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WELCOME TO THE COMMUNITY OF PRACTICE WEBINAR SERIES

- ▶ **Keep your mics muted and cameras off**
 - Helps ensure a clean recording
- ▶ **The recording will be posted online**
 - nasa.gov/flightopportunities
 - Resources menu
 - Community of Practice webinars
- ▶ **Please engage!**
 - Post your questions in the chat

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ABOUT THE COMMUNITY OF PRACTICE WEBINAR SERIES



An opportunity to hear from subject matter experts on best practices for preparing for suborbital flight tests



Researchers, program staff, and flight providers



Connecting and sharing information and lessons learned to:

- Increase the impact of suborbital flight tests
- Transfer best practices
- Optimize the experience of current and prospective program participants

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JOIN US FOR COMMUNITY OF PRACTICE WEBINARS

Subscribe to our newsletter for updates on future webinars!

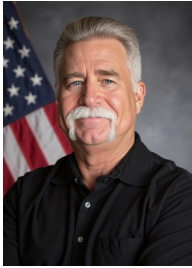


Future webinars

- Webinars are usually held 1st Wednesday of each month at 10 a.m. PT.
- Topics are announced in the Flight Opportunities newsletter and website.
- Session recordings are posted on the Flight Opportunities website.
- Let us know session topics you would like to see covered.

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TODAY'S SPEAKERS



Greg Peters
Program Manager,
NASA's Flight Opportunities program



Chris Birkinbine
TechLeap Prize Challenge
Project Manager, *NASA's Flight Opportunities program*



Bo Naasz
In-space Servicing,
Assembly, and
Manufacturing Capability
Architect, *NASA's Research and Technology Mission Directorate*



Lynn Van Deventer
Open Innovation Advisor,
NASA's Prizes, Challenges, and Crowdsourcing program



Joe Zimo
Space Technology Analyst,
NASA Headquarters

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WEBINAR AGENDA

- 1 Flight Opportunities and TechLeap Prize overview
- 2 Details of the Robotically Manipulated Payload Challenge
- 3 About Fly Foundational Robots (FFR)
- 4 About In-space Servicing, Assembly, and Manufacturing (ISAM)
- 5 Tips for preparing a strong application

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NASA'S FLIGHT OPPORTUNITIES PROGRAM









The **Flight Opportunities** program rapidly demonstrates promising technologies for space exploration, scientific discovery, and the expansion of space commerce through suborbital and hosted orbital testing with industry flight providers.

Program offers:





- Subject matter expertise on flight test with commercial providers
- Flight tests of technologies, instruments, and experiments through:
 - IDIQ contracts (available to all of NASA and OGAs)
 - Astute use of funding mechanisms
- Strategic investments in the growth of the U.S. commercial spaceflight industry

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Credits (clockwise): Virgin Galactic, NASA/Matthew Kuhns, Blue Origin, Zero Gravity Corp., SpaceWorks Enterprises, Varda Space Industries, and Austin Butler

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PROVIDING RESEARCHERS WITH ACCESS TO FLIGHT TESTS

Flight Opportunities **creatively uses a variety of funding mechanisms** to mature innovative solutions for the nation's technology needs, engaging academia, non-profit research institutes, industry, and entrepreneurs to address technology shortfalls.

Challenges	Solicitations	Other Mechanisms
 <ul style="list-style-type: none"> • Open to: <ul style="list-style-type: none"> – Commercial businesses – Academic or non-profit research institutions – Entrepreneurs – Independent innovators • Funding + flight test opportunity <div style="background-color: #ccc; padding: 5px; margin-top: 10px;">STEM Initiative (6-12 grades)</div> 	 <ul style="list-style-type: none"> • Announcements of Collaboration Opportunity • Tipping Points • ROSES (Research Opportunities in Space and Earth Science)  <p style="text-align: center;">University SmallSat Technology Partnerships</p>	<p style="color: #0070C0; font-weight: bold;">Flights of Opportunity</p> <ul style="list-style-type: none"> • Open to: <ul style="list-style-type: none"> – NASA personnel – Competitively selected NASA-funded projects – Other government agencies • Flight Opportunities helps: <ul style="list-style-type: none"> – Identify test environment – Establish mechanism/agreement – Prepare for flight


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NASA TECHLEAP OVERVIEW

Rapidly identify and develop technologies of significant interest to NASA through a series of challenges

- Cash prize and opportunity for a flight test
- Open to qualified businesses, universities, entrepreneurs, and other innovators

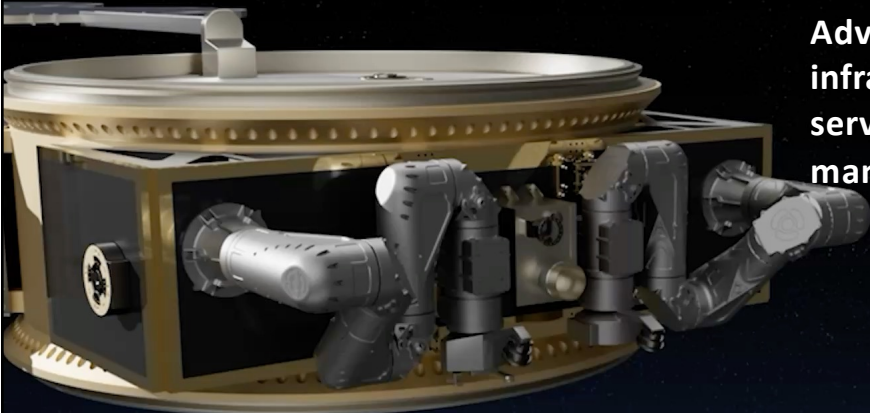


1 Autonomous Observation Challenge Autonomously detect, locate, track, and collect data on transient terrestrial events <i>COMPLETED</i>	3 Universal Payload Interface Challenge Optimized interface system that enables rapid and seamless integration of diverse payloads onto various flight vehicles <i>COMPLETED</i>
2 Nighttime Precision Landing Challenge Detect hazards from an altitude of $\geq 250\text{m}$ and process the data in real time to generate a terrain map <i>COMPLETED</i>	4 Space Technology Payload Challenge Advance transformative solutions and develop a flight-ready payload to address NASA's technology shortfalls <i>COMPLETED</i>
5 Robotically Manipulated Payload Challenge Advancing persistent infrastructure for in-space servicing, assembly, and manufacturing. <i>NEW</i>	

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THE ROBOTICALLY MANIPULATED PAYLOAD CHALLENGE



Advancing persistent infrastructure for in-space servicing, assembly, and manufacturing.

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Video for illustrative purposes only. Credits: Motiv Space Systems

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THE ROBOTICALLY MANIPULATED PAYLOAD CHALLENGE

Up to 3 winners


- Up to \$500,000 each
- Opportunity for a flight test

Advancing technologies through hosted orbital flight testing

- Prioritizing payloads that:
 - Are well suited to flight testing
 - Have a strong, well-developed project plan
 - Have a realistic schedule

Meeting future exploration, science, and other mission needs

- Fly Foundational Robots (FFR)
- In-space Servicing, Assembly, and Manufacturing (ISAM)
- NASA shortfall alignment



National Aeronautics and Space Administration Credits: Motiv Space Systems 11


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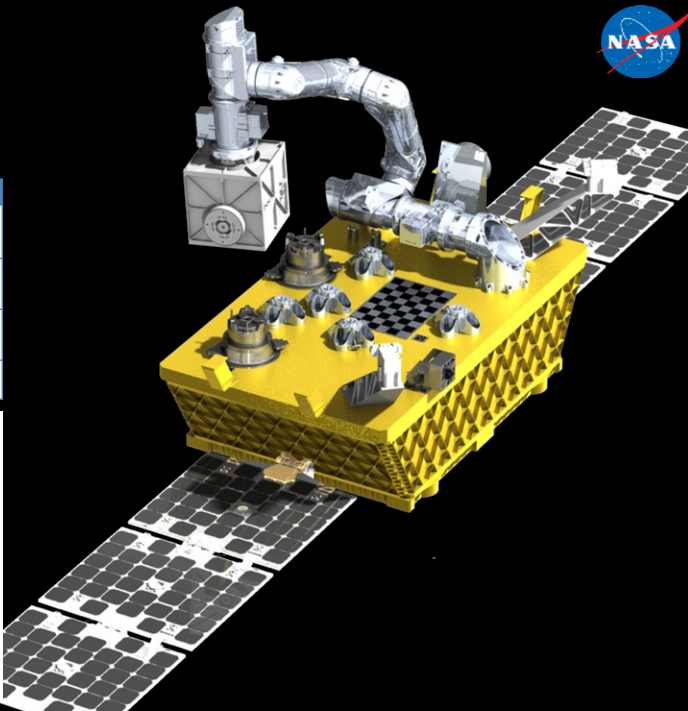
Fly Foundational Robots

Formulation Phase: Completed Summer 2025
Implementation Phase: Fully funded September 2025
Launch: NET Fall 2027

Level 1 Requirements	
FFR-L1-1	Characterize the performance of a mobile robotic manipulator system in the orbital space environment.
FFR-L1-2	Demonstrate robotic installation of a modular Orbital Rotational Unit (ORU) on a hosted orbital platform.
FFR-L1-3	Incorporate prepared interfaces supporting future in-space delivery and logistics activities
FFR-L1-4	Demonstrate a guest roboticist capability

Enabling a Commercial Ecosystem for In-Space Robotics





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FFR Payload Deck separable interfaces details

(Ref FFR Separable Interfaces Brief v5 260415)

CrossLink Cleat (Passive)

FFR Payload CrossLink Cleat Capabilities	
Quantity on Deck	3x (1x Reserved at all times for RA)
Power Pass-Thru from Deck ¹	RA power (28V, 3A avbl.), Heater power (24V - 32V, 3A avbl.), Chassis Ground
Power Pass-Thru to Deck (Via RA EE) ²	RA power (28V, 3A avbl.), Heater power (24V - 32V, 3A avbl.)
Data Pass-Thru to/from Deck ¹	4x RS422 Channels (1x Reserved at all times for RA), Gigabit Ethernet, ESTOP
Data Pass-Thru to/from Deck (Via RA EE) ²	2x RS422 Channels, ESTOP
Deck Interface Dimensions ²	ø172mm x 111mm
Mating Interface	Active CrossLink Cleat (RA EE)
Mating Interface Dimensions ²	ø142mm x 122mm

ISSI (Active)

FFR Payload ISSI Capabilities	
Quantity on Deck	1x
Power Pass-Thru from Deck ¹	24V Power (3A avbl.), Heater power (24V - 32V, 3A avbl.)
Data Pass-Thru to/from Deck ¹	Gigabit Ethernet
Deck Interface Dimensions ²	ø145mm x 49mm
Mating Interface	ISSI passive interface or ISSI active interface
Mating Interface Dimensions ²	ø145mm x 26mm

FuseBlox (Passive)

FFR Payload FuseBlox Capabilities	
Quantity on Deck	1x
Power Pass-Thru from Deck ¹	24V - 32V Unregulated power (3A avbl.)
Data Pass-Thru to/from Deck ¹	Gigabit Ethernet
Deck Interface Dimensions ²	100mm x 100mm x 40mm (base x width x height)
Mating Interface	Fuseblox active interface
Mating Interface Dimensions ²	100mm x 100mm x 200mm (base x width x height)

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What is In-Space Servicing, Assembly, & Manufacturing?

Traditional (non-ISAM-enabled) Programs

Study/Dev/Fab/I&T → Launch → Commissioning & Checkout → Operations → Decommissioning

ISAM-enabled Programs

Multi-Client Servicers and Agents
Clients from Multiple Orgs

Legend:

- Traditional
- Crosscutting
- Servicing
- Assembly
- Manufacturing
- Interoperability

* Or perhaps "fill" and "refill"¹⁴

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ISAM Capability Areas and Goals		
Docking and Berthing Systems	Human Rated Surface Docking and Berthing Systems	Demonstrate surface operations where multiple vehicles are mated together to enable crew and cargo/commodity transfer
	Next Gen In space Human Docking and Berthing Systems	Demonstrate phased docking and berthing system advancements supporting larger diameter, lower mass, and higher reliability CLD and Mars Exploration needs
	Unpressurized Element Docking and Berthing Systems	Enable a large variety of ISAM missions by fostering development and demonstration of selected classes of unpressurized docking and berthing systems for mating of non-crewed elements
Great Obs. Servicing	Instrument Servicing and Installation	Enable Great Observatory instrument upgrade to provide a higher cadence and quality of science discovery
Fluid Transfer	In-space and Surface Transfer of Earth-Storeable and EP Propellant	Enable increased mobility, flexibility, and mission lifetime via in-space and on-surface propellant fluid transfer
	In-space and Surface Transfer of High-Pressure Gasses	Enable transfer and resupply of pressurized gases for propellant and life support systems
Design for ISAM	Cooperative Interfaces, and Modular system design for ISAM clients	Enable future ISAM clients by developing standards, flight qualifying components that meet them, and incorporating the standards, components, and modules into operational flight missions.
	ISAM Cost Modeling, Value Proposition, and Acquisition Approaches	Enable adoption of commercial ISAM services by developing cost tools and procurement approaches, and by facilitating multi-user interoperability to foster a commercial ISAM ecosystem.
RPO and Small Spacecraft RPOC	Commercially Rendezvous, Proximity Operations, and Capture (RPOC) products and services	Enable commercially-provided Rendezvous, Proximity Operations, and Capture (RPOC) products and services
Assembly of Structures	In Space Assembly	Robotic Assembly and Construction of Modular Systems for Sustained In-Space Infrastructure
Robotic Manip. Systems	Space Robotic Manipulation	Foster development of Broad and dependable supply chain for space-qualified robotic hardware, electronics, and associated software

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ELIGIBILITY FOR ROBOTICALLY MANIPULATED PAYLOAD CHALLENGE

Who can apply?

- Individuals who are U.S. citizens or permanent residents
- Organizations that maintain a primary place of business in the U.S.
- Teams of eligible individuals or organizations, led by a U.S. citizen or permanent resident
- Foreign citizens can participate with restrictions but cannot win a prize



Full set of rules can be found at:
<https://rmpe.nasatechleap.org/rules-terms-and-conditions/>

National Aeronautics and Space Administration Credits (top to bottom): Blue Origin, Astrobotic, World View, Tyvak Nano-Satellite Systems, Zero Gravity Corporation 16

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ELIGIBILITY FOR ROBOTICALLY MANIPULATED PAYLOAD CHALLENGE

Who can apply?

What about government employees, contractors, and FFRDCs?

- Government employees may participate if they do not rely on resources available to them due to their employment.
- FFRDC employees may participate if they do not rely on resources available to them due to their employment.
- Contractors may participate if the technology proposed is different and not already federally funded.



Full set of rules can be found at:
<https://rmpc.nasatechleap.org/rules-terms-and-conditions/>

TIMEFRAME: KEY DATES FOR APPLICATION

May 20



Opening date

June 3
at 1 p.m. ET
(10 a.m. PT)



Informational webinar

June 18
at 1 p.m. ET
(10 a.m. PT)



Q&A webinar

July 29
by 5:00 p.m. ET
(2:00 p.m. PT)



Registration deadline

August 12
by 5:00 p.m. ET
(2:00 p.m. PT)





Submission deadline



Register and view more info:
<https://rmpc.nasatechleap.org>

Email inquiries to:
hello@nasatechleap.org

TIMEFRAME: SELECTION AND PROJECT SCHEDULE

Sept. 2026	Sept.–Dec. 2026	Dec. 2026–May 2027	2028
			
Winners Selected	Final Design and Initial Build	Complete Build for Integration	Potential Flight Test
\$200,000	\$200,000	\$100,000	Vehicle TBD by NASA



Register and view more info:
<https://rmpc.nasatechleap.org>

Email inquiries to:
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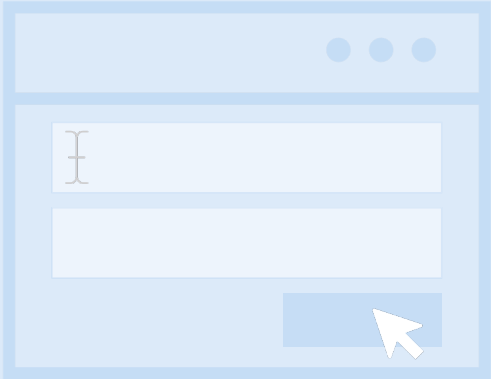
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HOW TO APPLY

The Basics

To learn about the requirements for this challenge, applicants should review:


- Technical guidelines
- Evaluation criteria
- Sample submission form and video pitch guidelines

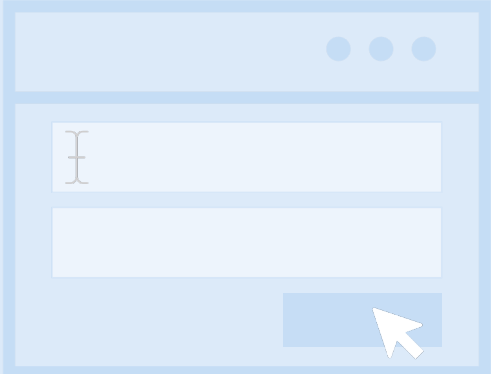


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TIPS FOR PREPARING A STRONG APPLICATION

Important Dates and Details






- Register by the **July 29 deadline** at <https://rmpc.nasatechleap.org> 
- Note the **word-count limits** for each section
- Pay attention to the **scoring criteria: 5 points each**
 - ✓ Technology alignment
 - ✓ Potential impact
 - ✓ Technical design
 - ✓ Project plan
- Submit your application by **August 12**
- Send questions to hello@nasatechleap.org



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TIPS FOR SUCCESSFUL TECHLEAP APPLICATIONS

 Communicate the connection to ISAM	<ul style="list-style-type: none">• Does your proposed payload address an identified capability gap in ISAM, with robotic manipulation essential to its value?• Clearly communicate how your technology can help close the gap.
 Explain why your technology is outstanding	<ul style="list-style-type: none">• Know the state of the art.• Clearly explain why your technology will be superior to what has been done before.
 State your case for flight and flight requirements	<ul style="list-style-type: none">• Why does your experiment need a robotic arm? What will you learn or gain through this flight testing?• Describe your test environment needs.
 Ensure your budget is clear	<ul style="list-style-type: none">• The budget is used to determine if the proposed project plan and budget are reasonable. It is not related to the prize funding.
 Be clear and to the point	<ul style="list-style-type: none">• Ensure your writing is clear and cogent.• Ask for peer reviews to give feedback, allowing enough time to make revisions before the deadline.

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TIPS FOR YOUR VIDEO PITCH

 <p>Does not need to be professionally produced</p>	 <h4>Requirements</h4> <ul style="list-style-type: none">• No more than 90 seconds• Must include closed captioning (in English)• Excludes non-licensed copyrighted material	 <h4>Recommended structure</h4> <ul style="list-style-type: none">• Introduce yourself and your organization and/or team.• Briefly describe your technology, including what is unique about it.• Explain how you will know that you've achieved success.• Make an effort to connect with your audience of Evaluation Panel judges.	 <h4>More tips</h4> <ul style="list-style-type: none">• If possible, show your technology to help judges understand the concept.• Good lighting and sound quality are important. Minimize background noise.
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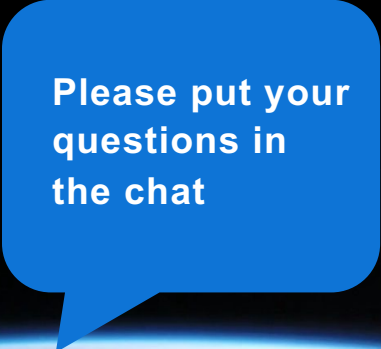

More about the requirements and recommendations for your video pitch are in the [sample submission form on the website](#).

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WHAT QUESTIONS DO YOU HAVE?

<https://rmpc.nasatechleap.org>



Please put your questions in the chat



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THANK YOU FOR JOINING TODAY'S WEBINAR

Reminders:

- Read the challenge details carefully and monitor the FAQs at <https://rmpc.nasatechleap.org/>
- Attend virtual informational session **June 18**
- Register by **July 29**
- Submit your application by **Aug. 12**
- Subscribe to the **Flight Opportunities newsletter**: <https://go.nasa.gov/32jXl9s>

