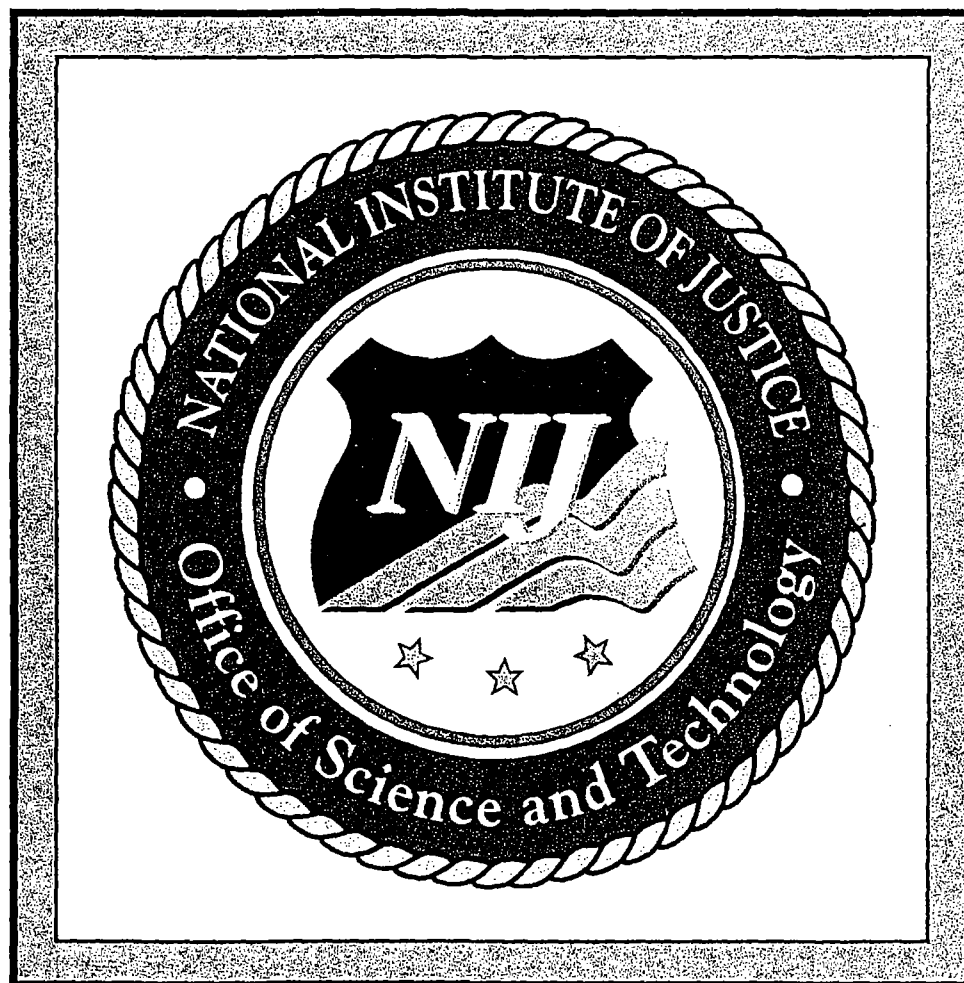
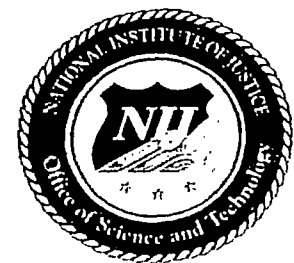




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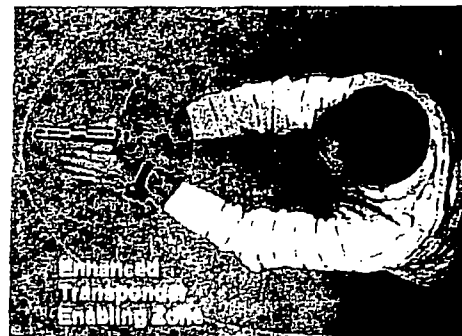
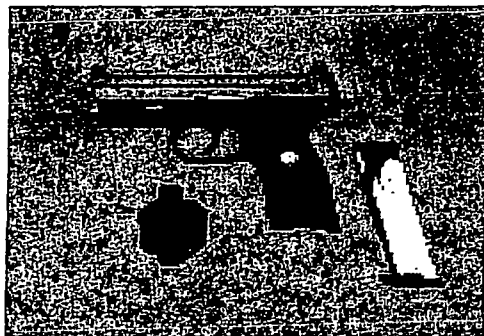


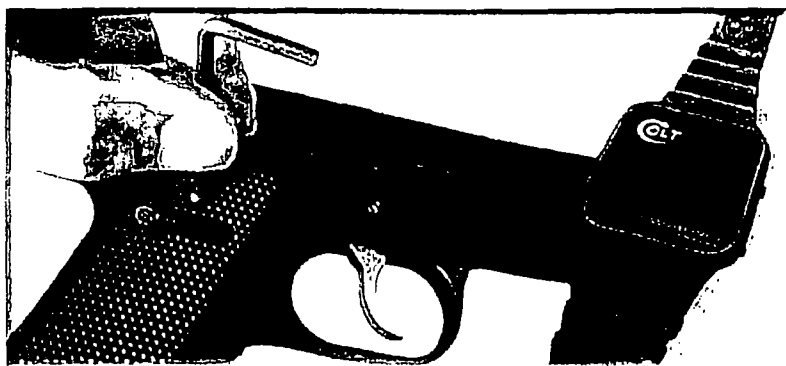
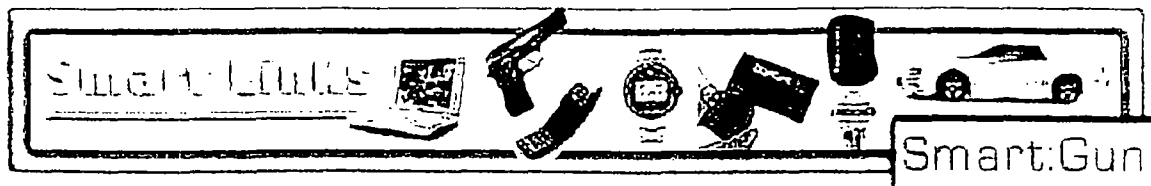
NATIONAL INSTITUTE OF JUSTICE

Office of Science and Technology

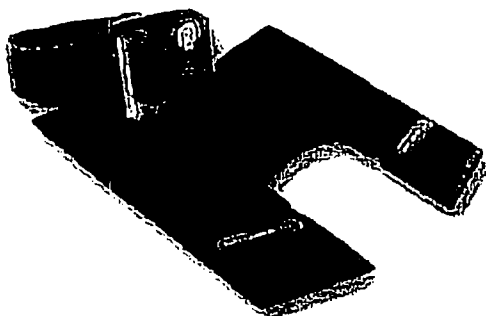
Smart Gun

- **One in every six officers that are killed in action with a firearm are killed with their own firearm**
 - **1994:** NIJ sponsored research by the Sandia National Laboratories to determine the viability of a law enforcement suitable Smart Gun
 - **1995:** Colt Manufacturing developed the first working Smart Gun prototype using Radio Frequency Identification technology
 - **1998:** Colt, with funding provided through NIJ, began a project to design and build a next generation Smart Gun, suitable for Law Enforcement use
 - Colt's Smart Gun development program will result in the manufacture of two next generation prototypes for delivery to NIJ
 - NIJ plans to conduct operational testing of the prototypes (i.e., ballistics, electronics, environmental, etc.)



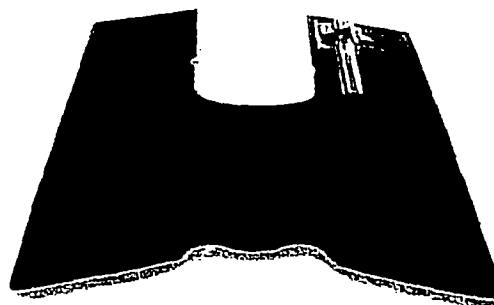


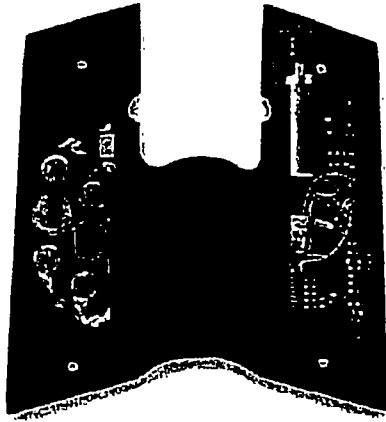
Smart:Gun establishes a 32 Bit communications link between a gun and a wristband or wristwatch or both for official applications. Range can vary from 6" for official purposes to 4' for commercial purposes.



Replacement Handgrips
and wristbands.

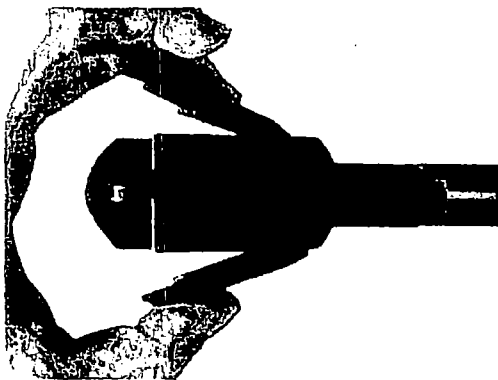
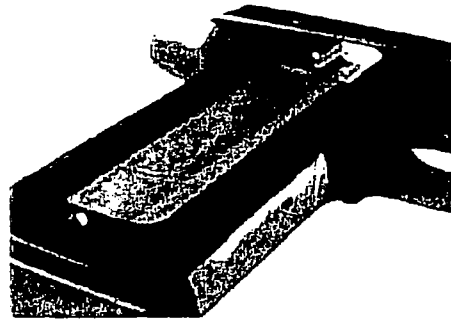
Handgrips and wristbands are hermetically sealed, protecting all internal components from exposure.





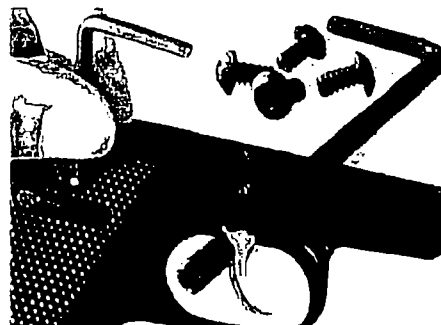
- Batteries left
- Grip-switch Center
- Electronics, Safety Actuator Right
- All components can be reconfigured to accommodate the form and fit requirements of most major makes and models.

A standard weapon is adapted by machining locations for the grip-switch and actuator.



- Bottom View of wrap-around installation of handgrips.

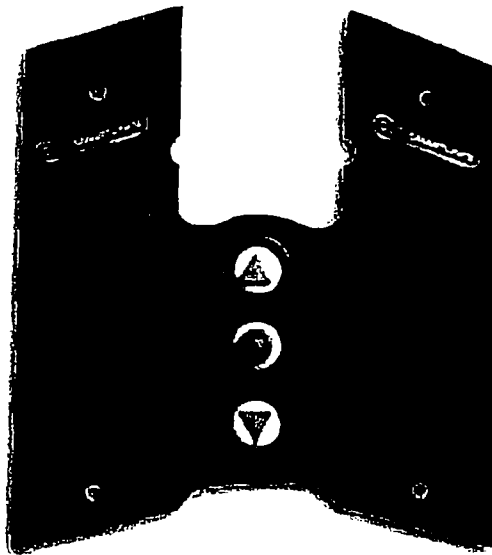
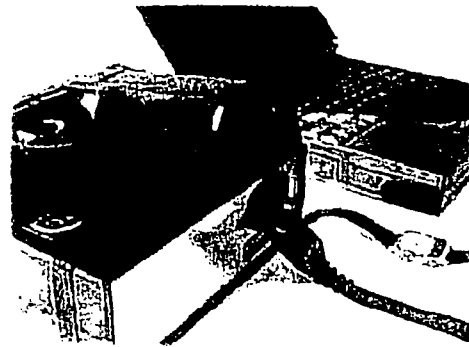
Tamper resistant screws and Allen wrench guard against unauthorized removal of handgrips.





Wristwatches and wristbands can be worn separately with up to 4' range or together (one on each wrist) for official either hand firing capability with as little as a 6" range.

The Smart:Gun is externally programmable via Windows compatible software and any PC.



Manual Safety Override

- PIN code will override the communications system when the watch is not present.
- PIN code will provide additional security when children are present.



U.S. Department of Justice

WENDY HOWE
Program Manager

National Institute of Justice
810 7th St., NW
Washington, DC 20531

Telephone: (202) 616-9794
FAX: (202) 307-9907



NATIONAL INSTITUTE OF JUSTICE

Office of Science and Technology

Project Description and Award Information

SMART Gun Development and Prototype

Award Number: 1997-LB-VX-K006

Award Amount: \$500,079

Award Recipient: Colt's Manufacturing Company, Inc.
PO Box 1868
Hartford, CT 06144-
(860) 244-1466

Impetus:

The FBI's report, Officer's Killed and Assaulted, shows over the past decade, one in every six officers killed with a firearm was killed with his or her own firearm after being disarmed by a suspect.

Project Description:

The Smart Gun Prototype II Program is a project to develop a firearm that will only fire for a recognized user. The base technology for the recognition and authorization of this handgun is radio frequency. When energized, the gun emits a radio signal, which is received by a small transponder worn by the authorized user and returns a coded radio signal. When the gun hears the signal, a locking pin is removed from the trigger mechanism, enabling the gun to fire.

The need and applicability for this technology has been aptly described in an NIJ-funded research document issued by Sandia National Laboratories, Albuquerque, NM, Smart Gun Technology Project Final Report. Sandia identified the law enforcement requirements for smart firearms technology and then investigated, evaluated, prioritized, and demonstrated (by proof of concept) the most promising technologies available.

Status

Prototype I was tested and demonstrated by Colt's. These tests showed that the technology can operate, that all necessary electronic and mechanical components can be made to fit inside a full-size pistol, and that authorization can be made well within the time required to draw and aim. Colt's Manufacturing has been funded by NIJ to design and build Prototype II, which will contain more advanced designs suitable for the law enforcement environment.

Project Deliverables:

Colt's Manufacturing will provide NIJ with two field operational Smart Guns for further evaluation.

NIJ Contact: Howe

Date Last Updated:
13-Sep-99

Chronology of National Institute of Justice (NIJ) Support for the Smart Gun Project

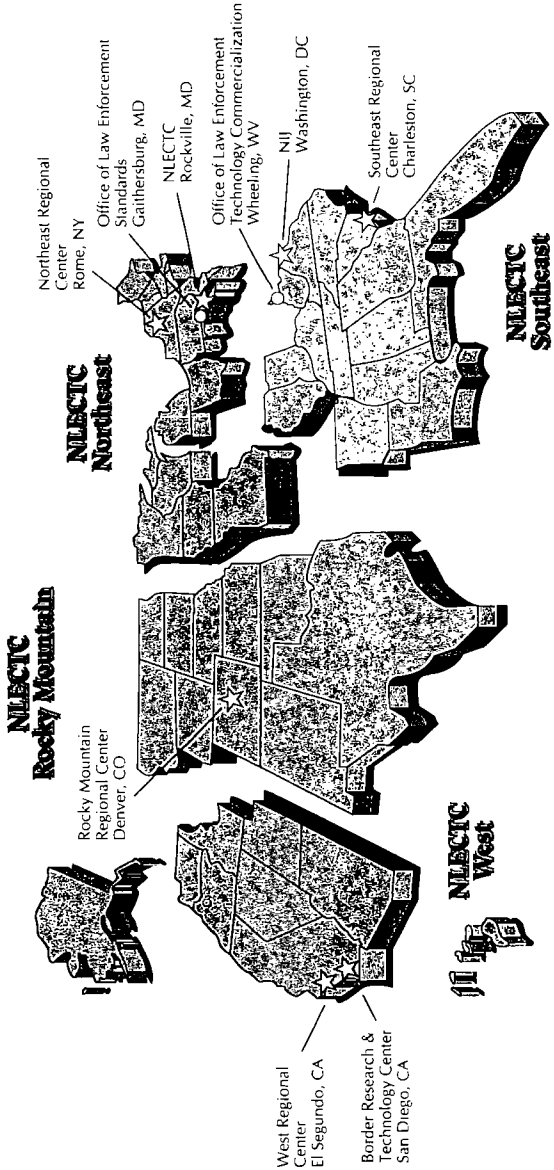
- Late 1992 The Technology Assessment Program Advisory Council (now know as the Law Enforcement and Corrections Technology Advisory Council) indicates growing concern over the number of officers killed with their own weapons, so NIJ identifies development of a Smart Gun as a key priority. The Advisory Council is composed of nationally recognized active local, State, and Federal law enforcement and corrections professionals that identifies the equipment and technology needs for the criminal justice community.
- 1993 Philip Gackle, Sandia National Laboratories, whose interest in Smart Guns was sparked by an article by Abraham N. Tennenbaum (former police lieutenant) urging the development of a Smart Gun, is invited to make a presentation at the annual meeting of the Technology Assessment Program Advisory Council (now known as the Law Enforcement and Corrections Technology Advisory Council) regarding the feasibility of developing a "smart gun". This firearm would be able to distinguish between an authorized user and someone who is not authorized to fire the gun.
- Although the Council was concerned about introducing power sources and electronics into the already complicated semiautomatic pistol, they were intrigued by the concept and recommended further exploration by NIJ.
- 1993 Congresswoman Patricia Schroder asks NIJ to develop a program for the development of a Smart Gun and puts language in the House Authorization Bill requiring the Department of Defense to fund the NIJ development of such a weapon. The Senate did not support this funding, but the language attracted the attention of officials at Sandia National Laboratories.
- 1993 In response to NIJ's general research solicitation, Sandia National Laboratories submitted a proposal to identify the law enforcement requirements for Smart Gun technology, to evaluate existing technology that could be used in a Smart Gun, and to develop proof-of-concept prototypes of the technology. The proposal was evaluated through the NIJ peer review process and was highly recommend for funding.
- Early 1994 An award for **\$620,000** was made to Sandia National Laboratories to undertake the smart gun project. The first step was to produce a report on the background and history of the problem of police firearm take-away, identify the extent to which officers are assaulted and killed with their own firearms, and to identify the requirements officers would want in a smart gun. Gathering of the necessary information was conducted through research of the FBI's Uniform Crime Reports, *Officers Killed and Assaulted*, and through written surveys and interviews with officers at national meetings and conferences. This research yielded a preliminary report detailing the scope of the problem with firearm take-away and the identification of officer requirements for a smart gun.

- 1994-1995 During this time frame, the project team from Sandia continued to collect information on officers' requirements for the operation of the smart gun and assessed the technical and practical feasibility of 14 technologies ranging from simple mechanical devices to sophisticated electromagnetic concepts. Subsequently, five models of proof-of-principal smart gun devices were built to illustrate the strengths and vulnerabilities of each technology under consideration.
- 1995-1996 These smart gun prototypes were demonstrated at a variety of law enforcement forums, from small advisory groups to major, national meetings, e.g. National Sheriffs' Association and the International Association of Chiefs of Police, in a continuing effort to identify operation strengths and weaknesses of the technologies. A final report was issued by Sandia in May 1996 detailing the results of the project.
- 1996 NIJ released a general solicitation for proposals in the area of law enforcement and corrections technology development. Colt's Manufacturing submitted a proposal for further smart gun development and the delivery of an operational prototype.
- April 1997 NIJ awarded a cooperative agreement to Colt's Manufacturing for **\$500,000** to further develop and manufacture 2 working prototype smart guns using radio frequency technology (the most promising commercially available technology identified by Sandia during its project)
- October 1998 Colt's Manufacturing will deliver 2 working prototype Smart Guns to NIJ as required by the cooperative agreement. After completion of electronic, environmental, and ballistic testing through NIJ's center system and its Office of Law Enforcement Standards, NIJ will embark on an evaluation program to validate the performance of the radio frequency technology.
- October 1998 Two local Washington, DC, area police academies express interest in participating in controlled field test of the Smart Gun. Preliminary meeting held to discuss the capabilities, needs, and development of scenarios.
- 1999 NIJ will procure 20 custom made Smart Guns for field testing at local police academies. To validate the capabilities and consistent performance of the weapons, NIJ will negotiate with local police academies to have the firearms tested and evaluated by police armorers, recruits, and SWAT members. NIJ will work with the agencies to develop adequate evaluation scenarios to determine the ease of operation, ergonomics of the weapon, and performance during controlled take-away situations. The evaluators will report any performance problems to NIJ including malfunctions of the mechanics of the firearm (slide, magazine, firing capabilities, etc.) and the components that operate the radio frequency and transponder.
- January 1999 Police academy field evaluation project is postponed because of mechanical and reliability difficulties experienced with integrating the Smart Gun technology into a semiautomatic pistol.

- May 1999 Colt's Manufacturing is granted a no-cost extension for delivery of prototype Smart Gun.
- July 1999 Colt's Manufacturing is granted a six month no-cost extension for delivery of prototype Smart Gun.
- December 99 Colt's Manufacturing is granted a 3 month no-cost extension for deliver of prototype Smart Gun.

February 2000

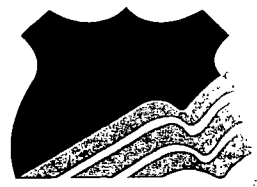
A Center or Office Near You



It's been shown that

Technology Saves Lives

But if your research into new law enforcement and corrections technologies consists of an occasional glance through a catalog or magazine, then it's time to investigate the "one-stop shop" for law enforcement and corrections product and technology information.



National Law Enforcement and Corrections Technology Center

National Law Enforcement and Corrections Technology Center

- NLETC Centers and Offices**
- NLETC**
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 - NIJ**
Washington, DC: 202-307-0645
 - Northeast Regional Center**
Rome, NY: 888-338-0584
 - Southeast Regional Center**
Charleston, SC: 800-292-4385
 - Rocky Mountain Regional Center**
Denver, CO: 800-416-8086
 - West Regional Center**
El Segundo, CA: 310-336-2222
 - Border Research & Technology Center**
San Diego, CA: 619-685-1491
 - Office of Law Enforcement Technology Commercialization**
Wheeling, WV: 800-678-6882
 - Office of Law Enforcement Standards**
Gaithersburg, MD: 301-975-2757



A program of the National Institute of Justice

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Office of Justice Programs
National Institute of Justice
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NIJ Director's Note

The National Law Enforcement and Corrections Technology Center (NLECTC) your one-stop shop for law enforcement and corrections equipment and technology information, offers its users centralized technology information, assessment, and referral services. NLECTC is a program of the National Institute of Justice (NIJ) Office of Science and Technology (OS&T). NIJ is the research and development arm of the U.S. Department of Justice. We encourage you to take advantage of their services.

Jeremy Travis

If you need

- ☑ Detailed standards, test reports, user guides, and bulletins on topics such as body armor, patrol vehicles and their tires, handcuffs, pepper spray, and DNA profiling.
- ☑ Information on who manufactures law enforcement and corrections products, and referrals to users of these products, as well as assistance in locating or borrowing equipment from other agencies or locating experts in a particular field.
- ☑ Toll-free access to on-staff professionals; a gateway to law enforcement and corrections technology information; or a free subscription to the National Law Enforcement and Corrections Technology Center's (NLECTC's) newsletter.
- ☑ A system of regional centers and offices offering technical assistance in a wide area of expertise and specialization.
- ☑ Assistance in identifying markets for products and technologies and learning about opportunities for technology commercialization.

Then you need

The system of technology information, assessment, and referral offered by NLECTC, your one-stop shop for law enforcement and corrections equipment and technology information.

NLECTC is a program of the National Institute of Justice (NIJ) Office of Science and Technology (OS&T). NIJ is the research and development arm of the U.S. Department of Justice.

NLECTC's sole mission is to be the most comprehensive source of product and technology information in the country.



National Law Enforcement and Corrections Technology Center

NIJ's OS&T

The mission of NIJ's OS&T is to:

- ☑ Identify equipment and technology requirements of local, State, and Federal criminal justice practitioners.
- ☑ Find, research, develop, and field test new technologies and help to adapt existing off-the-shelf technologies to meet criminal justice requirements.

- ☑ Introduce and disseminate information on promising new technologies, including those being developed through partnerships with the U.S. Departments of Defense, Energy, and Transportation and international law enforcement agencies.
- ☑ Develop and disseminate equipment performance standards, conduct objective evaluations of products, and publish the results.

In order to fulfill its mission, NIJ's OS&T has developed and implemented a national and regional technology system of support for State and local law enforcement and corrections agencies.

How NLECTC serves your needs

In 1993 Attorney General Janet Reno announced the creation of a new national technology information network that became NLECTC. NLECTC's sole mission is to be the country's most comprehensive source of law enforcement and corrections product and technology information.

NLECTC is composed of a national center, regional centers, and special offices located throughout the country (see map). NIJ funds and supports these centers and offices, which perform outreach to State and local law enforcement and corrections agencies and which serve as law enforcement's link to the science and technology community.

NLECTC's regional centers and offices not only bring information and technology closer—each has a specialty. The national office performs testing of law enforcement and corrections equipment, identifies law enforcement and corrections technology requirements, and publishes test results and guides on various technologies. The Northeast Regional Center focuses on concealed weapons detection technologies. The Southeast Regional Center focuses on corrections technology. The Rocky Mountain Regional Center works on solutions to communication interoperability problems. The West Regional Center provides investigative and surveillance technology support to the criminal justice community. The Border Research & Technology Center (BRTC) addresses the development of new technology for control of border-related crime. The Office of Law Enforcement Technology Commercialization (OLETC) helps transfer technologies from Federal laboratories to industry for development and, ultimately, manufacture, as useful and affordable technologies for law enforcement. The Office of Law Enforcement Standards (OLES) develops minimum performance standards for law enforcement equipment.

Get on NLECTC's mailing list today

To receive free copies of our newsletter or other useful publications, or to be added to NLECTC's mailing list, call 800-248-2742.

JUSTNET

A world of technology information at your fingertips

The Justice Technology Information Network, commonly referred to as JUSTNET, is a service of NLECTC. It provides local, State, and Federal agencies with law enforcement and corrections technology information via the Internet and its World Wide Web. Thousands of users visit this site for information on new law enforcement and corrections technologies, products, and services each month.

Our address is <http://www.nlectc.org>. If you need additional information on how to access our site, please call us and request a copy of our JUSTNET brochure.

That's easy to access

1. Ensure that your computer system has the following minimum requirements: 386 processor, VGA monitor, 4MB RAM, 14.4 kbps modem.
2. Establish an Internet/Web connection through a service provider (or call the NLECTC Hotline at 800-248-2742 for assistance).
3. Use a commercially available Web browser to search for JUSTNET (or <http://www.nlectc.org>).

The National Law Enforcement and Corrections Technology Center is supported by Cooperative Agreement 96-MU-MU-K011 awarded by the U.S. Department of Justice, National Institute of Justice. The National Institute of Justice is a component of the Office of Justice Programs, which also includes the Bureau of Justice Assistance, Bureau of Justice Statistics, Office of Juvenile Justice and Delinquency Prevention, and Office of Victims of Crime.

National Law Enforcement and Corrections Technology Center

800-248-2742

Your one-stop shop for objective, reliable information on new products and technologies for law enforcement and corrections.

P.O. Box 1160, Rockville, MD 20849-1160

301-519-5060

nlectc@aspensys.com
<http://www.nlectc.org>



A program of the National Institute of Justice

Once at JUSTNET's home page you will notice text that is presented in a color other than black. This color highlighting usually indicates hypertext links. By clicking on the hypertext, you can jump to another JUSTNET information area or to another Web home page but still maintain that thread or link back to your starting point.

Registration. Users must register with JUSTNET when they enter the Interactive Services area for the first time. A short, simple procedure, this registration allows NLECTC to track usage and provide assistance to users. Anyone may register and use the Interactive Services area. However, a separate section for criminal justice practitioners only is maintained to support the needs of that community. During registration a notice advises criminal justice professionals how to register their status and obtain an access password. Despite having password protection, this section should not be considered fully protected. Users are asked not to post or exchange operational information. If you have questions or need assistance, call the NLECTC Hotline at 800-248-2742.

Quality of Service. JUSTNET exists to provide you with the technology information you need and to serve as a forum to improve communications and increase cooperation among the constituencies of the criminal justice community. JUSTNET is not a static service. It will continue to grow by providing continually updated information as well as new features and options. Your suggestions and comments for improvement are welcome. Please direct comments and questions to:

NLECTC/JUSTNET

P.O. Box 1160
Rockville, MD 20849-1160

Telephone: 800-248-2742/301-519-5060
Fax: 301-519-5149
E-mail: asknlectc@nlectc.org

The National Law Enforcement and Corrections Technology Center (NLECTC) is a one-stop shop for law enforcement and corrections equipment and technology information. NLECTC is a program of the National Institute of Justice—the research and development arm of the U.S. Department of Justice. NLECTC's sole mission is to be the most comprehensive source of product and technology information in the country for law enforcement, corrections, and criminal justice practitioners.

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Some law enforcement and corrections agencies do not yet have access to the Internet. For these users, NLECTC has information specialists on staff who are available through our hotline number to provide you with the information and publications you need as well as provide contacts to other law enforcement and corrections information resources:

800-248-2742



THE INTERNET AND THE WEB: AN INTRODUCTION

Most people are familiar with the idea behind a computer network—a group of users connected together to allow information to be passed back and forth easily and rapidly, but most often only among themselves. The Internet, however, is a "network of computer networks" through which all users have the capability to freely exchange information with each other.

Internet users literally have access to an unending source of information. Through Internet services such as e-mail and bulletin boards, users have access to thousands of databases, discussion groups, and files on every topic imaginable from every corner of the world. What makes the World Wide Web (also called WWW or simply, the Web) exciting and useful to its users is its ability to handle not only text and graphics but also photographic images, video, and even audio. The Web is the graphics-oriented portion of the Internet organized by colorful "home pages" that enables the user to click on linked text, images, and sounds from a single computer screen. The Web links objects seamlessly so the user can jump, like spiders, from one information resource to another, yet maintain a thread back to their starting point. That's why it is called "the Web."

Users new to the Web will find themselves fascinated by the scope and ease of the information resources at their fingertips. And both new and experienced Web users will find that JUSTNET provides them with ready links to the best in law enforcement and criminal justice information in the world.

WHAT IS JUSTNET?

JUSTNET (Justice Technology Information Network) is your information gateway—via the Internet and its World Wide Web—to information on new technologies, equipment, and other products and services available to the law enforcement, corrections, and criminal justice communities.

Under the auspices of the National Institute of Justice (NIJ), JUSTNET is maintained by the National Law Enforcement and Corrections Technology Center (NLECTC). As your "one-stop shop" for law enforcement and corrections technology information, JUSTNET provides easy, online access to the information and services that you need most.

From JUSTNET's home page, you can choose from the following information service options, which also offer access to other criminal justice information Web sites:

News and Information Services

Receive information on initiatives sponsored by NIJ's Office of Science and Technology, make connections to NLECTC Regional Centers and Offices, link to other important and informative criminal justice Web sites, and examine the home pages of manufacturers of law enforcement and corrections products.

Interactive Services

Chat Line: Carry on interactive, online dialog through JUSTNET's Chat Line option by posting your comments or questions available for other users to see and respond to instantly.

Topic Board: Post electronic "sticky notes" under a variety of specific topics. Other users can then post their replies, allowing development of information "threads" over an extended period.

For users who are law enforcement or corrections practitioners, JUSTNET provides topic boards with password protection. These users can find instructions on obtaining a password to restricted areas at the end of JUSTNET's registration page.

Data and Publications Services

Access a database of commercially available law enforcement and corrections products and technologies. On-screen instructions and keyword search guide you to the product and manufacturer information you need.

For registered law enforcement and corrections users, search results automatically link you to information provided by agencies that have used those products, product tests, or evaluations currently on file with NLECTC, and recall information.

Also access recent NIJ and NLECTC publications as well as standards and testing information. Publications with hypertext links may be viewed online as text or downloaded to your computer. All publications are maintained in the NLECTC library and may be ordered at no cost by calling 800-248-2742.



ACCESSING JUSTNET

JUSTNET is available as an Internet/World Wide Web site. This connection places JUSTNET on the fastest growing information networking service in the world and allows you to connect with an ever-increasing number of law enforcement and corrections information services.

Making the Internet/Web Connection. To access JUSTNET you first need to establish an Internet/Web connection. City and State governments are increasingly putting computer networks in place to service their public safety agencies. Check with your computer support department to determine if your agency already has access to the Internet. In addition, you may be able to access the Internet through a local university or college. Many educational institutions have direct Internet links and may allow criminal justice professionals access through their facilities.

Users can connect, via modem, to JUSTNET through commercial services such as America Online®, CompuServe®, Microsoft Network, and Prodigy. Available in most areas of the country, these commercial services provide access to the World Wide Web. If you cannot locate an Internet/Web connection, please call the NLECTC Hotline at 800-248-2742 for assistance.

Web Browser Requirements. A browser is the way your computer looks for things and presents them to you from the Web. Commercially available Web browsers, such as Mosaic™ and Netscape™, are often included with the Internet connection service you choose at no charge or at an additional charge but offering a number of extra features. Almost any browser will work with JUSTNET. However, if you have difficulty in finding a browser, call the NLECTC Hotline at 800-248-2742.

System Requirements. In addition to offering the user access to an unending source of information from throughout the world, the popularity of the Web is due to its ease of use and ability to provide color graphics, photographs, and even sound and video. However, such graphic operations require newer computers having sufficient speed and memory. Slower, older equipment can work the Web, but it cannot download the graphics files. Graphics downloading is normally an option selection of the Web browser. Recommended minimum computer hardware requirements to access JUSTNET are:

- 386
- VGA Monitor
- 4MB RAM
- 16 MHz
- 14.4 kbps or faster Modem

Navigating to the JUSTNET Home Page

JUSTNET Address. Once you have an Internet connection and a browser, JUSTNET is only a few keystrokes or mouse clicks away. Most browsers allow you to type in a "URL" (Uniform Resource Locator). The URL is the address where a home page resides. JUSTNET's address is:

<http://www.nlectc.org>

Type in this address, press enter, and you will be quickly connected to JUSTNET. Once you have accessed JUSTNET, add it to your "Hot List." The Hot List is a listing of Web sites you want to visit most often. It provides a shortcut to finding JUSTNET in the future without having to remember the URL address.

National Law Enforcement and Corrections Technology Center

TECH

Winter 1999

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**Dedicated to Reporting Developments in Technology
for Law Enforcement, Corrections, and Forensics**



Making Guns Smart: The Next Step

The National Institute of Justice's (NIJ) "smart gun" project is off the drawing board and headed for field evaluations.

Colt's Manufacturing Company, Inc., will be delivering to NIJ two prototypes of a weapon that can be fired only by a recognized user. According to NIJ Program Manager Wendy Howe, NIJ plans to purchase 20 of Colt's smart guns and use them in a controlled field testing program at two U.S. police academies. The goal is to evaluate the technology, the weapon, and its effectiveness.

"It's similar to what NIJ did with body armor, except in that case we put 5,000 of the bullet-resistant vests on the street for field evaluation," Howe says. "But with the smart gun, we're only purchasing a limited number. We'll do a controlled study to further evaluate the technology in the hands of the police—in situations where lives are not at stake."

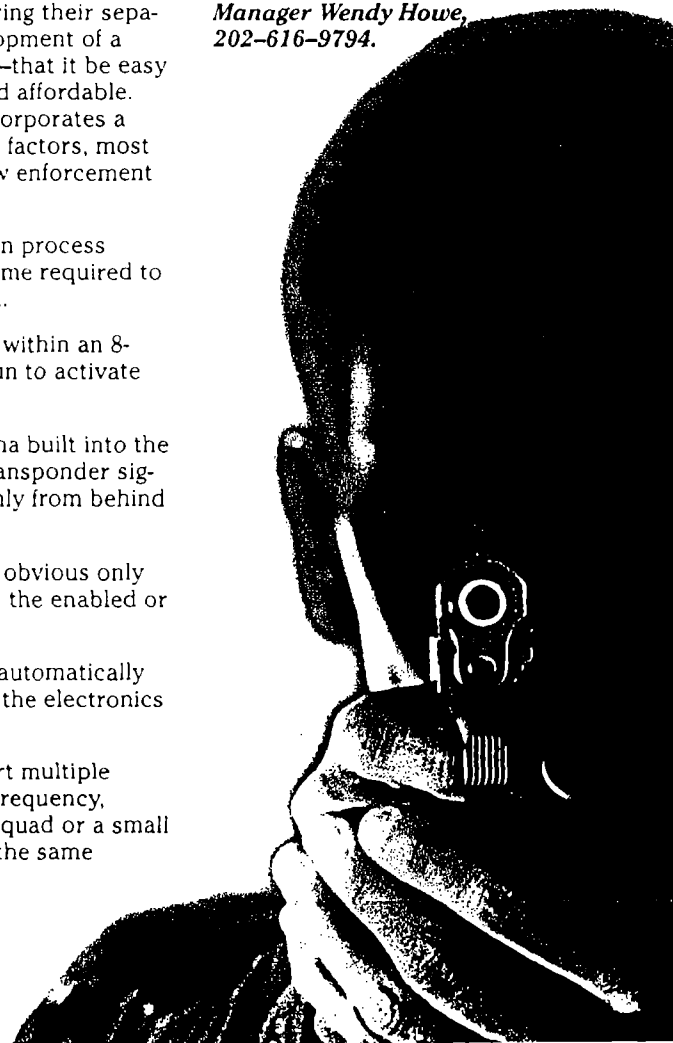
According to Howe, NIJ began studying smart gun technologies several years ago. With the identified needs and requirements of law enforcement in mind, a group of engineers, researchers, and scientists at the U. S. Department of Energy's Sandia National Laboratories in Albuquerque, New Mexico, investigated, evaluated, prioritized, and demonstrated a variety of "smart gun" technologies that included radio frequency, voice recognition, biometrics, and touch sensors.

Howe points out that the full-sized handgun addresses the concerns and incorporates the suggestions that NIJ and Colt's received during their separate studies and development of a smart gun technology—that it be easy to operate, reliable, and affordable. The smart gun also incorporates a number of other safety factors, most of which came from law enforcement feedback:

- ◆ The user verification process occurs within the time required to draw and aim a gun.
- ◆ The transponder is within an 8-inch range of the gun to activate the trigger.
- ◆ A directional antenna built into the gun ensures that transponder signals are received only from behind the weapon.
- ◆ An indicator that is obvious only to the user displays the enabled or disabled status.
- ◆ A fail-safe override automatically arms the weapon if the electronics fail.
- ◆ The gun will support multiple users on the same frequency, enabling an entire squad or a small department to use the same band.

Howe says that smart gun development has been prompted by the fact that over the

For more information about the National Institute of Justice's smart gun initiatives, contact Program Manager Wendy Howe, 202-616-9794.



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From the Director

Law enforcement leaders and administrators officials and officers working in the field know how crucial technology is to their day-to-day operations. In some circumstances, having the right tool can even mean the difference between life and death.

The technological revolution that has shaped society as a whole in recent years has also altered the criminal justice system. Some technologies that not long ago seemed advanced—vests that can stop bullets and electronic monitoring of probationers—today seem commonplace. But the revolution continues apace, with ever more spectacular advances now being made, or in the testing stages, or on the drawing board.

As the research arm of the U.S. Department of Justice, the National Institute of Justice (NIJ) has, since its founding 30 years ago, been at the forefront in sponsoring the development, testing, and demonstration of technology to improve the justice system. The development of DNA testing standards, soft body armor and improved fingerprint evidence are some of the many areas in which NIJ has played a leading role.

More recently, with strong support from the Administration and the Congress, NIJ has accelerated the pace of its efforts to use non-lethal technologies to minimize the use of force, computerized mapping to pinpoint and analyze crime patterns, concealed weapons detection to prevent violence, methods of stopping fleeing vehicles to apprehend suspects, and improvements in DNA laboratories to aid

needs and requirements of law enforcement in mind, a group of engineers, researchers, and scientists at the U. S. Department of Energy's Sandia National Laboratories in Albuquerque, New Mexico, investigated, evaluated, prioritized, and demonstrated a variety of "smart gun" technologies that included radio frequency, voice recognition, biometrics, and touch memory. The most promising, Howe says, was the use of radio frequency to verify the identity of the user.

At the same time, Colt's Manufacturing was looking into similar technology that involved verification by radio frequency. After spending \$1 million in development, the company applied to NIJ for an additional \$500,000 to take the idea of a radio frequency smart gun to the next level. NIJ funded the grant, and by early 1998, Colt's had a proof-of-concept device that it demonstrated to a group of its toughest critics—the end users. This meeting convened law enforcement and corrections officials and solicited their ideas about what worked and what did not. With their feedback, Colt's then developed and tested a second-generation device, which it delivered to NIJ late last year.

When energized, this second-generation prototype emits a radio signal. A small, wrist transponder is worn by the user. The wrist transmitter receives the information and returns a coded radio signal. The return signal prompts the removal of a blocking pin within the gun's trigger mechanism, enabling the gun to fire.

"The receiver is small enough to fit on the back of a watch, in a bracelet, or be made a permanent part of the uniform," Howe says. "The rest of the components are inserted in the grip. This technology is one of the most basic. It is the kind of technology used in garage door openers, which means there won't be any interoperability or radio spectrum problems."

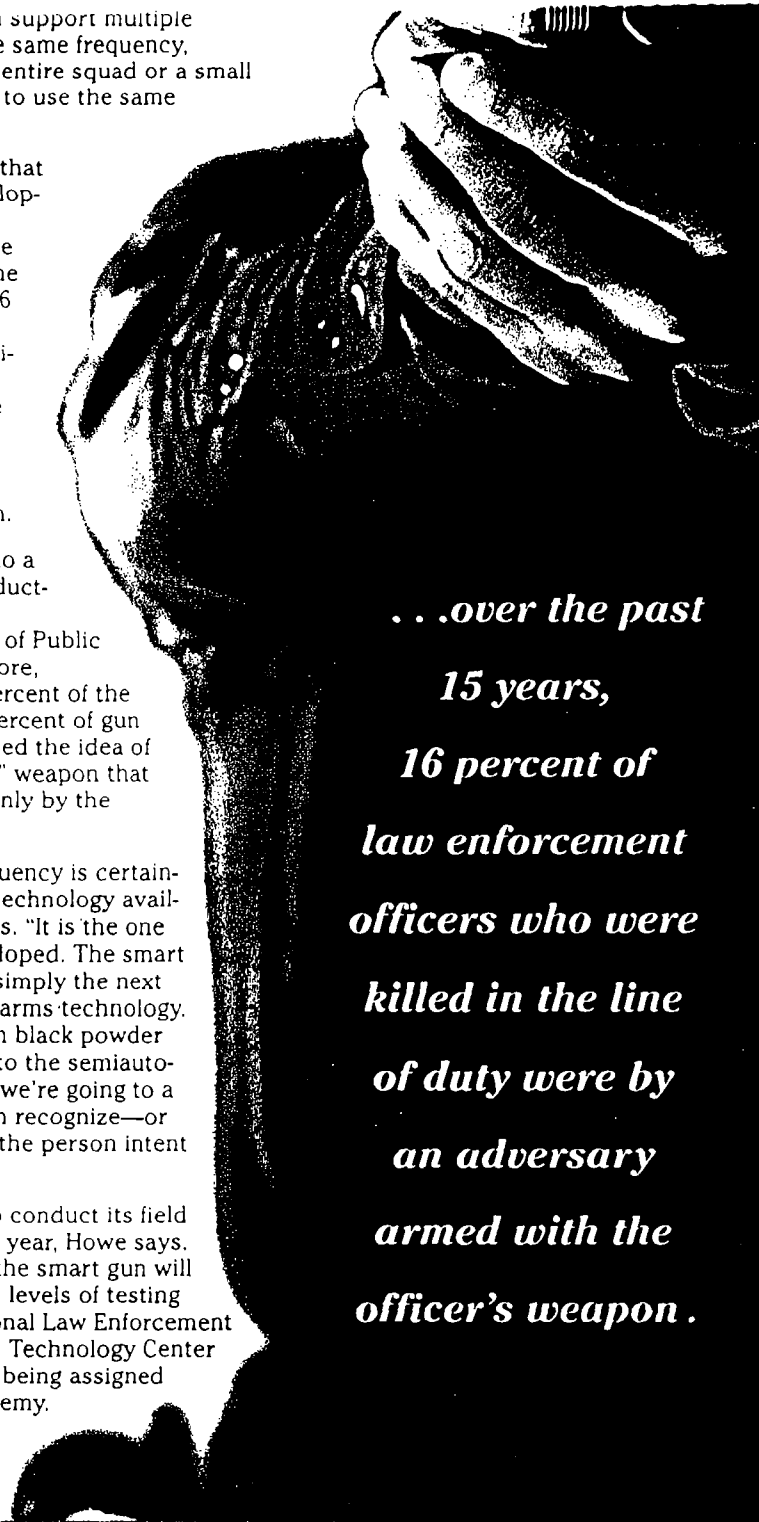
• The gun will support multiple users on the same frequency, enabling an entire squad or a small department to use the same band.

Howe says that smart gun development has been prompted by the fact that over the past 15 years, 16 percent of law enforcement officers who were killed in the line of duty were by an adversary armed with the officer's weapon.

According to a 1997 study conducted by the Johns Hopkins School of Public Health in Baltimore, Maryland, 71 percent of the public and 59 percent of gun owners supported the idea of a "personalized" weapon that could be fired only by the owner.

"Radio frequency is certainly not the only technology available," Howe says. "It is the one that Colt's developed. The smart gun concept is simply the next evolution in firearms technology. We've gone from black powder to the revolver to the semiautomatic, and now we're going to a weapon that can recognize—or not recognize—the person intent on firing it."

NIJ plans to conduct its field evaluations this year, Howe says. First, however, the smart gun will undergo several levels of testing within the National Law Enforcement and Corrections Technology Center system prior to being assigned to a police academy.



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More recently, with strong support from the Administration and the Congress, NIJ has accelerated the pace of its efforts to use these lethal technologies to minimize the use of force, computerized mapping to identify and analyze crime patterns, concealed weapons detection to prevent violence, methods of stopping fleeing vehicles to apprehend suspects, and improvements in DNA laboratories to aid in evidence testing—all these capabilities, and others, are now being explored by NIJ. Their application can mean even greater transformations in law enforcement operations.

TechBeat plays an important role as an essential link communicating the latest information about these developing technologies from the National Law Enforcement and Corrections Technology Center. By keeping law enforcement, courts, and corrections personnel current about the tools they can use, the newsletter makes a difference in controlling crime and ensuring justice.

Jeremy Travis
Director
National Institute of Justice

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National Law Enforcement and Correction Technology Center

TECH

Winter 1999

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**Dedicated to Reporting Developments in Technology
for Law Enforcement, Corrections, and Forensics**



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TECH

Technology Center

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people, as well as the storage, organization, and exchange of information."

The NEGIS Project started in 1996 at the request of President Clinton, who saw a demonstration of the software and asked the National Institute of Justice (NIJ) to fund its development. In fiscal year 1997, \$425,000 in NIJ funding was awarded to the Police Executive Research Forum to provide the equipment and training to make the system operational. NEGIS became operational in April 1998 and almost immediately began to show results. In one Massachusetts drive-by shooting, a witness knew only the suspect's moniker, or street name. The investigating officer posted an account of the incident along with the suspect's moniker on the NEGIS bulletin board. An officer from another agency recognized the name and identified the suspect, who was later arrested.

According to Kerle, today NEGIS is a series of five separate databases that serve law enforcement agencies in Massachusetts, Vermont, Rhode Island, Connecticut, and New York. The first database is for e-mail, which facilitates officer-to-officer communication, as well as officer-to-prosecutor communication. The second is a resource database that stores information about officers' special

(See Gangs, page 2)

Ganging Up on GANGS

Highly mobile and loosely organized, gangs in this country are notoriously hard to track. Their leadership structure changes constantly. Their use of street names makes members extremely difficult to identify. And their involvement in everything from drug trafficking

and prostitution to carjacking and murder place them under a myriad of criminal activity categories.

It was for these reasons that the Northeast Gang Information System (NEGIS) was created—to give law enforcement officers in five northeastern States the ability to track gang

members within and across State lines.

NEGIS had its beginnings as a gang-tracking computer program that was initially the design of two Massachusetts State Police (MSP) investigators, a spin-off of a similar program created by the Boston Police Department.

Developed in Lotus® Notes™, the computer program had modules that let officers send messages, track leads, identify officers and other experts with special skills, access a library of gang-focused articles, and input or retrieve information from an intelligence database.

"About 5 years ago we were given a mandate to pursue funding to find a statewide solution to gangs," says Lt. Thomas Kerle, a commander in MSP's Division of Investigative Services. "We used Boston's prototype and built NEGIS, which is really more than a gang-tracking system. We wanted to address bigger issues, like communication, which is by far the biggest problem. So we built modules that address communication between

Keeping Track of Electronic Monitoring

At the beginning of 1998 there were approximately 6 million adults in the United States under sentence of a court. Yet, approximately 1.8 million—less than one-third—were incarcerated in the Nation's prisons and jails. The rest—more than 4 million—were on probation or parole.

Since the 1970s, when jail populations began exploding, the focus of corrections has changed from just locking up lawbreakers to also finding safe and cost-effective alternatives to incarceration. Home detention, early release, expanded parole, behavior modification experiments, and work release programs were born, as was the need for a way to monitor individuals in these programs while they were in the community. Thus, electronic monitoring (EM)

systems developed. Since then, the electronic monitoring industry has grown at an exponential rate.

The Bureau of Justice Statistics reports that at the beginning of this decade, there were approximately 10,000 programs and 12,000 people involved in electronic monitoring. By 1998, there were approximately 25,000 programs and 30,000 people in use by individuals on pretrial status, probation, parole, or nearing the end of a minor drug, alcohol, or misdemeanor sentence," says Garry Pate,

"Electronic monitoring is a viable alternative to incarceration for individuals on pretrial status, probation, on pretrial status, parole, or nearing the end of a minor drug, alcohol, or misdemeanor sentence," says Garry Pate,

(See Monitoring, page 2)