FY10 Defense Authorization and Appropriations Requests

AAI Corporation
124 Industry Lane, Hunt Valley, MD 21030-0126
Shadow TUAS Training Aids, Devices, Simulators, and Simulations (TADSS) for Army National Guard
$2.5M
Project Description: The TADSS consists of Shadow Crew Trainers, Launcher Part-Task Trainers, Air Vehicle Part-Task Trainers, and Interactive Multimedia Instruction. Shadow crews have specific requirements to maintain their proficiency and readiness, and the TADSS will help fulfill their training needs. Army National Guard units are being activated and deployed without any Tactical Unmanned Aerial System (TUAS) equipment or the means to sustain individual Aircrew Training Manual requirements and proficiency. The gap between ARNG unit activation and Shadow equipment fielding averages 30 months. Due to these differences, ARNG TUAS units require different TADSS than active units to attain and maintain readiness. Since the TUAS units have dual use (applicability in Homeland Defense and other state missions as well as combat), it is critical to maintain a high state of readiness at all times.

Advanced Thermal Batteries
107 Beaver Court, Cockeysville, MD 21030
Novel Munitions Power System
$4.5M
Project Description: Novel Munitions Power Systems program addresses the challenges of future weapons by combining optical energy transfer and onboard energy harvesting with chemically stored energy. This work will address the development of power supplies for future large, medium and small caliber munitions and concentrates on developing a low cost flexible scalable architecture that will meet increasing power requirements and mission times while addressing continuous munitions system power up and environmental survivability issues. This program enables DOD to improve weapon safety, reliability, range, accuracy and lethality; to enhance warfighter protection; to reduce collateral damages and to establish an industrial base saving Millions of Dollars/year.

AEPLOG, Inc.
12800 Middlebrook Road Suite 108, Germantown, MD 20874
Autonomous Sustainment Cargo Container (ASCC), “Sea Truck”
$7.5M
Project Description: The Sea Truck consists of a propulsion module and an optional bow module which attach directly to commercial cargo containers, allowing the deployment of these self-propelled support units from offshore logistics and commercial ships to the beach for sustainment operations. The Sea Truck supports the Army’s need for low cost, logistics support equipment with critical distribution and sustainment capabilities. This project will provide actual field-test data to TRAC-LEE, allowing them to assess the desirability of the concept without computer modeling, scale modeling, water-tank testing, prototype design, development, and fabrication, and three years of development

time. The ASCC system also addresses other current needs and concerns of logistics support such as high sea state deployment, Operations Other Than Warfare, personnel and materiel safety, reduced fuel usage, and reduced personnel requirements.

Akonni, Inc.
400 Sagner Ave., Suite 300, Frederick, MD 21701
Automated Sample Preparation (ASP) for Biological Detection
$6.0M
Project Description: ASP will address the challenges of sample preparation for the detection/diagnosis of biological warfare agents. The ASP technology has the ability to process both environmental and clinical biological samples for subsequent analysis on both nucleic acid and/or immunoassay detection/diagnostic systems; AND when mated to currently fielded and new detection systems will enhance warfighter capability to detect and identify hundreds of potential targets simultaneously within a single analysis on a single detection/diagnostic platform. Current detection and diagnostic systems require significant amounts of sample pre-treatment and processing prior to analysis. The ASP technology will effectively provide rapid, simultaneous, and low-cost analysis of hundreds of biological targets to obtain the best possible outcome for patients with accurate and early detection.

Applied Signal Technology Inc
306 Sentinel Drive, Suite 100, Annapolis Junction, MD 20701
neu Vision-Intelligent Explosive Detection
$4.4M
Project Description: With increasing terrorist threats and changing world events, the Intelligence Community needs the ability to quickly conduct covert or overt inspection of containers, vehicles, packages and facilities. Effective inspection of objects of all sizes, from a small postal parcel to large containers and trucks, for explosives, narcotics and other controlled substances is essential for the success of counter-terrorism efforts.
The neu-VISION- Intelligent Explosive Detection System offers: unambiguous non-intrusive explosives identification, even in cluttered environments; low size weight and Power; Simple and intuitive operation; low lifecycle cost. Neu-Vision has several technical features including: penetration of thick barriers (steel, concrete…); automated material identification (explosives, chemical, i.e.); 3-D image mapping for enhanced detection; man-portability for rapid covert operation in the field; safe low-power neutron inspection technology; single-sided access advantage technology.

American Technology Corporation
15378 Avenues of Science, Suite 100, San Diego, Ca 92128
Long Range Acoustical Hailing Device Anti Terrorism Force Protection Equipment for Army Convoy Protection
$14.0M
Project Description: The Long Range Acoustical Hailing Device (LRAD) is a non-lethal, counter-personnel, long range hailing and warning device. LRAD's are capable of producing highly directional sound beams, allowing users to project warning tones and intelligible voice commands beyond small arms engagement range. The capability

enables U.S. forces to more effectively determine the intent of a person, vessel, or vehicle, at a safe distance and potentially deter them prior to escalating to lethal force. This system allows soldiers to communicate in host nation language at a safe range and has proven effective at clearing roads beyond 300 meters, saving from 15-30 minutes per convoy operation and greatly limiting the risk to personnel and supplies. Deploying LRAD systems will enable Army convoy protection teams to keep the supplies moving while limiting risks to themselves and civilian populations.

American Technology Corporation
15378 Avenues of Science, Suite 100, San Diego, Ca 92128
Long Range Acoustical Hailing Device Anti Terrorism Force Protection Equipment for USN Assets and Facilities
$5.0M
Project Description: The Long Range Acoustical Hailing Device (LRAD) is a non-lethal, counter-personnel, long range hailing and warning device. LRAD's are capable of producing highly directional sound beams, allowing users to project warning tones and intelligible voice commands beyond small arms engagement range. The capability enables U.S. forces to more effectively determine the intent of a person, vessel, or vehicle, at a safe distance and potentially deter them prior to escalating to lethal force.
LRAD provides a much needed capability for US Navy security personnel to effectively determine hostile intentions of potential terrorist vessels. LRAD provides tactical leaders with the time necessary to make measured and responsible escalation of force decisions.

ATK
Allegany Ballistic Lab
210 State Route 956 Rocket Center, WV 26726
Precision Guidance Kit (PGK) Technology Development
$7.5M
Project Description: The Army has a need for increased precision for the Infantry Brigade Combat Teams. The Army's 155mm PGK program is providing more responsive, more precise fire support capabilities. This same technology is adaptable to 105mm artillery and 120mm mortar rounds. The lack of precision for either 105mm artillery or 120mm mortars creates significant operational difficulties. On the one hand, 105mm and 120mm systems are more transportable than are the larger 155mm artillery systems, but currently lack precision capabilities. When employed, their use often entails disproportionate logistics burden due to the amount of ammunition they consume to accomplish a mission.

Clean Earth Technologies, LLC
9639 Dr. Perry Rd. Ijamsville, MD
M-BAD (Multiplexed PCR-coupled PNA labeled beads Flow Cytometric Assay for Simultaneous Detection of Multiple Biological Agents
$5.0M
Project Description: The M-BAD program will combine multiplexed PCR with PNA-labeled beads to develop a multiplexed PCR coupled PNA-labeled-beads flow cytometric assay to detect multiple biological agents. This proposed technology will provide high specificity and sensitivity. It will also operate rapidly and be substantially more cost-

effective. Taking advantage of all current state-of-the-art technologies, M-BAD is a new method for detection of multiple biological agents, i.e. multiplexed PCR coupled PNA-labeled-beads flow cytometric assay. This assay has high sensitivity and specificity, speed and cost effectiveness. The M-BAD program will develop the sensor ability to detect multiple biological agents at a very low cost.

Drive Developments, Inc.
4539 Metro Court, Frederick, MD 21704
FUEL (Fuel Usage Economy and Logistics)
$5.0M
Project Description: This FY10 program will serve to instrument CONUS Army vehicles with Diagnostic Information Management Environment (DIME) COTS systems. These systems will remotely record the fuel consumption of vehicles during their daily activities and test cycles. This fuel information will be correlated with other diagnostic measurements recorded to determine optimal routes, identify destructive driving habits and operational issues related to maintenance. This program will focus on identifying fuel savings through driver awareness and associated condition based maintenance. Alternative methods of fuel reduction, such as additives, may be explored as a part of this program as well. The program will also collect data to build into the future prognostics strategy for integrated vehicle management within the Army.

Fairchild Controls
540 Highland Street, Frederick MD, 21701
Adaptable Integrated Vapor Cycle based Environmental Control and Power System
$4.2M
Project Description: Modern aircraft face increasing demand for electric power and cooling because of advanced sensors & weapons systems. Thermal challenges are further exacerbated by high engine fuel efficiency that reduces available fuel heat sink and low observable requirements that limit the use of ram air as a heat sink. Thermal challenge will increase by an order of magnitude for future air platforms. The proposed program will address many of the above challenges using a novel adaptable vapor cycle based environmental control system.

Fugro EarthData, Inc.
7320 Executive Way, Frederick MD 21704
$8.5M
Airborne Dual-band Commercial IFSAR Mapping Production
Project Description: Interferometric Synthetic Aperture Radar (IFSAR) is an airborne radar mapping technology that provides imagery and map data to meet urgent military requirements for three-dimensional terrain models, high-resolution imagery maps, and detailed vector (line) maps. Rapid product collections and delivery supports urgent military operations such as intelligence, the global war on terrorism, topographic line map production, special operations, counter-terrorism, and counter-narcotics missions. The technology is sound and continues to evolve and currently is being utilized to meet stringent National Geospatial-Intelligence Agency (NGA) requirements. More than 60

percent of NGA's high-priority geospatial products contain only partial coverage, have void areas and gaps, and some information is over 30 years old.

General Dynamics Robotics Systems
1231 Tech Court, Westminster, MD 21157
Mobile Detection Assessment Response System Enhancements
$5.5M
Project Description: The MDARS robot autonomously performs random patrols, detects intruders, and determines the status of inventory, barriers, gates and locks using Radio Frequency Identification (RFID) technology. Onboard sensors and real-time video allow remotely-housed human operators to see intruders or suspect activity as soon as the robot encounters it. There are no funds identified in the FY10 budget to support MDARS enhancements. DoD has identified a variety of enhancements that will expand the capabilities of the MDARS robotic vehicle to support force protection efforts. Requested funds would develop additional capabilities and procure one vehicle for force protection that detects intruders, and determines the status of inventory, barriers, gates and locks using Radio Frequency Identification (RFID) technology.

General Dynamics Robotics Systems
1231 Tech Court, Westminster, MD 21157
Authorization Request for Program Support of Future Combat Systems Autonomous Navigation Systems (ANS)
No additional funding requested
Project Description: Product Manager-Force Protection Systems identified enhancements that will improve MDARS effectiveness for Army depot security patrolling and ongoing support of force protection efforts include: higher speed operation (at least 30 mph); operator controlled less-than-lethal weapons with an engagement range no less than 30 meters; on the move intruder detection; intruder detection out to 1500 meters (currently 300m); ballistic protection from small arms fire; and upgraded interoperability and joint operation capabilities. The purpose is to improve the performance of the MDARS vehicle to provide better force protection and physical security of U.S. military installations and personnel.

Information Control, LLC
16 S. Summit Ave., Suite 100, Gaithersburg, MD 20877
The National Medical Information and Response Command Center
$4.5M
Project Description: DOD and civilian organizations are unable to communicate across a single net as each distinct medical and first-responder community subscribes to its own specific tele-network and emergency response capabilities. Further, the nation has no central medical depository, clearinghouse, and warning system at the national level. Command and control organizations and field activities for both DOD and the civilian sector should be able to obtain needed medical information 24/7 and have the ability to communicate without hindrance, especially when loss of core communications infrastructure would likely happen. The Navy Health Research Center (NHRC) will oversee Information Control, LLC to advance the National vision to develop a

comprehensive information and emergency response capability, the National Medical Information and Response Command Center. This initiative is the cornerstone for the development of a single, unified National Medical "watch" Command Center serving US forces deployed worldwide, USG agencies and civilian health organizations.

Information Control, LLC
17 S. Summit Ave., Suite 100, Gaithersburg, MD 20877
Flexible Medical Solutions FlexMedPatch Program
$2.0M
Project Description: This program will finalize developed micro- and nanotechnologies to save the military, thus taxpayers hundreds of millions of dollars in avoidable medical visits, save tens of millions of barrels of foreign oil, and create dozens of jobs in Maryland while improving access to healthcare and immediacy of lab results for patients and physicians. Most importantly, the medical readiness of military forces will be greatly enhanced as a direct result of the application of this process. This project increases ability to remotely triage injured war fighters in field, sea and air theater of operations; ability to monitor the health of trainees while undergoing dangerous training exercises; ability to create baseline individualized profiles on war fighters and their capacity to withstand pain, recover from injury, and endure prolonged and acute stress; ability to predict cancers, strokes, and heart attacks before they occur; and ability to continuously monitor forces for alcohol and drug use.

Innovasan Corporation
342 Mapletree Drive, Knoxville, TN 37934
Fluid Medical Waste Stream Treat System
$6.0M
Project Description: The proposed research will prototype the patent pending Med-San™ Process, allowing DoD fixed and mobile installations to direct discharge treated fluid medical waste streams into the environment that are sterile and chemically inert – eliminating exposure hazards to the warfighter. Med-San™ has been recognized by the Telemedicine & Advanced Technology Research Center (TATRC), U.S. Army Medical Research & Material Command (USAMRMC). Their internal science review and their independent review conducted by the American Institute of Biological Scientists(AIBS) has led to their decision to sponsor research to develop Med-San™ prototypes to meet their mission requirements.

MPRI Training and Technology Group
7142 Columbia Gateway Dr., Columbia, MD 21046
Basic Rifle/Pistol Marksmanship for the US Army Reserve
$2.5M
Project Description: Basic Rifle/Pistol Marksmanship for US Army Reserve (BRPM) training is included in the Army Marksmanship Training Strategy. Reserve Soldiers have the current requirement to maintain an annual level of proficiency in marksmanship in accordance with the Standards in Training Commission (STRAC) and the USAR's Small Arms Training Strategy. The BRPM program supports individual marksmanship training from initial entry training through advanced skill levels. The BRPM program is versatile

and un-tethered allowing practice in different environments and locations creating realistic training scenarios. The BRPM program saves ammunition costs, travel time for training, is compatible with existing weapons of various calibers (M16, M4, M249, M240 and M9) and requires no modification to the weapon system. BRPM simulation can be used in concert with both standard U.S. military blank ammunition as well as BRPM specific lead free blank ammunition.

Northrop Grumman
1000 Wilson Blvd., Suite 2300, Arlington, VA 22209
Next Generation Shipboard Integrated Power: Fuel Efficiency and Advanced Capability Enhancer
$5.0M
Project Description: Existing and future surface combatants and submarines require advanced propulsion and power system technologies to enhance fuel economy, lower system acquisition cost, and free up volume and weight for war fighting capability. Funding is requested to continue the development of a power dense Integrated Power System (IPS) and Hybrid Electric Drive (HED) technologies suitable for surface combatant and submarine propulsion, enhanced power generation, and power conversion. Power dense electric machines and power conversion solutions enable hybrid propulsion systems that save fuel and provide increased critical power for additional payload capabilities. These developments allow an advanced IPS or HED system to be incorporated in future and existing warships, including the re-started DDG51 line, DDG51 Modification, Ohio Replacement, and a future CG(X).

Progeny Systems Corporation
9500 Innovation Dr., Manassas, VA 20110
Medical Health Records/Medical Informatics
$3.5M
Project Description: This effort provides a transition path that addresses use cases for applying Natural Language Processing and Knowledge Base (KB) technology to data entry and medical records to achieve realizable return-on-investments. Data Entry Automation applies the Medical Vocabulary Server to the Armed Forces Health Longitudinal Technology Application (AHLTA) user interface to provide real-time automated assistance in completing the free text areas, mitigating the need to use the multi-layered, time-consuming, structured methodology, while improving machine understandability of all entered information, both structured and free text; E&M coding for billing applies the Medical Vocabulary Server to produced medical records, both structured and free text, to automate the Electronic and Medical coding practice, saving money by both reducing manpower and increasing coding accuracy, and; lastly Syndromic Surveillance integrates the Medical Vocabulary Server with a Symbolic Knowledgebase that mines other medical and non-medical information sources to detect and monitor an outbreak size, spread, tempo, and disease trends in real time and provide warnings and information feeds to existing syndromic surveillance systems

Proxy Aviation
12850 Middlebook Road, Germantown, MD 20874
$7.5M
Multiple Unmanned Aerial Systems (UAS) Cooperative Concentrated Observation and Engagement against a Common Ground Objective
Project Description: There is an ongoing need in DoD to increase the number of (Information, Surveillance, Reconnaissance) ISR orbits provided by Unmanned Aircraft. This project increases effectiveness of the current fleet of Unmanned Aerial Vehicles (UAVs) by enabling multiple UAVs and multiple sensors to cooperate in the same airspace with dynamic mission execution. Proxy Aviation Systems has developed and demonstrate the power of UAS cooperative engagement capability that can reduce the manpower and increase the mission effectiveness of current UAS. The Universal Distributed Management System (UDMS) is a demo proven (TRL-6) autonomous command and control system that will enable up to twelve UAVs to operate simultaneously from a single ground station and perform complex tactical objectives. The upgrade of existing and future US Government UAVs with a Cooperative Engagement capability will significantly reduce the manning required to operate current UAV systems which will lower costs while increasing mission effectiveness.

Saft America Inc.
107 Beaver Court, Cockeysville, MD 21030
Electro-Magnetic Aircraft Launch System (EMALS)
$15.8M
Project Description: An alternate Energy Storage System (ESS) for the CVN-79 and follow-on nuclear aircraft carriers electro-magnetic aircraft launch system (EMALS) will save acquisition, development, and life-cycle costs while improving readiness and combat capability and eliminating at least 210 long tons of weight. The alternate ESS is based on very-high power lithium ion battery technology that has a technical readiness level of 9 (TRL-9). The ESS design is based on multiple high power cells configured into integrated modules forming a complete, easy to maintain system. The system includes battery management electronics to ensure the system is safe, reliable and available for each launch sequence. The system meets or exceeds all ESS requirements.
This project would complete the detailed equipment engineering design of the Li-ion Battery system to replace the Flywheel system for CVN79 Electro Magnetic Aircraft Launch System, Energy Storage Subsystem.

Smiths Detection
2202 Lakeside Blvd., Edgewood, MD 21040
Chemical Biological Protective Shelter
$10.0M
Project Description: To date, the National Guard - charged with securing our homeland and responding to a terrorist attack has limited Chemical Biological Protective Shelter (CBPS) systems in their inventory. The Chemical Biological Protective Shelter (CBPS) is a highly mobile, self-contained collective protection system that provides a contamination free, environmentally controlled working area for medical combat services and combat service support personnel to work freely without continuously wearing

chemical-biological protective clothing. It provides the war fighter with the most up to date mobile medical equipment to treat casualties.

Thales Communications, Inc.
22605 Gateway Center Drive, Clarksburg, MD 20871
Networked Dynamic Spectrum Access Investigation Enhanced MBTIR-Follow on Stage II
$2.6M
Project Description: The power of Software Defined Radios (SDRs) such as the Joint Tactical Radio System (JTRS) resides in the ability to equip the warfighter with tactical communications solutions across a myriad of operational domains, maintaining a strong evolutionary path for advanced capabilities today combined with the benefit of "investment protection." The concept of SDRs by design facilitates modernization and advanced capability technology insertion through software upgrades. The provision of $2.6M will continue the efforts started in FY09 to investigate the benefits of Networked Dynamic Spectrum Access for the Army AN/PRC-148 JEM to include evaluation of CONOPS and ability to transition these capabilities to the Current Force. This activity leverages Government prior investment yielding net costs savings.

Volvo Powertrain of North America
13302 Pennsylvania Avenue, Hagerstown, MD 21742
Hybrid electric Heavy Truck Vehicle
$3.0M
Project Description: The program's goal is to provide the military with a more fuel efficient, cleaner and more easily maintained heavy truck powertrain. A secondary goal is to build a truck engine that can provide the same electrical source as a traditional diesel generator. Combining these two capabilities in one engine will reduce deployed forces requirement for fossil fuels and reduce the need for inefficient, noisy diesel generators. Requested funds will be used to complete the final development stage prior to production. This final year of funding will enable Mack Trucks and Volvo Powertrain to finish building a prototype M915 truck with hybrid powertrain, and be prepared to compete for a M915 by the Army. It will reduce the logistics footprint of deployed forces by requiring less fuel in theater. It will also eliminate the need for noisy, diesel generators that can divulge the location of friendly forces. It will also provide a more easily maintained powertrain.

Zeltex Inc.
130 Western Maryland Parkway, Hagerstown, MD 21740
Remote Fuel Assessment System
$2.0M
Project Description: The military has critical operational requirements for a field capability to rapidly assess cached and secured fuel supplies at key distribution nodes without extensive logistic support. Zeltex, Inc. proposes to develop and demonstrate a Remote Fuel Assessment System (RFAS) for rapid fuel quality assessment. It will assess representative fuel content and contamination properties such as particulates, moisture, density, total oxygen content, benzene, olefins, aromatics, octane and cetane index to

identify the class of fuel. Embedded wireless communication and control capability in the RFAS will ensure seamless operation with tactical information networks (Sense and Respond Logistics).