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LAW ENFORCEMENT TECHNOLOGY for the 21st Century

Conference Report

May 15–17, 1995

National Institute of Justice

U.S. Department of Justice
National Institute of Justice
Office of Science and Technology

SECOND ANNUAL CONFERENCE ON LAW ENFORCEMENT TECHNOLOGY FOR THE 21ST CENTURY

CONFERENCE REPORT

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National Institute of Justice

Jeremy Travis

Director

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Foreword

Our first Conference on Law Enforcement Technology for the 21st Century, held in 1994, was envisioned by its sponsors as a catalyst for change—a way to significantly advance the pursuit of technology for law enforcement and corrections. In the year following this first conference, great strides have been realized in initiating and fostering a dialog among the diverse communities comprising the criminal justice system, whose participation is vital to the successful development of new technologies.

In just one year we have witnessed the identification of technology needs for law enforcement and corrections practitioners and the advantages and options that new technologies can offer; the establishment and expansion of partnerships among Justice, Defense, and industry to address constraints in existing technology research and development; and the fostering of public- and private-sector cooperation to bring technology to the marketplace. In addition, we have seen the establishment of the National Law Enforcement and Corrections Technology Center and five regional centers to serve as a "one-stop" shop for law enforcement and corrections equipment and technology information. And, we have seen the development of JUSTNET (Justice Technology Information Network) as a means to offer the criminal justice community online information about new products and technologies as well as to provide a means of communication among practitioners.

But now we must build upon those past accomplishments. Our second conference is bringing us new challenges. We must continue to review and assess these past accomplishments and realize new objectives for the near future. We must hone our response to needs for technology as expressed by law enforcement and corrections. We must refine the mechanism by which to bring the benefits of that technology to law enforcement. We must continue to explore innovative ways to fund technology development and procurement. And, we must expand the role of government in technology development.

This, our second conference, has confirmed what the past year's events have demonstrated—the promise of this initiative will not be short lived.

Janet Reno
Attorney General

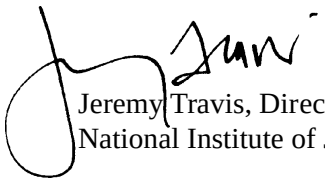
Introduction

In the year past, we have witnessed the fruits of our first Law Enforcement Technology for the 21st Century Conference. We have witnessed the birth of the National Law Enforcement and Corrections Technology Center and its regional centers—components of the Justice Technology Information Network (JUSTNET), formerly the Technology Information Network—that will simplify law enforcement's efforts in locating new products and technologies and industry's efforts in identifying law enforcement requirements.

We have seen dialog, collaborations, and partnerships, which had been previously nonexistent, expand and evolve among diverse communities. We have seen the formation of links with Federal laboratories come to fruition in the development of prototype technologies for law enforcement. And, in a spirit of cooperation for the good of us all as a Nation, we have seen the formation of a joint partnership, between the U.S. Departments of Defense and Justice, flourish. We have seen the formation of the Law Enforcement and Corrections Technology Advisory Council, comprising senior State and local law enforcement officials, police chiefs and sheriffs, corrections administrators, and senior representatives of all the major Federal law enforcement agencies, to ensure that uniform standards are developed as guidelines for the development of technology by industry.

In anticipation of that first Law Enforcement Technology for the 21st Century Conference, our goal was to respond to an existing window of opportunity—the strong climate of support that existed among all levels of government and among the public to address societal problems, particularly that of crime in our Nation. Now, a year later, we find the climate even stronger.

The momentum generated by the innovation infused into this initiative since its inception and by the interest demonstrated not only by the law enforcement, corrections, and criminal justice communities, but also by Congress, the Federal Government, State and local officials, and the private sector, as well as the media, confirms what this report will demonstrate—the time to capitalize on the momentum and make this initiative a reality is now.



Jeremy Travis, Director
National Institute of Justice

1995 Conference Objectives

- ***Review and assess how much has been accomplished in the past year.***
- ***Inform and focus response to technology needs.***
- ***Examine how to bring the benefits of technology to law enforcement.***
- ***Explore innovative ways to fund technology development and procurement.***
- ***Identify the role of government in technology development.***

Background and Scope

Technologies can provide new options for law enforcement agencies seeking ways to reduce the use of violent or lethal force in confronting uncooperative suspects. Furthermore, new technologies are essential to assist law enforcement in maintaining at least some parity with the methods criminals employ in trying to escape detection and avoid apprehension.

This second Law Enforcement Technology Conference was designed to generate and illuminate discussion on core issues; to continue a strong dialog and partnership among law enforcement, industry, and government; and to facilitate the goal of bringing the criminal justice community into the 21st century. The conference considered a host of law enforcement issues—liability, public safety, business opportunities, technology needs, technology as a force multiplier, technology affordability, government responsibility, and opportunities to leverage research and development.

In addition, the program highlighted technology achievements since the first conference and examined the movement of technology to the marketplace, including production and marketing, creative financing, and the role of government agencies. *Particular attention was paid to the needs of State and local law enforcement who represent more than 95 percent of all police and criminal justice personnel.*

The Conference Program

The National Institute of Justice (NIJ) reported on technology developments and the results of the 1994 conference, including the status of the new National Law Enforcement and Corrections Technology Center (NLECTC), the new Office of Law Enforcement Technology Commercialization (OLETC), and the relevance of recent accomplishments to law enforcement.

In addition, the conference featured a Fred W. Friendly Program that focused on the appropriate role of government in the development of these new technologies. The program's panel members wrestled with hypothetical situations that

mirrored those faced by local law enforcement and criminal justice agencies and national and local governments on a daily basis. Arthur R. Miller, Harvard Law School Bruce Bromley Professor of Law and a frequent Friendly Program moderator, led the panel of law enforcement and political leaders into a continually more complex array of situations and difficult choices.

In the session *Business of Technology: An Industry Perspective*, industry representatives discussed their perspectives on the business of developing and producing technologies for the decentralized criminal justice community. The session emphasized successful examples and lessons learned in market development in parallel sectors (i.e., examples of force multiplier effects in military and manufacturing sectors); how technology can produce leaps in performance; how market structure and cohesion affect product development; and how industry responds to the progress underway and to the strategic plan presented by NIJ at the opening session of the conference.

"Law enforcement is poised on the threshold of great things in its increasing proximity to the technological development of new tools for police officers. This era of accountability, high innovation, and common sense in trying to translate the technology is an important time for the National Institute of Justice, which is at the forefront of a new era in leadership."

Jeremy Travis
Director
National Institute
of Justice

In the session focusing on creative funding, panelists addressed creative funding sources and methods for the development and acquisition of law enforcement technology and equipment. Fully half of the law enforcement agencies in the United States have fewer than 12 sworn officers. This fragmentation and small size—coupled with a broad diversity of needs—present industry, government, and, most especially, practitioners with a formidable challenge.

The originally scheduled final morning session dealing with the role of Federal, State, and local governments in research, technology development, and procurement was preempted by an invitation to conference participants from the House of Representative's Judiciary Committee Subcommittee on Crime to testify at that morning's actual congressional hearing on law enforcement technologies. NIJ's director of Science and Technology presented information on technology's impact on fighting crime. Members of law enforcement and industry were invited by the subcommittee to present testimony on the need for Federal support for new technology for State and local law enforcement.

Law Enforcement Opportunity

An extraordinary window of opportunity exists through which to accelerate law enforcement well into the 21st century. Developments in new technology will provide law enforcement and corrections officers with the tools to meet the complex challenges of daily policing and corrections in a safe and effective manner, while partnerships among the Department of Justice, Department of Defense, and industry will be crucial elements in effectively addressing investment shortfalls in law enforcement research, development, and commercialization.

The Cost of Crime:

Crime not only has grave consequences for its victims, it makes costly demands on law enforcement as well.

Every year, 23,000 people are murdered, 100,000 are raped, and 2 million are assaulted. Nearly 300 suspects and 150 police officers are killed each year in violent confrontations. Between 1970 and 1991, the workload of police officers has increased more than 65 percent.

If, through technology, the level of crime could be reduced by a mere 1 percent, it could mean 250 fewer murders; 1,000 fewer rapes; 11,000 fewer assaults; 128,000 fewer burglaries, larcenies, and robberies; 14,000 fewer victims of crime burdening the health care system; and $700 million less in economic cost. The question is how to increase the effectiveness of law enforcement in order to realize these benefits.

Despite the high cost of crime, little has been done to modernize our primary crime-fighting instrument—our Nation's police. State and local police, who handle more than 95 percent of the country's crime, are still equipped much as Wyatt Earp was in the late 19th century. To improve the productivity and effectiveness of policing, law enforcement clearly needs more alternatives. The development of new technologies is instrumental in meeting this demand.

However, the search for innovative technologies is confounded by the fact that law enforcement and correctional officers frequently encounter situations that require some type of force, though not deadly force. Police policies generally state that the force used shall be no greater than is absolutely necessary and reasonable in a given situation. In addition, citizens demand that the police employ no more force than warranted, not only to avoid undue permanent injury, but also to preserve their right to due process.

It is clear that alternative mechanisms need to be developed that can induce the compliance of an offender or control an incident without the substantial risk of permanent injury or death to the subject(s). Less-than-lethal (LTL) weapons, when properly applied, provide this force option.

Opening Address Highlights

Jamie S. Gorelick, Deputy Attorney General of the United States

"We have to provide better tools to those in law enforcement and corrections, particularly at the State and local levels, if we are going to be able to press the war against crime as successfully as we pressed the cold war," said U.S. Deputy Attorney General Jamie S. Gorelick in her opening remarks at the Second Annual Law Enforcement Technology for the 21st Century Conference.

"I hope very strongly that this conference will continue to serve as a catalyst to further develop partnerships among law enforcement practitioners, between law enforcement and industry, and between law enforcement and government. These partnerships are essential to our joint efforts to bring technology and equipment to men and women in the law enforcement and the corrections communities."

Gorelick noted that since 1988, the investment in law enforcement and the criminal justice system has grown at roughly twice the rate of all other government spending. "As a Nation, we now spend $75 billion each year—a very attractive target for industry," she said. "Additionally, the private sector spends another $50 billion on private security agencies, and an unknown amount on home and business security, and these are conservative figures."

Citing a *Business Week* report that estimated the total cost of crime and the efforts to fight it as exceeding $425 million each year, Gorelick pointed out that "despite the incredible cost of law enforcement and the clear concern that our citizens have about crime, we really have done very little to modernize our primary crime-fighting instruments—the cops on the street.

"Although State and local police represent 95 percent of our Nation's police force and handle well over 95 percent of the crime in this country," she said, "they have essentially the same crime-fighting equipment they had a century ago. And that's a shame in a society that has so much more technology to offer. So what can we do to address that problem? We just have to be smarter about how we fight crime, and that's what this conference is about."

Gorelick urged the establishment of a genuine partnership involving all levels of government and industry in the support of law enforcement. She also stressed the need to create a law enforcement market. "We have already made some significant progress," she said. "However, there is still a great deal more to do. We don't have the government resources to fight this problem alone, and industry cannot bring its enormous technology development and manufacturing capabilities to bear without a viable law enforcement market."

Contrasting the differences between the defense market and the law enforcement market, Gorelick explained that in the defense arena devices must be tailored to the specific operational requirements of a single agency. The law enforcement community in this country, however, is made up of approximately 17,000 different agencies with an average staff of 24 or fewer officers. These departments make all purchases independently, creating a fragmented customer base.

"Although very large, this fragmented market discourages the entry of major industries into the field," Gorelick said. "Police and sheriff's departments collectively employ about 840,000 people and corrections agencies employ about 400,000. Added to that is the private security industry with more than 1 1/2 million

people and the fire and rescue agencies that use much of the technology needed by law enforcement, that's another 340,000 people. While enough to support a very robust market, each of these agencies is too small to do it by themselves."

According to Gorelick, the corrections picture is similar: 90 percent of prison inmates and all jail inmates are held in State and local facilities. Even though the U.S. Federal system is in fact very large and has had the opportunity to take advantage of technology, it is dwarfed by State and local corrections. Federal facilities rarely house more than 2,000 prisoners. By contrast, the Los Angeles county jail houses more than 20,000 inmates.

"If we want to have an impact on crime, we must support State and local law enforcement and corrections and use Defense Department technology as a force multiplier," Gorelick emphasized. As a force multiplier, she explained, the transferred technology would be used to enhance the effectiveness of personnel.

Gorelick reiterated the Clinton Administration's commitment to fight crime and support State and local law enforcement through proposed anticrime initiatives. She quoted from the Vice President's speech given in April 1994 in which he supported putting "the most advanced technology and the best new approaches at the disposal of police officers and other law enforcement officers throughout this country."

"Technology can save lives, and in this week that we honor law enforcement officers who have given their lives for this country, we have no more important mission than to make their jobs safer and more effective," Gorelick stated.

"We must find ways to fight crime smarter. What we have accomplished so far is only a beginning. There is still so much more that must be done to build upon these accomplishments."

U.S. Deputy Attorney General Gorelick's Challenges to Participants:

- *Work together to identify law enforcement needs and find innovative and effective ways to bring "the right technologies to the right agencies at the right time" with as little duplication as possible.*
- *For those on the front lines of the war against crime—law enforcement, corrections, and criminal justice communities—find ways to work together to prevent the sometimes parochial boundaries they face from interfering with their work.*
- *For those at the national and Federal laboratories, continue to find ways to work cooperatively with industry to identify, develop, and transfer useful technologies for application to law enforcement.*
- *For those in industry, "find ways to stay this difficult course. We know that in many cases your commitment has been entirely self-supported—with an uncertain business future—but that market is there, and we certainly have to make it important. We really want for our people to stay with us and work with us to bring your information and your technologies to this market."*

Keynote Highlights

Laurie Robinson, Assistant Attorney General, Office of Justice Programs

"The world today is clearly hurtling into the 21st century at a rapid pace, with new technologies available that were unimagined just a few years ago," stated Laurie Robinson, Assistant Attorney General, Office of Justice Programs, in her keynote speech to conference attendees. "Criminal justice practitioners must tap into these advances and become part of the technological revolution that is changing our laws, our work, and our world."

"Acquiring the information we need on the new technology will help criminal justice practitioners make sound decisions, improve the efficiency and effectiveness of our operations, and move the administration of justice into the future," Robinson said.

"This conference serves as an avenue for the research field to hear from the criminal justice practitioner. This sharing of information is essential to bring law enforcement operations into the next century."

Keynote Highlights

Jeremy Travis, Director, National Institute of Justice

In addressing conference attendees, National Institute of Justice Director Jeremy Travis said that on the national level, the elections last November strengthened the consensus in Congress "to do something about crime."

Because of a sequence of events—most important, the Crime Bill—law enforcement has an opportunity to require that research and evaluation and development be conducted simultaneously. "Our mandate," Travis said, "is to find out what works and then to translate the technology to the State and local levels."

"Despite technological advances," he said, "I have a sense of enormous frustration when seeing how poorly equipped our police officers, judges, and probation officers are when trying to carry out the awesome responsibilities we give them." Travis cited the example of lack of available computers to police officers who need fast access to background information when responding to 911 calls. He noted that even delivery services, such as Federal Express, have computerized systems that allow each operator to know the history of the package that is being delivered, yet police officers do not have the same level of access to information and technology.

"Why can't we find a way to make this technology available to law enforcement?" he asked. "The simple answer is that it can be done."

Travis noted that this endeavor has a tremendous commitment from the highest levels of Congress, and it is up to the field to bring costs down to make the technology more readily available to police officers.

"We have to make a difference at the local level," he said. "There is no more important mission than to enhance the public's safety."

Following opening remarks by Jamie S. Gorelick, Deputy Attorney General of the United States, the Second Annual Conference on Law Enforcement Technology for the 21st Century began with a National Institute of Justice (NIJ) perspective of what has been accomplished as a result of the first conference, which was held in June 1994. The presenters for this perspective were David G. Boyd, Director of NIJ's Office of Science and Technology; Kevin M. Jackson, NIJ Centers Program Manager; Lee Rivers, Executive Director, National Technology Transfer Center; and Harlin R. McEwen, Chief of Police, Ithaca, New York.

Technology Developments and Needs

David G. Boyd
Director
NIJ Office of Science and Technology

What Last Year's Conference Accomplished

"1994 marked a hallmark year for law enforcement science and technology when the Justice appropriation bill mandated funds to assist NIJ in its efforts to adopt technologies for law enforcement purposes," said David G. Boyd, Director of NIJ's Office of Science and Technology.

During 1994, Boyd said, the Technology Information Network (TIN) was established in conjunction with the Regional Information Sharing System and the Office of Law Enforcement Technology Commercialization, which is co-located with the National Technology Transfer Center. As part of TIN, the Justice Technology Information Network, or JUSTNET, will be brought online to link, via the Internet, to ARPAnet, IACP Net, RISS Net, and other data bases of use to law enforcement agencies through a regional information sharing system. JUSTNET, according to Boyd, will not replace existing systems, duplicate existing services, or provide anything other than technology-related information.

Boyd also noted the establishment of the National Law Enforcement and Corrections Technology Center (NLECTC) in 1994, which assumed the functions of the Technology Assessment Program Information Center (TAPIC). NLECTC, located in Rockville, Maryland, is to become the virtual hub of a national organization of regional centers dedicated to supporting Federal, State, and local law enforcement, corrections, and criminal justice system science and technology requirements. The Center will function as the focus of activity for hotline services, standards, evaluations, and data base development for JUSTNET. In addition, the Center will provide support to law enforcement technology assessment councils, panels, and committees. NLECTC's regional facilities will be centers of excellence in their respective technologies and will act as regional interfaces for law enforcement agencies and JUSTNET.

In his presentation, Boyd provided updates on several new prototype technologies that are in varying stages of development:

- ***Smart gun.*** Research is underway into technology that will prevent individuals other than the authorized user(s) of a firearm to fire the weapon. Identification would be acquired through radio frequency signals or other technologies under investigation. This weapon would be particularly useful for situations in which criminals somehow obtain possession of a police officer's gun in a struggle. It also has potential benefits for citizens who have guns in their homes.

- ***Chemical and inflammatory sprays.*** Oleoresin capsicum (OC), otherwise known as pepper spray, has eclipsed the use of CS and CN (*ortho*-chlorobenzylidene malononitrile and *alpha*-chloroacetophenone) chemical sprays. Currently underway is an NIJ-funded risk assessment of OC to evaluate technical aspects of its use, such as medical/clinical and product design; operational aspects, such as law enforcement agency field data and policy/training; and other parameters, such as public perception/awareness and legal/liability issues. A final report will include a proposed risk reduction strategy for OC's use. In anticipation of the future development of user guidelines, a next step would include identifying which compound or combination of compounds of OC produce the desired results when used and then determining potential levels of toxicity.

- ***DNA Laboratory Improvement Program.*** NIJ is, in partnership with the National Institute of Standards and Technology, developing standards for the application of a new DNA identification technique that will reduce identification times from several weeks to about 1 day and will eliminate the need for hazardous and expensive radioactive materials.

Mandates from 1994 Conference:

- ***Identify and establish a focus for law enforcement technology.***
- ***Create a structure to ease field access to technology information in terms of law enforcement requirements for information and industry.***
- ***Encourage the development of law enforcement technologies in general.***
- ***Ensure that law enforcement (the users) stay in the loop.***

- ***Soft body armor.*** "There has never been a failure in the field of soft body armor to stop a bullet it was designed to stop," Boyd told attendees. Improvements in soft body armor have contributed to saving more than 1,800 police officers' lives. In costs per officer killed in the line of duty—an average of $1 million in survivor benefits and training and replacement costs—the consequence of the $5 million invested in improvements in this technology has resulted in a taxpayer savings of more than $1.8 billion.

- ***Rear seat airbags.*** Airbags for the back of patrol cars keep suspects from assaulting officers, injuring themselves, or damaging the vehicle while being transported. To safely contain the subjects, a bag is inflated on command and maintains pressure against the subject. The breathing capability of the individual is not interrupted as the bag is porous enough to prevent suffocation. The bag inflates in 5 seconds and can be hygienically maintained and reused.

- ***Cyanoacrylate ("Magic") Wand.*** The portable, hand-held Magic Wand can develop latent fingerprints in a matter of seconds, onsite at the crime scene. When the wand is ignited, cyanoacrylate (super glue) impregnated with a fluorescent dye is dispersed as a fume and adheres to any latent fingerprints on a nonporous surface. To observe the fingerprints, an ultraviolet light is shined on the surface and the prints become visible to the naked eye. Cyanoacrylate also leaves a protective coating on the prints, which can then be lifted with conventional fingerprint powder and transferred to a fingerprint card or photographed.

- ***Sticky foam.*** The sticky foam can be delivered from a dispenser carried on a shoulder sling and can help immobilize would-be attackers from a distance of 30 to 50 feet. Though the foam can be removed from skin with baby oil, cleanup times are long. Laboratory testing, with volunteers playing the roles of inmates and officers, showed that the foam could be dispensed fairly accurately but relatively large amounts were required. Also, how to effect rapid and safe emergency removal procedures for face and eye contact remain significant issues. This initially promising technology may not get into the field.

- ***Vehicle interdiction devices.*** Research is being conducted to find devices that can stop fleeing vehicles remotely and safely. Low-profile barrier strips fitted with hollow needles that are picked up in tires of vehicles that drive over them are being used to bring fleeing vehicles gradually to a safe stop. Modifications to this type of device, to permit remote deployment and retraction of the needles, are under development. Also under development are devices that deliver electrical pulses directly to the vehicle's undercarriage, thereby disrupting the vehicle's computer and bringing it to a halt. Another approach involves

"The single most important thing the Federal Government can do to assist us on the front line: Provide the funding ... to develop new law enforcement technology."

Robert E. Cansler
Chief of Police
Concord, North Carolina

firing a tagging projectile from a police pursuit vehicle. The tag would adhere to the fleeing vehicle, allowing the police vehicle to break off the "hot pursuit" and track the offender's vehicle electronically until an apprehension could be made.

The National and Regional Law Enforcement and Corrections Technology Centers

Kevin M. Jackson
Centers Program Manager
National Institute of Justice

To overcome obstacles such as a lack of coordination between research and development and manufacturing, an underfunding of law enforcement, a very fragmented market, and an uncoordinated user/needs requirement system, NIJ will endeavor to apply technology as a force multiplier by leveraging manpower, exploiting information sources, and improving the effectiveness of law enforcement in the use of technology, according to Kevin M. Jackson, NIJ Centers Program Manager. In order to accomplish these initiatives, Jackson said, NIJ created the National Law Enforcement and Corrections Technology Center (NLECTC).

NLECTC maintains major data bases and a critical incident hotline and supports the Law Enforcement and Corrections Technology Advisory Council. Under NIJ's initiative for law enforcement, NLECTC also supports:

- Standards and testing.
- Development of data bases on product information, including objective test results, user data base, manufacturer data base, and requirements data for industry.
- Technology awareness, technology assessment, and technology transfer.
- Assessments of new technology by the law enforcement community.
- Technology coordination to prevent duplication and waste of resources among agencies.

"NLECTC's bottom line," Jackson said, "is to continually evaluate the needs of law enforcement and corrections in relation to technology and to assist in the transfer of technology and make it affordable." In addition to the national center in Rockville, Maryland, each regional center plays a role in accomplishing overall NLECTC objectives. Each also has a unique focus:

- ***NLECTC–Northeast.*** Based at Rome Laboratories (a U.S. Air Force Laboratory at Griffiss Air Force Base) in Rome, New York, this regional center focuses on weapons and weapons detection technologies.
- ***NLECTC–Southeast.*** Located on a U.S. Naval installation near Charleston, South Carolina, this regional center focuses on corrections technologies and will provide surplus equipment support.
- ***NLECTC–Rocky Mountain.*** Based at the Denver Research Institute within the University of Denver, this regional center specializes in communications standards and focuses on interoperability of communication networks.
- ***NLECTC–West.*** Located in El Segundo, California, this regional center focuses on forensic imaging and surveillance technologies.
- ***Border Research and Technology Center.*** This center, a combined effort of the State of California, the Department of Justice, the U.S. Treasury, and the aerospace industry, is located in San Diego, California. The center is tasked with developing new and comprehensive approaches to meeting the challenges along U.S. borders.

The NIJ Office of Law Enforcement Technology Commercialization

Lee Rivers
Executive Director
National Technology Transfer Center

In his presentation to conference attendees, Lee Rivers, Executive Director, National Technology Transfer Center (NTTC), discussed the Office of Law Enforcement Technology Commercialization (OLETC). According to Rivers, OLETC was established in 1989 through an NIJ-funded partnership with the NTTC and the National Aeronautics and Space Administration, and is currently based in Wheeling, West Virginia, with a satellite office in Washington, D.C. OLETC's mission, Rivers said, is to provide a single entry point for U.S. industry into the Federal laboratory system to help accomplish its objectives in support of NIJ's initiative, including:

- Develop technology commercialization partnerships, alliances, and support services to bring technology to fruition. OLETC will use economic development alliances to move Federal technology into the private sector, primarily to keep American industry competitive in the global marketplace.

- Facilitate the technology commercialization, transfer, and application of selected federally funded technologies and associated capabilities to law enforcement and related industries.

Law Enforcement Relevance

Harlin R. McEwen
Chief of Police
Ithaca, New York

Ithaca, New York, Chief of Police Harlin R. McEwen provided a hands-on perspective on the relevance of technology to local law enforcement. McEwen, who also serves as Chair of the Law Enforcement Technology Advisory Council, praised last year's conference as a good give-and-take discussion among law enforcement, industry, and the Federal agencies that, among other things, resulted in:

- Increased funding and the potential for even more.
- Establishment of NLECTC and its online information services (Justice Technology Information Network).
- Countless telephone calls from individuals seeking advice on how to market, develop, sell, and make a product affordable.
- Unprecedented communications among law enforcement, industry, and Federal agencies that are showing results.
- Technology demonstrations of products developed in response to this program's efforts.
- Increased and improved industry response to law enforcement input on price, needs, and applicability.

McEwen noted the importance of the ability of the law enforcement community to plug into the various other networks—RISS Net, IACP Net, and various types of law enforcement networks. "The exchange of technology information is exciting," he said, "and it has been needed in law enforcement for many years."

The Scenario: Three police officers in the fictional town of Idyllia have been killed in recent months; two with their own weapons. The third police officer's gun was never recovered. A new officer on the force has been doing extensive research on a new, hypothetical weapon called the "GG gun." Citing national statistics which show that 25 to 30 percent of police officers are killed with their own guns, the manufacturer of the "GG gun" claims it gives police officers greater security. Through the use of computer technology, this gun, the manufacturer says, can only be fired by its owner. Concerned over his own safety, the officer makes a request of his chief that he be allowed to carry the new "GG gun."

In an effort to examine the role of the Federal Government in the development, acquisition, and application of new technologies in law enforcement, moderator Arthur R. Miller presented 10 expert panelists from law enforcement, national and city governments, and the legal community with what appeared to be a simple problem with a simple solution.

But, as both the panel participants and the audience quickly find out, the process of incorporating a new technology into the daily activities of law enforcement nationwide is a complicated lesson in frustration, financial manipulation, and political bureaucracy at the local, State, and Federal levels.

Hard Choices for Law Enforcement: Federalism, Funding, and Control

Hard Choices for Law Enforcement: Federalism, Funding, and Control

A Fred W. Friendly Program
Columbia University Seminars on Media and Society

Arthur R. Miller, Moderator
Bruce Bromley Professor of Law
Harvard Law School

"Just because the technology is available, that isn't enough to justify its acquisition for individual police officers," stated panelist Steven C. Bishop, Chief of Police for Kansas City, Missouri. Playing the part of Idyllia's Chief of Police, Bishop said, "Even though it is the officer's life on the line, police departments must have standardized weapons. The officers can't go out and buy a gun on their own."

Bishop noted that because of the sophisticated atmosphere of the criminal world today, there has been an increased importance placed on providing the best technology for law enforcement. "There has been a change of emphasis in fighting crime over the years," he said. "There is a greater danger in the streets today because gangs are more prone to violence and the kinds of weapons they have are more high tech."

Keynote Highlights

Patricia Schroeder, U.S. Representative, Colorado, 1st District; House Judiciary Committee

Calling the 1990s the "decade of whining" by Americans who use law enforcement as a scapegoat for everything, Congresswoman Patricia Schroeder said, "It is time for those who protect the American public to take action to fight the new enemy."

In the post-Oklahoma City bombing era, Schroeder said, the new national security fear—terror at home—has become evident by people becoming prisoners in their own homes. As a result, law enforcement practitioners are being faced with new and increasing challenges that require bringing law enforcement technology into practical application.

Schroeder said the development of law enforcement technology is "a convergence of common sense" that defies the conventional wisdom about the Federal Government's inability to solve problems. It has also defied the political divisions within the government. Bipartisanship on Capitol Hill has become increasingly rare, she said, but both parties have been able to agree on increased funding for law enforcement technology.

Schroeder's amendment to give law enforcement technology 1 percent of the funding of the $2 billion crime bill under consideration by Congress has gained support on both sides of the aisle.

Citing a worldwide need for technology transfer, Schroeder noted that it is the United States who leads the world in basic research. "We could corner the market on new technologies, such as sticky foam, infrared, safe guns, or weapons protection," she said.

According to Schroeder, the international applications of the research and development of these technologies have already been demonstrated; for example, by the Department of Defense, which used tools developed through NIJ funding in deployments to Haiti and Somalia.

While law enforcement will remain at the State and local levels during the next century, Schroeder said that the Federal Government can assist in the transfer of technology, especially if the concepts of force enhancement and law enforcement were combined. NIJ "has found the perfect ways of bringing, adapting, and applying information together through the regional centers."

However, she said it is time to go one step further toward the goal of technology transfer. Schroeder called upon law enforcement to not only conduct critical testing and objective evaluations of technologies that can be modified and applied, but also to develop reliable standards for new products.

Ironically, even with a heightened need by law enforcement for new technologies to deal with more sophisticated criminals, panelists agreed that police officers are held back by departmental policy from being equally armed. At issue is the mandatory use of departmentally approved guns.

Although many police officers must purchase the weapons out of their own money, "the gun must be authorized by the police department," said James K. "Chips" Stewart, Principal, Booz-Allen & Hamilton, former Director of the National Institute of Justice, and a former police officer for the City of Oakland, California, who represented the viewpoint of police officers on the panel. "I don't have any say in it," he said. "As such, an officer, whose life is on the line every day, has little or no control over what measures can be taken to protect him or herself."

Among the reasons panelists cited for a continuing mandatory use of departmentally approved firearms were:

- ***Administrative factors.*** Because the local police departments pay for ammunition, "if there are five different kinds of guns, they would require five different types of bullets," Bishop said. This would not be cost effective for the department, which is already suffering from inadequate funding.
- ***Evaluation and testing.*** Testing must be done in a variety of settings under various conditions, and few State or local police departments have the time, money, and manpower to conduct such thorough evaluations.
- ***Training.*** The transfer of any new technology requires specific training, which increases spending in local police departments that are already suffering from financial cutbacks.
- ***Certification.*** The issue of certification requires uniform standards on a national level rather than departmental or State guidelines.
- ***Cost factors.*** On the State or local level, the question of how to pay for the new technology would delay its implementation. "I would need time to find the funding because at the local level, I couldn't afford it," said panelist Kurt L. Schmoke, Mayor, Baltimore, Maryland. "It would take about a year or two to get the proper funding."

In addition, the growth in private security, self-defense programs, and alarm systems has shown that individual citizens, who may be questioning the performance of law enforcement, are taking the responsibility for their own safety. "The average citizen doesn't care who pays or who provides the service," said

Keynote Highlights

Charles E. Schumer, U.S. Representative, New York, 9th District; House Judiciary Committee

"Because the law enforcement market is small and fragmented, it is becoming increasingly important for the field to begin a cooperative partnership with business and industry to develop and acquire new technologies," U.S. Representative Charles E. Schumer told conference attendees.

Technology appeals to the child in all of us, he said, because we want to see the triumph of good over evil. And the boundaries of law enforcement technologies today are limited only by our imaginations.

As a working partner, the Federal Government helps to make law enforcement technology a good business by determining law enforcement's needs and priorities, giving local governments the confidence to use the technologies through minimum product standards, and advancing research in product development through the use of carefully targeted seed money.

"Law enforcement technology has the capability to stand alone," Schumer said. "As such, it should have independent funding for its technology through the Justice Department."

panelist Richard L. Thornburgh, Esq., Kirkpatrick & Lockhart, and former Attorney General of the United States. "They just want a safer environment."

Because of the various factors cited by the panelists, the transfer of a new technology both at the State and local levels would be at a standstill. "I am frustrated because there is too much bureaucracy," Stewart said.

Panelists agreed that the greatest impact on the transfer of technology lies at the Federal level. The Federal Government has the funding mechanism as well as the capability to effectively move new technologies into law enforcement, which would save the lives of thousands of police officers nationwide.

Even so, at the Federal level, the question of how to transfer new technologies into law enforcement lies more within the political arena. "How would a president prioritize it against other plans?" Thornburgh asked. "Unless you want to raise taxes, you're going to have to come up with other ways of getting the money."

In addition, panelists discussed other factors at the Federal level that might impact the transfer of technology, such as:

- The perception of the Federal Government creating a national police force.
- The perceived crossing of territorial boundaries. "Local police chiefs might feel offended if the Federal Government interferes with their daily work," said panelist Stephen Gillers, Professor of Law, New York University. "The Federal Government doesn't have the power to tell local police officers what to do."
- The perception that it is best for local problems to be solved on the local level.

Despite these perceptions, panelists noted the key roles the Federal Government can play in the integration of new technology into the law enforcement arena in:

- Creating national guidelines and standards for the development, acquisition, and application of new technologies in law enforcement.
- Serving as a central coordinator in the dissemination of information on law enforcement technologies to State and local levels.
- Establishing generic assessment, evaluation, and testing protocols for law enforcement product and technology needs.
- Providing a foundation on which to base research and development through diversified funding mechanisms.
- Passing legislation for liability cases.
- Providing leadership and definition of standards in the areas of surveillance and right to privacy.
- Providing funding for police standards and training.

To transfer technology into law enforcement effectively, panelists agreed that there must be a marriage of capabilities and joint expertise that should be incorporated under the umbrella of the Federal Government.

Panelists said that the creation of NLECTC and its regional centers will help address this Federal role by serving as a central technology education and referral source for law enforcement. It is through this effort that developing working partnerships among government, defense, industry, academia, and law enforcement can make the greatest impact on the transfer of technology.

Keynote Highlights

Stephen Goldsmith, Mayor, Indianapolis, Indiana

The business of developing and producing technologies for law enforcement has been held back because there is no functioning marketplace that can serve as a base for transferring knowledge, according to Indianapolis Mayor Stephen Goldsmith.

"There is no single driving force to integrate technology in the law enforcement field," Goldsmith told conference attendees. In addition to this diffusion, there is an absence of competition within the government that has created a monopoly that offers no incentives, he said. "There is no true bureaucracy more monopolistic than law enforcement," making it difficult to create competition to stimulate innovations.

Other reasons Goldsmith gave for the failure of technology integration included:

- Barriers between industry and law enforcement restrict private sector participation in delivering services. "No organization has accepted the responsibility of delivering the technological advances to police," he said.
- The criminal justice system is not a system. "It is hard to drive technology in a nonsystem," he said.
- There is an unfortunate division between hardware technology and the management/consulting work.
- There is confusion regarding the lack of definition of what is value added in law enforcement.
- There is an absence of innovation capital.

To promote technology transfer in the law enforcement field, Goldsmith feels that NIJ and private industry must create ways to allow cross-boundary innovations, develop a forum to create technology transfer through a cooperative partnership, and streamline the enormous waste within law enforcement. In addition, industry must be willing to provide funds for system testing sites.

In addressing the possible solutions to technology transfer, each member must play a clearly defined role, he said. Not only is there a role for NIJ to create a national cross-disciplinary effort to stimulate technology transfer, but a Federal agency must have the explicit mission to provide science and technology information transfer to local law enforcement. The role of the Federal Government should be to buy down the cost of innovation through such venues as low-cost loans.

In conclusion, Goldsmith said, "The technological opportunities available are overwhelming, and all of us must create opportunities to work together to advance the transfer of this knowledge."

Although many new technologies are available today that can be easily adapted to the law enforcement field, the integration of this venue of critical support to police officers nationwide has been hindered by a variety of old and new factors. Of particular importance is the failure to recognize law enforcement as a business entity that impacts the development and transfer of technologies that are critical for success.

The Business of Technology: An Industry Perspective

James K. "Chips" Stewart
Moderator
Booz-Allen & Hamilton

"Why hasn't technology come into law enforcement?" asked James K. "Chips" Stewart, who served as moderator of the Business of Technology: An Industry Perspective panel. Among those who tried to answer this and other complex questions were industry representatives who focused their discussion on the business of developing and producing technologies for the decentralized criminal justice community.

The Business of Technology: An Industry Perspective

According to Stewart, recent statistics reflecting the declining percentage of crime clearances have demonstrated that the traditional methods of catching criminals are not working as well as in the past. This factor, when combined with the fact that police officers are being confronted by a new type of criminal, has created a greater need for technologies to meet the new challenges. "We have the wrong paradigm when it comes to law enforcement," Stewart said. "It is not enough to have the best men and women working on the police force. We need to help those people do the best job they can by giving them the best tools and by setting up a marketplace that will work that way."

To effect a paradigm shift, a conscious decision must be made to create change, and one way is through examining the current problem and attempting to solve it. "Think globally but act locally applies when trying to examine the law enforcement field," said Herb Blitzer, Applications Manager, Law Enforcement Markets, Eastman Kodak Company. "Technology today is such that, by using the right approach, one can examine each aspect of the law enforcement system individually and evaluate the cost efficiency in each category."

To conduct a full examination, Blitzer cited the use of a workflow chart that breaks down each departmental category and thus creates a systematic approach to defining needs. He said that this approach allows departments to "really know what your business is and what your police officers do." He also advised that law

enforcement departments should "not do this through isolation. Ask for help from business."

By looking at law enforcement as a business entity, the industrial concept of Total Quality Management (TQM) should be introduced, according to Robert B. Penninger, Director of Advanced Programs, GDE Systems, Inc. "TQM shows you how your business operates," he said. "This will show you how to do your job better."

Penninger said that one successful application of TQM can be found in the airline industry, which forced manufacturers to be competitive with the planes they provide. As a result, United Airlines recently acquired the new Boeing 777, which holds not only four times more people than a 707, but flies with just two crew members and costs just a quarter as much per passenger mile to operate. "Their computer systems have been adapted to manage the flow of information, thereby letting the pilots be pilots," Penninger said. "Police departments are faced with the same challenges. You're not dealing with wind structures and velocity, but you are dealing with who, what, and where are these people who are doing crimes. Technology can help police officers do their jobs more efficiently, but you have to look inward and see how your system operates."

"We need to move away from a people focus to a technology focus," said Rear Admiral Thomas Brooks, USN (Ret.), Vice President, AT&T Multi-Media Services and Ventures, who drew a parallel between law enforcement and the military, which has already conducted a paradigm shift. When the changing faces of the individuals who serve in the military became largely volunteer, Brooks said,

Factors contributing to the lack of technology in the field of law enforcement:

- ***A failure to recognize technology as an essential component of law enforcement; paradigm shift in thinking required.***
- ***A small dysfunctional law enforcement market that makes development of technologies unattractive to major companies.***
- ***A lack of knowledge of what new technologies are available.***
- ***The limited role of the Federal Government in the research, development, and acquisition of technologies.***

"the military had to conduct a paradigm shift so that the technology would allow their people to do things that they can."

Although the major difference between the military and law enforcement is that the military is one centrally directed force rather than fragmented departments, Brooks pointed out that the target of the technology was the same—to stay ahead of the enemy, whether the enemy was a foreign national or a local criminal. "The enemy can always afford the technology!" he said.

Reiterating a comment from his keynote address, Stephen Goldsmith, Mayor of Indianapolis, Indiana, said that within the law enforcement field, there is no functioning marketplace that can serve as a base for transferring knowledge—no single driving force to integrate technology. In addition to this diffusion, Goldsmith said that the absence of competition within government has created a monopoly that offers no incentives. "There is no true bureaucracy more monopolistic than law enforcement," he added, "making it difficult to create competition to stimulate innovations."

"No organization has accepted the responsibility of delivering the technological advances to police," Goldsmith said. Because the criminal justice system is not a system, "it is hard to drive technology in a nonsystem." He also cited an unfortunate division between hardware technology and the management/consulting work, a confusion regarding the lack of definition of what is value added in law enforcement, and an absence of innovation capital.

Stewart added that just as with any business in current American industry, success or failure of providing a service lies in how solid the marketplace is for efficiency and innovation. "All business is based on profit," he said. "In adapting business to law enforcement, we must concentrate on the idea of return on investment. However, because there are only 17,000 police departments, which makes the overall business of law enforcement a small market, there are other places that are forming competition, such as private security firms."

The influx of commercial and home security firms has minimized the return on investment from law enforcement, according to Jeffrey A. Leone, General Manager, High Performance Fibers, AlliedSignal, Inc., which makes ballistic fiber used in body armor. "If an industry has $1 million to invest in security technology," Leone said, "it would put it in three areas: law enforcement, commercial security, and home security. It has been demonstrated that both home and commercial security pay significant profits. On the other hand, law enforcement is barely paying money back."

In addition, the increasing numbers of private security firms have created unique problems for law enforcement. "There are cities that are currently passing legislation to tax residents who hire private security," said Stewart. "If only wealthy communities can afford sophisticated detection, this will create safe and unsafe zones in our society, which will also contribute to a vicious cycle between law enforcement and security firms."

"The technology itself is not a barrier," said David Beck, Vice President and General Manager, Westinghouse Electric Corporation. "The problem is the marketplace. Technology at the State and local levels is not a priority for funding."

And for those companies that produce other technologies, the profit is found in unrelated fields. "Booz-Allen & Hamilton is developing law enforcement technology while at the same time manufacturing tools for breast cancer," said Stewart. "Our work in breast cancer makes more money. And in business, the bottom line is profit."

"If liability cannot be waived for manufacturers of approved hardware used by law enforcement agencies for all reasons except product defect, then it should be assumed by law enforcement agencies or government in a manner similar to the liability assumed by the military for hardware developed to their specification."

Dr. Eric P. Wenaas
President and CEO
JAYCOR

Because the marketplace in law enforcement is small by commercial standards, it has not been traditionally profitable to large business. "This initiative to the law enforcement market on the part of ITT has been a labor of love," said Elaine Tuttle, Vice President, ITT Night Vision, ITT Electro Optics Product Division. "We realize that our products are so desperately needed by the law enforcement market. However, because of the shortfall in profit, I don't know how long we can continue to spend money on this technology," she said.

For Allied to remain in the law enforcement market, "we need to change the efficiency of getting products to law enforcement," Leone said. "Our industry must change its approach to law enforcement since the end user is not the budget decisionmaker." Those who are in the position of making the decisions regarding the purchase of technologies, according to Leone, are not those who would use the tools. The end-use customer in the law enforcement field is the average citizen who is more concerned about personnel costs and manpower and not technology. This diversity creates a sense of frustration for industry, which is trying to develop technologies for a fragmented law enforcement field.

Leone also drew a parallel between the law enforcement field and the automotive industry, which had been threatened by the influx of Japanese cars. Detroit's answer, he said, was to form central points within the automotive industry that would be responsible for individual technology. "You don't have to go to 17 places to determine the energy management or mileage for one car," he said. "This is what is critically needed in the law enforcement field."

Beck added that efficiency, accessibility, and innovation are hallmarks of American industry. Even when dealing with a small marketplace such as law enforcement, he said, "We in industry set goals and have a timeframe. If you can't see your progress being made, you want to reinvest elsewhere." In addition, he said that the costs of producing technologies are impacted by specific problems related to law enforcement. The usual costs in basic production of any technology include the development, manufacturing, marketing, and advertising costs.

However, in the law enforcement field, major focus must also be placed on legal liability costs. "Legal costs can destroy a product, and there is no way of protecting yourself against lawsuits," said Dr. Eric P. Wenaas, President and Chief Executive Officer, JAYCOR. He noted that if a police officer shoots or kills a criminal, the value of the person's life is determined by the courts. However, "if you injure them," he said, "you are saddled possibly with future medical costs, making the liability greater." One example cited was the Taser®, which had hundreds of lawsuits result from its use. Thus, the issue of legal liability prevents police from having tools that they need.

Because the law enforcement market poses unique problems to business and industry, it must be looked at as a commercial market with institutionalized buying practices. "Our mission has been to look at law enforcement as a commercial business and not as an extension of our military business," said Tuttle. "The challenge has been to take our core technology and translate and modify the products that work very specifically for law enforcement application."

"Because there are 17,000 agencies with common functions and challenges, some existing products can be adjusted and adapted to law enforcement," said Terrence L. Casto, Manager, Law Enforcement Programs, Harris Corporation. "However, what is needed are common definitions, formats, and functions which are key to the paradigm shift."

Casto said that the law enforcement community is "characterized by a lot of information that is captured in stovepipe solutions." He said that this has consequences for the cost of operations for both the user and for the industry that is trying to supply solutions. And despite a general frustration with a lack of interoperability in certain technologies, there are many tools that can assist, for example, in providing situational assessments, improving booking operations, and computerizing mug shot systems. "The impact of this technology doesn't stop with law enforcement," Casto said. "It carries into the parole, court, and probation systems."

In citing Detroit again as an example, Penninger said that it used to take 4 years to turn out a new car model. By adapting technology to improve their computer systems, the current turnaround is every 18 months. "This progress is not the result of hiring more people," he said. "It came about by adapting the technology that is available."

"Likewise, law enforcement needs to get automation into the mainstream of police work," Penninger said, citing the amount of time police officers spend filling out forms when they should be out on the streets. Just as in the medical community, which has adapted technology to bring down health care costs, he said, so too can the law enforcement field bring technology into the mainstream to increase efficiency and lower operating costs.

Leone added that despite the advances in technology, what is desperately needed in the law enforcement field is one centralized source that would serve as "keepers of the technology." He said that industry needs professional technology people who can analyze what the state of the art is in the market. "If there isn't one source to act as this analysis broker, there is no way industry can sufficiently cover 17,000 police departments and design products that they need," he emphasized.

Casto said that a lack of research and development standards has additionally hampered the integration of technology into the law enforcement field. What is critically needed in improving operations and accessing technology, Casto suggested, would be the adoption and utilization of "a hierarchy of standards, which at the lowest levels would address communications and protocol and at the highest levels would develop application standards."

Because Congress allocated nearly $2 billion in the Crime Bill for law enforcement on the State and local levels, a potential marketplace has been created that necessitates a central broker to guide law enforcement through technological applications. Panelists agreed that the Federal Government has a vital role in transferring today's technology. "We can translate our applications technology easily into law enforcement through an agency guiding us," Leone said. "As a result, industry would be more receptive and enthusiastic."

In calling for national direction that would pull together the fragmented law enforcement system, panelists said that the National Institute of Justice, as the agency to guide future law enforcement technology, has a role in the research, procurement, and transfer of technology by:

- Serving as an informational access pool so that law enforcement can learn what is available in the area of law enforcement technology, both in high technology and everyday commonplace technology; e.g., fax machines, e-mail, and file transfer, which are standard in the workplace but rare in police departments.
- Serving as an entity to test technology and establish uniform standards for research and development.
- Creating a national funding mechanism that would provide money to State and local levels for technology.
- Buying down the cost of technology (e.g., by underwriting technology and through loaner programs).
- Limiting costs by limiting potential liabilities.
- Developing a fundamental structure for basic research to make law enforcement better.
- Allowing national funds to be available, especially at the State and local levels, for development.
- Increasing public awareness of the problems facing law enforcement officials in their daily work.
- Increasing the level of attention to issues of law enforcement on the Federal, State, and local levels.
- Developing systems integration so that different departments can work together.

According to Stewart, a major first step has been taken with the establishment of the National Law Enforcement and Corrections Technology Center. In addition, with the creation of JUSTNET, these two entities have set the stage, he said, to put NIJ in the position of central broker in the transfer of technology to police officers nationwide.

Keynote Highlights

Joseph E. Brann, Director, Community Oriented Policing Services (COPS) Office, Department of Justice

"What technologies will individual police officers need in the 21st century?" asked Joseph E. Brann, Director of the Community Oriented Policing Services Office. With the new concept of community policing, he said, increased emphasis must be placed on problemsolving and analysis in order to assist police officers in their work.

Past technological advances have concentrated primarily on conflict, Brann said. Because a new criminal type is out on the streets, a new challenge exists—in providing technology that does more than help officers catch criminals. New technology must help them analyze information and solve problems.

Under community policing, a department's organizational methods must be examined in addition to a deeper examination of crime itself, he said. The emerging political philosophy that has evolved over the past 20 years requires a new technology that incorporates a flexible understanding of the problems facing police officers.

Today's police officer spends more than 70 percent of his or her time with social misbehaviors, Brann noted. Outcomes and efficient measures to rate response time, arrests, and prosecution, all important concepts of community policing, produce a qualitatively different approach that must be reflected in the technology.

According to Brann, community policing must provide police officers with problemsolving capabilities that deal directly with these changing needs. Since the citizen is the end user, technology serves to facilitate a partnership between the police officer and the community. In recognizing the broad scope of the officer's duties, future technologies must help police officers to integrate information and assist in identification and problemsolving.

Among the tools that are needed to achieve these goals, Brann said, are laptop computers that provide instant access to and transfer of information from one person to another. In addition, there must be a utilization of real time virtual reality software to give flexibility and judgment to police officers.

Addressing creative funding sources and methods for the development and acquisition of law enforcement technology and equipment was the charge to this panel of law enforcement administrators and government officials. Fully half of the law enforcement agencies in the United States have fewer than 12 sworn officers. This fragmentation and small size, coupled with the diversity of needs, presents industry, government, and most especially practitioners with a formidable challenge.

Creative Funding for Law Enforcement Technology and Equipment

Dr. Jim Gelatt
Moderator
President, Prentice Associates

Creative Funding for Law Enforcement Technology and Equipment

"Law enforcement technology for police departments has to be viewed as both a problem and an opportunity," stated Colonel Carl Baker, Deputy Secretary of Public Safety for the Commonwealth of Virginia. According to Baker, most police departments find themselves to be in a slowly drowning situation, with major increases in serious crimes, 911 calls, and most recently domestic terror. While workloads have risen dramatically in recent years, Baker said, resources such as personnel have decreased. Government downsizing, especially in police departments, is forcing these departments to do more with less, leaving police administrators with some difficult choices. To better understand the impact of police departments, he said, it is important to understand the makeup of the funding for police departments.

Baker explained that most departments have only about 5 to 7 percent of their budgets available for such uses as equipment, technology, ammunition, or computers after personnel and related overtime (which accounts for about 85 percent of police budgets); vehicle fuel and maintenance (10 to 12 percent); and communications (3 to 5 percent). These factors plus a lack of funds, personnel, and training all influence the timeliness and the degree to which new technologies are accepted by police administrators. He said that a number of questions need to be taken into consideration when talking about new technologies:

- How important is the new technology to the overall operation of the department? How important is it to compare it to other technologies or personnel?
- How much will it cost to purchase, to maintain?
- How many are needed?
- Where are the hidden costs? For example, new computers may require data input people.

- Does the technology save real money or man-hours?
- Will the technology help street officers better serve the community (the end user)?
- What is the value-added service to the community?
- How much training is required to use the technology?
- How will courts view the technology? What constitutional issues will come up?

"Industry must pay attention to the priorities set by law enforcement."

Colonel Carl Baker
Deputy Secretary
of Public Safety
Commonwealth of
Virginia

Law enforcement is nonetheless anxious to use new technologies, Baker said. They will adopt what proves to be effective and efficient. The benefits of pepper spray and the Magic Wand are measurable, he said. Pepper spray, for example, has substantially reduced the injuries to both officers and suspects during arrest altercations. Such technologies save money, time, and injuries to officers. The Magic Wand has simplified the fingerprint method, reduced the cost, and allowed officers to search for prints in one-tenth the time of past procedures. These two cases demonstrate where supply and demand are working.

Industry must pay attention to the priorities set by law enforcement, Baker said. Industry should consider:

- Technologies that offer remote weapons detection, which is the number one priority item for street officers.
- Less-than-lethal technologies, which when effective may reduce lawsuits and thus are easier to justify at budget time.
- Technologies that reduce the occurrence of high-speed pursuits.
- Technologies that provide officer protection.
- Technologies that assist in the collection of evidence.

To pay for the acquisition of new technologies, Baker said that there are means other than tax dollars, including asset forfeitures, State tax return checkoffs, tourist safety programs, criminal restitution programs, and private and government grants. He also noted mutually beneficial industry programs and privatization of technological development.

However, the better government approach, he said, is to provide incentives to firms to develop the technology and to assist in the transfer of Department of Defense technology to the law enforcement community. "This program cannot be successful if it is done in a vacuum," he said. "That's why it is so important to get input from law enforcement."

"There is a responsibility to ensure that whatever new technology is developed does not sit on the shelf and is both practical and affordable for law enforcement and answers those questions of supply and demand," Baker stressed.

Ithaca, New York, Police Chief Harlin R. McEwen reminded participants that although every State and locality has different laws, schemes, and controls over funding approaches that must be kept in perspective, ideas presented serve as opportunities that can be adapted in some way to almost any place in the country. As an example, McEwen said that in the State of New York one method to pay for 911 systems is to have a surcharge placed on telephone bills.

Telephone bills in New York include a monthly 35-cent charge if the local county had passed a law to adopt that surcharge, McEwen said. The telephone company collects the money and then turns it over to the county. The surcharge can only be used to pay for the equipment and the telephone lines necessary to implement 911, but not for additional personnel, such as dispatchers or call takers to run the equipment.

He added that a side benefit to implementing the system is the streamlining of data entry. Incoming calls are transmitted directly to the mobile terminal, with the automatic number, location, name, and the information downloaded into the records management system. Personnel hours are saved because the data are inputted only once. In conclusion, McEwen stressed promoting all innovative ways of securing funds.

"It has become increasingly clear that violent crime and the fear of violent crime is emerging rapidly as a major issue in Pennsylvania, Washington, D.C., and elsewhere around the United States," said James F. Barnes, Legislative Information Officer, Office of Legislative Information, Commonwealth of Pennsylvania. Barnes said that he and Thomas A. Tangretti of the State's House of Representatives have been formulating legislative approaches to provide needed resources.

Barnes said that their efforts, known as the Pennsylvania Police Agency Loan Proposal, were modeled after a 1975–76 Pennsylvania program for volunteer fire and rescue services and adapted for law enforcement purposes. The proposal included 2-percent loans of up to $200,000 for police structures (with a 15-year payback period), and up to $100,000 (with a 10-year payback period) for vehicles and equipment and technology. The bill was introduced in September 1994 (H.B. 14) and later passed and, according to Barnes, has subsequently spurred significant interest.

Lieutenant Michael McColly, city of Crown Point, Indiana, Police Department, told conference attendees about his department's efforts to raise funds for

equipment after its decision to increase visibility by switching to a fleet car program. The department, he said, financed the cars through the Indiana Bond Bank at $34,000 per year, but additional money was needed to equip them. Through an "Adopt-a-Car" program, the department formed a relationship with businesses in which they could sponsor a car by donating approximately $1,500, which was used to pay for equipping the vehicles. In return, the name of a sponsoring business was placed on the back of the car in small print, "This vehicle is equipped by [name of the business]."

Although there were a few questions of ethics with regard to funding, overall the program worked well, McColly said.

One participant suggested that in order to avoid the question of ethical conflicts, they should use another agency or organization that is in the business of fund-raising—a not-for-profit community foundation. The not-for-profit group would collect the money and designate it for the use of public safety enhancement so that the police department need not be associated with the funds themselves. These donations would be tax deductible for the donor.

In summary, Dr. Jim Gelatt, President, Prentice Associates, and facilitator for the panel discussion, outlined four steps to effective fund-raising:

1. Know your market. What works in one community may or may not work in another. Get to know your market so that you know who you are dealing with. Get across the point that contributors supporting your organization for crime prevention are investing in their community.

2. Develop your strategy. What will the market bear? Segment the market and then develop the strategy for approaching potential contributors (e.g., through letters or proposals).

3. Cultivate your donor. Devise ways that increase the likelihood of receiving an investment.

4. Ask! If this proves too difficult, contact the National Society of Fund-Raising Executives, which often adopts organizations and has a "friend" program where they help in the fund-raising effort.

The need for Congress to assist Federal, State, and local law enforcement in funding the research, development, and procurement of new technology to combat crime was the thrust of the testimony before the House Judiciary Subcommittee on Crime held on the final day of the conference. Through two panels, congressional leaders heard the issues facing both the Federal Government and industry relating to technology for the law enforcement community.

House Judiciary Subcommittee on Crime: "The Role of Government in the Development of Technology for Law Enforcement"

"The recent Oklahoma City tragedy has illustrated the central role of technology in law enforcement today," House Judiciary Subcommittee on Crime Chairman Bill McCollum (Florida, 8th District), told participants in his opening remarks. "Increased technological innovation is required to deal with the increasing sophistication of today's criminals."

House Judiciary Subcommittee on Crime

In discussing the perspective of the Federal Government in transferring technology, there was agreement among subcommittee members and panelists that all of our police departments cannot possibly be expected to pay for the testing and evaluation of new technologies. This has to be done at the Federal level.

Although there is a wide range of technologies that American industry has made available, few are being applied in law enforcement because "law enforcement is poorly funded," David G. Boyd, Director, National Institute of Justice (NIJ) Office of Science and Technology, told the subcommittee.

"Despite the incredible cost of law enforcement and the clear expressions of concern by citizens about the consequences to the public of crime," Boyd said, "we have done little to modernize our primary crime-fighting instrument—the Nation's police. In fact, State and local police, who represent more than 95 percent of our Nation's police personnel and handle well over 95 percent of the crime in this country, are still equipped much as Wyatt Earp was in the late 19th century."

He told the subcommittee that because little has been developed with the patrol officer in mind, what is needed is "a genuine R&D effort focused specifically on law enforcement, corrections, and public safety needs, especially at the State and local levels."

Boyd outlined six major elements that the Federal Government must incorporate into this effort to ensure that programs to transfer technology to law enforcement are effective:

- Draw attention to the advantages technology can offer to law enforcement. While virtually no money has been invested in developing effective technologies specifically for law enforcement, it is also true that law enforcement has not readily embraced technology.
- Identify a principal focus for law enforcement technology efforts to coordinate the development of new technologies, eliminate duplication, and ensure law enforcement involvement to avoid the costly mistakes that are made too often in other Federal research and development efforts.
- Create a mechanism to ease access to technological information by public safety agencies.
- Establish a way to ensure that public safety needs are considered in the earliest stages of every Federal research and development effort.
- Establish a process to ensure the safety of law enforcement technologies, both for the public and for the officer.
- Address the fragmented buying power of law enforcement.

A cooperative effort must exist between the Federal Government and industry to effectively transfer technology, Boyd said. “But we can do that only if we rely on intelligently structured partnerships which allow us to share information and pool resources.”

The recently established National Law Enforcement and Corrections Technology Center (NLECTC) is aimed at serving as a leverage agent for coordinating information as well as serving as a point of contact, he said. NLECTC is responsible for helping to facilitate the identification, development, manufacture, and adoption of new products and technologies specifically designed for law enforcement and criminal justice applicants. “This is one way to get the technology out into the field and to let the local police departments know what is available,” Boyd explained. However, NLECTC is intended to be only part of a new law enforcement information network that is targeted at industry to identify law enforcement requirements.

Another step toward this Federal leadership to disseminate information to State and local levels was highlighted by Ithaca, New York, Police Chief Harlin R.

McEwen, who has been working with other Federal law enforcement agencies to identify strategies to improve law enforcement communications by making more of the radio spectrum available for use by law enforcement.

With the signing of the Memorandum of Understanding between the Departments of Defense and Justice, McEwen said that a cooperative partnership between the two agencies would allow for the transfer of military technology to civilian law enforcement. McEwen said he would like to pursue a Memorandum of Understanding with the U.S. Department of Energy; subcommittee member Steven H. Schiff (New Mexico, 1st District) said he would be interested in such a formal understanding.

When questioned about the role of industry in technology, Boyd said, "We must encourage industry to build and sell technology that is affordable because the Federal Government can't afford it all. It is going to be tough to get industry interested in selling a product for just a few hundred or a few thousand people."

To acquaint themselves further with the potential of technology, subcommittee members asked Boyd to provide information on various technologies. When

House Judiciary Subcommittee on Crime:

Majority Members

- **Bill McCollum, *Chairman***
  Florida, 8th District
- **Steven H. Schiff**
  New Mexico, 1st District
- **Steve Buyer**
  Indiana, 5th District
- **Howard Coble**
  North Carolina, 6th District
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- **Ed Bryant**
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Minority Members

- **Charles E. Schumer, *Ranking***
  New York, 9th District
- **Robert C. Scott**
  Virginia, 3rd District
- **Zoe Lofgren**
  California, 16th District
- **Sheila Jackson Lee**
  Texas, 18th District
- **Melvin L. Watt**
  North Carolina, 12th District

Jurisdiction: Federal Crime Code, drug enforcement, sentencing, parole and pardons, Federal Rules of Criminal Procedure, prisons, other appropriate matters as referred by the chairman, and relevant oversight.

asked about any improvements made in the Taser [R], Boyd said that because liability problems are connected with this product, other technologies that can restrain uncooperative subjects, such as net devices or how to deliver pepper spray safely in a small area, are being investigated.

The issue of liability was cited by the panel representing industry as one of the major barriers to transferring technology. Dr. Eric P. Wenaas, President and CEO of JAYCOR, told the subcommittee that "the threat of lawsuits has a chilling effect on the manufacturers of equipment." He asked that the Federal Government take legislative steps to ensure that manufacturers are not liable to the public for hardware approved by, acquired by, and used by law enforcement agencies.

"No Federal, State, or local law enforcement agency in this country can legally do what you saw on public television when the news media followed O.J. Simpson down the California freeway. None of us, including the FBI, have the authorization for a broad enough radio spectrum to transmit live video like the news media has."

Harlin R. McEwen
Chief of Police
Ithaca, New York

Wenaas also detailed other barriers that have affected the transfer of law enforcement technology. Because law enforcement is a "fractionated market with no requirements, no standards, no centralized acquisition agencies, and no suitable distribution network for new products," Wenaas said, "this represents a major obstacle for private industry. Since it is the government who is the customer for these products, it is the government who can and should organize this market to encourage product development." In addition, Wenaas called on Congress to increase funding not only to industry to buy down the cost of R&D, but also to Federal, State, and local agencies to acquire such technology.

According to Grady C. Wright, Vice President and General Manager, Integrated Engineering Division, TRW Systems Integration Group, the impact of technology on the law enforcement field can result in a "force multiplier," which would reduce the number of people required to perform a specific task and free up resources for other missions, such as street patrols. Citing both the Automated Fingerprint Identification Systems (AFIS) and the Modus Operandi Registrant Computer (MORC) manufactured by TRW, Wright said that "applications of such technology will require some initial expenditures, but the savings, in terms of law enforcement manpower, resources, and peace of mind for our citizenry, will provide ample return on those investments."

The concept of force multiplier is especially felt in these times of government downsizing. Colonel Carl Baker, Deputy Secretary of Public Safety for the Commonwealth of Virginia, said that due to the streamlining being conducted nationwide, "the providers of new technology must know what drives the police administrator's decision on whether or not to purchase a product."

Baker suggested using creative funding methods, such as asset forfeiture moneys, donation programs, fees added to criminal convictions, criminal restitution programs, foundations, and grants as possible ways of increasing funding.

Subcommittee member Zoe Lofgren (California, 16th District) said that another way would be through revolutionary funds such as issuing bonds.

The issue of inadequate funding, combined with the need for independent testing of police products, is especially felt on the local level. “In my agency, our budget did not include a single dollar for R&D,” said Robert E. Cansler, Chief of Police, Concord, North Carolina. “Our technical research is totally based on a review of the work of others.”

In detailing an arrest incident in his department during which pepper spray was used and the suspect subsequently died while in custody, Cansler said that “no State or local government can provide the incentives needed for industry to do the necessary R&D to market effective products to such a decentralized market which is filled with legal land mines.”

According to Dennis Miyoshi, Director of the Nuclear Security Systems Center at Sandia National Laboratories, the future of law enforcement technology lies in a systems engineering approach, which incorporates analysis, testing, standards, and training. He mentioned several new technological areas that could make law enforcement more effective, such as contraband detection; tagging, tracking, and monitoring; less-than-lethal weapons; forensics; use control; and personal identity verification. “These technologies are in various stages of development,” Miyoshi said. “They offer tremendous opportunities for how we as a Nation deal with crime and criminal justice.”

In expressing their commitment to law enforcement technology, the members of the subcommittee were supportive and receptive. “It is vital that law enforcement be as smart as it can be, and we must assist them in getting the proper tools to do their work,” they said.

In offering support to the panelists whom he sensed were “frustrated,” Representative Fred Heineman (North Carolina, 4th District) said that “technology needs to go further. You can’t measure the importance of technology in dollars and cents. It can only be measured in human terms.”

“One of the greatest contributions that technology can make is in the field of law enforcement,” Schiff said. “We all must work together. Both sides of the political aisle are in agreement on this.”


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We're seeing many expressions of the need for technology—a convergence of views and support for better technology for law enforcement," said Conference Vice Chair Vice Admiral E.A. Burkhalter, Jr., USN (Ret.) in summarizing the conference proceedings. He noted discussions about innovation, opportunities for creativity and creative thinking, and ideas about involvement at both the Federal and local levels—how the market can be expanded by involving the private sector; the possibilities for national funding; and the need for public relations and the publicity that needs to go out to the Congress, State and local officials, and foundations to get more community support from the Federal down to the local levels. "We have seen excitement and innovation coming into this program that wasn't there a year ago," Burkhalter said, noting that the goal now is to capitalize on the momentum.

Concluding Notes and Acknowledgments

Acknowledgments

- **Jamie S. Gorelick**
  Deputy Attorney General of the United States;
  Conference Chair
- **Vice Admiral E.A. Burkhalter, Jr., USN (Ret.)**
  Conference Vice Chair
- **Judge William Webster**
  Former Director
  Central Intelligence Agency;
  Former Director
  Federal Bureau of Investigation;
  Conference Honorary Chair

Keynote Speakers

- **Joseph E. Brann**
  Director
  Community Oriented Policing Services (COPS) Office
  U.S. Department of Justice
- **Stephen Goldsmith**
  Mayor
  Indianapolis, Indiana
- **Laurie Robinson**
  Assistant Attorney General
  Office of Justice Programs

- **Patricia Schroeder**
  U.S. Representative
  Colorado, 1st District; House Judiciary Committee
- **Charles E. Schumer**
  U.S. Representative
  New York, 9th District; House Judiciary Committee
- **Jeremy Travis**
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  National Institute of Justice

Hard Choices for Law Enforcement: Federalism, Funding, and Control

Hard Choices for Law Enforcement: Federalism, Funding, and Control

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  Principal
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- **Patrick J. Sullivan, Jr.**
  Sheriff
  Arapahoe County, Colorado
- **Richard L. Thornburgh, Esq.**
  Kirkpatrick & Lockhart
  Former Attorney General of the United States

The Business of Technology: An Industry Perspective Panel

- **James K. "Chips" Stewart, Moderator**
  Principal
  Booz-Allen & Hamilton;
  Former Director
  National Institute of Justice
- **David Beck**
  Vice President and General Manager
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- **Herb Blitzer**
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- **Robert B. Penninger**
  Director of Advanced Programs
  GDE Systems, Inc.

- **Elaine Tuttle**
  Vice President
  ITT Night Vision
  ITT Electro Optics Product Division
- **Dr. Eric P. Wenaas**
  President and Chief Executive Officer
  JAYCOR

Creative Funding for Law Enforcement Technology and Equipment Panel

- **Dr. Jim Gelatt, Moderator**
  President
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- **Colonel Carl Baker**
  Deputy Secretary of Public Safety
  Office of the Governor
  Commonwealth of Virginia
- **James F. Barnes**
  Legislative Information Officer
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- **Dr. Eric P. Wenaas**
  President and CEO
  JAYCOR
- **Grady C. Wright**
  Vice President and General Manager
  Integrated Engineering Division
  TRW Systems Integration Group

Conference Exhibitors

Aberdeen Test Center. The Aberdeen Test Center (ATC) is a diverse Federal testing facility within the U.S. Department of Defense that works with material developers to test weapons and equipment for the U.S. armed forces. As a Federal laboratory, ATC can form technology transfer and dual-use partnerships with industry and participate in regional, State, and local economic development organizations. Contact: Aberdeen Test Center, Public Affairs Office, Aberdeen Proving Ground, MD 21005–5059; 410–278–2350.

AlliedSignal Fibers. AlliedSignal manufactures Spectra fiber, which is used in a variety of military and law enforcement body armor and other protective materials. Contact: AlliedSignal, Inc., P.O. Box 31, Petersburg, VA 23804; 800–695–5969.

AT&T Secure Communications Systems. AT&T has developed a series of secure communications systems designed to protect highly sensitive information transmitted via voice or facsimile. The systems, designed for telephones, cellular phones, and facsimile machines, feature state-of-the-art digital encryption. Contact: AT&T Secure Communications Systems, P.O. Box 20046, Greensboro, NC 27420; 800–243–7883.

BAI Aerosystems, Inc. BAI Aerosystems was founded in 1985 in response to the growing commercial, law enforcement, and military need for Unmanned Aerial Vehicles (UAVs). It is a full-service company that offers clients services in manufacturing, design and development, electronic engineering and integration, and training and field support. Contact: BAI Aerosystems, Inc., 9040 Glebe Park Drive, Easton, MD 21601; 410–820–7500.

B Tech, Inc. B Tech's Bogus Bullets is a technology for disabling illicit firearms. This technology converts ammunition so that it irreparably jams the weapon when fired. Unlike dummy ammunition, these bullets fire but weld themselves to the walls of the firing chamber, jamming the weapon's firing mechanism without explosion or risk to the shooter or bystanders. Contact: B Tech, Inc., 3212 Old Dominion Boulevard, Alexandria, VA 22305; 703–751–3422.

Colt's Manufacturing Company, Inc. Colt's Manufacturing Company, Inc., designs and manufacturers an M16 "family of weapons" and accessory items for use in combat and paramilitary operations. Contact: Colt's Manufacturing Company, Inc., P.O. Box 1868, Hartford, CT 06144–1868; 203–236–6311.

Firearms Training Systems, Inc. Firearms Training Systems (FATS) develops training tools for law enforcement and military instruction, including the FATS Classroom Trainer and Law Enforcement Simulators. The technologies allow instructors to simultaneously train and interact with students at all skill levels.

Both systems employ video or computer images and instructions projected onto a large screen, and give immediate evaluation and feedback on performance. Contact: Firearms Training Systems, Inc., 7340 McGinnis Ferry Road, Suwanee, GA 30174; 404–813–0180.

GDE Systems, Inc. GDE Systems provides military decision support and information processing systems. For potential law enforcement applications, GDE offers automated mission planning systems for both manned and unmanned platforms that provide interactive survivable routing, accurate performance analysis, rehearsal, and quick response to changing threats. The company's real-time imagery processing and exploitation products support applications with navigation aids, reference scene preparation, targeting materials, and perspective scene generation. Contact: GDE Systems, Inc., Business Development and Planning, P.O. Box 85310, San Diego, CA 92186–5310; 619–573–5157.

ITT Night Vision. ITT's Night Enforcer viewers are high-quality night-vision equipment that will make night-vision technology accessible to individual law enforcement personnel. The viewers are rugged, compact, water resistant, and simple to use. They were manufactured using the same technology employed by the military in Operation Desert Storm. Contact: ITT Night Vision, 7635 Plantation Road, Roanoke, VA 24019; 800–448–8678.

LaserMax, Inc. LaserMax has developed a completely internal laser gun sight that will enable urban police departments, and particularly transit police patrolling subways at night, to more accurately fire their semi-automatic weapons. LaserMax technicians worked closely with transit police firearms experts to stand up to the rigors of daily patrol. The sights are particularly effective in situations where an officer is unable to raise both hands to eye level to sight a target. They are installed as a drop-in unit with no permanent modification to the weapon. Contact: LaserMax, Inc., 3495 Winton Place, Building B, Rochester, NY 14623; 716–272–5427.

Mathews Associates, Inc. Mathews Associates manufactures military battery assemblies and is the prime supplier for the Navy, Marines, and U.S. Air Force for several battery technologies. Mathews also supplies several Government agencies with the SABER Battery, which is a sealed lead acid unit that has a built-in charger and is capable of being recharged through vehicular channels. The company supports these assemblies with a full array of power systems. Contact: Mathews Associates, Inc., 645 Hickman Circle, Sanford, FL 32771; 407–323–3390.

National Law Enforcement and Corrections Technology Center (NLECTC)/ National Institute of Justice. NIJ's National Law Enforcement and Corrections Technology Center was established in October 1994 to assume the functions of the Technology Assessment Program Information Center (TAPIC) and to additionally become the virtual hub of a national organization of regional centers dedicated to supporting Federal, State, and local law enforcement, corrections, and criminal justice system science and technology requirements. Contact: NLECTC, Box 1160, Rockville, MD 20849; 800–248–2742.

Naval Air Warfare Center. Reconnaissance and surveillance imagery systems developed by the Naval Air Warfare Center Aircraft Division in Warminster (NAWCADWAR), Pennsylvania, for military requirements are now capable of being applied to law enforcement settings such as drug interdiction, remote surveillance, security, and safety. The most promising applications include a covert surveillance camera and transmitter made of silicone and hidden in objects (i.e., rocks); a miniature camera and transmitter, called a "badge-cam" mounted behind law enforcement badges; a digital camera through which images can be retrieved immediately and enhanced as needed; and a fiber optic recording system that permits a diver to view and record imagery in real-time while operating from a submerged position. Contact: Naval Air Warfare Center Aircraft Division, Technology Transfer Program Manager, Code 4.0 CR, MS 70, Warminster, PA 18974–5091; 215–441–1143.

Non-Lethal Technologies, Inc. Non-Lethal Technologies has recently developed two related technologies for use by law enforcement: the Road Patriot™ and the Road Sentry™. The Road Patriot is a rocket-powered device mounted underneath the bumper of a pursuit vehicle that disables a vehicle's critical electrical engine controls, sensors, computers, and related circuits during high-speed pursuits. The Road Sentry, which disables vehicles in a similar manner, is an oval disk resembling a road bump that can be activated by remote control or automatic (unmanned) control in high-risk security areas. Contact: Non-Lethal Technologies, Inc., 1815 Higgins Road, Sleepy Hollow, IL 60118; 708–428–5676.

Office of Law Enforcement Technology Commercialization (OLETC). The Office of Law Enforcement Technology Commercialization was established through a National Institute of Justice-funded partnership with the National Technology Transfer Center and NASA to provide technology commercialization, support, and technology transfer information to law enforcement and criminal justice organizations and the manufacturing and technology communities. Contact: Office of Law Enforcement Technology Commercialization/National

Technology Transfer Center, Wheeling Jesuit College, 316 Washington Avenue, Wheeling, WV 26003; 800–678–6882.

Protech Armored Products. Protech is a provider of ballistic and break resistant vehicle protection, including vests, body suits, and ballistic shields. Protech specializes in customized protective systems for law enforcement, military, security and executive applications. Contact: Protech Armored Products, 158 Hubbard Avenue, Pittsfield, MA 01201; 800–234–3104.

Rome Laboratories. Rome Laboratories conducts research in surveillance systems; command, control, and communications systems; intelligence and reconnaissance systems; reliability sciences; photonics; solid-state sciences; electromagnetics; signal and speech processing; computational sciences; and artificial intelligence. The laboratory is interested in cooperative research and development agreements and patent licensing opportunities in these technology areas. Contact: Rome Laboratory Public Affairs Office, 26 Electronic Parkway, Griffiss AFB, NY 13441–4514; 315–330–3053.

Safariland Ltd., Inc. Safariland manufactures soft body armor vests. Safariland employs a team of weapons and ballistics experts who design and test the company's products using state-of-the-art equipment, modern manufacturing facilities, and real world, field use data collected over Safariland's 20 years in the police armor business. Contact: Safariland Ltd., Inc., 3120 East Mission Boulevard, Ontario, CA 91761; 800–347–1200.

Thermedics Detection. Thermedics develops, manufactures, and markets explosives- and drug-detection devices, product quality assurance systems, electronic test and other instruments, implantable heart-assist devices, and other biomedical products. The company is developing a portable drug detector, called the SENTOR system, for use by Federal law enforcement agencies to enhance their drug interdiction efforts. Contact: Thermedics Detection, 81 Wyman Street, P.O. Box 9046, Waltham, MA 02254–9046; 617–622–1111.

Westinghouse Security Systems. Westinghouse AID (Audio Intelligence Devices, Inc.) is a supplier of covert surveillance and intelligence-gathering equipment. Their products, which include audio and video surveillance equipment, third generation night-vision devices, surveillance vehicles, vehicular tracking equipment, and drug detection systems, are used by law enforcement organizations all over the world. Westinghouse has also been a provider of mobile robot systems (Westinghouse REMOTEC) for hazardous law enforcement operations; image processing, pattern recognition, and optical storage (Westinghouse Perceptics); and public safety systems (Westinghouse StreetLINK) that improve

officer safety and awareness. Contact: Westinghouse Security Systems, P.O. Box 17320, MS B550, Baltimore, MD 21203; 410–993–2409.

Olin Corporation, Winchester Division. For more than a century, Winchester has been a supplier of ammunition to law enforcement officers. Contact: Olin Corporation, Winchester Division, Law Enforcement Marketing, 427 North Shamrock Street, East Alton, IL 62024; 618–258–3393.