



The U.S. Department of Justice, Office of Justice Programs, National Institute of Justice is seeking applications for funding research and development of sensor or surveillance technologies, or novel applications of those technologies, to address specific needs in the field of criminal justice. This program furthers the Department's mission by sponsoring research to provide objective, independent, evidence-based knowledge and tools to meet the challenges of crime and justice, particularly at the State and local levels.

Solicitation: Sensors and Surveillance Technologies

Eligibility

(See "Eligibility," page 4)

Deadline

All applications are due by October 30, 2006, 11:59 p.m. eastern time

Contact Information

For assistance with the requirements of this solicitation, contact Chris Miles, Senior Program Manager, Research and Development Technology Division, 202-616-1110, Christopher.Miles@usdoj.gov.

This application must be submitted through Grants.gov. For technical assistance with submitting the application, call the Grants.gov Customer Support Hotline at 1-800-518-4726.

**Grants.gov Funding Opportunity No. 2007-NIJ-1434
SL# 000757**

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Sensors and Surveillance Technologies

CFDA No. 16.560

Overview

The National Institute of Justice (NIJ) is the research, development, and evaluation agency of the U.S. Department of Justice and a component of the Office of Justice Programs (OJP). NIJ provides objective, independent, evidence-based knowledge and tools to enhance the administration of justice and public safety. NIJ solicits proposals to inform its search for the knowledge and tools to guide policy and practice.

NIJ is seeking applications for funding research and development of sensor or surveillance technologies, or novel applications of those technologies, to address specific needs in criminal justice. NIJ is particularly interested in the following three areas:

- Concealed weapons detection (CWD) at a safe distance.
- Through-the-wall surveillance (TWS) for locating and/or tracking individuals within buildings.
- Other novel sensor or surveillance technologies, applications, or support functions for specific criminal justice applications.

Applicants should clearly identify in their application title and abstract the area for which they are applying (CWD, TWS, or novel).

Deadline: Registration

Registering with Grants.gov is a one-time process; however, if you are a first time registrant it could take up to several weeks to have your registration validated and confirmed and to receive your user password. Start the registration process early to prevent delays that may cause you to miss the application deadline. You must complete these three steps before you are able to register: (1) Register with Central Contractor Registry (CCR), (2) Register yourself as an Authorized Organization Representative (AOR), and (3) Be authorized as an AOR by your organization. For more Information, go to www.grants.gov. **Note: Your CCR Registration must be renewed once a year. Failure to renew your CCR registration may prohibit submission of a grant application through Grants.gov.**

Deadline: Application

The due date for applying for funding under this announcement is October 30, 2006, 11:59 p.m. eastern time.

Eligibility

In general, NIJ is authorized to make grants to, or enter into contracts or cooperative agreements with, States (including territories), local governments (including federally-recognized Indian tribal governments that perform law enforcement functions), nonprofit organizations, profit organizations, institutions of higher education, and qualified individuals. Foreign governments or organizations are not eligible to apply.

Faith-Based and Other Community Organizations: Consistent with President George W. Bush's Executive Order 13279, dated December 12, 2002, and 28 C.F.R. Part 38, it is DOJ policy that faith-based and other community organizations that statutorily qualify as eligible applicants under DOJ programs are invited and encouraged to apply for assistance awards to fund eligible grant activities. Faith-based and other community organizations will be considered for awards on the same basis as other eligible applicants and, if they receive assistance awards, will be treated on an equal basis with all other grantees in the administration of such awards. No eligible applicant or grantee will be discriminated for or against on the basis of its religious character or affiliation, religious name, or the religious composition of its board of directors or persons working in the organization.

Faith-based organizations receiving DOJ assistance awards retain their independence and do not lose or have to modify their religious identity (e.g., removing religious symbols) to receive assistance awards. DOJ grant funds, however, may not be used to fund any inherently religious activity, such as prayer or worship. Inherently religious activity is permissible, although it cannot occur during an activity funded with DOJ grant funds; rather, such religious activity must be separate in time or place from the DOJ-funded program. Further, participation in such activity by individuals receiving services must be voluntary. Programs funded by DOJ are not permitted to discriminate in the provision of services on the basis of a beneficiary's religion.

Applicants are encouraged to review the Civil Rights Compliance section under "Additional Requirements" in this announcement.

Specific Information—Sensors and Surveillance Technologies

Sensor and surveillance technologies allow law enforcement and corrections officers to watch, listen to, or otherwise monitor and thus safeguard locations. Examples include:

- Devices to detect concealed weapons on individuals.
- Video cameras and closed-circuit television systems.
- Audio and video receivers and recorders.
- Motion detectors.
- Heartbeat detectors.
- Radar flashlights to detect breathing and other vital signs.
- Devices to "see" through walls and into enclosed spaces to locate and track concealed persons.
- Night vision and thermal imaging devices that detect infrared radiation or heat.

NIJ is seeking proposals for research and development of sensor or surveillance technologies, or novel applications of those technologies, to address specific needs in criminal justice. The concept paper should describe:

- The operational environment in which the technology will function.
- The specific criminal justice need or requirement that the technology will address.
- The specific benefit anticipated and how the technology will produce that benefit.

If you are invited to submit a full application, you should further substantiate those points and also describe:

- The specific metrics against which results will be measured (using industry or government standard evaluation methods and measures wherever possible).
- The data that will be collected and how that data will be distributed such that other researchers can benefit from or replicate the results.
- How health, human safety, and privacy concerns for the operator, subject, and any transient personnel are addressed, and how this impacts or trades off against system performance.
- The anticipated timeline to get to an end product and cost of that end product.
- The impact of training, logistics, and maintenance.

NIJ is particularly interested in concealed weapons detection, through-the-wall surveillance, and other novel sensor and surveillance technologies. You should clearly indicate to which area of interest you are applying in both the concept paper title and abstract.

Areas of Interest

1. Concealed weapon detection (CWD) at a safe distance.

CWD systems include instruments, devices, equipment, and technologies to detect weapons most commonly concealed on human bodies or in containers or vehicles. Knives and firearms are the most common weapons of interest, but any metallic or nonmetallic object that can be used to do harm (including explosives and chemicals) may also be considered a weapon.

CWD systems may be stationary (standoff or walkthrough) or portable (handheld or vehicle-mounted) and may operate in a variety of environments (e.g., close-proximity or standoff screening, indoor or outdoor, controlled or uncontrolled areas, day or night) and scenarios (e.g., pat-down searches, monitoring, surveillance, and tracking).

CWD systems may include:

- X-ray imaging and magnetic resonance imaging.
- Microwave holography.
- Acoustic (sound) detection.
- Gradiometers (stationary metal detectors).
- Vehicle-mounted metal detectors.
- Millimeter wave (MMW) or microwave radar detection systems.
- Radar imaging systems.

- Infrared imaging system.
- Stand-off trace detection and pulse imaging systems (which may use broadband, noise, or electromagnetic pulses).

Desired Characteristics of Concealed Weapons Detection Technology

NIJ is most interested in technologies that can detect both metallic and nonmetallic weapons, require minimal or no cooperation from the subjects, and are portable or handheld. Potential covertness of the sensor is also a desirable attribute.

Public safety and corrections officers must be able to detect weapons from a safe distance and through a variety of clothing. Their highest priority is to detect large weapons—ranging from handguns to bomb belts or vests worn by suicide attackers. The weapons may be composed of a large range of materials, such as metals, nonmetals (including ceramics), plastics, and explosives. The minimum distance at which these weapons must be detected varies based on the size, shape, composition, and effective range of the weapon. However, in every case the distance must provide officers with sufficient time to react. For example, handguns should be detected at a distance of at least 15 meters and should be distinguishable from cell phones at that range.

Example Applications of Concealed Weapons Detection

CWD technology can be used in a number of operational environments. In your concept paper you may consider, but are not limited to, the following:

High-Throughput Screening for Venue Security. In providing security for a number of venues (e.g., schools, courts, and large public areas), officers need to scan a large population for concealed weapons in a short timeframe (e.g., 4,000 individuals within 1 to 1.5 hours). The speed of current devices needs to be improved to avoid impacting people at the site or exposing people who are waiting in line to the weather or possible violence, and to allow law enforcement officers to be more effective in their operations. Typically, 15 to 20 percent of individuals scanned require secondary screening, and it is desired that this number be significantly reduced.

Providing Security for High-Profile Individuals. Another specific CWD application of interest is to support criminal justice officers providing security for high-profile people. In these applications, a stand-off distance of greater than 10 meters is desired for the reliable detection of handguns, knives, or their components. The technology should:

- Be portable.
- Detect weapons and threat materials concealed on the body and/or in a backpack or similar container carried by a person before the person reaches a security checkpoint.
- Operate for a minimum of 4 hours on internal batteries.
- Be capable of being transported and operated by a single person.
- Detect weapons in realtime and process the information to identify the specific weapon type in less than 10 seconds.

Weapons Detection in Highly Controlled Settings. For corrections and other similar highly controlled settings, there is also an interest in a high-speed, safe system for detecting small weapons that may be constructed with commercial, homemade, or

improvised materials found in a corrections environment and concealed by swallowing or inserting into body cavities. Detection of concealed razor blades or bullets is also of interest. Such a system may be fixed or portable and should create no health hazard for the operator or the subject when operated within 12 inches of the subject. When fully developed into a commercial product, the portable system should weigh between 5 and 10 pounds; operate for a minimum of 8 hours on internal batteries; and be operable by a single, non-technical operator.

2. Through-the-wall surveillance (TWS) for locating and/or tracking individuals within buildings.

Criminal justice officers must locate and track individuals through a variety of interior and exterior building walls to support hostage rescue, building surveillance, building clearance operations, and building search operations.

Desired Characteristics for TWS Technologies Used in Hostage Rescues and Clearing Buildings

To rescue hostages or clear buildings, officers need a device that:

- Can remotely map the interior of the building, identify interior walls, and locate and track people who are in the building.
- Does not rely solely on ID tags. Some of the people the device would locate and track may be cooperative and issued an ID tag (SWAT officers, undercover officers, VIPs). However, others would not (hostage takers and untagged hostages). Applications that propose concepts relying solely on ID tags will not be considered.
- Can identify inanimate objects (such as furniture).
- Displays the building interior and people inside the building on a laptop computer screen for use by the commander of the operation. The display should show the walls and moving icons that indicate the location and movement of both cooperative and non-cooperative individuals. Ideally, it would also identify which individuals have weapons.
- Makes relevant information accessible by officers other than the commander via their personal digital assistants (PDAs) in real time from the commander's laptop computer.
- Is portable.
- Is rapidly deployable.
- Can survey the scene from a distance.
- Can employ multiple sensors.
- At a minimum, gives the user information about distance and direction. More desirable is a device that gives three-dimensional information (range, direction, and height) about the person being tracked.
- Is (potentially) covert. This is a desirable but not mandatory feature.

Desired Characteristics of TWS Technologies Used in Building Search Operations

For building search operations, officers need:

- Technologies that can locate and track individuals through metal walls. NIJ is most interested in this capability.

- A small, hand-held device capable of rapidly detecting an individual through exterior and interior building walls and doors.
- A device that can detect, at a minimum, living persons in a building. Greater functionality (e.g., providing range and azimuth) is desirable but must be balanced against cost and size.

3. Other novel sensor or surveillance technologies, applications, or support functions for specific criminal justice applications.

NIJ is also interested in other novel applications for sensors and surveillance technologies. For novel concepts, the applicant must specifically identify the criminal justice need for the technology, the benefit anticipated, and how the technology will produce that benefit.

Areas of priority interest under this section follow:

1. Technologies that provide improved area surveillance for evidence of specific activities of interest to law enforcement. These include crowd control and city monitoring, support to remote monitoring operations, and monitoring of high-priority public venues. It is desired that the activity monitoring system provide high-resolution (e.g., HDTV 720p) 360-degree camera coverage and have zoom capability for improved situational awareness.
2. A tactical command and control system (TC&CS) to locate, identify, and manage law enforcement or corrections assets and sensors in a single electronic map display with “point and click” detailed unit identification. The TC&CS should accurately display all sensors and suspect activity in near real time and the technology should operate in a systems environment that promotes the fusion and integration of these capabilities with partner agencies. Sensor compatibility and radio communications interoperability standards must be incorporated to ensure a fully operational interface. The system must record all data for investigative follow up, for determining operational trends for future law enforcement deployment, and to provide evidence for court purposes.
3. An unmanned, self-operating, unsupervised remote monitoring technology to provide high-resolution pre-event video and audio recording at high-profile locations where the frequency of incidents may be too low to warrant permanent staffing (e.g., schools, bridges, water supplies, prison perimeters, borders, and critical infrastructures). The technology would monitor an area or facility to ensure that criminal justice personnel are alerted in case of an illegal or dangerous incident based on sensors for traffic, fire, perimeter violations, gunshot detection, specific human behaviors of interest, etc. Recorded information should be able to support investigations and/or prosecutions regarding the incidents.
4. Ancillary technologies providing an improved capability in source authentication, time and date stamping of evidence, and chain of custody.
5. An integrated school physical security monitoring system to protect individuals and property on school grounds.
6. An integrated, remote school bus vehicle fleet physical security monitoring system to ensure vehicle operator and passenger accountability and safety.

What will *not* be funded:

1. Provision of training or direct service.
2. Proposals primarily to purchase equipment, materials, or supplies. (Your budget may include these items if they are necessary to conduct applied research, development, demonstration, evaluation, or analysis, but NIJ does not fund proposals that are primarily to purchase equipment.)
3. Work that will be funded under another specific solicitation.
4. Basic or Pure Research.
5. Proposals that do not involve a suitable treatment of a technology, such as the conduct of applied research, development, analysis, evaluation, or the demonstration of one or more technologies.

Cost of proposed work: Total funding for this solicitation and the number of awards made will depend on the availability of funds and the quality of the applications. All awards are subject to the availability of appropriated funds and to any modifications or additional requirements that may be imposed by law. Approximately 8 percent of applications to NIJ's annual Science and Technology solicitations are funded. NIJ funding for an individual research and development project rarely exceeds \$500,000 annually, though total funding for projects requiring several years to complete has exceeded \$1 million or more. If feasible, NIJ recommends that applicants divide the proposed work into discrete phases, with each phase resulting in the delivery of a measurable deliverable. Applicants should try to structure the phases so that the funding required in any fiscal year will not exceed \$500,000. This will enable NIJ to fund the proposed work incrementally, depending on: the quality of the deliverable at the end of each phase, emerging priorities, and the availability of funds. However, applicants should not divide their work if it is not feasible to do so without impairing the technical and programmatic soundness of their approach. Note: Deliverables (e.g., technical reports, proof-of-concept demonstrations, prototypes, etc.) will be required at the end of each phase to enable NIJ to assess the progress of the work and make reasoned determinations as to the suitability of funding the next phase of the work.

A grant made by NIJ under this solicitation may account for up to 100 percent of the total cost of the project. See "Cofunding" under "What an Application Must Include."

Performance Measures

To assist in fulfilling the Department's responsibilities under the Government Performance and Results Act (GPRA), P.L. 103-62, applicants who receive funding under this solicitation must provide data that measures the results of their work. Performance measures for this solicitation are as follows:

What an Application Must Include

Responding to this solicitation involves a two step process. The first step involves submitting a concept paper, which will be reviewed by a panel comprised of both expert practitioners and technologists. The deadline for the concept paper is October 30, 2006, 11:59 p.m. eastern time. If the concept paper is recommended and approved, the applicant will be contacted, invited to submit a full proposal, and given a proposal deadline. Extensions to deadlines are generally not granted.

Concept Paper

A concept paper should capture the essence of the full proposal following the same format (see Full Proposal below). The main difference between the concept paper and the full proposal is that the concept papers are much shorter and do not contain detailed budgets. Though the concept paper should not include a detailed budget or management plan, the program narrative should include a staffing plan and an estimate of the funding required, summarized by phase (if applicable), and a general timeframe for completion of those phases and the project as a whole.

The program narrative section of your concept paper must not exceed 7 double-spaced pages in 12-point font with 1-inch margins. Abstract, table of contents, charts, figures, or appendixes do not count toward the 7-page limit for the narrative section, but should not increase the total past 10 pages.

Full Proposal

Proposals should include the following:

Standard Form 424

Program Narrative

The Program Narrative includes:

- a. Abstract (not to exceed 400 words).
- b. Table of contents.
- c. Main body, which includes:
 - Purpose, goals, and objectives.
 - Review of relevant literature.
 - Research design and methods.
 - Implications for policy and practice.
 - Management plan and organization.
 - Dissemination strategy.
- d. Appendixes (not counted against program narrative page limit) include:
 - Bibliography/References (if applicable).
 - List of key personnel (required).
 - Résumés of key personnel (required).
 - List of previous and current NIJ awards (required).
 - Letters of cooperation/support or administrative agreements from organizations collaborating in the project (if applicable).
 - Chart for timeline, research calendar, or milestones (required).
 - Other materials required by the solicitation.

Budget Detail Worksheet

The estimate of funding required in the concept paper and the Budget Narrative (see below) of the Full Proposal should address the full scope, duration, and cost of the project. However, the Budget Detail Worksheet submitted with the Full Proposal should address **only** the costs associated with completing the first phase of the proposed project.

Templates for filling out the Budget Detail Worksheet may be found through the Internet at www.ojp.usdoj.gov/Forms/budget_fillable.pdf, OJP Standard Forms & Instructions. If you have any questions, please contact the Office of the Comptroller's Customer Service Center at 1-800-458-0786.

Budget Narrative

Indirect Rate Agreement (if applicable)

Applicants that do not have a federally negotiated indirect cost rate and wish to establish one can submit a proposal to their "cognizant" Federal agency. Generally, the cognizant federal agency is the agency that provides the preponderance of direct federal funding. This can be determined by reviewing an organization's schedule of federal financial assistance. If DOJ is your cognizant federal agency, obtain information needed to submit an indirect cost rate proposal at www.ojp.usdoj.gov/oc/indirectcosts.htm.

Other Program Attachments

These include several forms, available on OJP's funding page at www.ojp.usdoj.gov/forms.htm.

Page limit: The program narrative section of invited full proposals must not exceed 25 double-spaced pages in 12-point font with 1-inch margins. Abstract, table of contents, charts, figures, appendixes, and government forms do not count toward the 25-page limit for the narrative section.

Cofunding: A grant made by NIJ under this solicitation may account for up to 100 percent of the total cost of the project. You must indicate whether you believe it is feasible for you to contribute cash, facilities, or services as non-Federal support for the project. Your proposal should identify generally any such contributions that you expect to make and your proposed budget should indicate in detail which items, if any, will be supported with non-Federal contributions.

Selection Criteria

Successful applicants must demonstrate the following:

Understanding of the problem and its importance.

Quality and technical merit.

1. Awareness of the state of current research or technology.
2. Soundness of methodology and analytic and technical approach.
3. Feasibility of proposed project and awareness of pitfalls.

4. Innovation and creativity (when appropriate).

Impact of the proposed project.

1. Potential for significant advances in scientific or technical understanding of the problem.
2. Potential for significant advances in the field.
3. Relevance for improving the policy and practice of criminal justice and related agencies and improving public safety, security, and quality of life.
4. Affordability and cost-effectiveness of proposed end products, when applicable (e.g., purchase price and maintenance costs for a new technology or cost of training to use the technology).
5. Perceived potential for commercialization and/or implementation of a new technology (when applicable).

Capabilities, demonstrated productivity, and experience of applicants.

1. Qualifications and experience of proposed staff.
2. Demonstrated ability of proposed staff and organization to manage the effort.
3. Adequacy of the plan to manage the project, including how various tasks are subdivided and resources are used.
4. Successful past performance on NIJ grants and contracts (when applicable).

Budget.

1. Total cost of the project relative to the perceived benefit.
2. Appropriateness of the budget relative to the level of effort.
3. Use of existing resources to conserve costs.

Dissemination strategy.

1. Well-defined plan for the grant recipient to disseminate results to appropriate audiences, including researchers, practitioners, and policymakers.
2. Suggestions for print and electronic products NIJ might develop for practitioners and policymakers.

Relevance of the project for policy and practice:

Higher quality proposals clearly explain the practical implications of the project. They connect technical expertise with criminal justice policy and practice. To ensure that the project has strong relevance for policy and practice, some researchers and technologists collaborate with practitioners and policymakers. You may include letters showing support from practitioners, but they carry less weight than clear evidence that you understand why policymakers and practitioners would benefit from your work and how they would use it. While a partnership may affect State or local activities, it should also have broader implications for others across the country.

Review Process

NIJ is firmly committed to the competitive process in awarding grants. All proposals under this solicitation will be subjected to independent peer-review panel evaluations. External peer-review panelists consider both technical and programmatic merits.

Panelists are selected based on their expertise in subject areas pertinent to the proposals.

Peer-review panelists will evaluate proposals using the criteria listed above. NIJ staff then make recommendations to the NIJ Director. The Director makes award decisions.

Reasons for rejection: NIJ may reject applications that are incomplete, do not respond to the scope of the solicitation, do not comply with format requirements, or are submitted after the deadline. No additions to the original submission are allowed.

When awards will be made: All applicants, whether they are accepted or rejected, will be notified. The review and approval process takes about 10 months. You should not propose to begin work until at least 10 months after the proposal deadline on the cover of this solicitation. Also, you should not expect to receive notification of a decision for at least 10 months after that date. Lists of awards are updated regularly on NIJ's Web site at www.ojp.usdoj.gov/nij/funding.htm.

Additional Requirements

- Civil Rights Compliance
- Confidentiality and Human Subjects Protections regulations
- Anti-Lobbying Act
- Financial and Government Audit Requirements
- National Environmental Policy Act (NEPA) compliance
- DOJ Information Technology Standards
- Single Point of Contact Review
- Non-supplanting of State or Local Funds
- Criminal Penalty for False Statements
- Compliance with Office of the Comptroller Financial Guide
- Suspension or Termination of Funding
- Non-profit Organizations
- Government Performance and Results Act (GPRA)
- Rights in Intellectual Property

We strongly encourage you to review the information pertaining to these additional requirements prior to submitting your application. Additional information for each can be found at www.ojp.usdoj.gov/funding/otherrequirements.htm.

If your proposal is funded, you will be required to submit several reports and other materials, including:

Final substantive report: The final report should be a comprehensive overview of the project and should include a detailed description of the project design, data, and methods; a full presentation of scientific findings; and a thorough discussion of the implications of the project findings for criminal justice practice and policy. It must contain an abstract of no more than 400 words and an executive summary of no more than 2,500 words.

A draft of the final report, abstract, and executive summary must be submitted 90 days before the end date of the grant. The draft final report will be peer reviewed upon submission. The reviews will be forwarded to the principal investigator with suggestions for revisions. The author must then submit the revised final report, abstract, and executive summary by the end date of the grant. The abstract, executive summary, and final report must be submitted in both paper and electronic formats.

For program evaluation studies, the final report should include a section on measuring program performance. This section should outline the measures used to evaluate program effectiveness, modifications made to those measures as a result of the evaluation, and recommendations regarding these and other potential performance measures for similar programs. (This information will be particularly valuable to NIJ and other Federal program agencies in implementing performance measures for federally funded criminal justice programs.)

Interim reports: Grantees must submit quarterly financial reports, semi-annual progress reports, a final progress report, and, if applicable, an annual audit report in accordance with Office of Management and Budget Circular A-133. Future awards and fund drawdowns may be withheld if reports are delinquent.