National Aeronautics and Space Administration

National Academies workshop on The Small Business Technology Transfer Program

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About the Programs

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). With the SBIR/STTR Reauthorization Act, both the SBIR and STTR programs were extended through September 30, 2017. The programs seek to increase opportunities for SBCs to participate in Government R&D, to improve overall United States competitiveness, and to increase national employment.

- **Stimulate technological innovation in the private sector;**
- **Foster technology transfer through cooperative R&D between small businesses and research institutions**
- **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.**

The STTR program has a statutory requirement to stimulate a partnership of ideas and technologies between innovative small business concerns (SBCs) and Research Institutions through Federally-funded research or research and development (R/R&D). STTR also adheres to SBA directives to increase participation by Women-Owned and Small Disadvantaged Businesses.

STTR Managed Under STMD

Part of new focus a Space Technology At NASA

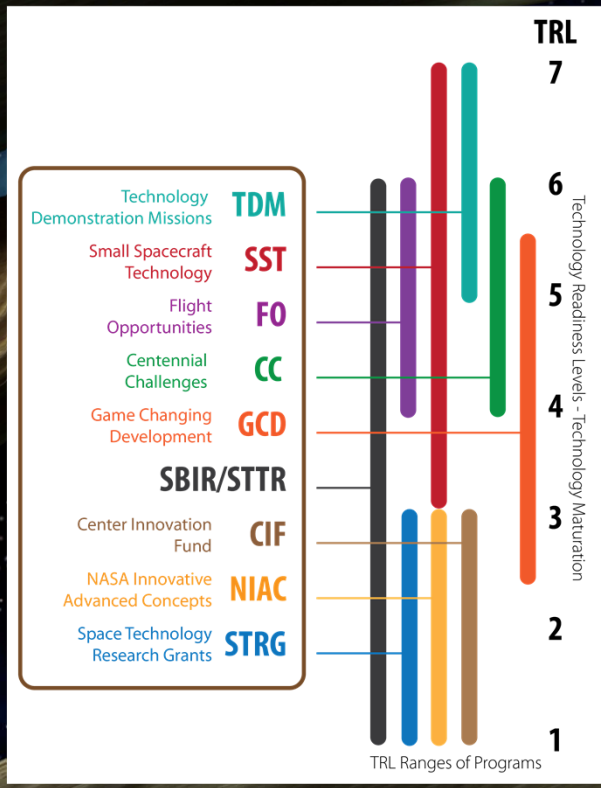
- One of 9 Programs within Space Technology Mission Directorate – tackling new technology development challenges across all "Technology Readiness Levels"

SBIR & STTR

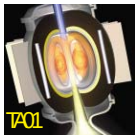
- Topics/Subtopics developed to support the needs of NASA's other Mission Directorates – Science, Human Exploration & Operations, Aeronautics Research
- Topics/Subtopics developed to support mid- to long-term technology development needs identified in NASA's "Space Technology Roadmaps" or the National Aeronautics R&D Plan

NASA Centers Play Critical Role

- All SBIR/STTR projects are managed at one of NASA's 10 Centers – home to NASA's development projects, research facilities, and Subject Matter Experts



Space Technology Technical Areas

TA01 

• LAUNCH PROPULSION SYSTEMS

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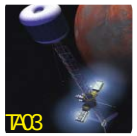
• IN-SPACE PROPULSION TECHNOLOGIES

TA03 

• SPACE POWER & ENERGY STORAGE

TA04 

• ROBOTICS, TELE-ROBOTICS & AUTONOMOUS SYSTEMS

TA05 

• COMMUNICATION & NAVIGATION

TA06 

• HUMAN HEALTH, LIFE SUPPORT & HABITATION SYSTEMS

TA07 

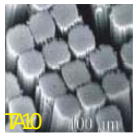
• HUMAN EXPLORATION DESTINATION SYSTEMS

TA08 

• SCIENCE INSTRUMENTS, OBSERVATORIES & SENSOR SYSTEMS

TA09 

• ENTRY, DESCENT & LANDING SYSTEMS

TA10 

• NANOTECHNOLOGY

TA11 

• MODELING, SIMULATION, INFORMATION TECHNOLOGY & PROCESSING

TA12 

• MATERIALS, STRUCTURES, MECHANICAL SYSTEMS & MANUFACTURING

TA13 

• GROUND & LAUNCH SYSTEMS PROCESSING

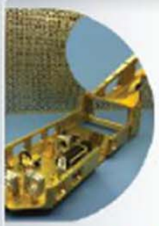
TA14 

• THERMAL MANAGEMENT SYSTEMS

Space Technology
Future Thrust Areas

High Power Solar Electric Propulsion

Deep space human exploration, science missions and commercial applications with investments in advanced solar arrays, high-power Hall thrusters and power processing units.



Space Optical Comm.

Substantially increase the available bandwidth for near Earth space communications currently limited by power and frequency allocation restrictions, and increase the communications throughput for deep space mission.

Advanced life Support & Resource Utilization

Technologies for human exploration mission including Mars atmospheric In-situ resource utilization, near closed loop air revitalization and water recovery, EVA gloves and radiation protection.

Mars Entry Descent and Landing Systems

Permits more capable science missions, eventual human missions to mars including, hypersonic and supersonic aerodynamic decelerators, a new generation of compliant TPS materials, retro-propulsion technologies, instrumentation and modeling capabilities.

Space Robotic Systems

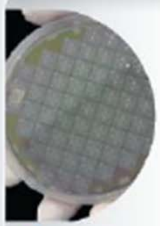
Creates future humanoid robotics, autonomy and remote operations technologies to substantially augments the capability of future human space flight missions.

Lightweight Space Structures

Targets substantial increases in launch mass, and allow for large decreases in needed structural mass for spacecraft and in-space structures.

Deep Space Navigation

Allows for more capable science and human exploration missions using advanced atomic clocks, x-ray detectors and fast light optical gyroscopes.



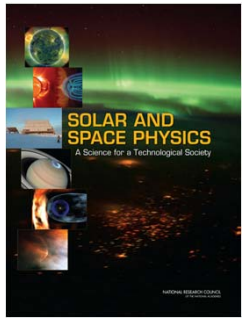
Space Observatory Systems

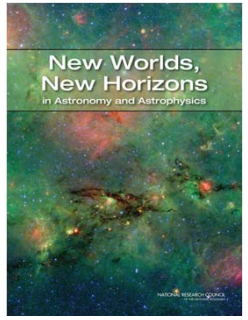
Allows for significant increases in future science capabilities including, AFTA/WFIRST coronagraph technology to characterize exo-planets by direct observation and advances in the surface materials as well as control systems for large space optics.

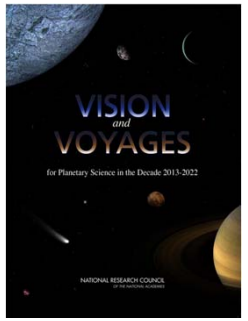
Further Understanding NASA Needs

- In Science – "Decadal Surveys" and NASA-developed implementation documents
  - Planetary Science
    - http://solarsystem.nasa.gov/multimedia/download-detail.cfm?DL_ID=742
  - Astronomy and Astrophysics
    - http://science.nasa.gov/astrophysics/special-events/astro2010-astronomy-and-astrophysics-decadal-survey/
    - http://science.nasa.gov/media/medialibrary/2013/04/15/secure-ImpPlan_R2_15Apr2013.pdf
  - Heliophysics (Solar and Space Physics)
    - http://www.nap.edu/catalog.php?record_id=13060
    - http://www.nasa.gov/mission_pages/sunearth/news/decadal-2012.html
    - http://science.nasa.gov/media/medialibrary/2010/03/31/Heliophysics_Roadmap_2009_tagged-quads.pdf
  - Earth Science
    - http://science.nasa.gov/earth-science/decadal-surveys/
    - http://esto.nasa.gov/

- In Aeronautics Research
  - National Aeronautics R&D Plan
    - http://www.whitehouse.gov/sites/default/files/microsites/ostp/aero-rdplan-2010.pdf
  - Various Detailed NASA Aeronautics Research documents
    - http://www.aeronautics.nasa.gov/programs.htm



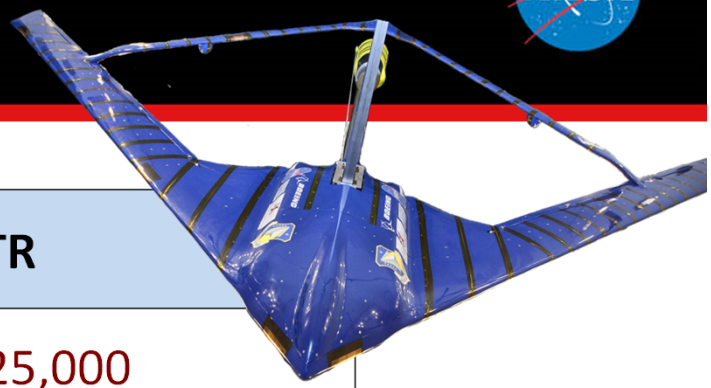




STTR Overview

- The Technical Infusion Managers (TIMs) working with Center Chief Technologists (CCTs) at each Center are responsible for coordinating the review and ranking process
- Focused on development, demonstration, and delivery of proposed innovation
- Each of the STTR topics and subtopics are mapped to the Space Technology Road Map's (STRs) Technology Areas (TAs)
- Contracts awarded via competitive selection:
  - Scientific and technical merit
  - Expected value to NASA
  - Commercial potential
- Contract period is typically 24 months with max value of $750,000
- Conduit to post-Phase II opportunities: Phase II-E, II-X, CRP, Phase III
  - For more information on post-Phase II opportunities visit:
    http://sbir.gsfc.nasa.gov/content/post-phase-ii-initiatives

SBIR/STTR General Solicitation



Phase I Contracts	SBIR	STTR
Maximum Contract Value	$125,000	$125,000
Period of Performance	6 months	12 months
Phase II Contracts	**SBIR**	**STTR**
Maximum Contract Value	$750,000	$750,000
Period of Performance	24 months	24 months

STTR Award Assistance

Discretionary technical assistance to STTR awardees.

- Agencies must use this money to attempt to increase participation by SDBs and WOSBs in the STTR Program, and small businesses in states with a historically low level of SBIR awards.

Pilot to Allow for Funding of Administrative, Oversight, and Contract Processing Costs

- STTR or SBIR Program-related outreach and related technical assistance initiatives not in effect prior to commencement of this pilot, except significant expansion or improvement of these initiatives, including:
- (I) Technical assistance site visits;
- (II) Personnel interviews; and
- (III) National conferences

STTR Outreach

- Targeted outreach to underrepresented minority groups such as Historically Black Colleges and Universities (HBCUs), Minority Serving Institutions (MSIs), and Minority Trade Organizations - HBCUs and MSIs play a large role in preparing minority professionals who enter into high-tech careers and who in turn may start-up high tech companies. The NASA SBIR/STTR Program has identified the following organizations to reach out to and share information on the STTR program as well as receive information on opportunities for outreach.

- Targeted outreach to women-owned small businesses - The NASA SBIR/STTR Program Office will continue to focus outreach toward women scientists, engineers, and women-owned research and development firms.

- Outreach to Underrepresented Areas - The NASA SBIR/STTR Program Office will also reach out to various State organizations to determine the appropriate course to increase awareness to those small business concerns residing in underrepresented areas. This activity may be worthy of coordination with SBA and/or several of the SBIR agencies so that constituents in these areas can obtain a broad perspective of the activities associated with several and/or many of Federal SBIR Programs.

SBIR/STTR – Beyond Phase II

Phase II-Enhancement (II-E)

Phase II-E	Minimum non-SBIR/STTR Funding Required for Eligibility for Matching in Phase II-E	Corresponding SBIR/STTR Program Contribution	Anticipated Period of Additional Performance
	$25,000	$25,000	6-12 Months
	Maximum non-SBIR/STTR Funding to be Matched by SBIR/STTR Program in Phase II-E	Corresponding SBIR/STTR Program Contribution	Anticipated Period of Additional Performance
	$125,000	$125,000	6-12 Months

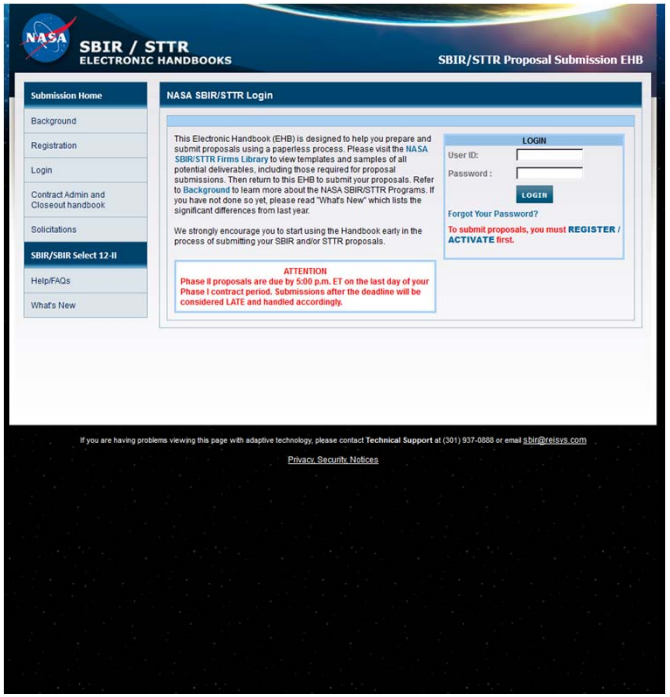
Phase II-eXpanded (II-X)

Phase II-X	Minimum Funding Required from non-SBIR/STTR NASA Source for Eligibility for Matching in Phase II-X	Corresponding SBIR/STTR Program Contribution	Anticipated Period of Additional Performance
	$75,000	$150,000	12-24 Months
	Maximum Funding Amount from non-SBIR/STTR NASA Source to be Matched in Phase II-X	Corresponding SBIR/STTR Program Contribution	Anticipated Period of Additional Performance
	$250,000	$500,000	12-24 Months

NASA SBIR/STTR Website

http://sbir.nasa.gov

- Electronic Handbook (EHB)



YOU MUST FIRST BE REGISTERED WITH THE SMALL BUSINESS ADMINISTRATION AT: http://www.sbir.gov/registration