Small Business Innovation Research  
Small Business Technology Transfer

Gynelle Steele  |  SBIR/STTR Overview - Reaching Higher: Aerospace Business Matchmaker  |  7/17/18
Soil Moisture sUAS

- Black Swift Technologies LLC, Boulder, Colorado

Water is critical to sustaining life, especially when it comes to the world’s food supply. Pinpointing which crops on multi-acre farms need water goes a long way to conserving this precious resource. Colorado-based Black Swift Technologies (BST) created a small unmanned aircraft system (sUAS) to help NASA get a clearer picture of soil moisture through the Small Business Innovation Research (SBIR) program. Soil moisture is defined in terms of volume of water per unit volume of soil. Using BST’s sUAS, NASA scientists can gather ground truth measurements for a clearer observation by getting closer to the source. This can help rule out misleading results generated by satellite imagery.
Water Recycling System for Space Exploration

- Pancopia, Hampton, VA

Water is as critical for survival in outer space as it is on Earth. In fact, 92% of the cost of sustaining human life on the ISS is attributed to making safe drinking water available. As a result, astronauts must make the most of water supplies by recycling this precious resource, which can save millions of dollars.

Pancopia developed a new biological water recycling system that can remove high levels of organic carbon and nitrogen, the two major pollutants in wastewater, at a lower cost than systems currently in use and at a faster rate.
Special Mirrors Help NASA Detect Planets

- IRIS AO, Inc., Berkley, CA

Starlight can lower the contrast in images sent back to Earth from a telescope traveling in space, making it harder to detect planets light years away. IRIS AO, Inc. helped NASA to develop deformable mirror (DM) technology that can filter out direct light from stars that limit the visibility of exoplanets. The technology is a key component of starlight blocking instruments on telescopes. The DM is used to correct optical aberrations that otherwise reduce the resolution of an image. The data collected by the telescope using the Iris AO DM can be used to determine if the target investigated in space is an exoplanet based on its orbit, and if the exoplanet has atmosphere using color spectrum imaging analysis. Iris AO has further developed DM technology for new imaging applications in critical research. For example, the National Institutes of Health and the Air Force are using Iris AO DMs for retinal imaging.
VISION
Empower small businesses to deliver technological innovation that contributes to NASA’s missions, provides societal benefit, and grows the US economy.

MISSION
Create opportunities through SBIR/STTR awards to leverage small business knowledge and technology development for maximum impact and contribution.

NASA’s SBIR and STTR programs have awarded more than $3.3 billion to research-intensive American small businesses.

Engineers and scientists from more than 12,000 small businesses in all 50 States, DC and Puerto Rico have participated.
The SBIR / STTR Programs

Small Business Innovation Research (SBIR)
- A set-aside program for small business to engage in Federal R&D – with potential for commercialization
- For FY17, 3.2% of Federal agencies Extramural R&D budgets greater than $100M per year

Small Business Technology Transfer (STTR)
- A sister set-aside program to facilitate cooperative R&D between small business concerns and U.S. research institutions – with potential for commercialization
- For FY17, 0.4% of the extramural research budget for all agencies with a budget greater than $1B per year
NASA Program Background

• NASA’s SBIR and STTR programs have awarded more than $3.3B to research-intensive American small businesses to date

• Engineers and scientists from more than 12,000 Firms in all 50 States, DC, and Puerto Rico have participated across the two programs

• Each year about 1,700 NASA scientists and engineers support the program performing technical reviews
Participating Federal Agencies

SBIR + STTR Programs

- Department of Defense (DoD)
- Department of Health and Human Services (HHS)
- Department of Energy (DoE)
- National Aeronautics and Space Administration (NASA)
- National Science Foundation (NSF)

SBIR Program Only

- Department of Agriculture (USDA)
- Department of Education (DoEd)
- Department of Transportation (DoT)
- Environmental Protection Agency (EPA)
- Department of Homeland Security (DHS)
- Department of Commerce (DoC)
STTR Eligibility Requirements

• Must be located in the United States and at least 51% owned and controlled by one or more individuals who are citizens of, or permanent resident aliens in, the United States

• Formal Cooperative R&D effort with a U.S. Research Institution

• Minimum 40% by small business, 30% by U.S. Research Institution (still have 30% that can be shared between the two parties or used for subcontracting, etc.)

• Small business is Prime, Principal Investigator can be from Small Business Concern or Research Institution

• The U.S. research institution (RI) must be an accredited college/university, a federal research and development center, or other non-profit research organization

• Other SBIR requirements generally also apply
NASA SBIR/STTR PROCESS

PHASE I
IDEA GENERATION
$125,000
SBIR 6 MONTHS
STTR 13 MONTHS

PHASE II
PROTOTYPE DEVELOPMENT
$750,000
24 MONTHS

PHASE III
INFUSION/COMMERCIALIZATION
NON-SBIR FUNDING

I-CORPS

PHASE II-E
UP TO $375,000 FUNDING
6-TO-12 MONTH EXTENSION UNDER A MATCHING FUND ARRANGEMENT

Go to sbir.nasa.gov/guide for details
I-Corps

In partnership with the National Science Foundation (NSF), NASA is offering the I-Corps program to educate selected teams on how to translate technologies from the laboratory into the marketplace.

http://sbir.nasa.gov/content/I-Corps
Learning about NASA’s Needs

Focus Areas

NASA’s research subtopics are organized by “Focus Areas” that group interests and related technologies.

- **Identify** the Area(s) closest to your innovation/idea
- **Go** to our website to research
- **Prepare to write** a proposal tailored to NASA’s needs

### 2018 Focus Areas

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<th>1. In-Space Propulsion Technologies</th>
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<td>10. Advanced Telescope Technologies</td>
<td>21. Small Spacecraft Technologies</td>
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<td>11. Spacecraft and Platform Systems</td>
<td>22. ISS Utilization and Microgravity Research</td>
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https://sbir.nasa.gov/solicitations
The NASA SBIR/STTR website is located at https://sbir.nasa.gov

Contact the Program
SBIR/STTR Helpdesk and Program Points of Contact

Research NASA’s Needs
Annual Solicitations including past years

Looking to Join the Program?
• Program Basics
• Forms Library
• Model Contract
• In-depth Training Resources and FAQs
Mentor-Protégé Program

The NASA Mentor-Protégé Program encourages NASA prime contractors to assist eligible protégés to:

- Enhance their capabilities to perform on NASA contracts and subcontracts,
- Foster the establishment of long-term business relationships between these entities and NASA prime contractors, and
- Increase the overall number of these entities that receive NASA contract and subcontract awards.

For more information on the Mentor-Protégé Program visit: http://www.osbp.nasa.gov/mpp/index.html
Contact us and let’s innovate together

Website: https://sbir.nasa.gov

NASA Help Desk: 301.937.0888