

#### Next-Generation Suborbital Researchers Conference

Robert L. Yang Program Executive Flight Opportunities Program

Next-Generation Suborbital Researchers Conference June 3, 2016









### Space Technology...

### an Investment for the Future

- Enables a new NASA missions beyond low Earth Orbit.
- **Delivers innovative solutions** that dramatically improve technological capabilities for NASA and the Nation.
- Develops technologies and capabilities that make NASA's missions more affordable and more reliable.
- Engages the brightest minds from academia and industry, including small businesses, in solving NASA's tough technological challenges.
- Invests in the economy by creating markets and spurring innovation for traditional and emerging aerospace business.



Addresses National Needs A generation of studies and reports (40+ since 1980) document the need for regular investment in new, transformative space technologies.



# STMD engages and supports:

NASA Capabilities Academia Small Businesses The Broader Aerospace Enterprise



## **Space Technology Pipeline**







Program facilitates technology development for innovative space technologies to:

- Reduce risk
- Reduce cost
- Improve performance
- Advance capabilities









## Flight Opportunities Program Space Technology Mission Directorate



NAS

# Accessing Flight Opportunities

#### Multiple paths are available for developing and testing technologies

#### • SpaceTech-REDDI Umbrella NRA

- Appendices issued for specific requirements:
  - Call for Payloads Appendix F1
    - U.S.-based researchers receive funding to purchase proposed flight service directly from commercial providers
  - Tipping Point Technologies Appendix
    - Embraces public-private partnerships between NASA and US industry to expand capabilities in space

#### NASA Internal Calls for Payloads

U.S. government researchers access testing via contracted commercial suborbital flight providers

#### • Announcement of Collaborative Opportunity

- "Sister solicitation" to Tipping Point Appendix
  - Provide opportunities for industry-led effort



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## Sight Opportunities Customers NASA



Technology development funding source



# Flight Opportunities at NSRC





#### Schedule a 1-on-1

**NASA Flight Opportunities** 

Space Technology Mission Directorate

Schedule a 1-on-1 meeting with Flight Opportunities

Please visit the Flight Opportunities booth to schedule your meeting. www.nasa.gov/flightopportunities



Flight Opportunities (FO) program management is offering opportunities during the NSRC for attendees to schedule 1-on-1 meetings with a member of their staff to discuss a variety of topics of interest to researchers and flight service providers.

This is an opportunity for you to ask questions regarding FO solicitations, provide feedback to FO on ways to improve their services, and other related topics important to you.

Hear more about Flight Opportunities

- Today @ 11am Suborbital Grant Writing Steve Ord, Technology Manager
- Saturday @ 8:30am TRL-Raising Ron Young, Program Manager



#### **Opportunity to learn more about a Flight Opportunities payload**

Glenn Laurent and Jed Diller of SWRI will be sharing an overview of SWRI's Solar Instrument Pointing Platform, *scheduled to fly with World View in August 2016* 









Jet Propulsion Laboratory California Institute of Technology

A novel approach to grappling non-cooperative objects in microgravity

	Achievement	Outcome
2014	Parabolic flight test	Demonstrated grappling ability
2015	Parabolic flight test	Demonstrated mobility and free-floating grappling
2016	Deployment to ISS	Longer duration testing in microgravity

Testing helped researchers adjust design and demonstrate functionality in a realistic operational environment







### **Additive Manufacturing Facility (AMF)**

Enabling production of critical components in micro-gravity

### MADE In space

	Achievement	Outcome
2011	Parabolic flight test	Technology optimization for microgravity
2013	SBIR Phase 3	Develop printer for ISS
2013	Parabolic flight test	Demonstrated effectiveness
2014	Deployment to ISS	Zero-Gravity 3D experimental printer operated successfully
2016	Deployment to ISS	AMF deployed as a permanent manufacturing facility on ISS

In-flight observations enabled hardware/ software modifications and rapid optimization for operation in microgravity





### **Mars Landing Technology**



Jet Propulsion Laboratory California Institute of Technology

	Achievement	Outcome
2013	Vertical-launch/landing testing	Demonstrated navigation based on terrain-feature recognition and descent- course changing capabilities
2016	Baselined for Mars 2020 rover mission	System will assist with precision landing of Mars 2020 rover

Enabling unprecedented precision for spacecraft landings

Testing provided rapid, low-cost means to validate this technology and prove its ability to successfully direct entry, descent, and landing of spacecraft on any space target





## **Keeping In Touch**



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More -

#### Flight Opportunities Newsletter



#### http://www.nasa.gov/flightopportunities

