



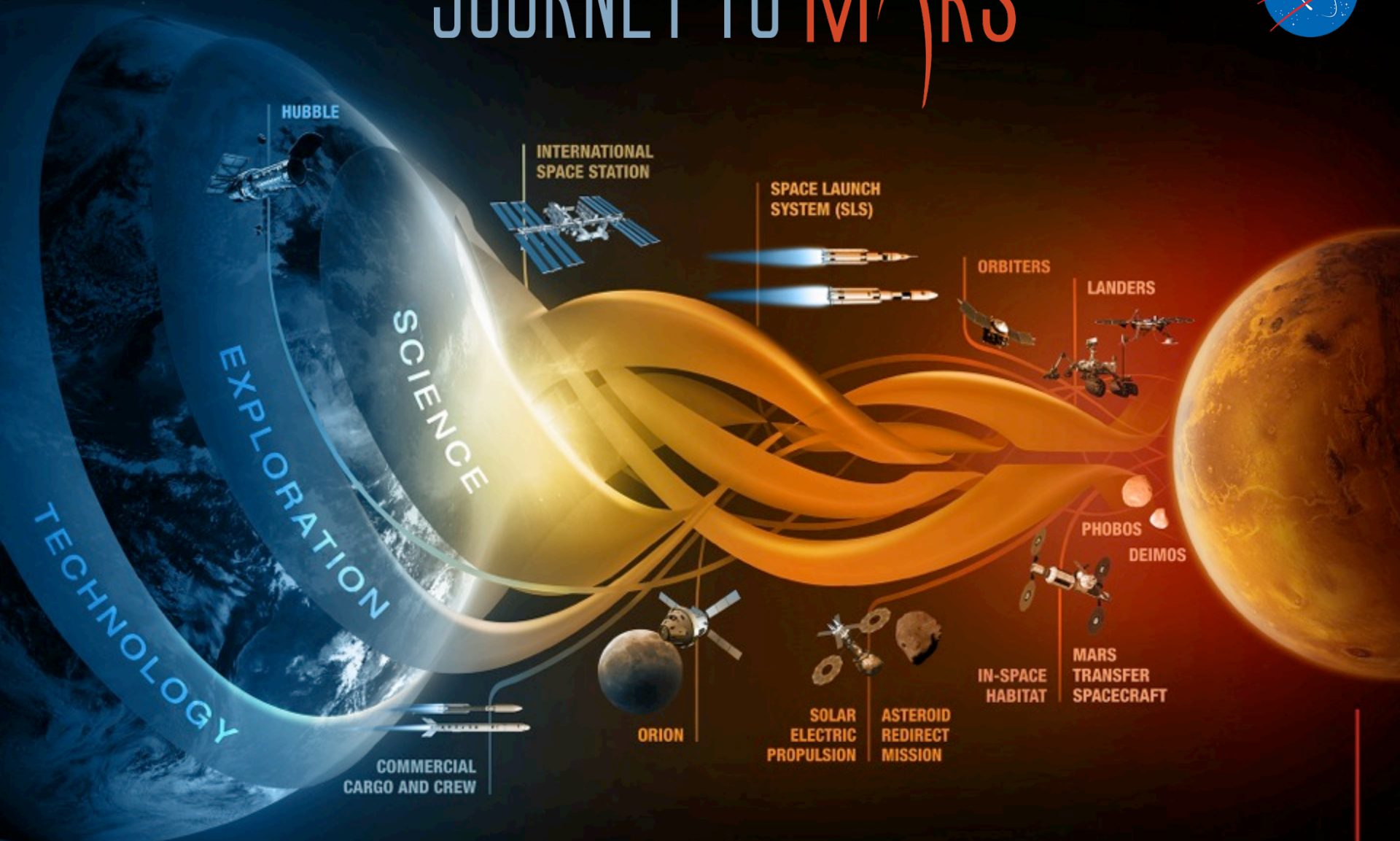
Small **B**usiness **I**nnovation **R**esearch **S**mall Business **T**echnology **T**Ransfer

Strategic Alignment of Your Research Interest To the NASA Mission

Michael Vinje, ARMD
Thomas Stanley, HEOMD
Damian Taylor, STMD
Robert Jones, SMD

August 22, 2017

JOURNEY TO MARS



MISSIONS: 6-12 MONTHS
RETURN: HOURS

EARTH RELIANT

MISSIONS: 1 TO 12 MONTHS
RETURN: DAYS

PROVING GROUND

MISSIONS: 2 TO 3 YEARS
RETURN: MONTHS

EARTH INDEPENDENT

NASA Strategic Goals



- Expand the frontiers of knowledge, capability, and opportunity in space.
- Advance understanding of Earth and develop technologies to improve the quality of life on our home planet.
- Serve the American public and accomplish our Mission by effectively managing our people, technical capabilities, and infrastructure.

NASA Mission Directorates



- **Aeronautics Research**

- NASA's Aeronautics Research Mission Directorate works to solve the challenges that still exist in our nation's air transportation system: air traffic congestion, safety and environmental impacts.

- **Human Exploration and Operations Mission Directorate**

- The Human Exploration and Operations Mission Directorate provides the Agency with leadership and management of NASA space operations related to human exploration in and beyond low-Earth orbit.

- **Science**

- NASA's Science Mission Directorate and the nation's science community use space observatories to conduct scientific studies of the Earth from space to visit and return samples from other bodies in the solar system, and to peer out into our Galaxy and beyond.

- **Space Technology**

- The Space Technology Mission Directorate is responsible for developing the crosscutting, pioneering, new technologies and capabilities needed to achieve NASA's current and future missions.

SBIR Technologies on Curiosity Rover



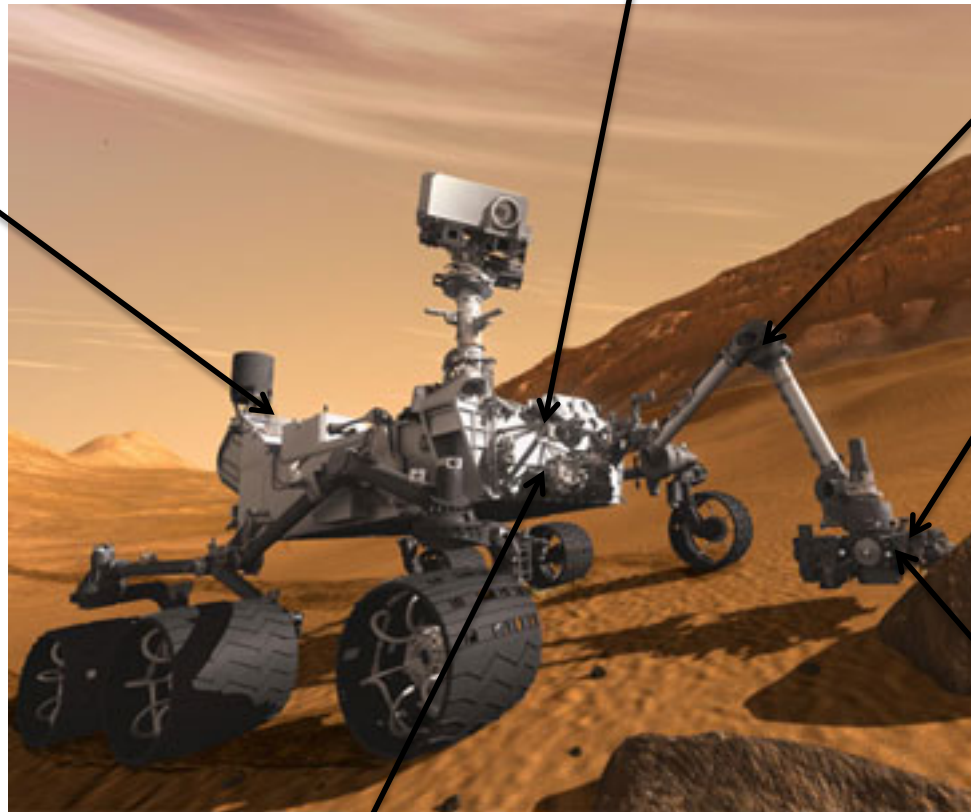
**Yardney
Technical
Products,
Pawcatuck, CT**
Lithium ion
batteries

Creare, Hanover NH
Space-qualified vacuum pump

**Starsys Research,
Boulder, CO**
Gearboxes for robotic arm

**Honeybee
Robotics, NY, NY**
Dust removal tool

inXitu, Campbell, CA
Chemistry
and Mineralogy
experiment (CheMin)
instrument



Grammatech, Ithica NY -
Software for rover operations

Aeronautics Research Mission Directorate

Programs with Strategic Thrusts



Mission Programs

Airspace Operations and Safety Program (AOSP)

- Safe, Efficient Growth in Global Operations
- Real-Time System-Wide Safety Assurance
- Assured Autonomy for Aviation Transformation



Advanced Air Vehicles Program (AAVP)

- Ultra-Efficient Commercial Vehicles
- Innovation in Commercial Supersonic Aircraft
- Transition to Low-Carbon Propulsion
- Assured Autonomy for Aviation Transformation (future)



Integrated Aviation Systems Program (IASP)

- Flight Research-Oriented Integrated, System-Level R&T supporting all six thrusts
- X-Planes/Test Environment



Seedling Program

Transformative Aeronautics Concepts Program (TAC)

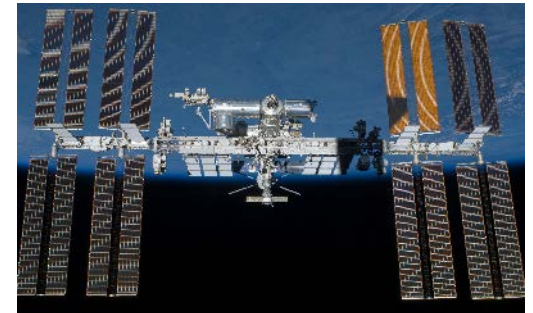
- High-risk, leap-frog ideas supporting all six thrusts
- Critical cross-cutting tool and technology development
- Assured Autonomy for Aviation Transformation



Human Exploration and Operations Mission Directorate Opportunities



- www.nasa.gov/directorates/heo/index.html
- Programs
 - Space Launch System
 - Orion Spacecraft
 - Ground Systems Development
 - Advanced Exploration Systems
 - Space Life and Physical Sciences Research and Applications
 - Human Research Program
 - International Space Station
 - Launch Services
 - Space Communications and Navigation (SCaN)



Science Mission Directorate Opportunities



<https://science.nasa.gov/researchers/sara/grant-solicitations>

- Many solicitations are located at:
<https://nspires.nasaprs.com>
 - Important group of Solicitations: Research Opportunities in Earth and Space Science (ROSES)*
 - Set up NSPIRES account in advance and become familiar with the submission process.

*Note: Previous solicitations are available

SMD Example Funding Opportunities

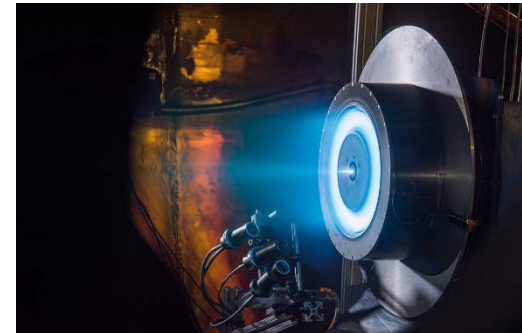


- Earth Science
 - The Instrument Incubator Program funds technology development (IIP)
- Planetary Science
 - Concepts for Ocean worlds Life Detection Technology (COLD-Tech)
- Astrophysics
 - Astrophysics Research and Analysis program (APRA)
- Heliophysics
 - Heliophysics Supporting Research (H-SR)

Space Technology Mission Directorate Opportunities



- <https://www.nasa.gov/directorates/spacetech/home/index.html>
- Programs
 - Centennial Challenges
 - Center Innovation Fund
 - Flight Opportunities
 - Game Changing Development (GCD)
 - NASA Innovative Advanced Concepts (NIAC)
 - Prizes and Challenges
 - Regional Economic Development
 - SBIR/STTR
 - Small Spacecraft Technology Program
 - Space Technology Research Grants
 - Technology Demonstration Program
 - Technology Transfer



SBIR/STTR Solicitation Topics





SBIR/STTR

Small Business Innovation Research / Small Business Technology Transfer

SEARCH [Advanced Search](#)

☐ Site ☐ Solicitations ☒ Awards

HOMEABOUT SBIR/STTRSOLICITATIONSSCHEDULE & AWARDSHANDBOOKSMULTIMEDIACONTACT US

Home >> [Solicitations](#) >> NASA SBIR/STTR 2014 Program Solicitation



Cover

Noteworthy Changes

▶ Chapter 1 Program Description

▶ Chapter 2 Definitions

▶ Chapter 3 Proposal Preparation Instructions and Requirements

▶ Chapter 4 Method of Selection and Evaluation Criteria

▶ Chapter 5 Considerations

▶ Chapter 6 Submission of Proposals

▶ Chapter 7 Scientific and Technical Information Sources

Chapter 8. Submission Forms and Certifications

▶ Chapter 9. Research Topics for SBIR and STTR

▼ 9.1 SBIR Research Topics

Aeronautics Research

Human Exploration and Operations

Science

Space Technology

▶ 9.2 STTR Research Topics

Small Business Technology Transfer

▶ Appendices

Phase II Proposal Instructions

▶ Amendments

View by

Mission Directorate

Technology Area

Legend

 Subtopic has been amended

[Expand All](#)

The SBIR Program Solicitation topics and subtopics are developed by the NASA Mission Directorates and Centers in coordination with the NASA SBIR/STTR programs.

There are four Mission Directorates (MDs):

▶ **Aeronautics Research** 

NASA's Aeronautics Research Mission Directorate (ARMD) expands the boundaries of aeronautical knowledge for the benefit of the Nation and the broad aeronautics community, which includes the Agency's partners in academia, industry, and other government agencies. ARMD is conducting high-quality,... [Read more>>](#)

▶ **Human Exploration and Operations** 

The Human Exploration and Operations Mission Directorate (HEOMD) is chartered with the development of the core transportation elements, key systems, and enabling technologies required for beyond-Low Earth Orbit (LEO) human exploration that will provide the foundation for the next half-century of... [Read more>>](#)

▶ **Science** 

NASA leads the nation on a great journey of discovery, seeking new knowledge and understanding of our planet Earth, our Sun and solar system, and the universe out to its farthest reaches and back to its earliest moments of existence. NASA's Science Mission Directorate (SMD) and the nation's... [Read more>>](#)

▶ **Space Technology** 

The Space Technology Mission Directorate (STMD) enables a new class of missions by drawing on talent from the NASA workforce, academia, small businesses, and the broader space enterprise to deliver innovative solutions that dramatically improve technological capabilities for NASA and the Nation. The... [Read more>>](#)

Legend

 Subtopic has been amended

[Expand All](#)

Select the
Mission
Directorate

11

Space Technology Research Grants

Opportunities to Propose



Engage Academia: *tap into **spectrum** of academic researchers, from graduate students to senior faculty members, to examine the theoretical feasibility of ideas and approaches that are critical to making science, space travel, and exploration more effective, affordable, and sustainable.*



NASA Space Technology Research Fellowships

- Graduate student research in space technology; research conducted on campuses and at NASA Centers and not-for-profit R&D labs



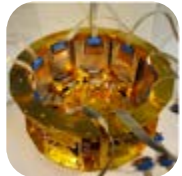
Early Career Faculty

- Focused on supporting outstanding faculty researchers early in their careers as they conduct space technology research of high priority to NASA's Mission Directorates

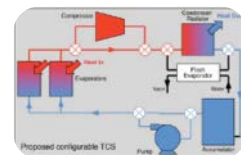
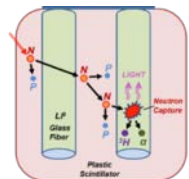
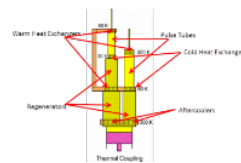
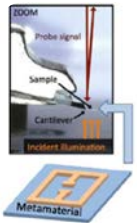


Early Stage Innovations

- University-led, possibly multiple investigator, efforts on early-stage space technology research of high priority to NASA's Mission Directorates
- Paid teaming with other universities, industry and non-profits permitted



**Reinvigorate the pipeline of high-risk/high-payoff
low-TRL space technologies**



Space Technology Research Grant Opportunities



Eligibility Requirements for NSTRF17

1. Pursuing or seeking to pursue advanced degrees directly related to space technology.
2. Are U.S. citizens or permanent residents of the U.S.
3. Are or will be enrolled in a full-time master's or doctoral degree program at an accredited U.S. university in fall 2017.
4. Are early in their graduate careers.

Application Components

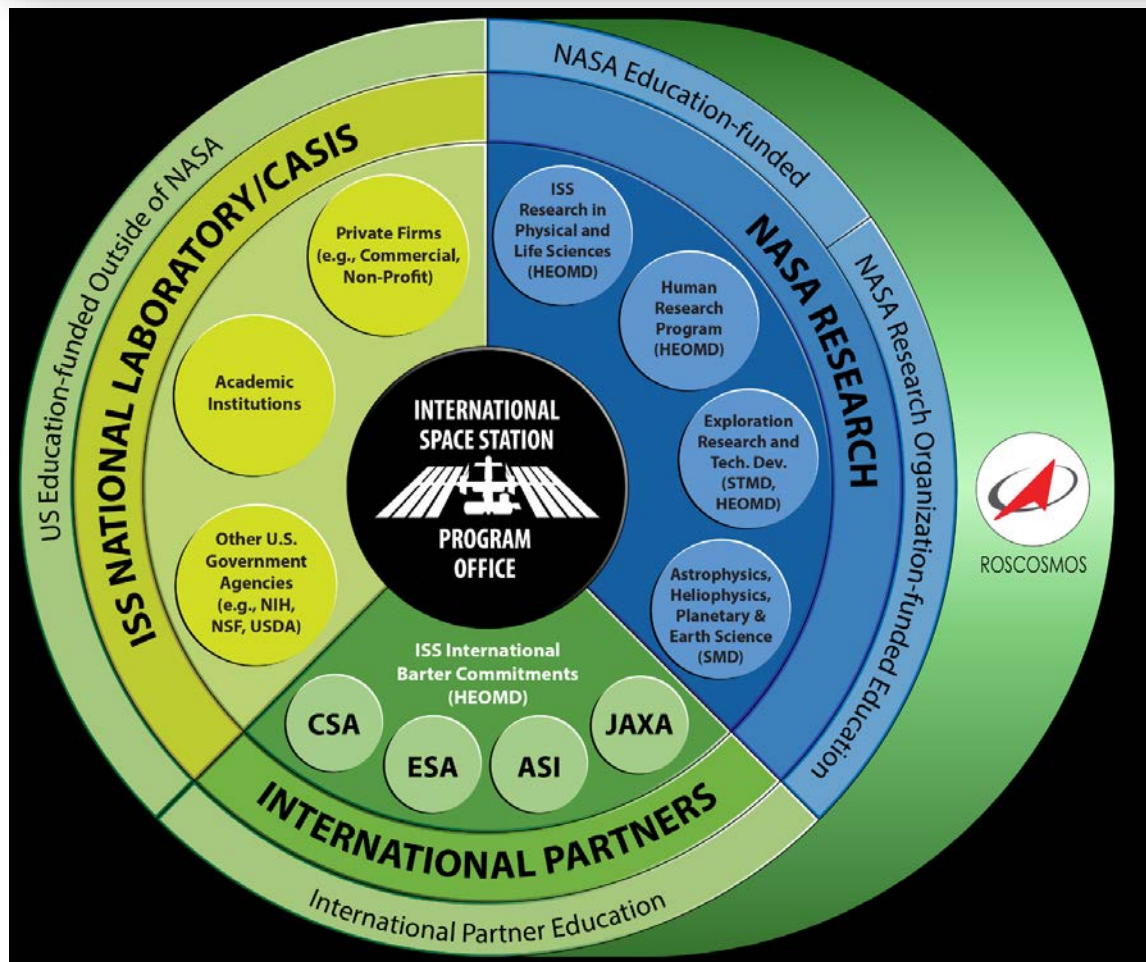
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|---|--|---|------------------------------------|
| 1 | Proposal Cover Page
(Program Specific Data Questions) | 5 | Curriculum Vitae |
| 2 | Personal Statement | 6 | Transcripts |
| 3 | Project Narrative | 7 | GRE General Test Scores |
| 4 | Degree Program
Schedule | 8 | Three Letters of
Recommendation |

Award Value

Fellowship Budget Category	Max value
Student Stipend	\$36,000
Faculty Advisor Allowance	\$10,000
Visiting Technologist Experience Allowance	\$10,000
Health Insurance Allowance	\$1,000
Tuition and Fees Allowance	\$17,000
TOTAL	\$74,000

NSTRF17: <http://tinyurl.com/NSTRF2017>.
NSTRF16: <http://tinyurl.com/NSTRF2016>.
NSTRF15: <http://tinyurl.com/NSTRF2015>.
NSTRF14: <http://tinyurl.com/NSTRF14>.
NSTRF13: <http://tinyurl.com/NSTRF13>.
NSTRF12: <http://tinyurl.com/NSTRF12-OCT>.
NSTRF11: <http://tinyurl.com/NSTRF11-OCT>.

Education Funding Sources



For more information on research sponsorship and funding, see:
http://www.nasa.gov/mission_pages/station/research/ops/funding/

(a) NASA Research

Grant opportunities and information in NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES) at

<http://nspires.nasaprs.com/external/>

(b) National Laboratory Research / The Center for the Advancement of Space in Science (CASIS)

The 2005 NASA Authorization Act designated the U.S segment of the space station as a national laboratory, enabling access by other Federal agencies, non-profits, and the private sector. Opportunities and information in CASIS' website at www.iss-casis.org/ and

www.spacestationresearch.com/research-on-station/opportunities/

(c) Educational Activities

Both NASA Education and CASIS offer education opportunities and information at NASA:

www.nasa.gov/audience/foreducators/stem_on_station/index.html. and at CASIS: <http://www.iss-casis.org/research.php>, <http://iss-casis.org/Education.aspx>, <http://casisacademy.org/>

(d) International Partner Research

International investigators should seek sponsorship through their appropriate space agency.



Backup Slides