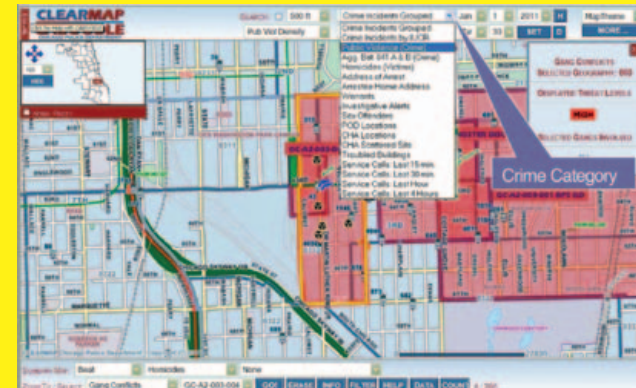


CRITICAL ISSUES IN POLICING SERIES

“How Are Innovations in Technology Transforming Policing?”



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CRITICAL ISSUES IN POLICING SERIES

“How Are Innovations in Technology Transforming Policing?”

January 2012



POLICE EXECUTIVE
RESEARCH FORUM

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Acknowledgments

ONE OF THE BIGGEST AND MOST IMPORTANT challenges facing police chiefs—and a challenge that they cannot delegate to subordinates—is the need to sort through the variety of new policing technologies that have come on the scene in recent years. Technology can make policing more efficient—always a key consideration, but especially during times of budget cuts. But technology costs time and money to acquire and deploy, and there are many different technologies to choose from. Are license plate readers effective in preventing or solving auto thefts and other crimes? Or do surveillance cameras give you more bang for the buck? Should technology dollars be spent beefing up computer systems that support Compstat and predictive analytics? What about using social media to develop collaborations with businesses and community groups to fight crime? And what are the civil rights implications of these new policing technologies?

It is clear that these types of questions will become even more important in coming years, as technology continues to advance and diversify. Thus, the role of technology in policing was a perfect topic for the “Critical Issues in Policing” series produced by PERF.

This report, the 19th in the Critical Issues series, summarizes what we found when we brought together more than 100 police chiefs and other leaders in the field for an Executive Session in Washington last April (see Appendix for a list of participants). As always, these experts provided frank assessments of their experiences with various technologies to date, as well as their views about the most important considerations for the future. PERF is very grateful to all who gave their time to travel to this meeting and share their expertise. We also are thankful to the police agencies that provided information to us in a survey we conducted to lay the

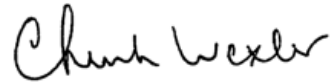
groundwork and acquire a base of knowledge about the use of technology in policing.

PERF also thanks the Motorola Solutions Foundation for its constant support of PERF meetings and reports in this Critical Issues series. It is no exaggeration to say that Motorola’s support over the last 20 years through the Critical Issues series has helped produce real advances in the field of policing, in areas ranging from crime reduction and prevention of gang- and gun-related violence to hot-button issues such as immigration enforcement and management of special events. We are grateful to Greg Brown, Chairman and CEO of Motorola Solutions; Mark Moon, Senior Vice President, Sales and Field Operations; Karen Tandy, Senior Vice President of Public Affairs; Jim Welch, Senior Vice President, North American Sales; Rick Neal, Vice President, Government Strategy and Business Development; Steve Bottorff, Director, North America Customer Solutions; and Matt Blakely, Director of the Motorola Solutions Foundation.

A number of PERF staff members also deserve credit for organizing the Executive Session and producing this report. Chief of Staff Andrea Luna managed the entire project with strong assistance from Deputy Chief of Staff Shannon Branly and Research Assistant Jacob Berman—defining the topic and subtopics, identifying experts to invite to the Executive Session, and handling the logistics to ensure that the meeting would be a success. Senior Research Associate Bruce Kubu managed the Technology Survey that produced some surprising findings about the extent to which many police departments are already using a wide variety of technologies. Project Assistant Dan Kanter helped with several aspects of the meeting (in one of his final assignments before leaving PERF to attend Harvard Law School). Dan’s successor, James

McGinty, produced the initial draft of this report, using a transcript of the Executive Session. Executive Assistant Tam Vieth served as PERF paparazzo at the meeting, producing the photographs in this report, and Communications Director Craig Fischer carefully edited and refined the report. Dave Williams provided his graphic design expertise to produce the printed document.

We hope this report will help police executives understand the key considerations and issues involved in bringing technology to policing, as described by many of their most experienced colleagues.



Executive Director
Police Executive Research Forum
Washington, D.C.



Introduction

By Chuck Wexler

I DON'T THINK I'M GUILTY OF OVERSTATEMENT in saying that policing in the United States has undergone a fundamental transformation in just the last 30 or 40 years. Policing today bears very little resemblance to the policing of the 1970s. For those of us who have been watching this happen day by day, the differences are simply stunning.

Back then, police officers thought they were doing a fine job if they responded quickly to calls for service and investigated crimes thoroughly. Today's police departments have given themselves a much larger and more important mission: working with their communities to solve crime problems, and in so doing, actually preventing crimes from being committed, and reducing crime rates.

What's more, today's police have proved that they can succeed in fulfilling this bold new mission. According to the FBI's Uniform Crime Reports, violent crime rates nationwide have declined 47 percent since the early 1990s.¹ In many cities, the changes have been even more dramatic. New York City had 536 homicides in 2010, compared to more than 2,200 in 1990. Washington, D.C.—once called the murder capital of the world—had 132 murders in 2010, compared to 479 in 1991.

Technology undoubtedly played a big role in helping police to bring crime rates down. CompStat would not have been possible without accurate, timely information about where and when crimes are being committed, and computers made it possible to gather crime data on a weekly or daily basis.

The police chiefs who participated in the PERF Executive Session on Technology have made it clear that we are just beginning to realize the impact that

technology will have on the effectiveness of policing. We expect to see a new Age of Technology in policing over the next 10 to 20 years, as the technologies that we currently are testing really take hold, and new technologies that we aren't even aware of yet become available.

Furthermore, police chiefs tell us that the economic downturn that began in 2008 is making policing technology more important, to the extent that it can help officers be more effective and efficient. Because of tight budgets in all levels of government, many police departments are being forced to lay off officers or let attrition bring down their staffing levels over time. Some chiefs are reporting success in using various technologies to mitigate the effects of a shrinking workforce. At the same time, we know from another Critical Issues survey that police departments are cutting back on technology spending because of budget cuts.

Consider just one type of technology: license plate readers (LPRs). PERF's survey showed that 71 percent of responding agencies already have LPRs. But typically, an agency has only a few vehicles equipped with the devices, and they are used for certain limited purposes, such as finding stolen cars or vehicles that have multiple parking violations and can be booted or towed.

But our survey found that almost every police agency expects to acquire or increase their use of LPRs in coming years, and that five years from now, on average they expect to have 25 percent of their cars equipped with LPRs. Think of the implications of that for helping police to quickly locate wanted

1. <http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2010/crime-in-the-u.s.-2010/tables/10tbl01.xls>.

persons or vehicles that have been linked to serious crimes.

No doubt there will be challenges in the Age of Technology. For example, 80 percent of our survey respondents told us they expect to increase the practice of placing GPS devices on crime suspects' vehicles. But the U.S. Supreme Court is currently considering a case that will decide whether GPS tracking of cars violates the Fourth Amendment ban on unreasonable searches and seizures. So at the moment, we don't know whether this is one technology that will be restricted by the courts.

But I expect that the setbacks will be far outnumbered by the advances, especially as police find ways to use multiple technologies in concert with each other. For example, in Camden, N.J., where the police force was cut nearly in half due to a budget

crisis, technology is a force-multiplier. Camden police are using Compstat to identify crime hot spots, and then directing patrol officers to drive through the hot-spot areas fairly often, in order to establish a police presence and reduce the opportunities for crime. In addition, GPS devices on the squad cars automatically provide data on how often each police car travels through a hot spot area. If a hot spot is not getting enough attention in the form of patrol car visits, the computer can be set to automatically send a notification to officers or supervisors.

The challenges of the coming decade in policing will include identifying technologies that are most effective (and cost-effective) in reducing crime, and training officers to use those technologies properly.



PERF Survey Shows Widespread Use of Many Technologies in Policing

IN ORDER TO GATHER A BASELINE OF INFORMATION about use of various technologies in police agencies, PERF conducted a survey of law enforcement agencies in March 2011. More than 70 agencies responded, providing facts about their current technologies, best practices, and lessons learned. The responding agencies generally were fairly large, with an average of 949 sworn officers serving a population of 531,000. But departments of various sizes were represented; the range of sworn officers in the responding agencies was 10 to 13,088.

Following are some of the survey findings:

Predictive policing: Seventy percent of the responding agencies said they already use some form of predictive policing, which was defined as “the advanced use of information/technology to predict and prevent crime.” Furthermore, 90 percent of the departments said they plan to increase

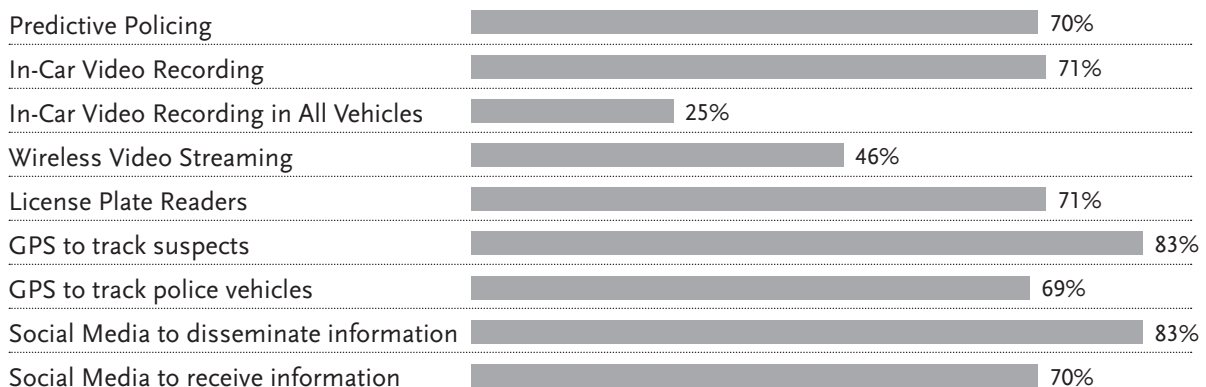
their use of predictive policing over the next five years.

More specifically, of the 69 agencies that said they use predictive policing, 24 said they use crime mapping software; 16 agencies said they use predictive policing to stop serial offenders; and 15 agencies said they use sortable historical data to allocate resources to try to prevent crimes.

In-Car Video Recording: PERF asked police agencies about the extent to which they have video recording capabilities in their vehicles. Twenty-nine percent of the responding agencies said they have no cars with recording capability. At the opposite end of the spectrum, 25 percent said they have video recorders in *all* of their vehicles.

In the middle range, 36 percent of respondents said they have video recording in half or fewer of their vehicles, and 10 percent said they have video in more than half (but not all) of their vehicles.

Percentage of Surveyed Agencies That Have Technologies



Wireless Video Streaming: Transmitting video—for example, from the scene of a major incident to a command center—has become a critical issue in policing because video requires substantially more wireless broadband capacity than many other types of data transmissions over the airwaves. Police and fire departments and other first responders nationwide have been urging Congress to allocate a section of the radio spectrum known as the “D Block” to public safety agencies, in order to help ensure that transmission of video feeds and other information will be possible now and in the future. Currently, public safety agencies rely on commercial carriers that often are overburdened, especially during major events or emergencies.

Nearly half of the agencies responding to PERF’s survey (46 percent) said they use wireless video streaming in some capacity. Twenty-six percent said they use it for investigative purposes; 23 percent use it during traffic stops; 21 percent use video to help ensure officer safety; 19 percent use it in responding to calls for service; 16 percent use it to provide officer accountability. (A given agency could cite multiple purposes for video transmissions.)

In addition, 11 percent cited other uses of wireless video streaming, such as video cameras contained in robotic cameras used in bombing, barricade, or hostage situations; monitoring of remotely located critical infrastructure, such as water supply facilities; video streaming to monitor crowds during major events; and video feeds from helicopters during pursuits.

Twenty-three percent of responding agencies said they stream video from fixed surveillance cameras to police vehicles—for example, to give responding officers information about what to expect as they are traveling to a crime scene. Most agencies said they plan to increase this capability, and on average, they expect that in five years, 81 percent of their vehicles will have this capability.

License plate readers: Seventy-one percent of responding agencies use automated license plate readers (LPRs) to some extent. These devices consist of cameras mounted on vehicles and associated software that can scan tags of passing or parked

cars and quickly trigger alerts if a vehicle has been reported stolen, has parking violations, or is included in some other database, depending on the police agency’s purpose for the LPR.

A large majority of agencies (85 percent) plan to acquire or increase their use of LPRs during the next five years. On average, responding agencies expect that 25 percent of their vehicles will have LPRs on board in five years.

Global Positioning Systems: Most police agencies responding to PERF’s survey (83 percent) said they use Global Positioning System technology (GPS) to track the movements of criminal suspects. (On November 8, 2011, the U.S. Supreme Court conducted oral arguments in a case testing the Constitutionality of attaching a police GPS device to a suspect’s vehicle. A decision is expected by June 2012.)

In addition, 69 percent of law enforcement agencies said they use GPS to track police vehicles. Tracking police vehicles’ location can have many purposes, including knowing officers’ exact location if they are in an accident or are assaulted or otherwise endangered or incapacitated. In Camden, N.J., GPS devices on police vehicles are linked with computer data about crime “hot spots” in order to trigger alerts that remind officers of the need to spend time in the hot spots. In some cities, police unions have expressed concern about officers’ location being monitored constantly.

Social Media: A large majority of police agencies (83 percent) use social media to share information with the public. Facebook was the social media platform cited most often, used by 74 percent of all agencies, followed by Twitter (57 percent), Nixle (34 percent), YouTube (34 percent), and MySpace (24 percent).

A slightly lower number of agencies (70 percent) use social media to *receive* crime tips or other information from the public.

Fully 89 percent of agencies said they monitor social media to identify investigative leads—for example, reviewing Facebook or Twitter pages of known or suspected gang members, who sometimes brag about crimes they have committed or

post otherwise incriminating information, or provide leads that police can follow to investigate a crime.

More than half of the responding agencies (57 percent) have already had disputes or controversies related to employees' postings of improper or embarrassing information or photographs on social media sites. About 20 percent said they had already

disciplined at least one employee over such infractions. And 58 percent of agencies said they have developed a policy governing employees' personal postings on social media sites. Another 12 percent said they were working on such a policy at the time of the survey. (See discussion on pp. 9–12 regarding whether such policies should be brief and simple, or more detailed and explicit.)

Websites and Social Media

AS SOCIAL MEDIA APPLICATIONS HAVE MUSHROOMED in popularity, police departments have been exploring ways in which they can use social media to communicate with the public. Participants at the PERF summit discussed the benefits and challenges of using social media.

Sharing Information and Developing Relationships with the Community

In the PERF survey, 83% of responding agencies said they use social media to share information with the public, and 70% said they use social media to receive information from the public.

Sacramento Chief Rick Brazier:

Our Blog and Facebook Page Are Very Useful for Getting Info to the Public

We are active on Facebook and Twitter and also have used YouTube. Our Home Page is one page, that's it. It pops up and everything is there including links to Facebook and Twitter. Approximately 55% of our followers are in the 25 to 44 age range, and it's pretty evenly split between males and females.

We're using our Web presence to interact with the public. We post "dumb crook" stories, and they're very popular. Posting something like that is a great way to get people to look at your Facebook page. Once you get them there, many of them look at the other information. We post all our press releases, we give kudos to our employees, and we post the anniversaries of officer deaths, which gets quite a bit of attention as well.



ABOVE: Sacramento Chief and PERF Treasurer Rick Brazier. RIGHT: Screenshot of Sacramento's Facebook page.

Los Angeles County Sheriff's
Captain Mike Parker



We've also put up video clips on our Facebook page, including crime prevention videos. In 2009 and parts of 2010, we saw significant increases in our rape statistics. We analyzed the reports and found that in at least 90 percent of the cases, the suspect and victim knew each other. So we wanted to find a way to educate the public about date rape and other types of rape in which the perpetrator is not a stranger. We partnered with Women Escaping A Violent Environment (WEAVE) and started a campaign to post educational messages about the consequences of committing any kind of rape. The messages are designed for different groups of people. One targeted 16- to 25-year-olds, while another targeted 25- to 40-year-olds. We've found that when you use traditional media, a story can die very quickly because there's always another story to take its place. We wanted to get our information out and make it available all the time. Facebook makes that possible.

We have a police advisory committee that helps us with our social media initiatives. It includes business leaders and community leaders. We also have a youth advisory committee, with two representatives from each high school in our city—public, private, and charter schools. We use these as focus groups. I consult with them about the messages we need to deliver to the community in response to current developments in the city and in the Police Department. Initially we found that the information we were delivering to the public, which mostly consisted of statistical data, wasn't of great interest to them. Our advisory committees told us that the public wanted to know how these facts would impact them.

To do this, we're trying to use short messages to get this information across. This helps us quickly give people answers to relevant questions they have, like how long the response time will be at the 911 center or why we're not always sending officers to burglaries anymore. Once we put it up on Facebook,

that information is always available, as opposed to merely releasing information to the local newspaper and people might not know about it if they never read the paper or they didn't happen to read the paper that day.

We've developed a blog with almost 800 questions that citizens have asked us. For example, in the "Recruiting" section there was a question submitted last week by someone getting out of the military and wondering about using military credits to be hired by a police department. We can quickly respond to this question and detail the standards that need to be met. We've found people sometimes feel more comfortable asking questions in a blog format than they do through other media, including Facebook.

**Los Angeles County Sheriff's
Captain Mike Parker:**

*People Expect Us to Use
New Communications Technology*

As technology changes, the public *expects* us to communicate with them in new ways. We now have the ability to instantly send out notifications when emergencies or other situations arise that the public should be aware of, so we are expected to do so, using the most effective technology available to us. In Los Angeles County, we've made major upgrades to our website and we frequently send department messages using systems popular with the public including Nixle text/emails, as well as Twitter, Facebook, and YouTube.

One aspect of this that we've noticed is that the general public usually doesn't have much



Motorola Solutions Vice President
Rick Neal

the overall effect is that most of the local media are reporting law enforcement stories in a more balanced and factual way.

Albuquerque Chief Ray Schultz:

Copyright Your Logos to Protect Your Agency Against Fake Websites

We've had a problem with rogue websites being set up by people claiming to be part of the Albuquerque Police Department. To cope with this we've had to copyright all our logos, which allows us to have fake websites shut down almost instantly.

Elaine Driscoll, Public Information Officer, Boston Police Department

Ed Davis Saw Teens at Crime Scenes Texting, And Realized Police Should Harness That

Back in 2007, Commissioner Ed Davis noticed teens standing around the yellow tape at crime scenes and sending text messages, and he thought that there must be a way to harness what they're doing. He went to an advertising agency, which set us up with the software we needed to develop a "text-to-tip" line. This program was so well received that people

opportunity to interact with the police, unless we happen to see them while we are on patrol or they do something wrong. But we can use these Nixle, Facebook and Twitter messages as a way to engage citizens who would like to have more interaction with the department.

These new forms of communication let us release news stories ourselves instead of relying solely on traditional media outlets. You might expect that this could lead to an antagonistic relationship with our local news outlets, because we aren't solely dependent on them anymore for communications. But we actually have a closer relationship with them now. The news media still like to be the first ones to report police-related news stories, so we often give them the story first, plus we still work closely with them to provide accurate information. I believe



ABOVE: Boston Public Information Officer Elaine Driscoll. RIGHT: Screenshot of Boston Police Department's blog.

Lauri Stevens, Founder,
LAWs Communications



were texting in tips from across the country, not just from Boston, and we also saw an increase in the volume of calls to our 1-800 tip line.

Today, the Boston Police Department has developed a blog to help us communicate with the public, and we've seen an incredible response to that. Our blog is bpdnews.com and we get about 70,000 visitors a month. We've reached that number through a variety of publicity techniques, including printing the website address on the side of all our vehicles. Having a very visible website has helped us avoid any of the confusion that can occur when people put up fake sites.

Like other departments, we've benefitted from having the blog as a forum to put out news about the department before the local papers. When people are getting their police news—both good and bad—straight from us, we can ensure that the public receives accurate information, and avoid some of the sensationalizing that can occur when local news agencies are the first to cover a story.

Lauri Stevens, Principal, LAWs Communication

A Police Agency in the UK Allows Crime Victims to Track The Status of Their Investigation Online

There's a department in the UK, the Avon and Somerset Constabulary, that has an app on their website called "TrackMyCrime." A crime victim can tell the police that they want to use this app when they report the crime, and anytime after that, the victim can go online and track the progress the police are making on the investigation.

**Jonathan Lewin, Managing Deputy Director,
Chicago Police Department
Office of Emergency Management
and Communications:**

Taking Relatively Minor Crime Reports Online Keeps Our Officers Available for Street Assignments

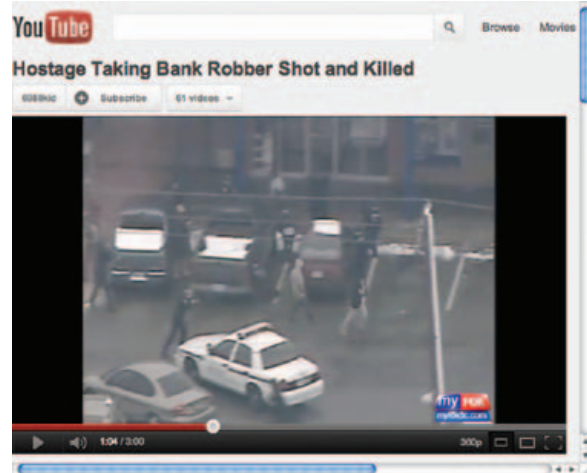
In Chicago we recently launched a web-based case reporting program. We started with just two types of crime—lost property and thefts under \$500. This program is for crimes in which the victim is safe,



Jonathan Lewin, Chicago Office of Emergency Management and Communications



ABOVE: Takoma Park, MD Chief Ronald Ricucci.
RIGHT: Screenshot of YouTube video depicting a
hostage-taking incident in Takoma Park.



there's no crime scene to protect, and the presence of a uniformed officer won't improve our chances of finding the perpetrator. Taking victims' reports online instead of in-person will reduce the number of sworn officers we take away from their street assignments. Taking a report in person can take about an hour of their time on average. An advantage of online reporting for the crime victims is that they can file the report when it's convenient for them. Many in our community already regularly use the Internet for many services, so they expect the Police Department to accept crime reports online.

Takoma Park, MD Chief Ronald Ricucci:

Crime Scene Video Can Now Be Online Within Minutes, While the Scene Is Still Active

We had a shooting at a bank in January that was broadcast on television. A bank robbery suspect came out of the bank with a hostage and was fatally shot by police. Five minutes after the shooting occurred, I was informed that a video of it was already on the news stations and YouTube. At that point we hadn't yet eliminated the possibility of there being a bomb in the bank, so the scene was

still active when information was being posted online. We weren't yet at the point where we could discuss the situation with the press, which meant the press was speculating based on the unverified information that was going out through the internet and over social media. Families of officers on the scene were concerned, because all they knew was that officers had been involved in a shooting.

I've been in this business for a while, but this was the first time I've seen a situation in which people were second-guessing our actions online while there was still an active threat at the scene. The way this story was rapidly transmitted across the country was something I've never seen before in law enforcement.

Issues Regarding Officers' Personal Postings on Social Media Sites

57% of the police agencies that responded to the PERF survey said they have had issues, disputes, or controversies based on employees' personal postings on social media sites. And 58% of agencies said they have an existing policy regarding employees' postings on social media sites.

**Chief Rick Braziel,
Sacramento Police Department**

*We Worked with the Union
To Develop a Clear Policy
Preventing Improper Postings by Officers*

Any action taken by an officer on Facebook or any other form of social media that embarrasses or discredits the Police Department is subject to discipline.

We decided to make this a simple, one-sentence policy to make our stance perfectly clear. Our policy says: “Employees shall not post comments or audio/visual media related to their position as members of the police department on any website or any social networking site if the activity could bring discredit or embarrassment to the department or the city.”

Our union has been fine with this policy. We give them input on a policy before it’s actually issued, so by the time it’s out there, they’re usually okay with it. The union president asked to change a few words in the social media policy, but they don’t want their members bringing discredit on the organization either, so they’re supportive of it as long as we’re reasonable in imposing discipline.

Before rolling out this policy, we identified officers with potentially objectionable things on their Facebook pages and informed them that this policy was coming out and they would be expected to comply. They all cleaned up their profile pages and our officers are now much more careful about what they post online.

One other issue that has come up is officers taking photos while on duty and then posting the photographs online. Today we have a very clear policy prohibiting employees from using personal devices to capture images while on duty. Our policy now classifies these photographs as evidence, so employees need prior permission from the chief to take personal pictures.

Calgary Deputy Chief Roger Chaffin:

*Young Officers Don’t Always Realize
The Problems that Social Network Sites
Can Cause*

Facebook and other social networking sites have caused issues for us as well. I think it’s important for us to educate our officers about the proper use of this technology. About 70 percent of our officers on the front lines have been on the job for less than three years. Because they’ve grown up with this kind of technology, they don’t always understand the impact that improper use of it can have on the organization. Many younger employees won’t put their names and addresses in the phone book, but they’ll put just about anything on Facebook. We spend a lot of time trying to educate them about the issues that can be caused by their actions online.



FAR LEFT: Calgary
Deputy Chief Roger
Chaffin

LEFT: Philadelphia
Chief Administrative
Officer Nola Joyce

RIGHT: Austin, TX
Chief Art Acevedo

FAR RIGHT:
Arlington, TX Deputy
Chief Laurretta Hill



**Nola Joyce, Chief Administrative Officer,
Philadelphia Police Department:**

*Everyone Is Starting to Understand
The Consequences of Posting Information
Online*

I'd like to speak about social media in a broad sense. I suspect that elections in the near future will be won and lost because of things that were posted on the candidates' Facebook pages when they were in college. Private businesses have put out a warning to college graduates, telling them to watch what they put on Facebook because their pages will be checked. I think that these problems won't go away entirely and we still need to address the issue, but we will see fewer of these incidents as people learn about the consequences.

Austin, TX Chief Art Acevedo:

*Public Safety Officers
Have Been Held Responsible
For Improper Online Comments*

We had an officer who was involved in a controversial on-duty shooting. His first day back on the job after the incident, he posted a photo of himself with an AR-15 and a caption saying he's "back on the hunt." Needless to say, that didn't go over well with the administration or the public, and shortly after

he was fired for DWI and his pattern of poor judgment, which included posting the photo.

In another incident, an Austin firefighter posted a photo of himself nude on a swingers' website, identifying himself as a member of a Fire Department. He was fired, and an arbitrator upheld the firing because the firefighter's actions brought discredit to the department.

So there is support for us holding our people accountable, despite the argument that it violates employees' First Amendment rights.

Arlington, TX Deputy Chief Laurretta Hill:

*Social Media Tells Us a Lot
About Recruit Candidates*

We had an officer who was on scene at a critical incident. During this incident the officer posted pictures and messages to his social media page. To deal with this situation, we cited a policy of unbecoming conduct which prevents officers from bringing the city into disrepute, and he was ultimately suspended for his actions. Since then, we've developed a social media policy.

Social media issues also are involved in recruiting and hiring personnel. We consider a lot of people during the hiring process, some of whom present themselves poorly through social media outlets. It speaks to their character, and it can give us a better idea about whether a candidate has



FAR LEFT: Cincinnati Assistant Chief Michael Cureton

LEFT: Elizabeth Township, PA Chief Robert McNeilly

some of the qualities that we're looking for in officers. We can learn quite a bit based on the friends they have, what they post, and what they're doing online. When we do this, we look at the totality of the circumstances. A single posting on Facebook in poor taste won't automatically eliminate someone from our hiring process. But if we see a pattern of behavior or something that raises a red flag, it lets us know that we need to dig a little deeper during our background investigation.

**University of Cincinnati Chief Michael Cureton
[Former Cincinnati PD Assistant Chief]:**

***Claiming That Postings Are Semi-Private
Is Not Much of a Defense***

(When I was with the Cincinnati Police Department) we had a homicide investigator who was tweeting information he got about homicides. He really crossed the line when he started speculating about how supervisors or politicians would react to a homicide.

He tried to defend himself by saying the tweets were not accessible to the general public, because his Twitter account could only be accessed by certain people. But the group that had access was so large that it may as well have been public. He was charged with conduct unbecoming an officer, and he was counseled and given a different assignment within the department.

**Chief Ray Schultz, Albuquerque
Police Department:**

***An Officer-Involved Shooting
Was Complicated by the
Officer's Objectionable Facebook Posting***

We had an officer-involved shooting, and the news media researched the officer's Facebook page and found that he had listed his occupation as "human waste disposal." The media then found a variety of questionable items on other police officers' pages. As a result of that incident, I now have a compliance officer assigned to Internal Affairs, and every time someone's name is brought up to Internal Affairs, their social media sites are checked by the compliance officer. If we find anything that's in violation of our policy, those personnel are subject to discipline.

Elizabeth Township, PA Chief Robert McNeilly:

***Social Media Are a New Variation
On a Longstanding Problem***

We look at social networks like Twitter and Facebook as being the latest method of communication that officers use. But before these systems were invented, there were others that caused similar types of problems. Years ago in Pittsburgh I had an officer who got a tattoo that said, "Love by Chance, Kill by Profession." We've been dealing with officer conduct problems forever, and social media is just

its newest form. We need to make sure that our police officers act professionally.

In my experience, arbitrators and prosecutors are more responsive to specific policy violations, rather than attributing a punishment to something vague like “conduct unbecoming of an officer.” I think that having more specific social media policies will lead to more policy violation arbitrations being ruled in favor of the department.

Sacramento Chief Rick Braziel:

We Created a Better Way of Managing Internal Police Communications

We send out a lot of emails and distribute quite a bit of material to our officers that is intended for their use only. These internal communications used to be distributed via email, but under that system, the information could be forwarded to anyone else without our knowledge.

To better manage this, we developed a secure section of our website that allows us to monitor who is using the materials we put out. We call it “Sacramento PD University,” because it includes online classes that sworn officers and civilians can take, in addition to information on criminal intelligence. A login is required to access it, so we know who is using it and who is downloading the materials we put out. It does take a little more work to post things in this format than it would to just send them out in an email.

We also put out quite a bit of information through forums on the website. Several groups within our department, such as our union, have their own forums where they can post things, and I have my own Chief’s forum which I post to regularly.

When I post something, an email is sent to all our employees informing them of the topic I posted about and providing a link to it. They can access it with the proper login credentials. I put up a variety of posts, including announcements, answers to questions, budget information, and a link to my weekly radio show. People can post comments and questions, giving employees a chance to interact with me in a new way. Officers have used this as a venue to give me ideas about how to cut costs and to provide other feedback from the field. We also have links to classes and other opportunities that might be of interest to officers.

Our goal is not only to provide information that will help us catch the bad guys, but also to improve our overall crime prevention abilities through social media.

Cameras

CAMERAS ARE AN IMPORTANT TOOL FOR CRIME prevention, criminal investigation, and monitoring interactions between law enforcement and the public. Participants in the PERF summit discussed their experiences with fixed surveillance cameras, in-car cameras, and officer body cameras.

Fixed Surveillance Cameras

**Jonathan Lewin, Managing Deputy Director
Chicago Police Department
Office of Emergency Management
and Communications:**

Chicago's 15,000 Integrated Cameras Have Contributed to Thousands of Arrests

Our current camera program was introduced in June 2003. It's called POD, which stands for Police Observation Device, and is funded in a variety of ways, including through city funds, narcotics seizure funds, DOJ grants, state education funds, Housing Authority money, corporate funding, and funding by individual aldermen in the city. Every one of the 50 alderman has access to "Neighborhood Menu" money that they can use, and, if they so choose, a portion of those funds can be used to buy cameras.

Camera locations are determined by a number of factors, including calls for service, public violence

incidents, and community input. We developed an index score system which allows anyone to plug in any address in the city and instantly receive a crime index score based on crimes, calls for service, and arrests.

Bandwidth Concerns Must Be a Priority

We've gone through several different generations of cameras. As is the case with all technology, though the years they've become smaller and cheaper. Today, about 90 percent of them are wireless. Due to bandwidth limitations, we can currently only deliver about four simultaneous video streams to each district. We need to increase that bandwidth, and we're hoping that the D Block will be a way for us to do that. We now have so much content we want to disseminate to all our districts that it completely



Police camera
in Chicago.

Minneapolis Assistant Chief
Janeé Harteau



saturates our network and we can only deliver a few video streams at a time.

Our newest-generation camera, called an L-POD, is smaller, cheaper, lighter, and more versatile than previous models. All the components are built in, including an encoder and wireless radio.

Through an integration platform, we have connected close to 15,000 cameras. At our airports, the Department of Aviation has close to 3,000 cameras set up. Officers in our 80 public high schools can view video feeds from cameras set up inside and around the schools. City colleges, the Chicago Housing Authority, the Transit Authority, the private sector, and the Police Department all have cameras that feed into our integrated camera system.

We also have mobile video resources through several helicopters and other vehicles that can send video back to us. Video can be viewed at any of our 25 police districts, the Crime Prevention and Information Center, and the Office of Emergency Management.

All our police officers receive First and Fourth Amendment training before they're allowed to access the system in any way, and all usage is supervised. All camera and operator actions are logged and can be tracked later.

The technology itself wasn't the biggest challenge in implementing this camera system. It was the intergovernmental agreements and memoranda of understanding that took us the longest to establish, especially with the schools, which have stricter privacy guidelines. We can't have surveillance in schools unless there's some kind of emergency event. Working out the details of that took months to hammer out.

Officers can conduct missions, which are proactive uses of cameras based on reasonable suspicion that crimes are likely to occur in a certain area. Officers track all missions they conduct. In 2009, we did over 18,000 of them, which led to over 4,000

arrests in which officers told us our cameras played a role in the arrests.

We don't currently have any automated facial recognition associated with this program. We're looking to incorporate an analytical system. We probably won't try to use facial recognition, but we would like to include analysis of patterns of behavior, objects left behind, and put license plate readers into the system. At any given time, we may have only 10 people actually watching the 15,000 cameras, so we need analytics that can alert those people to check the feed from certain cameras.

When we try to remove a camera from an area, there's an immediate outcry from the community. Our initial idea was to leave the cameras in place for 90 days at high-crime locations and then move them, but due to community objections we can't remove cameras now.

Minneapolis Assistant Chief Janeé Harteau:

Cameras and ShotSpotter Helped Us Make an Arrest in a Homicide Case

We now have a total of about 180 cameras. They have been extremely successful, and lately we have been working to expand our camera use and are testing another 34 around the university campus.

As we began installing cameras downtown, we found that we needed a way to communicate with the private security officers, who generally outnumber the police by about 13 to 1. We introduced the Radio Link system, which gives private security

guards the ability to have direct communication with police by sharing a radio channel on their hand-held radios.

We've also started to place mobile cameras in other high-crime areas in the city and are incorporating our video system with other tools, such as Shot Spotter. For example, last September we had a homicide in the middle of a street. Shot Spotter immediately activated the camera, which captured a photo of a vehicle leaving the scene. We weren't able to capture the license plate number, but the vehicle had a silver stripe which was unique to the car, so it didn't take much time for officers to find a car matching that description. With that evidence we were able to make an arrest and get a conviction for the murder.

Initially cameras were monitored solely at the precincts, but they're now monitored centrally as well at our Strategic Information Center. In addition we are tied into the Department of Transportation camera system, and we'd like to get access into other cameras, such as private businesses in downtown and outer areas to make it a regional system.

We now have the ability to send real-time information to officers while enroute to a call or once they are on scene. If a shooting incident occurs, we don't want to just respond to the crime, we also want to prevent the next one. To do this we have to be able to get information to our officers about the shooting, the suspects who are involved, their hangouts, their associates, the vehicles they drive, and potential next victims.



London MPS Detective Chief
Inspector Jim Stokely

We've been very successful with cameras, but the public assumes that these cameras are all being monitored 24 hours a day, 7 days a week, and that's not the reality. With predictive analytics, cameras can be more effective. We're going to start with loitering. We can set whatever parameters we want. For example, if somebody remains at a bus stop too long or sets down a backpack or suspicious package on our light rail system, the system can automatically alert the officers manning the desk. We'll have this technology at all our precincts and in our Strategic Information Center. When the system triggers an alert, we'll have the ability to back up the camera footage and see if there is anything we need to respond to.

We're also going to use the cameras to help us make resource deployment decisions. In downtown Minneapolis we have some very busy street corners. The cameras can provide us with accurate counts of the number of people at any given location, which helps us determine how many cops we should have there.

**Detective Chief Inspector Jim Stokley,
Metropolitan Police Service, London:**

*Cameras Were Critical in Helping Us
Identify 7/7 Bombers Within Four Days*

We have many different camera systems in place within London. Most of the camera systems we use are organized through our 32 individual boroughs, each of which has a different type of camera system in place. There are also different camera systems in all our transportation networks. Having so many different systems can be challenging, so today I've been interested to hear from the departments who avoid these difficulties by setting up their own cameras instead of using what's already in place.

Our first major investigation that involved the use of closed circuit cameras was our pursuit of a right-wing extremist who was randomly bombing diverse London communities. He was able to strike a couple times, but our cameras eventually captured an image of him, which led to his identification and arrest. Without this technology he might have gone on for quite a while longer before we caught him. Through cases like this, we saw the immediate benefits of the camera system.

Now I'd like to fast forward to the morning of July 7th, 2005. Three explosions occurred simultaneously on the London underground system and another occurred on a bus less than an hour later, killing a total of 52 people and injuring more than 700. We had no intelligence beforehand warning us of this attack. We had no immediate leads about the identity of the bombers, how they came into London, or what methods they had been using. In the past, bombing campaigns in London haven't been suicide bombing attacks, so we were looking for the bombers themselves.

Our first priority was to retrieve the video from those scenes. Using what we knew about the attacks, we tried to narrow down our video search to locations where it was likely the perpetrators were caught on video. We identified the King's Cross station and the Circle line as the hubs for the Underground bombings. We also knew which bus line the bomber was on and reasoned that he must have boarded the bus at one of those stops. By conducting interviews we were able to further narrow down the timeframe when the bomber could have boarded the bus. We also deployed officers to conduct local inquiries and look for additional useful video footage.

After examining the videos, we were able to find footage of the four bombers transferring from an above-ground train to the Underground system in King's Cross station. We traced their path back to discover they had boarded the train in a town about 40 miles north of London. We followed them on the cameras in that town to see the cars they had arrived in. These leads were the primary reason we were able to trace these bombings back to the perpetrators, and we identified the bombers four days after the attack.



Police camera in London.

Two weeks later, on July 21st, there were another four attempted bombings. The attempts were unsuccessful, so this situation was a manhunt to find criminals who we thought might try to strike again. The experience we had from conducting a similar investigation two weeks prior helped us use our video resources to find and distribute images of these suspects within about two hours.

Integrating technological and personnel resources was an essential part of these investigations, just as it is an essential part of any investigation. Technological advances can only help us do our job if we have capable people using and interpreting the information they bring in. And everyone needs to be capable of utilizing technology to do their part – from responding officers to investigators to lab technicians.

Atlanta Deputy Chief Shawn Jones:

Atlanta Has a Comprehensive Plan To Gradually Expand Cameras Across the City

In 2007, the Atlanta Downtown Improvement District wanted to put cameras up in an area they call the “tourist triangle.” We had the Peach Bowl coming to town, and they wanted to create a safe area for traveling between the hotels and the Georgia Dome, the World Conference Center and other destinations. They installed about 16 cameras in that area



Atlanta Deputy Chief
Shawn Jones

and monitored them with their own staff. Over the last year or so, they've turned those cameras over to us. We're trying to integrate the cameras into our 911 communication center, so we can have a video command center that will provide real-time crime information to our officers in the field. We are going to bring in our own staff so the cameras will be monitored by sworn police officers, with assistance from some analysts. We're in the planning process and recently visited Chicago, where we got some good information.

It will be an integrated network. We're thinking that we will cover about 3.5 square miles at first and only use these cameras in emergencies when 911 has been dialed. In the second phase of our plan, we'll move out to about 10 square miles and incorporate more of the cameras that aren't controlled by the police department. Other city agencies have cameras, and we'll want to pull them in. Simultaneously, we're going to explore some new intelligence analytics for our real-time crime center.

The third phase of our video plan is to cover about 72 of our city's 131 square miles. We've looked at all the crime that occurs within the city, and this phase will put us in range of capturing the hot-spot crime areas. We're also partnering with the Atlanta Public School System so that we'll have additional access to their cameras and can use our Atlanta police officers working in the schools, to be able to see in real time what's going on in the event of an emergency.

Phase four is to have the capability to send the video that comes in through dispatch to the patrol cars, so officers can see what type of situation they're responding to before they get there.

Finally, in phase five we're going to open it up to other commercial carriers, such as our Rapid Rail, bus, train, trolley cars, and commercial entities to be able to monitor what's going on if an emergency occurs. And in phase six, which is the last phase, we'll open it up to other municipalities in the event of an emergency where we have to respond.

We have different funding sources. Our police foundation is funding the video command center, and we have some trust account funds that we're going to be able to utilize to help fund the other parts. We're probably going to use some Urban Areas Security Initiative grants from DHS and some Georgia Emergency Management funds help us complete this process.

Bill Bratton, Chairman, Kroll:

After Initial Concerns, Residents of a High-Crime Area Supported Fixed Surveillance Cameras

Jordan Downs is a neighborhood in Los Angeles that probably has the highest crime rates and the most gang influence in the city. While I was chief there, we tested a system that enabled officers in responding cars with computer terminals to see recordings from fixed surveillance cameras as calls came in. Fire trucks and ambulances could also be equipped with the devices to give them a visual when they had to respond to a dangerous area.

The reaction to this program was very favorable, and we saw significant decreases in crime. When cameras first went in, a lot of people were concerned about them. But after they saw the reductions in crime as a result of the cameras, the residents in the area supported the use of this technology.

Ensuring that Police Can Achieve Wireless Broadband Transmission of Data

Harlin McEwen, Principal, Public Safety Spectrum Trust:

Police Cannot Compete with the Public For Wireless Broadband During a Crisis

I'd like to speak about ensuring that the new communications technologies we implement will always be available for our use. Many of these technologies require wireless broadband spectrum to transmit data—streaming video, license plate information, automatic vehicle locators, wireless gunshot detection data, and all types of information that is transmitted to computers in officers' vehicles or handheld devices like smartphones.

For the most part, the investments we're making now in communications technology are in commercial products. While these products can be very effective, there is the issue of limits on broadband capabilities. The general public also uses commercial products that in some cases are very similar to the devices used by police, and they are using these products over the same airwaves. So during major events or incidents, when an organized police response is most critical, police are competing with the public for broadband, and often the police data transmissions do not go through.

In an effort to prevent this type of situation from occurring, we are pushing for a nationwide broadband network that would operate on 700 MHz broadband spectrum currently allocated for public safety and hopefully to include the 700 MHz D-block spectrum, which will be designated for the exclusive use of police and fire agencies and other first responders. We need to guarantee that we will be able to take advantage of all the new technology we have at our disposal when we need it most, and legislation allocating the D-block to public safety will provide us with the necessary resources for this task.

David Furth, Deputy Chief, Public Safety and Homeland Security Bureau, Federal Communications Commission (FCC):

I know that all of you learn from one another, which is one of the great values of a forum like this. We can share all the different ways individual police departments are using technology, so that all departments move forward as technology moves forward.

This information is also valuable for us at the FCC; we deal with the spectrum and network aspects of these technologies that require the wireless transmission of data. The Commission's goal has been to help develop a public safety broadband network in the 700-megahertz band that would be nationwide and interoperable. But this isn't a reality yet, and there are several things that must happen to make it a reality.

One of the key things that we're focused on is trying to establish a technical framework for the network so that from the beginning it will be truly interoperable.

As many of you know, it has taken police a long time to make our narrow-band *voice* radio systems interoperable, and many of them still are not interoperable.

This time, dealing with broadband systems for data transmissions, we're trying to

get it right from the beginning.

In the past year, the Commission has tried to further this vision by issuing an order that granted waivers to about 20 different state and local jurisdictions around the country to begin early deployment of public safety broadband technology in previously designated spectrum (not the D Block). To do this, the Commission



TOP: Public Safety Spectrum Trust Chairman Harlin McEwen. BOTTOM: David Furth, Federal Communications Commission.

fashioned a mechanism in which the Public Safety Spectrum Trust would lease that spectrum to the jurisdictions so that they could commence early deployment of this technology. Some of those jurisdictions have also been successful in getting BTOP (Broadband Technologies Opportunities Program) grants through the Commerce Department. We hope that this will be the first wave of deployments of public safety broadband technology.

This past January, the Commission issued an order and sought comment regarding technical interoperability issues in the public safety broadband spectrum. In the order, the Commission took a rather unusual action in mandating the LTE (Long Term Evolution) technical standard, which is a fourth-generation broadband technical standard, for all 700 MHz public safety broadband deployments. Generally, the Commission leaves the choice of technical standard to the market, but because interoperability and technical compatibility are so important to public safety, the Commission chose to mandate LTE in this particular case.

We've also established the Emergency Response Interoperability Center (ERIC) to look at technical issues to ensure that we are laying the right foundation for a nationwide network. We want to work with the public safety community, so we've created an advisory committee, which I'm going to ask Gene Fullano to discuss next.

Gene Fullano, Associate Bureau Chief, FCC

Yes, we have announced the membership of a federal advisory committee to advise the Emergency Response Interoperability Center and the FCC on four very broad but important issues. There are four working groups, one for each of these issues. The first working group will

tackle interoperability, the second will analyze applications and user requirements, a third will delve into network security, and a fourth will look at network evolution, because we know that any network we develop will forever be changing.

The committee itself is made up of 59 members, who were chosen from over 160 nominations we received. Jeff Johnson from the International Association of Fire Chiefs is the Chair, and Deputy Chief Eddie Reyes of the Alexandria City Police is the Vice Chair. In choosing members, we tried to create a balance by having major public safety organizations represented, as well as regional groups, state and local public safety departments, and state chief information officers. The working groups will produce documents about each issue and make recommendations to the committee. Then the committee will develop a formal recommendation for the FCC.

Joshua Ederheimer, Principal Deputy Director, COPS Office

The Director of the COPS Office, Bernard Melekian, is playing a key role in the public safety broadband network issue and has been meeting with representatives from the White House and the Administration about it. With the economy impacting the number of sworn personnel, the need for better technologies, better and more far-reaching communications systems, and better training to properly utilize the newer technological resources becomes essential to maintaining sufficient public safety services. That's why developing and supporting the national broadband network, with the "D Block" allocated to public safety, is so vital to the future of first

responders. Matching the enormous amount of information obtained in local jurisdictions to an enhanced capacity to communicate and share that information with outlying areas is not just a vital mission-critical need, but also a cost-efficient practice.



TOP: FCC Associate Bureau Chief Gene Fullano.
 BOTTOM: COPS Office Principal Deputy Director Josh Ederheimer.

In-Car Cameras

62% of responding agencies in the PERF survey said they plan to increase in-car recording capability so that that technology will be in 84% of cars on average.

Austin, TX Chief Art Acevedo:

In-Car Videos Can Clarify the Facts When Controversial Incidents Occur

We've had video systems in our cars for quite a while, but until recently they weren't digital systems. The older systems aren't ideal because officers have to press a button to turn them on, and they don't always have time to do this in the middle of a critical incident. I pushed for digital camera systems to be included in our budget, and we now have funding to put new systems in 550 police cars and 55 motorcycles. The most important feature of these cameras are the seven automatic recording triggers that start the cameras, for example when the driver's car door is opened or the lights are activated. And the system is always on and ready, so if there's a crash, it automatically starts recording and saves the video from the 30 seconds *prior* to the crash.

Our department averages about three officer-involved shootings a year, which of course receive close scrutiny from the public. We've found video recordings to be a useful way to see what happened and share our perspective on these incidents with the community.

Our most recent officer-involved shooting occurred last October. A 16-year-old burglary suspect was shot after aiming a gun at an officer while fleeing a store. Fortunately the camera in one of our police cars captured it all on video. We were able to tell the public that we had video that corroborated the officer's account of the incident. The citizens review panel, which typically requests an independent investigation after a shooting like this, didn't ask for one because they didn't see any policy violations. Once the investigation was completed, we released the video.

Body Cameras

Albuquerque Chief Ray Schultz:

An Officer's Body Cam Showed that Use of an Electronic Control Weapon Was Appropriate

On March 1 of this year, we made it mandatory for our officers to wear a personal video camera. They cost \$115 each and have upgraded memory cards to 8 GB. Officers are required to download the video from events to their laptops and then burn a DVD, and we tag the DVD into evidence. This is just an interim procedure until we're able to get a bigger server and do a direct download.

Fifteen days after we went to the mandatory wear policy for the cameras, we had an in-custody death after use of an Electronic Control Weapon. The officer's video camera captured the suspect apologizing for hitting the officer in the head with a crucifix. The suspect had gashed the officer's head open. Rescue personnel were at the scene taking care of the officer when the suspect fell over and had a medical episode. In this instance, the camera was able to exonerate the officers and show that they had done nothing wrong.

Indio, CA Former Chief Brad Ramos:

Body Cameras Capture Video Footage That Other Cameras Miss

We put cameras into about 25 percent of our vehicle fleet. Unfortunately, outfitting the entire fleet would be very, very expensive. And I felt that most uses of force, officer-involved shootings, and complaints stemmed from incidents that occurred away from a police car, not right in front of it. We knew that car-mounted cameras wouldn't capture those incidents.

To deal with these issues, we started exploring the possibility of using body cameras when that technology first came out. We did a pilot program last summer, and we've decided to deploy them initially with officers in our motor units and then in our specialized units. In the next five years, we

Indio, CA Chief Brad Ramos



are going to try to have some sort of body camera on everybody in the department. So far we've been happy with the product and how it has tested in the field.

The cost is relatively inexpensive when compared to the amount of liability that police departments face. Thanks to quite a bit of risk management, including this technology, we haven't had many payouts as a result of our use-of-force investigations. I think when you look at the complete picture, it is a worthwhile investment.

Austin, TX Chief Art Acevedo:

Body Cameras Will Become Standard Equipment

We're going to be testing several body camera systems this month. I don't know if everyone in our field realizes how inexpensive this technology has become. We now have officers who buy pin cameras for themselves for \$30 or \$40. We were able to use the video footage from a \$30 body camera that one of my corporals was wearing as part of our inquiry into an officer-involved shooting.

We didn't have a policy about retaining video footage from body cameras, so we're working with lawyers to draft a policy. We're going to say that officers are utilizing this equipment while on duty as part of their employment, so anything they record with evidentiary value will have to be kept with the department. Otherwise we can't let them use the body cameras.

I think that within the next five years, everyone will be wearing a body camera. This technology can help reduce mistrust in the government. Cameras are also becoming cheaper and cheaper. I see body cameras, as well as in-car digital video cameras, becoming standard equipment.



Scanning a driver's license

William Bratton: **Technology in Policing** **Is a Matter of Embracing Change**

PERF asked Bill Bratton, the former chief executive of the Police Departments of Los Angeles, New York City, and Boston, to make a special address at the Technology Summit. Chief Bratton is currently Chairman of Kroll, an international company based in New York City that specializes in technology, intelligence, and information management.

Mr. Bratton served two separate terms as President of PERF and is known as one of the most influential police executives in modern history. To mention just one reason for Bratton's reputation: Under his leadership of the New York Police Department during the 1990s, the department created Compstat, the innovative system for using accurate, timely information about crime to devise effective countermeasures, hold officers accountable, and drive crime rates down. Today, various forms of Compstat policing are practiced in thousands of departments worldwide. As chief of police in Los Angeles, he took over a department that had suffered from a significant loss of trust in the community, and reestablished trust and reduced crime.

Chief Bratton offered a broad perspective about technology in policing, based on his 41 years in the profession:

I've been asked to give a talk about technology in policing, and to do that, we need to think about the concept of change.

As you know, policing is a profession that is all about change. If you're the kind of person who resists changes in how things are done, American policing is the wrong profession for you. If police chiefs don't initiate change, it will happen anyway, but it'll happen in a way that's outside of their control. During my time in several major police departments, I always thought of my job as being an agent of change. I've sought out organizations that needed change, and I have worked with a lot of good people to create positive change.

Let me offer a bit of context about how much we have advanced in terms of technological changes—and I'm not going back very far in time, just the span of my own career.

I entered the Boston Police Department in 1970 at 23 years of age. After six weeks of training, I was put out in the street in a blue uniform with a badge, a six-shot Smith & Wesson revolver, six spare rounds in loops on my belt, a set of handcuffs, a ticket book, and nothing else.



For communication, we would carry a roll of dimes so we could make calls from pay phones. Or we could use call boxes, which were located on every third block. When the red light on the call box was on, it meant you were needed, and you would call in to the dispatcher at the police station to get an assignment. If you arrested someone and needed assistance, you dragged the suspect down to the call box and tried to make sure he couldn't hit you in the head while you were calling for assistance.

In the station house, teletype was the main means of moving communications around the whole city. And each police station had four walkie-talkie radios, but they were big and heavy. They looked like something from the World War II era, and most officers avoided being assigned one because they didn't want to lug it around.

I used to sit with my partner and spend 15 minutes going through reams of yellow teletype paper jotting down the license plates of stolen cars that were reported that day. We were the "license plate readers."

Boston police cars were a basic Chevy or Ford, with a blue light blinking on the front and a red light in the back. The cars had a two-way radio, with one channel to call and a second channel to receive. This meant that when you were talking, you weren't able to listen at the same time. And to activate the siren in the vehicle, you had to keep your finger on a button on the dashboard. This got very interesting when you were responding to an emergency, keeping your thumb on the siren while steering and shifting gears manually, oftentimes without a partner in the car. The cars had a single dome light inside, which helped when you needed to read or write anything after dark. Unfortunately, cops would remove the light bulb and take it with them when they left the car so they could be sure to have a working light in the next car—which would not have a bulb because somebody else had already taken it.

When I joined the Boston Police Department, you had to call 748-1212 in emergency situations. We thought it was a modern revolution when 911 was created; you only had to dial three numbers instead of seven. And within a year or two, calls to the police from

pay phones were free. We thought having the 911 system would improve our response time. Instead the 911 system quickly overwhelmed almost every police department in America.

As I started to move up and became a young "whiz-kid" sergeant assigned to the Police Commissioner's office, I designed many of the computer programs that were eventually used to measure our police officers and hold them



LEFT: Old police call box.

BELOW: Modern in-car computer.



accountable. But everything—the 911 center, our operations center, our computer systems, the systems I was designing—was about measuring response. How long did it take the cops to go from roll call to the car and get in service? How long were they spending on calls—on minor calls, and on emergency calls? During the 1980s, we were getting some new technology, but it was still focused on the *response* to crime. It could be argued that the way we were using technology in the '70s and '80s was not fully protecting the population of the United States. Crime was

continued on next page

going up every year across the country, and nothing we were doing was impacting it.

But during the 1990s, police leaders began to reshape policing, with the help of the many organizations, including PERF and many federal agencies. We had a new focus on crime prevention through community policing. We were developing an entirely new approach that said the policing profession could do something more about crime than just take reports on it. We could do more than improve our response to crime; we could *prevent* crime.

We took a leadership role in developing new technology like CompStat in the New York Police Department. The computerized crime mapping we did in CompStat was a higher-tech version of the flipcharts and acetate layovers that we used to do by hand to inform our “hotspots” policing efforts. The technology revolution in the '90s and continuing into the 21st Century allowed us to predict, prevent, and protect. We began to get it right as we moved into the community policing era. And after 9/11, the changes came even faster. Thanks to our experience in the '90s, we had a better idea of how to use these new technologies and adapt to these changes. We began to work with the vendors and the federal government. We started to develop technology based on the idea that partnerships would produce prevention, and we started to use predictive policing.

So I believe that the key point about technology is that yes, we must learn about the latest technologies and be aware of them. But we mustn't let the technology push us in the wrong direction, as it did in the 1970s when we merely used technology to respond more quickly after a crime was committed. I urge you to ask questions about everything you are doing with technology. The profession has advanced, and we are much more inquisitive and demanding about technology than we were in the '60s and '70s.

The late, great Jack Maple, who was the developer of CompStat in the NYPD and one of the smartest people ever on the subject of crime, had a very simple expression: “You can only expect what you inspect.” In other words, you can only hope to change the things that you measure. In the '70s and '80s, we created



Three PERF Presidents—ONDCP Director Gil Kerlikowske, Philadelphia Commissioner Charles Ramsey, and Kroll Chairman Bill Bratton

systems centered on our response to crime. Moving forward into the 21st Century, we need to expect that we will be able to predict when and where crimes will be committed, and then move to prevent those crimes. We can do that by “inspecting” the effectiveness of the technologies and programs we use to predict and prevent crime.

The language of today is about computers, smart phones, Blackberries, iPads, Androids, apps, social media, Google, Facebook, Twitter, blogs, texting, email, DNA, CompStat, real time crime centers, predictive policing, GPS, Tasers, D-block broadband spectrum—and so on. Just think about it—only 40 years ago, if you used these words, nobody would have known what you were talking about. The change has been enormous, and it's coming at us faster every day.

Aside from the purely technological side of things, we must have clear goals and a clear vision of the direction we want to take. This is particularly important as we lead through a time when resources are so scarce, compared to what they were 10 or 15 years ago when the federal government led the way with billions of dollars for community policing initiatives. Policing needs to be in a leadership role, working not in isolation but in partnership with our federal government, with the private sector, with our communities.

And all of us in leadership positions need to embrace the change that's coming.

Gunshot Detection Systems

Camden, NJ Chief Scott Thomson:

Gunshot Detection System Revealed Unreported Instances of Gunfire

About five months ago we installed a gunshot detection system in a location with the highest incidents of calls for service and crimes committed relating to firearms, shootings, and homicides. To our surprise, we quickly learned that one-third of our shootings in that area were not being reported.

The other night, we had four individuals go outside, fire off 15 rounds, and then go back into an apartment complex. The gunshot detection system immediately alerted us that the situation occurred and gave us a precise location. We sent officers into the building and ended up getting one of our most wanted criminals with five handguns in an apartment complex. We had another incident where an individual came out of a house, shot off rounds, and no one called the police. We picked it up on the gunshot detection system, and sent in detectives who set up surveillance outside the building. He came out a half hour later with a high powered rifle with a scope on it. We were able to move in and get him as he was entering his vehicle.

What is important is that we wouldn't have known about these situations in the first place without this technology. We had no idea of the extent of

weapon firing that was occurring in this area. We now have the ability to quickly respond and capture the perps or intercept someone before they act on their violent intentions.

Washington, DC

Assistant Chief Alfred Durham:

Gunshot Detection Gives Us Faster Response, Which Can Make the Difference Between Life and Death

We have a significant portion of the District of Columbia covered with gunshot detection technology. We've found that when shots are fired in some neighborhoods, no one calls the police because they feel that someone else has probably already placed a call. There are some neighborhoods where people are accustomed to gunshots and don't report them at all.



Camden, NJ Chief
Scott Thomson

Washington, DC Assistant Chief
Alfred Durham



Gunshot detection also helps us coordinate a rapid police and medical response to shooting situations. Sometimes a few minutes can mean the difference between life and death. We're also going to integrate this technology with our video feeds, in order to give our officers a live look, from their cars, of the scene that they are about to enter.

**Los Angeles County Sheriff's
Captain Mike Parker:**

*Local Business Helped Us Pay
For Our Gunshot Detection System*

We have focused on areas of Los Angeles County where shootings frequently occurred, and we received contributions from local business to help pay for a gunshot detection system. They felt that increased safety in the neighborhoods would improve their businesses. Many of the shots that the technology detected were also called into 911, but there were some that were not reported. And in some of those cases, our quick response was able to prevent people from dying. Gunshot detection has been a factor in our homicides decreasing by 50 percent over the last five years.



Boston Deputy Superintendent John Daley:

*Gunshot Detection Often Provides
More Reliable Information than 911 Callers*

We use gunshot detection and find that, even when calls come in, this system has a couple advantages over relying on gunshot reports from 911 calls. Calls reporting gunfire often come in a minute or two after we find out about the incident through gunshot detection, which can be a significant amount of time if someone has a gunshot wound. This technology also can give us a more precise location about where the gunfire occurred than the witnesses, who often can only say they heard shots somewhere in the neighborhood.

Newport News, VA Captain Michael Grinstead:

*We Decided that Our System Was
Too Expensive to Implement and Maintain*

When you're considering a new technology, it's important to evaluate not only the upfront costs but also the costs of maintenance and upgrades that will occur down the road. We looked into gunshot detection but found it to be too expensive. We

Newport News, VA Captain
Michael Grinstead



Chicago Commander
Steven Caluris

decided that, in the long run, we would be better off using our funding for other purposes. We like the system, but with a limited amount of funding for technology, we had to prioritize.

**Jonathan Lewin, Managing Deputy Director
Chicago Police Department
Office of Emergency Management
and Communications:**

*We Had a High False-Alarm Rate in 2007,
But Plan to Use an Improved System*

In 2007 we tested gunshot detection for six months in a neighborhood with a lot of crime and a history of gun violence. We found that the public in Chicago generally calls 911 immediately if shots are fired, so our problem usually isn't identifying the source of the gunfire. And we found the system to have a high false-positive rate. There's a very high cost to responding to every alarm if many are false.

We were also very concerned about the costs of gunshot detection technology. Even if we only used it in the neighborhoods that are in the top 10 percent in terms of shots fired, it would cost us \$5.7 million to implement, plus ten percent of that per year to maintain it.

Boston Deputy Superintendent
John Daley

However, recent conversations with other jurisdictions have suggested that the technology has improved and that additional vetting is now performed on possible gunshot events, greatly reducing the false-positive rate. We anticipate implementing this improved technology in the near future.

Chicago Commander Steven Caluris:

*Our Current Technology Can Do
Many of the Same Things
Gunshot Detection Does*

In our fusion center in Chicago, we have a live 911 feed that gives us access to 2,000 cameras as soon as shots are fired. The second a call comes in to report gunshots, we can pull up those cameras, view the recordings, and report any useful information back into the field. This system can accomplish many of the same things that can be accomplished through gunshot detection technology. I know the goal of these systems is to capture events that are unreported, but we've had success ensuring that all these crimes are reported through our current system. Adding this technology on top of our existing measures probably isn't going to be an efficient use of our funds.



License Plate Readers

A Study Conducted by PERF and Mesa Police Shows that LPRs Result in More Arrests

PERF and the Mesa, AZ Police Department conducted a research study of the effectiveness of license plate readers. At the PERF Technology Summit, Mesa PD Detective Cory Cover and PERF Director of Research Christopher Koper described the study and the results.

Mesa CIO Cory Cover:

We worked with PERF to evaluate the effectiveness of license plate reader technology. The study involved four mobile license plate readers, four officers, and four cars. We had one marked car, one unmarked Crown Vic, and we put two of the officers in plainclothes in Chevy Cavaliers with no markings whatsoever.

For the first phase of the project, we looked at mile routes on one road. The officers were allowed to either stay stationary on the route or go slightly off the route into an apartment complex or restaurant. In the second phase we moved into a sort of grid system. Arizona is laid out in mile long grids, and we allowed the officers to go into residential neighborhoods in the grid but they had to

stay within those parameters. What we found was that being undercover worked to their advantage because the people who were driving around in stolen vehicles didn't see them coming, although with unmarked vehicles we give up the benefits of having the marked presence of patrol vehicles. The freeways were a challenge because our officers often weren't able to scan all six lanes.

PERF Research Director Christopher Koper:

Most police agencies that have LPRs have four of them or fewer. They cost around \$20,000 to \$25,000 per device. LPRs can help you recover stolen automobiles and apprehend auto thieves and other wanted persons. They may also have benefits for officer safety, because officers won't be distracted by entering license plate numbers into a computer while they're driving. LPRs may also reduce concerns about racial profiling, because they operate



Mesa Police CIO
Cory Cover



automatically to scan all vehicles within range of the devices.

Evaluations of LPR use have been quite limited. Our goal in this study, which was funded by the National Institute of Justice, was to determine whether police agencies can expect to see certain types of benefits by using LPRs.

General considerations about LPR use include maintenance issues, privacy considerations associated with the use of the data, and community reaction to the program. In some communities there is a strong negative public reaction to the use of surveillance technologies. While we were doing this study in Mesa, there was controversy throughout Arizona over the use of speed enforcement cameras on major roadways. The LPR program didn't receive that sort of public reaction, probably because it was a much smaller program and not as many people knew about it.

We also have to keep in mind that agencies can use LPR devices in a number of ways—in fixed locations, or in cars for mobile surveillance. They can put them on patrol cars or use them with special units.

The Mesa Police Department has four LPRs, and for this study they wanted to focus on the issue of auto theft hot spots. They assigned all the LPRs to a special four-officer unit. The four officers worked in four cars: one marked patrol car, one unmarked Crown Vic, and two unmarked Chevy Cavaliers, which were a little bit less conspicuous than the Crown Vic.

When more data went through the system, more matches were found. The Mesa police downloaded daily data on stolen vehicles and other vehicles of interest, such as cars linked to robberies, from the State of Arizona. They did not have real time wireless connections to these data sources, but the officers did have the ability to add additional information into the system manually. So if a bulletin

came out during the day on a newly reported car theft, the officers could enter that plate number into the system manually, so that the LPR could “watch” for it. Mesa also had some warrant information for the nearby localities of Tucson and Gilbert, but they did not have warrant information for the City of Mesa, so there were some limitations to the data they had. If you have the capability, there's a wide variety of data that you plug in to trigger alerts if a certain tag number is spotted by an LPR, such as in-state and out-of-state stolen automobiles, warrants, parking violators, uninsured motorists, and other subjects of interest. In the UK, they have very advanced LPR systems with a wealth of data being fed into their units in the field.

We executed the study in two phases. In the first phase, which was 30 weeks long, we had the LPR officers working what we were calling “hot route” road segments about a half mile in length. These were places where we thought auto thieves were very likely to travel, based on an analysis of locations where cars are stolen and where they are later recovered, as well as the input of Mesa detectives. At varying times over this 30-week period, we had officers working in 45 of these spots using the LPRs, and officers working in another 45 spots just doing manual license plate checks.

Phase two of the experiment lasted 18 weeks and involved officers working in somewhat larger areas we referred to as “hot zones.” These hot zones were areas about one square mile in size. When the

officers were in those areas, they put a little more emphasis on roving surveillance. At varying times over the course of this part of the study, they worked in 18 of these locations using the LPRs and in 18 locations doing manual license checks. We wanted to compare the performance of the auto theft unit when they were using the LPRs as opposed to when they were doing the manual checks. We decided where and when they used the LPRs based on random assignment. This ensured that the places and the times that they worked with an LPR would be comparable to the places and times that they worked just doing the manual checks.

The results gathered from both phases of the experiment were very similar, so I'll share the combined data from both phases. First, if we look at the number of license plates that were scanned, LPRs resulted in more than eight times as many license plates being read—a total of over 751,000 plates read, compared to about 89,000 when they were doing the manual checks.

Second, when they were using the LPRs they got 44 unique hits, while they only had 10 hits with the manual checks. So they got over four times as many hits with the LPRs, averaging about two hits a week with the LPRs. And there were 15 total arrests as a result of LPRs, compared to seven arrests resulting from officers doing the manual checks.

These numbers are not very large, but all the stolen car and stolen plate arrests came when they were using the LPR devices. They also recovered a total of

14 cars when they were using the LPRs, compared to seven when they were doing the manual checks. All the recoveries of occupied, stolen automobiles occurred when they were using the LPRs, and the majority of unoccupied recoveries also came when officers were using the LPRs.

In summary, when LPRs were used, police were able to get over eight times as many checks, over four times as many hits, and about twice as many arrests and vehicle recoveries as when they were not using the LPR devices. The number of hits, arrests and recoveries were not particularly high, which is the result of a number of different factors, including the volume of crime. I also think the results show the difficulty of catching auto thieves in the act. By the time many cars are reported stolen, the thieves have already abandoned them, which poses a challenge.

One other point to mention is that we may not always have had the officers in the optimal locations, because of the controls we had in place to define the parameters of the study and ensure that it was methodologically sound. In practice, when officers have more freedom to go to hot spots based on the latest crime analysis and based on traffic volume, they can considerably improve the recovery rate of stolen cars. In between the two phases of our study and after the main part of the experiment was over, Mesa officers did some freelance operations like that, and they got considerably more recovered cars per shift when they were operating that way, although the arrests remained about the same.

What I've taken from this study is the magnitude of the improvement you get when using the LPR devices. In many ways I think these estimations of the impact of LPRs are conservative, because we compared LPR use to the use of extensive manual checking by a specialized unit. If we were to compare



Los Angeles County Sheriff's
Captain Mike Parker

LPR use to a regular patrol doing sporadic checks, I think we would see an even greater impact.

While more vehicles were recovered, we didn't see a decrease in auto thefts in the target area. The data suggest that police agencies will probably need a critical mass of LPR use before they really start seeing crime reduction effects as a result of deterrence. I don't know what that threshold is, but I would urge departments to be realistic in their expectations if they are using a small number of the devices. We also recommend driving slowly when you're using the LPR units around hot spots. This will optimize the number of plates read while deterring people by having a more visible presence in the area.

Mesa CIO Cory Cover:

As Chris mentioned, during the break between phases one and two, our officers were allowed to go into hot spots to tackle the current problems, rather than being confined to the parameters of the study. They recovered 30 stolen vehicles during the entire 48-week study, but in that two-week break they recovered six vehicles. And immediately after the study ended, we had another period of time in which we worked on current information and used discretion with LPR use, and 16 stolen vehicles were recovered during nine weeks.

So when investigators were allowed to hit the hot spots based on the most current information, they were really effective.

During the study, we had a robbery case in which we had a vehicle plate that we were looking for but having trouble finding. An officer with an LPR was able to find the vehicle, allowing us to solve the robbery.

Other Agencies' Experience with LPRs

In the PERF survey, 71 percent of responding agencies use LPRs. 85 percent of agencies plan on acquiring or increasing their use of LPRs over the next five years, and expect that by that time the devices will be deployed in 25 percent of cars on average.

Washington, DC

Assistant Chief Alfred Durham:

We've Solved Two Homicides Using LPR Technology

We've had LPR technology for about a year and a half, and our troops have really embraced it. The primary purpose of LPR is to detect wanted persons, stolen autos, and vehicles using stolen license plates in real time. It is a tool to make law enforcement more efficient and effective. The LPR technology has been helpful in numerous investigations and in the seizures of stolen autos. The technology also allows patrol officers to recover unoccupied stolen autos on their beats. In a highly publicized October 2010 case, a LPR helped recover a vehicle taken in connection with a Montgomery County, Maryland homicide. We also closed two homicides using the





Philadelphia Commissioner and PERF President Charles Ramsey

LPR technology. Currently we have about 35 mobile units and about 38 fixed sites. The street sweepers for our Department of Public Works also have LPRs attached to their vehicles, because they issue traffic citations for parking violators along their routes.

I believe use of LPR technology is Constitutional, because it doesn't target people, it targets vehicles. Like other systems available to law enforcement officers, there must be an established criminal investigative predicate to search the historical records.

About two months ago, we had a series of robberies, and our only lead was a partial tag of a silver vehicle. The LPR system told us there were several hits on that vehicle in a specific area. Thanks to this technology, we were able to catch suspects for five robberies.

We also use LPR technology with our bomb technicians and bomb detection vehicles. Whenever there is a Presidential or dignitary movement in the city, we mount these on our special operations vehicles. As our officers travel their routes, the LPRs can detect and identify any wanted or unusual vehicles and that lets us know if we need to further investigate.

Minneapolis Assistant Chief Janeé Harteau:

We Situated Our LPRs on Bridges To Capture as Much Data as Possible

We're just beginning to use license plate recognition now. Currently we have about six mobile devices and one permanent, which is not as many as we'd like. We've placed the ones we have on heavily-trafficked bridges.

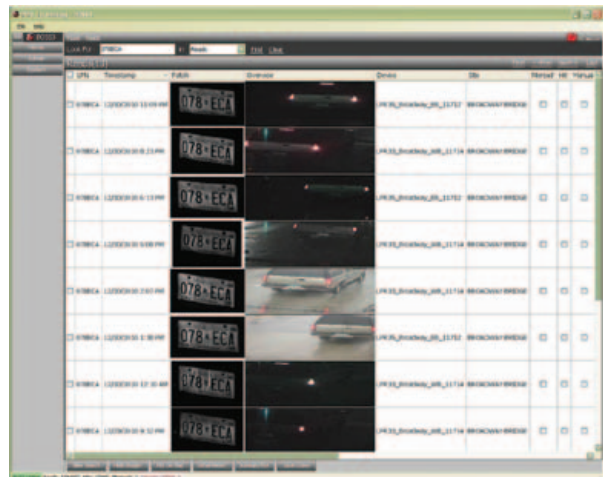
We had a domestic kidnapping case where Metro Transit Police and the FBI were looking for a suspect vehicle, and the only information they had was that it was a tan Suburban with "078" as part of the license plate. We did a search on the license plate recognition database, and came up with several vehicles. The closest match turned out to be the suspect vehicle. It's useful technology.

Sacramento Chief Rick Brazier:

A Shopping Mall Does LPR Scanning of Their Parking Lots

We use LPRs in our department, and a local shopping mall uses license plate readers in their parking lots. In 27 months, they were able to capture about 3

Screenshot of Minneapolis Police Department's license plate recognition database



million plates. Auto thefts decreased by 66 percent at the mall, and through this program we've identified homicide witnesses and robbery suspects. As of a couple weeks ago, they had identified 51 stolen vehicles in the parking lots, and we were able to get about 41 arrests out of that.

When the mall employees get a hit, they call us. They keep the data for 30 days. Our detectives also can do a quick query when there are crimes in or around the mall area and it might be useful to know whether a certain car was at the mall at a certain time.

Chicago Commander Steven Caluris:

LPRs Can Be Used for Investigative Purposes

Most of what we've been talking about has been enforcement, but LPRs can also be a great intelligence or investigative tool. In Chicago, we have them in every patrol district. Consider the manpower hours used to canvass the scene of a homicide or an aggravated battery, which is usually accomplished by assigning officers to collect license plates and information on nearby cars. Now we can just send a car with an LPR up and down the block to capture it all. This saves a lot of time.



Austin, TX Chief Art Acevedo:

Smart Officers Will Get the Most Out of LPRs

In my experience, an LPR is kind of like a canine, in the sense that it requires intelligent use by the operator. If you have an officer who knows how to get criminals and give him an LPR, the technology will be very effective. But if you give that same equipment to an officer who hasn't shown strong initiative in criminal apprehension, the LPR will have little impact. The personnel using LPRs must have the instinct to know where and how to utilize the technology.

Privacy Concerns

Washington, DC

Assistant Chief Alfred Durham:

We Only Photograph Vehicles From the Rear, So We Do Not Record Anyone's Face

When we monitor activity related to mass demonstrations, we hold the videos for seven days. Of course, if there is valuable information on a video that could be used for investigating a case, we hold onto it until the case is over and the prosecutor confirms we can erase it. For investigative purposes, we have a 30-day hold on anything from crime cameras.

Our policy allows us to keep data for a year and retrievable for three years. We haven't received any complaints about LPRs.

But one of the privacy provisions that our city council put into the legislation for photo enforcement of traffic laws is a stipulation that you can only photograph the rear of the vehicle and the tag only, so that there won't be anyone's facial features in the photo. We're just capturing the vehicle tags, and we haven't had any backlash about that.

Longmont, CO Information & Technology
Manager Denise Wood

Waco, TX Assistant Chief
Ryan Holt



**Jonathan Lewin, Managing Deputy Director,
Chicago Police Department
Office of Emergency Management
and Communications:**

*How You Use Data Is More Important
Than How Long It Is Stored*

I think the important consideration is not necessarily how long you store the data, but rather how you use it. You can't just go in and start mining the data, because there will be some First Amendment issues there.

Takoma Park, MD Chief Ronald Ricucci:

*The Success of LPRs
Outweighs Privacy Concerns*

Takoma Park is a very liberal place, and there were some objections from the community when we started using LPRs. It was only a pilot program for the first year, but this technology had such an impact on our arrest and vehicle recovery statistics that we are continuing to use it. We do have to delete any LPR data we get after 30 days. We have to delete everything from our in-car video cameras after 90 days.

Waco, TX Assistant Chief Ryan Holt:

*Our City Council Required a Privacy Policy
Before We Began Using LPRs*

We follow the suggested guidelines from the state of Texas. These dictate that we don't save information from technology like LPRs for more than 30 days unless it is related to a criminal investigation. There are some exceptions, such as the digital video footage from our squad cars, which we hold for 90 days. We had to develop a policy for deleting our LPR information before we even had the technology, because community members had privacy concerns and vocally objected at our city council meeting. So the council required that we have a policy in place before we used the LPRs in the field.



Newport News Assistant Chief
Joseph Moore

Special Issues in Use of Technology

Evidence Maintenance and Privacy Concerns

Austin, TX Chief Art Acevedo:

Discuss New Technologies with the Public To Get Their Ideas and Reduce Pushback

Chiefs in various cities have mentioned that you hear complaints of “Big Brother” when you first raise the idea of public safety cameras in neighborhoods. But once the community sees the effects of the cameras, they’re completely in favor of them.

Similarly, our police unions get nervous about having their every move recorded by dash cams, but once they see that it saves officers from frivolous complaints and helps defend lawsuits, they’re very much in favor of it. Our union was instrumental in lobbying for our upgrade to a digital camera system in patrol cars.

We have a seven-day loop on our public safety camera videos. After seven days, if video has not been flagged for either a public records request or investigative purposes, it automatically is purged.

When the public hears phrases like “intelligence-led policing” and “predictive policing,” they think of Big Brother and *1984*. We need to have discussions with the public about new technologies and the robust privacy policies adopted to protect

privacy. This lessens the pushback we get when we implement this crime fighting technology and related policies, and benefits us in the long run.

**Jonathan Lewin, Managing Deputy Director,
Chicago Police Department
Office of Emergency Management
and Communications:**

Storage Constraints Limit How Long We Can Retain Video Footage

Right now it depends on the type of camera, but we keep our videos anywhere from seven to 30 days. There is some legislation pending that would require us to keep it longer. At one time the state was trying to get every public-sector agency that maintained cameras to retain the video for seven years, and we testified that it would be impossible because we couldn’t fund the storage costs of that.

Ellen Scrivner, National HIDTA
Director, ONDCP



Hennepin County, MN Lieutenant
Spenser Bakke



Chicago Commander Steven Caluris:

*If Video Footage Is Needed for
An Investigation, We Usually Know It
Pretty Quickly*

Pretty much everything we have is set up to automatically purge. When we get calls from detectives asking to look at video, it usually happens very quickly, often within minutes of the crime. That's the dynamic in which we work. If there's anything of a criminal nature recorded on video, it's grabbed and inventoried within hours. Most everything else is never looked at again, so it's purged automatically.

Calgary Deputy Chief Roger Chaffin:

Our Digital Evidence Is Kept for One Year

For anything that could be considered digital evidence, our policy is to hold onto things for one year. This covers everything, like all in-car video and digital photographs.

But anything that falls under our Freedom of Information Act, we are required to keep for seven years before we destroy it.

**Hennepin County, MN Sheriff's
Lieutenant Spenser Bakke:**

*In Minnesota, All Government Data
Is Considered Public
Unless It Is Part of an Active Investigation*

We have to deal with the Minnesota Governmental Data Practices Act, which essentially states that almost all data is public unless it is part of an active or ongoing investigation. No data can be classified as criminal intelligence, and this can pose some challenges.

Using Technology to Manage Officer Activity

Police departments are increasingly using new technology to track officer movement and monitor officer performance. In the PERF survey, 69 percent of responding agencies said they use GPS to track police vehicles, with 58 percent of agencies planning to increase this over the next five years. 4 percent of agencies said they currently use GPS to track on-duty officers on foot, and 46 percent of agencies plan to increase this practice over the next five years.

Camden, NJ Chief Scott Thomson

*We Use Automatic Vehicle Locators
To Make Sure Officers Focus on
High-Crime Locations*

We had a 120-day notice that we were going to lose half the police department. So from that point forward, everything was looked at in terms of how it could serve as a force multiplier. We worked feverishly with our vendor on our Automatic Vehicle Locator system (AVL), which we use for officer accountability and performance measurement.

We got the AVL vendor to develop a system that we call electronic fencing. Here's how it works: With our hottest crime spots, we established guidelines about how often officers must visit those locations and whether an officer can leave the location. For



Ventura, CA Chief Ken Corney

example, last weekend we had four shootings in a two- square block area. So we set the criterion that a squad car must pass through that location at least four times every hour. When the AVL does not detect the vehicle moving through that location over that time period, alert emails are automatically sent out to our Command and Control center. The watch commander is now on notice to address this gap in public safety and fill it by getting officers there as quickly as possible.

We're in the process of developing it further into a dashboard format so we'll have automatic indicators when deviations occur.

Elizabeth Township, PA Chief Robert McNeilly:

Early Intervention Systems Are a Technological Advance That Can Identify Employees Who Are Not Performing

One thing we haven't talked about yet today is Early Intervention Systems. These systems can be used to track employee performance, and they keep records on everything from training to awards to every arrest and traffic stop an officer makes.

When I was chief in Pittsburgh, even while we went from 1,200 police officers to 900 and the

overall size of the department fell from 1,500 to 1,000, the crime rate continued to decrease and calls were answered just as fast. But then I used an early intervention system to look at the numbers and track employee performance. It revealed that some detectives didn't solve any cases or make any arrests. I saw that a good 10 percent of the police department made no arrests, no traffic stops, and no searches, while another 10 percent recorded only very small numbers in each category. To me, it really proved the saying that "20 percent of the people do 80 percent of the work, and 20 percent create 80 percent of the problems."

It made me realize that if we have officers who are not doing any of the things that sworn officers do, including making arrests and making traffic stops, their jobs could be computerized, civilianized, or eliminated.

To fix this, we needed to push people to produce results, make sure the supervisors were actually supervising, and remove people who still weren't being productive.

I don't think that this would work in every case, especially in organizations that have had to make massive cuts. But I think there are departments that could benefit from implementing this.



Prince William County, VA Chief and PERF Vice President Charlie Deane

Albuquerque Police Work with Businesses To Reduce Crime

At the PERF summit, Albuquerque Chief Ray Schultz discussed how his department has used technology to create industry associations and police partnerships with private companies that have helped reduce property crime.

Albuquerque Chief Ray Schultz:

The Albuquerque Police Department has 1,100 sworn officers, about 1,700 total employees, and we serve a population of about 570,000 people. When I took over as chief about six years ago, property crime was a big concern.

One of the things we learned is that if you send out an email blast for every crime that occurs, the emails very quickly get lost in the pile of emails that we all receive. So we started setting up partnerships with business groups in Albuquerque, organized by the various types of industries, such as retail, financial institutions, hotels and restaurants, construction, and so on.

For each one, we created a communication network that is real-time and very robust, 24/7, sending information out within the specific industry. Probably the most successful group has been our retailers, which we call the Albuquerque Retail Assets Protection Association (ARAPA). People involved in retail wanted to share information with each other about how they were being victimized by shoplifters, people writing bad checks, engaging in various kinds of fraud, and so on. People in construction are concerned about thefts of equipment from their construction sites. We've been able to organize seven different groups.

It's really taking off and now there are similar programs in Los Angeles, Seattle, and Minnesota.

One of the hurdles when we first started was corporate policy. The retailers initially were reluctant to share information with each other. But it didn't take long for them to see that it

was in their interest to share information with each other and do it in real time, because the people stealing from Target were the same people stealing from Wal-Mart. The ones stealing from CVS were also stealing from Walgreens. We also found out that private industry has better technology than we could ever imagine, and they're able to capture it live 24/7.



Albuquerque Chief Ray Schultz

My crime analysis people also are involved. We have found that the guy we catch shoplifting or passing a bad check at a retail store is often involved in a host of other crimes, like fraudulently obtaining credit cards or money orders or checks, or breaking into cars to steal items that help him steal someone's identity and open up those accounts.

The crime analysis people help us identify trends as they start to emerge, and we share the information with the industry people. For example, a crew of very active organized retail thieves will come into Albuquerque on a Friday, because they know that on Saturdays and Sundays we don't have most of our detectives working, retailers don't have their A-teams working, and the banks and other

financial institutions are usually closed as well. So they'll hit the city heavily on a Friday evening, pass bad checks or money orders all day Saturday and Sunday morning, and they're on a plane out of town by early Sunday afternoon. Well, as soon as we recognized that trend, we were able to post that information for the members of the retail association.

And often there's sharing of information from one industry to another. For example, people from the hospitality association will tell us, "We have some people staying in our hotel, they paid cash for the room, and as we



Website of Albuquerque Retail Assets Protection Association, which provides information about crimes and suspicious activities of interest to retail businesses

clean the room every day the maids notice that it's filling up with DVDs." So we're able to either do a knock and talk or a search warrant, and we have recovered a lot of property. It's been very successful.

We're also taking this regional, and we're finding that we're seeing the same crooks in Albuquerque as they do in Santa Fe, El Paso, Amarillo, Phoenix, and other places.

When you join one of these associations, you have to be vetted through the industry. The Police Department has a liaison person with each one of the different industry groups, but the industries run the program themselves. If it's the police running it, there's less buy-in,

but if it's one of their own members, it gets instant credibility and the information starts to go out quickly. Information includes things like security camera pictures of people who acted suspiciously or committed crimes. It gets posted on the association's website, and so of course it is available to everyone 24/7 via their laptops, smartphones, etc.

For example, if a retail store has a video photo of someone leaving the store by a fire exit, that gets posted on the ARAPA webpage for all the retailers to see. And if the parking lot cameras capture a photo of the car and license plate number, they post that as well. So if that same crew shows up at a store across town, their loss prevention people give the police a call and tell us, "The guys who just ripped off the Wal-Mart on the west side are in our Staples store right now." And we'll dispatch officers or loss prevention people, watch them, and very often we'll catch them committing a second crime.

The only push-back came from some of the corporate people who were worried about liability questions. But they see the benefits of receiving notifications from other businesses, and we are making arrests. It's important that the system is able to get the information to them quickly. If people are passing fraudulent money orders or cashier's checks, they get the account numbers and can notify their people to "watch for these account numbers now, because this crew is out, they're in the city and they've just hit within the last couple hours."

When new scams are developed, it's important to get that information out to the businesses quickly. A year ago, we had a group of "UPC code changers"—people who would buy a 99-cent DVD, scan the UPC code and print it on a sticker. Then they would go back to the store and put the 99-cent sticker on a \$29 Blu-ray. Then they would look for the most inexperienced clerk and purchase this Blu-ray movie for 99 cents. Then they'd go out in the

continued on next page

parking lot, pull off the fake sticker, go back in the store and get a refund in the form of a \$29 gift card. Then they'd go back to the parking lot and sell the gift card for \$20. The ARAPA network was able to detect the scam and alert all the other businesses, so they could very quickly meet with their clerks and tell them, "Watch closely right now when you see Blu-rays come through. If you see one come through for 99 cents, it's one of the scam artists."

Another example: We had a lot of thefts last year from construction sites. So we took a Bobcat that was donated by one of our partners, put it on a trailer with a for-sale sign on it, and loaded it up with GPS and remote video surveillance. That Bobcat was stolen 21 times in 60 days. All we had to do was park it on the corner, and we'd get video of people stealing it. We would allow them to take it back to "the nest," where we would often find a lot of other stolen construction equipment.

These associations' websites have an interactive map that shows you what's going on with various types of crime. We've got icons so you can track thefts above \$500, thefts below \$500, and so on. You can click and get additional information about each incident and view photographs if they're included. If you want to track an individual case, you can get a notification on your smartphone when anybody adds a comment about that case. There's a suspect gallery of both known and unknown offenders, which allows us to link various crimes that were committed by a single offender. Even when there's an arrest made, we still post a photo because very often a person is going to bond out within hours, and a prolific offender is going to go right back out, doing what they know best.

This has been extremely successful. Property crime numbers here last year were down 18.4 percent, and in the first 90 days of this year they're down another 30.4 percent, and it's just a result of keeping the pressure on. Our local businesses are enthusiastic about this. Their loss prevention people like the program because it's making them look good with the number of arrests that are being made. These programs don't cost much to run. And because it's two-way information-sharing between private industry and law enforcement, it's extremely successful.

Corporate loss prevention personnel have a lot of resources. The average Wal-Mart or Target store has between 85 and 150 cameras inside and outside. We're starting to work with them about putting license plate readers (LPRs) in some of their parking lots. That way, when offenders are driving around committing multiple crimes, we can catch them on an LPR as they're pulling *into* the parking lot and be ready for them.

We're getting ready now to take these ideas out to neighborhood associations on a smaller scale, so when we notice an emerging crime trend in a neighborhood, we can get information in their hands. And more importantly, we want block captains and neighborhood leaders to talk to their neighbors about what's occurring in their neighborhood and bring information back to us. We think it's going to be very successful.

Criminals communicate with each other, and crews are likely to travel to where there are easier targets. We're seeing Albuquerque crews going to LA, but we're also seeing crews come to us from LA. We're seeing more and more movement of criminals.

Computer Analytics: Tracking Gang Activity

Chicago Commander Steven Caluris described the way his department has used computer analytics to monitor gang activity.

Chicago Commander Steven Caluris:

Chicago's "Caboodle" Gives Officers A Wide Range of Useful Information

Through the years I have seen tremendous advances in our information technology. I remember a time when if I wanted a mug shot of somebody printed in color, I'd have to bring a sandwich to the person in the graphic arts department. Today, the way technology can get information in the hands of officers out on the beat is astounding.

Our department does this through a data system that we call Caboodle. The name is a reference to the phrase "kit and caboodle," because this system includes everything we need. The goal of this program is to merge statistics and intelligence analysis and then get it out to officers in ways that are most useful for them.

Officers can access the Caboodle site on any department computer. They have a user ID and a password, so they are accountable for their actions on the site. Once logged on, they have the ability to run searches and display a variety of information in different ways.

To give an example, we're currently tracking about 210 active gang conflicts. More than 50 percent of our violence in Chicago is related to gang activity. A DHS analytical model rates these 210 gang conflicts in Chicago as high-, medium-, or low-threat, and many of our police initiatives and enforcement actions are tied into that assessment. For example, if a gang conflict is listed as high-threat, officers in the field can enforce a gang and narcotics loitering ordinance.

Caboodle has been useful in our attempts to bring enforcement to these gangs. It can demonstrate that actions we're taking to investigate and

prevent gang activity are being taken responsibly. It shows the public that we're not just randomly targeting people or situations for enforcement; these decisions are backed up by statistical information.

The officers can use filters to pull up any particular information about a certain gang and its involvement in illegal activities. They can pull every type of statistical information, including crime data, parolee information, outstanding warrants, and cease and desist orders. This gives our front-line supervisors the ability to plan strategic operations and directed missions during their watch, based on the threats and the intelligence we can give them about those gang conflicts.

For example, if a shooting or other incident occurs near a school and there's a possibility that



Screenshot of Chicago Police Department's "Caboodle" data system.

there will be retaliation or escalation on the street, Caboodle gives officers the ability to quickly get an idea of what issues are at play in the area. With this information, they can put a strategic, data-based plan in place. They can view detailed information about every aspect of the conflict, such as incident reports from earlier events in the school. Officers can also view files on people or locations that are tied to this conflict. The system is also tied into the county assessor's office and Google maps, giving officers a 360-degree view of the area before they enter it.



San Francisco Assistant Chief
Thomas Sawyer

Managing Technology Employees

Changes in technology have led to changes in job responsibilities for police department employees. Some agencies have adapted to this by bringing sworn officers off the streets to do technological jobs, while other agencies have filled these roles by hiring more civilians. At the PERF summit, police leaders discussed how they've managed their technology employees.

**Joshua Ederheimer, Principal Deputy Director,
COPS Office:**

Civilians Working with Technology Play an Important Role

When budget cuts force a department to lay off personnel, I think in some cases that the civilians working on these technology projects can provide more value than the sworn officers because of their area of expertise. It used to be that when you cut civilians, you were cutting secretaries or low-level administrators. Now we have civilians running divisions, handling forensics and crime analysis, and operating fusion centers. In many cases we need the skills they bring to the table to keep us up to date with current technology.

For example, these new forms of social media are emerging as a significant way that we will be communicating with our communities in the future.

**Nola Joyce, Chief Administrative Officer,
Philadelphia Police Department:**

It Can Be Hard to Find Officers Who Want to Work with Social Media

Right now, I think the greatest risk with communicating through new technology is that you start to use it but cannot maintain it. I think it's more damaging if a chief launches a blog and six months later isn't posting anything on it.

When there's a hiring freeze, I can't hire civilians to do this kind of job. We brought in a couple of sworn officers to assist in handling our internal and external communications. But it was harder than we expected to find officers capable and wanting to do this type of work. Officers don't join the police department to sit behind a desk managing social media. We've managed to keep posting quite a bit of information online, but I do feel the danger is over-committing and then not being able to keep your online content fresh.

Calgary Deputy Chief Roger Chaffin:

Employing Social Media Professionals Is Ideal, But Isn't Always Possible

If possible, I think agencies should follow Boston's lead by hiring professionals who know how to use social media properly. Unfortunately, in our current economic conditions, many departments have to assign people with less experience and expertise to coordinate our social media efforts.

Mesa Police CIO Cory Cover:

A Volunteer Program Can Be a Low-Cost Way to Get Work Done

In Mesa we have a very big volunteer program to increase manpower. Our program has over a hundred volunteers, many of them retirees, who help

us throughout the department. As we all deal with budget cuts, we should remember that volunteers can be a low-cost way to fill some roles within the department. We have one recently retired engineer who is smarter than I'll ever be, and is willing to help me out with anything I need. Volunteers generally aren't up-to-date on all the technology, but they're willing to learn. If we could use volunteers to help with social media efforts, we could have somebody filling an important role at no cost.

**Harlin McEwen, Chairman,
Public Safety Spectrum Trust:**

*Unions May Object
When Positions Go to Civilians*

I do think that social media is going to change the way we do business, but I'm also concerned about how technology will affect management's relationship with unions. There's a lot of talk about how law enforcement jobs can be done more effectively and affordably by taking advantage of technology or using more civilians, but uniformed sworn personnel are concerned about such discussions. For those law enforcement executives with mandatory union bargaining agreements, the way unions will react is an important part of any discussion about using technology to make cuts to our force of sworn officers. If the union sees something as being their replacement, whether it's technology or civilian employees, they will have an issue with it.

Technology at Major Events

Arlington, TX Deputy Chief Laretta Hill:

*Many Technologies Helped Us Coordinate
Law Enforcement Efforts for the Super Bowl*

I was the on-scene commander and Arlington's primary planner when we hosted the Super Bowl. The Super Bowl presented us with many unique opportunities because it was awarded to the North Texas region and not just Arlington. The teams stayed in Fort Worth and Irving, the game was in Arlington, and an "NFL Experience" exhibit was held in Dallas.

Many different venues needed to communicate with each other leading up to game day. We knew that bringing several organizations with different operating systems together meant we would have some technology challenges to overcome if we wanted to have operable communications and information sharing. One thing we did early on was develop action teams to address technology and communication issues within our regional planning structure.

The biggest advantage technology gave us at the Super Bowl was the ability to communicate and observe events occurring in real time. We gave our commanders at the stadium and in other areas of the city iPads for instant access to all the information they needed. We used Digital Sandbox risk management software to input, store, and access all our critical infrastructure and key resource information. All the locations are plotted into this software, and we can pull up the contact information and a list of potential threats for each location just by clicking on it. It can also give us real-time information and a live look when there is a call for service at any location in the city. With help from the FBI, we also used a communication platform called Virtual Command, which enabled us to share and keep track of information about what was going on across the region.

Our everyday event management software is also a useful tool, and we utilize it all the time. It has a feature that enables us to send out direct emails or text messages to all officers or specific groups of officers who are working an event to ensure they're aware of possible threats.

Conclusion

THE POLICING PROFESSION IS UNDERGOING A period of great change, caused in large part by the many new types of technologies that help police officers to work more efficiently. Today's officers can instantly pull up information about suspects on computers in their patrol cars or on smartphones. They can analyze data about crime and offenders and neighborhood demographics to the point where it becomes possible to predict the likelihood of crimes being committed at certain locations and certain times. Police agencies with license plate readers can get information about where a suspect's vehicle has been driven or parked lately. And when a crime is committed, chances are there may be one or more video recordings at the scene or nearby that can shed light on the investigation.

Many of these technologies are still relatively young, and some have not yet been widely adopted. Other new technologies with applications for policing no doubt will be invented in coming years.

To the extent that technology is changing the nature of police work, it is also changing the qualities and desirable qualifications for tomorrow's police officers and police chiefs. In the future, the police profession will have a greater need for imaginative thinkers who can create new ways to apply technological devices, or to combine several different types of technology in order to advance a crime-fighting purpose.

New technologies will also increase the need for researchers and analysts who can advise police chiefs about which technologies work best in real terms. There are many technologies available, and

some are expensive, so police agencies increasingly will need to make good choices about where to invest their limited technology dollars. A surveillance camera may produce clear, sharp images—but does it actually help to solve or prevent crimes? License plate readers clearly are much more efficient than officers at quickly inputting plate numbers into a computer—but how often does that result in stolen cars being recovered, or suspects apprehended? These are the types of questions police departments are already asking, and will be focusing on more in the future.

The weak economy is impacting the deployment of technology in policing in conflicting ways. On one hand, we know that police department budget cuts are causing reductions in force in many communities, and technology is helping short-staffed departments to maintain and even improve services. On the other hand, police budgets for purchasing and maintaining technology are being cut like everything else.

One more question to ask ourselves is whether we are carefully considering the infrastructure that is needed to support technology—the costs of monitoring it and of staffing technology units at a time when departments are laying off civilians. We really need to think about all of the aspects of technology when initial investments are being made.

PERF will continue to monitor developments in policing technology, and police executives certainly will be discussing these issues at PERF conferences in coming years.

About the Police Executive Research Forum

THE POLICE EXECUTIVE RESEARCH FORUM (PERF) is a professional organization of progressive chief executives of city, county and state law enforcement agencies. In addition, PERF has established formal relationships with international police executives and law enforcement organizations from around the globe. PERF's membership includes police chiefs, superintendents, sheriffs, state police directors, university police chiefs, public safety directors, and other law enforcement professionals. Established in 1976 as a nonprofit organization, PERF is unique in its commitment to the application of research in policing and the importance of higher education for police executives.

PERF has developed and published some of the leading literature in the law enforcement field. The "Critical Issues in Policing" series provides up-to-date information about the most important issues in policing, including several recent reports on the impact of the economic downturn on police agencies. Other Critical Issues reports have explored the role of local police in immigration enforcement, the police response to gun and gang violence, "hot

spots" policing strategies, and use-of-force issues. In its 2009 book *Leadership Matters: Police Chiefs Talk About Their Careers*, PERF interviewed 25 experienced police chiefs about their strategies for succeeding as chiefs and working well with their mayors, their officers, and their communities. PERF also explored police management issues in "Good to Great" Policing: *Application of Business Management Principles in the Public Sector*. Other publications include *Managing a Multijurisdictional Case: Identifying Lessons Learned from the Sniper Investigation* (2004) and *Community Policing: The Past, Present and Future* (2004). Other PERF titles include *Racial Profiling: A Principled Response* (2001); *Recognizing Value in Policing* (2002); *The Police Response to Mental Illness* (2002); *Citizen Review Resource Manual* (1995); *Managing Innovation in Policing* (1995); *Crime Analysis Through Computer Mapping* (1995); *And Justice For All: Understanding and Controlling Police Use of Deadly Force* (1995); and *Why Police Organizations Change: A Study of Community-Oriented Policing* (1996).

To learn more about PERF, visit www.policeforum.org.

We provide progress in policing.



About Motorola Solutions and the Motorola Solutions Foundation

MOTOROLA SOLUTIONS IS A LEADING PROVIDER of mission-critical communication products and services for enterprise and government customers. Through leading-edge innovation and communications technology, it is a global leader that enables its customers to be their best in the moments that matter.

Motorola Solutions serves both enterprise and government customers with core markets in public safety government agencies and commercial enterprises. Our leadership in these areas includes public safety communications from infrastructure to applications and devices such as radios as well as task-specific mobile computing devices for enterprises. We produce advanced data capture devices such as barcode scanners and RFID (radio-frequency identification) products for business. We make professional and commercial two-way radios for a variety of markets, and we also bring unlicensed wireless broadband capabilities and wireless local area networks—or WLAN—to retail enterprises.

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Motorola Solutions is a company of engineers and scientists, with employees who are eager to encourage the next generation of inventors. Hundreds of employees volunteer as robotics club mentors, science fair judges and math tutors. Our “Innovators” employee volunteer program pairs a Motorola Solutions employee with each of the non-profits receiving Innovation Generation grants, providing ongoing support for grantees beyond simply funding their projects.

For more information on Motorola Solutions Corporate and Foundation giving, visit www.motorolasolutions.com/giving.

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APPENDIX

Participants at the PERF Executive Session “How Are Innovations in Technology Transforming Policing?”

April 4, 2011, Washington, D.C.

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