NASA SBIR 2021 Phase I Solicitation

H8.01 Low Earth Orbit (LEO) Platform Utilization to Foster Commercial Development of Space

Lead Center: JSC

Participating Center(s): ARC, GRC, JPL, KSC, LaRC, MSFC

Scope Title:

Use of the International Space Station (ISS) to Foster Commercialization of LEO Space

Scope Description:

This subtopic seeks proposals that advance NASA’s objective of leveraging the unique ISS capabilities (microgravity and exposure to space) to catalyze markets leading to a broad commercial demand for LEO. Of specific interest are proposals that could lead to valuable terrestrial applications and foster a scalable and sustainable demand for commercial markets in LEO. Use of the ISS will facilitate validation of these applications and enable development of the minimal viable product required to significant capital and lead to growth of new and emerging LEO commercial markets in the following areas: in-space manufacturing, regenerative medicine, bioengineering, and advanced materials production.

Expected TRL or TRL Range at completion of the Project: 3 to 7

Primary Technology Taxonomy:
Level 1: TX 12 Materials, Structures, Mechanical Systems, and Manufacturing
Level 2: TX 12.X Other Manufacturing, Materials, and Structures

Desired Deliverables of Phase I and Phase II:

- Research
- Analysis
- Prototype
- Hardware
- Software

Desired Deliverables Description:

For Phase I, as a minimum, a written report detailing evidence of demonstrated prototype technology in the laboratory or in a relevant environment and stating the future path toward hardware and software demonstration in orbit. Bench or lab-level demonstrations are desirable.

Desired deliverables at the end of Phase II would be engineering development units and/or software packages for NASA-sponsored testing that could be turned into proof-of-concept systems suitable for flight demonstrations.
State of the Art and Critical Gaps:

The ISS is being used to stimulate both the supply and demand of commercial marketplace as NASA supports the development of the LEO space economy.

Relevance / Science Traceability:

This subtopic is in direct support of NASA’s recent policy to enable commercial and marketing activities to take place aboard the ISS. The ISS capabilities will be used to further stimulate the demand for commercial products development.

References:

- Space Station Research & Technology
  at: https://www.nasa.gov/mission_pages/station/research/experiments/explorer
- Center for the Advancement of Science In Space, Inc.
  at: https://www.issnationallab.org/(link is external)
- LEO Economy: https://cms.nasa.gov/leo-economy/low-earth-orbit-economy