



NASA SBIR 2009 Phase I Solicitation

03.03 Enabling Research for ISS

Lead Center: JSC

Participating Center(s): GRC, KSC, MSFC

The focus of this sub-topic is on the development of systems and technologies that provide innovative ways to leverage the existing ISS facilities for new payloads or provide on orbit analysis to enhance capabilities, reduce sample return requirements, or enable sample return for existing payloads.

Current utilization of ISS is limited by upmass, downmass, crew time and by the capabilities of the interfaces and hardware already developed. Innovative ways of interfacing existing hardware such as being able to use the light microscopy module (LMM) in the Fluids Integrated Rack (FIR) as a life science microscope could increase biotechnology research capabilities. Enabling additional cell and molecular biology culture techniques by providing innovative hardware to allow for safe, contained transfer of cells from container to container within the Microgravity Sciences Glove Box (MSG) would permit new types of studies on ISS. On orbit analysis techniques that would reduce or remove the need for downmass (such as a system for gene array tests, or kits for DNA extractions for long term storage) are also examples of hardware possibilities that would extend and enable additional research.

Capabilities that extend the types of studies that can be completed in orbit are not limited to the above examples or to biotechnology disciplines. Innovative methods for further subdividing payloads lockers to enable numerous pico-payloads, or developing an innovative generic control system to interface with existing ISS control systems are a further examples of the type of technology that is requested under this subtopic.

The existing hardware suite and interfaces available on ISS can be found at:

http://www.nasa.gov/mission_pages/station/science/experiments/Discipline.html

Due to the difficulty and complexity of qualifying hardware for human spaceflight, proposals under this subtopic are expected to advance the development to a level demonstrating the technology in the lab or relevant environment under the SBIR program.

Research should be conducted to demonstrate technical feasibility during Phase 1 and show a path toward Phase 2 hardware and software demonstration and delivering a demonstration unit or software package for NASA testing at the completion of the Phase 2 contract.