Identification & Significance of Innovation

**ISS-based flight experiment** that will allow key relevant space-flight environmental validation of the innovative Roll-Out Solar Array (ROSA) technology

- The ROSA flex-blanket solar array technology provides game-changing affordability and performance, including:
  - Significantly lower cost, greater specific power, more compact stowage volume, higher structural performance, deployment reliability, less complexity, and higher modularity & scalability than state-of-the-art solar arrays
  - Necessary aspect of readying the enabling ROSA technology for infusion into the many potential end-user applications is test-validation of hardware in a relevant spaceflight environment
  - The ISS provides a ready and cost-effective relevant space environment (zero-G, vacuum and solar illumination/thermal) test-bed for the validation of key ROSA technology areas via the straightforward flight experiment configured during the program

Technical Objectives and Work Plan

**Phase 1 Technical Objective:** Facilitate the ultimate space-flight demonstration of ROSA to TRL 7+; and establish near-term flight-infusion feasibility of the ROSA solar array system via preliminary detailed planning, design, risk mitigation and ISS-related requirements/interface definition of an ISS-based ROSA Flight Experiment.

Work plan accomplished in collaboration with JSC personnel and included: ROSA ISS flight experiment preliminary requirements definition, experiment / hardware design, configuration trade study/evaluations, experiment operations development, interface definitions

**Technology infusion identified:** Applicable to virtually all NASA and non-NASA missions as a direct replacement for current-state-of-the-art & state-of-the-practice solar arrays

The ROSA technology is very well suited for mission applications requiring significant design flexibility, scalability, modularity, highest specific power, packaging efficiency and low cost

Applicable opportunities: All NASA and non-NASA GEO, LEO, MEO, Interplanetary, high power SEP, and Lunar/planetary Surface Lander missions. NASA’s Outer-Planets missions, New Horizons missions, Discovery Missions, CEV, COTS/CRS, rovers, other SEP missions, and many other commercial missions.

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