Aurora International Consulting (AIC)

"Bringing Energy, Experience, Knowledge and Creative Solutions To Every Assignment"

Small Business Innovation Research (SBIR) Program Primer

Department of Homeland Security (DHS)

Department of Defense (DOD)

National Science Foundation (NSF)

Environmental Protection Agency (EPA)

National Institutes of Health (NIH)

Department of Agriculture (USDA)

Department of Commerce (DOC)

Department of Transportation (DOT)

Department of Education (DoED)

Department of Energy (DOE)

National Aeronautics & Space Administration (NASA)

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SBIR Program

SBIR is a competitive proposal submission process involving eleven **(11)** US federal agencies. Small firms and aspiring entrepreneurs vie for contract or grant funding awards to develop innovative technology products, services or advancement of scientific research methods that can be marketed in the governmental and/or commercial marketplace.

The federal money affords firms an opportunity to engage in high-risk research and development (R&D), which is normally cost-prohibitive for their companies. By commercializing the R&D results, more importantly, firms are able to generate additional revenues, achieve market leadership within their industry sector and expand their companies.

PLEASE NOTE: Agencies are not interested in buying existing technology products/services or funding further research on products that a company developed on its own.

SBIR Program Purpose

There are three stated purposes that drive the SBIR program:

- Help small firms gain a share of federal research & development funding;
- Help small firms grow their companies; and
- Help eleven federal agencies solve real world problems.

SBIR Program Eligibility Requirements

To be eligible for funding, applicants must meet the following criteria:

- A small business with no more than 500 employees
- Principal place of business is located in the United States
- A for-profit company
- At least 51 % owned, or at least 51% of its voting stock, in case of a publicly traded company

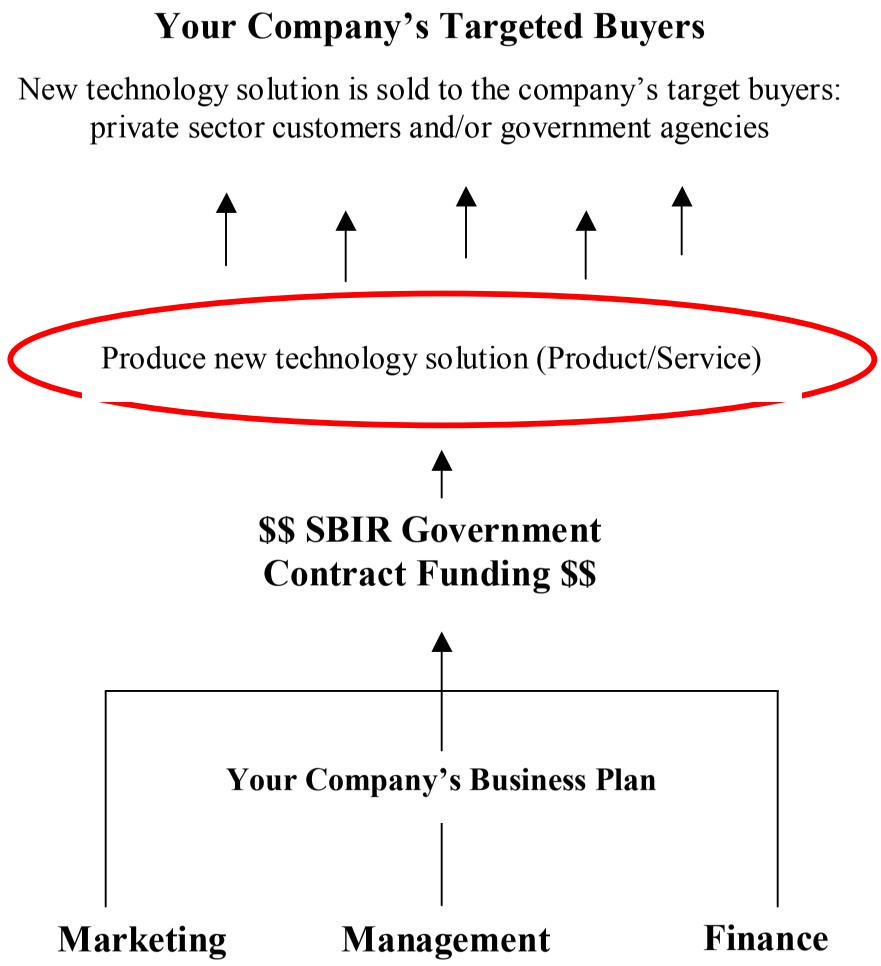
Diagram A

Primary SBIR Program Goal:

A small firm combines government SBIR funding dollars with its company's business plan to develop (produce) a new technology solution that can be sold to the private sector and/or the government.

Benefits For Your Company

- Use the government's money to conduct high risk research and development (i.e., new product/service creation).
- Create a new product/service that contribute to your company's business growth.
- Company retains Intellectual property (IP) rights on its new inventions.
- Company can win multiple contracts.
- All awards are Prime Contracts.
- Become a market leader within your industry sector.
- Don't have to compete against large corporations/contractors.



Participating Federal Agencies

These eleven (11) participating agencies award over 1 billion dollars in government research and development prime contracts / grants to small firms and to entrepreneurs each year.

Department of Agriculture	**USDA**
Department of Commerce	**DOC**
Department of Defense	**DoD**
Department of Education	**DoED**
Department of Energy	**DoE**
Department of Homeland Security	**DHS**
Department of Transportation	**DOT**
Environmental Protection Agency	**EPA**
National Institutes of Health	**NIH**
National Aeronautics & Space Administration	**NASA**
National Science Foundation	**NSF**

Basic Facts About The Participating Federal Agencies

	DOD	NASA	DOT	EPA	DHS	DOC	NSF	USDA	DoED	DOE	NIH
Award Type	C	C	C	C	C	C	G	G	G / C	G	G / C
Review Process	I	I	I	I	I	I	E	E	I	E	E
Research Topics	S	B	B	B	S	S	B	B	B	B	B
Gap Funding	Y	N	N	Y	Y	N	Y	N	N	N	N
RFPs Issued Calendar	3 Times Nov / May / Aug	Once July	Once Feb	Once March	2 Times Mar / Sept	2 Times Oct / Nov	2 Times Mar / Aug	Once June	2 Times Mar / Nov	Once Sept	3 Times Jan -Dec

C-Contract B- Broad[1] I- Internal Proposal Review

G-Grant S- Specific[2] E- External Proposal Review

[1] See a Broad Research Topic example on page. 12

[2] See a Specific Research Topic example on page 13.

SBIR Funding Levels

The funding is divided into three phases. Phase I funding, which generally maximizes at $**100,000**, is awarded to a small firm for the development of a feasibility study. The study is a *"proof of concept"* document indicating that the proposed new product/solution is technically viable. If the agency approves the study, the firm competes for additional money in Phase II. Funding under Phase II, which generally maximizes at $**750,000**, enables a company to begin the actual process of producing and testing a prototype.

In the third phase, small firms are encouraged to seek funding from either internal (i.e., self-funding) or external sources (i.e., venture capitalists, angels, banks, etc.) for the production, promotion and distribution of the new product/service solution.

AGENCY	SBIR PHASE I FUNDING LEVELS
Department of Agriculture	**80,000**
Department of Commerce	**75,000**
Department of Defense	**70,000 – 100,000**
Department of Education	**100,000**
Department of Energy	**100,000**
Department of Homeland Security	**100,000**
Department of Transportation	**100,000**
Environmental Protection Agency	**70,000**
National Institutes of Health	**100,000**
National Aeronautics & Space Administration	**70,000**
National Science Foundation	**100,000**

Selected Technology Development Contracting Opportunities

	DOD	NASA	DOT	EPA	DHS	DOC	NSF	USDA	DoED	DOE	NIH
Biotechnology	✓	✓	-	-	✓	✓	✓	✓	-	✓	✓
Medical Devices	✓	✓	-	-	-	-	✓	-	-	✓	✓
Information Technology	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Online Training	✓	-	-	-	-	-	✓	✓	✓	-	✓
Networking	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓
Environmental Technology	✓	✓	-	✓	✓	-	✓	✓	-	✓	✓
Wireless	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Artificial Intelligence	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sensors	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Internet / Web-based	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓

✓ = Denotes Agency Offers Contracting Opportunity In This Technology Development Area

How The SBIR Proposal Development Process Works

Each participating federal agency is responsible for preparing and releasing request for proposals (RFPs), evaluating submitted proposals and awarding SBIR funding contracts.

The agencies will issue a list of broad or specific RFP descriptions regarding the technology solutions that are needed. Companies are invited to submit a **25**-page proposal indicating how they plan to (**1**) meet the agency's needs, (**2**) develop the technology concept solution into an actual product/service and (**3**) promote and sell the product/service in a designed marketplace.

After a company submits its proposal, usually electronically, the agencies evaluate whether the proposal satisfies their stated requirements. Moreover, the agencies utilize the following standard proposal review criteria:

1. Scientific and Technical Innovation **(Creativity & Originality)**

2. Potential Commercial Application of Innovation **(Marketability)**

3. Investigator Qualifications **(Project Leader & Research Team Qualifications)**

Standard Phase I Application Form

This form is used to prepare a 25-page SBIR proposal

I. Cover Sheet

II. Proposal Summary

III. Technical Section

Identification and Significance of the Innovation
Technical Objectives
Work Plan

Related Work
Relationship with Future Research or Research and Development

Key Personnel
Facilities/Equipment
Subcontractors/Consultants
Prior, Current, or Pending Support of Similar Proposals or Awards

IV. Commercialization

Commercialization Strategy

V. Budget

Cost Proposal

The SBIR Proposal & Submission Process

(1) RFP Issued	(2) Phase I	(3) Phase II	(4) Commercialization
Agency issues request for proposals (RFPs) seeking new technology solution.	Agency reviews your company's proposal and awards funding.	Agency reviews and accepts your company's feasibility study and awards the company additional funds.	Agency expects your company to either use internal funding or raise outside funds to market and sell the new technology solution.
Your company answers an RFP by preparing a **25**-page proposal indicating it has the experience, knowledge, and skills to produce the desired technology solution.	For six-months, your company use the funding to produce a feasibility, *"Proof of Concept,"* study.	Your company is awarded funds, for the next two years, to produce an actual prototype of the proposed technology solution.	You company utilizes its marketing plan to promote and sell the new solution in the commercial and/or governmental marketplace.

Sample SBIR Research Topic

Environmental Protection Agency's SBIR Program (Broad Topic Example)

Monitoring and remote sensing technologies are needed to identify pollution problems and emission sources and to protect human health and the environment. This topic includes three subtopics: (1) Air pollution monitoring; (2) Continuous emission monitors; and (3) Remote sensing.

Better air pollution monitors are needed for measuring Particulate Matter (PM), ammonia, and other air pollutants. Needs include but are not limited to:

Instruments that can quantify semi-volatile compounds (e.g., naphthalene and other polycyclic compounds) in a semi-continuous time scale.

Better analytical instruments for continuous or short term, practical, sensitive ammonia measurements in the low ppb range. Also, development of a near real time sampler for ammonia.

Development of an automated event-based wet deposition collector and gauge. The sampler should require only weekly operator service/exchange and should integrate gauging with collection. This gauge should be able to interface with digital loggers and not require a stripchart.

Development of an improved reliable and real time instrument for methane and non- methane organic compounds (NMOC). Instrument should have an internal zero air supply and no carrier gas or at least carrier gas at low flow to extend operation times to months instead of weeks. Detection limits for NMOC should be in the ppb range, auto range capability to catch events at more than 50 ppm. Full remote control capability by modem and capability of being networked to other continuous instruments at the site.

Sample SBIR Research Topic

US Department of Commerce's (NIST) SBIR Program (Specific Topic Example)

NIST seeks innovative and practical ways of improving radio links for first responders in difficult reception environments through the application of techniques similar to those developed for the military and deep space communications. The weakest link in the first-responder's communication system is the transmission power of a portable handset. Even when the base station is able to transmit powerful and intelligible signals to a first responder, the first responder is often unable to complete the communication link with the reduced power available in his or her handset, typically 1 to 5 watts. The radio signals emanating from the first-responder's portable handset, after being attenuated by structural materials, become so weak that they become indistinguishable from electrical noise from other sources.

However, it is often possible to detect simple codes, consisting of only a few well-defined symbols, from a portable handset even when attenuation is high enough to make voice communication impossible. This is the notion behind deep space communications, where slow data rate signals and signal processing are used to pick signals out of the noise.

In an emergency scenario, use of a beacon based on a slow data rate would allow the first responder to receive voice instructions from the base station and communicate back with simple codes. It is envisioned that such code-based communications could be incorporated into existing first responder handsets through a retrofit or even a firmware upgrade. Ultimately, emergency beacons based on slow data rate signals could even be built into cell phones. This project has high potential for commercialization in both the public safety sector and the cell phone/mobile communication industries.

Phase 1 of this SBIR solicitation will demonstrate the feasibility of a data based emergency beacon that is easy to use, straightforward to implement in hardware or firmware, inexpensive, and retrofittable to first responder radios. Phase 1 of this research should develop a plan for commercializing and integrating the beacons into communication systems for first responders.

Systems based on open standards preferred. Contractor should demonstrate successful reception of information from signals at least 30 dB beneath the noise floor of standard first responder handset radios (we have demonstrated 20 dB improvement using simple Morse Code techniques in our lab). NIST is willing to work with the contractor to help with evaluation of the system.

Phase 2 will deliver a working prototype system.

How To Win: Ten Steps To Victory!

"To win SBIR funding, your company must show agencies that it possesses the experience, the skills and the knowledge of turning a product development concept into an actual marketable technology solution."

SBIR Phase I Proposal Ingredients

Your Company's Business Plan
80% of Proposal Content

Your Company's Team

- Experience
- Knowledge
- Skill

Research Information
20% of Proposal Content

Market Research, Scientific and Technical Data

SBIR Phase I Proposal Application

25-Page Proposal

Three Sections:

(1) Technical
(2) Commercialization
(3) Budget (Cost Proposal)

SBIR Funding

Prime Contract / Grant

Your Company's Business Plan

- Eighty percent (80%) of the SBIR Phase I proposal content will come from the business plan.
- The marketing section, for instance, provides answers to the proposal's *significance of the problem, related work,* and *commercial potential* sections.
- The management section supplies information to *the work plan, the key personnel, the facilities/equipment,* and *the consultant/subcontractor* parts of the proposal.
- Data for the proposal's budget can found be in the financial section of the business plan.
- The product commercialization implementation relies on the marketing section. In particular, the marketing section contains vital information, such as market research, market testing, promotion, pricing, and launch activities, needed to execute a commercialization strategy.
- Phase III Funding: the business plan will be used as an introduction to potential outside investors (i.e., Business Angels, VCs, and SBICs) and lenders.

Your Company's Team

Your project team must include experienced, skilled and knowledgeable individuals who know how to get the job done.

Note: For companies lacking qualified personnel, the SBIR program allows applicants to use up to thirty (30%) percent of their proposed project budget to hire consultants or outside talent that can enhance and/or augment a company's research team.

Where To Find Outside Help?

- Colleges or Universities: Professors and/or researchers specializing in your company's technology, product development, or industry area

- Professional consultants directories

  * Consultants & Consulting Organizations (Thomson & Gale Publication)
  * The Consultant Directory (Standard & Poor's)
  * Consultants Directory (Dun & Bradstreet)

- Trade & Industry Associations

  * Database of industry consultants or experts
  * Listed on association website
  * Writers for association publications

Information

Scientific & Technical Research

Your team must include supporting scientific & technical research information that demonstrates your company's awareness of the **State-of-Art**. Both federal agency representatives and proposal reviewers expect your company to demonstrate knowledge of your technical field.

Where To Find It?

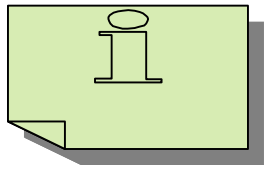
Academic Journals
Government Technical Reports & Studies
College / University sponsored studies

Market Research

Market research information is needed to show that an actual market (potential customers/buyers) exists for the proposed technology solution.

Where To Find It?

Trade & Industry Associations (Annual Reports published in their publications)
Mergent Online – Provides detailed market information for selected industries
Standard & Poor's NetAdvantage – Includes data and analysis of industries and companies
Business Management Practices- Business statistics and data tables
Business and Company Resource Center- Industry market research information, investment reports, and company rankings



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Who We Are

Aurora International Consulting (AIC) provides business formation and business development services. Specifically, AIC offers:

- Business Plan Development Service
- Market Assessment Service
- SBIR Action Plan™ Development Service
- SBIR Proposal Development Service

Who We Serve

Aspiring technology entrepreneurs (i.e., Researchers, Scientists, Technologists, etc.) involved in starting & running a new company and emerging small high technology firms interested in earning consistent revenues, reducing costs and achieving profits

SBIR Experience & Knowledge

Darrell Williams, AIC's Founder, President & CEO, has been involved in the Small Business Innovation Research (SBIR) since 1999. Under his leadership, from January 1999 - November 2006, Mr. Williams led the Washington Emerging Technologies Center (WETC) in winning three (3) US Small Business Administration Office of Technology SBIR Outreach grants for the Washington, DC metro-area.

WETC served, under the SBA grants, over 600 DC-area small high technology firms and individuals interested in winning contracts/grants from the SBIR program.

For More Information

Let us know how we can help your company succeed. You can either drop us a line from the **Contact Us** page on AIC's website (www.auroraintercon.com) or contacting Mr. Darrell Williams today, at staff@auroraintercon.com.

