



# National Drug Control Strategy

Counterdrug Research  
and Development  
Blueprint Update

The White House  
February 2003

## MESSAGE FROM THE DIRECTOR

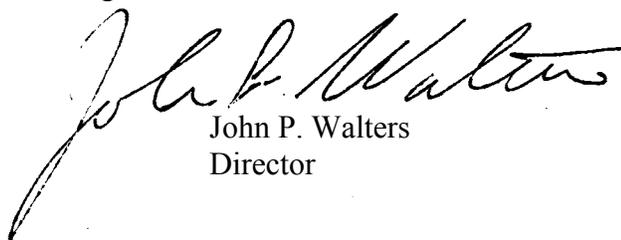
The Counterdrug Research and Development Blueprint Update provides a periodic report on the efforts of the Counterdrug Technology Assessment Center (CTAC) on the research and development program and the Technology Transfer Program.

Technology plays a crucial role in making progress toward our National Drug Control Strategy goals of achieving a 10 percent reduction in current use of illegal drugs in two years and a 25 percent reduction in current use of illegal drugs in five years. Through CTAC sponsorship of advanced neuroimaging and genetics instrumentation, substance abuse researchers are revealing the processes in the brain that result in addiction, and what can be done to reverse or mitigate these processes. New neuroimaging facilities dedicated to addiction research will be opened at the University of North Dakota, Roskamp Institute at the University of South Florida, Brookhaven National Laboratory, and National Institute on Drug Abuse Intramural Research Program in Baltimore, Maryland. This knowledge will provide for the development of better treatments to heal America's drug users, and will provide a better understanding of why addiction takes place so that we can stop use before it starts.

To disrupt the market, the U.S. Customs Service, Border Patrol, and U.S. Coast Guard are installing new capabilities and systems to interdict illicit drugs at our borders and on the high seas. Since September 11, 2001, this equipment has been used to search for chemical and biological agents and weapons of mass destruction. These searches also have led to dramatic increases in the seizure of drugs. We look forward to working closely with the Department of Homeland Security to continue developing advanced inspection technology that will further tighten border security.

The ability of our federal, state, and local agencies to communicate and share information is crucial to combating the drug trafficking organizations. An operational testbed for communications interoperability developed in conjunction with the Drug Enforcement Administration field office and Denver metro regional drug task forces, successfully demonstrated a capability to communicate effectively during joint operations with each agency using its own dissimilar and incompatible radio. One of CTAC's more successful programs, the Technology Transfer Program, relies on technical and operational performance testbed evaluations and outreach to industry to acquire additional items for law enforcement. Over the past five years, this program has brought advanced drug crime-fighting technology and associated training to over 20 percent of the state and local police departments and sheriffs offices.

The successes reported in this Blueprint Update result from the dedicated efforts of the industrial, academic, and national laboratory sectors. ONDCP, the substance-abuse research teams, and law enforcement personnel across the country who have benefited applaud their accomplishments. We are confident that with continued efforts, we will be able to meet our national goals of reducing illicit drug use in America.



John P. Walters  
Director

# EXECUTIVE SUMMARY

This Counterdrug Research and Development Blueprint Update provides the annual periodic report on the Counterdrug Technology Assessment Center's (CTAC) counterdrug research and development (R&D) program and Technology Transfer Program (TTP). Appendices to this report provide information mandated by CTAC's role as the central counterdrug technology research and development organization of the U.S. Government. CTAC's efforts support the National Drug Control Strategy goals of achieving a 10 percent reduction in current use of illegal drugs in two years, and a 25 percent reduction in current use of illegal drugs in five years.

The demand reduction R&D program supports the President's national priorities: stopping use before it starts and healing America's drug users. CTAC, in collaboration with the National Institute on Drug Abuse (NIDA), has created a niche for developing and installing advanced neuroimaging centers across the U.S. In fiscal year 2002, three advanced neuroimaging centers became operational: a Positron Emission Tomography (PET) brain scanner at the University of Pennsylvania, a 4-Tesla functional Magnetic Resonance (fMRI) scanner at McLean Hospital outside Boston, and a 7-Tesla fMRI in Boston, Massachusetts. These new centers increase

the total number of CTAC-sponsored neuroimaging centers to twelve. This expansion of the national infrastructure of advanced neuroimaging systems enables expanded research with previously unavailable levels of detail, offering novel insights into the underlying causes of addiction.

In the supply reduction area, CTAC works with national drug control agencies to develop and evaluate technologies to interdict drug shipments and disrupt the drug market. Tactical technology-development efforts to support the law enforcement officer in performing daily operations have included projects to improve information management and data sharing, tracking and surveillance, and communications interoperability capabilities. Under CTAC leadership, a custom engineered computer-based wireless communications interoperability system that eliminates the incompatibility problem for the Denver, Colorado area completed a full year of highly successful operations in August 2002 and is now available to state and local law enforcement agencies through the TTP. Since its beginning in 1998, the TTP has delivered advanced drug crime fighting technology and the necessary training to use it to nearly 4,000 state and local law enforcement agencies across all fifty states.

## CTAC Major Activities

### Research and Development Program

*Demand Reduction: Stopping Use Before It Starts and Healing America's Drug Users*  
Brain Imaging and Bioinformatics Technologies

*Supply Reduction: Disrupting the Market*

Drugged Driving Detection, Communications Interoperability, Cargo Inspection, Drug Crime Information Handling, and Tracking and Surveillance Technologies

*Operational Test and Evaluation Activities*

### Technology Transfer Program

*Deliveries to nearly 4,000 state and local agencies*

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- A. Applicable Legislation
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- E. Technology Transfer Program
- F. Acknowledgements

<sup>1</sup> Please see [www.whitehousedrugpolicy.gov](http://www.whitehousedrugpolicy.gov)

# INTRODUCTION

The Counterdrug Technology Assessment Center (CTAC) is the central counterdrug technology research and development organization of the United States Government. This Counterdrug Research and Development Blueprint Update provides an annual report on the counterdrug research and development (R&D) program. The report concentrates on those accomplishments made with R&D projects conducted with CTAC funding and the Technology Transfer Program (TTP). Appendices contain information mandated by CTAC-related legislation as well as information about activities undertaken by other national drug control agencies. Appendices B and C contain sensitive, yet unclassified, information, were removed from this report, and can be accessed online at [www.whitehousedrugpolicy.gov](http://www.whitehousedrugpolicy.gov). The ONDCP Clearinghouse webmaster will arrange for access to specific information as appropriate.

- Appendix A provides excerpts from recent legislation and conference reports
- Appendix B provides an updated listing of priority scientific and technological needs by agency
- Appendix C provides a summary of drug-related R&D projects by the national drug control agencies
- Appendix D provides the Annual Report on the Development and Deployment of Narcotics Detection Technologies (required by P.L. 105-85) (funding levels provided online)
- Appendix E provides a summary of the Technology Transfer Program
- Appendix F acknowledges those who supported the preparation of this report

CTAC's strategic goals were developed in concert with the National Drug Control Strategy goals and national priorities. The schematic in Figure 1 provides an overview of CTAC's goals: (1) improve the quality of research, (2) improve the quality of drug-related criminal investigations, and (3) expand investigative capabilities of state and local law enforcement; and their relationship to the national goals of:

## Two-Year Goals:

- A 10 percent reduction in current use of illegal drugs by the 12-17 age group
- A 10 percent reduction in current use of illegal drugs by adults age 18 and older

## Five-Year Goals:

- A 25 percent reduction in current use of illegal drugs by the 12-17 age group
- A 25 percent reduction in current use of illegal drugs by adults age 18 and older

## Federal Agency R&D Spending

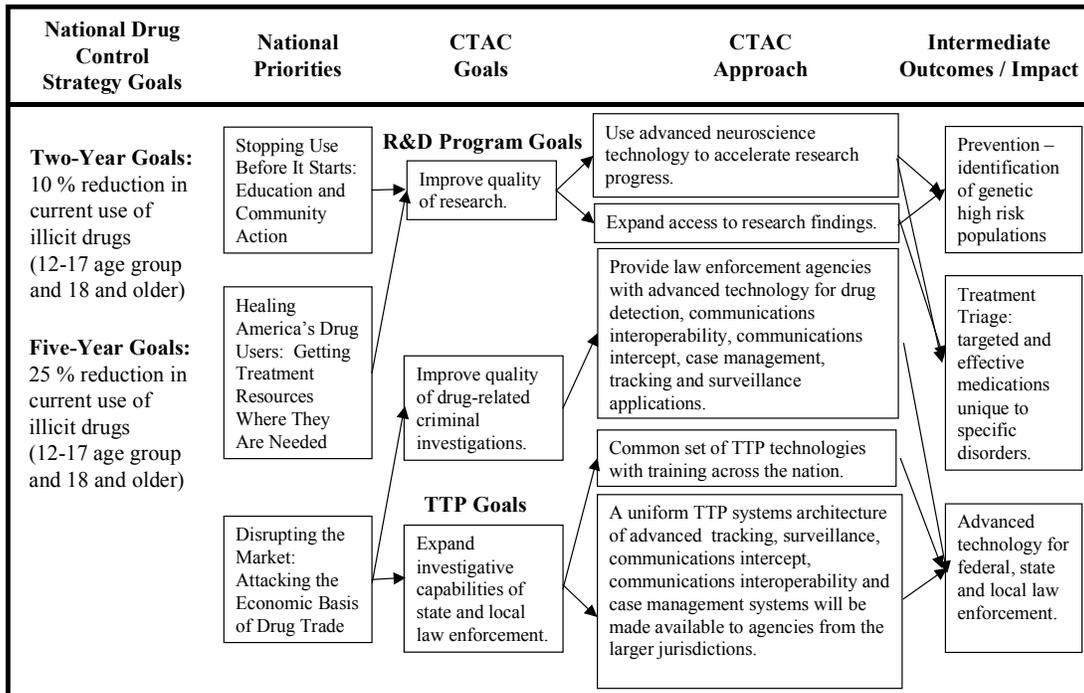
The National Drug Control Strategy Budget Summary provides the drug-related R&D budgets for the national drug control agencies.

## CTAC R&D Funding

For fiscal year 2002, CTAC received appropriations of \$42,300,000 as follows:

- \$20,064,000 for R&D projects in support of demand and supply reduction technologies, and
- \$22,236,000 for the Technology Transfer Program.

Figure 1. CTAC Goals Related to National Goals and Priorities



# CTAC R&D PROGRAM SUMMARY

CTAC's R&D program supports both demand and supply reduction efforts to reduce illicit drug use in America.

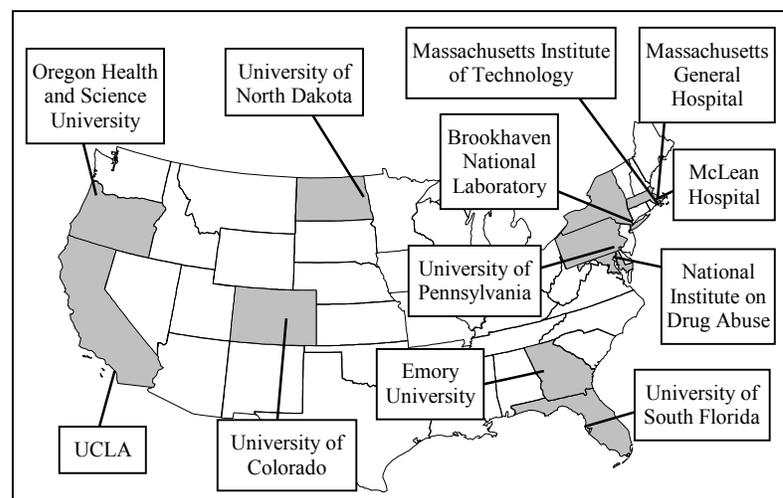
## Demand Reduction

CTAC, in collaboration with the National Institute on Drug Abuse (NIDA), has created a niche for developing and installing advanced technology that enables innovative substance abuse research across the nation. This collaboration ensures that advances in the design of neuroimaging and genetics instrumentation enable concept-driven paradigm shifts in science. Just as X-ray crystallography enabled Watson and Crick's discovery of the double helix, advanced neuroimaging instrumentation and facilities to image the living brain likely hold the keys to unlock knowledge about the effects of substance abuse on the brain.

The creation of a comprehensive representation of how the brain forms, functions, and falters will help reduce drug addiction (and other neurological disorders) as both a public and individual health problem. Thoroughly understanding the changes that occur on a cellular, molecular, circuit and behavioral level within individuals in an addicted state will enable researchers to develop truly effective preventative and treatment measures. Identifying individual genetic variations that confer risk (or resistance) will help society provide more effective and targeted prevention and education efforts. Likewise, knowing the precise changes will allow for specific regimens targeting the particular brain pathways that have been distorted by the substance of abuse.

Novel non-invasive neuroimaging instrumentation allows scientists to penetrate the deepest regions of the brain. These scientists aim to unveil the detailed underlying mechanisms that answer how drugs act in the brain, how addictive states transpire, and which treatment and prevention efforts are most effective. With CTAC support, many of the nation's finest substance abuse research centers are being equipped with the most modern neuroimaging facilities available to reveal the brain with a depth, clarity, and delineation previously unavailable.

Figure 2 shows the location of the CTAC-supported substance abuse research centers that have received leading-edge neuroimaging facilities or medical instrumentation through this CTAC program. These institutions have all agreed to focus on drug abuse research and train the next-generation of researchers to continue the advancement of our knowledge.



*Figure 2. Locations of CTAC Demand Reduction Infrastructure Technology Initiatives*

### **Projects Becoming Operational During 2002**

McLean Hospital's Brain Imaging Center in Belmont, Massachusetts has begun using a high field (4-Tesla) functional Magnetic Resonance Imaging (fMRI) / Magnetic Resonance Spectroscopy (MRS) scanner for clinical assessments of drug addicts. This system provides a spectroscopic means to measure the drug chemistry and metabolism in the brain. McLean Hospital scientists are using these MRS capabilities to study the neurochemical changes associated with acute and chronic use of alcohol, marijuana, cocaine, and heroin, in addition to attracting new post-doctoral fellows to focus their efforts on drug abuse research. McLean's MRS experience will enable them to develop better treatment assessments, dubbed "surrogate markers." Such markers are already used in clinical trials of multiple sclerosis, HIV dementia, and other neurological diseases.

An Institutional Research Protocol was approved for the Massachusetts General Hospital (MGH) in Boston, Massachusetts allowing the MGH research team to use the powerful 7-Tesla fMRI to obtain human images. Receiving protocol approval allows researchers to move forward with a research program to examine the brain reward circuitry that mediates drug addiction and characterizes the temporal dynamics when presented with a drug. Doing so will require a multi-site, national effort with the collection of thousands of scans comparing the addicted and naïve brains. The MGH team is forming collaborative relations with other institutions with specialized capabilities in genetics and allied fields to further empower their research to develop neuroimaging technology as a clinical tool for the diagnosis and prognostic determination of treatment for substance abuse disorders.

In early April, the University of Pennsylvania held the ribbon cutting for a new high resolution Positron Emission Tomography (PET) camera making breakthrough use of Gadolinium Ortho-Silicate crystal detectors. This crystal type has demonstrated improved signal-to-noise ratio, increased image contrast, and higher count-rate capability compared to standard sodium iodide crystals. Those improvements over the PET systems are expected to significantly advance the output of Pennsylvania's research into craving and its possible controls. Patient studies in 2003 will validate the imaging protocol, modeling and quantitative analysis of neuroreceptor studies by imaging brain activity resulting from cue-induced cocaine craving.

NIDA's Intramural Research Program (IRP) applied the advantages of a head-only fMRI over those of typical whole-body machines in a multidisciplinary approach to drug abuse research. IRP-based scientists will interact with medication development and treatment researchers to test clinical efficacy of new potential medications. The selected 3-Tesla unit provides an increased signal-to-noise ratio through advanced techniques.

Research Triangle Institute has completed tests with human subjects using the PET system and associated radiotracer chemistry lab at the NIDA Intramural Research Program (IRP) in Baltimore. Researchers conducted quantitative analyses of brain activity using bolus Oxygen-15 to measure regional cerebral blood flow in abstinent drug abusers and healthy control subjects performing standardized cognitive tasks. Researchers aim for differences between the two groups in cognitive abilities and their neuroanatomical correlates to be used by clinicians to extrapolate treatment responses based on the underlying dysfunction seen through the tested vulnerability factors/markers.

### Projects Continuing in 2003

At UCLA's Crump Institute, an ultra-high resolution small animal PET facility was installed at the main campus in the Sepulveda Veteran's Administration Medical Center. This state-of-the-art MicroPET center will be co-located with the Vervet monkey colony. The facility will consist of the MicroPET relocated from the main campus with associated biomedical cyclotron and radiochemistry equipment. This new facility will enable scientists to use the well-defined lineage of the Vervet monkey colony in non-human primate studies to link biochemical events to the specific genes critical to brain reward functions. This facility will also have the capability to evaluate therapeutic compounds and will provide a platform for training future scientists in addiction research.

A high-field fMRI will enable scientists at Oregon Health and Science University to study the effects of performance enhancing anabolic steroids and other drugs in the adolescent brain. Several advanced techniques will be employed with the machine. Magnetic Resonance perfusion and tensor imaging will be used to learn more about the effects of methamphetamine and cocaine in humans and in developing monkeys. MR arterial spin labeling will be used to examine the relationship between anxiety and depressive behaviors and the risk for drug dependence.

The University of Colorado Health Sciences Center will use a 3-Tesla fMRI to study prevention efforts in adolescents just beginning drug abuse, and how brain function is altered during cocaine and amphetamine-induced states. This tool will radically help researchers determine the brain abnormalities associated with inherited risk for substance abuse in conduct-disordered adolescents.

Massachusetts Institute of Technology is exploring improved imaging methods using conventional single photon emission computed tomography (SPECT) technology based on the use of innovative processing algorithms, particularly coded aperture. Researchers are building a prototype system with sub-millimeter resolution to upgrade existing gamma camera technology with limited three-dimensional information available through laminography.

The Drug Evaluation Network System (DENS) is a data backbone with analysis software used to collect and track "treatment entry" data on addicts. DENS is helping addiction researchers compare treatment outcomes across treatment modalities. The system incorporates the standardized Addiction Severity Index (ASI) screening and assessment system. This project has already yielded a database rich in detail from over 35,000 patient records enrolled in 21 treatment programs. The DENS website tracks treatment program data from clinics in major cities, including Philadelphia, Chicago, Los Angeles, New York and Miami. The European Union is now interested in using the ASI with DENS. A planning meeting in early 2003 in Stockholm, Sweden is being held to discuss how best to implement DENS in Europe.

In January 2003, a new exhibit on the dangers of addiction opened at the Arizona Science Center in Phoenix. Visitors to this exhibit learn about the latest research on brain function before and during addiction. The exhibit, comprised of two four-sided kiosks, includes a range of multi-sensory interactive experiences and computer-based media to introduce teens and parents to groundbreaking research on the dangers of addiction and how it can be treated and prevented. Visitors to the exhibit can view a simulated PET scan machine to see the effect drugs have on the human brain.

Videos featuring testimonials of young addicts now in recovery show the emotional and spiritual costs of using illicit drugs. Ideally, this presentation will not only warn students away from drugs but also inspire young people to pursue careers in the field of addiction research. If this prototype science museum exhibit is successful, it can be replicated for use in other science museums across the country.

University of Arizona is conducting a study to reduce adolescent substance abuse relapse through the treatment of sleep disturbance. This project focuses on developing an effective, multi-component, group treatment of sleep disturbance and daytime sleepiness for adolescents who have completed treatment for substance abuse. Sleep problems occur in association with and during withdrawal from a variety of substances and lead to increased likelihood of reuse, poor school and work performance, absenteeism, and increased depression. The treatment of sleep disturbance promises to reduce these risk factors and reduce the likelihood of relapse.

### **New Projects Starting in Late 2002 or Early 2003**

University of North Dakota at Grand Forks will install a MicroPET facility to validate the use of the Weaver mutant mouse as a suitable model to study individual dopaminergic systems involved in drug addiction. This technology dedicated for substance abuse research is also devoted to training Native American students to participate in such research.

Genetics researchers at the Roskamp Institute of the University of South Florida in Tampa are using recent developments in microarray technology to investigate blood gene expression to classify characteristic fingerprints produced by specific drugs. This ability to profile changes in RNA across the

human genome will enable the production of detailed genomic and proteomic models of responses to drug challenges by serial analysis of gene and protein expression/modification. Coordination between CTAC sites will subsequently correlate these models with neuroimaging of use, abuse, and addiction. This program will generate a standard procedure for using microarray technology to obtain unique patterns from peripheral blood samples from a large, well-characterized sample. The DNA of identified genes will be analyzed to determine any genetic variation, indicating any possible susceptibilities to substance abuse. Comparing the differences of the genes will enable inferences among those encoding predisposition to drug abuse (trait), or response to drug exposure (state). The researchers will then create easily useable customized RNA and DNA arrays to test for the presence of these trait or state markers.

Brookhaven National Laboratory (BNL) is using MR microscopy and molecular modeling to establish a preclinical high-resolution MicroMRI. This 9.4-Tesla 20-centimeter bore diameter MRI will become part of the NIDA Regional Neuroimaging Center at BNL. The MicroMRI technology will enable the researchers to non-invasively measure changes in brain morphology, brain function, and brain neurochemistry in rodents. A MicroMRI instrument will make studies possible in the rodent model pertaining to the functional and structural changes in response to drugs while monitoring their temporal response.

A superconducting magnet system for use in high-resolution magnetic resonance in-vivo spectroscopy will be installed at the NIDA IRP in Baltimore, Maryland in early 2003. This high field machine is also at 9.4-Tesla, but with a 31-centimeter bore diameter, other primate species will be available for future testing.

## Supply Reduction

CTAC works with the national drug control agencies in the development and evaluation of technology to interdict drug shipments and to disrupt drug trafficking organizations. The following development projects are either complete or are being evaluated by federal law enforcement agencies (LEAs) for use in the field.

### Tactical Technologies

Tactical technology development efforts to support the law enforcement officer performing daily operations include projects to improve knowledge management through information sharing across networks, data mining, tracking and surveillance, internet analysis, and communications interoperability capabilities.

The integration of real-time location and tracking systems with database records of current and past criminal associations will give law enforcement new tools for strategic and tactical planning and execution of drug-related criminal investigations. A scalable information tool, Crystal, is being developed in conjunction with the Rockland County (NY) Narcotics Task Force to enable agencies to organize and present criminal and case-related information with real-time positional data from tracking and surveillance management systems. Users can visually link suspected criminal activity under surveillance to a geographic / historic positional background.

CTAC, in conjunction with DEA, also supports the development of a digital radio system for use in an advanced body wire device. The digital radio features will provide increased capabilities in terms of security (low probability of detection) and intelligence gathering compared with earlier analog devices.

In addition, CTAC supports the development of low-cost handheld sensors to detect cocaine methylbenzoate vapors. These sensors are based on a combination of sensitized metal ion luminescence and molecular imprinting. Molecularly imprinted polymers are synthetic polymers designed to selectively bind to a certain molecule. Optical fibers coated with ultraviolet LED's then detect the binding of the target molecule. Ten handheld units will be available for testing by the spring of 2003.

Decoder technology is being developed to enable law enforcement agencies to monitor mobile telephone communications across the various provider and vendor technologies. This technology should be available in early 2003.

A VHF tactical repeater technology is being developed with deployment planned for spring 2003.

### Wireless Communications Interoperability

A statewide wireless communications interoperability architecture was designed for Colorado in fiscal year 2001. This architecture facilitates communications across the dissimilar and incompatible wireless networks of federal, state, and local agencies within the state. Engineers from the U.S. Naval Space and Naval Warfare Systems Center - San Diego (SPAWAR SSC-SD) evaluated two system configurations for this architecture – one capable of interfacing up to 24 agencies for larger operations and a second configuration designed for smaller operations involving five or fewer agencies.

The project had two phases:

- *Phase I: Denver Metro.* In the Denver metropolitan area, SSC-SD engineers installed a fixed interoperable system that makes use of the existing radio-antenna area coverage of local area LEA participants. Portable interoperable systems were also deployed for those drug task forces operating outside the range of the existing towers. Participating LEA resources were provided complete training on use of these systems. This phase was completed and a major demonstration held during August 2001.
- *Phase II: Statewide Deployment.* SSC-SD Engineers conducted surveys of radio spectrum coverage and an inventory of existing infrastructure equipment for six selected locations throughout Colorado. SSC-SD engineers then installed interoperable communications systems at a host organization for each site and provided location-specific training to LEA resources with responsibility for operating each system. CTAC worked with participant LEAs to establish protocols and procedures for linking the deployed systems to create a statewide communications interoperability capability. Participant LEAs displayed this statewide capability to law enforcement officers from across the country at a major demonstration held at Castle Rock, Colorado in August 2002.

In fiscal year 2002, communications interoperability systems were installed in six regions including Denver, Colorado Springs, Durango, Grand Junction, Larimer County, and Pueblo. The installation of a seventh system has begun in Steamboat Springs.

### **Drugged Driving Initiatives**

Last year, the University of Utah Center for Human Toxicology conducted an evaluation of Point of Collection Test (POCT) devices with an emphasis on those devices using saliva. In coordination with the National Highway Traffic Safety Administration (NHTSA), CTAC is collaborating with the British Home Office and European Union for further testing and evaluation of POCT devices in the United Kingdom and Europe. The tests will be a continuation of the original Roadside Testing Assessment (ROSITA) with an anticipated start date for the testing phase to be in the first quarter of calendar year 2003.

CTAC also supports the development of an ion selective electrode designed by the Naval Research Laboratory to detect drugs in various matrices such as saliva and sweat in field settings. A prototype device has been constructed.

### **Test and Evaluation Support**

SPAWAR SSC-SD manages CTAC's tactical technology testbed project. This testbed examines tactical technologies that will become part of an overall system architecture of law enforcement current and future counterdrug systems. SSC-SD has testbeds in San Diego, New York, Baltimore and Oklahoma City. Each testbed has a different set of tactical support technologies.

CTAC also sponsors test and evaluation activities with the federal drug control agencies. For example, the U.S. Customs Service uses a Community Test and Evaluation Center (CTEC) that has been relocated from North Carolina to the Patuxent Naval Air Station in Maryland. Less than lethal technologies for boat-to-boat interdiction were developed by Customs engineers and tested at CTEC last year.

# TECHNOLOGY TRANSFER PROGRAM

Over the past five years, the Technology Transfer Program has delivered advanced drug crime fighting technology, training and support to nearly 4,000 state and local law enforcement agencies across all fifty states. The technologies available for transfer include information technology and analytical tools, communications intercept, tracking and surveillance, and drug detection devices. A complete description of the TTP program is provided in Appendix E to this report.

## Number of Requests

Since the program began in fiscal year 1998, the TTP has received more than 6,300 applications. Of these applications, approximately 75 percent came from agencies serving smaller jurisdictions of fewer than 500,000 people. These requests typically seek hand-held devices such as mini-busters, undercover surveillance systems, night-vision kits or thermal imagers.

A summary of the types of agencies receiving deliveries and the population sizes served is provided in Figure 3. Overall, police departments and sheriffs' offices received 80 percent of the deliveries. By population, agencies serving populations of 500,000 or less received 86 percent of the deliveries. Night vision kits, thermal imagers, drugwipes, mini-buster kits, and body worn transmitters comprise the predominant mix of technologies provided to police departments and sheriffs' offices in smaller jurisdictions. Task forces, police departments, and sheriffs' offices in larger jurisdictions serving populations of 500,000 or more request the more complex systems (e.g., AVTS, VoiceBox, Data Locator, and Interoperability Communications System).

The top priority items requested in the current backlog of nearly 1,800 agency applications include requests for 206 mini-busters, 263 audio surveillance systems, 617 night vision kits, 384 thermal imagers, 71 body worn transmitters and 45 small look video surveillance systems.

Figure 3. Deliveries By Agency Type / Population Size -FY 1998 - 2002

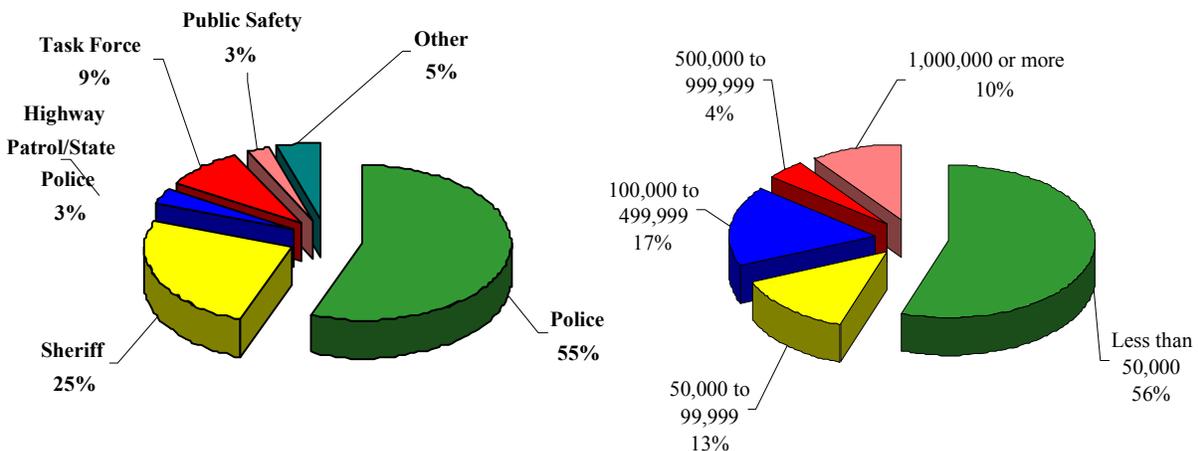


Table 1. CTAC Technology Transfer Program Appropriations

FY 1998	FY 1999	FY 2000	FY 2001	FY 2002
\$13.0M	\$13.0M	\$13.052M	\$18.210M	\$22.236M

A summary of the funding appropriated for TTP is provided above in Table 1.

The U.S. Army Electronic Proving Ground (EPG), Fort Huachuca, Arizona, has technical and administrative responsibility for program management, engineering analysis, acquisition, logistics, outreach awareness efforts, and informative publications.

### Promotion Efforts to State and Local Law Enforcement

Figure 4 below provides a summary of the promotion efforts to state and local law enforcement over the past year.

### Effectiveness and Interest in the Program

The TTP provides an efficient means for getting drug crime fighting technologies into the hands of LEAs serving on the front line. Over 90 percent of the TTP’s budget is used for the purchase of equipment and training. The program’s emphasis on pre-screening applicants combined with training and follow-up with those LEAs that receive equipment ensure recipient agencies make full-use of the equipment.

An additional benefit of the TTP is that as it reaches more and more LEAs nationally, it creates de facto standards in terms of state-of-the-art technologies used by officers on the street. The TTP catalog approach also leads to significant economies in terms of reduced training and retraining costs.

Figure 4. TTP Outreach Activities and Promotion Efforts

2002 Workshops, Meetings, Conferences and Demos		
Dates	Event	Location
February 15	Leadership Meeting Congressman Roscoe G. Bartlett	Frederick, MD
April 8	Leadership Meeting Congressman Mike Souder	Kendallville, IN
April 16-18	Workshop	Pittsburgh, PA
April 22	Leadership Meeting Congressman Ed Pastor	Phoenix, AZ
April 30	Senate Law Enforcement Technology Day	Washington, DC
May 29	Leadership Meeting Congressman Bennie G. Thompson	Lexington, MS
May 30	Leadership Meeting Congressman John Shimkus	Mount Vernon, IL
June 22-26	National Sheriff's Association (NSA)	Tulsa, OK
July 8-10	ONDPC Symposium	Cambridge, MA
July 21	Gordon Research Conference on Illicit Substance Detection: Drugs	Oxford, England
August 7	Leadership Meeting Congresswoman Karen Thurman	Inverness, FL
August 12	Leadership Meeting Congressman Bart Stupak	Sault Ste. Marie, MI
August 20	ICS Demonstration & Specialized Workshop	Castle Rock, CO
August 21-23	Sources Sought Evaluations	Denver, CO
August 27	Leadership Meeting Senator Max Baucus	Billings, MT
August 28	Leadership Meeting Congressman Brian Baird	Vancouver, WA
August 29	Leadership Meeting Congresswoman Shelley Berkley	Las Vegas, NV
October 5-9	International Association of Chiefs of Police (IACP)	Minneapolis, MN
November 13	Integrated Border Enforcement Team (IBET)	Ottawa, Canada
November 15	Rotary Club of Dulles International Airport	Dulles, VA
December 11-13	HIDTA Annual Conference	Washington, DC

2002 Training Sessions		
Dates	Location	Attendees
March 25-29	Orlando, FL	800
June 4-5	Phoenix, Arizona	164
December 16-20	Atlanta, Georgia	392

# OVERSIGHT AND COORDINATION

CTAC leads the Interagency Working Group for Technology (IAWG-T) composed of technology representatives from the national drug control agencies. The IAWG-T meets periodically to exchange information regarding agency programs and common technical problems. Each year, the IAWG-T provides an updated listing of priority scientific and technological needs by technology area and agency, a listing of drug-related R&D projects being sponsored by each agency, and an Annual Report on the Development and Deployment of Narcotics Detection Technologies. The annual report is provided in Appendix D to this Blueprint Update.

CTAC sponsors outreach activities including technology workshops, technical symposia, and conferences. These activities promote the exchange of information and provide another mechanism to oversee and coordinate counterdrug technology initiatives throughout the scientific and academic communities and with federal, state, and local drug control agencies.

## **Scientific Working Group for the Analysis of Forensic Drug Samples (SWGDRUG)**

SWGDRUG was formed in 1997 to initiate and develop minimum standards for the identification of drug exhibits in forensic science laboratories. CTAC has sponsored the SWGDRUG meetings in support of DEA, which serves as the principal organizer. Meetings are international in scope with participation from the United States, Canada, the United Kingdom, Japan, Germany, the Netherlands, Australia, and the United Nations.

In 2001, the first set of recommendations covering Methods and Reports, Education and Training, and Quality Assurance were disseminated to the international forensic science community. This project has resulted in a significant upgrading of forensic science laboratories with implementation of the recommendations. SWGDRUG Part II convened with a meeting in Arlington, Virginia, January 6-8, 2003, with continued international representation.

## **Technology Symposia**

CTAC held the seventh ONDCP Technology Symposium in July 2002 in Cambridge, Massachusetts. This conference was dedicated exclusively to demand reduction issues to determine the technology challenges that limit drug abuse prevention and treatment research. Some 180 people were in attendance, representing academia, medicine, government and industry. Over 40 scientists presented their research findings and suggestions for future directions over a two-day period.

Presentations on the first day focused on the research areas that CTAC/NIDA-supported scientists are exploring to develop better treatment and prevention strategies. The second day concentrated on the physical element improvements needed for achieving such success, ranging from ligand development, bench-to-bedside issues, bioinformatics solutions, and neuroimaging equipment improvements. Throughout the meeting, the importance of data sharing was frequently raised. It was agreed that scientists using neuroimaging techniques to study drug abuse must use a trans-disciplinary approach to bring disparate disciplines together for collaborative experiments leading to the better

understanding of how addiction transpires in the brain. Large sample sizes are necessary for studies of complex diseases, such as drug addiction, for appropriate genetic and phenotypic inferences. A working group format was suggested during this meeting and is discussed in the Demand Reduction future plans section of the Blueprint Update.

Manufacturers of medical diagnostic equipment are beginning to show interest in producing the more expensive, higher resolution equipment needed for research studies. While the motivation for industry to begin investing in these machines may be for more glamorous areas such as Alzheimer's research, the same regions of the brain are believed to be responsible for craving and addictive behavior.

### **International Drug Profiling Conference Series**

From the scientific literature, there is evidence that forensic “drug profiling” is conducted in laboratories around the world. No previous attempts, however, have been made to convene a conference to discuss the different goals and methodologies available internationally. In conjunction with DEA, CTAC supported the first international drug profiling conference in December 2002 at the DEA forensics laboratory in Virginia. Representatives from the United States, Germany,

Australia, United Kingdom, Japan, Sweden, Finland, Switzerland, Hong Kong, United Nations, and the Netherlands attended the conference. The outcome of the conference series was to identify samples that share a commonality of source and drug-processing methodologies that distinguish specific controlled substances and the geographic area where the production is taking place. With the recognition that drug trafficking is international in scope, this series of conferences will have as its focal point the goal of providing both intelligence and enforcement information to law enforcement worldwide.

### **International Crop Estimation and Control Methods Workshop**

ONDCP, together with the United Nation's Office on Drugs and Crime (UN/ODC), is cosponsoring a two-day international workshop focusing on illegal drug crop control measures. The meeting will be held in Vienna, Austria in early 2003. The workshop will address technical challenges to the drug abuse research community. Topics include eradication alternative results, issues/impediments and opportunities, cost and price measurements of illegal narcotics products, best practices and alternatives for measuring prices, and local economic alternatives to drug crops.

## FUTURE PLANS

CTAC's niche in supporting the instrumentation and infrastructure needs of neuroimaging will be extended through new brain imaging centers in Baltimore, Maryland; Grand Forks, North Dakota; and Long Island, New York. On the law enforcement front, CTAC will continue to improve the communications interoperability capabilities of state and local law enforcement agencies, passing many of these improvements directly to these agencies through the TTP.

### **Demand Reduction**

CTAC's demand reduction R&D program is now organizing several working groups to channel the development and integration of the technology and subsystems that are limiting further advancement of substance abuse researchers.

CTAC demand reduction initiatives will complement those of NIDA by improving the investigative tools and instruments available for substance abuse, dependence, and addiction research. ONDCP/CTAC's Demand Reduction Technology Symposium in July 2002 helped substance abuse researchers document the capabilities and limitations imposed by current technology. Subsequently, CTAC, in coordination with NIDA, is establishing a team of working groups to define a development program to advance the tools needed for improving substance abuse research. Each working group will focus on a particular aspect of technology identified as limiting research progress. An oversight committee composed of group leaders and other government officials will direct the working groups. Initial focus will be on infrastructure development plans, access strategies to novel ligands, and data-sharing approaches.

By understanding the limitations that current equipment and instrumentation impose on substance abuse research, CTAC can direct technology development efforts towards those areas with the highest impact potential and need across the field. As technical challenges are identified, CTAC will evaluate the imaging modalities that are most appropriate and will provide the resources for suitable infrastructure and validation studies. Nuclear imaging capabilities, such as PET or SPECT for example, allow for the measurement of neurotransmission, and the examination of the pharmacological properties of drugs in the brain. Strategies requiring insight into the functional changes of the brain may require other tools, such as fMRI. Several other emerging modalities may provide key advantages in showing millisecond temporal resolution, physically unachievable by either PET or fMRI.

CTAC plans to continue expanding the national infrastructure through the installation of advanced neuroimaging facilities across the country. Research using these facilities will focus on collaborative efforts between existing ONDCP/CTAC centers, studying patterns of different drugs of abuse across several at-risk populations. CTAC plans to develop an information exchange backbone to link research teams together in functional units. The data-sharing network will provide larger sample sizes, making findings more significant across the entire population. Deriving a common set of projects and creating an expanded subject base will allow for specific protocols to be implemented over many at-risk populations, increasing the pace of scientific advancements in the drug abuse research community.

## Supply Reduction

The direction of CTAC's supply reduction R&D program is established according to the following criteria:

- Address broad-based, multi-agency needs that transcend the requirements of any single agency.
- Concentrate on those applications that are potential candidates for the Technology Transfer Program.

The most significant near-term opportunities for improving operational capabilities are believed to lie in knowledge management and communications interoperability technology.

Plans for fiscal year 2003 include potential projects for:

- Development of a digital narrowband audio surveillance transmitter that is compatible with Project 25 digital standards.
- Development of a remote capability for Title III cellular intercept capabilities.
- Development of an Internet webpage analysis product.
- Improvements to the capability to intercept and exploit cellular communications.
- Development of an architecture using commercial technologies for real-time wireless data transfer between field units, command centers, and other parties.

## Testbeds

A technology testbed will continue at the SPAWAR Systems Center in San Diego where scientists and engineers are working with law enforcement officers to develop interfaces to accommodate dissimilar software capabilities under one user-friendly information management architecture. The resultant architecture will provide the

capability to integrate components for case management with real-time access to tracking and surveillance data including authorized wire intercepts.

In 2003, scientists and engineers will make recommendations on the integration of communication interoperability systems into a robust national architecture capable of supporting emergency response to hostile events or natural disasters. The study will look at scenarios that include both regional and distributed crises that require coordinated response from federal, state, and local agencies.

An architecture using commercial technologies is being configured for real-time wireless data transfer between field units, command centers, and other parties. The exchange of real-time data or even video provides capabilities useful in joint, coordinated operations. This capability allows surveillance and other data to be transferred in real-time to investigators and personnel not present at the site of the operation.

## Technology Transfer Program

In five years, the TTP has provided support to more than 20 percent of the state and local police departments and sheriffs' offices in the United States. The strategy for the TTP is to maximize the delivery of hand-held devices with training to the state and local agencies serving the smaller population sizes (less than 500,000) and to provide case building investigative tools to the agencies and task forces serving the larger population sizes (500,000 and greater). The approach includes the following:

- *Support the officer on the street by providing high technology equipment to increase effectiveness of personnel resources and improve officer safety by continuing the deployment of items*

such as thermal imagers and mini-busters.

- *Support specialized regional drug crime task forces and major city police departments* that will benefit from the successful deployment of more complex, larger-scale systems for communications interoperability and data mining applications in support of longer-term drug trafficking conspiracy investigations. CTAC will refine outreach efforts and increase the training provided to recipient agencies to accomplish this goal.
- *Ensure the proper set of technologies is being offered.* This effort will include the introduction of new technologies to the program, improvements to existing systems, and elimination of technologies that no longer meet the operational requirements of law enforcement agencies or that can be replaced with next-generation technology.

Over the next year, two broad TTP initiatives will be pursued: (1) Develop advanced wireless communications interoperability capabilities, and (2) Develop a centerpiece architecture for case management tools.

### **Oversight and Coordination**

CTAC is planning the 2003 ONDCP International Technology Symposium in San Diego, California, from July 8-11, 2003. The theme for this symposium is *Counterdrug C4I System Research and Development*. Our eighth international technology symposium will feature presentations and technical papers on new counterdrug technology concepts, developments, and applications, particularly in the areas of command, control, communications, computers and intelligence (C4I) and nonintrusive inspection technologies to counter narcoterrorism. Continued support is planned for DEA and the SWGDRUG in gaining international acceptance of SWGDRUG standards and the international drug profiling conference.

## CONCLUSION

This Blueprint Update provides a summary of this year's contributions and future plans. While advancements in technology can improve capabilities tremendously, these improvements are useless when an agency is unable to acquire existing technology because of budget limitations. The union of the R&D program with the TTP has allowed over 4,000 state and local agencies to overcome that obstacle.

Increasing our knowledge of the causes of addiction and substance abuse is bearing fruit. Images of the interactions of drugs in the brain are leading research scientists to find that many disorders of the nervous system (e.g., Alzheimer's) occur in the same regions of the human brain affected by the abuse of drugs. A program is being

developed by CTAC to provide scientists with the proper equipment and technology to assess potential linkages of drug addiction with the genetic predisposition to other diseases of the brain.

Ongoing, broad-based community support for these programs has led to success. This success demonstrates the commitment and dedication of our federal, state, and local law enforcement agencies and the teams of research scientists who devote their talents to solving the causes of drug addiction. These men and women are using advancements in technology to make our streets safer and to develop the knowledge needed to prevent and treat drug abuse on a scale never before imagined.

## REFERENCE DOCUMENTS

The following is a list of documents pertinent to the Blueprint Update.

- *Counterdrug Technology Transfer Program Status Report*, Office of National Drug Control Policy, Counterdrug Technology Assessment Center, January 2002.
- *Fiscal Year 2001 – Fiscal Year 2007 Strategic Plan*, Office of National Drug Control Policy, 2001.
- *Fiscal Year 2002 Annual Performance Plan and Fiscal Year 2000 Annual Program Performance Report*, Office of National Drug Control Policy, June 2001.
- *2002 Annual Report: National Drug Control Strategy - Counterdrug Research and Development Blueprint Update*, Office of National Drug Control Policy, Counterdrug Technology Assessment Center, NCJ-192263, 2002.
- *National Drug Control Strategy*, Office of National Drug Control Policy, NCJ-198156, January 2003.
- *National Drug Control Strategy, Budget Summary*, Office of National Drug Control Policy, NCJ-198157, January 2003.
- The Sixth Triennial Report to Congress from the Secretary of Health and Human Services. *Drug Abuse and Addiction Research: 25 Years of Discovery to Advance the Health of the Public*. National Institute on Drug Abuse. September 1999, [NIDA Research Priorities and Highlights, pp. 23-32.]
- *Bringing the Power of Science to Bear on Drug Abuse and Addiction, Five-Year Strategic Plan*. National Institute on Drug Abuse. September 2000. NIH Publication Number 00-4774.
- *Colorado Wireless Interoperability Communications Project*. United States Navy Space and Naval Warfare Systems Center – San Diego (SPAWAR). December 2001. SPAWAR Technical Document 3136.

## APPENDIX A – APPLICABLE LEGISLATION

The following highlights from applicable legislation summarize Counterdrug Technology Assessment Center appropriations, functions, staff levels and roles.

### **P.L. 105-277 of October 21, 1998 [H.R. 4328] (title VII of Division C) Office of National Drug Control Policy Reauthorization Act of 1998**

#### **SEC. 708. COUNTER-DRUG TECHNOLOGY ASSESSMENT CENTER.**

(a) ESTABLISHMENT.—There is established within the Office the Counter-Drug Technology Assessment Center (referred to in this section as the “Center”). The Center shall operate under the authority of the Director of National Drug Control Policy and shall serve as the central counter-drug technology research and development organization of the United States Government.

(b) DIRECTOR OF TECHNOLOGY.—There shall be at the head of the Center the Director of Technology, who shall be appointed by the Director of National Drug Control Policy from among individuals qualified and distinguished in the area of science, medicine, engineering, or technology.

(c) ADDITIONAL RESPONSIBILITIES OF THE DIRECTOR OF NATIONAL DRUG CONTROL POLICY.—

- (1) IN GENERAL.—The Director, acting through the Director of Technology shall—
- (A) identify and define the short-, medium-, and long-term scientific and technological needs of Federal, state, and local drug supply reduction agencies, including—
    - (i) advanced surveillance, tracking, and radar imaging;
    - (ii) electronic support measures;
    - (iii) communications;
    - (iv) data fusion, advanced computer systems, and artificial intelligence; and
    - (v) chemical, biological, radiological (including neutron, electron, and graviton), and other means of detection;
  - (B) identify demand reduction basic and applied research needs and initiatives, in consultation with affected National Drug Control Program agencies, including—
    - (i) improving treatment through neuroscientific advances;
    - (ii) improving the transfer of biomedical research to the clinical setting; and
    - (iii) in consultation with the National Institute on Drug Abuse, and through interagency agreements or grants, examining addiction and rehabilitation research and the application of technology to expanding the effectiveness or availability of drug treatment;
  - (C) make a priority ranking of such needs identified in subparagraphs (A) and (B) according to fiscal and technological feasibility, as part of a National Counter-Drug Enforcement Research and Development Program;
  - (D) oversee and coordinate counter-drug technology initiatives with related activities of other Federal civilian and military departments;

- (E) provide support to the development and implementation of the national drug control performance measurement system; and
  - (F) pursuant to the authority of the Director of National Drug Control Policy under section 704, submit requests to Congress for the reprogramming or transfer of funds appropriated for counter-drug technology research and development.
- (2) LIMITATION ON AUTHORITY.—The authority granted to the Director under this subsection shall not extend to the award of contracts, management of individual projects, or other operational activities.

(d) ASSISTANCE AND SUPPORT TO OFFICE OF NATIONAL DRUG CONTROL POLICY.—The Secretary of Defense and the Secretary of Health and Human Services shall, to the maximum extent practicable, render assistance and support to the Office and to the Director in the conduct of counter-drug technology assessment.

**Conference Report 106-319 of September 14, 1999 [To accompany H.R. 2490] Making Appropriations for The Treasury Department, The United States Postal Service, The Executive Office Of The President, And Certain Independent Agencies, For The Fiscal Year Ending September 30, 2000, And For Other Purposes**

"For necessary expenses for the Counterdrug Technology Assessment Center for research activities pursuant to the Office of National Drug Control Policy Reauthorization Act of 1998 (title VII of Division C of Public Law 105–277), \$29,250,000, which shall remain available until expended, consisting of \$16,000,000 for counternarcotics research and development projects, and \$13,250,000 for the continued operation of the technology transfer program: Provided, That the \$16,000,000 for counternarcotics research and development projects shall be available for transfer to other Federal departments or agencies."

"The conferees agree to provide \$29,250,000 instead of \$31,100,000 as proposed by the Senate. The House had proposed \$29,250,000 in ONDCP's Salaries and Expenses Appropriation. The conferees agree to establish this new, separate appropriation account for the Counterdrug Technology Assessment Center (CTAC) as authorized in Public Law 105–277 and proposed by the Senate. It consists of \$16,000,000 for the core research and assessment activities of CTAC, as well as \$13,250,000 for the counterdrug technology transfer program."

**P.L. 106-58 of September 29, 1999 [H.R. 2490] Treasury And General Government Appropriations Act, 2000**

"For necessary expenses for the Counterdrug Technology Assessment Center for research activities pursuant to the Office of National Drug Control Policy Reauthorization Act of 1998 (title VII of Division C of Public Law 105–277), \$29,250,000, which shall remain available until expended, consisting of \$16,000,000 for counternarcotics research and development projects, and \$13,250,000 for the continued operation of the technology transfer program: *Provided*, That the \$16,000,000 for counternarcotics research and development projects shall be available for transfer to other Federal departments or agencies."

**Conference Report (H. Rept. 106-479) on H.R. 3194, Consolidated Appropriations Act, 2000 (House of Representatives - November 17, 1999)**

**Division B, Title II -- Other Appropriations Matters**

"Sec. 237. In addition to amounts appropriated to the Office of National Drug Control Policy, \$3,000,000 is appropriated: Provided, That this amount shall be made available by grant to the United States Olympic Committee for its anti-doping program within 30 days of the enactment of this Act."

**P.L. 106-113 of November 29, 1999: An act making consolidated appropriations for the fiscal year ending September 30, 2000, and for other purposes.**

**Division B, Appendix E, Title II -- Other Appropriations Matters**

"Sec. 237. In addition to amounts appropriated to the Office of National Drug Control Policy, \$3,000,000 is appropriated: Provided, That this amount shall be made available by grant to the United States Olympic Committee for its anti-doping program within 30 days of the enactment of this Act."

**Conference Report (H. Rept. 106-796) to Accompany H.R. 4516 Making Appropriations for the Legislative Branch for the Fiscal Year Ending September 30, 2001, and for Other Purposes. - July 27, 2000**

**Division B; Incorporation of H.R. 4985**

For necessary expenses for the Counterdrug Technology Assessment Center for research activities pursuant to the Office of National Drug Control Policy Reauthorization Act of 1998 (title VII of Division C of Public Law 105-277), \$29,053,000, which shall remain available until expended, consisting of \$15,803,000 for counternarcotics research and development projects, and \$13,250,000 for the continued operation of the technology transfer program: Provided, That the \$15,803,000 for counternarcotics research and development projects shall be available for transfer to other Federal departments or agencies.

**Conference Report (H. Rept. 106-940) to Accompany H.R. 4475 Making Appropriations for the Department of Transportation and Related Agencies for the Fiscal Year Ending September 30, 2001, and for Other Purposes. - October 5, 2000**

Title V - Executive Office of The President and Funds Appropriated to the President, Office of National Drug Control Policy, Counterdrug Technology Assessment Center

The conferees agree to provide an additional \$7,000,000 for the Counterdrug Technology Assessment Center, including \$5,000,000 for the continued operation of the technology transfer program and \$2,000,000 for the continued development of the wireless interoperability communication project currently underway in Colorado. This much-needed project is in direct response to the wireless communication difficulties experienced by state and local law enforcement during the Columbine High School tragedy.

**P.L. 106-346 October 23, 2000 An Act Making Appropriations for the Department of Transportation and Related Agencies for the Fiscal Year Ending September 30, 2001, and for Other Purposes**

For an additional amount, \$7,000,000: Provided, That \$5,000,000 shall be available for continued operation of the technology transfer program: Provided further, That \$2,000,000, to remain available until expended, shall be available for counter-narcotics research and development projects, to be used for the continued development of a wireless interoperability communication project in Colorado.

**House Report 106-756 to Accompany H.R. 4871 making appropriations for the Treasury Department, United States Postal Service, the Executive Office of the President, and Certain Independent Agencies for the Fiscal Year ending September 30, 2001 and for Other Purposes.**

The Committee remains strongly supportive of the technology transfer program, which allows CTAC to provide technologies developed with Federal funding directly to state and local law enforcement agencies that might otherwise be unable to benefit from the developments due to limited budgets or technological expertise. Priority is given to candidates in High Intensity Drug Trafficking Areas, and on the ability and willingness of candidates to share in costs, either through in-kind or direct contributions. The basic technology for transfer includes information technology, analytical tools, communications, tracking and surveillance, and drug detection devices. The program has gained significant support from state and local law enforcement agencies, and the Committee understands that the funding provided in the this bill addresses less than a quarter of the unmet demand. As of March 2000, the program has delivered over 1,570 pieces of equipment to 1,159 state and local law enforcement agencies. The program has demonstrated a very low administrative cost, with equipment purchases making up 84 percent of costs. The program, which has received very high evaluation ratings from its users, is also heavily represented in local police and sheriff's organizations and in communities with populations under 500,000 (80 percent). Given the substantial unmet need for this relatively low-cost and high-payoff program, the Committee strongly encourages ONDCP and the Administration to increase the funding level for this program as it develops its fiscal year 2002 budget.

**Conference Report (H. Rept. 106-1033) to Accompany H.R. 4577 Making Omnibus Consolidated and Emergency Supplemental Appropriations for the Fiscal Year, December 15, 2000**

**Enactment of Provisions of H.R. 5658 as introduced on December 14, 2000, A bill making appropriations for the Treasury Department, United States Postal Service, the Executive Office of the President and Certain Independent Agencies for the fiscal year ending September 30, 2001 and for other purposes.**

For necessary expenses for the Counterdrug Technology Assessment Center for research activities pursuant to the Office of National Drug Control Policy Reauthorization Act of 1998 (title VII of Division C of Public Law 105-277), \$29,053,000, which shall remain available until expended, consisting of \$15,803,000 for counternarcotics research and development projects, and \$13,250,000 for the continued operation of the technology transfer program: Provided, That the \$15,803,000 for counternarcotics research and development projects shall be available for transfer to other Federal departments or agencies.

**P.L. 106–554, December 21, 2000, Making consolidated appropriations for the fiscal year ending September 30, 2001, and for other purposes.**

For necessary expenses for the Counterdrug Technology Assessment Center for research activities pursuant to the Office of National Drug Control Policy Reauthorization Act of 1998 (title VII of division C of Public Law 105–277), \$29,053,000, which shall remain available until expended, consisting of \$15,803,000 for counternarcotics research and development projects, and \$13,250,000 for the continued operation of the technology transfer program: *Provided*, That the \$15,803,000 for counternarcotics research and development projects shall be available for transfer to other Federal departments or agencies.

**House Report 107-52 to Accompany H.R. 2590 Making appropriations for the Treasury Department, the United States Postal Service, the Executive Office of The President, and certain independent agencies for the fiscal year ending September 30, 2002, and for other purposes. - July 23, 2001.**

The CTAC technology transfer program has been enormously successful, demonstrating the impact that can be achieved with a relatively small level of funding by transferring mature, tested technology that has practical and immediate usefulness to local and state law enforcement agencies that would otherwise not have access to such tools. The Committee therefore includes \$22,236,000, a \$4,026,150 increase over the level funded in fiscal year 2001. As of the end of fiscal year 2000, there has been 1,909 deliveries of targeted, relatively low-cost technology to 1,325 state and local law enforcement agencies nationwide. In fiscal year 2001, there are 1,234 outstanding requests for law enforcement technology transfer to date, and the expectation that over 800 of these can be met this year. The Committee believes that this additional funding will help increase the capability of CTAC to meet this need for technology to help leverage the ability of chronically short-staffed law enforcement agencies to take on major drug crime at the local level.

**Senate Report 107-57 to Accompany S. 1398 Making appropriations for the Treasury Department, the United States Postal Service, the Executive Office of The President, and certain independent agencies for the fiscal year ending September 30, 2002, and for other purposes. - September 4, 2001.**

The Committee fully supports the continuation of this program and, therefore, has provided \$22,000,000 for its operation in fiscal year 2002. The Committee believes that this program demonstrates the best that the Federal Government has to offer to state and local law enforcement in their efforts to combat drug related crimes. The Committee is encouraged by the positive reception this program has received by state and local law enforcement agencies as current requests for technology continue to outpace resources by over four to one. The Committee expects CTAC will conduct further outreach to state and local agencies to educate them about the program. Finally, the Committee would encourage CTAC to work with private industry to make their developed technology available to state and local law enforcement through this program. The Committee requests that ONDCP report within 60 days after the date of this enactment of the fiscal year 2002 appropriations bill on the number of requests received, promotion efforts to state and local law enforcement, and the effectiveness and interest in this program by these law enforcement communities.

**Conference Report (H. Rept 107-253) to Accompany H.R. 2590 Making appropriations for the Treasury Department, the United States Postal Service, the Executive Office of The President, and certain independent agencies for the fiscal year ending September 30, 2002, and for other purposes. - October 26, 2001**

For necessary expenses for the Counterdrug Technology Assessment Center for research activities pursuant to the Office of National Drug Control Policy Reauthorization Act of 1998 (21 U.S.C. 1701 et seq.), \$42,300,000, which shall remain available until expended, consisting of \$20,064,000 for counternarcotics research and development projects, and \$22,236,000 for the continued operation of the technology transfer program: Provided, That the \$20,064,000 for counternarcotics research and development projects shall be available for transfer to other Federal departments or agencies.

The conferees agree to provide \$42,300,000 instead of \$42,000,000 as proposed by the Senate and \$40,000,000 as proposed by the House. Of this funding, \$20,064,000 is for the basic research and development program and \$22,236,000 is for continuation of the technology transfer program. The conferees include \$2,000,000 to provide neuroimaging technology to an institution that can conduct substance abuse research and train Native American physicians in substance abuse research as described in the Senate report, and \$300,000 to support research into the relationship between genetic factors leading to conditions such as Alzheimer's Disease and environmental factors, particularly substance abuse.

**P.L. 107-67 November 12, 2001 An Act Making appropriations for the Treasury Department, the United States Postal Service, the Executive Office of the President, and certain Independent Agencies, for the fiscal year ending September 30, 2002, and for other purposes.**

For necessary expenses for the Counterdrug Technology Assessment Center for research activities pursuant to the Office of National Drug Control Policy Reauthorization Act of 1998 (21 U.S.C. 1701 et seq.), \$42,300,000, which shall remain available until expended, consisting of \$20,064,000 for counternarcotics research and development projects, and \$22,236,000 for the continued operation of the technology transfer program: Provided, That the \$20,064,000 for counternarcotics research and development projects shall be available for transfer to other Federal departments or agencies.

**House Report 107-575 to accompany H.R. 5120 Making appropriations for the Treasury Department, the United States Postal Service, the Executive Office of the President, and certain Independent Agencies for the fiscal year ending September 30, 2003, and for other purposes, - July 15, 2002.**

Pursuant to the Office of National Drug Control Policy Reauthorization Act of 1998 (title VII of Division C of Public Law 105-277), the Counterdrug Technology Assessment Center serves as the central counterdrug research and development organization for the United States Government.

The Committee recommends an appropriation of \$55,800,000 for the Counterdrug Technology Assessment Center, \$13,500,000 above the fiscal year 2002 enacted level and \$15,800,000 above

the President's request. Included in the appropriation are \$26,064,000 for counternarcotics Technology Research and Development, and \$29,736,000 for the Technology Transfer Program. The Committee has included continued funding for neuroimaging studies and genomic research into the relationship between genetic predisposition and environmental factors bearing upon drug addiction in the amount for counternarcotics Technology Research and Development.

**Senate Report 107-212 to accompany S. 2740 making appropriations for the Treasury Department, the United States Postal Service, the Executive Office of the President, and certain Independent Agencies for the fiscal year ending September 30, 2003, and for other purposes – July 17, 2002.**

The Committee recommends an appropriation of \$40,000,000 for the Counterdrug Technology Assessment Center (CTAC). This funding includes \$22,000,000 for the continuation of the technology transfer program by CTAC to State and local law enforcement in their efforts to combat drugs. Pursuant to the Office of National Drug Control Policy Reauthorization Act of 1998 (Title VII of Division C of Public Law 105–277), CTAC serves as the central counterdrug research and development organization for the U.S. Government.

The Committee expects multiagency research and development programs to be coordinated by CTAC in order to prevent duplication of effort and to assure that whenever possible, those efforts provide capabilities that transcend the need of any single Federal agency. Prior to the obligation of these funds, the Committee expects to be notified by the chief scientist on how these funds will be spent; it also expects to receive periodic reports from the chief scientist on the priority counterdrug enforcement research and development requirements identified by the Center and on the status of projects funded by CTAC.

The Committee continues to believe CTAC should work closely and cooperatively with the individual law enforcement agencies in the definition of a national research and development program which addresses agency requirements with respect to timeliness, operational utility, and consistency with agency budget plans.

Last year the Committee provided additional funds for CTAC to focus on conducting substance abuse research and training Native American physicians in the field of substance abuse research. The Committee requests that the chief scientist provide periodic updates on this process.

#### COUNTERDRUG TECHNOLOGY TRANSFER PROGRAM

The Committee fully supports the continuation of this program and, therefore, has provided \$22,000,000 for its operation in fiscal year 2003. The Committee believes that this program demonstrates the best that the Federal Government has to offer to State and local law enforcement in their efforts to combat drug related crimes. The Committee is encouraged by the positive reception this program has received by State and local law enforcement agencies as current requests for technology continue to outpace resources by over four to one. The Committee expects that CTAC will conduct further outreach to State and local agencies to educate them about the program. Finally, the Committee would encourage CTAC to work with private industry to make their developed technology available to State and local law enforcement through this program. The Committee requests that ONDCP report within 60 days after the date

of enactment of the fiscal year 2003 appropriations bill on the number of requests received, promotion efforts to State and local law enforcement, and the effectiveness and interest in this program by these law enforcement communities.

# APPENDIX B – COUNTERDRUG SCIENTIFIC AND TECHNOLOGICAL NEEDS

As noted in the introduction, please see [www.whitehousedrugpolicy.gov](http://www.whitehousedrugpolicy.gov) for this appendix.

# APPENDIX C – COUNTERDRUG RESEARCH AND DEVELOPMENT PROJECTS

As noted in the introduction, please see [www.whitehousedrugpolicy.gov](http://www.whitehousedrugpolicy.gov) for this appendix.

# APPENDIX D – NARCOTICS DETECTION TECHNOLOGES

As noted in the introduction, please see [www.whitehousedrugpolicy.gov](http://www.whitehousedrugpolicy.gov) for this appendix.

# APPENDIX E – TECHNOLOGY TRANSFER PROGRAM

## Introduction

The Technology Transfer Program (TTP) was established by Congress in 1998 and has provided both technologies and the training to more than 20 percent of the 18,500 state and local Law Enforcement Agencies (LEAs) nationally. From 1998 through 2002, the TTP delivered 4,811 pieces of equipment to 3,898 state and local law enforcement agencies in all 50 states and provided training and support with the delivery of each technology. Many applicants await technology deliveries pending receipt of additional funding for the TTP. At the end of fiscal year 2002, there were 1,777 pending applications.

The TTP is not a grants program, rather, the drug crime fighting technologies available from the program are limited to a catalog of items proven to be operationally effective by federal, state and local law enforcement. Its unique characteristics combined with its strong endorsement by the law enforcement community make it an excellent model for any technology transfer program. The TTP provides an efficient means for getting drug crime fighting technologies into the hands of LEAs serving on the front line. Its emphasis on pre-screening of applicants combined with training and follow-up with those LEAs that receive equipment ensure recipient agencies make full-use of the equipment.

An additional benefit of the TTP is that as it reaches more and more LEAs nationally, it creates de facto standards in terms of state-of-the-art technologies used by officers on the street. As the TTP program continues, the future ubiquity of its catalog of available technologies will lead to significant economies in terms of reduced training costs; as personnel move from one LEA to another they are more likely to be familiar with the new agency's technologies as these become standardized

Over the past five years, CTAC's lessons-learned provide useful insights for those tasked with the establishment of similar technology transfer efforts. The following provides unique TTP features organized in three parts: 1) TTP Underpinnings, 2) TTP Execution, and 3) TTP National Deployment Strategy.

## Underpinnings

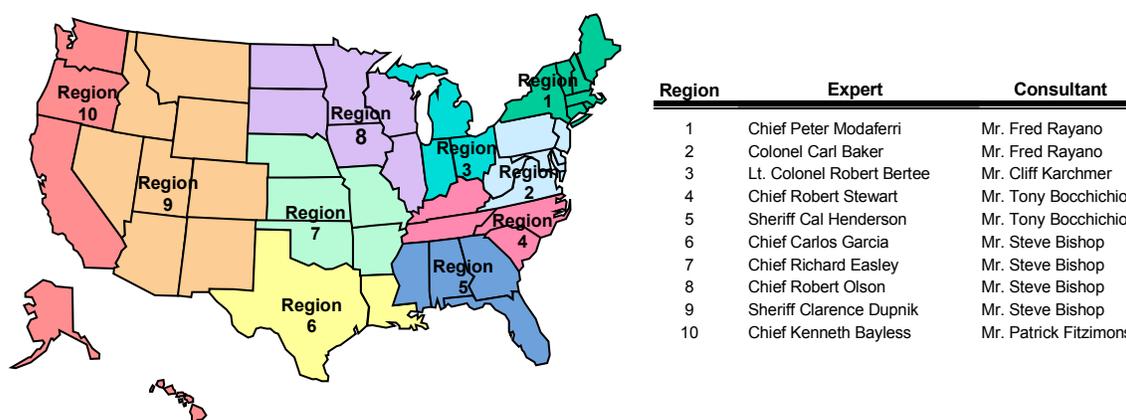
The TTP design is based upon the notion that the transfer of technology to state and local law enforcement is best done by an organization that understands the available technologies and has a stake in the development of them. Further, it is bolstered by the inclusion of regional experts from the law enforcement community who understand the needs of local communities and the utility of available technologies for law enforcement missions. Finally, the adoption and distribution over time of a uniform set of proven technologies creates valuable efficiencies for all state and local LEAs throughout the nation. These TTP underpinnings are discussed below.

*Research and Development Program Link.* CTAC's supply reduction R&D program addresses broad-based, multi-agency needs that transcend the requirements of any single agency, and

concentrates on those technology applications that are potential candidates for TTP. This R&D component benefits the TTP as technologies are vetted prior to inclusion in the TTP catalog. Only after new systems are tested and proven do they become TTP candidates for use by state and local law enforcement agencies.

*Regional Experts/Program Support.* The TTP enjoys support from active-duty, nationally recognized, senior police chiefs and sheriffs who serve as regional law enforcement experts for each of the 10 regions across the country (See Figure E-1: TTP Regional LEA Experts). These experts review applications for TTP technologies from agencies within their respective regions, assist in evaluating the program, and provide advice on the operational utility of the technologies offered.

Figure E-1. Technology Transfer Program Regional Law Enforcement Experts



The TTP also benefits from ONDCP Interagency Agreements with the U.S. Army Electronic Proving Ground (EPG) and the U.S. Navy Space and Naval Warfare Systems Center (SSC). EPG and SSC provide contracting and procurement support services, as well as technical and program management functions for CTAC-sponsored projects. The contracting agents publish Broad Agency Announcements and Sources Sought Announcements from their parent organizations (U.S. Army and U.S. Navy) to solicit proposals for innovative concepts and approaches from industry, academia and national laboratories. They also coordinate the technical review and evaluation of these proposals with representatives from the federal, state and local user agencies. The contracting agents then negotiate and manage contracts with the successful vendors.

EPG manages the TTP contracting/technical program office. This program office employs a comprehensive “cradle-to-grave” approach. The TTP management team fills agency requests from bulk order contracts, conducts outreach awareness workshops for law enforcement agencies, provides mandatory training sessions for technology recipients, and maintains all program management reports, statistics, and records. A short chain of authority ensures a rapid-reaction capability for response to unplanned events requiring rapid deployment of technology. On September 17, 2001, EPG and CTAC delivered 100 satellite telephones to “ground zero” for first-responders to the World Trade Center attack to use until normal communications could be restored.

*Uniform Set of Technologies.* The TTP catalog of available technologies is divided into two broad categories: (1) handheld devices (e.g., night-vision devices, handheld contraband detectors) and (2) case management / investigative tools (e.g., link analysis software). At present, there is a high degree of standardization or uniformity among the handheld devices being used - as 20 percent of the state and local agencies nationally have received some of these available tools from the TTP. As these devices proliferate through TTP distribution, they become de facto standards and law enforcement personnel benefit as they work with or transfer to a similarly equipped law enforcement agency. As for the case management and investigative tools, these more complex systems today enjoy less penetration (5 percent) nationally. Over time, these more complex systems and architectures will evolve with input from the user community and the revised systems will proliferate to other LEAs that will benefit from receipt of proven case management/investigative systems.

TTP technologies support narcotics officers, regional drug task forces, and major city drug crime investigative units conducting large-scale conspiracy cases. The technologies available for transfer include information technology and analytical tools, communications intercept, tracking and surveillance, and drug detection devices. CTAC will continue to expand and upgrade the crime-fighting equipment available to state and local LEAs across the nation. The uniform set of handheld technologies combined with the necessary training to use and maintain them is provided in response to applications received from agencies serving smaller jurisdictions, while a uniform architecture for tracking, surveillance, phone intercept, and case building systems is intended to support those agencies serving larger jurisdictions.

## **Execution**

Execution of the TTP begins for a recipient agency with submission of an application processed with a number of checks and balances to ensure the desired technology fits the circumstances and capabilities of that agency. Based on those applications received over the past five years, 86 percent of TTP equipment has been delivered to agencies serving smaller jurisdictions; such agencies are often hard-pressed to obtain TTP-type equipment from any other source. The emphasis on training is a significant part of the program's success and agencies do not receive equipment until training is completed along with any relevant certifications. The TTP's interaction with an agency is ongoing; it does not end following approval of an application, completion of training or the delivery of equipment. Recipient agencies commit to regular follow-up with the TTP to ensure equipment is utilized in day-to-day operations and to identify any issues with a delivered technology for resolution.

*Application Process and Technology Distribution.* Applications to the TTP are reviewed on a first-come, first-served basis, though a submission does not guarantee an agency will receive any TTP items. Agencies may begin the application process with the submission of a web-based or hardcopy form. Applicants select up to three available technologies and must respond to questions regarding the need for them. A number of checks and balances exist within the application process to ensure the most rational distribution of available technologies. Among these is the requirement that the head (e.g., Police Chief) of each agency endorse the application.

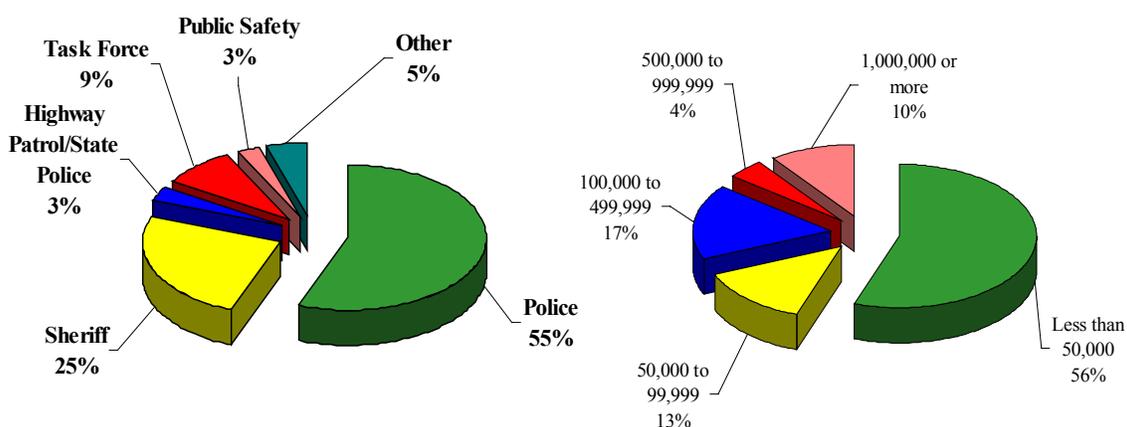
During the application process, the respective TTP regional expert provides a subjective judgement as to whether:

- The technologies requested will improve the operational capabilities of the requesting department or organization.
- The organization has the requisite infrastructure to integrate the technology into its daily operations.
- The equipment is too complex for the organization.

These experts also have the ability to modify an agency’s application by the substitution of one technology with another or to change an applicant’s technology rankings. TTP regional experts also judge that an applicant agency faces a significant level of drug-related crime and determine that there is a reasonable expectation that the requested technology will be used to support investigations of such crime. State and local law enforcement applications for TTP technologies continue to increase along with awareness of the program.

Over the past five years, 86 percent of TTP applications and deliveries involved agencies serving populations of 500,000 or less (See Figure E-2 for the distribution of TTP deliveries by agency type and jurisdiction size). The predominant mix of technologies requested by and provided to smaller jurisdiction agencies was comprised of thermal imagers, drugwipes, mini-buster kits, and body worn transmitters. Eighty percent of TTP applications and deliveries involved police departments and sheriffs' offices. Applications for the more complex systems (AVTS, VoiceBox, Data Locator, VideoDetective System, and Interoperability Communications system)<sup>1</sup> were received from task forces, police departments, and sheriffs' offices from the larger jurisdictions serving populations of 500,000 or more. 30 percent of TTP deliveries have been to state and local agencies located within one of the High-Intensity Drug Trafficking Areas (HIDTAs).

Figure E-2. Deliveries By Agency Type / Population Size – fiscal year 1998 – 2002



<sup>1</sup> The Advanced Vehicle Tracking System (AVTS) is a covert vehicle tracking system with mapping display. VoiceBox is a multimedia digital collection system for Title III investigations. The VideoDetective System is a PC-based, real-time, plug-and-play video enhancement system that eliminates jitter and camera motion. For wireless interoperability applications, the TTP currently deploys a modular interconnection system providing interoperability for incompatible radio systems.

The underlying assumption with regard to the TTP's equipment distribution is that federal, state, and local law enforcement agencies (LEAs) all need advanced technologies to conduct their drug-related criminal investigations, but to a different scale and complexity. The federal LEAs employ the technology to carry out complex, large-scale, drug-related criminal investigations while state and local LEAs need identical technologies but usually on a smaller scale for drug-related criminal investigations and daily operations.

*Training, Retraining and Outreach Emphasis.* The TTP's approach to training stems from the knowledge that technologies are tools and not in and of themselves solutions for law enforcement problems. Officer training and routine use of technologies ensure successful technology deployment. This approach also takes into account the realization that training is not a "one shot deal." Training sessions for TTP catalog equipment is provided regularly throughout the year to provide ample opportunity for first-time and refresher equipment use instruction.

TTP user training is provided with no out-of-pocket costs for the recipient agency. This hands-on training is required *before* any equipment is delivered. Training is provided to each recipient by the commercial vendor and by law enforcement officers who use the equipment in daily operations. In some cases, certification for equipment operation (e.g., thermal imagers) is provided as well.

Recipient agencies commit to respond to a variety of feedback requests including 90-, 180-, and 270-day evaluations. The 90-, 180- and 270-day evaluation forms request specific objective and quantifiable data regarding results achieved with use of TTP equipment. Agencies provide information as to the number of cases in which the equipment was employed and details of specific operational experience with the technology. In addition, recipients provide subjective comments as to the utility of a particular technology. These subjective comments provide a vital feedback loop for insights into the strengths and weaknesses of the TTP and/or its offered technologies as well as a vehicle for recipients to offer suggestions to improve the program.

TTP evaluations submitted to date indicate that the technologies offered are readily integrated into the operations of state and local agencies. Recipient agencies confirm that TTP equipment improves counterdrug operations. In general, following receipt of TTP equipment, agencies report an increase in drug-related arrests and seizures and a dramatic improvement in officer safety.<sup>2</sup>

## **National Deployment Strategy**

In order to bring about the standardization of law enforcement technologies, a national deployment strategy was developed for the TTP. This strategy is driven by a vision for the TTP as the model for delivery of advanced crime fighting technologies to state and local law enforcement.

The strategy for the TTP is to maximize the delivery of hand-held devices with training to the state and local agencies serving the smaller population sizes (less than 500,000) and to provide

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<sup>2</sup> In FY01 seizures reported using new TTP equipment included \$91MM of drugs (4 tons of marijuana, 1,000 pounds of cocaine and 550 pounds of methamphetamine), \$5.6MM in cash and 38 vehicles valued at \$500,000.

case building investigative tools to the agencies and task forces serving the larger population sizes (500,000 and greater). A number of core competencies make successful execution of the TTP strategy possible. A highly respected management team oversees the TTP. Links to technology R&D efforts, coordination with other federal technology efforts, an ability to deliver solutions in a cost-effective manner, and an application process that ensures delivered solutions are in fact used by recipient agencies characterize other core competencies of the TTP. Program results are regularly measured against program goals to ensure objectives are met; the TTP employs regular feedback mechanisms to understand results from the field so that issues may be resolved. Going forward, the TTP will continue to innovate with the inclusion of additional advanced technologies after these are vetted by TTP testbeds.

*TTP Vision.* The TTP was first authorized by Congress in 1998 to transfer technology to state and local law enforcement agencies. Since that time, the program has grown to be a recognized leader by law enforcement agencies for technology transfer. The vision for the TTP is summarized as follows:

*Fundamentally change the equipment procurement paradigm of the state and local law enforcement community from single, independent purchases of equipment to a cohesive strategy to obtain and integrate a common set of technologies into daily operations. The TTP will transform the current mindset to one that also accounts for the required equipment commonality, knowledge, resources, training and follow-up to ensure successful technology deployment.*

This vision guides TTP efforts going forward. In many cases however, agency heads find it difficult to obtain technology funding as elected officials tend to select more short-term, visible funding activities, such as hiring additional officers. As one local law enforcement official addressing colleagues noted:

"All of us in this room understand the politics of local law enforcement budgeting. For a chief or a sheriff to go before local elected leaders and ask for more money to buy technologies instead of to hire additional officers is quite difficult."

A lack of adequate funding prevents state and local law enforcement agencies from procuring and successfully deploying usable technologies. The TTP vision is realized as agencies adopt procurement approaches that account for all necessary components of successful technology deployment.

*TTP Core Competencies.* Regular coordination with other federal agencies involved with law enforcement technologies ensures that the needs of law enforcement agencies are taken into account. These needs are then matched with available and developing technologies. Such technologies are first deployed in testbeds to ensure viability in an operational environment. Less than 10 percent of the TTP budget is consumed for administrative expenses and Congress has recognized the TTP for its penchant for combining results delivery with frugality. With its training requirements, the TTP increases the likelihood that equipment will be successfully deployed. Regular follow-up ensures equipment use in daily operations and provides a channel to address any problems with the equipment or its use.

*TTP Going Forward.* The TTP is a successful “cradle-to-grave” federal technology deployment program that serves law enforcement well. As a model for other law enforcement technology transfer programs, it needs no structural or functional modifications.

The TTP catalog evolves over time along with the needs of the law enforcement community to ensure that the proper set of technologies is offered. This effort includes the introduction of new technologies to the program, improvements to existing systems, and the elimination of technologies that no longer meet operational requirements or that can be replaced with next-generation technology. New technologies added this year include an advanced case management system, a search engine to allow for searches across multiple databases, a wireless video transmitter and receiver kit, a covert vehicle tracking device, and an advanced infrared camera.

In the near-term, areas of greatest interest for inclusion of technology in the TTP include the following:

1. Support the officer on the street with standardized and easy-to-use advanced crime fighting technologies.
2. Support specialized regional drug crime task forces and major city LEAs with the successful deployment of more complex, larger scale systems for case management and investigative tools.

The TTP will support the officer on the street by providing high technology equipment to increase the effectiveness of personnel resources and improve officer safety with further deployment of items such as thermal imagers and mini-busters. The TTP will continue to deliver hand-held devices and systems in response to requests from investigators working on individual cases. Support activities will include:

- Hold additional regional one-day workshops to maintain an awareness of the TTP.
- Introduce new hand-held devices and equipment as they become available to accommodate those agencies returning to the program for additional items.

The TTP will also support specialized regional drug crime task forces and major city departments with the successful deployment of more complex, larger scale systems for communications interoperability and data mining applications. Steps to introduce more of these complex case management tools into the mix include:

- Conduct highly focused workshops concentrating on case management tools to introduce these items to agencies that can use them but have not yet requested them.
- Fulfill those requests for the more expensive case management tools (formerly withheld due solely to funding limitations).

In addition, the TTP will include extensive training sessions for agency personnel before they receive new equipment. Certification for use of certain technologies (e.g., thermal imagers) has already been incorporated into the initial training to assure safe and proper use of the systems. Additional retraining sessions will be established for the agencies that already have a system. Training and retraining sessions along with workshops pass on first-hand knowledge gained from operational use of the equipment. These sessions enable the program to leverage its prior investments to benefit new users.

A new series of regional workshops will focus on the more complex case management systems. Attendance will be limited only to those departments capable of deploying systems of this complexity and those departments willing to devote internal resources necessary to install, train and maintain the systems. This approach was demonstrated at Lakewood, Colorado in August 2001, with the installation of a communications interoperability system at the Lakewood Police Department. The Lakewood Police Department provided all facilities and resources to install, train, operate and maintain the system which now supports communications connectivity for approximately 20 federal, state and local agencies and task forces within the neighboring jurisdictions.

The use of testbed prototype evaluation programs will continue to support the core R&D program and the TTP. These testbeds will continue to evaluate operational configurations for law enforcement technologies. Active-duty law enforcement officials will continue to serve as experts to determine the optimum configurations for new technologies so they may be added to the TTP.

These technology testbeds will continue to produce new capabilities and new "versions" or components to overall system architectures. These enhancements will be provided as updates to those agencies that have received previous versions of the systems. The linking of the TTP to law enforcement technology R&D efforts sets it apart from other programs.

## **Conclusion**

In five years, the TTP has had a significant impact on the technological capabilities of state and local law enforcement agencies as more than 20 percent of all such agencies nationally are TTP recipients. It enjoys the endorsement of the law enforcement community and praise from Congress for its effectiveness. In short, the TTP works. It is a federal program that consistently delivers results with accountability. The TTP provides an excellent model for similar technology transfer programs.

The current list of technologies available from the TTP is given in Tables E1 and E-2.

Table E-1. LIST OF TECHNOLOGIES: *Complex Case Building Systems*

TECHNOLOGY	DESCRIPTION
<b>ACISS Narcotics &amp; Intelligence Records Management System</b>	Software System that can store, manage and link all information collected by a narcotics unit. Image, video or audio files can all be intelligently related to any subject, vehicle, intercepted phone call, address or report for case management.
<b>ADACS (Advanced Digital Audio Collection System)</b>	Complete turnkey system capable of intercepting, decoding, recording, and playback of landline and wireless telephone communications. Provides for automatic matching of the Call Data Channel and Call Content Channel.
<b>AVTS (Advanced Vehicle Tracking System)</b>	Using GPS-enabled “tags” attached to suspects’ cars and trucks, lets officers map real-time vehicle position. Includes a user-friendly mapping software package operating on a PC base station. Multiple vehicles can be tracked simultaneously.
<b>CBSS (Cellular-Based Surveillance System)</b>	Covert transmitter and receiver system monitors and records evidence audio through the cellular network and VHF bands simultaneously. Components may be used separately and will integrate with existing VHF audio surveillance systems.
<b>Digital Information Gateway (DIG) Software</b>	Information retrieval software that allows the search of any number of databases, documents, and web sites simultaneously. DIG scales to task forces, divisions, organizations, or even agencies.
<b>Digital Pager Intercept</b>	Intercepts, time-stamps, and records messages, either numeric or alphanumeric, sent to suspects’ digital pagers. In specific cases, the messages are relayed to the case officer's own pager. Can intercept up to eight separate channels of pager traffic.
<b>Interoperability Communications System</b>	Using computer-aided switching technology, connects multiple LEAs on disparate systems to a central radio system. Vastly improves real-time interagency communications during counternarcotic investigations. Permits each agency to assign its circuit to an agent or patrol vehicle and lets the two agents communicate directly in the field: no dispatchers needed.
<b>LINCOLN (Local Intercept Network Collection – Online Network) Wiretap System</b>	Title III telephone intercept system permits CALEA-compliant switch-based intercepts with several wireless carriers including Nextel, VoiceStream, and AT&T Wireless. Ranges from single-line to multi-line networked wiretap system. Package comes with LINCOLN server hardware, workstations, Pen-Link analysis software, and CALEA interface hardware.
<b>Multimedia Processing System</b>	PC-based video processing workstation with predefined application filter systems to solve common video or image problems such as demultiplexing, low light images, and object stabilization. Additional applications to process complex video problems are available.
<b>Pen-Link Analysis Software</b>	Telephone surveillance software provides complete, end-to-end data collection, distribution, and analysis systems. Helps build and integrate call, subscriber, event, seizure, and case files; stores complete case data; and provides instant network access to images, audio, and video.
<b>R3000 Navigator Telephone Surveillance System</b>	Expandable digital telephone-intercept system for Title III investigations that allows interception and decoding of CALEA-compliant digital messages. System provides LEAs a logical path of migration from traditional analog intercepts to digital switch-based telephone surveillance.
<b>SPIN (Suspect Pointer Index Network)</b>	Provides automated entry, retention, and analysis of multimedia investigative data (images and text). Users at nodes throughout a given jurisdiction can enter suspect and case data, including mug shots, on this networked, wireless system that provides complete data search capability.
<b>VisuaLinks Software</b>	Software package to identify and graphically highlight underlying patterns, trends, anomalies, or new relationships in data by using advanced link analysis techniques.
<b>VoiceBox</b>	Allows live, LAN-connected monitoring and collection of telephone, Internet, room-probe, fax, and video transmissions using a built-in dialed number recorder (DNR). Includes a networked printer, CD workstation, courtroom playback workstation, and high-level data backup.

Table E-2. LIST OF TECHNOLOGIES: Tactical Tools to Support the Officer

TECHNOLOGY	DESCRIPTION
<b>Audio Surveillance System</b>	Covert body wire transmitter and receiver system includes a concealable body wire transmitter, repeater for extended range capability, and a receiver base station that can record transmissions on either audio cassette or professional mini-disk. Provides superior sound recording in the field.
<b>Body Worn</b>	Miniaturized, multi-channel transmitter with voice privacy and low probability of detection (VPLPD) capabilities. Can be worn inconspicuously and can defeat both detection and eavesdropping devices.
<b>Drugwipe</b>	Surface residue drug test kit that identifies trace amounts of cannabis, cocaine, opiates, and amphetamines. Officer wipes swab across surface such as dashboard or doorknob and inserts swab into vial. Color change indicates presence of narcotics.
<b>Mini-Buster</b>	Self-contained portable contraband detection kit that locates hidden compartments and bulkheads. Includes an ultrasonic range finder to detect false walls; a flexible fiber optic scope for remote viewing inside inaccessible spaces such as fuel tanks; and other assorted steel probes, extension mirrors with flashlights, and pocket pencil inspection probe.
<b>Mini-PIX Wireless Video Surveillance</b>	A wireless video transmitter and briefcase receiver kit containing all the necessary elements for on-body and off-body wireless video surveillance applications.
<b>Night Vision Kit</b>	Amplifies images in low light using military-strength night vision goggles with built-in infrared illuminator and a 50-millimeter (mm) lens; an interchangeable 70-300 mm lens with variable gain; a 3-power (3X) magnifier, and a very fast optic snap-on telescope.
<b>PicoDAC</b>	A pocket-size, 12.5-ounce, powerful, rugged, digital signal processor for field use to improve audio from telephones, tape recorders, live microphones, and radio receivers. Equipped with 10 filter and bandwidth combinations to filter the most commonly encountered noise.
<b>Sentinel Global Positioning System (GPS)</b>	Small covert GPS tracking system and data logger that provides law enforcement with data on all movements and patterns of the vehicle. Data can be downloaded from a few hundred feet through a built-in spread-spectrum RF link.
<b>Thermal Imager</b>	Night vision device senses heat, not light, and generates real-time video in all lighting conditions including total darkness. Can be hand-held or mounted on a vehicle rooftop. Remote operation from inside vehicle permits 360-degree pan, 40-degree tilt using joystick. Can detect a human out to 1,500 feet. Designed to withstand harsh weather conditions.
<b>ThermoVision Scout</b>	An ultra-compact, lightweight, rugged infrared camera with a built-in color 2.5-inch liquid crystal display (LCD) to reduce peripheral vision impairment compared to eyepiece imagers.
<b>VideoDetective Interceptor</b>	PC-based video enhancement system that eliminates jitter and camera motion from real-time or previously recorded video of license plates or suspects. Provides video editing capability, zoom mode, and image digitization and storage for superior evidence processing.

# APPENDIX F - ACKNOWLEDGMENTS

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