



# ENERGY DEPARTMENT

## *Small Business Innovation Research and Small Business Technology Transfer*

**National SBIR/STTR Fall Conference**

**April 30-May 3, 2007**

Larry James

SBIR/STTR Acting Program Director



# **SBIR/STTR FY 2007 TECHNICAL TOPICS**

## **Energy Efficiency and Renewable Energy**

1. Use of Cellulosic Biomass to Produce Biofuels
2. Solar Energy
3. Hydrogen Delivery and Production
4. Wind Energy Reliability and Cost Reduction
5. Technologies Related to Hybrid Electric Vehicles with Special Emphasis on Plug-in Hybrids
6. Alternative Feedstocks to Chemicals



# **SBIR/STTR FY 2007**

## **TECHNICAL TOPICS (cont'd)**

### **Basic Energy Sciences (including NE, EE, FE)**

7. Chemical Reactions and Separation Processes for Bio-Refinery Applications
8. Catalysis
9. Separation Process Technologies for Manufacturing
10. Nanotechnology Applications for Energy Efficiency and Renewable Energy
11. Advanced Cooling Technology
12. Solid State Lighting
13. Neutron and Electron Beam Instrumentation
14. Technology to Support National Scientific User Facilities
15. Accelerator Technology for Present and Future Accelerator Facilities
16. Materials for Advanced Nuclear Energy Systems
17. Advanced Coal Research



# **SBIR/STTR FY 2007**

## **TECHNICAL TOPICS (cont'd)**

### **Fossil Energy**

18. Coal Gasification and Combustion Technologies
19. Advancements in Solid Oxide Fuel Cell Balance-of-Plant and Turbine Performance and Sub-Systems for Performance Enhancements
20. High Performance Materials for Long Term Fossil Energy Applications
21. Environmental Innovations for Fossil Energy Applications
22. Oil and Natural Gas Technologies
23. Climate Control Technology for Fossil Energy Applications

### **Nuclear Energy**

24. Advanced Technologies for Nuclear Energy



# **SBIR/STTR FY 2007**

## **TECHNICAL TOPICS (cont'd)**

### **Nuclear Physics**

- 25. Nuclear Physics Electronics Design and Fabrication
- 26. Nuclear Physics Particle and Radiation Detection Systems, Instrumentation and Techniques
- 27. Nuclear Physics Accelerator Technology
- 28. Nuclear Physics Software and Data Management

### **High Energy Physics**

- 29. High Energy Physics Data Acquisition and Processing
- 30. Accelerator Technology for International Linear Collider
- 31. Advanced Concepts and Technology for High Energy Accelerators and Colliders
- 32. Radio Frequency Accelerator Technology for High Energy Accelerators and Colliders
- 33. High Field Superconductor and Superconducting Magnet Technologies for High Energy Particle Detectors
- 34. High Energy Physics Detectors



# **SBIR/STTR FY 2007**

## **TECHNICAL TOPICS (cont'd)**

### **Office of Science (Joint computing topic w/NE, HEP, ASCR, BER)**

35. Advanced Computational Methods for Applied Science and Engineering

### **Advanced Scientific Computing Research**

36. Numerical Software Maintenance Software Engineering

37. Scientific Visualization and Data Understanding

38. High Performance Networks

39. Scalable Systems Software for Petascale Computer Systems

40. High Performance Middleware

### **Data Management**

41. Discovery, Search, and Communication of Textual Knowledge Resources in Distributed Systems



# **SBIR/STTR FY 2007**

## **TECHNICAL TOPICS (cont'd)**

### **Defense Nuclear Nonproliferation**

- 42. Research to Support Proliferation Detection
- 43. Research to Support Nuclear Explosion Monitoring

### **Electricity Delivery and Reliability**

- 44. High Temperature Superconducting Second Generation Wire
- 45. Power Electronics and Advanced Materials for Energy Storage
- 46. Modeling Analysis



# **SBIR/STTR FY 2007**

## **TECHNICAL TOPICS (cont'd)**

### **Biological and Environmental Research**

- 47. Carbon Cycle Measurements of the Atmosphere and the Biosphere
- 48. Genomes-to-Life (GTL) and Related Biotechnologies
- 49. Technologies for Subsurface Characterization and Monitoring
- 50. Atmospheric Measurement Technology
- 51. Medical Sciences

### **Fusion Energy**

- 52. Advanced Technologies and Materials for Fusion Energy Systems
- 53. Fusion Science and Technology
- 54. High Energy Physics for Inertial Fusion Energy

# FY 2007 SCHEDULE

- **November 21, 2006: Phase I deadline**
- **Mid-April 2007: Phase I award selection**
- **April 13, 2007: Phase II deadline**
- **Mid-June 2007: Phase II award selection**
- **Late June 2007: Phase I grants begin**
- **Mid-to-late July 2007: Phase II grants begin**



# PHASE I EVALUATION PROCESS

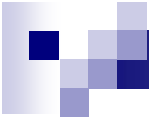
- ADMINISTRATIVE REVIEW
- FIRST STEP REVIEW
- EXTERNAL PEER REVIEW
- SCORING/RANKING
- AWARD SELECTION
- NEGOTIATIONS
- FORMAL AWARDS
- DEBRIEFINGS





# REASONS FOR FIRST STEP DECLINATIONS

- Is the application responsive to the technical topic and subtopic?
- Is it for research or research and development?
- Does the application duplicate work that has already been funded?
- Does the application provide enough information to conduct further review?
- Is there a conflict of interest with respect to topic preparation?
- Does this application stand a reasonable chance of being funded compared to other applications received in the same topic/subtopic?



# DOE SBIR/STTR EVALUATION CRITERIA Phases I and II

## 1. **Strength of the Scientific/Technical Approach**

*To what extent does the proposed work build upon or move beyond the current state-of-the-art? How new or unique is the idea? How significant is the scientific and/or technical challenge? Is a breakthrough possible? Has the applicant demonstrated knowledge of the subject? How thoroughly have the concepts been presented?*

## 2. **Ability to Carry out the Project in a Cost Effective Manner**

*Please comment on the qualifications of the Principal Investigator (PI), other key staff, and consultants, if any, and on the level of adequacy of equipment and facilities*

## 3. **Impact**

*Please comment on the significance of the technical and/or economic benefits of the proposed work, if successful. Please comment on the likelihood that the proposed work could lead to a marketable product or process, and on the size of the potential market. Please comment on the likelihood that the project will attract further development funding (from private sector sources or from Federal, non-SBIR/STTR sources) after the SBIR/STTR project expires.*

Evidence of Commercial Potential (Phase II Only)



# **FY 2006 RESULTS**

## **Phase I**

- **1387**            **Phase I Applications Received**
- **1072**            **Applications Sent Out for Review**
- **290**             **Selected for Award (260 SBIR, 30 STTR)**

**SBIR – 34 collaborations; 16 universities, 15 DOE labs, 3 other**  
**STTR – 29 collaborations; 16 universities, 7 DOE labs, 6 other**

## **Phase II**

- **253**            **Phase II Applications Received**
- **182**            **Phase II Applications in Funding Range**
- **139**            **Selected for Award (124 SBIR, 15 STTR)**

**SBIR – 24 collaborations; 12 universities, 5 DOE labs, 7 other**  
**STTR – 15 collaborations; 7 universities, 6 DOE labs, 2 other**



# CURRENT SUCCESS RATES

	<u>SBIR</u>	<u>STTR</u>
<b>Phase I</b>	<b>1 out of 6</b>	<b>1 out of 10</b>
<b>Phase II</b>	<b>1 out of 2</b>	<b>1 out of 2</b>



# COMMERCIALIZATION ASSISTANCE PROGRAMS

- Business Plan Assistance & Opportunity Forum (PII)
- Trail Blazer (Phase I)
- Technology Niche Analysis (mid-Phase II)
- Virtual Deal Simulator (pilot – Phase II)



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**PUCK**

**Powerful  
Universal  
Controller**

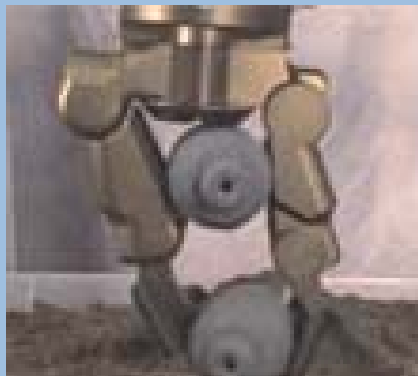
**SBIR Project:** Universal  
Telerobotic-Master Device  
with Advanced Feedback



Compact yet powerful

### **Puck Features**

- All-in-one packaging
- Ultra-miniature
- Ultra-power efficient
- 32-bit DSP processor
- Near-zero torque ripple
- Up to ½-HP capacity
- Radiation tolerant
- Conduction cooling



Robot unearthing bombs

### **Applications**

- Clearance of unexploded ordnance
- Reactor decommissioning
- Energy-efficient precision machinery



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# **Wraptor<sup>TM</sup>**

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