



POSITION STATEMENT

Small Business Innovative Research

*Adopted by the IEEE-USA
Board of Directors, 4 March 2010*

When addressing issues related to economic growth and competitiveness, Congress has given special consideration to small, high-tech firms - in recognition that data indicates such companies tend to be highly innovative; play a significant role in technological advancement; and contribute to a high standard of living in the United States. In a report by the National Academy,¹ it was noted that the Small Business Innovation (SBIR) program is achieving its goals of successfully contributing to knowledge embodied in data, publications, patents, licenses, presentations, analytical models algorithms, research equipment, prototypes, spin-off companies, new human capital, increasing innovation, encouraging participation by small companies in federal R&D, providing support for small firms owned by minorities and women, and resolving research questions for mission agencies in a cost-effective manner.

To continue to improve the SBIR program, IEEE-USA recommends that SBIR re-authorization legislation do the following:

1. Preserve the Basic Phase I, Phase II, and Phase III structure; direct application for Phase II funding should not be allowed. In a zero sum funding scenario, permitting companies to apply directly to Phase II would have the potential to significantly reduce funds available for Phase I projects.
2. Conduct regular evaluations through annual reports and internal and external evaluations to ensure quality program management, accountability, improved program output and responsiveness to the needs of small company applicants.
3. Improve the program process by assuring the topics are defined bottom-up, the selection process and cycle time/milestones are transparent, and that pilot programs are developed.²
4. Increase agency budgets to double SBIR agency set-asides for Phase I and II limits to keep up with inflation. SBIR awards were last adjusted in 1995 and have not kept up with inflation.

5. Standardize award processing periods and shorten decision cycles for all agencies. Currently, award processing periods and decision cycles are different among all the SBIR awarding R&D Federal agencies.
6. SBIR funding awards should be based on past performance in commercialization success and not excluded or jeopardized on the number of grants received.
7. Authorize funding mechanisms beyond Phase II [such as the NSF Phase II-B program, the NIH continuation awards and the Navy's Phase II-B and III].³
8. Upgrade internal tracking mechanisms and provide separate funds for management and evaluation. Tracking mechanisms are not standardized among agencies and increases in program management and evaluation funding are necessary to successfully implement the SBIR programs.
9. Retain the current eligibility conditions for Venture Capital firms seeking to participate in the SBIR program.⁴
10. Require a detailed and specific commercialization plan in Phase II, and a plan for obtaining non-SBIR funding for Phase III.⁵
11. Standardize, as much as possible, all SBIR reports and output, so that it can be easily put into a database for entrepreneurs administered by the Small Business Administration.⁶
12. Encourage women and minorities at small firms to apply as principal investigators and senior investigators for SBIR awards, and track success rates.⁷

This statement was developed by the IEEE-USA Research & Development Policy Committee and represents the considered judgment of a group of U.S. IEEE members with expertise in the subject field. IEEE-USA advances the public good and promotes the careers and public policy interests of more than 210,000 engineers, scientists and allied professionals who are U.S. members of IEEE. The positions taken by IEEE-USA do not necessarily reflect the views of IEEE or its other organizational units.

Background

The Importance of Small Business for Job Creation

Congress has demonstrated an ongoing interest in the small business sector. Addressing issues related to economic growth and competitiveness, special consideration has been given to small, high-tech firms for several reasons, including the fact that data indicates such companies tend to be highly innovative, play a significant role in technological advancement, and contribute to a high standard of living in the United States.

In the middle of the 2001-2002 recession, more than 2 million net jobs disappeared at large companies with this pattern persisting well after the end of the recession. However, small businesses create most new jobs in the U.S. even when the economy is recovering from a recession. During this recession, they created 124% of all net new jobs, by offsetting the 25% loss in large business employment.

Small businesses are the largest source of jobs for scientists and engineers and are our nation's leading source of breakthrough innovations to meet federal agency R&D needs. However, the collective assets of US venture capital firms shrank by 24% in 2008 to \$197 billion, amounting to the lowest investment in small companies and start-ups since 1990.⁸

The Role of the SBIR Program

Innovation-driven job creation was a key rationale behind legislation creating the SBIR program, reflecting an effort to increase that portion of the federal research and development (R&D) budget provided to small enterprises for work associated with the mission responsibilities of government departments and agencies. Believing that small companies were underrepresented in government R&D activities, P.L. 97-219 established agency SBIR programs to guarantee this sector a portion of the government's research and development budget to compensate for what was viewed as a federal contracting preference for large corporations.

Current law requires that every federal department with an extramural R&D budget of \$100 million or more establish and operate a SBIR program and allocate 2.5% of this budget for research at small companies. This set-aside results in more than \$2 billion in SBIR funding across the agencies. As of FY2010, eleven federal departments administer SBIR programs, including the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, and Transportation; the Environmental Protection Agency; the National Aeronautics and Space Administration; and the National Science Foundation. Each agency's SBIR activity reflects that organization's management style.

Individual departments select their R&D interests, administer program operations, and control financial support. Funding may be disbursed in the form of contracts, grants, or cooperative agreements. Separate agency solicitations are issued at established times. The Small Business Administration creates broad policy and guidelines under which individual departments operate SBIR programs. The agency monitors and reports to Congress on the conduct of the separate departmental activities.

To be eligible to compete in the program, a company must be independently owned and operated; not dominant in the field of research proposed; for profit; the employer of 500 or fewer people; the primary employer of the principal investigator; and at least 51% owned by one or more U.S. citizens or lawfully admitted permanent resident aliens. Agency SBIR efforts involve a three-phase activity. In the first phase, awards up to \$100,000 (for six months) are provided to evaluate a concept's scientific or technical merit and feasibility. The project must be of interest to, and coincide with, the mission of

the supporting organization. Projects that demonstrate potential after the initial endeavor may compete for Phase II awards of up to \$750,000 (lasting one to two years) to perform the principal R&D. Phase III funding, directed at the commercialization of the product or process, is expected to be generated in the private sector. Federal dollars, but not SBIR funds, may be used if the government perceives that the final technology or technique will meet public needs. P.L. 102-564 directed agencies to weigh commercial potential as an additional factor in evaluating SBIR proposals.

Small Business Technology Transfer (STTR) Program

A pilot effort to encourage commercialization of university and federal laboratory R&D by small companies was created by P.L. 102-564 and reauthorized several times through FY2009. The Small Business Technology Transfer (STTR) program provides funding for research proposals that are developed and executed cooperatively between a small firm and a scientist in a research organization and fall under the mission requirements of the federal funding agency. Up to \$100,000 in Phase I financing is available for one year; Phase II awards of up to \$750,000 may be made for two years. Currently funded by a set-aside of 0.3% of the extramural R&D budget of departments that spend over \$1 billion per year on this effort, the Departments of Energy, Defense, and Health and Human Services, NASA, and NSF participate in the STTR program.

End Notes

- 1) "An Assessment of the Small Business Innovation Research Program", Charles W. Wessner, Editor, Committee on Capitalizing on Science, Technology, and Innovation: National Research Council, National Academy Press (2009). Available on-line at: http://www.nap.edu/catalog.php?record_id=12441
- 2) Solicitation topics are broadly defined and defined from the "bottom-up" based on agency mission needs. Project selection procedures and cycle times, which vary by agency with significant effects small businesses, should be transparent, flexible and directed to the needs of small businesses. To incorporate positive changes and increased productivity in the program, pilot programs should be encouraged.
- 3) Although SBIR awards in many cases have been vital inputs for success, most major commercialization successes need substantial post-SBIR research and funding from a variety of sources. This recommendation is intended solely to improve the commercialization possibilities of the SBIR program by authorizing experiments with funding beyond Phase II in order to bridge the "Valley of Death." As pointed by the NAS study, the NSF Phase IIB initiative and the NIH Competing Continuation Awards are successful examples that other agencies should consider.
- 4) Currently, if the Venture Capital Company (VC) is a large business, with 500 or more employees, including affiliates and subsidiaries, then the VC may seek or hold only a minority position in an SBIR company to participate in the SBIR

Program. On the other hand, if the Venture Capital Company (VC) is a small business, with 499 or fewer employees, including affiliates and subsidiaries, then the VC may participate in the SBIR Program in any manner it wishes, as either a majority or a minority shareholder. Changes in Sec. 102 of H.R. 2965 would open up the SBIR program to business that are majority owned by VC firms without the above restrictions unintentionally crowding out true small business and diluting scarce resources.

- 5) The SBIR program supports the transfer of research into the marketplace, as well as the general expansion of scientific and technical knowledge, through a wide variety of mechanisms. However, detailed and specific commercialization plans in Phase II, and a plan for obtaining non-SBIR funding for Phase III rather in Phase I should be the norm.
- 6) At present, all eleven R&D federal agencies have their own report and output criteria embodied in data, scientific and engineering publications, patents and licenses of patents, presentations, analytical models, algorithms, new research equipment, reference samples, prototypes products and processes, spin-off companies, and new “human capital” (enhanced know-how, expertise, and sharing of knowledge). Centralizing these reports and output is critical for exploitation and data mining by all US businesses looking for innovative ideas and possible commercial markets.
- 7) According to the NAS report (infra note 1), “While support for woman-owned businesses is increasing, support for minority-owned firms has not increased.” Phase I awards to minority-owned firms at DoD has declined since the mid 1990s falling below 10 percent for the first time in 2004 and 2005. In addition, R&D agencies do not have a uniformly positive record in collecting data and monitoring funding flows for research by woman- and minority-owned firms.
- 8) “The Incredible shrinking venture capital” by John Browning, *Nature*, volume 460, 23 July 2009, page 459.