Keeping an Eye on Crime

The use of surveillance cameras is quickly becoming one of the nation’s most popular—and economical—ways of using technology to fight crime. For example, the city of Baltimore, Maryland, and other places, installed security cameras in areas of high crime. According to Ray Downs, deputy director of OS&T’s Scientific Development Branch (PSDB), in a project that partners the National Institute of Justice (NIJ), in a project that partners the Home Office, is studying how to make the best use of public surveillance and video technologies.

The National Institute of Justice (NIJ), in a project that partners the agency’s Office of Science and Technology Development (OS&T) with its United Kingdom counterpart, the Police Scientific Development Branch (PSDB) of the Home Office, is studying how to most effectively access and analyze the information collected on the video surveillance tapes. According to Ray Downs, deputy director of OS&T’s Research and Technology Development Division, PSDB, like NIJ, sets standards, tests equipment, and fosters technology development for police and corrections agencies. A Memorandum of Understanding, signed by NIJ and PSDB, is providing a mechanism for the offices to work together on projects of common interest.

“We use video surveillance a lot in England, probably more than anywhere else in the world,” Downs says. “Our goal is to get a better understanding of how police use videotapes. We’ll be doing a survey to find out how often police use them, in what manner, and how effective they are as a source of evidence.”

An adjunct to the survey will be to ascertain the current state of the art of videotape analysis equipment. “We’re learning more about the whole field in general,” Downs says. “It’s an area that is booming. Equipment quality is going up and prices are going down, just like a lot of other technology. So it’s likely there will be an expanded use of this technology.”

NIJ and PSDB will survey their respective industries and research communities in their countries and elsewhere, compare notes, and then determine what they can do to help their law enforcement constituencies get the most benefit from video surveillance, according to Downs.

Thus far, debate over surveillance cameras is rare, for several reasons. Downs says that most people are accustomed to being filmed at automatic teller machines, and therefore may not find surveillance surprising or intrusive. Some people also believe public surveillance is the price they must pay for a safer community. Educating the public about the cameras in the early stages of a video surveillance program has been another factor in encouraging public acceptance.

This is not to say that protests are nonexistent. While many criticize the cameras as useful crimefighting tools, they say they fear unscrupulous camera owners could use them to intrude on citizens’ privacy.

The city of Baltimore, in partnership with its business community, circumvented many problems by implementing safeguards against the misuse of the system and the information gleaned from it by mounting the cameras where everyone can see them. “Our cameras are not covert,” says Frank Russo, Director of Public Safety for the Downtown Partnership of Baltimore, Inc., and a retired Baltimore City police officer. “They are obvious, which is part of the reason public support has been so overwhelming. We haven’t tried to hide anything.”

According to Russo, the black-and-white cameras used in Baltimore are fixed in place, and they cannot pan, tilt, or zoom. The tapes are held reviewed for 96 hours and are reused unless a crime is reported. The cameras have captured shootings and help police

Out of Retirement, Into Training

The city of Baltimore, in partnership with its business community, circumvented many problems by implementing safeguards against the misuse of the system and the information gleaned from it by mounting the cameras where everyone can see them. “Our cameras are not covert,” says Frank Russo, Director of Public Safety for the Downtown Partnership of Baltimore, Inc., and a retired Baltimore City police officer. “They are obvious, which is part of the reason public support has been so overwhelming. We haven’t tried to hide anything.”

According to Russo, the black-and-white cameras used in Baltimore are fixed in place, and they cannot pan, tilt, or zoom. The tapes are held reviewed for 96 hours and are reused unless a crime is reported. The cameras have captured shootings and help police
It was the success of these two “riots,” according to OLETC’s acting director Tom Burgoyne, that served as the impetus for MEDC’s interest in turning the prison into a year-round training facility.

To be called the National Corrections and Law Enforcement Training Center, the facility will be renovated with monies secured through MEDC. These funds include $1 million appropriated by Congress, with another $1 million to be matched by the State of West Virginia, plus another State-funded $25,000 grant to be used for planning.

When completed, Burgoyne says, the training center will provide more than just space for OLETC’s annual mock prison riot. It will serve as a year-round, hands-on training facility for Federal, State, and local corrections, law enforcement, fire, and emergency response personnel. In addition, the center’s actual prison environment will provide a testbed and showcase for new and emerging technologies. It will help put new products and new technologies into the hands of the end user.

Types of technologies that OLETC already envisions for demonstrations at the training center include less-than-lethal, officer protection, weapons and contraband detection, perimeter and internal security, personnel location and tracking, interoperability and communications, and telemedicine. Hands-on training would cover cell-block extractions, prisoner restraint and control, crime scene evidence collection, command post operations, negotiations training, bomb/explosives detection training, door entry procedures, high-risk transportation, incident command systems, aircraft escapes, interview and information collection, crowd control, and media interactions.

But before all of this can happen, Burgoyne says, much of the prison needs to be reconditioned and upgraded. This will include a new heating and air conditioning system, new plumbing, and structural repairs to its existing buildings. He notes, however, that already in place is a 55 million dining room that was added for extra security after a 1986 riot and a 1-acre prison industries building that sits inside the prison yard and can accommodate the product displays of more than 100 vendors.

While this training facility is not part of NJ’s National Law Enforcement and Corrections Technology Center system and is not funded by NJ, a working partnership already has been established to permit OLETC to take advantage of its unique capabilities.

For more information on the Moundsville prison conversion, contact Tom Burgoyne, OLETC acting director, or Everett Smith, project manager, at 888–306–5382.

Another Riot at MOUNDsville

Corrections officers, police officers, and public safety personnel will once again hook up with technology innovators and vendors for the third annual mock prison riot at the old West Virginia State Penitentiary in Moundsville, May 2–5, 1999.

Sponsored by the National Institute of Justice’s Office of Law Enforcement Technology Commercialization (OLETC), this event features hands-on training in the form of realistic scenarios that involve prison uprisings, hostage situations, and prison takeovers. During last year’s riot, tactical teams from law enforcement and corrections agencies participated in training scenarios that included a response to an inmate basketball game stabbing, three cell-block takeovers, a total-darkness capture, an uprising staged in the chapel, a high-speed car escape, and an attempt to escape on a riverboat. More than 100 medical, fire, and emergency response personnel also participated in support roles to treat and evacuate the “injured.” Criminal justice students from Ohio, West Virginia, Pennsylvania, and Maryland served as inmates and hostages.

As in the past, this year’s riot will also showcase new and developing law enforcement and corrections technologies, which will be incorporated into the training scenarios, field demonstrations, and exhibits. These technologies will cover everything from night vision devices, security systems, officer protection products, and less-than-lethal weapons, to prisoner restraints, communications devices, and personnel location and tracking systems. This year’s riot will also include a demonstration of interoperability systems and forensics applications.

For more information about attending the riot or demonstrating a technology, contact OLETC at 888–306–5382, or access JUSTNET at www.nлектc.org.

For more information about the National Institute of Justice’s video camera surveillance project or to provide input for the survey, contact Tom Coty, project manager, 202–514–7683. For more information about the United Kingdom’s Police Scientific Development Branch of the Home Office, contact Jim Aldridge, 44–1727–816240.
One of the worst fears from the dawn of the personal computer has been the 'Millennium Bug,' a glitch some experts believe can bring computers to a standstill at the turn of the century.

During the 1960s, computers used two digits to represent a year, so the year 2000 was stored as 00. In contrast, 1999 was coded as 99. There are some 10 million embedded chips worldwide that may be vulnerable to the Millennium Bug, should they be fed a date of 00, or a date that cannot be processed as a year.

Termed the “Y2K (Year 2000) Problem” or the “Millennium Bug,” this glitch some experts believe will be little more than an annoyance. They predict a few ATM failures, miscalculated paychecks, and some disruption in the ability to access online databases. Others envision nothing short of a digital disaster, advising people to stockpile food and learn how to live without power and water. They foresee gas shortages, plane crashes, and business failures.

So where does this leave the city police department or the local jail? Behind the curve if they have not yet begun checking their systems for Y2K compliance. By February of this year, most companies were not even checking their systems for Y2K compliance, and few departments had a plan that their department will be okay. Don’t sit back and let somebody else take over. Take ownership. This is your problem.

Administrators should remember that they are linked to other departments in the city, county, and State. This includes courts, prosecution, jails, crime labs, and connections to Federal and State databases. If a given program malfunctions, it could inadvertently trigger jail doors to open. The federal government recommends a public education effort that includes meetings with community groups and the media. Experts advise taking a calm, rational approach, one that does not give in to fear or overdramatization, but that allows for an immediate start on the inventory and assessment process.

For additional resources relating to Y2K compliance, for public safety agencies, access JUST-NET, the World Wide Web site of the National Law Enforcement and Corrections Technology Center, at www.just-net.org, or the President’s Council on Year 2000 Conversion at http://www.y2k.gov.

If you’re a small department with 5 or 10 person- nal computers, you might be able to do it. But if you’re a large organization with mainframes and no one has done anything yet, all you can do is triage and fix what is mission critical,” says Jack LeFeman, a vice president of Science Applications International Corporation (SAIC), a San Diego consulting firm to cities and public safety agencies.

“By February of this year, most companies were supposed to be in the final implementation phase. So if you’re just waking up and saying you want to do a search, write an RFP, and go through the bid process, I would say forget it. You need to bring someone in right now who has addressed the situation and can give you the right advice to help you determine what your mission-critical items are. You’ll have to recognize that you’re going to have some problems and probably have to do a work-around,” LeFeman says.

Remediation

“Fix it, update it, or replace it,” Hanlon says. Contact vendors and ask for Y2K certification. If the vendor cannot supply it, ask for a solution.

But even that may not be enough, notes Hanlon, whose work has focused on embedded-chip systems and includes everything from blood alcohol analyzing equipment to fire alarms and internal systems that could inadvertently trigger jail doors to open. Testing, she says, is critical. “We get vendor assurances, but anything that is mission critical, we test ourselves. We’re not taking anything at face value.”

Contingency Planning

A contingency plan includes specific strategies should internal systems fail, as well as plans to address problems that could arise in the community. Police departments functioned before computers came along,” says Charles Rinkevich, the former head of the Federal Law Enforcement Training Center and now a vice president with SAIC. “So we need to be looking at ways to do things that maintain operations if the worst case scenario occurs. One possibility is to activate your emergency operations center on December 31 and keep it up for a couple of days. Prepare for things to go goofy. Think about what could happen in the city if you have power outages or a loss of heating or water. What happens if the traffic lights don’t function? You need a contingency plan in case of problems like these.”

Agencies also may want to include a disaster drill as part of their contingency plan, along with an educational component. San Diego County’s Office of Disaster Preparedness is offering citizens a pamphlet on Y2K preparation, and county officials are planning a public education effort that includes meetings with community groups and the media. Experts advise taking a calm, rational approach, one that does not give in to fear or overdramatiza-

Y2K Compliant?

- Communications systems (CAD, 911, and any related records management systems; radios, radio systems, and networks).
- Fleet maintenance programs.
- Building maintenance systems and those that control access, lighting, or power.
- Security systems.
- Mobile data terminals and computers.
- Paging and alerting devices, systems, or networks.
- Electronic pens; laptop and palmtop computers.
- Bar code readers.
- Electronic laser sighting devices.
- Night vision devices.
- Listening devices.
- Explosives and drug detectors.
- Audio and video-recording devices.
- Geopositioning and information systems.
- Vehicle systems, including infrared and night vision systems, sirens, public address systems, and audio- and video-recording devices.
- Helicopter systems, including infrared and night vision systems, sirens, public address systems, and audio- and video-recording devices.
- Automatic vehicle-locating systems.
- Robots for bomb detection.
- Remote control devices for security cameras or projectors.
- Security cameras.
- Time-stamping devices for legal documents or time cards.
- Parachute and scuba equipment.
- Hazardous materials detection equipment.
- Electronic equipment for crime scene investigations.
- Fingerprint-processing equipment (photographic, laser, special lighting, or digitizing equipment; data transfer equipment).
- Evidence-processing equipment (labeling, bar coding, stamping).
- Connections to Federal, State, county, and city online databases.
- Office equipment (fax machines, printers, copiers, scanners).
- Metal detectors.
- Mobile devices for controlling traffic signals.
- Card key systems and networks.
- Intercom systems.
- Electronic firearms trigger guards or safety locks.
- Electronic prisoner tracking devices.
- Equipment that does its own maintenance scheduling.
- Equipment that alerts the operator to battery service.
- Software programs that schedule training or certification.
- Crime lab equipment that may be date-dependent.
Building a Forensic Laboratory

Building or renovating any facility is a complicated undertaking. But building a new forensic laboratory or renovating an old one is even more daunting. Along with the usual concerns that come with facility planning, forensic laboratories bring with them the added considerations of environmental health and safety, hazardous materials, evidence preservation and security, and special requirements that are particular to the forensic sciences.

Until recently, the only guidance for creating a forensic laboratory came from the American Society of Crime Laboratory Directors (ASCLD). Although the information the organization offered on forensic laboratory planning was up to date and relevant, it was contained in a number of different documents or it resided with its members, based on their own hands-on experiences.

Now, with the help of a National Institute of Justice (NIJ) grant, laboratory planners have a new, comprehensive source of information, Forensic Laboratories: Handbook for Facility Planning, Design, Construction, and Moving. This publication, a result of a 2-day workshop attended by ASCLD members and coordinated by the Office of Law Enforcement Standards (OLES) at the National Institute of Standards and Technology, offers guidelines to empower laboratory managers to improve their facilities and is directed specifically toward forensic concerns. These guidelines are designed to safeguard the integrity and objectives of the profession, maximize organizational efficiency, ensure economical expenditures of resources, and provide a safe working environment for employees. The handbook, as its title suggests, offers information on everything from planning a new facility to planning the move.

"ASCLD was getting a lot of requests for information," says OLES Director Kathleen Higgins. "Some people got funding from their agencies to build new labs. Some were given existing buildings and told, ‘Here, do something with this. Make a lab out of it.’ We looked around and realized that a lot of these people just didn’t have the information they needed. ASCLD asked for NIJ assistance, and NIJ tasked OLES with bringing together people with expertise in all areas of facilities planning."

“I’ve never seen a group of people so eager to make something happen,” Higgins says. “This was a group with a lot of energy and enthusiasm. As a result of their work, we were able to put together this document, Forensic Laboratories won’t turn a police administrator into an expert on crime labs or construction, but it does offer general guidelines on everything from site planning and design to developing a strategic plan for moving into a new facility.”

According to Higgins, there is a second publication related to forensic laboratories that is nearing completion, Forensic Sciences: Review of Status and Needs, which was the result of another workshop. This publication will detail the future requirements of forensic laboratories and the forensic science community. It is scheduled to be available later this year.

Laboratory works in partnership with NLECTC–Rocky Mountain and focuses on technologies to improve police field operations and develop crime-mapping software for jurisdictions. NLECTC–Rocky Mountain also houses the newly created Crime Mapping Technology Center, which draws on the expertise of Air Force scientists and engineers in its development of technologies that can be used to detect concealed weapons on individuals, an effort that is expected to yield stationary equipment for use in law enforcement and homeland defense. This center operates under the auspices of the university, which houses a forensic science program with an active research and training program, as well as curriculum for those interested in learning about equipment, technology, or research findings.

The National Institute of Justice (NIJ)’s NLECTC system consists of facilities located across the country that are colocated with an organization or agency that specializes in one or more specific areas of research and development. Although each of the NLECTC facilities has a different technology focus, they work together to form a seamless web of support, different technology areas of focus, they work together to form a seamless web of support, and to aid in criminal investigations, such as a scanning electron microscope, an x-ray fluorescence detector, and a mass spectrometer, all of which are used to process trace evidence. Its other areas of expertise include computer architecture, data processing, communications systems, and a recent effort to identify technologies to stop fleeing vehicles.

We Get You Covered

The National Institute of Justice (NIJ), responding to recommendations by the law enforcement and corrections community, converted its Technology Assessment Program Information Center (TAPIC) into the National Law Enforcement and Corrections Technology Center (NLECTC) system. Created in 1994 as a component of NIJ’s Office of Science and Technology, NLECTC’s goal, like that of NIJ, is to provide support, research findings, and technological expertise to help State and local law enforcement and corrections personnel do their jobs more safely and more efficiently.

NIJ’s NLECTC system consists of facilities located across the country that are colocated with an organization or agency that specializes in one or more specific areas of research and development. Although each of the NLECTC facilities has a different technology focus, they work together to form a seamless web of support, different technology areas of focus, they work together to form a seamless web of support, and to aid in criminal investigations, such as a scanning electron microscope, an x-ray fluorescence detector, and a mass spectrometer, all of which are used to process trace evidence. Its other areas of expertise include computer architecture, data processing, communications systems, and a recent effort to identify technologies to stop fleeing vehicles.

Supported by NIJ, the Office of Law Enforcement Standards applies science and technology to the needs of the criminal justice community. While its major objective is to develop minimum performance standards for equipment and technology, which NIJ promulgates as voluntary national standards, OLES also undertakes studies leading to the publication of technical reports and user guides. Its areas of research include clothing, communications systems, emergency equipment, investigative aids, protective equipment, vehicles, and weapons. It also develops measurement methods for analytical techniques and standard reference materials for forensic scientists and crime labs. Since the program began in 1971, OLES has coordinated the development of nearly 200 standards, user guides, and advisory reports. Housed at the National Institute of Standards and Technology, OLES is supported by the Office of Law Enforcement Technology Commercialization (OLET). The Office of Law Enforcement Technology Commercialization, a program of NIJ, is located at Wheeling Jesuit University. OLET’s mission is to work with industry, manufacturers, and laboratories to facilitate the commercialization of technologies into the law enforcement and corrections marketplace. OLET provides special services and assistance to innovators, entrepreneurs, universities, Federal and other laboratories and universities nationwide in commercializing technologies that will enhance the effectiveness of law enforcement and corrections practitioners. A national partnership is beginning to develop that will provide a continual pipeline of innovative products, concepts, and value-added services that will expedite the commercialization of needed new products and services for State and local law enforcement and corrections communities. OLET has directly assisted in commercializing several innovative products, including the RoadSpadeTM, a novel vehicle-stopping device; the TriageTrackerTM, a low-cost, handheld night vision device; an Explosive Ordnance Disposal Technician Training Kit; and the Counterpoint Stab and Slash Protective Vest. OLET has identified more than 50 additional emerg-

The newest addition to the NLECTC system, this facility is housed in the University of Central Florida and initially will focus on arson and explosives research. The mission is to conduct fundamental research into the basic nature of fire and explosion reactions, provide the support for developing standard protocols for analyzing arson and explosion debris, promote the use of electronic media to access and exchange information about the forensic sciences, and provide education opportunities to practicing professionals and full-time students. This new facility will draw on the expertise of the university, which houses a forensic science program with an active research program, as well as the Institute of Simulation and Training, which is currently exploring ways to simulate explosive reactions to study various chemical processes.
The National Institute of Justice (NIJ) has long believed that one of the most vital aspects of its work – the solicitation of ideas and suggestions from criminal justice practitioners – is this information that helps form the framework of NIJ's work. NIJ's Office of Science and Technology and its National Law Enforcement and Corrections Technology Center (NLECTC) system acquire this information through conferences, regional workshops, and most especially through a series of advisory groups. These groups are comprised of representatives from all areas of law enforcement, corrections, and the forensic sciences, and focus on everything from operational technological needs to liability issues and public acceptance of these new technologies.

One such group, the Law Enforcement and Corrections Technology Advisory Council (LECTAC), is composed of law enforcement, corrections, and forensics practitioners who serve as advisers to the NLECTC system and recommend technology program priorities. Because LECTAC's members are also the end users of new technologies, they bring the day-to-day needs of police and corrections officers to the forefront. As a result of their recommendations, NIJ is able to bring in researchers, scientists, and engineers to address the emerging needs of the law enforcement and corrections communities.

LECTAC's current research priorities include the development of technologies and research in the areas of concealment and contraband detection, vehicle stopping, enhanced DNA testing, officer protection, less-than-lethal technology, information management, counterterrorism, location and tracking, secure communications, and noninvasive drug detection. Following are updates on several sample projects in the development of technologies and research in the law enforcement, corrections, and forensics communities.

**Crime Scene Teleforensics.** The National Institute of Justice and the United States Army Medical Research and Materiel Command, in collaboration with the New York State Police Forensic Investigation Center, are sponsoring a demonstration and evaluation to determine whether telemedicine techniques can be used to provide forensic experts with remote access to crime scenes. Through the use of medical video teleconferencing and communications, forensic personnel will be provided with the ability to: reduce traffic, contamination, and unauthorized personnel at a crime scene; increase peer and administrative review of crime scenes; increase access to special reviews by forensic experts; and provide crime scene training. The U.S. Army currently uses a portable, wireless, telemedical system for remote military medical care, which is being used in this project. For more information, contact Saralyn Borowman, National Institute of Justice, 202–305–3309.

**Applying Space Technology to Forensic Science.** The objective of this project is to identify and field-test various National Aeronautics and Space Administration (NASA)-related technologies during crime scene investigations. Those technologies potentially relevant to law enforcement applications include remote sensing, neutron/gamma-ray spectroscopy, and x-ray spectroscopy. The use of magnetometers may also assist investigators in the location of buried bodies by detecting minute variations in magnetic fields at suspected homicide grave sites, whereas the development of advanced data networks could connect crime scenes with forensic laboratories nationwide, allowing almost instantaneous transfer of field data for time-sensitive analysis and assessment. These systems would be connected to central crime laboratories by a variety of methods, including military and public safety communications line systems, and microwave communications systems. Other areas of mutual interest include the development of portable imaging, detection, molecular excitation, and analysis equipment; miniaturized analog and digital electronics; more rugged equipment; and instruments for remote field use. The project also will explore real-time data compression, high-rate data burst transmission, and communication systems and networks to set up the transfer of information. These technologies ultimately could be made available to State and local police for investigation of physical evidence at crime scenes. For more information, contact Lisa Forman, National Institute of Justice, 202–307–6698.

**Evaluation of Voice Stress Analysis Technology.** In response to queries from a number of law enforcement agencies, the Air Force Research Laboratory (AFRL) in Rome, New York, and the National Law Enforcement and Corrections Technology Center (NLECTC)–Northeast, are evaluating the scientific value and utility of existing, commercial, voice stress analysis technology for law enforcement applications. Vendors of this technology claim it can detect stress, indicating possible deception, in voice communications. The systems are advertised as being cheaper, easier to use, less invasive, and less constraining than polygraph technology. A thorough literature search has been carried out, providing insight into the development of voice stress analysis information, on previous evaluation efforts, and knowledge of the existence of various commercial voice stress analysis systems that are being marketed to law enforcement agencies. One such system has been purchased, and a police officer and a laboratory researcher have been trained in its use. Speech data collected for eventual inclusion as part of the laboratory evaluation. Contact with voice stress analysis users, potential users, and other researchers involved in ongoing evaluations continues. A comprehensive technical report and videotape presentation of evaluation results will be the final products of this effort. For more information, contact Sharon Walter, NLECTC–Northeast, 888–338–0584.

**Backscatter Imaging System for Concealed Weapons Detection.** The National Institute of Justice, in cooperation with the U.S. Department of Defense (DoD) and the Joint Program Steering Group (JPSG), funded the modification of an off-the-shelf technology developed by Nicolet Imaging Systems of San Diego, California, for detecting concealed weapons. The system uses what is known as the Compton effect, or x-ray backscatter. Standard medical radiology uses x-rays that pass completely through the body. But the low-energy x-rays emitted by this system, which are equivalent to about 5 minutes of exposure to sunlight at sea level, are reflected back rather than penetrate the body, hence the term "backscatter." An individual stands before the device and is scanned. Computer software creates a composite image of the individual from the reflected x-rays. As different materials absorb and reflect the x-rays differently, they show up as different shades and shapes in the image. By viewing the false color feature which has been added and the shape of an object in the image, the operator can distinguish normal anatomical features and everyday items, such as keys or coins, significantly reduces the false alarm rate as compared with currently available devices, which tend to detect all metal objects. It can detect weapons with even a small steel content, like that found in knives used by hobbyists. The INEL prototype is ready for commercialization, with a company in Idaho Falls, Idaho, developing a commercialization package. A prototype has been installed in the Bannock County, Idaho, courthouse for operational evaluation. For more information, contact Dr. Pete Nacci, at the NIJ/DoD Joint Program Steering Group, 703–351–8821.

**Handheld Acoustic System for Concealed Weapons Detection.** Under the sponsorship of the National Institute of Justice, JAVCOR is developing an inexpensive, handheld device to alert police and corrections officers to the potential presence of a weapon at a greater distance (4 to 12 feet) than the handheld metal detectors in use today, thus providing a greater margin of safety. This device also will be able to detect metallic and nonmetallic weapons concealed under an individual's clothing utilizing acoustic technology. The detector will be affordable for even smaller law enforcement and corrections agencies. A breadboard model already has been demonstrated with positive results. It was able to detect a plastic knife concealed under a heavy sweatshirt at a distance of 7 feet. Two working models also have been developed. Testing is being conducted to determine performance parameters. The working models were recently demonstrated at the California Border Alliance Group and received a positive reception from law enforcement representatives. These working models have been built and will be operationally tested by the Los Angeles County Sheriff's Department. For more information, contact Dr. Pete Nacci, at the NIJ/DoD Joint Program Steering Group, 703–351–8821.

**Electromagnetic Portal for Concealed Weapons Detection.** The National Institute of Justice has supported the Idaho National Engineering Laboratory (INEL) in the development of an improved weapons detection portal employing fluxgate magnetometers. These magnetometers detect anomalies in the earth's magnetic field that are caused by magnetic material contained in objects carried by individuals. Most commercial weapons contain ferrous (iron-bearing) materials, which are magnetic. Because this technology does not sound an alert on such innocuous objects as keys or coins, it significantly reduces the false alarm rate as compared with currently available devices, which tend to detect all metal objects. It can detect weapons with even a small steel content, like that found in knives used by hobbyists. The INEL portal is ready for commercialization, with a company in Idaho Falls, Idaho, developing a commercialization package. A prototype has been installed in the Bannock County, Idaho, courthouse for operational evaluation. For more information, contact Dr. Pete Nacci, at the NIJ/DoD Joint Program Steering Group, 703–351–8821.

**Rapiscan Corporation.** For more information, contact Dr. Pete Nacci, at the NIJ/DoD Joint Program Steering Group, 703–351–8821.
A Map to the Market

Have you ever thought you had a great idea for a new product based on all your on-the-job experience? Before you thought of negotiating the route from "idea" to "marketplace" had you stymied?

In truth, the road to market can often be chaotic, messy, and disorderly. It can be tedious and frustrating. And you can get lost so easily.

So why even venture out? Because the rewards can be enormous. And now there is a practical roadmap to get you there.

“It can take years to grow a product from the seed of an idea to a marketable item,” says Marcia Rorke, founder and president of Mohawk Research Corporation. “It took over 40 years to develop DNA [deoxyribonucleic acid] analysis, and over 40 years for the development of magnetic resonance imaging and CAT [computerized axial tomography] scans. About the only thing that didn’t take that long was numerically controlled machine tools. That only took about 20 years to develop.”

Rorke, whose company offers consulting and training in new product development, was one of more than 250 inventors and entrepreneurs invited to attend a recent conference sponsored by the National Institute of Justice’s (NIJ’s) Office of Law Enforcement Technology Commercialization (OLETC).

The first-of-its-kind conference, titled “One Step Ahead With Technology,” brought together innovators, venture-seed capitalists, manufacturers, and the law enforcement and corrections communities to let them know that a roadmap does exist to show them how to navigate the road to commercialization in the law enforcement and corrections marketplace.

Not intended to paint a rosy picture of the commercialization process, the conference instead offered inventors and entrepreneurs realistic, practical information they could use. In addition to general sessions on all aspects of commercialization, conference workshops explored such topics as:

- Financing through the private and public sector.
- Creating a commercialization strategy.
- Finding suitable manufacturing and financial partners.
- Performing market research.
- Finding ways to protect intellectual property.
- Partnering with NIJ.
- Utilizing the services of OLETC in expediting the commercialization process.

The Innovation Process

What makes the innovation process difficult is that it requires expertise in three primary areas. The first area is technical development, which is where the idea is born, developed, and fine tuned. The second area is market development, which involves defining the product’s customer base. The third area is organizational development, which entails putting together a team that can take the product from start to finish. The process also involves four stages: the research stage, which takes the product from idea to engineering application; the innovation stage, which goes from defining the product to creating a prototype; the entrepreneurial stage, which takes the product into production; and the managerial stage, which sets up the structure for major market penetration.

What stymies most inventors is that they rarely are expert in all, or even most, of these areas. “You have to decide what role you want to play. You have to know what you’re good at. That way you will be able to avoid some of the pitfalls,” Rorke told conference participants. “You also need to understand how one area relates to another and how important it is that all three activities be completed in parallel. For example, what happens if the technology is ready, but the manufacturer has not been found yet? What if the manufacturer is ready, but you have no customer base for your technology? The market may get ahead of you, or you have to have the technology ready by a certain date, but it hasn’t been tested yet. Then you wind up with a premature prototype and are subject to lawsuits and injuries.”

Other conference panelists agreed. “You need two things—knowledge and desire,” stated Donna Marts, a mechanical engineer with the U.S. Department of Energy’s Idaho National Engineering Laboratory (INEL) who designed the RoadSpike™, a remotely controlled barrier strip that stops fleeing vehicles. “If you develop the technology on your own, you need to ask yourself if you’re the right person to take it from cradle to grave, or do you need help?”

When Marts was in the process of developing the RoadSpike™, INEL put its other experts to work doing market assessments, commercialization studies, and investigating patent legalities. Although the RoadSpike™ was developed through an NIJ grant, INEL’s support in these other areas enabled Marts to do what she does best—design the technology.

“That doesn’t mean it was always easy,” Marts said. “There will be barriers, but you can’t get frustrated. You have to have a strategy. Find a way to go over them, around them, or through them. Do whatever you have to do to be successful. Just the idea that we may have saved one life because of this technology is reward enough.”

The RoadSpike™ technology was ultimately transferred to OLETC, where it was licensed for production to PMG Manufacturing Group. It is currently available to the law enforcement market. (Also see: “RoadSpike® Stops Fleeting Vehicles” in TechBeat, October 1997.)

Kevin Broussel, owner of Ultra Armor Ltd., created a stab-resistant body armor specifically for corrections officers. OLETC helped Broussel assess the market and determine the financial potential of his product. “OLETC found the best price structure that let me offer the customer a price break without compromising performance.

Getting There

- Define the product. The innovation process begins with product definition. This is an important function of the National Institute of Justice’s (NIJ’s) Office of Science and Technology and its National Law Enforcement and Corrections Technology Center (NLECTC) system. Through its regional and national advisory councils, the NLECTC system learns about the needs of law enforcement and corrections.
- Understand that each stage of the innovation process is driven by a different kind of person, each of whom is rewarded by different things. The bench scientist, for example, may be motivated more by potential awards, the recognition of the scientific community, or the good that can come from a new product or technology than by profit. Conversely, manufacturing or financial partners have to focus more on potential revenues than on how or why the technology was created.
- Accept the fact that you will be doing things over and over again. You will go through a number of prototypes and may have to bounce back from misdirected marketing efforts or the rejection of potential partners.
- Realize that there will be major differences between the culture of a major manufacturer and that of a lone entrepreneur or a small-business owner. The language will be different, as will the business perspective and frame of reference. “We had some miscommunication at first because we had not shared our market strategy up front,” says Larry Curfiss, vice president and director of ITT’s Commercial Products Division. “We discovered we weren’t always speaking the same language. Having someone like OLETC [Office of Law Enforcement Technology Commercialization] involved helped break down a lot of those language barriers.”
- Understand that the size and depth of the product’s market will determine the size of your manufacturing partner and your approach to possible partners. Most manufacturers will focus on the potential return on their investment, or ROI, which must be substantial enough to affect the corporate bottom line. When approaching a potential partner, it is important to know the size and nature of the market, how you plan to tap into it, and what kind of ROI your partner can expect.
- Consider intellectual property an asset, and protect it as such.
- Have a commercialization plan, preferably one that has the input of people with expertise in all areas of commercialization. A good plan will have an executive summary, current project status, deployment plans, a marketing strategy, and information about potential revenues. It will also detail the problems you can expect to encounter and how you can plan to handle them.
- Do not expect your technology to find its way to the commercial marketplace alone. Find a champion, like NIJ and OLETC, to help.
If I hadn’t been able to do both, I wasn’t willing to go forward. OLETC’s help was a big part of my decision to take this to the corrections market,” Broussel says. Ultra Armor is now immersed in the marketing aspect of its product and is focused on developing a distribution network.

Mark Jones is the inventor of Tiger Vision®, a night vision device designed for use by patrol officers. Like the other panelists, Jones was no expert inventor. A former San Antonio police officer, he spent years building prototypes and convincing nearby Texas agencies to try them out. It was the recommendations of those agencies and the promise of his Tiger Vision® technology that captured the attention of OLETC. But it took the clout of OLETC and NIJ to open the doors to ITT Night Vision™, one of the largest manufacturers of night vision equipment in the world.

OLETC walked Jones through the process of signing a licensing agreement that will have ITT manufacturing Tiger Vision® and field testing it; if all goes well, it also will manufacture it for full-scale production. ITT’s goal, says Larry Curliss, vice president and director of ITT’s Commercial Products Division, is to offer law enforcement a night vision device for less than $1,000, a marked reduction from the cost of its current night vision device, which sells for around $3,500. (Also see: “Tiger Vision: Linking Invention With Industry” in TechBeat, Winter 1999.)

It is ITT’s sales and distribution network that could mean the difference between success and failure for Jones. “The law enforcement market is totally decentralized,” Curliss says. “You really do have to make individual calls to these agencies. You have to show them your product. It’s a difficult market. But Mark has a good idea and the customer base is there. OLETC had the market research that supports the technology. It was that information ITT needed to move forward with the project.”

**Innovation at Work**

The conference also featured an exhibit of new products and technologies, all of which were in various stages of the innovation process. Some were at the prototype stage, others were in the beginning of the marketing stage, while still others were waiting for financial and manufacturing partners. The products and technologies on display included a new type of crime scene light; an offender tracking bracelet that can be used in areas where GPS [global positioning system] will not operate; a vest that keeps the body cool; “smart cards” with computer chips embedded in them; a wearable computer for crime scene technicians that uses a wireless modem, laser, wrist-mounted keyboard, and digital camera and sends information directly back to headquarters; a dual-purpose shotgun shell that can be a lethal or nonlethal projectile; a gas mask with a built-in voice amplifier and radio; a gunshot locator that fits into a smoke detector and automatically contacts 911 at the sound of gunfire; a handheld computer that provides two-way spoken language translation of English to a foreign language and back again; a surveillance and reconnaissance robot; and a new type of optical technology that uses natural light to measure vehicle speed.

“These are the kinds of products OLETC looks for,” says Tom Burgoyne, OLETC acting director. OLETC then offers a variety of services that can be applied to almost every stage of the innovation process, including:

- Matching emerging technologies to law enforcement and corrections needs.
- Assisting in the development of market assessments and business plans.
- Locating complementary technologies, expertise, and testing resources.
- Identifying product standards and test protocols.
- Locating partners, manufacturers, and distributors.
- Identifying grant-funding sources.
- Providing information on liability, intellectual property, and licensing questions.

Burgoyne says that OLETC currently has more than 70 potential technologies and/or product ideas in various stages of commercialization, including: a new night vision device for use by patrol officers; a stab-resistant vest; a bomb technician’s training kit; an entanglement net that can be fired from a belt launcher or a 37-mm gas gun; a low-cost, all-weather, emergency reflector device; a laser speed measuring device that can fit onto conventional sunglasses, a helmet, or a video camcorder; a noninvasive optical device that can test for drugs or chemical substances; a facial identification system that can screen more than 1 million mug shots in less than 2 seconds; and a laser device that can disorient and distract the human eye.

For more information about the National Institute of Justice’s Office of Law Enforcement Technology Commercialization services or its current projects, call 888–306–5382, or e-mail oletc@nttc.edu. For copies of the TechBeat articles noted above, contact the National Law Enforcement and Corrections Technology Center (OLETC) in Rockville, Maryland, at 800–248–2742 or access them through the NLECTC system World Wide Web site, JUSTNET, at www.nlectc.org.

Photos by Corbis Images.
Sign Up To Receive Free Reports From the National Criminal Justice Reference Service

In addition to funding the National Law Enforcement and Corrections Technology Center, NIJ also supports the National Criminal Justice Reference Service (NCJRS), an international clearinghouse on crime and justice information. NCJRS staff respond to reference questions, provide referrals to other resources, distribute NIJ and other Office of Justice Programs (OJP) documents, and maintain a mailing list of over 45,000 registered users. In addition, NCJRS sponsors the NIJ Criminal Justice Conference Calendar at http://www.ncjrs.org/calendar, which lists conferences and meetings of interest to the criminal justice community. If you are interested in signing up for the NCJRS mailing list, you may request a registration form using any of the following methods:

Fax-on-Demand. Dial 800–851–3420, select option 1, then option 2. The registration form is #1 on the document index. The form will be faxed to you immediately.

Fax. You may fax your request for a registration form to 410–792–4358. You will receive a form promptly in the mail.

E-mail. Send an e-mail to askncjrs@ncjrs.org and request a registration form. It will be sent to you in the mail.

Write. Send a written request to NCJRS, Box 6000, Rockville, MD 20849–6000.

Call. You may call an NCJRS information specialist and request a registration form. The number is 800–851–3420.

As a registered user, you will receive the bimonthly Catalog, the quarterly NIJ Journal, and selected reports about NIJ and other Office of Justice Programs (OJP) documents, and maintain a mailing list of over 45,000 registered users. In addition, NCJRS sponsors the NIJ Criminal Justice Conference Calendar at http://www.ncjrs.org/calendar, which lists conferences and meetings of interest to the criminal justice community. If you are interested in signing up for the NCJRS mailing list, you may request a registration form using any of the following methods:

Fax-on-Demand. Dial 800–851–3420, select option 1, then option 2. The registration form is #1 on the document index. The form will be faxed to you immediately.

Fax. You may fax your request for a registration form to 410–792–4358. You will receive a form promptly in the mail.

E-mail. Send an e-mail to askncjrs@ncjrs.org and request a registration form. It will be sent to you in the mail.

Write. Send a written request to NCJRS, Box 6000, Rockville, MD 20849–6000.

Call. You may call an NCJRS information specialist and request a registration form. The number is 800–851–3420.
We Won Again

TechBeat, the flagship publication of the National Law Enforcement and Corrections Technology Center system, was recognized in 1998 with a first-place Blue Pencil Award for most improved periodical by the National Association of Government Communicators, which each year honors Federal agencies for publications that exceed industry standards in editorial and design excellence. And, TechBeat, for the second year in a row, has been honored with a best-of-category award in the Excellence in Print competition sponsored by the Printing and Graphics Communications Association.

Dedicated to reporting developments in technology for law enforcement, corrections, and forensic science professionals, TechBeat was transformed in late 1997 into a four-color, tabloid-sized publication and enhanced by the use of unique graphic elements, according to its managing editor, Rick Neimiller. “TechBeat’s new look and format have served the intended purpose—to more effectively transfer technology information to the publication’s more than 30,000 criminal justice professionals,” Neimiller says. “Along with recapturing the attention of its long-term readers, TechBeat has attracted many new readers.”

To receive a no-cost subscription to TechBeat or to request additional copies at no charge, call the National Law Enforcement and Corrections Technology Center, 800–248–2742. TechBeat also can be accessed through the center’s World Wide Web site at www.nlectc.org.

Photo by Danny Hart, Aspen Systems Corporation.