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ADVANCE PLANNING BRIEFING FOR INDUSTRY



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APBI OBJECTIVES

The Advance Planning Briefing for Industry (APBI) is sponsored by the Combating Terrorism Technical Support Office (CTTSO). APBI provides representatives of industry, government, entrepreneurs, and associated developers with a preview of the requirements that are identified for publication in the CTTSO annual Broad Agency Announcement (BAA). Attendees are encouraged to talk with contracts, program, and technical staff to ensure a full understanding of these requirements. This is the only opportunity for direct discussions regarding the solicitations.

Requirement descriptions are subject to change without notice; the BAA package supersedes all APBI information.

BAA SOLICITATION – A THREE-PHASED APPROACH

The BAA is implemented in three phases to minimize costs for submitters. Phase 1 requires a one-page Quad Chart that conveys the essence of the proposed solution for a single requirement. Phase 2 submissions are White Papers (not to exceed 12 pages) for accepted Phase 1 submissions. For accepted Phase 2 submissions, Phase 3 consists of a Full Technical Proposal (not to exceed 50 pages) and detailed cost information. *Phase 1 submissions can be selected for Phase 3 if funding is available and the mission priority warrants an accelerated process.*

BAA ANNOUNCEMENT AND POINTS OF CONTACT

Finalized requirements are published in an annual BAA. The BAA is officially announced on the Federal Business Opportunities (FedBizOpps) Web site at www.fedbizopps.gov. The BAA package is published in BIDS at www.bids.tswg.gov. All responses to the BAA and submitter notifications including next phase submission requests are processed in BIDS. Questions regarding any BAA requirement shall be directed to the appropriate BAA contracting office. Questions and answers will be posted in BIDS under **FAQs**.

Navy Contracting Office: 13-Q-3025@cttso.gov

BAA SCHEDULE

BAA Package Published	On or about February 15, 2013 **
Quad Charts	Due 30 days after publication date
White Papers	Due as specified in the acceptance e-mail
Full Proposals	Due as specified in the acceptance e-mail
Planned Awards	October 2013 - beyond

**** REFER TO THE PUBLISHED BAA ON THE BIDS SITE FOR SPECIFIC DATES.**

COMBATING TERRORISM TECHNICAL SUPPORT OFFICE

ADVANCE PLANNING BRIEFING FOR INDUSTRY TECHNOLOGY REQUIREMENTS BRIEFINGS

APBI AGENDA

Time	Presentation	Location
7:00 a.m.	Registration	Amphitheater Lobby
8:00 a.m.	Welcome	Amphitheater
8:10 a.m.	CTTSO Overview	Amphitheater
8:25 a.m.	BAA Process	Amphitheater/ Lobby
8:40 a.m.	Technology Transition	Amphitheater/ Meridian B
8:55 a.m.	Chemical, Biological, Radiological, Nuclear and Explosives (CBRNE)	Oceanic A
9:45 a.m.	Personnel Protection (PP)	Meridian C
10:00 a.m.	Improvised Device Defeat (IDD)	Meridian D & E
10:20 a.m.	Explosive Ordnance Disposal/Low-Intensity Conflict (EOD/LIC)	Meridian D & E
10:40 a.m.	Training Technology Development (TTD)	Continental C
10:50 a.m.	Break	
11:10 a.m.	Investigative Support and Forensics (ISF)	Continental C
11:35 a.m.	Physical Security (PS)	Continental B
11:50 a.m.	Tactical Operations Support (TOS)	Meridian C
12:30 p.m.	Irregular Warfare Support (IWS)	Oceanic B
12:40 p.m.	Advanced Analytic Capabilities (AAC)	Meridian B
1:00 p.m.	Meeting Adjourned	

**The breakout rooms will remain open after 1 p.m. to continue discussions with subgroups and programs.*

APBI briefings will be recorded and made available via webcast shortly after January 30, 2013 on the BIDS site – www.bids.tswg.gov.

BACKGROUND

MISSION

The CTTSO mission is to identify and prioritize the needs of the interagency community charged with combating terrorism. Deliver capabilities to those on the front lines through rapid research, development, test, evaluation, and operational support. Incorporate available expertise and experience from government, commercial, private, and academic sources throughout the United States and the world.

STRUCTURE

The CTTSO operates under the auspices of the U.S. Department of Defense (DoD) Office of the Assistant Secretary of Defense for Special Operations/Low-Intensity Conflict. The DoD provides program management and execution as well as a major part of the program funding. The U.S. Department of State, the U.S. Department of Energy, the Department of Homeland Security, the Federal Bureau of Investigation, and other agencies contribute funds for projects of interest.

As a general rule, the CTTSO is able to identify meaningful combating terrorism needs and satisfy them better and faster. Mission success is due in part to a broad base of federal agency participation as well as operational requirements from the war fighters and end users. Government representatives from more than 100 agencies actively contribute to the identification and selection of key CbT requirements to promote shared and multi-user solutions and to prevent duplication of effort.

The CTTSO regularly reviews current project status, assesses emerging threats, identifies new user requirements, and selects proposals for new research and development projects to meet those requirements. This APBI forecasts the requirements anticipated for funding in Fiscal Year 2014 and advertised using a BAA.

CTTSO PROGRAMS

Currently, the CTTSO oversees the following programs focusing on different aspects of the war on terror.

The **Technical Support Working Group (TSWG)** conducts national interagency research and development identifying and addressing the high priority needs of the CbT community. The U.S. Department of State Office of the Coordinator for Counterterrorism provides sponsorship for this program. An Executive Committee provides guidance and is chaired by a DoD representative. DoD, DOS, DOE, DHS, the FBI, and the InterAgency Board also have seats on the Executive Committee, with DoD acting as executive agent. TSWG is divided into 9 specific mission area subgroups that are each chaired by a leading agency representative. Every federal organization associated with CbT is represented in at least one subgroup.

The **Explosive Ordnance Disposal/Low-Intensity Conflict (EOD/LIC)** Program provides 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.

The **Irregular Warfare Support (IWS)** program initiative began in 2006 to solve non-traditional problems encountered by joint, interagency, and international counterinsurgency efforts. The program uses innovative and integrated processes of operational analysis, capability design/development, and field experimentation in support of irregular engagement against identified threats to national security.



BAA STRATEGY AND SUBMISSION INFORMATION

FREQUENTLY ASKED QUESTIONS

WHAT IS A BAA?

The Broad Agency Announcement (BAA) is a competitive research and development contracting approach described in FAR Part 6 and Part 35. BAAs are used for the acquisition of basic and applied research; for development not related to a specific system or hardware procurement; to advance state-of-the-art technologies or increase knowledge or understanding; and when proposals with varying technical and scientific approaches are anticipated. The primary difference between a BAA and other competitive procurements is that the submissions received for a BAA are evaluated on the submission's individual merits rather than against other submissions.

WHAT IS BIDS?

The BAA Information Delivery System (BIDS) is a secure Web-based application designed to receive and process submitter responses to BAA requirements. Access the system at www.bids.tswg.gov using a standard Web browser.

WHO CAN RESPOND TO A BAA?

The government encourages any submitter with a potential solution to submit research concepts for consideration. This includes nonprofit organizations, educational institutions, small businesses, small disadvantaged businesses, government laboratories, historically black colleges and universities/other institutes, and foreign contractors as well as large businesses.

HOW DO I GET A BAA PACKAGE AND RESPOND TO THE BAA?

BAA packages are posted to the BIDS Web site and can be downloaded by any visitor; however, to respond to a BAA requirement, a submitter registration is required.

WHY DO I NEED THE BAA PACKAGE INSTRUCTIONS?

BAAs are a competitive procurement process; therefore, the guidelines in the BAA package must be followed to avoid disqualification. The BAA package will be posted to the BIDS Web site on or about February 15, 2013. Packages provide detailed requirement descriptions as well as instructions for submittal preparation and upload in BIDS. Be sure to review all guidance; submissions for each phase must be in full compliance with all BAA instructions.

IS MY COMPANY COMPETITION AND PROPRIETARY INFORMATION SECURED?

All data uploaded to BIDS is secure from public access and is encrypted site-to-site. All submissions are considered proprietary and source selection sensitive and must be protected accordingly. BIDS access for evaluation and processing is strictly controlled.

WHO WILL SEE AND EVALUATE MY SUBMISSION?

The CTTSO intends to use both government and contractor support personnel in the review, evaluation, and administration of all submissions for this BAA. All individuals shall certify that they will not disclose any information pertaining to this solicitation including any submission, the identity of any submitters, or any other information relative to this BAA and shall certify that they have no financial interest in any submissions evaluated. Submission of information in response to this BAA constitutes permission to disclose information to certified evaluators under these conditions.

HOW DO I TRACK THE PROGRESS OF MY SUBMISSION?

Registered submitters can track the progress of their responses to any published requirement. Status is indicated behind each submission documents identifier as:

- Pending (in review by the evaluation team);
- Accepted (the next phase submission has been requested); or
- Rejected (further participation in this BAA for this submittal is not requested).

INFORMATION AND TIPS FOR PROPOSING UNDER THE BAA PROCESS

1. Available Resources from BIDS www.bids.tswg.gov

- Published BAA packages are located under Download BAAs.
- Submission Samples and Format are located under Downloads; Reference Materials; Document Format.
- Reference Data includes the APBI briefings and are located under Downloads; Reference Materials.
- The Submitter QuickCard (PDF) is located on the Homepage banner menu bar.

2. BIDS Help

- **Online Help** – provides instruction on topics related to BIDS use.
- **FAQs** – lists user questions and official responses.
- **Help Request** – submits an e-mail to the BIDS Help Desk.

3. BIDS Registration

- Registration is required for submittal upload. The process is automated, similar to most Web accounts. Be sure to complete all required data fields.
- Retain User Name and Password for login and tracking identification.
- To automatically reset a forgotten password, under Login, select Forgot My Password (the account e-mail address must be valid).

4. Visit the BIDS site early

- Register and/or validate/update account password, e-mail address, and business information.
- Check Online Help under Internet Browsers to verify correct browser settings.
- See the BIDS Submitter QuickCard to help navigate the BIDS Web site during submission upload.

5. Read the BAA package thoroughly

- The BAA package contains instructions, full requirement descriptions, and other information to assist in submittal preparation.
- Download the package, read the instructions, and clarify any issues through the BAA e-mail contact early.

6. Document Preparation

- Include the BAA number, Document Identifier, and proposal title on each submittal.
- Use the document formats and samples provided in BIDS.
- Ensure that each submission addresses all required elements including requirement, schedule, cost, deliverables and products, and task descriptions.
- The submission shall be clear, concise, and contain all information requested.

7. File Size Limits and Naming

- File sizes must not exceed 1 M.
- Files must be in the format described in the BAA package.
- File names cannot contain special characters or spaces.
- File extensions must be identified and correct.
- Files shall not be password protected.
- A file that cannot be opened will be rejected.

8. Upload to the Correct Requirement

- “Shot-gunning” proposals to unrelated requirements is highly discouraged.
- Check the submission after upload. (View My Submission)
- Be sure that the attachment is the correct file and accessible from the Web site. In general, if you can see it, we can see it.

9. Clarification of “Shall” and “Should”

For greater clarity and to reduce potential ambiguity, for this document, the following definitions are given:

- Shall – mandatory requirements binding on the proposer.
- Should – a desired action/capability.

10. Late is Late

- The BIDS software does not allow uploads after the BAA due date and time.
- All times referenced in the BAA and used in BIDS are in the U.S. Eastern Time Zone (either Eastern Standard or Daylight Savings Time).
- Upload submissions early to avoid missing the deadline.
- Under no circumstances will extensions be granted.

PROJECT SELECTION AND EVALUATION GUIDELINES

The CTTSO conducts rapid prototype development focused on critical multiagency and future threat counter/antiterrorism requirements. To meet the CTTSO mission, projects are generally selected with the following criteria:

- Multiagency requirements receive highest priority;
- Rapid prototyping/tangible product; and
- No duplication of effort.

SUBMISSION EVALUATION

Each submission (initially Quad Charts, then White Papers, and Full Proposals) will be evaluated on its individual merit and relevance to the program requirement rather than against other proposals in the same general research area. The following highlights sample evaluation criteria from the planned BAA package and are provided for information purposes only.

Basic Requirements

- Proposed solution meets the stated requirement.
- Proposal exhibits comprehensive understanding of the problem and the requirements.
- Multiple users (U.S. government or commercial).
- Compliant with solicitation requirements.

Cost

- Achievable and reasonable for work proposed.
- Costs analyzed and risks addressed.
- Affordable with the budget constraints.

Past Performance

- Success in similar efforts.
- Demonstrated ability to deliver products within budget and schedule.
- Team demonstrated expertise in technical and management areas of cost, schedule, and risk.

Technical Performance

- Approach is feasible, achievable, and complete.
- Technical team has expertise and experience.
- Effort is defined, complete, and in logical sequence.
- Deliverables and products are clearly defined and will meet the requirement.
- Technical risks and mitigation are defined and reasonable.
- Government furnished equipment and materials are identified.
- Intellectual property ownership is addressed.
- Transition to production is addressed.
- Other agency interest or funding is documented.

Schedule

- Achievable and reasonable for proposed solution.
- Risk and critical elements addressed.

CTTSO PROGRAMS AND MISSION AREAS/ SUBGROUPS

ADVANCED ANALYTIC CAPABILITIES (AAC)

Identify, prioritize, and execute research and development projects that satisfy interagency requirements to improve sense-making, decision-making, and data management for counterterrorism, counterinsurgency, stabilization/re-construction missions, and cyber defense. Focus on the development and integration of analytic tools and associated processes at the tactical level to include operational level interface.

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR, AND EXPLOSIVES (CBRNE)

Identify, prioritize, and execute research and development projects that satisfy the needs of the interagency combating terrorism community to counter the employment of chemical, biological, radiological, nuclear, and explosive materials. Deliver capabilities to the community through rapid research, development, test, and evaluation.

IMPROVISED DEVICE DEFEAT (IDD)

Identify, prioritize, and execute projects that satisfy mission critical needs and address interagency requirements for advanced technologies to safely and effectively defeat improvised terrorist devices.

INVESTIGATIVE SUPPORT AND FORENSICS (ISF)

Identify, prioritize, and execute research and development projects of multiagency interest that provide investigative and forensic support to terrorist-related counteraction, investigations, and analysis.

PERSONNEL PROTECTION (PP)

Identify, prioritize, and execute research and development projects that will provide advanced tools, techniques, and guidelines to satisfy interagency requirements for enhanced personal security.

PHYSICAL SECURITY (PS)

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.

SURVEILLANCE, COLLECTION, AND OPERATIONS SUPPORT (SCOS)

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

TACTICAL OPERATIONS SUPPORT (TOS)

Identify, prioritize, and execute research and development projects that enhance the capabilities of DoD 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.

TRAINING TECHNOLOGY DEVELOPMENT (TTD)

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.

EXPLOSIVE ORDNANCE DISPOSAL/LOW-INTENSITY CONFLICT (EOD/LIC)

The Explosive Ordnance Disposal/Low-Intensity Conflict Program provides Joint Explosive Ordnance Disposal technicians and special operations forces operators with the advanced technologies and mission-focused solutions required to address current and emerging threats presented by unconventional and asymmetric warfare.

IRREGULAR WARFARE SUPPORT (IWS)

Develop adaptive and agile ways and means to support irregular warfare in the current and evolving strategic environments. Support joint, interagency, and international partners who conduct irregular warfare through indirect and asymmetric approaches with solutions to erode an adversary's power, influence, and will. Identify materiel and non-materiel solutions via operational analysis, concept development, field experimentation, and spiral delivery of capabilities to defeat the motivations, sanctuaries, and enterprises of targeted state and non-state actors.

REQUIREMENTS DESCRIPTIONS

Requirement descriptions are subject to change without notice; the published BAA package supersedes all APBI information.



CBRNE NOTES

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR, AND EXPLOSIVES (CBRNE)

R3761 EXPLOSIVE SAMPLING MATERIALS AND DEVICES

Develop new methods to more effectively and efficiently collect the nanogram quantities of commercial, military, and homemade explosives that are present near improvised explosive devices. The proposed device or novel material(s) shall be capable of collecting nanogram levels of particles (both airborne and present on surfaces) and/or part per billion levels of explosive vapors. Sampling methods that can simultaneously collect both particle and vapor samples of high and low vapor pressure are particularly desired. Ideally, sampling should be accomplished in various ambient environments (indoor, outdoor, land, maritime, pre- and post-blast). During the development process, standard laboratory analytical instruments and/or a commercial explosive trace detector shall be used to assess performance. Samples shall be deliverable to an existing commercial explosive trace detector.

Submissions shall address one or more of these sampling requirements:

1. Contact sampling shall be accomplished within 5-10 seconds for standard luggage items. Systems should offer significant improvements over current contact sampling technologies in terms of one or several of the following criteria: ability to collect the analyte, thermally desorb the analyte, reduced costs, increased use of same sample material, etc. This development can include a sampling wand, and/or the sampling media (swab) itself.
2. High volume sampling shall have a sampling time commensurate with the volume of air to be sampled. The sample collected could be particle, vapor, or both. Such sampling volumes would range from smaller items such as the shoes of an individual in a checkpoint scenario to larger items like a sea cargo container.
3. Non-contact sampling shall be accomplished within 10-20 seconds per man-portable item. The system shall minimize variability between operators and provide a path to effective automation in later phases (not required for the initial prototype). The

system shall be capable of integrating to either an ion mobility spectroscopy or mass spectrometry based explosives trace detector.

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R3762 HANDHELD ORTHOGONAL EXPLOSIVES DETECTOR

Develop a single handheld explosive detector that will quickly, reliably, and safely determine if a substance presented to the detector from a macroscopic sample is an energetic compound (commercial, military, or homemade explosive) or a mixture of explosive precursors versus a non-energetic threat. The system shall include a minimum of two orthogonal detection techniques for within system validation of results. Combination FTIR-Raman systems are not sought at this time.

The system operation shall function independent of bulk material color (light or dark) or consistency (paste or powder). The proposed system shall provide determination within 1 minute and shall have the minimum detection capabilities as similar existing commercial-off-the-shelf (COTS) units (currently, a combination of COTS Raman and FTIR systems are in use). The system shall detect military and commercial explosives, black powder, and inorganic HME threats such as nitrates, chlorates, perchlorates, and permanganates.

The system shall be environmentally hardened for operation in severe environmental conditions such as temperature ranges of -20 to 140 degrees F and humidity levels from 20 up to 95 percent. The system shall operate from battery power (minimum operation time on battery power of 8 hours) or alternating current power worldwide. Total handheld system weight should not exceed 10 pounds. Proposals shall state estimated end unit price. The system has a maximum target price of \$60,000 (objective) and \$100,000 (threshold).

All proposals shall utilize a phased approach to ensure that several go/no-go points exist along the development pathway.

R3763 AUTOMATED FINGERPRINTING SOLUTION FOR IDENTIFICATION OF DECEASED PERSONS

Fingerprinting the dead and the living are different. For the deceased, the recording medium is manipulated against the person. For the living, the person is manipulated against the recording medium. Current devices are designed for the living. A solution shall be created for fingerprint acquisition from deceased persons

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in a CBRNE environment with the operator wearing protective clothing, gloves, and a mask.

The following specific capabilities are required:

- Mobile, wireless, portable, and handheld;
- Ability to operate in various environmental conditions (impact resistance, ability to decontaminate, etc.);
- Captures images at 500-1000 dpi;
- Curved surface scanner (similar to fingerprint spoon) or 3-D scan capture;
- Captures both rolled and flat fingerprints;
- Green/red light for acceptable/unacceptable image capture;
- Viewable real-time capture screen adapter available; and
- ANSI-NIST ITL 1-2011 (http://www.nist.gov/customcf/get_pdf.cfm?pub_id=910136) and FBI EBTS v9.4 (<https://www.fbi Biospecs.org/ebts.html>) compliant.

R3764 ENERGY EFFICIENT TECHNOLOGIES FOR EXPEDITIONARY SHELTERS

Develop new or improved energy efficient technologies, or advance to fieldable prototype emerging technological capabilities pertaining to enhancing the energy efficiency of expeditionary shelters (rigid and soft wall). Technologies for insulation, heating, and lighting systems for deployed military forces that improve the energy efficiency of the shelters are sought. Advanced capabilities beyond those currently available from government or commercial production are sought. Solutions shall be able to be incorporated into existing shelters without being weight or cost prohibitive.

The government seeks advanced development of rigid and soft wall shelter technologies pertaining to energy efficiency (shelters, composites, liners, lights, heaters). Shelters and materials shall be Berry compliant. Areas of particular interest include:

- Energy efficient technologies that reduce the logistical footprint and provide lighter weight, modular shelter systems, and ancillary equipment for all combat missions;
- Innovative shelter materials/liners for rigid and soft wall shelters;
- Improved environmental insulation performance per pound of material for soft and rigid wall

shelters reducing shelter weight and transport burden with no more than 10 percent increase in cost over current shelter systems; and

- Advanced lightweight reliable environmental control equipment.

R3767 CB PROTECTIVE SOCK/LINER SYSTEM

Develop a next generation CB protective sock/liner system that provides NFPA 1994, Class 3 (<http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1994&cookie%5Ftest=1>) protection while worn under normal combat/tactical footwear. The sock/liner system shall be capable of being worn unobtrusively and provide enhanced comfort compared to current sock/liners, such as the Integrated Footwear System. The sock/liner system shall provide extended mission tailored percutaneous protection from exposure to the harmful effects of all traditional CB warfare agents and the toxic industrial chemicals listed in NFPA 1994 and be capable of integrating with a variety of protective ensembles. The sock/liner system design shall not interfere with the performance of routine and emergency mission duties. The material solution shall be capable of operating in temperature and humidity extremes and be capable of withstanding salt spray, seawater, rain, sand, dust, sweat, oil, common over-the-counter foot care medications, and other contaminants. Sizes shall support the 95th percentile of the male and female operational populations.

The storage life of the component shall be a minimum of two years when stored according to manufacturers' requirements (desired storage conditions: 55F-95F; 20-99 percent RH, and no exposure to direct sunlight). The component shall be reusable when not contaminated and shall be disposed of after a single contamination event. The sock/liner system shall be launderable for multiple cycles to support continued operations.

R3768 SMALL UNIT WATER PURIFIER

Current defense missions require operations in remote, austere environments lacking safe water supplies for basic consumptive and hygiene use. Existing bulk water treatment systems are too large, power intensive, and require specially trained operators. By contrast, individual water purifiers (IWP) produce enough water to supply the individual war fighter for several weeks but are not designed for extended use. Currently, war fighters are using IWPs far beyond their intended capacity and have requested larger systems. The need for a treatment system between individual and bulk use, termed small

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unit water purifiers, is an identified gap within the DoD. The system shall be designed to reduce the resupply of bottled water and the currently fielded individual water purifier. The resultant water shall meet TB MED 577, Sanitary Control and Surveillance of Field Water Supplies.

System requirements shall include:

- Modular, compact (foot-locker-sized) system that could be easily transported by man or animal at < 200 lbs;
- Preferably gravity fed, that can produce enough water to support 500 L/day;
- Provision for disinfection and water storage;
- Low maintenance and consumable requirements for operation by a medic who would have training on the system prior to deployment;
- Limited analytical testing equipment to provide confidence in water quality produced; and
- From a logistics standpoint, the system requires periodic consumables and interoperability with available power sources, if required.

R3769 WEARABLE DETECT-TO-WARN CHEMICAL/RADIOLOGICAL SENSOR SYSTEM

Emergency response personnel, specifically those in maritime operations, operate from open vessels exposed to all environmental conditions in potentially hazardous environments and may encounter a variety of chemically related threats ranging from confined spaces with limited oxygen, spaces with explosive/flammable atmospheres, working in close proximity to vessels/waterfront facilities with accidental or intentional release of toxic industrial chemicals, exposure to chemical warfare agents, and radiological/nuclear threats. Being aware of these hazards is critical to ensuring both the safety of the operational personnel and the population that they protect.

A harsh environment, wearable Detect-To-Warn device for multiple threats including: low oxygen, explosive/flammable atmospheres, TICs, CWAs, and neutron/gamma radiation is sought. The table on the following page defines the key parameters necessary for the proposed solutions.

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Capability	Objective	Threshold
Oxygen Concentrations	0 – 30% range with 0.1% resolution	
Explosive Limits	1 – 100% LEL with 1% resolution	
Toxic Industrial Chemicals (TICs)	Time Weighted Average (PEL/ TWA)	Immediately Dangerous to Life and Health (IDLH)
Chemical Warfare Agents (CWAs)	10% IDLH	IDLH
Gamma Radiation	0.01 - 30 μ Sv/ hour	0.1 - 30 μ Sv/ hour
Neutron Radiation	Required	Not required
Weight	< 1.0 lb	< 1.5 lb
Volume	< 36 in ³	< 52 in ³
Cost (Initial/Annual)	< \$2k / \$100 (5% of initial cost)	< \$4k / \$400 (10% of initial cost)
Continuous Operation	> 12 hrs	> 8 hrs
Lifetime Operation	> 408 hrs	> 175 hrs
Power (Commercial Batteries)	Non-Rechargeable	Non-Rechargeable
Intrinsically Safe	Required	Preferred
Water Resistant/ Ruggedized	Yes	Yes
Built-In/Self Calibration	Yes	Yes

R3770 EXPLOSIVES DETECTION TRAINING

Design and develop a modular training package for explosive trace detection technologies. The offeror shall conduct front end and training needs analyses to determine performance gaps and analyze the training needs, audience, job tasks, environment, content, and determine the most suitable presentation format. The training shall be developed for both initial and sustainment training purposes. Content shall focus on the basic science of explosive detection technology and shall include set up, hazards, maintenance, and common troubleshooting techniques and solutions. The training package shall highlight the capabilities and limitations of the equipment chosen by end users for inclusion in the training. The training package should incorporate

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illustrations, graphics, and photographs as the majority of the information, with minimal text, in support of the educational concepts. The training package shall be capable of being delivered in a computer-based training format, with availability to expand to other media. The resultant training package shall use a tiered approach, as it shall be applicable to end users from a variety of agencies with a broad array of expertise, including but not limited to: users, managers, and maintenance level personnel. All information shall be unclassified, and the government shall retain all rights and licenses to the information and delivered products. Training packages shall be delivered as a part of this effort in CD/DVD format.

Solutions are sought that are instrument agnostic, thereby focusing on the technology and not a specific product.

R3771 CONFIGURABLE PORTABLE CBR GLOVE BOX

A need exists for an economical collapsible portable glove box (PGB) having configurable service ports for screening unknown materials for hazardous properties. Unknown materials suspected to be biological threat agents are first screened in the field for the presence of explosive, radioactive, and volatile organic compound (VOC) properties before submission to a laboratory. Some circumstances require that screening be conducted inside a PGB using instruments on the outside.

The PGB currently in use cannot be adapted to different instruments. It has only a single small port used for VOC screening via a gas meter. Radioactive screening is conducted through the PVC wall of the PGB and is therefore limited to detecting beta and gamma particles. The PGB also lacks a means to remove air to facilitate collapse and transport.

PGB utility and versatility may be enhanced with the ability for the user to 1) place service ports of different sizes and types at desired locations; 2) detect alpha particles from outside without release of particulates; and 3) collapse the device through a high flow-through filter.

The PGB shall meet the following general requirements:

- Made of a pliable puncture-resistant plastic with a lightweight support frame;
- Contain glove ports with attached butyl gloves;
- Have a sealed sliding zipper (e.g., gas and water tight) with an easy-to-grasp pull tab;
- Allow for user-installable panel mount ports

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for connectors, valves, filters, and detection attachments;

- Have hole punches sized for add-on service ports and have safety caps for unused service ports; and
- Have a radiation-permeable (alpha particle) membrane with panel mount wall port.

In addition, proposals shall include concepts for the following:

- Filter ports – design user-added or built in panel-mount fittings for COTS particulate vapor filters;
- Tubing ports – design user-added panel-mount tubing ports that maintain seal and are compatible with standard connector sizes, or modify COTS panel mount couplings to specification. Design hole punches of appropriate sizes; and
- Alpha-permeable membrane and mount – identify candidate membranes permeable to alpha particles but not particles 1 micron or larger (e.g., ultra thin mica, track-etched membranes). Test for alpha permeability and quantify flux degradation at detector. Design membrane frame and panel-mount port (mount may be built in, but membrane shall be installed at time of use). Define parameters for use (sample distance, probe distance, limits of detection, etc.). Permeability of membrane to alpha particles shall be verified and quantified. Membranes shall be installable at time of use to avoid damage.

R000 CBRNE FY14 UNSPECIFIED REQUIREMENT

Develop new or improved technologies or emerging technological capabilities pertaining to Chemical, Biological, Radiological, Nuclear and Explosives (CBRNE) that may be of interest to the CTTSO but were not specifically requested in this BAA and are not commercially available. Future interests shall be timely, relevant, and further worldwide combating terrorism efforts.

The government seeks concepts in the seven CBRNE focus areas: threat characterization and attribution; consequence management; information resources; protection; trace detection; bulk detection; and proximity and standoff detection. Areas of particular interest include:

- Personal protective equipment, including next generation materials;

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- Methods for chemical and biological material attribution;
- Decision support tools for evidence-based CBRNE response;
- Biological detection systems utilizing orthogonal approaches; and
- Mobile learning and performance support applications (apps) for CBRNE response.

Medical applications (vaccines, pharmaceuticals, clinical diagnostics, and syndromic surveillance systems) will not be considered. These areas and other areas that do not directly relate to CBRNE will be rejected without consideration or comment.

Unspecified requirements are for proposing unique innovations that have not yet been identified by the CTTSO. Submissions against a particular subgroup's unspecified requirement should be relevant to that subgroup's mission. The CTTSO does not budget for unspecified requirements. If the evaluation team determines that an unspecified requirement submission is promising enough to merit pursuing, funds will be identified at that point. Because proposed technologies from the unspecified requirements will be competing against proposed technologies for identified and prioritized interagency requirements, the CTTSO may not be able to make any awards against the unspecified requirements.

PERSONNEL PROTECTION (PP)

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R3749 ALTERNATIVE FUEL VEHICLE AND GAS EFFICIENT VEHICLE ASSESSMENT

Develop a computer model, which is supported by test and evaluation, of the performance characteristics of alternative fuel vehicles and gasoline engine vehicles that are used in law enforcement. The goal is to analyze a vehicle's handling capability in emergency operations. As the automotive industry moves more aggressively to predominantly manufacturing lighter weight and alternative fuel vehicles (AFVs) (e.g., hybrid/electric), administration officials are looking to increase the use of these environmentally friendly vehicles in motor vehicle fleets. Extensive testing to evaluate maneuverability and performance in a protective operation/law enforcement capacity on select AFVs is required to provide the government with a better understanding of the AFVs' capabilities. Computer modeling, side-by-side performance, and maneuverability testing of AFVs versus gasoline engine vehicles will identify variances in vehicle capabilities and safety limitations that could be of concern when using AFVs in emergency operations. Having the available computer modeling and comparison data will enable the government to accurately determine the reasonableness of using AFVs in operations and make an informative selection of the available models. In this requirement, AFVs and gasoline engine vehicles shall be tested to include domestic model year 2014, four door, four passenger sedans, and seven passenger sport utility vehicles (SUVs) that are commonly used in government motorcades and law enforcement operations. Specific vehicles of interest will be shared at the White Paper phase of this solicitation. Computer modeling of each vehicle shall include armored and unarmored configurations to identify potential risks associated with items such as undercarriage, suspension, center of gravity, weight, and dimensions of the vehicle while performing emergency tactical driving maneuvers. Each vehicle shall then undergo drive testing, which shall include escape, evade, tactical, emergency response, and pursuit maneuvers that are to be performed by a certified and trained emergency vehicle operator proficient in executing the driving maneuvers. Data collected during testing shall provide a performance baseline using the gasoline vehicles; an assessment of the electronics including the wiring diagram/electric circuitry for the AFVs that identifies any potential issues with the electrical system, as well as an analysis of performance, handling, and any limitations or safety concerns. All vehicles shall undergo the same testing during this effort. All computer

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modeling and test data gathered during this effort shall be compiled and organized into a detailed informative evaluation report and delivered to the government.

R3750 GRAPHICS PROCESSING UNIT (GPU) MAP

Current geospatial display solutions are either expensive or difficult to implement because of massive storage space and infrastructure demands, as well as burdensome licensing fees. This requirement develops a software application that provides real-time generation of accurate worldwide street map data to deployed end users who operate in bandwidth constrained environments with little to no data storage capacity. Although mapping software currently exists on the market, it is very expensive and requires constant refreshing. This new software application will eliminate that problem and reduce the cost.

The offeror shall develop three cooperating software solutions to accelerate its usage of open-source, freely available worldwide street map data in bandwidth-constrained environments. The solution shall explore a community-releasable option, thus promoting low-cost geospatial options to federal and state governments.

The first solution shall develop a hardware-accelerated, Open Graphics Library (OpenGL)-based software library to render OpenStreetMap image tiles in real time. This software library shall be able to quickly locate the requested geospatial data from a local file using an optimized binary data structure, render multiple tile sizes and geospatial projections, and customize all rendering through style sheets. The library shall provide software calls for integration into popular open-source Web mapping software such as Geoserver or Mapserver, as well as software calls suitable for desktop display applications. The library shall be optimized for both 32-bit and 64-bit Intel processors on both Windows and Linux. All methods of the library shall be exposed, documented, and provided to the government.

The second solution shall develop utilities to convert OpenStreetMap data from Protocol Buffer (PBF) or OSM XML format into a file-based, search-optimized binary data structure suitable for fast searching by the rendering library. The utilities shall be multithreaded and allow for fast conversion of entire world files as well as incremental updates for specific geographical areas into the optimized binary file. This optimized binary file shall be as space-efficient and time-efficient as PBF or greater.

The third solution shall develop a desktop display

application using the software library to provide a worldwide, pan-zoomable display. The application shall also provide secure interface for accepting personnel tracking or other tracking position messages and add/update those messages graphically on a dynamic overlay.

Deliverables shall include all software and source code with unlimited rights for the government.

R3751 THREE-DIMENSIONAL PERSONNEL TRACKING

A need for the capability to reliably track operating personnel in a three-dimensional environment remains. This capability will provide incident response commanders with real-time geospatial situational awareness of deployed assets during an operation in a high-rise building.

The required solution shall provide the capability to locate a person within 9 feet (threshold) and 3 feet (objective), in all three dimensions, within a typical interior high-rise building environment. The solution shall have an operating range of 1,000 feet (threshold), 3,000 feet (objective). The solution shall weigh no more than 5 ounces (threshold), 2.5 ounces (objective), and have a volume of less than 9 cubic inches. The solution shall be heat and water resistant and not affect the operator's ability to perform the mission. The solution's performance shall not depend on any preparation to the building/environment. The solution shall be battery operated and able to sustain operations for 8 hours (threshold) 12 hours (objective) without need for external shore power. The device shall be rechargeable with the use of shore power.

The solution shall include a standalone custom device that is cellular-enabled. Additionally, a cellular phone application solution shall be included. In the case of the cellular phone application, the device shall continue to operate while the cellular phone is in sleep or standby mode. The system shall be capable of operating on both commercial and non-commercial (user-defined) 4G LTE networks. No form of 802.xx shall be used. The solution shall be encrypted at AES 256 or higher. Device configuration and communication shall be open to the government and in a non-proprietary format.

The solution shall also include command center software to view operations in real time. The maps shall be user editable with the ability to add and manipulate building floor plans in a quick and easy manner. The solution shall also include a similar monitoring application for phones running Android, iOS, and Blackberry operating systems.

PP NOTES

IDD NOTES

IMPROVISED DEVICE DEFEAT (IDD)

R3753 HORIZONTAL BLADE TRUNK OPENING TOOL

Bomb squads require a tool for remotely opening automobile trunks, regardless of whether the trunk latch is offset from center to an unknown position. The tool shall feature a horizontally deployed blade, aligned with the trunk lid bottom edge that, when actuated, will sever the trunk latch, wherever it may be positioned. Explosively driven actuation of the blade is acceptable but not required. If explosively driven, the explosive charge shall be hand-packable by the operator using explosives commonly carried on the bomb squad's response vehicle. The blade shall be capable of dealing with most, if not all, trunk configurations, including those in newer models that have tight seals and overhanging edges. It is desired that the tool exhibit little or no additional penetration into the trunk after severing the latch. The tool shall be capable of both manual and robotic deployment.

R3754 WINDSHIELD-MOUNTED VBIED DISRUPTION TOOL

Bomb squads require a windshield-mounted VBIED disruption tool that can provide explosively driven disruption forces through the windshield and into the interior of a suspect vehicle, disrupting the circuit components of the IED within the vehicle. The tool shall be capable of manual and robotic deployment. The tool shall provide disruption to critical IED circuit components located under the driver/passenger seats, the foot well, the glove box, and under the dashboard. The explosive load for this tool shall be a type that is available to bomb squads, such as C-4 or sheet explosives, and the loading of the explosives into the tool shall be done by the bomb squad, in order to avoid handling and shipping classification restrictions. Initiation of the charge within the tool shall be by a standard detonator or by a detonating cord connection to a detonator. The tool shall be designed to minimize collateral damage to vehicles, objects, and structures in close proximity to the target vehicle.

R3755 MANUAL ENTRY MULTI-METER

Develop a handheld manual entry multi-meter to be used for diagnostics on detonators, mechanical switches, and electromechanical switches. The meter shall have

auto-adjust scales and three functions: DC voltage, DC current, and continuity test. The DC current options shall allow for an in-line measurement and for indirect measurement via an integral current clamp. The current clamp shall have its own connector and lock into the meter. Current clamp measurements shall automatically read out in units of milliamps (mA) and have a range and resolution appropriate for wire diagnostics. In addition, the in-line current meter and voltage meter shall have minimum values and resolution appropriate for hand entry wire diagnostics. The input impedance shall be at least 10 times what is available on commercial multi-meters. The multi-meter and probes shall be rated at CAT II or higher with a voltage rating of 1000V. The continuity tester read-out in ohms shall exceed the safety standard for a blaster's ohmmeter (maximum test current <1 mA). The multi-meter shall have a backlight option, and the read-out shall clearly show the setting. The tool shall include probes optimized for taking DC voltage and in-line current measurements through the insulation of detonator leg wires. The probes shall have a mechanism to lock down on a wire and be color coded. The probes and current clamp shall be able to fit into a 1 inch diameter hole, be externally insulated, and have an option to hook onto a wire extending 12 inches into a target. The probes need to be tested to ensure continuity during render safe operations. The multi-meter terminals shall be color coded, and the current terminal shall be shielded such that the operator has to manually remove the shield before use. The multi-meter shall alert the operator when the probes are incorrectly connected for a particular setting. The multi-meter shall provide threshold alerts based on meter readings and have programmable options for alarms (vibration, visual, and audible).

R3756 HEADS-UP DISPLAY (HUD) FOR BOMB SUIT HELMET

Develop a heads-up display (HUD) capability for bomb suit helmets. The HUD shall have the ability to be turned on and off on command and display specified bomb suit information (battery life, fan speed, etc.). The HUD shall not interfere with the ability to use a self-contained breathing apparatus (SCBA) system. When used in conjunction with an SCBA, the HUD shall display specified life support information (bottle pressure, air consumption, air time remaining, etc.). Desirable functions include an expandable system for additional information of potential use to the bomb technician, such as bio-sensor generated vital statistics of the user and information from external sensors such as chemical, biological, and radiological sensing equipment. The HUD

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shall be compatible with all current generation bomb suits, independent of the manufacturer. It is desirable that the HUD have the ability to retrofit to older bomb suits, as well as be adaptable to emerging bomb suit designs. When the HUD data is displayed on the bomb suit helmet visor, it shall not interfere with the bomb technician's view, and the data shall remain legible should the visor become fogged. The HUD shall not in any way reduce the level of physical protection provided by the bomb suit or helmet.

EXPLOSIVE ORDNANCE DISPOSAL/LOW-INTENSITY CONFLICT (EOD/LIC)

R3757 TACTICAL COLLAPSIBLE CHARGE CONTAINER

Develop an expandable soft plastic explosive charge container that can be prepared for use by an operator in two minutes or less for wide scope EOD and/or demolition applications. The item material shall be soft plastic but may incorporate hard components. The item shall have a minimum jet velocity of 4,000 fps using C-4 or minimum 6,000 fps using C-8. The item volume requirement is 8-10 oz. of liquid or gel, preferably water. Minimum of two collapsed charge container kits shall fit inside a standard M16 ammo pouch. The item shall be inflatable by the user to enable volume fill to be poured in. The item shall not permanently deform during pre-use storage and shall take and hold shape after filling without leaking. The container requires an adaptor port for standard initiators and a fill port for water or other fill material (e.g., gel, other liquids, etc.). Item shall not require any special nozzle for filling. An inexpensive, one-time use, bendable stand is required as part of the charge container kit.

R3758 METALS IDENTIFICATION IN EXPLOSIVES

EOD personnel require the capability to readily identify metallic compounds and materials in suspect homemade explosive and conventional high explosive mixtures. Identification of explosives under field conditions is currently used to make tactical decisions with regard to safety, as well as the selection of tools and procedures for rendering safe and disposing of suspected bulk explosives. Many commercial bulk explosives and homemade explosives are mixed with metal flakes or powder in order to enhance their explosive effects. These metallic enhancements cannot be detected by currently fielded tools that utilize Raman and Fourier Transform Infrared (FTIR) technologies. Failure to identify metallic thermobaric enhancements may result in underestimation of safe standoff distances for hazardous blast and fragmentation. The Metals Identification in Explosives tool shall be capable of taking a sample size of 500 mm³ and processing and analyzing the substance within 5 minutes. The tool, in its operational configuration, shall not exceed 5 lbs in weight or exceed a volume of 150 cubic inches, with no dimension exceeding

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EOD/LIC NOTES

10 inches in the xyz planes. It shall operate on readily available commercial batteries (Alkaline-AA, 9 volt, 3V Lithium 123A, etc.) used by the military and be capable of hot swapping batteries without loss of data. The tool shall meet MIL-STD-810 requirements for ruggedness and durability.

R3759 HYDRAULIC ROBOTIC ARM SYSTEM

Develop a hydraulically-actuated platform independent arm system for robotic platforms. The arm shall have all hydraulic systems (pump, fluid reservoir, etc.) self-contained and built in to the system. The system shall operate on multiple power sources, including 12-24 VDC and 110-240 VAC. The system shall be capable of lifting 100 lbs close to the shoulder and a minimum of 25 lbs throughout the arm travel area. The system shall be Joint Architecture for Unmanned Systems compliant. Overall system weight including arm, hydraulic systems, and mounting base shall not exceed 60 lbs total weight. Hydraulic supply lines shall be contained within the arm structure. The end of the arm shall have a hydraulic output that enables hydraulically-actuated tools to be installed as end effectors.

R3760 REMOTE FUZE REMOVAL SYSTEM

Develop a mechanical remote fuze removal system. The system shall be robotic platform independent and have the ability to be operated remotely or as a standalone system for manual employment. The system shall operate on common batteries (BB2590 series, etc.) and include a low-battery display to indicate when the system has insufficient power to complete additional fuze removals. The system shall not use energetics in its functioning. The system shall be capable of clamping to pipes, end caps, fuzes, projectiles, rockets, and bombs with diameters ranging from 1 inch to 14 inches. The system shall be able to clamp two different-sized items at once, such as the body of an ordnance item and its fuze, which are generally of two different diameters. The system shall be able to unthread items that may be damaged or that may have thread-locking compound in the threads. The overall weight of the down range system element shall not exceed 25 lbs.

TRAINING TECHNOLOGY DEVELOPMENT (TTD)

TTD NOTES

TTD R3746 INTEGRATION OF THE COMMON DATABASE IN A GAME ENGINE

Design and develop an interface for commercial game engines and the Simulation Interoperability Standards Organization (SISO) Common Database (CDB) Shared Public Specification. The U.S. government has implemented several prototype simulation systems that have used various game engines with each requiring unique and proprietary 3-D virtual databases. Currently, the U.S. government has hundreds of terabytes of geo-specific correlated data layers in industry standard formats (such as Geo-TIFF, shape files, and OpenFlight), organized in a global data structure that can be published at run-time (with a refresh rate of 60Hz), or compiled into a proprietary run-time format by a modeling system. The U.S. government data is formatted in the SISO CDB Shared Public Specification.

The offeror shall design and develop an interface for a commercial gaming engine that can run the CDB data natively (i.e., without compiling it into a different format), or through on-the-fly processing that publishes CDB data into the internal game engine format. The offeror shall clearly identify which game engine(s) they propose using. The game engine shall have the following characteristics:

- Ability to simulate air, ground, and maritime environments, including surface and subsurface for ground and maritime;
- Ability to switch between runtime and modeling modes without the need to recompile (i.e., edits shall feed back into the CDB format). This ability shall enable a user, instructor, or scenario developer to stop a simulation, make adjustments to terrain, weather, lighting, ballistics, Artificial Intelligence behaviors, and so on, then switch back to a runtime mode without having to recompile or publish;
- Accurate, embedded physics modeling of materials, blast effects, ballistics, weather, trafficability, etc.;
- Embedded Artificial Intelligence;
- Integrated database and scenario editing tools rather than two separate applications;
- Ability to page in data (i.e., drop unneeded data from memory as it loads in new data while

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moving through the 3-D space) as the simulation moves through the geographic database, in order to operate without a predefined geographic database extent;

- Embedded ephemeris model representing the placement and movement of the sun, moon, and planets and how they affect illumination and continuous time of day heat indexing;
- Embedded thermal modeling;
- Embedded weather modeling with accumulation effects;
- Ability to use data that is geo-referenced in the World Geodetic Survey - 1984 (WGS-84) spherical model without introducing convergence errors;
- “Massive Multiplayer Online Gaming” with at least 500 participants;
- Real-time conformal terrain (i.e., an explosive charge used to breach a wall causes an explosion that creates a crater in the ground next to the wall, and the hole, rubble, and crater will appear in the other simulation clients); and
- Capable of interfacing with Distributive Interactive Simulation and High Level Architecture gateways.

In the case that an offeror proposes the integration of a game engine that is missing one or more of these characteristics, the proposal shall include the cost of modification of the game engine to meet all of the stipulated characteristics.

A successful offeror shall have documented experience in the development and use of geo-specific 3-D databases and development and/or integration of commercial game engines. Upon completion of the project, the offeror shall provide:

- The development and/or integration of CDB in the game engine;
- Any modifications to the game engine to provide the required characteristics;
- Demonstration of the required integration using government furnished CDB data sets; and
- Delivery of the code developed for this project. In addition to providing all hardware purchased under this effort, the offeror shall deliver 10 licenses for the game engine and any other COTS software used in the development and demonstration of this project.

RO00 TTD FY14 UNSPECIFIED REQUIREMENT

Develop training technologies and human performance improvement solutions to increase mission readiness and enhance the operational capabilities of all elements, to include both military and civilian communities involved in combating terrorism. The technologies shall provide valuable and innovative approaches to enhancing knowledge, skills, and abilities to deter, defeat, prevent, protect, mitigate, and respond to terrorist threats. This includes the development of new or improved training technologies, performance support capabilities, computer-based training courses, programs of instruction on new concepts, training delivery architectures, training aids, devices, and simulations. The proposed training and/or performance improvement technologies shall support the life cycle of research and development to include: analysis, research, design, development, implementation, evaluation, verification and validation testing, and technology transition.

All submissions shall identify the anticipated end user and/or supporting organization, along with points of contact or coordination that has been done to vet the requirement. This end user point of contact information should be placed in the bottom right quadrant of the quad chart submission. Areas of interest include, but are not limited to:

- Training and human performance technologies focused on the AFRICOM AOR, the PACOM AOR, and the Southwest Border;
- Training technologies used in support of allies, coalition, and/or host nation partners;
- Mobile learning and performance support applications (apps) for operational users (military in theater (any/all AORs) and/or federal law enforcement and protective services domestically and internationally);
- Advanced performance support capabilities to include augmented reality; and
- Analysis, research, and/or evaluation of training technology.

Unspecified requirements are for proposing unique innovations that have not yet been identified by the CTTSO. If the CTTSO evaluators determine an unspecified requirement submission is sufficiently promising to merit pursuing, funds may be identified at that point. Because proposed technologies from the unspecified requirements will be competing against proposed technologies for identified and prioritized interagency requirements, the CTTSO may not make any awards

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against the unspecified requirements. Proposed technologies, models, architectures, software, hardware, tools, and other applications not directed toward a training need are not desired and will be rejected without consideration or comment.

INVESTIGATIVE SUPPORT AND FORENSICS (ISF)

ISF NOTES

R3716 LINGUISTIC ANALYSIS FOR CREDIBILITY ASSESSMENT AND INTENT

This requirement involves facilitating interdisciplinary information and data sharing as well as advanced research to improve empirical understanding of and develop advanced methods for the linguistic analysis for credibility assessment and intent. This involves establishing an international network of researchers and practitioners willing to contribute to a large-scale data repository on linguistic indicators of deception. The repository shall provide a strong evidence base on which to evaluate the effectiveness of language indicators of deception. It will also provide a benchmark against which to evaluate other techniques (e.g., whether a particular interview approach improves the indicator accuracy or how things differ across cultures). Within this arrangement, academic researchers would be free to develop and refine their own tools and techniques and share these results with other parties.

This may include, but is not limited to an assessment tool developed by the UK Centre for the Protection of National Infrastructure, entitled D-Cast, or other tools in U.S. federal government use. Any assessment tool to be evaluated shall use linguistic cues to identify instances of fabrication in a suspect's statement and examine the text of interest for critical words and phrases that have been shown to correlate with fabrication.

The context for use of these advanced methods is in non-time-critical protective security and investigative cases (e.g., threat assessment). A considerable amount of data have since been collected in both the UK and the U.S., such that it is now possible to improve the validity of assessment tools by re-computing the algorithms. This requirement provides for the exchange of these data and the development of more refined algorithms addressing a broader range of deceptive communications. These include fabrications relating to past activities, attitudes and future intentions, whether in written statements, transcribed, or spoken conversation (e.g., an investigative interview). The proposed work shall allow researchers to test a variety of text analytic tools.

This requirement involves the following activities:

- Establishment of an international network of researchers and practitioners willing to contribute to a large-scale data repository and analyze this

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data to derive algorithms for pertinent linguistic credibility assessment tools;

- Refine the algorithms, language dictionaries, and speech recognition focus of the new software of the pertinent linguistic analysis credibility assessment tools to maximize effectiveness; and
- Extend the existing linguistic analysis credibility assessment tools and/or systems so that users can employ purpose built dictionaries and define their own algorithms.

R3732 FORENSIC MICROBIAL PROTEOMICS ASSESSMENT AND DEVELOPMENT

Assess and develop an effective forensic microbial proteomic methodology for microbial samples that can be validated scientifically and transitioned later to the microbial forensic user community. The effort shall emphasize the identification, analysis, and characterization of pathogens of interest and aid in source attribution.

The base effort shall be completed in 12 months. Additional phases may be later options. The base effort shall use one or more existing analytic platforms that is or could be available to most well equipped laboratories. New platforms, equipment, or instrument development is not part of this effort. The effectiveness of the methodology shall be demonstrated on at least three isolates each of at least one spore-forming and one non-spore-forming select agent bacterium or acceptable surrogate.

The effort shall address and analyze the following subjects:

- The additional information, if any, forensic proteomics may provide beyond what is provided by genomic characterization and comparison and the way this information can be acquired;
- The best protein markers that can be used to maximize forensic information for characterization and comparison of microbial samples from known and questioned sources;
- The stability and variation across the bacterial kingdom of the optimal forensic protein markers and the process by which it occurs;
- The stability and variation of proteomic analysis across generations of microbial reproductions under standard culture conditions through 100 generations;
- The effects of altering culture conditions,

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particularly temperature and growth media, on the results and interpretation of forensic proteomic analysis, and the predictability of these effects and their value in forensic analysis;

- The best and most appropriate terminology and verbiage for reporting forensic proteomic results;
- The best validated method for determining statistical confidence of forensic proteomic analysis; and
- The most efficient set of experiments that would validate and transition the developed methods to operational use and the timeline to accomplish it.

The analysis, assessment, and developed methodology shall adhere to forensic principles and applications that can support law enforcement, criminal investigation, and intelligence activities and operations.

R3733 ADVANCED DIGITAL AUTOMOTIVE IMAGE SYSTEM

Update the most recent version of the Digital Automotive Image System (DAIS version 2.2 January 23, 2012) with all new makes and models of cars manufactured since the completion of Version 2.2 and with any makes and models since 2000 not included in it. The updated version shall also be on a DVD and shall have the same capabilities as the Version 2.2.

DAIS Version 2.2 is a database of images of automobile makes and models and includes some of their descriptive technical data. The developer shall be responsible for acquiring all required images and technical information. The new version shall provide the capability of easily downloading the entire DAIS database and all its capabilities from the DVD to another PC, laptop, and server. The new version of DAIS shall be recorded on a single DVD and fully operate on commonly used PCs and laptops using Windows XP or later. The contractor shall be able to produce approximately 20,000 DVDs and distribute them to various law enforcement and federal agencies as directed by the Federal Bureau of Investigation.

Each make and model shall have at least three images, a front view, side view, and rear view, in the same format and resolution as version 2.2. These images shall be incorporated into the system so every image can function with all of the capabilities described in this requirement.

The following are the features and capabilities of the present DAIS version and shall be included on the DVD for the end users:

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- The capability to search by one or any combination of the following criteria: (a) manufacturer; (b) year of manufacture; (c) model; (d) class and subclass, e.g. compact, mid-size, full size; (e) type, e.g. passenger car, minivan, sports car, sport utility vehicle (SUV), truck, station wagon, van, or other types to be named later; (f) number/type of doors, e.g. 2-door, 4-door, hatchback; and (g) hardtop or convertible;
- The capability of viewing at least 6 thumbnail-type images simultaneously on the screen. These views shall enlarge to a full-size image 8 inches by 10 inches of 1500 x 1000 pixels, or 150 dpi;
- The ability to download and print images at 150 dpi on 8 inch by 10 inch paper on a high-quality color laser or dye sublimation printers, plus the ability to create "Be On the Look-Out" type posters/flyers with text;
- The capability to store or print search criteria used to do the initial search; and
- The new version shall be easy to operate by high-school graduates.

A copy of the present version of DAIS will be provided to the developer.

R3745 DEVELOPMENT OF DNA METHODOLOGY TO GEO-SOURCE HEROIN

Develop a forensic opium poppy DNA methodology to provide heroin profiling capabilities based on regional specific gene markers. The developed methodology shall include the extraction of DNA from authentic known geographic origin and seized (unknown geographic origin) heroin, opium, or opium poppy samples, amplification, sequencing, data processing and computation, identification and characterization of gene targets, and profiling. Four specific geographic regions for heroin production are targeted: Mexico, South America, Southwest Asia, and Southwest Asia. Authentic samples will be provided for analysis and profiling. Once the profiles with gene targets are developed for each region, they shall be validated successfully with authentic samples (at 95 percent or greater confidence).

The developer shall have an extensive background and experience in the area of bioforensics with selective focus on genetic identity research and in developing and profiling custom genetic markers to identify subpopulations of plants. Prior expertise in the following areas is highly desired: 1) extraction of genetic materials from heroin or opium or opium poppy; 2) identification

of poppy genetic markers that are unique to different geographic regions or poppy subpopulations (varieties); 3) profiling of samples (such as grouping or linking) by employing the genetic markers; 4) advanced next generation sequencing capabilities and an optimized ability to process biological related data to generate an end-to-end sequencing solution; and 5) forensic science and criminalistics methodology. An ISO-17025/9001 or ASCLD/LAB-International or equivalent DNA testing and sequencing accreditation are required at the developer laboratory site. The laboratory design shall have a directional flow to avoid sample contamination. The developer shall have appropriate extraction, amplification, and sequencing instruments with proper calibration and maintenance records. The instruments should perform in accordance with the instrument manufacturer and method validation protocols. The developer shall be able to store and generate information at the DEA sensitive level. Although not classified, this refers to information that requires a certain level of protection from loss or inadvertent or deliberate disclosure, alternation, or destruction and requires protection under the Privacy Act and information not releasable under the Freedom of Information Act.

R3752 NEXT GENERATION REMOTE AUTOMATED PHYSIOLOGICAL ANALYSIS BY THERMAL IMAGING

Develop an advanced version of the present National Center for Credibility Assessment (NCCA) automated remote human response measuring system that uses thermal imaging to assess heat emanations from the facial area. The present system is a non-contact human emotion response system for measuring emotional perspiration, pulse rate, and respiration by using high-resolution thermal images of the face. It is a portable, easy-to-use thermal imaging data collection system with specific physiological response plug-ins that can be updated continually as new algorithms are developed. A copy of this system will be made available to the developer.

The advanced system shall capture and record high-resolution thermal images of the face and be fully compatible with the present system. The advanced system shall further develop the physiological response algorithms using a state-of-the-art thermal camera and shall include head tracking based on the thermal data and automatic calibration with its measurement capabilities. Additionally, the advanced algorithms developed shall provide real-time results, allow for instant recording and immediate playback, give further

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comprehensive analysis at a later time, and thoroughly synchronize the measurement data with itself and with certain events such as when questions are asked and when responses are given. The advanced system shall be a non-contact, portable, easy-to-use system capable of giving military, law enforcement, and security personnel at checkpoints and access control areas the capability to determine the emotional state of individuals in real-time in a passive non-contact manner to assist in evaluating the credibility of subjects. The advanced system will be tested upon completion by NCCA or an NCCA representative under such conditions and scenarios.

RO00 ISF FY14 UNSPECIFIED REQUIREMENT

Develop new, advanced, improved, or emerging technologies or capabilities pertaining to Investigative Support and Forensics that may be of interest to the CTTSO but were not specifically requested in this BAA and are not commercially available. Any proposals shall be timely, relevant, advance worldwide combating terrorism efforts, and may include:

- Computer Investigative and Electronic Evidence
 - More inclusive and technically advanced detection, identification, and extraction of easily perishable or temporary data of computer and automated systems, especially those relating to e-mail traffic, the Internet, LANs, and unauthorized penetration of these systems. Proposals shall be outside the realm of data mining.
 - Faster, more effective, accurate, low-cost methods of voice identification and speaker recognition that significantly advances present technology in this area.
 - Data extraction from non-computer electronic equipment. Any proposed tool or technique shall be able to function in the physical environment in which terrorism occurs and where appropriate be compatible with existing hardware and software platforms.
- General Investigative and Forensic Science Technologies
 - Faster, more reliable, more widely applicable, more rugged, less costly, or less labor-intensive tools for identification, collection, preservation, or analysis of evidence from crime scenes, especially those involving improvised explosive devices (pre-incident and post-incident), mass casualty crimes, post-incident terrorism scenes,

combat environments, or sensitive sites. This may include advanced technologies to identify, qualify, and quantify post-blast materials and evidence.

- Fast, low-cost methods for analyzing DNA evidence from mixed multiple or contaminated sources. Also of interest are techniques that may be DNA or non-DNA related that efficiently and accurately determine the time that biological evidence has been present at a scene.
- Non-DNA related technology that can identify, individualize, categorize, or compare at the macro, micro, or nano level biological evidence, materials, or organisms for forensic related applications. Especially desired are technologies that can provide knowledge beyond what can be obtained from genomic methods.

Unspecified requirements are for proposing unique innovations that have not yet been identified by the CTTSO. The CTTSO does not budget funds toward unspecified requirements. If CTTSO evaluators determine an unspecified requirement submission is sufficiently promising to merit pursuing, funds will be identified at that point. Since proposed technologies from the unspecified requirements will be competing against proposed technologies for identified and prioritized interagency requirements, the CTTSO may not make any awards against the unspecified requirements. Proposals shall be non-proprietary. Proposals pertaining to data mining; report writing; data compilation; detection of concealed bombs, explosives, or weapons; intrusion detection or access control; or any strictly physical security measure should not be submitted. These areas are either not desired or are the responsibility of other subgroups or agencies and will be rejected without consideration.

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PHYSICAL SECURITY (PS)

3776 EXPLOSIVE EQUIVALENCY TOOL

Develop a software tool that will guide users through a step-by-step process to run damage equivalency calculations in support of their design and scientific applications. The product will be geared toward engineer and researcher use. The performer will be provided a study as GFI that identifies methodologies to be used in the calculations and how those calculations should be conducted. The objectives of the GFI provided study will identify the characteristics of explosive events that cause damage or injury; research historical tests for comparing the performance of explosives; and evaluate each testing method for applicability for determining explosive performance with regard to the characteristics of explosive events determined by the event causing damage or injury. The methodology for equivalency in the GFI study is composed of five main parameters and explosive conditions, which will need to be linked to an equivalency, such as peak pressure, impulse, brisance, environmental conditions, confinement, etc. The tool's platform will guide the user to the correct parameter for their problem set. The developer will be responsible for data mining based on the methodologies to obtain all available information to feed into the tool. Some reports will be provided as GFI, but the developer will be responsible for the majority of the research. The developer will also provide this bibliography to the government along with the software tool.

Explosive equivalency testing has historically been linked to that of TNT (Trinitrotoluene). However, the methods to calculate that equivalency can vary significantly depending on the methods used to estimate that equivalency. The tool will provide an equivalency related to TNT. It is desirable that the tool also provide an equivalency related to C4. While the tool could be used by law enforcement or military for operational considerations, the intended end user is one that requires it for more technical applications as described above. This effort will develop the software tool to automate these calculations, develop a platform that guides the user to the appropriate methodology for their problem set, and develop an analysis of gaps in data to complete the tool. The software shall be fast-running and compatible with Windows and Apple platforms and accessible via the Web.

R3777 TEMPORARY ANTI-PERSONNEL (TAP) BARRIER SYSTEM

Design or develop a non-lethal personnel barrier system intended for enhanced crowd control applications. The system shall have the ability to deter and delay a violent crowd that may attack the Temporary Anti-Personnel (TAP) Barrier System with locally available implements. This specifically precludes the system being required to defeat battery powered tools. The operational scenario envisions a reusable, "knocked down" (e.g., disassembled) system, comprised of complimentary components that is modular, scalable, and able to be adapted and installed in a variety of environments and terrains. The system shall be mechanically assembled from individual elements by a team of no more than four men employing commercially available hand tools and/or battery powered hand tools. The TAP barrier system shall be capable of resisting lateral force of 100 pounds, applied at 60 inches above grade, along the entire length of the barrier and a point load of 150 pounds of force at 60 inches above grade at any individual location on the system.

Additional requirements include:

- The system shall be capable of being deployed in configurations that include the ability to change direction and/or provide other than strictly linear arrays;
- The system shall have a minimum height of 9 feet, 10 inches;
- The system shall be designed and fabricated to allow all of the individual components to be transported in a traditional ISO in traditional ISO shipping container with opening sized 7 feet and 6 inches wide by 7 feet and 5 inches high;
- The system shall be designed and constructed to hinder members of a hostile crowd from disassembling the TAP System while deployed. The use of tamper resistance or detention based mechanical fasteners represent viable methods of achieving this goal; and
- The weight of the individual components shall be no more than 60 pounds per person for larger elements (e.g., large section carried by four people – max weight 240 pounds).

The TAP Barrier System shall be capable of being augmented with General Purpose Barbed Obstacle Tape.

Project deliverables shall include the demonstration and erection of one 100-foot long segment prototype system for evaluation at a mutually agreeable location.

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TACTICAL OPERATIONS SUPPORT (TOS)

R3734 TACTICAL LONG-RANGE AUDIO INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE (ISR) SYSTEM

Develop a long-range audio intelligence surveillance reconnaissance system to acquire real-time, high fidelity audio information. This precision instrument shall be capable of non-destructive and non-contact vibration measurement of point targets within an area of interest. Currently, laser vibrometer systems have the capability to obtain non-contact vibration measurements of a surface but are very susceptible to atmospheric disturbances. The desired system shall collect data via line of sight throughout indoor and outdoor environments and shall operate in the climactic categories of hot, basic, and cold as defined by Army Regulation 70-38. The system shall be optimized for use at ranges no less than 500 meters (threshold), 1,000 meters (objective). The system shall be able to be transported and deployed in the field as part of either a low-visibility, mounted capability (threshold) or be man-packed (objective) and set up in the field and have a maximum weight of 30 lbs (threshold), 7 lbs (objective). The system shall collect and record data at high enough fidelity for use in legal prosecution. The system shall have an Ingress Protection rating of 65 (threshold), 67 (objective) and be ruggedized against shock and vibration associated with transportation and employment via military and commercial mobility platforms. The system shall operate on power supplies of 12V, 24V, 120V and 240V to include U.S. military standard batteries (e.g., BA-XX90). Batteries shall be hot swappable and have a minimum operation time of 8 hours at threshold weight. Seismic and radar based technologies are not of interest.

R3735 ADVANCED BALLISTIC ENGINE AND RANGEFINDER (SABER)

Develop a weapon mounted rangefinder and ballistic engine to increase the maximum effective range of currently issued combat rifles and machine guns. Tactical operators require an operational environment-calibrated, ballistic engine driven, laser rangefinder to exploit the capabilities of weapons systems and increase combat hit potential out to 600 m with 5.56 mm, 800 m with 7.62 mm, ammunition respectively. The intent of such a weapon-mounted device is that, once an operator acquires his target through his sight, he can push a

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remote pressure switch and instantly see the relevant variables for a firing solution—without taking eyes off the threat. Key variables are: elevation and windage based on the range, density altitude, cant, inclination and weapon and ammo specific trued data. The device shall include an onboard environmental sensor that calculates density altitude: temperature and barometric pressure. The device shall include a cant and Inclination sensor ± 1 degree. The rangefinder laser pulse-train duration shall be $1/100^{\text{th}}$ of a second. The ballistic engine shall be operator adjustable for weapon type, muzzle velocity, ballistic coefficient, sight height over bore, barrel twist rate, bullet weight, and zero range via an onboard menu. The ballistic engine shall operate on the G7 ballistic coefficient. The device shall include a weapon mounted display allowing the shooter to view relevant data from the shooting position. The device shall include a remote, hard-wired (threshold) wireless (objective) display of the same data for a spotter. Device components shall be mountable on a weapon as needed via Picatinny rails. The device shall survive a shock impulse no less than that of the Mk 17 SCAR Heavy. The laser rangefinder shall provide ranges out to 800 m (threshold), 1500 m (objective). The system shall operate for a minimum of 6 hours of continuous use in high power mode (threshold), 24 hours (objective). The system shall accurately provide azimuth to target with an error of no greater than 5 degrees (threshold), 1 degree (objective).

R3736 PERSONAL TACTICAL MICRO MARKER SYSTEM

Develop a discrete, lightweight, low-volume personal tactical micro marker system for identifying tactical operators with no or a very low signature so they can be identified, located, supported, recovered, and reintegrated back into U.S. or friendly control. Tactical operators working in the U.S. and overseas conduct missions in permissive to non-permissive environments where the risk of hostage taking or kidnapping is high. These operators currently lack a discrete means of identifying themselves while under duress or isolated from friendly organizations. Their movement can be either on foot or in commercial vehicle. This device shall not be able to be detected during a cursory (threshold) or detailed (objective) search of the operator's clothing or personal belongings. The device shall have an activation mechanism that the operator can initiate while concealed but that will not be accidentally activated during search, with a battery life of at least 48 hours (threshold), or six periods of 12 hour operation (objective). The device shall be easily disposable if the situation dictates.

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R3737 TACTICAL PLATFORM MARKING KIT

Develop a visibly transparent material capable of being detected with night vision devices (NVDs) for the discrete marking of structures or mobility platforms in operational stride in a variety of tactical environments (dense urban, desert, woodland, etc.). The material shall remain detectable by NVDs for no less than 4 days (threshold), 7 days (objective). The ability to detect the material shall not be degraded by precipitation and shall endure in the climactic categories of hot, basic, and cold as defined by Army Regulation 70-38. The material shall self-adhere and allow for discrete application by an operator via hand emplacement (threshold) or remote emplacement (objective). The material shall be non-toxic. The material shall be detectable at ranges equal to or greater than current COTS Gated Laser Intensifier Tape.

R3738 UNDERWATER VISION ENHANCEMENT (UVE)

Develop an Underwater Vision Enhancement (UVE) device that allows divers to inspect ship hulls, piers, and surface-level maritime structures for explosive devices without the use of visible light. The new device shall be low volume/low profile with a high field of view and interface with current Mk-48 USN mask assembly. The device should minimize the bending of light rays to the diver's eye (e.g., eye of diver looks directly into optics vice through water into optics). Optics may use secondary non-visible diffused light augmentation when no ambient light is available. Optics shall mount onto mask/faceplate (threshold), be integrated internally into the mask/faceplate (objective). Consideration should be given to integration with various commercial mask assemblies by replacement of the commercial faceplate with a compatible faceplate with optics system as a combination. This device shall provide binocular (threshold), monocular (objective) viewing capability; provide Image Intensified (threshold) images, multiple digitally-fused (nighttime true color)(objective) images; allow 24 cm (threshold) close-in inspection, 16 cm (objective) close-in inspection for hull search in turbid water; allow 64 cm (threshold), 96 cm (objective) hull search in clear water; provide 4 m (threshold), 6 m (objective) device recognition in vertical clear water; provide 100 m (threshold), 300 m (objective) range for surface use for detection/scanning; integrate with USN M48 MOD1 FFM (threshold), USN Mk 20 FFM AND M48 MOD1 FFM (objective); weigh less than 1.5 lbs (threshold), 1.25 lbs (objective); run on 2x AA or DL123 batteries (threshold), 1x AA or DL123 batteries (interchangeable) (objective); operate for 6 hours (threshold), 12 hours

(objective) at 22 degrees C; provide a 40 degree x 40 degree (threshold), 80 degree x 160 degree (objective) field of view; operate while immersed in seawater to a depth of 99 (threshold), 300 (objective) feet; and provide mission recording (objective) and/or plug-and-play with current sonar systems capability (objective). Primary method of sonar system's data transfer will be "wireless" (through water) and cabled (threshold), cabled only (objective).

R3740 MARITIME CANISTER LAUNCHED SMALL UNMANNED AERIAL SYSTEM (UAS)

Develop a collapsible wing small UAS integrated with a maritime canister transport and launch capability. Current small tactical UAVs are launched and controlled from land/surface platforms only. This capability shall provide an integrated transport, launch, and control system for use by maritime forces that is STANAG 4586 and 4609 compliant. This system shall deploy a collapsible-wing, battery powered small tactical UAV capable of transmitting ISR data to the host platform via NSA Suite B-secured mobile ad hoc network radio. The canister and control unit shall be sealed and sustain external pressure of 35 PSI (threshold), 105 PSI (objective). The air vehicle shall have an operating time of no less than 45 minutes (threshold), 180 minutes (objective). The air vehicle shall have a stall speed no greater than 20 knots (threshold), 15 knots (objective) and a dash speed of no less than 50 knots (threshold), 60 knots (objective). This control unit shall have a display that can be operated in a waterproof container (threshold) or an inherently waterproof display (objective). This system shall be recoverable for reuse by operators on land after launch and use with minimal refurbishment required for reuse. This air vehicle shall be recoverable at Sea State Three (i.e., land in the water, remain afloat for a minimum of 30 minutes) by the host platform and prepared for reuse with minimal refurbishment (objective). UAVs shall be able to be loaded and carried in a launch canister for a minimum of eight hours (threshold), 96 hours (objective) without degrading performance. UAVs shall be able to withstand launch forces that will propel it to a suitable altitude and speed to attain stable flight in up to 20 (threshold)/30 (objective) knot winds and Sea State Three. UAVs shall be able to vertically launch upward in any orientation while bobbing on the waves.

R3741 SPECIAL WARFARE TECHNICAL SUPPORT

According to ADP 3-05 Special Operations (31 August 2012), Special Warfare is the execution of activities that

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involve a combination of lethal and non-lethal actions taken by a specially trained and educated force that has a deep understanding of cultures and foreign language, proficiency in small unit tactics, and the ability to build and fight alongside indigenous combat formations in permissive, uncertain, or hostile environments. This requirement specifically focuses developing the tactical technologies and capabilities that will enable tactical Special Warfare activities, not operational or strategic policies, programs or capabilities. Provide comprehensive research, development, test and engineering technical support to rapidly create enabling technologies, best practices, and tactics, techniques, and procedures for advanced Special Warfare requirements to counter emerging threats. These capabilities will include tactical communications systems; tactical command and control systems; low-cost tagging, tracking, and locating systems; technical surveillance equipment and capabilities; close target reconnaissance capabilities; intelligence, surveillance, target acquisition and reconnaissance systems; and tactical offensive systems.

R3742 MAN-PORTABLE AERIAL RADAR SYSTEM (MARS)

Develop and deliver a two-man backpackable aerial radar system capable of detecting and tracking (threshold), classifying (objective) low-Radar Cross Section (RCS) objects such as small unmanned aerial systems and manned ultralight aircraft. The system should be capable of detecting and tracking targets with an RCS of no more than 0.5 meters squared at no less than 5 km (threshold), 15 km (objective). The system should scan 360 degrees at full detection range in no more than 20 (threshold), 10 (objective) seconds. The system shall operate on 12V, 24V, 120V, and 240V power sources to include U.S. military standard batteries. The system with all ancillary components (e.g., setup tools, backpacks, power supply, etc.) shall not weigh more than 75 lbs (threshold), 50 lbs (objective). The system shall be able to function in all environments detailed in Army Regulation 70-38 and be fully ruggedized to MIL-STD-810G.

R000 TOS FY14 UNSPECIFIED REQUIREMENT

Develop innovative technologies that enhance the capabilities of DoD 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.

Technologies may include:

- Systems that assist teams in conducting intelligence, surveillance, target acquisition, and reconnaissance missions;
- Specialized access systems that assist operators in gaining rapid access to objectives to conduct an assault or reconnaissance, improve evaluation of tactical options, and support efficiency of operations, while providing force protection;
- Offensive systems that enhance the effectiveness of small offensive tactical teams engaged in specialized operations;
- Communications systems that enhance communication capabilities for operational forces. Emphasize reducing operational load, integrity of communications, and special communications;
- Survivability systems that provide protection from or identification of ballistic, fragmentation, explosive, and thermal threats during the conduct of tactical missions; and
- Unconventional warfare systems that provide innovative solutions for small specialized tactical operations teams conducting a broad spectrum of military and paramilitary operations including counterinsurgency and foreign internal defense missions through, with, or by host nation indigenous forces building partner capacity to support U.S. objectives.

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IRREGULAR WARFARE SUPPORT (IWS)

R3780 MILITARY INFORMATION SUPPORT OPERATIONS (MISO) SUPPORT TO UNCONVENTIONAL WARFARE

This requirement is for innovative materiel and non-materiel solutions to develop and/or enhance MISO forces' capabilities, which are essential to unconventional warfare missions.

Psychological perceptions of legitimacy, both internally and externally, are the most critical vulnerability in unconventional warfare. MISO forces are uniquely suited to delivering inform and influence effects in the human domain in order to shape perceptions and operationally prepare the environment for such missions. MISO forces are critical to managing perceptions in order to fulfill the operational imperative of anticipating and controlling psychological effects. The focus of these efforts should be to research and develop concepts and capabilities and then test and evaluate these concepts and capabilities in order to provide more effective MISO capabilities to the U.S. government. The proposed solutions should consider the following areas, although they are not limited to these areas:

- What MISO capabilities can be used to conduct information preparation of the environment? How can this be enhanced or developed?
- How would one conduct comprehensive analysis of the target audience and identify key influencers?
- How can the strength, intention, and popular support to resistance movements best be assessed?
- What is the most effective approach to shaping the environment for the introduction of U.S. forces via traditional MISO tactics, techniques, and procedures as well as military deception?
- What is the best way to develop inform and influence capabilities of indigenous and exile resistance movements?
- How can the physical and virtual media outlets that might be exploited, disrupted, seized, or destroyed during later phases of a mission be identified?
- How can expanded media operations in the underground and auxiliary be enabled?

- How can resistance movements be emboldened while disrupting and delegitimizing the hostile regime internally and externally?
- How can the newly installed government best be legitimized?
- How can the development of counter-revolutionary movements that may affect U.S. interests be deterred?

RO00 SPECIAL WARFARE RESEARCH AND DEVELOPMENT

This is an open requirement that covers the issue of Special Warfare (see below). The government seeks to conduct research and development in order to enhance U.S. capabilities to build long-term partner nation capabilities critical to deterring, disrupting, and denying sanctuary to our adversaries. This requirement is seeking materiel and non-materiel solutions in the forms of experimentation, modeling, exercises, and collaboration with academia, the interagency, and the Department of Defense to shape and enable special warfare capabilities in preventing and countering emerging threats.

According to ADP 3-05 Special Operations (31 August 2012), Special Warfare is the execution of activities that involve a combination of lethal and nonlethal actions taken by a specially trained and educated force that has a deep understanding of cultures and foreign language, proficiency in small unit tactics, and the ability to build and fight alongside indigenous combat formations in permissive, uncertain, or hostile environments. Special Warfare is an umbrella term that represents special operations forces conducting combinations of unconventional warfare, foreign internal defense, and/or counterinsurgency through and with indigenous forces or personnel in politically sensitive and/or hostile environments. Special Warfare provides a capability that achieves impact largely by working with and through others to assess and moderate behavior, address local conditions, and/or build indigenous war fighting capability, typically in long-duration campaigns. This capability is employed in unconventional warfare (UW), counterinsurgency, foreign internal defense, security force assistance, stability operations, and select intelligence activities such as preparation of the environment.

Some possible areas that may be of interest include: developing UW concepts and capabilities in an urban environment, developing counter-network operations concepts and capabilities, developing an efficient and effective methodology for conducting gap analyses

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to determine the best way to assist allies and partners, and developing and testing means to legally exploit the human domain to include human terrain and human geography.

Submit under this number and title relevant Special Warfare strategic, operational, or tactical concepts and capabilities that are achievable within a constrained budget environment to enhance U.S. and partner nations' capability. Submissions against this requirement should be relevant to Special Warfare (as defined in ADP 3-05). Funds are not budgeted for open requirements. If the evaluation team determines that an open requirement submission is promising enough to merit pursuing, funds may be identified at that point. Because proposed capabilities from the unspecified requirements will be competing against proposed capabilities for identified and prioritized interagency requirements, the program may be unable to make any awards against the unspecified requirements.

ADVANCED ANALYTIC CAPABILITIES (AAC)

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R3782 DISENGAGEMENT OPERATIONS

Disengagement operations often require training locals to assume responsibility for their region's security. Often, this becomes even more difficult for a variety of reasons. This requirement seeks for methodologies to leverage the influence gained by previous accomplishments and to reach a point at which further accomplishment comes at significantly less effort.

Disengagement training requires characterization not only of village internals, but also of the relationships and external influences on the village. At a minimum, this requirement deals with three areas. The first area is information and knowledge capture. The desired information shall include cross village familial and fraternal relationships, histories of cooperation or conflict, tribal leader influences, economic relations, and proximity-driven relationships. The second area is algorithm development. Disengagement involves knowledge gaps, shortfalls in its theoretical underpinnings, uncertainties associated with human decision making, and nonlinearities associated with the yet to be understood accomplishment versus effort curves. The third challenge is tools and system architecture development. Employment of the algorithms require an effective mechanism for capturing and persisting information and knowledge; for drawing upon command-specific as well as community databases; for quantifying network-produced relationships (i.e. via social network analysis metrics); for assessing mission accomplishment. This requires a strong community-wide collaboration process and a robust suite of analysis tools. The fourth challenge is the creation of the operational methodology design and process. The disengagement operations planning process should conform to military decision-making process and command-dictated methods (e.g., SOCOM's VSO 101).

Although the disengagement challenge is not confined to a specific AOR or even an AOR type, current operational considerations suggest that the solicited effort focus initially on an AOR of high current interest (e.g., Afghanistan).

R3783 INNOVATIVE APPROACHES TO ASSESSMENTS

Develop a program with innovative approaches, methodologies, and tools that will enable third-party

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assessments of global solutions for unclassified mission support solutions.

The CTTSO intends to field data collection and analysis solutions on a global scale. These solutions are intended to improve war fighter efficacy for missions that involve partner nations and law enforcement. As part of an integrated program management and sustainment approach, the CTTSO is seeking innovative approaches for:

- Defining and capturing measures of effectiveness/ measures of outcomes data;
- Capturing and reporting user group feedback (subjective); and
- Capturing and reporting data to support business case analysis for program transition.

The data collected for specific programs will range from unclassified up to SECRET. Tools and automated methods for data collection should interface/integrate with mission support systems and architectures. Specifically, assessment tools should interoperate with or ingest data from existing end user advanced analytic platforms such as Palantir. Personnel conducting assessments should be capable of global deployment.

3784 ROBUST MULTILINGUAL INTEGRATIVE ONTOLOGY/TRANSLATOR

Partner nation collaboration requires multilingual data entry and analytical capability.

This requirement would be part of a newly fielded global network that allows structured data entry using handheld devices and ingestion into a collaborative analytical global network. This global network is based on a recently acquired analytic platform and has the capability of administering accounts to partner nation analysts and users both for data entry and analysis. This capability of collaborative analysis with partner nations requires a language translation capability for structured data and free text.

A user who speaks English should be able to log onto his account, be recognized as an English speaker, and therefore enter, view, and enrich all content in English. A Spanish speaker should be recognized by the system as such and be able to view the same content in Spanish. The same capability shall translate to the data entry platform.

The CTTSO requires a robust ontology for this network that enables rich language translation in order to persist in meaning from one language to another. Furthermore,

data tagging in any language shall be linked to the ontology, not the particular language so that tagging persists in any language.

If vendors have solutions other than ontological translation that meet the intent of this requirement, those solutions will also be considered.

Languages required for this capability in the initial phase are English, Spanish, French, German, and Arabic.

Integration requirements include the currently fielded integrated fusion analytic platform and the Lighthouse App-Naval Postgraduate School CORE lab.

R000 AAC FY14 UNSPECIFIED REQUIREMENT

Develop new or improved technologies or emerging technological capabilities pertaining to Advanced Analytics that may be of interest to the CTTSO but were not specifically requested in this BAA and are not commercially available. Future interests shall be timely, relevant, and further combating terrorism efforts.

The government seeks concepts pertaining to two focus areas. One focus area is advanced analytic platforms, tools, and training for integrated solutions that fuse a variety of data sources, tools, and models (including socio-cultural dynamic models) into advanced counterinsurgency and domestic combating terrorism analytical systems useable by interagency and coalition operational communities at the strategic, operational, and tactical levels. This can include near real-time integrated analytical and knowledge management systems that utilize a variety of sensors, devices, and architectures that address a variety of threats and scenarios.

The second focus area is cyber defense applications to support sustained operations by deployed elements and industrial control systems through enhanced layered defensive capabilities by anticipating and avoiding threats through understanding the cyber situation, anticipating adversarial actions, assessing potential impacts, and by implementing new broad spectrum defensive methodologies.

Unspecified requirements are for proposing unique innovations that have not yet been identified by the CTTSO. Submissions against a particular subgroup's unspecified requirement shall be relevant to that subgroup's mission. The CTTSO does not budget for unspecified requirements. If the evaluation team determines that an unspecified requirement submission is promising enough to merit pursuing, funds will be identified at that point. Because proposed technologies

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from the unspecified requirements will be competing against proposed technologies for identified and prioritized interagency requirements, the CTTSO may not be able to make any awards against the unspecified requirements.

GLOSSARY OF ACRONYMS

AAC	Advanced Analytic Capabilities
AFV	Alternative Fuel Vehicle
AOR	Area of Responsibility
APBI	Advance Planning Briefing for Industry
BAA	Broad Agency Announcement
BIDS	BAA Information Delivery System
CB	Chemical and Biological
CBRNE	Chemical, Biological, Radiological, Nuclear, and Explosives
CbT	Combating Terrorism
CDB	Common Database
COTS	Commercial-Off-the-Shelf
CTTSO	Combating Terrorism Technical Support Office
CWA	Chemical Warfare Agent
DoD	Department of Defense
EOD/LIC	Explosive Ordnance Disposal/Low-Intensity Conflict
FAQ	Frequently Asked Question
FTIR	Fourier Transform Infrared
GFI	Government Furnished Information
GPU	Graphics Processing Unit
HME	Homemade Explosives
HUD	Heads-Up Display
IDD	Improvised Device Defeat
IED	Improvised Explosive Device
ISF	Investigative Support and Forensics
IWP	Individual Water Purifier
IWS	Irregular Warfare Support
MARS	Man-Portable Aerial Radar System
MISO	Military Information Support Operations
NCCA	National Center for Credibility Assessment
PAVB	Power Assisted Vehicle Barrier
PGB	Portable Glove Box
PP	Personnel Protection
PS	Physical Security
RCS	Radar Cross Section
SCBA	Self-Contained Breathing Apparatus

SCOS	Surveillance, Collection, and Operations Support
SISO	Simulation Interoperability Standards Organization
SOF	Special Operations Forces
SUV	Sport Utility Vehicle
TAP	Temporary Anti-Personnel
TIC	Toxic Industrial Chemical
TOS	Tactical Operations Support
TSWG	Technical Support Working Group
TTD	Training Technology Development
UAS	Unmanned Aerial System
UAV	Unmanned Aerial Vehicle
UVE	Underwater Vision Enhancement
UW	Unconventional Warfare
VBIED	Vehicle-Borne Improvised Explosive Device
VOC	Volatile Organic Compound



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