TACOM APBI

30 October - 1 November

Advanced Planning Briefing for Industry
Tank Automotive Research, Development, & Engineering Center

TACOM Advanced Planning Briefing for Industry

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Director
U.S. Army Tank Automotive RD & E Center

1 November 2002
FCS Block I Technologies

Lightweight Airborn Multi spectral Minefield Detection (LAMMDS)

Lightweight Armor Solution for Vehicles

On-the-Move Close-in Defeat APS

Integrated Army Active Protection System (IAAPS)

Next Generation Training and Simulation Systems

Combat Hybrid Power Systems (CHPS)

Multi-Function Staring Sensor Suite (MFS3)

Crew Integration and Automation Test Bed (CAT)

Dismounted Warrior C4 Technologies

FCS Engine

On-the-Move Tactical SATCOM Technology

Multi-Mission Common Modular UAV Sensors ATD

Robotic Follower

Soldier Stamina-Biomedical Interventions

Organic Air Vehicle (OAV)

Objective Force Warrior (OFW)

Re-supply and Precision Airdrop

Foliage Penetration Radar (FOPEN)

Loitering Attack Munition (LAM), Penetrating Attack Munition (PAM)

Combat Coalition ID (CCID)

Small UAV (SUAV)

Hummingbird (A-160)

Agile Commander

Log C2

Netfires C3 for NLOS/BLOS

Combat Casualty Care

Ground Standoff Mine Detection System

C4ISR On-The-Move (OTM) Test Bed

TARDEC

ARDEC

Tank-automotive & Armaments COMmand

(As of 17 Oct 02)
Opportunities in FY03

- Controls and Robotics
- Agent Polluted Water Detection/Removal
- Vehicle Technologies
- Power/Energy Systems
- Auxiliary Power Units
- Visualization/Prototyping
- Advanced Suspension

Tank-automotive & Armaments COMmand

(As of 17 Oct 02)
Detection of Chemical-Biological Pollutant Agents in Water

- Hand held, self power device to analyze water
- Detect and monitor CB warfare agents in real time
- Economical and mass producible
- Require no specialized training

NBC Agent Water Contamination Removal Technologies

- Process to remove NBC warfare agents from water.
- Capable to contain waste for safe disposal.
- Minimal complexity and logistic burden.
- Power efficient.
Robotic Imaging
- Terrain Characterization/World modeling
- 360° Safeguarding
- Pedestrian Detection
- Road Sign Identification

Navigation, Control, Path Planning
- Cooperative Situation Awareness (UGV/UGV & UGV/UAV)
- Mission Oriented Robotic Path Planning Incorporating Tactical Behaviors
- Use of A Remote Sensor Info for Path Planning and Execution (UGS, UGV’s, UAV’s)
- Robotic Planning Based on Mobility State Self-Awareness
Vehicle Technologies

Advanced Thermal Management Systems
- Areas of Interest: compressors, heat exchangers, systems packaging and vehicle integration for legacy and future truck systems
- Demonstrated return on investments based on reduced fuel consumption & O&S costs
- Vehicle integration should accommodate future truck high voltage bus and legacy systems

Next Generation Tactical Vehicle Architecture
- Areas of Interest: Electronic systems and subsystem controls, smart sensors, nano-technologies, MEMS, advanced power management architectures, embedded computing devices, smart actuators, and multiplexed electronics systems
- Integration of capability to analyze diagnostic systems and fault codes at the electronic control level with the different varieties of control structures of Army tactical wheeled vehicles

(As of 17 Oct 02)
Vehicle Technologies (Cont’d)

Integration of Voice Activated Device with Onboard CPU
- Development of a voice interactive computing device to interface with Army truck platforms
- Voice activated control of on-vehicle systems and software on an Army tactical truck
- Control of communication equipment, equipment diagnostics, IETM Software, navigation, asset tracking, telematics systems

Advance Pumping Technologies for Parasitic Reduction
- Development of an objective design and prototype pumps and supporting cooling components that result in performance and design benefits
- Demonstrate both pump technology improvements and benefits to commercial and military vehicles utilizing worst case driving constraints

(As of 17 Oct 02)
Advanced Coatings Research

- Conduct research in coatings technology for ground vehicles
- Provide analysis into the causes of corrosion in fielded ground vehicle systems
- Develop techniques and technologies for corrosion detection
- Develop corrosion resistant coatings
- Evaluate new commercially developed corrosion preventive technologies
- Research application and maintenance techniques and identify best/recommended practices
Tracked Hybrid Electric Vehicle

- Demonstrate hybrid electric drive on a Command and Control tracked vehicle (M577)
- Develop a power budget and power management system for the propulsion system and other onboard power users
- Investigate different energy storage devices
Auxiliary Power Units

Rotary Multi-Fuel Auxiliary Power Unit

- Onboard Military Vehicle
- Output 12 - 18 KW
- Operate on Heavy Carbon Fuels
- High Power Density
- Cold Start Capability
- Low Noise Output

Fuel Cell Based Ground Vehicle Auxiliary Power Unit

- Develop On-Board Fuel Cell Auxiliary Electric Power Generator
- Develop Robotic & individual mobility fuel cell power systems
- Demonstrate fuel cell passenger vehicles on military bases
Advanced Suspensions

Track Over Wheel Study
- 16 – 20 Ton Weight Class
- Configuration Optimization
- Application Feasibility

Magnetorheological and Compressible Fluids
- Combination/Integration of Fluids
- Strut Application
- Semi-Active Capability

Low Bandwidth Active/Compressible Fluids
- Height Control Capability
- Load Equalization
- Roll and Pitch Control
- Improved Ride for Less Cost and Complexity

(As of 17 Oct 02)
Visualization and Prototyping

Integrated Program Management Framework

- Comprehensive, real time deployable collaboration solutions.
- Mitigate risk, time constraints and classification issues of developing new vehicle technologies.
- Capable of self-service management, milestone/activity task/resource tracking, online, and information visual.
- Integrate cost, schedule, earned value and programmatic information into a collaborative weapons system development environment.
- Provide virtual workspaces for globally dispersed teams.
- Interface with existing metrics to measure applications.
- Accelerate Army’s vehicle development and fielding process.
Digital Human Modeling and Virtual Reality for Future Combat Systems

- Development of a biomechanically correct and optimized human models for the conduct of realistic studies of human factors in a virtual environment
- Construction of rigorous methods for quantifying human performance measures for implementation into design optimization techniques
- Address bandwidth management for feedback control
Rapid Prototyping

- Leverage commercial state-of-the-art rapid prototyping tools and technologies within manufacturing to assist in the design, development and production of military vehicle systems, subsystems and components.
- Delivery of first quality parts, optimizing component performance.
- Increase alternate design selection with minimum affect on costs.
- Reduction in time from design to production.
- Accessible to customer for interactive collaboration.
Power/Energy Systems

Fuel Cell Power Systems for

- Robotics
- Individual Mobility
- Passenger Vehicles (on base)
Broadly-defined topics of interest covering a range of TARDEC’s requirements (must be within lab mission and agency programs).

- Contains instruction for preparation and submission of both abstracts and proposals.
- Contains criteria for evaluation and selection of proposals for award.

Only one announcement will be posted to TACOM website and FedBizOpps.

November 2002
BAA Process

**BAA Announcement Issued**
- Day 30

**Abstracts Received**
- Day 45

**Invitation Letters Issued**
- Day 50

**Evaluations Complete**
- Day 125

**Proposals Submitted**
- Day 95

**Procurement Packages to the R&D Group**
- Day 145

**Alpha Negotiation**
- Day 170

**Award**
- Day 180

**Abstract Review Complete**

(As of 17 Oct 02)
Small Business Innovation Research (SBIR)

Three-phase program of product development
Next Army solicitation available on WWW MAY 2003:
www.acq.osd.mil/sadbu/sbir

Most SBIR Participants are firms of fewer than 10 employees

Phase I
Feasibility Study
Up to $100K (Army $70K)

Phase II
Research & Development
Up to $750K (Army $730K)

Phase III
Develop & market product

Topic Pre-Release
MAY 2003

Dual use technologies
DoD funds feasibility and R&D
Industry develops product & market

Successfully Transferring New Technologies from Concept to Market

Military
Commercial
Other Govt

(As of 17 Oct 02)
## SBIR PROGRAM

### PHASE I AWARDS

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<th>Year</th>
<th>Awards</th>
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<td>FY 00</td>
<td>18 ($ 1.3 M)</td>
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<tr>
<td>FY 01</td>
<td>30 ($ 2.1M)</td>
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<tr>
<td>FY 02</td>
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### PHASE II AWARDS

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### PHASE II FAST TRACK AWARDS

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Total Army SBIR budget for FY02 about $151M
TARDEC SBIR budget for FY02 about $16M

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(As of 17 Oct 02)
Timetable for SBIR Solicitation

PHASE I SCHEDULE

Topic Pre-release on Web
Solicitation Opens
Solicitation Closes
Proposal Evaluation
Negotiate Contracts (Phase I)

MAY 2003
JULY 2003
AUG 2003
AUG - OCT 2003
NOV - DEC 2003

PHASE II SCHEDULE

Invite Proposals
Proposals Due
Field Eval & OMLs
TAC Eval & OMLs
Phase II SEB
Negotiate Contracts (Phase II)

MAY 2003
JUNE 2003
JUN - JUL 2003
JUL - AUG 2003
AUG 2003
AUG – DEC 2003

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