Technology for Community Policing

Conference Report

National Institute of Justice
Office of Community Oriented Policing Services
Technology for Community Policing

Conference Report

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National Institute of Justice
Office of Community Oriented Policing Services
National Institute of Justice
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Introduction

Community policing is a collaborative effort between the police and the community that identifies problems of crime and disorder and involves the community in the search for solutions. It is founded on close, mutually beneficial ties between police and community members.

To advance that agenda, during the summer and fall of 1996, the National Institute of Justice (NIJ) and the Office of Community Oriented Policing Services (COPS) held a series of five regional conferences that focused on how technology can enhance community policing.

The conferences, held in Colorado Springs, Colorado; Rochester, New York; San Diego, California; Charleston, South Carolina; and Louisville, Kentucky, were supported by NIJ’s network of regional National Law Enforcement and Corrections Technology Centers (NLECTC).

The conferences featured presentations by law enforcement professionals on approaches to using technology to strengthen partnerships between the community and police and to develop strategies to fight crime. Topics included how to apply the vast resources of the Internet and World Wide Web to law enforcement, mapping and tracking crime through crime analysis technology, and technology liability considerations. In addition, individual speakers, including chiefs of various police departments, shared information on actions their departments have taken and technology they have used to foster community policing.

For example, the Dallas Police Department uses mobile neighborhood police assistance centers, which are specially equipped recreational vehicles that officers use to deliver services directly to high-crime areas. They allow officers to remain in a neighborhood 24 hours a day, concentrating on preventing violent crime, stopping drug trafficking, and organizing neighborhood watch groups.

Fax Net, created 5 years ago in Phoenix, Arizona, has become a vital crime prevention network in communities across the country by giving police a tool to rapidly alert neighborhood businesses and associations to criminal activity and wanted suspects. Also emphasized was the importance of tools such as bicycles and motor scooters, mobile telephones, and pagers.

The challenge for police is to embrace technology, but they must apply it intelligently. Technology can sometimes be employed at cross-purposes with community policing. For example, one speaker said, the combination of computer-aided dispatch technology and computerized data in the patrol car has tethered officers to the automobile rather than facilitate the face-to-face interaction in the community that is so integral to community policing.

Police agencies need to be careful that the technology they choose to use is not created in a vacuum. Officers on the beat need to be part of the design process. Having too sophisticated a computer program can be as great a burden as having none at all. Police agencies also need to be very aware of liability and constitutional issues surrounding new technology.
To advance law enforcement interests and ensure success, State and local agencies need to work in partnership as much as possible with the three supporters of the conferences, NIJ, COPS, and NLECTC.

| NIJ is the research and development arm of the U.S. Department of Justice. NIJ sponsors research and development to improve and strengthen the criminal justice system and related civil justice aspects. |
| The Office of Community Oriented Policing Services (COPS) provides funds to add 100,000 community policing officers to America’s streets. In addition to hiring grants, COPS is dedicated to advancing community policing nationwide through funding training and technical assistance efforts; evaluation and research activities; and innovative programs. Examples of innovative programs include the COPS Anti-Gang Initiative, Community Policing to Combat Domestic Violence, the Youth Firearms Violence Initiative, Troops to COPS, and the Police Corps. For information, telephone the U.S. DOJ Response Center at 800–421–6770. |
| NLECTC serves as a central technology education and referral resource for law enforcement and corrections by providing technical expertise and services to assist in technology research, development, assessment, and evaluation. NLECTC is made up of four regional centers and three special offices, each having a unique technology focus. For information, telephone 800–248–2742. |
Welcome

Jeremy Travis  
Director  
National Institute of Justice

Travis told conferees that this is the beginning of the “golden age” of support for technology and law enforcement and corrections, with strong support coming from the executive and legislative branches of Government and the public.

Travis discussed three themes:

- Government action in Washington, D.C.
- Why we are entering this golden age of technology.
- The future of technology and law enforcement.

Travis encouraged participants to take advantage of services offered by the National Law Enforcement and Corrections Technology Centers, which are part of an information infrastructure throughout the Nation to service local law enforcement agencies. The centers provide a centralized means for law enforcement agencies to keep up-to-date on available technology.

This new era of support for police officers on the beat represents a remarkable coming together of forces around the Nation that springs from the recognition of a need that must be met.

Executive Branch. The President is very supportive, Travis said. For example, the President read an article on technology to detect concealed weapons and sent the Attorney General a note asking about it. A year later the Department of Justice has invested more than $2.1 million in weapons detection research, and the Department of Defense has added several million more. Work at NLECTC–Northeast, colocated with Rome Laboratory within the Griffiss Business and Technology Park (formerly Griffiss Air Force Base) in Rome, New York, has advanced far enough that testing in the field is being considered. The technology is within reach.

In addition, through the performance review work of the Vice President, a productive partnership has been formed with the Department of Defense to make the best defense technology available to law enforcement.

Attorney General Janet Reno is very supportive of the National Institute of Justice (NIJ) and particularly its technology agenda, Travis said. She urged the creation of a technology policy council within the Department of Justice to ensure everything possible is being done within the Federal Bureau of Investigation (FBI), the Drug Enforcement Administration (DEA), the Bureau of Alcohol, Tobacco, and Firearms (ATF), and NIJ to leverage technology for law enforcement and corrections activities.

Congress. Strong support in Congress is key to long-term success. The new awareness at the Federal level requires both legislative and executive support. U.S. Representative Patricia Schroeder (D–CO) has been at the forefront of developing an agenda to convert defense technology to law enforcement, Travis
said, and others are equally active within Congress. Last year Congress appropriated $37.5 million of the defense budget and $30 million this year to support the conversion of technology to law enforcement use. Congress listed the priorities for spending those funds, based on the areas in which law enforcement professionals say they have the greatest need. Over a number of years, NIJ has worked with local law enforcement agencies to determine what they feel are the most important ways to use technology. Technology to detect concealed weapons has been at the top of the list. In this way, NIJ can sit down with its partners at the Departments of Justice and Defense and ensure that first investments go to areas in which law enforcement says it has the greatest need.

In the 1994 Crime Act establishing the Office of Community Oriented Policing Services (COPS), Congress called for the development of technologies to modernize policing. Because of that support, NIJ has been able to engage in a partnership with COPS to support the notion that technology can be supportive of community policing. The Schroeder Amendment to the Act requires that 1 percent of policing monies be set aside for technology. Travis said that 1 percent is a small number, but when measured against the total $2 billion budget, Congress has devoted $20 million over 3 years for research into technology.

**Why Are Our Elected Officials Reacting?**

- People care about crime. Crime is the central issue on people’s minds and all levels of government must respond to this concern.
- There is strong grassroots support within the law enforcement community that officers deserve the best. That support is being heard at the national level.

**Where Are We Headed?**

NIJ is building an ambitious technology program. Over the next year, NIJ’s obligation is to make those investments wisely by listening to local law enforcement carefully. NIJ is supportive of law enforcement priorities and the movement toward community policing. Travis encouraged conferees to take an active role.

Ultimately, Travis said, NIJ’s objectives are the same as local police agencies—to ensure that cops on a tour at night have the best equipment and the best technology.
Overview of the Office of Community Oriented Policing Services (COPS)

David Hayeslip
Assistant Director
Planning, Policy & Evaluation
Office of Community Oriented Policing Services

COPS and Technology

The Office of Community Oriented Policing Services (COPS) was formed 2 years ago as part of the 1994 Crime Act. The Attorney General charged COPS with a unique mission: to implement the Cops on the Beat mandate of the Act and, more generally, to reinvent the way Government does business by eliminating bureaucratic waste and moving grants out the door.

COPS is proud of its customer service orientation, Hayeslip said. Every COPS staff member believes that law enforcement professionals are their customers and that the needs and ideas of those professionals are what the grants awarded by COPS should support. Unlike many past grant programs, COPS should not decide from Washington, D.C. what agencies and individuals in the field need. Instead, COPS should listen to what law enforcement agencies in the communities of the United States have to say.

The mission of COPS, Hayeslip said, is to implement and enhance community policing across this country by supporting problem solving and partnerships with the community. COPS also believes, as is reflected in every grant it awards, that technology is an essential tool of community policing that can facilitate both efficiency and effectiveness.

Grants sponsored by COPS fall into five categories:

- Grants to hire more police. To date the program has supported the hiring and redeployment of 54,000 community police officers; approximately 20,000 of those officers have finished training and are on the beat. COPS hiring programs have funded more than half the police departments in this country, which serve approximately 87 percent of the U.S. population.

- Grants to purchase technology to support civilianization and to redeploy existing sworn officers into community policing. At least 1,500 police departments have received funding under this program to date.

- Free training seminars throughout the country on topics ranging from introduction to community policing to executive-level training.

- Grants to fund programs on youth firearms violence, gang suppression, domestic violence, problem solving in the community, and organizational change and development.

- Funding for comprehensive evaluation of COPS programs to ensure that they work.
COPS on the Horizon

Ongoing and future COPS programs include:

- Universal hiring programs continue on a rolling basis. This year, agencies that have been awarded grants need not apply again. Funding will be determined by the number of officers those agencies indicate will be needed in future years.

- MORE ’96 (Making Officer Redeployment Effective) are grants for technology that will allow sworn officers to be redeployed into the community. This program, which is open to all law enforcement agencies, is designed to expand the time available for community policing by current law enforcement officers, rather than fund the hiring or rehiring of additional law enforcement officers. The grants may be used to buy technology and equipment and to procure support resources (including civilian personnel).

- Solicitations for supporting training and technical assistance will look to developing new means of delivery systems, curriculums, and training sessions hosted by regional organizations.

- Police Corps, an experimental pilot program in seven States in which college students who commit to working in a police department for 4 years are reimbursed by the State for their tuition and other costs.

- The Law Enforcement Scholarship program provides tuition help to inservice law enforcement officers who would like to attend college.

- The Troops to COPS program, which will be supported by $10 million in funding from the Department of Defense, helps police agencies train honorably discharged veterans.

- COPS plans to conduct inhouse evaluation studies over the course of the year to disseminate case studies and success stories that staff members are collecting through contact with professionals in the field.

- Under consideration is an alternative three-digit number to 911 that will link callers with more appropriate services.

- In the fall of 1996 the President announced a program through which the cellular telephone industry will donate phones to neighborhood watch groups. COPS is helping to coordinate the program through the Community Policing Consortium.
How can technology help police be more effective in community policing?

The challenge for police is to embrace technology, Sloan said, but they must do it intelligently. Police must become more knowledgeable about what technology can really do. Often, they are faced with prolonged implementation, then questionable utility once the technology is in place. It is critical that users be involved during the initial stages of developing and implementing technology.

Sloan suggested combining two principles: define the objective and ensure that form follows function. Police must ensure that the form technology takes follows the function they are charged with carrying out. They must assess their most basic function as police agencies and redefine their role in pursuit of that function. How police prioritize and use technology will be shaped by what they prioritize in their departments.

The term “law enforcement” itself connotes a narrow and distorted view of police functions, Sloan said. Caution must be taken to ensure that technological advances that police develop and implement support not only the law enforcement components of police activities, but also all the other roles that a community policing practitioner has to carry out: mediator, facilitator, community mobilizer, organizer, crime prevention monitor, and mitigator. Function should not be altered to meet the form of technological advances. It is critical to not sacrifice effectiveness of policing for greater efficiency.

Examples Sloan cited of how technology has been employed at cross-purposes with community policing include:

- The combination of computer-aided dispatch technology and computerized data in the patrol car has tethered officers to the automobile rather than facilitate the face-to-face interaction in the community that is so integral to community policing. Not only do officers feel tied to machines in their patrol units, but dispatchers can’t reach officers who are out of their cars.
- Automated records management systems have improved the efficiency of data entry and storage but have complicated the retrieval of vital information.
- Deployment and scheduling software do a good job of computing optimum manpower needs but with traditional, incident-driven measures.
- Systems that analyze police workload and help devise strategies to deal with it also are based solely on traditional measures. These data are incredibly valuable, but basing decisions solely on them causes police to continue to adhere to the traditional mindset.

Technological innovations can be tremendous tools for law enforcement: concealed weapons detection and sharing information between police agencies about crime trends and criminals have tremendous potential. Police must explore technology that enhances their ability to diagnose community problems.
in a systematic manner. They must be able to better analyze the cause of crime and the quality of life in communities across the country.

In addition, communications technology can open policing to the community to facilitate information sharing and prevent crime, mobilize the community around salient crime and quality of life issues, help the community better understand policing, and help police better understand community issues and restraints.

COPS programs can help officers become more effective in policing their communities. Technology can help police marshal resources and synthesize service providers to solve community problems. Police are in the community 24 hours a day, 7 days a week, 365 days a year. Who better to coordinate community services? Sloan said.
The Evolution of Police Technology

Tom Brady
Criminal Justice Consultant

The history of police and technology in the United States, Brady said, began with the officer on the beat well before the turn of the century. Brady quoted Chicago police chief Frances O’Neil, who, speaking in 1903 about conditions on the street for police in the 1870’s, said, “Those were desperate times for policemen in a hostile country with unpaved streets and uneven sidewalks, sometimes miles from the police station with little prospect of assistance in case of need. It took real nerve to be a policeman in those days.”

Soon after came technology and progress, the invention of the patrol wagon and the signal system. In 1877, the telegraph was used for the first time by police and fire departments in Albany, New York. In 1878, the telephone was installed in precinct houses in Washington, D.C. In 1901, a fingerprint classification system was developed. In 1923, the first police crime laboratory in the United States was established in Los Angeles. In 1928, police in Detroit began using the one-way radio. In 1934, police in Boston began using the two-way radio. In 1932, the FBI inaugurated its famous crime laboratory. In 1948, radar was introduced to traffic law enforcement.

This litany of progress, Brady said, makes it appear that police have enjoyed the full benefits of the 20th century’s technological explosion. But technological innovations that could make police more productive have not always been developed or adapted to police needs. Other innovations, he said, have not been manufactured and marketed to the law enforcement and corrections community. Even while improved technology is being made available to the general public, modernization of law enforcement agencies has been spotty at best.

In 1967, a presidential crime commission was assembled to examine why the crime rate in the United States had doubled between 1940 and 1965, increasing five times faster than the U.S. population. The commission’s report detailed how, for much of their history, the Nation’s police officers had lagged behind other sectors in reaping the benefits of technology. It found that 40 years earlier most police departments could have been equipped as well as they were in 1965. Not only police officers, the commission reported, but also the Nation’s criminal justice system had been shortchanged.

Since that report’s discouraging findings, there has been some progress for police in the United States. The development of the 911 emergency response system in the late 1960’s, for example, illustrated that when private industry can forecast a likely profit from new technology, it will deliver that technology quickly.

Another step forward for law enforcement occurred in the 1970’s with the National Institute of Justice’s development of soft body armor, the agency’s most significant technological contribution to police safety. To date, soft body armor

“There has not been as much progress in developing technology for police as they and their work warrant.”

Tom Brady
has been credited with saving the lives of more than 1,800 police officers. In 1984, NIJ began a program to develop DNA technology and make that technology available to local and State law enforcement.

Other advances have developed piecemeal across the country, a reflection of the Nation’s fragmented policing system. Two important examples are the fractured implementation of the automated fingerprint identification system (AFIS), a computer system for automatic identification of fingerprints, and technology that would give police better alternatives to deadly force. AFIS may be accessed from remote LANs and removes the need to make manual fingerprint comparisons. Fragmented use of AFIS can allow criminals from one State to avoid detection in another.

Even more detrimental to the future of policing has been the slow, haphazard computerization of law enforcement agencies in the United States. The push to computerization began in the 1970’s, when the Federal Government provided funding to police departments wanting to buy computers. Ten years later, an estimated 1,500 police agencies were using computers, but most likely only as elaborate adding and filing machines. It is now clear that during those two decades most police departments lagged far behind the private sector in making effective use of computers. As with other technologies, manufacturers viewed the Nation’s 17,000 law enforcement agencies as an insignificant market and were reluctant to invest in new software applications and specialized hardware for their use.

By the 1990’s, law enforcement use of computers had grown dramatically, but a 1993 Bureau of Justice Statistics survey still showed that only two-thirds of local police departments were using computers; an increasing number of those departments depend on computers for sophisticated purposes such as criminal investigation and crime mapping and analysis.

The widespread introduction of computers to policing in 1970 began the third and current era of U.S. policing, the era of community policing. Information technologies, anchored in computerization, have an important current and future role in successfully implementing community policing.

Brady quoted a remark by Al Blumstein, head of the 1967 commission’s science and technology task force, that technology is finally starting to take hold in law enforcement. The dominant transformation, Blumstein now believes, has been in computing.

**Obstacles to Progress: Fragmentation, Liability, and Fear of Misuse**

Despite the extraordinary technological advances of the past 30 years, Brady argued, chronic obstacles still impede the development of police technology. Why is technology not serving police officers better with new choices and new products, as it does so many other areas of endeavor?

The obstacle to progress for many of these questions, Brady suggested, lies in the fragmentation of police agencies at the local level. Fragmentation, he said, has made law enforcement a hard-to-reach, unrewarding market for developers and manufacturers of technology. Small agencies rarely pool funds for purchases that would increase their presence as technology consumers, and most police departments have precious few resources for research and development.
Fragmentation also has caused great disparity among agencies in their awareness of technology. Although a few departments have revolutionized their operations, many others lag far behind. Lacking experts on staff to evaluate the technology they purchase, small neighboring police departments too often buy incompatible technology, notably in communications equipment. Finally, fragmentation has prevented the establishment of national standards for law enforcement that would encourage more agencies to consider using new applications.

A second factor in law enforcement’s slow embrace of technology, Brady said, has been concern over liability issues. Technological innovations intended to allow police to exercise graduated levels of force have sometimes generated lawsuits, negative press, and criticism from the community. The use of pepper spray, for example, while hailed by law enforcement professionals as a proven alternative to lethal force, has caused tension between some departments and the communities they serve. Technology to detect weapons concealed on the body has raised questions regarding constitutional rights to privacy.

A third factor influencing technology’s use in law enforcement, Brady told the conference, is the specter of “big brother” government surveillance of citizens. As law enforcement agencies employ sophisticated information systems and other high-tech surveillance equipment, sometimes to monitor the activities of their own officers, they will increasingly face public concern that technology not be misused.

The Federal Government has assumed responsibility for fostering the development and availability of new technology. The Government is fulfilling that responsibility through the National Institute of Justice, and specifically its Office of Science and Technology. Congress has recognized its role by significantly increasing funding to NIJ to speed the adoption of new technology by local police departments. The future of police technology will address practical concerns such as improving the patrol function, maximizing the impact of community policing, and supporting the evolution of information systems. To the extent that technology helps police accomplish these goals, life will be safer for everyone in the 21st century.
Technology for Community Policing

Featured Speaker

U.S. Representative Patricia Schroeder (D–Colorado), First District

Events in recent years such as the bombing of the World Trade Center in New York City, the bombing of the Murrah Federal Office Building in Oklahoma City, and a series of mail bombs attributed to the Unabomber have changed the face of security in our Nation.

“Americans are very concerned suddenly about domestic security. During the Cold War we were worried about enemies that were far away. But now there are enemies among us,” said Schroeder in a videotaped address. “The whole security thrust is changing.”

And law enforcement must change with it. Criminals have become more sophisticated in their use of technology, and law enforcement professionals must be equipped sufficiently to do their jobs. Both parties in Congress have been able to agree on more funding for law enforcement in recent years. The Federal Government also can help in the transfer of technology through conducting testing and evaluation of new technology, developing standards, and serving as an information resource for local and State law enforcement agencies.

Schroeder urged conferees to use the resources of the National Law Enforcement and Corrections Technology Centers (NLECTC), including the Rocky Mountain regional center based in her home State of Colorado. The NLECTC centers are collocated with research labs or organizations that can foster technology development. The key to success is partnerships.

“The only way this is going to work is if we partner with the resources in the region, if we partner with the law enforcement people in the region, and if we partner with the private sector in the region, and do that through the centers,” Schroeder said.

“You’re right at the beginning. We want you to be active partners. This is your tax dollars, this is your money, and this is your security, this is your children’s security. We are planning what America is going to look like in the 21st century,” she concluded.
Featured Speaker

John C. Martinez  
Deputy Chief  
Dallas, Texas, Police Department

Community policing, Martinez said, is not a model and not a program; it is a philosophy that strives to make police part of the neighborhood. The cornerstone of community policing is putting cops back on the beat to get a better sense of residents’ needs.

The experience of the Dallas Police Department is that policing is most effective when citizens get involved. Community policing thrives, Martinez said, when police and citizens work together to prevent crime and solve neighborhood problems. A police department, no matter how dedicated its officers or sophisticated its technology, cannot solve a community’s problems without the trust and help of citizens.

The Dallas Police Department has developed an approach to community policing that is tailored to the unique problems of the Dallas metropolitan area. All patrol divisions are divided into three areas commanded by a lieutenant. These areas are then further divided into five geographic sections with specific neighborhoods targeted for intensive policing.

Each targeted neighborhood, Martinez said, is assigned a pair of community police officers who work in tandem to address that neighborhood’s needs. They resolve short-term disputes as they arise but focus on long-term solutions in areas that can have a greater impact on the community: public safety, social services, affordable housing, truancy, and access to city and government services. The Dallas Police Department believes that officers must know how to solve problems, not just deal with recurring problems incident by incident.

According to Martinez, technology can and should be an important part of community policing. He highlighted the tools that have had the greatest impact for his department.

- **Mobile neighborhood police assistance centers.** These highly visible mobile “storefronts” are specially equipped recreational vehicles that officers use to deliver services directly to high-crime areas. They allow officers to remain in a neighborhood 24 hours a day, concentrating on preventing violent crime, stopping drug trafficking, and organizing neighborhood watch groups.

- **Fax Net.** Created 5 years ago in Phoenix, Arizona, Fax Net has become a vital crime prevention network in communities across the country by giving police a tool to rapidly alert neighborhood businesses and associations to criminal activity and wanted suspects.

“Officers must know how to solve problems, not just deal with recurring problems incident by incident.”

Deputy Chief  
John Martinez
Voice mail for neighborhoods. Because their safety and the safety of their families are threatened, members of neighborhood watch groups become very active when crime increases on their streets. During these times, a neighborhood voice mail system can be a police department’s most effective means of communication with neighborhood residents and a way to put responsibility for stopping crime back into the community.

Other technology, both simple and advanced. Martinez emphasized the importance of considering a variety of tools including bike and scooter patrol, mobile phones, and pagers.
Cops on the Web

Ira Wilsker
Regional Police Academy
Lamar University Institute of Technology

The Internet: An Overview

In the United States, nearly 22 percent of all adults over the age of 16, or 35 million people, now have regular Internet access. Worldwide, Wilsker said, at least 200 million people have access, and that number is growing rapidly every day.

The Internet is not owned by any organization or individual. It was created through a military research project to survive a nuclear strike by developing a means of disseminating information through redundant communications links around the country. Since the 1960’s, the Internet has been administered by the National Science Foundation. It is now being privatized.

Wilsker gave a wide-ranging presentation, compressing into 30 minutes what he would normally cover over a 2-day workshop. Wilsker noted that the Internet’s potential as a tool of mass communication is reflected in the extraordinary range of activities for which it is used:

- Free exchange of information.
- Research and information on every topic imaginable: academic, personal, commercial, safety, advertising, and software.
- **Surfing the World Wide Web.** Simple and graphically oriented, the phenomenal growth of Internet use began in 1993 with its creation. Mosaic was the first World Wide Web product. Popular browsers are Netscape, Microsoft Internet Explorer, and others.
- **Electronic mail.** Instant, personal, and extremely cost effective. While typically not secure, communications related to law enforcement and corrections can be protected using encryption software such as Pretty Good Privacy (PGP). E-mail software is now included with most browsers or is bundled in software packages. Popular freestanding software (Pegasus Mail and Eudora) is also available via the Internet.
- **GOPHER.** The first Internet function, GOPHER was developed at the University of Minnesota. While not as efficient at locating information as the Web, tens of thousands of GOPHER sites exist, offering a wealth of information to researchers and other users. One GOPHER search engine is called VERONICA, and it is accessible and searchable on the Web.
- **FTP, or file transfer protocol.** Through this technology, files can be sent and retrieved by anyone in the world who has computer access. Built into most browsers, FTP can be used to download new and updated software. Popular freestanding FTP search engines are Cute FTP and WS_FTP. A free Web site, [http://www.shareware.com](http://www.shareware.com), lists more than 200,000 free software products available for downloading.
USENET. This service offers at least 27,000 newsgroups on an extraordinary range of topics. Much like CB radios used in the past, newsgroups are open to everyone and their content represents the full range of opinion and interests. Dozens of newsgroups on law enforcement and corrections topics exist, including discussions of everything from complaints about police work to traffic, crime, and every other issue affecting the work of police agencies across the country.

Other Internet tools to keep abreast of law enforcement topics. These tools include newsreaders such as FREE AGENT; live Internet Relay Chat channels that law enforcement professionals can use to chat with other professionals in a restricted environment; phone utilities that allow police to hold live voice conversations with other officers all over the world for free; live audio and video broadcasts by more than 1,200 radio and television stations; personal newspapers; and legal and other academic search engines.

Using the Internet for Law Enforcement

The possibilities for applying the Internet to law enforcement are only beginning to be explored. Wilsker outlined several areas in which visionary agencies are already forging ahead:

Communications between police and the community. For a fraction of the cost and time required in the past, police agencies can educate the community electronically about neighborhood crime trends and wanted criminals, drug abuse prevention, missing children, youth programs, department and city services, and a host of other useful information. Neighborhood residents can use e-mail and links to information posted on agencies’ Web sites to obtain information they need more quickly and to send comments that will help police respond better to their concerns.

Training officers and volunteers. The Internet has become an invaluable tool in law enforcement and corrections to inform professionals in the field about techniques and equipment, and it allows sensitive information to be exchanged through restricted channels when needed.

Providing a wealth of information to law enforcement professionals. Police and corrections sites on the Web are growing rapidly and now represent an extraordinary range of topics:

- News
- Upcoming training events and conferences
- Missing children and adults
- University police
- City and county sheriff’s and police departments
- State and Federal agencies
- Military agencies
- Canadian and international police agencies
- Government grants
- Job listings
- Prisons and capital punishment
- Terrorism, anarchy, and hate groups
- Traffic and highway issues
- Legal and court sites
- Commercial sites
- E-mail lists
- Patches and badges
- Crime trends and serial murders
- Sexual abuse and domestic violence
- Forensics and investigation
- Firearms
- Cults and sects
- Narcotics and drugs
- Law enforcement gophers

Two of the largest law enforcement sites are http://www.ih2000.net/ira.htm and http://police.sas.ab.ca/.

**The City of Rochester: Using the World Wide Web To Educate the Community**

In an effort that has expanded awareness of community safety beyond traditional crime issues, the city of Rochester has posted vital information on its Web site (http://www.rochester.lib.ny.us/cityhall/html) that has helped parents, children, and the elderly avoid being victims of accidents and crime. The site links browsers to practical information on issues that are important to the community:

- 10 Tips for Fire Safety
- 911 Tips
- Baby Sitter Guide
- Beware the Stranger at Your Door
- Child Safety Forum
- Community Services
- Crime Prevention Tips for the Elderly
- Exploring Law Enforcement
- Guidelines for Gun Owners
- How to Praise/Complain About City Policing
- How to Protect Your Neighborhood
- Latchkey Children
- Neighborhood Watch
- Preventing Child Sexual Abuse
- Sexual Assault Information on the Internet
- Shoplifting
- Teenage Driver Safety
Creating a Web Page

There are now more than 50 million Web sites in existence, and the number of sites doubles every 2 to 3 months. Setting up a Web page is extremely easy through any of the following methods:

- Connect to another agency’s Web page and save it in HTML format with the Save As command under File. Use that page as a model to design your own site.

- Use a template from a word processing software (WordPerfect and Microsoft Word) or a free HTML editor (HOT DOG or Netscape Gold) that can be downloaded from the Web.

- Use a text editor (EDIT or NOTEPAD) to write HTML instructions for your page. Try http://www.ic2000.net/ira/homepage.htm.

After a home page is created, it can be posted on the Web with FTP. Most local Internet providers will donate Web space to law enforcement and other city agencies to generate subscribers. Free Web space is also available at http://geocities.com.
Keynote Speaker

The Honorable Paul Shechtman  
Commissioner, Criminal Justice Services  
New York State

Shechtman began his discussion by saying that the entrance of Rome Laboratory and the New York State Technology Enterprise Corporation into the criminal justice system’s product development field presents an extraordinary opportunity. The staff of the New York State Division of Criminal Justice Services (DCJS) and the New York State Police have begun to work with Rome’s scientists and engineers to examine advanced technology previously available only for national defense and to determine how that technology can be integrated into the daily lives of police officers.

“The challenges for law enforcement as we approach a new century,” Shechtman said, “are numerous and difficult. But the solutions to those challenges will be created by many of the individuals sitting in this room.”

Using technology as a workforce multiplier does not require high-powered technological innovations. Sometimes, Shechtman said, a fax machine and a computer programmer will do. The ability to do more with less is often breathtaking if technology is applied intelligently to the community policing mix.

An example from New York is the Statewide Automated Fingerprint Identification System (SAFIS), which has transformed fingerprint identification in the State since its inception in 1989. Before its development, fingerprint analysis was a tedious, labor-intensive process. Months were often spent attempting to match fingerprints with a suspect. Six years ago at DCJS, the floors sagged with tubs of fingerprint cards. If ever an identification system was crying out for a technological fix, it was fingerprinting.

According to Shechtman, SAFIS was that fix. In the summer of 1996, New York City was terrorized by a new Central Park rapist. A woman was raped, brutally beaten, and left to die. New York City police had few leads until a latent fingerprint taken from the crime scene was matched to the perpetrator using SAFIS. The search, Shechtman said, took 20 minutes and worked because the suspect had a prior record for not paying a subway fare.

DCJS and the New York State Police are now at work on a new data base that promises to revolutionize sex crime investigation in the next century. It is a DNA data base in which samples from offenders will be stored and matched with crime scene specimens. To help design the data base, the State has established a DNA committee comprised of some of the country’s leading DNA scientists.

Other technological achievements on the horizon for New York State, Shechtman said, include:

- A state-of-the-art forensics investigations center for the New York State Police built entirely with the seized assets of criminals.
- A shell casings data base that will allow investigators to link guns to crimes.
- Live scan technology to transmit high-quality digital fingerprint images.

“Anyone who doesn’t believe that the future is bright for law enforcement is mired in the past. Anyone who does not think that technology is the key to dramatically improving our delivery of law enforcement services is not looking boldly at what is possible.”  

Paul Shechtman
A statewide mug shot system that will give law enforcement the ability to retrieve photographs of wanted offenders and suspects.

A device that victims of domestic abuse can use to alert the police if their batterer approaches—a measure of safety for women who live in constant fear of attack.

Computer software that will train officers to handle crime scene evidence and other field work properly.

Shechtman ended his address with words of caution about using technology. First, cops on the beat must be part of the design process. “Technology,” he said, “is created in a laboratory but need not be designed in a vacuum.”

Second, law enforcement should not suffer the sins of technological overkill. Having too sophisticated a computer program can be as great a burden as having nothing at all.

Third, technology must be funded adequately and properly at the State and local levels. States, counties, and cities desperately need money to modernize their forces and to exploit the workforce multiplier that technology provides.

Last, police agencies must think hard about constitutional issues. The constitutional implications of using new technology are real and prosecutors and academics should be part of the working groups established to consider using force alternatives and new weapons.
Law Enforcement Information and Technology Centers

National Law Enforcement and Corrections Technology Center: What It Offers You

Marc Caplan  
Project Manager  
NLECTC  
Rockville, Maryland

The mission of the National Law Enforcement and Corrections Technology Center (NLECTC) is to be the most comprehensive source of product and technology information in the country for law enforcement, corrections, and other criminal justice practitioners.

To accomplish this, the NLECTC National Center in Rockville, Maryland:

- **Operates a hotline/information response center.** This center responds to requests from criminal justice practitioners, procurement officials, manufacturers, laboratories, Congress, and the media. It includes a critical incident response center to identify trends in the use of less-than-lethal technology that might indicate a problem in the field. The center also issues product warnings.

- **Tests law enforcement products and publishes test results.** NLECTC manages a voluntary compliance testing program and tests off-the-shelf products to NIJ standards; contracts with independent testing laboratories; issues letters of compliance; and publishes test results.

- **Publishes informational bulletins on technologies.** Bulletins offer an effective way of disseminating current information on technologies and testing activities. Also published are Technology Beat newsletters, equipment performance reports, consumer product lists, and advisory committee and conference reports.

- **Manages JUSTNET and technology data bases.** For online access via the Internet and World Wide Web to NLECTC, users may access JUSTNET (Justice Technology Information Network). JUSTNET provides access to NLECTC news/hot topics, publications, products/manufacturers, and topics boards, as well as a gateway to other law enforcement and criminal justice resources. JUSTNET’s address is: http://www.nlectc.org.

- **Coordinates conference and advisory group activities.** NLECTC coordinates activities of the Law Enforcement and Corrections Technology Advisory Council and sponsors, hosts, and supports technology demonstrations and conferences throughout the year.
In addition to the National Center, NLECTC’s regional centers and special offices play a vital role in accomplishing NLECTC objectives. Each also has a unique focus:

**NLECTC–Northeast Region.** *John Ritz, Director.* Based at Rome Laboratories within the Griffiss Business and Technology Park (formerly Griffiss Air Force Base) in Rome, New York, this center is the lead on concealed weapons detection technologies. Current projects include speech enhancement and automated language translation, image processing, and secure communications.

**NLECTC–Southeast Region.** *Steven Bishop, Director.* [Tommy Saxton, new Director.] Hosted by the South Carolina Research Authority and linked with the Naval In-service Engineering Center near Charleston, South Carolina, this center focuses on corrections technologies.

**NLECTC–Rocky Mountain Region.** *James Keller, Director.* Based at the Denver Research Institute within the University of Denver, this center focuses on communications interoperability. Current projects include a wireless communications interoperability survey; ballistic threat assessment and abatement; explosives identification and detection; and photogrammetry/crime scene reconstruction.

**NLECTC–Western Region.** *Robert Pentz, Director.* Colocated with Aerospace Corporation in El Segundo, California, the center specializes in forensic imaging. Current projects include keyless handcuffs and specifications for photo and print transmission systems.

**Border Research and Technology Center (BRTC).** *Chris Aldridge, Director.* This center, a joint program with NIJ, the Office of National Drug Control Policy, and NLECTC–Western Region, is located in San Diego, California. Its concentration is on technologies that can be used to meet the law enforcement challenges along U.S. borders. BRTC activities overlay that of both the Western Region and the Rocky Mountain Center.

**Office of Law Enforcement Technology Commercialization (OLETC).** *Paul Ginouves, Director.* Colocated with the National Technology Transfer Center in Wheeling, West Virginia, OLETC’s area of expertise is helping to commercialize technology from the laboratory. Current projects include a retractable spiked barrier strip, rear seat airbags, concealed weapons detection, and protective gloves.

**Office of Law Enforcement Standards (OLES).** *Kathleen Higgins, Director.* Part of the National Institute of Standards and Technology in Gaithersburg, Maryland, OLES develops the minimum performance standards that NLECTC uses in its testing program.
Center for Applied Science and Technology for Law Enforcement (CASTLE)

Tom McCoig  
CASTLE Operations Manager  
Oak Ridge National Laboratory

The Center for Applied Science and Technology for Law Enforcement (CASTLE) is an advanced technology partnership serving regional law enforcement. Located at the Oak Ridge National Laboratory in Tennessee, CASTLE is a partnership of scientific, university, private sector, and law enforcement personnel. The program’s goal is to apply technology at the grassroots working level to solve crimes while improving the safety and efficiency of the officer’s job.

The mission of the CASTLE program is to apply federally funded technological capabilities to understand and solve law enforcement needs. One way to meet that mission is through immediate application of off-the-shelf technology to solve crimes. Through the use of quick response technology, CASTLE tries to minimize bureaucracy to obtain quick results.

Examples of technology research endeavors include:

Video enhancement. The solving of armed robberies, homicides, and other crimes through advanced video enhancement. CASTLE responds to law enforcement requests for assistance in recovering evidence that is captured on videotape.

Cranio-facial reconstruction. Computer and intelligent systems technologies can provide significant improvements in quality, cost, and production time for cranio-facial reconstruction. The Oak Ridge National Laboratory is working with the University of Tennessee to apply advanced computing and artificial intelligence for rapid and low-cost reconstruction of faces from skeletal remains.

Lab-On-A-Chip. Oak Ridge also is developing microfabricated devices that can perform the functions of a chemistry lab at reduced cost. Applications of the devices include analysis of suspected illicit materials and detection of crimes against the environment, such as illegal dumping.

Advanced fingerprint analysis. One problem is that children’s fingerprints disappear at a faster rate than adult fingerprints. Future development includes a specific test for juvenile fingerprints. Also being researched is the detection of compounds, such as hormones, that could help profile potential suspects from fingerprints at a crime scene.

Smart repeater. Oak Ridge is developing a smart repeater, a radio communication project to allow interoperability in multiagency/multiuser scenarios and flexible intercommunications for field operations involving diverse types of radio frequency gear with varying frequencies and modulation formats.

Body armor cooling system. Under development is a cooling system to improve the comfort of body armor vests and thermal conditioning systems for garments used in harsh environments.
Featured Speaker

Peter J. Laun
Law Enforcement Victim Witness Coordinator
U.S. Attorney’s Office
Northern District of New York

Laun suggested that police agencies consider three rules when implementing community policing programs:

- **Timing is key.** Before embarking on a new program, a police department should talk about it in the community. Too often, police plan community activities in a vacuum and then are surprised when they don’t receive the full support of the community. The more key leaders are involved in planning community programs, the more resources will be available and the greater the chance for success.

- **Expect resistance.** Recognize that resistance to a new program results largely from emotional attachment to the program or philosophy being replaced. Officers’ and managers’ legitimate fears of technology should be acknowledged and discussed. Programs may fail not because they are flawed but because the individuals implementing them do not believe they will work.

- **Consider the whole picture.** The success of a community program depends heavily on how well it fits into the department’s strategic planning—how it builds on the success of programs that preceded it and becomes a bridge to those that will follow. Making a traumatic change to the criminal justice piece of the community system without considering its impact on other members of the community such as education and health service providers can have profound negative consequences.

The most effective community policing programs are created and implemented as part of a collaboration with the rest of the community. Community policing that has an impact is difficult; but departments that take the time and make the effort to implement it properly will see their programs make a difference in the safety and security of the citizens they serve.

“The manner in which you implement community policing will determine its impact on the community. The timing of change is important. Is your community ready for change?”

Peter Laun
Technology as a Force Multiplier

James Lingerfelt
Inspector
Metropolitan Police Department
Washington, D.C.

Before investing in any new technology, law enforcement must understand its uses. Agencies must first define their needs, then select technology that is appropriate for those needs.

Law enforcement’s embrace of technology as a tool in community policing is driven by an important demographic trend: the influx of young officers who understand and are comfortable using technology. As a result, resistance in police agencies to technological change has receded dramatically.

The District of Columbia Metropolitan Police Department, Lingerfelt said, will soon deploy the equivalent of 500 officers back on the street by using information management systems that allow officers to spend more time solving community problems. He stressed that technology must address specific problems of department work. Buying technology that does not support the work of police in the community is wasteful. To make wise choices about technology, a department must start with a straightforward, well-conceived strategic plan for information services that supports the department’s operational strategic plan, states the mission of its information services operation, and clearly identifies that mission’s objectives and deadlines. These objectives can then be used as a foundation for preparing a budget that is realistic and supports problem solving in the community.

He stressed that information systems are simply tools. In tradition-bound organizations, they will not correct poor management or prevent the incredible waste of time and effort police officers spend protecting themselves in case something goes wrong. However, applied intelligently as part of a strategic plan for information services, technology can save time and reduce costs by stripping away a layer of obsolete information services; support a refocusing of practices and culture on community policing; and position the department for the future.

The Importance of Business Process Reengineering

Transforming a department’s organizational culture and the systems that support it, Lingerfelt said, requires radically rethinking and redesigning business processes to achieve dramatic improvements in cost, quality, speed, and service. The core team driving this change must include as full partners the individuals who will use and most benefit from the department’s information services: officers on the beat and members of the community.

Combining technical expertise with the experience of patrol officers and volunteers from the community, the Metropolitan Police Department produced a workable strategic plan that has guided the department’s difficult process of transformation. The document began with an as-is analysis of department work, examining
in detail how patrol officers spent their time and the value of each activity. It then identified points of leverage—time-consuming tasks that could be automated, moved to civilian employees or volunteers, streamlined, or eliminated—at which small changes could have a significant impact on time and cost.

**Using Technology as a Force Multiplier: Three Strategies**

**Strategy I:** Give officers more time in the community by moving administrative work to other than sworn personnel.

- Enter data once electronically when it is collected. Because this practice is not standard in law enforcement, many police departments waste significant time and resources reentering the same information on multiple reports.
- Put every field on a report in a database that can be searched by officers and other employees in the department. Giving investigators and officers this ability greatly enhances their power to analyze the information they collect.
- Take advantage of electronic messaging to automate notification requirements that are now the responsibility of sworn personnel. Departments can lessen that burden by using automatic messaging to query claimants for more information or to prompt civilian volunteers to collect that information.

**Strategy II:** Streamline or eliminate redundant and unnecessary work, particularly for patrol officers.

- Use mobile computer workstations and other technology to keep officers in the field. Forcing them to return to the station for nonessential, mundane tasks wastes time they could devote to solving community problems.
- Outsource time-consuming tasks such as towing vehicles and traffic enforcement and analysis that are better handled by the private sector.
- Use computer and video technology to train officers in the street instead of at a training facility or station that limits their effectiveness.

**Strategy III:** Reduce the costs of support services and apply the savings to solving community problems.

- Automate reports and criminal histories to reduce or eliminate the staff needed to maintain paper files. Reassign these staff to more meaningful activities that directly support patrol officers and address community concerns.
- Allow the public to download accident reports and other information requests that otherwise consume valuable staff time. Fees for those services can be billed automatically.
- Use Reverse 911 to quickly pass along information to the community that officers must normally communicate through slower and more labor-intensive approaches such as door-to-door canvassing.
- Distribute identification and booking activities to remote sites to keep officers in the community instead of in long delays at central facilities.
- Take advantage of videoteleconferencing to reduce travel time and costs for officers attending interagency training and community meetings.
The collective result of these changes has been a significant expansion of the department’s capabilities despite budget cuts and staff reductions. As in many other police agencies operating on an extremely tight budget, concerns were raised about the cost of implementing this radical redesign of the department’s information services. The department found, however, that every component of the strategic plan would pay for itself in 1 year or less. The question now for law enforcement is, how can police agencies afford not to invest in technology?
Organizational Change and Community Policing

Nancy McPherson
Director
Community Policing Bureau
Seattle, Washington, Police Department

McPherson discussed the movement toward problem-oriented policing in the United States and its impact on organizational change.

The backbone of policing, McPherson said, is the work police officers do every day and night. The function of community policing is to make that work more effective and more rewarding. For her department, making that change meant providing crime analysis support not just during the day but during all the time that officers work, that is, around the clock. Every information tool developed by the crime analysis unit was developed with officer input and officer needs in mind.

The partnership between crime analysis and problem-oriented policing, she said, has become very important. Many managers of police are technically challenged, yet they make decisions about using technology, often frustrating officers in the field. At this conference, law enforcement should take the opportunity to address this problem by asking three important questions:

- Do we share a vision of how to support community policing in our agencies?
- Do we understand each other well enough to work together in support of that vision?
- What are the challenges for law enforcement professionals making decisions about what systems to use, managing those systems, and using them?

Technology Experts, Managers, and Users Must Work Together To Support Community Policing

According to McPherson, community policing is an organizational philosophy, not a program, that transcends the organization top to bottom. It acknowledges that without the active support of the community, long-term solutions to problems are not possible. The people who know best about a community’s problems are the people who live and work closest to those problems.

She noted that community policing is only effective, however, if it has operational strategies that bring the philosophy to life. If community policing is alive and thriving in a police agency, three such strategies will be apparent: (1) problem solving, (2) partnership with the community, and (3) organizational transformation.
The First Strategy: Problem Solving

Technology plays an important role in each of these strategies. For problem solving, McPherson noted, it means training every employee, line and staff, sworn and civilian, to use a systematic and analytical approach to identifying and solving problems. This approach moves law enforcement away from the standard two questions asked in police agencies when dealing with problems. Those questions are: What’s the problem? and What are you going to do about it? Many agencies are moving beyond reacting to single, isolated incidents and identifying patterns of recurring incidents that can be dealt with effectively as a larger problem. This process allows police staff, whether they are technology experts or practitioners in the field, to speak a common language about how to solve problems.

The problem-solving approach, she said, asks two additional questions: What do we need to know about a problem before we decide what to do? and, How do we know that we’ve solved the problem?

At each step in this process, technology users rely on the collection of data, a quick turnaround of that data into usable information, and an analysis of why the problem is occurring. But, McPherson cautioned, if problem analysis is too time consuming or too frustrating, officers won’t do it because the next call for service is always waiting.

In the response step of problem solving, nontraditional and traditional methods of policing are used. Technology continues to support crime prevention through detection and apprehension of criminals, court testimony based on thorough crime scene investigations, and investigative followup. Sometimes in the rhetoric of community policing the use of enforcement is overlooked as an effective problem-solving tool. Many of the problem-solving efforts that community officers are engaged in use a hardball approach to putting away bad people who should be in jail. In the future, police will use technology and partnerships with other agencies to make the lives of career criminals even more difficult.

In the final step of the problem-solving model—assessment—standard crime statistics can no longer be considered the single measure of success. Elected officials must be educated that bean counting will not support a problem-oriented approach to community policing. It takes input from all three groups—experts, users, and decisionmakers—to figure out how to measure what really matters.

Surveys to identify problems that are real to the community, the reduction of calls for service at specific locations, and officer and community satisfaction that a problem has been solved: these are a few of the criteria to measure effectiveness.

Reinventing the wheel each time police agencies attempt assessment is not smart, McPherson said. Research and crime analysis staff should have a standard set of tools that can be customized to measure what really matters. At every opportunity, police professionals, whether they be experts, users, or decisionmakers, must educate policymakers and officials about how to measure police work.

Elected representatives want the perspective of police officers in the field doing the work. When police agencies are as effective at preventing crime as they are at cranking out big arrest numbers, they won’t lose staffing and financial resources that help maintain long-term gains in the community.
The Second Strategy: Building Partnerships With the Community

A partnership is defined as the sharing of mutual responsibilities. This strategy, McPherson said, is challenging: Not every community member will share the responsibility of policing their community. Communities are, however, taking on more responsibility for identifying and solving their problems. Police are becoming a resource for communities. Community members who have accepted this responsibility are demanding more access to information and more responsiveness and openness from those in law enforcement who control the information they need.

Police agencies have learned that, other than controlling information that is part of an ongoing investigation, they do not need to keep as much information confidential as they have in the past. The law enforcement community is debating how much access to information the average community member should have. At the same time, some trendsetters have moved ahead, developing tools such as kiosks and public access networks—the ATM and Internet approach to providing neighborhoods with easy-to-use information. Making a serious commitment to this strategy may require locating hardware and software libraries, community centers, or public access facilities to give people an opportunity to partner with us.

If police agencies ask people to partner with them to solve crime, they must give those community members the resource tools to be effective partners.

The Third Strategy: Organizational Transformation

According to McPherson, an agency committed to community policing must be willing to look at every structure and system in its organization to see how each part supports or hinders community policing.

In the 1970’s, she said, community policing was not effective because police administrators were not willing to make the tough organizational changes that would support a new way of doing business. Organizational transformation means looking at every system, every policy, every unit, and every piece of technology to bring our sights dead center with the philosophy of community policing. The first question technology experts and managers should ask is, “Do all of our systems speak to each other?” Many agencies are installing personal computers throughout their departments without developing their personal computer capability. To develop that capability, which is critical to providing routine, accurate information that officers can access and analyze, agencies must retrain their mainframe experts and increase their information technology staff. Employees at every level of the department should have access to this information.

Whatever the system employed to identify and solve crime, each unit must understand the organization’s vision for community policing and be reminded of that vision every day. One of the major challenges for all agencies attempting to make problem solving the focus of their policing is finding time for officers to devote to proactive activities.
Electronic reporting is a promising technology that saves time on paperwork and allows more information to be available immediately to officers on the beat. The Maryland Park Police are developing a paperless, voice recognition report-writing system that will be installed in every patrol car and on every detective’s desk within the next 2 years.

Incidents of technology becoming a burden to officers in the field have shown us the importance of bringing together technicians and managers as well as users so that all decisions about using technology are made with the input of each perspective.

Do an agency’s technology experts, users, and decisionmakers share a vision for how to carry out policing? Can we understand each other and work together toward a problem-oriented approach to community policing? Yes, McPherson said, if decisionmakers and users acknowledge and appreciate the expertise of technology experts, and experts appreciate the need to educate decisionmakers and users. Decisionmakers and users sometimes need prompt explanations of technology issues, while in other situations they have more time to explore the full range of an innovative tool or system. If experts share this information with decisionmakers and users in a way that facilitates understanding and inspires enthusiasm, those officers will be the strongest advocates for change. Officers working in the field must know that the developers of technology have the best interests of the department at heart and are focused on solving problems in the community.

Challenges for Users and Managers of Technology

- Have the ability, as managers and users, to adapt to technology. Technology can either support our partnership with the community or widen the gulf between us.
- Be willing to push the envelope with innovative thinking about systems that support problem solving. Managers and users must think big about the possibilities for technology within their departments and in the community.
- Be willing to change when others see new opportunities for technology. We can all win if we stick together. We will not be effective problem solvers unless we are supported by technology.
Life in the United States has undergone massive changes since the end of World War II, including an extraordinary technological transformation. History will record that the United States became the greatest nation on earth because of its ability to invest in and produce technology.

But law enforcement has not been able to draw upon these changes to improve the lives of the men and women policing our street, Bersin said. At a time when the President can order a cruise missile to be directed down a chimney in Baghdad, one wonders at the disconnect that permits phenomena like the high-speed chase to continue to jeopardize the lives of officers and civilians both here at the [U.S.–Mexico] border and throughout the United States.

Why is it that we can manage technology for the military but not for law enforcement? The fragmentation of the law enforcement market and the lack of investment from a central source are two keys; but more important is that until recently a constituency in law enforcement has demanded a serious investment from Congress and the private sector. We are now, however, at the threshold of that effort, Bersin said. The pioneers at this conference will drive the investment in technology needed to dramatically improve the security and effectiveness of police work.

Bersin suggested that this investment focus on three broad areas over the next 3 to 5 years:

- Equipment that serves local law enforcement. Police officers need safety equipment that takes advantage of the advanced technology developed during the Cold War. This technology is available and needs to be brought to market.

- Information technology that is reliable and accurate. Giving officers and border patrols a tool to identify individuals before contact has revolutionized law enforcement’s ability to take dangerous criminals off the street.

- Innovations to create a seamless communications web across local, State, and Federal agencies.

Changes on this scale cannot be made overnight, but law enforcement must move with all deliberate speed toward these objectives.

“If we keep the direction and maintain the momentum, we will have in place in 5 to 10 years the resources, strategy, and people to accomplish in law enforcement what we accomplished in the military over the last generation.”

Alan D. Bersin
Featured Speaker

Jerry Sanders
Chief
San Diego, California, Police Department

Sanders, a pioneer of community-based problem solving in the San Diego Police Department, called on police agencies to use technology to improve communication with officers in the field and with other agencies, and to open a new communication channel with communities.

San Diego, he said, used a grant from COPS to develop an automated field reporting system that has given its officers more time to solve problems in the community. With this system, the time officers must spend writing and filing reports will be cut in half.

Focusing this conference on the needs of line officers is important. Line officers know what tools they need and how to make them practical.

There is a long history of cooperation among the 26 local, State, and Federal law enforcement agencies in San Diego County that could serve as a model for other areas of the United States. For more than 20 years, these agencies have used the same crime and arrest reports and shared that information through an automated regional justice information system. By giving officers a window on what is happening in neighboring jurisdictions, the system makes them safer and smarter.

Technology, Sanders said, should be applied intelligently to help law enforcement meet two critical objectives:

- Giving officers every bit of useful information possible, including templates for solving community problems such as drug abuse and homelessness. Strategies that have worked in the street should be shared with officers who will encounter similar problems. To be effective, crime analysis must be geared toward officers in the street. It is this information that will make a difference in communities plagued by crime.

- Forming partnerships in the community. In the past, police agencies have neglected the potential for using technology as a link to the communities they serve.

For too long law enforcement has mistakenly believed that only it could identify crime trends and craft solutions to them. Using information on the Internet, neighborhood leaders in San Diego are now analyzing crime in their communities and looking for ways to attack the root of that crime. Allowing community-based organizations to tackle problems that they are better equipped to handle gives officers more time to focus on their most important work: getting criminals off the street.
Not long ago, Greenberg said, many professionals working in law enforcement claimed that they could be more effective if they had access to more information. Law enforcement professionals now have that access, he said, but few actually use it to any real advantage. Officers are either not given important relevant information by dispatchers or don’t pay attention to the information they themselves have available. The compelling issue for this conference, he said, is finding ways to use the information police do have more effectively.

Greenberg argued that police should be most concerned with previous contact and incident information. Individuals who repeatedly come into contact with police do so for a reason. Addresses that are frequently the scene of violence pose the greatest threat to officers. Getting the right kind of information to patrol officers before they respond to a call for service is vital to their safety and effectiveness.

Greenberg noted that alternative, nontraditional sources of information have been very helpful to police in Charleston. Those he highlighted were:

- Information kept by pawn shops on the source of merchandise they have for sale.
- Telephone-based data, including calls made by criminals at the scene of a crime.
- Video footage from banks and convenience stores that can be analyzed in new ways to identify criminals.

Law enforcement also has been slow, Greenberg said, to use information to involve the community in policing their neighborhoods. Members of a community can shed invaluable light on the characteristics of crime committed on their streets by looking at crime data police have collected for decades but never bothered to share with those who could have prevented that crime in the first place. This information can be made available to the community through the Internet and at public libraries and community meetings.

Technology also can help the victims of crimes assist the police, Greenberg said. Victims of harassment and stalking who are provided a laptop computer or cellular phone can document information much more quickly and accurately when a repeat incident occurs. Unsolved burglary cases have been solved by citizens putting information about stolen goods on the Internet.

These technologies are available now, Greenberg said, but police must learn to use them more intelligently.
Mapping and Tracking Crime

Patrick Sullivan, Jr., Moderator
Sheriff
Arapahoe County, Colorado

Philip McGuire
Assistant Commissioner
New York City Police Department

Bill Chimento
Captain
New York City Police Department

Nola Joyce
Deputy Director
Research and Development Division
Chicago Police Department

Jonathan Lewin
Sergeant
Chicago Police Department

Kim English
Research Director
Colorado Division of Criminal Justice

Introduction

Patrick Sullivan

One of law enforcement’s greatest challenges, Sullivan said, is to make crime analysis information more useful to patrol officers and to community members who have formed partnerships with police to fight crime in their neighborhoods.

Police have traditionally relied on Uniform Crime Report data as the basis for crime analysis, but an important new source of information, the National Incident-Based Reporting System (NIBRS), is making community policing much more effective. NIBRS has made much more useful data available to police departments nationwide but requires a major shift in how information is collected and used.

Small police agencies may not have the resources to invest in crime analysis technology now commonly used by large metropolitan departments, he noted, but can access that technology by forming partnerships and consortiums with larger private, government, and police organizations.
GIS-Based Crime Analysis in the New York Police Department

*Philip McGuire and Bill Chimento*

McGuire and Chimento discussed the New York Police Department’s (NYPD’s) experiences with GIS mapping, focusing on the history of mapping at the department, the department’s management setting, the use of crime analysis in the department’s precincts, and research on new mapping applications.

**GIS at NYPD: Looking Back**

In the 1970’s, McGuire said, the NYPD began to experiment with automated mapping technologies, but that effort was cut short by the city’s fiscal crisis from 1975 to 1981. By 1988, the department, with new technology available and a healthier financial outlook, initiated a PC-based automated analysis program.

In 1994, the Giuliani administration brought a new management philosophy to the NYPD. At the heart of that philosophy are three very interrelated needs: specific crime strategies, intensive performance monitoring, and automated support for monitoring and analysis.

Each month, borough and precinct commanders must present a plan to make progress on the city’s crime strategies to the department’s executive staff. To make their plans credible and based on a current picture of crime and the quality of life in their communities, those commanders must have accurate and timely mapping support.

**NYPD Crime Mapping**

The department designed its mapping and crime analysis program, created with the popular software programs MapInfo, FoxPro, and MapBasic, to be quick and easy to use. Patrol officers and commanders needing immediate information on crime trends in their patrol precinct access the program at workstations connected to a local area network.

To look at a pattern of crime in his precinct, for example, a precinct commander need only click on the precinct desired; the type, including subcategories, of crime committed; the period of time to be analyzed; and other obvious and less obvious factors involved. To keep the information in the system extremely current, complaint reports are now fed directly into a data base instead of being typed on carbon-copy forms and distributed to various divisions of the department.

Once a map is generated, the program gives the NYPD the ability to overlay a street grid with locations of important geographical sites such as street names, bars and restaurants, subway stations, schools, and parks. Adding this information to a map can be of great aid to commanders and their officers in determining correlations between crime and where and why it is occurring. Users also can read short summaries of individual incidents taken directly from original crime and arrest reports.
The department’s recent success in reducing crime rates in the city can be attributed partly to its unprecedented ability to develop a strategy for fighting crime on every street in its precincts that is based on both current detailed crime data and a bigger picture of the causes of that crime. Reported crime in the city for murder, robbery, burglary, car theft, and total index crime is lower now than at any time since 1970.

McGuire noted that the department believes its success must also be attributed to its commitment to relentless followup once a strategy has been developed. NYPD’s crime analysis and mapping tools play an important role in that followup by allowing precinct commanders to compare from week to week and month to month the picture of crime in their precinct neighborhoods. It is a simple approach to community policing that works: strategies that show progress are pushed even harder; those that do not are discarded.

The Future of NYPD Crime Mapping

The NYPD’s most important immediate need for crime mapping, McGuire said, is interconnecting adjoining precincts to allow them to share information and strategies for overlapping and surrounding areas.

NYPD is also working with the City University of New York on a research program funded by the National Institute of Justice to build intelligence into mapping software in the form of identifying, evaluating, and forecasting crime trends. Intelligent crime analysis and mapping software could be a powerful tool for public-private crime prevention partnerships in communities across the country. McGuire urged conference participants to read about progress on this research at http://everest.hunter.cuny.edu/capse/crime.html.

ICAM: Chicago’s Newest Crime-Fighting Tool

Nola Joyce and Jonathan Lewin

Joyce and Lewin discussed the Chicago Police Department’s Information Collection for Automated Mapping (ICAM) software, a crime analysis program developed by Chicago police officers for Chicago police officers.

ICAM, Joyce said, was designed for beat officers by beat officers, and is the product of an effort by the Chicago Alternative Policing Strategies (CAPS) program to decentralize data collection and analysis in the Chicago Police Department. The project recognized, she added, that officers must have access to information they need when and where they need it. It also recognized that, whenever appropriate, information should be shared with community members to help them identify and solve problems.

The officers who developed ICAM, Joyce said, wanted to create a mapping and analysis tool program officers could use to generate maps of accurate, timely crime data and target hot spots of criminal activity. Above all, they wanted to make ICAM a tool not for a select group of high-level officials and analysts who often have no firsthand experience with the neighborhoods being targeted, but a tool for the beat officer.

“Police officers are only as good as the information they have.”

Nola Joyce

“ICAM’s focus is on beat officers and making crime analysis as easy as possible for them.”

Sergeant Jonathan Lewin
Criminals, Joyce remarked, are creatures of habit, and a map of those habits is one of a police officer’s most powerful weapons. ICAM creates maps from a selection of more than 300 crimes and can overlay important neighborhood establishments such as schools, abandoned buildings, and liquor stores—information that reveals a great deal about why crimes occur. If officers want a quick snapshot of crime on their beat, ICAM allows them to view a Top 10 list of offenses that have occurred on their beat over a 1-month period.

Knowing that a visual presentation of crime can spur action in a neighborhood, beat officers use ICAM maps at community meetings to identify and prioritize the community’s most persistent problems and discuss tactics such as Neighborhood Watch and citizen patrols that the community and police can use to solve those problems.

Mapping and Analyzing Crime as a Public Health Crisis

Kim English

English discussed a project in Colorado that uses data not traditionally included in crime analysis for law enforcement applications.

In 1991, English said, the Centers for Disease Control and Prevention declared violence a public health crisis in the United States. The result of that action and the widespread embrace of the concept of community policing in U.S. law enforcement was a change in focus for some researchers studying crime and violence.

English noted that the field of public health employs a different perspective than that of traditional crime analysis. To study crime and violence through the prism of public health, she said, requires first determining the risk factors for individuals to become perpetrators or victims of crime. The public health perspective brings a new strategy to crime prevention that fits well with the philosophy of community policing: violence can be averted through simple, low-cost solutions to specific local problems that lead to repeated incidents of violence.

English cited two important studies—by the National Institute of Medicine and the Office of Juvenile Justice and Delinquency Prevention in the Department of Justice—that stressed the accumulation of risk factors in the lives of those affected most by violence. These studies reach conclusions that echo the most powerful objective of community policing: that by taking a communitywide approach, key members of the community will take ownership of strategies to reduce violence and juvenile delinquency.

According to the studies, English said, the past 30 years of criminological research into violence has identified 13 risk factors at four levels:

- Community
- Family
- School
- Individual/peer
English analyzes data on particular types of crime as an indicator of risk factors in a community, not merely as an indicator of the crime itself. As crime data links risk factors for people in a certain geographical area, crime prevention strategies that address those factors can be selected and employed. Research has found, for example, that communities with greater availability of firearms experience higher rates of violent crime. An obvious and important strategy for those communities would therefore be reducing access to firearms for those most at risk of violence.

An important family risk indicator, she said, is domestic violence. Violence in a family increases the likelihood that young people will engage in violent behavior themselves. A researcher using the public health model would study police arrest data to find evidence that domestic abuse is a neighborhood risk indicator.

Once these risk indicators have been identified for a community and data supporting their existence collected, mapping software can be used with that data to pinpoint law enforcement problems and needs for services at the address level. English highlighted innovative approaches to mapping risk factors that are overlaying population density and crime incidents as well as maps of Weed and Seed areas, AFDC recipients, and domestic violence.

In the end, English said, risk factor data and mapping correlations are only valuable if law enforcement, community members, and service providers use them to develop crime and violence prevention strategies. Data can be a powerful vehicle to get people talking about and owning problems in their communities.
Featured Speaker

The Honorable William B. Traxler, Jr.
U.S. District Judge
District of South Carolina

Traxler asked the conference participants to imagine what it would be like to ask a doctor from the 18th century to work in a modern operating room. The advances in medicine and equipment he would see in that room, Traxler said, would be incomprehensible. In architecture, computers can now be used to “build” a structure long before the foundation is laid. The same is true for criminal justice. The information systems and technological innovations available to officers and prosecutors today have revolutionized law enforcement to the point that routine activities such as fingerprinting, computer crime mapping, and DNA analysis would astound officers from the past.

The extraordinary change of the past 200 years should make the field of law enforcement excited about what is possible in the next century. What is our vision for the future?

Articulating a common vision for a group as large and diverse as law enforcement is a difficult undertaking, Traxler said. The Italian philosopher Machiavelli, he noted, wrote that an innovator will always make enemies of those individuals who have prospered under the old way of doing things.

To overcome this resistance, law enforcement must identify the forces of change within its ranks and use them to develop a vision of how police agencies can best serve the public in the decades to follow. The first step, Traxler said, is simple: look at the status quo. Law enforcement can learn much by observing what is not working in the current system. Although a solution may not be readily at hand, it is clear that technology will dramatically change the face of law enforcement in the next century.
Keynote Speaker

E. Douglas Hamilton
Chief
Louisville, Kentucky Division of Police

Sharing information, being open to new technology, and a willingness to forgo the status quo—all are actions police must take to remain effective in a changing society, according to Hamilton.

“The community expects us to have an ability to stay on top of problems and emerging trends. They expect us to know how to share information. They expect us to know what other police departments are doing,” Hamilton said.

The more than 17,000 law enforcement groups in the United States often are small police departments without the manpower or the financial resources needed to investigate new technology. For help, they can turn to the National Law Enforcement and Corrections Technology Center (NLECTC), a Federal law enforcement information network that can answer questions about current technologies, possibilities for the future, and results of NIJ testing initiatives, and provide referrals to agencies using products. Hamilton urged conference participants to contact their regional NLECTC center to obtain information as well as to pass information along that could be useful to other agencies. NLECTC also needs to hear from police to identify law enforcement priorities and inform industry.

Law enforcement professionals should take advantage of the vast information resources available on the Internet and the World Wide Web. The Justice Technology Information Network (JUSTNET) (http://www.nlectc.org), serves as a gateway to law enforcement and criminal justice resources.

Hamilton said law enforcement officials need to be open to changes in longstanding procedures if officers are to be freed of unnecessary paperwork and made available to work in the community.

“We have to change our mindset in law enforcement. It is very easy for us to adopt the status quo,” Hamilton said. “What the technology conference allows you to do is to focus on the tools that we use in our job, to break away from the traditional tools that we have.”

Too often, Hamilton said, police receive information on helpful technology after something happens. Police need to try to become informed and to be ready before an incident occurs.

“We’re not a group that necessarily shares a whole lot of information until disaster occurs, and then we’re reaching out for information to try and deal with it,” Hamilton said.

He said police need to be current about technology developments and liability issues in nonlethal force, such as rear-seat airbags for police vehicles to restrain prisoners; Oleoresin Capsicum (OC), or pepper spray; and a net that can be fired over suspects so they can be approached and taken into custody.
In addition, vehicles are being designed to allow the separation of sexes and juveniles in transportation of suspects. Research is also being done on retractable roadway spikes to stop fleeing vehicles; the spikes could be activated to stop a suspect’s vehicle, then retracted so that other vehicles would not be affected. Also being researched are circuit interrupter technologies in which a bumper-mounted rocket sling containing a circuit interrupter is fired underneath the pursued vehicle to blow out the vehicle’s electrical system and stop it. Concealed and passive weapons detection, lead-free ammunition, smart guns, and communications technologies also are being studied.

“There are some tools that are available, but I’m not so sure that we as a group know that much about them, or know what our priorities are, so part of what you’re doing here today is to find out what is available, to find out what your priorities are, to find out how other police departments struggle with it, and then hopefully for you to share your successes and your failures with the others in the law enforcement field,” Hamilton said.
Communications Interoperability

Mike Borrego
Engineering Manager
Colorado Information Technology Service

Bob Tollman
Communications Services Manager
Colorado Information Technology Service

Mary Ball
Telecommunications Manager
San Diego County

Curt Munro
Communications Systems Manager
San Diego County

Colorado

Mike Borrego and Bob Tollman

Connect Colorado is a statewide telecommunications network that will allow a variety of government agencies in Colorado to converse and share data and images through a shared information backbone. The public safety piece of that infrastructure—a statewide digital trunked network—has been under development for 5 years.

Before the project was initiated, Borrego said, Colorado’s radio network was using old technology to support 6,700 radios. The network used a conventional system in which each channel is assigned a specific operation such as parks and recreation. This approach, by allowing some channels to be idle while others are clogged with users, wastes the resources of the network. A digital trunked network, however, automatically assigns users to the next available channel in the system on the basis of need and priority.

Colorado considered a variety of options to replace its conventional radio network: current analog technology, digital trunked radio, digital cellular technology, satellite technology, and a form of digital trunked radio called enhanced specialized mobile radio.

Ideally, Borrego said, these features were desired:

- Immediate connection for users.
- Party-line connections for group discussion.
- Privacy for confidential discussion.
- Immediate access to the system for individuals with urgent business.
- A system based on government and not a manufacturer’s proprietary standards.
- Emergency notification that would indicate officers’ locations to dispatchers.
- Statewide coverage.
- Ability to transmit information and images through multimedia.
- Compliance with new FCC rules.
- Multiple user levels that would accommodate the needs of every agency, including those with technologically advanced infrastructures already in place, and that would give the smallest organizations access to a multimillion dollar system.
- Room for growth in the system.

Of the technologies available, Borrego said, only digital trunking met Colorado’s requirements. A digital trunked network offered the potential to handle 16 million users at the same time and to organize those users into an unlimited number of talkgroups assigned to specific operations. Each State agency, for example, would have both an operational and administrative talkgroup.

Borrego highlighted other advantages of digital trunking:
- Assigning access to the system according to seven priority levels. The highest level is reserved for emergencies.
- Queuing callers when all channels are busy and automatically calling them back when space becomes available. Users with the highest priority access levels are bumped to the front of the queue.
- Giving priority to recent users who need to finish a conversation.
- Automatic resending of calls that are interrupted by terrain or other problems.
- Signaling users that they are out of range through a special tone.
- Automatically displaying a user’s identification number to the dispatcher after the emergency button on that user’s radio has been pressed. By interrupting low-priority calls if necessary, calls for emergency assistance are always connected in less than a second.
- Announcing important messages such as APB’s to every radio in the network or to special groups of users.
- Allowing users to place and receive phone calls to and from individuals on the LAN telephone line.
- Dynamically regrouping users during an incident to create a special, inclusive talkgroup. Groups of users can be assigned to special channels in advance of emergencies to speed their response time. In addition, talkgroups can be merged into a larger group for extremely large, multiagency incidents and training exercises.
- Inhibiting radios in the network that are stolen or being used by unauthorized individuals.
Borrego also noted the importance of applying the network to practical needs of officers in law enforcement and other public safety agencies. The most important include communicating via clear or encrypted voice; transmitting data directly to laptop computers in patrol units; immediately displaying status messages to police officers in their vehicles; giving officers a link to State and Federal crime information; and automatically locating the positions of patrol units during emergencies.

**San Diego County**

*Mary Ball and Curt Munro*

Munro began the discussion by stating that radio communications is the most critical tool in resolving any public safety crisis, whether it be in the community or at the scene of a disaster or terrorism attack. However, following incidents involving more than one agency, officers from those agencies often express frustration that they cannot easily communicate with one another, he said. Their ability to coordinate efforts suffers greatly as a result.

Munro said that criminals do not respect law enforcement’s myriad jurisdictions, and officers from local, State, and Federal agencies should not have to rely upon third-party dispatchers to share information. Community policing is easier and more effective when radio systems are compatible. He urged police departments to look at their existing technology and communications infrastructure and overcome the obstacles to compatibility.

Ball followed Munro’s introductory comments with a presentation of the Western Wireless Emergency Communication System (WWECS), which will establish a common Federal-State-local public safety network. Ball’s work on WWECS, she said, is based on her experiences creating and implementing the first government radio system open to all Federal employees in the San Diego area who could supply a radio and pay a service fee.

The basic design of that local Federal system, Ball said, is being used to develop, using existing infrastructure, a wireless communications system for Federal, State, county, and local agencies in the Western United States. The system now covers 10,000 square miles, including 185 miles along the U.S.–Mexico border, and is operable from 100 feet below sea level in Calipatria, California, to an altitude of more than 7,000 feet at Palomar Mountain, California.

In conclusion, Munro said, more important than the technology the system employs, which is now a conventional “patched” interface, is that public safety agencies at all levels of government begin to cooperate and develop a seamless tool of communication. As more regions of the country duplicate the success of efforts in San Diego and Colorado, it is hoped that a single wireless system soon will serve agencies throughout the Nation.
Technology Liability Considerations

Robert Cansler
Chief
Concord, North Carolina, Police Department

Cansler opened his discussion by saying that the use of force in threatening and violent situations is inevitable. While acknowledging the inherent risk in their profession, he said, police must always search for new ways to approach conflict that minimize risk of injury to any member of their community, officer or citizen.

With that goal in mind, the Concord Police Department authorized the use of pepper spray on suspects who officers believe pose a threat to their lives and to the community. In the early morning hours of July 11, 1993, Concord police officers took Angelo Robinson into custody for disorderly conduct and assaulting a government official, using pepper spray to subdue him. Robinson died shortly after his arrest. An autopsy by the Office of the Chief Medical Examiner for North Carolina found no evidence of life-threatening injury to Robinson and attributed his death to “asphyxia due to bronchospasm precipitated by pepper spray.” The autopsy also found the existence of a previously undiagnosed chronic lung disease.

Cansler reported that media reports of Robinson’s death touched off violent civil disturbances in Concord the day of his arrest, and the city operated under a state of emergency ordinance for one week. Robinson’s arresting officers were the target of three simultaneous investigations: a Federal civil rights investigation, a State criminal investigation, and a departmental review. None of the investigations produced any evidence of wrongdoing by the officers. A civil suit against the officers, the Concord Police Department, and the manufacturer and distributor of the pepper spray used in the incident is still pending.

“For our department, which is sincerely committed to community policing,” Cansler said, “the outcome of public allegations and litigation arising from this incident are far less important than the damage caused to the trust officers have worked to establish in our community, particularly in neighborhoods historically distrustful of the police.”

Cansler suggested preventive steps police departments can take to avoid the kind of conflict and litigation his department and community suffered.

- Document research and legal action taken on any new equipment your agency is considering adopting. Information is available in scientific, medical, and professional journals and legal data bases.
- Review your department’s insurance needs. Manufacturers of technology may provide users with legal assistance and reimbursement for damages awarded in liability actions. Request an insurance certificate and determine the scope of coverage provided. If the manufacturer does not provide user coverage, obtain a written opinion from your carrier verifying that use of the technology will be covered by existing insurance.

“For a police department committed to community policing, the outcome of public allegations and litigation arising from incidents involving new alternatives to lethal force is less important than the damage to the trust officers have worked to establish in the neighborhoods they serve.”

Robert Cansler
Adopt and enforce practical written guidelines on use. Submit them to the technology’s manufacturer or distributor and demand that they approve them in writing.

Involve the community in decisions about adopting and using technology. Community members, the consumers of police services, should help set priorities for those services. Community leaders who participate in evaluating technology will disseminate factual information to the public through informal channels. The alternative is to allow rumors to influence public opinion after an incident occurs.

Use training instructors and procedures approved by the technology’s manufacturer and distributor. If the manufacturer does not certify instructors, send the company a copy of your training outline and materials and ask for written comments. In addition, add a requirement to your purchase order or bid specifications that manufacturers and distributors notify you of updates in training.

Document officer training, using a video camera. Records of attendance and competency testing will be valuable evidence of your department’s concern for public safety and of the scope of your training.

Verify the results of field use. A track record of successful use will be vital to your department’s defense of a technology should the unexpected occur. In the Angelo Robinson case, the Concord Police Department documented for the media more than 30,000 uses of pepper spray nationwide without injury.

In conclusion, Cansler urged law enforcement agencies to “rigorously examine the way in which technology is applied to our missions, rigorously train and provide guidance to the officers using technology, and rigorously examine technology options and manufacturers to find the finest product for the best price from a company that will stand by our side.” But most important, he said, “we must inform the communities we serve of how we hope to harness technology to improve law enforcement and protect our citizens.”
Technology for Community Policing

Technology: Supporting the Officer in the Community

P.J. Duggan
Staff Sergeant
Edmonton Police Service
Canada

The Shift to Community Policing

To successfully implement this model, law enforcement agencies must rethink and restructure all information systems to support the work of officers in the community. Problem solving in policing requires that officers have the ability to identify neighborhood problems and recognize recurring incidents as symptoms of a bigger problem.

Echoing the words of Edmonton Police Chief John Lindsay, Duggan said that operational effectiveness depends on practical applications of technology that parallel major shifts in community policing. “Information technology,” Lindsay believes, “must therefore be selected, structured, and used . . . to support local neighborhood problem solving.”

The experience of the Edmonton Police Service (EPS) has suggested that neighborhood problem solving will work only when based on these principles:

- Urban areas consist of individual neighborhoods with individual problems.
- Some neighborhoods legitimately require more police attention than others.
- Specific locations in a neighborhood often become repeat problems.
- The community’s constant demand for service makes the police incident-driven and reactive.
- Information is the lifeblood of policing.

Although some have noted that increased reliance on technology separates police and the community they serve, the success of Edmonton’s experiment has shown that the opposite is true: properly managed information technology can bring the police and the community closer together.

Old Information Systems No Longer Meet Community Needs

While an excellent tool to support rapid response to calls, the Computer Aided Dispatch (CAD) systems traditionally used by police seldom are flexible enough to supply the kind of information managers and community officers need in a community policing model. CAD systems function as, in the words of Chief Lindsay, “electronic filing cabinets” that do not focus on the information most vital to neighborhood officers—repeat problems.

According to Duggan, community policing requires a much broader information path that moves law enforcement beyond its preoccupation with calls for service, dispatch, response, and incident reports and toward an understanding of community problems and the resources to solve them.
Community policing requires a new information delivery system on the street and on computers that support crime analysis.

Prior to 1988, EPS was a conservative, process-oriented model of traditional policing that employed three strategies that had little effect on crime or police workload: random patrol, rapid response, and investigation after the fact. As Edmonton’s population and crime rose sharply in the 1980’s, this approach unraveled as budget cuts took a toll on the department’s resources and manpower. As a street manager in the downtown area, Duggan found it impossible to catch up to the calls his group received each day for service.

In response, the department attempted a radical change. Using research that challenged the command and control approach, Edmonton police built a neighborhood foot patrol program that concentrated on solving problems in the city’s hot spots of crime. Duggan highlighted two aspects of the program’s successful implementation:

- EPS had the program evaluated by independent researchers to show the community and officers throughout the department that problem solving policing works.
- The process revealed the importance that an information system plays in organizational change. The old CAD system was manipulated to identify hot spots based on workload and repeat calls for service.

Edmonton’s rewired CAD system classified data by volume of occurrence at specific locations, repeat address, dispatched calls, and dispatched units. By looking at this basic information in a new way, EPS found that for nearly 75 percent of all police responses calls for service originated from repeat addresses and much of the police activity occurred at relatively few locations. Solving problems in these hot spots of crime became the focus of community officers’ assignments and what they considered as their beats.

The success of Edmonton’s foray into community policing led to a rethinking of every aspect of the organization’s operations. Every decision and commitment of resources was examined in light of meeting community needs. This standard, the department’s core value, became a powerful tool to move more officers onto the street and several million dollars into the budget supporting them.

EPS became an information-based organization that focused on the patrol officer as the cornerstone of the police delivery system.

To help patrol officers carry out this responsibility, the department made a commitment to community policing in four key areas:

- Assigning each community officer to a particular area.
- Requiring that officers take ownership of those areas and their problems.
- Giving officers freedom to make decisions.
- Encouraging policing in collaboration with local residents, not as a service to them.

Duggan pointed out that a community officer’s assignment could extend beyond a geographical problem area to groups of residents with shared problems or concerns.
The New Service Delivery

Although Edmonton’s new community-oriented philosophy won the support of the community and officers on the beat, the department was still operating largely in a reactive mode, overwhelmed by calls for service. A new approach to service delivery was needed. The heart of that approach recognized that rapid response to most nonemergency calls made little difference. Instead, the community agreed to bring nonemergency needs to police at 1 of 16 community stations. Patrol officers would then have more time to respond to real emergencies and to solve problems before they became emergencies.

In addition to the requirement that residents report calls to community stations, Duggan highlighted other elements of the strategy that have been effective:

- A computerized call path chart that determines if a request for service will be handled by a community station or dispatched. By tracking backlog in the dispatch system, the chart helps determine the best resources for solving problems.
- Expanded ownership of community policing within the department. Every officer, manager, and volunteer working in a neighborhood must respond to the needs of that neighborhood.
- Self-assignment of calls. Patrol officers, who are familiar with the problems of trouble spots in the community, are given a role in deciding which calls they will take and when they will meet the complainant.
- Accountability through on-street managers.
- The use of volunteers, who, as a vital link to the neighborhoods EPS serves, are now an indispensable part of community policing in Edmonton.

The new strategy worked. According to Duggan, Edmonton citizens now report more than 62 percent of occurrences to community station officers and the volunteers they supervise.

A New Strategy Requires New Technology

Devoting the time of patrol officers to community problem solving, however, also heightened the department’s need for greater technological support. OSCAR, the Operational Support, Communications, and Records system, was designed to support community-based service delivery. OSCAR’s complaint handling and dispatch system, CHAD, has significantly enhanced community officers’ safety and ability to solve problems by providing them access to a wealth of information about a location’s criminal history. OSCAR’s other component, a records and data management system called PROBE, uses mapping technology to perform data and intelligence analysis by area. Officers use PROBE to identify problem locations within their neighborhood assignments. Through the system, data are available from a wide variety of police reports, including case investigations, traffic violations, arrest bookings, street information reports, and intelligence analysis.

In policing, time and information are an officer’s most precious resources. OSCAR has given the Edmonton Police Service and the community it serves much more of both and an opportunity to make life healthier and safer.
What Community Policing Has Accomplished in Edmonton

- Criminal code violations: ▼ 45%
- Clearance rates for crimes against persons: ▲ 13%
- Clearance rates for crimes against property: ▲ 23%
- Insurance claims for residential break-ins: ▼ 42%
- Insurance claims for vandalism: ▼ 53%
- Complaints against EPS officers: ▼ 47%
- Citizen satisfaction with community stations: 93%
- Significantly reduced workloads in communications.
- Increase in police-citizen contact.
- Decrease in insurance fraud.
- More than 850 citizen volunteers working at community stations.
Community Oriented Policing: Technology and Strategies

Community Policing Strategies: Using Paperless Reporting To Make Policing More Effective

Frank Bishop
Lieutenant
Greeley, Colorado, Police Department

Bishop discussed an intergovernmental paperless reporting system designed and implemented in Colorado that has reduced officers’ administrative workload and increased their time in the community.

In 1993, Bishop said, an intergovernmental agreement in Colorado led to the development of a paperless reporting system fed by and dispatched to 40 State, county, and municipal agencies. The system includes a huge information database that allows the agencies to better monitor criminal activity in their jurisdictions by sharing a wealth of information from crime and arrests reports.

In addition to being an important new tool for collaborative policing, the system was designed to help individual officers in the street by eliminating paper reports and the clerical labor they require. Bishop estimated that the system, which has been operating for 6 years, frees at least 1 hour each day for officers in the community by allowing them to electronically file reports from the field. It has also made reports cleaner, more informative, and available to every officer, investigator, and district attorney on the network within 8 hours.

To maintain the quality of information in the system, control records are tracked through the system’s routing path from entry by a field officer to the point at which a report’s content is locked in by a supervising officer. At the end of the process, multiple reports relating to the same incident or arrest are linked with a case number that becomes a simple but powerful search tool for followup investigation.

As the amount of data entered into the system began to crowd its hard drive, a CD-ROM project was developed using vendors and resources within the Greeley City Police Department. A CD-ROM was recently produced and distributed to investigators, Bishop said, that contained reports spanning 2 years. The project is also working on an innovative application of CD-ROM technology that will give officers in the field immediate access to mug shots.

Giving officers more access to the system in their cars as they patrol, Bishop argued, represents the best technological opportunity law enforcement has to make community policing better and more efficient. The most important objective of any information system must always be to increase the ability of patrol officers to not only inquire but to inquire intelligently.
Community Policing Strategies: Stopping Car Prowls with the VARDA–Car

Tim Hall  
Detective  
San Diego, California, Police Department

The VARDA–Car experiment began, Hall said, with a survey of resident concerns about crime in a northern San Diego neighborhood. The survey found that their top priority was burglary from parked cars, with auto theft also ranking high. In San Diego, reported monetary loss from auto theft and car prowls exceeds that from all other theft combined.

To learn more about the frequency and concentration of car prowls in the neighborhood, Hall and his partner, officer Cindy Brady, examined crime activity maps and crime report information from the department’s highly regarded Crime Analysis unit. They identified areas with consistent histories of theft as well as the car models most likely to be targeted in those areas.

Under severe staffing and budget constraints, Hall and Brady determined that the VARDA–Car, a bait car equipped with a VARDA alarm, would be the department’s most effective response. They needed an experimental program requiring little or no additional staffing or budget, and they wanted to develop a program that would fit in well with the department’s other problem-oriented policing (POP) projects. Hall’s decision to use the VARDA–Car was also influenced by the department’s requirements that the program avoid high-speed pursuit by using a disabled car and that it not involve intensive surveillance.

VARDA–Cars are wired with silent VARDA alarms that transmit a prerecorded message directly over the police radio frequency. When a car is broken into, the message alerts officers in the area to the burglary and gives the location of the car.

The VARDA alarm eliminated the need to have officers sit and waste valuable time watching the bait car. In effect, the car could be watched by every Northern Division officer on patrol as they monitored their radios. The alarm also allowed the car to be disabled before being parked in the target area. Using disabled bait delayed suspects, prevented the loss of the car, and eliminated the possibility of police pursuit.

Although the VARDA–Car appeared to be an ideal crime prevention tool for car prowls, Hall and Brady discovered that finding a suitable bait car and paying for damages caused by break-ins became major obstacles to implementing the program. Vehicles seized in drug-related cases, for example, were not available due to restrictive city policies on their use and bureaucratic red tape.

With the donation of a high-mileage, but new-looking Volkswagen Jetta to the department by the National Insurance Crime Bureau (NICB), Hall and Brady implemented the program by putting a wired bait car on the street. The Bureau also provided an attractive, but broken, car stereo and a line of credit for car repairs. Crime analysis reports identified the Jetta as a popular target for car prowls because the car’s door locks are easily pried open with a screwdriver.
The VARDA–Car program immediately produced impressive results. In the first 6 months of operation, 29 felony arrests were made, with a 100-percent conviction rate. The program has cost the city of San Diego virtually nothing in equipment or staffing. But even more important than arrests and convictions, according to Hall, has been the way the program inspired patrol officers, detectives, and the department’s neighborhood policing team to work together on a crime problem that has frustrated San Diego residents for many years.

The VARDA–Car’s success led NICB to donate additional cars, which are now used by other divisions of the San Diego Police Department, and police agencies throughout the country have expressed interest in using VARDA–Cars to stop car prowling in their cities.

The VARDA–Car: What Works and What Doesn’t

- Ensure other law enforcement agencies in the area are aware of the car and how it works. Their patrol officers may pick up the alarm’s radio transmission and respond to the car’s location.
- Explain to patrol officers that they should not “sit” on the car. Heavy surveillance by patrol units in the early stages of the San Diego program had the unintended effect of driving away prowlers.
- Place the car in terrain that does not block the alarm’s radio transmission.
- Place the car in an environment—such as a fenced parking lot—that prevents suspects from fleeing on foot.
- Securely attach the bait stereo to the chassis of the VARDA–Car to delay suspects until patrol units arrive. Failure to arrest suspects in the San Diego experiment was caused primarily by slow response.

Community Policing Strategies: Preventing False Alarms in Phoenix

*Patricia M. Rea*
*Alarm Coordinator*
*Phoenix Police Department Alarm Unit*

Rea discussed the Phoenix Police Department’s False Alarm Tracking System (FATS), which was implemented in 1990 at a cost of $17,500. In 1995–96, FATS cut the department’s expected false alarm responses in half, a savings of $4.4 million.

Each year, Rea said, police departments in cities across the country waste thousands of hours—and millions of dollars—responding to repeated false alarms. In Phoenix, the city code traditionally allows businesses and residences to have a certain number of false alarms without assessment of a fine. Once an alarm system triggers an excessive number, however, both subscribers and their alarm companies are fined. Enforcement of this code is handled by the Phoenix Police Department’s alarm unit.
Before the introduction of FATS in 1990, the unit’s enforcement of alarms was a manual, labor-intensive process that wasted an extraordinary amount of personnel hours and led to complacency on the part of officers who were weary of responding to more and more false activations at the same locations. After an alarm activated, 9–1–1 operators asked standard questions about the type of alarm, business or residence, and alarm company involved. This information was entered into the department’s computer-aided dispatch (CAD) system and sent to radio for dispatch. Responding officers then retrieved the information on their patrol car’s mobile data terminal (MDT).

After their investigation, officers completed a false alarm report that essentially duplicated the information they had obtained from the CAD screen. These reports were then forwarded to the alarm unit where incidents were compared to address histories to determine if enforcement was needed. Enforcement procedures required manually typing warning letters and invoices and checking addresses at each stage of the process.

The burden of alarm enforcement on the department’s resources and personnel became unmanageable when false alarm activations paralleled the city’s explosive growth in the late 1980’s and rose dramatically. In 1989, more than 80,000 false alarms were reported in the city, an increase of 60,000 over 1985.

In response, the department radically rethought its alarm enforcement process. At the heart of the new strategy was FATS, a tracking system developed in 1990 that automated the entire alarm call process and educated alarm subscribers through public awareness.

Built to follow all department and city code procedures and guidelines on alarm enforcement, FATS generates and displays all information needed by officers from the moment an alarm is activated through followup enforcement. It is tied to the department’s CAD system and to patrol officers’ mobile data terminals, linking officers and dispatchers to data bases with information on addresses, alarm ownership, and residence and business ownership. Every automated activity in the system is triggered by a simple permit number assigned to subscribers when they apply for an alarm license. Using a permit system streamlines the involvement of 9–1–1 operators once a call is received by eliminating the need to type repetitive information into CAD as well as the errors dispatchers and alarm company operators make through miscommunication.

FATS also automated officers’ false alarm reports, allowing this information to be entered on MDT’s and downloaded directly to the system every 24 hours. This step alone has eliminated 6 person-hours previously needed each day for data entry. After CAD and MDT false alarm information is received, FATS calculates the oldest alarm activation for that permit within a 365-day cycle and counts the number of false alarms. The system then generates any correspondence required by city code, including warning letters and assessment notices. In addition, FATS tracks the monetary value of assessments and operates an accounting feature that displays payments received and balance due information.

Through FATS, the department has studied when, where, and why false alarms are activated in Phoenix and used that information to dramatically reduce their occurrence. Specifically, a FATS report showing that 60 percent of false alarms were occurring due to human error prompted the department to launch a false
alarm prevention campaign for subscribers and alarm companies. More than 1,100 alarm subscribers have attended the program since its inception, and 94 percent of those individuals have not reported additional false alarm problems.

**Bicycle Patrol and Community Policing**

*Steve Cambron*
Officer  
*Louisville Division of Police*
Bike Patrol Unit

If you want to improve police/community relations, increase police visibility, and discourage crime, put some officers on mountain bikes.

Cambron, a police mountain bike instructor with the Louisville Police Department, said the city began the bike patrol in 1993 because the city had a new river walk that needed patrolling. The police department considered using golf carts, scooters, mopeds, or horses. But the motorized equipment is noisy and needs maintenance, and horses need a lot of attention and care. Cambron said bikes need a minimum of maintenance and are quiet; they provide officers with the advantage of the element of surprise.

Cambron said mountain bike police officers are probably the most mentally and physically disciplined officers in a police department. Officers ride in all kinds of weather and go through rigorous physical training.

“The advantages of having an officer on a mountain bike is that you are getting an all around better officer,” Cambron said. “It takes a certain officer to put on a bike patrol. You have to be particular.”

Officers should be screened carefully. Officers need to enjoy talking with citizens and being out in the community. Bike police officers are more approachable; being on a bike puts them in close contact with the community. While foot beats are good, Cambron said a bike officer can cover twice the area of a foot patrol officer in one-third of the time. In addition, bikes can go where cars can’t; in heavy traffic, officers on bikes can ride between cars. During events that draw large crowds, bikes make it easy to travel around and through the crowd area.

Cambron said working on the bike unit has changed him as an officer. “This bike unit has really opened me up, it’s opened my mind up to a brand new form of policing called community oriented policing.”

“This bike patrol is here to stay, it’s not going anywhere. This is not a fad, it’s not going to go away tomorrow, it’s not going to go away next week, because it works,” Cambron said.

“This bike is one of the most advantageous things that any police department can use. It’s the way to go as far as community oriented policing, I can’t tell you how much this is going to put you back in touch with your community.”

*Officer Steve Cambron*
Bill Hubbs  
Sergeant  
San Diego, California, Police Department

The San Diego Police Department, Hubbs said, has a long history of using bicycles on patrol, but in the past they have been deployed exclusively on the city’s beaches. As crime rose rapidly in San Diego in the 1980’s and early 1990’s, the department considered a variety of new policing strategies. Bike patrol, however, was not thought to be a viable alternative on the city’s urban streets.

That thinking has changed dramatically, said Hubbs. The addition of officers patrolling on bikes in Balboa Park and downtown San Diego has made the department a more effective policing agency and forged closer ties between officers and members of the community. The program has been endorsed enthusiastically by residents who say that highly visible officers on bike patrol have brought a greater police presence to the streets. At the same time, bike patrol has made law enforcement less intimidating and more responsive to people in need.

“As bikes are a good public relations tool,” Hubbs said. “They make us more accessible to the public.”

Since the introduction of bike and horse patrols in Balboa Park, crime in that neighborhood has decreased 42 percent. Bike patrols are now operating throughout San Diego County, and Hubbs has been impressed by the community’s strong financial support of the program. All of the bikes used by the department are donated by local businesses.
Detecting Concealed Weapons

Irv Smietan
Program Manager
National Institute of Justice/Joint Program Steering Group

David Ferris
Technical Program Manager
Concealed Weapons Detection
Rome Laboratory
Rome, New York

Smietan presented an overview of the collaboration between the Departments of Defense and Justice to apply technology developed for the military to law enforcement settings. Ferris discussed the progress of Rome Laboratory’s efforts to design a viable concealed weapons detection device for use by police on the street and in prisons.

Smietan began by noting that in 1994, the Departments of Defense and Justice, recognizing that the deployment of U.S. military force has focused increasingly on policing ethnic and religious conflicts rather than on waging war, agreed to jointly develop and share technology. A joint steering group was formed under the leadership of the Defense Advance Research Projects Agency (DARPA) and the National Institute of Justice to spearhead the effort and Congress appropriated $37 million in 1995 to fund its programs.

The collaboration is currently researching three areas of applied technology:

- Situation awareness including concealed weapons detection, geolocation/navigation/communications, sniper and mortar detection, and information technology.
- Force protection including personal armor and biomedical technology.
- Minimization of unintended damage and injury including limited effects technology.

The most promising application for law enforcement, Smietan said, is clearly concealed weapons detection. In 31 States it is now legal for most citizens to carry concealed weapons, and the threat of gun violence for officers on patrol has never been greater.

Existing metal detectors work moderately well in airports and other venues, he said, but are not effective in highly mobile police or military operations in the street. They are restrictive in the types of weapons they will detect and their range of detection, cannot be used covertly, and raise important issues of privacy in most settings outside the corrections field.

Rome Laboratory is fostering the development of detection devices more applicable to law enforcement by focusing its research on technologies that are nonobtrusive, that detect nonmetallic weapons and distinguish between weapons and innocuous items, and that have a range of 2 to 10 meters. It is unlikely, Smietan suggested, that a single technology will meet these requirements, requiring researchers to pursue a multisensor approach.
Ferris began his discussion of concealed weapons detection research at Rome Laboratory by describing the tradeoffs inherent in detection technologies now available. Technologies capable of detecting weapons under heavy clothing, for example, provide poor images while those that do produce clear images are severely limited in penetration. These tradeoffs are the rules of nature determining what a technology can and cannot accomplish, and researchers are learning to use them to their advantage.

The weapons detection program at Rome Laboratory is studying technologies that are considered either close to application or promising for the future. Ferris described how each technology works, noting their advantages and disadvantages.

**Infrared Imaging**

Infrared technology images the body’s heat emissions and those of other objects on the body. It detects the presence of a weapon by showing its cooler image against the warmer body. The technology’s primary assets are its ability to image clearly and availability for immediate use. Its effectiveness, however, is severely restricted by heavy clothing that blocks heat emission from the body.

**Millimeter Wave Imaging**

Similar to infrared imaging, millimeter wave (MMW) technology measures energy radiated from the body to detect weapons. Ferris called MMW the detection technology of the future because it offers many of the advantages that other sensor technologies lack, particularly its ability to penetrate clothing. Disadvantages include its imaging quality, which does not match that of infrared, and its early stage of development as a practical tool for law enforcement.

**Acoustic Imaging**

An excellent penetrating technology, acoustic imaging detects the acoustic energy transmitted by a weapon concealed on the body. It detects all types of weapons regardless of composition but its images are of poorer quality than those of infrared or MMW. With time, the clarity of acoustic images may improve and make acoustic imagers a viable application on the street.

**X-Ray Imaging**

A technology applicable to highly controlled environments such as prisons, x-ray detection machines reflect very low doses of x-ray energy off of an individual’s body. In the resulting image, the body appears bright against the outline of a weapon, which absorbs the x rays and appears dark. In corrections, Ferris said, in which privacy is less an issue than in general police work, x-ray imagers can be used very effectively to penetrate any type of clothing or package and produce excellent images of any object present. X-ray imagers cannot, however, detect weapons hidden in body cavities.
Magnetic Imaging

Although most standard magnetic imagers such as those found in airports are not useful to covert and mobile law enforcement activities, Ferris highlighted a magnetic system that could be an important addition to the portal sensors now available. The imager uses an array of sensors to detect not only the presence of metal but also to show an image of its presence on the body. The technology’s disadvantages relative to other imagers are that it does not detect plastic weapons and must be placed where individuals can walk through it.

The Future of Concealed Weapons Detection Technology

Ferris concluded by presenting each technology’s potential as an affordable and practical weapon detection tool for law enforcement (see accompanying chart). Passive millimeter wave and acoustic technology, he argued, may not be ready for police applications until the year 2000 but could contribute significantly to a multisensor solution.
Closing

David Boyd
Director
Office of Science and Technology
National Institute of Justice

In closing the conferences, Boyd urged police and other law enforcement professionals to take an active role in the advisory process to ensure that Federal research and development activities support the technology priorities of those on the front lines of crime fighting.

NIJ is the research arm of the U.S. Department of Justice. NIJ seeks out law enforcement technology projects, encourages and funds their development, then transfers the technology to industry for introduction into the marketplace. Guidance from those working in the field is an integral element of success.

“We ask you to really push us, to ask us to try to provide you with the support and assistance you really need,” Boyd told the conferees.

Close to 700 law enforcement professionals attended the five Technology for Community Policing conferences. Several experts formed a core of presenters who shared their knowledge at each conference. In addition, guest speakers from each region or host city participated to provide their unique perspectives.

Successful partnerships are key to community policing. In holding the conferences in five different cities, organizers hoped to reach as many police officers as possible to ensure they are aware of what the issues are, what technology and services are available to them, and how technology can enhance community policing.

“Thank you for coming out and listening to us,” Boyd concluded.
Conference Exhibitors


Advanced Law Enforcement Readiness Training. Advanced Law Enforcement Readiness Training (ALERT) specializes in advanced training for law enforcement personnel. ALERT’s series of videos focuses on the needs of officers in the field, providing training in patrol-related hazards, survival techniques and tips, legal updates, current liability concerns, and basic training. Contact: Advanced Law Enforcement Readiness Training, P.O. Box 6738, St. Louis, MO 63144–6738; 800–253–7845.

AeroVironment, Inc. AeroVironment, Inc. provides services and products to solve environmental and energy problems and to optimize opportunities for the future. The company’s development process combines systems engineering, project management, advanced theory, prototyping, and field testing. This approach is applied to high-efficiency vehicles, aerodynamics, hydrodynamics, composite structures, electronics, and renewable energy. Products include the GM Impact electric car. Contact: AeroVironment, Inc., 222 East Huntington Boulevard, Suite 200, Monrovia, CA 91016; 818–357–9983.

Amber, A Raytheon Company. Amber designs and manufactures focal plane array detectors and high-performance infrared imaging systems. The company’s expertise includes integrated circuit readout design, focal plane array fabrication, electronics, and software. Contact: Amber, A Raytheon Company, 5756 Thornwood Drive, Goleta, CA 93117; 805–692–1348.

Aries Systems International, Inc. Aries Systems International, Inc. (ASI) has developed the ASI Public Safety Suite, a Windows-based system designed to improve the productivity of law enforcement agencies. The system consists of three modules: (1) WIN*Records is a complete law enforcement records management system for automating a department’s files. It also offers immediate access to data in the National Incident Based Reporting System (NIBRS); (2) WIN*Dispatch organizes, manages, and controls fast-paced activity in a dispatch center; and (3) WIN*Warden is a comprehensive management information system for a corrections facility. Contact: Aries Systems International, Inc., Dayton Center, 5100 Springfield Pike, Suite 308, Dayton, OH 45431; 800–526–1790.

ATX Research, Inc. ATX Research, Inc. has developed the OnGuard Personal Security and Vehicle Tracking System. The heart of the system, the OnGuard Tracker, is an electronic device mounted in the system owner’s vehicle. If triggered (for example, by the car moving without the correct code being entered to disarm the system, or by the driver pushing the panic button), the Tracker collects longitude and latitude information and transmits this data to the OnGuard Response Center. Staff at the Response Center can then communicate with the
occupants of the vehicle to evaluate the situation and alert law enforcement or emergency services personnel of the vehicle’s location. **Contact:** ATX Research, Inc., 10010 San Pedro, Suite 200, San Antonio, TX 78216; 800–789–4373.

**Aurora Police Department.** The Aurora Police Department has developed two programs as part of its commitment to the community. One, the Bicycle Patrol program, is a proactive approach aimed at increasing citizen awareness regarding bicycle safety, pedestrian safety, and community involvement. From late spring to early fall, 10–15 officers patrol, on bikes, areas near city parks, schools, and the business district. In Aurora’s Police Area Representative (P.A.R.) program, one officer is permanently assigned to each of Aurora’s 22 geographic areas. The P.A.R. officer works with both the community and the Police Department to organize and evaluate effective crime prevention programs. **Contact:** Aurora Police Department, District I, 1400 Dallas Street, Aurora, CO 80010; 303–739–6920 or Aurora Police Department, District II, 15001 East Alameda Drive, Aurora, CO 80012; 303–739–6050.

**Calspan SRL Corporation.** Calspan SRL Corporation provides high-technology services and systems and operates technical facilities for the U.S. Government and industry. The company’s fields of expertise are aeronautics, transportation systems, human systems technology, information systems and electronic warfare, chemical defense and demilitarization, and space technology. **Contact:** Calspan SRL Corporation, 800 Connecticut Avenue NW, Suite 1111, Washington, DC 20006; 202–887–4700.

**Center for Applied Science & Technology for Law Enforcement.** A pilot program formed by Tennessee’s Oak Ridge National Laboratory, the Center for Applied Science & Technology for Law Enforcement (CASTLE) is a partnership of scientific, university, private sector, and law enforcement personnel focused on applying technology at the grassroots level to both solve crimes and make officers’ jobs safer and more efficient. The CASTLE program addresses immediate technology needs not being met by nationwide programs, in areas such as video and audio surveillance, trace and physical evidence sampling, and forensic laboratory analysis. **Contact:** Center for Applied Science and Technology for Law Enforcement, Lockheed Martin Energy Systems, P.O. Box 2009, Oak Ridge, TN 37831–8206; 423–241–2283.

**Cerulean Technology, Inc.** Cerulean Technology develops client/server software applications for public and private wireless networks. Its PacketCluster Patrol software is a wireless mobile information system for law enforcement and public safety. The Windows-based software gives police officers direct access to local, State, and national motor vehicle and criminal data bases from notebook computers in their patrol cars, helping them work more safely and efficiently. **Contact:** Cerulean Technology, Inc., 2 Mount Royal Avenue, Marlborough, MA 01752–1935; 508–460–4000.

**Colt’s Manufacturing Co., Inc.** Colt’s Manufacturing designs and manufactures firearms and accessory items for use in combat and law enforcement operations. These range from double-action revolvers to submachine guns, grenade launchers, carbines, and rifles. **Contact:** Colt’s Manufacturing Company, Inc., P.O. Box 1868, Hartford, CT 06144–1868; 800–962–2658.
Corona Software Inc. Corona Software developed its Staff Wizard software specifically for police managers and analysts. Staff Wizard, the core software, supports the optional Staff Wizard Scheduler and Staff Wizard Roster Builder modules. The core software performs calculations against input data and produces output statistics for use in planning, budgeting, and managing. Staff Wizard Scheduler uses output data from the core software to determine the optimal staffing arrangement to meet an agency’s needs. Staff Wizard Roster Builder uses output data to build a roster based on the optimal arrangement of individual work schedules for the agency. Contact: Corona Software Inc., 12000 North Washington Street, Suite 208, Thornton, CO 80241–1926; 303–450–9887.

Database Technologies, Inc. Database Technologies, Inc. developed DBT ONLINE, an information research system designed to be used as a national locator tool. Given just a few facts—for example, a name, Social Security number, or address—DBT ONLINE produces a full report including information such as personal demographics, past and present addresses, phone numbers, assets, and more. Contact: Database Technologies, Inc., 100 East Sample Road, #3200, Pompano Beach, FL 33064; 800–279–7710.

Decision Systems. Decision Systems focuses on the new areas of cognitive factors research, applications in user friendly software, and human/machine interface design and development. TeleMinder®, a product of Decision Systems, is an automated voice messaging system designed for health care. The system automatically calls people on the telephone to give them important information and ask questions. It uses pre-recorded voice and patient data from main computer systems to deliver interactive, customized messages. Contact: Decision Systems, 318 State Street, Los Altos, CA 94022; 415–949–2544.

Digital Description Systems, Inc. Digital Description Systems, Inc. (DDSI) offers Compu-Capture 2000, a video imaging system specifically designed for the law enforcement and corrections community. Once an acceptable image is captured from a high-resolution video camera, it can be transmitted directly into the Compu-Capture 2000 system, where it is stored. The system also can store crime scene images, evidence photographs, or any scannable document and link them to a specific record. Images can be printed or they can be faxed from within the Compu-Capture 2000 system (especially helpful for transmitting information such as wanted posters and missing person bulletins). Contact: Digital Description Systems, Inc., 2010–F Cabot Boulevard West, Langhorne, PA 19047; 800–799–3374.

Environmental Systems Research Institute, Inc. Environmental Systems Research Institute, Inc. (ESRI) specializes in the development of products and services used for mapping and geographic analysis. Their ARC/INFO geographic information system (GIS) is a system of hardware, software, and geographic data that can be used to solve complex planning and management problems. One feature enables users to solve problems such as finding the most efficient travel route, generating travel directions, or defining service areas based on travel time. Contact: Environmental Systems Research Institute, Inc., 380 New York Street, Redlands, CA 92373–8100; 909–793–2853.
EPIC Solutions. EPIC Solutions specializes in digital imaging software and population management tools for public safety, law enforcement, and social welfare markets, domestic and international. The company’s products include BOOK’em, which captures and manipulates digital photo images, fingerprints, evidence, and crime scene information. Contact: EPIC Solutions, 10907 Technology Place, San Diego, CA 92127–1811; 619–675–3525.

Ericsson Inc. Ericsson Inc.’s Private Radio Systems business designs, manufactures, and markets private radio systems and products for public safety, utility, industrial, commercial, and government markets. Specializing in portable radios, mobile radios, and base stations, Ericsson provides customers with communication systems to help them get the job done faster, easier, and more efficiently. Contact: Ericsson Inc. Private Radio Systems, Mountain View Road, Lynchburg, VA 24502; 804–237–8994 or 800–431–2345.

Firearms Training Systems, Inc. Firearms Training Systems (FATS) develops training tools, such as the FATS Classroom Training and Law Enforcement Simulators, for law enforcement and military instruction. The small arms simulation exercises use video or computer images projected onto a large screen to place participants in shoot/don’t shoot situations and other stressful scenarios. Trainers can evaluate participants’ performance and give immediate feedback. Contact: Firearms Training Systems, Inc., 7340 McGinnis Ferry Road, Suwanee, GA 30174; 404–813–0180.

Geographic Information Services, Inc. Geographic Information Services, Inc. specializes in the design and implementation of geographic information systems. Its Crime Analyst provides law enforcement staff, from patrol officers to the chief of police, with the tools needed to analyze criminal activity within any police geography including beat, neighborhood, or precinct. The company also is an authorized dealer for TRAK, Inc.’s E911 Dispatcher, a geographic information system designed for use by emergency response dispatchers. Contact: Geographic Information Services, Inc., P.O. Box 19188, Birmingham, AL 35219; 205–941–0442.

Impact Solutions. Impact Solutions applies mobile information management software solutions to the public safety (police, fire, and emergency medical services) marketplace. The company developed its core software product, Xpediter, to address the need to improve officer and agency productivity through automation of crime reporting. Contact: Impact Solutions, 3625 Ruffin Road, Suite 200, San Diego, CA 92123–1886; 800–618–9733 or 619–974–9762.

Impairment Detection Services Limited. Impairment Detection Services Limited is a distributor for two Eye Dynamics, Inc. systems designed for substance abuse testing—the EPS–100 Performance System and the EM/I Eye Observation System. Both systems records changes in the eye resulting from alcohol or drug intoxication, providing a substance abuse testing system that is more accurate and efficient than urine testing. Contact: Impairment Detection Services Limited, 729 Fullerton Avenue, Suite 1A, Addison, IL 60101; 800–972–3683 or 708–620–1227.

JAYCOR. JAYCOR is a diversified company with primary business in the areas of telecommunications engineering, defense sciences, systems development, environmental services, information technology services, applied technology, and law enforcement and nonlethal technologies. JAYCOR has been applying
technologies originally developed for Department of Defense applications to the needs of the government and the civilian sectors. **Contact:** JAYCOR, 9775 Towne Centre Drive, San Diego, CA 92121; 619–453–6580.

**Language Systems, Inc.** Language Systems, Inc. develops software that integrates speech and natural language processing, focusing on spoken translation systems. Software under development includes that which will translate spoken English into spoken output in a foreign language and also translates from the foreign language into English. **Contact:** Language Systems, Inc., 6269 Variel Avenue, Suite F, Woodland Hills, CA 91367; 818–703–5034.

**LaserMax, Inc.** LaserMax manufactures lasers for aerospace, industry, and science. The company has developed a completely internal laser gunsight for Glock, SIGARMS, and S&W Sigma pistols that enables law enforcement officers to fire more accurately at criminal offenders. Installed as a drop-in unit, the laser sight requires no permanent modification to the weapon. **Contact:** LaserMax, Inc., 3495 Winton Place, Building B, Rochester, NY 14623; 716–272–5420.

**Louisville Division of Police Bike Patrol Unit.** The Louisville Division of Police Bike Patrol Unit was formed in 1993 to increase police visibility and deter crime. **Contact:** Louisville Division of Police Bike Patrol Unit, 633 West Jefferson Street, Louisville, KY 40202; 502–574–7111.

**Motorola SSTG.** Motorola’s Space and Systems Technology Group (SSTG) researches, develops, and produces high-technology terrestrial and space-based communications equipment and systems, sensors, and specialized equipment. Areas of expertise include communications systems, system security engineering, tactical electronic systems, software systems, decision systems, satellite survey and positioning systems, fuse systems, radar systems, electronic equipment used to track and command missiles, aircraft and satellites, and advanced manufacturing. **Contact:** Motorola SSTG, 8201 East McDowell Road, Scottsdale, AZ 85252–9040; 602–441–7274.

**National Law Enforcement and Corrections Technology Centers (NLECTC).** NLECTC, a program of the National Institute of Justice, serves as a centralized source of product and technology information for law enforcement and corrections professionals. The NLECTC National Center and regional centers offer technology information, assessment, and referral services. **Contacts:** NLECTC, Box 1160, Rockville, MD 20849; 800–248–2742; NLECTC–Northeast Region, 26 Electronic Parkway, Rome, NY 13441–4514; 888–338–0584; NLECTC–Southeast Region, 7325 Peppermill Parkway, North Charleston, SC 29418; 800–292–4385; NLECTC–Rocky Mountain Region, 2050 East Iliff Avenue, Denver, CO 80208; 800–416–8086; NLECTC–Western Region, Mail Station M1/300, P.O. Box 92957, Los Angeles, CA 90009–2957; 310–336–2222.

**Neve’s Uniforms, Inc.** Neve’s Uniforms, Inc. is a public safety and industrial uniform retail outlet with stores in Denver, Colorado, and Rapid City, South Dakota. An outside sales department services businesses, police and fire departments in seven States. The company also services national and international clients. **Contact:** Neve’s Uniforms, Inc., 4855 Pecos Street, Denver, CO 80221; 303–455–7000.
New Perceptions Inc. New Perceptions Inc., a computer consulting firm, developed the Info-Disk, a computer program aimed at protecting children and expediting the transfer of critical information concerning missing children to law enforcement officials. The two-part Info-Disk system consists of (1) computer diskettes for parents containing a child’s name, photo, and vital statistics and (2) computer software for law enforcement agencies that enables them to transmit the data, via modem, on a local, state, national, or international level. **Contact:** New Perceptions Inc., 4300 South U.S. Highway #1, Suite 203, Department 133, Jupiter, FL 33477; 561–744–4890.

**NISE East.** NISE East (Naval Command, Control and Ocean Surveillance Center In-Service Engineering East Coast Division) provides full-service engineering and technical support. The organization has expertise in five technical areas: (1) air traffic control, environmental effects, and integrated C4I systems; (2) security systems; (3) communications systems; (4) command and control systems; and (5) cryptologic and intelligence systems engineering. **Contact:** NISE East, 4600 Goer Drive, North Charleston, SC 29406–6504; 803–974–4000.

**Office of Community Oriented Policing Services (COPS).** The Office of Community Oriented Policing Services (COPS) provides funds to add 100,000 community policing officers to America’s streets. In addition to hiring grants, COPS is dedicated to advancing community policing nationwide through funding training and technical assistance efforts; evaluation and research activities; and innovative programs, such as the COPS Anti-Gang Initiative, Community Policing to Combat Domestic Violence, the Youth Firearms Violence Initiative, Troops to COPS, and the Police Corps. **Contact:** Office of Community Oriented Policing Services (COPS), U.S. Department of Justice, 1100 Vermont Avenue NW., Ninth Floor, Washington, DC 20530; 800–421–6770.

**ORION Scientific Systems, Inc.** ORION Scientific Systems, Inc. is a research and consulting firm that concentrates on solving complex law enforcement problems through the application of advanced information technologies. Products include the Law Enforcement Analysis Data System, or LEADS, which uses analytic tools and integrated information processing techniques. **Contact:** ORION Scientific Systems, 19800 MacArthur Boulevard, Suite 480, Irvine, CA; 714–261–0226 or 8400 Westpark Drive, Suite 200, McLean, VA 22102; 703–917–6540.

**Phoenix Group Inc.** The Phoenix Group Inc. (PGI) designs, develops, and sells advanced technology, rugged (miniature) mobile computer systems. This includes heads-up displays for operation in a true “hands free” environment, through voice recognition. These products were specifically designed for industrial and military field applications where demanding performance is required in harsh environmental conditions. **Contact:** Phoenix Group Inc., 123 Marcus Boulevard, Hauppauge, NY 11788; 516–951–2700.

**PhotoTelesis, A Division of Texas Instruments.** The Defense Systems and Electronics division of Texas Instruments manufactures computer equipment for soldier’s use on or off the battlefield. Products include the PhotoTelesis Lightweight Video Reconnaissance System (LVRS), which consists of rugged, lightweight computer and image transmission/retrieval equipment and the accompanying software, Imaging and Communications Environment (ICE 2.0).
Contact: PhotoTelesis, 7800 IH 10 West, Suite 700, San Antonio, TX 78230; 210–349–2020 or PhotoTelesis, 1901 North Moore Street, Suite 204, Arlington, VA 22209; 703–527–3411.


Riteway Products. Riteway Products is a distribution subsidiary of GT Bicycles. Riteway, which focuses on independent bicycle dealers, sells bicycle parts and accessories from various manufacturers, but exclusively distributes GT Bicycles. Contact: GT Bicycles, 3100 Sagerstrom Avenue, Santa Ana, CA; 714–513–7100.

The Robot Factory. The Robot Factory manufactures remotely controlled robots designed for promotional and educational use. Soft robots shaped like animals are especially helpful in teaching safety and antidrug programs to children, since they easily capture a child’s attention. The Robot Factory’s robots can be customized with strobes, flashers, cassettes, and sirens. Contact: The Robot Factory, 3740 Interpark Drive, Colorado Springs, CO 80907–5058; 800–717–6268 or 719–447–0331.

Robotronics, Inc. Robotronics, Inc. manufactures robots to use in educational safety programs for children. Products include Pluggie the Fireplug, a talking fire hydrant robot used to teach fire safety, and PC the Patrol Car. The robots have special features such as head, eye, mouth, hand and arm movements, flashing lights, music, and sirens. Contact: Robotronics, Inc., 1610 West 1600 South, Springville, UT 84003–3057; 801–409–4488.

San Diego Border Patrol Sector/Border Research and Technology Center (BRTC). A joint program with NIJ, the Office of National Drug Policy, and NLECTC–Western Region, BRTC’s concentration is on technologies that can be used to meet the law enforcement challenges along U.S. borders. Contact: Border Research and Technology Center, 1250 Sixth Avenue, Suite 130, San Diego, CA 92101; 619–685–1491.

Science Applications International Corporation (SAIC). SAIC offers expertise in technology development and analysis, computer system development and integration, technical support services, and computer hardware and software products. SAIC scientists and engineers focus on areas of national security, environment, energy, health, transportation, and space. Contact: Science Applications International Corporation, 10260 Campus Point Drive, San Diego, CA 92121; 619–546–6000.

Stinger Spike Systems, Inc. Stinger Spike Systems, Inc. manufactures a tire deflating device designed for use by law enforcement agencies. The Stinger Spike System’s bidirectional spike strip deflates tires when run over from any direction, at any speed. Easy to set up and take down, the Stinger Spike System provides a safe and effective method for stopping high-speed pursuits. Contact: Stinger Spike Systems, Inc., P.O. Box 848, Monticello, UT 84535; 800–587–2803 or 801–587–2803.
Technology Helps Company. Technology Helps Company offers products and consulting services to law enforcement agencies interested in obtaining a secure method for tracking gang activity, sex offender registration, juveniles, police applicants, internal affairs complaints, and case information. All products use Lotus Notes client server technology, are portable to the field, and are designed to return the intelligence edge to the investigating officer. **Contact:** Technology Helps Company, 1724 Huron Trail, Plano, TX 75075; 972–422–7399.

TELESIS Corporation. TELESIS Corporation is an educational publishing and training company specializing in drug and alcohol prevention and treatment services. The company uses systems engineering and computer technology for its products. **Contact:** TELESIS Corporation, 409 Camino Del Rio South, Suite 205, San Diego, CA 92108; 800–542–2966.

Tuxall Uniform and Equipment, Inc. Tuxall Uniform and Equipment, Inc. supplies public safety personnel with a variety of products to fit their needs. Tuxall’s product line includes equipment for patrol cars, uniforms and special law enforcement gear, and evidence collection kits. The products can be purchased from Tuxall’s mail-order catalog or at Tuxall’s full-service stores. **Contact:** Tuxall Uniform and Equipment, Inc., 5700 North Washington Street, Denver, CO 80216; 800–825–3339.

U.S. Air Force, Rome Laboratory. Rome Laboratory is the Air Force Super Lab for Command, Control, Communications, and Intelligence (C’I) research and development. C’I is the military process of managing U.S. forces on a worldwide basis. Rome Laboratory seeks to transfer laboratory-developed technologies, processes, and technical expertise to the public and private sectors. Opportunities for technology transfer include the areas of signal, speech, and image processing; communications; electromagnetics; photonics; and computational sciences. **Contact:** Rome Laboratory, Technology Transfer Office (RX/XP), 26 Electronics Parkway, Rome, NY 13441–4514; 315–330–1905.