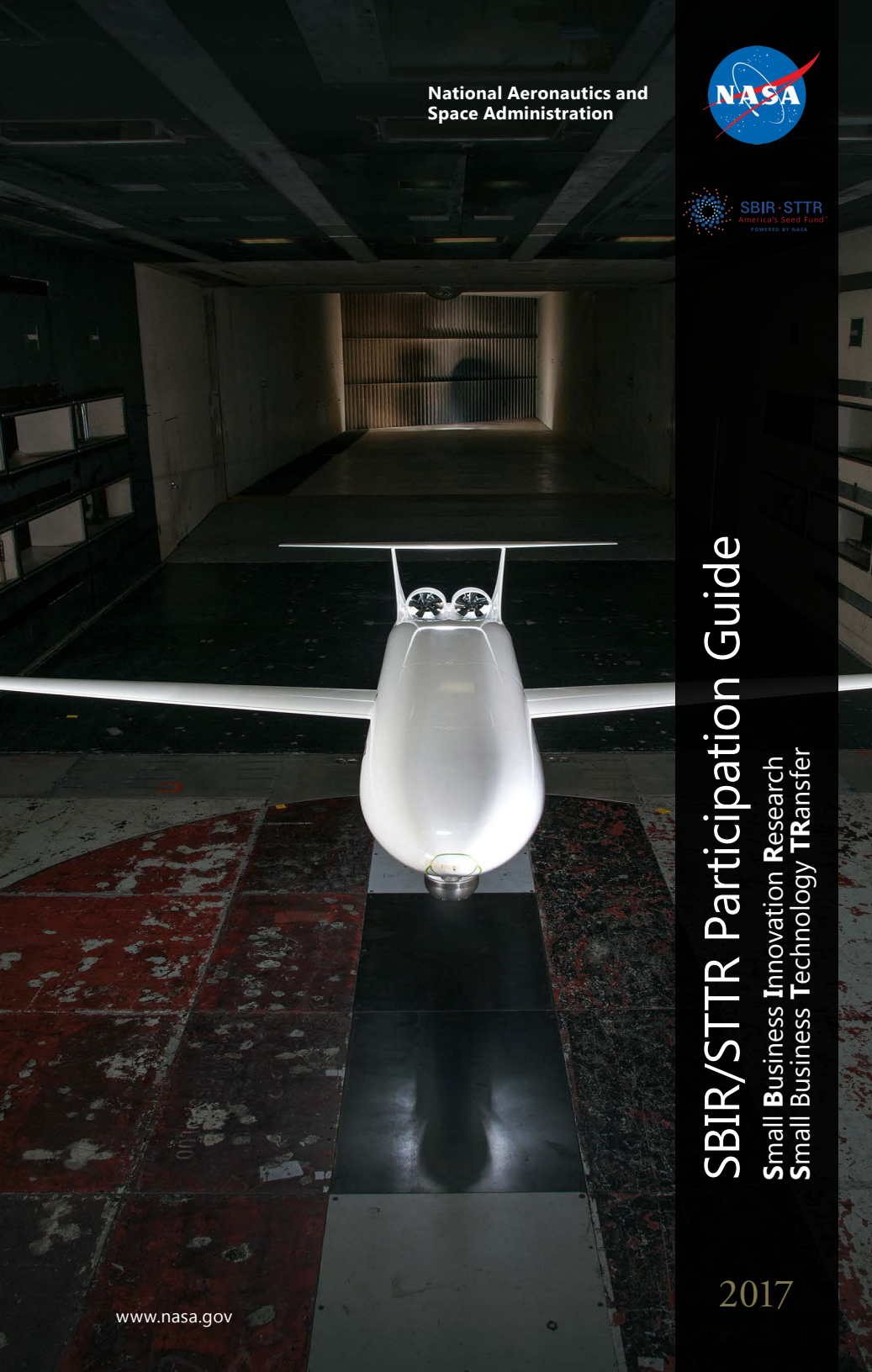


National Aeronautics and Space Administration

SBIR/STTR Participation Guide

Small **B**usiness **I**nnovation **R**esearch
Small Business **T**echnology **TR**ansfer

2017

www.nasa.gov

Contents

Introduction

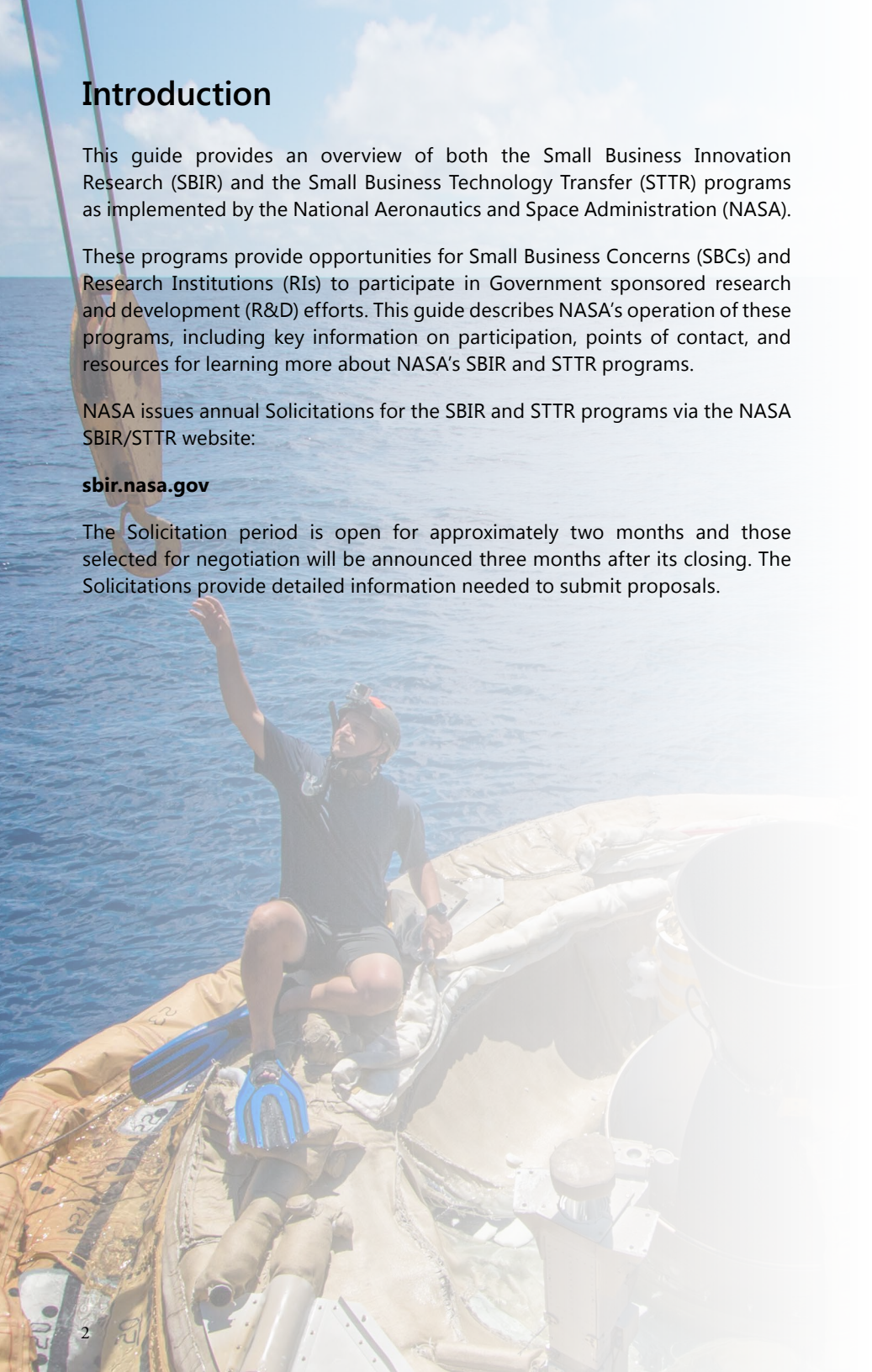
This guide provides an overview of both the Small Business Innovation Research (SBIR) and the Small Business Technology Transfer (STTR) programs as implemented by the National Aeronautics and Space Administration (NASA).

These programs provide opportunities for Small Business Concerns (SBCs) and Research Institutions (RIs) to participate in Government sponsored research and development (R&D) efforts. This guide describes NASA's operation of these programs, including key information on participation, points of contact, and resources for learning more about NASA's SBIR and STTR programs.

NASA issues annual Solicitations for the SBIR and STTR programs via the NASA SBIR/STTR website:

sbir.nasa.gov

The Solicitation period is open for approximately two months and those selected for negotiation will be announced three months after its closing. The Solicitations provide detailed information needed to submit proposals.



SBIR/STTR Programs Overview

The NASA SBIR and STTR programs fund the research, development, and demonstration of innovative technologies that fulfill NASA needs as described in the annual Solicitations and have significant potential for successful commercialization. Commercialization encompasses the transition of technology into products and services for NASA mission programs, other Government agencies and non-Government markets. Technological innovation, the overall focus of the NASA SBIR and STTR programs is vital to the performance of the NASA mission and to the Nation's prosperity and security.

The SBIR and STTR programs were established pursuant to the Small Business Innovation Development Act of 1982, P.L. 97-219 (codified at 15 U.S.C. 638). On December 31, 2011, the President signed into law the National Defense Reauthorization Act of 2012 (Defense Reauthorization Act), P. L. 112-81, Section 5001, Division E of the Defense Reauthorization Act contains the SBIR/STTR Reauthorization Act of 2011 (SBIR/STTR Reauthorization Act), which extends both the SBIR and STTR programs through September 30, 2017. Both programs seek to increase opportunities for SBCs to participate in Government R&D, to improve overall United States competitiveness, and to increase national employment. STTR has the additional intent of developing collaboration between SBCs and non-profit RIs.

Federal agencies with extramural R&D budgets exceeding $100 million are required to administer an SBIR program. Agencies with extramural R&D budgets exceeding $1 billion are also required to administer an STTR program. Each agency administers its own program within directives issued by the Small Business Administration (SBA). For the current fiscal year 2017, the funding for SBIR has been increased by 0.2 percent to 3.2 percent and for STTR investment is 0.45 percent, which is out of each participating agency's extramural R&D budget. NASA's annual funding for SBIR and STTR programs is approximately $190-210 million per year.

The statutory purposes of the SBIR/STTR programs are to:

- Stimulate technological innovation in the private sector;
- Strengthen the role of SBCs in meeting Federal research and development needs;
- Increase the commercial application of these research results and,
- Encourage participation of socially and economically disadvantaged persons and women-owned small businesses.

In addition to the statutes governing the SBIR and STTR programs, Executive Order 13329 (issued February 24, 2004) directs Federal agencies administering the SBIR and STTR programs to advance technological innovation in manufacturing through related R&D. Accordingly, the NASA SBIR and STTR Solicitations include agency needs related to manufacturing in compliance with this Executive Order.

Energy Independence and Security Act of 2007, section 1203, stated that federal agencies shall give high priority to small business concerns that participate in or conduct energy efficiency or renewable energy system research and development projects. If a proposal has a connection to energy efficiency or alternative and renewable energy this should be indicated in Part 5 of the proposal (Related R/R&D) and a brief explanation of how it is related to energy efficiency and alternative and renewable energy should be provided.

Benefits of Participating

The SBIR and STTR programs provide opportunities for SBCs and partnering RIs to work with NASA to advance proposed innovations and transition resulting technologies, products and services into NASA mission programs and other markets. Other benefits of an SBIR/STTR contract with NASA include:

- "Equity-free" funding to explore, develop and demonstrate the feasibility of proposed innovations;
- Non-disclosure of proprietary data provided under the contract for a period of four years;
- Data and intellectual property rights necessary for commercialization, including ownership of data, copyrights, and inventions resulting from the performance of the contract and
- Fulfillment of the Federal procurement competition requirements, enabling the award of follow-on, Phase III contracts by NASA, other Federal agencies and prime contractors to the Government without further competition.

Participants in the NASA SBIR and STTR programs report other benefits as well:

- Gaining additional credibility after winning an SBIR/STTR contract in the search for capital, equipment, or services;
- Obtaining exposure, experience, and contacts within NASA that has led to other contracts or subcontracts and

- Receiving the debriefing comments from detailed technical evaluations, which helps the SBC understand the strengths and weaknesses of their proposal.

Overall, participating SBCs and RIs are challenged to develop, transition and bring to market their innovative concepts and technologies in ways that contribute to the NASA mission, the Nation's prosperity and their commercial growth.

Eligibility

The recipient of an SBIR or STTR funding award, in accordance with SBA directives, must qualify as a Small Business Concern, which is defined as:

- Legally established and organized for profit with the place of business located in the U.S.;
- Operated primarily in the U.S. or makes a significant contribution to the U.S. economy;
- Majority owned and controlled by U.S. citizens or permanent resident aliens and,
- 500 employees or less, including any affiliates.

For the SBIR program, the Principal Investigator (PI) must be primarily employed by the SBC (equivalent to more than 50% of the PI's work time), and precluding full-time employment with another organization. The STTR program permits employment of the PI by either the SBC or the RI.

Program Structure

The structure of the SBIR and STTR programs reflects the Congressional understanding that the innovation process and bringing new products and services to the market takes time and has a high degree of technical and business risk. The programs have three phases:

Phase I is the opportunity to establish the scientific, technical and commercial merit and feasibility of the proposed innovation in fulfillment of NASA needs. All Phase I contracts are selected competitively and require reporting on the work and results accomplished, including the strategy for the development and transition of the proposed innovation.

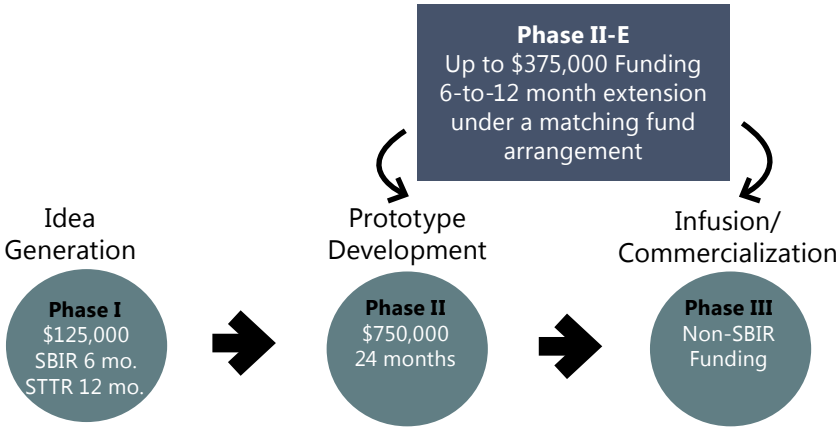
NASA SBIR Phase I contracts last up to 6 months and STTR Phase I contracts last up to 12 months, both with maximum funding of $125,000.

I-Corps: The NASA SBIR/STTR Program is partnering with the National Science Foundation (NSF) to offer selected teams the opportunity for Phase I contractors to participate in the NSF Innovation Corps program (I-Corps TM) (hereinafter I-Corps). I-Corps educates teams on how to translate technologies from the lab into the marketplace.

Phase II is focused on the development, demonstration and delivery of the proposed innovation. The most promising Phase I projects are awarded Phase II contracts through a competitive selection based on scientific and technical merit, expected value to NASA, and commercial potential. All Phase II contracts require reporting on the work and results accomplished, and whenever possible, the delivery of a prototype unit or software package, or a more complete product or service, for NASA testing and utilization.

The duration of both SBIR and STTR Phase II contracts is usually a period of 24 months with maximum funding of $750,000.

Phase II Extended (Phase II-E) Option: The objective of the Phase II-E Option is to further encourage the advancement of innovations being developed under active Phase II contracts that are in good standing with NASA. Eligible firms shall secure a non-SBIR/STTR investor to contribute funding towards further enhancing the research to qualify for this option. The investor may be a non-SBIR/STTR NASA or NASA program; or may be an investor external to NASA, from another government agency or the private sector, depending on the strategy being pursued for enhancing the technology for further research, infusion, and/or commercialization. Under this contract option, NASA will match external investor funds with SBIR/STTR funds to extend an existing Phase II project for a minimum of 4 months to perform additional R/R&D.



Civilian Commercialization Readiness Pilot Program: NASA is offering a separate opportunity for SBIR/STTR Phase II awardees (from any Agency) to submit applications to NASA's FY17 Civilian Commercialization Readiness Pilot Program (CCRPP) related to NASA interests. The CCRPP seeks opportunities to support technology maturation that either require more funds than would be available through a Phase II-E contract option, or where the SBIR/STTR Phase II project has moved beyond the time window to enable the Phase II-E. Preliminary informationabout the CCRPP is available via the public website: sbir.nasa.gov. The official release, including the information related to the proposal requirements and evaluation criteria, will be posted in early 2017.

Award amounts subject to change due to budget considerations

Award Selection

NASA's SBIR and STTR programs are highly competitive. Historically, 13% of SBIR Phase I proposal submissions receive awards, while 20% of STTR Phase I proposals receive awards. About 40% of the completed Phase I projects receive funding for Phase II development. NASA funding awards for SBIR and STTR projects are issued as contracts between NASA and the SBC.

All proposals must be submitted in response to the annual NASA SBIR and STTR Solicitations. Proposals are screened for compliance with proposal submission requirements, including relevance to NASA needs described in the Solicitations. Proposals are then evaluated by NASA technical personnel and selected through a competitive procurement process based on factors described in the Solicitations. These factors include:

- Scientific/Technical Merit and Feasibility
- Experience, Qualifications and Facilities
- Effectiveness of the Proposed Work Plan
- Commercial Potential and Feasibility
- Price Reasonableness

For Phase II proposals, commercial merit is a critical factor. As such, for Phase II proposals the scoring breakdown and weights have slightly changed. Commercialization had previously been rated as adjectival but will now contribute into proposals overall score at a weight of 5%.

Proposals recommended for negotiations will be forwarded to the Program Management Office for analysis and presented to the Source Selection Official and

Mission Directorate Representatives. The Source Selection Official will consider the recommendations as well as overall NASA priorities, program balance and available funding. Each proposal selected for negotiation will be evaluated for cost/price reasonableness, the terms and conditions of the contract will be negotiated and a responsibility determination made. The contracting officer will advise the Source Selection Official on matters pertaining to cost reasonableness and responsibility. The Source Selection Official has the final authority for selecting the specific proposals for award.

Research Areas

The SBIR and STTR Solicitations are produced in partnership with NASA's Mission Directorates and centers to focus on the agency's priority mission needs. These needs, updated annually, are organized under subtopics. The subtopics are being organized in a different way within Chapter 9 of the solicitation this year. Instead of being grouped by NASA Mission Directorate as in previous solicitations, subtopics are now being organized into groupings called "Focus Areas." Focus areas are a way of grouping NASA interests and related technologies. This change is intended to make it easier for proposers to understand related needs across the agency and thus identify subtopics where their research and development capabilities may be a good match.

Proposals eligible for award must address one or more needs within a subtopic. The Solicitations listed online at sbir.nasa.gov include tools employing text search and a technology taxonomy that is available to help find subtopics of interest. The technology taxonomy also allows a SBC or RI to find subtopics whose text may not include specific technical words but which are relevant.

NASA's Mission Directorates and centers manage the focus areas and subtopics for the Solicitations. Subtopics evolve in keeping with the agency's mission needs and priorities. Each subtopic is normally the responsibility of one NASA center, noted as "Lead Center" in the Solicitations, with assistance from "Participating Centers." All four NASA Mission Directorates participate in the SBIR program. STTR subtopics focus on needs associated with the core competencies of NASA's centers in support of NASA mission programs.

Subtopic Workshop: NASA now holds annual Subtopic Workshop to build NASA's relationship with the small business community and increase communication between NASA and potential proposers. The workshop attendees have the opportunity to:

- Interact with the NASA SBIR/STTR Program Experts, Mission Directorate Representatives, and NASA Technologists

- Learn about, ask questions, and provide feedback on selected topic areas. The information obtained through the workshop may inform development of upcoming SBIR/STTR solicitations
- Receive a general overview of NASA's SBIR and STTR programs
- Network with other small business and industry leaders

The next subtopic workshop is tentatively scheduled to be held in June 2017.

SPACE TECHNOLOGY MISSION DIRECTORATE

https://www.nasa.gov/directorates/spacetech/home

The Space Technology Mission Directorate (STMD) enables a new class of missions by drawing on talent from the NASA workforce, academia, small businesses, and the broader space enterprise to deliver innovative solutions that dramatically improve technological capabilities for NASA and the Nation. The rapid development and infusion of new technologies and capabilities are critical components to advancing the Nation's future in space. These activities fuel an emerging aerospace economy and build upon the space technology needs of other government agencies, as well as the overall aerospace enterprise. NASA supports these objectives and contributes to the demands of larger national technology goals by investing in Space Technology.

AERONAUTICS RESEARCH MISSION DIRECTORATE

https://www.nasa.gov/aeroresearch

NASA's Aeronautics Research Mission Directorate (ARMD) expands the boundaries of aeronautical knowledge for the benefit of the Nation and the broad aeronautics community, which includes the Agency's partners in academia, industry, and other government agencies. ARMD is conducting high-quality, cutting-edge research that will lead to revolutionary concepts, technologies, and capabilities that enable radical change to both the airspace system and the aircrafts that fly within it, facilitating a safer, more environmentally friendly, and more efficient air transportation system. At the same time, we are ensuring that aeronautics research and critical core competencies continue to play a vital role in support of NASA's goals for both manned and robotic space exploration.

SCIENCE MISSION DIRECTORATE

https://science.nasa.gov/

The Science Mission Directorate develops and operates an overall program of science and exploration. Objectives include the following: (1) study planet Earth from space to advance scientific understanding and meet societal needs; (2) understand the Sun and its effects on Earth and the Solar System; (3) advance scientific knowledge of the origin and history of the solar system, the potential for life elsewhere, and the hazards and resources present as humans explore space and (4) discover the origin, structure, evolution, and destiny of the universe, and search for Earth-like planets.

HUMAN EXPLORATION AND OPERATIONS MISSION DIRECTORATE

https://www.nasa.gov/directorates/heo

The Human Exploration and Operations (HEO) Mission Directorate provides the Agency with leadership and management of NASA space operations related to human exploration in and beyond low-Earth orbit. HEO also oversees low-level requirements development, policy, and programmatic oversight. The International Space Station, currently orbiting the Earth with a crew of six, represents the NASA exploration activities in low-Earth orbit. Exploration activities beyond low-Earth orbit include the management of Commercial Space Transportation, Exploration Systems Development, Human Space Flight Capabilities, Advanced Exploration Systems, and Space Life Sciences Research & Applications. The directorate is similarly responsible for Agency leadership and management of NASA space operations related to Launch Services, Space Transportation, and Space Communications in support of both human and robotic exploration programs.

Phase I Proposal Preparation

Basic requirements differ in certain important details among the agencies that operate SBIR/STTR programs. Thus a careful review of the NASA SBIR-STTR Solicitations is necessary to comply with the instructions and requirements for an acceptable and competitive proposal to NASA. The application for the submission of proposals is provided on the SBIR/STTR website under the link entitled Handbooks. Proposal submission tools are only available during the open Solicitation period.

Highlights of the Phase I proposal instructions from the Solicitations are provided below.

A competitive Phase I proposal will clearly and concisely (1) describe the proposed innovation relative to the state of the art; (2) address the scientific, technical and commercial merit and feasibility of the proposed innovation and its relevance and significance to one or more NASA needs within a subtopic of the Solicitation and (3) provide a preliminary strategy that addresses key technical, market, business factors pertinent to the successful development, demonstration of the proposed innovation, and its transition into products and services for NASA mission programs and other potential customers.

Phase I proposals are limited to 23 pages and must include the following items in the specified order:

- Cover Sheet (Form A);
- Proposal Summary (Form B);
- Budget Summary (Form C);
- Technical Content;
- R/R&D Agreement between the SBC and RI (STTR only), counts as 1 page towards the 23-page limit.
- Briefing Chart (not included in the 23-page limit. The Briefing Chart must not contain proprietary data).

The technical content must contain the 11 parts listed below, in order, and must not exceed 20 pages for SBIR and 19 pages for STTR including all graphics and the Table of Contents. Each form counts as one page each. The space allocated to each part will depend on the project chosen and the SBC's approach:

Part 1: Table of Contents

Part 2: Identification & Significance of the Innovation

Part 3: Technical Objectives

Part 4: Work Plan

Part 5: Related R/R&D

Part 6: Key Personnel & Bibliography of Directly Related Work

Part 7: Relationship with Phase II or Future R/R&D

Part 8: Facilities/Equipment

Part 9: Subcontracts & Consultants

Part 10: Potential Post Applications

Part 11: Essentially Equivalent and Duplicate Proposals & Awards

In addition, proposals to the STTR program require the electronic submission of the research agreement between the SBC and the RI. A model agreement is provided in the Solicitations, or offerors can create their own agreement. This agreement counts as one page toward the 23 page limit.

A non-proprietary one page briefing chart is requested to assist in the ranking and advocacy of proposals prior to selection. This chart is not counted against the 23-page limit. Its submission, along with classifying the proposed innovation within the technology taxonomy, also enhances NASA's use of project results.

Each proposal submitted must address one or more NASA needs within just one subtopic. An SBC may submit more than one proposal to the same subtopic; however, the SBC should not submit the same (or substantially equivalent) proposal to more than one subtopic. NASA will not accept more than 10 proposals to either program from any one company. The acceptance of awards for essentially equivalent work being performed at any other agency of the Federal Government is not allowed and is considered fraudulent and subject to criminal prosecution.

All Phase I contracts require the delivery of reports that present (1) the work and results accomplished; (2) the scientific, technical and commercial merit and feasibility of the proposed innovation; (3) the relevance and significance to one or more NASA needs and (4) the strategy for development and transition of the proposed innovation into products and services for NASA mission programs and other potential customers.

Additional Information

The NASA SBIR/STTR website (sbir.nasa.gov) contains Solicitations and schedules, along with a wealth of related information. Documents and information available include prior award lists, technical abstracts, program statistics, procurement information, and links to state and private assistance organizations.

The SBIR/STTR Firm's Library (https://sbir.gsfc.nasa.gov/sbir/firm_library/index.html) provides specific help in meeting proposal and contract requirements. The Firm's Library offers templates and samples of all potential Phase I and Phase II deliverables from proposal submissions through the life of the contract. Samples include proposals, forms for proposals and contract negotiations,

cooperative agreements (STTR), briefing charts, and reports. In addition, templates and samples for items such as business plans, briefing charts, and success story documentation are available.

NASA TechSource (sbir.nasa.gov/techsource) provides searchable information on current and recently completed SBIR and STTR Phase II projects funded by NASA.

The NASA SBIR/STTR archive of proposal abstracts of previous NASA Phase I and II awards, accessible via the NASA SBIR/STTR website, is also available to assist the formulation of proposals.

The NASA Office of the Chief Technologist (www.nasa.gov/oct/) provides additional online technology resources for exploring other NASA research, technology, expertise and R&D capabilities.

The NASA Office of Small Business Programs (OSBP) promotes and integrates all small businesses into the competitive base of contractors that pioneer the future of space exploration, scientific discovery, and aeronautics research. The Mentor-Protégé Program (MPP) offers substantial assistance to small disadvantaged businesses.

Sources of Assistance

Since the inception of the SBIR and STTR programs a wide range of public and private sector programs and services have emerged to assist SBCs in all phases of the programs.

The SBA (http://sbir.gov) provides information on the SBIR and STTR programs across the federal government as well as other programs and services that provide assistance for the development of small businesses and their participation in the SBIR and STTR programs.

The National Science Foundation sponsors an extensive website for the overall SBIR/STTR community (http://www.nsf.gov/eng/iip/sbir/).

The organizations mentioned above as well as the following individuals may be contacted for assistance concerning participation in the NASA SBIR/STTR programs.

Program Management Office

The Space Technology Mission Directorate provides overall management for the NASA SBIR/STTR programs. The NASA SBIR/STTR Program Management Office, which operates the programs in conjunction with NASA Mission Directorates and centers, is hosted at the NASA Ames Research Center.

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email: Thomas.M.Stanley@nasa.gov

Notes

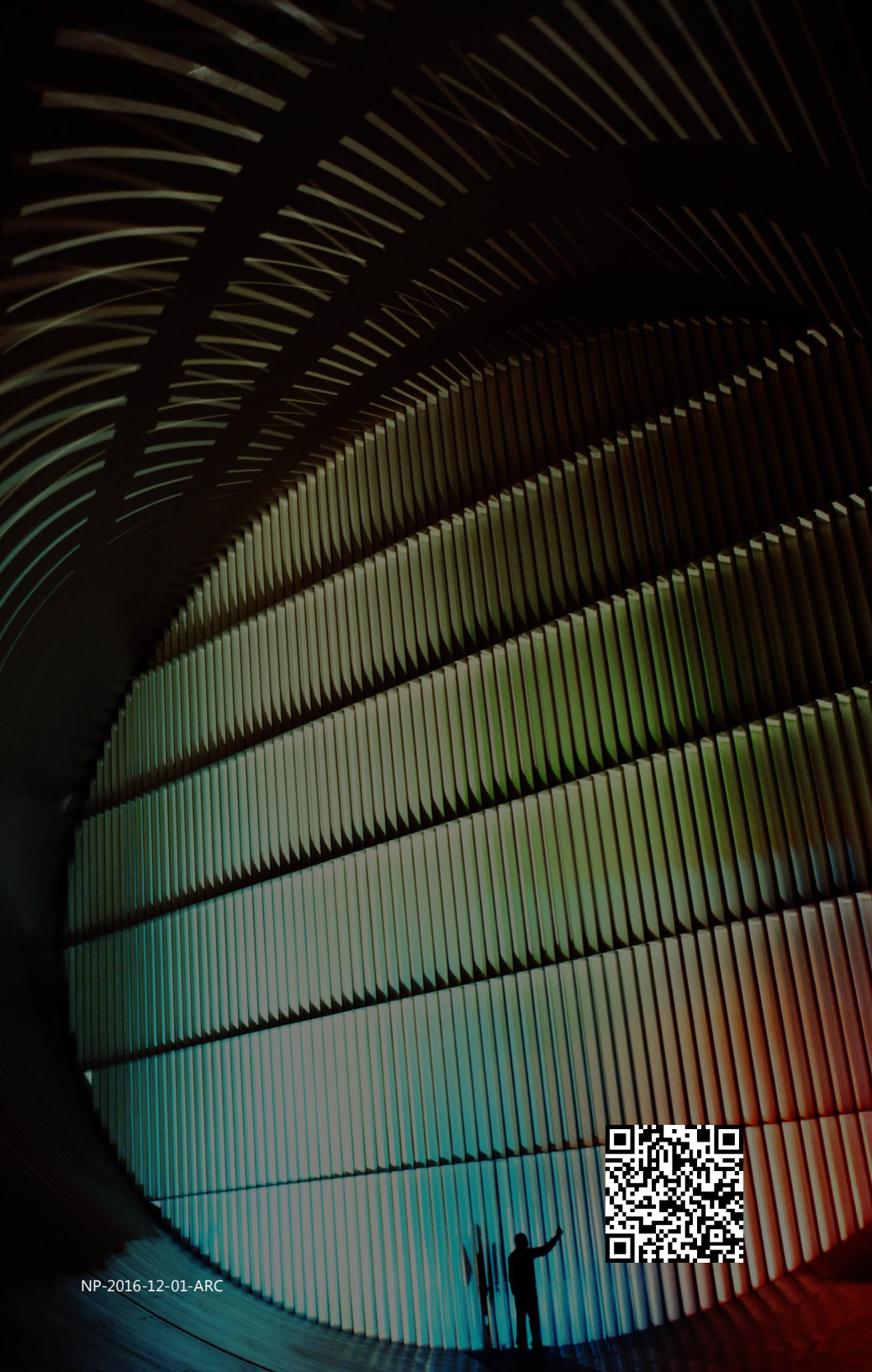
Visit our website to find success stories featuring SBIR and STTR firms that have been infused into NASA missions or commercialized into industry: sbir.nasa.gov

An equation you need to remember:

NASA TOLERANCE FOR FRAUD, WASTE, AND ABUSE = ZERO

NASA Inspector General Hotline:
1-800-424-9183
http://oig.nasa.gov/hotline.html
PO Box 23089 l L'Enfant Plaza l
Washington, DC 20026
National Aeronautics and Space Administration
www.nasa.gov

Please send questions and comments to:
ARC-SBIR-Outreach@mail.nasa.gov



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