



2005

ARMY QUALITY AWARDS



SBIR/STTR PHASE II



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Enhanced Chemical Biological Closure

Diversified Marketing Group

Narberth, Pennsylvania

Diversified Marketing Group developed an economical and flexible closure system for the next generation of breathable and lightweight chemical protective garments, offering protection from gas, liquid, chemical biological (CB), and hazardous materials. The highly effective FLEXSEAL™ closure combines a matrix of weaving techniques, element constructions, material coatings, and unique channeled slider and seal block technologies. The closure remains airtight when bent, and air and water impermeable while sufficiently resisting toxic chemical and nerve agent simulants. No longer will closures be the weakest link in the protection of civilian and Soldier in a hostile CB environment. End-items can now be vacuum sealed and packaged without closure failure. This new technology has many military and commercial uses, including chemical protective overgarments, OSHA's Level A – D suits, CB shelters, Dry Bags, and underwater equipment.



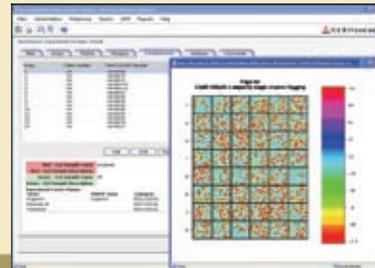
U.S. Army Natick Soldier Center

Web-driven Bioinformatic Platform

3rd Millenium, Inc.

Waltham, Massachusetts

Genomics technologies play a principal role in many biological research and discovery efforts such as the design of rapid diagnostics for pathogens, the development of antidotes for toxic chemical agents, and the elucidation of the mechanism of action for diseases. A robust data and knowledge management informatics system is a critical component for tracking and analyzing the vast amounts of data produced by these technologies. The Array Repository and Data Analysis System (ARDAS) provides complete informatics support for conducting 2-color spotted and Affymetrix microarrays experiments and is extensible to other genomics technologies such as proteomics or metabolomics. ARDAS includes a Laboratory Information Management System (LIMS) for tracking laboratory-produced data, a warehouse for organizing the data in a statistically rigorous framework and for performing sophisticated searches, and an Analysis Information Management System (AIMS) that integrates several computational tools.



U.S. Army Medical Research and Materiel Command

Robotic Systems Control

CHI Systems, Inc.

Fort Washington, Pennsylvania

To assist the Future Combat Systems (FCS) Program in solving the single operator, multiple robot command and control challenge, CHI Systems developed simulation prototypes of robotic FCS weapon and sensor systems, which contain rich sets of task-based behaviors. The CHI-developed FCS Unit of Action Robotic Control behaviors allow single control of up to 200 robotic systems by assigning robotic commander behaviors to hierarchies of subordinate robots, and then managing robots by exception. Robotic commanders are able to control their subordinates, allowing the human controller to manage only a few key robotic subordinates, rather than hundreds of individual robots. The robotic control behaviors were inserted into the Armament Research, Development and Engineering Center Combat Decision Aiding System to perform testing of FCS effects-based operations by robotic systems in simulation environments. The behaviors allowed hundreds of simulated robotic weapon systems to operate with limited human intervention.



U.S. Army Armament Research, Development and Engineering Center



Bioengineered Proteins

TransGenRx and Louisiana State University

Baton Rouge, Louisiana

TransGenRx has developed transgenic chickens capable of expressing and secreting specified proteins into the whites of eggs, allowing economical large scale production of pharmaceutical proteins such as vaccines, antibodies, and antidotes. This technology is the targeted integration of a desired gene sequence into virtually any animal, and the controlled expression of that sequence to achieve a desired outcome such as protein production and gene therapy. This may be a major breakthrough in molecular biology and recombinant DNA technology, the disciplines that make up biotech drug development. Ultimately, successful development of this technology will make it possible to save millions of lives through the production of protein therapeutics and diagnostics that were not economically feasible in the past. This technology holds the potential to lower the cost of production of protein drugs in this rapidly growing industry by 100 fold – a protein that currently costs the industry \$100 can be made for \$1.



U.S. Army Research Office



Collaborative Leadership Training

Knowledge Analysis Technologies, LLC.

Boulder, Colorado

Knowledge Analysis Technologies developed an automated software agent to monitor, moderate, and evaluate contributions in an online collaborative environment. This novel application of Latent Semantic Analysis advances the state of the art in military leadership development by providing expert feedback to users and access to hundreds of digital books. Leaders have instant access to online critical incident resources for training and by embedding the knowledge of senior officers into the system, junior leaders can reap the benefits of direct mentoring – anytime, anywhere. The agent has been used successfully by cadets at the U.S. Air Force Academy and senior officers at the U.S. Army War College. In both cases, the use of this system led to significant improvements in training performance.



U.S. Army Research Institute for the Behavioral and Social Sciences



Measurement and Signature Intelligence System

Progeny Systems Corporation

Manassas, Virginia

Progeny Systems Corporation has developed the Aerial Canopy MASINT Sensor System (ACMS) — an air deployable remote monitoring system for the Soldier that allows significantly better intelligence gathering and information transmission in any environment. ACMS enhances situational awareness and precision targeting without risk of personnel loss. Fundamental to ACMS is a forward area dispersed array of sensors and communications relays that have already demonstrated successful, remote deployment from both a helicopter and a Tactical Unmanned Aerial Vehicle. The work being conducted by Progeny provides a cost-effective, high performance approach to ACMS by designing a configurable payload capability that features flexibility of signal processing capabilities, sensor packages, deployment options, and RF communication links. ACMS can effectively be used for early warning, area denial, facilities protection, Combat Search and Rescue, Counterterrorism, Border Patrol, and Counter Drug Operations.



U.S. Army Communications–Electronics Research, Development and Engineering Center



Compact Solid State Power

Sophia Wireless, Inc.

Chantilly, Virginia

Satellite communications on-the-move is a critical capability for military situational awareness and also has many commercial applications for entertainment and high-speed communications. Sophia Wireless has successfully developed the smallest sized, lightest weight, and highest performing solid state power amplifiers (SSPA) for satellite transceivers. The amplifiers use innovative and proprietary power combining circuits, hybrid RF integration, and thermal management techniques to achieve high power levels while maintaining excellent linearity and wide bandwidth. Their Ku-band SSPA operate from 12.6 to 18 GHz, about 10 times the typical SSPA bandwidth. The size, weight, and power of these new amplifiers make them particularly well suited to applications in ground mobile platforms, unmanned aerial vehicles, and other military and commercial mobile applications.



U.S. Army Research Office

Army SBIR/STTR Phase II Quality Awards

The Quality Awards Program recognizes exceptional Army SBIR/STTR Phase II 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 the following criteria: 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, 240 Phase II projects were eligible to compete for an award. From those eligible, 104 applications were received, and of those, 57 were forwarded to the Quality Awards Selection Evaluation Board. The Board selected seven projects from across the Army that represent the best in technology innovation, relevance to the needs of the Army, and commercialization potential.

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 Phase II Quality Awards brochure.

The SBIR Program

Congress initiated the Small Business Innovation Research (SBIR) Program in 1982 to increase small business participation in Federal Research and Development (R&D). Successful Army SBIR research efforts move through three phases:

- Phase I: Feasibility Study, which lasts up to six months and is funded for up to \$70,000 with a \$50,000 option available.
- Phase II: Research and Development, which lasts up to two years with up to \$730,000 in funding.
- Phase II Plus: One year, \$500,000 maximum (effective 1 July 2005) subject to third-party matching funds.
- Phase III: Commercialization, which requires funding from the private sector or non-SBIR program sources.

The STTR Program

The Small Business Technology Transfer (STTR) Program was established in FY94 as a three-year pilot program and has been reauthorized to the year 2009. 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), or other non-profit research institutions.

- Phase I: Feasibility Study, which lasts from six to twelve months and is funded for up to \$100,000.
- Phase II: Research and Development, which lasts up to two years with up to \$750,000 in funding.
- Phase III: Commercialization, which requires funding from the private sector or non-SBIR program sources.

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