A routine inventory is under way.

Down the road in the State correctional facility, officers move among inmates “counting heads,” not just once, but several times during the course of the day—a routine “inventory,” but one that consumes more time and resources.

Soon, however, correctional officers may have access to technology that makes counting inmates as quick and accurate as taking store inventories.

Every day, at every correctional facility across the country, correctional officers take inmate head counts. Some counts are done a few times each day; others are done up to a dozen times.

“Until now, a manual head count has been an institution’s only option,” says Rob Donlin, corrections program manager at the National Institute of Justice’s (NJI’s) National Law Enforcement and Corrections Technology Center (NLECTC)—Southeast. “If that manual count produces the correct number, everything is fine. But a problem happens if the manual count comes up short. Say that you are supposed to have 75 inmates in your cell block, and you come up with 74. The best thing you would do is count them all over again to make sure that you didn’t make a counting error. If you come up with 74 again, then you know that someone is missing, but you don’t know who.”

When a situation such as this occurs, staff conduct a roll call to determine who is missing, a tedious process than can take hours. Meanwhile, administrators may notify local law enforcement of a potential escape, but until staff complete the roll call, administrators cannot provide a name or a description.

By later this year, however, a new scenario may be in place. BWX Technologies, which operates the Y–12 National Security Complex in Oak Ridge, Tennessee, for the U.S. Department of Energy (DOE), has teamed up with NLECTC–Southeast to develop a portable biometric identification scanner that uses technology similar to the devices that perform those grocery store inventories. A prototype of this biometric counting system is currently undergoing extensive field testing in a number of correctional facilities.

Donlin says that with the envisioned biometric counting system, correctional officers will use handheld units to scan inmates’ fingerprints and send them back to a central database. The central unit will check the fingerprint for a match in the database and, in less than 5 seconds, will send back the inmate’s mug shot for visual verification.

While the idea for a biometric counting system for correctional applications came out of an NLECTC brainstorming session, Donlin says, BWX Technologies Y–12 staff made it a reality. “They’re the brains behind it. We just go in with the ideas and say, ‘Make it happen.’ I’m sure someone, somewhere, has looked into developing a biometric counting system before, but when we asked for it, the people at Oak Ridge came up with a winner.”

The winner they came up with was a commercially available biometric device that includes a fingerprint scanner, a speaker that beeps when all inmates have checked in or listing those who are missing. He says that while the counting system may have little effect on the time it takes to perform an initial count, it will eliminate the need for second counts and roll call counts. It also will immediately provide data on missing inmates, including their fingerprints and mug shots.

Although using scanners to verify fingerprints is not new, using them to verify inmate fingerprints is. In an effort to keep down the ultimate cost of a biometric counting system, BWX Technologies staff searched extensively for commercial-off-the-shelf (COTS) technology that met the requirements they received from NLECTC–Southeast.

Up Close From a Distance

Investigators have only one chance to protect and secure a crime scene, collect evidence, and document images for future review. But crime scenes by their nature are often chaotic. Vital evidence can be inadvertently overlooked, contaminated, or even destroyed by the best-intentioned investigators. The use of teleforensics technology under evaluation by the El Paso, Texas, Police Department may reduce crime scene problems as it aids investigations.

Teleforensics allows investigators at a remote location to view a crime scene as evidence is being gathered. A technician at the crime scene uses a camcorder (handheld or helmet cam) that is outfitted with a wireless transmitter. The camcorder transmits images via radio frequency to a monitor for detectives to view in real time. Concurrently, the recorder makes a videotape for investigators to view before questioning witnesses or to recreate the crime scene.
With a given fingerprint, a correctional officer who sees the database sends back the mug shot that corresponds to the fingerprint. The database can store all 10 fingerprints for every inmate, allowing a correctional officer to choose any fingerprint at random. Because BWX Technologies’ contract with DOE allows the group to perform work for other agencies under certain conditions, NLECTC–Southeast was able to approach the contractor about developing a biometric counting system.

The difficulty of altering or faking all 10 fingerprints defines the maximum security level. They also considered voiceprints and even a new, developing technology that scans the veins under the skin. “Fingerprinters seemed like the best choice, because someone can say something different to someone else and the same for the inmate and the correctional officer to scan,” Cain says.

The system’s database can store all 10 fingerprints for every inmate, allowing a correctional officer to choose any fingerprint at random.

**The system’s database can store all 10 fingerprints for every inmate, allowing a correctional officer to choose any fingerprint at random.**

For more information on the biometric counting system, call Rob Donlin, 800-292-4385, or email, donlin@nlectce.org.

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(Counting With Fingers . . . cont. from page 1)

Teleforensics help protect potential evidence by limiting the number of people allowed inside the crime scene. It gives police a record of the crime scene before it is altered. It can help identify valuable evidence, speed up the investigation, and develop leads. Teleforensics provide outside investigators with the same information as those at the crime scene, which improves their analysis of the scene.

The El Paso teleforensics project began in 1999 when the Border Research and Technology Center (BRTC), a partnership between the National Institute of Justice, provided equipment to the department. This initial equipment, dubbed the investigative toolkit, consisted of a microphone and a camera in a briefcase. Using low-cost, off-the-shelf technology, BRTC’s technology partner Sandia National Laboratories (SNL) in Albuquerque, New Mexico, created a prototype for the department to evaluate during covert operations.

BRTC’s mission, says its director, Chris Aldridge, is to work with law enforcement agencies and other entities to enhance technology capabilities along the Nation’s borders. Aldridge says the El Paso Police Department was chosen for the project not only because El Paso is a border city, but also because its officers are “technology champions.”

The project’s first phase, Czerwinsky notes, started with a toolkit apart and pieced together using the original request specified only that the counting system be based on a unique biometric identifier. They estimated the cost would be around $2,000 per unit. Cain describes that the database version specified only that the counting system be based on a unique biometric identifier. They estimated the cost would be around $2,000 per unit.

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“arbage, says. “That provided a possible motive or connection.” Czerwinsky says. “Discovering such evidence so early in the investigation is invaluable.”

Inmates are always playing games, he says. “They get paid, say, 40 cents a day to work in the work detail, and they report to work, but then they say they have to go to the doctor, they have to go to the psychologist, they spend the whole day running around, then claim they were there the whole time. Using this system for portal control would track their movements and verify their movements for that day.”

As the system comes into full use in numerous correctional facilities, Cain expects corrections personnel to come up with more efficient ways to use the fingerprint scanner. “Just like new versions of software come out all the time, we will keep coming out with new versions of the biometric counting system that can do other things.”

For more information on the biometric counting system, call Rob Donlin, 800-292-4385, or email, donlin@nlectce.org.

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(See From a Distance, page 10)
What could an orthopedic surgeon, a manufacturer of hearing equipment, an engineer from Ireland, and a former patrol officer possibly have in common? Three things: They developed technologies they thought would benefit law enforcement and corrections officers, they lacked the experience or knowledge to bring these technologies into the criminal justice market, and they received commercialization assistance from the Office of Law Enforcement Technology Commercialization (OLETC).

Hand-in-Glove Fit

While the overall rate of AIDS in the prison population is five times greater than that of the general population in the United States, an even larger problem may be hepatitis C, an incurable liver infection that can be spread through contact with blood and is generally contracted through intravenous drug use and shared needles. An estimated 1.4 million prisoners infected with hepatitis C travel in and out of the Nation’s prisons and jails each year.1 Needle-stick injuries occur often in law enforcement, too, and less than 40 percent of officers injured seek medical attention.2 Every time an officer pats down a suspect or inmate, that officer runs a risk of serious illness, even death.

Arizona surgeon Dr. Neal Gimbel had been experimenting with puncture-resistant gloves to protect medical staff from needle sticks and bloodborne diseases since the early 1980s. He worked on his ideas using hand molds and a vat of latex, first in his garage laboratory and then in corporate laboratory facilities. His perseverance paid off in 1995, when he received the first of four patents, and with the help of private investors launched the Gimbel Glove Company.

In 1999, Gimbel contacted the National Institute of Justice (NIJ) on how to approach the public safety market with the puncture-resistant gloves developed for the medical community. NIJ referred him to OLETC for help. OLETC invited Gimbel to bring his protective gloves to that year’s Mock Prison Riot.

“The Mock Prison Riot is a great opportunity to do shoe-leather type of research for anyone marketing to the public safety community,” says Wayne Barte, OLETC project manager. “If your product can’t stand the rigors of real-life exercises, don’t bring it. If these people don’t like something, they’ll tell you. They are very honest. They need to be—their lives depend on it.”

Although the puncture-resistant gloves received strong positive feedback at the mock riot, sales were slow. “Law enforcement is an industry with well-connected, mature relationships that are hard to crack regardless of how good a new product may be,” Barte says. “The company had sales representatives direct calling agencies with more than 100 officers and telemarketers calling smaller agencies, but they weren’t making much headway. They were a small startup company out of Phoenix and no one ever heard of them before.”

The company, according to Barte, needed a well-connected distribution partner that could get the gloves into the market. In keeping with its mission to get ideas into the marketplace, OLETC arranged for company president Gordon

“Some of the best ideas for new products come from those who know a better way to do the job, but who lack the business acumen or capital,” says Nick Tomlin, deputy director of the National Institute of Justice’s (NIJ’s) Office of Law Enforcement Technology Commercialization (OLETC), part of the National Law Enforcement and Corrections Technology Center system. “We give their ideas a push to get them out to the field more quickly. Since 1995, our mission has been to put technology into the hands of law enforcement and corrections.”

OLETC’s decision to provide commercialization assistance to a particular technology depends on whether that technology will add genuine value to the public safety field and falls within the needs and priorities established by the Law Enforcement and Corrections Technology Advisory Council (LECTAC). LECTAC is a national body of more than 100 criminal justice and public safety professionals representing local, State, and Federal agencies; associations; and courts. The advisory council also has representatives from Canada, the United Kingdom, and Israel. Tomlin says that if a technology meets the criteria, OLETC stands ready to provide market research and evaluation; application and competitive analysis; and information on intellectual property, licensing, strategic partnerships, and capital formation. OLETC also provides operational demonstration opportunities and coaches participants in project management and commercialization planning.

In addition to its day-to-day commercialization assistance initiatives, Tomlin says OLETC hosts three to four Commercialization Planning Workshops each year for entrepreneurs with little experience in commercializing a product or for established businesses that want to pursue the public safety market. These 5-day workshops give technologists the tools and knowledge they need to take their ideas or products to market. OLETC also sponsors a yearly National Commercialization Conference to bring manufacturers and venture capitalists together with technologists and inventors.

But the ultimate opportunity to demonstrate new technologies and receive feedback, Tomlin says, occurs at the annual Mock Prison Riot at the former West Virginia Penitentiary in Moundsville. The event brings together hundreds of corrections officers and tactical teams to use and assess new technologies in realistic situations. Organized by NIJ, OLETC, the National Corrections and Law Enforcement Training and Technology Center, and the West Virginia Division of Corrections, the 2003 Mock Prison Riot on April 27–30 is expected to showcase 75 different technologies for almost 1,200 law enforcement and corrections professionals.

For more information about the commercialization assistance and activities offered through the Office of Law Enforcement Technology Commercialization or the technologies mentioned in this article, call 888-306-5328 or log on to the center’s website, www.oletc.org. For information about the Law Enforcement and Corrections Technology Advisory Council, contact Jeff Vining, 800-248-2742, or email jeving@nlectc.org.
Each year the National Institute of Justice sponsors a technology institute specifically for midlevel law enforcement personnel from State and local departments and agencies who are involved with technology and technology initiatives. During this 5-day institute, participants receive information and assistance on existing and developing technologies, work through problems relating to technology implementation, and exchange technology lessons learned. Participants also receive briefings and demonstrations at various agencies and departments in the metropolitan area. Participants bring to the institute questions, technology problems and solutions, and a desire to accomplish their jobs more efficiently and effectively.

There is no cost for the Law Enforcement Technology Institute, and all travel, food, and lodging expenses are covered. However, only 25 to 30 individuals are selected to attend. Deadline for applications is June 1, 2003. To obtain applications or to receive additional information, call the National Law Enforcement and Corrections Technology Center in Rockville, Maryland, at 800-248-2742, or send an e-mail to asknlectc@nlectc.org. Information also is available through JUSTNET at www.justnet.org.

This conference will spotlight the innovative use of technology in community corrections and provide a glimpse of the technologies in development that will soon be available to assist agencies with their mission performance.

Tentative topics include:
- Advances in Electronic Monitoring
- Advances in Drug and Alcohol Testing Technologies
- How To Obtain Funding for Your Technology Project
- Crime Mapping for Community Corrections
- Less-Than-Lethal Weapons
- Supervising High-Tech Offenders
- Technology for Managing Sex Offenders
- Management Issues in Implementing Technology
- Innovative Case Management Systems
- Distance Learning and Computer-Based Training
- Supervising High-Tech Offenders
- Technology for Managing Sex Offenders
- Management Issues in Implementing Technology
- Innovative Case Management Systems
- Distance Learning and Computer-Based Training

For more information or to be placed on our mailing list for information regarding this conference, please call Jennifer Dunne at 800-416-8086, or e-mail jdunne@du.edu.

Hosted by the National Law Enforcement and Corrections Technology Center–Rocky Mountain, a program of the National Institute of Justice.
Pardy met to represent with a representative from the Hatch Corporation, which has sold protective gear for more than 10 years. The gloves fit into Hatch’s product line, and in May 2001, the two companies became partners in the marketing, sale, and distribution of the Gimbel Frisk and Search Gloves.

“We received invaluable assistance from OLETC,” Pardy says. “We needed feedback from our potential [public safety] users, and we needed to learn how to adapt our marketing strategy from the medical community, which we knew, to that of the public safety market.”

Hear It With Your Bones

More and more, law enforcement and corrections officers are sharing the same equipment needs as firefighters and other emergency response personnel. The ability to communicate over high noise levels is as much a priority with firefighters as it is with police. Also, corrections officers must work daily in cell blocks—open areas of steel and concrete, where the confusing din of shouting and clanging during a disturbance makes officer communication extremely difficult. OLETC and the Fire Fighting Task Force (FFTF) are helping to commercialize a technology originally developed for the U.S. Navy SEALs that allows all branches of public safety to communicate over high noise levels.

“You literally hear with your bones,” says Harold Holsopple, president of Sensory Devices, whose company licensed the technology used to develop the Radioear tactical headset.

According to Holsopple, bone conduction technology bypasses the outer ear, sending and receiving audio signals via vibrations in the skull or cheek bones instead. It leaves the ears either uncovered and alert to surrounding sounds or covered and protected against background noise, as the user prefers. The perception of speaking and hearing is the same as in normal conversation. Because the microphone and receiver work by “hearing” with the bone structure of the head, tactical officers who do not want to be heard by suspects can communicate with each other in a hushed whisper that is easily heard by other members of the team. Also, because sound is transmitted through the bones, officers can maintain clear radio communication with each other with minimum interference from ambient noise in situations with very high noise levels.

The origin of the Radioear headset goes back a few years to when FFTF coordinator Robert Saha visited the U.S. Naval Coastal Station in Panama City, Florida, in search of potential technologies for use by firefighters. There, he came across the “head contact microphone,” a technology developed by Naval Surface Warfare Center engineer Frank Downs at the request of the U.S. Navy SEALs. The SEALs were looking for a miniature waterproof microphone to use in full-face masks to overcome wind noise on high-speed boats. Saha immediately recognized its potential for firefighting applications.

In early 1998, Saha and Downs took a prototype of the head contact microphone, which had been incorporated into a firefighter’s helmet, to Pittsburgh, Pennsylvania, for feedback from potential users. The technology, which was patented by the U.S. Navy, had been vividly demonstrated at a Metropolitan Fire Chiefs Conference in San Diego, California, when a fire company created 110 decibels of noise by running a chainsaw, a pumper, and other equipment outside the hotel where the conference was taking place. A firefighter standing outside spoke into a standard radio and was unintelligible to the listeners in the hotel, but when he spoke while wearing the prototype head contact microphone, he was easily understood.

After reading about the prototype helmet in a Pittsburgh newspaper, the vice president of Sensory Devices contacted Saha. In July 1998, the company began discussing collaborations with the Navy, and the company was licensed to develop and manufacture the microphone the following April.

Sensory Devices already had developed communication headsets that used electromagnetic bone vibration, but only for reception. The company relied on standard air microphones for transmission. With the new technology, however, Sensory Devices was able to incorporate bone-conduction microphones for transmission.

Recognizing how valuable this hands-free communication technology would be to law enforcement and corrections officers, as well as to firefighters, Saha invited Sensory Devices to demonstrate the technology at the 2000 Mock Prison Riot. Although the original mission of the group was to develop technologies to assist and protect firefighters on the job, it has since developed a formal relationship between OLETC, the Federal Laboratory Consortium, and the National Aeronautics and Space Administration’s Center for Technology Commercialization to include the needs of law enforcement and corrections professionals.

“The introduction of the Radioear headsets at the mock riot was positive beyond expectation,” Holsopple says. “We did demonstration after demonstration.”

As a result of the mock riot, the Minnesota Department of Corrections ordered a number of the devices for evaluation and has since ordered more. Lt. Carol Krippner, Special Operations Response Team Commander at the State’s St. Cloud facility, has used the headphones in training. “The ability to communicate quietly, without open mikes, in a stealthy entry like a hostage situation is important,” she says. “The team can be right on the other side of the wall from the inmates, getting directives from a commander. They know when they’re given the green light to go in, and there’s no beeps or feedback that you’d have on the open mike to alert the inmates.” Conversely, in dynamic entries with a lot of noise, flashbangs, smoke, and lack of visual contact, Krippner says that team leaders can still communicate without problems.

Sensory Devices brought the headsets to the mock prison riots in 2001 and 2002, and will be returning for the 2003 event, during which the devices will be used and evaluated in various riot scenarios.

No Barring This Door

While installing vandal-proof sprinkler heads in an Irish prison, John Cosgrove of Clone, County Kildare, was asked by the warden if he knew a way to prevent inmates from barricading the doors and jamming the locks. Cosgrove, a mechanical engineer who holds international patents, went home, drew up some plans, tinkered with them, and built a prototype for a new type of door-frame system.

“Imagine a situation where inmates have their shoulders to the cell door while they’re beating the living daylights out of an officer inside the cell,” Cosgrove says. “It takes time to gain access in those circumstances, but with this door, an officer can gain access within 15 seconds.”

Essentially, Cosgrove says, he designed a system that has a door within a double frame—a moving frame and a frame that’s fixed to the wall. The door frame has hinges and security locks on either side of it. When the moving interior frame is unlocked, the door that normally opens into the room can then be opened out into the corridor, safely and quickly. Officers can access the barricaded area faster, without force and without damaging the door’s hardware.

After use, the door can be returned to full service within 15 minutes or less. In addition to its utility as a cell door, Cosgrove says, it is effective for use in passageways, clinics, and offices in jails and prisons where it can prevent prisoners from commandeering a corridor and creating unsafe, “no go” areas in a riot situation.

Cosgrove says that marketing to law enforcement and corrections in Ireland and England does not differ markedly from the process in the United States. However, one important difference arises when it comes to his barricade-proof door: Unlike cell doors in Ireland, most cell doors in U.S. correctional facilities open out into the corridor, preventing them from being barricaded from inside. This means, however, that prisons and jails in the United States are built with corridors 8 to 10 feet wider to allow safe passage when the cell doors are opened. By using a door that...
What Is Radiation and What Is Contamination?

Radiation is a form of energy. The atoms of some elements are radioactive and spontaneously release energy (radiation) as they transform from unstable to stable forms. Most elements are stable and do not emit radiation and therefore are not considered radioactive.

Radioactive material located in public where it is not wanted is known as contamination. For example, radioactive fuel contained in a nuclear reactor is not considered contamination. However, if that same fuel is released into the environment during an accident, it is considered contamination.

Different Kinds of Radiation

Remember that radiation is a form of energy released from a radioactive atom. That energy can be released in four different forms: alpha particles, beta particles, gamma rays, and neutrons. Awareness of the different forms of radiation will better prepare you to protect yourself and the public.

- Alpha particles can travel short distances (inches). A sheet of paper or the outer layer of a person’s skin easily stops them. Radiative materials that emit alpha particles are hazardous only when inhaling, ingested, absorbed, or injected.

- Beta particles can travel further and can pass through a sheet of paper and some clothing, but are stopped by thin metal or glass. Beta particles can damage skin, but like alpha particles the greatest hazard comes when a person inhales, ingests, absorbs, or injected with materials that emit beta particles.

- Gamma rays are similar to rays. They travel at the speed (light) through the air (can lead, dirt), and other dense materials can be used to block (shield) gamma rays. Gamma rays can be an extreme external body hazard.

- Neutrons are extremely slow moving particles. They can travel long distances in air and are released when an atom breaks apart, a process known as fission. Water and concrete can be used to shield neutrons. Neutrons, like gamma rays, can be an extreme external body hazard.

Special instruments and trained personnel are needed to accurately identify the forms of radiation. Reliable packaging information (if available) may also help to determine the radiation type.

Mannmade Sources of Radiation

Radioactive materials that emit alpha particles can poison the reactor. In some machines and nuclear reactors are examples of manmade radioactive sources. Manmade radioactive materials are used in medicine, industry, research, and nuclear weapons.

Detection of Radiation

The most obvious means of determining the presence of radioactive materials is by locating a radiation warning symbol or a vehicle, container or object that is emitting radiation. If you suspect that you are near a radiation source, do not enter the area until you are sure that you are not exposed to radiation.

- Distance.
- Time.
- Shielding.

What Is a Dirty Bomb?

Dirty bombs are devices used to contaminate an area with radioactive materials or radiation. They are difficult to accurately describe or characterize because they do not cause mass devastation like a nuclear weapon or an improvised nuclear device. However, they can cause radiation sickness, with initial symptoms such as nausea, vomiting, and diarrhea. Eye damage, increased cancer risk, genetic defects, and even death can result from higher exposure levels.

What Are the Risks and How Do I Protect the Public and Myself?

The fundamental principle in radiation protection is that all exposures should be kept to a minimum. Typically, exposure to radioactivity has no immediate symptoms (symptomatic).

To avoid overexposure to radiation sources, always wear proper protective equipment, including a mask and gloves when exposed to ionizing radiation.

- Respiratory equipment and clothing should be worn and proper procedures followed.

For more information about other resources addressing this topic, contact the National Law Enforcement and Corrections Technology Center system at 800-248-2742, or e-mail asknet@inlecc.org.

This poster was developed in cooperation with the Law Enforcement Technology Support Center at the U.S. Department of Energy’s Oak Ridge National Laboratory and the National Institute of Justice (Justice Academy 2001-4-9-4-002) and is a technology partner with the National Law Enforcement and Corrections Technology Center - Gacult.
The National Law Enforcement and Corrections Technology Center (NLECTC) system, a program of the National Institute of Justice (NIJ), offers no-cost assistance in helping agencies large and small implement current and emerging technologies.

The NLECTC system was established in 1994 by NIJ’s Office of Science and Technology to deliver information and technology assistance to more than 18,000 police departments; 50 State correctional systems; thousands of prisons, jails, and parole and probation departments; and other public safety organizations.

With a network of regional centers and specialty offices located across the country, the NLECTC system has been able to deliver expertise in a number of technologies by forming partnerships with such host organizations as the Air Force Research Laboratory, the Space and Naval Warfare Systems Center, and The Aerospace Corporation. Through these partnerships, NLECTC staff have access to the latest innovations in research and development.

The NLECTC system serves as an “honest broker” resource for technology information, assistance, and expertise.

Contact NLECTC for:

Technology Demonstration
We introduce and demonstrate new and emerging technologies through such special events, conferences, and practical demonstrations as theMock Prison Riot (technologies for corrections), Operation America (bomb detection technologies), and an annual public safety technology conference. On a limited basis, NLECTC facilitates deployment of new technologies to agencies for operational testing and evaluation.

Capacity Building
We provide hands-on demonstrations of the latest technologies to address such operational issues as crime and intelligence analysis, geographic information systems, and semi-automatic pistols is tested on a pass/fail basis. NLECTC also conducts comprehensive testing of new technologies and product concepts. They then work with innovators and industry to develop, manufacture, and distribute these new, innovative products and technologies.

Technology Needs Assessment
Our national body of criminal justice professionals—the Law Enforcement and Corrections Technology Advisory Council (LECTAC)—ensures that we are focusing on the real-world needs of public safety agencies.

Border Research and Technology Center (BRTC)
1010 Second Avenue, Suite 1920
San Diego, CA 92101–4912
888–656–2782
info@brtc.nlectc.org

Rural Law Enforcement Technology Center (RULETC)
100 Bureau Drive, Stop 4102
Gaithersburg, MD 20899–8102
301–975–2757
RULETC@aol.com

Office of Law Enforcement Standards (OLES)
108 Burke Drive, Stop 4102
Gaithersburg, MD 20899–8102
301–975–2757
oles@mist.gov
Offered through JUSTNET, the website of NLECTC, this weekly news summary provides synopses of recent articles relating to technology developments and initiatives in law enforcement, corrections, and the forensic sciences that have appeared in newspapers, newsmagazines, and trade and professional journals. The summaries also are available through an electronic e-mail list, JUSTNET News. Each week, subscribers to JUSTNETNews receive the summary directly via e-mail.

You've Got Jail

Associated Press

Law enforcement officers are using e-mail messages and electronic files to document valuable evidence that could assist in the prosecution of suspects. Computer data, dubbed the "gift that keeps on giving" by California Attorney General Tom Green, is difficult to delete. Investigators are able to rely on backup copies of electronic messages, as deleted files on a computer's hard drive will remain until that space is overwritten with new data. Although criminals or people who simply want to protect their personal information can use encryption software to scramble their e-mail, most people are not that knowledgeable, according to prosecutors.

Monitoring System Links Suspects, Crime Scenes

Associated Press

The Seminole County Sheriff's Office in Sanford, Florida, uses global positioning system (GPS) technology to track suspects who may be released from jail pending trials. The technology establishes connections between a suspect's whereabouts and areas where crimes took place.

Protection at the Pumps

Canadian Security

Canada's Pioneer Petroleums has installed surveillance video and point-of-sale/exception monitoring systems in 80 of its locations. While one camera is focused on the cash register to monitor transactions, another is aimed on the store floor, and, in some outlets, up to 10 cameras are focused on gas pumps. Monitoring systems are used to prevent and deter employee theft by recording unusual transactional events and matching them with video surveillance. Cameras used for pumps are fitted with telephoto lenses to allow the capture of license plate numbers if a customer fails to pay. The cameras also help to verify the legitimacy of slip-and-fall claims.

Brooklyn To Join Queens Using Digital Photos for Domestic Violence Cases

Associated Press

The New York City Police Department, which processes approximately 90,000 domestic violence cases annually, will start admitting digital photographs as evidence in Brooklyn. This will replace the traditional use of Polaroid photos.

Prison Monitoring System Keeps Close Tabs on Inmates

Chicago Tribune

Some U.S. prisons are now using a radio-monitoring system that tracks prisoners and corrections officers through tamper- and water-resistant bracelets and pager-like devices, respectively, which are monitored by a network of receivers. The system reportedly conducts head counts every 2 seconds, pinpoints the location of a prisoner or guard within 20 feet, and allows guards to signal for help. Currently, the 300-inmate California State Prison in Corcoran, a 200-inmate maximum-security juvenile prison in Michigan, and a large medium-security prison in Logan, Illinois, are among those using the system. However, the estimated 51 million cost to outfit a prison has deterred more municipalities from purchasing the system, especially in tight budget times. The system is based on technology developed about 20 years ago for military applications.

In Crash Data, Lots To Debate

New York Times Online

Transportation experts continue to debate whether red-light cameras improve public safety. The Federal Highway Administration admits its annual crash data for Howard County, Maryland, are not definitive enough to determine the impact of the county's red-light reduction program. However, critics suggest that red-light cameras just change the nature of car accidents from one type to another. A Charlotte, North Carolina-based study conducted over a 3-year period concluded that the number of front-to-side crashes at intersections equipped with red-light cameras decreased by 37 percent, but rear-end collisions grew 4 percent. Richard A. Retting of the Insurance Institute for Highway Safety concludes that despite the increase in rear-end collisions, the drop in the number of dangerous front-to-side crashes indicated in the study justifies the installation of cameras, since rear-end collisions are less deadly. The Department of Transportation reported 1,151 fatalities and 84,000 injuries in 2001 caused by drivers failing to stop at red lights.

Program Aids Police in Identification

Clarion Ledger

To help identify people whose faces have become excessively disfigured, police in Jackson, Mississippi, have been trained to use a new facial imaging software. The software helps police reconstruct a person's face by eliminating the injury. The $5,000 computer program can also be used to make composite sketches based on eyewitnesses' accounts. Furthermore, officers can change eye color and skin tone, add scars, or place a hood on the composite.

Smart Paint Creates Chameleon Tanks

BBC News Online

Researchers located at the New Jersey Institute of Technology and the U.S. Army's Armament Research and Development Center are developing microscopic electromechanical machines called nanomachines that will be embedded in the paint that covers military vehicles. This paint will alert Army personnel if the coating has been damaged, and will be capable of self-repair. It will also reduce the vehicle's sensitivity to explosions and enable vehicles to change color and become instantly camouflaged and invisible on the battlefield.

Would-Be Car Thieves Taking the Bait

Tech TV

Police departments around the country are increasing their use of remote control and global positioning system (GPS) technology in undercover "bait cars." The bait car appears on a city map displayed on a laptop monitor in the police department. If the vehicle is broken into, a trumpet alarm sounds and alerts police that a theft is in progress. Once the car starts moving, the location is relayed by the GPS device. "We can actually shut down the vehicle. We can kill the ignition and have the vehicle coast harmlessly to a stop. And we have the option of locking the doors so that the suspects can't escape," says Chris Dengeles, a detective with the Arlington County (Virginia) Police Department. Law enforcement has been using bait cars since 1997, but new technology is allowing police to track vehicles longer and farther, with more options for bringing the thieves to justice and collecting video and audio evidence.
While these investigations proved that teleforensics aids crime scene analysis, they also revealed flaws in the system. The signal from the transmitter was weak, which sometimes caused the video feed to break up and radio transmissions to fade out. Police also were concerned about possible media interception of the live feed, since the transmissions were not encrypted. Moreover, there were concerns about the legality of presenting evidence from the toolkit in court. To address these concerns, Czerwinsky gave the District Attorney’s office an overview of the project. “They gave us their blessing,” he says.

After proving the concept of teleforensics at four crime scenes, the project moved into its third phase—using helmet cameras equipped with the technology at critical incidents such as protests, riots, or hostage situations, that require the intervention of SWAT teams.

Czerwinsky notes the use of teleforensic technology in critical incidents means the incident commander no longer has to make critical decisions based only on oral briefings from on-scene personnel, radio transmissions by officers, and cell phone traffic. Without seeing what is happening for themselves, he says, commanders can have a hard time getting the information they need. “There are a lot of officers on radios, and there is a lot of screaming, and it can get chaotic. But with helmet cams, a live video feed is streamed to the command post, which gives the commander more information to make a better decision.”

In addition, Czerwinsky says that video from the scene of a critical incident helps investigators re-create the incident. Traditionally, investigators interview witnesses to a critical incident and piece together what happened. “When the SWAT team goes in, their job is to save lives and eliminate any threat. They’re going to destroy the crime scene. They’ll be stepping on blood, removing victims, altering evidence. But that’s their mission. The crime scene is secondary. The helmet camera allows investigators to see the crime scene before it was altered.” Adds Czerwinsky, “I’m not saying [the tape] will have everything on it, but it will eliminate a lot of confusion.”

Investigators tested the helmet cameras at two mock school-shooting scenarios. At the first mock shooting, an investigator followed SWAT team members with a camcorder as the team entered the school. The transmission from inside the incident was sent to a 25-inch monitor located with incident commanders. The result: “Although we were able to get some good video,” Armitage says, “the quality was not as good as transmissions from the crime scene investigations. But it worked. . . . They were watching what the SWAT team was doing.”

Based on the feedback from SWAT team members, Armitage and Richard Sparks, a specialist at SNL, developed a prototype helmet cam using surplus Army helmets that had been donated to the El Paso Police Department. These prototypes were tested by SWAT team members at a second mock school shooting. As contact team members entered the school wearing the helmet cam, recovery team members watched the action on a pocket-size monitor. The only problem encountered was electromagnetic and radio interference. “The transmitters are really low powered, not real high quality, and they just don’t send video through the building very well,” Armitage says. He notes that the test was “a good learning experience. We are working to resolve this problem.”

According to Armitage, most investigators have been receptive to teleforensics technology. He says veteran investigators take time to warm up to the idea, but once they see what the technology can do, they like it. SWAT team members especially liked the helmet cam because the recovery team could see what the contact team was doing inside the school, a clear advantage over radio communications. “When the contact team goes in [with the helmet cam], the recovery team can see where a victim is and know exactly how to get there,” Armitage says. SWAT team members also approved of the pole cameras that were created for the mock shooting, which enabled them to see around corners and above and below stairwells.

The appeal of this technology, Czerwinsky says, is that it is affordable and user friendly and can be easily modified to fit a department’s needs. It is well suited to smaller agencies that do not have the budgets to buy state-of-the-art equipment from a vendor. Moreover, he says, when buying from a vendor, “you’re stuck with whatever the vendor gives you.”

The intention for the investigator’s toolkit is to develop a plug-and-play system that works with simple, off-the-shelf technology. “The goal of this project is to show departments that there is equipment out there that they can put together without having to spend thousands and thousands of dollars,” Armitage says. Before receiving the investigator’s toolkit, the El Paso department bought an expensive video-only system, he says, that “really wasn’t functional. The video was just awful. You couldn’t see anything.”

Czerwinsky and his team strongly believe the toolkit could become an industry standard. Although other departments may be using similar technology, he says, “no one is using it in the same way.”

The next step is sending the video feed over the Internet so commanders can view a crime scene or critical incident on laptops or PCs at their desks. At one of the mock school shootings, El Paso investigators used a modem to transmit video to police headquarters about 20 miles away. “The video was fluttered and had a 30-second delay because the technology being used was low end,” Czerwinsky says. “But we were just trying to prove that it would work.”

In the meantime, further refinements are being made to the toolkit. SNL is working on a newer version that will have infrared lighting for night missions, improved battery life, and improved range of transmission.

El Paso Chief of Police Carlos Leon says he is honored that his department was chosen for this initiative and is excited about the possibilities both for his department and for departments across the country. He believes the investigator’s teleforensics toolkit will save lives.

For general information on the teleforensics toolkit for investigators, call Commander Michael Czerwinsky, 915–583–6115 or e-mail, MichaelC@ci.el-paso.tx.us. For technical questions call Sgt. Darvin Armitage, 915–759–2000 or e-mail, epdpsrdar@msn.com; or call Sgt. Arthur McNulty, 915–544–7622, or e-mail, ArtMar83ci.el-paso.tx.us. For more information contact Ray Kimble, 915–202–3065–4638, Kimbrel@elpd.ep.usao.gov.
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instead opens into the cell. Cosgrove says the cost of building a correctional facility could be reduced by 10 percent because the corridors would be narrower and thus reduce the amount of square footage. Correctional facilities with reduced square footage, he says, would have lower maintenance, lighting, heating, and cooling costs.

In addition to showcasing the door at the various mock riots, OLET provided Cosgrove with information and research assistance, performed market research, and knocked on a number of doors in pursuit of manufacturing partners. In 2001, Cosgrove and Maximum Security Products entered into a manufacturing license agreement that will allow the barricade-proof door to be manufactured in the United States for the North American market.

**Code 3 “Back” Up**

The Quebec Occupational Health and Safety Research Institute found that inadequate seats in police patrol cars can cause lower back pain. Driving can increase back pain in some people due to different forces—acceleration, deceleration, swaying—that act on the body when the car is in motion and the feet are being used to drive the car and cannot be placed on the floor to stabilize the body. Add to those forces the hard equipment normally carried by officers on their duty belts, some of which presses against their backs and makes it impossible to get normal lumbar support. The result is back problems.

Fernando Cuen used to spend up to 8 hours a day in his patrol car. Eventually he developed back problems so disabling he retired. The problem? An officer’s duty belt often carries more than 20 pounds of equipment, and patrol vehicle seats are not designed to provide back support when the duty belt prevents the lower back from making contact with the seat. Although little documented research exists, anecdotal evidence shows that back pain is a real problem for officers who spend many hours in their vehicles. Cuen pondered the problem and came up with a design for a device.

The Code-3 Squeeze™—in California, Code 3 signifies a priority call—is an ergonomic device designed to reduce back injuries by literally squeezing vehicle seats to allow room for duty belts and their accessories. Cuen says a 10-gauge, cold, rolled-steel bar clamps around the lower back of the seat, compressing the lower portion and creating a concave space where the equipment can fit. A padded cloth slipcover fits over the metal bar to provide protection from heat or cold and a pneumatic pump can be used to inflate three air bladders, allowing the officer to customize his or her back support.

Cuen, who had never been in business before, attended one of OLET’s Commercialization Planning Workshops. The result was the signing of a nationwide distribution agreement with the Enforcement Technology Group, which will market the device under the name Alleviator.

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2 Côté, Michèle, Auto Patrol Duty and Back Problems in Quebec Police Officers, Montreal: Quebec Occupational Health and Safety Research Institute, 1999.