

Environmental Management – Small Business Perspective

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ADA Technologies, Inc.

Introduction

■ **Judy Armstrong**

- Involved for 15 years in government-funded R&D

■ **SBTC**

- DC-based non-profit promoting the interests of technology-based small business

■ **ADA Technologies, Inc.**

- Successful participant in DOE R&D programs

Discussion

- **R&D and Economic Opportunity**
- **Small Business: An Innovation Engine**
- **Department of Defense Strategies**
- **Conclusion**

The Government R&D Market Place Has Fundamentally Changed

■ The Market is dramatically smaller:

- DOE EM budgets have dwindled
- National Laboratories, universities and small business compete for the same dollars

■ The Environmental Industry has reduced and consolidated:

- Massive acquisitions and mergers
- Consolidation to corner strategic markets

■ Scientist and Engineers are less available:

- Venture capital-backed activities are attractive
- Greater entrepreneurial spirit and expectations

The Government R&D Market Place Has Fundamentally Changed *(cont.)*

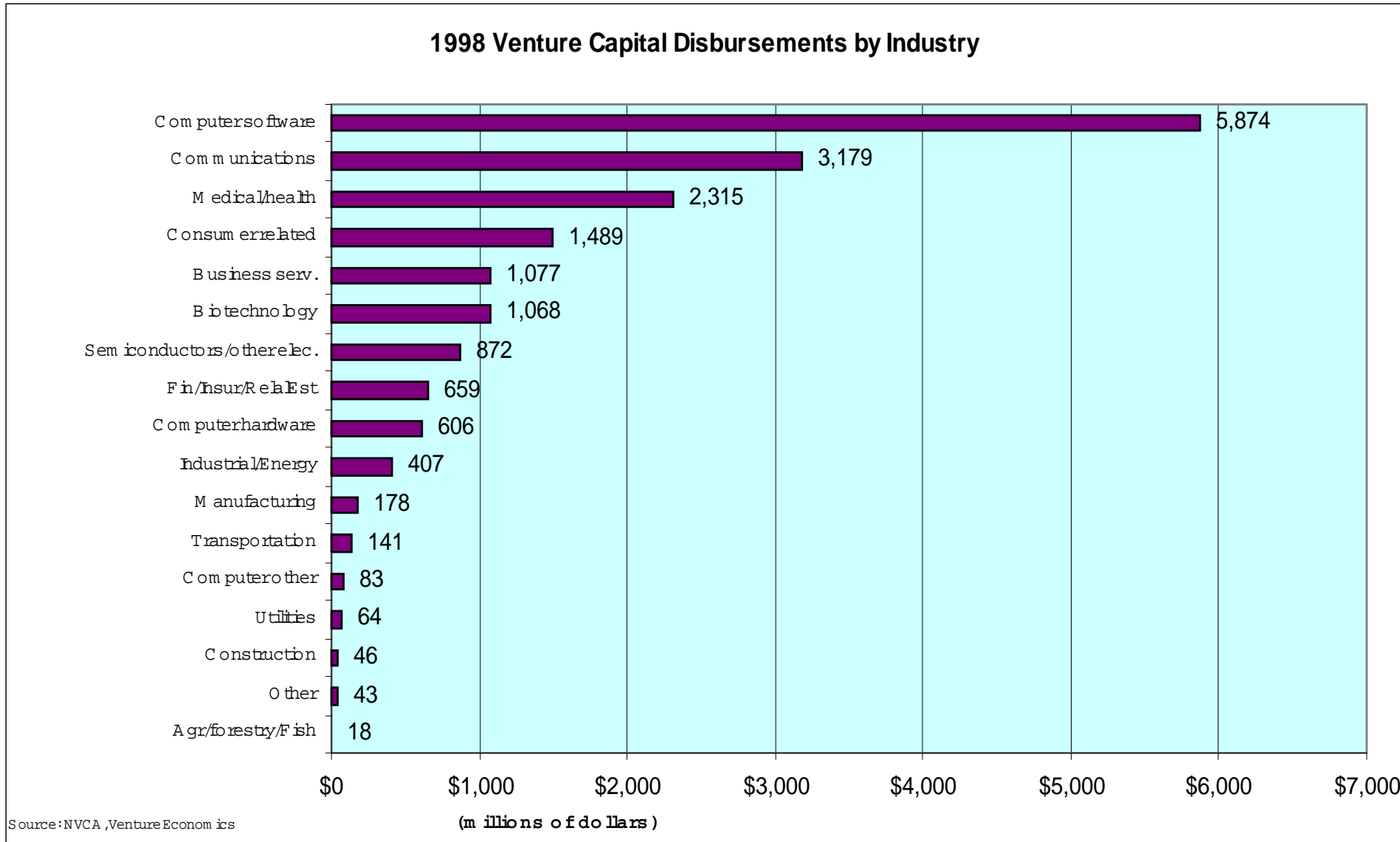
■ Results:

- Reduced competition
- Reduced innovation
- Reduced urgency
- Reduced incentives to control costs
- Reduced incentives to attract talented scientists and engineers

Venture Capital Funded R&D

- **Most financing rounds exceed \$10M, encompasses majority of distributed funds**
- **Investment requires 2-3 year exit strategy**
- **Concentrated on few industries at any one time**
 - 1998 - Computers and IT technologies
 - 1999 - Internet technologies and e-commerce
- **Attracting talented young engineers and scientists**

1998 Venture Capital Distribution by Industry



Technologies Overlooked by Venture Capital

■ **Instrumentation**

■ **Environmental Science**

■ **Materials**

■ **Engineering**

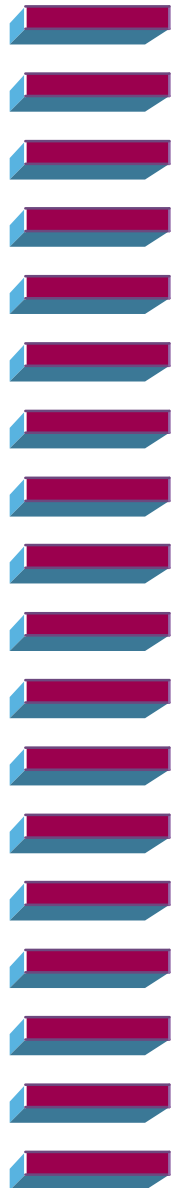
■ **Aerospace**

■ **Machinery**

■ **Opto-electronics**

■ **Chemicals**

AMERICA'S SMALL ADVANCED TECHNOLOGY BUSINESSES



*Creating an
“Innovation Engine”
for Federally-funded R&D*

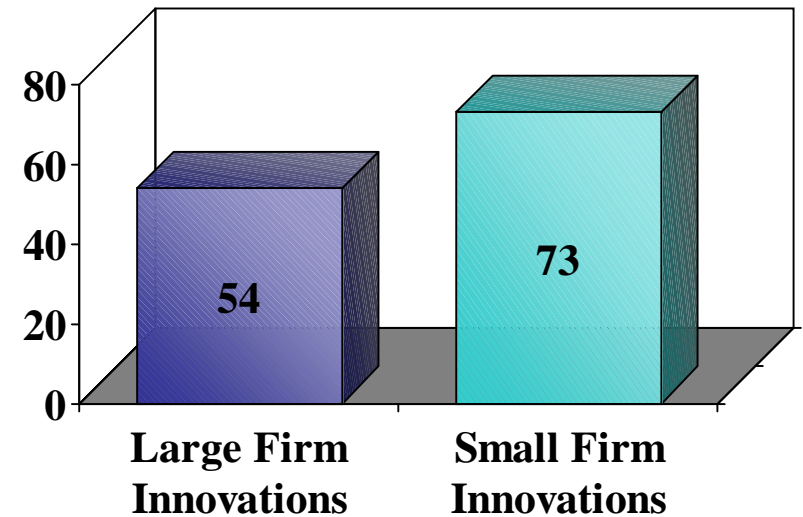
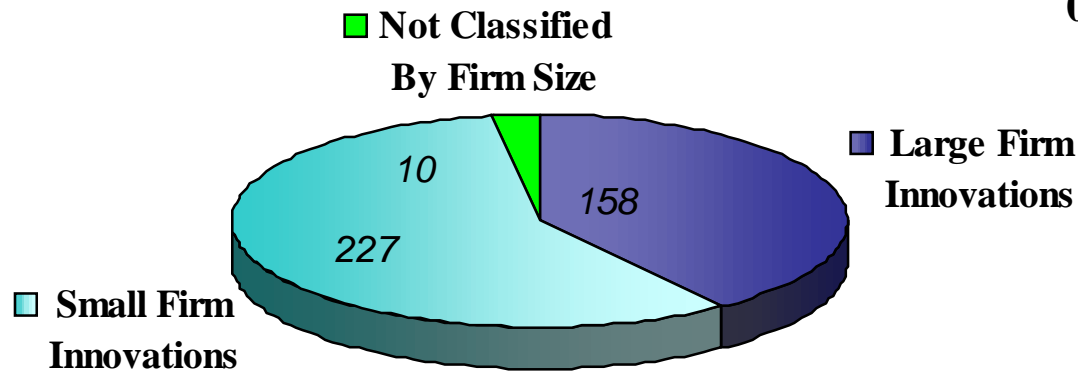
*Meeting Public Program Goals
Including Energy,
Transportation, etc.*

Why a Small Business Solution?

- **Small Advanced Technology Business is one of the critical “innovation engines” in today’s economy.**
- **Better - Faster - Cheaper:**
 - Small High-Tech Firms are where the innovations are
 - Small High-Tech Firms are increasingly where the engineers and scientists are
 - Small Business engineers and scientists cost less
 - The Small Advanced Technology Business sector is the fastest growing segment of the economy
 - Small High-Tech Businesses lead in the revolutionary new technologies taking place in communications, data processing, electronics, materials, micro-technology, and bio-technology

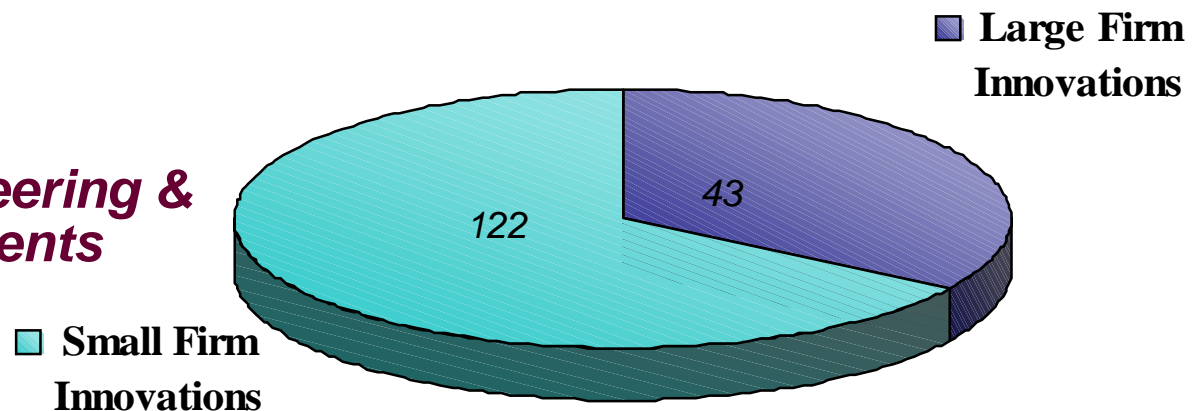
Small Business Innovation

Innovations in Electronic Computing Equipment

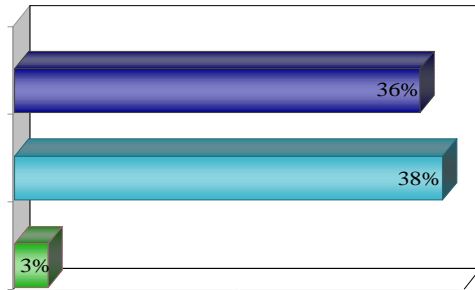


Innovations in Electronic Components

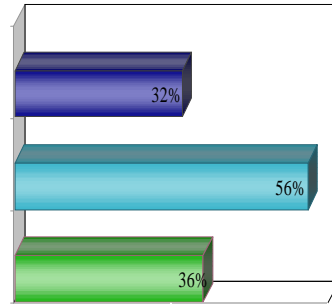
Innovations in Engineering & Scientific Instruments



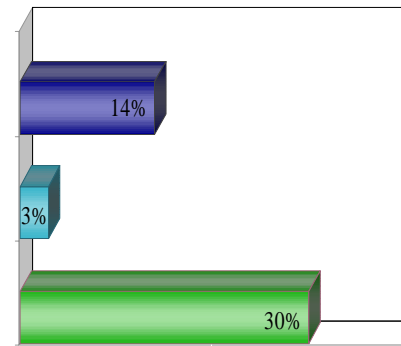
Small Business Measures Up



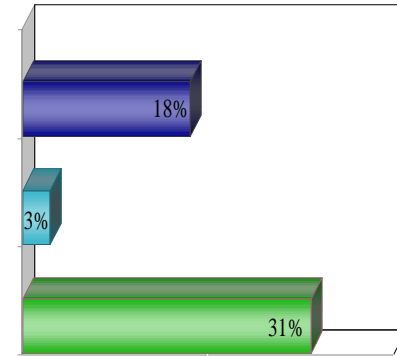
Small Business



Large Business


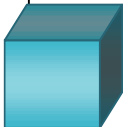



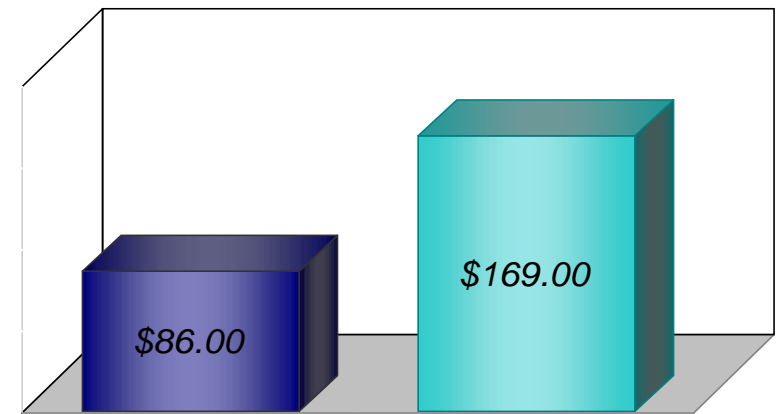
Government



Academic Institutions

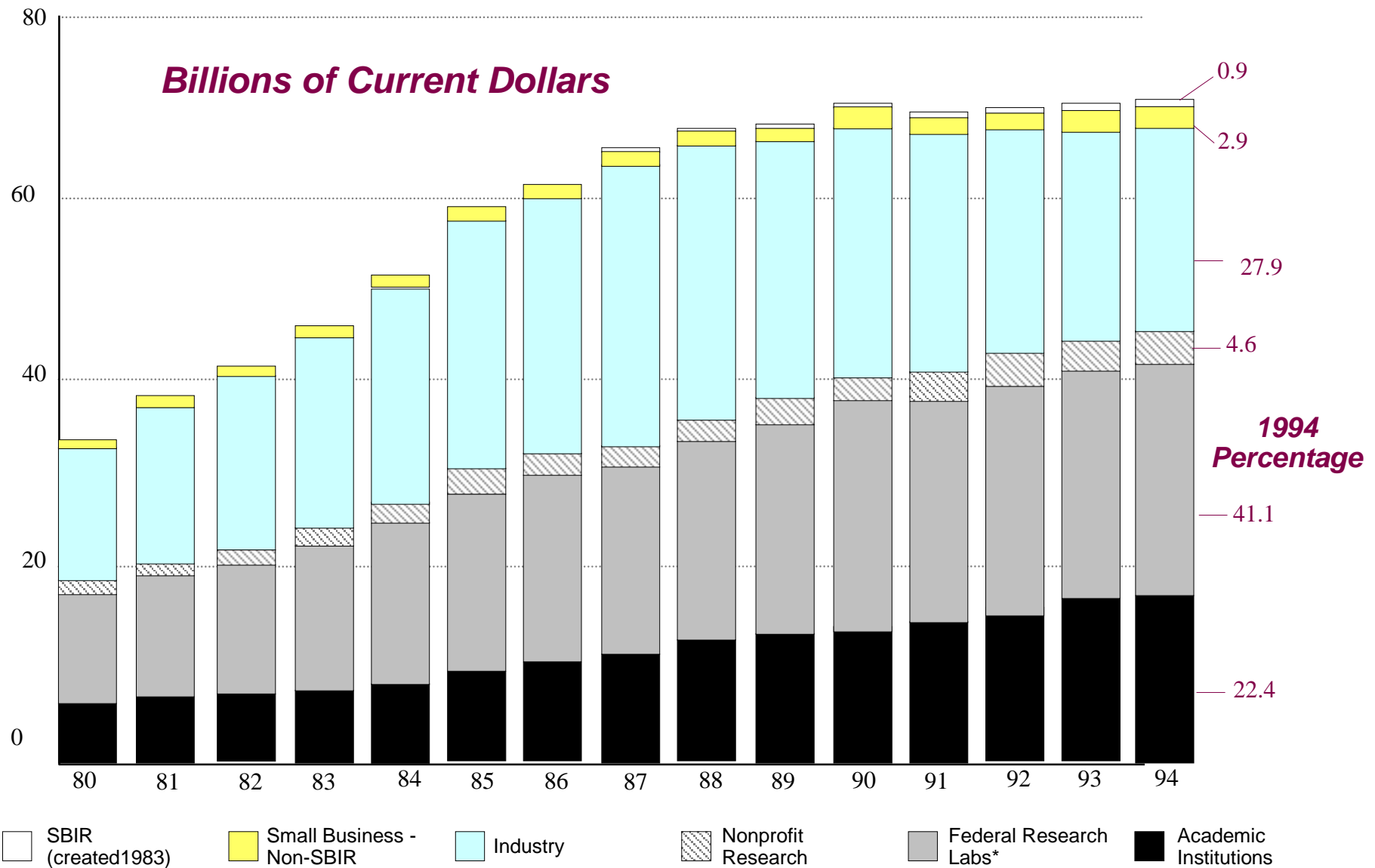
LEGEND:

-  **Scientists & Engineering Employees, 1995**
-  **Patents Issued, 1994**
-  **Federal R&D Funding, 1995**



Cost per Scientist, 1994
Small Business *Large Business*

Issue: Why Does the Federal Research and Development Funding Look Like This?



* Includes Federally Funded Research and Development Centers.

Source: U.S. Small Business Administration, Office of Advocacy, based upon data from the National Science Foundation, "Science & Engineering Indicators 1996"; SBA Office of Technology Annual Reports.

The SBIR Program

■ One attempt to change the R&D funding scale

■ Purpose and role of the SBIR Program

- To stimulate technological innovation
- To use small business to meet federal research and development needs.
- To foster and encourage participation by minority and disadvantaged persons and woman-owned businesses in technological innovation
- To increase private sector commercialization of innovations derived from federal R&D.

■ Creation of successful small businesses

- training and education
- technical assistance
- access to capital

■ Development of Innovative Technology

The SBIR Opportunity

- **Become an entrepreneur, develop a vision**
- **Create a new business serving the R&D needs of the country**
- **Become rich and successful**
- **Example: Recovery of mercury from waste water**
 - DOE-funded
 - NIH commercialization success
 - Expansion to self-decontaminating surfaces
 - SBIR success across agencies, Congress wins in the big picture

ADA/DRNA Dental Recovery Units



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How to Better Use Small Business: Department of Defense Strategies

- **The Challenge Program**
- **The Fast Track Program for Phase IIs SBIRs**
- **Sole Source Procurement of Successful SBIR Technologies**

Request from Congress to DOD

How can you modify your acquisition process to provide more funding for Phase III SBIRs?

Answer: The Challenge Program

The Challenge Program

What is it?

- **Allows small high-tech businesses to challenge the status quo in DOD system acquisition cycles that are dominated by large primes – a form of technology insertion**
- **FY 1999 Defense Authorization Bill required report to Congress**

The Challenge Program

Why was it created?

- **Fewer prime contractors and less incentive to compete**
- **Limited pressure for innovative, high-risk payoff technologies, less incentive to cut costs**
- **Encourage risk-taking by acquisition program managers**
- **Leverage talents in small business as a competitive counterweight to the status quo in current acquisition programs**
- **Fill void left by venture capital funding and corporate not-invented-here syndrome**

Why is this Important?

- **Phase I/II SBIR process rapidly and affordably produces new technology**
- **No money was budgeted by major programs for new technology not generated within normal acquisition cycles and no incentives existed to incorporate new technology**
- **SBIR ROI limited by lack of Phase III activity**

Modifications to the Acquisition Process

- **Create liaison between major acquisition programs and the SBIR community**
- **Establish connectivity between SBIR topics and acquisition needs**
- **Issue guidance to acquisition programs to include SBIR in on-going planning**
- **Implement metrics to monitor activity**
- **Educate participants regarding the advantages of integrating SBIR technologies into acquisition programs**

Building a Program that Works

- **SBIR Topic Creation**
- **Phase III Funding Commitment**

SBIR Topic Creation

- **Allow small business to suggest “challenge” technology to SBIR Program - as opposed to all topics being defined by program offices**
- **Evaluate merit of topics by a committee - members from small business, DOE program offices and the SBIR Office**
- **Solicit competitive proposals on “challenge topics through SBIR and vet them through the existing process**

Phase III Funding Commitment

- **Set aside some % of R&D acquisition programs to fund Phase III technology activity for a first year**
- **Increase the percentage by some amount each year for several years**
- **Distribute funds directly to small business or through prime contractors**

DOD Projected Phase III Funds Based on 1997 Statistics

| Total R&D | FY 2001 | FY 2002 | FY 2003 |
|-------------------------|----------------|----------------|----------------|
| \$18.7B | 3% \$561M | 4% \$748M | 5% \$937M |
| Phase IIIs At \$7.5M | 75 | 100 | 125 |
| % of 639 Phase IIs | 12% | 16% | 20% |

The Fast Track Program for Phase IIs SBIRs

- **Increased probability of award where matching cash exists, expedited processing and interim funding between Phase I and Phase II**
- **Maintains urgency of development**
- **Program outlined in DOD SBIR solicitation**

Sole Source Procurement of Successful SBIR Technologies

- **Policy directive from DOD SBIR Program Manager for DOD organizations that wish to make a Phase III award as follow-on to an SBIR project; establishes that further competition is not required if the follow-on work meets statutory criteria of “phase III” SBIR. (Memo to be included in package.)**

Sole Source Memorandum



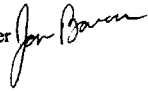
OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON
WASHINGTON DC 20301-3000

7 NOV 1996



MEMORANDUM FOR SBIR PROGRAM MANAGERS FOR THE MILITARY DEPARTMENTS
AND DEFENSE AGENCIES

FROM: Jon Baron, DoD SBIR Program Manager 

SUBJECT: Phase III Follow-on SBIR Contracts

This memorandum serves to clarify DoD policy regarding the award of a contract to a small business for follow-on work to an SBIR project. In general:

- DoD organizations that wish to award a contract to a small business for follow-on work (R&D or production) to an SBIR project may do so *without further competition*, provided that the follow-on work meets the statutory criteria for "phase III" of SBIR. In such cases, justification and approval are not required for other than full and open competition.
- If the follow-on work does *not* meet the statutory criteria for phase III, either full and open competition or justification and approval for other than full and open competition are required prior to awarding a contract.
- This memo discusses two guidelines that DoD organizations should follow in implementing this policy.

Further competition not required if follow-on work meets statutory criteria for "phase III" of SBIR

The 1992 Small Business Research and Development Enhancement Act (P.L. 102-564) made it clear that if a federal agency wishes to fund follow-on work to an SBIR project in "phase III" of SBIR, that agency need not conduct another competition in order to satisfy the Competition in Contracting Act (CICA). As explained in the Committee report on the legislation:

"... an agency which wishes to fund an SBIR project in phase III (with non-SBIR monies) or enter into a follow-on procurement contract with an SBIR company, need not conduct another competition in order to satisfy the Federal Competition in Contracting Act (CICA). Rather, by phase III the project has survived two competitions and thus has already satisfied the requirements of CICA" [H. Rept. 102-554, part I, on H.R. 4400]



The DoD General Counsel recently issued an opinion which confirms that further competition is not required for follow-on R&D or production as long as the follow-on work meets the statutory criteria for phase III:

"It is our opinion that Phase III SBIR funding that meets the criteria of 15 U.S.C. Section 638(e)(4)(C) [the definition of phase III in the Small Business Act] may be awarded without further competition. Where, however, the follow-on activity is for production that does not meet the criteria of section 638(e)(4)(C), other authority, such as 10 U.S.C. 2304(c)(1), may be required to continue exclusively with the SBIR contractor" [DoD General Counsel, 17 November 1995]

By extension, if proposed follow-on work does *not* meet the statutory criteria for phase III, either full and open competition or justification and approval for other than full and open competition are required prior to awarding a contract.

Guidelines that DoD organizations should follow in implementing this policy

Before a DoD organization awards a follow-on contract to an SBIR project without competition, the organization should follow two general guidelines.

- (i) **The contracting officer should establish, through consultation with the prospective COTR for the proposed contract as well as the COTR on the SBIR project (if available), whether the proposed follow-on R&D or production work meets the statutory criteria for phase III, which are as follows:**

The proposed work is (i) an "application [] of SBIR-funded research or research and development" for "products or services intended for use by the Federal Government" or (ii) a "continuation of research or research and development that has been competitively selected [in phase I and phase II]." [15 U.S.C. Section 638(e)(4)(C)]

As discussed above, if the proposed contract meets these statutory criteria for phase III, the contract may be awarded to the small business without further competition and without justification and approval for other than full and open competition.

- (ii) **The organization should determine whether five or more years have elapsed between the end of the SBIR project and the start of the proposed follow-on contract. If so, the contracting officer and prospective COTR on the proposed contract should consider that competition may well be in the government's interest even if the proposed work meets the statutory criteria for phase III.**

In these cases, competition may well be in the government's interest because, after five years, the government has unlimited rights in the technical data developed during the SBIR project, and can therefore conduct a competition in which all proposing companies have access to those data. The result of the competition may be a more affordable, higher-quality product for the government than could be delivered on a noncompetitive basis by the SBIR contractor.

What might DOE EM consider?

- **Training and education - greater small business participation in formulating strategy and tactics for EM funding – DOE; establishment of and communication of sustained DOE critical needs – not unlike the DOD mission critical needs list**
- **Establishing a DOD-like Challenge Program**
- **Technology assistance - facilitated relationships with national labs**
- **Access to capital - Phase III DOD-like Challenge Program set-aside**
- **Establishing an advisory committee with DOE, DOD, small business, big business and academic participation**