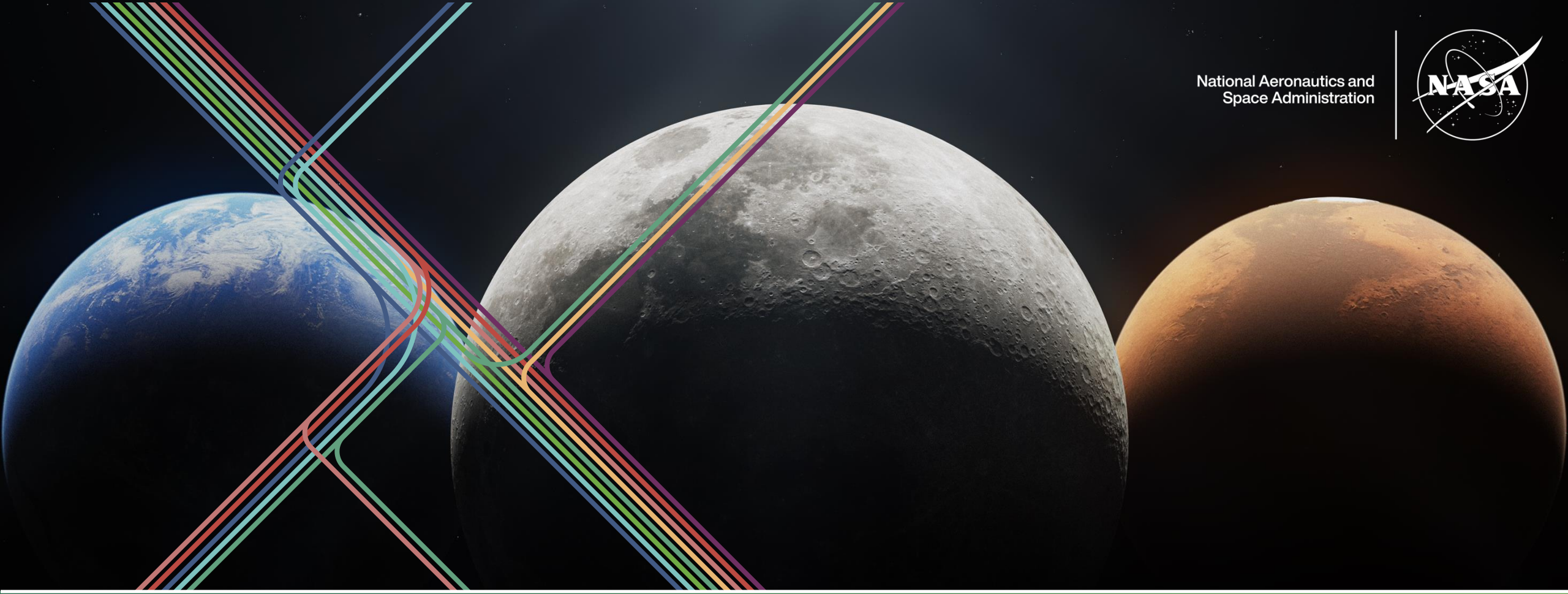


Paths to Partnership

Exploration Systems Development Mission Directorate

Julie Grantier
Deputy Manager for Integration
Strategy and Architecture Office
NASA – ESDMD - SAO

Partner Path to Infusion into Artemis Enterprise

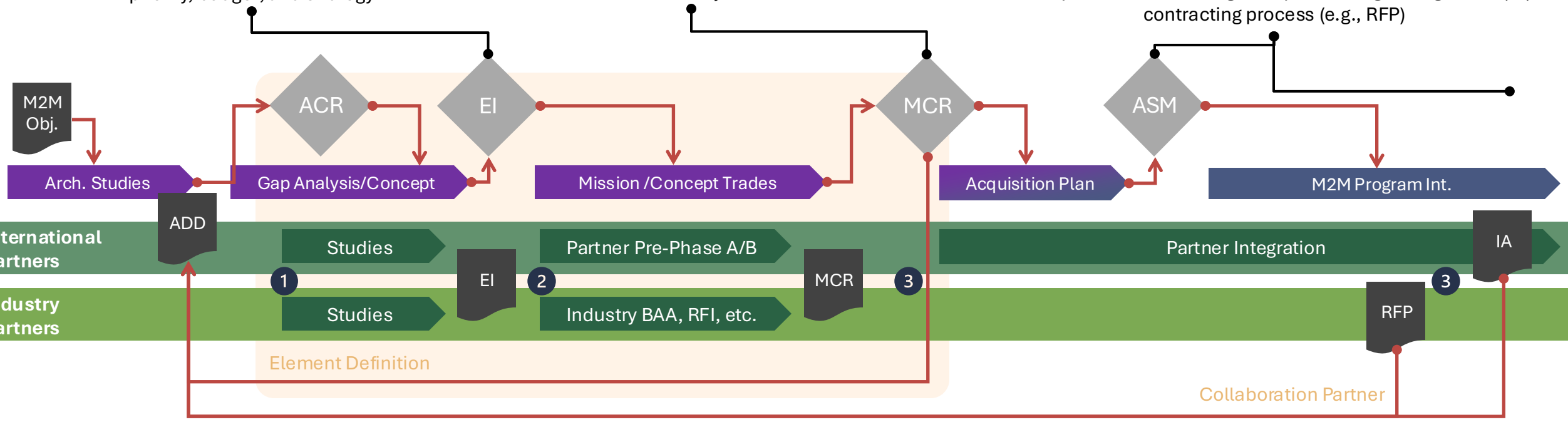
Exploration Systems Development Mission Directorate

National Aeronautics and Space Administration

Element Initiation (EI)
Overt decision to proceed with maturation of concept assessed for priority, budget, and strategy

Mission Concept Review (MCR)
Evaluates feasibility of proposed mission concept(s) and its fulfillment of architecture needs and objectives.

Acquisition Strategy Meeting:
Agency affirmation of the element in Artemis. Transition from SAO to M2MPO for implementation, completion of project roles and responsibilities leading to Implementing Arrangement (IA) or contracting process (e.g., RFP)



Document(s)

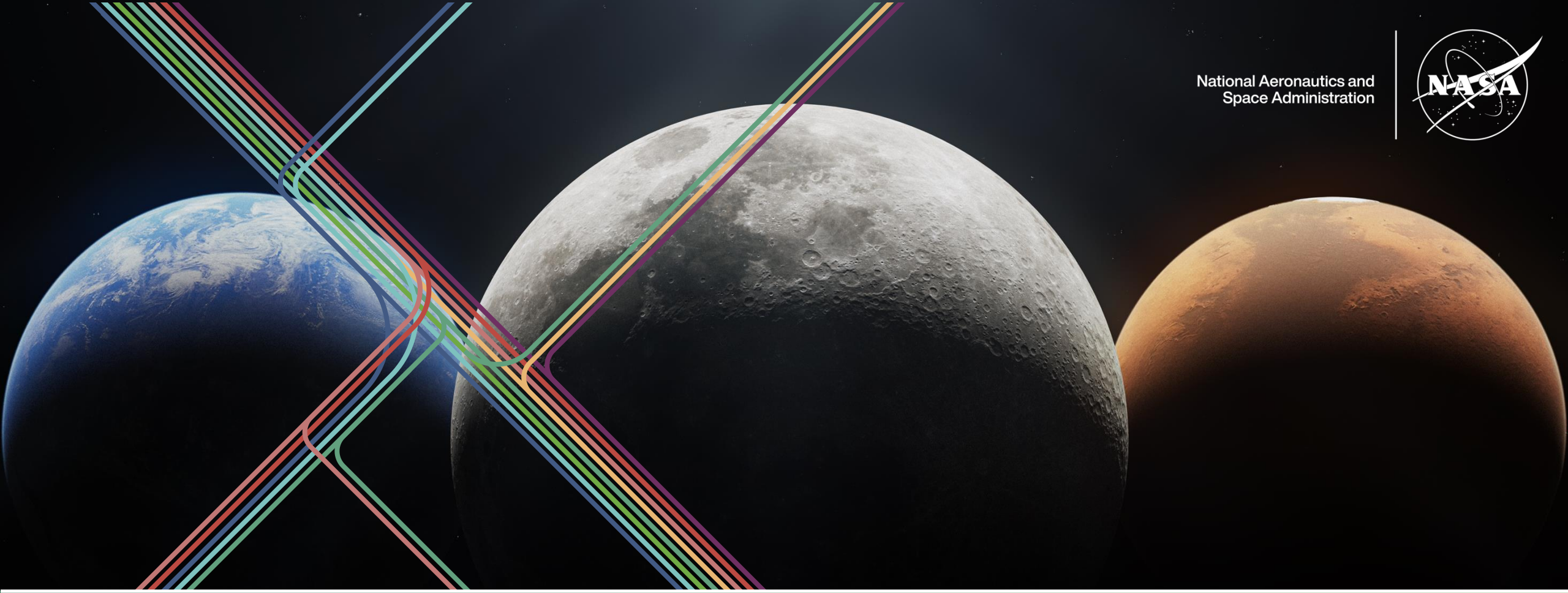
NASA Milestone

1. Feasibility studies and collaboration identify potential concept.
2. Mission refinement to optimize for strategic value and functional achievement, using study mechanisms to better inform planning.
3. Feedback incorporated into architecture products as milestones occur.

Collaboration Partner

Strategy and Architecture Office (SAO)

Moon to Mars Program Office (M2MPO)



Ways to do Business with NASA via the Office of Procurement

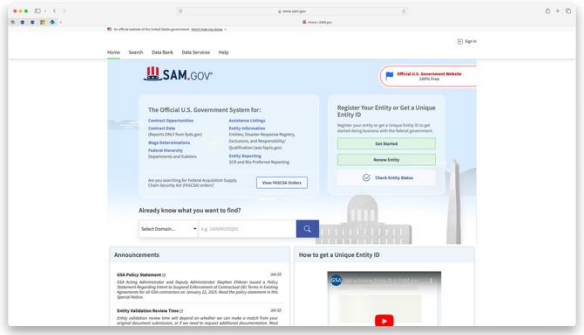
Kameke Mitchell
Director of the Procurement
Strategic Operations Division

Engaging with NASA

National Aeronautics and Space Administration

There are numerous entry points to find the various NASA Procurement opportunities:

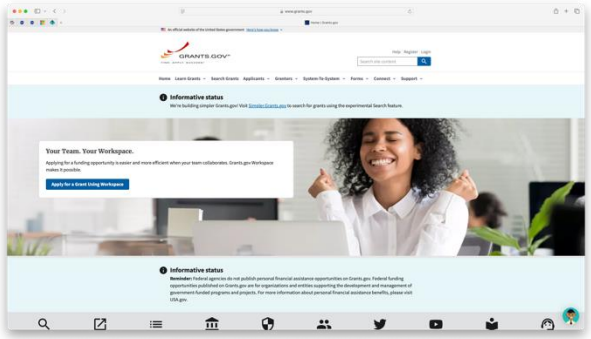
SAM.gov



The System for Award Management (SAM.gov) is an official website of the U.S. Government.

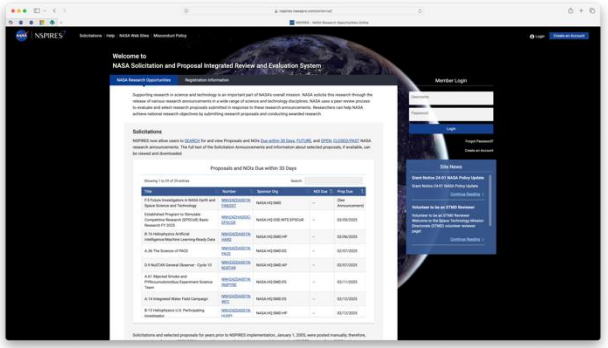
- The most active portal for finding various NASA opportunities

Grants.gov



Government portal that highlights the various grant opportunities across NASA.

NSPIRES



Supporting research in science and technology is an important part of NASA's overall mission. NASA solicits this research through the release of various research announcements in a wide range of science and technology disciplines. NASA uses a peer review process to evaluate and select research proposals submitted in response to these research announcements. Researchers can help NASA achieve national research objectives by submitting research proposals and conducting awarded research.

Engaging with NASA

National Aeronautics and Space Administration

NASA Announcement of Opportunities (AO) and NASA Research Announcement (NRA) are forms of Broad Agency Announcements (BAA). FAR 35.016 states, "BAA's may be used by agencies to fulfill their requirements for scientific study and experimentation directed toward advancing the state-of-the-art or increasing knowledge or understanding rather than focusing on a specific system or hardware solution." NFS 1835.016, "Broad Agency Announcements," authorizes: (a) Announcement of Opportunity (AO; NFS 1872); (b) NASA Research Announcement (NRA; NFS 1835.01671); and (c) Other forms as approved by the AA for Procurement. (e.g., Other BAAs)

- AO typically issues a few per year; always used for specific space flight programs. Usually for much larger requirements than those solicited by an NRA. Mostly results in contracts.

- NASA Research Announcement (NRA) https://nspires.nasaprs.com/external/index.do: Can result in a grant, contract or cooperative agreement.

- Broad Agency Announcement: Same as the NRA
  - NextStep III: Solicits concept studies, basic and applied research and technology development and demonstrations in support of NASA's Exploration Systems Development Mission Directorate (ESDMD) and Space Operations Mission Directorate (SOMD).

Research Opportunities in Space and Earth Sciences (ROSES): NASA's Science Mission Directorate (SMD) is planning to release its annual omnibus solicitation for basic and applied research, Research Opportunities in Space and Earth Science (ROSES) 2025 as NNH25ZDA001N on or about February 14, 2025, at https://solicitation.nasaprs.com/ROSES2025.

Research Opportunities in Aeronautics (ROA): Solicits foundational and system-level research in support of the Aeronautics Research Mission Directorate (ARMD), National Aeronautics and Space Administration (NASA).

Engaging with NASA

National Aeronautics and Space Administration

OTHER AVAILABLE OPPORTUNITIES:

Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR): The program is part of America's Seed Fund, the nation's largest source of early-stage non-dilutive funding for innovative technologies. Through this program, entrepreneurs, startups, and small businesses with less than 500 employees can receive funding and non-monetary support to build, mature, and commercialize their technologies, advancing NASA missions and helping solve important problems facing our country. Phase I solicitations are due by 5pm on March 10, 2025.

- Phase I: Idea Generation, Valued at $150K, SBIR-6 months, STTR-13 months
- Phase II Prototype Development: Value at $$850K, 24 months
- Phase III Infusion/Commercialization: Non-SBIR Funding

NASA Innovative Advanced Concepts (NIAC): The NIAC program supports visionary research ideas through multiple progressive phases of study.

- **Phase I** studies are efforts up to nine months that explore the overall viability and advance the Technology Readiness Level (TRL). Eligible recipients of Phase I awards can propose for a follow-on Phase II study. Valued at $175K for nine months
- **Phase II** develops concepts for up to two years. Researchers must prepare a roadmap for further development but are not expected to fully advance the technologies to a level required for NASA or commercial transition. Valued at $600K for 2-year study
- **Phase III** continues the exploration and development for another two years. The final phase is designed to strategically transition NIAC concepts with the highest potential impact for NASA, other government agencies or commercial partners. $2M for 2-year study

Space Technology Payload Challenge: Addressing shortfalls to meet future exploration, science, and other mission needs

- Advancing Technology, Solving Shortfalls: NASA seeks to advance transformative solutions that address one or more of NASA's technology shortfalls. Up to nine winners will receive up to $500,000 each to build their payloads plus the opportunity to test them on suborbital, hosted orbital, or parabolic flights. Registration open until March 4, 2025, application due March 20, 2025.

NASA LunaRecycle Challenge: A $3 million, two track, two-phase competition focused on the design and development of recycling solutions that can reduce solid waste and improve the sustainability of longer-term lunar missions. Submissions due March 31, 2025.

Procurement Contact Information

National Aeronautics and Space Administration

ADDRESS

Office of Procurement
National Aeronautics and Space Administration
Mary W. Jackson NASA Headquarters Building
300 Hidden Figures Way SW
Washington DC 20546-0001

WEBSITE

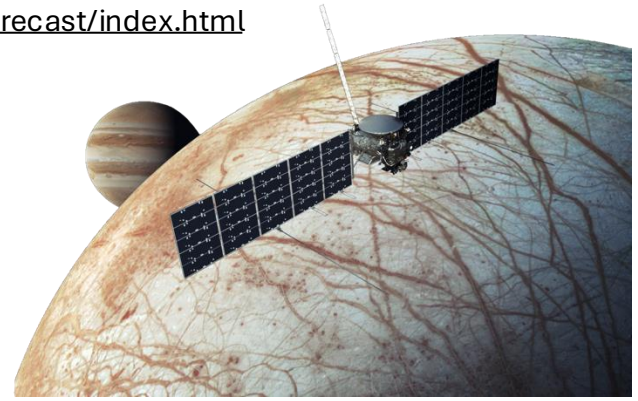
https://www.nasa.gov/office/procurement

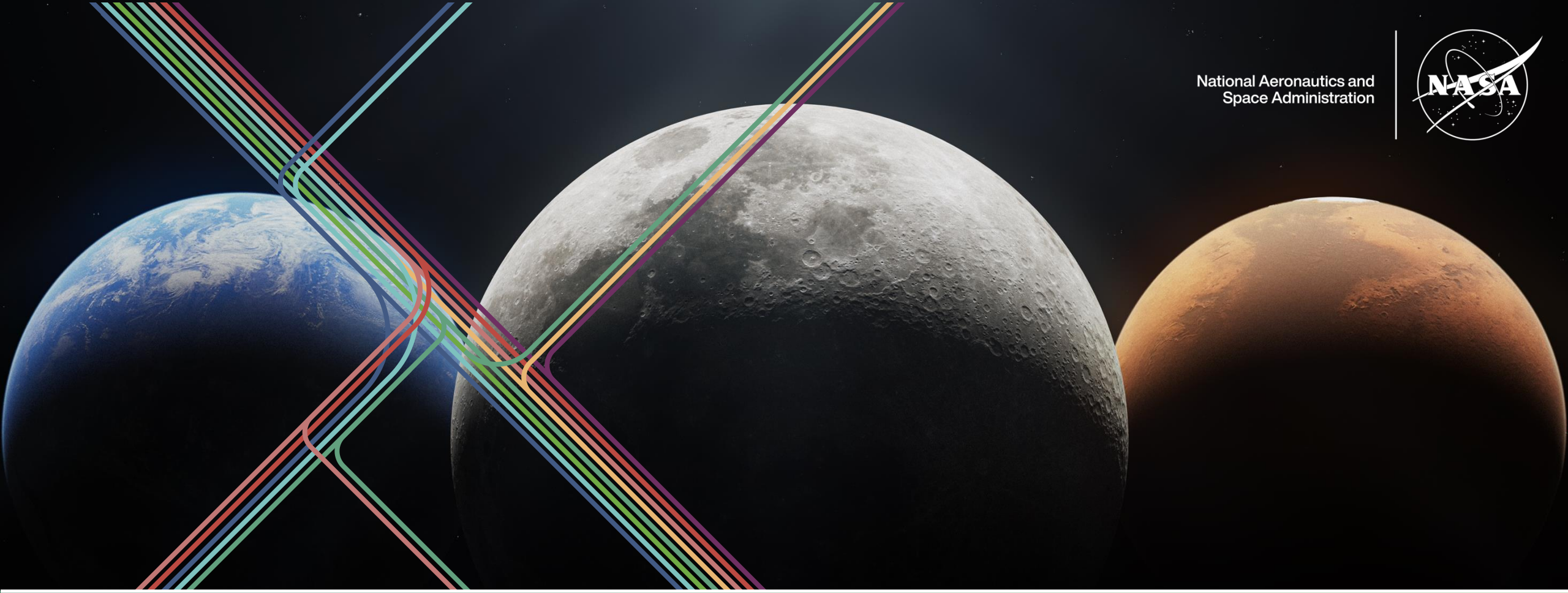
EMAIL

hq-procurement@mail.nasa.gov

For two years in a row, the NASA Acquisition Forecast received a score of "Good" – the highest ranking in terms of evaluation against the 15 key attributes of a business forecast!

Scan to view the NASA Acquisition Forecast, or visit https://www.hq.nasa.gov/office/procurement/forecast/index.html





Paths to Partnership

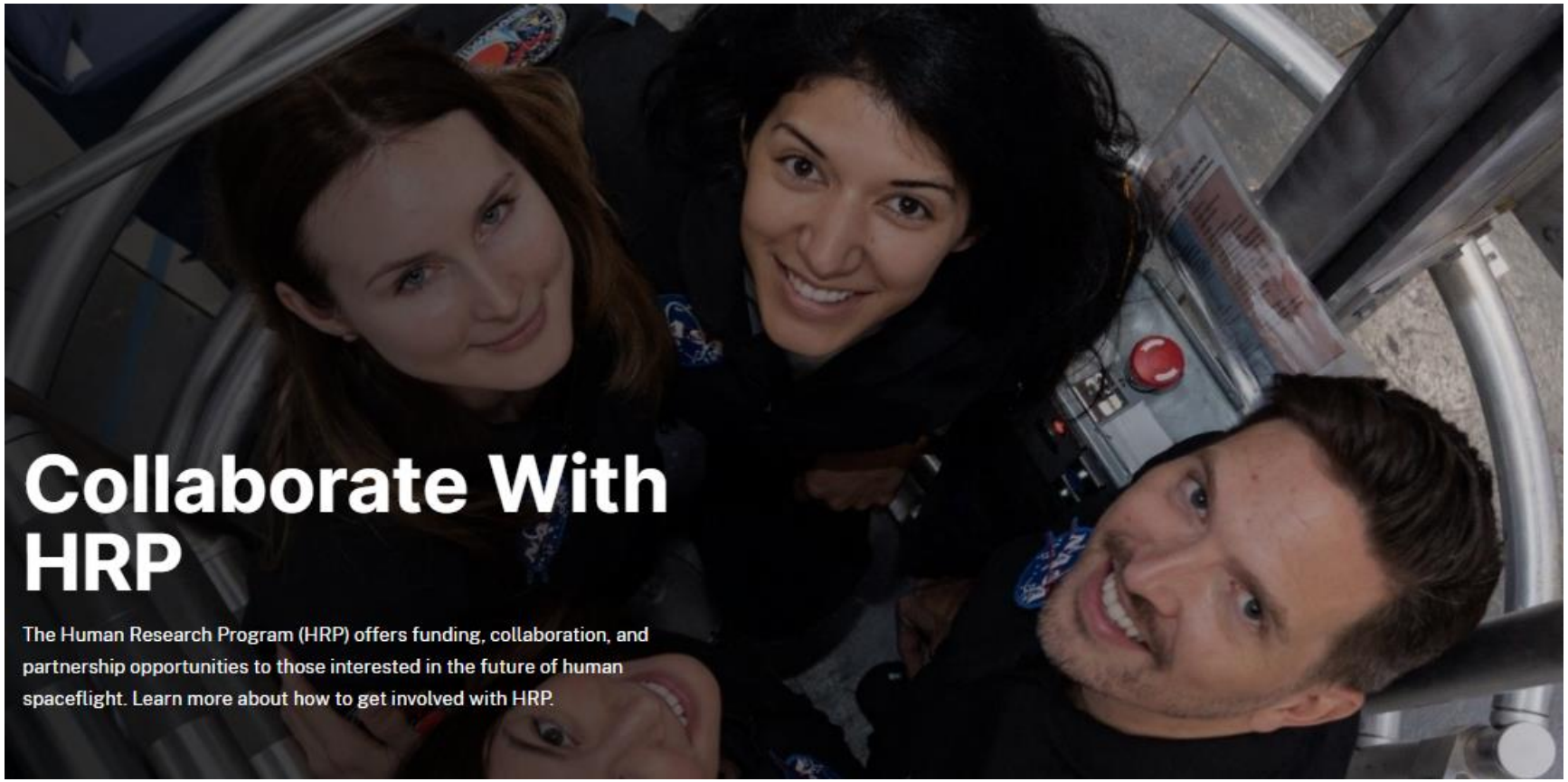
Space Operations Mission Directorate

David Baumann
Human Research Program Director
Space Operations Mission Directorate
NASA – SOMD – HRP

Human Research Program (HRP)

National Aeronautics and Space Administration

Mission: Enable space exploration beyond low Earth orbit by reducing risks to human health and performance



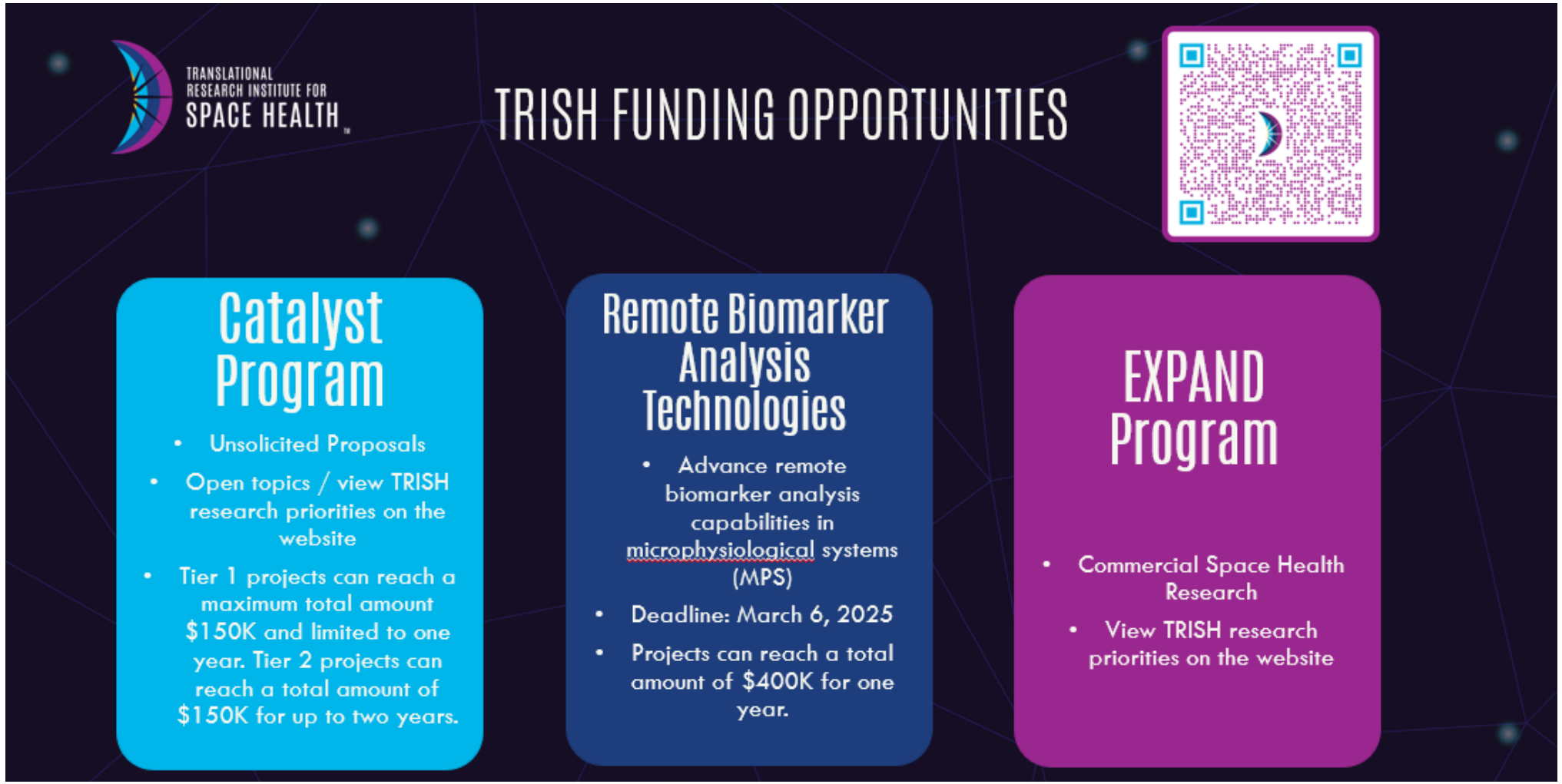
HRP Collaboration

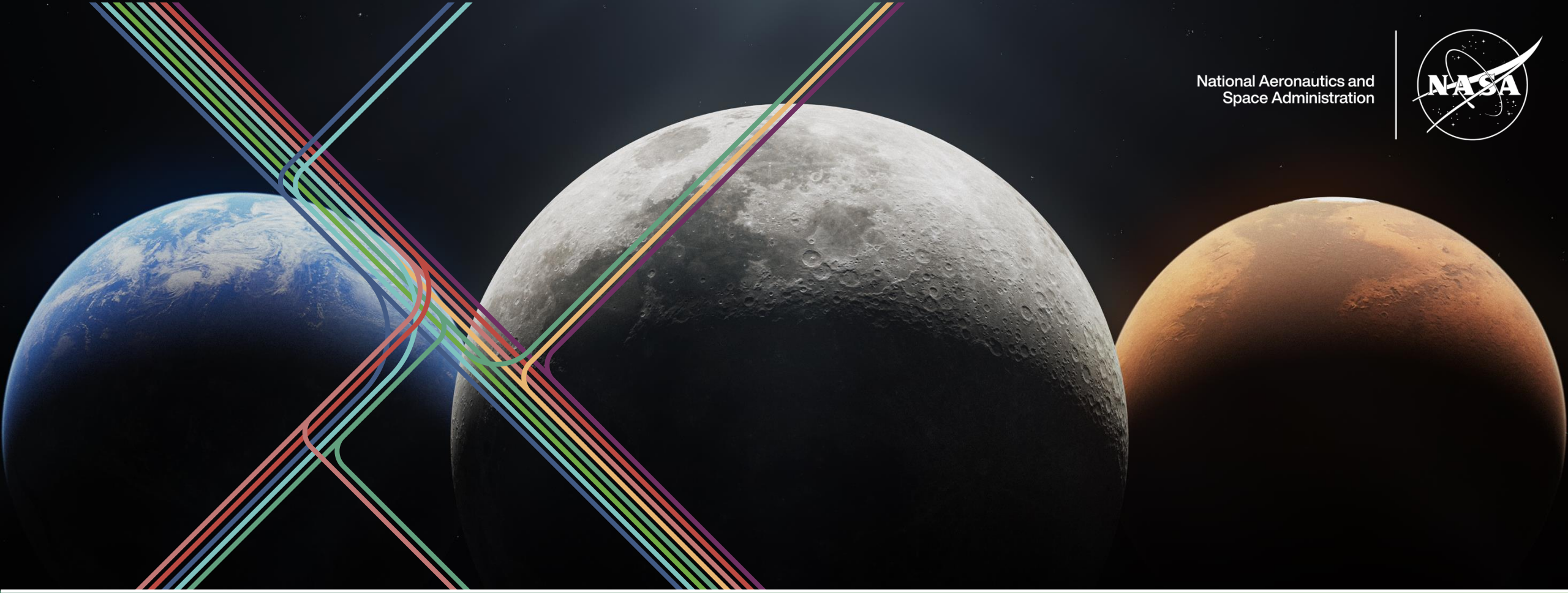
National Aeronautics and Space Administration

- **Solicitations**
  - NSPIRES
  - SBIR
- **HRP Annual Investigators' Workshop – January 2026**
  - 3000+ participants. Commercial Space, Industry, International Partners, Academia, OGAs/DoD
- **Partnerships**
  - Domestic: Space Act Agreements
  - International Partners
- **Education and Early Career Opportunities**
  - EPSCOR
  - STAR and SHINE programs

Translational Research Institute for Space Health (TRISH)

National Aeronautics and Space Administration





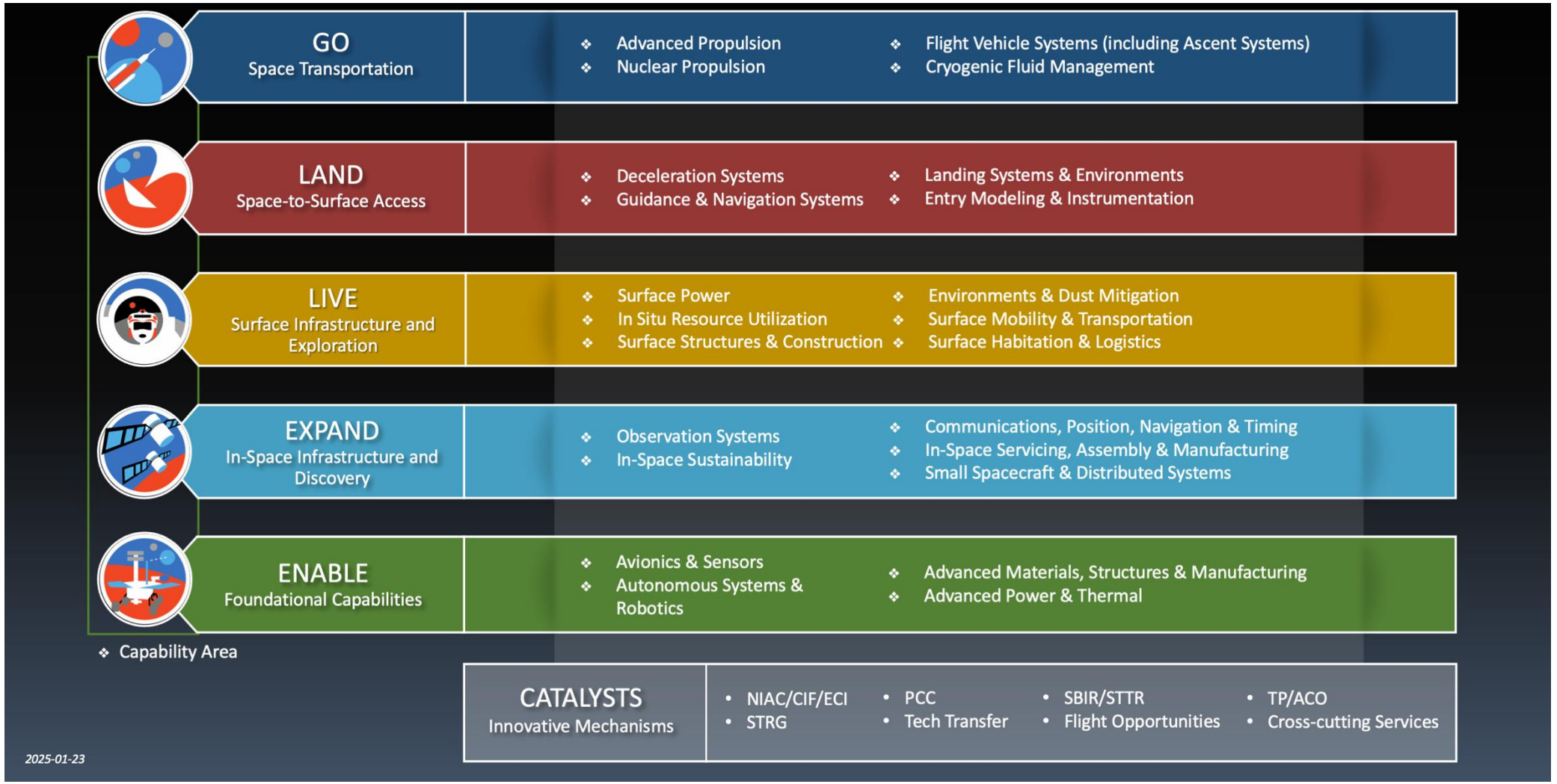
Paths to Partnership

Space Technology Mission Directorate

Walt Engelund
Deputy Associate Administrator for Programs
Space Technology Mission Directorate
NASA – STMD

Future STMD Organizational Structure

National Aeronautics and Space Administration



External STMD Mechanisms to Advance Tech

National Aeronautics and Space Administration

Contracts

Grants and Cooperative Agreements

Challenges

Flight Tests

Funded / Unfunded Space Act Agreements

Small Business Innovation Research / Small Business Technology Transfer (SBIR/STTR)	NASA Innovative Advanced Concepts (NIAC)	Space Technology Research Grants (STRG)	Prizes, Challenges, and Crowdsourcing (PCC)	Flight Opportunities (FO)	Tipping Point Announcement for Partnership Proposals (TP)	Announcement of Collaboration Opportunity (ACO)

Cross-cutting activities and other tools

techport.nasa.gov/opportunities

Tipping Point and Announcement of Collaboration Opportunity

National Aeronautics and Space Administration

Through the **Tipping Point Announcement** for Partnership proposals, NASA uses a cost-sharing model to quickly mature commercial technologies, increase the likelihood of infusion into a commercial space application, and bring the technology to market for both government and commercial applications.

Through the **Announcement of Collaboration Opportunity (ACO),** NASA helps reduce the development cost of commercial space technologies and accelerate the infusion of emerging commercial capabilities into future missions. Resulting in unfunded Space Act Agreements, NASA centers partner with selected companies to provide expertise, facilities, hardware and software at no cost.

Benefits to NASA

- Combines NASA and industry resources
- Option to issue focused topics
- Accelerates advancement of critical space technologies for future agency use
- Increases competition and encourages risk taking

Benefits to Industry

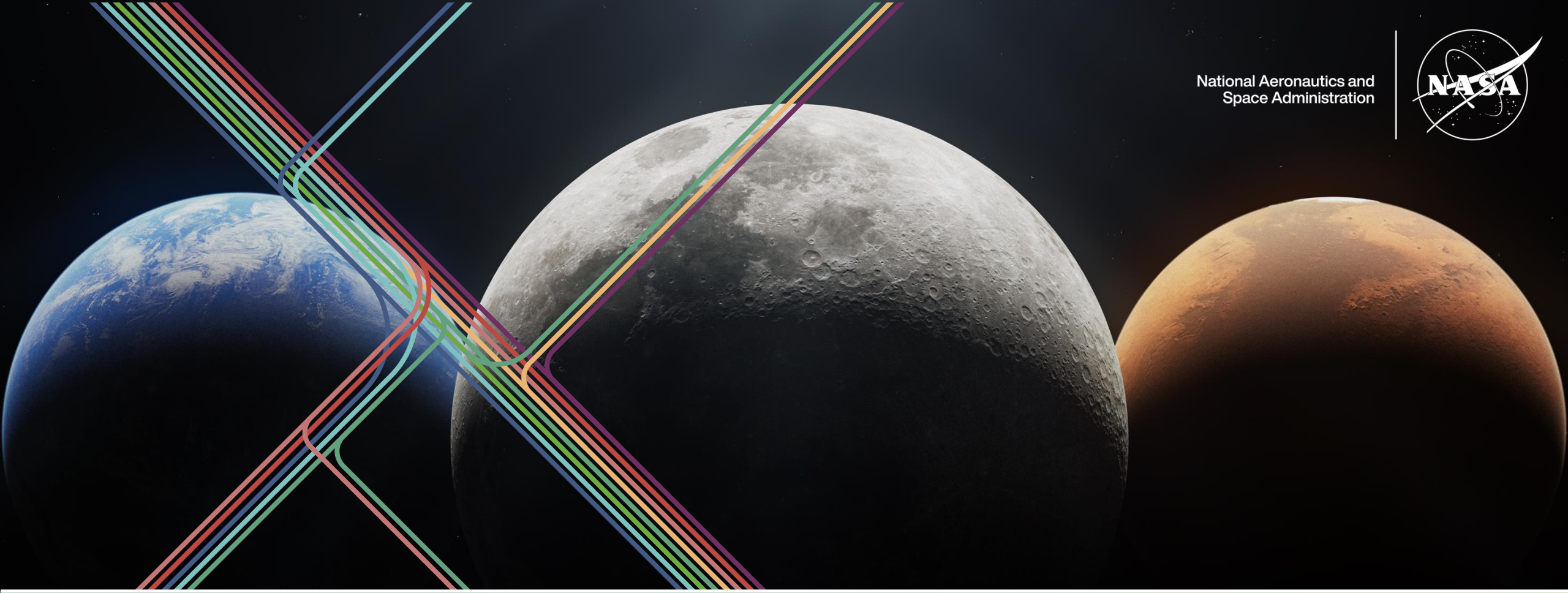
- Stimulates the commercial space economy
- Provides access to NASA facilities and expertise
- Give flexibility related to intellectual property and accounting requirements,

Since 2015

- Tipping Point
  - 61 projects selected
  - $618 million awarded
- ACO
  - 78 projects selected
  - ~$78 million in-kind resources provided

Redwire Tipping Point award to prototype a manufacturing technology intended to build critical infrastructure on the surface of the Moon, including landing pads, roads, berms, and foundations for habitats.

ACO supporting first stage recovery for Rocket Lab's Neutron vehicle using NASA thermal protection and fiber optic strain sensing technology expertise



Paths to Partnership

Science Mission Directorate

Debra Needham
Program Scientist
Science Mission Directorate
NASA – SMD

Industry Delivering Science

National Aeronautics and Space Administration

SMD also manages the **Commercial Lunar Payload Services (CLPS)** initiative to deliver science instruments and technology demonstrations to the lunar surface and enable operations of those payloads.

CLPS leverages commercial innovation to enable more frequent and more affordable access to the lunar surface. These efforts enable scientific discovery and paves the way for sustainable human exploration on the surface of the Moon and for expanding humanity's reach to Mars and beyond.

CLPS Overview

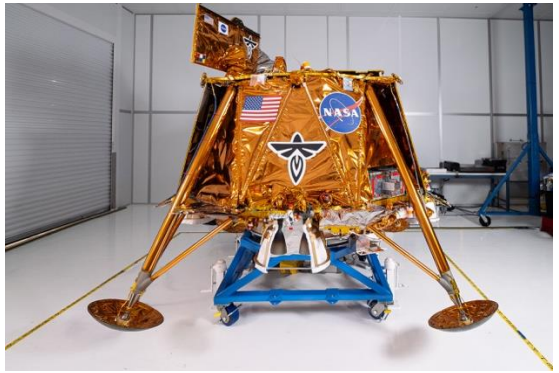
- Indefinite Quantity Indefinite Duration contract
- 14 companies in IDIQ pool
- 12 Task Orders awarded
- 2 missions executed with 1 landing on the Moon
- 1 active mission with another expected Q1 2025

Benefits to Industry

- Stimulates the commercial lunar economy
- Provides access to NASA facilities and expertise
- Give flexibility related to intellectual property and accounting requirements

Benefits to NASA

- More frequent, more affordable access to the lunar surface
- Enable scientific discovery
- Test technologies in advance of human exploration on the surface of the Moon and Mars



Firefly's Blue Ghost lander is on its way to the lunar surface, carrying 10 NASA scientific instruments and technology demonstrations.

Intuitive Machines' Athena lander is IM's second mission to the Moon, delivering a NASA drill and spectrometer technology demonstration that will also address key science objectives, as well as commercial payloads contracted by IM.

Competitive Science through ROSES

National Aeronautics and Space Administration

Through the **Research Opportunities in Space and Earth Science (ROSES)** program, SMD uses a competitive selection process to select the science instruments and investigations that seek new knowledge and understanding of our planet Earth, our Sun, the Moon, Mars, and broader solar system, and the universe out to its farthest reaches and back to its earliest moments of existence. NASA recognizes the scientists and engineers who acquire and utilize science data, are at the center of it all.

Annual Program Elements

Science Instrument Investigations

- PRISM – Payloads and Research Investigations on the Surface of the Moon

Science Instrument Technology Development

- DALI - Development and Advancement of Lunar Instrumentation
- PICASSO - Planetary Instrument Concepts for the Advancement of Solar System Observations
- MatISSE- Maturation of Instruments for Solar System Exploration

Science Research

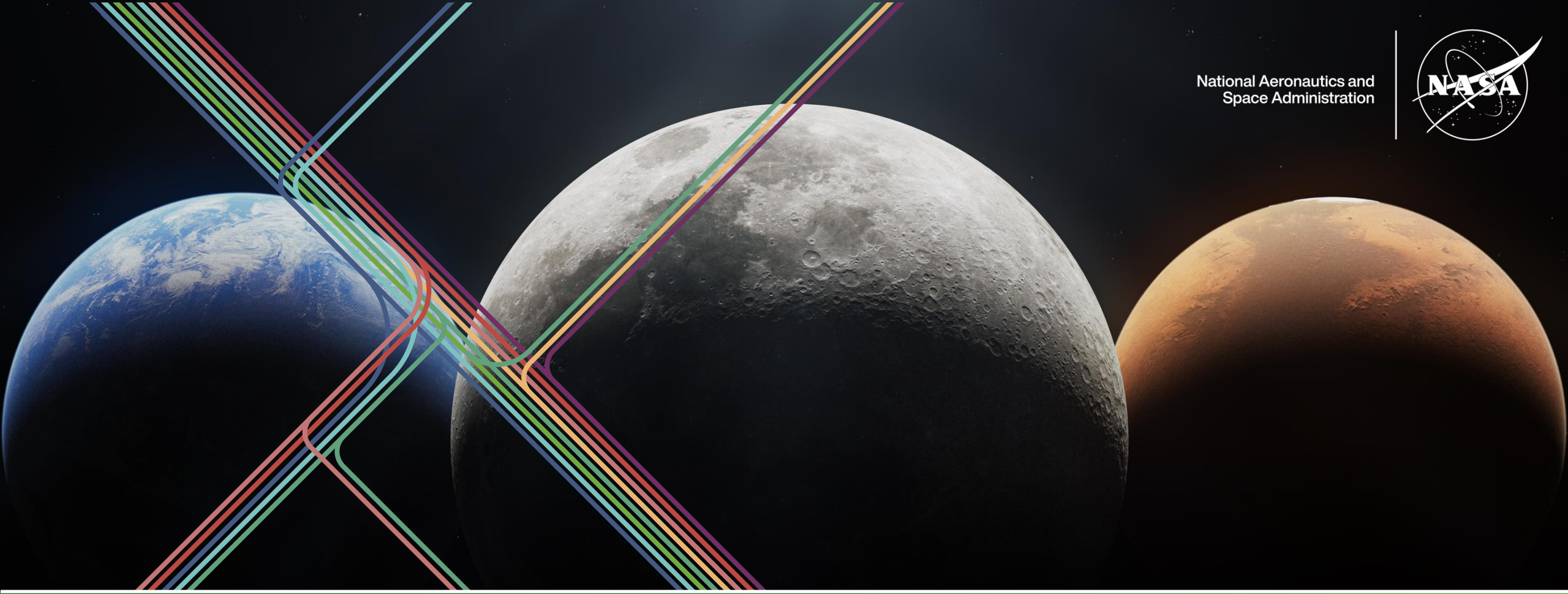
- LDAP - Lunar Data Analysis Program
- MDAP - Mars Data Analysis Program
- LARS - Laboratory Analysis of Returned Samples
- LMaP - Lunar Mapping Program
- Planetary Data Archiving, Restoration, and Tools
- PSTAR - Planetary Science, Technology, and Analogs Research

Open and Upcoming Program Elements

- Artemis IV Deployed Instruments
- PRISM SALSA - Stand-Alone Landing Site Agnostic PRISM
- SSERVI CAN 5 - Solar System Exploration Research Virtual Institute
- Artemis III Participating Scientists

Other Engagement Opportunities

- Lunar Surface Science Workshops
  - Uncrewed Science with Pressurized Rover (April)
  - Outbriefs from NASA HQ and Artemis (May)
  - Artemis Orienteering/Geolocation (TBD)
- Mars Surface Science Workshops
- National Academies Studies (non-polar lunar; Mars science)



Paths to Partnership

Mars Campaign Office

Dayna Ise
Program Scientist
Mars Campaign Office
NASA – ESDMD – M2MPO

New Start Process – Current State

National Aeronautics and Space Administration

March - July

Portfolio Refinement

- Domain Leads present final domain new start recommendations to MCO Director
  - MCO Director presents final MCO portfolio recommendation to M2M Program
  - M2M Program presents recommendation to Directorate
- Partnerships and dependencies established and approved.

MCO Portfolio Life Cycle

August - October

Execution and Reporting

- Execution planning guidance released
- DLs coordinate with Portfolio Leads to provide technical progress updates to SAO CIT for ESDMD architecture gap updates

November - February

Planning

- SAO holds Architecture Concept Review and releases annual Architecture Definition Document revision
- Domain Technology Development Plans released
- Call for New Start Task Submissions

Industry/Academia solicitations and partnerships are being assessed for inclusion in the portfolio

Partnering Opportunity Entry

- Utilization of SAAs through centers
- SBIR/STTR
- Program advocacy/Augmentation

MCO Priority Development Areas

National Aeronautics and Space Administration

Crew Health and Performance

- Food systems improvements
  - Packaging and storage for extreme environments
  - Cook and prep tech
  - Food safety for edibles
  - More work in crop production
- Fire Safety
  - Exploration atmosphere safer materials
  - Partial-g smoke/fire detection and fire suppression
  - Emergency breathing mask for all exploration atmospheres
- Health Countermeasures
  - Smaller exercise equipment
  - Better vibration isolation systems for exercise equipment
  - Wearable sensorimotor countermeasures devices
- Medical
  - Wearable diagnostic devices
  - Autonomous clinical decision support (doc in a box)
  - Medical equipment sterilization technologies

Surface Systems and Environments

- Power management and distribution between surface elements (with STMD)
- Lunar dust-tolerant systems and dust mitigation
  - Cleaning tools
  - Connectors and sealing surfaces for cryo, power, pneumatics, and fluids
  - Dust tolerant fabrics, and electrodynamic dust shields for fabrics
- Surface science tools development
- Bearing materials, seals, and lubricants for extreme environments

Transportation and Vehicle Systems

- Cryo fluid storage (with STMD)
- ISRU manufacturing

Other ADD technology gaps will be considered

Earth Independent Operations

- Communications, position, navigation, and timing work with LunaNet and SCaN coordination
- Lunar surface clock
- Fiber optic sensors
- Autonomous photogrammetry
- Nano sensors

PANEL

National Aeronautics and Space Administration

Charting the Course: to Partnership with NASA

Paths

Moon to Mars Architecture Workshop

Kavli Auditorium

MODERATOR

Julie Grantier
Deputy Manager for Integration
ESDMD, SAO

Kameke Mitchell
Director of the Procurement Strategic Operations Division
Office of Procurement

David Baumann
Director, Human Research Program
SOMD

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