

2009

LAW ENFORCEMENT AND CORRECTIONS TECHNOLOGY ADVISORY COUNCIL

Annual Report



About the National Institute of Justice

NIJ is the research, development, and evaluation agency of the U.S. Department of Justice and is dedicated to researching crime control and justice issues. NIJ provides objective, independent, evidence-based knowledge and tools to meet the challenges of crime and justice, particularly at the state and local levels. NIJ's principal authorities are derived from the Omnibus Crime Control and Safe Streets Act of 1968, as amended (see 42 USC § 3721-3723) and Title II of the Homeland Security Act of 2002.

The NIJ Director is appointed by the President and confirmed by the Senate. The NIJ Director establishes the Institute's objectives, guided by the priorities of the Office of Justice Programs, the U.S. Department of Justice and the needs of the field. The Institute actively solicits the views of criminal justice and other professionals and researchers to inform its search for the knowledge and tools to guide policy and practice.

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Executive Summary

TOP 10 PRIORITIES 2009

LECTAC, the Law Enforcement and Corrections Technology Advisory Council, is a critical part of the National Institute of Justice's (NIJ) Research, Development, Test and Evaluation process, providing practitioner-based input on what technologies are most important and what technology gaps currently exist. This "real world" input helps shape the activities of NIJ's science and technology portfolios, as well as NIJ-funded research supporting the development and implementation of new technologies for law enforcement and corrections use.

LECTAC is an entity composed of approximately 40 leaders from law enforcement, corrections, forensic science and criminal justice professional associations. The members of LECTAC have identified subject-matter expertise in their respective disciplines and are tasked with providing an executive-level review of the issues presented to them. The information reviewed by LECTAC in ranking these priorities has been developed by the 17 NIJ-sponsored Technology Working Groups. These TWGs, also composed of law enforcement and corrections practitioners, are "working level" subject-matter experts who are currently assigned to roles in their agencies where they routinely work with technologies in their particular area of expertise.

LECTAC members are appointed by the National Law Enforcement and Corrections Technology Center (NLECTC)-National, with NIJ approval, based on their records of distinguished service. They represent federal, state and local criminal justice agencies; labor

organizations; and national and international law enforcement, corrections and criminal justice organizations.

LECTAC works to strengthen links between NIJ and the law enforcement and corrections community by reviewing and analyzing the present and future technological needs of the criminal justice system and recommending research and development priorities to NIJ.

LECTAC also:

- Advises NLECTC on equipment testing and the creation of standards, user guidelines and technical reports.
- Reviews NLECTC system programs and recommends how to improve program relevance to state and local law enforcement and corrections needs.
- Collaborates with NLECTC-National and the National Institute of Standards and Technology, Office of Law Enforcement Standards to provide technical assistance to manufacturers and the criminal justice system.
- Reviews and comments on draft publications.
- Participates in ad hoc committees established by NLECTC-National to provide guidance on technical and policy issues.
- Drafts articles for applicable publications.
- Makes presentations to peer groups to promote awareness of NLECTC programs and activities.

Needs and requirements are presented alphabetically by priority areas; LECTAC views all 10 requirements as being equal in importance/priority.

Biometrics

Biometric and information technology-based tools to rapidly, accurately and positively confirm the identity of individuals.

Body Armor

Lightweight, flexible ballistic-resistant armor that maintains NIJ-rated level of protection performance for at least five years in daily field use, in conjunction with a test protocol to confirm the ongoing performance of field-worn armor.

Community Corrections/Communications

Technology to locate, track and communicate the whereabouts of predatory offenders in all environments.

Corrections

Improved contraband detection and monitoring technologies for law enforcement and institutional facilities (such as corrections, schools and courts).

Corrections

Wireless communication detection/defeat technologies.

Electronic Crime

Establishment of an Electronic Crime and Digital Evidence Center for the electronic crime and digital evidence field.

Explosives

Prepare bomb squads for vehicle-borne improvised explosive devices (VBIEDs) and continue development of national electronic countermeasure program.

Less Lethal

Reliable, medically safe and effective less-lethal tools for law enforcement and corrections personnel to control combative/noncooperative individuals, including conducted energy device improvement capability to deliver instantaneous and precise effects at a long distance and new caltivate agents, with a delivery system for same.

Personal Protective Equipment

Development of a retention holster standard.

Pursuit Management

Technology to control or stop pursuits using police-activated vehicle intervention technologies and cooperative technologies.

Message From the LECTAC Director

September 2009

The Law Enforcement and Corrections Technology Advisory Council, or LECTAC, is pleased to provide the National Institute of Justice with their Top 10 list of technology requirements for 2009.

The members of LECTAC and the Technology Working Groups do not presume that their deliberations encompass the full range and breadth of technology requirements for all of the approximately 19,000 individual state and local law enforcement agencies, 4,400 local jails, 50 state correctional agencies and 350 crime laboratories in the United States today. We encourage LECTAC and TWG members to seek input from their colleagues in other agencies and bring those issues forward in their meetings. We also encourage law enforcement, corrections and forensics professionals reviewing this document to provide us with comments and suggestions. Your comments may be submitted to NLECTC-National in writing by fax at (301) 519-5149, or by e-mail to asknlectc@nlectc.org (please be sure to include "LECTAC" in the subject line of your message).

Working together, we seek to advance law enforcement, corrections and forensic science through the identification and implementation of new technologies to better equip and ensure practitioners' safety in their daily duties.

Sincerely,



Lance Miller
Director, NLECTC-National
LECTAC Program Manager
Rockville, Md.

Message From the LECTAC Chair

September 2009

Dear Colleagues:

On July 18-19, 2009, the Law Enforcement and Corrections Technology Advisory Council convened in Arlington, Va., to review the Technology Working Groups' technology needs and the operational requirements established during the 2009 TWG meetings. LECTAC was tasked with reviewing 114 high-priority technology recommendations from 17 reporting TWGs to produce a Top 10 list of technology priorities.

With the assistance of National Law Enforcement and Corrections Technology Center-National staff, LECTAC reviewed the high-priority technology recommendations using a three-phase process. The first two phases were conducted via an online voting ranking system.

Phase 1: LECTAC members reviewed the 114 requirements submitted by the 17 TWGs and ranked the top three requirements for each TWG. This resulted in a list of 51 requirements.

Phase 2: LECTAC members reviewed the list of 51 and ranked what they considered to be the top 25 requirements from this list. The resulting list of 27 formed the basis of discussion at the annual business meeting. (There were 27 items due to ties between some items.)

Phase 3: LECTAC determined the final Top 10 list.

LECTAC is submitting the technology priorities outlined in the Executive Summary and expanded on in the body of the report. The priorities are not listed by importance; all are considered equal.

Sincerely,



Greg Bazick
Deputy Chief
Ann Arbor Police
Ann Arbor, Mich.
LECTAC Chair

Introduction

In 2005, the National Institute of Justice (NIJ) revised its technology development process, implementing a Research, Development, Test and Evaluation (RDT&E) process that fully integrates all elements of the NIJ science and technology program. This process encompassed the creation of Technology Working Groups (TWGs) composed of subject-matter experts from the fields of law enforcement and corrections and incorporated the oversight of the Law Enforcement and Corrections Technology Advisory Council (LECTAC). Additional oversight and implementation direction is provided by the National Law Enforcement and Corrections Technology Center (NLECTC)-National. This process helps NIJ's Office of Science and Technology (OS&T) fulfill the requirements outlined in the Homeland Security Act of 2002, which include establishing and maintaining advisory groups to assess law enforcement technology needs of federal, state and local law enforcement agencies.

This process helps to ensure that NIJ's activities are based on practitioner-driven needs. The priorities that are generated by the working groups are incorporated into NIJ's research and development solicitations, and are also shared with other federal agencies including the U.S. Department of Defense and U.S. Department of Homeland Security to help leverage their research and development and technology investments.

The NLECTC system, at the direction of NIJ, established 17 TWGs to represent the identified core technology portfolios of NIJ/OS&T. These technology portfolios are as follows:

- Biometrics.
- Body Armor.
- Communications Technologies.
- Community Corrections.
- Corrections.
- Electronic-Crime (E-Crime).
- DNA Forensics.
- Explosives.
- General Forensics.
- Geospatial Technologies.
- Information-Led Policing.
- Less-Lethal Technologies.
- Modeling and Simulation.
- Personal Protective Equipment.
- Pursuit Management.
- School Safety.
- Sensors and Surveillance.

These TWGs meet twice each year to hear briefings and establish and prioritize technology needs in their portfolio areas.

LECTAC Review

LECTAC meets annually to review the high-priority technology needs as established by the TWGs and create a "Top 10" list of technology needs for NIJ derived from the TWGs' high-priority list. This list is used by NIJ program managers to prepare technology solicitations for proposals and to provide a basic direction for technology development within the various NIJ technology portfolios.

Methodologies

Prior to the annual meeting, NLECTC-National provided LECTAC members with a nonranked list of 114 technology needs identified as high priority by the various TWGs. Background materials included selection criteria for members to use in ranking projects, as follows:

- Which projects will have the greatest impact on your ability to do your jobs? Those having greater impact would be ranked higher.
- Is there an existing technology that can satisfy the needs of this project? If so, then perhaps this item should be rated lower than others.
- Does this project satisfy multiple areas of need (e.g., communications, personnel safety and weapons detection)? If so, then perhaps it should receive a higher rating.
- Are there any significant obstacles that would preclude the adoption/implementation of this technology (e.g., legal, policy, training, funding, community acceptance)? If so, please note the obstacle(s). If the obstacle is determined to be significant, is there a potential mitigation plan that can be developed to address the obstacle? If not, then perhaps this item should be rated lower than others, if at all.

LECTAC members could view the complete list of high-priority items through the LECTAC online SharePoint® site, and were asked to rank the top three items from each TWG, resulting in a list of 51 requirements. In the next phase, each LECTAC member ranked the requirements in order of importance. Their responses were compiled and analyzed, and the top 25 scorers were compiled and provided to committee members prior to the meeting to use in determining the final rankings. There were actually 27 items because of ties among some entries. (This report includes the text as sent to LECTAC members at the end of the narrative.)

Performance Measurement and Evaluation

Performance measurement and evaluation have become more important as aspects of accountability. In this regard, NIJ has expanded the LECTAC/TWG process to include consideration of the specific problem and desired outcomes related to needs requirements. By including the development of problem statements and desired outcomes of the research and development in the needs requirements and prioritization process, NIJ can better assess the urgency of a given problem and in this way, better prioritize allocation of increasingly scarce resources. Also, by including declaration of desired outcomes, NIJ can better design appropriate methods for use in evaluation of technologies resulting from the process.

The primary purpose of a problem statement is to focus the attention of the problem-solving team. However, if the focus of the problem is too narrow or the scope of the solution too limited, creativity and innovation may be stifled. A problem statement is the description of an active challenge faced by practitioners that does not have adequate solutions available. The problem statement should address all six questions: what, how, where, when, why and who.

Statements of expected outcomes follow directly from the problems and needs requirements that the newly developed technology will be designed to address. Resources for criminal justice are increasingly scarce while the criminal justice system is being held to higher standards of accountability. In this regard, NIJ is increasingly being asked whether research and development efforts are resulting in measurable and significant outcomes as a result of the investment in public funds.

Statements of desired outcomes should always include some estimation of effect. There may be many or multiple desirable outcomes and impacts resulting from the successful development of a new or innovative technology. The development of statements of desirable outcomes allows NIJ to assess the extent, nature and type of evaluation research needed to provide an assessment of the technologies' effectiveness, efficiency and costs/benefits.

Business Meeting

Arlington, Virginia
June 18–19, 2009

Lance Miller, director of NLECTC-National (which organized the meeting) moderated the meeting with assistance from Sarah Agan and Katy Milani, facilitators from the Corner Alliance.

Deputy Chief Greg Bazick of the Ann Arbor (Mich.) Police, the current LECTAC chair, introduced one new member, Leah Cheli of the International Union of Police Associations. During the meeting, the group recognized Alex Fox, who is retiring from LECTAC and the Massachusetts Department of Correction, for his LECTAC service. The LECTAC Vice Chair-Law Enforcement position is vacant, and Deputy Chief Bazick asked for and received two nominations: Deputy Chief Brad Johnson of the Fairbanks Police Department and Commander Jonathan Lewin of the Chicago Police Department. Voting was to occur at a later date.

In addition to the technology priority review, LECTAC members heard and viewed presentations on the NIJ science and technology program and the various portfolios, NIJ's standards and testing program and the LECTAC SharePoint Web site:

- Chris Tillery, Associate Deputy Director for Science and Technology, NIJ, NIJ Science and Technology program update.
- Marc Caplan, Chief, Operational Technologies Division, program overview.
- William Ford, Chief Information and Sensors Technologies Division, program overview.
- Casandra Robinson, Visiting Scientist, NIJ Standards and Testing, program overview.
- Lois Tully, Deputy Chief, Investigative and Forensic Sciences Division, program overview.
- Lance Miller, Director, NLECTC-National, SharePoint collaboration tool.






All presentations were made available to LECTC members via the LECTAC SharePoint site.

Prior to the LECTAC meeting, the original list of 114 priorities identified by the TWGs was whittled down by LECTAC members to 27 using an online voting ranking system. (There were 27 items, rather than 25, because of ties with some entries.)

Ms. Agan facilitated the Top 10 selection session. The first day LECTAC broke out into four smaller groups, each of which identified 10 priorities from the list of 27. They identified areas where priorities overlapped and could be combined. Participants then came back as a full group, and

discussed the top priorities at length. The group discussed the priorities on the afternoon of the first day, and completed work on the second day, identifying and accepting 10 priorities that included several combined items. LECTAC members noted that there were a number of common themes between the requirements on the list of 27. Because a substantial number of members could not attend the meeting, the list of 10 was made available to the LECTAC membership for approval online. The results presented in this report represent approval by the entire membership.

The priorities are not listed by importance; all are considered equal. They are listed in alphabetical order. On the individual pages for each priority, each is mapped back to the TWGs, and an icon appears that identifies which of the five areas in the NIJ *High-Priority Criminal Justice Technology Needs* report the priority maps back to:

- Protecting the Public 
- Ensuring Officer Safety 
- Confirming the Guilty and Protecting the Innocent 
- Improving the Efficiency of Justice 
- Enabling Informed Decisionmaking 

In addition to designating the Top 10 list, discussion included trends and challenges facing LECTAC and the criminal justice community and improvement of LECTAC/TWG interaction. Discussion is not detailed here. Discussion was captured in a separate minutes-type summary report, which was distributed to LECTAC members.

During meeting discussion, several areas of importance were identified beyond the Top 10 list that some LECTAC members felt should be mentioned in the annual report. The following are critical areas of focus above and beyond the Top 10 list:

- Cell phone jamming technologies.
- Technology requirements can be viewed as themes, under which multiple solicitations can take place.
- The 2009 National Academy of Sciences report on the state of forensics in the United States cited a number of issues that need to be explored, and the report will have an effect on the criminal justice community. The study found that crime labs are grossly underfunded, lack a scientific foundation and are compromised by delays in analyzing physical evidence. Although forensics is not included in the Top 10 priority list, it remains a vital, important area.

Biometrics



Maps to TWGs

Biometrics, Information-Led Policing

Maps to Requirements # (In order of importance)

3, 11, 14

Technology Need or Requirement

Biometric and information technology-based tools to rapidly, accurately and positively confirm the identity of individuals.

Description of Need

Generally, law enforcement, corrections, and probation and parole officers need improved technologies to facilitate confirming the identity of a person of interest in a timely manner. Specifically, they need the ability to identify a person through capture of a facial image and/or voice recording on an audio/video device, which can then be checked against a nationwide database, and the ability to speed up the collection of finger and palm prints, possibly via a device that can collect these prints in the field and then convert them to a digital format for comparison to a nationwide database. A standard that addresses the timeliness of data provided to the consumer is needed to accompany the technology.

Expected Outcomes

- 1) Reduce the number of felonious assaults/fatalities of law enforcement officers by reducing or eliminating the amount of time spent waiting in the field to identify individuals detained during field interviews/traffic stops.
- 2) Increase efficiency and reduce the amount of time spent processing arrestees and incarcerated subjects, ensuring accurate and positive identification of these individuals.
- 3) Increase public safety through rapid and accurate biometric identification of wanted criminals, known/suspected terrorists, individuals on parole/probation and persons of interest to ongoing investigations from remote or standoff distances in public venues.
- 4) Enhance criminal justice/citizen interactions with regard to safety, efficiency and effectiveness through adoption and implementation of these technologies.

Body Armor



Maps to TWGs

Body Armor

Maps to Requirements # (In order of importance)

6

Technology Need or Requirement

Lightweight, flexible, ballistic-resistant armor that maintains NIJ-rated level of protection performance for at least five years in daily field use, in conjunction with a test protocol to confirm ongoing performance of field-worn armor.

Description of Need

The law enforcement and corrections communities need a lightweight, flexible, breathable and durable vest that meets existing NIJ standards, because the lighter and more comfortable a vest is, the more likely an officer is to actually wear it full-time.

Expected Outcomes

- 1) Produce new fibers, materials and construction methods that would result in a 25 percent reduction in the current weight of armor at a given threat level while providing equal or improved ballistic resistance. Armor resulting from these efforts would be worn more frequently by officers, achieving a 30 percent increase in wear rates over current levels.
- 2) Use standards and test methods to evaluate the ongoing ballistic performance of units of armor in field use, related back to the conditioning protocols defined in NIJ Standard 0101.06. These efforts would ultimately lead to the development of nondestructive test methods to assess the ongoing ballistic resistance of individual units of armor.

Community Corrections/Communications



Maps to TWGs

Community Corrections, Corrections (Institutional), Communications

Maps to Requirements # (In order of Importance)

7, 15 19, 20

Technology Need or Requirement

Technology to locate, track and communicate the whereabouts of predatory offenders in all environments and the location and status of corrections staff in a facility.

Description of Need

- 1) Community corrections professionals need better location and tracking technologies to monitor and communicate information about the whereabouts of predatory and violent offenders in all environments within the community, because current location tracking systems do not perform to the requirements of public safety. Solutions must provide cost-effective, accurate, and reliable continuous monitoring and communication of whereabouts in all environments and include highly secure circumvention prevention and detection measures.
- 2) Improve security of one-piece location tracking systems. Shielding the GPS signal is much easier with one-piece units. Also, one-piece units cannot accurately tell if the device is at rest, making it vulnerable to spoofing. As the use of one-piece technology becomes more widespread, it is essential to develop technology to address these security issues. The technology solution should work with one-piece units to ensure that tampers/removals, motion and intentional signal blocking are detected and recorded. Finally, alternative tethering technologies are required which are secure but provide an alternative more conducive to offender re-entry efforts than a large device strapped to an ankle.
- 3) Corrections staff need technology that will locate staff continuously in real time throughout a facility so that they can be helped in case of emergency. This technology shall be cost-effective, nonproprietary, based on open standards, highly accurate, highly reliable and able to be integrated into a central data and communications infrastructure.
- 4) Precision locator technology is needed for public safety and corrections to determine the location and status of personnel. This technology would be used for routine management of personnel and assets and conveying the precise location of personnel when emergency assistance is required. This

Expected Outcomes

includes an emphasis on real-time updates, application for jurisdictional wide, routine asset management and tactical response. Include in-building (3D) coverage within unwired environments emphasizing officer needs assistance situations. The device should be a portable one that stands alone or operates in tandem with vehicle equipment.

- 1) Create continuous tracking capability with 100 percent reliability outdoors and 90 percent reliability indoors, within 10 meters. Tracking would be achievable in areas such as subways and inside commercial buildings and would be precise to building level. Increased accountability of the offender and increased confidence in the technology, which should lead to more use of the technology as an alternative to incarceration.
- 2) Enhanced security of one-piece devices, which will increase confidence in its use. The outcome for the alternative tethering requirement will be more sensitive matching of tethering technology to an offender's particular needs (e.g., vocational situation).
- 3) Significant reduction in time needed to respond to staff emergencies, which should in turn result in a reduction in the number of staff injuries, the number of days missed due to injury (measure for reduction in severity of injuries), a reduction in workers compensation claims and an increase in staff retention due to the improved safety.
- 4) Development of a device that can be worn by a first responder and can track their location outdoors, indoors and at elevation.

Corrections



Maps to TWGs

Corrections (Institutional), Sensors & Surveillance

Maps to Requirements # (In order of importance)

2, 4, 13, 16

Technology Need
or Requirement

Improved contraband detection and monitoring technologies for law enforcement and institutional facilities (such as corrections, schools and courts).

Description of
Need

- 1) Law enforcement officers need the ability to detect handguns concealed either on a person’s body or in a public place such as a park or shopping mall. The technology should be able to be operated surreptitiously from a distance of 15 or more meters.
- 2) Law enforcement and school security officers need the ability to detect handguns being transported by students and visitors prior to their entry to a school. This technology needs to operate from a standoff distance of 15 meters to provide an early warning. It could also be used to scan areas on school property.
- 3) Corrections personnel require technologies for use at egress and ingress points that will integrate and improve existing methods of detecting a broad spectrum of contraband such as, but not limited to, metallic and nonmetallic weapons, drugs and tobacco. This portal device must safely and nonintrusively detect contraband carried on the body and within body cavities, provide rapid throughput, be user-friendly in operation and maintenance, and, most importantly, be affordable enough to be a viable solution for most correctional agencies.
- 4) A new technology is needed to detect small homemade or improvised weapons made from items commonly found in the correctional environment. This would include, ferrous metals, nonferrous metals, plastic, plexiglass, wood and stainless steel.

Expected Outcomes

1&2) QinetiQ SPO-30, Brijot MMW imager, Trex/Sago ST-150 imager partially meet the requirements in 1 and 2 above. They do not meet the distance requirement of 15 meters. The SET Counter Bomber and QinetiQ SPO-20 (both nonimaging) operate at 15 or more meters. The Luna nonlinear acoustic system under development has potential to exceed distance requirement but no funding has yet been identified to further develop.

3) Enhance ability to search all individuals entering a facility and significantly decrease the amount of contraband introduced into a typical correctional facility.

4) Existing systems have difficulty detecting smaller objects. The Luna nonlinear acoustic system is being integrated (NIJ R&D) into a commercial wand to extend capability for detecting smaller objects and improve detection for nonmetal materials.

Corrections



Maps to TWGs

Corrections (Institutional)

Maps to Requirements # (In order of importance)

10

Technology Need
or Requirement

Wireless communication detection/defeat technologies.

Description of
Need

The introduction and use of unauthorized wireless communication devices creates a serious security concern for corrections. This is an important issue, as evidenced by legislation created by a number of states making it a felony to introduce a cell phone into a prison. Inmates use these devices to carry on criminal activities to facilitate escape attempts, harass victims, intimidate staff, etc. Corrections requires cost-effective technology that eliminates unauthorized wireless communications and/or assists in accurate (x,y,z coordinates) location detection of a broad range of wireless communication, including cell phones, walkie talkies, blackberries, Bluetooth devices and PDAs. Technology must have the capability to defeat or detect devices based on frequency bandwidth, whether intact or broken down into component parts, whether powered on or not, and should not interfere with desirable RF devices used by staff. System capability should be integrated into a central data and communications infrastructure.

Expected
Outcomes

Significant reduction and/or elimination of the use of unauthorized wireless communication devices, which would result in the great reduction of associated criminal activity both inside the institutions and in the community.

Electronic Crime



Maps to TWGs
Electronic Crime

Maps to Requirements # (In order of Importance)

17

Technology Need or Requirement

Establishment of an Electronic Crime and Digital Evidence Center for the electronic crime and digital evidence field.

Description of Need

The electronic crime and digital evidence field lacks a single designated entity with the subject matter expertise and capacity to coordinate and support the various electronic crime and digital evidence projects, programs and efforts undertaken to build law enforcement's capacity in these areas.

Expected Outcomes

Establishment of an Electronic Crime and Digital Evidence Center with the subject matter expertise and capacity to support and coordinate projects and programs to build the capacity of state and local law enforcement to effectively address the challenges of electronic crime and digital evidence. A resource center that will facilitate the development of tools and technology to build the capacity of state and local law enforcement to prevent, investigate and prosecute electronic crime and collect, acquire and examine digital evidence. A single designated authority to evaluate tools and training, facilitate technology transfer and identify ongoing support options through commercialization. Create an established capability to deploy the deliverables from NIJ-funded projects to state and local law enforcement after the grant funding period for R&D has expired.

Explosives



Maps to TWGs
Explosives

Maps to Requirements # (In order of importance)
12, 26

Technology Need or Requirement	Prepare bomb squads for vehicle-borne improvised explosive devices (VBIEDs) and continue development of national electronic countermeasure program.
Description of Need	Law enforcement needs improved tools and technologies to neutralize VBIEDs, including the ability to remotely deploy and execute tools capable of defeating them, and an integrated remote firing system incorporated in a rapidly deployable tool that limits collateral damage. [Tool characteristics vs. improvised explosives. Integrate robot into render-safe scenarios involving large vehicle IEDs (LVIEDs). Complete development of single-sided x-ray.]
Expected Outcomes	Capability to make repeated remote diagnostic penetrations of a VBIED cargo area. Perform a remote surgical attack of the LVIED remote disassembly. The ability to have more ECM (electronic countermeasure) capable bomb squads. Measurable increase in the number of vehicle-borne IED attacks detected prior to detonation, resulting in lives saved and injuries and damage to property prevented.

Less Lethal



Maps to TWGs

Less Lethal

Maps to Requirements # (In order of importance)

1, 5, 9

Technology Need or Requirement

Reliable, medically safe and effective less-lethal tools for law enforcement and corrections personnel to control combative/noncooperative individuals, including conducted energy device (CED) improvement, capability to deliver instantaneous and precise effects at a long distance and new calmativ agents and a delivery method for same.

Description of Need

The criminal justice community needs science-based and incremental improvement in CED technology and its operational effects on mobility, physical function, and motivation for use with single aggressors and barricaded suspects, and in corrections-inmate confrontations. Current technology does not have the capability of delivering instantaneous and precise effects at long distance. The criminal justice community also needs a capability to inhibit metabolic functioning of individuals and groups (calmativ agents) that is quick-acting, completely reversible and has no long-term physical or psychological effects, along with a method of delivery for this metabolic function inhibitor that is capable of delivering at a variety of ranges to a target of one or many.

Expected Outcomes

- 1) Improved range to 30 feet with the same effects and precision at zero feet as at 30 feet, with 100 percent immobilization and/or 100 percent skeletal muscle-function impairment, 100 percent immediate compliance and full recovery within 30 minutes.
- 2) Improved ability to resolve hostage situations with reduced injury and death to officers, victims and subjects.

Personal Protective Equipment



Maps to TWGs

Personal Protective Equipment

Maps to Requirements # (In order of Importance)

18

Technology Need
or Requirement

Development of a retention holster standard.

Description of
Need

Retention holsters do not have an independent standard. Currently law enforcement must depend on the manufacturer to provide a product that meets their needs without a third-party evaluation. There is also a difference among classification across the industry that is or can be confusing to the purchaser.

Expected
Outcomes

Reduction in officer firearm takeaways by unauthorized individuals. The reduction in takeaways should result in a reduction of officer injuries and deaths from their own firearms. A special technical committee has been formed and the draft standard is in progress. The draft standard is scheduled to be complete during the fourth quarter FY09 or first quarter FY2010.

Pursuit Management



Maps to TWGs

Pursuit Management

Maps to Requirements # (In order of importance)

21, 8

Technology Need or Requirement

Technology to control or stop pursuits using police-activated vehicle intervention technologies and cooperative technologies.

Description of Need

The law enforcement community needs the ability to safely control and stop pursuits using police-activated intervention technologies and cooperative technologies. Many original equipment and after-market systems exist that allow remote monitoring and control of a vehicle's functions. This technology is "cooperative" because the system depends on technology preinstalled on vehicles that is designed to "cooperate" with law enforcement instructions during an emergency. However, there is a high probability that suppression of the vehicle cannot happen quickly (less than one minute) if law enforcement has to go through a command structure. A trial is needed to show that direct intervention is possible from an officer's vehicle.

Expected Outcomes

1) Purchase cell phone intercept equipment, 2) connect to a vehicle that is equipped with OnStar or similar technology, 3) remotely control parameters, 4) explore other communications paths into the vehicle such as V2V or R2V or maintenance ports. The outcome is show that direct intervention is possible from the officer's vehicle.

LECTAC Round 2 Rankings (Top 25)

LECTAC meets annually to review the high-priority technology needs as established by the TWGs and create a Top 10 list of technology needs for NIJ derived from the TWGs’ high-priority list. This list is the product of the first two phases of the process: Review of 114 requirements submitted by the 17 TWGs and ranking the top three requirements for each TWG, then ranking the top 25 from that list. These results were discussed at the annual business meeting to create the final list. Due to ties between some items, there were actually 27 entries.

This year, LECTAC members voted online through the new LECTAC database. The database, developed by NLECTC-National and housed on the NLECTC system’s intranet, allows members to prioritize the TWG-generated needs and requirements online instead of reviewing information in binders and manually submitting their rankings.

RANKING: 1

Less Lethal

TWG Recommendation
Conducted Energy Device (CED) Improvement

Description of Issue/Requirement/Need
Current conducted energy devices (CEDs) are limited by range. The devices that penetrate skin often require medical follow-up. The wires of tethered devices sometimes break or become detached from the probes. It is difficult to predict under stress the impact location of the second probe/dart on most systems. Training costs (initial and sustainment) are very high

using tactical cartridges. The criminal justice community needs technology improvement and operational effects improvement of technology in order to influence the next generation of this class of weapons. The improvements should be science-based and incremental.

OPERATIONAL SCENARIO(S): Single aggressor, barricaded suspect and corrections-prisoner disorder.

BASIC RESPONSE(S): Mobility, physical function and motivation.

TWG Recommended Outcomes
These systems need to be effective out to a range of 30 feet.

The effects and precision should be the same at zero (0) feet as 30 feet.

A range-finder capability (or using a laser sheet beam rather than laser point) would assist officers in discharging weapons in the optimal range window (tethered systems).

A “dartless” system is desirable.

Reusable training devices/simulators would reduce training costs and enhance sustainment training.

REQUIRED RESPONSE(S): Immediate 100 percent immobility and/or 100 percent muscle function impaired (skeletal), 100 percent compliant immediately and full recovery within 30 minutes.

Monitor manufacturer efforts including untethered electro-muscular disruption (EMD) devices TASER XREP, TASER 40 mm and Lektrox. Monitor Department of Defense RDT&E efforts on HEMI development and COTS characterization (research on human effects and device development/improvement).

[NIJ is conducting/funding effects research and human effects studies on EMDs.]

RANKING: 2

Sensors and Surveillance

TWG Recommendation

Detect Concealed Weapons on an Individual (Law Enforcement)

Description of Issue/Requirement/Need

Law enforcement officers need the ability to detect handguns concealed either on a person's body or elsewhere in their possession in public places such as shopping malls, parks and street corners. This technology should be able to be operated surreptitiously from a distance of 15 or more meters.

TWG Recommended Outcomes

Qinetic SPO-30, Brijot MMW imager and the Trex/Sago ST-150 imager partially meet this requirement, but they do not meet the distance requirement of 15 meters. The SET Counter Bomber and Qinetic SPO-20 (both nonimaging) operate at 15 or more meters. The Luna nonlinear acoustic system under development has the potential to exceed the distance requirement, but no funding has yet been identified to further develop.

RANKING: 3 (tie with 2)

Biometrics

TWG Recommendation

Confirming and Fixing the Identity of Individuals

Description of Issue/Requirement/Need

Law enforcement/corrections officers need improved technologies to use when attempting to confirm a person's identity. This technology would be used in situations such as: 1) intake and outtake of inmates, 2) positive identification of visitors to correctional institutions, 3) confirming the identity of a person possessing multiple identification documents, 4) mortuary identification (the TWG noted interest in technologies that could be used for rapid identification in the wake of a mass casualty event), 5) wants and warrants verification; 6) offender/suspect tracking (sex offender, gangs, arsonist, etc.), 7) criminal history checks, 8) facilitation of queries across criminal justice information system databases. The TWG recognized four prominent biometric technologies as candidates: 1) finger/palm prints, 2) facial recognition, 3) iris scan, 4) voice recognition.

TWG Recommended Outcomes

Numerous awards made in response to this and other requirements identified by the TWG: 1) Solicitation for Concept Papers: Sensors, Surveillance, and Biometrics Technologies for Criminal Justice, October 2004; 2) Solicitation for Concept Papers: Biometric Technologies, October 2005; 3) Solicitation: Biometric

Technologies, November 2, 2006 due date. For this specific requirement, the following projects have been funded: 1) Efficient, Field Optimized Multi-Modal Biometric System; 2) Standards Based Performance and User Cooperation Studies of Commercial Iris Recognition Products; Multimodal Biometric Fusion with Predictive Quality Metrics. Special Note: In addition to these projects, the Border Research and Technology Center (BRTC) is facilitating the demonstration of the “Cross Match Guardian” fast capture (Type 14 Flats) to a local law enforcement task force with cross border highway checkpoint responsibilities.

RANKING: 4

Corrections

TWG Recommendation

Improved Contraband Detection Technologies

Description of Issue/Requirement/Need

Introduction of contraband presents a serious problem for correctional facilities. Weapons, drugs and other contraband compromise the security of an institution, create black markets and negatively impact the correctional environment. In addition, staff, inmate and public safety are compromised. To combat this, corrections personnel require technologies for use at egress and ingress points that will integrate and improve existing methods of detecting a broad spectrum of contraband such as, but not limited to, metallic and nonmetallic weapons, drugs, tobacco and wireless communication devices. Portal devices must safely and nonintrusively detect contraband

carried on the body and within body cavities, provide rapid throughput, be user friendly in operation and maintenance and most importantly be affordable enough to be a viable solution for most correctional agencies.

TWG Recommended Outcomes

Significant decrease in the amount of contraband introduced into a typical correctional facility.

RANKING: 5

Less Lethal

TWG Recommendation

New Calmative Agents: Calmative Agent Delivery System

Description of Issue/Requirement/Need

The criminal justice community needs a capability to inhibit metabolic functioning of individuals and groups that is quick acting, completely reversible and has no long-term physical or psychological effects. The criminal justice community needs a method of delivery for a metabolic function inhibitor that is capable of delivering at a variety of ranges to a target of one or many.

OPERATIONAL SCENARIO(S): Single aggressor, barricaded suspect, hostage rescue-clearing facilities and corrections-prisoner disorder.

BASIS RESPONSE(S): Mobility, physical function, sense and interpret and motivation.

TWG Recommended Outcomes

This technology will provide a tool with which officers can resolve hostage situations with reduced injury and death to officers, victims and subjects.

REQUIRED RESPONSE(S): Immediate immobilization fully recoverable in two to 30 minutes, immediate and full impairment of physical function with full recovery, immediate disruption of ability to sense and interpret information with full recovery and immediate full compliance.

[Current project partially addressing this issue is: 2007-DE-BX-K009 (Operationalizing Calmatives-Concepts and Technologies). Study should yield sufficient data to focus and solicit manufacturer development effort.]

RANKING: 6

Body Armor

TWG Recommendation

Lightweight, Flexible Body Armor

Description of Issue/Requirement/Need

The law enforcement and corrections communities need a lightweight, flexible, breathable and durable vest that meets existing NIJ standards. According to the TWG, the lighter and more comfortable a vest is, the more likely an officer is to actually wear it full time.

TWG Recommended Outcomes

- Near-term outcome: Improved wearability of armor.
- Long-term outcome: Increased wear rates.

RANKING: 7

Community Corrections

TWG Recommendation

Technology to Locate, Track and Communicate Whereabouts of Predatory Offenders in All Environments

Description of Issue/Requirement/Need

Current location tracking systems do not perform to the requirements of public safety. These systems have difficulty tracking offenders indoors, underground and anywhere the subject is beyond the “sight” of the satellite system. In addition, near real-time communications of offender location are dependent on the availability of cellular communications. Community corrections requires better location and tracking technologies to monitor and communicate the whereabouts of predatory and violent offenders in all environments within the community. Solutions must provide cost-effective, accurate and reliable continuous monitoring and communication of whereabouts in all environments. Highly secure circumvention prevention and detection measures are also required.

TWG Recommended Outcomes

Increased accountability of the offender and increased confidence in the technology, which should lead to more use of the technology as an alternative to incarceration.

RANKING: 8

Pursuit Management

TWG Recommendation

Controlling or Stopping Pursuits Using Cooperative Technologies

Description of Issue/Requirement/Need

There is a high probability that the suppression of the vehicle cannot happen quickly (less than one minute) if law enforcement has to go through a command structure. This trial will show the potential of direct intervention.

TWG Recommended Outcomes

1) Purchase cell phone intercept equipment, 2) connect to a vehicle that is equipped with OnStar or alike, 3) remotely control parameters, 4) explore other communications paths into the vehicle such as V2V or R2V or maintenance ports.

Show that direct intervention is possible from the officer's vehicle.

RANKING: 9

Less Lethal

TWG Recommendation

Near-Instantaneous Effect on Human Targets

Description of Issue/Requirement/Need

Law enforcement and corrections officers need a technology that would provide a repeatable, near-instantaneous less-lethal effect on a human target. This technology would be used to deliver

an effect at a long stand-off distance to one or two individuals located in a group or crowd without collateral effects to others who are nearby. Current less-lethal technologies do not have the capability of delivering instantaneous and precise effects at a long distance. For example, two technologies that have demonstrated promise are directed energy (DE) systems: millimeter wave (RF/MMW) and infrared lasers (IR/LASER).

OPERATIONAL SCENARIO(S): Single aggressor, barricaded suspect, noncompliant groups, corrections-prisoner disorder.

BASIS RESPONSE(S): Mobility, sense and interpret, and motivation.

TWG Recommended Outcomes

This technology will provide a tool with which officers can resolve hostage situations with reduced injury and death to officers, victims and subjects. Additionally, as these systems become more affordable, it is desired that some DE systems will replace the kinetic energy (KE) impact systems by partially filling those needs described in Kinteic Energy Impact Munition Improved Range and Precision/Accuracy Systems (LLD-2006-R03).

REQUIRED RESPONSE(S): Immediate immobilization (movement or redirection) at extended distances that is fully recoverable in two to five minutes, immediate disruption of ability to sense and interpret information with full recovery and immediate full compliance (behavior change).

[Monitoring manufacturer efforts including untethered EMD devices TASER XREP, TASER 40 mm and Lektrox 37/40 mm. Funding active denial technology operational trial of the Assault Intervention Device (AID) by Raytheon and the Los Angeles Sheriff's Department (LASD) through the Weapons and Protective Systems Technologies Center of Excellence (WPSTC). Should continue funding through the evaluation of the device in the operational setting to determine its impact on reducing inmate assaults.]

RANKING: 10

Corrections

TWG Recommendation

Wireless Communication Detection/Defeat Technologies

Description of Issue/Requirement/Need

The introduction and use of unauthorized wireless communication devices creates a serious security concern for corrections. This is an important issue as evidenced by legislation created by a number of states making it a felony to introduce a cell phone into a prison. Inmates use these devices to carry on criminal activities, to facilitate escape attempts, harass victims, intimidate staff, etc. Corrections requires cost-effective technology that eliminates unauthorized wireless communications and/or assists in accurate (x,y,z coordinates) location detection of a broad range of wireless communication, including cell phones, walkie talkies, blackberries, Bluetooth devices and PDAs. Technology must have the capability to defeat or detect devices based on frequency

bandwidth, whether intact or broken down into component parts, whether powered on or not, and should not interfere with desirable radio frequency devices used by staff. System capability should be integrated into a central data and communications infrastructure.

TWG Recommended Outcomes

Significant reduction and/or elimination of the use of unauthorized wireless communication devices, which would result in the great reduction of associated criminal activity both inside the institutions and in the community.

RANKING: 11

Biometrics

TWG Recommendation

Identification of People From Video and Audio Surveillance

Description of Issue/Requirement/Need

Law enforcement officers need the ability to identify a person through capture of their face and/or voice on audio/video devices, and the related ability to check biometric identifiers against a database. This technology could be used by criminal justice for the following activities:

- Handling school outsider problems (preventing unauthorized access on school campus.)
- Identifying employees and inmates moving through a secure or controlled area.
- Identifying and authorizing communications system users through voice recognition.

- Detecting altered appearance.
- Detecting gang activity.
- Identifying inmate speakers during telephone conversations. Criminal justice professionals need an improved audio surveillance technology to positively identify and monitor inmates and other persons of interest during telephone conversations as well as automatically flag phrases and other parts of the recorded discussions for investigative or counter terrorism purposes.

TWG Recommended Outcomes

Projects supported to meet this requirement: 1) Normalization Plug-In for Improved Face Recognition of Noncooperative Individuals, 2) High Quality 3D Facial Images from Surveillance Video, 3) Noncooperative 3D Face Recognition, 4) The Use of HDTV for In-Vehicle Cameras and Face Recognition, 5) Effects of Varying Video Sources and Quality on Face Recognition.

RANKING: 12

Explosives

TWG Recommendation

Prepare Bomb Squads for Vehicle Borne Improvised Explosive Devices (VBIEDs)

Description of Issue/Requirement/Need

Tool characterization vs. improvised explosives integrate robot into render-safe scenarios involving large vehicle IEDs (LVIEDs). Complete the development of single-sided x-ray.

TWG Recommended Outcomes

Capability to make repeated remote diagnostic penetrations of a VBIED cargo area. Perform a remote surgical attack of the LVIED remote disassembly.

RANKING: 13

Sensors and Surveillance

TWG Recommendation

Detect Large Concealed Weapons on an Individual (School Safety)

Description of Issue/Requirement/Need

Law enforcement and school security officers need the ability to detect handguns being transported by students and visitors prior to their entry to a school. This technology needs to operate from a standoff distance of 15 meters to provide an early warning. It could also be used to scan areas on school property.

TWG Recommended Outcomes

QinetiQ SPO-30, Brijot MMW imager, Trex/Sago ST-150 imager partially meet this requirement. They do not meet the distance requirement of 15 meters. The SET Counter Bomber and QinetiQ SPO-20 (both nonimaging) operate at 15 or more meters. The Luna nonlinear acoustic system under development has the potential to exceed the distance requirement but no funding has yet been identified to further develop.

RANKING: 14

Information-Led Policing

TWG Recommendation

Improve the Speed and Accuracy of Data Sources Used to Positively Identify Persons of Interest

Description of Issue/Requirement/Need

The current quantity, quality and speed of data source inquiries is inefficient to meet the needs of a law enforcement officer working in a field environment.

TWG Recommended Outcomes

Incrementally improve the speed and accuracy of data sources to permit officers in the field to identify persons of interest. In the near term, reduce acquisition, response and verification time to less than 10 minutes with minimal cross data source errors. In the long term, increase the number of data sources available for persons of interest inquiries while reducing the time and increasing the accuracy of each transaction.

1) Invest in information quality operational research initiatives. 2) Increase the body of knowledge and best practices to improve the quality of data available to law enforcement officers working in a field environment.

RANKING: 15

Corrections

TWG Recommendation

Staff Identification, Location and Duress Technology

Description of Issue/Requirement/Need

Correctional facilities are dangerous environments and staff injuries are common. A safer environment for officers creates better working conditions and allows an institution to operate more effectively and efficiently. Corrections staff need technology that will locate staff continuously throughout a facility in real time so that they can be aided in case of emergency. Technology shall be cost-effective, nonproprietary, based on open standards, highly reliable and should be able to be integrated into a central data and communications infrastructure. Technology shall be highly accurate and able to locate officers within 10 feet on x, y and z coordinates.

TWG Recommended Outcomes

Significant reduction in time needed to respond to staff emergencies, which should in turn result in a reduction in the number of staff injuries, the number of days missed due to injury (measure for reduction in severity of injuries), a reduction in workers compensation claims and an increase in staff retention due to the improved safety.

RANKING: 16

Sensors and Surveillance

TWG Recommendation

Detect Concealed Weapons and Contraband (Corrections)

Description of Issue/Requirement/Need

A new technology is needed to detect small homemade or improvised weapons made from items commonly found in the correctional environment. This includes ferrous metals, nonferrous metals, plastic, plexiglass, wood and stainless steel.

TWG Recommended Outcomes

TWG members increased the priority from medium to high for this requirement. Systems have difficulty detecting smaller objects. The Luna nonlinear acoustic system is being integrated (NIJ R&D) into a commercial wand to extend capability for detecting smaller objects and improve detection for nonmetal materials.

RANKING: 17

Electronic Crime

TWG Recommendation

The Electronic Crime and Digital Evidence Field

Description of Issue/Requirement/Need

The electronic crime and digital evidence field lacks a single designated entity with the subject matter expertise and capacity to coordinate and support the various electronic crime and digital evidence projects, programs and efforts undertaken to build law enforcement's capacity in these areas.

TWG Recommended Outcomes

Establishment of an Electronic Crime and Digital Evidence Center with the subject matter expertise and capacity to support and coordinate all the various projects, programs and efforts undertaken to build the capacity of state and local law enforcement to effectively address the challenges electronic crime and digital evidence present to state and local law enforcement. A resource center that will facilitate the development of tools and technology to build the capacity of state and local law enforcement to prevent, investigate and prosecute electronic crime and collect, acquire and examine digital evidence. A single designated authority to evaluate tools and training, facilitate technology transfer and identify ongoing support options through commercialization. Create an established capability to deploy the deliverables from NIJ-funded projects to state and local law enforcement after the grant funding period for R&D has expired.

RANKING: 18

Personal Protective Equipment

TWG Recommendation

Development of a Retention Holster Standard

Description of Issue/Requirement/Need

Retention holsters do not have an independent standard. Currently law enforcement must depend on the manufacturer to provide a product that meets their needs without a third-party evaluation. There is also a difference in classification across the industry that is or can be confusing to the purchaser of holsters.

TWG Recommended Outcomes

Reduction in officer firearm takeaways by unauthorized individuals. The reduction in takeaways should result in a reduction of officer injuries and deaths from their own firearms. A special technical committee has been developed and the draft standard is in progress. The draft standard is scheduled to be complete during the fourth quarter of FY09 or the first quarter of FY10.

RANKING: 19

Community Corrections

TWG Recommendation

Development of More Secure and Alternative Tethering Technologies

Description of Issue/Requirement/Need

One-piece location tracking systems are growing in popularity among community corrections agencies. These devices have some advantages over the two-piece variation but do pose some serious security concerns. For example, shielding the GPS signal is much easier with one-piece units. In addition, one-piece units cannot accurately tell if the device is at rest, which makes it vulnerable to spoofing. As the use of one-piece technology becomes more widespread, it is essential that technology be developed to address these security issues. Specifically the technology solution should work with one-piece units to ensure that tampers/removals are detected and recorded and detect motion and intentional signal blocking. Finally, alternative tethering technologies are required that are secure but provide an alternative more conducive to offender re-entry efforts than a large device strapped to an ankle.

TWG Recommended Outcomes

Enhanced security of one-piece devices, which will increase confidence in its use. The outcome for the alternative tethering requirement will be more sensitive matching of tethering technology to an offender's particular needs (e.g., vocational situation, less stigma).

RANKING: 20

Communications Technologies

TWG Recommendation

Locator Technologies

Description of Issue/Requirement/Need

Because of the nature of their work, public safety and corrections need precision locator technology to determine the location and status of personnel. This technology would be used for routine management of personnel and assets, conveying the precise location of personnel when emergency assistance is required. This includes an emphasis on real-time updates, application for jurisdictional wide, routine asset management and tactical response. Include in-building (3D) coverage within unwired environments, emphasizing officer needs assistance situations. Device should be a portable one that stands alone or operates in tandem with vehicle equipment.

TWG Recommended Outcomes

Development of a device that can be worn by a first responder and can track their location outdoors, indoors and at elevation.

Technology currently available is limited to in-vehicle AVL technologies that provide intermittent updates. Precision is required to activate a panic emergency button or portable radio to locate users requiring assistance. Development of this technology should not become a labor issue. Deployment and labor issues will be addressed as policy issues.

RANKING: 21

Pursuit Management

TWG Recommendation

Controlling or Stopping Pursuits Using Police Activated Vehicle Intervention Technologies

Description of Issue/Requirement/Need

There is a high probability that the suppression of the vehicle cannot happen quickly (less than one minute) if law enforcement has to go through a command structure. This trial will show the potential of direct intervention.

TWG Recommended Outcomes

1) Purchase cell phone intercept equipment, 2) connect to a vehicle that is equipped with OnStar or alike, 3) remotely control parameters, 4) explore other communications paths into the vehicle such as V2V or R2V or maintenance ports.

Show that direct intervention is possible from the officer's vehicle.

RANKING: 22

Personal Protective Equipment

TWG Recommendation

Multi-Threat Protection Gloves

Description of Issue/Requirement/Need

There is currently no glove on the market that will give law enforcement protection against stab, slash and pathogen threats and still allow

them the dexterity and tactility to perform their mission. The glove needs to allow for performance of day-to-day missions as well as be able to be worn for an entire shift. Decontamination on-site is preferable.

TWG Recommended Outcomes

The gloves should create a reduction in injuries due to punctures and slashes caused by hypodermic needles, razor blades and other sharp objects. The pathogen resistance in the gloves should decrease the chance that an officer will contract some of the diseases they come into contact with while on the job.

[NIJ has partnered with the Technical Support Working Group (TSWG) to combine resources to meet this need. Warwick Mills has completed the preliminary design review (PDR) and is scheduled for a critical design review (CDR) later this year.]

RANKING: 23

DNA Forensics

TWG Recommendation

Tools for Data Interpretation of Casework Samples

Description of Issue/Requirement/Need

DNA lab analysts need a system that can perform quantitative interpretation of STR data from mixtures of two or more individuals. Should be able to calculate ratios on three-person mixtures. Should work on partial STR profiles and degraded DNA samples. Should be Web-based and compatible with LIMS (Laboratory Information Management Systems).

TWG Recommended Outcomes

Expedited review of DNA profiles leading to higher throughput of forensic DNA analyses. A validation kit to be used for this purpose is still desired. Datasets (not samples) needed. Need profiles (various kits/platforms/triallelic samples, etc.). Need raw data for labs to process. It may be possible to explore with NIST or the Forensic Technologies CoE. Tools to interpret three-person (or more) mixtures is still a priority.

RANKING: 24

Body Armor

TWG Recommendation

Revise the Existing NIJ Standard for Ballistic Helmets (0106.01)

Description of Issue/Requirement/Need

The current version of this standard was published in 1975. This standard needs to be updated to reflect current ballistic threats, test methods, research into blunt trauma impact effects, etc.

TWG Recommended Outcomes

Near-term outcomes: 1) Requirements and test methods that address blunt trauma resulting from nonpenetrating rounds. 2) Requirements that address nonballistic impacts such as fit and impact resistance. Long-term outcomes: 3) Increased officer safety and reduction/elimination of blunt trauma injuries.

RANKING: 25

Communications Technologies

TWG Recommendation
CAD Interfaces

Description of Issue/Requirement/Need

Inability to exchange data seamlessly (and in real time) between disparate systems; fusion center issues; development of COPLINK (RMS) evolved from TWG coordination; development of intelligent software – standards-based information (voodoo layer) that forces it to other systems; interface standards of new systems.

TWG Recommended Outcomes

1) Investigate if a standard currently exists, 2) if not, establish one, 3) implement a mandatory requirement that the standard be a part of the standard CAD base, 4) make it a requirement that it be included in the next generation 911 specs.

The CommTech TWG voiced a concern over the issue of disparate CAD systems between agencies and remains interested in identifying solutions and standards to mitigate future problems.

RANKING: 26 (tie with 25)

Explosives

TWG Recommendation
Continue Development of National Electronic Countermeasure Program

Description of Issue/Requirement/Need

LVIED scenarios have involved remote-control explosives situations. There are approximately 20 bomb squads in high-risk areas that have this capability.

TWG Recommended Outcomes

The ability to have more ECM (electronic countermeasure) capable bomb squads.

RANKING: 27

Geospatial Technologies

TWG Recommendation
Mapping Tools Compatible Within the Operating Environment of Mobile and Handheld Computing Devices

Description of Issue/Requirement/Need

There is a lack of tools and technologies available that provide 3-dimensional geocoding and mapping within large buildings for use by law enforcement for emergency response and analysis purposes. Mapping to the real vertical location is currently constrained by a lack of existing data, inability to capture Z attributes and the lack of necessary 3-D base layers to map against. When responding to emergency calls,

responders need the ability to accurately locate places within expansive buildings. For analysis purposes, this means that the where and how of crime that increasingly occurs in large buildings and housing developments cannot be viewed accurately with existing GIS models.

TWG Recommended Outcomes

Addressing this problem could help not only in providing emergency response, but help reduce crime and disorder in buildings such as schools, jails, etc. that house numerous people by mapping crime, people, etc. The problem impacts any entrance and exit strategies law enforcement would need to enter a building during a disaster or major incidents such as a school shooting or hostage situation. Police and other public safety are less efficient and effective in responding to crime and managing problems that are occurring within these large buildings, while crime analysts are also limited in their ability to perform 3-D pattern analysis. Thus, the context of crime cannot be accurately assessed and crime prevention and abatement programs properly devised or evaluated.

LECTAC History

Since its inception in the mid-1970s, the advisory body now known as LECTAC has provided valuable advice to NLECTC and the law enforcement and corrections community. The council has not only helped bring new technologies into practice, but also has ensured that NIJ does not pursue inappropriate technologies.

History

LECTAC has a long history that began nearly 30 years before the establishment of the TWG process. In 1977, the National Institute of Law Enforcement and Criminal Justice (NILECJ), NIJ's predecessor agency, recognized that the law enforcement community needed independent, accurate information and technical assistance to help with the equipment procurement process. NILECJ funded the International Association of Chiefs of Police (IACP) to establish and operate the Equipment Technology Center (ETC) to provide this information and assistance; prior to its establishment, law enforcement agencies relied on the untested claims of product manufacturers and/or the other opinions of consumers. (Experience had demonstrated that more often than not, neither of these sources provided reliable information.) In order to ensure that the ETC testing programs met law enforcement's needs and requirements, NILECJ and IACP established the National Advisory Committee for Law Enforcement Equipment and Technology (NACLEET). IACP appointed NACLEET members, based on their knowledge and expertise in specific areas, with the approval of the Law Enforcement Assistance Administration (LEAA) and NILECJ.

In 1979, Congress passed the Justice System Improvement Act of 1979, signed into law by President Jimmy Carter; this act converted NILECJ into NIJ. NIJ issued a new grant to the IACP that converted the ETC into the Technology Assistance Program (TAP) and created the Technology Assessment Program Information Center (TAPIC) to serve as the clearinghouse for law enforcement technology and equipment information. To reflect the changes, NACLEET was renamed the Technology Assessment Program Advisory Council (TAPAC).

In 1985, NIJ awarded the operation of TAP and TAPIC to another grantee, ending eight years of operation by IACP. Recognizing that IACP remained an integral resource for the law enforcement community, a seat for an IACP representative was established on TAPAC. Then as now with LECTAC, many sitting TAPAC members also belonged to IACP.

As a result of the Violent Crime Control and Law Enforcement Act of 1994, NIJ converted TAPIC into the National Law Enforcement Technology Center (NLECTC), which served as a hub for several regional centers throughout the country in addition to maintaining its previous testing and information center resources. These NLECTC regional centers were established as "centers of excellence" in various technology-focus areas and also acted as regional interfaces for law enforcement agencies. Once again, to reflect the changes in the program, TAPAC was renamed, this time as the Law Enforcement Technology Advisory Council (LETAC).

In 1995, NIJ, recognizing that the corrections community also had an urgent need for technical assistance for equipment and technology procurement, renamed NLETC the National Law Enforcement and Corrections Technology Center (NLECTC) and broadened the focus of the program to include the corrections community. LETAC became the Law Enforcement and Corrections Technology Advisory Council (LECTAC) and was restructured into two committees for law enforcement and corrections. Both committees had parallel subcommittee structures and reported to an executive committee, comprised of the chairs of the respective subcommittees. The various regional centers established their own regional advisory councils.

In 1997, the LECTAC Executive Committee, in an effort to reduce overlapping (and sometimes conflicting) requirements from the two committees, as well as to include input from the regional advisory councils, requested that NLECTC-National initiate an effort to consolidate and streamline LECTAC and the regional advisory councils. The result, approved by the LECTAC Executive Committee in April 1998, consolidated the law enforcement and corrections committees into one body. The subcommittee structure was realigned into nine technology focus areas, and each subcommittee has representatives from both law enforcement and corrections agencies. To improve communication among the regional centers, their advisory councils and LECTAC, the directors of each NLECTC regional center and the chair of each regional center advisory council are now a part of the LECTAC Executive Committee.

LECTAC's structure continued to experience minor adjustments over the next several years. In late 2004, NIJ initiated a comprehensive restructuring of LECTAC and the process by which technology requirements were identified and prioritized. The subcommittee structure of LECTAC was disbanded and replaced with 17 Technology Working Groups, each one corresponding to an active technology portfolio within NIJ. The responsibilities for managing these TWGs were assigned to the various NLECTC Regional Centers who were tasked with a TWG's corresponding technology portfolio. The TWGs were then tasked with developing the specific technology requirements for their areas of expertise.

LECTAC was restructured into a smaller (approximately 35-40 member) executive advisory body, tasked with reviewing and prioritizing the inputs received from the TWGs. LECTAC is administered by NLECTC-National, located in Rockville, Md., and meets at least annually to review the TWGs' recommendations.

Whether known as NACLEET, TAPAC, LETAC or LECTAC, the mission and purpose has remained consistent over the years: to provide NIJ with practitioner-based input on the technology needs of state and local law enforcement, corrections, crime laboratory and criminal justice agencies.

Through this process, LECTAC seeks to further the identification, development and implementation of new technologies that advance the operations of criminal justice agencies and ensure the safety of law enforcement and corrections personnel in the performance of their duties.

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Tallahassee, Fla.

Carl A. Wicklund

Executive Director
American Probation and Parole Association
Lexington, Ky.

About the National Law Enforcement and Corrections Technology Center System

The NLECTC system exists to support the nation's structure of state and local law enforcement and corrections. The United States has more than 19,000 law enforcement agencies, 50 state correctional systems and thousands of prisons and jails. The fragmented nature of law enforcement and corrections impedes the dissemination of valuable new information, fosters a patchwork marketplace that discourages the commercialization of new technologies and underscores the need for uniform performance standards for equipment and technologies.

The NLECTC system is an integrated network of criminal justice technology centers and Centers of Excellence that offer outreach, demonstration, testing and evaluation assistance to the criminal justice community. Established in 1994 by NIJ as part of its research, development, testing and evaluation initiatives, the NLECTC system serves as an "honest broker" resource for technology information and assistance and helps introduce technologies into practice within the criminal justice community. The NLECTC system's purpose is to determine the needs of the law enforcement and corrections communities and assist them in understanding, using and benefitting from new and existing technologies that, increasingly, are vital levers of progress in criminal justice.

To receive more information or to add your name to the NLECTC mailing list, call (800) 248-2742 or (301) 519-5060, or write:

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