National Aeronautics and Space Administration

SmallSat Technology Development Opportunities: The Small Business Innovation Research (SBIR) Program and University Smallsat Technology Partnerships (USTP)

SmallSat Conference | 2024

Samson Phan, PhD

Small Spacecraft Technology (SST) program

Project Manager

SmallSat Technology Development Opportunities

Key to success is NASA's ability to leverage from and develop new technologies with industry and academia

There are many ways to partner with NASA for SmallSat technology developments!

SBIR·STTR
America's Seed Fund

Target: U.S. Small Businesses (+ Research Institutions for STTR)

Leverage small business knowledge and technology development to deliver innovation that contributes to NASA's missions, provides societal benefit, and grows the US economy

University SmallSat Technology Partnerships

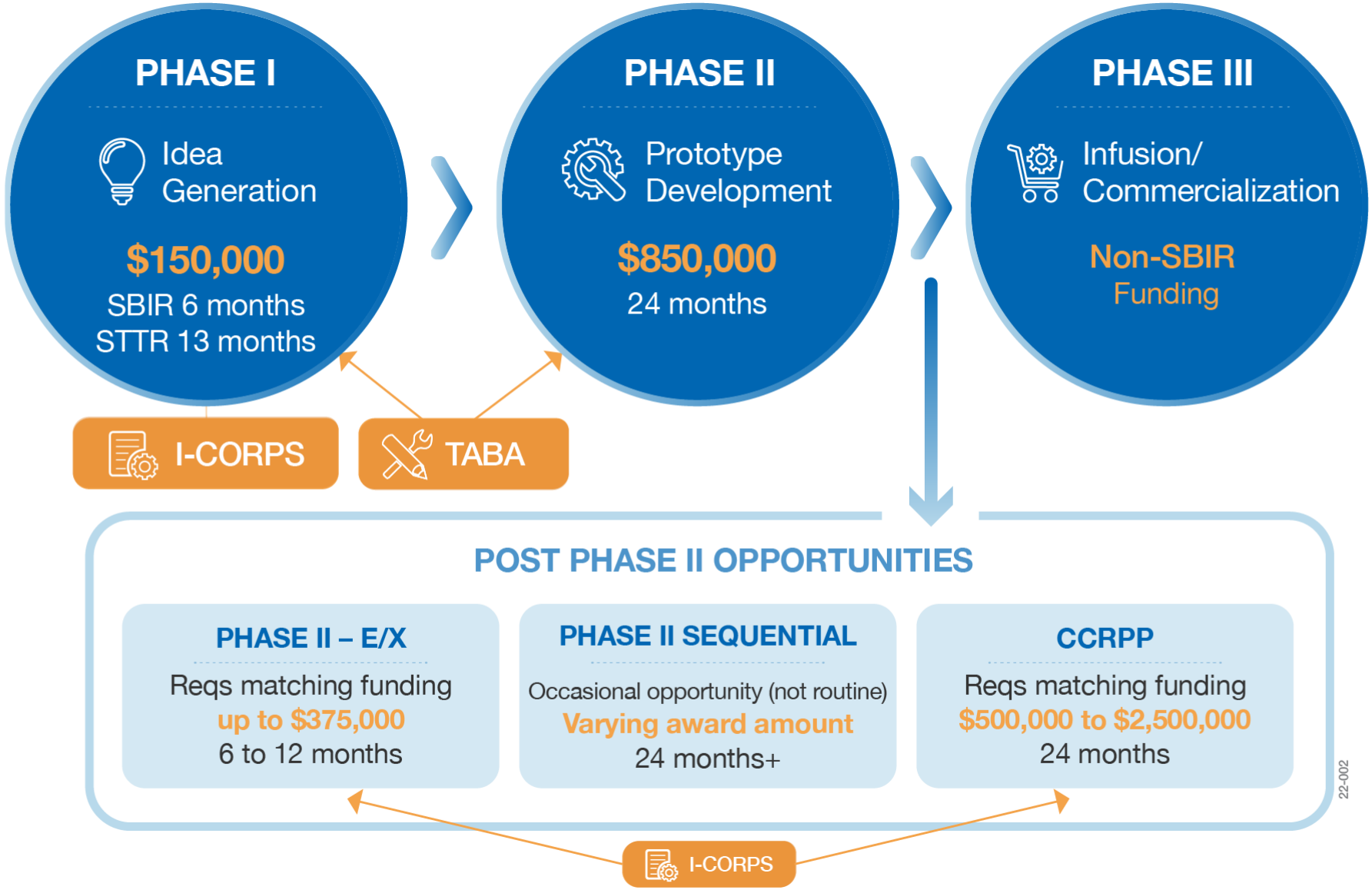
Target: U.S. Universities and Colleges

Advance novel technologies for SmallSats useful to NASA and industry, leveraging unique talents and fresh perspectives from the university community. Focus on TRL 3-5

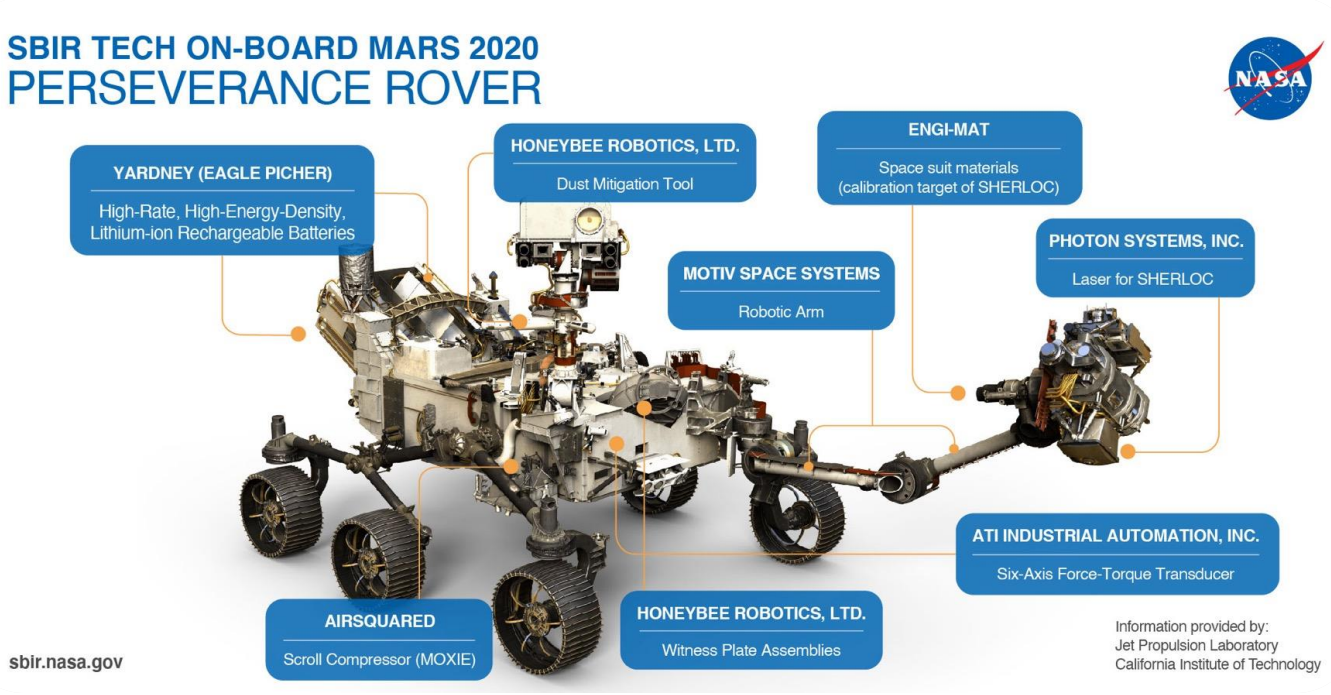
Other Agency Initiatives

Other Agency initiatives may have SmallSat related scope depending on the year. For example, **Announcement of Collaboration Opportunity (ACO)** and **Tipping Points.** S3VI opportunities tracking page: https://www.nasa.gov/smallsat-institute/nasa-smallsat-opportunities

SBIR / STTR Program Structure



SBIR/STTR Success Stories



NASA's SBIR and STTR programs have awarded **more than $3.75 billion** to research-intensive American small businesses.

Engineers and scientists from more than 3,100 Firms in all 50 States, DC, and Puerto Rico have participated across the two programs.

Approximately 15,000 total awards have been made to-date.

For more information:

- Website: www.sbir.nasa.gov
- Newsletter, Webinars, and program announcements: sbir.nasa.gov/info
- Solicitations: https://sbir.nasa.gov/solicitations
- Success Stories: https://sbir.nasa.gov/success-stories

University Smallsat Technology Partnerships (USTP)

University SmallSat Technology Partnerships

NASA's Starling mission includes USTP-developed technologies

Scope:

- 2-year PI-led cooperative agreements between U.S. university team and a NASA center to develop specific technologies for small spacecraft
- $225k / year for University ($445k total)
- 0.5 FTE/year + $30,000 for NASA partner (includes JPL)
- Starting Technology Readiness Level (TRL): 3-5, with an expected increase in TRL of +2
- Possibility for funded extensions for Technology Demonstrations (suborbital to orbital)

2023 Technology Topics:

- Topic 1: Earth- and Global Navigation Satellite System-Independent Position Navigation and Timing for Small Spacecraft
- Topic 2: Edge Computing and Machine-Learning Architectures, Software, Platforms, and Devices for Small Spacecraft
- Topic 3: High Specific Power Systems and Thermal Control for Small Spacecraft

Solicitation Timeframe: April 25 2023–July 18 2023, 2-step process (closed)

- NASA benefits from rapid, innovative academic processes yielding new technologies
- Universities gain experience and recognition through hands-on NASA collaborations

USTP Success Stories

Investments:

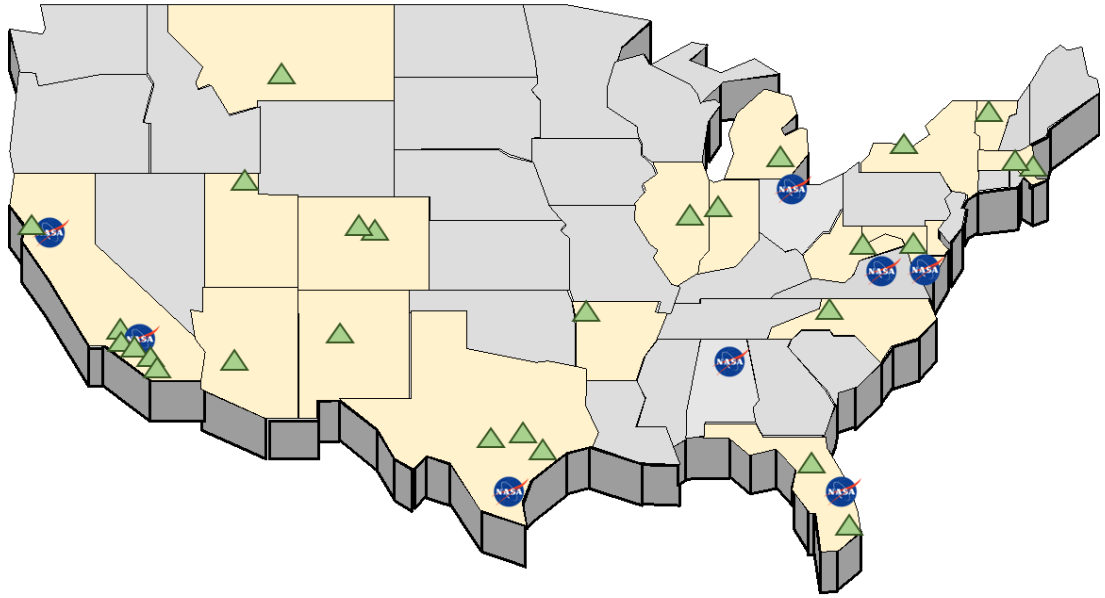
- Over $26,468,000 awarded
- 46 partnerships in 5 cohort years
  (2013, 2015, 2016, 2018, 2019)
- 28 universities in 19 states
- 8 of 10 NASA centers partnered

Results:

- 23 flight demonstrations performed/planned
- 1 Intersatellite Network Planning/ Routing tool software open-sourced
- Numerous New Technology Reports / Patents
- 30+ conference presentations
- 50+ papers published
- 100+ students involved
- Many technology readiness levels (TRL) raised

28 Universities in 19 States

8 NASA Centers



For more information:

- Website:
  https://www.nasa.gov/directorates/spacetech/small_spacecraft/smallsat-technology-partnership-initiative
- S3VI newsletter:
  https://lp.constantcontactpages.com/su/hkvyjHq/S3VISubscription

Contact us and let’s innovate together!

Meet us at:

NASA STMD booth