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# National Institute of Justice

## S o l i c i t a t i o n

*June 2001*

### Communications Interoperability and Information Sharing Technologies (AGILE R&D)

**APPLICATION DEADLINE:**

July 20, 2001

**U.S. Department of Justice**  
**Office of Justice Programs**  
810 Seventh Street N.W.  
Washington, DC 20531

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For grant and funding information, contact:  
**Department of Justice Response Center**  
800-421-6770

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**Office of Justice Programs**  
**World Wide Web Site:**  
*<http://www.ojp.usdoj.gov>*

**National Institute of Justice**  
**World Wide Web Site:**  
*<http://www.ojp.usdoj.gov/nij>*

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## Communications Interoperability and Information Sharing Technologies (AGILE R&D)

*This solicitation is funded through the Crime Identification Technology Act (CITA) appropriation. Additional information about CITA programs can be found on the Internet at*

<http://www.ojp.udoj.gov/cita>.

### I. Introduction

The National Institute of Justice (NIJ), a component of the Office of Justice Programs, is the research agency of the U.S. Department of Justice. Created by the Omnibus Crime Control and Safe Streets Act of 1968, as amended, NIJ is authorized to support research, evaluation, and demonstration programs, development of technology, and both national and international information dissemination. Specific mandates of the Act direct NIJ to:

- Sponsor special projects, and research and development programs, that will improve and strengthen the criminal justice system and reduce or prevent crime.
- Conduct national demonstration projects that employ innovative or promising approaches for improving criminal justice.
- Develop new technologies to fight crime and improve criminal justice.
- Evaluate the effectiveness of criminal justice programs and identify programs that promise to be successful if continued or repeated.
- Recommend actions that can be taken by Federal, State, and local governments as well as by private organizations to improve criminal justice.
- Carry out research on criminal behavior.
- Develop new methods of crime prevention and reduction of crime and delinquency.

NIJ's portfolio covers a diverse and dynamic array of research and development topics. Over the course of each year, the Institute's research program evolves as a result of consultations with researchers, technologists and practitioners, State and local policymakers, and partnerships with other public and private organizations. NIJ's Online Portfolio of active awards is available at <http://nij.ncjrs.org/portfolio/>. The Institute

encourages prospective applicants to consult that publication as well as *Building Knowledge about Crime and Justice: 2000 Research Prospectus of the National Institute of Justice* (document number 178903), as guides to NIJ's approach to criminal justice research and development.

The Institute continues to discuss and promote research collaborations with other Federal agencies and private foundations and has established a variety of research partnerships. NIJ encourages researchers and practitioners from all disciplines to explore the opportunities for collaborative efforts presented in this directed solicitation and to propose appropriate arrangements.

This solicitation is for the development and/or evaluation of communications interoperability and information sharing technologies. It is not intended for the procurement and deployment of fully operational systems. Any such proposal received by NIJ will not be considered for award.

### II. Background

NIJ's Advanced Generation of Interoperability for Law Enforcement (AGILE) is a comprehensive program that addresses the need for improved public safety communications and information sharing. The work of public safety requires effective coordination, communication, and sharing of information among numerous criminal justice and public safety agencies. Unfortunately, many police officers, firefighters, and emergency medical service personnel responding to the same incident cannot communicate with each other. The fact that many agencies either have, or are, in the process of upgrading or implementing computer aided dispatching, communications, and records management systems further compound this. A majority of these systems will be unable to communicate and share data across jurisdictional

and regional boundaries or with other public safety agencies within the same jurisdiction (e.g., police and fire) due to unique system designs.

The AGILE program consists of three main program thrusts. They are: 1) The research, development, test, and evaluation of interoperable communications and information sharing technologies; 2) The identification, development, and adoption of open architecture standards for interoperability; and 3) Interoperability education/outreach. This solicitation addresses the first AGILE main program thrust, the research, development, test, and evaluation of interoperable communications and information sharing technologies.

### III. Areas of Research Required

This solicitation seeks proposals that offer the development of communications interoperability and information sharing technologies that address specific gaps in today's regional communications needs of public safety agencies. General areas of interest to the AGILE program include:

- Information sharing—Address technological and policy obstacles to enable effective and efficient , on-demand sharing of database information in a regional area
- High-bandwidth communications—Ability to transmit, from stationary and mobile platforms, high-bandwidth information, such as still images and near real-time video, using common standards and open architecture techniques
- Voice communications—Ability to overcome disparate bands, frequencies, and waveform generation techniques to enable regional voice communications interoperability for day-to-day and mutual aid situations.

#### A. Focus areas

The following focus areas represent specific needs that could be addressed with innovative voice communications and information sharing technologies. While these topics are of particular interest to the AGILE Program, you may submit proposals for communications interoperability and information sharing technologies in other application areas as well. Keep in mind that any system design you propose must facilitate the goal of making voice communications interoperability and information sharing easier to accomplish. The use of common, industry standards and open system architectures are encouraged.

While it may be necessary for you to propose a solution that involves proprietary techniques, if it is determined that this approach will preclude or minimize interoperability, then your proposal will be deemed non-responsive to this solicitation and will not be considered for award.

As previously stated, the third main program thrust for AGILE involves "Interoperability education/outreach." Your research, development, test, and evaluation proposal must address the results and/or lessons learned you expect to deliver to NIJ at the end of the period of performance. These in turn will be incorporated into the AGILE outreach effort.

- Software-defined radios (SDR): There are many barriers to voice communications interoperability, including disparate bands, disparate waveform types, and proprietary issues. Current practice typically achieves interoperability by handing out multiple radios, one from each responding agency to each other responding agency. This approach is cumbersome, inefficient, and severely limits the number of participants. Recently deployed technology provides an interim solution using a communications switch to link together the audio of disparate radio systems. While this approach increases operational capability, it still falls short of providing comprehensive interoperability. The AGILE Program is interested in determining the technical and

commercial viability of an SDR that can operate effectively across multiple frequency bands assigned to the public safety community. For example, it can operate on frequencies from 30 MHz to about 800 MHz. The AGILE Program is also interested in antenna systems that would work in conjunction with SDRs, i.e., multi-band antennas. Approaches for such antennas need to consider size and weight implications, besides performance. A software-defined radio can reduce its bandwidth where spectrum is scarce or increase it when spectrum is plentiful, thereby offering higher quality communication. Technology that can easily adapt to different frequencies, different modulation schemes, different technical standards and variable power levels to be consistent with the service rules is of particular interest. The desired effect would provide greater spectrum efficiency and enhanced future interoperability through the development of technology that can enable currently unused spectrum to be put into productive use. The goal is to determine the feasibility of an affordable SDR approach based on a sound technical design that facilitates open architecture and multiple vendors' products.

- Convergence of wireless and information technologies: Public safety officials require access to information as a natural course of their every day duties. Technologies that make it easier and quicker to obtain this information will increase the efficiency and safety of the public safety officer along with the safety of the general public. The explosive growth in today's commercial wireless data market offers public safety the opportunity to reduce the cost and complexity of mobile data solutions by leveraging the convergence of traditional wire and wireless technology products. Examples of this include voice over Internet Protocol (IP), Blue Tooth wireless networking standards, and Wireless

Application Protocols (WAP). The AGILE Program is interested in ways to leverage this industry trend on behalf of public safety.

- Improved Data Modems: Public safety officials increasingly need to transmit data to officers on patrol. They generally have two options from which to choose to accomplish this. They can either rely on commercial services, such as those that provide cellular digital packet data (CDPD), or use their agency's existing land mobile radio (LMR) infrastructure. The AGILE Program is interested in improved techniques that will provide public safety agencies the ability to transmit data using normal voice LMR channels on a non-interference basis in which voice has override priority.
- Security: Rapidly evolving infrastructure such as the Internet provides a means for efficient sharing of data among multiple public safety agencies. However, given the nature of data maintained by such agencies, securing that data, particularly as it is disseminated across jurisdictional boundaries, is critical. In addition, laws, policies and guidelines pertaining to the security of information vary from locality-to-locality, region-to-region, and state-to-state. This can be a legitimate barrier to the efficient and effective sharing of information among public safety agencies. The AGILE Program is interested in adaptive security techniques that will provide public safety data managers the necessary flexibility to meet their mission needs for sharing data while remaining compliant with applicable laws, policies and guidelines on security.

## **B. Creative Technology Solutions in Other Areas**

The intent of this category is to serve as an "open window" to encourage the submission of research and development proposals of communications

interoperability and information sharing technologies not addressed in the previous focus areas. You must explain the interoperability benefits that public safety agencies will derive from your proposal.

## **C. The Need for Technology**

General guidelines. You are encouraged to use the resources and expertise of the NIJ National Law Enforcement and Corrections Technology Center (NLECTC), Rockville, Maryland, and the regional NLECTC's located in Rome, New York; Charleston, South Carolina; Denver, Colorado; El Segundo, California; and the Border Research and Technology Center (BRTC), San Diego, California. More information about the NIJ National Law Enforcement and Corrections Technology Center system is available on the Internet at <http://www.nlectc.org>.

NIJ encourages you to submit proposals that link public and private sectors. This is especially true for links to public safety agencies. For example, partnerships between a police department and a company with technological experience or a consortium that includes a police department and one or more companies or academic institutions would receive favorable consideration. Partnership groups should include an active member of a recognized law enforcement or corrections agency. Proposed partnerships need to be substantiated, including details of personnel agreements with the partner agency, planned level of effort, and access to the agency resources.

If you are proposing a new technology, your proposal should focus on the appropriate phases of research, development, testing, evaluation, adoption, and implementation. Whatever your technology, your project should address real and significant problem areas. You may also propose modifications of existing technology to be used in new or innovative ways.

You should keep in mind that cost considerations of the resulting technology development products are a major concern. Most public safety agencies have limited resources for hardware purchases, and

these must compete against the myriad training, support, and supply needs of the typical department. These and related factors all influence the timeliness and the degree to which new technologies are accepted by police planners and administrators. Please consider the questions below when determining the usefulness of your proposed new technology development effort. In your proposal, you should incorporate information that addresses the general themes posed by these questions; however, do not assume you must explicitly answer each one.

- How important is the new technology to the overall use of communications interoperability for law enforcement? What will be its impact on personnel requirements?
- How much will the technology cost to purchase, customize to fit local needs (if necessary) and maintain?
- What are the hidden costs?
- What, if any, are the net savings in labor or other costs? Is the cost commensurate with the application value?
- How much training is required to use and maintain the technology?
- Does this technology follow an open architecture design? How will the proposed technology interoperate with other functionally equivalent capabilities in other agencies (including legacy systems)?

## **D. Selection Criteria**

When writing your proposal, make sure that you address the following areas:

- Partnerships - Identify any public safety agency that you are partnering with and to what extent. An informative description about the partnership will serve to strengthen the proposal.
- Description - Be articulate with your proposed project's description, minimizing the level of jargon. Describe how comparative tasks are performed today, how

# S o l i c i t a t i o n

the proposed project will improve on this, and who would benefit. Projects with a potential for replication to other regional areas will receive greater consideration than those for a unique, stove-piped solution.

- Evaluation - Identify how you intend to evaluate the result of the proposed project in order to identify areas of success and areas needing additional work. Proposals with well thought out plans to evaluate the proposed project's results will receive greater consideration than those without an evaluation plan.
- Partnerships - Identify any public safety agency that you are partnering with and to what extent. An informative description about the partnership will serve to strengthen the proposal.
- Description - Be articulate with your proposed project's description, minimizing the level of jargon. Describe how comparative tasks are performed today, how the proposed project will improve on this, and who would benefit. Projects with a potential for replication to other regional areas will receive greater consideration than those for a unique, stove-piped solution.
- Evaluation - Identify how you intend to evaluate the result of the proposed project in order to identify areas of success and areas needing additional work. Proposals with well thought out plans to evaluate the proposed project's results will receive greater consideration than those without an evaluation plan.

NIJ is firmly committed to the competitive process for awarding grants. All proposals are subjected to an independent, peer-review panel evaluation. The panel consists of members with academic, practitioner, technical, and operational expertise in the subject areas of the solicitation. Selection criteria used to evaluate proposals are as follows:

## 1. Quality and Technical Merit

- Soundness of methodology and analytic or technical approach
- Innovation and creativity
- Feasibility of proposed project; awareness of pitfalls
- Awareness of existing research and related applications

## 2. Impact of the Project

- Understanding the importance of the problem
- Potential for significant advance in crime prevention, law enforcement, courts, corrections, or other practice or policy areas
- Planning to include metrics used to measure the impact of the project
- Potential for advancement of scientific understanding of the problem area
- Relevance to practice, including development and demonstration in application domains (if applicable)
- Letters of support from participating agencies
- Affordable end products (if applicable)

## 3. Capabilities, Demonstrated Productivity, and Experience of Applicants

- Organizational and implementation planning
- Qualifications and experience of personnel as related to proposed project
- Responsiveness to the goals of the solicitation

# S o l i c i t a t i o n

- Demonstrated ability to manage proposed effort
- Adequacy of proposed resources to perform effort

#### 4. Budget Considerations

- Total cost relative to perceived benefit
- Appropriate budgets and level of effort
- Use of existing resources to conserve costs (is this a continuation of an existing effort, is it leveraging other funded activities, or is it a new start?)
- Cost-effectiveness of program or product for application in the criminal justice system (if applicable)

After peer-review panels' consideration, Institute staff makes recommendations to NIJ's Director based on the results of the independent reviews. Final decisions are made by the NIJ Director following consultation with Institute staff.

## IV. How to Apply

Those interested in submitting proposals in response to this solicitation must complete the required application forms and submit related required documents. (See below for how to obtain application forms and guides for completing proposals.) Applicants must include the following information/forms to qualify for consideration:

- Standard Form (SF) 424—application for Federal assistance
- Geographic Areas Affected Worksheet
- Assurances
- Certifications Regarding Lobbying, Debarment, Suspension, and Other Responsibility Matters; and Drug-Free Workplace Requirements (one form)
- Disclosure of Lobbying Activities
- Budget Detail Worksheet
- Budget Narrative

- Negotiated indirect rate agreement (if appropriate)
- Names and affiliations of all key persons from applicant and subcontractor(s), advisors, consultants, and advisory board members. Include name of principal investigator, title, organizational affiliation (if any), department (if institution of higher education), address, phone, and fax
- Proposal abstract
- Table of contents
- Program narrative or technical proposal
- Privacy certificate
- Form 310 (Protection of Human Subjects Assurance Identification/ Certification/ Declaration)
- Environmental Assessment (if required)
- References
- Letters of cooperation from organizations collaborating in the research project
- Résumés
- Appendixes, if any (e.g., list of previous NIJ awards, their status, and products [in NIJ or other publications])

**Confidentiality of information and human subjects protection.** NIJ has adopted new policies and procedures regarding the confidentiality of information and human subjects protection. Please see the *Guidelines for Submitting Proposals for National Institute of Justice-Sponsored Research* for details on the new requirements.

**Information Technology.** The Office of Justice Programs encourages integration and interoperability of information technology (IT) systems between all justice agencies and across Federal, State, and local jurisdictional boundaries. IT systems include automated information systems used by each of the justice system components (law enforcement, courts, prosecution, defense, corrections, probation and parole) in their internal day-to-day business and in communicating with each other. To support State and local justice integration and interoperability of these systems, OJP asked the Governor to designate a "point of contact" to provide information on IT plans and coordination in your State and local recipients of



# S o l i c i t a t i o n

awards that will be used in whole or in part for information systems may be required by the awarding OJP Bureau to communicate with this point of contact about their information technology plans. By increasing local communication when planning and implementing information technology, OJP funds may be used to support interoperable, rather than isolated, information systems.

The name and address of your State Information Technology Point of Contact can be obtained by calling our customer service line at 1-800-458-0786, or on the OJP web page at <http://www.ojp.usdoj.gov/ec/states.htm>.

**Proposal abstract.** The proposal abstract, when read separately from the rest of the application, is meant to serve as a succinct and accurate description of the proposed work. Applicants must concisely describe the research goals and objectives, research design, and methods for achieving the goals and objectives. Summaries of past accomplishments are to be avoided, and proprietary/confidential information is not to be included. Length is not to exceed 400 words. Use the following two headers:

**Project Goals and Objectives:**

**Proposed Research Design and Methodology:**

**Page limit.** The number of pages in the “Program Narrative” part of the proposal must not exceed 30 (double-spaced pages), no matter the amount of funding requested.

**Due date.** Completed proposals **must be received** at the National Institute of Justice by the close of business on July 20, 2001. Extensions of this deadline will not be permitted.

**Award period.** In general, NIJ limits its grants and cooperative agreements to a maximum period of 24 months. However, longer budget periods may be considered.

**Number of awards.** NIJ anticipates supporting up to three cooperative agreements under this solicitation.

**Award amount.** Awards totaling nearly \$800,000 in FY 2001 will be made available for this NIJ solicitation. Additional incremental funding may be available in FY 2002.

**Applying.** Two packets need to be obtained: (1) application forms (including a sample budget worksheet) and (2) guidelines for submitting proposals (including requirements for proposal writers and requirements for grant recipients). To receive them, applicants can:

- Access the Justice Information Center on the Web: <http://www.ncjrs.org/fedgrant.htm#nij> or the NIJ Web site: <http://www.ojp.usdoj.gov/nij/funding.htm>

These Web sites offer the NIJ application forms and guidelines as electronic files that may be downloaded to a personal computer.

- Request hard copies of the forms and guidelines by mail from the National Criminal Justice Reference Service at 800–851–3420 or from the Department of Justice Response Center at 800–421–6770 (in the Washington, D.C., area, at 202–307–1480).
- Request copies by fax. Call 800–851–3420 and select option 1, then option 1 again for NIJ. Code is 1023.

**Guidance and information.** Applicants who wish to receive additional guidance and information may contact the U.S. Department of Justice Response Center at 800–421–6770. Center staff can provide assistance or refer applicants to an appropriate NIJ professional. Applicants may, for example, wish to discuss their prospective research topics with the NIJ professional staff.

**Send completed forms to:**

# S o l i c i t a t i o n

Solicitation for Communications Interoperability  
and Information Sharing Technologies (AGILE  
R&D)

Tom Coty, Program Manager  
National Institute of Justice  
810 Seventh Street N.W.  
Washington, DC 20531  
[overnight courier ZIP code 20001]

For more information on the National Institute of  
Justice, please contact:

**National Criminal Justice Reference Service**

Box 6000  
Rockville, MD 20849-6000  
800-851-3420  
e-mail: askncjrs@ncjrs.org

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