

PROGRAM MANAGEMENT

The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs provide a significant opportunity for NASA to benefit from the innovations of small high-technology U.S. firms and research institutions. SBIR and STTR contractors perform basic research and development (R&D) in three competitive phases that can benefit future missions of the Agency. The first phase is essentially a feasibility study; it is a 6-month contract for up to \$70,000. The second phase is more substantial and is where most of the development work is done. The phase II contract is for up to 24 months and \$600,000. The third phase provides a wonderful opportunity for small U.S. businesses to leverage their government funded R&D into commercial products that benefit the economy of the Nation.

Ten federal agencies have SBIR programs, with total federal funding in excess of \$1 billion annually. The program now provides the largest source of prevention capital within the federal government. Governmentwide, over 11,000 companies have received funding through the SBIR program since 1983; more than 250 former SBIR firms are now publicly traded.

Within the Agency, these programs also represent the largest interface with for-profit firms. As a result of the 2000 SBIR solicitation, NASA received 1,847 proposals from 771 companies in 47 states. From these proposals, 288 phase I awards were made to 210 firms in 37 states. The combined SBIR and STTR programs awarded 437 new contracts in fiscal year 2000, which is approximately 50 percent of new

research and development contracts awarded by the Agency.

Over the past several years, the NASA SBIR management team has consistently emphasized four basic principles for the administration of the NASA SBIR and STTR programs. These principles are

1. Alignment of research topics to the highest technology priorities of the Agency.
2. Focus on program effectiveness as measured by phase III commercialization.
3. Enhance program efficiency by using advanced information technology.
4. Provide opportunity for a cross section of small U.S. businesses.

Alignment of Research Topics to Agency Technology Priorities

The SBIR and STTR programs are fully supportive of the technology needs and priorities of the Agency. The NASA Strategic Plan, the Enterprise Strategic Plans, and the Center Strategic Implementation Plans are the guiding documents for achieving this goal. Based on these documents, and with significant involvement from the NASA Strategic Enterprises, we seek small businesses to participate in the R&D of critical technologies that enable future missions.

Beginning in 1997, the SBIR program aligned its annual solicitation by Strategic Enterprise. Each Strategic Enterprise Associate Administrator designated a representative to work with the SBIR program. The representative communicates the technology

“ The NASA SBIR program has given Scientific Materials Corp. the opportunity to make its concepts for improved optoelectronic materials a reality. These materials led to the development of new lasers and other devices for broad base commercial applications in remote sensing, medical, and lithography technology.”

Ralph Hutcheson
President, Scientific
Materials Corp.

“These technologies would not have been commercially feasible without the support of the SBIR program. The follow-on commercial support that was built directly on this early research has enabled the company to grow substantially.”

Kevin Burns
Precision
Combustion, Inc.

planning activities of the Enterprise to the SBIR management team at the Centers, as well as integrates the SBIR program into the technology planning activity of the Enterprise. Significant efforts in communication and integration have resulted in the annual solicitations that reflect the Agency's technology taxonomy.

The STTR program focuses on early technology development by requiring a research institution (typically a university) to cooperate with a small business to submit proposals. This program supports NASA's core competencies as defined in the Strategic Plan. Beginning with the 1999 solicitation, the STTR program was aligned with the Agency Centers of Excellence. Because of the limited budget, each Center of Excellence participates in this program every other year.

Program Effectiveness as Measured by Phase III Commercialization

A key congressional intention of these programs is to assist small, high-technology U.S. businesses to fund their early R&D efforts and move the resulting technologies into commercialization or phase III of the program. For the SBIR and STTR programs, phase III commercialization is defined as either (1) further development and use of the technology in a federally funded effort or (2) development of the technology for sale in the commercial marketplace. NASA SBIR and STTR programs seek to fulfill both of these congressional intentions.

Infusion of successful SBIR developed technologies into NASA missions is critical to the success of these programs and is an aspect of the program that is increasingly emphasized.

Correlation of solicitation topics to Strategic Enterprise mission needs is resulting in a substantial increase in phase III contracts. In fiscal year 2000, 23 new phase III contracts were issued with a total value of \$90.4 million.

At the end of December 2000, the NASA SBIR program has documented 348 commercial success stories. These stories are published on the Internet at <http://sbir.nasa.gov>.

Enhancing Program Efficiency through Information Technology

The third management principle guiding these programs is the use of advanced information technology to operate the programs more efficiently.

This goal was realized with the development and use of innovative Internet-based electronic handbooks (EHB's). EHB's were originally funded by the NASA SBIR program at Goddard to manage complex distributed information processes in an integrated and intuitive environment. The successful implementation and deployment of EHB's led to a phase III award in August 1998. The objective of this continuing effort is an end-to-end, Internet-based, paperless system supporting all SBIR and STTR management processes.

EHB's are a cost-effective and efficient means of reengineering and modeling business processes. The EHB's guide the user through the necessary forms and menus to execute the defined processes. The EHB's have the end-to-end management process flow, which includes solicitation development, proposal submission, proposal evaluation and selection, contract negotiation, and contract

reporting. Benefits of EHB's include greater data accuracy and quality, faster turnaround time, increased synergy, imbedded e-mail features for effective communications, and rapid acceptance by a diverse user community. The real-time online information in the EHB's facilitates comprehensive reporting, analysis, and decision making. This technology is now being transferred to other NASA program management offices such as the Earth Science Technology Office (ESTO) at Goddard Space Flight Center (GSFC) and other federal agencies (e.g., Department of Justice Bulletproof Vest Program). The EHB's have been recognized in articles published in the *Washington Post*, *Government Executive*, *NASA Tech Briefs*, and *Federal Computer Week*. The EHB contractor, REI Systems, Inc. has been awarded the Small Business Administration's Administrator's Excellence award (June 1999); a NASA Space Act Award (\$10,000); and the Small Business Administration's Tibbett's Award.

Opportunities for Wide Array of Small U.S. Businesses

The fourth management principle is to provide an opportunity for a cross section of U.S. businesses to participate in the NASA SBIR and STTR programs. We do this by broad dissemination of program information on the Internet at <http://sbir.nasa.gov> and by reaching out at numerous regional and national SBIR conferences. Consistent with the congressional intent of these pro-

grams, we specifically reach out to underrepresented groups.

In recent years, over 25 percent of NASA's SBIR awards were made to firms owned by minorities or by women. While this is not a selection criteria, we are proud of the fact that these percentages have increased in recent years and indicate a high level of diversity (and opportunity) within the program.

There is also a large technological, as well as geographical dispersion within these programs. This year, the SBIR program will include 108 separate technology areas that support all five NASA Strategic Enterprises and will be administered at all ten NASA field installations. Since the program's inception, contract awards have been made in all 50 states to approximately 2,000 small business concerns.

SBIR and STTR Future Objectives

These programs are critical sources of new technologies that enable future NASA missions. The processes, incentives, and information exchange pathways necessary for NASA to benefit from SBIR and STTR technologies are being developed not only for specific customers, but also for a broad array of NASA missions.

To be truly successful, we must bring potential NASA customers into the technology identification, development, and infusion process. The continued development of electronic tools for rapid transfer of innovative technologies into mission applications will help us reach this goal.



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W. Paul Mexcur
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