



U.S. DEPARTMENT OF  
**ENERGY**

Office of  
Science

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

## **-- ASCR's Engagement --**

ASCAC Meeting  
August 23-24, 2011  
Rockville Hilton  
Rockville, MD

Walter M. Polansky  
Advanced Scientific  
Computing Research

# SBIR/STTR Program

## Small Business Innovation Development Act of 1982- P.L. 97-219

- To stimulate technological innovation
- To use small business to meet Federal R&D needs
- To foster and encourage participation by minority and disadvantaged persons in technological innovation
- To increase private sector commercialization innovations derived from Federal R&D

**Three Phase program (feasibility, demonstration, commercialization)**

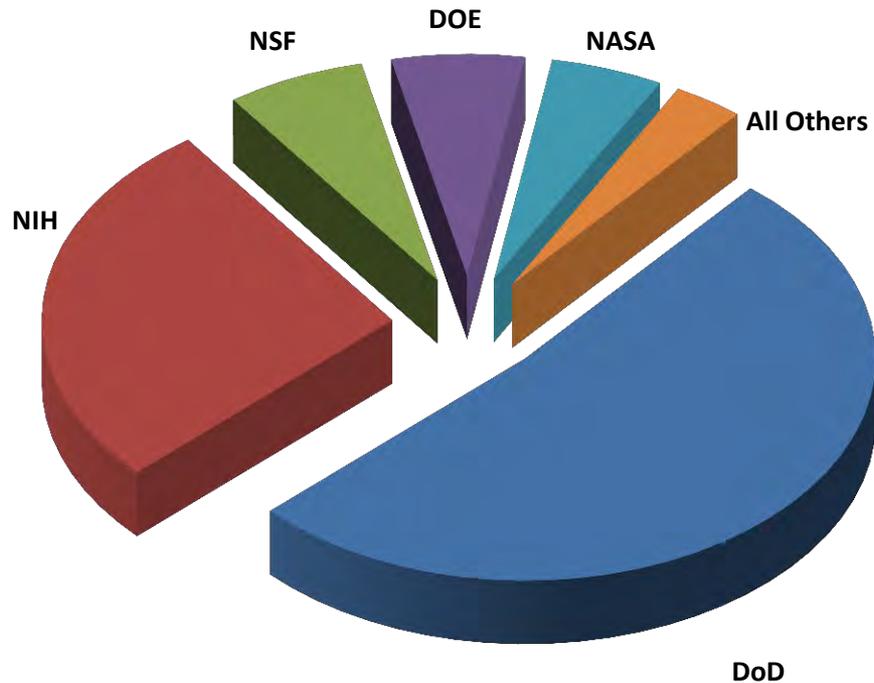
**Proposals solicited**

**Budgets established as a set-aside from extramural R&D appropriations**

|               | SBIR          | STTR            |
|---------------|---------------|-----------------|
| FY 1982-87    | 0.2% - 1.25 % | --              |
| FY 1988-92    | 1.25%         | --              |
| FY 1993-94    | 1.5%          | 0.15%<br>(FY94) |
| FY 1995-96    | 2.0%          | 0.15%           |
| FY 1997- 02   | 2.5%          | 0.15%           |
| FY 2003-pres. | 2.5%          | 0.3%            |



# Agency SBIR/STTR Budgets – FY2009



|  |                 |
|--|-----------------|
| DoD  | \$ 1.3 B        |
| NIH  | \$680 M         |
| NSF  | \$ 161 M        |
| DOE  | \$154 M         |
| NASA   | \$130 M         |
| All Others: DHS,<br>EPA, DOC, DOT,<br>USDA, DoED | \$82 M          |
|  |                 |
| <b>Total</b>                                     | <b>\$ 2.5 B</b> |

**Office of Science- \$105 M**

**ASCR- \$10 M**

# ASCR and SBIR/STTR History

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## ASCR's engagement emphasized only the research component of SBIR/STTR objectives

- **FY 1996- First ASCR SBIR Topic**
  - 31 proposals received; 2 received Phase I funding; 1 went to Phase II
- **FY 2007- First (and only) collaboration with other offices**
  - Solicitation contained joint topics seeking solutions to computational problems relevant to research in Basic Energy Sciences (BES), High Energy Physics (HEP) and R&D in the Office of Nuclear Energy (NE)
  - 28 proposals received; 4 received Phase I funding; none were funded for Phase II
- **FY2011**
  - 7 Topics; 209 proposals received; 14 received Phase I funding;
  - Phase II's – 8 (FY2010); 10 (FY2009)

# FY 2011 ASCR Phase I Portfolio

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- **“Reliable Parallel Electromagnetic Simulations on High-Order Unstructured Meshes” – Symmetrix Inc.**
- **“Tahiti: A Platform for Total Eclipse Use in Remote Computing” – Paratools Inc.**
- **“Bro-Intelligent Load Balancer Towards Terabit Scale Cyber-Security” – Reservoir Labs, Inc.**
- **“Power Management Optimization Platform for High Performance Computing and Data Centers”- Decision Detective Corp**
- **“High Fidelity Simulation of Laser-induced High-Energy Spark Ignition” – Tech-X**
- **“Significantly Enhance Hard Disk Drive Performance by using Titanium Foil Disk Substrates” – Antek**



# FY 2011 ASCR Phase I Portfolio (cont'd)

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- **“Self-Powered Wireless Sensing and Control of Intelligent Facilities” – Nanosonic, Inc**
- **Multi-scale two-phase bubbly flow modeling” – Dynaflow, Inc**
- **“Visualizing staggered vector fields” - Tech X**
- **“CAGE-100: Real-Time Multi-Port Packet Capture System for 100 Gigabit Ethernet Traffic” – Intelligent Automation Inc.**
- **“Power efficient supercomputing for topic 35D” – Cognitive Electronics LLC**
- **“A Data-Driven Approach to Interactive Visualization of Power Grids” – Power Info LLC**
- **“Dynamically Controlled Electric Demand Management System” – Enhanced System Consulting Inc.**
- **“Extreme-Speed Eigensolver Suite” – Accellogic LLC**



# Trajectory

- Existing SBIR/STTR legislation has been operating under a series of Continuing Resolutions (CRs) since 2008. Present CR expires Sept. 30, 2011
- Current Senate and House bills

|   | <b>S.493</b>                             | <b>H.R. 1425</b>   |
|---|--|--|
| <b>Reauthorization Term</b>                     | <b>8 years</b>                           | <b>3 years</b>   |
| <b>Set-aside</b>                                | <b>Increase<br/>SBIR 3.5%; STTR 0.6%</b> | <b>Remain at current levels<br/>SBIR 2.5%, STTR 0.3%</b> |
| <b>Venture Capital (VC) Participation</b>       | <b>25%; 15%</b>                          | <b>45%; 35%</b>  |
| <b>Reduce Award Cycle Time</b>                  | <b>Yes</b>                               | <b>Yes</b>   |
| <b>Use program funds to administer program</b>  | <b>Yes, 3%</b>                           | <b>Yes, 3%</b>   |
| <b>Maximum Award Levels for SBIR &amp; STTR</b> | <b>Identical</b>                         | <b>Identical</b>   |



# Commercialization Challenges by Program Office

| Program Offices                   | Commercial Opportunity | Customers   | Nonfinancial Success Factors  | Reasons for Lack of Private Investment  |
|-----------------------------------|------------------------|---|---|---|
| EE, FE, NE, OE, ARPA-E            | large                  | <ul style="list-style-type: none"> <li>• industrial</li> <li>• consumer</li> </ul>  | <ul style="list-style-type: none"> <li>• energy security</li> <li>• environmental responsibility (clean energy)</li> </ul>      | <ul style="list-style-type: none"> <li>• high technical risk</li> <li>• high market risk</li> <li>• long payback</li> </ul> |
| SC (ASCR, BER, BES, FES, HEP, NP) | very limited           | <ul style="list-style-type: none"> <li>• national laboratories</li> <li>• adjacent markets</li> </ul>                                 | <ul style="list-style-type: none"> <li>• discovery &amp; applied science impact</li> </ul>                                      | <ul style="list-style-type: none"> <li>• limited opportunity</li> </ul>   |
| EM, NN                            | very limited           | <ul style="list-style-type: none"> <li>• government agencies</li> <li>• government contractors</li> <li>• adjacent markets</li> </ul> | <ul style="list-style-type: none"> <li>• national security</li> <li>• environmental responsibility (legacy clean-up)</li> </ul> | <ul style="list-style-type: none"> <li>• limited opportunity</li> </ul>   |



# ASCR Workshop for Industry Software Developers

March 31 2011, Co-Chaired by Suzy Tichenor (ORNL) and David Skinner (LBNL)

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## Workshop Summary

- **40 Companies and a broad representation of SciDAC software developers met to discuss mechanisms for deploying SciDAC software to the private sector**
- **Wide ranging discussion of the SciDAC software portfolio's capabilities wrt ISV codes**
- **Active discussions and outreach engagements have followed**

## Key Findings

- **Companies are recognizing multicore architectures and parallelism as present-tense concerns and opportunities.**
- **Effective software delivery is key to adoption of the software by industry.**
- **Multiphysics simulation and Uncertainty Quantification (UQ) are shared public/private sector priorities.**

More information here : [http://outreach.scidac.gov/industry\\_software/](http://outreach.scidac.gov/industry_software/)



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# Major Changes to SBIR/STTR Solicitations

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## FY 2012 SBIR/STTR Phase I (Release 1) Funding Opportunity Announcement – Office of Science

(<http://science.energy.gov/~media/sbir/pdf/docs/2012SBIRTechTopicDescriptions.pdf>)

### – ASCR Topics

- Advanced Networking Technologies and Services
- Increasing Adoption of HPC Modeling and Simulation in the Advanced Manufacturing and Engineering Industries
  - This topic is specifically focused on bringing HPC solutions and capabilities to advanced manufacturing and engineering market sectors.

– Letters of Intent- August 25, 2011

– Proposals- September 19, 2011

## FY 2012 SBIR/STTR Phase I (Release 2) Funding Opportunity Announcement- Applied Programs

– Issue Date: December, 2011

# Strategy for SBIR/STTR

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## Leveraging ASCR results into the industrial base through SBIR/STTR

- **Derive SBIR/STTR solicitation topics from ASCR core strengths**
  - to impact industrial competitiveness in 3-5 years
- **Engage ASCR's research and facility communities in the process**
- **Establish and Maintain dialogue with industry, e.g.**
  - National Center for Manufacturing Sciences
  - National Digital Engineering and Manufacturing Consortium
  - Council on Competitiveness
- **Collaborate with Applied Technology Program Offices on future joint solicitation topics**
  - Wind Energy
  - Smart Grids

