Combating Terrorism Technical Support Office

REVIEW BOOK | 2009

Preface

In the worlds of business and government, verbal cues mean little. Saying "we support this" does not matter if there is no money attached to it. Words, on their own, do not mean much.

Except when they're from those in combat.

For over twenty years, the Technical Support Working Group (TSWG), and now the Combating Terrorism Technical Support Office (CTTSO), has provided a needed forum for the development and delivery of technologies and capabilities for both antiterrorism and counterterrorism—defensive measures against attacks and direct action against terrorists which make people safer and finding and neutralizing terrorists easier. Products first prototyped with CTTSO are now in use with military units in combat, Special Operations Forces, Explosive Ordnance Disposal, law enforcement, and first responders. The interagency scope of the organization, coupled with multiple international partners, has allowed CTTSO to be both innovative and entrepreneurial. And the results have been met with thanks by the people who use them.

Preface

But users don't just give CTTSO their thanks. They give their time, helping to develop the next generation of equipment by telling CTTSO what they need. They stay involved during the development process, making fixes both small and large. They ensure that the people who need the product get what they really want. They work with CTTSO staff to stay involved with our Australian, Canadian, Israeli, Singaporean, and United Kingdom counterparts to guarantee that we provide equipment that is not just the best in the country, but in the world.

And CTTSO changes its directions when appropriate. Emphasis on counterinsurgency operations in Afghanistan underline the need to operationalize irregular warfare. The Irregular Warfare Support (IWS) program looks to strategies on how to fight an unconventional war better. CTTSO began experimentation with tailorable packages to support small task organized units in remote operations. Austere environments require rugged capability sets requiring minimal training and maintenance. Small units need low-profile force protection kits to allow them to operate independently. Coalition warfare and security operations require new tools oriented to regional language and culture issues. A new program under the CTTSO banner this year, Human Social Cultural Behavior (HSCB), works to analyze how people react across regions so that what may seem a great idea to an American to "win hearts and minds" encourages the same reaction by an Afghani. The support of the community technical experts, our partners and users is critical to continued success, both now and in the future.

This annual review book will highlight a few of the new technologies and resources that are improving the effectiveness of military and civilian security forces, law enforcement officials, bomb squads, training instructors, and a host of other individuals who have a single-minded purpose and defined mission to prevent or respond to acts of terrorism. It will also highlight those agencies that, by providing us their people and their support, help to ensure that CTTSO continues to be on the cutting edge of providing technology to those who need it the most.

Table of Contents

The Combating Terrorism Technical Support Office

4 Overview and Organization
5 International Program

The Technical Support Working Group

8 History and Mission
8 Organization and Structure
10 Program Funding

The Technical Support Working Group Subgroups

13 Chemical, Biological, Radiological, and Nuclear Countermeasures
19 Explosives Detection
23 Improvised Device Defeat
29 Investigative Support and Forensics
37 Personnel Protection
43 Physical Security
51 Surveillance, Collection, and Operations Support
55 Tactical Operations Support
61 Training Technology Development

The Explosive Ordnance Disposal/Low-Intensity Conflict Program

68 Organization and Funding

The Irregular Warfare Support Program

74 Organization and Funding

The Human Social Culture Behavior Modeling Program

78 Organization and Funding

CTTSO Product Development and Delivery

82 Technology Transition
84 2009 Meetings and Conferences
86 BAA Information Delivery System
87 CTTSO Portal Web Site

Appendix

90 2009 Membership
95 TSWG 2009 Membership by Subgroup
103 2009 Performers
112 Glossary

Combating Terrorism Technical Support Office

Combating Terrorism Technical Support Office

Overview

Identify requirements to combat terrorism and provide solutions to warfighters, first responders, and other frontline users as rapidly as possible.

The Combating Terrorism Technical Support Office (CTTSO) is charged with providing a forum for interagency and international users to discuss mission requirements to combat terrorism, prioritize those requirements, fund and manage solutions, and deliver capabilities. CTTSO accomplishes these objectives through rapid prototyping of novel solutions developed and field-tested before the traditional acquisition systems are fully engaged. This low-risk approach encourages interdepartmental and interagency collaboration, thereby reducing duplication, eliminating capability gaps, and stretching development dollars. This unique "left of POM" process for rapidly delivering capabilities allows the Department of Defense and interagency acquisition systems and Programs of Record to identify successful capabilities and incorporate them into budget cycles without the risk of long-term development efforts.

Organization

The Assistant Secretary of Defense for Special Operations/Low-Intensity Conflict and Interdependent Capabilities (ASD (SO/LIC&IC)) established CTTSO in 1999 to consolidate its research and development programs previously administered by the Office of the Assistant Secretary of Defense (Command, Control, Communications and Intelligence). The research and development effort that supports the interagency Technical Support Working Group (TSWG), was the first program to transition to CTTSO. The Explosive Ordnance Disposal/Low-Intensity Conflict (EOD/LIC) Program, which develops advanced technologies for Joint Service EOD and Special Operations Forces (SOF) missions, transitioned in 2001. In 2007, the Irregular Warfare Support (IWS) Program was initiated to satisfy a growing need to improve the capacity of the United States to counter insurgencies and fight an irregular war. Finally, the Human Social Culture Behavior (HSCB) Modeling Program stood up in 2008 to enhance the understanding of the complex operational problems related to social and cultural terrain.

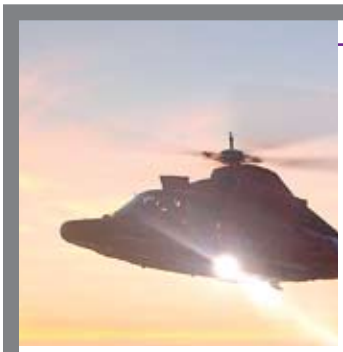
Combating Terrorism Technical Support Office

CTTSO's International Program

"For history teaches us that the nations that grow comfortable with the old ways and complacent in the face of new threats, those nations do not long endure. And in the 21st century, we do not have the luxury of deciding which challenges to prepare for and which to ignore. We must overcome the full spectrum of threats -- the conventional and the unconventional; the nation-state and the terrorist network; the spread of deadly technologies and the spread of hateful ideologies; 18th century-style piracy and 21st century cyber threats."

- President Barack Obama

While the United States Armed Forces, law enforcement, and homeland security agents have gained more experience combating terrorism than any would desire, there is always more to learn. CTTSO is fortunate to count Australia, Canada, Israel, Singapore, and the United Kingdom as friends with which collaborative solutions to combat terrorism are developed. Dating back to 1993, CTTSO has expanded its ability to deliver improved capabilities by leveraging foreign experience, expertise, and resources in the fight against terrorists and their infrastructure. These bilateral relationships ensure that CTTSO is providing its military and interagency customers with the highest level of capability possible.



Technical Support Working Group

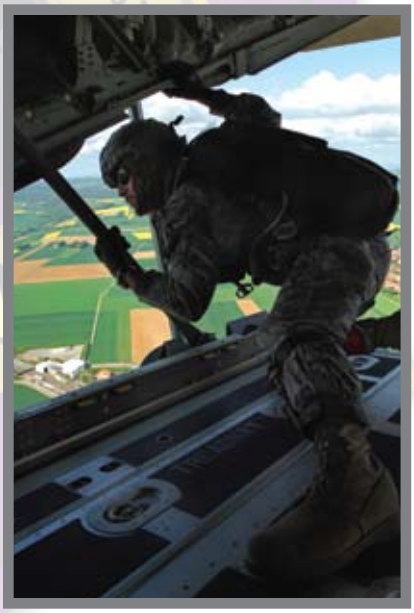
Technical Support Working Group

History and Mission

In April 1982, the National Security Decision Directive 30 assigned responsibility for the development of an overall U.S. policy on terrorism to the Interdepartmental Group on Terrorism (IG/T), chaired by the Department of State (DOS). TSWG was an original subgroup of the IG/T, which later became the Interagency Working Group on Counterterrorism (IWG/CT). In its February 1986 report, a cabinet level Task Force on Counterterrorism – led by then Vice-President Bush – cited TSWG as assuring "the development of appropriate counterterrorism technological efforts. "

Today, TSWG still performs that counterterrorism technology development function as a stand-alone interagency working group. TSWG's mission is to identify and prioritize the needs of the national interagency community through research and development programs for combating terrorism requirements. TSWG delivers capabilities to those on the front lines through rapid research and development, test and evaluation, while providing operational support. TSWG incorporates available expertise and experience from government, commercial, private, and academic sources throughout the United States and the world.

TSWG initiates efforts to influence longer-term research and development; and, reflecting the shift to a more offensive strategy, balance its technology and capability development efforts among the four pillars of combating terrorism: antiterrorism, counterterrorism, intelligence support, and consequence management.

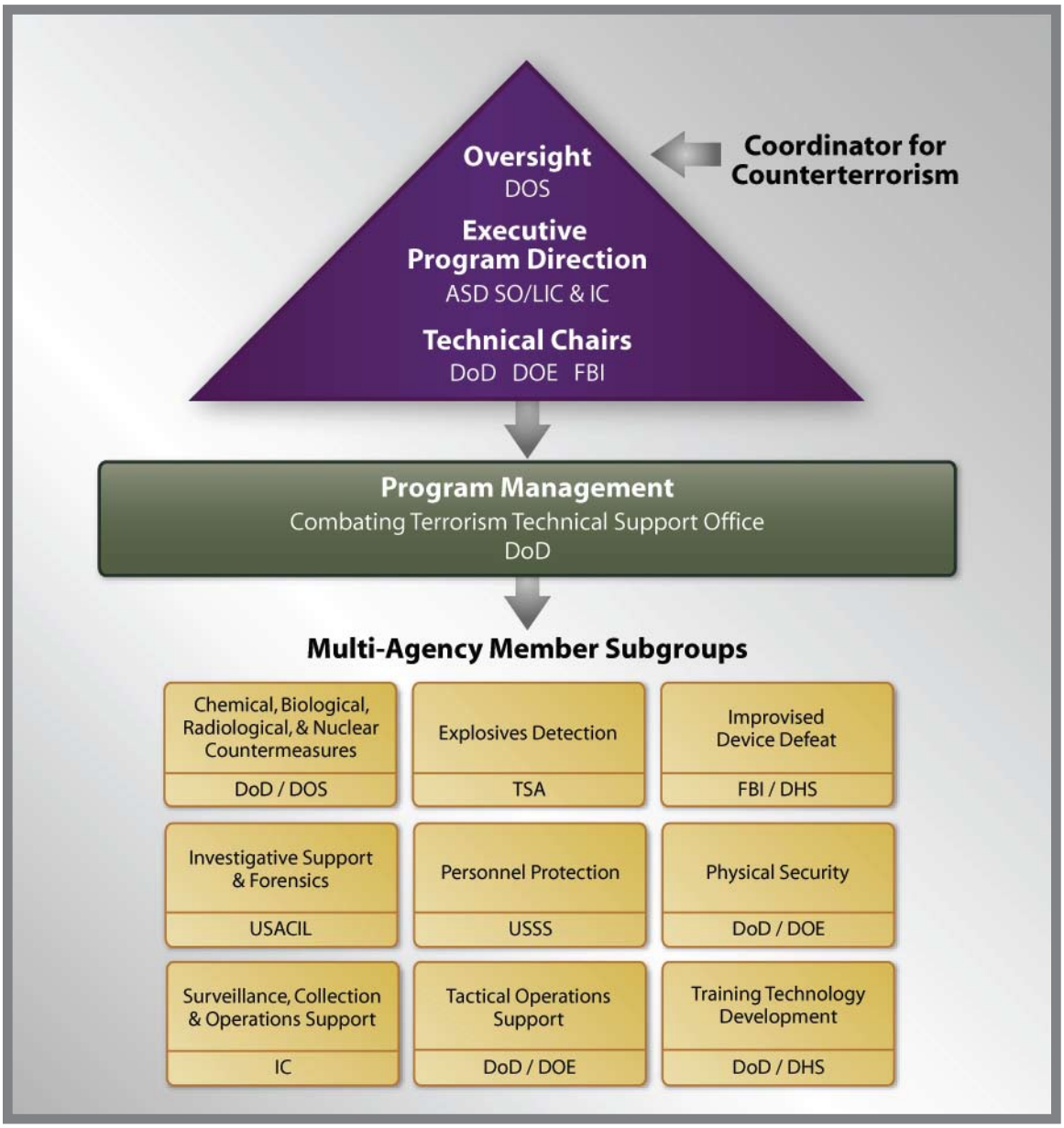


Organization and Structure

TSWG operates under the policy oversight of the Department of State's Coordinator for Counterterrorism and the management and technical oversight of the Department of Defense Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict. While TSWG's core funds are derived principally from CTTSO and DOS, other departments and agencies contribute additional funds and provide personnel to act as project managers and technical advisors. TSWG has successfully transitioned capabilities to the Departments of Agriculture, Defense, Homeland Security, Justice, State, and Treasury; the Intelligence Community; the Public Health Service; and many other departments and agencies. Additionally, TSWG has transitioned many systems to State and local law enforcement. TSWG membership includes representatives from over 100 government organizations. Participation is open not only to Federal departments and agencies, but also to first responders and appropriate representatives from State and local governments and international agencies. These departments and agencies work together by participating in one or more subgroups. A comprehensive listing of member organizations by subgroup is provided in the appendix.

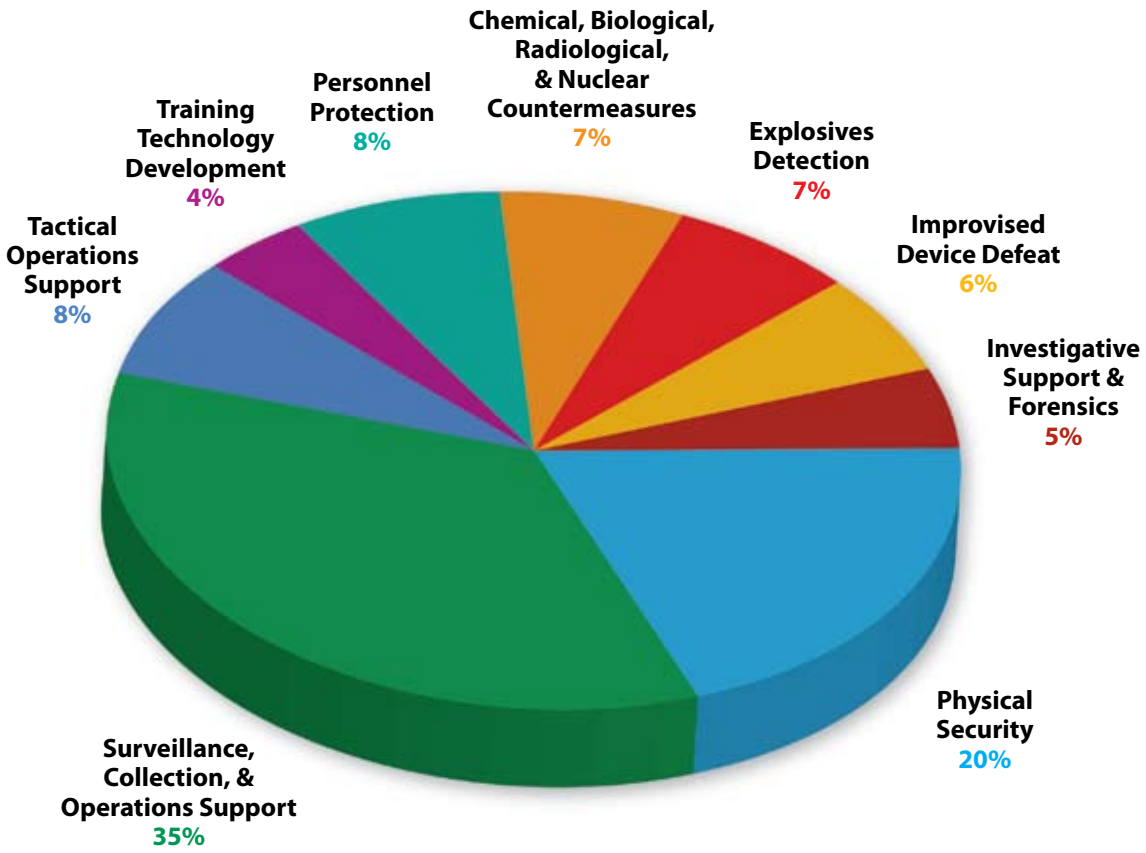
Technical Support Working Group

TSWG's subgroups are chaired by senior representatives from Federal agencies with special expertise in those functional areas. Chairmanship of nine subgroups is shared as indicated in the organizational chart below.



Technical Support Working Group

TSWG FY 2009 Program Funding ($187 Million)



INTERAGENCY INTERNATIONAL

TSWG

Technical Support Working Group Subgroups

INTERAGENCY INTERNATIONAL

TSWG

Chemical, Biological, Radiological, and Nuclear Countermeasures

Chemical, Biological, Radiological, and Nuclear Countermeasures

Mission

Identify, prioritize, and execute interagency chemical, biological, radiological, and nuclear combating terrorism requirements and deliver technology solutions for detection, protection, decontamination, mitigation, containment, and disposal.

The Chemical, Biological, Radiological, and Nuclear Countermeasures (CBRNC) subgroup identifies and prioritizes multi-agency user requirements and competitively seeks technological solutions for countering the terrorist employment of CBRN materials. Through its participation in the InterAgency Board for Equipment Standardization and Interoperability and in coordination with the Department of Homeland Security, the National Institute of Justice, the Environmental Protection Agency, and other DoD components the CBRNC subgroup integrates technology requirements from the fire, hazardous materials, law enforcement, and emergency medical services communities into its process. Senior representatives from DoD and the Department of State co-chair the subgroup.

Focus Areas

The CBRNC subgroup focus areas reflect the prioritized requirements of the CBRN incident prevention and response community. During FY 2009, these focus areas were:

Detection

Improve the sampling, detection, and forensic analysis of chemical, biological, and radiological threat agents in the air, in food or water, and on surfaces.

Protection

Improve the operating performance and reduce the costs of individual and collective protection. Develop and enhance personal protective equipment (PPE), including respiratory protection systems and garments. Develop analysis and design tools for CBRN protection for building engineers and architects. Develop and evaluate advanced filter materials.

Consequence Management

Develop technologies and procedures to mitigate the effects of a life-threatening or destructive event. Develop and improve response activities and related equipment to counter a terrorist use or accidental release of CBRN materials, to include short- and long term decontamination and restoration.

Chemical, Biological, Radiological, and Nuclear Countermeasures

Information Resources

Develop shared information management tools to provide a common situational awareness. Facilitate the efficient integration of diverse emergency and consequence management elements from Federal, State, and local agencies.

Selected Completed Projects

Fast Repetition Rate Fluorimeter

Current water monitoring systems are often very expensive and complicated to install and maintain. Chelsea Technologies developed an alternative technology, the Fast Repetition Rate Fluorimeter II (FRRF II), that monitors chemical contamination in water supplies in near real-time by measuring the bio-fluorescence of naturally-occurring algae, whose fluorescence changes significantly in contaminated water. The FRRF II automatically monitors these algae and can quickly alert operators when contamination rises to unsafe levels. Initial tests show that FRRF II can identify the presence of some common toxic industrial chemicals and chemical warfare agents in water. The system is available in designs for both laboratory use as well as community water treatment systems, and is being developed for other uses related to water protection. For community systems, the installation cost is one-fourth that of current systems, and the cost for upkeep is minimal. Requests for additional information should be sent to cbrncsubgroup@tswg.gov.

Multipurpose Threat Glove

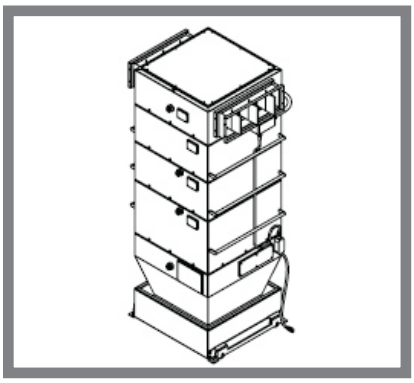
To protect public safety officers during routine tasks, Warwick Mills, Inc. designed a multipurpose glove that protects against cuts, punctures, and pathogen threats. The gloves are slip-resistant but are thin and pliable enough to retain manual dexterity. They resist degradation over time and remain operational in extreme temperatures, humidity, salinity, and UV conditions. The gloves are also machine-washable and can be decontaminated on-site and reused. The gloves are compatible with existing commercial and military-issued duty uniforms. Requests for additional information should be sent to cbrncsubgroup@tswg.gov.

Total Organic Carbon Detector

Measuring the total organic carbon (TOC) in water samples has multiple applications, such as identifying when foreign matter is added. Most inorganic compounds have a detectable level of organic carbon when added to a water system. Current TOC analysis technologies require a combination of hazardous reagents, high temperatures, and compressed gasses. In addition, such devices are highly sensitive to environmental factors, vibration, and user adjustments. OI Analytical developed an inexpensive, online, total organic carbon detector to quantitatively measure all types of organic carbon dissolved or suspended in water. The system can be used in field water or domestic water supply systems to detect contamination with organic substances. The OI Analytical

Chemical, Biological, Radiological, and Nuclear Countermeasures

detector provides a novel TOC analysis device packaged in a robust, field-installable, continuous monitoring package. The Environmental Protection Agency tested alpha prototypes of the system and identified hardware and software improvements. Selected water utilities field tested beta prototypes through the end of 2009. Requests for additional information should be sent to cbrncsubgroup@tswg.gov.



Transportable Gasifier for the Destruction of Contaminated Biomass

Foreign and domestic animal disease outbreaks have highlighted the impact of large-scale animal mortality on agriculture and the environment. These outbreaks have resulted from both natural causes and accidental releases. Such incidents demonstrate the potential consequences in the aftermath of an agricultural bioterrorism attack. Proper management of the post-event state will ensure public safety and security while mitigating the affect on the environment and the amount of time needed to restore public confidence in the commodities and agriculture markets. BGP, Inc. developed a transportable gasifier that provides a safe and effective means to dispose of large-scale animal mortalities and contaminated biomass through a unique continuous-feed, high-temperature gasification process. The system is mobile and can be transported on standard low-boy trailers for on-site sanitary and environmentally friendly destruction of contaminated biomass. BGP completed successful field evaluations of the transportable gasifier in FY 2009. The evaluations focused on assessing environmental impact and biomass throughput. Requests for additional information should be sent to cbrncsubgroup@tswg.gov.

Selected Current Projects

Advanced Small-Room Chemical and Biological Filtration System

Special and high-profile locations require the capability to provide shelter-in-place in a small room in the event of a chemical or biological incident where evacuation is not the desired course of action. HBM Associates is designing an advanced small-room chemical and biological filtration system that will be installed in the designated safe room of critical facilities and is intended for emergency use. The system will be integrated into new and renovated constructions.

Enhanced Performance Tactical Chemical, Biological, and Radiological Boot

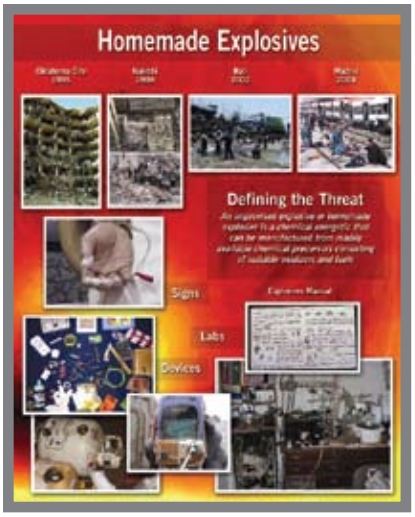
First Responders require footwear with superior stability and comfort for use in environments contaminated with chemical, biological, and radiological (CBR) agents. Current boots for hazardous materials response are heavy, hot, and have poor ergonomic function. The North Carolina State University Textile Protection and Comfort Center has partnered with Globe Firefighter Suits, Falcon Performance Footwear, and W. L.

Chemical, Biological, Radiological, and Nuclear Countermeasures

Gore & Associates to develop an enhanced performance CBR boot providing protection against chemical warfare agents, toxic industrial chemicals and materials, and flash fire. The boot is designed to meet the component requirements of National Fire Protection Association (NFPA) 1994, Standard on Protective Ensembles for First Responders to CBR Terrorism Incidents, and NFPA 1971, Standard on Protective Ensembles for Structural and Proximity Fire Fighting. The project team of users, material designers, and clothing design experts are addressing deficiencies in current tactical footwear while designing a reusable CBR protective boot that provides enhanced comfort, ruggedness, and protection from flash fire.

Homemade Explosives Containment Guide

A homemade explosive is a chemical energetic that can be manufactured from readily available chemical precursors consisting of a suitable oxidizer and a suitable fuel that are properly mixed. The disruption of homemade explosives may result in the release of chemicals into the environment. This effort is addressing the need for standardized containment guidance for the clean-up of chemicals and materials that may be found in laboratories producing illicit explosive materials. The Air Force Research Lab is examining production methods for homemade explosive materials and identifying the types and quantities of chemicals expected in such facilities. The resulting guidebook will specify spill collection supplies required to absorb, render harmless, and prepare such chemicals for disposal and will provide further containment guidance for law enforcement operations.



Low-Profile Escape Mask

Current escape masks are often bulky and not optimized for use by the general public. The Low-Profile Escape Mask is an individual protection device that will provide respiratory and ocular protection in the event of a chemical or biological attack. The mask will be for short-duration use to escape a contaminated area and will meet the requirements of the National Institute for Occupational Safety and Health Standard for Chemical, Biological, Radiological, and Nuclear – Self-Contained Escape Respirator, released September 2003. The mask is designed to provide protection for a general population of adults who may wear eyeglasses, have beards or long hair, or other characteristics that may preclude use of military-style masks. The escape mask will remain packaged for storage until time of use, with explicit and easy-to-understand instructions. The packaged mask is expected to approximate the size of a daily planner to make it easily portable for high-profile individuals. The prototype mask is currently undergoing design changes based on end-user feedback.

Chemical, Biological, Radiological, and Nuclear Countermeasures

Removable Reactive Overlay Coatings

Coatings are a critical element in the military's arsenal of chemical, biological, and radiological warfare protective technologies. Military personnel and facilities have immediate needs for self-decontaminating vehicle overlay coatings to protect personnel and equipment. Isotron Corporation is developing removable coatings coupled with advanced reactive materials technology to neutralize biological and chemical warfare agents. Such coatings hold the potential to render vehicle coatings "self-decontaminating," providing a safer operating environment for the warfighter. These next-generation coatings require minimal time and equipment to affix and could be applied safely on site. This effort will field removable coatings for large-scale CBR contamination avoidance and decontamination and will support critical military base recovery and vehicle change-of-theatre operations.

3-D Personnel Location and Tracking

Location and tracking of emergency responders, especially those operating in dense structural environments, continues to be one of the highest priorities of the emergency response community. Military commanders also need to be able to track deployed personnel in urban environments. Such capabilities are not currently available in an operationally suitable system with the small size, low unit cost, and accuracy needed. To meet this need TRX Systems is developing a small, low-cost, low-power sensor system to provide both indoor and outdoor location and tracking. This system will address current operational barriers, such as environments that deny GPS locating and dense structures that bar radio-frequency penetration. The 3-D system will generate real-time maps, unknown building configurations, and next-generation prototypes will transmit data such as personnel health monitoring and video. The system will not require special instrumentation or preparation of the building, reducing set-up time to under a minute.

Contact Information

cbrncsubgroup@tswg.gov

A comprehensive listing of member organizations by subgroup is provided in the appendix.

INTERAGENCY INTERNATIONAL

TSWG

Explosives Detection

ED

Explosives Detection

Mission

The Explosives Detection (ED) subgroup identifies and develops technologies to enhance the operational capability of both military and civilian applications. A representative from the Transportation Security Administration chairs the subgroup.

Focus Areas

The ED subgroup focus areas reflect the prioritized requirements of a broad range of interagency customers, including those responsible for incident response, physical security, and forensic analysis. During FY 2009, these focus areas were:

Vehicle-Borne Improvised Explosive Device Detection

Develop technologies necessary to provide a remote or stand-off detection capability for explosives in large volumes at a distance. Investigate unique physical and chemical phenomena that identify the presence of explosives, the physical limits for sensor technology to respond to these phenomena, and enhancements to detection technology. Develop techniques to improve both stand-off distance and the types of explosives that can be detected. Evaluate remote techniques, in which a system is down-field from the operator but near the objects of interest.

Suicide Bomber Detection

Improve systems that detect the presence of improvised explosive devices concealed by persons engaged in suicide attacks against government installations and public facilities, both domestic and international. Programs in this area are highly sensitive; specific capabilities generally cannot be discussed in an unclassified document.

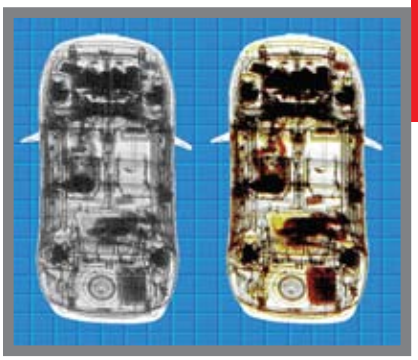
Short-Range Detection

Develop new explosive detection capabilities and improvements to existing systems for detection and diagnosis of concealed threats. Emphasis is placed on technologies that support entry-point, cargo, passenger rail, and baggage screening. Explore electronic, wet chemical and biological techniques to improve detection rates, throughput, and accuracy in identification of explosives. Evaluate integration and implementation of explosives detection technologies in operational scenarios to refine user needs and improve vendor engineering.

Explosives Detection

Selected Completed Projects

Dual-Energy X-Ray to Detect Vehicle-Borne Improvised Explosive Devices



Distinguishing between illegal substances, explosives, and other contraband in vehicles is challenging. Spectrum San Diego developed a dual-energy X-ray system for the detection of bulk explosives that may be concealed in cars and trucks. The system uses a technique that can discriminate between organic and metallic objects that may be concealed or are otherwise difficult to discern. The dual-energy system also allows the operator to acquire quantitative information on organic masses located in the vehicle. The system has a five mph drive-through capability and is also safe for screening individuals. In late 2009 the Johns Hopkins University Applied Physics Laboratory and the Naval Surface Warfare Center – Crane Division, are conducting field trials to evaluate the range of detectable threats. Requests for additional information should be sent to edsubgroup@tswg.gov.

Selected Current Projects

Backscatter Walk-through Portal

Equipment quickly deteriorates in austere, extreme environments. Rapiscan Systems is developing a ruggedized, modular, walkthrough backscatter system intended for military and civilian use in harsh environments, including severe weather and extreme temperatures. The hardened system will be easily transportable and operable day and night, indoors and outdoors. Enhancements will be made to the detection software to provide improved detection capabilities and ease of detection by security personnel.

Automatic Target Recognition for Backscatter Portals

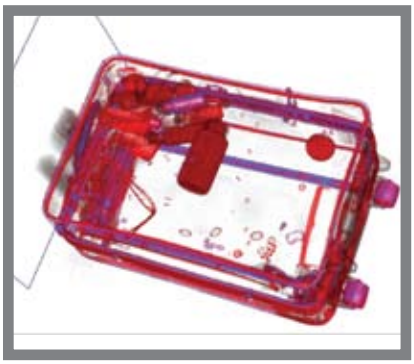
Current backscatter portals provide graphic images of individuals being screened; this presents privacy issues for everyone involved. In response, L3 Communications Service Division developed and is testing a software package for current backscatter X-ray portals to provide privacy filters and automatic target recognition. The software can be adapted to any backscatter portals currently on the market, providing a better capability for older systems with no privacy filters; this algorithm provides some after market privacy filters to black out sensitive images of the public while simultaneously making threats like guns, knives and explosives stand out. The privacy filters and target recognition algorithms can be adjusted for a range of concept of operations from domestic to military applications. Prototype software, packaged on a laptop, will be available for operational assessments in late 2009.

ED

Explosives Detection

Portable Vapor Standard

In laboratory settings, a standard is a chemical compound of known purity and concentration. Current commercial off-the-shelf explosive trace detectors have no such standard to ensure that their vapor sampling mode is functioning properly when working in the field. A standardized vapor source used to verify proper trace detector functionality requires consideration of a number of parameters including disseminated volume, concentration of standard, inlet detector flow rate, and sensitivity of the detector to the standard. Due to the sensitive nature of what is being detected and the potential consequences of a false negative, it is necessary to reliably produce a vapor standard to ensure functionality. In response, Midwest Research Institute is developing a low-cost portable vapor standard dissemination system to use with handheld trace detectors to validate that the instrument is in fact detecting airborne explosive vapors. This standardized vapor source will be first designed to work with current commercial off-the-shelf Ion Mobility Spectrometry systems prior to expanding to other technologies.



X-ray Explosive Detection System Image Quality Enhancement

False alarms during baggage screening for explosives at airports increase inspection costs and reduce system throughput. Reveal Imaging and GE Global Research Center, with GE Homeland Protection, are conducting statistically well-designed studies to improve the performance of explosive detection system by determining the quantitative relationships between explosives detection, false alarm rates, image resolution, and dual-energy detection capability. The studies address both conventional and homemade explosives and analyzed the causes of false alarms in the laboratory and in passenger bags at airports. While reductions in false alarm rates are desirable, such reductions cannot degrade the performance of the system in detecting an explosive device or increase the processing time required for each bag. These studies are being used to determine cost versus detection and/or false alarm performance trade-offs. This information will guide the development of the next-generation baggage screening systems that will have lower total cost of ownership by operating at higher throughput speeds while producing fewer false alarms. The research is supported by the Department of Homeland Security, Science and Technology Directorate.

Contact Information

edsubgroup@tswg.gov

A comprehensive listing of member organizations by subgroup is provided in the appendix.

U.S. Marine Corps photo by Cpl. Theodore W. Ritchie

Improvised Device Defeat

Improvised Device Defeat

Mission

Identify, prioritize, and execute research and development projects that satisfy mission critical needs, fill capability gaps, and address interagency requirements for advanced technologies to safely and effectively defeat improvised terrorist devices. Emphasis is placed on technologies to enhance the training and support of operational personnel in the location, identification, render safe, and disposal of homemade explosives, improvised explosive devices, and other emerging terrorist threats.

The Improvised Device Defeat (IDD) subgroup delivers advanced technologies, tools, and information to increase the operational capabilities of bomb technicians, Federal, state, and local bomb squads to defeat and neutralize terrorist devices. The IDD subgroup identifies and prioritizes multi-agency user requirements through joint working groups and thorough validation processes. Representatives from the Federal Bureau of Investigation's Bomb Data Center and the Department of Homeland Security's Office of Bombing Prevention co-chair the subgroup.

Focus Areas

The IDD subgroup focus areas reflect the joint priorities of military and civilian responders. During FY 2009, these focus areas were:

Device Defeat

Develop advanced technologies to defeat the broad spectrum of improvised terrorist devices to include improvised explosive devices (IEDs), vehicle borne IEDs (VBIEDs), person borne IEDs, and enhanced hazard devices containing chemical, biological, or radiological materials. Develop innovative, cost-effective disruption and precision render safe solutions that increase standoff distance, reduce collateral damage, and decrease risk to the improvised devices defeat operator. Improve neutralization techniques for both sensitive and insensitive explosives and enhanced payloads such as flammable liquids and gases.

Identification and Diagnostics

Advance the capability of bomb technicians to interrogate unknown or suspect items and packages. Develop technologies to locate and identify improvised devices and enhanced fillers, and diagnose key fuzing and firing components. Develop tools to assist bomb technicians in the identification of U.S. and non-U.S. ordnance and firing systems incorporated into or modified for use in improvised devices.

Improvised Device Defeat

Emerging Threats

Advance production of effective countermeasures to neutralize or defeat radio-controlled IEDs and provide safe environments for bomb technicians. Develop, characterize, and test technology solutions to safely and effectively render safe or neutralize devices containing improvised homemade explosives. Develop, characterize, and test technology solutions to effectively render safe improvised devices using novel fuzing systems that incorporate such items as an electronic sensor, microcontroller, or mechatronic[1] components.

Remote Procedures

Develop advanced application systems to remotely access, diagnose, and defeat improvised devices. Advance development of manufacturer- and model-independent products and robotic tools with "plug and play" interface. Develop open-architecture, navigation, communication, and operator controls for robotic platforms, tools, and sensors.

Tool Characterization and Information Resources

Improve performance evaluation methodologies, test procedures, and tool characterization models for improvised device defeat technologies. Conduct ongoing evaluation and improvement of tools, methods, and protocols for confirming the accuracy of detection equipment, reliability of diagnostic tools, and completeness of neutralization and safeing techniques. Advance training concepts and information delivery systems that promote the tactical and operational response readiness required to effectively, safely, and efficiently counter improvised devices and emerging terrorist threats.

Selected Completed Projects

Remote Utility Conversion Kit

Public safety bomb squads need a cost-effective, remote capability to deliver large charges when faced with the disruption of a VBIED. Due to the popularity of the Kawasaki Mule fielded among many of the bomb squads, Applied Perception, Inc. developed a field-installable kit that converts the current vehicle into a remotely controlled vehicle. The Remote Utility Conversion Kit (RUCK) provides remote operation to a range of one mile, while maintaining the capability to be used in the manual mode at the flip of a switch. The RUCK was deployed with the Allegheny County Police Bomb Squad and Maryland State Police Bomb Squad. Requests for additional information should be sent to iddsubgroup@tswg.gov.

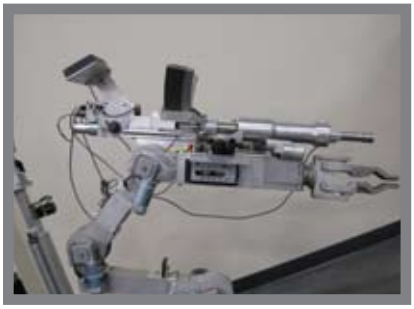
1 *Mechatronics adds intelligence to a mechanical design or replaces a mechanical design with an intelligent electronic solution. An example of a mechatronic component is the digital thermostat, which has replaced the much more inefficient mechanical thermostat. Digital thermostats are more accurate and are typically programmable, allowing for increased efficiency.*

IDD

Improvised Device Defeat

ODF Optronics LTD. Eyeball R1 and Northrop Grumman ANDROS F6A Integration

Bomb technicians require the ability to gather situational awareness from a remote location to increase the margin of safety for their operations. To address this need, Northrop Grumman enhanced the standoff capability for first responders by integrating the Eyeball R-1 with the widely fielded ANDROS F6A robotic system. Developed by ODF Optronics LTD, the Eyeball R1 is a rugged and compact wireless 360° mobile display system, designed to provide law enforcement personnel with situational awareness before entering a building, floor, or room. Tactical users roll, toss, or lower Eye Ball R1 into the crisis site as the situation dictates. By integrating ANDROS, a heavy-duty and versatile robotic system, with the Eyeball R1, the system can be placed or pneumatically launched into position if desired. Software integration allows the control and camera view of the R1 to be transmitted wirelessly through the robotic system's Operator Control Unit located in a safe area. This configuration provides bomb squads enhanced situational awareness while conducting missions. Requests for additional information should be sent to iddsubgroup@tswg.gov.



Multiple Improvised Explosive Devices Disruption System

Disruptors used by bomb technicians only fire one round, requiring the operator to bring the robotic platform back to the safe area to reload the disruptor. The Multiple IEDs Disruption System (MIDS), developed by Idaho National Laboratory, gives the bomb technician the ability to fire multiple shots for disrupting IEDs. The MIDS saves technician's time and resources to minimize the time on target. The MIDS is capable of firing ten percussion actuated non-electric rounds in the same volley. It is currently being field-tested at Idaho National Laboratories. Requests for additional information should be sent to iddsubgroup@tswg.gov.

Single-Sided Imaging

Often, IEDs and VBIEDs are in such a position that is difficult to properly place X-ray equipment on multiple sides to obtain proper diagnostics. American Science and Engineering, Inc. developed a non-invasive, backscatter X-ray system to image suspect IEDs and VBIEDs using only a single side. The system may be manually or robotically employed to interrogate threats from a safe distance. The bomb technician is able to view the X-ray images as they are displayed on the Operator Control Unit of the imaging system from the safe area. This technology will assist the bomb technician in formulating a render safe procedure without putting himself in harms way. Requests for additional information should be sent to iddsubgroup@tswg.gov.

Improvised Device Defeat

Selected Current Projects

Camera Blinder

The enemy conducts surveillance to observe, delay, and defend their position in case of an attack. This may pose a risk to bomb technicians and SWAT operators while they are conducting missions. AMP Research is developing a capability to blind enemy cameras during special operation missions. This device will enable law enforcement to neutralize surveillance cameras from a distance and ensure that their tactics, techniques, and procedures are not compromised.

Tool Characterization Guide

Bomb technicians need a tool that will help select a disruptor when faced with an IED or VBIED. Battelle Memorial Institute and Sandia National Laboratories have been tasked to characterize the performance of disruptors against varying sizes of threat devices. Some of the disruptors under evaluation are: the Mini-High Energy Access and Disablement Device, Modular Large Vehicle Disruptor, Aqua Ram, Boot Banger, Scalable Improvised Device Defeat, and smaller water disruption charges that bomb squads carry in their equipment. This data will be incorporated into the Tool Characterization Guide which will assist bomb technicians in determining which disruptor needs to be used based on the threat.

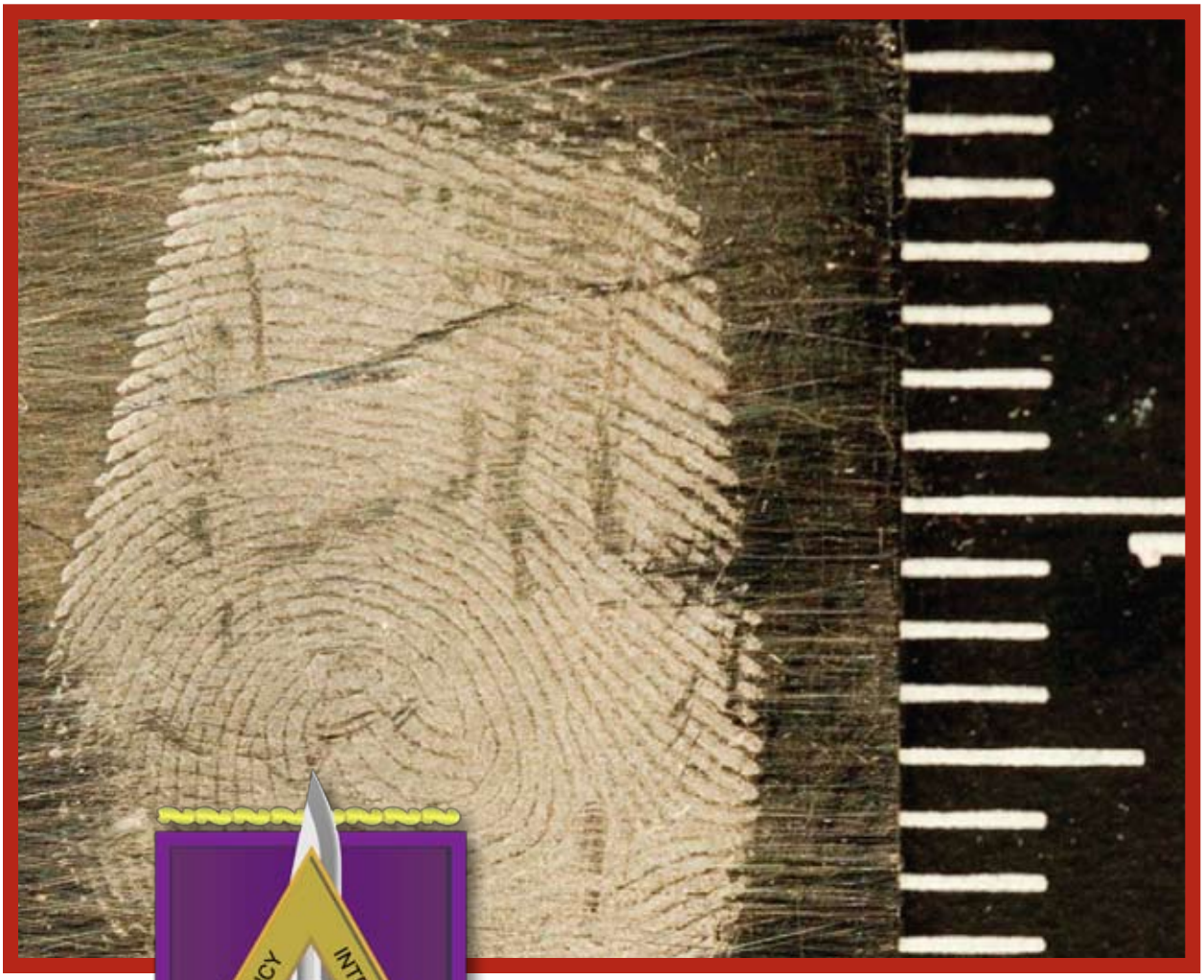
Land Shark ®

Currently fielded robotic systems are expensive and do not have enough capabilities to meet the challenges of varying mission scenarios for warfighters and first responders. Black-I Robotics is developing the Land Shark, a low-cost, multi-mission robot. The Land Shark® is a medium size unmanned ground vehicle that can be modified to accommodate different payloads, sensors, and attachments to support a range of missions. The Land Shark® is being developed by leveraging existing and recently developed technologies from government labs, academia, and industry to provide advanced multi-mission capabilities at a lower cost compared to currently fielded robotic systems.

Contact Information

iddsubgroup@tswg.gov

A comprehensive listing of member organizations by subgroup is provided in the appendix.



Investigative Support and Forensics

Investigative Support and Forensics

Mission

Identify, prioritize, and execute research and development projects that satisfy interagency requirements for criminal investigation, law enforcement, and forensic technology applications in terrorism-related cases.

The Investigative Support and Forensics (ISF) subgroup implements research and development projects that provide new capabilities to law enforcement personnel, forensic scientists, and intelligence operatives responsible for investigating and interdicting terrorist incidents. Projects conducted through this group have had a major impact on forensic investigations and intelligence operations throughout the civilian and military law enforcement community. A representative from the U.S. Army Criminal Investigation Laboratory chairs the subgroup.

Focus Areas

The ISF subgroup focus areas reflect the prioritized requirements of the military and civilian law enforcement communities. During FY 2009, these focus areas were:

Crime Scene Response

Improve the quality of recognition, documentation, collection, and preservation of evidence as well as the safety of first responders at a scene. Train first responders and forensic examiners and improve their capabilities to process and record terrorist incident scenes for future prosecution. Support scientific and technical efforts not assigned to other ISF focus areas.

Electronic Evidence

Develop computer forensic hardware, software, decryption tools, and digital methods to investigate terrorism. Develop advanced methods to extract and enhance audio recordings and video images from surveillance sources. Identify computer systems and media used by terrorists and extract the maximum amount of evidence from them. Improve techniques for the analysis of electronic devices to obtain the most forensic information.

Explosive and Hazardous Materials Examination

Improve methods for assessing the size, construction, and composition of explosive devices or other energetic hazardous materials. Identify and analyze explosive residue and other trace evidence present at blast scenes, especially those requiring rapid protection and processing to preserve the evidentiary value. Develop advanced techniques for post-blast scene and evidence examinations.

Investigative Support and Forensics

Forensic Biochemistry

Develop analytical methods for biological evidence found at terrorist scenes to make identifications and extract the maximum information such as origin or age. Enhance the use of DNA or other person-specific identifiers to track, identify, or profile persons or other biological material. Use stable isotope ratios to determine the geographic origin of organic material.

Friction Ridge Analysis

Improve latent print and related biometric techniques used in terrorism cases. Emphasize processes for automation of techniques that are tedious, expensive, non-portable, or reliant upon hazardous chemicals. Create better visualization and development of latent prints using lasers or more versatile and affordable reagents. Support better comprehension of latent prints and their molecular content as well as the scientific validation of fingerprint examinations.

Next-Generation Canines

Design, develop, and evaluate systems and methodologies that enable working canines and handlers to operate more effectively and efficiently. Enhance the ability of canines to perform functions such as explosives detection, tracking, patrolling, and attacking in an operational environment. Explore training tools, protocols, and technologies that support and enhance canine detection, including the development of new training aids that will enable more thorough exposure of canines to different types of scents. Design, develop, and evaluate methods to improve the capability to locate friendly personnel, reestablish contact with enemy combatants, and conduct reconnaissance of an area.

Questioned Document Examination

Develop advanced document and handwriting analysis techniques, devise standardized identification criteria, and establish a legal scientific basis for these examinations. Improve the techniques for investigating forgeries, counterfeit documents, disguised handwritings, and writing in different languages and character sets. Develop software to analyze questioned documents and match documents, authors, and document-generation hardware by handwriting analysis or pattern-recognition algorithms.

Surveillance and Information Gathering

Produce new and advanced surveillance and tracking techniques for law enforcement use. Develop better communication capabilities for tactical operations. Improve voice identification and speaker recognition capabilities. Advance credibility assessments, interviewing techniques, and related technologies. Improve information gathering and analysis techniques through technology, social interaction methods, and training.

Investigative Support and Forensics

ISF

Selected Completed Projects

Computer Log Collector

Terrorists and criminals continually find ways to defeat computer security and hack into automated systems. Previously, determining the specific details – who, what, when and how – concerning a hacking incident was time consuming and difficult. In response, ID Scientific (formerly known as 3rd Ring, Inc.) developed a new software tool that allows investigators to collect the information in the computer that answers these questions. A small thumb drive contains the entire software program and attaches to any USB port on a computer or server. Once connected, the tool can extract vast amounts of data pertinent to the hacking and store it on the thumb drive. It allows for easy downloading to other storage media. It can also identify and collect the RAM, running processes, all event log files, and other types of information. The software then categorizes, analyzes, and formats the data to make it easy to use by investigators. The system is versatile and law enforcement officials can use it in other types of computer investigations. The International Association of Chiefs of Police recognized the Computer Log Collector with an Excellence in Technology Award in 2009. The item is commercially available. Requests for additional information should be sent to jwilkinson@idscientific.com.

Updated Digital Automotive Image System

Terrorists and criminals often use motor vehicles in the commission of their crimes. Having photos or images quickly available of all known vehicles with their accompanying data improves the chances of a successful eye witness identification. Southwest Research Institute (SwRI) developed the Digital Automotive Image System (DAIS) and updated and improved its original DAIS that provided a front, side, and rear-view image of nearly every make and model of motor vehicle commercially manufactured in the last twenty years. The new system includes those models manufactured since SwRI produced the original system three years ago. Investigators can search the database by vehicle category, body style, number of doors, and other traits besides the make and model. DAIS can produce photo line-ups and "Be on the Lookout For" posters. DAIS, which was produced with the assistance of the Federal Bureau of Investigation, fits on one DVD and is easily downloaded to a computer hard drive. In 2009 SwRI distributed one DAIS DVD to each law enforcement agency in the United States. The new update already played a significant role in several major cases. Law enforcement agencies may seek further information about DAIS by contacting DAIS@leo.gov. Requests for additional information should be sent to ISFSubgroup@tswg.gov.

Investigative Support and Forensics

Optimization of Human Scent

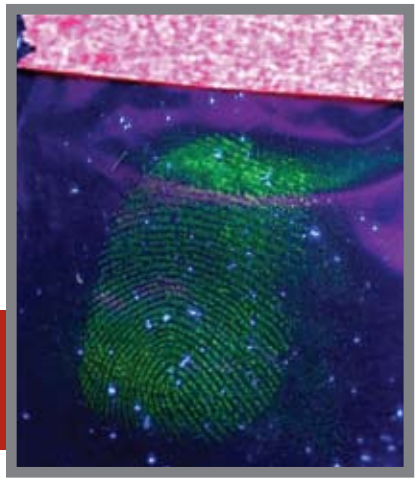
Investigators need a user-friendly, rugged, reliable, and compact system for canine handlers to collect human scent for future use. The Human Scent Collection System (HSCS), developed by Battelle Memorial Institute, addresses this need. The HSCS collects human scent – a volatiles profile – onto a gauze pad from an item of evidence. The resulting "scent pad" can then be presented to a trained canine to trail the person who matches the unique volatiles profile. The HSCS enhances the capability to relocate friendly personnel, reestablish contact with enemy combatants, and conduct reconnaissance of an area. The HSCS includes a user-friendly interface, a durable lightweight body, and a design to minimize cross-contamination. The design process included significant end user input, laboratory testing to confirm scent transfer capability, and an operational demonstration. The final system represents a critical step towards gaining acceptance within the scientific and legal communities of the process by which human scent evidence is collected and stored for future use Requests for additional information should be sent to ISFSubgroup@tswg.gov.

Selected Current Projects

Remote Viewer for Bullet Comparison

Analysis by forensic firearms examiners critically affects criminal and terrorist cases both domestically and on the battlefield. The need for firearms examinations is increasing, yet the number of those qualified is limited and concentrated at forensic laboratories located far from the scene or combat zone. Quantum Signal, LLC is developing a solution that remotely extends the range of the forensic firearms examiner. Rather than being onsite, the examiner can use a "teleoperated" comparison microscope to study the markings and striations on bullets and spent shell casings to make identifications. The system will allow remotely located examiners to manipulate and examine materials placed in a motorized mount under a comparison microscope by an onsite technician. All features of the microscope, which are typically adjustable – such as zoom, focus, and lighting – will be controlled via a user-friendly, "teleoperated" interface. This will enable a single firearms examiner to analyze evidence efficiently at a host of different locations directly from their existing laboratory.

Investigative Support and Forensics

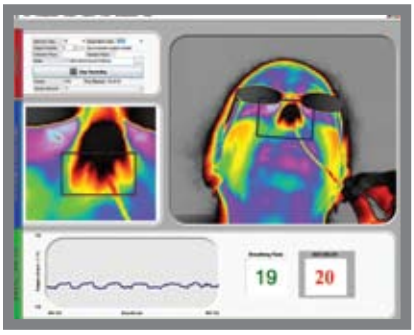


Evidence Recovery from Improvised Explosive Devices

Improvised Explosive Devices (IEDs) continue to be a weapon of choice for terrorists and identifying who built or planted these IEDs is one of the biggest challenges in forensic science. Despite the tremendous heat and pressures during an IED explosion, fingerprint and DNA evidence may survive the blast and remain on the post-blast bomb debris. Oak Ridge National Laboratory (ORNL) and Michigan State University are developing new techniques to visualize fingerprints and collect DNA that survives detonation. ORNL is identifying derivative products from the degradation of latent print residues and is then developing enhanced capabilities to detect and visualize these products. Additionally, the developers are determining what effect the common fingerprint technique of cyanoacrylate fuming has on the new processes. Michigan State University is concurrently producing improved processes to collect DNA as well as more sensitive processes to analyze it.

Firewire Memory Extractor

Accessing and retrieving information from computers and electronic equipment can reveal valuable evidence and intelligence. Frequently, these devices have Firewire ports which have security vulnerabilities that investigators can exploit to access and extract data even when the equipment is locked. Ashlar International LLC is developing a hardware-software system that connects to a Firewire port, bypasses the security measures, and then extracts the data in the device's memory. The system will collect RAM and download the running processes as well as passwords. Modules within the software will convert the captured raw data into an easily readable format which investigators can immediately analyze and use. The small, easily portable system will operate from a standalone Firewire external flash drive with massive storage space and can function on Windows, Mac, and Linux-based devices.



Advanced Thermal Action Coding System

The military, law enforcement, and intelligence communities need fast, accurate, and non-contact methods to assess the truthfulness or credibility of persons in many different environments. One emerging technology is thermal imaging of a person's face to measure the blood flow in the periorbital areas which indicates stress during questioning. The University of Houston is developing the Advanced Thermal Action Coding System (ATACS) which, besides using thermal imaging technology to assess the periorbital blood flow, simultaneously measures the traditional polygraph metrics of heart, breath, and electrodermal activity. The ATACS provides continuous measurements and analysis in real-time and automatically correlates the measurements to the exact time questions were asked. The system also stores all of the data for future review and analysis. The hardware will be portable and easy to use without extensive training. The University of Houston will conduct thorough validation of ATACS by direct comparison with traditional polygraph testing and will develop efficient techniques for its use in the field.

Investigative Support and Forensics

Integrated Canine System

Since the beginning of the U.S. combat operations in Iraq and Afghanistan, reliance on military working dogs on the battlefield has escalated to an all-time high. Simultaneously, U.S. forces gain a significant tactical advantage when they can view real-time images of potentially hostile situations in their area of operations. In response, Tactical Electronics is developing the Integrated Canine System, which will enhance the soldier's situational awareness of the battlefield by providing real-time video with integrated global positioning data. This new system, which fits in a vest fitted to the dog, will equip military working dogs with video cameras and GPS devices that transmit encrypted signals to their tactical teams. From a safe distance the teams can analyze video views of potentially hostile threats and environments before having to engage them. Besides the combat teams receiving immediate and accurate tactical information, they can retransmit the signal in real-time to other units or record it for after-action reviews, more comprehensive intelligence analysis, and other reporting.

Contact Information

isfsubgroup@tswg.gov

A comprehensive listing of member organizations by subgroup is provided in the appendix.

Personnel Protection

Personnel Protection

Mission

Identify, prioritize, and execute research and development projects that satisfy interagency requirements to provide advanced tools, techniques, and guidelines that enhance personnel security.

The Personnel Protection subgroup develops new equipment, reference tools, and standards to enhance the protection of personnel. Projects focus on putting innovative tools such as automated information management systems, communication devices, mobile surveillance systems, and personnel and vehicle protection equipment, in the hands of U. S Military, Federal, state, and local law enforcement protection details. Representatives from the United States Secret Service and Department of Energy co-chair the subgroup.

Focus Areas

The Personnel Protection subgroup focus areas reflect the prioritized requirements of the protective services community. During FY 2009 these focus areas were:

Fixed Site Security

Develop technologies to enhance the protection of fixed facilities. Provide threat detection, defeat, and mitigation tools for increased airfield, residence, and command center security. Develop surveillance and perimeter security systems that can be integrated with existing security architectures.

Individual Protection

Augment individual protection levels through the development and enhancement of communications and alert mechanisms and enhancing personal body armor by increasing ballistic protection, improving conceal ability, and reducing weight.

Information Resources

Develop reference materials, information management systems, and analytical tools to enhance preparation, facilitate decision making, and improve incident response capabilities. Evaluate performance of personnel protection equipment and assess feasibility for combating terrorism missions.

Mobile Security

Enhance personnel protection while traveling away from the high-level security of a protected installation. Develop surveillance and detection capabilities to increase protection of vehicles, aircraft, temporary living quarters, meeting venues, and public events. Develop armor solutions for enhanced ballistic and blast protection against current and emerging threats.

Personnel Protection

Selected Completed Projects

Wireless Emergency Vehicle Kit

While on travel, vehicles hardwired with emergency lights and sirens are not always available. Rental vehicles with temporary wired lights and sirens have typically been used. These wires are scattered through the vehicle causing safety issues if quick exits or entries to the vehicle are needed. To address these issues, Lewis Innovative Technologies, Inc. developed a versatile, easy to install lightweight wireless system that provides safe transportation for HRP and allows any vehicle to be quickly transitioned to a temporary emergency vehicle. A siren, four emergency lights, and the remote controller can all fit within a standard sized carry-on case. The carrying case, an airline approved carry-on container for easy transportation, contains equipment for charging the batteries either from AC wall power or DC vehicle power for versatility. The remote controller can be used to cycle through available flash patterns and siren tones. The emergency light modules are powered by internal rechargeable battery packs for up to 8 hours of operation (depending on flash pattern). Also included in the case are a variety of mounting brackets and hardware to adapt the kit for use in multiple installation scenarios and vehicles. The components are interchangeable across kits with simple reprogramming via the remote controller. The first evaluation units will be available to the TSWG by the beginning of 2010 with commercial production units available to the Law Enforcement community beginning in the second quarter of 2010. Requests for additional information should be sent ppsubgroup@tswg.gov.

Protective Services Portal

The number of agencies providing protective services for HRP continues to grow and the need for consistency and interoperability between them is essential for the success of their mission. To address this need, Platinum Solutions created the Protective Services Portal, a web-based tool providing best practices and templates to enhance the development of operations plans and to guide users through each step of this process. The Portal is a secure application enabling users to build and organize operations plans detailing critical information regarding hotels, airports, event sites, motorcade routes, nearby hospitals, and other necessary information. The Portal's searchable database stores these operations plans and associated attachments such as road maps, floor plans and photos of airports and hotels. The database also has tiered access controls for authorized users. The portal enables agents to apply the knowledge and special training gained from the Federal Law Enforcement Training Center - Protective Services Operational Training Program to their agency missions. Several federal agencies currently use the portal and it is accessible on the Federal Bureau of Investigation's Law Enforcement Online web site. Requests for additional information should be sent to ppsubgroup@tswg.gov.

Personnel Protection

Modular Surveillance Toolkit

When protecting HRP while traveling, surveillance is extremely important for continuous safety and to mitigate attacks. In response, Patton Electronics developed a small, adaptable Modular Surveillance Toolkit that supports man-portable, vehicular, and rooftop surveillance capabilities. The Modular Surveillance Toolkit can provide the high-level security of fixed-installations that security details require as well as other various types of surveillance capabilities. The toolkit offers video and audio capture, local storage, and encrypted uplink to a remote command center via the cellular network. The toolkit for rooftop use is equipped with two pan, tilt, zoom controlled cameras and a secure digital high capacity card for data storage. The toolkit for vehicle surveillance has four cameras with pan, tilt, zoom control, covering all sides of the vehicle for greater situational awareness. The vehicle surveillance toolkit also includes a removable hard disk drive used for data storage. The system provides GPS vehicle data so it can be tracked in real time with video streaming. The toolkit is commercially available and requests for additional information should be sent to ppsubgroup@tswg.gov.

Improvised Explosive Device Warhead Lethality Mitigation

While traveling in lightly protected vehicles, personnel in combat are extremely susceptible to improvised explosive device (IED) attacks, and mitigation tactics are essential. The IED Warhead Lethality Mitigation study researched explosively formed penetrator threats and tested and validated armor solutions that address the entire family of IED threats. The effort performed warhead characterization, modeling and simulation, and model validation for designs that represent the current and projected threats. The testing measured the family of threats at varied standoff distances and angles of attack. Results of this characterization effort and armor testing are being leveraged to design and manufacture armor solutions that provide enhanced protection against IED threats. Requests for additional information should be sent to ppsubgroup@tswg.gov.

Personnel Protection

Selected Current Projects

Organizational Structures Recognition

Combating terrorist networks in the information age is increasingly difficult. The exponential increase in the availability of data requires not only a new perspective on the data collection, but also the management and evaluation of the data to identify terrorist networks. To simplify and accelerate the tedious process of intelligence data management, exploitation and analysis, 21st Century Technologies developed the Lynxeon platform technology, which acts as a force multiplier for the intelligence analyst. The automated software system is for network detection, tracking, and analysis and will enable analysts to leverage the capabilities of the Lynxeon platform to develop and demonstrate an interactive and flexible analytic tool capable of scalable and flexible graph query and analysis. The tool finds and displays pertinent activities and relationships of groups and individuals. The current Graphical User Interface enables analysts to explore, visualize, and geospatially represent graph query and analytical results with unclassified, simulated data; however, the project will focus on analyzing classified data in the next phase prior to delivery of a prototype.

Smart Shade

Maintaining ambiguity during convoys and motorcades is essential to keeping HRP safe in high-threat locations and during high-threat scenarios. The ability to instantaneously switch transparent armor to an opaque state while in transit is paramount to the safety of HRP. Smart Shade, which is being developed by GKN Aerospace, will allow transparent armor in vehicle windows to instantly darken to conceal the identity of HRP. During the opaque state, light transmission will drop to less than one percent, effectively concealing HRP and also allowing them to review sensitive material from within the vehicle if necessary. Users will be able to switch between clear and dark modes with an easy push button command. The Smart Shade system will operate on a 12V DC circuit that will be integrated with the vehicle's transparent armor and the window frame to avoid altering the interior of the vehicle. Smart Shade will ultimately be integrated in curved transparent armor to be fully operable in any vehicle.

Personnel Protection

Comparative Headform Research

Many variations of headforms have been developed in the last 20 years to simulate human head response to shock and blast effects. This research will provide a comprehensive evaluation of existing headforms used to test cranial protective equipment performance under combat blast and ballistics loading. The evaluation will assess headform accuracy and reliability for replicating actual head injuries addressing both the type and range of loads over which each headform can be reliably used to quantify the onset and severity of injuries, both with and without head protection. Tests will address all aspects of a blast environment, including primary (overpressure), secondary (penetrating or impacting fragments from the bomb or blast-generated debris), tertiary (displacement), and quaternary (primarily thermal) effects. A follow-on effort to incorporate the evaluation results of the performance capabilities of associated personal protective equipment will be considered.

PP

Personnel Tracking Device

Agents and HRP routinely find themselves in different parts of the world to conduct business. In order to track personnel while on location, different means of communication are required and coverage is somewhat unreliable. Integrating cellular and satellite communication technologies into one small device allows agents and HRP to be reliably tracked wherever their mission may take them. The personnel tracking device is a tri-mode device communicating via the cellular (GSM and CDMA2000) and satellite (Iridium) infrastructure. The tracking device will search for the highest strength signal available and transmit location, specific latitude and longitude details, and battery life data to a designated command center with each communication. Data will be transmitted on a periodic basis or immediately upon triggering the panic mechanism. All information will be encrypted and transmitted to a Government controlled command center.

Contact Information

ppsubgroup@tswg.gov

A comprehensive listing of member organizations by subgroup is provided in the appendix.

INTERAGENCY INTERNATIONAL

TSWG

Physical Security

Physical Security

Mission

Identify and prioritize interagency physical security requirements to protect forces, vital equipment, and facilities against terrorist attacks, execute research and development projects that address those requirements, and transition successful prototypes into programs of record or into immediate field use to meet urgent operational needs.

The Physical Security (PS) subgroup identifies the physical security requirements of Federal, State and local agencies, both within the United States and abroad, and develops technologies to protect their personnel and property from terrorist attacks. The subgroup manages projects to develop prototype hardware, software, and systems for technical and operational evaluation by user agencies. A Department of Defense representative from the US Army Office of the Provost Marshal General, a Department of Energy representative, and a Department of Justice representative from the Bureau of Alcohol, Tobacco, and Firearms tri-chair the subgroup.

Focus Areas

The PS subgroup focus areas reflect the prioritized requirements of the physical protection community. During FY 2009, the PS Subgroup absorbed the Blast Effects and Mitigation Subgroup and realigned focus areas as follows:

Vulnerability Identification

Develop predictive analysis software and decision aids to identify vulnerabilities and/or determine preventive courses of action. Emphasize pre-event planning and assessment of emerging threats.

Threat Mitigation

Test and evaluate infrastructure components to investigate and characterize potential damage in order to identify mitigation strategies to protect against current and evolving threats. Components include but are not limited to: buildings, bridges, tunnels, utility systems, water supplies, and computer networks. Where components and threats require evaluation under unique circumstances, test protocols will be developed to ensure repeatable and consistent results. Emphasize explosives, gunfire, mortars, rockets, and shrapnel and debris effects. Mitigation strategies may include common test protocols, hardened infrastructure, improved design standards, retrofit techniques, and new design criteria.

Prototypes and Integrated Solutions

Develop technologies and techniques to survey facilities; improve situational awareness; detect, identify and locate advancing threats; control access to critical assets; and neutralize confirmed threats. Emphasize automatic alerting, expeditionary kits, and exportable

Physical Security

variants. Integrate technologies into force protection solution packages that will improve the effectiveness of security systems, reduce manning requirements, and offer increased affordability and survivability of operators and responders.

CTTSO-wide Thrusts

PS Subgroup manages Working Groups that require multi-disciplinary solutions and the expertise of several Programs within CTTSO. Current thrusts include:

Homemade Explosives

Identify, prioritize, and execute research and development projects to satisfy interagency and international requirements that address the adaptive threat associated with homemade explosives. Emphasize characterization of homemade explosives to combat their use in terrorist activities. Coordinate requirements received from the Homemade Explosives Working Group (HMEWG) across appropriate CTTSO Programs.

Subterranean Operations

Develop capabilities to detect, locate, survey, and disrupt subterranean operations in semi-permissive and non-permissive environments to allow tactical forces to conduct operations and counter hostile and/or criminal networks. Coordinate requirements received from the Counter-Tunnel Operations Working Group (CTOWG) across appropriate CTTSO Programs.

Working Groups

The Physical Security Subgroup has regularly scheduled working group meetings that bring together scientists, researchers, intelligence officers, operators, and academia from the interagency and international communities to collaborate on efforts, identify capability gaps, and build a collective path forward. The following three areas have active working groups: Homemade Explosives, Counter-Tunnel Operations, and Waterside Security.

Physical Security

Selected Completed Projects

Security Assessment Simulation Toolkit

The Security Assessment Simulation Toolkit (SAST) fulfilled an urgent need to rapidly develop a greater level of cyber security experience amongst Department of Defense (DoD) personnel. SAST provides a common inter-service software tool for use in security training, exercise, testing, information assurance, and information operation reducing operational cost, and facilitating interoperability. The SAST concept has core principals – user autonomy, interoperability, scalability, and shared investment outcomes – that make the capability attractive to a broad range of users in the DoD community. SAST has the potential to become one multi-disciplinary tool, replacing several uniquely designed tools each for a specific application. Standardizing with SAST substantially reduces operational costs and provides a more comprehensive capability; its development revolutionized the use of Cyber Security simulation technology within the DoD. The Office of Naval Research, the National Center for Advanced Security System Research, the Department of Energy, the Pacific Northwest National Laboratory, and Defense Information Systems Agency (DISA) contributed to SAST-related research throughout various stages of the software lifecycle. SAST is not commercially available but will be hosted by the DoD Information Assurance Range at DISA. The SAST software certifications process is underway in order to be used by Defense organizations. Requests for additional information should be sent to PSSubgroup@tswg.gov.

PS

Steel Stud Structure Full-Scale Blast Testing

In order to improve structural response to blasts while improving construction methods and reducing costs, the Department of State (DOS) set a requirement for testing of select structural designs. This is phase three of a test series to characterize specific engineering criteria of steel stud structure design elements against full-scale, close-in blast pressures. TSWG and DOS defined test criteria in order to better understand the effects on design, welds, structural failures, window design, and other parameters. Data points collected provide overall, individual, and combined effects and will be used to conduct direct comparisons of the various options developed. Data collected from this test series will ultimately report on improved designs and high fidelity physics-based response calculations will be coded to help validate the performance of the improved designs. Design changes to steel stud structures as a result of this effort will dramatically enhance construction design to better withstand blast effects, while minimizing overall costs. Blast testing was performed at New Mexico Tech's Energetic Materials Research and Testing Center, with structural design provided by Karagozian & Case. Requests for additional information should be sent to PSSubgroup@tswg.gov.

Physical Security

Improved Mass Transit Surveillance and Early Warning System

The gas attacks on the Japanese transit system and the bombings of the Russian transit system highlight the catastrophic effects that can be achieved by terrorist organizations. One of the lessons learned from these attacks is the value of accurate on-scene information following an incident. Minimizing chaos maximizes the opportunity to improve emergency response which can best be done with current and accurate information coordinated through integrated command center-like security operations. Furthermore, the capability to focus on anomalous behavior that might precede an actionable event may potentially avert or mitigate threats, or speed the response to an emergency situation. The Mass Transit Surveillance and Early Warning System (MTSS) is an integrated monitoring, detection, and alerting system with the ability to distinguish, track, and display anomalous human behavior in multiple-stream video feeds for the identification of possible terrorist attacks in a mass transit setting. The MTSS is adaptable for monitoring a variety of mass transportation venues, including mass transit subway stations, light rail stations, bus terminals, tunnels, and bridges. Requests for additional information should be sent to PSSubgroup@tswg.gov.

Digital Observation Guard

With the proliferation of Special Operations, tactical, and expeditionary deployments into austere, non-secure locations, there is an urgent need to employ equipment that can provide security without being visible or identifiable. The Digital Observation Guard (DOG) was developed in response to requests from operational personnel serving in Operation Iraqi Freedom and Operation Enduring Freedom for a rapidly and easily deployable and/or recoverable self-contained video surveillance system. The systems are designed for tactical use in a variety of environments including urban, desert, and mountainous terrain while maintaining mobility and versatility in a lightweight package. The developer upgraded the system with a smaller high-performance pan-tilt-zoom (PTZ), thermal camera, photocell illuminator, mobile kit, and mini-dome PTZ. Small teams of U.S. Forces fielded the DOG system in and around temporary or semi-permanent encampments for perimeter protection. In response to operational feedback from deployed systems, the Physical Security subgroup will oversee enhancements to the next generation DOG to include additional camera equipment and sensors into a field-deployable kit. Requests for additional information should be sent to PSSubgroup@tswg.gov.

Homemade Explosives Laboratory

Homemade explosives (HME) or non-ideal explosives are an emerging threat to U.S. Forces and Federal, state, and local first responders and law enforcement. The precursor materials are easy to acquire, the means of production are readily available, and due to the commonality of the materials with benign products, HMEs are difficult to detect. To address

Physical Security

these and other issues, an HME Laboratory was constructed through a joint project with the Israeli Security Agency. This facility allows remote manufacturing of improvised and other enhanced homemade explosives so the U.S. and Israeli counterparts can perform research and development testing. Requests for additional information should be sent to PSSubgroup@tswg.gov.

Trailer Mounted Military Mobile Vehicle and Cargo Inspection System

With the continued increase of terrorist activities, it is necessary to increase security with respect to threat devices or contraband concealed in vehicles that enter protected areas. Current inspection practices involve a visual inspection of the vehicle, but these practices can be time consuming, tedious, limiting, and often require continuous upgrades to keep up with rapid changes in terrorist operations. The Trailer Mounted Military Mobile Vehicle and Cargo Inspection System (T-MMV) project modified an existing Vehicle and Cargo Inspection System capability, developed specifically for use by the military in expeditionary environments. The resulting T-MMV is ruggedized for use in theater and enables trained force protection personnel to quickly screen vehicles and cargo for Improvised Explosive Devices (IEDs) and other contraband. Developed by SAIC, the T-MMV is capable of overt and covert detection, and is deployable worldwide. The T-MMV was employed in theater for operational testing and evaluation; it is undergoing further enhancements before being redeployed. Requests for additional information should be sent to PSSubgroup@tswg.gov.

Selected Current Projects

ICWater Enhancement for Incident Commanders

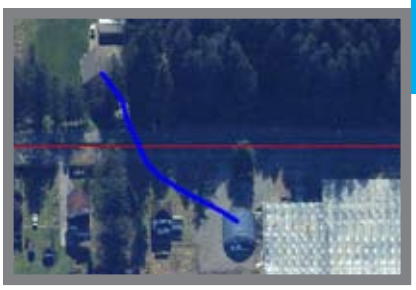
The Incident Command Tool for Drinking Water Protection (ICWater) Enhancement is the result of a collaborative effort with the U.S. Forest Service in response to a need to better track contaminants in the water supply as a result of fighting wildfires. ICWater provides emergency personnel means to protect public water sources during contamination attacks and improves the speed and accuracy of responding to a contamination. This enhanced software tool will now assist Incident Commanders in making tactical and strategic decisions during wildfire response. The ICWater Enhancement will account for contaminants such as silt and chemical fire retardants introduced into streams and rivers immediately downstream from wildfire locations, thereby protecting public drinking water supplies. The Incident Commander inputs critical data from the contamination scene into the ICWater interface; chemical fire retardants will be modeled whether they enter water sources through aerial application or direct application to surface water. The ICWater Enhancement will also simulate transport of fine sediments (both soil and ash) that can be generated in large quantities from burned landscapes.

Physical Security

Characterization of Homemade Explosives

Worldwide threat reports show that Ammonium Nitrate (AN), Hydrogen Peroxide (HP) and Urea Nitrate (UNi) are current homemade explosive threats with largely unknown chemical and physical properties. To address this, the Federal Bureau of Investigation (FBI) will conduct tests to analyze a multitude of threat variations including the AN threat to transportation, the characterization of size effects on industrial grade AN, and the thermal effects of HP and UNi. AN is classified for transportation as a Class 5. 1 oxidizer and was previously considered as neither detonable nor a terrorist threat. Recent AN detonability tests conducted by the Bureau of Alcohol, Tobacco, Firearms and Explosives and FBI will be analyzed by government and private industry experts, under guidance from the Transportation Security Administration's Explosives Division, to evaluate AN use and detonation in transport; final determination may lead to smaller packaging for AN, new designs for hopper cars, and freight rail limitations. The resulting data will benefit law enforcement, the intelligence and explosives community, and international partners. The FBI is conducting testing with contributory funds provided by the Department of Homeland Security.

Detection of Underground Anomalies

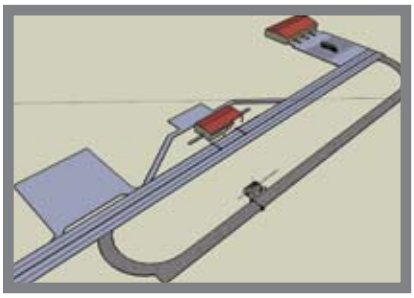


Tunnels and subterranean space in both domestic and international arenas continue to thrive and are an increasing problem. Movement of combatants, and trafficking of contraband to include narcotics and weapons, is one of the biggest challenges facing Federal, state, and local law enforcement, and U.S. and allied military forces. To date, the ability to detect, exploit, and neutralize the threat posed by subterranean networks has been extremely limited. To address the growing threat, the Defense Advanced Research Projects Agency provided funds to partner with the Israeli Ministry of Defense to develop a novel means to detect and map underground voids to allow operators to safely and effectively reduce the threat they pose.

Shock Physics for Expeditionary Concepts

Terrorist and enemy combatants increasingly rely on the use of Vehicle and Personnel Borne IEDs and indirect fire to inflict casualties on U.S. and allied forces. With the increase in expeditionary deployments and Forward Observation Bases lacking resilient infrastructure, these enemy tactics produce catastrophic results. TSWG is investigating currently available building materials to determine the amount of protection they afford when confronted with this growing threat. Current efforts include assessing the use of protective walls, reinforcing exterior building walls, and using external protective shelters. Ongoing testing supports both U.S. Forces and forward deployed allies.

Physical Security



Interactive Physical Security Test Bed

The fielding of multiple, often integrated, physical security-related technologies requires a facility to evaluate individual and combined systems, conduct iterative testing, and provide a real-world location to develop the tactics, techniques, and procedures and training associated with each technology suite. The Interactive Physical Security Test Bed (IPSTB), currently in development, will provide a realistic arena for the purpose of evaluating new and existing technologies and optimizing their employment. The test bed is housed at New Mexico Tech's Energetic Materials Research and Test Center which has several unique features, including the ability to employ live explosives – enabling testing of explosive detection equipment – a live blast range, and access to the site's extensive silver mines, to be used as a resource for subterranean operations. The combination of newly constructed infrastructure to create a full-scale mock entry control point (ECP) and existing silver mines that simulate a tunnel environment will provide an ideal environment for operational exercises. The ECP structures are reconfigurable to account for the differences in ECPs used by the DoD and other Federal partners. The IPSTB will be a phased approach to allow for flexibility as new technologies are identified for insertion.

Contact Information

pssubgroup@tswg.gov

A comprehensive listing of member organizations by subgroup is provided in the appendix.

INTERAGENCY INTERNATIONAL

TSWG

Surveillance, Collection, and Operations Support

Surveillance, Collection, and Operations Support

Mission

Identify, prioritize, and execute research and development projects that satisfy interagency requirements supporting intelligence gathering and special operations directed against terrorist activities.

The Surveillance, Collection, and Operations Support (SCOS) subgroup identifies high-priority user requirements and special technology initiatives focused primarily on countering terrorism through offensive operations. SCOS research and development projects enhance U.S. intelligence capabilities to conduct retaliatory or preemptive operations and reduce the capabilities and support available to terrorists. A representative from the Intelligence Community chairs the subgroup.

Focus Areas

The SCOS subgroup focus areas reflect the prioritized requirements of the Intelligence Community. During FY 2009, these focus areas were:

Traditional Surveillance

Improve the quality of intelligence collection. Develop and advance capabilities for the collection and enhancement of video, imagery, and audio surveillance.

Analytical Surveillance

Improve automated tools for terrorist identification using biometrics, pattern recognition, speech and speaker recognition, and information retrieval from multiple sources.

Intelligence, Surveillance, and Reconnaissance

Develop and improve the capability to locate, identify, and track terrorists and terrorist activities. Support programs and initiatives critical to intelligence operations, such as tagging, tracking, and locating; special sensors; and clandestine communications.

Human Language Technologies

Respond to the emerging needs for advanced language solutions in the operational environment including data exploitation and analysis of information in languages other than English and technology to enhance language proficiency and cultural skills. Develop new approaches to triage multisource, multigenre, and multilingual data in order to increase actionable intelligence at all levels of operational mission.

Program Highlights

SCOS projects are classified or highly sensitive. Program requirements, the success of projects, and specific capabilities cannot be discussed in an unclassified document.

Surveillance, Collection, and Operations Support

Contact Information

scossubgroup@tswg.gov

Tactical Operations Support

Tactical Operations Support

Mission

Identify, prioritize, and execute research and development projects that enhance the capabilities of Department of Defense and interagency special operations tactical teams engaged in finding, fixing, and finishing terrorists. This includes the development of capabilities for state and local law enforcement agencies to combat domestic terrorism.

The Tactical Operations Support (TOS) subgroup provides technology solutions to assist direct-action operational personnel in a variety of tactical missions and environments. Most often these solutions are in the form of rapidly prototyped and specialized equipment. Each material solution is specifically designed to provide enhanced mission effectiveness while assisting operational personnel in maintaining situational awareness. The subgroup is co-chaired by a representative from the Department of Defense and the Department of Energy.

Focus Areas

The TOS subgroup focus areas reflect the prioritized requirements of offensive counterterrorism forces. During FY 2009, these focus areas were:

Communications Systems

Develop flexible and enhanced communications capabilities specifically designed for tactical forces. Emphasize reducing the size of equipment, while improving operator mobility and efficiency. Consider durability, concealment, innovative power sources, range, reception, battery life, ease of use and low probability of detection and/or interception. Develop assured tactical communications connectivity in challenging environments such as buildings, caves, tunnels, below deck, or underground bunkers.

Intelligence, Surveillance, Target Acquisition, and Reconnaissance Systems

Develop technologies to assist tactical teams in conducting intelligence, surveillance, target acquisition, and reconnaissance missions. Develop systems that enhance the visual perception or other imaging capabilities of tactical operators in all conditions and environments. Develop independent, vehicular or weapon-mounted systems for enhanced aiming, target designation, illumination, range detection, or surveillance.

Tactical Operations Support

Offensive Systems

Develop equipment and capabilities that enhance the effectiveness of small offensive tactical teams engaged in specialized operations. Develop specialized weapons, munitions, detonators, distraction and/or diversion devices and other unique tactical equipment. Develop systems to support sniper and countersniper operations. Develop man-portable sensor systems to enhance operator security during tactical missions.

Specialized Access Systems

Develop technologies that assist tactical assault forces in gaining rapid access to objectives, improve evaluation of tactical options, and support efficiency and stealth of operations. Develop enhanced manual and dynamic breaching technologies for tactical assault teams. Develop clandestine defeat or override devices for building and vehicle entry points.

Survivability Systems

Develop clothing, individual equipment, mobility platform enhancements, and man-portable systems that provide protection from or identification of ballistic, fragmentation, explosive, and thermal threats during the conduct of tactical missions.

Unconventional Warfare, Counter-Insurgency Support

Develop innovative solutions for small specialized tactical operations teams conducting a broad spectrum of military and paramilitary operations – including counter-insurgency and foreign internal defense missions – through, with, or by host nation indigenous forces building partner capacity to support U.S. objectives.

Selected Completed Projects

Improved Laser/Light Aiming Device

The current dynamic battle space is constantly changing and evolving; to meet the demands of these areas of conflict, Special Operations Forces (SOF) require a rifle rail-mounted, high-powered aiming and illumination device for use in periods of limited visibility. Laser Devices, Inc. developed the Improved Laser/Light Aiming, or PEQ-15SO, device as an improvement of the DBAL-A2 (PEQ-15A) laser system, based on direct user feedback and SOF's unique mission set. The PEQ-15SO system integrates an infrared laser pointer, an adjustable infrared illuminator, a visible red laser pointer, and a white light. The laser pack and white light conserve as much rail space as possible, with the battery compartment fitting between the top and side rail of an HK-416. In addition to higher power output, the PEQ-15SO was designed to allow the operator to switch between infrared aiming devices and visible aiming devices without removing his hand from the weapon to move the selector switch. Laser Devices, Inc. is now producing the PEQ-15SO as the DBAL-A3. Requests for additional information should be sent to tossubgroup@tswg.gov.

Tactical Operations Support

Extendable Camera Viewing System

During inspection or surveillance missions, tactical operators must be able to rapidly identify threat objects using pole cameras. To meet this need, Intelligent Optical Systems developed the Extendable Camera Viewing system, also known as the UpRight™ Pole Camera system. The UpRight™ increases the operator's ability to rapidly orient the viewed image and thereby improves their ability to discern the viewed scene and interpret the image to quickly identify threats and improve execution of tactical actions. The UpRight™ Pole Camera system displays a vertical "right side up" image of the scene regardless of how the pole camera head is oriented. The system consists of a camera embedded in a telescoping pole, which transmits a video feed to a display system, enabling operators to search inaccessible areas. Requests for additional information should be sent to tossubgroup@tswg.gov.

Multiband Inter/Intra Team Radio Amplifier and Antenna

Because the Multiband Inter/Intra Team Radio Amplifier and Antenna (MBITR) radio is the most common military radio used by U.S. and NATO Forces around the world, a range extension is needed to enhance its use. In particular, U.S. tactical operations teams conducting operations from non-standard vehicles need a discreet way to extend the operational range of their MBITR radios to employ it at greater distances. The MBITR Amplifier (MB50) and Antenna system is a multiband 50 Watt radio amplifier and low-profile antenna designed to transmit and receive amplification across the entire 30 to 512 megahertz band. The MB50 is a rugged lightweight, hand-held amplifier that can be used for manpack, vehicle, airborne or fixed station applications. Tactical Support Equipment produces the MBITR Amplifier as the TSE-AMP-MB50. Requests for additional information should be sent to tossubgroup@tswg.gov.

Selected Current Projects

Minigun Signature Reduction

The Mk-44 and M134 minigun are six-barrel, 7. 62mm Gatling gun systems that can fire at speeds up to 6,000 rounds per minute. These guns generate large amounts of blast and flash that create visual and audible hazards to the gunner and vehicle or aircraft team. Recovery time of hearing and vision of friendly forces causes unacceptable delays and loss of situational awareness during combat operations. To mitigate these firing effects, Veritay Technologies is developing a suppressor that reduces the muzzle flash, blast, and sound. The suppressor will replace the current barrel clamp unit with an accumulation chamber containing baffle plates that enclose the muzzle of the weapon. Designed to divert large portions of the gun gas to regions outside of the line-of-fire, the suppressor will reduce the hazards caused by firing the weapon and increase the effectiveness of the Mk-44 and M134 weapon.

Tactical Operations Support

Stand-off Vehicle Stopper

Several interagency users require non-lethal means of stopping vehicles in order to mitigate risk of death or injury to both the occupants of the vehicle and operators pursuing the vehicle. Cybernet Systems Corporation is developing a directed energy system that will be helicopter-mounted and can be employed at a distance of at least 100 meters from the target vehicle. The TOS Stand-off Vehicle Stopper will provide operators with the ability to effectively stop target vehicles from a safe distance without permanently damaging the vehicle or harming the occupants.

Enhanced Detection of Optical Devices

In recent years, technologies were developed to locate sniper position using post-shot calculation methods (e. g., acoustic triangulation and muzzle flash detection). However, operators prefer to detect the position of snipers and enemy observers pre-shot. Torrey Pines Logic, Inc. is developing the Enhanced Detection of Optical Devices (EDOD) system, which uses a retro-reflective approach by emitting light towards, and receiving the reflection from, an optical device. The EDOD will be a significant improvement over other retro-reflection systems because the return signal is evaluated by a signal processor before a detection alarm is presented to the user. This crucial step mitigates the false alarm rate inherent in other retro-reflection systems. Two potential configurations for the system are a hand-held package similar to binoculars or a module that can be integrated to a gimbaled camera system for fixed-site or vehicle operations, providing an automated scanning function.

Full Spectrum Ballistic Eyewear

Operators routinely conduct operations in hazardous conditions that sometimes lead to loss of eyesight. To mitigate this risk, ballistic protective eyewear became a standard part of every user's personal protective equipment. However, sometimes an operator is unable to use their ballistic eyewear due to the lens' inability to quickly transition from low-light transmission to high-light transmission. The current technology requires lenses to be replaced to increase or decrease light transmission. Naval Air Weapons Center at China Lake is developing Full-Spectrum Ballistic Eyewear, which will resolve this issue by allowing operators to use one pair of ballistic eye protection. The full-spectrum eyewear will be fitted with a miniature control circuit board and coated with an electrochromatic film to rapidly increase or decrease light transmission in response to the ambient light.

Contact Information

tossubgroup@tswg.gov

A comprehensive listing of member organizations by subgroup is provided in the appendix.

INTERAGENCY INTERNATIONAL

TSWG

Training Technology Development

Training Technology Development

Mission

Identify, prioritize, and execute projects that satisfy interagency requirements for the development and delivery of combating terrorism related education, training, and mission performance support products and technologies.

The Training Technology Development (TTD) subgroup delivers training and training technologies to increase mission readiness and enhance operational capabilities in the combating-terrorism community. The strategy behind the mission is to analyze, design, develop, integrate, evaluate, and leverage distributed learning technologies to deliver high-quality training and education in the medium best suited to the users' needs and requirements. A representative from the U.S. Marine Corps chairs the subgroup.

Focus Areas

The TTD subgroup focus areas reflect the prioritized requirements of the military and civilian combating-terrorism communities. During FY 2009, these focus areas were:

Models, Simulations, and Games

Develop interactive models, simulations, and games (MS&G), including, but not limited to: tabletop simulations, field exercise simulations, immersive virtual-learning environments, hands on virtual reality, simulation models, and PC-based, three-dimensional and isometric simulations and games. Develop crowd models, adversarial behavior models, network-based simulations, mini-simulations on specific combating-terrorism related tasks. Incorporate beneficial game characteristics through the full range of game genres (i.e., strategy, first person tactical, massively multiplayer online game, role-playing, etc.). Develop tools, technologies, and techniques for improving MS&G design, development, and validation.

Advanced Training and Education

Develop programs of instruction, training packages, computer- and classroom-based combating terrorism training courses. Develop the advanced tools, techniques, and guidelines required to analyze needs, develop solutions, and evaluate results. Analyze performance needs to identify applicable solutions. Integrate delivery technologies with combating-terrorism training materials to increase the quality, effectiveness, and accessibility of training.

Training and Information Aids and Devices

Develop job aids, training aids, performance improvement solutions, and training devices to support mission performance, and increase mission readiness. Support new areas of research in the combating terrorism domain. Provide training simulants as aids in training exercises.

Training Technology Development

Delivery Architectures

Develop new, advance emerging, and enhance existing learning, content, and knowledge management technologies. Develop software and hardware technologies, architectures, and infrastructures to deliver information, education, and training to combating terrorism personnel. Emphasize ubiquitous and distributed computing to provide the basis for information and training technology interoperability, the standards needed to provide distributed, on-demand, and customized training consistent with future computing infrastructure. Emphasize proven methods of effective individualized instruction and electronic performance support.

Selected Completed Projects

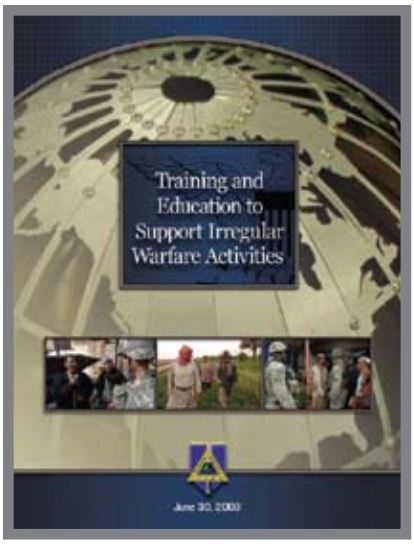
Multilingual Tactical Site Exploitation Training Package

To effectively support stability, security, transition, and reconstruction operations, military personnel require the ability to train indigenous police forces to conduct tactical site exploitation missions. In cooperation with the TTD subgroup and the Investigative Support and Forensics subgroup, the Penro Group built on the success of the Site Exploitation: Evidence Collection training package and developed the Multilingual Tactical Site Exploitation training package. Topical areas in this training package range from site assessment and search techniques to tactical questioning and scene documentation. The training package contains all the resources needed to effectively train a target audience: instructor presentations and notes, student materials, video demonstrations, student evaluations, guidebooks, and reference cards. The Multilingual Tactical Site Exploitation training package is available through the Government Printing Office: http://bookstore.gpo.gov/
Training Support Package Stock Number: 008-001-00197-5
Guidebook Stock Number: 008-001-00195-9
Field Cards Stock Number: 008-001-00196-7

Cop on the Beat

The Irregular Warfare mission extends the capabilities of our military, making it difficult for the enemy to operate without detection and denying them the ability to control the local population. In order to respond effectively, military personnel must be trained on proactive patrolling through the area of operations, constantly surveying the community and interacting with local resources. Lockheed Martin developed standardized instructor-led training to teach military personnel essential combat policing skills associated with urban operations, to include building relationships with business owners and community leaders; analyzing the needs of the community; identifying criminals, criminal activities, and crime areas; and maintaining a presence in the community. The Cop on the Beat training includes a Program of Instruction and Master Lesson Files. Requests for additional information should be sent to ttdsubgroup@tswg.gov.

Training Technology Development



Irregular Warfare Institute

The Irregular Warfare (IW) Joint Operating Concept 2007 acknowledges that our adversaries will likely choose IW tactics, techniques, and procedures when faced with a conventional force. As such, there is a need to analyze and develop an evolving knowledge framework that effectively equips our armed forces to respond to and anticipate IW challenges. In collaboration with the TTD subgroup and the Irregular Warfare Support program, Strategic Analysis, Inc. conducted an assessment of irregular warfare operations and activities within the educational domain. In order to assess the need, driving forces, and uses for such frameworks, Strategic Analysis conducted interviews to determine current irregular warfare capabilities, best practices, and existing gaps. Additionally, Strategic Analysis surveyed over 130 institutions, resulting in a catalogue of over 1,000 courses in the areas of unconventional warfare, counterterrorism, stability operations, civil affairs, and intelligence operations. Requests for the project report should be sent to ttdsubgroup@tswg.gov.

Selected Current Projects

Assessment of Mobile Learning Trends for Use by the Military

The use of mobile technologies for training and educational purposes, or mobile learning, is one of the fastest growing and most useful developments in the training world today. Mobile learning allows job aids and training to be accessed at any time, in any location around the world. The Center for Innovative Technology is conducting a full-scale assessment of mobile learning trends and challenges, with the ultimate goal of shaping and developing new mobile learning technologies and best practices within the Department of Defense. The assessment will identify viable training alternatives, current and emerging mobile learning technologies, solutions, capabilities, best practices, and lessons-learned that will provide a strong base for the use of mobile learning applications within the military. The results of the assessment will be available in Spring 2010.

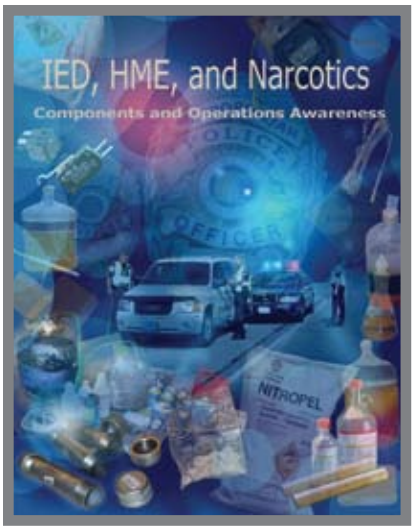
Special Operations Advanced Sniper Simulator

The inability to train and maintain critical marksmanship skills on a long, known distance range facility has a negative impact on the ability to conduct sniper and counter-sniper missions. In addition, there are a limited number of fully provided long, known distance ranges available for initial and sustainment training. In response, Advanced Interactive Systems, Inc. is designing a virtual-live fire sniper simulator that can handle up to a 50 caliber round and that can duplicate the conditions of a known distance range in a complex urban environment. Within these modular containers, sensors accurately record the strike of each live round and provide detailed scenario feedback on the probability of a kill given a hit.

Training Technology Development

Improvised Explosive Device, Homemade Explosive, and Narcotics Component and Operations Awareness Web-based Course

The increased threat of terrorism through the use of improvised explosive devices and homemade explosives against our civilian and military law enforcement personnel constitutes the most prevalent threat to the national security of the United States. In order to respond effectively, the breadth of our law enforcement personnel must be trained and equipped to differentiate between and respond appropriately to improvised explosives, homemade explosives, and narcotics-related incidents. To address this threat and ensure the information is readily accessible, AT-Solutions is designing and developing the training as a Web-based course. The course will be available in Spring 2010.



Contact Information

ttdsubgroup@tswg.gov

A comprehensive listing of member organizations by subgroup is provided in the appendix.

TTD

U.S Marine Corps photo by Cpl. Artur Shvartsberg

Explosive Ordnance Disposal/ Low-Intensity Conflict

Explosive Ordnance Disposal/ Low-Intensity Conflict

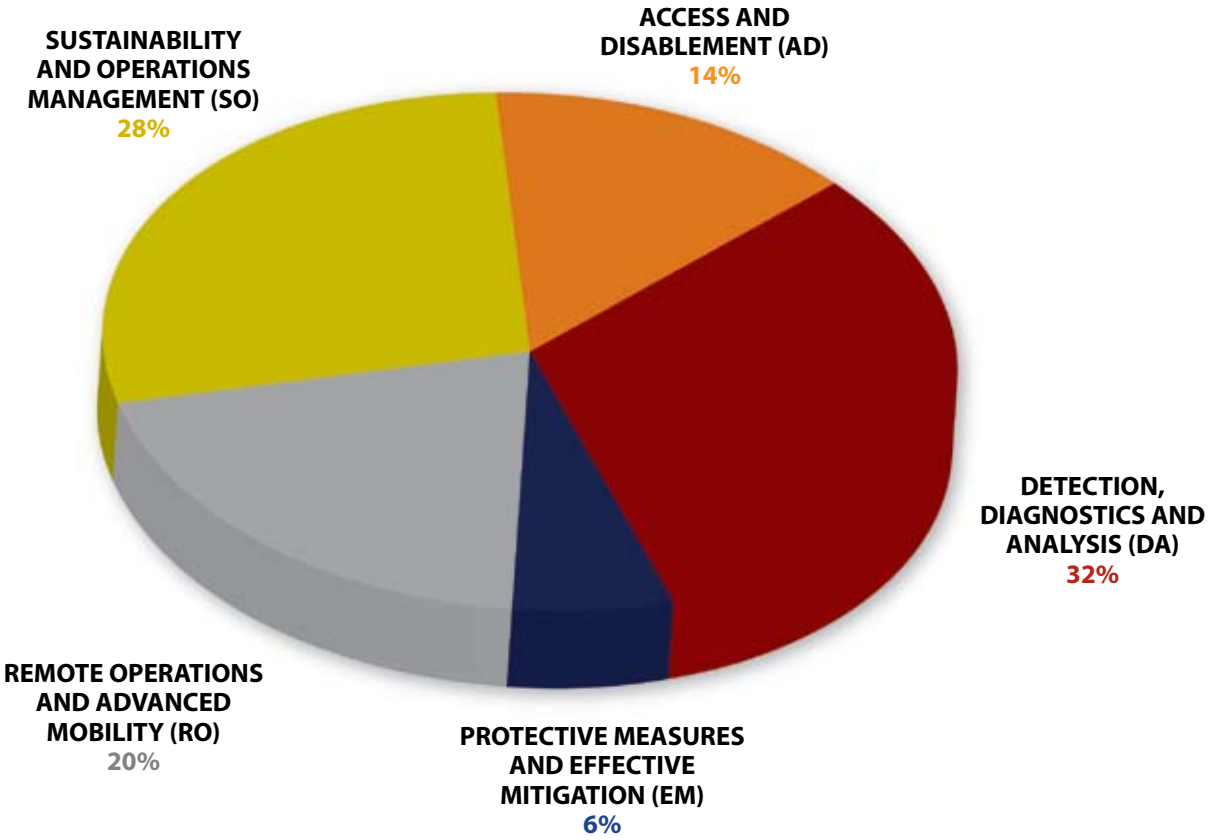
Mission and Organization

The Explosive Ordnance Disposal/Low-Intensity Conflict (EOD/LIC) program provides Joint Service EOD technicians and Special Operations Forces (SOF) operators with the advanced technologies and mission-focused solutions required to address current and emerging threats presented by unconventional and asymmetric warfare. These communities annually submit prioritized requirements, which are then reviewed and approved by the Office of the Assistant Secretary of Defense for Special Operations/Low-Intensity Conflict and Interdependent Capabilities.

Funding

In FY 2009 funding for EOD/LIC totaled

EOD/LIC FY 2009 Funding by Focus Area ($7 Million)



Explosive Ordnance Disposal/ Low-Intensity Conflict

Focus Areas

Remote Operations and Advanced Mobility

Develop capabilities to remotely approach, enter, and conduct reconnaissance operations in hazard areas and danger zones. Enhance mobility-related technologies and equipment to facilitate safely approaching, operating in, and withdrawing from hazardous environments. Develop systems and technologies to gather and store operational information for transmission to operational personnel and unit commanders. Improve technologies for the relocation of unexploded ordnance, hazardous materials, and improvised devices.

Access and Disablement

Develop tools to quickly and efficiently breach or gain access to structures, barriers, vehicles, and containers. Develop chemical, mechanical, electrical, and explosively actuated systems for the neutralization and disruption of unexploded ordnance and improvised devices. Improve technologies for rendering fuzing and firing systems inoperable.

Detection, Diagnostics, and Analysis

Develop tools to locate and verify the presence of improvised devices, unexploded ordnance, booby traps, and other threats. Develop technologies to determine the specific type, condition, and characteristics of unexploded ordnance and improvised device components, and the specific hazards associated with each. Improve methods to analyze and evaluate improvised device construction.

Protective Measures and Effects Mitigation

Advance the development of personnel protection systems for operations in enhanced hazard environments. Develop novel and improved solutions to protect personnel and property from blast, fragmentation, and ballistic hazards.

Sustainability and Operations Management

Develop tools and equipment to enhance situational awareness and operational capability during incident response or direct action operations. Develop human performance improvement tools that foster the advancement of knowledge related to unexploded ordnance, improvised devices, and hazardous environments. Develop tools and training for conducting novel and advanced missions related to improvised devices and hazardous environments.

Explosive Ordnance Disposal/ Low-Intensity Conflict

Selected Completed Projects

Disposable Reduced Hazard Initiator

One of the most dangerous aspects of conducting demolition operations, which range from ordnance disposal to the rendering safe of improvised explosive devices (IEDs), is the handling of conventional blasting caps. The electrically initiated Reduced Hazard Initiator (RHI), which uses secondary explosives and incorporates low-energy technology, is a suitable substitute for electric blasting caps because it is not susceptible to electromagnetic radiation. This results in the initiator being labeled Hazards of Electromagnetic Radiance to Ordnance safe, a particular concern aboard ships and submarines. The RHI recently became the first initiator to receive a United Nations hazard classification code of 1.4S from the Department of Transportation. This is the same classification given to small arms ammunition, significantly reducing the shipping, storage, and transportation burden on military EOD personnel, and potentially impacting all users of explosives and demolition materials. The RHI has a wide variety of applications, providing a safer alternative to traditional methods. It was successfully demonstrated at the Naval Air Weapons Center China Lake and will be operationally evaluated by EOD and Special Operations Forces units in FY10. Requests for additional information should be sent to eodlic@eodlic.cttso.gov.

Modular Unmanned Surface Craft-Littoral

The Navy's riverine force has a requirement for a small unmanned surface vehicle to enhance waterway and harbor reconnaissance operations and serve as a 'point man' for support of maritime security operations. The Modular Unmanned Surface Craft-Littoral (MUSCL) is a spinoff of EOD/LIC's Unmanned Reconnaissance Observation Craft, both developed by the Naval Surface Warfare Center. MUSCL is a modular, two-man-portable, self-propelled, unmanned surface craft that operates remotely or semi-autonomously. The MUSCL is also capable of running a pre-programmed mission using GPS navigation. The system carries a stabilized pan-and-tilt color camera, a forward-looking infrared camera, and a fixed-mount driving camera coupled to an audio/video transmitter. It is also equipped with a communications system with a range of approximately 5 miles, line-of-sight. A laptop computer controls MUSCL and displays the information that the craft provides to the user. The system uses FalconView™ software for mission planning and for displaying craft position and status. The MUSCL is capable of incorporating illuminating devices to assist with missions such as under-pier inspections and side-scanning sonar to identify potential underwater hazards. The system can travel at speeds up to 11. 5 knots in the current configuration, with a target speed of 20 knots in development. Navy Expeditionary Combat Command plans to use FY10 funding to build three systems for user evaluation. Requests for additional information should be sent to eodlic@eodlic.cttso.gov.

Explosive Ordnance Disposal/ Low-Intensity Conflict

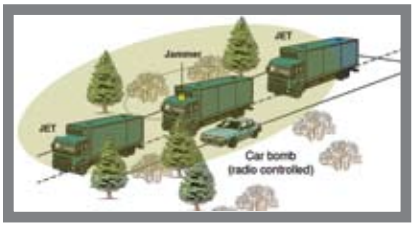
Selected Current Projects

Vehicle Borne Assisted Detection System

While performing vehicular route reconnaissance, a significant number of military personnel have been injured and killed by the detonation of anti-tank mines and pressure-plate IEDs. Vehicles performing reconnaissance missions require a real-time mobile capability to detect these threats buried in the ground. The Marine Corps Special Operations Command (MARSOC) developed a Vehicle Borne Assisted Detection System based on a modified Geonics EM-61 metal detector. The detection coils mount to the front of the vehicle and the system is easily stowed when the vehicle is not in use. MARSOC deployed eight systems to Operation Enduring Freedom in June 2009 for operational evaluation. Generation two systems will be deployed in December 2009. This effort was jointly funded by the Joint Improvised Explosive Device Defeat Organization and the U.S. Special Operations Command.

Jamming Effectiveness Tester

Both vehicular convoys and dismounted troops utilize portable electronic countermeasures (ECM) systems, or jammers, to protect them from threats like radio-controlled IEDs. Military forces require assurance that they are safely within the defensive envelope of their ECM systems. A U.S.-Israel bilateral project is testing the Jamming Effectiveness Tester (JET), which assesses ECM effectiveness and performs spectral analysis. The JET also indicates whether the operator's location is within the protective area covered by a nearby jamming system. It will also perform an over-the-air functional test to verify that a specified local jamming system is operational. The JET will be a handheld, standalone device capable of analyzing signals within the range of common military jammers. This system will have a straightforward user interface, a logging capability, and a feature to wipe sensitive data. The JET device will undergo operational testing and evaluation in FY10.



Explosive Ordnance Disposal/ Low-Intensity Conflict

Combatant Craft Stabilized Weapons System Module

Combatant craft have evolved from strictly mobility assets into maritime operations platforms. Consistent with current strategies, which recognize the demands and challenges of irregular warfare, combatant craft require the increased offensive and defensive fires capacity provided by a stabilized weapons system to meet the challenges posed by both traditional and irregular naval threats. A bilateral effort with Israel will result in the design, fabrication, installation and testing of a stabilized weapons system module on both U.S. and Israeli Navy low-profile combatant craft. Based on the operational requirements defined by both navies, the stabilized system will be a modified Remote Operated Stabilized Arms Mount (ROSAM), compatible with 7. 62mm, .50 caliber, and 40mm automatic weapons. The ROSAM will be housed in a watertight module that will be raised and lowered as needed. When not in use, the mount will be stowed such that the craft's detection signature is not altered. The module prototype is currently undergoing assembly and integration on a demonstrator craft. Initial operational testing and evaluation will be conducted in FY10.

Contact Information

eodlic@eodlic.cttso.gov

U.S. Marine Corps photo by Staff Sgt. William Greeson

Human Social Culture Behavior Modeling Program

Human Social Culture Behavior Modeling Program

Mission

Develop tools and capabilities that facilitate socio-cultural understanding, human terrain forecasting, and the application of human, social, cultural, and behavioral factors in mission planning and operations in diverse geographic regions.

Today's military is involved in a growing number of complex missions from Irregular Warfare to Stability, Security, Transition, and Reconstruction (SSTR) operations. These missions are best served by a force equipped to understand and appreciate the individual, tribal, cultural, ethnic, religious, social, and economic elements of the human terrain and able to apply this understanding to improve mission effectiveness. The CTTSO Human Social Cultural Behavior (HSCB) Modeling Program is a new initiative working in conjunction with the military and multiple Federal Agencies. Funding is derived from the Office of the Secretary of Defense.

Focus Areas

Operations Planning

Develop capabilities for military planners to enhance understanding of complex operational problems related to the social and cultural terrain within their areas of responsibility. Design effective approaches that link potential effects of tactical actions to strategic aims. Develop tools that provide greater insight into how strategic, operational, and tactical operations may be impacted by, or may affect, the socio-cultural dynamics of individuals and groups within the mission space.

Operations Analysis

Develop tools and capabilities, grounded in social science theory, that provide insight into affecting attitudes and behaviors of particular foreign audiences. Create tools that provide socio-culturally relevant estimates of likely outcomes of kinetic and non-kinetic courses of actions with respect to potential effects on attitudes, beliefs, and actions. Specific emphasis is placed on forecasting the direct, second, third, and higher order effects of a given course of action to minimize adverse impacts and unintended consequences.

Training and Mission Rehearsal

Develop training tools, technologies, and assessment metrics to provide warfighters with socio-cultural understanding and skills to effectively conduct missions and shape events in unfamiliar cultural environments. Specific emphasis is placed on the integration of socio-cultural models, based on robust theoretical foundations, into training systems for enhancing socio-cultural and human behavior/cognition skills at both the operational and tactical levels. Create training capabilities that provide warfighters with the ability to quickly assess and identify societal norms, behaviors, and social structures in a specific social or cultural group. Develop non-traditional, field-capable technologies that enable the

Human Social Culture Behavior Modeling Program

training and/or mission rehearsal of non-technical, adaptive skills related to cultural understanding, interpersonal communication, and teamwork. Create flexible training systems to support ongoing operations by rapidly delivering understanding of complex new regions of interest, and new mission areas (e.g. transition and reconstruction).

Data, Modeling, and Visualization Architectures

Develop operational frameworks for model-based decision support systems to assist decision-makers in understanding and operating within the social, cultural, and behavioral domains. These frameworks will allow the wide array of models being developed across the HSCB program to be readily interoperable with a variety of data sources and supporting applications and integrated into the systems used by the operational community. Develop automated data management, translation, and extraction tools to service HSCB models. Create tools, methods, and functional architectures for collection, storage, shared use, and dissemination of socio-cultural data. Develop visualization tools and frameworks that integrate cultural information into a military operational environment to facilitate the appropriate interaction of key socio-cultural elements.

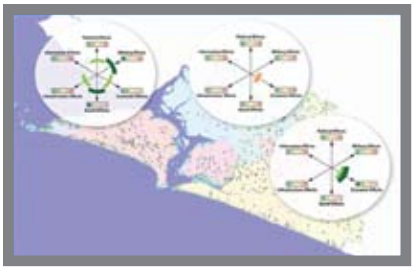
Program Highlights

Plug and Play Cultural Avatars for Training and Mission Rehearsal

Understanding and navigating the socio-cultural terrain has not historically been recognized as core warfighter competencies; however these skills proved to be a critical component of recent operations in Iraq and Afghanistan. There is a need for technical solutions that effectively and efficiently provide the warfighter with the capabilities needed to confront the cultural complexity characteristic of current and future missions. VCOM3D, in conjunction with Soar Technology, is developing user-friendly authoring tools and reusable, culture-specific behavior models that can be embedded in a wide range of mobile, Web-based, and multi-user interactive training simulations. These tools and models will improve the quality, availability, and speed of development of authentic, experiential cultural training and mission rehearsal for warfighters. This project is extending the on-going integration of Vcom3D's Virtual Human physical behaviors with Soar Technology's cultural cognitive architecture to produce Plug and Play Cultural Avatars (PPCAs) with richer physical and cognitive cultural behaviors. In addition to their compatibility with multiple single and multi-user platforms, the PPCAs will be distinguished by the ability to simulate highly realistic, culturally appropriate verbal and non-verbal interactions in particular fine-grained, nuanced culture-specific cognitive behaviors. The visual cues associated with interactions will include a wide range of behaviors, including gesture, eye motion, facial expression, and body language. These behaviors will be simulated with sufficient fidelity to support instruction in both receptive skills

Human Social Culture Behavior Modeling Program

(listening, observing expressions, gestures, and body language, etc.) and productive skills. VCOM3D has successfully demonstrated an Iraqi "knock and talk" scenario and is currently developing a negotiation training module on Afghan culture.



Socio-Cultural Analysis Tool

Current approaches for analyzing the effects of socio-cultural interactions on military courses of action are analyzed through ad-hoc reasoning based on intuition, insight and experience. There is a lack of a unifying framework, processes, and tools to provide the necessary socio-cultural expertise when and where it is needed. Set Corporation, in conjunction with SRI International and Science Applications International Corporation, is developing a Socio-Cultural Analysis Tool (S-CAT), to facilitate the embedding of socio-cultural reasoning into the Military Decision Making Process. S-CAT enables a user to explore the possible socio-cultural consequences of Courses of Actions (COAs), project events forward in time to forecast plausible futures (including second, third, and higher order effects), and provide structured evidence to enable a user to understand the socio-cultural interactions behind the generated outcomes. S-CAT, which integrates rule-based probative forecasting with agent-based simulation, provides a distributed modeling framework, enabling multiple distributed users to enter structured observations about the HSCB characteristics in the area of operations. A user could generate a collection of options for supporting actions or policies and then run them through S-CAT to explore plausible consequences with the intent of finding the options most likely to achieve the commander's intent with the fewest negative consequences. After a set of options is selected and an overall COA developed, the COA can be simulated to project plausible futures that could result. By applying S-CAT in this manner, a user can understand socio-cultural cause-effect relationships, increase the likelihood that a COA will achieve the desired objective, and decrease the likelihood of unintended effects. Set Corporation has successfully demonstrated a proof-of-concept system and is currently performing systems engineering activities to support further integration, testing and evaluation, and transition to operational users and programs of record.

Contact Information

hscb@hscb.cttso.gov

DoD photo by Fred W. Baker III

Irregular Warfare Support

Irregular Warfare Support

The Irregular Warfare Support (IWS) program develops adaptive and agile ways and means to support irregular warfare efforts in current and evolving tactical and operational environments. IWS supports joint, interagency, and international partners conducting irregular warfare that may employ, but are not limited to, indirect and asymmetric approaches to erode an adversary's power, influence, and will. IWS solutions include material and non-material operational analysis, concept development, and delivery of capabilities to defeat targeted state and non-state actors.

Mission

IWS develops interagency capabilities and capacities for information age irregular warfare. During FY 2009, these focus areas were:

Focus Areas

Pursuit and Denial

Conduct research, operational analysis, capability design, and implementation support to enable client organizations to better apply indirect and asymmetric force to identify, disrupt, deny, and destroy hostile organizations and their supporting enterprises.

Indirect Communications Support

Conduct research, operational analysis, capability design, and implementation support to enhance and improve client organization efforts to erode adversaries' power, influence, and will through proactive and responsive informational, psychological, and other irregular operations. Increase the efficacy of military operations while decreasing the likelihood of their necessity.

Mission Rehearsal and Exercise

Conduct research, operational analysis, capability design, and implementation support to increase U.S. proficiency in and capacity to wage irregular warfare on target states and non-state actors. Further the art and science of irregular warfare operations and their understanding in the appropriate agencies, forces, and bodies of government.

Knowledge Management

Conduct research, operational analysis, capability design, and implementation support to increase U.S. and appropriate partners' understanding of hostile forces, current and evolving tactical and operational environments, and opportunities for successful irregular warfare operations by client organizations.

Irregular Warfare Support

Effects Based Operations Integration

Conduct research, operational analysis, capability design, and implementation support to synchronize interagency irregular warfare efforts. Refine current capabilities and develop capabilities necessary for friendly forces to prevent and prevail in future conflicts.

Program Highlights

IWS programs are classified or highly sensitive. Program requirements, the success of programs, and specific program capabilities cannot be discussed in an unclassified document.

Contact Information

iws@iwsp.cttso.gov

USMC photo by Lance Cpl John M. McCall

Product Development and Delivery

Technology Transition

The TSWG charter identifies technology transition assistance throughout the development cycle as essential to supporting national combating terrorism objectives. CTTSO has formalized the technology transition process into every aspect of its research and development programs. CTTSO requires that every proposal received address technology transition as a principal task and that each new project include a technology transition plan. A dedicated technology transition manager works with CTTSO developers to prepare the plans and to address the issues associated with a successful transition to production, such as:

- *Exploration of all applications and markets for the technology;*
- *Understanding and managing intellectual property (patents, trademarks, copyrights, trade secrets, and licensing; to include data and software rights and options);*
- *Market evaluations for U.S. Military, Federal, state, local, and commercial users;*
- *Environmental, safety, and health issues;*
- *Liability risk reduction and consideration of SAFETY Act Applications;*
- *Security and Export Control provisions;*
- *Regulatory restrictions to include electronic emissions, environmental, safety, health, transportation, and others;*
- *Test and evaluation planning and independent operational testing by users;*
- *Transition to production, including partnering, investment capital, licensing, and finding markets and distributors; and*
- *Operational suitability and operational support planning.*

A number of technology transition tools and methodologies are used to assist the developer with resolving issues, and reaching user markets, such as:

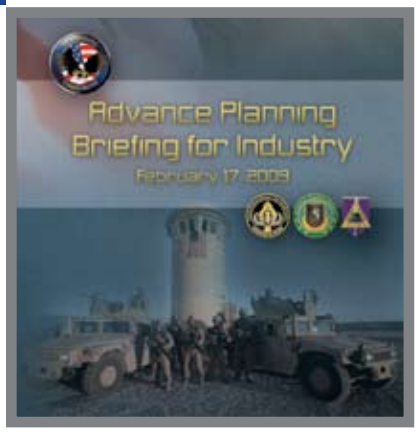
- *Commercialization assessments and transition plan formats;*
- *Publication of handbooks and special primers;*
- *Non-disclosure agreements;*
- *Provisional patents versus full patents;*
- *Liability risk reduction techniques;*
- *Tailored license application forms and licensee/partner selection board assistance;*
- *Technical data and software package rights and management techniques;*
- *Federal Business Opportunity announcements;*
- *Licenses and Cooperative Research and Development Agreements (CRADAs);*
- *Export Control processing assistance;*
- *Technology briefs, articles, and outreach plans to reach large user groups; and*
- *Interface with professional associations, user publications, and other media to provide product visibility.*

Technology Transition

The keys to accelerating the complicated process of moving many prototypes to production includes having a disciplined process, available assistance, and teamwork among project manager, technology transition manager, and developer. Additional information is available at the Technology Transition section of the CTTSO Web site, http://www.cttso.gov.

2009 Meetings and Conferences

February 2009



Advanced Planning Briefing for Industry

On February 17, the 2009 Advanced Planning Briefing for Industry (APBI), sponsored by CTTSO, provided representatives of industry, government, entrepreneurs, and associated developers with a preview of the requirements identified in the annual CTTSO Broad Agency Announcements. This year 700 registrants attended the APBI which was held in the Ronald Reagan Building in Washington, D. C. CTTSO, IWS, and EOD/LIC program representatives presented 56 requirements published in March 2009.

April 2009

International Homemade Explosives Workshop 2009

TSWG's Physical Security subgroup hosted its third International Homemade Explosives (HME) Workshop in April 2009. The event was sponsored by CTTSO and hosted 140 attendees, including representatives from the Department of Homeland Security, the Federal Bureau of Investigation, the Intelligence Community, the U.S. Marine Corps Explosive Ordnance Disposal units and CTTSO bilateral partners from Canada, the United Kingdom, Australia, Israel and Singapore. The Workshop provided TSWG and its partners with a forum to highlight emerging threats, technologies, and science in the area of HME. The conference included briefings to strengthen recognition and response capabilities by analyzing threats, capability gaps, and current research. Breakout sessions were organized to identify and coordinate requirements necessary for end-user success.

May 2009

Force Protection Equipment Demonstration

7,688 people attended the successful 2009 Force Protection Equipment Demonstration (FPED) in May 2009. Co-sponsored by CTTSO, the FPED is an annual event to showcase commercial off-the-shelf force protection equipment. The demonstration is part of the Department of Defense's integrated approach to force protection, combining awareness training with physical security measures, advanced technology, and protection measures tailored to the end user. At the eighth FPED, 3,000 vendors and organizations exhibited equipment at the Stafford Regional Airport.

October 2009

Explosive Detection Symposium and Workshop 2009

TSWG's Explosives Detection subgroup hosted its second International Explosive Detection Conference, in October 2009. The conference was co-sponsored by the Department of Homeland Security, the Department of State, the Federal Bureau of Investigation, and the Bureau of Alcohol Tobacco, Firearms and Explosives. The event served to strengthen ties

2009 Meetings and Conferences

between domestic and international participants in the explosives detection field. During this five day event, CTTSO obtained a better understanding of the fundamental issues needed to be solved from a technology and policy standpoint. This was accomplished through a series of presentations, technology demonstrations, and participant scenarios. The Explosives Detection subgroup also worked to educate the user community by providing in depth training sessions and helped develop partnerships between emerging technologies and the development community.

November 2009

Personal Protective Equipment Conference 2009

TSWG's Chemical, Biological, Radiological, and Nuclear Countermeasures (CBRNC) subgroup hosted its second Personal Protective Equipment (PPE) Conference, PPE 2009, in November 2009. PPE 2009 was co-sponsored by the Department of Homeland Security, the National Institute of Occupational Safety and Health, the National Institute of Justice, the National Fire Protection Association, and the International Association of Fire Fighters. PPE 2009 provided TSWG and its partners with a forum to highlight emerging technologies in the area of PPE. The conference included briefings of new technologies and an exhibition of new and emerging equipment from PPE vendors. Allies present included Australia, Canada, Israel, Japan, the Netherlands, the United Kingdom, Singapore, and others. Deliverables from the event included the identification of gaps to drive future research directions.

BAA Information Delivery System (BIDS)

The Broad Agency Announcement (BAA) Information Delivery System, better known as BIDS, works to support the CTTSO mission through the electronic publication of its annual BAAs. BAAs are the solicitation method of choice to bring the most urgent combating terrorism requirements forward for publication. CTTSO staff monitors BAA package instruction in light of submitter responses and feedback, and CTTSO implements improvements as needed each year to clarify the submission process.

To ensure the widest possible distribution to potential submitters, BAAs can be downloaded at the BIDS Web site (http://www. Bids.tswg.gov) and are also advertised at the Federal Business Opportunities Web site (http://www. fedbizopps.gov). In addition to conventional Government solicitation notices, the BIDS Web site provides a BIDS Advisory and Announcement area that posts BAA news, coming events, and partnering agency solicitations. In addition to the advisory, the RSS (really simple syndication) news feed allows interested users to receive real-time broadcast information at a local computer when connected to the Internet.

BIDS is a rich source of submitter information, providing small business outreach, online training, and most recently guidance for offerers proposing the use of human subjects in research. Overall BAA statistics are posted once the BAA closes.

BIDS not only functions as a response collection system, but also provides for submission evaluation and submitter notification. Submitter data is fully protected in a 128-bit encrypted environment. Evaluators must comply with source selection data handling requirements and accept a nondisclosure agreement to access BIDS. In addition to the nondisclosure, evaluators must also certify that there is no conflict of interest before access is granted to any submissions. The evaluation process is monitored for timely notice to submitters with the typical response via automated e-notice complete within 90 days.

BIDS continues to serve as a leading solicitation process model for other Federal programs by providing a streamlined electronic solution to receive proposals, providing access for subject matter expert evaluation, processing submissions through the approving authority, notifying the submitter of status, and maintaining a record of solicitation results.

CTTSO Portal Website — *www.cttso.gov*

The CTTSO portal Web page (www.cttso.gov) works to centralize comprehensive program resources while maintaining the individual technical expertise of each sector.

Featured program elements to date include the Technical Support Working Group, Explosive Ordnance Disposal/Low-Intensity Conflict, and the Irregular Warfare Support program. Each program maintains its own Web site and is easily accessed through the portal. Most recently, the TSWG site has been re-engineered to focus on the transition of products available to end users.

Portal visitors can freely navigate several information pages to learn about the CTTSO, or review business opportunities for product commercialization. Helping small businesses and nontraditional defense contractors to find opportunities and do business with the Government is one of several information focuses. A Technology Transition page is provided for CTTSO contract awardees to help in the transition to production or commercialization of products. Links to BIDS and other Government sites such as NATO and the Terrorism Research Center are also available. The Contract Award page details information on current performers, recent contract awards, and BAA statistical data.

CTTSO Forums, an access-controlled site for data sharing among mission area participants, is linked from the portal.

Appendix

2009 Membership

Federal Agencies

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Food Safety and Inspection Service
Forest Service

U.S. Department of Commerce
National Institute of Standards and Technology
National Institute of Standards and Technology – Office of Law Enforcement Standards

U.S. Department of Defense
Acquisition, Technology, and Logistics
Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense
Defense Academy for Credibility Assessment
Defense Advanced Research Projects Agency
Defense Computer Forensics Laboratory
Defense Criminal Investigative Service
Defense Finance and Accounting Service
Defense Intelligence Agency
Defense Threat Reduction Agency
Explosive Safety Board
Joint Chiefs of Staff
Joint Improvised Explosive Device Defeat Organization
Joint Personnel Recovery Agency
Joint Program Executive Office for Chemical and Biological Defense
Joint Project Manager-Guardian
Joint Task Force - North
Joint Warefare Analysis Center
National Security Agency
Office of the Under Secretary of Defense for Personnel and Readiness
Pentagon Force Protection Agency
Physical Security Equipment Action Group
Rapid Reaction Technology Office
Special Operations Command

U.S. Army
20th Support Command (Chemical, Biological, Radiological, Nuclear and High Yield Explosives)
22nd Chemical Battalion
52nd Ordnance Group
Armaments Research, Development and Engineering Center
Armed Forces Institute of Pathology
Army Medical Department
Army Research Laboratory
Asymmetric Warfare Group
Chemical School, Maneuver Support Center
Communications-Electronics Research, Development, and Engineering Center
Corps of Engineers
Criminal Investigation Command

2009 Membership

Explosive Ordnance Disposal Technical Detachment, Indian Head, MD
Edgewood Chemical Biological Center
Intelligence and Security Command
John F. Kennedy Special Warfare Center and School
Maneuver and Support Center
Medical Research and Material Command
Natick Soldier Center
National Ground Intelligence Center
National Guard Bureau
Office of the Provost Marshal General
Product Manager-Force Protection Systems
Rapid Equipping Force
Research, Development and Engineering Command
Research, Development, and Engineering Command Simulation and Training Technology Center
Soldier Systems Center
Special Forces Command
Training and Doctrine Command

U.S. Air Force

Air Combat Command
Air Force Engineering and Services Center
Air Force Research Laboratory
Civil Engineer Support Agency
Explosive Ordnance Disposal Detachment 63, Indian Head, MD
Office of Special Investigations

U.S. Navy

Bureau of Medicine
Chief of Naval Operations
Commander Navy Installations Command
Explosive Ordnance Disposal Fleet Liaison Office, Indian Head, MD
Expeditionary Combat Command
Explosive Ordnance Disposal Technology Division
Facilities Engineering Command
Facilities Engineering Service Center
Naval Air Systems Command
Naval Air Warfare Center
Naval Criminal Investigative Service
Naval Explosive Ordnance Disposal Technology Division
Naval Forces Central Command
Naval Research Laboratory
Naval Sea Systems Command
Naval Space and Naval Warfare Systems Command
Naval Surface Warfare Center
Office of Naval Research
Program Executive Office Ships

2009 Membership

U.S. Marine Corps
Central Command
Chemical Biological Incident Response Force
Criminal Investigation Division
Marine Corp Explosive Ordnance Disposal Detachment, Indian Head, MD
Systems Command
Training and Education Command
U.S. Marine Corps Systems Command
Warfighting Lab

U.S. Department of Energy
National Nuclear Security Administration
Nuclear Regulatory Commission
Office of Health, Safety, and Security

Environmental Protection Agency
National Enforcement Investigations Center
Criminal Investigations Division

U.S. Department of Health and Human Services
Centers for Disease Control
Food and Drug Administration
National Institute for Occupational Safety and Health

U.S. Department of Homeland Security
Border and Transportation Security Directorate
Coast Guard
Customs and Border Patrol
Drug Enforcement Agency
Federal Army Marshal Service
Federal Emergency Management Agency
Federal Law Enforcement Training Center
Federal Protective Service
Forensic Document Laboratory
Homeland Security Advanced Research Project Agency
Homeland Security Institute
Immigration and Customs Enforcement
Information Analysis and Infrastructure Protection Directorate
Office for Domestic Preparedness
Office of Bombing Prevention
Transportation Security Administration
Science and Technology Directorate
Secret Service
Transportation Security Administration
Transportation Security Laboratory
Urban Search and Rescue

2009 Membership

U.S. Department of Housing and Urban Development
Bureau of Reclamation
Department of the Interior

U.S. Department of Justice
Ballistic Research Facility
Bureau of Alcohol, Tobacco, Firearms, and Explosives
Drug Enforcement Administration
Federal Bureau of Investigation
Federal Bureau of Prisons
Hostage Rescue Team
National Center for Forensic Science
National Forensic Science Technology Center
National Institute of Justice
Special Response Team
Marshals Service

Federal Reserve Board

Intelligence Community
National Reconnaissance Office
Intelligence Advanced Research Projects Activity

Interagency Board

National Tactical Officers Association

U.S. Postal Inspection Service

U.S. Department of State
Bureau of Diplomatic Security
Bureau of Overseas Buildings Operations
Office of the Coordinator for Counterterrorism

U.S. Department of Transportation
Research and Innovative Technology Administration (Volpe Center)
Federal Aviation Administration

U.S. Department of the Treasury
Internal Revenue Service
Office of the Inspector General

U.S. Department of Veterans Affairs
Office of The Inspector General

White House
Homeland Security Council
Office of Science and Technology Policy

2009 Membership

Legislative Branch

U.S. Senate Sergeant at Arms
U.S. Capitol Police

Judicial Branch

U.S. Supreme Court Police

State and Local Agencies

Amtrak Police Department
Arlington (VA) Fire Department
Bloomington, Minnesota Police Department (Central region)
Capitol Police
City of NY Office of the Chief Medical Examiner
Fairfax County (VA) Fire Department
Fairfax County (VA) Police Department
Fire Department of New York
Georgia Bureau of Investigation (Southern region)
Houston, Texas Police Department (Western region)
Illinois State Police
Las Vegas (NV) Police Department
Long Beach (CA) Police Department
Los Angeles County (CA) Sheriff's Department
Los Angeles Joint Regional Intelligence Center
Maryland State Police
Michigan State Police
Morris County (NJ) Sheriff's Office (Eastern region)
National Bomb Squad Commanders Advisory Board
New York Police Department
Seattle (WA) Fire Department
South Pasadena (CA) Police Department
Washington DC Metro Police

TSWG 2009 Membership by Subgroup

Chemical, Biological, Radiological, and Nuclear Countermeasures

Environmental Protection Agency
Federal Reserve Board
Intelligence Community
Interagency Board
State and Local Agencies:
- Arlington (VA) FD
- Fairfax County (VA) FD
- Fire Department City of New York
- New York Police Department
- Seattle (WA) FD
- City of NY Office of the Chief Medical Examiner

U.S. Department of Agriculture:
- Animal and Plant Health Inspection Service
- Food Safety and Inspection Service

U.S. Capitol Police
U.S. Department of Commerce
- National Institute of Standards and Technology

U.S. Department of Defense
- Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense
- Acquisition, Technology, and Logistics
- Defense Intelligence Agency
- Defense Threat Reduction Agency
- Joint Chiefs of Staff
- Joint Improvised Explosive Device Defeat Organization
- Joint Program Executive Office for Chemical and Biological Defense
- National Security Agency
- Pentagon Force Protection Agency
- Special Operations Command
- U.S. Air Force Air Combat Command
- U.S. Army 20th Support Command CBRNE—Chemical, Biological, Radiological, Nuclear and High-Yield Explosives
- U.S. Army 22nd Chemical Battalion
- U.S. Army Medical Department
- U.S. Army Chemical School, Maneuver Support Center
- U.S. Army National Ground Intelligence Center
- U.S. Army Research, Development, and Engineering Command – Edgewood Chemical Biological Center
- U.S. Marine Corps Chemical, Biological Incident Response Force
- U.S. Marine Corps Systems Command
- U.S. Navy Bureau of Medicine
- U.S. Navy Naval Forces Central Command
- U.S. Navy Naval Air Warfare Center
- U.S. Navy Naval Surface Warfare Center

TSWG 2009 Membership by Subgroup

U.S. Department of Energy
- Office of Health, Safety, Security
- National Nuclear Security Administration

U.S. Department of Health and Human Services
- Centers for Disease Control
- Food and Drug Administration
- National Institute for Occupational Safety and Health

U.S. Department of Homeland Security
- Coast Guard
- Federal Emergency Management Agency
- Federal Protective Services
- Homeland Security Institute, Science and Technology Directorate
- Secret Service
- Transportation Security Administration

U.S. Department of Justice
- Federal Bureau of Investigation
- National Institute of Justice
- Marshals Service

U.S. Department of State
- Bureau of Diplomatic Security
- Bureau of Overseas Buildings Operations
- Counterterrorism Office

U.S. Department of Transportation
- Research and Innovative Technology Administration (Volpe Center)

U.S. Senate Sergeant at Arms

White House
- Homeland Security Council
- Office of Science and Technology Policy

Explosives Detection

U. S Department of Commerce
- National Institute of Standards and Technology

U.S. Department of Defense
- Defense Intelligence Agency
- Joint Improvised Explosive Device Defeat Organization
- Pentagon Force Protection Agency
- U.S. Air Force Engineering and Services Center
- U.S. Air Force Research Lab
- U.S. Navy Naval Explosive Ordnance Disposal Technology Division
- U.S. Navy Naval Surface Warfare Center
- U.S. Navy Naval Research Laboratory
- U.S. Marine Corps Explosive Ordnance Disposal
- U.S. Army Edgewood Chemical Biological Center

U.S. Department of Homeland Security
- Coast Guard
- Science and Technology Directorate
- Transportation Security Administration

TSWG 2009 Membership by Subgroup

- Secret Service

U.S. Department of Justice
- Bureau of Alcohol, Tobacco, Firearms and Explosives
- Federal Bureau of Investigation

U.S. Department of State
- Bureau of Diplomatic Security

Improvised Device Defeat

Intelligence Community
National Bomb Squad Commanders Advisory Board
State and Local Agencies:
- Fairfax County (VA) Police Department
- Maryland State Police
- Michigan State Police
- Bloomington, Minnesota Police Department (Central region)
- Houston, Texas Police Department (Western region)
- Morris County Sheriff's Office (Eastern region)
- Georgia Bureau of Investigation (Southern region)

U.S. Capitol Police
U.S. Department of Defense
- U.S. Air Force Air Combat Command
- U.S. Air Force Explosive Ordnance Disposal Detachment 63
- U.S. Army 52nd Ordnance Group
- U.S. Marine Corps Chemical Biological Incident Response Force
- U.S. Marine Corps Explosive Ordnance Disposal Detachment
- U.S. Navy Naval Explosive Ordnance Disposal Technology Division
- U.S. Navy Explosive Ordnance Disposal Fleet Liaison Office

U.S. Department of Homeland Security
- Border and Transportation Security Directorate
- Homeland Security Advanced Research Project Agency
- Information Analysis and Infrastructure Protection Directorate
- Office for Domestic Preparedness
- Science and Technology Directorate
- Secret Service
- Transportation Security Administration

U.S. Department of Justice
- Bureau of Alcohol, Tobacco, Firearms, and Explosives
- Federal Bureau of Investigation
- National Institute of Justice
- Marshals Service

Investigative Support and Forensics

Capitol Police
Environmental Protection Agency
Federal Reserve Board
Intelligence Community

TSWG 2009 Membership by Subgroup

National Enforcement Investigations Center
National Transportation Safety Board
U.S. Department of Commerce
- National Institute of Standards and Technology – Office of Law Enforcement Standards

U.S. Department of Defense
- Armed Forces Institute of Pathology
- Counterintelligence Field Activity
- Defense Intelligence Agency
- Defense Threat Reduction Agency
- Defense Finance and Accounting Service
- Defense Academy for Credibility Assessment
- Defense Computer Forensics Laboratory
- Defense Criminal Investigative Service
- Office of the Provost Marshal General
- Pentagon Force Protection Agency
- U.S. Air Force Office of Special Investigations
- U.S. Army Criminal Investigation Command
- U.S. Army Intelligence and Security Command
- U.S. Army Communications-Electronics Research, Development, and Engineering Center
- U.S. Marine Corps Criminal Investigation Division
- U.S. Navy Naval Criminal Investigative Service
- U.S. Special Operations Command

U.S. Department of Energy
- Office of Health, Safety, and Security

U.S. Department of Health and Human Services
- Office of Inspector General

U.S. Department of Homeland Security
- Federal Law Enforcement Training Center
- Federal Protective Service
- Forensic Document Laboratory
- Immigration and Customs Enforcement
- Secret Service
- Transportation Security Administration
- Transportation Security Laboratory

U.S. Department of Justice
- Bureau of Alcohol, Tobacco, Firearms, and Explosives
- Drug Enforcement Administration
- Federal Bureau of Investigation
- National Institute of Justice
- National Center for Forensic Science
- National Forensic Science Technology Center
- Marshals Service

U.S. Department of State
- Office of the Coordinator for Counterterrorism

U.S. Department of Transportation
- Federal Aviation Administration

U.S. Department of the Treasury
- Office of the Inspector General

TSWG 2009 Membership by Subgroup

- Internal Revenue Service

U.S. Postal Inspection Service
U.S. Department of Veterans Affairs

Personnel Protection

Intelligence Community
U.S. Capitol Police
U.S. Supreme Court Police
U.S. Department of Commerce
- National Institute of Standards and Technology
- Office of Law Enforcement Standards

U.S. Department of Defense
- Defense Threat Reduction Agency
- Joint Improvised Explosive Device Defeat Organization
- Joint Personnel Recovery Agency
- Pentagon Force Protection Agency
- Rapid Reaction Technology Office
- U.S. Army
- U.S. Army Soldier Systems Center (Natick)
- U.S. Army Criminal Investigation Command
- U.S. Army Medical Research and Material Command
- U.S. Army Research, Development and Engineering Command
- U.S. Army Special Operations Command
- U.S. Army Research Laboratory
- U.S. Navy Naval Criminal Investigative Service
- U.S. Navy Naval Air Systems Command
- U.S. Navy Program Executive Office Ships

U.S. Department of Energy
U.S. Department of Homeland Security
- Federal Air Marshal Service
- Secret Service, Special Services Division, Technical Security Division
- Transportation Security Administration

U.S. Department of Housing and Urban Development
U.S. Department of Justice
- National Institute of Justice
- Marshals Service

U.S. Department of State
U.S. Department of the Treasury
- Internal Revenue Service

Physical Security

Environmental Protection Agency
Federal Reserve Board
Intelligence Community
- Intelligence Advanced Research Projects Activity

State and Local Agencies

TSWG 2009 Membership by Subgroup

- Amtrak Police Department
- Capitol Police
- DC Metro Police
- Los Angeles Joint Regional Intelligence Center
- New York Police Department

U.S. Department of Agriculture
- Forest Service

U.S. Department of Commerce
- National Institute of Standards and Testing

U.S. Department of Defense
- Defense Advanced Research Projects Agency
- Defense Intelligence Agency
- Defense Threat Reduction Agency
- Explosives Safety Board
- Joint Chiefs of Staff
- Joint Improvised Explosive Device Defeat Organization
- Joint Project Manager - Guardian
- Joint Task Force - North
- Joint Warfare Analysis Center
- National Reconnaissance Office
- Offices of the Secretary of Defense
- Physical Security Equipment Action Group
- U.S. Air Force Civil Engineer Support Agency
- U.S. Air Force Office of Special Investigations
- U.S. Air Force Research Laboratory
- U.S. Army Armaments Research, Development and Engineering Center
- U.S. Army Research Laboratory
- U.S. Army Asymmetric Warfare Group
- U.S. Army Chemical School
- U.S. Army Corps of Engineers
- U.S. Army Maneuver and Support Center
- U.S. Army Natick Soldier Center
- U.S. Army Office of the Provost Marshal General
- U.S. Army Product Manager-Force Protection Systems
- U.S. Army Rapid Equipping Force
- U.S. Army Research, Development and Engineering Command
- U.S. Army Special Forces Command
- U.S. Army Training and Doctrine Command
- U.S. Marine Corps Central Command
- U.S. Marine Corps Systems Command
- U.S. Marine Corps Warfighting Lab
- U.S. Navy Chief of Naval Operations
- U.S. Navy Commander Navy Installations Command
- U.S. Navy Naval Criminal Investigative Service
- U.S. Navy Expeditionary Combat Command
- U.S. Navy Naval Explosive Ordnance Disposal Technology Division
- U.S. Navy Facilities Engineering Command
- U.S. Navy Naval Facilities Engineering Service Center

TSWG 2009 Membership by Subgroup

- U.S. Navy Office of Naval Research
- U.S. Navy Naval Sea Systems Command
- U.S. Navy Space and Naval Warfare Systems Command
- U.S. Navy Naval Surface Warfare Center

U.S. Department of Energy
- National Nuclear Security Administration
- Nuclear Regulatory Commission

U.S. Department of Homeland Security
- Coast Guard
- Customs and Border Patrol
- Drug Enforcement Agency
- Immigration and Customs Enforcement
- Science and Technology Directorate
- Secret Service
- Transportation Security Administration
- Transportation Security Laboratory

U.S. Department of the Interior
- Bureau of Reclamation

U.S. Department of Justice
- Bureau of Alcohol, Tobacco, Firearms, and Explosives
- Drug Enforcement Agency
- Federal Bureau of Investigation
- Federal Bureau of Prisons

U.S. Department of State
- Bureau of Diplomatic Security

U.S. Department of Transportation
U.S. Postal Inspection Service
U.S. Sergeant at Arms

Tactical Operations Support

National Tactical Officers Association
State and Local Swat Teams
U.S. Department of Defense
- U.S. Army
- U.S. Marine Corps
- U.S. Special Operations Command

U.S. Department of Energy
- National Nuclear Security Administration
- Office of Health, Safety and Security

U.S. Department of Homeland Security
- Border Patrol
- Coast Guard
- Federal Emergency Management Agency – Urban Search and Rescue
- Secret Service

U.S. Department of Justice
- Ballistic Research Facility
- Bureau of Alcohol, Tobacco, Firearms and Explosives

TSWG 2009 Membership by Subgroup

- Federal Bureau of Investigation
- Hostage Rescue Team
- Marshals Service
- Special Response Team

U.S. Department of State

- Bureau of Diplomatic Security

Training Technology Development

Intelligence Community
Interagency Board
National Bomb Squad Commanders Advisory Board
National Tactical Officers Association
U.S. Department of Defense

- Joint Improvised Explosive Device Defeat Office
- Office of the Under Secretary of Defense for Personnel and Readiness
- Pentagon Force Protection Agency
- U.S. Army National Guard Bureau
- U.S. Army Research, Development, and Engineering Command Simulation and Training Technology Center
- U.S. Army Training and Doctrine Command
- U.S. Army John F. Kennedy Special Warfare Center and School
- U.S. Marine Corps
- U.S. Marine Corps Training and Education Command
- U.S. Special Operations Command

U.S. Department of Energy
U.S. Department of Homeland Security

- Federal Law Enforcement Training Center
- Federal Emergency Management Agency
- Office of Bombing Prevention
- Science and Technology Directorate

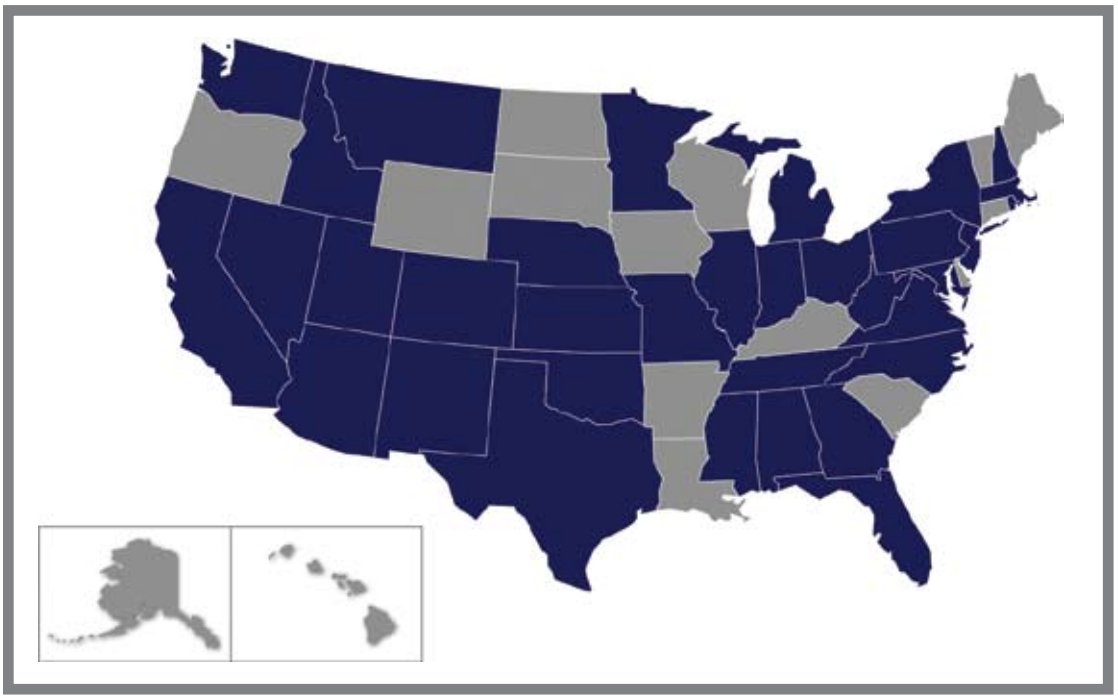
U.S. Department of Justice

- National Institute of Justice

U.S. Department of State

- Bureau of Diplomatic Security

2009 Performers



Alabama
Lewis Innovative Technologies, Inc., Moulton
U.S. Army AMRDEC, Redstone Arsenal

Arizona
Armorworks, Tempe
ESS, Inc., Scottsdale
General Dynamics C4 Systems, Scottsdale
University of Arizona, Tucson

California
3rd Ring, Inc, Mammoth Lakes
ACM Systems, Inc., Grand Terrace
Alelo TLT, LLC, Los Angeles
GE Infrastructure Security, San Diego
Information Systems Laboratories, San Diego
Intelligent Optical Systems, Inc., Torrance
L-3 Communication, San Diego
L-3 Communications Sonoma EO, Santa Rosa
L-3 Titan Group Linkabit Division, San Diego
Language Weaver, Inc., Marina Del Ray
Lawrence Livermore National Laboratory, Livermore
Martone Radio Technology, Inc., San Ramon
NASA Jet Propulsion Laboratory, Los Angeles
Naval Air Warfare Center, China Lake

2009 Performers

Naval Facilities Engineering Service Center, Port Hueneme
Naval Health Research Center, San Diego
Rapiscan Security Products, Inc., Hawthorne
Rapiscan Systems Neutronics and Advanced Technologies, Sunnyvale
Science Applications International Corporation, San Diego
Spectrum, San Diego
SRI International, Menlo Park
Tactical Survey Group, San Bernardino
Teledyne Scientific and Imaging, LLC, Thousand Oaks
Torrey Pines Logic, Inc., San Diego
University of California at San Diego, San Diego
University of Southern California, Marina del Rey
University of Southern California, Institute for Creative Technologies, Marina del Ray

Colorado

AeroAstro, Inc., Littleton
Alion Science and Technology, Boulder
Applied Research Associates, Inc., Littleton
APTEK, Colorado Springs
Colorado State University, Fort Collins
Fidelity Comtech, Inc., Longmont
Law Enforcement Technologies, Inc., Colorado Springs
NEK Advanced Securities Group, Inc., Colorado Springs
RadiantBlue Technologies, Inc., Colorado Springs
SET Corporation, Greenwood Village
Stratom, Inc., Boulder

District of Columbia

BAE Systems Advanced Technologies Inc., Washington
Bureau of Alcohol, Tobacco and Firearms, Washington
Defense Investigative Agency, Washington
Department of Homeland Security, Washington
Global Secure Corporation, Washington
Government Printing Office, Washington
Naval Research Laboratory, Washington

Florida

AMP Research, Inc., Naples
Applied Research Associates, Inc., North Florida Division, Panama City
Crossmatch Technologies, Inc., Palm Beach Gardens
Cubic Corporation Simulation Systems Division, Orlando
Florida Film and Video, St. Petersburg
Florida International University, Miami
Florida State University, Tallahassee
General Dynamics Ordnance and Tactical Systems, Orlando
Harris Corporation, Melbourne
Ion Applications, Inc., West Palm Beach
Lightmaker Group, Orlando
National Institute for Truth Verification, West Palm Beach, West Palm Beach

2009 Performers

Naval Surface Warfare Center, Panama City
Project Manger for Instrumentation, Targets, and Threat Simulators, Orlando
Raytheon Company, Orlando
SR Technologies, Inc., Davie
Studio 14b, Safe Harbor
U.S. Air Force Research Laboratory at Tyndall Air Force Base, Panama City
U.S. Air Force Special Operations School, Irregular Warfare Division, Eglin Air Force Base
U.S. Army Program Executive Office for Simulation, Training, and Instrumentation, Orlando
University of Central Florida, Orlando
University of Florida, Gainesville
Vcom3D, Inc., Orlando

Georgia
Squires-Fulcher LLC, Locust Grove

Idaho
Idaho National Laboratory, Idaho Falls
pro Swat, Inc., Boise

Illinois
Infrastructure Defense Technology Inc, Belvidere

Indiana
Naval Surface Warfare Center, Crane Division, Crane
Vohne Liche Kennels Canine Security, LLC, Denver

Kansas
Wichita State University, Wichita

Maryland
Army Aberdeen Test Center, Aberdeen
Army Research Laboratory, Aberdeen Proving Ground, Aberdeen
Edgewood Chemical Biological Center, Edgewood
G3 Technologies, Inc., Columbia
Impact Computing Corporation, Silver Spring
Joint Trauma Analysis and Prevention, Fort Detrick
National Institute of Standards and Testing, Gaithersburg
Naval Air Systems Command, Patuxent River
Naval Air Warfare Center, Patuxent River
Naval Explosive Ordnance Disposal Technology Division, Indian Head
Naval Surface Warfare Center, Carderock
Naval Surface Warfare Center, Indian Head Division, Indian Head
Neany, Inc., Hollywood
Patton Electronics, Gaithersburg
RedXDefense, Rockville
Regal Decisions Systems Inc, Belcamp
SimQuest, Silver Spring
Tektron Micro Electronics, Inc., Hanover
TRX Systems, Inc., Lanham
ViaGlobal Group, Annapolis

2009 Performers

Zeus Technology Systems, Inc., Hanover

Massachusetts

American Science and Engineering, Inc., Ballerica
BBN Technologies, Cambridge, Cambridge
Black I Robotics, Tyngsboro
Charles River Analytics, Inc., Cambridge
Excellims Corporation, Maynard
FLIR Systems, Inc., North Billerica
Foster-Miller, Inc, Waltham
GE Homeland Protection, Wilmington
iRobot, Burlington
National Security Innovations, Inc., West Yarmouth
Noble Peak, Wakefield
Reveal Imaging Technologies, Bedford
The Charles Stark Draper Laboratory, Inc., Cambridge
Volpe National Transportation Systems Center, Cambridge

Michigan

Cybernet Systems Corporation, Ann Arbor
Quantum Signal, LLC, Ann Arbor
Soar Technology, Inc., Ann Arbor
University of Notre Dame, Notre Dame

Minnesota

Agile Defense, LLC, Hopkins
University of Minnesota, Minneapolis

Mississippi

Camgian Microsystems, Starkville
Engineering Research and Development Center, Vicksburg

Missouri

Midwest Research Institute, Kansas City
Washington University in St. Louis, St. Louis

Montana

Veridical Research and Design, Bozeman

Nebraska

Army Corps of Engineers Protective Design Center, Omaha

Nevada

National Nuclear Safety Administration, Las Vegas
Remote Sensing Laboratory, Las Vegas

New Hampshire

BAE Systems, Nashua
Dartmouth College, Hanover
Insight Technology, Inc., Londonderry

2009 Performers

Transparent Language, Inc., Nashua

New Jersey

Armaments Research, Development and Engineering Center, Picatinny Arsenal
Sarnoff Corporation, Princeton

New Mexico

Applied Research Associates, Inc., Albuquerque
Energetic Materials Research and Testing Center, Socorro
Least Squares Software, Inc., Albuquerque
National Assessment Group, Kirtland Air Force Base, Albuquerque
Sandia National Laboratories, Albuquerque
Stolar Research Corporation, Raton
U.S. Department of Energy, Los Alamos National Laboratory, Los Alamos
White Sands Missile Range, White Sands

New York

Columbia University, New York
GE Global Research, Niskayuna
Material Intelligence, New York
Northrop Grumman Corporation, Bethpage
Syracuse Research Corporation, North Syracuse
Tactronics LLC, Westhampton Beach
Weidlinger Associates Inc., New York

North Carolina

Duke University, Durham
Emerging Technology Support, LLC, Mooresville
General Dynamics Armament and Technical Products, Inc., Charlotte
Signalscape, Inc., Cary
Tactical Support Equipment, Inc., Fayetteville
XinRay Systems, Research Triangle Park
Xintek Inc., Research Triangle Park

Ohio

Applied Research Associates, Inc. (Klein Associates Division), Fairborn
Battelle Memorial Institute, Columbus
University of Dayton Research Institute, Dayton
Wright-Patterson Air Force Base, Dayton

Oklahoma

ICx Nomadics, Stillwater
Southwest Research Institute, Midwest City

2009 Performers

Pennsylvania
Applied Perception, Cranberry Township
Carnegie Mellon University, Pittsburgh
Drexel University Data Fusion Laboratory, Philadelphia
Dynamic Defense Materials, Boothwyn
L-3 Services Group, Command and Control Systems and Software Division, Horsham
Navmar Applied Sciences Corporation, Warminster
Nuvision Engineering, Pittsburgh
RE2 Inc., Pittsburgh
Saint Joseph's University, Early Responders Distance Learning Center, Philadelphia
Pennsylvania State University, State College
University of Pennsylvania, Philadelphia

Rhode Island
Naval Undersea Warfare Center, Newport

Tennessee
Animax Designs, Inc., Nashville
Northrop Grumman-Remotec, Clinton
Oak Ridge National Laboratory, Oak Ridge
Universal Strategy Group, Inc., Mt. Pleasant

Texas
21st Century Technologies, Austin
Applied Research Associated, Inc., Advanced Technology Division, San Antonio
Applied Research Associates, Inc., San Antonio
Dell, Inc., Austin
L-3 Communications Titan Group, San Antonio
Operational Test Command, Ft Hood
Protection Engineering Consultants, San Antonio
Southwest Research Institute, San Antonio
U.S. Army Institute of Surgical Research, Fort Sam Houston
University of Houston, Houston
University of Texas at Dallas, Richardson

Utah
AccessData Corporation, Lindon
IsoForensics Inc., Salt Lake City

Virginia
Acxiom Corporation, McLean
ASET International Services Corporation, Arlington
A-T Solutions, Fredericksburg
AT-Solutions, Inc., Fredericksburg
Battelle Memorial Institute, Arlington
Blackbird Technologies, Herndon
Booz Allen Hamilton, McLean
C3NS, Inc., Chantilly
Camero, Inc., Vienna

2009 Performers

Center for Innovative Technology, Herndon
Corporation for National Research Initiatives, Reston
Courage Services, Inc., McLean
Defense Threat Reduction Agency, Alexandria
Federal Bureau of Investigation, Quantico
Gatekeeper Security Inc., Reston
George Mason University, Fairfax
Hazard Management Solutions, Inc., Arlington
Institute for Physical Sciences, McLean
L-3 Communications Titan Group, Reston
Lockheed Martin, Manassas
McQ, Inc., Fredericksburg
Multi-Threaded, Inc., Herndon
National Media Services, Front Royal
Naval Surface Warfare Center, Dahlgren
Naval Surface Warfare Center Carderock, Virginia Beach
NexGen Communications, LLC, Dulles
NSI, Inc., Fairfax
Ocean Marine Industries, Inc., Chesapeake
Old Dominion University, Norfolk
Platinum Solutions, Inc., Reston
Potomac Institute for Policy Studies, Arlington
Project Manager for Force Protection Systems, Fort Belvoir
R4 Communications, McLean
S4 Tech, Reston
Science Applications International Corporation, Sterling
SPADAC, McLean
Sparta, Inc., Centreville
Strategic Analysis, Inc., Arlington
System Planning Corporation, Arlington
SyTech Corporation, Alexandria
The Penro Group, Alexandria
The Technology Development Group, Inc., Leesburg
Trident Systems, Inc., Fairfax
U.S. Army Evaluation Center, Alexandria
University of Virginia, Charlottesville
Zero Point, Inc., Virginia Beach

Washington

Advanced Interactive Systems, Seattle
Pacific Northwest National Laboratory, Richland
Specialty Products Inc, Lakewood

West Virginia

STS International, Inc., Berkley Springs
West Virginia High Technology Consortium Foundation, Fairmont
West Virginia University, Morgantown

2009 Performers

International

Australia
Appen Pty Ltd., Chatswood, New South Wales
Australian Borders and Customs, Canberra
Australian Federal Police, Canberra
Bond University, Bond
Department of the Prime Minister and Cabinet, Canberra

Canada
Allen-Vanguard Protective Technologies, Ltd., Ottawa, Ontario
Argon Security Technologies, Inc., Port Moody, British Columbia
Bosik Technologies LTD, Ottawa, Ontario
Canadian Border Service Agency, Ottawa, Ontario
Defence Research and Development Canada, Valcartier, Quebec
Mining Resources Engineering Limited, Ontario
Optosecurity, Inc., Quebec City, Quebec
Royal Canadian Mounted Police, Ottawa, Ontario
Smiths Detection, Mississauga, Ontario

Germany
Siemens Medical Solutions, Vacuum Technology, Erlangen

Israel
Controp Precision Technologies Ltd, Hod Hasharon
Elbit Systems, Haifa
Electro-Optics Industries, Ltd, Rehovat
Israel Ministry of Defence, Tel-Aviv
Israel National Police, Jerusalem
Israeli Security Agency, Tel Aviv
ODF Optronics Ltd., Tel-Aviv
Rafael Armament Development Authority Ltd, Haifa
SOREQ, Tel Aviv

Netherlands
TNO Defence, Security and Safety, Soesterberg

New Zealand
Zephyr Technology Limited, Auckland

Singapore
Defence Science and Technology Agency
Nanyang Technological University

Switzerland
Institut de Police Scientifique Ecole des Sciences Criminelles, Lausannes-Dorigny

2009 Performers

United Kingdom

Defence Science and Technology Laboratories, Fort Halstead, Kent
Explora Security LLC, London
Hazard Management Solutions, Inc, Farington, Oxfordshire
MBDA, Bristol
Ministry of Defence, London
QinetiQ, Ltd., Farnborough, Hampshire
Systems, Communications, and Networks, Ltd. Blandford Forum, Dorset
UK Centre for the Protection of National Infrastructure, London
UK Metropolitan Police, London
UK Ministry of Defence, London
University of Portsmouth, Portsmouth

Glossary of Acronyms

A

ACC	Air Combat Command
AFESC	Air Force Engineering and Services Center
AFIP	Armed Forces Institute of Pathology
AFRL	Air Force Research Lab
AFSFC	Air Force Security Forces Center
AMEDD	Army Medical Department
ARL	Army Research Laboratory
ASD	Assistant Secretary of Defense
ASD (SO/LIC & IC)	Assistant Secretary of Defense for Special Operations/Low-Intensity Conflict and Interdependent Capabilities
ATF	Bureau of Alcohol, Tobacco, Firearms, and Explosives

B

BAA	Broad Agency Announcement
BIDS	BAA Information Delivery System
BUMED	Bureau of Medicine and Surgery
BX	Blast Effects and Mitigation

C

C3	Command, Control, and Communications
CA	California
CB	Chemical and/or Biological
CBIRF	Chemical Biological Incident Response Force
CBRN	Chemical, Biological, Radiological, and Nuclear
CBRNC	Chemical, Biological, Radiological, and Nuclear Countermeasures
CBRNE	Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives
CDC	Centers for Disease Control and Prevention
CENTCOM	U.S. Central Command
CID	Criminal Investigation Division (U.S. EPA)
CID	Criminal Investigation Command (U.S. Army)
CIFA	Counterintelligence Field Activity
CML Bn(TE)	Chemical Battalion (Tech Escort)
CMLS	Chemical School
CRADA	Cooperative Research and Development Agreement
CTTSO	Combating Terrorism Technical Support Office

D

DACA	Defense Academy for Credibility Assessment
DATSD (CBD)	Office of the Deputy Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense
DCFL	Defense Computer Forensics Laboratory
DDRE	Office of the Director of Defense Research and Engineering
DEA	Drug Enforcement Administration
DHS	Department of Homeland Security

Glossary of Acronyms

DIA	Defense Intelligence Agency
DNA	Deoxyribonucleic Acid
DoD	Department of Defense
DOE	Department of Energy
DOJ	Department of Justice
DOS	Department of State
DS	Bureau of Diplomatic Security
DTRA	Defense Threat Reduction Agency

E

ECBC	Edgewood Chemical Biological Center
ECP	Entry Control Point
ED	Explosives Detection
EECF	Expeditionary Environmental Control Facility
EMRTC	Energetic Materials Research and Testing Center
EOD	Explosive Ordnance Disposal
EOD Tech Det	Explosive Ordnance Disposal Technical Detachment
EOD/LIC	Explosive Ordnance Disposal/Low-Intensity Conflict
EPA	Environmental Protection Agency

F

FAA	Federal Aviation Administration
FAMS	Federal Air Marshal Service
FBI	Federal Bureau of Investigation
FBOP	Federal Bureau of Prisons
FDA	Food and Drug Administration
FDL	Forensic Document Laboratory
FEMA	Federal Emergency Management Agency
FIVAK	Field-Installable Inconspicuous Vehicle Armor Kit
FPS	Federal Protective Service
FPSS	Force Protection Systems Squadron
FSIS	Food Safety and Inspection Service
FY	Fiscal Year

G

GWOT	Global War on Terror

H

HAZMAT	Hazardous Material
HME	Homemade Explosives
HMMWV	High-Mobility Multipurpose Wheeled Vehicle
HQ	Headquarters
HRT	Hostage Rescue Team
HSC	Homeland Security Council

Glossary of Acronyms

HSCB	Human Social Cultural and Behavior Modeling
HSCS	Human Scent Collection System
HSS	Office of Health, Safety, and Security

I

IC	Intelligence Community
ICE	Immigration and Customs Enforcement
IDD	Improvised Device Defeat
IED	Improvised Explosive Device
IG/T	Interdepartmental Group on Terrorism
INSCOM	Intelligence and Security Command
IRS	Internal Revenue Service
ISF	Investigative Support and Forensics
IWG/CT	Interagency Working Group on Counterterrorism
IWS	Irregular Warfare Support

J

JCS	Joint Chiefs of Staff
JIEDDO	Joint Improvised Explosive Device Defeat Organization
JWAC	Joint Warfare Analysis Center

L

LA	Los Angeles

M

MANSCEN	Maneuver Support Center
MAV	Micro Air Vehicle
MCD	Marine Corps Detachment
MD	Maryland
MI	Michigan
MRMC	Medical Research and Materiel Command
MTRS	Man-Transportable Robotic Platform
MUSCL	Modular Unmanned Surface Craft-Littoral

N

NATO	North Atlantic Treaty Organization
NAVATA	Networked Advanced Vehicle Anti-Tamper and Alert System
NAVCENT	Naval Forces Central Command
NAVEODFLTLAU	Naval Explosive Ordnance Disposal Fleet Liaison Office
NAVEODTECHDIV	Naval Explosive Ordnance Disposal Technology
NAVFAC	Naval Facilities Engineering Command
NAVSEA	Naval Sea Systems Command
NAWC	Naval Air Warfare Center

Glossary of Acronyms

NCFS	National Center for Forensic Science
NCIS	Naval Criminal Investigative Service
NEIC	National Enforcement Investigations Center
NFPA	National Fire Protection Association
NFSTC	National Forensic Science Technology Center
NGIC	National Ground Intelligence Center
NHRC	Naval Health Research Center
NIJ	National Institute of Justice
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
NNSA	National Nuclear Security Administration
NRL	Naval Research Laboratory
NSA	National Security Agency
NSWC	Naval Surface Warfare Center
NTOA	National Tactical Officers Association

O

OAFME	Office of the Armed Forces Medical Examiner
OBO	Overseas Buildings Operations
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
OIG	Office of the Inspector General
OLES	Office of Law Enforcement Standards
ONR	Office of Naval Research
OSI	Ocular Scanning Instrument
OSI	Office of Special Investigations
OUSD (P&R)	Office of the Under Secretary of Defense for Personnel and Readiness

P

PCR	Polymerase Chain Reaction
PD	Police Department
PDA	Personal Digital Assistant
PDC	Protective Design Center
PEO	Program Executive Office
PEO-SEQ	Program Executive Office Soldier Equipment
PFPA	Pentagon Force Protection Agency
PM-FPS	Product Manager for Force Protection Systems
PM-G	Product Manager for Guardian
PPE	Personal Protective Equipment
PS	Physical Security
PVC	Polyvinyl Chloride

R

R&D	Research and Development
RANT	Rapid Access Neutralization Tool

Glossary of Acronyms

RCIED	Radio-Controlled Improvised Explosive Device
RCV	Remote-Controlled Vehicle
RCVOA	Remote-Controlled Vehicle Operational Assessment
RDD	Radiological Dispersion Device
RDECOM	Research, Development, and Engineering Command
RF	Radio Frequency
RFW	Radio Frequency Weapon
RHIB	Rigid-Hull Inflatable Boats
RSS	Really Simple Syndication

S

S/CT	Department of State Office of the Coordinator for Counterterrorism
S&T	Science and Technology
SAFETY ACT	Support Anti-Terrorism by Fostering Effective Technologies Act of 2002
SAVER	System Assessment and Validation for Emergency Responders
SCOS	Surveillance, Collection, and Operations Support
SERVANT	Sense and Report Vehicle Anti-Tamper
SME	Subject Matter Expert
SO/LIC & IC	Special Operations/Low-Intensity Conflict and Interdependent Capabilities
SOCOM	U.S. Special Operations Command
SPAWAR	Space and Naval Warfare Systems Command
SPIDER	Stabilized Panoramic Automatic Intrusion Detection and Recognition System
SSC	Soldier Systems Center (Natick)
SSD	Special Services Division
SWAT	Special Weapons and Tactics
SWM	Surface Wound Mapping

T

TACOM	Tank-Automotive and Armaments Command
TIC	Toxic Industrial Chemical
TOS	Tactical Operations Support
TRADOC	Training and Doctrine Command
TSA	Transportation Security Administration
TSD	Technical Security Division
TSP	Training Support Package
TSWG	Technical Support Working Group
TTD	Training Technology Development

U

USA	United States Army
USACE	United States Army Corps of Engineers
USAARL	United States Army Aeromedical Research Laboratory
USAF	United States Air Force
USAISR	United States Army Institute of Surgical Research
USCG	United States Coast Guard

Glossary of Acronyms

USMC	United States Marine Corps
USMS	United States Marshals Service
USN	United States Navy
USSS	United States Secret Service
UXO	Unexploded Ordnance

V

VA	Virginia
VBIED	Vehicle-Borne Improvised Explosive Device
VIC	Vehicle Inspection Checklist
VIP	Very Important Person

W

WA	Washington