

National Aeronautics and Space Administration



OFFICE OF THE CHIEF TECHNOLOGIST

A graphic for the Space Technology Industry Forum. It features a yellow and black background with a 3D perspective of a complex mechanical or industrial structure. A person in a dark jacket and pants stands on the right side, looking towards the structure. The text "SPACE TECHNOLOGY" is in a smaller font above "INDUSTRY FORUM", which is in a large, bold, white font.

SPACE TECHNOLOGY
INDUSTRY FORUM

Space Technology Research Grants Program

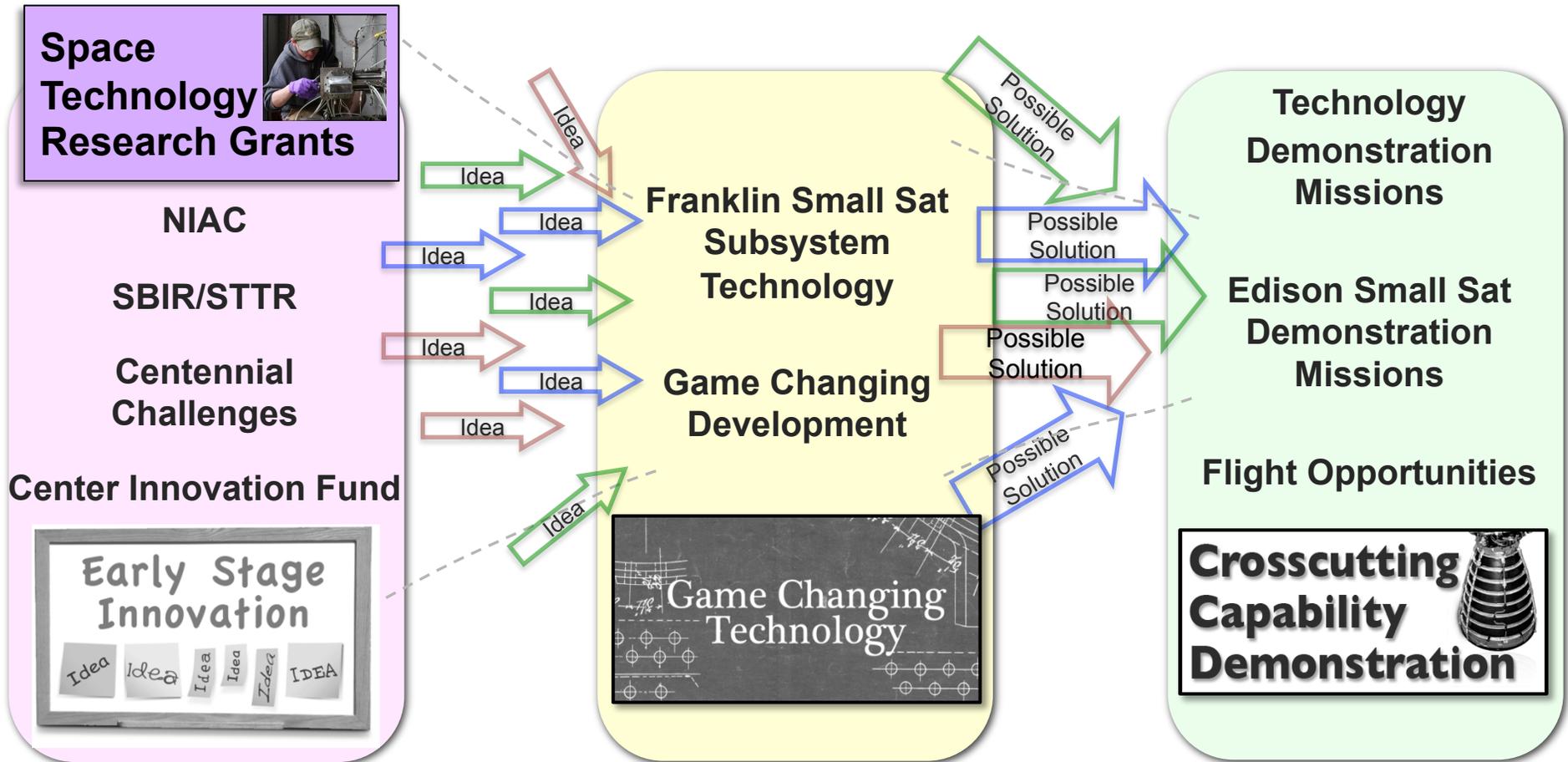
Harry Partridge

Office of the Chief Technologist

July 13, 2010



OCT Program Overview



Technology Readiness Level (TRL)

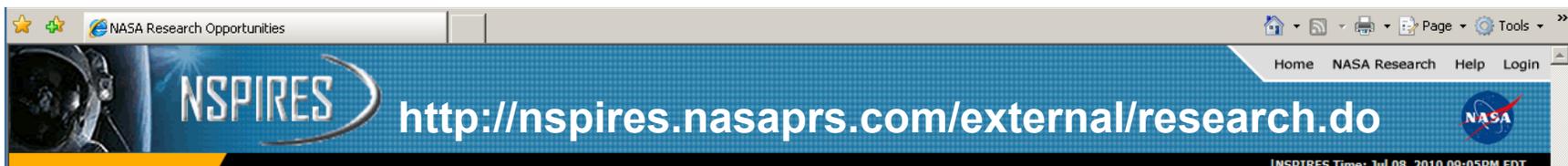
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Space Technology Research Grants Overview



- **Objective:** The *Space Technology Research Grants Program* will **accelerate the development of push technologies** to support the future space science and exploration needs of NASA, other government agencies, and the commercial space sector. **Innovative projects with high risk/high payoff will be encouraged.**
- The Program composed of **two competitively awarded components:**
 - **GRANTS:** This low TRL technology portfolio focuses on research in advanced space technology performed by academia, NASA field Centers, and not-for-profit R&D labs, with the option of including small business, industry and other government agency partners.
 - **FELLOWSHIPS:** Competitive selection of U.S Citizen or permanent resident graduate student research that shows significant promise for future application towards NASA missions and strategic goals
- Level II Program Office: NASA Glenn Research Center



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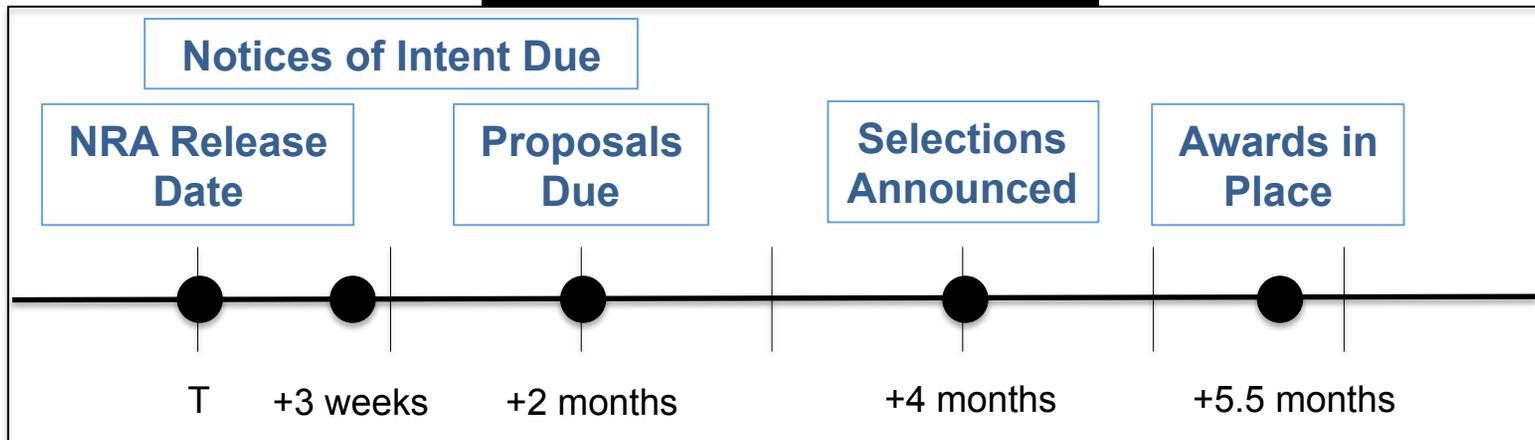
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Grants - Anticipated Award Details and Schedule



- Award duration and amount
 - Typical award will be 12 months and \$250K
 - Award can be a maximum of 2 years and \$400K/year
- Approximately ~100 new awards per year
- There is no fixed internal/external distribution; intent is to reward the best ideas
- One solicitation per year for an NRA release in December

Typical Solicitation Schedule



Special for FY11: Inaugural call planned with January 2011 Grants starts

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Grants – What are we looking for?



- **Technologies that, if successful, would lead to a dramatic improvement at the system level (performance, mass, cost, reliability, operational simplicity or other figures of merit associated with space flight hardware).**
 - *Although progress under an award may be incremental, the projected impact must be substantial and clearly defined.*
- Through this investment, NASA is seeking:
 - **Maturation of revolutionary technologies** that advance NASA's missions
 - Cross-cutting technologies that contribute new approaches not just for space applications but that **also fulfill national needs** in areas such as communications, power, energy storage, propulsion, safety and security.

Space technology deals with the design, modeling, operation, maintenance, repair, testing, and reliability of any of the components and systems of both manned and robotic spacecraft

Sample Grants Topics



Safe Despin/Detumble Approaches
for Large Non-operational
Spacecraft

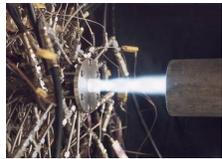
Material/Structural Concepts to
Mitigate Impact of Small Debris

Reliable and Affordable
Exploration Systems

Extreme Environment
(Temperature/Radiation) Sensors
and Mechanisms

Planetary Protection Techniques

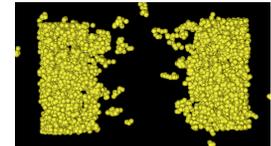
Microwave/Laser Power Transmission



Flexible Power Arrays

Print Manufacturing and Rapid 3D
Prototyping
High Bandwidth
Commur

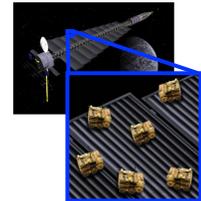
Computational Materials
Design



Orbital Debris Removal



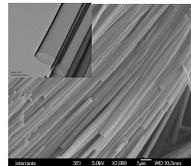
Lightweight Low
Transit Volume Space Structures



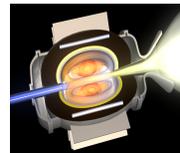
Nonconventional Access to Space

Nanotube Based Structural Materials

Precision Timing and Navigation Using Only Celestial
Objects



Climate Sensors



Space Robotic
Assembly and
Fabrication



Planetary Entry Decelerators

Energy Storage Systems

Non-Chemical In-Space Propulsion

Coatings and Adhesives

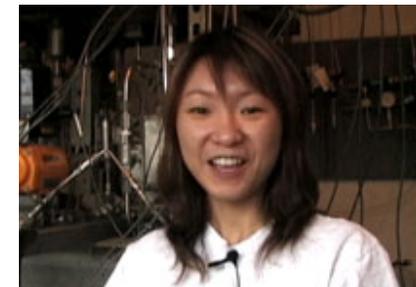
Formation Flying Spacecraft
Systems (Swarm Operations)

Advanced Radiation Shielding Materials (Techniques and Systems)

Fellowships - Overview



- Prestigious awards
- Will support candidates pursuing M.S. (up to 2 years) and Ph.D. (up to 4 years) degrees
- Designed with maximum flexibility for the student
- Majority of the fellowships will be aligned with the academic year and with the typical graduate school recruiting and acceptance schedule
- NASA-wide (vs. center-specific) discipline-based interaction with fellows



Fellowships – Anticipated Award Details and Schedule



Generous Awards

Category	Maximum value – M.S. candidate	Maximum value – Ph.D. candidate
Student Stipend	\$25,000	\$30,000
Faculty Advisor Allowance	\$9,500	\$9,500
On-site NASA Center/ R&D lab experience Allowance	\$10,000	\$10,000
Health Insurance Allowance	\$1,000	\$1,000
Tuition and Fees Allowance	\$10,000	\$10,000
TOTAL	\$55,500	\$60,500

Typical Annual Schedule

Call for Proposals.....	October 1
Proposals due.....	December 1
Announcement of new Fellowships.....	February 15 (following year)
Start date of fellowships.....	August 15

Special for FY11: Inaugural call planned with January 2011 Fellowship starts

Fellowships - Details



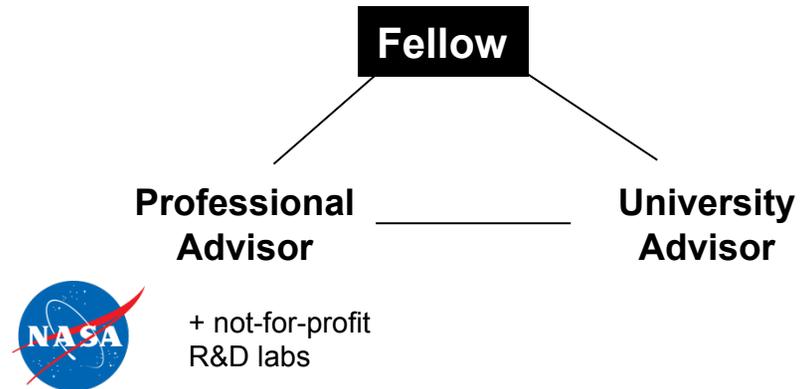
Application

- ✓ Educational Area of Inquiry/Goals
- ✓ Degree Schedule
- ✓ Letters of Recommendation
- ✓ CV of advisor and Student
- ✓ Transcripts
- ✓ GRE scores

Selection

Fellows will be ***selected via peer review***

- Merit of Proposed Educational Area of Inquiry
- Relevance
- Academic excellence



Marries on-campus research with on-lab research.

Year	FY11 (Jan)	FY11 (Sep)	FY12 (Sep)	FY13 (Sep)	FY14 (Sep)
Total # fellows	50	300	500	500	500

Building up to 500 active fellows per year!

Concluding Remarks



- The Office of the Chief Technologist looks forward to your participation in both the Grants and Fellowships components of the Space Technology Research Grants Program.
- We look forward to the exciting influx of *ideas* and *students*.
- Please join us tomorrow at the Space Technology Research Grants Program break-out session, or follow up anytime:

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