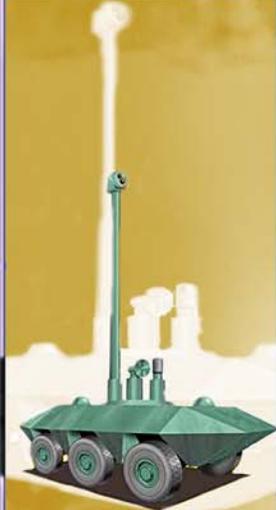


2001 Army SBIR Phase II Quality Awards

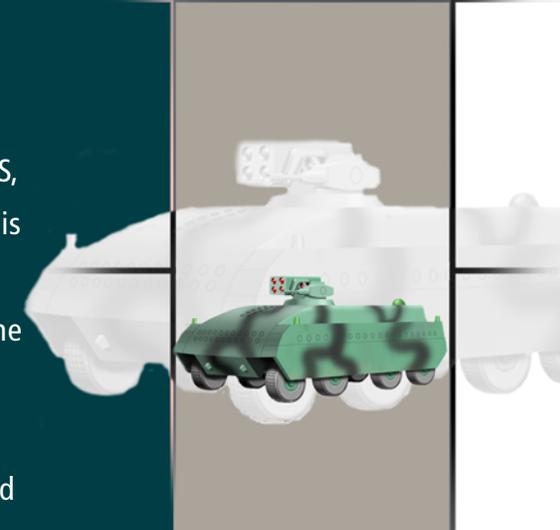
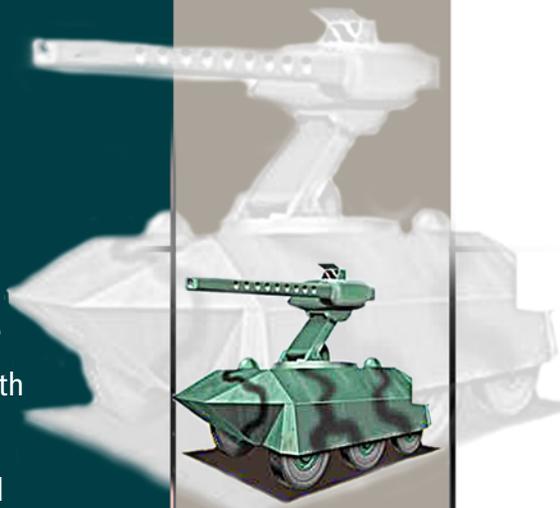


Future
Combat
Systems

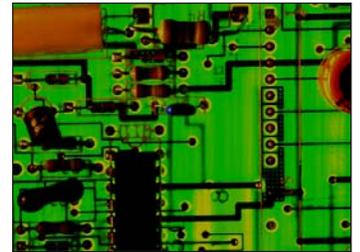
Future Combat Systems

The Army is undertaking a transformation into a more responsive, deployable, and sustainable force, while maintaining high levels of lethality, survivability, and versatility. In unveiling this new strategy, GEN Eric Shinseki, Chief of Staff of the Army, stated, "Heavy forces must be more strategically deployable and more agile with a smaller logistical footprint, and light forces must be more lethal, survivable, and tactically mobile."

This new force is called the **Objective Force (OF)**, and is intended to meet the full spectrum of present and future Army missions. The cornerstone of the OF capability and the transformation is the **Future Combat Systems (FCS)** Program. This reconfigurable, adaptive **system of systems** will provide a common baseline capability that increases the Army's ability to conduct network/collaboration centric warfare. The Army is working to develop and demonstrate the first generation of FCS, and all its enabling technologies, within this decade. This transformation has had, and will continue to have, a major impact on the entire Army Science and Technology (S&T) enterprise — to include the SBIR Program. During 2000, the SBIR Program was aligned with FCS and OF technology categories — this will be an ongoing process as OF/FCS needs change and evolve.



2001



Electromagnetic Interference Shielding

Ormet Circuits, Inc.
Carlsbad, CA

As Army weapon and support systems have become increasingly dependent on electronics, susceptibility of electronics to electromagnetic interference (EMI) has become a major readiness issue. Electronic devices have become smaller and faster and are being forced closer and closer together. Ormet developed a unique, cost-effective, and state-of-the-art shielding process. They use ORganic-METallic materials which can be screen-printed on bare boards to provide 80 dB of EMI shielding, or spray-coated over dielectrics on populated boards to provide 30 to 40 dB of shielding. This enabling technology may be critical to ensuring the survivability of FCS command and control systems.

U.S. Army Space & Missile Defense Command

Army SBIR Phase II Quality Awards



Barrel Armor

TPL, Inc.
Albuquerque, NM

Newly developed propellants are extremely corrosive and consume gun components at an accelerated rate as ammunition is being developed with higher velocities and lethalties. TPL, Inc. developed a process to explosively-clad thermochemical-resistant refractory metals to the bores of various caliber gun tubes and fabricated two tantalum-clad test barrels from 25mm Bushmaster barrels. Testing demonstrated an increase in barrel life of greater than 400%. This technology not only dramatically increases barrel service life, but allows development of new higher-performance ammunition for greater range and accuracy, with far fewer sustainment requirements, and will enable more lethal rapid-fire weapon systems.

U.S. Army Research Office

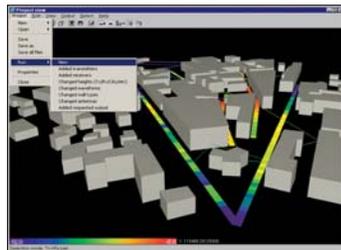


Increased Power

Lynntech, Inc.
College Station, TX

Fuel cells offer lighter, more powerful energy sources than are currently available and will extend mission time, reduce weight, and dramatically decrease the logistics burden of present batteries. Monopolar fuel cells represent the simplest possible fuel cell power supply. With methanol as the fuel, Lynntech, Inc. developed cells that are capable of delivering a large amount of electrical energy from an easily handled, pourable liquid fuel. These fuel cells have great potential to serve as small primary energy sources for the Land Warrior Program, and can also power a diverse range of portable electronics for much longer than current battery technology.

U.S. Army Research Laboratory



Site-Specific Radio Communication

Remcom, Inc.
State College, PA

Realistic analyses of radio wave channels are required to assess communication networks and systems envisioned for use with FCS. Remcom, Inc. developed a software tool which combines site-specific, physics-based radio propagation models for predicting wave characteristics in indoor, urban, and rural environments with a powerful, easy to use graphical user interface. The site-specific models very accurately predict the negative interactions of radio communication signals with the physical environment, particularly in dense urban areas where strong shadowing and multi-path interference effects occur. Using this information, deployed tactical units can build ad hoc and effective wireless communication systems to optimize communications coverage.

U.S. Army Research Office



High Resolution Micro-Display

eMagin Corporation
Hopewell Junction, NY

The Army needs dependable micro-displays to give mounted and dismounted soldiers expanded situational awareness to maintain high levels of lethality, survivability, and versatility for the Objective Force. eMagin developed a high-resolution, active matrix organic, light-emitting diode (OLED) micro-display for incorporation into military helmet-mounted displays. The OLED micro-displays provide high brightness and resolution, a wide temperature operating range, shock resistance, and wide viewing angles, allowing ease of viewing for long periods of time. These micro-displays can be interfaced directly to unattended sensors or to computer videos, providing simple connectivity with low power consumption.

U.S. Army Communications-Electronics Command

Army SBIR Phase II Quality Awards

The Army SBIR Program sponsors an annual Quality Awards Program that recognizes top quality Army SBIR Phase II projects for their technical achievement, contribution to the Army, and dual-use commercialization potential. Each year, a distinguished panel of Army and industry experts selects the winning projects from nominations submitted across the Army. Throughout the year, the winners and their accomplishments are showcased at several Army conferences and symposia.

2000 Winners

Student-Centered Learning System: Farance, Inc.

Rapid, Effective Malaria Test: Flow, Inc.

Smart Armor Structures: Production Products Mfg. & Sales, Inc.

Computer-Aided Design: ThermoAnalytics, Inc.

Better Communications: Cree, Inc.

Night Driving Simulator: DCS Corporation

Detection of Mosquito-Borne Pathogens: Medical Analysis Systems, Inc.

High-Speed Munitions Inspection: Skiametrics, Inc.

The SBIR Program

Congress initiated the SBIR Program in 1982 to increase small business participation in federal research and development. 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 for up to \$730,000.
- **Phase III:** Commercialization, which requires funding from the private sector or non-SBIR program sources.

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