UNITED STATES ARMY

SBIR STTR Programs

U.S.ARMY

SBIR CALL TO DUTY!

Small Business Innovation Research

Small Business Technology Transfer

"The vision of the Army SBIR and STTR programs is to be the Army's premier source of innovative technology solutions, providing direct access to America's high-tech small business research and development community…"

Dr. Thomas H. Killion
Deputy Assistant Secretary for Research and Technology and Chief Scientist, U.S. Army

The Army is very proud of the success of the SBIR and STTR programs. As our Nation's largest source of early stage technology financing, this billion-dollar program enables hundreds of small businesses to move ideas from drawing boards to the marketplace. Through SBIR and STTR, we now know that the best ideas don't necessarily come from the labs of large corporations or even our government labs. Most often, innovative technologies are invented by creative individuals at small, entrepreneurial companies.

The U.S. Army SBIR/STTR Commercialization Brochure is published annually and PM, Army SBIR distributes this brochure within the Army and Department of Defense community and to the private sector at a number of conferences and other venues across the country. These brochures are meant to highlight program successes and to provide visibility to the positive impacts made by small businesses that have successfully transitioned their SBIR/STTR research into operational capabilities or to the commercial marketplace.

The SBIR and STTR Programs

Congress established the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs to provide small businesses and research institutions opportunities to participate in government-sponsored research and development (R&D).

The goals of the SBIR and STTR programs are to: (1) stimulate technological innovation; (2) use small business to meet Federal R&D needs; (3) foster and encourage participation by socially and economically disadvantaged small business concerns (SBCs), and by SBCs that are 51 percent owned and controlled by women, in technological innovation; and (4) increase private sector commercialization of innovations derived from Federal R&D, thereby increasing competition, productivity, and economic growth.

While STTR has the same objectives as SBIR regarding the involvement of small businesses in Federal R&D and the commercialization of their innovative technologies, the STTR program requires participation by universities, federally funded research and development centers (FFRDCs), and other non-profit research institutions.

Both the SBIR and STTR programs use a three-phase program structure, reflecting the high degree of technical risk involved in developing and commercializing cutting edge technologies.

- Phase I is a feasibility study that determines the scientific, technical, and commercial merit and feasibility of a selected concept. Phase I projects are competitively selected from proposals submitted against solicitations. Each solicitation contains topics seeking specific solutions to stated government needs. The SBIR and STTR Phase I selection process is highly competitive, with about one out of ten submitted Phase I proposals receiving awards.

- Phase II represents a major R&D effort, culminating in a well-defined deliverable prototype (i.e., a technology, product, or service). The Phase II selection process is also highly competitive. Successful Phase I contractors are invited to submit Phase II proposals as there are no separate Phase II solicitations.

- In Phase III, the small business or research institute is expected to obtain funding from the private sector and/or non-SBIR/STTR government sources to develop the prototype into a viable product or service for sale in Government or private sector markets.

	SBIR	STTR
PHASE I	6 months $70,000 max	6-12 months $100,000 max
PHASE I Option	4-month option (Government's discretion) $50,000 max, to fund interim Phase II efforts	No option
PHASE II	2 years $730,000 max	2 years $750,000 max
PHASE II Plus	1 year $500,000 max (subject to third-party matching funds)	N/A
PHASE III	Unlimited time Non-SBIR funding	Unlimited time Non-STTR funding

The following success stories highlight the positive impacts made by small businesses that successfully transitioned their SBIR/STTR research into operational capabilities or to the commercial marketplace.

Autonomous Aerial Delivery System

Atair Aerospace, Inc.

Brooklyn, NY
www.atairaerospace.com
info@atairaerospace.com

Current airdrop methods expose ground forces to threats from Improvised Explosive Devices (IEDs), and air crews to threats from man-portable air defense systems and Rocket Propelled Grenades (RPGs). The Atair Aerospace, Inc. Onyx 500(tm), an autonomous precision guided parafoil delivery system, supports the Joint Precision Airdrop System (JPADS), which is being developed to help transition current WWII-era airdrop practices into the 21st century. Atair's innovative approach to urgent operational requirements integrates the state of the art in parachute designs and guidance systems into unmanned aerial vehicle (UAV) platforms, UAV recovery parachute systems, and military projects that utilize precision airdrop systems. The Defense Advanced Research Projects Agency (DARPA) selected Atair Aerospace, Inc. to develop and manufacture the Long Endurance Autonomous Powered Paraglider (LEAPP) UAV to fulfill an urgent need for long endurance (48+hours) intelligence, surveillance, and reconnaissance (ISR) mission capabilities.

"Onyx systems provide military planners with the capability to strategically and covertly position equipment and supplies for rapidly moving ground and special operations forces."

Phase III Impacts

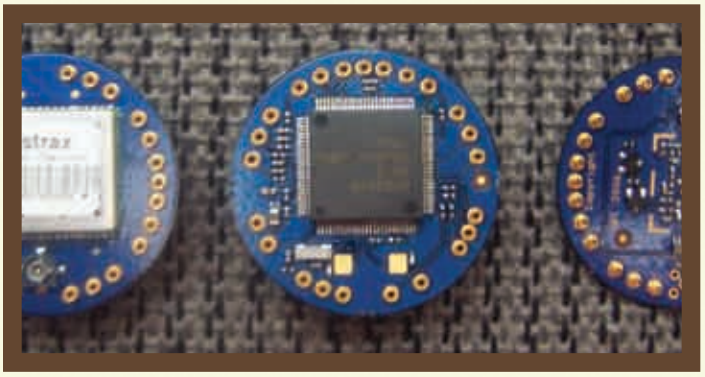
Atair Aerospace, Inc. has received $8.5M in private investments and the Army has purchased 32 Onyx systems, plus support and certification, with a contract value of $3.2M.

Ultrawideband Technology for Sensor Network Communications

Innovative Wireless Technologies, Inc.

Forest, VA
www.iwtwireless.com
sales@iwtwireless.com

To conduct effective military operations on diverse urban and rural terrains against an enemy embedded in and indistinguishable from the local populace, Soldiers require accurate and comprehensive situational awareness data. Self-forming, low power, wireless unattended ground sensor (UGS) networks are one means to meet this requirement. UGS networks face the challenges of maintaining continual communications under harsh decentralized deployment scenarios, with limited or no available infrastructure. Innovative Wireless Technologies, Inc. (IWT) developed a complete communication suite that enables UGS ad hoc mesh networks. IWT's solution optimizes use of radio frequency technology, sensor type, latency of event transmission, and data routing within a limited battery budget in three components: hardware radio platform, mesh protocol stack, and mesh management tool. This modular platform development approach has produced derivative products and demonstrations with diverse deployment needs.



"Unattended ground sensor systems face the challenges of maintaining continual communications under harsh decentralized deployment scenarios..."

Phase III Impacts

The Communication-Electronics Research, Development and Engineering Center has invested over $3M and Innovative Wireless Technologies has investments of $6M to develop a two-chip Ultra Wideband radio for various applications, including Unattended Ground Sensors, Robotics Applications, and RFID tags; and demonstrate with a 100-node deliverable network.

Unattended ground sensors and derivative product sales are forecasted to be $11M in 2006-07.

UNITED STATES ARMY SBIR STTR Programs

Enhanced Chemical Biological Closure

Diversified Marketing Group, Inc.

Narberth, PA
www.dmgroup.org
info@dmgroup.org

FLEXSEAL™, a flexible closure system for breathable, lightweight chemical protective applications, offers protection from gas, liquid, chemical biological (CB), and hazardous materials. By providing air/water impermeability and resistance to toxic/nerve agents, FLEXSEAL™ closures offer Soldiers protection in a life-threatening CB environment, can protect civilian first responders in a hazmat scenario, and help save an able-bodied seaman swept overboard. The closures can improve portable helicopter landing pads; chemical protective and airtight shelters; CB protective clothing, gloves, footwear; jet engine covers; airplane wing protection assemblies; and OSHA's Level A through D suits. When built into chemical biological clothing and equipment, the closures will help Soldiers complete their missions by improving "wear ability" and intrinsic function. Most important, these closures extend the performance of all gear, whether utilized in a wartime deployment or in a CB hostile, "hazmat" environment. FLEXSEAL™ has potential in military/commercial products requiring closures such as tents, backpacks, and sleeping bags.

"Diversified Marketing Group, Inc.'s FLEXSEAL™ represents a technological breakthrough in zipper technology."

Phase III Impacts

FLEXSEAL™ has generated $6M in sales to various agencies within the Department of Defense.

CALL TO DUTY!

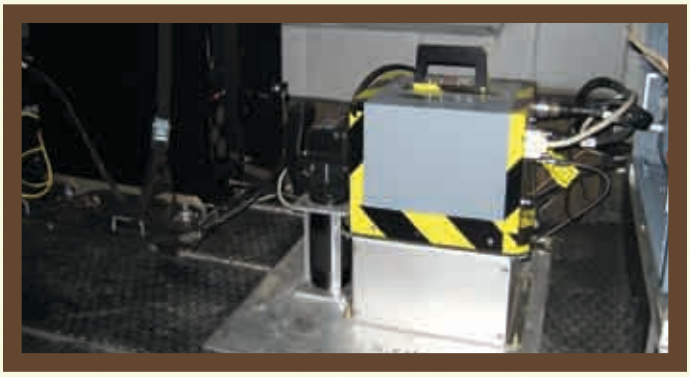
U.S. Army Engineer Research and Development Center

Buckeye: High Resolution Imaging System

Flight Landata, Inc.

North Andover, MA
www.flidata.com
information@flightlandata.com

Flight Landata, Inc. designed, tested, and built an integrated aerial imaging system called Precision Geo-Reference Digital Airborne Camera System (PG-DACS) which became the Engineer Research and Development Center's Buckeye Sensor System. The Buckeye System's most notable contributions have been in support of Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) in Afghanistan. The aerial system is platform independent and weighs approximately 30 pounds. The Buckeye Sensor can operate at a variety of altitudes based upon the desired image resolution and image swath width, and a variety of configuration options can meet each tactical application. The system is comprised of a digital camera to take near vertical pictures of an area; gyroscopes to measure the roll, pitch, and yaw of the aircraft; an accelerometer; an encased processor and data storage system; and a laptop used to control the sensor and monitor the collection while in flight.



"The Buckeye Sensor System was cited as one of the reasons ERDC was selected as the 2005 Army Research Laboratory of the Year, the highest Army research and development award given."

Phase III Impacts

The U.S. Army Engineer Research and Development Center (ERDC) has awarded a $10M indefinite duration/indefinite quantity (ID/IQ) Phase III contract to further develop the Buckeye Sensor System after use in Operations Iraqi Freedom and Enduring Freedom. $1M has been obligated to date.

UNITED STATES ARMY SBIR STTR Programs

U.S. Army Research Laboratory

Disposable Sensor System

McQ, Inc.

Fredericksburg, VA
www.mcqinc.com
info@mcqinc.com

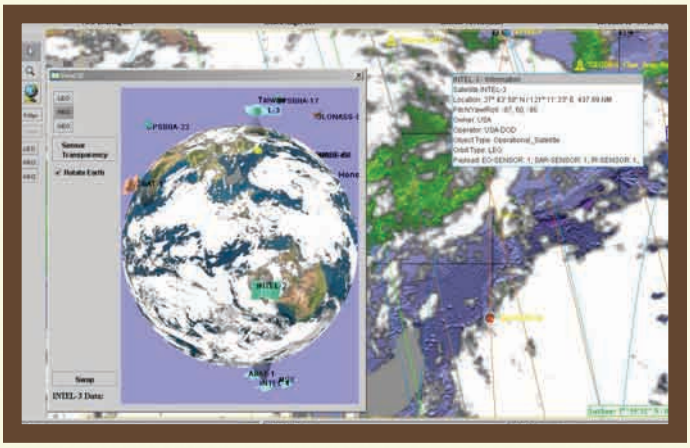
Unattended ground sensors (UGS) have been a trusted remote sensing system for surveillance and reconnaissance since the Vietnam era. Advances in technologies for detection, signal processing, communications, and user friendliness have dramatically improved the capabilities of UGS systems for the Army; however, the high cost of full featured UGS systems has prevented widespread use for many applications. McQ, Inc. demonstrated that UGS sensors can be developed at a dramatically lower cost using conventional consumer manufacturing techniques. McQ's complete Disposable Sensor System (DSS) includes a handheld PDA-based user display and a large quantity of sensor nodes, each with passive infrared, acoustic, magnetic, and seismic detection modalities.

"The Disposable Sensor System is packaged in a case that is smaller and lighter than a deck of cards and has a projected manufacturing cost of less than $20 per node. "

Phase III Impacts

McQ, Inc.'s Disposable Sensor System formed the basis for a Phase III $1.7M award by the Defense Threat Reduction Agency (DTRA) for an acoustic battle damage assessment sensor system that is currently undergoing pre-deployment tests.

Single Integrated Space Picture



21st Century Systems, Inc.

Herndon, VA
www.21csi.com
info@21csi.com

Because operational capability gaps limit rapid decisions based on situational awareness in space, the Army is developing Intelligent Agent Software to provide real-time course-of-action (COA) support based on predicted events. 21st Century Systems' Joint Awareness Warfighter-Space (JAWS) addresses a consolidated list of Army Essential Single Integrated Space Picture (SISP) Capability Needs. These requirements include integrated situational awareness for better control of the battlespace; transformation of space-based data into actionable knowledge; assessment of the impact of space and terrestrial weather on the status of satellite links; improvement of GPS navigational accuracy; and use of predictive analysis to reduce fratricide and collateral damage. For planning, JAWS assists in performing timely space planning (Deliberate, Crisis Action, and Mission Planning), provides automated COA development capability, and reduces the space operator's decision cycle. The Space and Missile Command will continue to pursue SISP technologies, such as JAWS, to meet Future Force Space situational awareness needs.

"Army Single Integrated Space Picture technology programs are addressing critical Space situational awareness needs and are set to transition to Soldier programs. "

Phase III Impacts

The Space and Missile Defense Command and PEO, Missiles and Space have invested nearly $14M to develop JAWS as an integral component of the Army's Single Integrated Space Picture program.

UNITED STATES ARMY SBIR STTR Programs

Dentistry On The Move

Bell Dental Products

Denver, CO
www.belldental.com
bdproducts@belldental.com

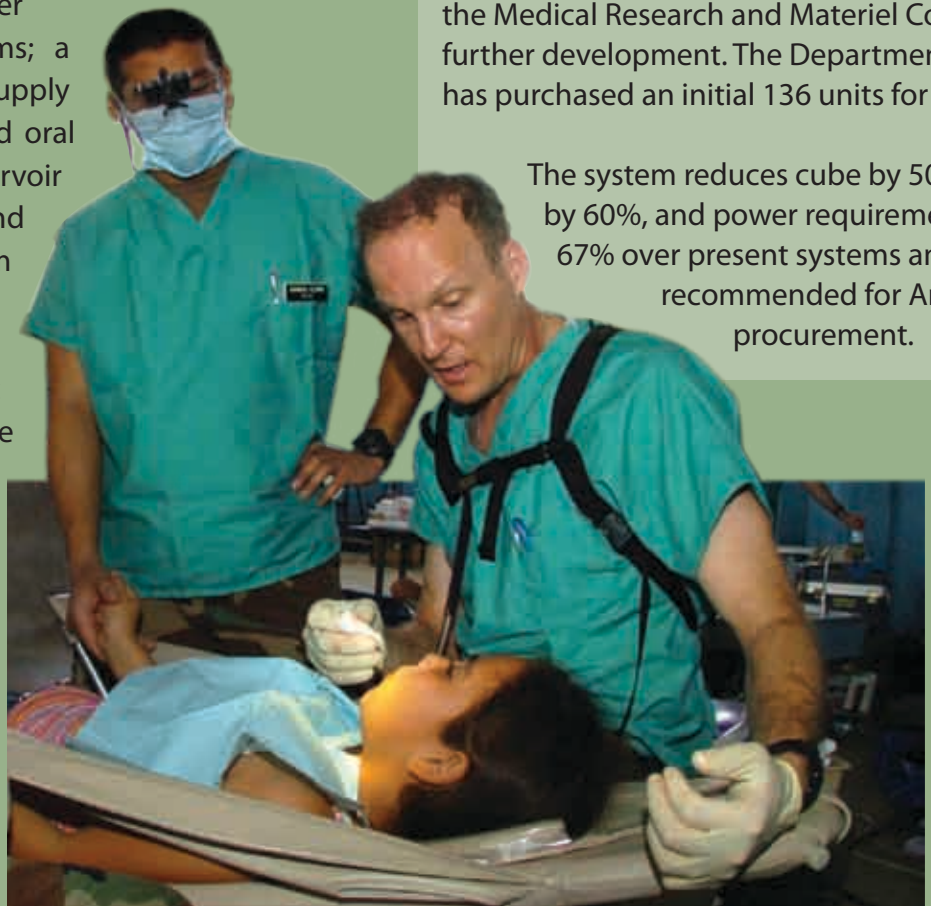
The Dental Field Treatment and Operating System (DEFTOS) is a state-of-the-art system utilizing the latest electric motor driven hand-piece technology, and incorporates all of the functionality to perform any dental procedure from cleaning to oral surgery. The system includes an electric motor, with or without fiber optics, high-speed hand-piece, low-speed hand-piece, air/water supply, air/water syringe, high volume evacuator, saliva ejector, and variable speed foot switch. The system is lightweight and totally self-contained. It includes an oil-less air compressor that provides air to the water and air supply subsystems; a self-contained water supply for hand-piece coolant and oral irrigation; and a waste reservoir for collection of liquids and solids from the vacuum supply subsystem. The system supports a variety of standard electric motors and all E-type connected hand-pieces. The entire system can be quickly assembled or disassembled, and packs into one molded shipping container for safe transport and storage.

"28 Dental Field Treatment and Operating Systems have been deployed to Iraq since November 2005 and have accumulated over 12,000 operating hours, with only two confirmed failures."

Phase III Impacts

Bell Dental Products has received $1.6M from the Medical Research and Materiel Command for further development. The Department of Defense has purchased an initial 136 units for $2M.

The system reduces cube by 50%, weight by 60%, and power requirements by 67% over present systems and has been recommended for Army wide procurement.



CALL TO DUTY!

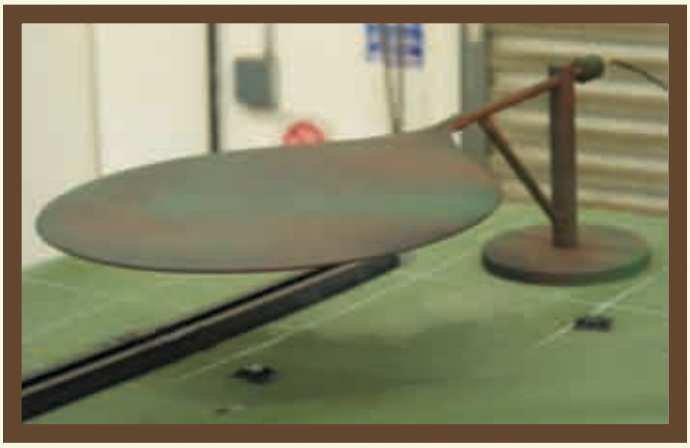
U.S. Army Research Laboratory

Noise-Cancelling Acoustic Sensors

Scientific Applications & Research Associates, Inc.

Cypress, CA
www.sara.com
information@sara.com

Flow noise limits the applicability of acoustic detection/tracking arrays on mobile platforms and must be reduced for accurate acoustical detection of targets at tactically significant ranges, in conditions of high winds and/or high vehicle velocities. Scientific Applications & Research Associates, Inc. developed an acoustic sensor array for ground vehicles that dramatically decreases associated flow noise and local acoustic noise. Further advances to this technology include sensors for aerostat platforms; ground-mounted counter-mortar systems; vehicle-mounted counter-sniper acoustic sensor systems; expanded acoustic frequency ranges for the detection of a variety of acoustic signals; a conformal mounted design; mechanically rugged designs; and dust and water resistance; and a stand-alone windscreen/sensor for use in gunshot detection.



"The Noise-Cancelling Acoustic Sensor allows for greater accuracy in detection, location and classification of ground vehicles, small arms fire, and mortar and artillery fire."

Phase III Impacts

Scientific Applications & Research Associates, Inc. has received $1.5M from the U.S. Army Research Laboratory to advance the noise-cancelling acoustic sensor for use on aerostat platforms, ground-mounted counter-mortar systems, and vehicle-mounted counter-sniper acoustic sensor systems.

UNITED STATES ARMY SBIR STTR Programs

Automated Classification of Remotely Sensed Imagery

Visual Learning Systems, Inc.

Missoula, MT
www.featureanalyst.com
sales@vls-inc.com

Visual Learning Systems, Inc. developed Feature Analyst® as a tool for automating the collection of information from remotely sensed images (e.g., satellite and aerial imagery) to provide the Army with a complete toolset for extracting all features, such as roads and buildings. Accurate and timely geospatial information benefits U.S. forces by reducing an adversary's home advantage and thus potentially saving lives. Easily integrated into existing software, the tool enhances without changing current workflows. This user-friendly technology improves the speed and accuracy of generating geospatial feature data from imagery to support mapping and other mission planning exercises by allowing Army imagery and terrain analysts to access feature extraction models in a simple, straightforward manner. Several independent studies showed that Feature Analyst® can save 80-90% of the time currently spent by analysts on feature collection. Feature Analyst® is currently used by all U.S. military services as well as several U.S. intelligence organizations.

"Several independent studies showed that Feature Analyst® can save 80-90% of the time currently spent by analysts on feature collection."

Phase III Impacts

Visual Learning Systems has received $1M in investments from the Department of Defense and private sources for further development of Feature Analyst®.

Visual Learning Systems also received $1.5M in sales from across the federal government including the Department of Agriculture, the Department of the Interior, and the U.S. Geological Survey.

CALL TO DUTY!

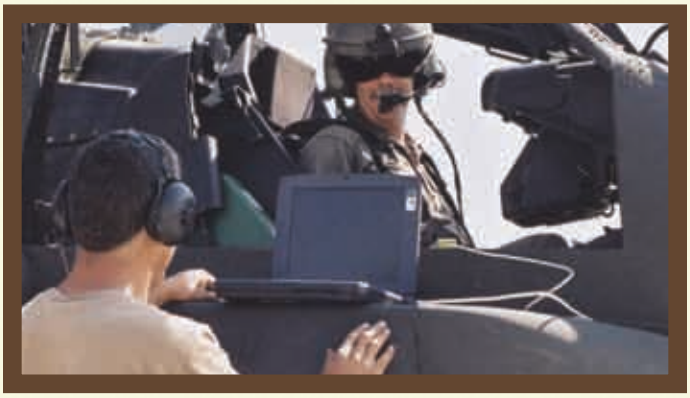
U.S. Army Aviation and Missile Research, Development and Engineering Center

Aviation Components Health and Usage Monitoring System

Intelligent Automation Corporation

Poway, CA
www.iac-online.com
info@iac-online.com

Helicopters produce significant vibrations that cannot be fully eliminated and must be considered in the reliability and maturation of aircraft components. Intelligent Automation Corporation developed a low cost regime recognition capability and integrated it into its Helicopter Usage Monitoring System (HUMS) as an extension to the U.S. Army's Vibration Management Enhancement Program (VMEP) for the AH-64, UH-60 and CH-47 aircraft. The software lets the Army aviators know how an aircraft is operating and subsequently how component damage is being accumulated. Helicopter operations benefit from continuous monitoring of adverse vibrations, reduction of controllable vibrations, and use of vibration characteristics to predict component faults. This system has been installed in helicopters deployed throughout the world. Aircraft equipped with the regime recognition system eliminate time-based maintenance procedures that will save millions of dollars for the Army over the life of the aircraft.



"…I should be thanking you all for the support and the impact this system has had on our maintenance program… which ultimately equates to combat power." From a Battalion Commander

Phase III Impacts

Intelligent Automation Corporation has received $9.2M in sales from the U.S. Army, Bell Helicopters Textron, and others.

The regime recognition/HUMS capability improved Fully Mission Capable rates by at least 10% for AH- 64D, Apache Longbow helicopters.

Bell Helicopter selected Intelligent Automation Corporation regime recognition/HUMS for the Bell 412 helicopter fleet.

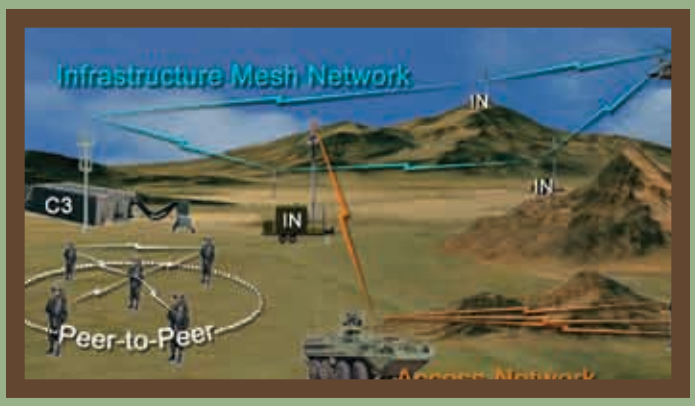
UNITED STATES ARMY SBIR STTR Programs

Spectral Efficient Communications System

San Diego Research Center, Inc.

San Diego, CA
www.sdrcinc.com
info@sdrcinc.net

San Diego Research Center, Inc. developed HyNet, a transportable hybrid network communication system that addresses the Army's test and training ranges need to achieve interoperability and commonality and to be ready for future Network Centric Systems and Operations. HyNet combines both infrastructure-based and ad hoc capabilities, and uses a robust waveform designed specifically for long operating ranges and adverse conditions. It enables test and training ranges to be expandable and easily adaptable to requirements posed by evolving and new systems. The HyNet instrumentation communications system separates the application from a specific radio link by providing a single dynamic wireless network. HyNet manages all required communications by associating Type of Service and Quality of Service parameters with each application type.



"This system solves the very real-word problem of providing dramatically increased data bandwidth using less radio frequency spectrum than was previously available"

Phase III Impacts

San Diego Research Center, Inc. was recently awarded an $82.5M indefinite duration/indefinite quantity (ID/IQ) Phase III contract by PEO, STRI to deliver these systems to the Army. $35M has been obligated to date.

Highly Effective Mosquito Trap

ISCA Technologies, Inc.

Riverside, CA
www.iscatech.com
info@iscatech.com

ISCA Technologies, Inc. provides integrated pest management solutions that are economical, effective, environmentally friendly, and importantly, do not have the harmful side effects of many conventional pest management techniques that rely solely on insecticides. ISCA Technologies created compositions mimicking host (i.e., human) skin and modified them using a patented synthetic method, which closely recreates for the mosquito a complete "olfactory sensation" associated with a host. Traps baited with these artificial "sensory correct" profiles trigger rapid responses from female mosquitoes, inducing host seeking and feeding behaviors. The traps are also collapsible, highly portable, and do not require pressurized gas, which makes it ideal for Soldiers in the field. A consumer version of this trap, the Zumba CMT20 mosquito trap, is being manufactured and sampled to distributors and researchers in several countries. ISCA Technologies is working with U.S. Army entomologists to field test these traps.

"In preliminary studies, a single trap in a medium-sized room captured all 100 released mosquitoes in as little as eight minutes."

Phase III Impacts

ISCA Technologies, Inc. received $2M from the National Institute of Standards and Technologies and $200K from the Office of Technology Transfer and Commercialization for further R&D.

ISCA Technologies, Inc. has achieved six consecutive years of revenue growth.

Seamless Data Display for Netted Indirect Fires

ProLogic, Inc.

Fairmont, WV
www.prologic-inc.com
sdd-support@prologic-inc.com

ProLogic, Inc. developed the Seamless Data to Display (SDD) Netted Fires Service to enable faster and smarter netted fires command and control decisions by optimizing the function of allocating weapon assets against targets. Integrated with the Combat Decision Aid Suite and the Joint Weaponeering Service, the SDD accesses several levels of information: current battlefield Situational Awareness; Joint Munitions Effectiveness Manual data and models; and logistical information. Combining Government/ Commercial Off-the-Shelf technologies, the SDD enables the warfighter to realize the netted fires concept in a scaleable, net-centric, service-oriented architecture. By bundling the powers of commercial geographic information systems, Army standard munitions databases, and leading edge netted fires algorithms, warfighters can exponentially increase their efficiencies with regard to indirect fires. SDD implements the netted fires concept as an end-user focused solution, enabling any user on the battlefield in rural and urban terrain to bring the full might and power of the military rapidly and seamlessly onto any target or threat.

"Seamless Data to Display (SDD) Netted Fires Service will reduce the time decision makers' need to act on time critical intelligence and targets of opportunity." – Dr. Norman Coleman, Chief, Armament Engineering Technology Center, U.S. Army Armaments Research, Development and Engineering Center

Phase III Impacts

Prologic, Inc. was awarded a $10M Phase III contract from U.S. Army Armaments Research, Development and Engineering Center to further develop this technology.

Transparent Spinel Armor

Technology Assessment & Transfer, Inc.

Annapolis, MD
www.techassess.com
info@techassess.com

Current and emerging threats dictate a compelling need for lighter weight transparent armor with improved ballistic protection capabilities. Weight critical weapon systems and support equipment cannot sustain the additional weight of bullet proof glass armor currently being used to meet these evolving threats. Recent ballistic tests of transparent magnesium aluminate spinel armor against advanced threats at Aberdeen Proving Ground have demonstrated outstanding multi-hit performance. Processing methods for large trapezoidal and curved spinel armor plates have also been demonstrated.

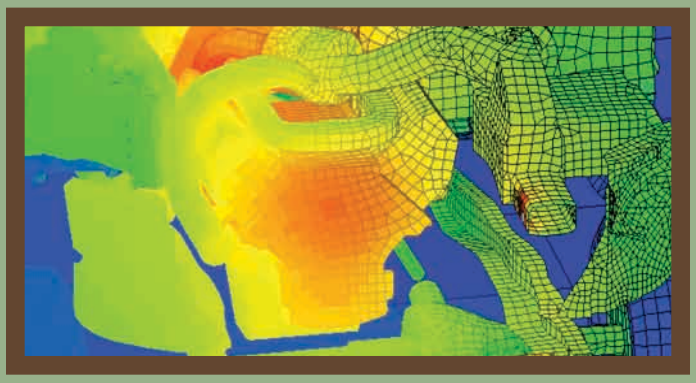
"Technology Assessment & Transfer, Inc. fabricated prototype 11"x 14" armor windows at approximately half the weight and thickness of present systems."

Phase III Impacts

Technology Assessment & Transfer, Inc. has received $3.6M in investments from the Department of Defense including the Air Force Materials Laboratory, NAVAIR, the Missile Defense Agency, and Army Redstone Arsenal. It has also received over $2M from sales to Lockheed Martin, Northrop Grumman, and others.

Vehicle Thermal Design Tool

Internal thermal image of a propulsion system



ThermoAnalytics, Inc.

Calumet, MI
www.thermoanalytics.com
info@thermoanalytics.com

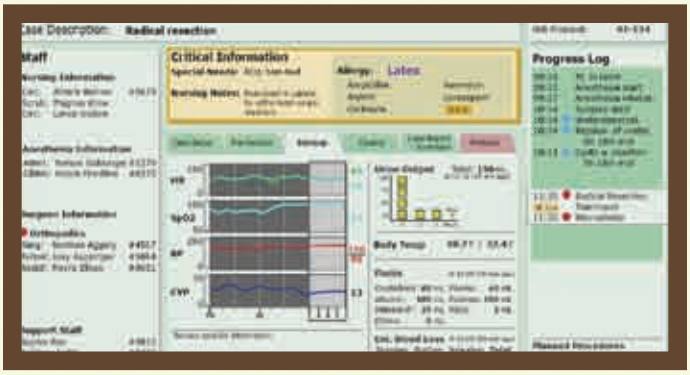
ThermoAnalytics, Inc. produced MuSES (Multi Services Electro-optical Signature code), a software program that provides assessment of reliability problems, vulnerability performance, infrared suppression and detection, and thermal management system design in vehicles and aircraft. MuSES has improved systems currently in theater and has been used extensively in some Army and Navy acquisition programs. Field reports of specific vehicle problems and design challenges provided valuable guidance and prioritization of the software's critical new features. Military benefits include a 50% reduction in some stages of the design process. Also, significant economic benefits have been realized including improved productivity and design innovations for the Michigan-based automotive industry and increased jobs in Michigan's Upper Peninsula. A commercial version (without signature management capabilities) is being co-developed for dual-use thermal analysis customers.

"ThermoAnalytics is also studying the feasibility of detecting roadside bombs with the software's infrared detection capability. "

Phase III Impacts

ThermoAnalytics has received $9.5M from various programs in the Department of Defense to further develop the technology. Contributing programs include the Army Future Combat Systems, the Stryker Vehicle Program, the Marine Corps Expeditionary Fighting Vehicle Program, and the Air Force Target Acquisition Weapons Software.

Operating Room Situational Awareness



LiveData, Inc.

Cambridge, MA
www.livedata.com
info@livedata.com

With the support of Army SBIR and in collaboration with the Center for Integration of Medicine and Innovative Technology (CIMIT) and Massachusetts General Hospital's Operating Room (OR) of the Future, LiveData, Inc. developed a patient safety perioperative readiness support system, currently installed in leading hospitals and commercially available as OR-Dashboard™. The system can help the OR team reduce errors and near misses due to oversight, failure to recognize an issue, or miscommunication. Patient safety improvements in the OR require systems that simplify the environment and augment staff capabilities. OR-Dashboard™ captures and integrates patient data from diverse sources – including physiological monitors, anesthesia equipment, and patient record systems – into a comprehensive yet concise view of the patient's status, displaying the information on an "electronic whiteboard" in the OR. The web-based display enables authorized users anywhere to view the identical images seen by the OR team.

"By capturing and organizing information in a highly visual, contextual way, OR-Dashboard™ makes it possible for everyone in the OR to be on the same page: to instantly view, understand, and act upon continuously changing information."

Phase III Impacts

LiveData, Inc. has generated over $2M in sales and commitments. Memorial Sloan-Kettering Cancer Center purchased 21 OR-Dashboard™ systems. Systems are operational at Massachusetts General Hospital; and a large New York City hospital has purchased four additional systems under a pilot program.

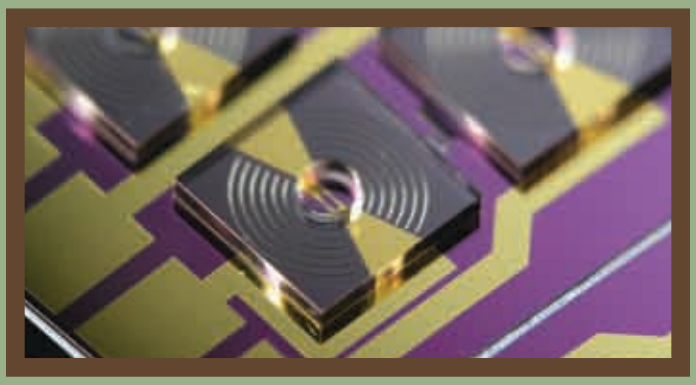
UNITED STATES ARMY SBIR STTR Programs

MEMS-based Micro Detonator Technology

Tanner Research, Inc.

Monrovia, CA
www.tanner.com
salesw@tanner.com

The low-cost Integrated Composite Energetics Packaging System (ICEPS™) quickly evolved for immediate use within the XM-307 Airburst Fuze MEMS-based safe and arm device as the initiator board starting the ordnance fire train of multiple micro-scale energetic components. From this very successful start in an important gun-launched munitions application, ICEPS™ may be the only methodology immediately available to cost-effectively implement the exploding foil initiators (EFI) required to initiate emerging insensitive munitions (IM) energetics. The EFI currently available to munitions and rocket motor developers cost about $125 each while Tanner's objective, albeit aggressive, is to provide $10 to $20 EFI devices, based on large quantity orders. The EFI will be mass fabricated by Special Devices, Inc. for multifunctional low-cost use as initiator/igniter devices in legacy and IM applications.



"Tanner's Integrated Composite Energetics Packaging System (ICEPS™) facilitates multiple revolutionary approaches for implementing micro-scale smart fuzing systems, and especially for use in very small projectile warhead and propellant cavities. Most importantly, ICEPS™ can be used with legacy or emerging insensitive munitions energetics."

Phase III Impacts

Special Devices, Inc. plans to invest over $1M to commercialize ICEPS™ and spin-off technologies including the Fireset/EFI device to be repackaged for use in a MIL-STD 1901A rocket motor igniter.

Tanner is fielding inquiries from munitions fuzing manufacturers such as Kaman.

The ICEPS™ is also being used in the Tanner/SDI MIL-STD 1901A Interrupted Igniter being developed for use in 12 Thaad missile pyrotechnic devices.

Robotic Extraction/Evacuation of Casualties

Applied Perception, Inc.

Cranberry Township, PA
www.appliedperception.com
info@appliedperception.com

Many Soldiers have been injured or killed while trying to save others under hostile conditions. Applied Perception, Inc. prototyped a pair of unmanned ground systems to extract and evacuate combat casualties while reducing exposure to Soldiers. A small unmanned vehicle with a robotic manipulator is intended for short-range casualty extraction, and a larger unmanned vehicle, containing two life-support systems, is designed for further evacuation to forward medical facilities. Both vehicles are equipped with numerous new sensing technologies. Their autonomous navigation system is compliant with DoD Joint Architecture for Unmanned Systems (JAUS) and has been transitioned to the Army Program Manager for Force Protection Systems Family of Rapid Response Equipment (PM-FPS FIRRE) program for perimeter security. The U.S. Army's Tank Automotive Research, Development and Engineering Center is utilizing this technology to develop a modular, interoperable robotic platform to enable multi-mission capabilities for the Future Combat Systems (FCS) program.

"A complete Autonomous Navigation System was designed, implemented and tested for a dual robotic system with multiple payloads for a variety of missions."

Phase III Impacts

With $1.8M in Department of Defense funding, the immediate result of this program is the inclusion of this technology into the Tactical Amphibious Ground Support (TAGS-CX) vehicle with marsupial bay.

The navigation software first developed and tested on this SBIR project was a key factor in Applied Perception, Inc. winning a subcontract from Northrop Grumman to supply the FIRRE vehicle's autonomous navigation system.

UNITED STATES ARMY SBIR STTR Programs

Flexible Color Displays

Universal Display Corporation

Ewing, NJ
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Under an SBIR award, the Communication-Electronics Research, Development and Engineering Center has directed the Universal Display Corporation to develop conformable flexible display devices with integrated GPS and wireless communications, mountable on a soldier's wrist. The true innovation behind the initial project is the deposition of Organic Light Emitting Device (OLED) materials onto flexible steel foil substrates. In January 2006, three proof-of-concept prototypes were delivered to the Army and Air Force, and despite line defects, these prototypes were the world's first high-resolution, active-matrix, full-color displays using OLED materials deposited onto flexible steel foil. Under Phase III, UDC and L-3 Communications Display Systems are packaging the displays for wrist-worn applications, and minimizing the inherent line and pixel defects experienced during the Phase II effort. In conjunction with the U.S. Army Flexible Display Center and Arizona State University, this industry breakthrough will move the United States closer to creating a flexible display manufacturing capability. These prototypes will include improved packaging of the display driver electronics for delivery of thinner wrist-worn displays, integrated GPS, and near optimal display visual performance.

"The Army views these portable, flexible displays as a critical component required for future Commanders to assess the Common Operational Picture anytime, anywhere on the battlefield."

Phase III Impacts

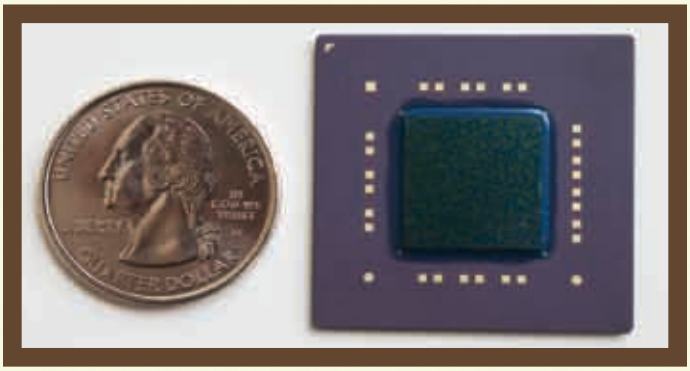
Universal Display Corporation was awarded a $2.2M Phase III contract by the U.S. Army Communication-Electronics Research, Development and Engineering Center and has invested an additional $3M in capital to incorporate enhancements in performance and functionality into the next generation of flexible display prototypes.

Hyperspectral Image Processing Platform

Coherent Logix, Incorporated

Austin, TX
www.coherentlogix.com
doerr@coherentlogix.com

The Army recognized the need for lower power, size, and weight signal processing platforms and initiated the development of the miniature processor platform by awarding an SBIR contract to Coherent Logix, Incorporated. The objective of the effort was to investigate platform reprogrammability and dynamic reconfigurability to support continually changing static and dynamic application requirements and enable lifetime field upgrades. The HyperX™ platform has a ten times better computational efficiency and a 100 times better energy efficiency versus current Field Programmable Gate Array (FPGA) and Digital Signal Processor (DSP)/Multi Processor Platform (MPP) technology. The immense computational speed in a compact low-power device will enable hyperspectral and multi-spectral image/data fusion capability to be available to the Soldier. Because the processor platform is real-time reprogrammable, systems using the HyperX™ will be able to react in real time to meet the demands of a network-centric battlefield. Other applications being developed for the Army include a remote miniature sensor platform and a direct conversion ultra-broadband digital surveillance receiver.



"HyperX™ promises to be a breakthrough in next-generation parallel processing technology enabling a host of critical processing operations previously inaccessible to the Soldier."

Phase III Impacts

Coherent Logix has received $10.5M in funding from the Army, Air Force, DARPA, and others for continued development.

Planned HyperX™ applications across the Department of Defense include hyperspectral imaging, remote sensor platforms, surveillance receivers, multi-spectral data fusion, anti-jam GPS, and software defined GPS, software defined radio.

In May 2005, Coherent Logix received $5M in equity financing.

Army SBIR/STTR
COMMERCIALIZATION

During Phase III of the U.S. Army SBIR/STTR Programs, small companies are expected to obtain funding from the private sector and/or non-SBIR/STTR government sources to develop prototypes from Phase II into products for sale in private sector and/or military markets. U.S. Army Phase III commercialization success encompasses the following:

Sales

"Sales" includes cash revenue from the sale of new products or non-R&D services embodying the specific technology and/or spin-off technology developed under the Phase II project.

Additional Investment

"Additional Investment" includes investment from any source other than the federal SBIR/STTR program in activities that further the development and/or commercialization of the specific technology developed under the Phase II project.

Commercialization Brochure

The U.S. Army SBIR/STTR Commercialization Brochure is published annually. This brochure is distributed within the Army/DoD community and to the private sector at a number of conferences and other venues across the country.

Past Commercialization Brochures

2005

2004

2003

2002

Outreach & Sources of Information

The Army SBIR/STTR Programs conduct an aggressive outreach program to increase small business awareness of broad opportunities provided by the Army. Army SBIR/STTR personnel participate in national, regional, and local conferences across the country. This provides small businesses with face-to-face contact with people who are knowledgeable about Army needs and the SBIR/STTR process. The PM, Army SBIR Website identifies upcoming events at which the Army will be participating.

Website (www.armysbir.com)

- General SBIR/STTR information
- Changes and new requirements
- Points of Contact and links to other Army programs
- Proposal submission procedures
- Recent Army SBIR/STTR awards
- Searchable database of past awards
- Chemical-Biological Defense SBIR Program
- Phase III Success Stories
- Quality Awards Program

UNITED STATES ARMY
SBIR STTR
Programs

2006 Army SBIR/STTR Quality Awards Winners

Applied Perception, Inc.
Cranberry Township, Pennsylvania

Akron Rubber Development Laboratory, Inc.
Akron, Ohio

Bay Materials, LLC
Menlo Park, California

Scientific Applications & Research Associates, Inc.
Cypress, California

Opto-Knowledge Systems, Inc.
Torrance, California

Visual Learning Systems, Inc.
Missoula, Montana

The Quality Awards Program recognizes exceptional Army SBIR/STTR projects. Each year, a distinguished panel of Army and industry experts selects the winning projects from nominations submitted from across the Army. Nominations are evaluated based on: originality and innovation of research, relevance of the research to the Army mission, and immediate commercialization potential of the research.

The Army Quality Awards Program is very competitive. This year, 254 projects were eligible to compete for an award and 34 nominations were forwarded to the Quality Awards Selection Board. The Board selected six projects from across the Army that represent the best in small business research and development.

In recognition of this achievement, the winners and their projects are showcased at Army and small business conferences and symposia throughout the year via this Army SBIR/STTR Quality Awards brochure.

CALL TO DUTY!

UNITED STATES ARMY
SBIR STTR
Programs

Photos courtesy of the U.S. Army and:

Senior Airman Jeffrey Allen
Staff Sergeant Jacob N. Bailey
Photographer's Mate First Class Bart A. Bauer
Captain Michael Blankartz
Specialist Curt Cashour
Staff Sergeant James H. Christopher III
Specialist Jeremy D. Crisp
Staff Sergeant Kyle Davis
Gunner's Mate First Class Martin Anton Edgil
Staff Sergeant Jason W. Edwards
Lance Corporal Ben J. Flores
Specialist Alisan Gul
Staff Sergeant Russell Lee Klika
Staff Sergeant Brian D. Lehnhardt
Kaye Richey
Sergeant Craig Zentkovich

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