

## Small Business Innovation Research   Small Business Technology TTransfer

Dr. Joseph Grant & Mr. Carlos Torrez | NASA STTR Overview | 08.14.18

# SBIR / STTR Programs Vision and Mission

## VISION

Empower small businesses to deliver technological innovation that contributes to NASA's missions, provides societal benefit, and grows the US economy.

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

## MISSION

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

Engineers and scientists from **more than 12,000** small businesses in all 50 States, DC and Puerto Rico have participated



# The STTR Program

## Small Business Technology Transfer (STTR)



- STTR facilitates cooperative R&D between small business concerns and U.S. research institutions – with potential for commercialization
- For FY18, 0.45% of the extramural research budget for all agencies with a budget greater than \$1B per year (5 federal agencies presently participate)
- 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, Veteran-Owned and Small Disadvantaged Businesses and outreach to HBCUs and Minority Serving Institutions. Outreach is also made to under represented areas/regions of the country.

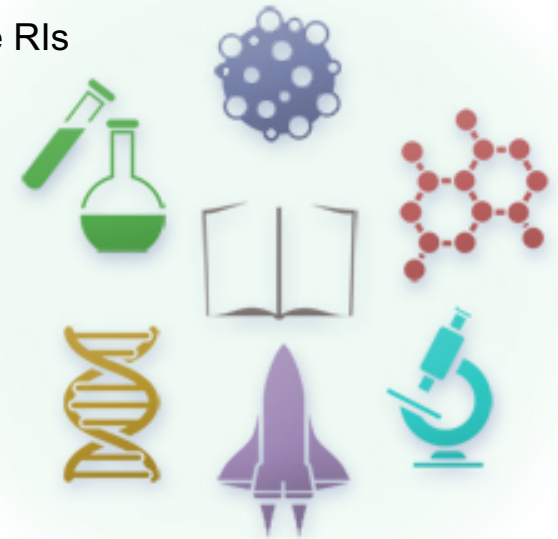
# Why Should You Participate in STTR?

## For the Small Business Concerns

- Opportunity to Leverage expertise and innovative ideas from Professors/Research Staff/Students
- Opportunity to leverage specialized facilities and experimental equipment at the Research Institutions (RIs) when often SBCs may not be able to afford such facilities on their own
- Opportunity to Create Pipeline of Usable Talent for Company from the RIs
- Develop working relationship & credibility with government R&D
- Fosters partnerships with large corporations and academia
- Provides recognition and visibility for your business
- Participation attracts venture capital and other funding sources

## For the Research Institutions

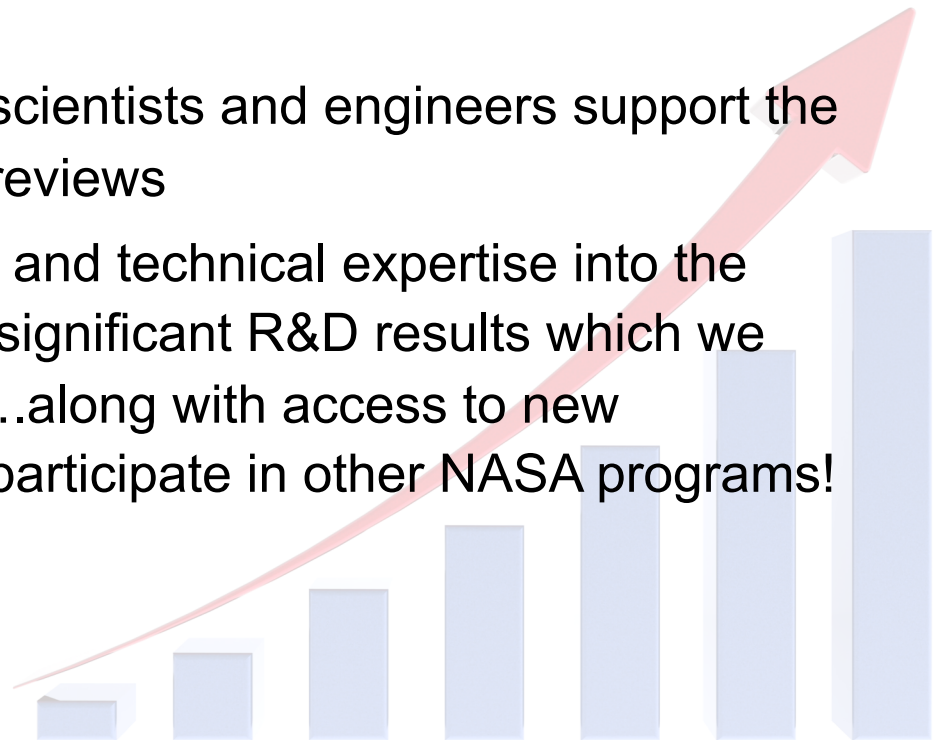
- Opportunity to Create/Inspire Entrepreneurship as a vital part of the Educational Experience
- Another opportunity to access federal funding for research
- An opportunity sometimes to get RI Intellectual Property (IP) involved in the project and licensed
- Another means for visibility in the research community, generate peer-reviewed pubs., etc.





# NASA Program Background

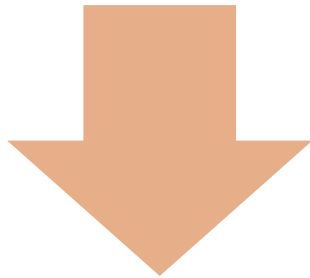
- NASA's SBIR and STTR programs have awarded more than **\$3.3B** to research-intensive American small businesses to date; STTR makes up close to **\$300M** of that figure
- Engineers and scientists from more than 12,000 Firms in all 50 States, DC, and Puerto Rico have participated across the two programs
- Each year about 1,700 NASA scientists and engineers support the program performing technical reviews
- NASA invests significant funds and technical expertise into the program and is rewarded with significant R&D results which we infuse into our programs.....along with access to new businesses and RIs who may participate in other NASA programs!



# Agency SBIR / STTR Differences

## CONTRACTING AGENCIES

- Agency establishes plans, protocols, requirements
- Highly focused topics
- **Procurement** mechanism for DOD and NASA
- More fiscal requirements



**NASA, DoD, HHS/NIH, ED,  
EPA, DOT, DOC**

## GRANTING AGENCIES

- Investigator initiates
- Approach
- Less-specified topics
- **Assistance** mechanism
- More flexibility

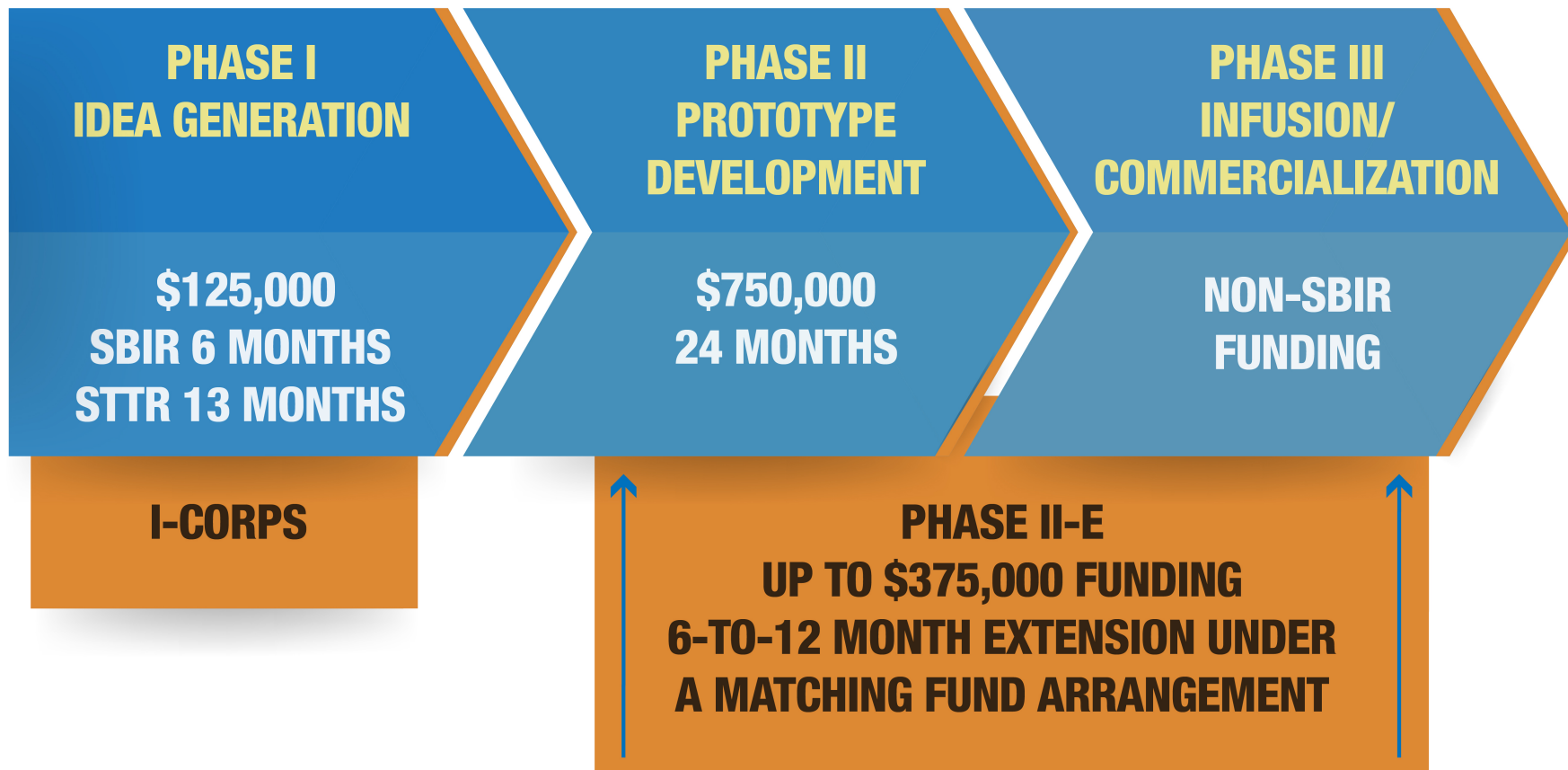


**HHS/NIH, NSF, ED,  
USDA, DOE**



# SBIR/STTR Program Structure

## NASA SBIR/STTR PROCESS



Go to [sbir.nasa.gov/guide](https://sbir.nasa.gov/guide) for details

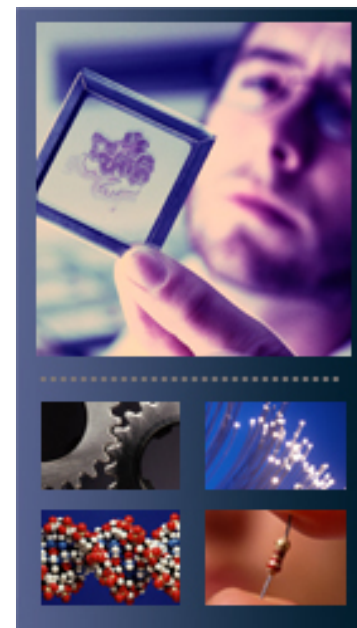
# Intellectual Property

## Patent Rights

- Small business concerns normally retain the principal worldwide patent rights to any invention developed with Government support

## Government Use

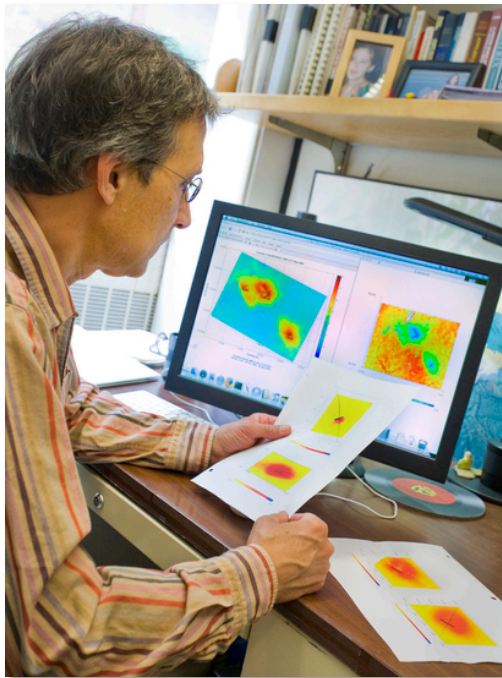
- The Federal Government receives a royalty-free license for Federal Government use



**U.S. Patent and Trade Office**

<http://www.uspto.gov/>





## Protection Period

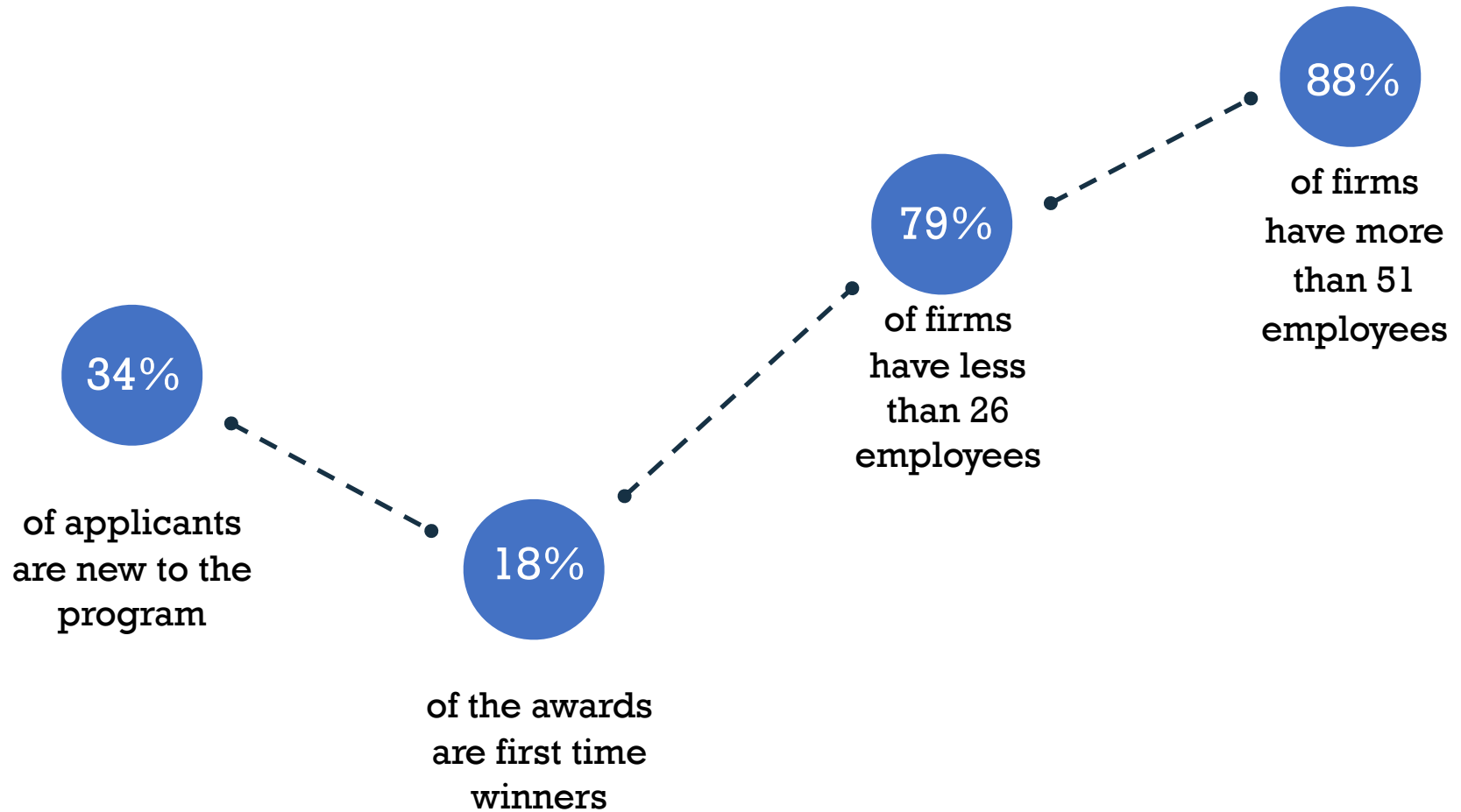
- Data generated from your R/R&D is protected from public disclosure for a minimum of 4 years (civilian agencies) or 5 years (DOD) after the conclusion of your award (Phase I, Phase II, or federally funded Phase III)

## Government Use

- The Government retains a royalty-free license for Government use of any technical data delivered under an SBIR award, whether patented or not

# Working with Small Businesses

## FY17 Phase I SBIR/STTR Awards Data Points





# Program 2018 Initiatives

## 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>



# 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>



# 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

<https://sbir.nasa.gov/solicitations>

### 2018 Focus Areas

- |   |   |
|---|---|
| 1. In-Space Propulsion Technologies         | 12. Entry, Descent and Landing Systems                            |
| 2. Power and Energy Storage                 | 13. Information Technologies for Science Data                     |
| 3. Autonomous Systems for Space Exploration | 14. In-Space and Advanced Manufacturing                           |
| 4. Robotic Systems for Space Exploration    | 15. Lightweight Materials, Structures, Assembly, and Construction |
| 5. Communications and Navigation            | 16. Ground and Launch Processing                                  |
| 6. Life Support and Habitation Systems      | 17. Thermal Management Systems                                    |
| 7. Human Research and Health Maintenance    | 18. Air Vehicle Technology  |
| 8. In-Situ Resource Utilization             | 19. Integrated Flight Systems                                     |
| 9. Sensors, Detectors and Instruments       | 20. Airspace Operations and Safety                                |
| 10. Advanced Telescope Technologies         | 21. Small Spacecraft Technologies                                 |
| 11. Spacecraft and Platform Systems         | 22. ISS Utilization and Microgravity Research                     |



# NASA's Technology Roadmaps

**TA 1**



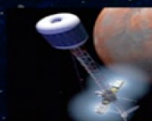
**LAUNCH PROPULSION SYSTEMS**

**TA 2**



**IN-SPACE PROPULSION TECHNOLOGIES**

**TA 3**



**SPACE POWER AND ENERGY STORAGE**

**TA 4**



**ROBOTICS AND AUTONOMOUS SYSTEMS**

**TA 5**



**COMMUNICATIONS, NAVIGATION, AND ORBITAL DEBRIS TRACKING AND CHARACTERIZATION SYSTEMS**

**TA 6**



**HUMAN HEALTH, LIFE SUPPORT, AND HABITATION SYSTEMS**

**TA 7**



**HUMAN EXPLORATION DESTINATION SYSTEMS**

**TA 8**



**SCIENCE INSTRUMENTS, OBSERVATORIES, AND SENSOR SYSTEMS**

**TA 9**



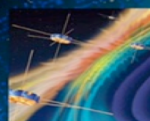
**ENTRY, DESCENT, AND LANDING SYSTEMS**

**TA 10**



**NANOTECHNOLOGY**

**TA 11**



**MODELING, SIMULATION, INFORMATION TECHNOLOGY, AND PROCESSING**

**TA 12**



**MATERIALS, STRUCTURES, MECHANICAL SYSTEMS, AND MANUFACTURING**

**TA 13**



**GROUND AND LAUNCH SYSTEMS**

**TA 14**



**THERMAL MANAGEMENT SYSTEMS**

**TA 15**



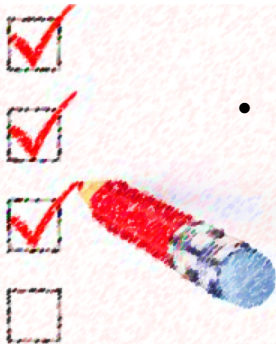
**AERONAUTICS**

<https://www.nasa.gov/offices/oct/home/roadmaps/index.html>



# Checklist before Submitting Application

- Submit proposal prior to the deadline
- Perform the “Endorse Proposal” step, which is the final step in the submissions process
- Make sure you meet the format requirements (margin and font size, page limitation)
- Have the RI register correctly (STTR Requirement)
  - For STTR proposals the RI needs to endorse the Research Agreement prior to your proposal being complete and submitted
    - RI will need to create an account in the Proposal Submission EHB
    - register under your firm using your EIN, State, and PIN so they are attached to your proposal correctly
    - choose the RI option at the bottom of the page when entering their name, email, phone, etc.



# NASA SBIR/STTR Website [www.sbir.nasa.gov](http://www.sbir.nasa.gov)

The NASA SBIR/STTR website is located at [www.sbir.nasa.gov](http://www.sbir.nasa.gov)

**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



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

## The Concept - Spring 2018 Newsletter

[Download to Read](#)



### Proposers

[SBIR/STTR Basics](#)  
[SBIR/STTR Schedule](#)  
[Interactive Participation Guide](#)  
[SBIR/STTR Firms Library](#)  
[Model Contract](#)  
[Training Resources](#)  
[FAQs](#)



### Awardees

[SBIR/STTR Schedule](#)  
[SBIR/STTR Firms Library](#)  
[Additional Sources of Assistance](#)  
[Awardee Firm's EHB](#)  
[Training Resources](#)  
[FAQs](#)



### Publications

[SBIR/STTR Newsletter – The Concept](#)  
[Interactive Participation Guide](#)  
[SBIR/STTR Annual Report](#)  
[FY 2016 Economic Impact Report](#)

## PHASE III SUCCESS

### SNAPSHOT

A record-breaking aircraft was designed to travel far distances to collect data in very cold climates by innovating existing technologies through a joint effort funded by NASA and DoD.

## LONG ENDURANCE AIRCRAFT SET WORLD RECORD

Vanilla Aircraft, Falls Church, VA

### Innovation

A long endurance Unmanned Aircraft System (UAS) was designed by Vanilla Aircraft to cover thousands of square miles of treacherous terrain in a single flight on one tank of fuel through temperatures below  $-40^{\circ}\text{F}$ . The newly-designed UAS is specifically outfitted with instruments to collect critical information for research missions. Due to its capability for longer missions, fewer missions are needed, translating into reduced operating and personnel costs.

A non-stop, record-breaking unrefueled 56-hour test flight proved the aircraft could meet both NASA's need to explore remote locations with extreme cold climates as well as the Department of Defense's desire to add capabilities to support ground forces in critical missions.



## PHASE II SUCCESS

### SNAPSHOT

A ground-breaking tool for NASA scientists to study air traffic costs of the United States National Airspace System.

## Finding Cost Efficiencies in US National Airspace Operations

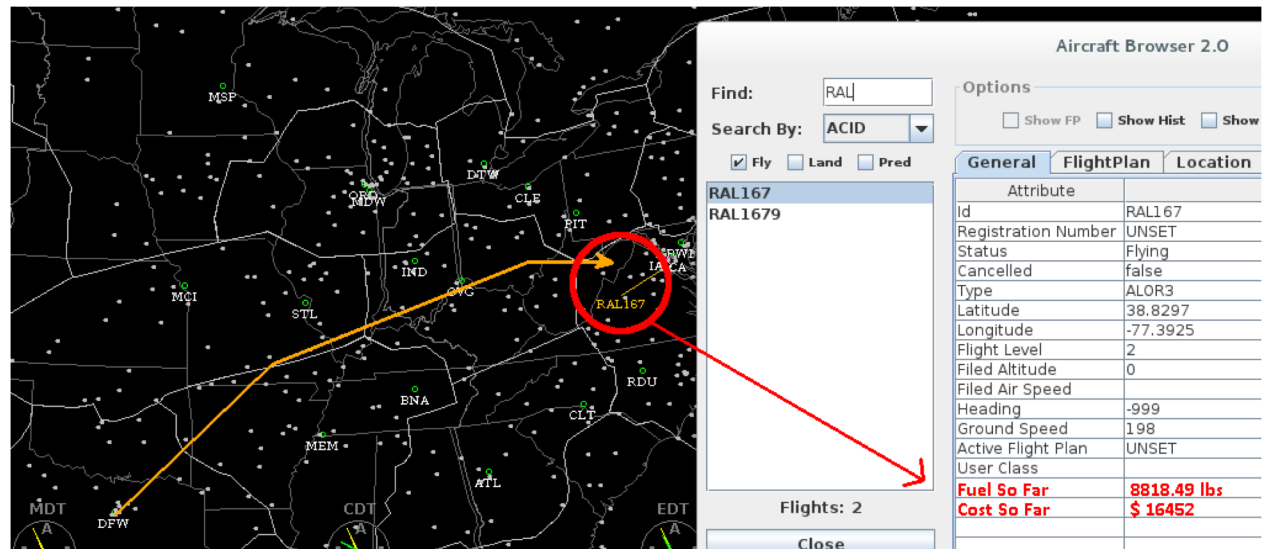
Robust Analytics, Gambrills, MD

### Challenge

The United States National Airspace System (NAS) is comprised of airspace, along with navigation facilities and airports. There are approximately 41,000 NAS operational facilities in the US. Efficient, cost-effective and safe air traffic management operations are critical for NAS.

### Innovation

Robust Analytics developed the Air Traffic Cost Assessment Tool (ATCAT), a model that estimates the cost of operating commercial aircraft in the NAS. This innovation offers a greater understanding of the cost drivers for aircraft operators and will help to validate the cost and revenue impacts.





# SBIR/STTR Success

## PHASE III SUCCESS

IRIS AO products derived from SBIR funding are available for world-wide distribution by Edmund Optics - approximately \$2 million revenue generated annually from the technology developed from NASA SBIR. NASA's SBIR program invested \$875,000.

## SNAPSHOT

Since the first exoplanet discovery in 1995, NASA has dedicated resources to develop deformable mirrors for powerful telescopes to determine if there are signs of life beyond Earth on planets outside our solar system.

## Special Mirrors Help NASA Detect Planets

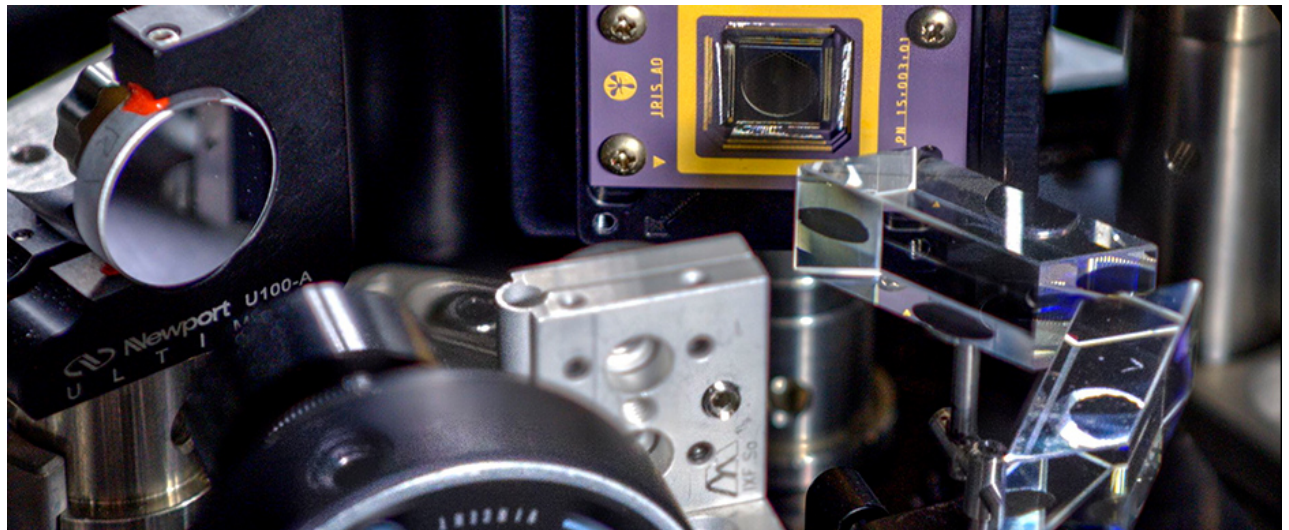
IRIS AO, Inc., Berkley, CA

### Challenge

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.

### Innovation

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.



Contact us and let's innovate together

Website

**[www.sbir.nasa.gov](http://www.sbir.nasa.gov)**

Sign up for our Newsletter

**<https://sbir.nasa.gov/info>**

NASA Help Desk

**301.937.0888**

# Small Business Innovation Research Program



NASA's HBCU/MI  
Technology Infusion Road  
Tour  
Honolulu, HI  
August 14, 2018

Kelly Wright  
Director, NOAA  
Technology Partnerships Office





# Small Business Innovation Research

The Federal SBIR Program is a highly competitive program that encourages domestic small business to engage with federal government in developing products/services that have potential for commercialization while meeting agency mission needs.



## Previous SBIR federal funding recipients:



**iRobot**



**QUALCOMM**

**MADE  
IN SPACE**



**SBIR · STTR**  
America's Seed Fund

<https://www.sbir.gov/featured-success-stories>

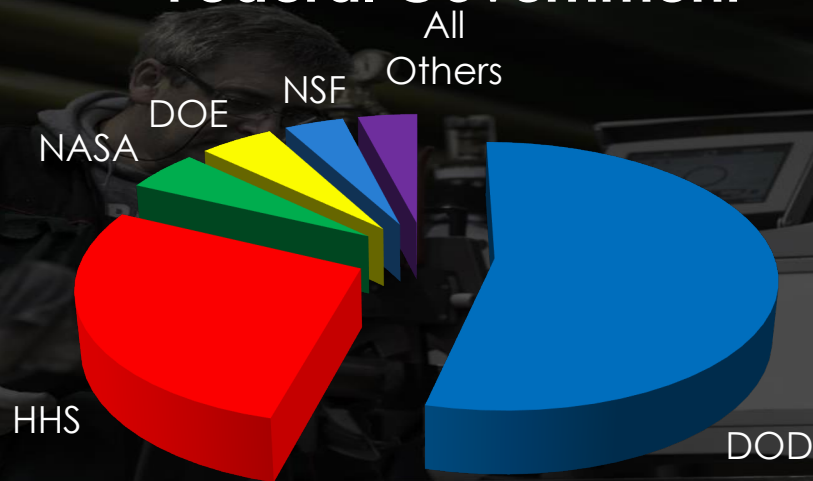


## Participating Agencies

- Dept. of Agriculture (USDA)
- **Dept. of Commerce (DoC)**
- Dept. of Defense (DoD)
- Dept. of Education (ED)
- Dept. of Energy (DOE)
- Dept. of Health & Human Services (HHS)
- Dept. of Homeland Security (DHS)
- Dept. of Transportation (DOT)
- Environmental Protection Agency (EPA)
- National Aeronautics and Space Administration (NASA)
- National Science Foundation (NSF)



## SBIR Funding Across Federal Government



**SBIR · STTR**  
America's Seed Fund





# SBIR Agency Differences

- Number and timing of solicitations
- Topic areas (Broad v. Focused)
- Type of award (Contract v. Grant)
- Dollar amount of award (Phase I and II)
- Proposal preparation instructions
- Proposal review process



**SBIR • STTR**  
America's Seed Fund



# SBIR Program Eligibility

- Small Business Concern must be organized as For-profit
- American-owned and independently operated
- Work must be done in the U.S.
- Principal Investigator employed by small business
- Company size limited to 500 employees



**SBIR · STTR**  
America's Seed Fund







## **Mission:**

**To understand and predict changes in climate, weather, oceans and coasts.**

**To conserve and manage coastal and marine ecosystems and resources.**

**To share that knowledge and information with others.**





**Weather >**



**Climate >**



**Oceans & Coasts >**



**Fisheries >**



**Satellites >**



**Research >**



**Marine & Aviation >**



**Charting >**



**Sanctuaries >**



## NOAA SBIR Program

Awards	<b>Grants</b> (Beginning in FY 2019)
Solicitation per fiscal year	One
Released	<b>October</b>
Proposals due	December/January
Available via	<a href="https://www.grants.gov/DOC-Grants-Online">Grants.gov/DOC Grants-Online</a>
Typical Phase I Awards	\$120K, Approximately 30
Typical Phase II Awards	\$400K, Approximately 20
Commercialization Assistance	Available to Phase II awardees



# NOAA SBIR Topics / Subtopics

FY 2019 SBIR Phase I FFO: Subtopics TBD

**\*Possible Examples:**

- Increased Aquaculture Production
- Recreational and Commercial Fisheries
- Extreme Weather Impacts, Forecast and Prediction
- Natural Disasters / Weather events; Coastal Preparedness
- Technology Transfer

NOAA

*\* These are just examples. Final NOAA SBIR subtopics will be published in the October Federal Funding Opportunity*







NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION OCEANIC AND ATMOSPHERIC RESEARCH

# TECHNOLOGY PARTNERSHIPS OFFICE

Promoting Partnership & Commercialization of NOAA Technology and Innovations

**Kelly Wright**

Director, NOAA Technology

Partnerships Office

[Kelly.wright@noaa.gov](mailto:Kelly.wright@noaa.gov)

301.628-1009

**Vince Garcia**

NOAA SBIR Program Manager

[vincent.garcia@noaa.gov](mailto:vincent.garcia@noaa.gov)

301.628.1011

[www.techpartnerships.noaa.gov](http://www.techpartnerships.noaa.gov)



@NOAASBIR

