

MEMORANDUM

GW

To: Tom Freedman
From: Bill Valdez
Date: November 12, 1998
Subject: Crimetechnology

Attached is a *draft* proposal. Please keep a close hold since I haven't shown it to agency folks yet, although I think most will be happy with it. I've also included a list of technologies that are being developed that could be announced as part of this initiative.

As next steps, I want to hold an interagency meeting later this month followed by a workshop in December that brings local law enforcement folks together with the agency folks to achieve buy-in. Let me know if you think we're on the right track....

bill

Executive Summary:
Partnership for Advanced Crime Enforcement
Draft: November 12, 1998

Overview: President Clinton's 100,000 cops program and the Vice President's 1994 crime technology initiative have laid the foundation for a comprehensive Partnership for Advanced Crime Enforcement (PACE). This new initiative would bring together pilot initiatives underway at many federal agencies (Energy, FBI, DOJ, DoD, etc.) and require a \$1 billion investment per year for the first five years.

Basic Elements: PACE would involve five major elements:

1. Expanding the technology and training program managed by DOJ's National Institutes of Justice (\$250 million). The current pilot technical assistance and technology development program (four centers, \$35 million budget) would be expanded nationally to 14 centers.
2. Modernizing the nation's 350 state and local crime labs that perform 95% of the nation's forensics work. This would require an investment of \$250 million and is supported by S-2022, an authorization passed by the most recent Congress.
3. Training the nation's 700,000 local cops and sheriffs in modern crime fighting techniques and technologies. Training is the number one priority of local law enforcement agencies, but they don't have the budget or infrastructure. An annual \$250 million initiative, building on DoD and the National Guard's infrastructure training system, would provide the needed training.
4. Modernizing the communications system used by local agencies. The current system is fragmented and results in frequent failures to communicate between agencies. Funding would be included in NIJ's \$250 million base.
5. Testing and deploying new technologies. Local law enforcement agencies can't afford the high tech crime fighting tools they need. A \$250 million/year grant program dedicated to high technology acquisitions is needed.

Goals: Consensus is needed to develop goals for PACE, but the goals would be similar to the following:

- Improve crime fighting readiness by 25% through advanced technologies and training.
- Solve 10% more high tech crimes per year through expanded technical assistance.
- Solve 25% more crimes by 2003 through improved forensics capabilities.
- Provide training to all 700,000 cops and sheriffs by 2003.
- Provide modern crime fighting tools to 50% local law enforcement agencies by 2005.
- Create model communication systems in 10 pilot communities by 2003.
- Test and deploy 200 new technologies by 2003.

A PARTNERSHIP FOR ADVANCED CRIME ENFORCEMENT
DRAFT DISCUSSION PAPER
November 12, 1998

I. Overview: Current Status of U.S. Local & State Law Enforcement.

U.S. businesses and families are protected against crime by 17,360 state and local law enforcement agencies that employ approximately 700,000 officers. More than 90% of those agencies have 24 or fewer sworn officers and 50% have 12 or fewer officers. Yet state and local law enforcement agencies are responsible for handling 95% of the crimes that people care about – muggings, robberies, burglaries, homicides, etc.

Americans support this decentralized system of law enforcement because they believe it allows local control and oversight -- their police and sheriff departments are responsible to them, not to some faraway authority. Yet, it is this very decentralization that has made it difficult for local law enforcement to use advanced technologies to fight crime.

The local law enforcement community simply does not have the resources or ability to develop and test the new technological tools that they need. This comes at a time when the nature of their job is becoming increasingly complex and dangerous because criminals have access to more advanced technology than the police.

II. The Clinton Administration's Commitments to Local Law Enforcement

In 1994, the Clinton Administration developed a program to help fight crime by putting 100,000 new police officers on the street. This significantly strengthened the "thin blue line" and enabled communities to commit extra police resources in areas that previously had been neglected, for example community-based policing.

The Administration also recognized that law enforcement was not taking advantage of the billions of dollars of investment that our nation had made in the development of advanced technologies. To meet this technology shortfall, on April 20, 1994, Vice President Al Gore oversaw the signing of an agreement between the Departments of Justice and Defense that initiated a five-year pilot program designed to increase the capacity of state and local law enforcement to fight crime through the application of technology. The Vice President said at the time:

"We are fully committed to the advancement of technology for law enforcement. It is time. The American people are ready to see this happen.....It is high time that we put the most advanced technologies and the best new approaches at the disposal of police officers and other law enforcement officers throughout the country... This is part of an all out assault on crime. This Administration is committed heart and soul to the war against crime and violence. What we have seen today is just the beginning. Our Administration is committed to doing everything possible, not just to developing new technology, not just to get these new tools to the officers where they do the most good, but to back up these officers in every way we possibly can."

III. The Technology Pilot Program in Action: A Major Success Story

By all accounts the Vice President's technology pilot program has been a huge success. The pilot is run by the Department of Justice's National Institute of Justice (NIJ). With the Administration's leadership and Congressional support, the NIJ has accomplished much – ranging from “low tech” to “high tech” - in four short years. For example:

- Through partnerships with existing federal technology organizations, NIJ has established the National Law Enforcement and Corrections Technology Center (NLECTC) network to provide technology information and technical assistance to law enforcement. The Center network provides a “quick response” capability to agencies that need specialized technical help. **In 1997 alone the NLECTC responded to 10,000 local requests for assistance.**

For example, the NLECTC, working with a Federal Emergency Management Agency funded Arson Strike Force, has turned around an arson problem in Utica, New York. The city had an arson rate double that of the national average. In a relatively short period of time **arson in Utica has dropped 50% with closure rates at 52% (versus the national average of 15%) and conviction rates at 100%.**

In Whittier, California the NLECTC used advanced forensic techniques not available anywhere else to help the police solve a serial child molestation case. In Oregon, the NLECTC, using advanced metallurgical science, assisted the police in solving a murder case. In Denver the NLECTC, using advanced ballistic impact testing procedures, helped solve the murder of a Denver police officer.

- Working with the DOD “surplus property” program, NIJ has helped state and local law enforcement get access to DOD surplus and excess equipment. **Since 1994, this has resulted in the donation of \$___ million worth of valuable equipment to local law enforcement agencies.**
- NIJ has funded the research, development, testing and evaluation of numerous technologies to help law enforcement. These range from less-than-lethal technologies, to weapons detection, see-through-walls systems, capture nets, a “smart” gun, a rapid DNA identification detection system, and more. There are numerous cases where new DNA techniques developed by NIJ have helped free people who were wrongly convicted. NIJ has also put on the streets the technologies that they are helping to develop. For example, police now have a better way to stop a fleeing car with less risk to officers or innocent bystanders because of an NIJ technology. **To date, more than ___ new technologies have been tested and put into the field.**
- NIJ has initiated several pilot training programs using advanced computer and simulation technologies to enhance training and to develop a means to deliver training to the user on site. **Thus far, ___ local law enforcement personnel have been trained using this advanced technology.**

IV. Bridging the Gaps.

The Clinton Administration has provided local law enforcement agencies with the human resources – 100,000 new cops – that they desperately needed. And the Vice President's technology initiative has demonstrated the extraordinary value that technology can bring to local law enforcement.

Now is the time to completely bridge the gap between local law enforcement agencies and the technology they need to effectively combat crime. There are five major gaps that must be bridged: faster response to local requests for technical assistance, a strengthened crime lab system, better training for officers, better use of modern communication capabilities, and expanded technology development and deployment efforts.

- *Faster Response:* The NIJ Center system was intended to be a pilot. Because of the demand for these services, the system is overextended and cannot provide the "quick response" assistance that is needed nationwide. The four regionally based centers in the network have to cover an average of between 10 and 15 states each, which is simply too much territory to cover with existing resources.
- *Crime Labs:* The "thin blue line" is considerably thicker due to the 100,000 cops initiative, but crime lab capabilities remain very thin. Well equipped and managed state and local crime labs are a critical element of a local agency's ability to solve crimes. However, while advances are being made in forensic technology, the nation's 350 crime labs often do not have the resources to purchase and apply these technologies. In many cases, they are still using technologies pioneered in the 1800s when 21st Century technologies are now available.
- *Training:* Local law enforcement officials have consistently identified increased training as their number one priority because they face situations that are much more challenging and complex than ever before. Yet the makeup of law enforcement makes it difficult for them to receive the kind of training they require. A 20-person office cannot afford to send its officers to a week's worth of training without compromising crime fighting capabilities, but states still require continuing certification of officers in new skills.
- *Communication:* The local law enforcement community's ability to fight crime would be significantly upgraded if they could communicate and exchange data in a seamless fashion. There are numerous cases where a lack of interoperability has led to the escape of suspects, including the murder of police officers.
- *Technology Development:* The need to develop, test and field new law enforcement tools remains as compelling as ever given the rapidly increasing technological capabilities of criminals. U.S. government national laboratories that produce advanced technologies and U.S. businesses that supply those technologies to local law enforcement agencies would benefit from a focused effort to develop and deploy crime fighting technologies to local agencies.

V. The Solution: A Comprehensive Technology & Training Initiative¹

Technology and training can clearly make a difference. NIJ's Utica project helped reduce serious arsons by 50%. The adoption of computerized mapping systems coupled with new management techniques has been credited with reducing serious crimes in New York City by 39%. Soft body armor has saved the lives of over 2,000 police officers.

The Federal government has an important role to play in local law enforcement by coordinating Federal resources to bridge the gaps that exist in technology and training. This new initiative builds on the success of the 100,000 cops program and the Vice President's technology initiative by systematically providing those police officers with the crime fighting tools and training they need to deal with 21st Century criminals. The elements of the initiative are:

1. A National Technology & Training Program

A focal point is needed within the Department of Justice to expand upon the Vice President's initiative. The establishment of a permanent Bureau of Law Enforcement Technology and Training Support (BLETTS) as a stand-alone organization within the Office of Justice Programs (OJP) is required. BLETTS will develop and field new technologies, provide "quick response" technical assistance to law enforcement, test and evaluate new technologies, and provide local law enforcement agencies with the information and training they need to use these new tools. BLETTS will be funded at a level of \$250 million a year.

Goal: Improve the crime fighting readiness of local law enforcement agencies by 25% by 2005 through advanced technologies and training.

2. Expanded Quick Response Centers

Establish 10 additional NLECTC Quick Response Centers to meet the technical assistance needs of law enforcement. These Centers will be supported by a consortium of Federal laboratories to ensure that the best forensic technologies are available to law enforcement officers. This consortium will in no way duplicate the work of the existing local and state crime lab system. It is intended that the consortium will provide forensic support, in coordination with local crime labs, only when the local lab does not have the equipment or technical skills to do the job. Funding for the Centers will come through the BLETTS budget.

Goal: Solve 10% more high technology crimes per year through expanded technical assistance.

¹ Note that these major initiatives will be announced as part of the announcement of a comprehensive program. The announcement of the major elements of the program (new Centers, Crime Lab Improvement etc) can be spread out over time. Moreover announcements of specific programs within the major elements can be announced during the intervening time frame.

3. 21st Century Crime Lab Initiative

BLETTS, in partnership with the FBI, will manage a \$250 million initiative to dramatically improve our nation's state and local crime labs that provide 95% of the forensics support to local law enforcement agencies. This program will be buttressed by the establishment of a Regional Forensic Support network of forensics experts from Federal national laboratories, universities and other research programs.

A crucial part of this initiative will be improved DNA testing. A tremendous backlog – 500,000 samples -- currently exists in testing DNA. The National Commission on the Future of DNA Evidence has strongly recommended rapid development of the DNA database. In Virginia alone, this database has already identified dozens of suspects in old, unsolved cases for which there were no leads. However, until this backlog can be addressed, the database cannot be fully effective and more crimes will be committed by suspects who would otherwise be identified after the first crime. This can be achieved within two years.

Goal: 25% more crimes solved by 2003 through improved forensics capabilities.

4. Advanced Technology Training Initiative

BLETTS will develop a partnership with the DOD Advanced Distributed Learning Initiative (ADL) and the National Guard to develop dual use training centers throughout the United States. These centers, to be located at National Guard Armories or other agreed upon sites, will provide local law enforcement agencies with access to interactive computer based training and advanced simulation training tools in a location closer to home. This will solve the problem of providing local officers with access to needed advanced training. This initiative will require \$250 million/year to train the nation's 700,000 local law enforcement officers.

Goal: Provide training programs to all local law enforcement agencies by 2003.

5. Moving Technology Into the Street

About 95% of a typical law enforcement agency's budget is dedicated to personnel. The scarce resources left over are spent on basic equipment such as cars, radios, and revolvers. There is little money available to purchase the new tools necessary to keep up with criminals. A new grant program administered by OJP and funded at \$250 million/year for five years dedicated solely to the purchase of high tech equipment by state and local law enforcement is required.

Goal: Provide modern crime fighting tools to 50% of the nation's local law enforcement agencies by 2005.

6. Enhanced Law Enforcement Communications

Communications provides the backbone that supports local law enforcement agencies' efforts to combat crime. But in most communities, radio systems supporting police, fire and emergency medical services are overwhelmed. Worse, current frequency allocations and technologies make it impossible for adjacent agencies to talk to each other. To help address this, the Administration has successfully freed up 24 MHz of new radio frequencies, but modernizing the public safety wireless infrastructure so it can take advantage of this new spectrum will be a massive undertaking. Therefore, BLETTS will use its base budget to support the following actions:

- The NLECTCs will provide agencies with technical and engineering support to address immediate short-term problems;
- The NLECTCs will provide planning support so communities may design the new infrastructure and develop workable transition plans;
- BLETTS will provide seed grants to begin building and demonstrating systems that can solve this problem.

Goal: Create model communication systems in 10 pilot communities by 2003.

7. Expanded Testing Program

BLETTS will expand their testing and evaluation program – including partnering with the Department of Defense Live Fire Test Office – so that the local law enforcement community is confident that what they are getting works as advertised under realistic conditions. This kind of testing program will enable law enforcement to make the best investment possible in new equipment and, more importantly, save lives. The importance of such a program is evident from the experience with soft body armor. Of the 307 models of body armor tested in 1997, only 124 – about 40% -- passed. The consequences of having officers putting their lives on the line wearing substandard body armor is unthinkable.

Goal: Test and deploy 200 new technologies by 2003.

Note: near term refers to 1-2 years
mid term refers to 2-3 years

1. There are a few that I don't have here.

- One that you might be particularly interested in is a computer based interactive training project that is ongoing in Mississippi. The idea is to deliver interactive training via the Internet and CD-ROM to remote locations. The company that is working with Mississippi has one Training series already developed that can be demonstrated (I am enclosing a demo CD-ROM on that). The Mississippi project is near term.
- There is also a judgmental use of force training tool using simulation technology that NIJ will be evaluating some time this year. What is interesting about it is that it is mobile and has a shoot back capability. This is a commercialized product. NIJ was not involved in its development, but will be involved in an evaluation (I've enclosed an article on it.)
- I believe there is also another hand held weapons detection system already in prototype stage. If I'm right it is in a more advanced stage than the one enclosed in this packet. I'll know more on that later this week
- There is a through-the-walls sensor/weapons detection technology that NIJ is testing now. This is a near term project. I will have something on that later this week.
- There is also a personal alarm monitor that automatically activates when an officer is distressed that NIJ is working on. This is near term.

I will have the others by the end of the week

2. The following is the status of enclosed projects – in the same order

Body Armor – Ready this year

Handheld weapons detection – prototype this year.

Electromagnetic weapons detection – ready

Information technology – operational

Flying plate disrupter – near term

Telemedicine demonstration project – operational

Bomb diagnostic tool – commercialized

Uncooled Thermal Imager- Infrared Sensor – near term

Mass spectrometry DNA typing – near term

Mobile Interoperability testbed – near term

Ring Airfoil – near term

CODIS backlog – near term

DNA microchip -mid term

Smart Gun – mid term

Facial recognition – mid term

Technology Tools – being commercialized

Title: Concealable Body Armor

Description: The National Institute of Justice (NIJ), in collaboration with the Defense Advanced Research Project Agency (DARPA), sponsored development of an advanced body armor system that could be worn inconspicuously under the uniform blouse of either a law officer or soldier, or under a coat and jacket. This concealable body armor (CBA) is unique in that it is designed to stop a rifle bullet at point blank range while also being concealable. CBA has hard titanium or ceramic-composite inserts over the heart and spine and "soft" body armor employing a ballistic fabric over the remainder of the torso. The inserts provide rifle protection. Their size and position are designed to preclude a fatal wound. The soft component of CBA protects against 9 mm high velocity handgun bullets. Testing by the Office of Law Enforcement Standards, at the National Institute of Standards and Technology, demonstrated that CBA with either type of insert stopped a rifle bullet at ~ 175 m range. More development by the US Army's Soldier Systems' Command resulted in a system that stops rifle bullets at point blank range.



Impetus: Violence, particularly violence involving firearms, has reached epidemic proportions in the United States. *The Sourcebook of Criminal Justice Statistics, 1996* reports that of all violent crimes across the United States, 29 percent involve use of a firearm. Firearms are involved in nearly 70 percent of all murders and non-negligent manslaughter, 40 percent of all robberies, and 23 percent of all aggravated assaults. The body armor in general use with law officers today only provides protection against pistol bullets.

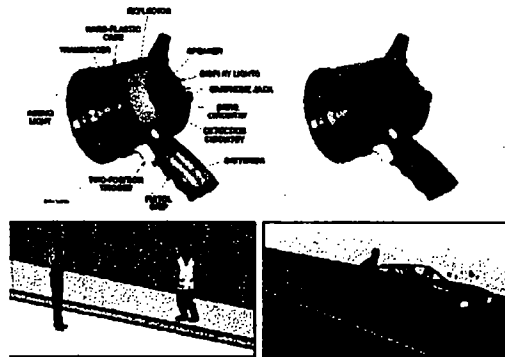
Impact: This effort led to development of a body armor system that offers the potential to significantly increase the safety of law enforcement personnel.

Status: This system was type classified (limited) by the U.S. Army and over 1,000 sets were purchased for the military. An additional 4 sets were purchased by the Secret Service for evaluation. The Army is carrying on the basic technology into its next generation of body armor. A principal design goal is to reduce the cost of this system.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group and was funded and managed through DARPA. Development was undertaken jointly by the U.S. Army Soldier Systems' Command and the U.S. Army Research Laboratory.

POC: Dr. Robert Rosenfeld

Title: Handheld Acoustic Device for Concealed Weapons Detection



Description: The National Institute of Justice (NIJ) is sponsoring JAYCOR to develop an inexpensive, handheld device to alert law officers to the potential presence of a weapon at a greater distance than the handheld metal detectors in use today, thus providing them a greater margin of safety. Another advantage of this device is that it will detect non-metallic as well as metallic weapons. This device works by emitting an inaudible acoustic pulse. The pulse is absorbed by soft objects, such as the human body. However, if it strikes hard objects under clothing, such as weapons carried next to the body, the pulse is reflected back alerting the officer to the potential presence of a weapon. This detector will be affordable for even smaller law enforcement agencies.

Impetus: Violence, particularly violence involving firearms, has reached epidemic proportions in the United States. According to the Bureau of Justice Statistics, from 1974 to 1993 the number of arrests for weapons increased by 55 percent and the number of violent offenses committed with a firearm increased by 78 percent. *The Sourcebook of Criminal Justice Statistics, 1996* reports that of all violent crimes across the United States, 29 percent involve use of a firearm. Firearms are involved in nearly 70 percent of all murders and non-negligent manslaughter, 40 percent of all robberies, and 23 percent of all aggravated assaults. Today law officers have no means of effectively detecting weapons concealed on individuals at a safe distance.

Impact: This effort will lead to the development of a device with the potential of significantly increasing the safety of law officers.

Status: A laboratory model has been demonstrated with positive results. It was able to detect a plastic knife concealed under a heavy sweatshirt at a distance of 7-feet. Two different working models have been developed and testing is being conducted. The working models were recently demonstrated at the California Border Alliance Group and received a positive reception from the law enforcement representatives that were there. Demonstrations of prototypes of this technology are expected in 1999.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. The US Air Force Research Laboratory, Information Directorate, Rome Research Site acts as the technical monitor for this effort.

POC: Irwin Smietan

Title: Electromagnetic Weapons Detection Portal

Description: The National Institute of Justice (NIJ) sponsored the Idaho National Engineering Laboratory (INEL) to develop an improved weapons detection portal employing fluxgate magnetometers. The magnetometers detect anomalies in the earth's magnetic field caused by magnetic material in objects carried by individuals. Most weapons contain such materials. On the other hand, objects such as keys and coins tend to be made of non-magnetic materials. This technology, because it will not alert on such innocuous objects, significantly reduces the number of false alarms compared to currently available devices that tend to detect all metal objects. Additionally, this technology can detect weapons with even a small metal content, such as that found in the small blades used by hobbyists.



Impetus: Violence, particularly violence involving firearms, has reached epidemic proportions in the United States. A very troubling aspect of this epidemic is the use of firearms by juveniles. Over the past decade, numerous studies have pointed to the possession of weapons by adolescents as an increasingly serious problem, particularly in urban areas. In a sample of Washington, D.C. minority, inner-city ninth and tenth graders, 11 percent had used a weapon to threaten someone; while a survey of high school students in Baltimore found that almost half of the males had carried a gun to school at least once. Detecting concealed weapons is a challenging problem. The walk-through devices (portals) used today, such as are found in courthouses, have high false alarm rates. They alert on any object with a high metal content, even on such innocuous items as keys and coins. They also have difficulty in detecting weapons with a small metal content.

Impact: This effort has resulted in development of a portal device offering significantly greater security for schools and other public buildings, such as courthouses.

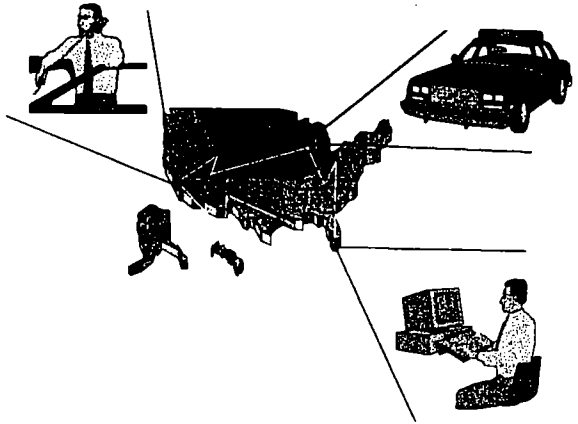
Status: The INEL portal is almost ready for commercialization. A prototype was installed in the Bannock County, Idaho, courthouse for operational evaluation.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. The US Air Force Research Laboratory, Information Directorate, Rome Research Site acts as the technical monitor for this effort.

POC: Irwin Smietan

Title: InfoTech Project

Description: The National Institute of Justice (NIJ) is sponsoring a project to develop and demonstrate information technologies providing scalable, secure information sharing across multiple jurisdictional boundaries. InfoTech offers a user-friendly interface that can be tailored to the needs of a particular user, but will retrieve data regardless of the design of the information sources. Privacy and information security is another important issue addressed by InfoTech. It is implemented through any of several layers of protection mechanisms. All security implemented has a key recovery mechanism that can be administered by each agency.



Impetus: There are roughly 17,000 law enforcement agencies in the United States, with differing procedures and protocols dealing with the sharing of information and differing information and communication systems. As a result, the sharing of data among jurisdictions is difficult. Standardizing procedures and protocols as well as information systems among a significant subset of these agencies would be extremely difficult and expensive.

Impact: InfoTech technologies enable the ready sharing of data among law enforcement agencies without incurring the enormous expense of replacing existing information systems with a new common system. InfoTech technologies also enable each jurisdiction to implement, control, and administer data security, according to its specific needs.

Status: Current participants in InfoTech are the Florida Department of Law Enforcement (FDLE) and the Sheriff's Offices of Monroe and Brevard Counties, Florida. The program utilizes the FDLE Criminal Justice Network (CJ-Net) as the backbone wired network for communications. As part of InfoTech, FLDE and NIJ are working together to provide Florida Department of Highway Safety and Motor Vehicle driver's license data and photos over CJ-Net. An initial operational capability is expected by January 1999. FY99 funding will enable expansion to other agencies and refinement and hardening of the technology. This will include working with the South Florida High Intensity Drug Trafficking Area (HIDTA) to leverage its efforts to establish a LE wide area network (WAN) in South Florida.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. The Space and Naval Warfare Systems Center, Charleston acts as its technical monitor.

POC: Dr. John Hoyt

Title: Flying Plate Disrupter



Description: The National Institute of Justice (NIJ) is sponsoring an effort to develop and demonstrate an approach to disrupting large explosive devices by using explosively formed slugs, or "flying plates." Derived from military technology developed to destroy heavily armored vehicles and naval vessels, this technology consists of a small plastic cylinder capped by a copper plate, and packed with a small explosive charge. When detonated, the cylinder deforms the plate into a slug and propels it into the explosive device, scattering the explosive material without causing it to detonate.

Impetus: Explosive devices are perhaps the terrorist's most often used weapon. Large explosive devices such as ammonium nitrate-fuel mixtures in 55-gallon drums are a particularly challenging problem. Once such a device is located, an effective means to neutralize it without moving it is vital to the safety of the public and to law enforcement and public safety personnel on the scene. The FBI has identified commercial dynamite as the most likely booster material used in such devices. Dynamite is also among the most sensitive of booster materials. This sensitivity makes the safe disruption of such devices difficult. In general, existing explosive disrupters impart high shear over a very small area, which will cause the detonation of sensitive explosive material.

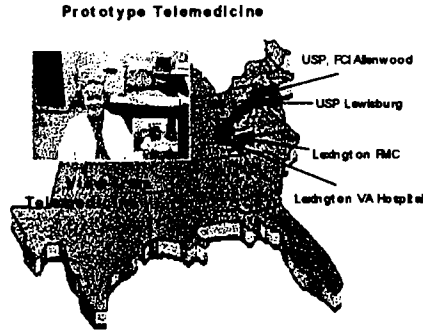
Impact: This effort will provide an inexpensive means of safely neutralizing such device in situ, increasing the safety of the public and law enforcement and other public safety personnel on the scene.

Status: Phase I of this effort, the proof-of-concept, was successfully completed. Phase II, currently underway, will conclude in a nationwide demonstration and evaluation of this technology with law enforcement agencies, which is expected to occur before the end of FY99.

DoD/DOJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. The Indian Head Division of the Naval Surface Warfare Center is developing this technology.

POC: Jerry Howell

Title: Telemedicine Demonstration



Description: The National Institute of Justice (NIJ) in collaboration with the Federal Bureau of Prisons (BoP) and the Department of Veterans Affairs, sponsored a demonstration project to evaluate the impact of telemedicine and telecommunications technologies for addressing the needs of prison healthcare.

Impetus: Healthcare costs for prisoners continue to rise. They represent a significant portion of the criminal justice budget for federal, state and local governments. Delivery of healthcare to prisoners is a demanding, expensive responsibility for prison systems. Additionally, the need to transport inmates out of a prison for medical services not available there, poses a threat to prison staff and to the local community.

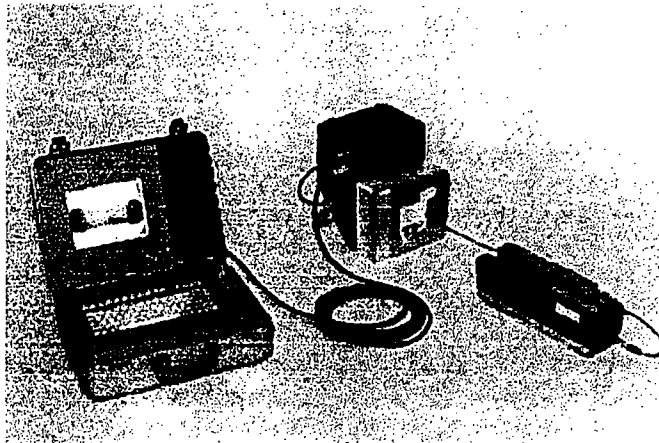
Impact: This project produced the first comprehensive assessment of the utility of telemedicine in a correctional environment. It also developed and demonstrated a state-of-the-art, turn-key telemedicine system, geared for inmate population needs and a model for development and implementation of telemedicine in other venues.

Status: A prototype telemedicine network has been in operation since September 1996, linking the Federal Medical Center (FMC) in Lexington, Ky., the United States Penitentiary (USP) in Allenwood, Pa., the USP in Lewisburg, Pa. and the Veterans' Affairs Medical Center in Lexington, KY. Funding provided by the BoP enables the expansion of this network to include the Medical Center in Springfield, Mo. In the course of this project, telemedicine was widely embraced by officials, medical staff and prisoners and came to play a major role in the delivery of healthcare services. This highly successful project established that substantial savings may be realized with the utilization of telemedicine technology. It found that the cost of the telemedicine system would be recovered in 15 months with a substantial monthly savings thereafter. In addition to cost savings, it was convincingly established that telemedicine offers improved access to specialty care and enhanced public safety through the reduction in the number prisoners transported outside the prison for medical care. As a consequence, NIJ is planning on exploring the application of telemedicine in jails in 1999.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. It was funded in part through the Defense Advanced Research Projects Agency.

POC: Dr. Peter Nacci

Title: X-Ray Diagnostic System for Explosive Devices



RTR-3 X-Ray System

Description: The National Institute of Justice (NIJ) is collaborating with the Technical Support Working Group (TSWG) and the Federal Bureau of Investigation in sponsoring a nationwide demonstration and assessment of an improved diagnostic systems for explosive devices. This technology, the RTR-3 was initially developed under TSWG auspices. It is a computer based, portable x-ray system that enables bomb technicians to rapidly examine an explosive device by displaying an x-ray image of the device on a computer screen, rather than having to wait for that image to be developed on film. The RTR-3 also enables them to transmit the x-ray image of a device, via modem, to remote experts for analysis.

Impetus: Explosive devices are perhaps the terrorist's most often used weapon. Once such a device is located, an effective means to disrupt it without moving it is vital to the safety of the public and to law enforcement and other public safety personnel on the scene. The safe disruption of such devices is greatly facilitated by being able to determine their construction. X-ray images are a preferred means of doing so. Using conventional x-ray technology, requiring the development of x-ray film, can be a cumbersome and time consuming process.

Impact: This effort will provide information on the performance of the RTR-3. This information will be used to improve future such systems, making them more effective and in so doing enhancing the safety of the public and law enforcement and other public safety personnel on the scene.

Status: Agreements are being developed with 24 state and local agencies, across the country, for participation in this demonstration, which is expected to begin by the end of 1998.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. The Indian Head Division of the Naval Surface Warfare Center and the Office of Special Technology are providing technical support to this project.

POC: Jerry Howell

Title: Deployment and Evaluation of Low-Cost Uncooled Thermal Imagers to Enhance Law Enforcement Operations

Description: Deploy inexpensive, handheld and vehicle mounted, infrared sensors to law enforcement agencies; evaluate how the sensors are utilized in typical operational scenarios; and develop an understanding of thermal imager use by law enforcement that can be used by other agencies to help in their decision to purchase and use infrared sensors.

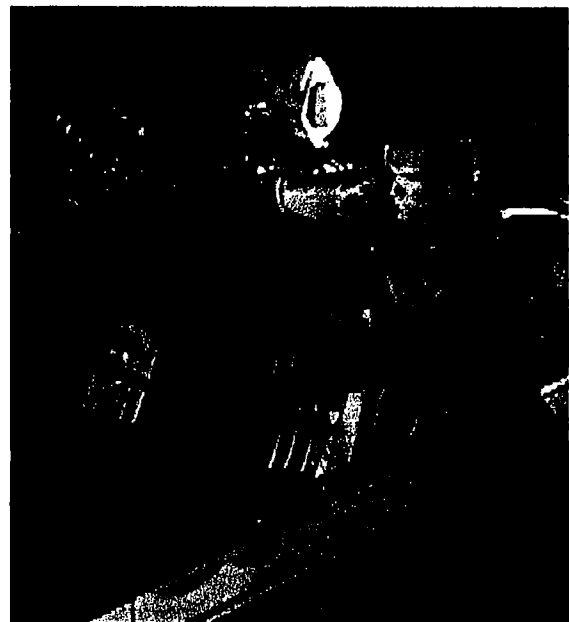
Impetus: Infrared sensors are not commonly used by law enforcement agencies. This project will establish a law enforcement-derived operational guide that will help other agencies determine whether or not to purchase and use infrared sensors within their department.

Impact: The product of this effort will help to educate law enforcement agencies on the use of infrared sensors and will help to facilitate the decision-making process to purchase and use infrared sensors within individual law enforcement agencies.

Status: Because of a significant DoD investment, the uncooled infrared sensors have become more affordable for military and law enforcement use. An operational guide will facilitate the use of infrared sensors in law enforcement agencies.

DoD/DoJ Relationship: The DoD has invested more than \$70M to develop a useful and affordable uncooled infrared sensor. As a result of Industry and Defense Dept commercialization efforts, a number of affordable law enforcement products are now available.

POC: Tom Coty



Title: Mass Spectrometry DNA Typing

Description: Mass spectrometry DNA typing has been shown to greatly reduce analysis time of DNA samples to the point where more than 1,000 samples can be tested in less than five minutes, and at substantially less cost than current techniques. This technique is highly automated and can be easily expanded to include other genetic markers as they are identified to be of forensic value in the future.



Robot for distributing DNA into Mass Spectrometry

Impetus: A need exists for faster and less expensive testing methodologies to process large numbers of samples for the convicted offender database (CODIS). While we currently have a backlog of at least a half million to a million samples awaiting DNA profiling for entry into the CODIS database, it is expected that between 1 to 2 million new convicted offenders will be added to the database annually as the investigative power of CODIS is realized.

Impact: The development of this technology will enable laboratories to reduce the CODIS backlog and maintain the in-flow of new convicted offender samples as they are collected. The CODIS database will generate a "hit" (i.e. identification) from crime scene evidence for every 1000 samples in the database to rapidly generate investigative leads, more solved crimes and more saved lives.

Status: This project has demonstrated high-throughput sample analysis capability for all 13 core genetic markers required by the forensic community for inclusion in the CODIS national database.

DoD/DoJ Relationship: None

POC: Lisa Forman, Ph.D.

Title: Mobile Interoperability Testbed

Description: NIJ has expanded the Advanced Law Enforcement Response Technology (ALERT) testbed initially developed by the Dept of Transportation's Federal Highway Administration. The program will develop and demonstrate a mobile information management system to control and integrate communications systems both in public safety vehicles across jurisdictions and throughout communications centers (dispatch).

Impetus: The technologies that have evolved and are currently used in law enforcement vehicles and communications centers to communicate with are continually expanding and rapidly filling the interior of the vehicles. These stovepipe approaches lead to an inability to communicate across jurisdictions.

Impact: A mobile interoperability configuration is needed in order to manage the cost and implementation of future technologies in the public safety arena.

Status: Initial prototypes have demonstrated the use of touch screen monitors that control various technologies, such as the radar, emergency lighting, sirens, radio communications, and video cameras.

DoD/DoJ Relationship: None

POC: Brenna Smith

Title: Less-Than-Lethal Incapacitation Technologies

Description: Less-than-lethal technologies provide options for law enforcement and corrections officers when confronted by violent or uncooperative suspects or prisoners. There is no single less-than-lethal weapon for all scenarios. Project areas currently under development or evaluation include: chemical (pepper spray), electrical (stun devices), kinetic energy blunt impact projectiles (ring air foil projectiles), nets (baton or projectile launched), and light (laser dazzler).

Impetus: Minimize the risk of death and injury to law enforcement officers, suspects, prisoners, and the general public and reduce civil and criminal liability suits against law enforcement and corrections agencies.

Impact: Less-than-Lethal technologies have saved the lives of suspects and prisoners, law enforcement and corrections officers, and the general public.

Status:

The ring airfoil projectile (RAP). The RAP is a blunt impact projectile that is nonlethal at the muzzle. It was developed by the military and is now being modified for law enforcement applications. These modifications include the development of a new launch device and the dispersal of pepper powder on impact. A prototype launcher will be available in March 1999, and a field trial will be conducted in FY99.

Pepper Spray. NIJ has conducted and is currently conducting various evaluations of the health effects and effectiveness of pepper spray. Pepper spray effectiveness studies have been published and NIJ should have in-depth information of the health effects of pepper spray by the end of FY99.

Electric stun projectile. The electric stun projectile uses taser and stun gun technology. It gives an officer a 30ft standoff from which to incapacitate a suspect or prisoner. NIJ is funding a human effects advisory panel to analyze the health effects of the electric stun projectile. If the analysis results are favorable, NIJ will fund a field trial.

Nets. NIJ has funded the modification of two types of nets to enhance their safety. One is a net that can be launched from 40 feet using a grenade launcher. The other is a net that can be launched from three to ten feet via a baton. The projectile-launched net is a commercial product and a prototype baton-launched net will be demonstrated in November 1998.

Laser Dazzler. The laser dazzler is a green laser light that flashes to disorient the suspect or prisoner. It was developed through the Joint Program Steering Group, and NIJ is funding its safety certification at Phillips Laboratory. After safety certification, a field trial will be conducted.

DoD/DoJ Relationship: The ring airfoil projectile is a DoD-developed device that is currently being upgraded to include pepper spray. Other less-than-lethal technologies are either spinoffs of DoD projects or are being developed in conjunction with the DoD under a recently signed Memorandum of Understanding between NIJ and DoD's Joint Nonlethal Weapons Directorate.

POC: Ray Downs, Ph.D., and Sandy Newett

Title: National Commission on the Future of DNA Evidence Follow-up & CODIS Database Backlog Reduction Program

Description: This is a two year program to eliminate the estimated backlog of half million to a million convicted offender samples for entry into the Combined DNA Index System (CODIS) national database; develop the State and local crime laboratory infrastructure necessary to allow maintenance of the database; consider safeguards with regard to privacy issues; and expand the number of types of convicted felon samples (e.g., burglary) collected for the database.

Impetus: The enormous backlog of convicted offender samples awaiting analysis and entry into CODIS detracts from the utility and effectiveness of the national database. Every day that these samples remain unanalyzed is a day that a crime could be solved by a database "hit," if the offender had been convicted previously.

Impact: This funding will, within two years, enable State and local jurisdictions to eliminate their backlogs, develop convicted offender databases and also to keep up with the numbers of new offender samples submitted. By implementing methods such as mass spectrometry and microchip technology and other high through-put technologies in the labs, forensic DNA samples that now require a day to process for DNA identification will take less than five minutes. A *current* and *comprehensive* database will provide the potential for a greater number of CODIS "hits" and, subsequently, more solved crimes.

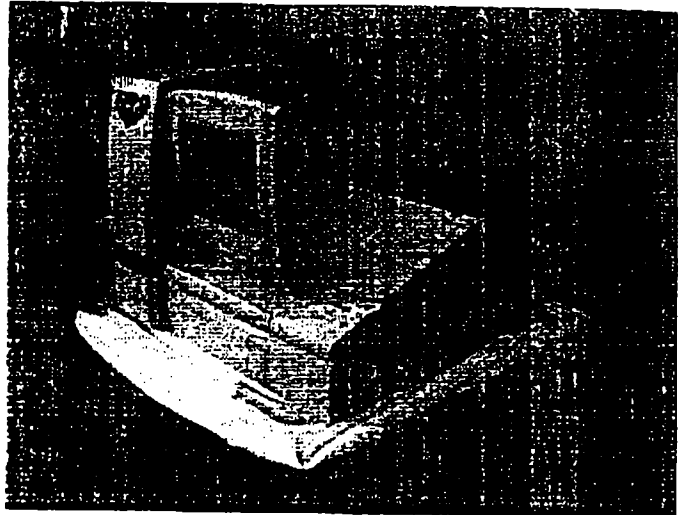
Status: NIJ has requested \$10 million for Fiscal Year 2000 to fund this initiative.

DoD/DOJ Relationship: None.

POC: Lisa Forman, Ph.D.

Title: DNA microchip technology

Description: Electronic (Nanogen) and capillary electrophoresis (Whitehead Institute) microchips can perform DNA testing rapidly and accurately at a low cost. These technologies are amenable to miniaturization, will allow additional genetic markers to be incorporated into the systems, will enable DNA analysis to be performed at the crime scene, and will allow for preliminary results to be obtained in minutes.



Nanogen Prototype Electronic Microchip DNA Testing

Imperus: The need to input suspect DNA profiles into the CODIS database as quickly as possible for identification in order to better identify suspects and exonerate innocent people.

Impact: This development allows for rapid exonerations of uninvolved people and quick identification of suspects which will be identified and apprehended faster, hence closing more cases.

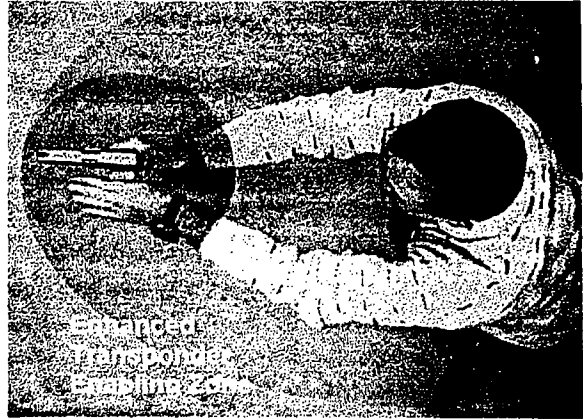
Status: The first generation electronic microchip analyzes already extracted DNA samples in less than 30 minutes for four (of thirteen) genetic markers. The final prototype electronic microchip will extract the DNA from evidence samples, will perform DNA testing on the extracted DNA, and produce a DNA profile in less than an hour. The miniaturized capillary electrophoresis microchip can type four CODIS markers in two minutes at a significant decrease in cost. Phase one allows for the addition of other CODIS markers and will begin the development of a fully automated system.

DoD/DoJ Relationship: DoD has invested funds in the development of the electronic microchip system.

POC: Lisa Forman, Ph.D.

Title: Smart Gun

Description: NIJ has funded an effort by Colt Manufacturing to enhance its second generation prototype Smart Gun: a weapon that will only fire for a recognized user. This weapon employs radio frequency technology. When energized, the gun emits a radio signal, which is received by a small transponder worn by the authorized user and returns a coded radio signal. Upon receipt of the signal, a locking pin is removed from the trigger mechanism enabling the weapon to fire.



Impetus: A review of the past 10 years of the FBI's report on officers killed and assaulted shows that 1 in 6 officers killed annually are victims of their own weapons in the hands of an assailant.

Impact: A Smart Gun would greatly reduce the number of officer deaths due to the officer being disarmed and shot with his or her own weapon. This technology application could be used to allow public safety officials to carry weapons in situations in which they have been typically prohibited from doing so, i.e. jails and correctional facilities.

Status: NIJ, working with the Office of Law Enforcement Standards, the National Law Enforcement and Corrections Technology Center, and two Metropolitan, DC, police academies will develop and conduct an extensive field evaluation program of the Smart Gun and its technology during FY99.

DoD/DoJ Relationship: None

POC: Wendy Howe

Title: Facial Recognition Technology

Description: To develop and integrate facial recognition software with intelligent information search technologies to measurably improve law enforcement investigation capabilities for identifying missing and exploited children and fighting child exploitation on the Internet.

Impetus: With the growth of the Internet there has been an explosion of child exploitation and pornography that law enforcement has not been able to deal with effectively.

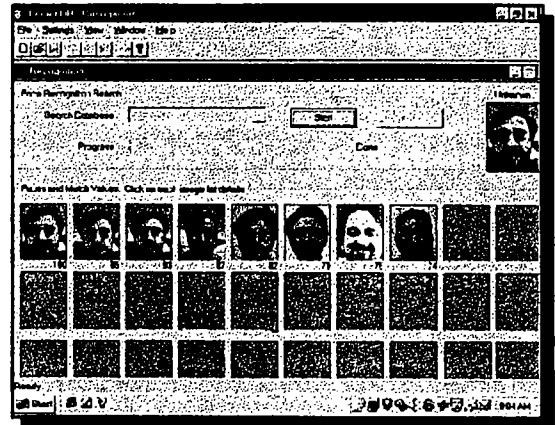
Impact: If successfully developed, this product will efficiently locate, extract, and identify faces from still and video pornographic images and will then search very large databases of missing children and criminals for image matches. This will effectively multiply the productivity of law enforcement engaged in the fight against child exploitation.

Status: The intelligent search modules are in various stages of development and integration with a still photo facial recognition capability. Efforts associated with developing a video facial recognition search capability are just getting underway.

DoD/DoJ Relationship: The DoD has funded the development of still photo facial recognition and a standardized method for evaluating still photo facial recognition. DoJ is currently funding activities that will help standardize evaluation methods of video facial recognition. There may be a joint funding activity in the near future with DoD to establish the standard for video facial recognition evaluation.

POC: Tom Coty

Visionic's Facial Recognition System



Title: Technology Tools for Law Enforcement and Correction Officers Training

Description: This program is developing technologies that will augment the training of law enforcement and corrections officers. By using Computer Based Training (CBT), Video Based Training, Virtual Reality, and Advanced Distance Learning, officers can be trained efficiently, inexpensively, and safely. Each of these technologies will allow learning through realistic operational scenarios at a lower cost and in safe environments.

Impetus: The time and funding to train and retrain law and corrections officers is not always available. Yet, training is of paramount importance to ensure the officers are effective and minimize liability actions.

Impact: The use of technology tools to enhance officer training will allow affordable, safe, and timely training of officers.

Status: NIJ is currently developing an updated version of a generic Bomb Threat Training Simulator on CD-ROM for use by law enforcement and security first responders to a bomb-threat scene. An alpha version of the Weapons Team Engagement Trainer (WTET), a video based team engagement shoot/no-shoot trainer, is currently being used by law enforcement agencies in Orlando, FL. Beta versions of the WTET will be installed in a Sheriff's Department on the West Coast and at a Naval Training site in Orlando, FL. Both sites will be used to train military and law enforcement officials.

DoD/DoJ Relationship: NIJ is currently working with the Naval Air Warfare Center Training Systems Division in Orlando, FL to develop and implement the Weapons Team Engagement Trainer, and assess and develop other technology tools for training.

POC: Sandy Newett and Kevin Jackson

Title: Teleforensic Program

Description: The teleforensic program will evaluate and develop communications and sensor technologies to provide forensic experts with remote access to crime scenes.

Impetus: Because crime scene and forensic experts can not visit all crime scenes in a timely and cost effective manner, remote sensors and communications to crime scenes will enhance the investigations of crimes.

Impact: More crime scene investigations, especially those requiring highly trained experts, will have the benefit of forensic and crime scene experts.

Status: Initial agreements between NIJ, the US Army, and NASA have been signed to demonstrate some of the currently available technologies in mock crime scenes. Crime scene investigators will assess the utility of the technologies and recommend further evaluations and development.

DoD/DoJ Relationship: The demonstration program is being coordinated with the US Army's Medical and Research Command at Ft. Dietrick, MD.

POC: Lisa Forman, Ph.D.

SW
MEMORANDUM

TO: Tom Freedman
FROM: Bill Valdez
DATE: November 12, 1998
SUBJECT: Crimetech

Attached is a *draft* proposal. Please keep a close hold since I haven't shown it to agency folks yet, although I think most will be happy with it. I've also included a list of technologies that are being developed that could be announced as part of this initiative.

As next steps, I want to hold an interagency meeting later this month followed by a workshop in December that brings local law enforcement folks together with the agency folks to achieve buy-in. Let me know if you think we're on the right track....

bill

BR -
I passed
this along
to Jose.
I think
it looks
good.
Tom

Tom -
Cool toys!
-BR

Executive Summary:
Partnership for Advanced Crime Enforcement
Draft: November 12, 1998

Overview: President Clinton's 100,000 cops program and the Vice President's 1994 crime technology initiative have laid the foundation for a comprehensive Partnership for Advanced Crime Enforcement (PACE). This new initiative would bring together pilot initiatives underway at many federal agencies (Energy, FBI, DOJ, DoD, etc.) and require a \$1 billion investment per year for the first five years.

Basic Elements: PACE would involve five major elements:

1. Expanding the technology and training program managed by DOJ's National Institutes of Justice (\$250 million). The current pilot technical assistance and technology development program (four centers, \$35 million budget) would be expanded nationally to 14 centers.
2. Modernizing the nation's 350 state and local crime labs that perform 95% of the nation's forensics work. This would require an investment of \$250 million and is supported by S-2022, an authorization passed by the most recent Congress.
3. Training the nation's 700,000 local cops and sheriffs in modern crime fighting techniques and technologies. Training is the number one priority of local law enforcement agencies, but they don't have the budget or infrastructure. An annual \$250 million initiative, building on DoD and the National Guard's infrastructure training system, would provide the needed training.
4. Modernizing the communications system used by local agencies. The current system is fragmented and results in frequent failures to communicate between agencies. Funding would be included in NIJ's \$250 million base.
5. Testing and deploying new technologies. Local law enforcement agencies can't afford the high tech crime fighting tools they need. A \$250 million/year grant program dedicated to high technology acquisitions is needed.

Goals: Consensus is needed to develop goals for PACE, but the goals would be similar to the following:

- Improve crime fighting readiness by 25% through advanced technologies and training.
- Solve 10% more high tech crimes per year through expanded technical assistance.
- Solve 25% more crimes by 2003 through improved forensics capabilities.
- Provide training to all 700,000 cops and sheriffs by 2003.
- Provide modern crime fighting tools to 50% local law enforcement agencies by 2005.
- Create model communication systems in 10 pilot communities by 2003.
- Test and deploy 200 new technologies by 2003.

A PARTNERSHIP FOR ADVANCED CRIME ENFORCEMENT
DRAFT DISCUSSION PAPER
November 12, 1998

I. Overview: Current Status of U.S. Local & State Law Enforcement.

U.S. businesses and families are protected against crime by 17,360 state and local law enforcement agencies that employ approximately 700,000 officers. More than 90% of those agencies have 24 or fewer sworn officers and 50% have 12 or fewer officers. Yet state and local law enforcement agencies are responsible for handling 95% of the crimes that people care about – muggings, robberies, burglaries, homicides, etc.

Americans support this decentralized system of law enforcement because they believe it allows local control and oversight -- their police and sheriff departments are responsible to them, not to some faraway authority. Yet, it is this very decentralization that has made it difficult for local law enforcement to use advanced technologies to fight crime.

The local law enforcement community simply does not have the resources or ability to develop and test the new technological tools that they need. This comes at a time when the nature of their job is becoming increasingly complex and dangerous because criminals have access to more advanced technology than the police.

II. The Clinton Administration's Commitments to Local Law Enforcement

In 1994, the Clinton Administration developed a program to help fight crime by putting 100,000 new police officers on the street. This significantly strengthened the "thin blue line" and enabled communities to commit extra police resources in areas that previously had been neglected, for example community-based policing.

The Administration also recognized that law enforcement was not taking advantage of the billions of dollars of investment that our nation had made in the development of advanced technologies. To meet this technology shortfall, on April 20, 1994, Vice President Al Gore oversaw the signing of an agreement between the Departments of Justice and Defense that initiated a five-year pilot program designed to increase the capacity of state and local law enforcement to fight crime through the application of technology. The Vice President said at the time:

"We are fully committed to the advancement of technology for law enforcement. It is time. The American people are ready to see this happen.....It is high time that we put the most advanced technologies and the best new approaches at the disposal of police officers and other law enforcement officers throughout the country... This is part of an all out assault on crime. This Administration is committed heart and soul to the war against crime and violence. What we have seen today is just the beginning. Our Administration is committed to doing everything possible, not just to developing new technology, not just to get these new tools to the officers where they do the most good, but to back up these officers in every way we possibly can."

III. The Technology Pilot Program in Action: A Major Success Story

By all accounts the Vice President's technology pilot program has been a huge success. The pilot is run by the Department of Justice's National Institute of Justice (NIJ). With the Administration's leadership and Congressional support, the NIJ has accomplished much – ranging from “low tech” to “high tech” - in four short years. For example:

- Through partnerships with existing federal technology organizations, NIJ has established the National Law Enforcement and Corrections Technology Center (NLECTC) network to provide technology information and technical assistance to law enforcement. The Center network provides a “quick response” capability to agencies that need specialized technical help. **In 1997 alone the NLECTC responded to 10,000 local requests for assistance.**

For example, the NLECTC, working with a Federal Emergency Management Agency funded Arson Strike Force, has turned around an arson problem in Utica, New York. The city had an arson rate double that of the national average. In a relatively short period of time **arson in Utica has dropped 50% with closure rates at 52% (versus the national average of 15%) and conviction rates at 100%.**

In Whittier, California the NLECTC used advanced forensic techniques not available anywhere else to help the police solve a serial child molestation case. In Oregon, the NLECTC, using advanced metallurgical science, assisted the police in solving a murder case. In Denver the NLECTC, using advanced ballistic impact testing procedures, helped solve the murder of a Denver police officer.

- Working with the DOD “surplus property” program, NIJ has helped state and local law enforcement get access to DOD surplus and excess equipment. **Since 1994, this has resulted in the donation of \$___ million worth of valuable equipment to local law enforcement agencies.**
- NIJ has funded the research, development, testing and evaluation of numerous technologies to help law enforcement. These range from less-than-lethal technologies, to weapons detection, see-through-walls systems, capture nets, a “smart” gun, a rapid DNA identification detection system, and more. There are numerous cases where new DNA techniques developed by NIJ have helped free people who were wrongly convicted. NIJ has also put on the streets the technologies that they are helping to develop. For example, police now have a better way to stop a fleeing car with less risk to officers or innocent bystanders because of an NIJ technology. **To date, more than ___ new technologies have been tested and put into the field.**
- NIJ has initiated several pilot training programs using advanced computer and simulation technologies to enhance training and to develop a means to deliver training to the user on site. **Thus far, ___ local law enforcement personnel have been trained using this advanced technology.**

IV. Bridging the Gaps.

The Clinton Administration has provided local law enforcement agencies with the human resources – 100,000 new cops – that they desperately needed. And the Vice President's technology initiative has demonstrated the extraordinary value that technology can bring to local law enforcement.

Now is the time to completely bridge the gap between local law enforcement agencies and the technology they need to effectively combat crime. There are five major gaps that must be bridged: faster response to local requests for technical assistance, a strengthened crime lab system, better training for officers, better use of modern communication capabilities, and expanded technology development and deployment efforts.

- *Faster Response:* The NIJ Center system was intended to be a pilot. Because of the demand for these services, the system is overextended and cannot provide the "quick response" assistance that is needed nationwide. The four regionally based centers in the network have to cover an average of between 10 and 15 states each, which is simply too much territory to cover with existing resources.
- *Crime Labs:* The "thin blue line" is considerably thicker due to the 100,000 cops initiative, but crime lab capabilities remain very thin. Well equipped and managed state and local crime labs are a critical element of a local agency's ability to solve crimes. However, while advances are being made in forensic technology, the nation's 350 crime labs often do not have the resources to purchase and apply these technologies. In many cases, they are still using technologies pioneered in the 1800s when 21st Century technologies are now available.
- *Training:* Local law enforcement officials have consistently identified increased training as their number one priority because they face situations that are much more challenging and complex than ever before. Yet the makeup of law enforcement makes it difficult for them to receive the kind of training they require. A 20-person office cannot afford to send its officers to a week's worth of training without compromising crime fighting capabilities, but states still require continuing certification of officers in new skills.
- *Communication:* The local law enforcement community's ability to fight crime would be significantly upgraded if they could communicate and exchange data in a seamless fashion. There are numerous cases where a lack of interoperability has led to the escape of suspects, including the murder of police officers.
- *Technology Development:* The need to develop, test and field new law enforcement tools remains as compelling as ever given the rapidly increasing technological capabilities of criminals. U.S. government national laboratories that produce advanced technologies and U.S. businesses that supply those technologies to local law enforcement agencies would benefit from a focused effort to develop and deploy crime fighting technologies to local agencies.

V. The Solution: A Comprehensive Technology & Training Initiative¹

Technology and training can clearly make a difference. NIJ's Utica project helped reduce serious arsons by 50%. The adoption of computerized mapping systems coupled with new management techniques has been credited with reducing serious crimes in New York City by 39%. Soft body armor has saved the lives of over 2,000 police officers.

The Federal government has an important role to play in local law enforcement by coordinating Federal resources to bridge the gaps that exist in technology and training. This new initiative builds on the success of the 100,000 cops program and the Vice President's technology initiative by systematically providing those police officers with the crime fighting tools and training they need to deal with 21st Century criminals. The elements of the initiative are:

1. A National Technology & Training Program

A focal point is needed within the Department of Justice to expand upon the Vice President's initiative. The establishment of a permanent Bureau of Law Enforcement Technology and Training Support (BLETTS) as a stand-alone organization within the Office of Justice Programs (OJP) is required. BLETTS will develop and field new technologies, provide "quick response" technical assistance to law enforcement, test and evaluate new technologies, and provide local law enforcement agencies with the information and training they need to use these new tools. BLETTS will be funded at a level of \$250 million a year.

Goal: Improve the crime fighting readiness of local law enforcement agencies by 25% by 2005 through advanced technologies and training.

2. Expanded Quick Response Centers

Establish 10 additional NLECTC Quick Response Centers to meet the technical assistance needs of law enforcement. These Centers will be supported by a consortium of Federal laboratories to ensure that the best forensic technologies are available to law enforcement officers. This consortium will in no way duplicate the work of the existing local and state crime lab system. It is intended that the consortium will provide forensic support, in coordination with local crime labs, only when the local lab does not have the equipment or technical skills to do the job. Funding for the Centers will come through the BLETTS budget.

Goal: Solve 10% more high technology crimes per year through expanded technical assistance.

¹ Note that these major initiatives will be announced as part of the announcement of a comprehensive program. The announcement of the major elements of the program (new Centers, Crime Lab Improvement etc) can be spread out over time. Moreover announcements of specific programs within the major elements can be announced during the intervening time frame.

3. 21st Century Crime Lab Initiative

BLETTS, in partnership with the FBI, will manage a \$250 million initiative to dramatically improve our nation's state and local crime labs that provide 95% of the forensics support to local law enforcement agencies. This program will be buttressed by the establishment of a Regional Forensic Support network of forensics experts from Federal national laboratories, universities and other research programs.

A crucial part of this initiative will be improved DNA testing. A tremendous backlog – 500,000 samples – currently exists in testing DNA. The National Commission on the Future of DNA Evidence has strongly recommended rapid development of the DNA database. In Virginia alone, this database has already identified dozens of suspects in old, unsolved cases for which there were no leads. However, until this backlog can be addressed, the database cannot be fully effective and more crimes will be committed by suspects who would otherwise be identified after the first crime. This can be achieved within two years.

Goal: 25% more crimes solved by 2003 through improved forensics capabilities.

4. Advanced Technology Training Initiative

BLETTS will develop a partnership with the DOD Advanced Distributed Learning Initiative (ADL) and the National Guard to develop dual use training centers throughout the United States. These centers, to be located at National Guard Armories or other agreed upon sites, will provide local law enforcement agencies with access to interactive computer based training and advanced simulation training tools in a location closer to home. This will solve the problem of providing local officers with access to needed advanced training. This initiative will require \$250 million/year to train the nation's 700,000 local law enforcement officers.

Goal: Provide training programs to all local law enforcement agencies by 2003.

5. Moving Technology Into the Street

About 95% of a typical law enforcement agency's budget is dedicated to personnel. The scarce resources left over are spent on basic equipment such as cars, radios, and revolvers. There is little money available to purchase the new tools necessary to keep up with criminals. A new grant program administered by OJP and funded at \$250 million/year for five years dedicated solely to the purchase of high tech equipment by state and local law enforcement is required.

Goal: Provide modern crime fighting tools to 50% of the nation's local law enforcement agencies by 2005.

6. Enhanced Law Enforcement Communications

Communications provides the backbone that supports local law enforcement agencies' efforts to combat crime. But in most communities, radio systems supporting police, fire and emergency medical services are overwhelmed. Worse, current frequency allocations and technologies make it impossible for adjacent agencies to talk to each other. To help address this, the Administration has successfully freed up 24 MHz of new radio frequencies, but modernizing the public safety wireless infrastructure so it can take advantage of this new spectrum will be a massive undertaking. Therefore, BLETTTS will use its base budget to support the following actions:

- The NLECTCs will provide agencies with technical and engineering support to address immediate short-term problems;
- The NLECTCs will provide planning support so communities may design the new infrastructure and develop workable transition plans;
- BLETTTS will provide seed grants to begin building and demonstrating systems that can solve this problem.

Goal: Create model communication systems in 10 pilot communities by 2003.

7. Expanded Testing Program

BLETTTS will expand their testing and evaluation program – including partnering with the Department of Defense Live Fire Test Office – so that the local law enforcement community is confident that what they are getting works as advertised under realistic conditions. This kind of testing program will enable law enforcement to make the best investment possible in new equipment and, more importantly, save lives. The importance of such a program is evident from the experience with soft body armor. Of the 307 models of body armor tested in 1997, only 124 – about 40% -- passed. The consequences of having officers putting their lives on the line wearing substandard body armor is unthinkable.

Goal: Test and deploy 200 new technologies by 2003.

Note: near term refers to 1-2 years
mid term refers to 2-3 years

1. There are a few that I don't have here.

- One that you might be particularly interested in is a computer based interactive training project that is ongoing in Mississippi. The idea is to deliver interactive training via the Internet and CD-ROM to remote locations. The company that is working with Mississippi has one Training series already developed that can be demonstrated (I am enclosing a demo CD-ROM on that). The Mississippi project is near term.
- There is also a judgmental use of force training tool using simulation technology that NIJ will be evaluating some time this year. What is interesting about it is that it is mobile and has a shoot back capability. This is a commercialized product. NIJ was not involved in its development, but will be involved in an evaluation (I've enclosed an article on it.)
- I believe there is also another hand held weapons detection system already in prototype stage. If I'm right it is in a more advanced stage than the one enclosed in this packet. I'll know more on that later this week
- There is a through-the-walls sensor/weapons detection technology that NIJ is testing now. This is a near term project. I will have something on that later this week.
- There is also a personal alarm monitor that automatically activates when an officer is distressed that NIJ is working on. This is near term.

I will have the others by the end of the week

2. The following is the status of enclosed projects – in the same order

Body Armor – Ready this year

Handheld weapons detection – prototype this year.

Electromagnetic weapons detection – ready

Information technology – operational

Flying plate disrupter – near term

Telemedicine demonstration project – operational

Bomb diagnostic tool – commercialized

Uncooled Thermal Imager- Infrared Sensor – near term

Mass spectrometry DNA typing – near term

Mobile Interoperability testbed – near term

Ring Airfoil – near term

CODIS backlog – near term

DNA microchip – mid term

Smart Gun – mid term

Facial recognition – mid term

Technology Tools – being commercialized

Title: Concealable Body Armor

Description: The National Institute of Justice (NIJ), in collaboration with the Defense Advanced Research Project Agency (DARPA), sponsored development of an advanced body armor system that could be worn inconspicuously under the uniform blouse of either a law officer or soldier, or under a coat and jacket. This concealable body armor (CBA) is unique in that it is designed to stop a rifle bullet at point blank range while also being concealable. CBA has hard titanium or ceramic-composite inserts over the heart and spine and "soft" body armor employing a ballistic fabric over the remainder of the torso. The inserts provide rifle protection. Their size and position are designed to preclude a fatal wound. The soft component of CBA protects against 9 mm high velocity handgun bullets. Testing by the Office of Law Enforcement Standards, at the National Institute of Standards and Technology, demonstrated that CBA with either type of insert stopped a rifle bullet at ~ 175 m range. More development by the US Army's Soldier Systems' Command resulted in a system that stops rifle bullets at point blank range.



Impetus: Violence, particularly violence involving firearms, has reached epidemic proportions in the United States. *The Sourcebook of Criminal Justice Statistics, 1996* reports that of all violent crimes across the United States, 29 percent involve use of a firearm. Firearms are involved in nearly 70 percent of all murders and non-negligent manslaughter, 40 percent of all robberies, and 23 percent of all aggravated assaults. The body armor in general use with law officers today only provides protection against pistol bullets.

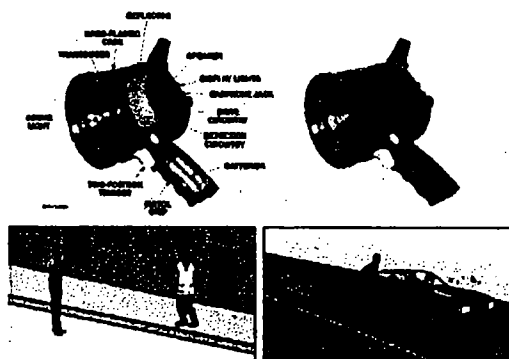
Impact: This effort led to development of a body armor system that offers the potential to significantly increase the safety of law enforcement personnel.

Status: This system was type classified (limited) by the U.S. Army and over 1,000 sets were purchased for the military. An additional 4 sets were purchased by the Secret Service for evaluation. The Army is carrying on the basic technology into its next generation of body armor. A principal design goal is to reduce the cost of this system.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group and was funded and managed through DARPA. Development was undertaken jointly by the U.S. Army Soldier Systems' Command and the U.S. Army Research Laboratory.

POC: Dr. Robert Rosenfeld

Title: Handheld Acoustic Device for Concealed Weapons Detection



Description: The National Institute of Justice (NIJ) is sponsoring JAYCOR to develop an inexpensive, handheld device to alert law officers to the potential presence of a weapon at a greater distance than the handheld metal detectors in use today, thus providing them a greater margin of safety. Another advantage of this device is that it will detect non-metallic as well as metallic weapons. This device works by emitting an inaudible acoustic pulse. The pulse is absorbed by soft objects, such as the human body. However, if it strikes hard objects under clothing, such as weapons carried next to the body, the pulse is reflected back alerting the officer to the potential presence of a weapon. This detector will be affordable for even smaller law enforcement agencies.

Impetus: Violence, particularly violence involving firearms, has reached epidemic proportions in the United States. According to the Bureau of Justice Statistics, from 1974 to 1993 the number of arrests for weapons increased by 55 percent and the number of violent offenses committed with a firearm increased by 78 percent. *The Sourcebook of Criminal Justice Statistics, 1996* reports that of all violent crimes across the United States, 29 percent involve use of a firearm. Firearms are involved in nearly 70 percent of all murders and non-negligent manslaughter, 40 percent of all robberies, and 23 percent of all aggravated assaults. Today law officers have no means of effectively detecting weapons concealed on individuals at a safe distance.

Impact: This effort will lead to the development of a device with the potential of significantly increasing the safety of law officers.

Status: A laboratory model has been demonstrated with positive results. It was able to detect a plastic knife concealed under a heavy sweatshirt at a distance of 7-feet. Two different working models have been developed and testing is being conducted. The working models were recently demonstrated at the California Border Alliance Group and received a positive reception from the law enforcement representatives that were there. Demonstrations of prototypes of this technology are expected in 1999.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. The US Air Force Research Laboratory, Information Directorate, Rome Research Site acts as the technical monitor for this effort.

POC: Irwin Smietan

Title: Electromagnetic Weapons Detection Portal

Description: The National Institute of Justice (NIJ) sponsored the Idaho National Engineering Laboratory (INEL) to develop an improved weapons detection portal employing fluxgate magnetometers. The magnetometers detect anomalies in the earth's magnetic field caused by magnetic material in objects carried by individuals. Most weapons contain such materials. On the other hand, objects such as keys and coins tend to be made of non-magnetic materials. This technology, because it will not alert on such innocuous objects, significantly reduces the number of false alarms compared to currently available devices that tend to detect all metal objects. Additionally, this technology can detect weapons with even a small metal content, such as that found in the small blades used by hobbyists.



Impetus: Violence, particularly violence involving firearms, has reached epidemic proportions in the United States. A very troubling aspect of this epidemic is the use of firearms by juveniles. Over the past decade, numerous studies have pointed to the possession of weapons by adolescents as an increasingly serious problem, particularly in urban areas. In a sample of Washington, D.C. minority, inner-city ninth and tenth graders, 11 percent had used a weapon to threaten someone; while a survey of high school students in Baltimore found that almost half of the males had carried a gun to school at least once. Detecting concealed weapons is a challenging problem. The walk-through devices (portals) used today, such as are found in courthouses, have high false alarm rates. They alert on any object with a high metal content, even on such innocuous items as keys and coins. They also have difficulty in detecting weapons with a small metal content.

Impact: This effort has resulted in development of a portal device offering significantly greater security for schools and other public buildings, such as courthouses.

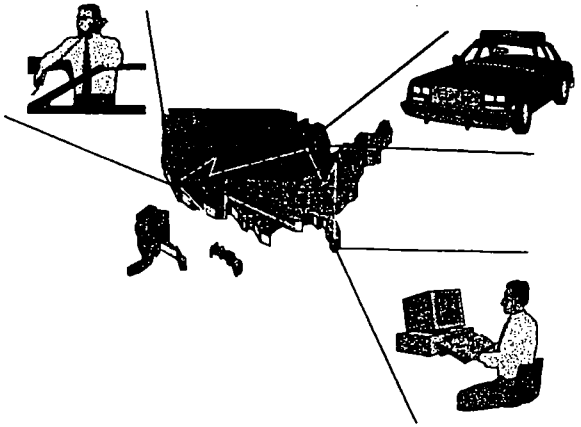
Status: The INEL portal is almost ready for commercialization. A prototype was installed in the Bannock County, Idaho, courthouse for operational evaluation.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. The US Air Force Research Laboratory, Information Directorate, Rome Research Site acts as the technical monitor for this effort.

POC: Irwin Smietan

Title: InfoTech Project

Description: The National Institute of Justice (NIJ) is sponsoring a project to develop and demonstrate information technologies providing scalable, secure information sharing across multiple jurisdictional boundaries. InfoTech offers a user-friendly interface that can be tailored to the needs of a particular user, but will retrieve data regardless of the design of the information sources. Privacy and information security is another important issue addressed by InfoTech. It is implemented through any of several layers of protection mechanisms. All security implemented has a key recovery mechanism that can be administered by each agency.



Impetus: There are roughly 17,000 law enforcement agencies in the United States, with differing procedures and protocols dealing with the sharing of information and differing information and communication systems. As a result, the sharing of data among jurisdictions is difficult. Standardizing procedures and protocols as well as information systems among a significant subset of these agencies would be extremely difficult and expensive.

Impact: InfoTech technologies enable the ready sharing of data among law enforcement agencies without incurring the enormous expense of replacing existing information systems with a new common system. InfoTech technologies also enable each jurisdiction to implement, control, and administer data security, according to its specific needs.

Status: Current participants in InfoTech are the Florida Department of Law Enforcement (FDLE) and the Sheriff's Offices of Monroe and Brevard Counties, Florida. The program utilizes the FDLE Criminal Justice Network (CJ-Net) as the backbone wired network for communications. As part of InfoTech, FLDE and NIJ are working together to provide Florida Department of Highway Safety and Motor Vehicle driver's license data and photos over CJ-Net. An initial operational capability is expected by January 1999. FY99 funding will enable expansion to other agencies and refinement and hardening of the technology. This will include working with the South Florida High Intensity Drug Trafficking Area (HIDTA) to leverage its efforts to establish a LE wide area network (WAN) in South Florida.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. The Space and Naval Warfare Systems Center, Charleston acts as its technical monitor.

POC: Dr. John Hoyt

Title: Flying Plate Disrupter



Description: The National Institute of Justice (NIJ) is sponsoring an effort to develop and demonstrate an approach to disrupting large explosive devices by using explosively formed slugs, or "flying plates." Derived from military technology developed to destroy heavily armored vehicles and naval vessels, this technology consists of a small plastic cylinder capped by a copper plate, and packed with a small explosive charge. When detonated, the cylinder deforms the plate into a slug and propels it into the explosive device, scattering the explosive material without causing it to detonate.

Impetus: Explosive devices are perhaps the terrorist's most often used weapon. Large explosive devices such as ammonium nitrate-fuel mixtures in 55-gallon drums are a particularly challenging problem. Once such a device is located, an effective means to neutralize it without moving it is vital to the safety of the public and to law enforcement and public safety personnel on the scene. The FBI has identified commercial dynamite as the most likely booster material used in such devices. Dynamite is also among the most sensitive of booster materials. This sensitivity makes the safe disruption of such devices difficult. In general, existing explosive disrupters impart high shear over a very small area, which will cause the detonation of sensitive explosive material.

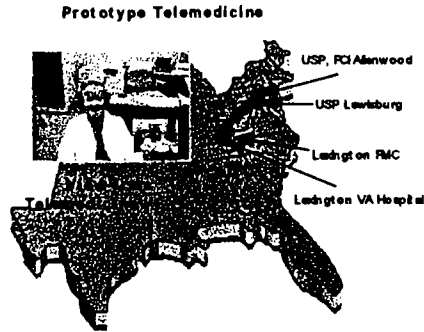
Impact: This effort will provide an inexpensive means of safely neutralizing such device in situ, increasing the safety of the public and law enforcement and other public safety personnel on the scene.

Status: Phase I of this effort, the proof-of-concept, was successfully completed. Phase II, currently underway, will conclude in a nationwide demonstration and evaluation of this technology with law enforcement agencies, which is expected to occur before the end of FY99.

DoD/DOJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. The Indian Head Division of the Naval Surface Warfare Center is developing this technology.

POC: Jerry Howell

Title: Telemedicine Demonstration



Description: The National Institute of Justice (NIJ) in collaboration with the Federal Bureau of Prisons (BoP) and the Department of Veterans Affairs, sponsored a demonstration project to evaluate the impact of telemedicine and telecommunications technologies for addressing the needs of prison healthcare.

Impetus: Healthcare costs for prisoners continue to rise. They represent a significant portion of the criminal justice budget for federal, state and local governments. Delivery of healthcare to prisoners is a demanding, expensive responsibility for prison systems. Additionally, the need to transport inmates out of a prison for medical services not available there, poses a threat to prison staff and to the local community.

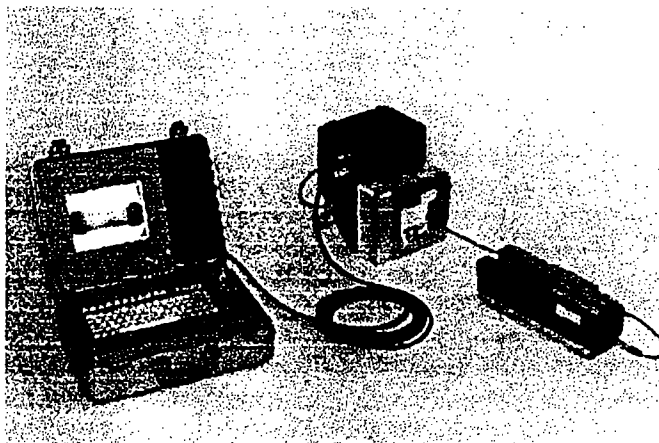
Impact: This project produced the first comprehensive assessment of the utility of telemedicine in a correctional environment. It also developed and demonstrated a state-of-the-art, turn-key telemedicine system, geared for inmate population needs and a model for development and implementation of telemedicine in other venues.

Status: A prototype telemedicine network has been in operation since September 1996, linking the Federal Medical Center (FMC) in Lexington, Ky., the United States Penitentiary (USP) in Allenwood, Pa., the USP in Lewisburg, Pa. and the Veterans' Affairs Medical Center in Lexington, KY. Funding provided by the BoP enables the expansion of this network to include the Medical Center in Springfield, Mo. In the course of this project, telemedicine was widely embraced by officials, medical staff and prisoners and came to play a major role in the delivery of healthcare services. This highly successful project established that substantial savings may be realized with the utilization of telemedicine technology. It found that the cost of the telemedicine system would be recovered in 15 months with a substantial monthly savings thereafter. In addition to cost savings, it was convincingly established that telemedicine offers improved access to specialty care and enhanced public safety through the reduction in the number prisoners transported outside the prison for medical care. As a consequence, NIJ is planning on exploring the application of telemedicine in jails in 1999.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. It was funded in part through the Defense Advanced Research Projects Agency.

POC: Dr. Peter Nacci

Title: X-Ray Diagnostic System for Explosive Devices



RTR-3 X-Ray System

Description: The National Institute of Justice (NIJ) is collaborating with the Technical Support Working Group (TSWG) and the Federal Bureau of Investigation in sponsoring a nationwide demonstration and assessment of an improved diagnostic systems for explosive devices. This technology, the RTR-3 was initially developed under TSWG auspices. It is a computer based, portable x-ray system that enables bomb technicians to rapidly examine an explosive device by displaying an x-ray image of the device on a computer screen, rather than having to wait for that image to be developed on film. The RTR-3 also enables them to transmit the x-ray image of a device, via modem, to remote experts for analysis.

Impetus: Explosive devices are perhaps the terrorist's most often used weapon. Once such a device is located, an effective means to disrupt it without moving it is vital to the safety of the public and to law enforcement and other public safety personnel on the scene. The safe disruption of such devices is greatly facilitated by being able to determine their construction. X-ray images are a preferred means of doing so. Using conventional x-ray technology, requiring the development of x-ray film, can be a cumbersome and time consuming process.

Impact: This effort will provide information on the performance of the RTR-3. This information will be used to improve future such systems, making them more effective and in so doing enhancing the safety of the public and law enforcement and other public safety personnel on the scene.

Status: Agreements are being developed with 24 state and local agencies, across the country, for participation in this demonstration, which is expected to begin by the end of 1998.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. The Indian Head Division of the Naval Surface Warfare Center and the Office of Special Technology are providing technical support to this project.

POC: Jerry Howell

Title: Deployment and Evaluation of Low-Cost Uncooled Thermal Imagers to Enhance Law Enforcement Operations

Description: Deploy inexpensive, handheld and vehicle mounted, infrared sensors to law enforcement agencies; evaluate how the sensors are utilized in typical operational scenarios; and develop an understanding of thermal imager use by law enforcement that can be used by other agencies to help in their decision to purchase and use infrared sensors.

Impetus: Infrared sensors are not commonly used by law enforcement agencies. This project will establish a law enforcement-derived operational guide that will help other agencies determine whether or not to purchase and use infrared sensors within their department.

Impact: The product of this effort will help to educate law enforcement agencies on the use of infrared sensors and will help to facilitate the decision-making process to purchase and use infrared sensors within individual law enforcement agencies.

Status: Because of a significant DoD investment, the uncooled infrared sensors have become more affordable for military and law enforcement use. An operational guide will facilitate the use of infrared sensors in law enforcement agencies.

DoD/DoJ Relationship: The DoD has invested more than \$70M to develop a useful and affordable uncooled infrared sensor. As a result of Industry and Defense Dept commercialization efforts, a number of affordable law enforcement products are now available.

POC: Tom Coty



Title: Mass Spectrometry DNA Typing

Description: Mass spectrometry DNA typing has been shown to greatly reduce analysis time of DNA samples to the point where more than 1,000 samples can be tested in less than five minutes, and at substantially less cost than current techniques. This technique is highly automated and can be easily expanded to include other genetic markers as they are identified to be of forensic value in the future.



Robot for distributing DNA into Mass Spectrometry

Impetus: A need exists for faster and less expensive testing methodologies to process large numbers of samples for the convicted offender database (CODIS). While we currently have a backlog of at least a half million to a million samples awaiting DNA profiling for entry into the CODIS database, it is expected that between 1 to 2 million new convicted offenders will be added to the database annually as the investigative power of CODIS is realized.

Impact: The development of this technology will enable laboratories to reduce the CODIS backlog and maintain the in-flow of new convicted offender samples as they are collected. The CODIS database will generate a "hit" (i.e. identification) from crime scene evidence for every 1000 samples in the database to rapidly generate investigative leads, more solved crimes and more saved lives.

Status: This project has demonstrated high-throughput sample analysis capability for all 13 core genetic markers required by the forensic community for inclusion in the CODIS national database.

DoD/DoJ Relationship: None

POC: Lisa Forman, Ph.D.

Title: Mobile Interoperability Testbed

Description: NIJ has expanded the Advanced Law Enforcement Response Technology (ALERT) testbed initially developed by the Dept of Transportation's Federal Highway Administration. The program will develop and demonstrate a mobile information management system to control and integrate communications systems both in public safety vehicles across jurisdictions and throughout communications centers (dispatch).

Impetus: The technologies that have evolved and are currently used in law enforcement vehicles and communications centers to communicate with are continually expanding and rapidly filling the interior of the vehicles. These stovepipe approaches lead to an inability to communicate across jurisdictions.

Impact: A mobile interoperability configuration is needed in order to manage the cost and implementation of future technologies in the public safety arena.

Status: Initial prototypes have demonstrated the use of touch screen monitors that control various technologies, such as the radar, emergency lighting, sirens, radio communications, and video cameras.

DoD/DoJ Relationship: None

POC: Brenna Smith

Title: Less-Than-Lethal Incapacitation Technologies

Description: Less-than-lethal technologies provide options for law enforcement and corrections officers when confronted by violent or uncooperative suspects or prisoners. There is no single less-than-lethal weapon for all scenarios. Project areas currently under development or evaluation include: chemical (pepper spray), electrical (stun devices), kinetic energy blunt impact projectiles (ring air foil projectiles), nets (baton or projectile launched), and light (laser dazzler).

Impetus: Minimize the risk of death and injury to law enforcement officers, suspects, prisoners, and the general public and reduce civil and criminal liability suits against law enforcement and corrections agencies.

Impact: Less-than-Lethal technologies have saved the lives of suspects and prisoners, law enforcement and corrections officers, and the general public.

Status:

The ring airfoil projectile (RAP). The RAP is a blunt impact projectile that is nonlethal at the muzzle. It was developed by the military and is now being modified for law enforcement applications. These modifications include the development of a new launch device and the dispersal of pepper powder on impact. A prototype launcher will be available in March 1999, and a field trial will be conducted in FY99.

Pepper Spray. NIJ has conducted and is currently conducting various evaluations of the health effects and effectiveness of pepper spray. Pepper spray effectiveness studies have been published and NIJ should have in-depth information of the health effects of pepper spray by the end of FY99.

Electric stun projectile. The electric stun projectile uses taser and stun gun technology. It gives an officer a 30ft standoff from which to incapacitate a suspect or prisoner. NIJ is funding a human effects advisory panel to analyze the health effects of the electric stun projectile. If the analysis results are favorable, NIJ will fund a field trial.

Nets. NIJ has funded the modification of two types of nets to enhance their safety. One is a net that can be launched from 40 feet using a grenade launcher. The other is a net that can be launched from three to ten feet via a baton. The projectile-launched net is a commercial product and a prototype baton-launched net will be demonstrated in November 1998.

Laser Dazzler. The laser dazzler is a green laser light that flashes to disorient the suspect or prisoner. It was developed through the Joint Program Steering Group, and NIJ is funding its safety certification at Phillips Laboratory. After safety certification, a field trial will be conducted.

DoD/DoJ Relationship: The ring airfoil projectile is a DoD-developed device that is currently being upgraded to include pepper spray. Other less-than-lethal technologies are either spinoffs of DoD projects or are being developed in conjunction with the DoD under a recently signed Memorandum of Understanding between NIJ and DoD's Joint Nonlethal Weapons Directorate.

POC: Ray Downs, Ph.D., and Sandy Newett

Title: National Commission on the Future of DNA Evidence Follow-up & CODIS Database Backlog Reduction Program

Description: This is a two year program to eliminate the estimated backlog of half million to a million convicted offender samples for entry into the Combined DNA Index System (CODIS) national database; develop the State and local crime laboratory infrastructure necessary to allow maintenance of the database; consider safeguards with regard to privacy issues; and expand the number of types of convicted felon samples (e.g., burglary) collected for the database.

Imperus: The enormous backlog of convicted offender samples awaiting analysis and entry into CODIS detracts from the utility and effectiveness of the national database. Every day that these samples remain unanalyzed is a day that a crime could be solved by a database "hit," if the offender had been convicted previously.

Impact: This funding will, within two years, enable State and local jurisdictions to eliminate their backlogs, develop convicted offender databases and also to keep up with the numbers of new offender samples submitted. By implementing methods such as mass spectrometry and microchip technology and other high through-put technologies in the labs, forensic DNA samples that now require a day to process for DNA identification will take less than five minutes. A *current* and *comprehensive* database will provide the potential for a greater number of CODIS "hits" and, subsequently, more solved crimes.

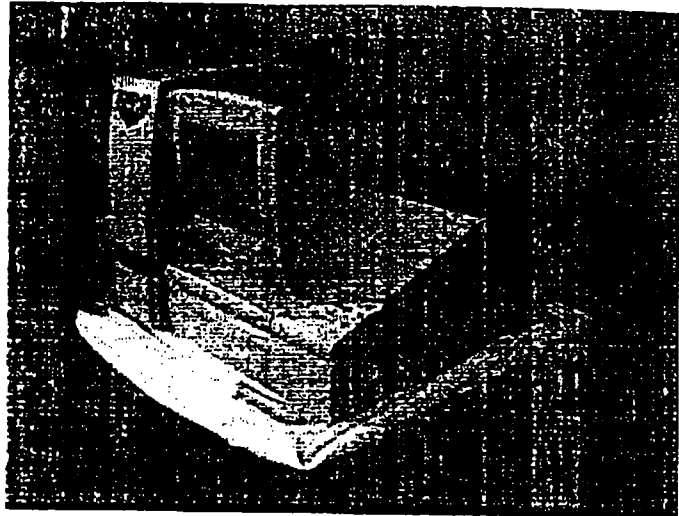
Status: NIJ has requested \$10 million for Fiscal Year 2000 to fund this initiative.

DoD/DOJ Relationship: None.

POC: Lisa Forman, Ph.D.

Title: DNA microchip technology

Description: Electronic (Nanogen) and capillary electrophoresis (Whitehead Institute) microchips can perform DNA testing rapidly and accurately at a low cost. These technologies are amenable to miniaturization, will allow additional genetic markers to be incorporated into the systems, will enable DNA analysis to be performed at the crime scene, and will allow for preliminary results to be obtained in minutes.



Nanogen Prototype Electronic Microchip DNA Testing

Impetus: The need to input suspect DNA profiles into the CODIS database as quickly as possible for identification in order to better identify suspects and exonerate innocent people.

Impact: This development allows for rapid exonerations of uninvolved people and quick identification of suspects which will be identified and apprehended faster, hence closing more cases.

Status: The first generation electronic microchip analyzes already extracted DNA samples in less than 30 minutes for four (of thirteen) genetic markers. The final prototype electronic microchip will extract the DNA from evidence samples, will perform DNA testing on the extracted DNA, and produce a DNA profile in less than an hour. The miniaturized capillary electrophoresis microchip can type four CODIS markers in two minutes at a significant decrease in cost. Phase one allows for the addition of other CODIS markers and will begin the development of a fully automated system.

DoD/DoJ Relationship: DoD has invested funds in the development of the electronic microchip system.

POC: Lisa Forman, Ph.D.

Title: Smart Gun

Description: NIJ has funded an effort by Colt Manufacturing to enhance its second generation prototype Smart Gun: a weapon that will only fire for a recognized user. This weapon employs radio frequency technology. When energized, the gun emits a radio signal, which is received by a small transponder worn by the authorized user and returns a coded radio signal. Upon receipt of the signal, a locking pin is removed from the trigger mechanism enabling the weapon to fire.



Impetus: A review of the past 10 years of the FBI's report on officers killed and assaulted shows that 1 in 6 officers killed annually are victims of their own weapons in the hands of an assailant.

Impact: A Smart Gun would greatly reduce the number of officer deaths due to the officer being disarmed and shot with his or her own weapon. This technology application could be used to allow public safety officials to carry weapons in situations in which they have been typically prohibited from doing so, i.e. jails and correctional facilities.

Status: NIJ, working with the Office of Law Enforcement Standards, the National Law Enforcement and Corrections Technology Center, and two Metropolitan, DC, police academies will develop and conduct an extensive field evaluation program of the Smart Gun and its technology during FY99.

DoD/DoJ Relationship: None

POC: Wendy Howe

Title: Facial Recognition Technology

Description: To develop and integrate facial recognition software with intelligent information search technologies to measurably improve law enforcement investigation capabilities for identifying missing and exploited children and fighting child exploitation on the Internet.

Impetus: With the growth of the Internet there has been an explosion of child exploitation and pornography that law enforcement has not been able to deal with effectively.

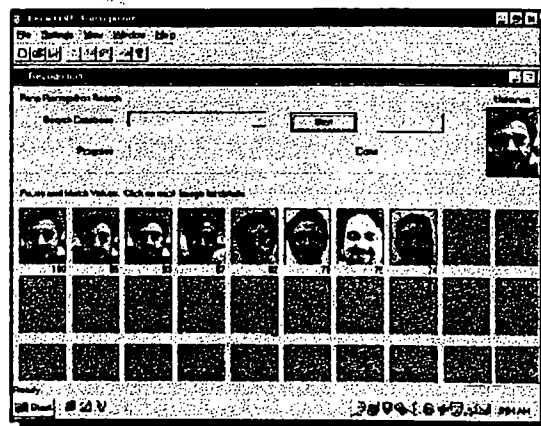
Impact: If successfully developed, this product will efficiently locate, extract, and identify faces from still and video pornographic images and will then search very large databases of missing children and criminals for image matches. This will effectively multiply the productivity of law enforcement engaged in the fight against child exploitation.

Status: The intelligent search modules are in various stages of development and integration with a still photo facial recognition capability. Efforts associated with developing a video facial recognition search capability are just getting underway.

DoD/DoJ Relationship: The DoD has funded the development of still photo facial recognition and a standardized method for evaluating still photo facial recognition. DoJ is currently funding activities that will help standardize evaluation methods of video facial recognition. There may be a joint funding activity in the near future with DoD to establish the standard for video facial recognition evaluation.

POC: Tom Coty

Visionic's Facial Recognition System



Title: Technology Tools for Law Enforcement and Correction Officers Training

Description: This program is developing technologies that will augment the training of law enforcement and corrections officers. By using Computer Based Training (CBT), Video Based Training, Virtual Reality, and Advanced Distance Learning, officers can be trained efficiently, inexpensively, and safely. Each of these technologies will allow learning through realistic operational scenarios at a lower cost and in safe environments.

Impetus: The time and funding to train and retrain law and corrections officers is not always available. Yet, training is of paramount importance to ensure the officers are effective and minimize liability actions.

Impact: The use of technology tools to enhance officer training will allow affordable, safe, and timely training of officers.

Status: NIJ is currently developing an updated version of a generic Bomb Threat Training Simulator on CD-ROM for use by law enforcement and security first responders to a bomb-threat scene. An alpha version of the Weapons Team Engagement Trainer (WTET), a video based team engagement shoot/no-shoot trainer, is currently being used by law enforcement agencies in Orlando, FL. Beta versions of the WTET will be installed in a Sheriff's Department on the West Coast and at a Naval Training site in Orlando, FL. Both sites will be used to train military and law enforcement officials.

DoD/DoJ Relationship: NIJ is currently working with the Naval Air Warfare Center Training Systems Division in Orlando, FL to develop and implement the Weapons Team Engagement Trainer, and assess and develop other technology tools for training.

POC: Sandy Newett and Kevin Jackson

Title: Teleforensic Program

Description: The teleforensic program will evaluate and develop communications and sensor technologies to provide forensic experts with remote access to crime scenes.

Impetus: Because crime scene and forensic experts can not visit all crime scenes in a timely and cost effective manner, remote sensors and communications to crime scenes will enhance the investigations of crimes.

Impact: More crime scene investigations, especially those requiring highly trained experts, will have the benefit of forensic and crime scene experts.

Status: Initial agreements between NIJ, the US Army, and NASA have been signed to demonstrate some of the currently available technologies in mock crime scenes. Crime scene investigators will assess the utility of the technologies and recommend further evaluations and development.

DoD/DoJ Relationship: The demonstration program is being coordinated with the US Army's Medical and Research Command at Ft. Dietrick, MD.

POC: Lisa Forman, Ph.D.

SW

MEMORANDUM

To: Tom Freedman
From: Bill Valdez
Date: November 12, 1998
Subject: Crimotech

Attached is a *draft* proposal. Please keep a close hold since I haven't shown it to agency folks yet, although I think most will be happy with it. I've also included a list of technologies that are being developed that could be announced as part of this initiative.

As next steps, I want to hold an interagency meeting later this month followed by a workshop in December that brings local law enforcement folks together with the agency folks to achieve buy-in. Let me know if you think we're on the right track....

bill

Executive Summary:
Partnership for Advanced Crime Enforcement
Draft: November 12, 1998

Overview: President Clinton's 100,000 cops program and the Vice President's 1994 crime technology initiative have laid the foundation for a comprehensive Partnership for Advanced Crime Enforcement (PACE). This new initiative would bring together pilot initiatives underway at many federal agencies (Energy, FBI, DOJ, DoD, etc.) and require a \$1 billion investment per year for the first five years.

Basic Elements: PACE would involve five major elements:

1. Expanding the technology and training program managed by DOJ's National Institutes of Justice (\$250 million). The current pilot technical assistance and technology development program (four centers, \$35 million budget) would be expanded nationally to 14 centers.
2. Modernizing the nation's 350 state and local crime labs that perform 95% of the nation's forensics work. This would require an investment of \$250 million and is supported by S-2022, an authorization passed by the most recent Congress.
3. Training the nation's 700,000 local cops and sheriffs in modern crime fighting techniques and technologies. Training is the number one priority of local law enforcement agencies, but they don't have the budget or infrastructure. An annual \$250 million initiative, building on DoD and the National Guard's infrastructure training system, would provide the needed training.
4. Modernizing the communications system used by local agencies. The current system is fragmented and results in frequent failures to communicate between agencies. Funding would be included in NIJ's \$250 million base.
5. Testing and deploying new technologies. Local law enforcement agencies can't afford the high tech crime fighting tools they need. A \$250 million/year grant program dedicated to high technology acquisitions is needed.

Goals: Consensus is needed to develop goals for PACE, but the goals would be similar to the following:

- Improve crime fighting readiness by 25% through advanced technologies and training.
- Solve 10% more high tech crimes per year through expanded technical assistance.
- Solve 25% more crimes by 2003 through improved forensics capabilities.
- Provide training to all 700,000 cops and sheriffs by 2003.
- Provide modern crime fighting tools to 50% local law enforcement agencies by 2005.
- Create model communication systems in 10 pilot communities by 2003.
- Test and deploy 200 new technologies by 2003.

A PARTNERSHIP FOR ADVANCED CRIME ENFORCEMENT
DRAFT DISCUSSION PAPER
November 12, 1998

I. Overview: Current Status of U.S. Local & State Law Enforcement.

U.S. businesses and families are protected against crime by 17,360 state and local law enforcement agencies that employ approximately 700,000 officers. More than 90% of those agencies have 24 or fewer sworn officers and 50% have 12 or fewer officers. Yet state and local law enforcement agencies are responsible for handling 95% of the crimes that people care about – muggings, robberies, burglaries, homicides, etc.

Americans support this decentralized system of law enforcement because they believe it allows local control and oversight -- their police and sheriff departments are responsible to them, not to some faraway authority. Yet, it is this very decentralization that has made it difficult for local law enforcement to use advanced technologies to fight crime.

The local law enforcement community simply does not have the resources or ability to develop and test the new technological tools that they need. This comes at a time when the nature of their job is becoming increasingly complex and dangerous because criminals have access to more advanced technology than the police.

II. The Clinton Administration's Commitments to Local Law Enforcement

In 1994, the Clinton Administration developed a program to help fight crime by putting 100,000 new police officers on the street. This significantly strengthened the "thin blue line" and enabled communities to commit extra police resources in areas that previously had been neglected, for example community-based policing.

The Administration also recognized that law enforcement was not taking advantage of the billions of dollars of investment that our nation had made in the development of advanced technologies. To meet this technology shortfall, on April 20, 1994, Vice President Al Gore oversaw the signing of an agreement between the Departments of Justice and Defense that initiated a five-year pilot program designed to increase the capacity of state and local law enforcement to fight crime through the application of technology. The Vice President said at the time:

"We are fully committed to the advancement of technology for law enforcement. It is time. The American people are ready to see this happen.....It is high time that we put the most advanced technologies and the best new approaches at the disposal of police officers and other law enforcement officers throughout the country... This is part of an all out assault on crime. This Administration is committed heart and soul to the war against crime and violence. What we have seen today is just the beginning. Our Administration is committed to doing everything possible, not just to developing new technology, not just to get these new tools to the officers where they do the most good, but to back up these officers in every way we possibly can."

III. The Technology Pilot Program in Action: A Major Success Story

By all accounts the Vice President's technology pilot program has been a huge success. The pilot is run by the Department of Justice's National Institute of Justice (NIJ). With the Administration's leadership and Congressional support, the NIJ has accomplished much – ranging from “low tech” to “high tech” - in four short years. For example:

- Through partnerships with existing federal technology organizations, NIJ has established the National Law Enforcement and Corrections Technology Center (NLECTC) network to provide technology information and technical assistance to law enforcement. The Center network provides a “quick response” capability to agencies that need specialized technical help. **In 1997 alone the NLECTC responded to 10,000 local requests for assistance.**

For example, the NLECTC, working with a Federal Emergency Management Agency funded Arson Strike Force, has turned around an arson problem in Utica, New York. The city had an arson rate double that of the national average. In a relatively short period of time **arson in Utica has dropped 50% with closure rates at 52% (versus the national average of 15%) and conviction rates at 100%.**

In Whittier, California the NLECTC used advanced forensic techniques not available anywhere else to help the police solve a serial child molestation case. In Oregon, the NLECTC, using advanced metallurgical science, assisted the police in solving a murder case. In Denver the NLECTC, using advanced ballistic impact testing procedures, helped solve the murder of a Denver police officer.

- Working with the DOD “surplus property” program, NIJ has helped state and local law enforcement get access to DOD surplus and excess equipment. **Since 1994, this has resulted in the donation of \$ ___ million worth of valuable equipment to local law enforcement agencies.**
- NIJ has funded the research, development, testing and evaluation of numerous technologies to help law enforcement. These range from less-than-lethal technologies, to weapons detection, see-through-walls systems, capture nets, a “smart” gun, a rapid DNA identification detection system, and more. There are numerous cases where new DNA techniques developed by NIJ have helped free people who were wrongly convicted. NIJ has also put on the streets the technologies that they are helping to develop. For example, police now have a better way to stop a fleeing car with less risk to officers or innocent bystanders because of an NIJ technology. **To date, more than ___ new technologies have been tested and put into the field.**
- NIJ has initiated several pilot training programs using advanced computer and simulation technologies to enhance training and to develop a means to deliver training to the user on site. **Thus far, ___ local law enforcement personnel have been trained using this advanced technology.**

IV. Bridging the Gaps.

The Clinton Administration has provided local law enforcement agencies with the human resources – 100,000 new cops – that they desperately needed. And the Vice President's technology initiative has demonstrated the extraordinary value that technology can bring to local law enforcement.

Now is the time to completely bridge the gap between local law enforcement agencies and the technology they need to effectively combat crime. There are five major gaps that must be bridged: faster response to local requests for technical assistance, a strengthened crime lab system, better training for officers, better use of modern communication capabilities, and expanded technology development and deployment efforts.

- *Faster Response:* The NIJ Center system was intended to be a pilot. Because of the demand for these services, the system is overextended and cannot provide the "quick response" assistance that is needed nationwide. The four regionally based centers in the network have to cover an average of between 10 and 15 states each, which is simply too much territory to cover with existing resources.
- *Crime Labs:* The "thin blue line" is considerably thicker due to the 100,000 cops initiative, but crime lab capabilities remain very thin. Well equipped and managed state and local crime labs are a critical element of a local agency's ability to solve crimes. However, while advances are being made in forensic technology, the nation's 350 crime labs often do not have the resources to purchase and apply these technologies. In many cases, they are still using technologies pioneered in the 1800s when 21st Century technologies are now available.
- *Training:* Local law enforcement officials have consistently identified increased training as their number one priority because they face situations that are much more challenging and complex than ever before. Yet the makeup of law enforcement makes it difficult for them to receive the kind of training they require. A 20-person office cannot afford to send its officers to a week's worth of training without compromising crime fighting capabilities, but states still require continuing certification of officers in new skills.
- *Communication:* The local law enforcement community's ability to fight crime would be significantly upgraded if they could communicate and exchange data in a seamless fashion. There are numerous cases where a lack of interoperability has led to the escape of suspects, including the murder of police officers.
- *Technology Development:* The need to develop, test and field new law enforcement tools remains as compelling as ever given the rapidly increasing technological capabilities of criminals. U.S. government national laboratories that produce advanced technologies and U.S. businesses that supply those technologies to local law enforcement agencies would benefit from a focused effort to develop and deploy crime fighting technologies to local agencies.

V. The Solution: A Comprehensive Technology & Training Initiative¹

Technology and training can clearly make a difference. NIJ's Utica project helped reduce serious arsons by 50%. The adoption of computerized mapping systems coupled with new management techniques has been credited with reducing serious crimes in New York City by 39%. Soft body armor has saved the lives of over 2,000 police officers.

The Federal government has an important role to play in local law enforcement by coordinating Federal resources to bridge the gaps that exist in technology and training. This new initiative builds on the success of the 100,000 cops program and the Vice President's technology initiative by systematically providing those police officers with the crime fighting tools and training they need to deal with 21st Century criminals. The elements of the initiative are:

1. A National Technology & Training Program

A focal point is needed within the Department of Justice to expand upon the Vice President's initiative. The establishment of a permanent Bureau of Law Enforcement Technology and Training Support (BLETTS) as a stand-alone organization within the Office of Justice Programs (OJP) is required. BLETTS will develop and field new technologies, provide "quick response" technical assistance to law enforcement, test and evaluate new technologies, and provide local law enforcement agencies with the information and training they need to use these new tools. BLETTS will be funded at a level of \$250 million a year.

Goal: Improve the crime fighting readiness of local law enforcement agencies by 25% by 2005 through advanced technologies and training.

2. Expanded Quick Response Centers

Establish 10 additional NLECTC Quick Response Centers to meet the technical assistance needs of law enforcement. These Centers will be supported by a consortium of Federal laboratories to ensure that the best forensic technologies are available to law enforcement officers. This consortium will in no way duplicate the work of the existing local and state crime lab system. It is intended that the consortium will provide forensic support, in coordination with local crime labs, only when the local lab does not have the equipment or technical skills to do the job. Funding for the Centers will come through the BLETTS budget.

Goal: Solve 10% more high technology crimes per year through expanded technical assistance.

¹ Note that these major initiatives will be announced as part of the announcement of a comprehensive program. The announcement of the major elements of the program (new Centers, Crime Lab Improvement etc) can be spread out over time. Moreover announcements of specific programs within the major elements can be announced during the intervening time frame.

3. 21st Century Crime Lab Initiative

BLETTS, in partnership with the FBI, will manage a \$250 million initiative to dramatically improve our nation's state and local crime labs that provide 95% of the forensics support to local law enforcement agencies. This program will be buttressed by the establishment of a Regional Forensic Support network of forensics experts from Federal national laboratories, universities and other research programs.

A crucial part of this initiative will be improved DNA testing. A tremendous backlog – 500,000 samples -- currently exists in testing DNA. The National Commission on the Future of DNA Evidence has strongly recommended rapid development of the DNA database. In Virginia alone, this database has already identified dozens of suspects in old, unsolved cases for which there were no leads. However, until this backlog can be addressed, the database cannot be fully effective and more crimes will be committed by suspects who would otherwise be identified after the first crime. This can be achieved within two years.

Goal: 25% more crimes solved by 2003 through improved forensics capabilities.

4. Advanced Technology Training Initiative

BLETTS will develop a partnership with the DOD Advanced Distributed Learning Initiative (ADL) and the National Guard to develop dual use training centers throughout the United States. These centers, to be located at National Guard Armories or other agreed upon sites, will provide local law enforcement agencies with access to interactive computer based training and advanced simulation training tools in a location closer to home. This will solve the problem of providing local officers with access to needed advanced training. This initiative will require \$250 million/year to train the nation's 700,000 local law enforcement officers.

Goal: Provide training programs to all local law enforcement agencies by 2003.

5. Moving Technology Into the Street

About 95% of a typical law enforcement agency's budget is dedicated to personnel. The scarce resources left over are spent on basic equipment such as cars, radios, and revolvers. There is little money available to purchase the new tools necessary to keep up with criminals. A new grant program administered by OJP and funded at \$250 million/year for five years dedicated solely to the purchase of high tech equipment by state and local law enforcement is required.

Goal: Provide modern crime fighting tools to 50% of the nation's local law enforcement agencies by 2005.

6. Enhanced Law Enforcement Communications

Communications provides the backbone that supports local law enforcement agencies' efforts to combat crime. But in most communities, radio systems supporting police, fire and emergency medical services are overwhelmed. Worse, current frequency allocations and technologies make it impossible for adjacent agencies to talk to each other. To help address this, the Administration has successfully freed up 24 MHz of new radio frequencies, but modernizing the public safety wireless infrastructure so it can take advantage of this new spectrum will be a massive undertaking. Therefore, BLETTS will use its base budget to support the following actions:

- The NLECTCs will provide agencies with technical and engineering support to address immediate short-term problems;
- The NLECTCs will provide planning support so communities may design the new infrastructure and develop workable transition plans;
- BLETTS will provide seed grants to begin building and demonstrating systems that can solve this problem.

Goal: Create model communication systems in 10 pilot communities by 2003.

7. Expanded Testing Program

BLETTS will expand their testing and evaluation program – including partnering with the Department of Defense Live Fire Test Office – so that the local law enforcement community is confident that what they are getting works as advertised under realistic conditions. This kind of testing program will enable law enforcement to make the best investment possible in new equipment and, more importantly, save lives. The importance of such a program is evident from the experience with soft body armor. Of the 307 models of body armor tested in 1997, only 124 – about 40% – passed. The consequences of having officers putting their lives on the line wearing substandard body armor is unthinkable.

Goal: Test and deploy 200 new technologies by 2003.

Note: near term refers to 1-2 years
mid term refers to 2-3 years

1. There are a few that I don't have here.

- One that you might be particularly interested in is a computer based interactive training project that is ongoing in Mississippi. The idea is to deliver interactive training via the Internet and CD-ROM to remote locations. The company that is working with Mississippi has one Training series already developed that can be demonstrated (I am enclosing a demo CD-ROM on that). The Mississippi project is near term.
- There is also a judgmental use of force training tool using simulation technology that NIJ will be evaluating some time this year. What is interesting about it is that it is mobile and has a shoot back capability. This is a commercialized product. NIJ was not involved in its development, but will be involved in an evaluation (I've enclosed an article on it.)
- I believe there is also another hand held weapons detection system already in prototype stage. If I'm right it is in a more advanced stage than the one enclosed in this packet. I'll know more on that later this week
- There is a through-the-walls sensor/weapons detection technology that NIJ is testing now. This is a near term project. I will have something on that later this week.
- There is also a personal alarm monitor that automatically activates when an officer is distressed that NIJ is working on. This is near term.

I will have the others by the end of the week

2. The following is the status of enclosed projects – in the same order

Body Armor – Ready this year

Handheld weapons detection – prototype this year.

Electromagnetic weapons detection – ready

Information technology – operational

Flying plate disrupter – near term

Telemedicine demonstration project – operational

Bomb diagnostic tool – commercialized

Uncooled Thermal Imager- Infrared Sensor – near term

Mass spectrometry DNA typing – near term

Mobile Interoperability testbed – near term

Ring Airfoil – near term

CODIS backlog – near term

DNA microchip -mid term

Smart Gun – mid term

Facial recognition – mid term

Technology Tools – being commercialized

Title: Concealable Body Armor

Description: The National Institute of Justice (NIJ), in collaboration with the Defense Advanced Research Project Agency (DARPA), sponsored development of an advanced body armor system that could be worn inconspicuously under the uniform blouse of either a law officer or soldier, or under a coat and jacket. This concealable body armor (CBA) is unique in that it is designed to stop a rifle bullet at point blank range while also being concealable. CBA has hard titanium or ceramic-composite inserts over the heart and spine and "soft" body armor employing a ballistic fabric over the remainder of the torso. The inserts provide rifle protection. Their size and position are designed to preclude a fatal wound. The soft component of CBA protects against 9 mm high velocity handgun bullets. Testing by the Office of Law Enforcement Standards, at the National Institute of Standards and Technology, demonstrated that CBA with either type of insert stopped a rifle bullet at ~ 175 m range. More development by the US Army's Soldier Systems' Command resulted in a system that stops rifle bullets at point blank range.



Impetus: Violence, particularly violence involving firearms, has reached epidemic proportions in the United States. *The Sourcebook of Criminal Justice Statistics, 1996* reports that of all violent crimes across the United States, 29 percent involve use of a firearm. Firearms are involved in nearly 70 percent of all murders and non-negligent manslaughter, 40 percent of all robberies, and 23 percent of all aggravated assaults. The body armor in general use with law officers today only provides protection against pistol bullets.

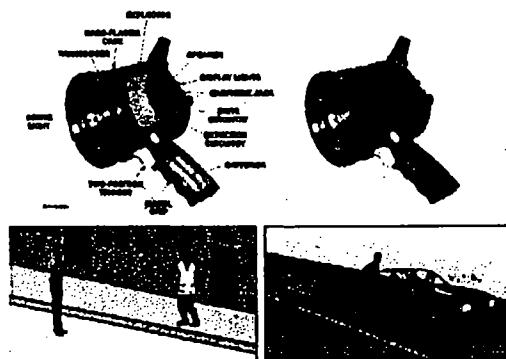
Impact: This effort led to development of a body armor system that offers the potential to significantly increase the safety of law enforcement personnel.

Status: This system was type classified (limited) by the U.S. Army and over 1,000 sets were purchased for the military. An additional 4 sets were purchased by the Secret Service for evaluation. The Army is carrying on the basic technology into its next generation of body armor. A principal design goal is to reduce the cost of this system.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group and was funded and managed through DARPA. Development was undertaken jointly by the U.S. Army Soldier Systems' Command and the U.S. Army Research Laboratory.

POC: Dr. Robert Rosenfeld

Title: Handheld Acoustic Device for Concealed Weapons Detection



Description: The National Institute of Justice (NIJ) is sponsoring JAYCOR to develop an inexpensive, handheld device to alert law officers to the potential presence of a weapon at a greater distance than the handheld metal detectors in use today, thus providing them a greater margin of safety. Another advantage of this device is that it will detect non-metallic as well as metallic weapons. This device works by emitting an inaudible acoustic pulse. The pulse is absorbed by soft objects, such as the human body. However, if it strikes hard objects under clothing, such as weapons carried next to the body, the pulse is reflected back alerting the officer to the potential presence of a weapon. This detector will be affordable for even smaller law enforcement agencies.

Impetus: Violence, particularly violence involving firearms, has reached epidemic proportions in the United States. According to the Bureau of Justice Statistics, from 1974 to 1993 the number of arrests for weapons increased by 55 percent and the number of violent offenses committed with a firearm increased by 78 percent. *The Sourcebook of Criminal Justice Statistics, 1996* reports that of all violent crimes across the United States, 29 percent involve use of a firearm. Firearms are involved in nearly 70 percent of all murders and non-negligent manslaughter, 40 percent of all robberies, and 23 percent of all aggravated assaults. Today law officers have no means of effectively detecting weapons concealed on individuals at a safe distance.

Impact: This effort will lead to the development of a device with the potential of significantly increasing the safety of law officers.

Status: A laboratory model has been demonstrated with positive results. It was able to detect a plastic knife concealed under a heavy sweatshirt at a distance of 7-feet. Two different working models have been developed and testing is being conducted. The working models were recently demonstrated at the California Border Alliance Group and received a positive reception from the law enforcement representatives that were there. Demonstrations of prototypes of this technology are expected in 1999.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. The US Air Force Research Laboratory, Information Directorate, Rome Research Site acts as the technical monitor for this effort.

POC: Irwin Smietan

Title: Electromagnetic Weapons Detection Portal

Description: The National Institute of Justice (NIJ) sponsored the Idaho National Engineering Laboratory (INEL) to develop an improved weapons detection portal employing fluxgate magnetometers. The magnetometers detect anomalies in the earth's magnetic field caused by magnetic material in objects carried by individuals. Most weapons contain such materials. On the other hand, objects such as keys and coins tend to be made of non-magnetic materials. This technology, because it will not alert on such innocuous objects, significantly reduces the number of false alarms compared to currently available devices that tend to detect all metal objects. Additionally, this technology can detect weapons with even a small metal content, such as that found in the small blades used by hobbyists.



Impetus: Violence, particularly violence involving firearms, has reached epidemic proportions in the United States. A very troubling aspect of this epidemic is the use of firearms by juveniles. Over the past decade, numerous studies have pointed to the possession of weapons by adolescents as an increasingly serious problem, particularly in urban areas. In a sample of Washington, D.C. minority, inner-city ninth and tenth graders, 11 percent had used a weapon to threaten someone; while a survey of high school students in Baltimore found that almost half of the males had carried a gun to school at least once. Detecting concealed weapons is a challenging problem. The walk-through devices (portals) used today, such as are found in courthouses, have high false alarm rates. They alert on any object with a high metal content, even on such innocuous items as keys and coins. They also have difficulty in detecting weapons with a small metal content.

Impact: This effort has resulted in development of a portal device offering significantly greater security for schools and other public buildings, such as courthouses.

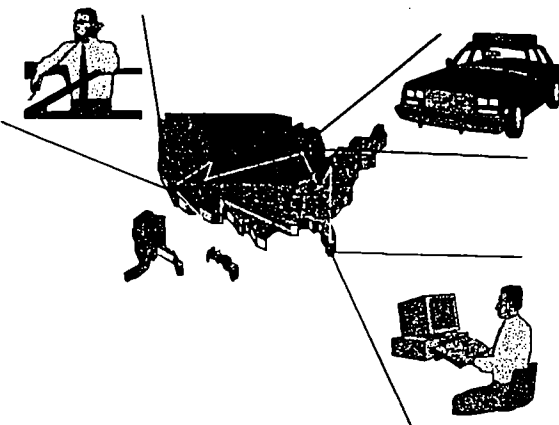
Status: The INEL portal is almost ready for commercialization. A prototype was installed in the Bannock County, Idaho, courthouse for operational evaluation.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. The US Air Force Research Laboratory, Information Directorate, Rome Research Site acts as the technical monitor for this effort.

POC: Irwin Smietan

Title: InfoTech Project

Description: The National Institute of Justice (NIJ) is sponsoring a project to develop and demonstrate information technologies providing scalable, secure information sharing across multiple jurisdictional boundaries. InfoTech offers a user-friendly interface that can be tailored to the needs of a particular user, but will retrieve data regardless of the design of the information sources. Privacy and information security is another important issue addressed by InfoTech. It is implemented through any of several layers of protection mechanisms. All security implemented has a key recovery mechanism that can be administered by each agency.



Impetus: There are roughly 17,000 law enforcement agencies in the United States, with differing procedures and protocols dealing with the sharing of information and differing information and communication systems. As a result, the sharing of data among jurisdictions is difficult. Standardizing procedures and protocols as well as information systems among a significant subset of these agencies would be extremely difficult and expensive.

Impact: InfoTech technologies enable the ready sharing of data among law enforcement agencies without incurring the enormous expense of replacing existing information systems with a new common system. InfoTech technologies also enable each jurisdiction to implement, control, and administer data security, according to its specific needs.

Status: Current participants in InfoTech are the Florida Department of Law Enforcement (FDLE) and the Sheriff's Offices of Monroe and Brevard Counties, Florida. The program utilizes the FDLE Criminal Justice Network (CJ-Net) as the backbone wired network for communications. As part of InfoTech, FLDE and NIJ are working together to provide Florida Department of Highway Safety and Motor Vehicle driver's license data and photos over CJ-Net. An initial operational capability is expected by January 1999. FY99 funding will enable expansion to other agencies and refinement and hardening of the technology. This will include working with the South Florida High Intensity Drug Trafficking Area (HIDTA) to leverage its efforts to establish a LE wide area network (WAN) in South Florida.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. The Space and Naval Warfare Systems Center, Charleston acts as its technical monitor.

POC: Dr. John Hoyt

Title: Flying Plate Disrupter



Description: The National Institute of Justice (NIJ) is sponsoring an effort to develop and demonstrate an approach to disrupting large explosive devices by using explosively formed slugs, or "flying plates." Derived from military technology developed to destroy heavily armored vehicles and naval vessels, this technology consists of a small plastic cylinder capped by a copper plate, and packed with a small explosive charge. When detonated, the cylinder deforms the plate into a slug and propels it into the explosive device, scattering the explosive material without causing it to detonate.

Impetus: Explosive devices are perhaps the terrorist's most often used weapon. Large explosive devices such as ammonium nitrate-fuel mixtures in 55-gallon drums are a particularly challenging problem. Once such a device is located, an effective means to neutralize it without moving it is vital to the safety of the public and to law enforcement and public safety personnel on the scene. The FBI has identified commercial dynamite as the most likely booster material used in such devices. Dynamite is also among the most sensitive of booster materials. This sensitivity makes the safe disruption of such devices difficult. In general, existing explosive disrupters impart high shear over a very small area, which will cause the detonation of sensitive explosive material.

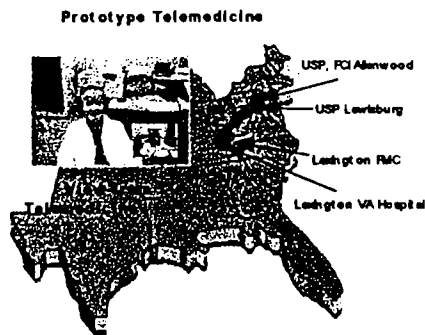
Impact: This effort will provide an inexpensive means of safely neutralizing such device in situ, increasing the safety of the public and law enforcement and other public safety personnel on the scene.

Status: Phase I of this effort, the proof-of-concept, was successfully completed. Phase II, currently underway, will conclude in a nationwide demonstration and evaluation of this technology with law enforcement agencies, which is expected to occur before the end of FY99.

DoD/DOJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. The Indian Head Division of the Naval Surface Warfare Center is developing this technology.

POC: Jerry Howell

Title: Telemedicine Demonstration



Description: The National Institute of Justice (NIJ) in collaboration with the Federal Bureau of Prisons (BoP) and the Department of Veterans Affairs, sponsored a demonstration project to evaluate the impact of telemedicine and telecommunications technologies for addressing the needs of prison healthcare.

Impetus: Healthcare costs for prisoners continue to rise. They represent a significant portion of the criminal justice budget for federal, state and local governments. Delivery of healthcare to prisoners is a demanding, expensive responsibility for prison systems. Additionally, the need to transport inmates out of a prison for medical services not available there, poses a threat to prison staff and to the local community.

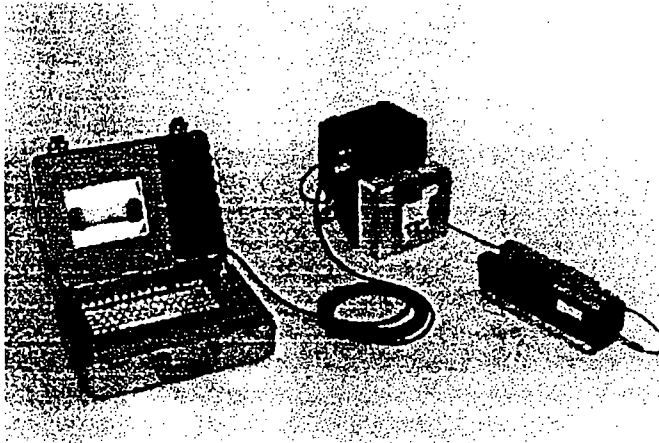
Impact: This project produced the first comprehensive assessment of the utility of telemedicine in a correctional environment. It also developed and demonstrated a state-of-the-art, turn-key telemedicine system, geared for inmate population needs and a model for development and implementation of telemedicine in other venues.

Status: A prototype telemedicine network has been in operation since September 1996, linking the Federal Medical Center (FMC) in Lexington, Ky., the United States Penitentiary (USP) in Allenwood, Pa., the USP in Lewisburg, Pa. and the Veterans' Affairs Medical Center in Lexington, KY. Funding provided by the BoP enables the expansion of this network to include the Medical Center in Springfield, Mo. In the course of this project, telemedicine was widely embraced by officials, medical staff and prisoners and came to play a major role in the delivery of healthcare services. This highly successful project established that substantial savings may be realized with the utilization of telemedicine technology. It found that the cost of the telemedicine system would be recovered in 15 months with a substantial monthly savings thereafter. In addition to cost savings, it was convincingly established that telemedicine offers improved access to specialty care and enhanced public safety through the reduction in the number prisoners transported outside the prison for medical care. As a consequence, NIJ is planning on exploring the application of telemedicine in jails in 1999.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. It was funded in part through the Defense Advanced Research Projects Agency.

POC: Dr. Peter Nacci

Title: X-Ray Diagnostic System for Explosive Devices



RTR-3 X-Ray System

Description: The National Institute of Justice (NIJ) is collaborating with the Technical Support Working Group (TSWG) and the Federal Bureau of Investigation in sponsoring a nationwide demonstration and assessment of an improved diagnostic systems for explosive devices. This technology, the RTR-3 was initially developed under TSWG auspices. It is a computer based, portable x-ray system that enables bomb technicians to rapidly examine an explosive device by displaying an x-ray image of the device on a computer screen, rather than having to wait for that image to be developed on film. The RTR-3 also enables them to transmit the x-ray image of a device, via modem, to remote experts for analysis.

Impetus: Explosive devices are perhaps the terrorist's most often used weapon. Once such a device is located, an effective means to disrupt it without moving it is vital to the safety of the public and to law enforcement and other public safety personnel on the scene. The safe disruption of such devices is greatly facilitated by being able to determine their construction. X-ray images are a preferred means of doing so. Using conventional x-ray technology, requiring the development of x-ray film, can be a cumbersome and time consuming process.

Impact: This effort will provide information on the performance of the RTR-3. This information will be used to improve future such systems, making them more effective and in so doing enhancing the safety of the public and law enforcement and other public safety personnel on the scene.

Status: Agreements are being developed with 24 state and local agencies, across the country, for participation in this demonstration, which is expected to begin by the end of 1998.

DoD/DoJ Relationship: This project is administered by the Joint (Justice - Defense) Program Steering Group. The Indian Head Division of the Naval Surface Warfare Center and the Office of Special Technology are providing technical support to this project.

POC: Jerry Howell

Title: Deployment and Evaluation of Low-Cost Uncooled Thermal Imagers to Enhance Law Enforcement Operations

Description: Deploy inexpensive, handheld and vehicle mounted, infrared sensors to law enforcement agencies; evaluate how the sensors are utilized in typical operational scenarios; and develop an understanding of thermal imager use by law enforcement that can be used by other agencies to help in their decision to purchase and use infrared sensors.

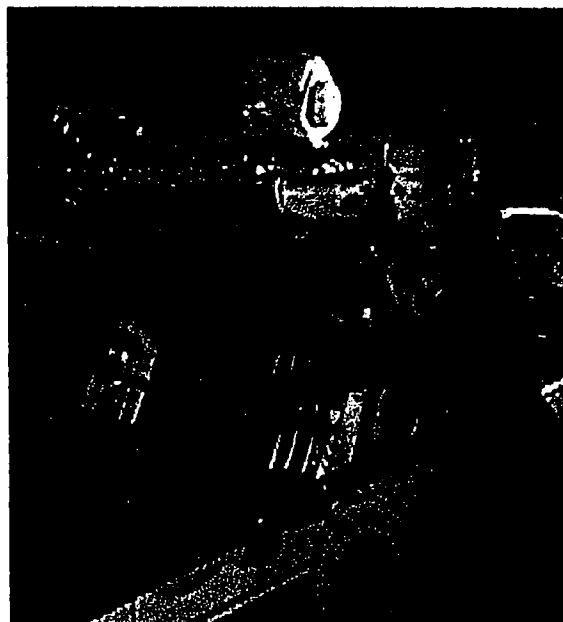
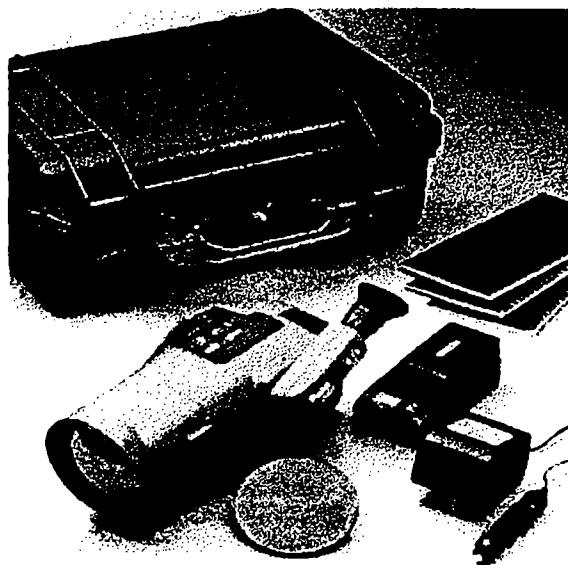
Impetus: Infrared sensors are not commonly used by law enforcement agencies. This project will establish a law enforcement-derived operational guide that will help other agencies determine whether or not to purchase and use infrared sensors within their department.

Impact: The product of this effort will help to educate law enforcement agencies on the use of infrared sensors and will help to facilitate the decision-making process to purchase and use infrared sensors within individual law enforcement agencies.

Status: Because of a significant DoD investment, the uncooled infrared sensors have become more affordable for military and law enforcement use. An operational guide will facilitate the use of infrared sensors in law enforcement agencies.

DoD/DoJ Relationship: The DoD has invested more than \$70M to develop a useful and affordable uncooled infrared sensor. As a result of Industry and Defense Dept commercialization efforts, a number of affordable law enforcement products are now available.

POC: Tom Coty



Title: Mass Spectrometry DNA Typing

Description: Mass spectrometry DNA typing has been shown to greatly reduce analysis time of DNA samples to the point where more than 1,000 samples can be tested in less than five minutes, and at substantially less cost than current techniques. This technique is highly automated and can be easily expanded to include other genetic markers as they are identified to be of forensic value in the future.



Robot for distributing DNA into Mass Spectrometry

Impetus: A need exists for faster and less expensive testing methodologies to process large numbers of samples for the convicted offender database (CODIS). While we currently have a backlog of at least a half million to a million samples awaiting DNA profiling for entry into the CODIS database, it is expected that between 1 to 2 million new convicted offenders will be added to the database annually as the investigative power of CODIS is realized.

Impact: The development of this technology will enable laboratories to reduce the CODIS backlog and maintain the in-flow of new convicted offender samples as they are collected. The CODIS database will generate a "hit" (i.e. identification) from crime scene evidence for every 1000 samples in the database to rapidly generate investigative leads, more solved crimes and more saved lives.

Status: This project has demonstrated high-throughput sample analysis capability for all 13 core genetic markers required by the forensic community for inclusion in the CODIS national database.

DoD/DoJ Relationship: None

POC: Lisa Forman, Ph.D.

Title: Mobile Interoperability Testbed

Description: NIJ has expanded the Advanced Law Enforcement Response Technology (ALERT) testbed initially developed by the Dept of Transportation's Federal Highway Administration. The program will develop and demonstrate a mobile information management system to control and integrate communications systems both in public safety vehicles across jurisdictions and throughout communications centers (dispatch).

Impetus: The technologies that have evolved and are currently used in law enforcement vehicles and communications centers to communicate with are continually expanding and rapidly filling the interior of the vehicles. These stovepipe approaches lead to an inability to communicate across jurisdictions.

Impact: A mobile interoperability configuration is needed in order to manage the cost and implementation of future technologies in the public safety arena.

Status: Initial prototypes have demonstrated the use of touch screen monitors that control various technologies, such as the radar, emergency lighting, sirens, radio communications, and video cameras.

DoD/DoJ Relationship: None

POC: Brenna Smith

Title: Less-Than-Lethal Incapacitation Technologies

Description: Less-than-lethal technologies provide options for law enforcement and corrections officers when confronted by violent or uncooperative suspects or prisoners. There is no single less-than-lethal weapon for all scenarios. Project areas currently under development or evaluation include: chemical (pepper spray), electrical (stun devices), kinetic energy blunt impact projectiles (ring air foil projectiles), nets (baton or projectile launched), and light (laser dazzler).

Impetus: Minimize the risk of death and injury to law enforcement officers, suspects, prisoners, and the general public and reduce civil and criminal liability suits against law enforcement and corrections agencies.

Impact: Less-than-Lethal technologies have saved the lives of suspects and prisoners, law enforcement and corrections officers, and the general public.

Status:

The ring airfoil projectile (RAP). The RAP is a blunt impact projectile that is nonlethal at the muzzle. It was developed by the military and is now being modified for law enforcement applications. These modifications include the development of a new launch device and the dispersal of pepper powder on impact. A prototype launcher will be available in March 1999, and a field trial will be conducted in FY99.

Pepper Spray. NIJ has conducted and is currently conducting various evaluations of the health effects and effectiveness of pepper spray. Pepper spray effectiveness studies have been published and NIJ should have in-depth information of the health effects of pepper spray by the end of FY99.

Electric stun projectile. The electric stun projectile uses taser and stun gun technology. It gives an officer a 30ft standoff from which to incapacitate a suspect or prisoner. NIJ is funding a human effects advisory panel to analyze the health effects of the electric stun projectile. If the analysis results are favorable, NIJ will fund a field trial.

Nets. NIJ has funded the modification of two types of nets to enhance their safety. One is a net that can be launched from 40 feet using a grenade launcher. The other is a net that can be launched from three to ten feet via a baton. The projectile-launched net is a commercial product and a prototype baton-launched net will be demonstrated in November 1998.

Laser Dazzler. The laser dazzler is a green laser light that flashes to disorient the suspect or prisoner. It was developed through the Joint Program Steering Group, and NIJ is funding its safety certification at Phillips Laboratory. After safety certification, a field trial will be conducted.

DoD/DoJ Relationship: The ring airfoil projectile is a DoD-developed device that is currently being upgraded to include pepper spray. Other less-than-lethal technologies are either spinoffs of DoD projects or are being developed in conjunction with the DoD under a recently signed Memorandum of Understanding between NIJ and DoD's Joint Nonlethal Weapons Directorate.

POC: Ray Downs, Ph.D., and Sandy Newett

Title: National Commission on the Future of DNA Evidence Follow-up & CODIS Database Backlog Reduction Program

Description: This is a two year program to eliminate the estimated backlog of half million to a million convicted offender samples for entry into the Combined DNA Index System (CODIS) national database; develop the State and local crime laboratory infrastructure necessary to allow maintenance of the database; consider safeguards with regard to privacy issues; and expand the number of types of convicted felon samples (e.g., burglary) collected for the database.

Impetus: The enormous backlog of convicted offender samples awaiting analysis and entry into CODIS detracts from the utility and effectiveness of the national database. Every day that these samples remain unanalyzed is a day that a crime could be solved by a database "hit," if the offender had been convicted previously.

Impact: This funding will, within two years, enable State and local jurisdictions to eliminate their backlogs, develop convicted offender databases and also to keep up with the numbers of new offender samples submitted. By implementing methods such as mass spectrometry and microchip technology and other high through-put technologies in the labs, forensic DNA samples that now require a day to process for DNA identification will take less than five minutes. A *current* and *comprehensive* database will provide the potential for a greater number of CODIS "hits" and, subsequently, more solved crimes.

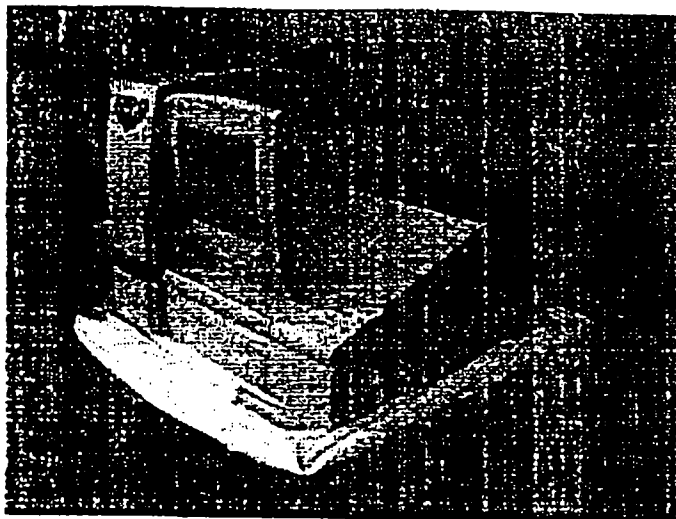
Status: NIJ has requested \$10 million for Fiscal Year 2000 to fund this initiative.

DoD/DOJ Relationship: None.

POC: Lisa Forman, Ph.D.

Title: DNA microchip technology

Description: Electronic (Nanogen) and capillary electrophoresis (Whitehead Institute) microchips can perform DNA testing rapidly and accurately at a low cost. These technologies are amenable to miniaturization, will allow additional genetic markers to be incorporated into the systems, will enable DNA analysis to be performed at the crime scene, and will allow for preliminary results to be obtained in minutes.



Nanogen Prototype Electronic Microchip DNA Testing

Impetus: The need to input suspect DNA profiles into the CODIS database as quickly as possible for identification in order to better identify suspects and exonerate innocent people.

Impact: This development allows for rapid exonerations of uninvolved people and quick identification of suspects which will be identified and apprehended faster, hence closing more cases.

Status: The first generation electronic microchip analyzes already extracted DNA samples in less than 30 minutes for four (of thirteen) genetic markers. The final prototype electronic microchip will extract the DNA from evidence samples, will perform DNA testing on the extracted DNA, and produce a DNA profile in less than an hour. The miniaturized capillary electrophoresis microchip can type four CODIS markers in two minutes at a significant decrease in cost. Phase one allows for the addition of other CODIS markers and will begin the development of a fully automated system.

DoD/DoJ Relationship: DoD has invested funds in the development of the electronic microchip system.

FOC: Lisa Forman, Ph.D.

Title: Smart Gun

Description: NIJ has funded an effort by Colt Manufacturing to enhance its second generation prototype Smart Gun: a weapon that will only fire for a recognized user. This weapon employs radio frequency technology. When energized, the gun emits a radio signal, which is received by a small transponder worn by the authorized user and returns a coded radio signal. Upon receipt of the signal, a locking pin is removed from the trigger mechanism enabling the weapon to fire.



Impetus: A review of the past 10 years of the FBI's report on officers killed and assaulted shows that 1 in 6 officers killed annually are victims of their own weapons in the hands of an assailant.

Impact: A Smart Gun would greatly reduce the number of officer deaths due to the officer being disarmed and shot with his or her own weapon. This technology application could be used to allow public safety officials to carry weapons in situations in which they have been typically prohibited from doing so, i.e. jails and correctional facilities.

Status: NIJ, working with the Office of Law Enforcement Standards, the National Law Enforcement and Corrections Technology Center, and two Metropolitan, DC, police academies will develop and conduct an extensive field evaluation program of the Smart Gun and its technology during FY99.

DoD/DoJ Relationship: None

POC: Wendy Howe

Title: Facial Recognition Technology

Description: To develop and integrate facial recognition software with intelligent information search technologies to measurably improve law enforcement investigation capabilities for identifying missing and exploited children and fighting child exploitation on the Internet.

Impetus: With the growth of the Internet there has been an explosion of child exploitation and pornography that law enforcement has not been able to deal with effectively.

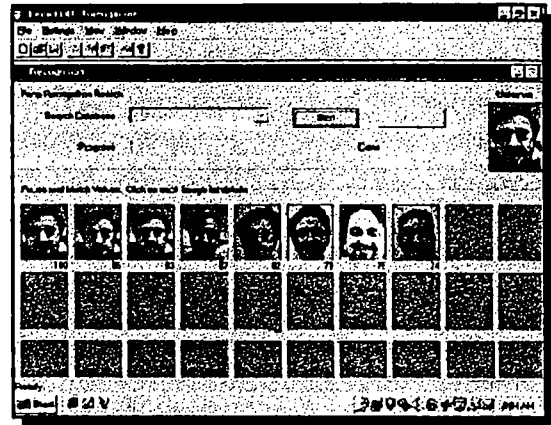
Impact: If successfully developed, this product will efficiently locate, extract, and identify faces from still and video pornographic images and will then search very large databases of missing children and criminals for image matches. This will effectively multiply the productivity of law enforcement engaged in the fight against child exploitation.

Status: The intelligent search modules are in various stages of development and integration with a still photo facial recognition capability. Efforts associated with developing a video facial recognition search capability are just getting underway.

DoD/DoJ Relationship: The DoD has funded the development of still photo facial recognition and a standardized method for evaluating still photo facial recognition. DoJ is currently funding activities that will help standardize evaluation methods of video facial recognition. There may be a joint funding activity in the near future with DoD to establish the standard for video facial recognition evaluation.

POC: Tom Coty

Visionic's Facial Recognition System



Title: Technology Tools for Law Enforcement and Correction Officers Training

Description: This program is developing technologies that will augment the training of law enforcement and corrections officers. By using Computer Based Training (CBT), Video Based Training, Virtual Reality, and Advanced Distance Learning, officers can be trained efficiently, inexpensively, and safely. Each of these technologies will allow learning through realistic operational scenarios at a lower cost and in safe environments.

Impetus: The time and funding to train and retrain law and corrections officers is not always available. Yet, training is of paramount importance to ensure the officers are effective and minimize liability actions.

Impact: The use of technology tools to enhance officer training will allow affordable, safe, and timely training of officers.

Status: NIJ is currently developing an updated version of a generic Bomb Threat Training Simulator on CD-ROM for use by law enforcement and security first responders to a bomb-threat scene. An alpha version of the Weapons Team Engagement Trainer (WTET), a video based team engagement shoot/no-shoot trainer, is currently being used by law enforcement agencies in Orlando, FL. Beta versions of the WTET will be installed in a Sheriff's Department on the West Coast and at a Naval Training site in Orlando, FL. Both sites will be used to train military and law enforcement officials.

DoD/DoJ Relationship: NIJ is currently working with the Naval Air Warfare Center Training Systems Division in Orlando, FL to develop and implement the Weapons Team Engagement Trainer, and assess and develop other technology tools for training.

POC: Sandy Newett and Kevin Jackson

Title: Teleforensic Program

Description: The teleforensic program will evaluate and develop communications and sensor technologies to provide forensic experts with remote access to crime scenes.

Impetus: Because crime scene and forensic experts can not visit all crime scenes in a timely and cost effective manner, remote sensors and communications to crime scenes will enhance the investigations of crimes.

Impact: More crime scene investigations, especially those requiring highly trained experts, will have the benefit of forensic and crime scene experts.

Status: Initial agreements between NIJ, the US Army, and NASA have been signed to demonstrate some of the currently available technologies in mock crime scenes. Crime scene investigators will assess the utility of the technologies and recommend further evaluations and development.

DoD/DoJ Relationship: The demonstration program is being coordinated with the US Army's Medical and Research Command at Ft. Dietrick, MD.

POC: Lisa Forman, Ph.D.