National Aeronautics and Space Administration

Space Grant and Space Technology Mission Directorate
Working Group Meeting

April 28, 2023

www.nasa.gov

Topics

- Welcome, Meeting Objectives
- STMD Upcoming Funding Opportunities, TechPort Overview and Funding Opportunities Tool
- I-Corps
- COSMIC: Consortium for Space Mobility and ISAM Capabilities
- Future Meeting Topics, Cadence

STMD BY THE NUMBERS FY 22

>3300 proposals evaluated

~750 proposals selected

>1650 active technology projects

>900 academic collaborations with >175 unique organizations

>1300 industry collaborations with >700 unique companies

>150 planned flight demonstrations

>175 patent licenses to companies

>1000 transitions since 2011

	Title	Solicitation/ Activity Type	Topic/Open	Frequency	Applicant / Audience	Size ($ max) *(based on lifecycle $)*	Volume of Annual Awards
NIAC	NASA Innovative Advanced Concepts (NIAC) Phase I	Grant / Internal Awards	Open	Annual	Government, Industry, Academia	Small	Few
NIAC	NASA Innovative Advanced Concepts (NIAC) Phase II	Grant / Internal Awards	Open	Annual	NIAC Phase I Awardees	Medium	Few
NIAC	NASA Innovative Advanced Concepts (NIAC) Phase III	Contracts	Open	Annual	NIAC Phase II Awardees	Large	Few
CIF/ECI	Center Innovation Fund (CIF)	Internal Awards	Open	Annual	NASA Centers	Small	Many
CIF/ECI	Early Career Initiative (ECI)	Internal Awards	Open	Annual	NASA Early Career Researchers	Large	Few
STRG	NASA Space Technology Graduate Research Opportunities (NSTGRO)	Grant	Open	Annual	Graduate Students, US Universities	Small	Many
STRG	Early Career Faculty (ECF)	Grant	Topic	Annual	Early Career Faculty at US Universities	Medium	Few
STRG	Early Stage Innovations (ESI)	Grant	Topic	Annual	US Universities	Medium	Few
STRG	Lunar Surface Technology Research (LuSTR) Opportunities	Grant	Topic	Annual*	US Universities	Large	Few
STRG	Space Technology Research Institutes (STRI)**	Grant	Topic	Every Other Year	US Universities	Large	Few

Size Legend: *Small: <$500k, Med: $500k-$1M, Large: >$1M)* | **Volume Legend:** *Few: <20, Medium: 20-50, Many: >50)* | ***Every-Other Year Cycle*

	Title	Solicitation/ Activity Type	Topic/Open	Frequency	Applicant / Audience	Size ($ max) *(based on lifecycle $)*	Volume of Annual Awards
I-Corps	NASA Innovation Corps (I-Corps) Pilot	Grant	Open	Open	Academia / Higher-Ed / Non-Profit Research Institutions	Small	Few
SBIR/STTR***	SBIR/STTR Phase I	Contracts	Topic	Annual	Small Businesses	Small	Many
	SBIR Phase II	Contracts	Topic	Annual	SBIR Phase I Awardees	Medium	Many
	STTR Phase II	Contracts	Topic	Annual	STTR Phase I Awardees	Medium	Medium
	SBIR Ignite Phase I	Contracts	Topic	Annual	Small Businesses	Small	Few
	SBIR Ignite Phase II	Contracts	Topic	Annual	SBIR Ignite Phase I Awardees	Medium	Few
	SBIR/STTR Sequentials	Contracts	Topic	Annual	SBIR/STTR Phase II Awardees	Large	Few
	CCRPP	Contracts	Open	Annual	SBIR Phase II Awardees	Large	Few

Size Legend: *Small: <$500k, Med: $500k-$1M, Large: >$1M)* | **Volume Legend:** *Few: <20, Medium: 20-50, Many: >50)* | ****Universities are required partners for STTRs*

	Title	Solicitation/ Activity Type	Topic/Open	Frequency	Applicant / Audience	Size ($ max) *(based on lifecycle $)*	Volume of Annual Awards
SBIR/STTR***	SBIR/STTR Phase II – E	Contracts	Open	Open	SBIR/STTR Phase II Awardees	Small	Medium
	SBIR I-Corps	Contracts	Open	Annual	SBIR Awardees	Small	Medium
	SBIR/STTR Phase III	N/A	N/A	Open	Phase I/Phase II Awardees	N/A	N/A
PCC	Crowdsourcing Contenders	Internal Awards	Open	Annual	NASA Employees	Small	Few
	NASA@WORK Projects	Crowdsourcing	Topic	Open	NASA Employees	N/A	Many
	NTL Projects	Prizes, Challenges, Crowdsourcing	Topic	Open	Public	Varies	Many
	Centennial Challenge Projects	Prize	Topic	Ad-Hoc	Public	Large	Few
Tech Transfer	Invention Disclosure	Invention Disclosure	Open	Ad-Hoc	Internal Audience	N/A	N/A
	Software Release	Software Release	Open	Ad-Hoc	External and Internal Audiences	N/A	N/A
	Patent Licensing	Patent Licensing	Open	Ad-Hoc	Industry	N/A	N/A

Size Legend: *Small: <$500k, Med: $500k-$1M, Large: >$1M)* | **Volume Legend:** *Few: <20, Medium: 20-50, Many: >50)* | ****Universities are required partners for STTRs*

National Aeronautics and Space Administration

NASA

EXPLORESPACE TECH

NASA Technology Portfolio Management System

Dillon Gresham – Senior Software Engineer

TechPort

https://techport.nasa.gov

What is TechPort?

- https://techport.nasa.gov/
- TechPort is a public portfolio of 16,000+ active and completed NASA technology projects
- TechPort specifically captures research and development activities that fall under the categories of applied research and experimental development
- Project records hold:
  - Anticipated Benefits
  - Technology Readiness Levels
  - Taxonomy Area Classification
  - Library items
  - Target Destinations
  - States and Organizations with work
  - And a lot more…

TechPort Users and Key Benefits

➢NASA Leadership

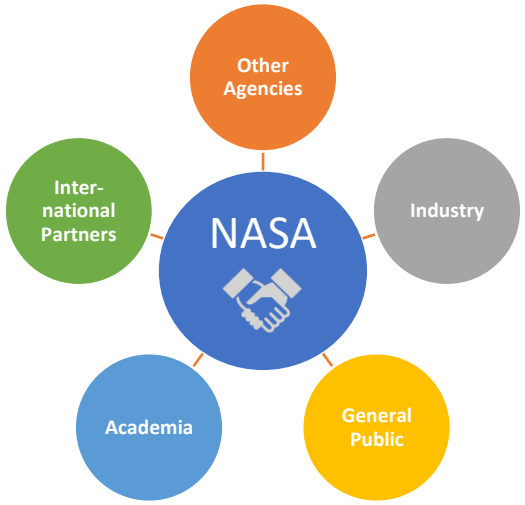
- Discover insights about NASA's technology portfolio across fiscal years.
- Create specialized analyses and understand trends.
- Quickly respond to inquiries and data requests (e.g. OMB, Congress).
- Ensure opportunities for underrepresented partners.

➢Technology Innovators and Collaborators

- Discover the technologies being developed at NASA.
- Create new technologies and evolve existing technologies by building off prior work.
- Build partnerships between NASA, industry, academia, other agencies, and international partners.
- Identify and contact potential partners with common challenges and complementary expertise.
- Identify similar efforts during proposal preparation and review cycles.

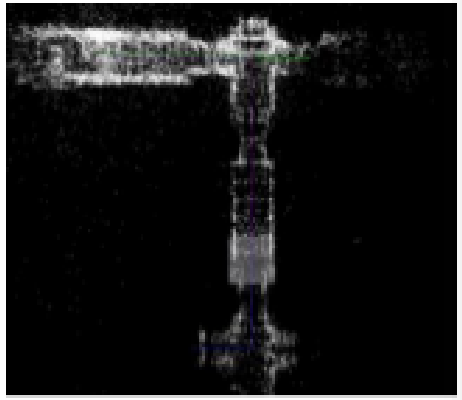
➢General Public

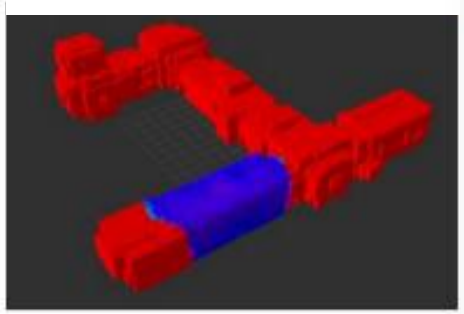
- Engage on "what's new" with NASA technology.
- Visualize the results from the use of public funds.
- Realize the benefits of the Open Data policy for Federal Agencies.

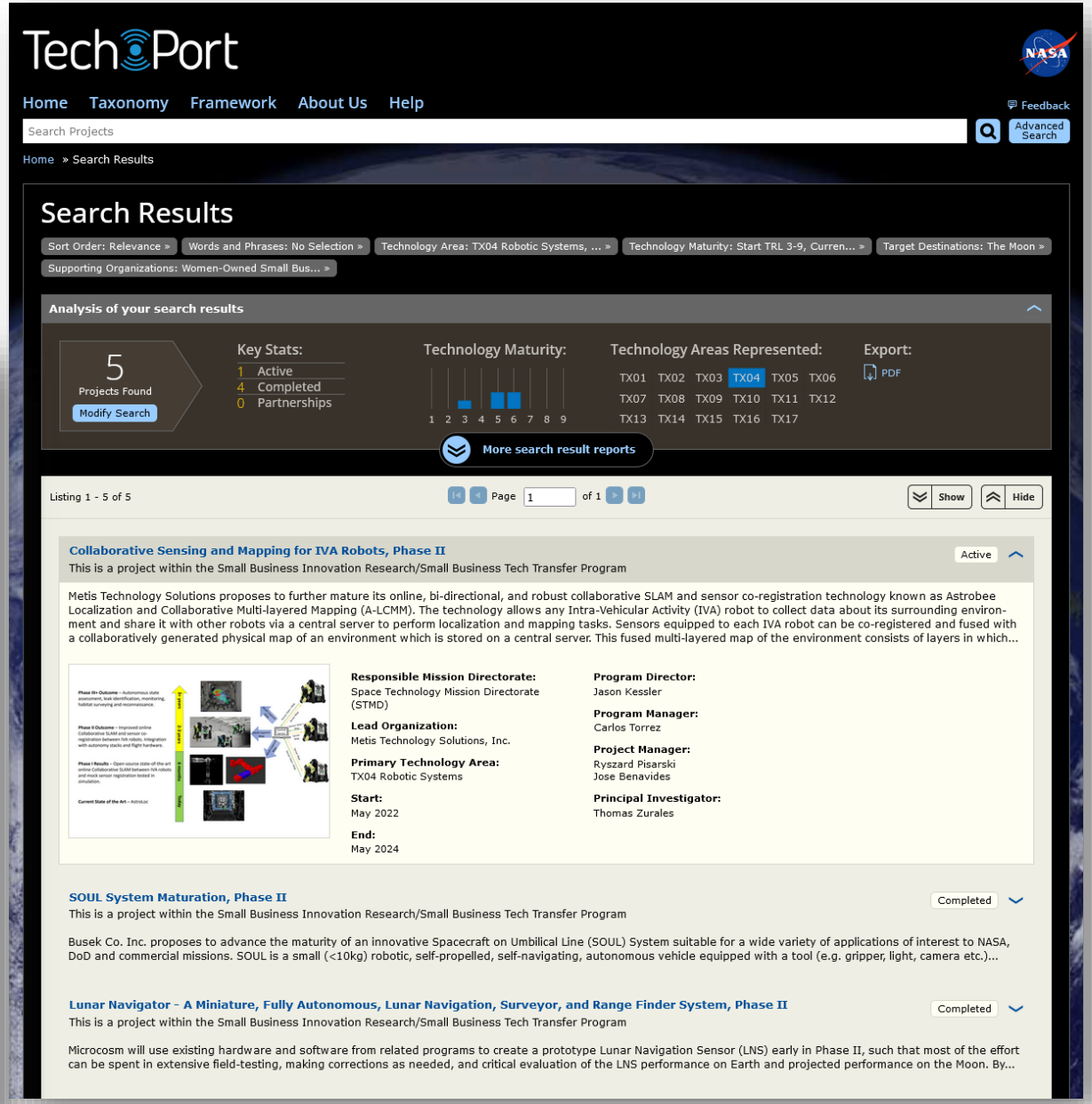


Collaboration and Partnership Development

TechPort provides a powerful networking and collaboration platform to find partners working in similar or complementary domains.



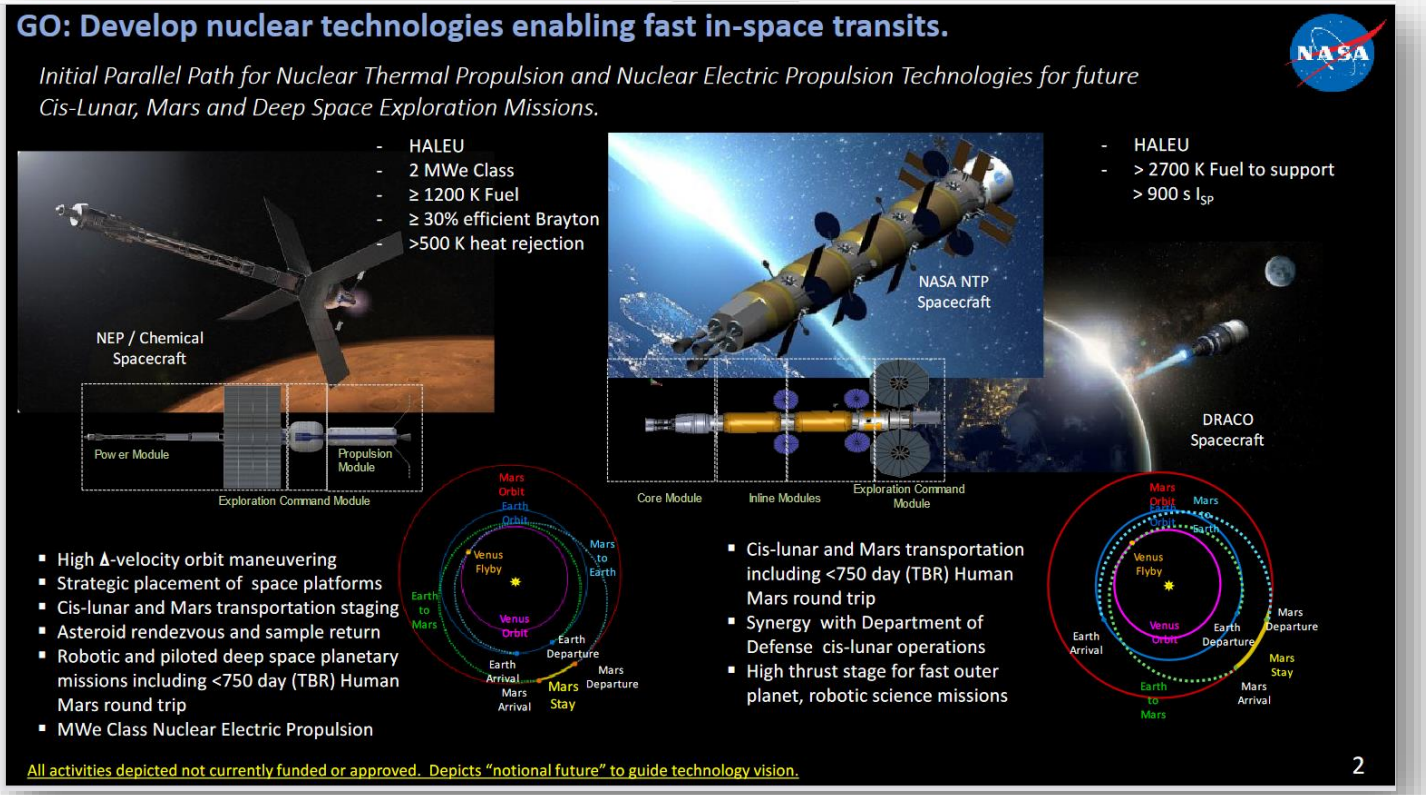


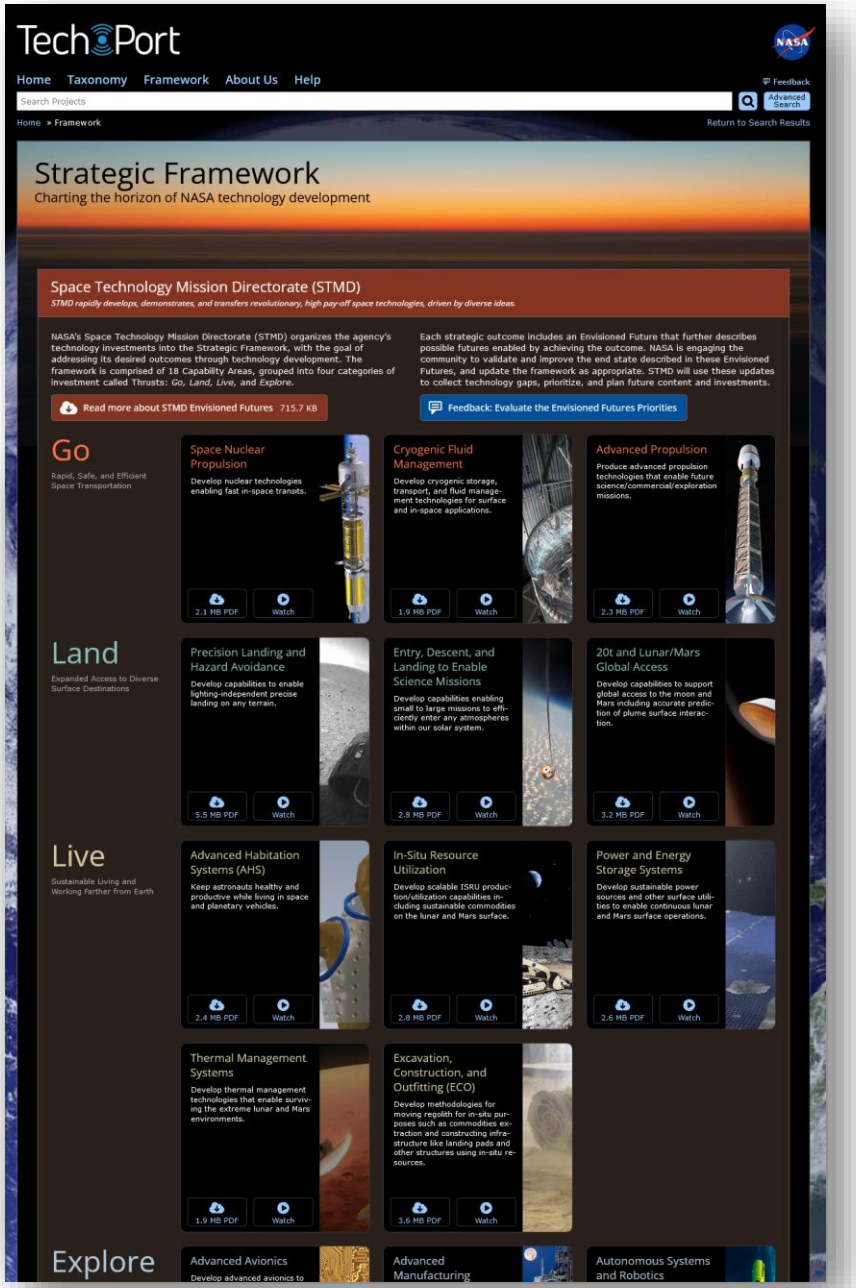


Strategic Framework

TechPort displays a rollup of NASA's envisioned technology future states.

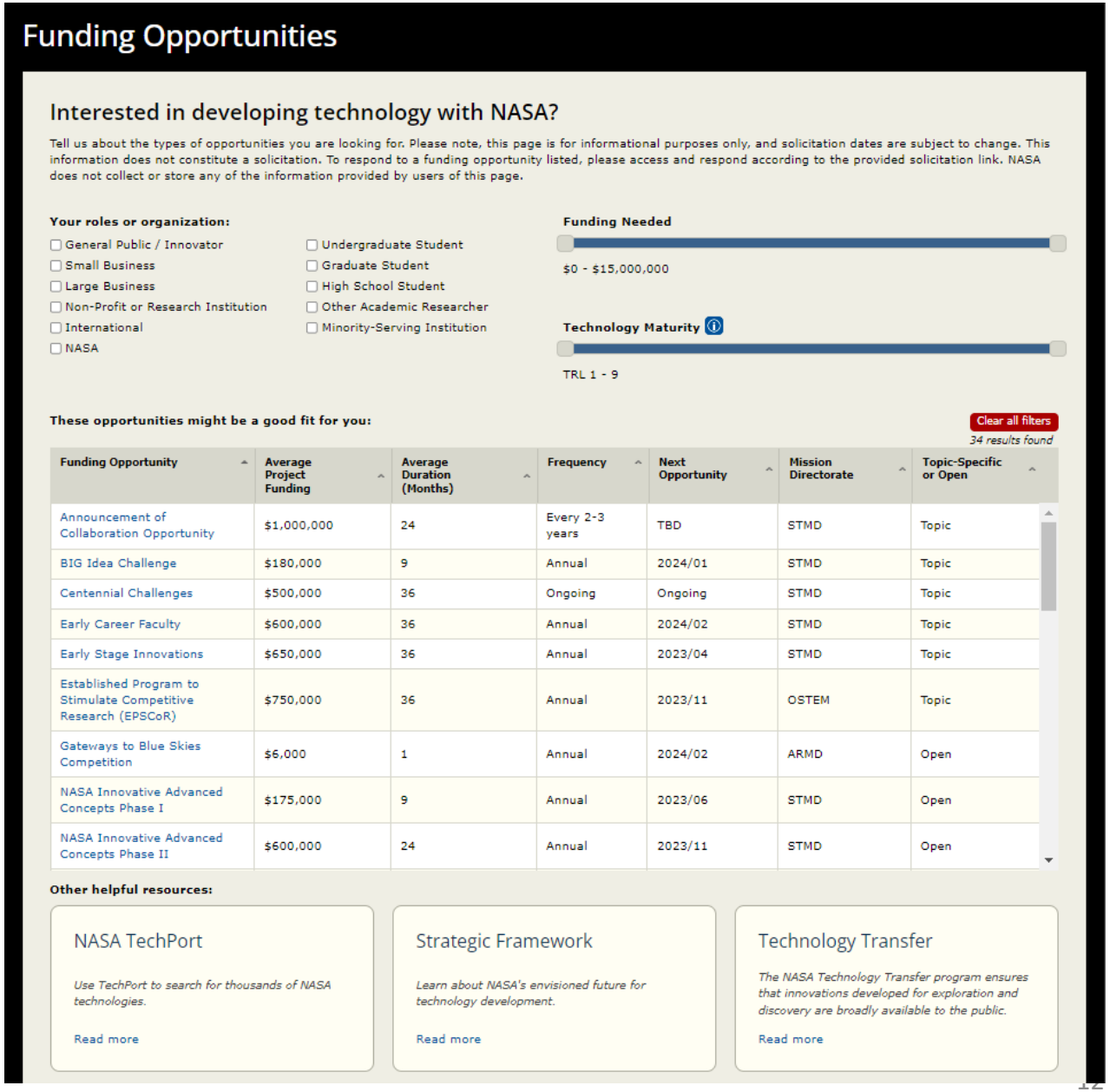
Provides key information on the types of technologies NASA intends to develop, and where the current gaps are.





TechPort Funding Opportunities Tool

- TechPort's Funding Opportunities tool allows users to filter for NASA opportunities that best fit their needs based on:
  - Role or organization
  - Funding needed
  - Technology maturity
- Learn which opportunities are the best fit for you at https://techport.nasa.gov/opportunities
- NASA does not collect or store information provided by users of this page



Contact us at hq-techport@mail.nasa.gov.

https://techport.nasa.gov

Hi!

Maggie Yancey,

Entrepreneurship Lead

NASA | The Science and Space Technology Mission Directorates

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www.linkedin.com/in/maggie-a-yancey-8334297/

The Bridge Seed Funding Program: enables faculty at under-resourced institutions (URIs) to initiate or expand upon activities with NASA researchers that, over the course of a two-year period, will provide the foundation for a future proposal to increase their competitive position to lead or partner on future SMD proposals, future Bridge Partnership solicitations and/or NASA mission proposals in the future.

https://science.nasa.gov/smd-bridge-program

Research Initiation Award (RIA): Providing a 2-year research award for up to $300K for faculty/researchers with the involvement of undergraduates at non-R1 institutions. Proposers from eligible minority-serving institutions, primarily undergraduate institutions, and community colleges are encouraged to apply.

Informational Webinar for Proposers on Bridge and RIA |Wednesday, May 24, 2023 1-2:30 pm ET | https://go.nasa.gov/404qx1j

Innovation Corps (I-Corps) – Apply Today!

Are you ready for your innovation to take off?

Join NASA's Innovation Corps Pilot today

Apply to participate in an immersive entrepreneurship training designed to help you take your idea from the lab to the marketplace. The opportunity is designed for not-for-profit entities, such as academia & nonprofit research institutions.

Build your capabilities through the NASA Innovation Corps:

- **Informed decision-making** to facilitate research and/or technology transitions and new NASA funding opportunities
- Facilitated focus and inspiration on the **commercial potential** of proposed research and/or technology
- Advanced **workforce development opportunities** in science missions and space technology by preparing students with a foundational education in entrepreneurship
- Enhanced **entrepreneurial mindsets**

Interested in exploring potential customers? Form your team and apply today for a **$10k grant** to support your team & customer discovery. Subsequent funding up to **$40k** will also be available.

Easy lift proposal - 6 pages or less - due to NSPIRES by:

- May 19, 2023; September 8, 2023; January 26, 2024; March 29, 2024.

Stay Connected

Create a NSPIRES account and subscribe to the newsletters for reminders and updates and read the full solicitation for the most accurate and up-to-date information.

NASA I-Corps Pilot Team Composition

A NASA I-Corps Pilot team must include a Technical Lead, an Entrepreneurial Lead.

- **The Technical Lead** serves as the Principal Investigator (PI) of the award, the Entrepreneurial Lead should be listed as a Co-I, and the Industry Mentor as a collaborator. The Technical Lead provides a deep and direct technical expertise in the relevant core research and/or technology area the I-Corps team is exploring.
- **The Entrepreneurial Lead** has relevant knowledge of the research and/or technology area and guides translation of the research and/or technology if the project demonstrates the potential for commercial viability.
- **The Industry Mentor** is responsible for advising the team through the duration of the course(s) and usually has contacts in the industry area being explored. The Industry Mentor may not receive a stipend or consultancy fees through the grant.

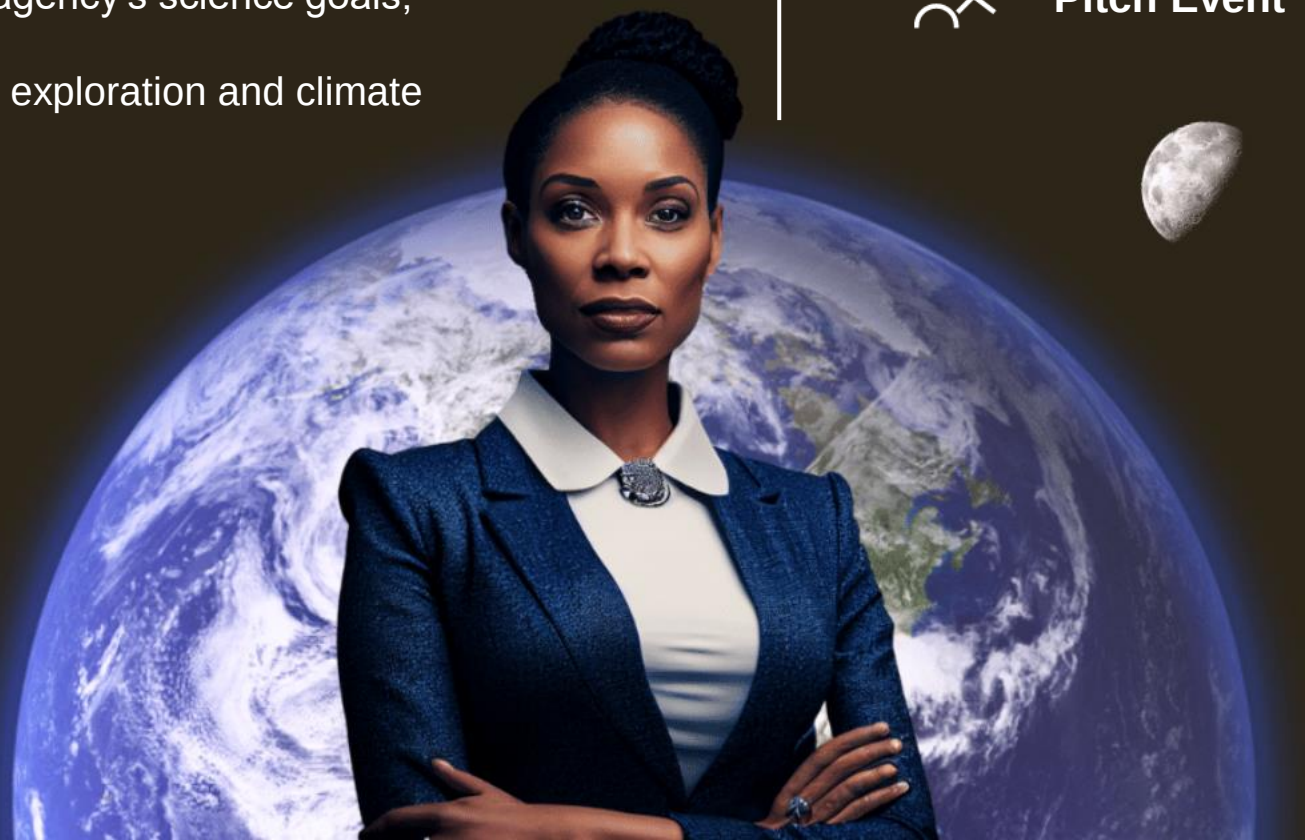
"Participating in the NASA Innovation Corps Pilot was a tailored, intense, and well-structured experience that got the wheels turning in my brain. Through customer discovery, I gained a deeper understanding of how my research can explore potential real-world applications and it opened up numerous options for me, and I personally benefited greatly from participating."

Erina Vela, Queens College – Entrepreneurial Lead for NASA Short Course Team

NASA Science Mission Directorate

Entrepreneurs Challenge

The 2023 NASA Entrepreneurs Challenge recognizes and supports entrepreneurs working on technology that advances the agency's science goals, particularly in lunar exploration and climate science.



Round 1:
Technical Paper and Pitch Deck

Round 2:
Pitch Event

20 Awardees

$1M in Prizes

Be part of launching lunar payloads and unlocking climate science today!

SCAN

CONSORTIUM FOR SPACE MOBILITY
AND ISAM CAPABILITIES

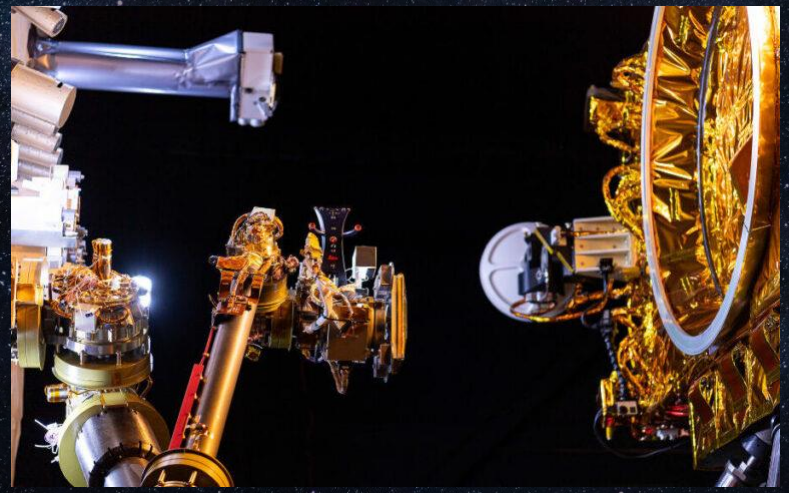
Briefing to Space Grant STMD Working Group

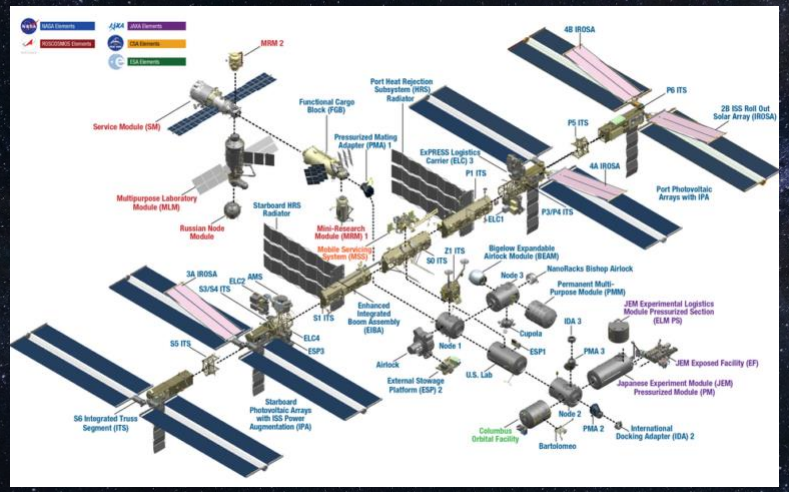
Greg Richardson
COSMIC Executive Director
The Aerospace Corporation

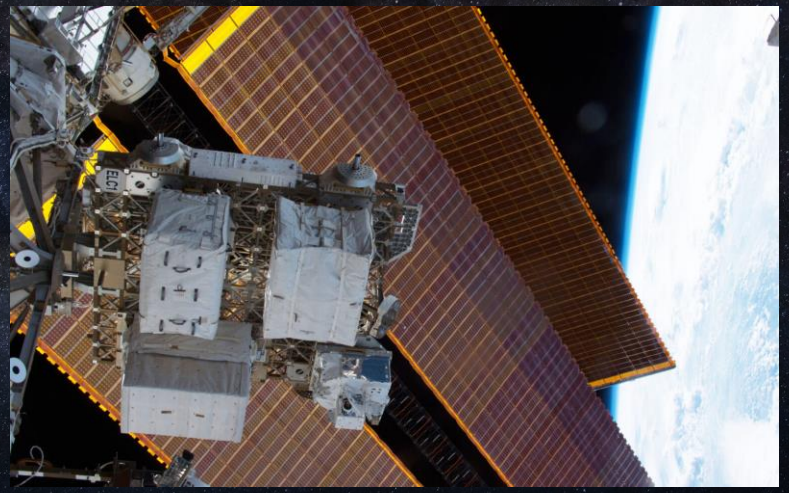
April 28, 2023

What is ISAM?

- Design of modular, serviceable, upgradeable, and evolvable systems
- Assembly of simple to complex space systems
- Manufacturing in space using Earth- and locally-sourced materials

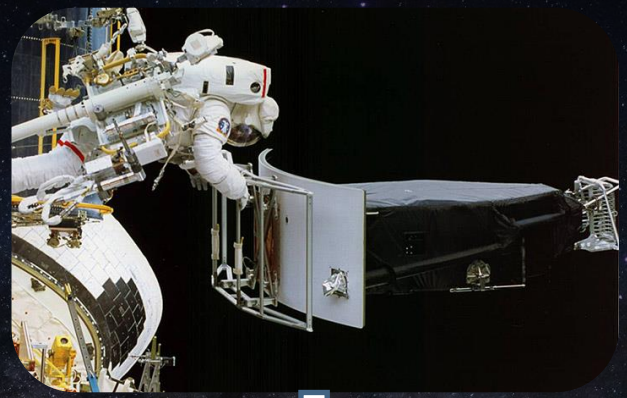






Why Now?

ISAM National Strategy and Implementation Plan



Foster an ecosystem to leverage ISAM capabilities

- Support and stimulate USG, academic, and commercial ISAM capability development
- Consistent with US Space Priorities Framework (Dec 2021)

Strategic goals

1. Advance ISAM research & development
2. Prioritize expanding scalable ISAM infrastructure
3. Accelerate the emerging ISAM commercial industry
4. Promote international collaboration and cooperation
5. Prioritize environmental sustainability
6. Inspire a diverse future space workforce

COSMIC: A Nationwide Alliance for ISAM

- Vision:
  - Create a nationwide alliance that enables the U.S. space community to provide global leadership in ISAM.
- Mission:
  - Making ISAM a routine part of space architectures and mission lifecycles.

Goals and Objectives

Capability Development

Develop, mature, and demonstrate ISAM technologies that enable and enhance mission utility.

- *Promote coordinated development and demonstration of new ISAM technologies*
- *Provide access to digital, ground, and space test opportunities and infrastructure to transform technologies into fielded capabilities*
- *Incubate and advocate promising technologies with applications to new ISAM markets*

Ecosystem Economics

Promote U.S. leadership in ISAM technologies and capabilities that change the business model away from single-use space assets.

- *Facilitate transfer of ISAM technologies to commercial market*
- *Encourage collaboration among industry and government members*
- *Support organizations in the development of open standards and norms*
- *Navigate the ISAM legal and regulatory perspectives*

Mission Applications

Encourage and guide missions to use ISAM capabilities as part of commercial and government program lifecycles.

- *Collaborate to define future missions and architectures that require or benefit from ISAM capabilities (“guide stars”)*
- *Influence the incorporation of ISAM into government and commercial space activities*
- *Maintain knowledge of available ISAM capabilities, ongoing activities, and existing facilities, and communicate this information to mission developers*
- *Prioritize environmental sustainability*

A nationwide alliance working collaboratively to make ISAM a routine part of the space mission lifecycle

Organization

COSMIC
CONSORTIUM FOR SPACE MOBILITY AND ISAM CAPABILITIES

Steering Committee
(USG + Industry* + Academia)

Consortium Management Entity
Phase 1: Execute day-to-day operations of the Consortium according to strategic guidance from the Steering Committee
Phase 2: Integration across focus areas

USG Caucus
Support USG products, e.g. prioritization, solicitations, and roadmapping

Industry Caucus*

Academia Caucus

Research & Technology (RT)

1. Basic Research (w/ Academia)
2. Applied Technology (gov't and industry)
3. R&D Subgroups (by discipline and/or ISAM function, e.g. robotics, RPO, capture, refueling, autonomy, etc.

Demonstration Infrastructure (DI)

1. Digital and simulation systems
2. Ground test facilities and systems
3. Flight testbeds for ISAM technologies / capabilities

Missions & Ecosystems (ME)

1. Business models, economic benefits, programmatic versatility
2. Current missions enhanced by ISAM (business case, lifecycle value)
3. Future missions enabled by ISAM

Policy & Regulation (PR)

1. Remove speed bumps to widespread adoption
2. Various activities (w/ CONFERS)
3. Support for others who develop standards

Workforce Development (WD)

1. Increase opportunities to include ISAM in education
2. Build a skilled labor workforce to support ISAM
3. Expand opportunities to attract students to tackle ISAM challenges

* Includes ties to CONFERS

COSMIC Coordination

COSMIC
CONSORTIUM FOR SPACE MOBILITY AND ISAM CAPABILITIES

Present Day

3Q FY22	4Q FY22	1Q FY23	2Q FY23

National

- OMB
- ISAM National Strategy
- OSTP ISAM IWG
- ISAM National Implementation Plan

Public *US Only

- STMD STIGUR
- AIAA ASCEND
- COSMIC Feedback Session*

DoD

- USSF/SSC
- USSF/SPoC
- USSPACECOM
- AFRL
- USSF/SSC
- SAF/SQ
- DIU
- NRL

NASA

- JPL
- ISAM Workshop
- LaRC
- MSFC
- JSC
- GSFC
- Center TIP Annual, ARC
- ESDMD, SOMD, SMD, OTPS
- HQ (A-Suite)

Academia

- GT, USC, TAMU, NMSU
- P, MIT, Johns Hopkins, CMU, M, VT, NH, UCB, M, S, UC, WVU

Industry

- CONFERS Leadership
- REDWIRE
- SpaceLogistics
- CONFERS GSSF
- Astroscale
- AXIOM SPACE
- Lockheed Martin
- Nanoracks
- OrbitFab
- Sierra Space
- Starfish Space
- MAXAR

Call to Action

COSMIC
CONSORTIUM FOR SPACE MOBILITY AND ISAM CAPABILITIES

Today

- Sign up for the COSMIC mailing list at cosmicspace.org
- Ask questions & provide opinions

Summer 2023

- Attend COSMIC engagement sessions
- Talk to others in your network about COSMIC

Fall 2023

- Attend the COSMIC kickoff in Oct/Nov
  - Working sessions about consortium activities and products
- Attend monthly Focus Area meetings

2024+

- Support COSMIC's steady-state cadence
- Finalize products and identify plans for the next year
- Help our ISAM community continually improve and thrive

Making ISAM a routine part of space architectures and mission lifecycles


Thank you!