National Aeronautics and Space Administration

ROSES C.13

Science Transport & Robotic Innovation for Deployment & Exploration (STRIDE)

Pre-proposal Conference

February 4, 2026

Erica Montbach
Lane Painter
Larry Matthies

STRIDE Release Information

NASA Science
MARS EXPLORATION

STRIDE Solicitation Information

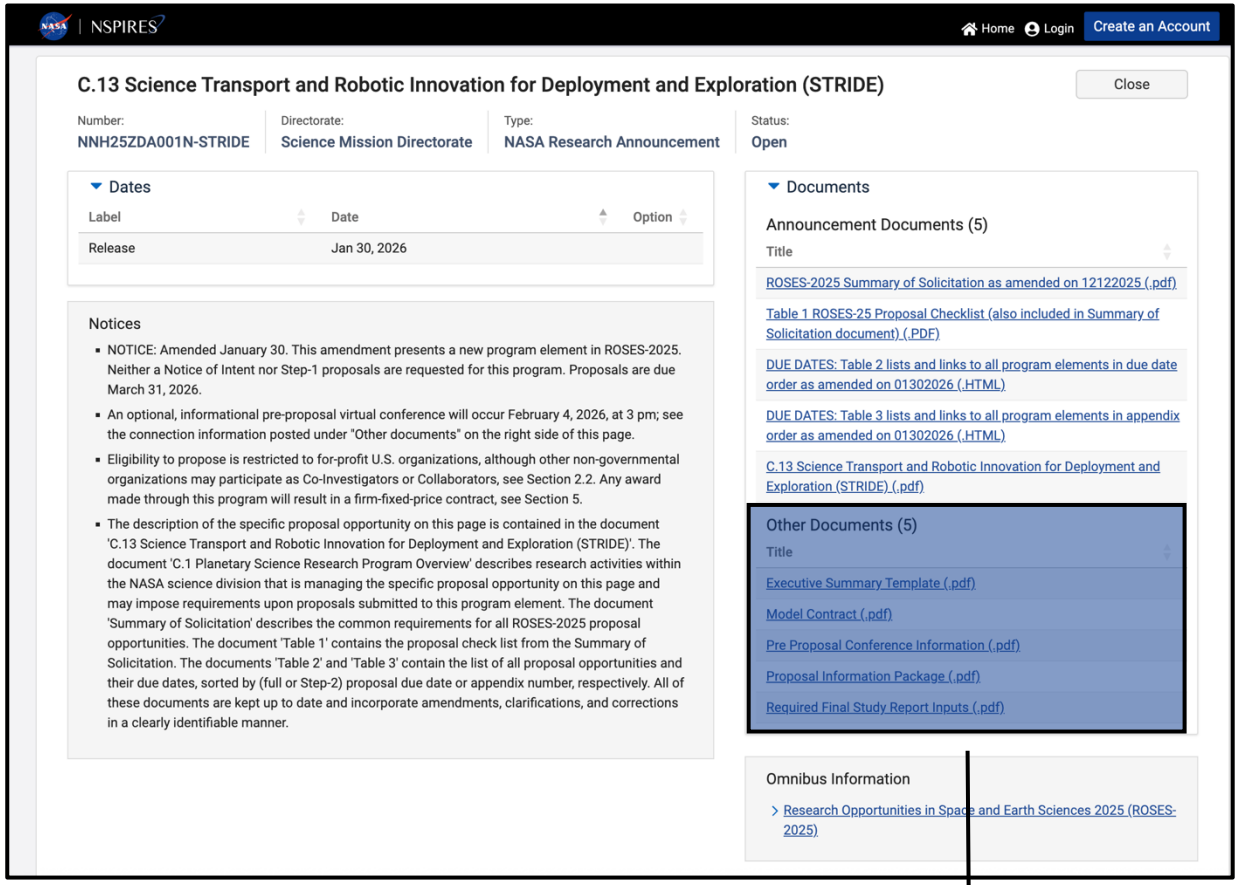
- The official STRIDE solicitation was released as part of NASA ROSES-25 on January 30, 2026.
- The solicitation, along with all relevant attachments, can be accessed using the link: [go.nasa.gov/STRIDE] or by using the QR code

ROSES (Research Opportunities in Space and Earth Sciences)

Learn more about ROSES25

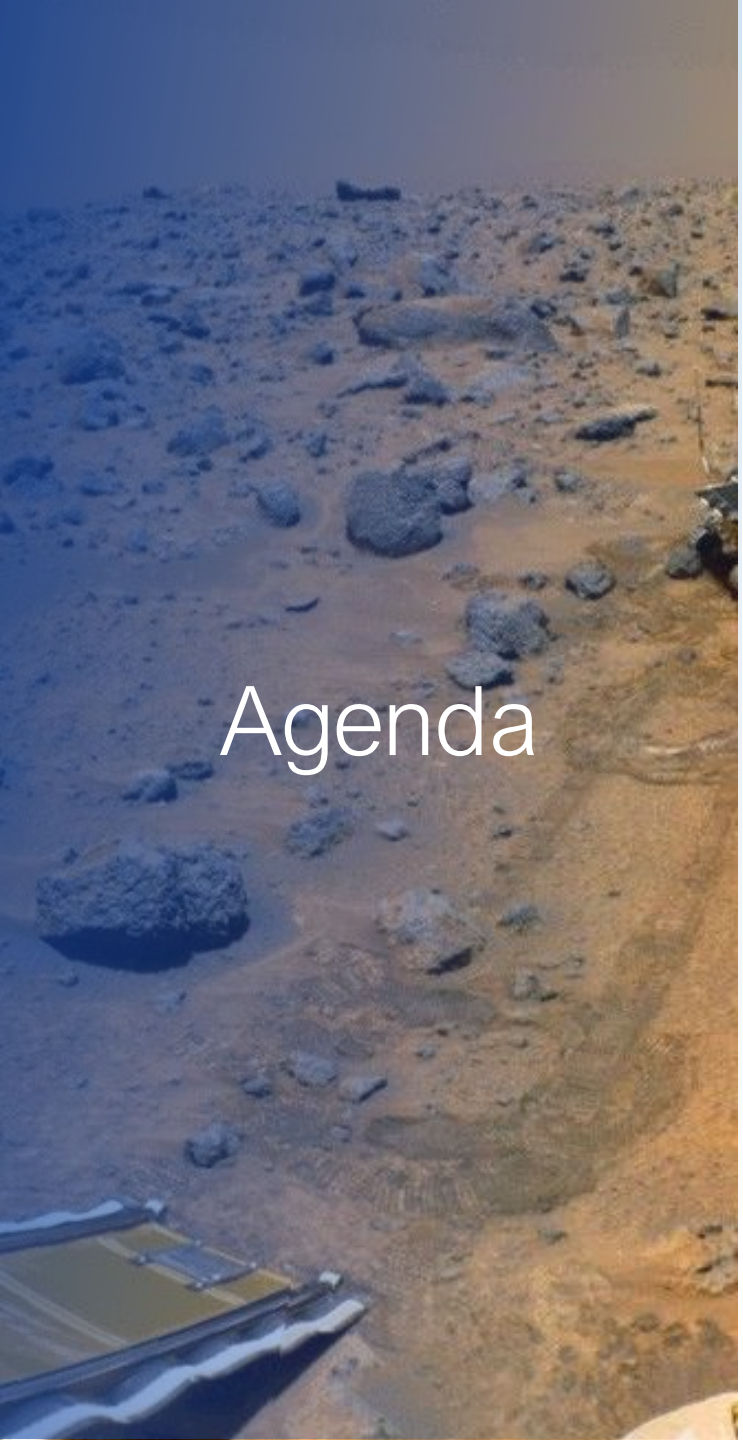
- ROSES stands for Research Opportunities in Space and Earth Sciences.
- ROSES is an omnibus Notice of Funding Opportunity that includes multiple proposal opportunities, each with its own topic and schedule, collectively soliciting research and technology development activities across NASA's Science Mission Directorate (SMD).
- Additional information on ROSES is available at the link provided here or by using the QR code.

Other Documents



Other Documents

- Executive Summary Template
- Model Contract
- Pre Proposal Conference Information
- Proposal Information Package (PIP)
- Required Final Study Report Inputs



Agenda

NASA Science
MARS EXPLORATION

01 Introduction (Lane Painter)

02 Opening Remarks & STRIDE Motivation (Tiffany Morgan)

03 STRIDE Solicitation Overview (Eric Montbach & Lane Painter)

04 Required Final Study Report Inputs & Proposal Information Package (Larry Matthies)

05 Question & Answer (Erica Montbach)

The presentation slides and written Q&A will be posted on the Program Element homepage in NSPIRES at: [go.nasa.gov/STRIDE]

STRIDE Team

Erica Montbach
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Planetary Science Division,
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STRIDE Co-Lead

Lane Painter
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STRIDE Co-Lead

Larry Matthies
Technology Manager,
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STRIDE Co-Lead

Nathan Barba
Curiosity Program Executive (PE),
Mars Exploration Program
NASA Headquarters

Opening Remarks

Tiffany Morgan
Director
Mars Exploration Program
NASA Headquarters

NASA Science
MARS EXPLORATION

Motivation for the STRIDE Solicitation

NASA's Mars Exploration Program recognizes the rapid advancement of U.S. commercial robotics and autonomous systems.

- Emerging mobility platforms capable of transporting and deploying science payloads with increased efficiency.
- Growing capabilities to operate across complex, varied terrain.
- Opportunity to leverage commercial innovation to address the unique mobility and deployment challenges of future Mars exploration.
- Seeding American industry to support future Mars exploration potential.

NASA Science MARS EXPLORATION

Science Transport & Robotic Innovation for Deployment & Exploration (STRIDE):

NASA is soliciting proposals from U.S. industry to conduct design studies of advanced robotic surface and aerial mobility systems with payload transportation and deployment capability for Mars surface operations, and, where applicable, early-stage prototyping of hardware for the same purpose.

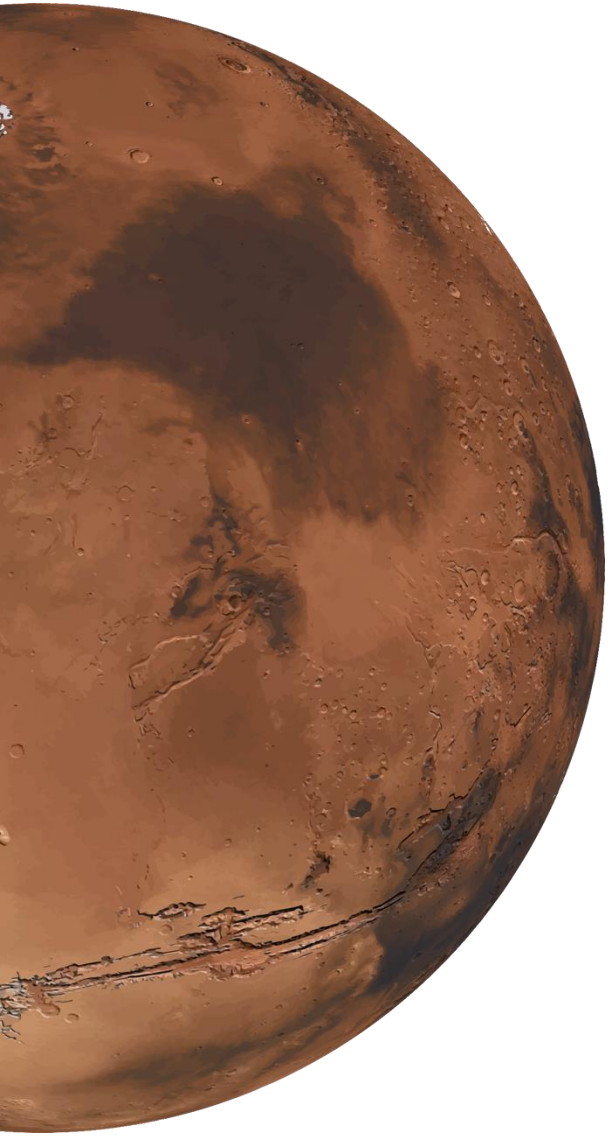
Tracks

- **Track A:** Concept Study
- **Track B:** Concept Study + Prototype & Demonstration

Eligible Proposers:

- U.S. for-profit companies only
- Partnership with and/or subcontracts to other types of organizations (e.g., academia, non-profits, or University Affiliated Research Centers) are permitted.

STRIDE Goals



01

Identify the level of development required for commercial robotic mobility systems originally developed for terrestrial and lunar use to operate and traverse realistic Martian environments while enabling cost effective transportation and or deployment of science payloads

02

Identify key capability gaps and help advance the broader landscape of robotic exploration at Mars with proposals encouraged to articulate how their proposed platform could enhance overall science return

STRIDE Program Tracks

This program element has two tracks; proposers must select one:

For information about work elements described for Tracks A and B see Required Final Study Report Inputs document.

Track A (Concept Study)

Consists of concept studies that define a mobility system architecture and provide models of its anticipated performance in the Martian environment, including traverse capability and its ability to survive expected temperature ranges, power availability, and radiation conditions.

Track B (Concept Study + Prototype & Demonstration)

Includes a concept study, as in Track A, plus a prototyping and demonstration effort.

Track B may include development of novel subsystems for use in a Mars environment but must culminate in consideration of a full vehicle system. Testing and demonstration work should attempt to validate key performance models or claims in the concept study to show advantages over prior Mars mobility systems. See the Proposal Information Package (PIP) under other documents on the NSPIRES page for this program element for discussion of prior Mars mobility systems.

Considerations of Concept Value

NASA is seeking concepts for surface and aerial mobility systems that maximize, to the extent possible, the following areas of interest.

Mars Environmental Operability	Payload Transportation and/or Deployment and Accommodation	Mobility Capability	Technical Innovation and Risk Reduction
Demonstrated ability of the proposed system to function in the Martian environment, including tolerance for dust, temperature extremes, communication constraints, and other environmental conditions expected during surface operations.	Capacity to reliably transport, deploy, or manage payloads, including breadth of science investigation the system can address (see PIP A2.2 for more information).	Ability to traverse realistic Martian terrains with meaningful range, endurance, and robustness -- e.g., cratered, rocky, or sandy regions for surface vehicles, as well as elevation/altitude range for aerial vehicles (see PIP A2.2 for more information).	Novel design approaches, technology advancements, or subsystem innovations that reduce operational risk or expand feasible mission scenarios.

NASA recognizes that not all metrics can be optimized but expects successful concepts to demonstrate improvement in one or more of these area

STRIDE Eligibility & Participation

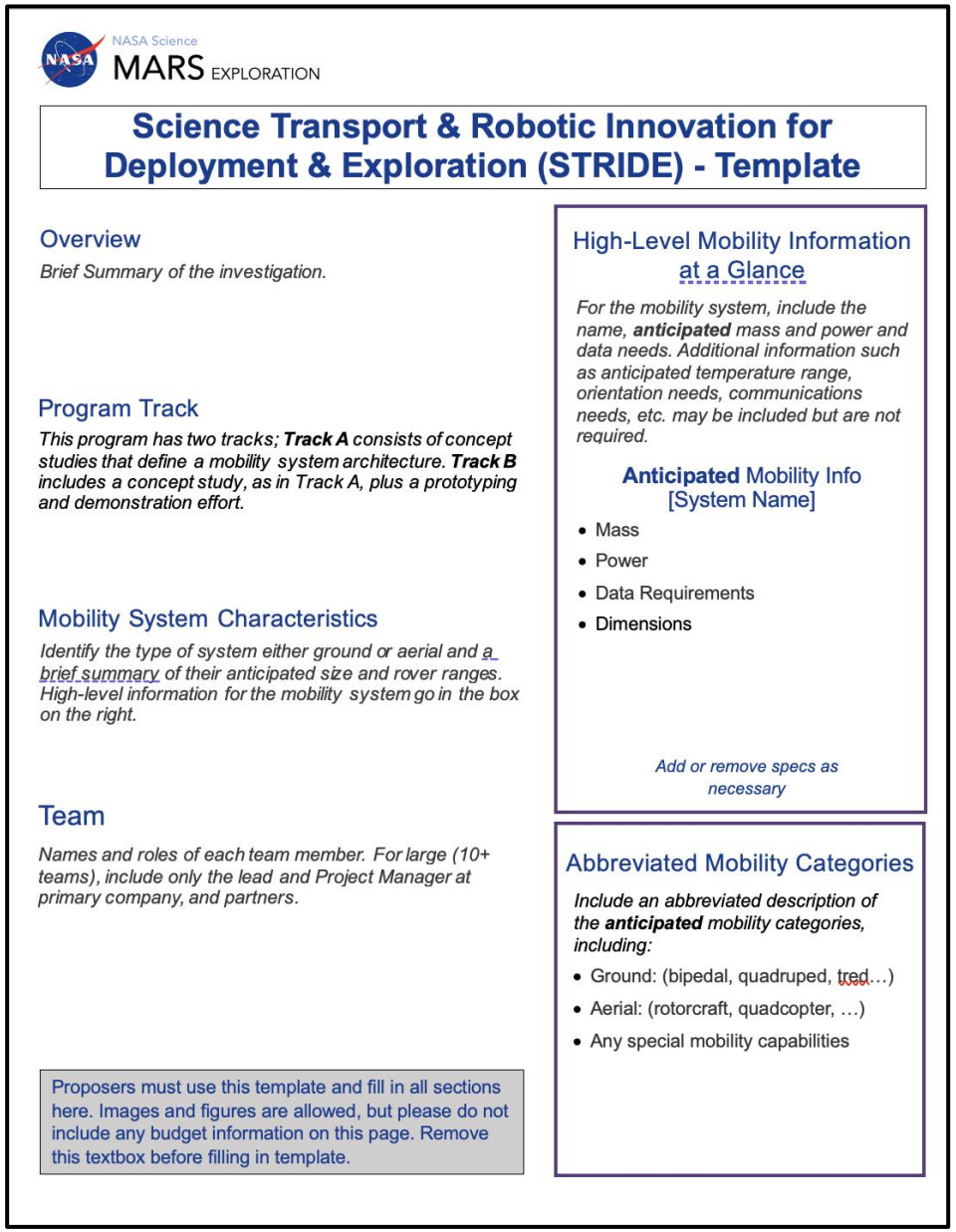
- To be eligible, the primary proposing organization must be a for-profit U.S. organization
- Partnership with and/or subcontracts to other types of organizations (e.g., academia, non-profits, or University Affiliated Research Centers) are permitted.
    - NASA civil servants, Jet Propulsion Laboratory (JPL) employees, government laboratories, and Federally Funded Research and Development Centers (FFRDCs) shall not propose as a Prime Contractor and may not be included as a subcontractor or team member in response to this opportunity.
- Government laboratory test facilities may be utilized for testing (see subsection 3.3.7 for more information).
- There is no restriction on the number of proposals that an organization may submit to this solicitation as either the lead organization or as a subcontract. However, each proposal must be a separate, stand-alone, complete document for evaluation purposes.

Proposal Content

Proposal Element	Requirements
Proposal Cover Pages/ Proposal Summary	As per NSPIRES
Executive Summary and Track Selection	Per template, included in proposal PDF
Table of Contents	As needed, included in proposal PDF
Scientific/ Technical/ Management (S/T/M) Section	15 pages, included in proposal PDF
Hardware Test Plan	1 page Track B Only, included in proposal PDF
References	As needed, included in proposal PDF
Table of Personnel and Work Effort	As needed, included in proposal PDF
Biographical Sketches / Curriculum Vitae	As needed, included in proposal PDF
Current and Pending Support (C&P)	As needed, included in proposal PDF
Schedule	As needed, included in proposal PDF
Risk and Challenge Assessment	As needed, included in proposal PDF
Statements of Commitment and Letters of Support, Feasibility and Endorsement	As needed, included in proposal PDF
Budget Narrative and Details	As needed, included in proposal PDF
Total Budget	As needed, uploaded separately from proposal PDF
High-End Computing (HEC) Appendix Document	Optional, uploaded separately from proposal PDF

For more information, please refer to section 3.3 Proposal Content of the solicitation.

Executive Summary



NASA Science
MARS EXPLORATION

Science Transport & Robotic Innovation for Deployment & Exploration (STRIDE) - Template

Overview

Brief Summary of the investigation.

Program Track

*This program has two tracks; **Track A** consists of concept studies that define a mobility system architecture. **Track B** includes a concept study, as in Track A, plus a prototyping and demonstration effort.*

Mobility System Characteristics

Identify the type of system either ground or aerial and a brief summary of their anticipated size and rover ranges. High-level information for the mobility system go in the box on the right.

Team

Names and roles of each team member. For large (10+ teams), include only the lead and Project Manager at primary company, and partners.

Proposers must use this template and fill in all sections here. Images and figures are allowed, but please do not include any budget information on this page. Remove this textbox before filling in template.

High-Level Mobility Information at a Glance

*For the mobility system, include the name, **anticipated** mass and power and data needs. Additional information such as anticipated temperature range, orientation needs, communications needs, etc. may be included but are not required.*

Anticipated Mobility Info [System Name]

- Mass
- Power
- Data Requirements
- Dimensions

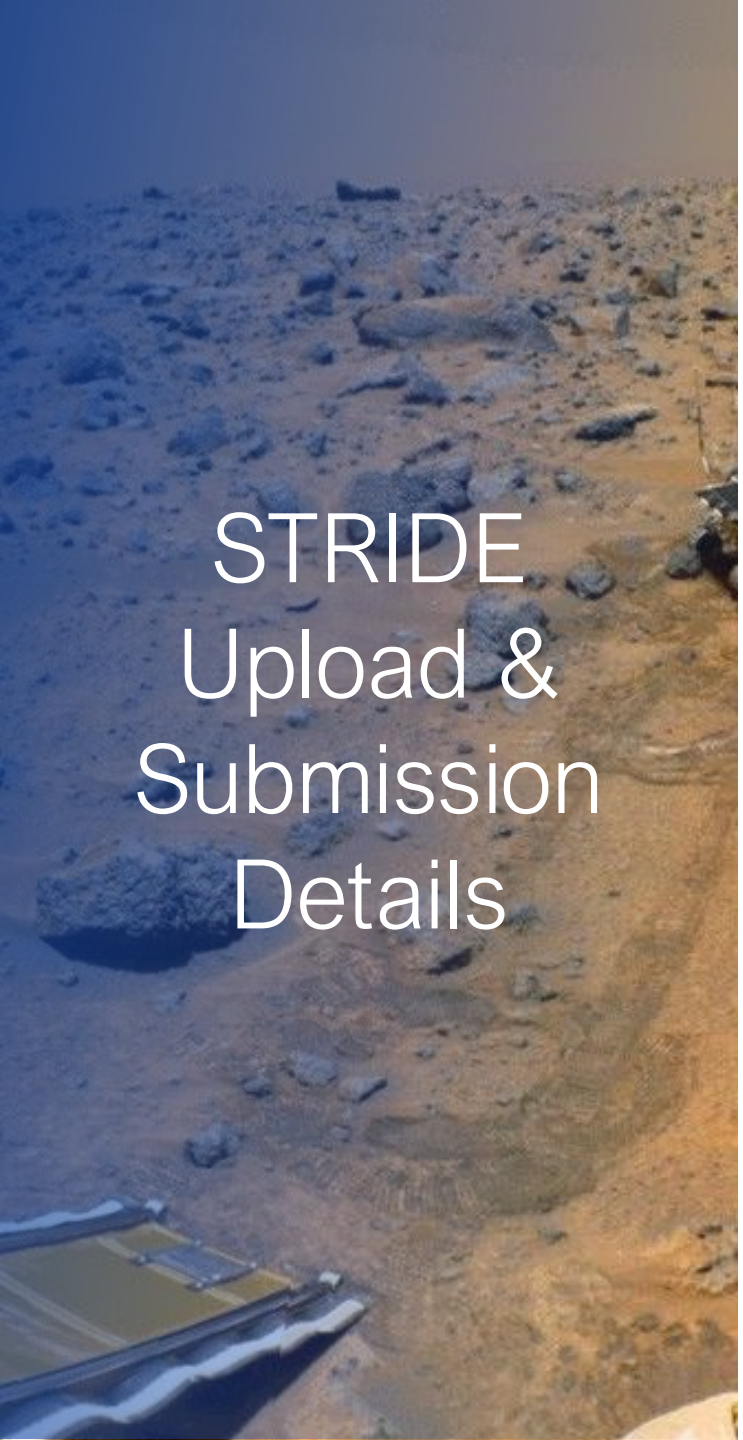
Add or remove specs as necessary

Abbreviated Mobility Categories

*Include an abbreviated description of the **anticipated** mobility categories, including:*

- Ground: (bipedal, quadruped, tred…)
- Aerial: (rotorcraft, quadcopter, …)
- Any special mobility capabilities

- Proposals are required to have an Executive Summary page with all the information provided in the template on NSPIRES.
- The exact layout/design can vary.



STRIDE Upload & Submission Details

- The solicitation is available at [go.nasa.gov/STRIDE]
- Proposals must be submitted by **March 31, 2026,** via NSPIRES at https://nspires.nasaprs.com/
- Potential proposers are strongly encouraged to access NSPIRES well in advance of the proposal due date to familiarize themselves with the platform and to begin entering all required information early in the process.
- Refer to ROSES-2025, specifically Section IV(b)(iv) of the ROSES-25 Summary of Solicitation, for full instructions on proposal formatting, submission procedures, and registration requirements.

Where instructions in this program element differ from those in C.1, the Planetary Science Research Program Overview or the ROSES-2025 Summary of Solicitation, the requirements of this program element take precedence.

Proposal Evaluation Criteria

The criteria considered in evaluation of proposals are:

Technical Merit	Relevance to Program Elements Objectives
Team Qualifications and Resources	Cost & Schedule Reasonableness

For more information, please refer to section 3.5 Evaluation Criteria of the solicitation.

STRIDE Award Structure & Duration

Track	Definition	Duration	Budget
Track A	Concept Study	12 Months	Maximum Budget: $1,000,000 USD
Track B	Concept Study + Physical Testing	12 Months	Maximum Budget: $3,000,000 USD

- NASA intends to solicit and select a range of surface and aerial robotic mobility systems spanning a range of payload capabilities. NASA may ultimately select multiple systems, with the number of selections determined by the quality and applicability of the proposed concepts.

STRIDE Deliverables

Deliverable	Description
Kick-Off Meeting	Contractors shall participate in an individual virtual kickoff meeting with NASA to review program expectations, deliverables, and address any initial questions.
Status Meetings	Contractors shall participate in virtual status reviews between NASA and the study team.
Interim In-Person Presentation & Site Visit	Contractors shall conduct one in-person interim presentation at the study team's facility. This review will include a two-hour presentation and oral briefing on progress to date, accompanied by an on-site walkthrough of relevant facilities, hardware, prototypes, or testing setups as applicable.
Final Written Report	Contractors shall deliver a final written report summarizing the complete technical and programmatic study results in response to the "Required Final Report Inputs" document.
Final Presentation	Contractors shall provide a final oral presentation of key findings to NASA, conducted in person at NASA Headquarters in Washington, DC.
On-Site System Demonstration (Track B Only)	For Track B efforts, Contractors can conduct an in-person demonstration of the mobility system at a company-selected, designated facility.
Publicly Releasable Final Report	Contractors shall provide NASA with a version of the report and/or presentation that does not contain company sensitive/proprietary, export-control, or ITAR data suitable for external distribution.

Companies selected under Track B (Concept Study + Physical Testing) will retain ownership of any prototype articles developed during the performance period of their contract.

STRIDE Key Dates

Milestone	Date
Release of ROSES program element	January 30, 2026
STRIDE Pre-proposal Conference	February 4, 2026
Deadline for proposals	March 31, 2026
Proposals must be submitted via NSPIRES	https://nspires.nasaprs.com/
Planning Date for Start of Investigation	~ 6 months After the Proposal Due Date
Final Deliverables Due	Not to exceed 12 months from the effective start date of award

Required Final Study Report Inputs

Required Final Study Report Inputs

Concept Study (Tracks A and B):	• **Define** a mobility system architecture for your choice of surface or aerial mobility and for your choice of range of payload masses, Mars environments, and mobility performance within broad ranges described next. Include descriptions of all major subsystems, with mass and power estimates by subsystem. • **Describe** provisions for science instrument accommodation (i.e. integration and deployment). • **Describe** high-level concept of operations (conops), i.e. major activities that would be performed for a day-in-the-life of the mobility system. • **Describe** expected rate of traverse of the system as a function of any environmental parameters this critically depends on, as well as the expected maximum traverse distance over the intended lifetime of the vehicle or one Mars year, whichever is shorter.

Required Final Study Report Inputs

Concept Study (Tracks A and B):	• **Describe** the hazard negotiation capabilities of the vehicle, i.e. mobility hazards for surface vehicles, or in-flight and landing hazards for aerial vehicles. • **Describe** the architecture of autonomous navigation capabilities for hazard avoidance and state estimation. • **Describe** provisions for surviving the temperature environment, as well as any operational restrictions imposed by the temperature environment, such as the portion of a Mars day (sol) that the system can operate. • **Estimate** the Cost of Transport (CoT, in Joules/meter) of the mobility system in nominal operating conditions. E.g. for surface vehicles, on flat ground with typical Mars soil; for aerial vehicles, at nominal cruise velocity.

Required Final Study Report Inputs

Concept Study (Tracks A and B):	• **Describe** key aspects of energy management, including (1) energy source (e.g. solar array or radioisotope power system), (2) power required for subsystems by operational mode, and (3) how this impacts daily operations and traverse range. • **Assess** the system's tolerance of the radiation environment of transit to Mars (up to one Earth year duration) and Mars surface operations (up to one Mars year). Describe any aspects of the system concept designed to mitigate radiation effects. • **Discuss** anticipated lifetime of the system and key limiting factors. • If the system concept includes components that are currently below TRL 5 for the Mars environment, **estimate** the level of effort and level of risk associated with raising these to TRL 5.

Required Final Study Report Inputs

Concept Study (Tracks A and B):	• **Describe** any manner in which the mobility system would be scalable and adaptable, e.g. for different payload sizes, total traverse ranges, or different Mars environments. • **Summarize** unique innovations and advantages of the proposed system compared to previously flown Mars mobility systems and to other alternatives from prior research. • **Describe** any factors expected to make the system more affordable than previously flown Mars mobility systems, as quantitatively as possible.

Required Final Study Report Inputs

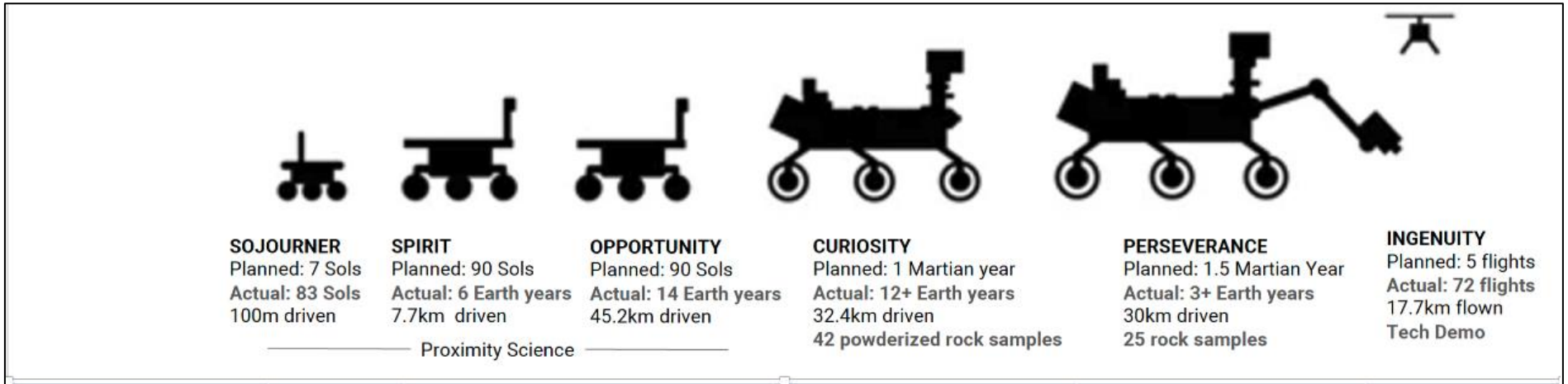
Physical Prototyping, Testing, and Demonstration (Track B only):	• Intended to culminate in evaluation and consideration of a complete mobility system that validates key performance models or claims in the concept study. Here, "complete mobility system" implies, at minimum, all electro-mechanical and software aspects required to demonstrate and validate system-level mobility performance claims or models in the concept study. • Optionally, may also include work that advances the maturity of novel component technologies, if this is material to advantages of the overall mobility system. Test results must be included to substantiate maturation claims. • Prototypes may use commercial-grade components instead of flight-like components if that is advantageous, e.g. for cost or schedule reasons under this program. However, performance evaluation reports should explicitly account for the effects of any such substitutions and include estimates of differences that would be expected with flight-like parts, e.g. on mass, power, mobility, etc.

Proposal Information Package (PIP)

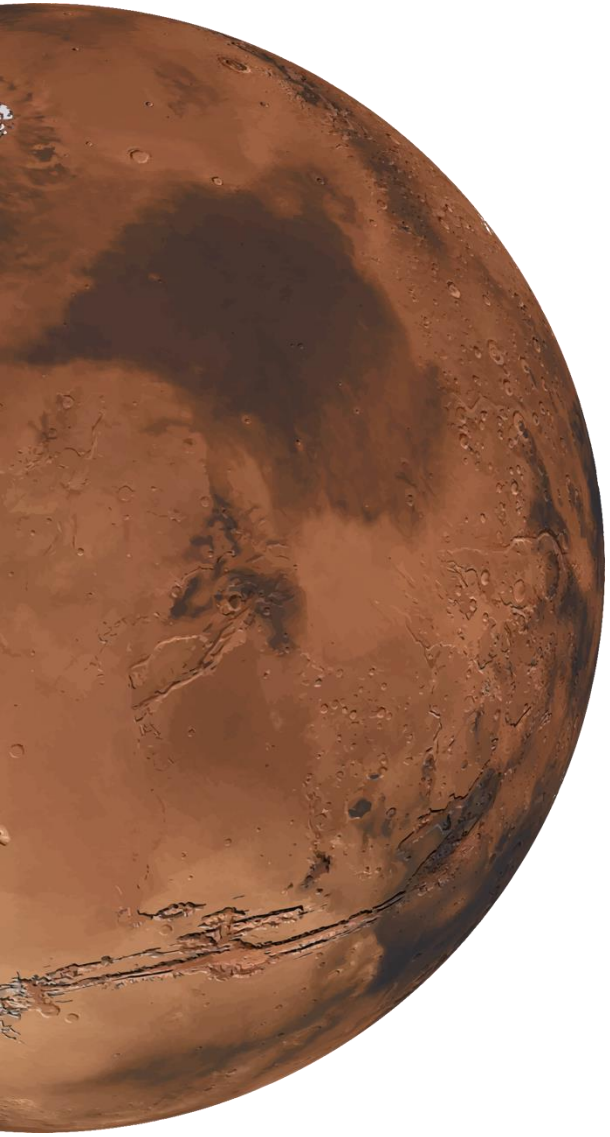
ROSES C.13: Science Transport & Robotic Innovation for Deployment & Exploration (STRIDE)

Overview of NASA Mars mobility systems flown to date:

- Typically operate < 3-4 hours/sol. Science instrument mass fraction < 10%



Total mass, kg	11	174	899	1025	1.8
Instr. Mass, kg	0.74	5.8	75	59	~ 0.001
Tool mass, kg	N/A	0.73	substantial (10s of kg)	substantial (> 100 kg)	N/A
Pay. mass frac., %	*6.7*	3.8 incl tool	8.3 + tools	5.6 + tools	0.06
Latitude range	19°N	10°N – 10°S	30°N – 30°S	30°N – 30°S	18°N
Elevation range	-2.5	< -1.3 km MOLA	-0.5	-0.5	-2.6
Longest traverse, m	8	200	329	411	704
Longest dim, m	0.65	2.3	3	3	1.2



Mars Accessibility Overview:

- Potential future Mars mobility missions can only be sketched as broad possibilities at this time.
- Broad classes of potential Mars science investigations, relevant landing sites, and the geographic distribution of such landing sites are discussed in [Kerber 2025] between latitudes of 30°N and 30°S, and below elevation of +3 km MOLA.
- Latitudes up to or beyond 40°N are also of interest for assessing or accessing mid-latitude subsurface ice deposits [SFL-SAG].
- Choose the area of Mars your mobility concept addresses and describe how the design is suitable for the corresponding environmental conditions (see subsequent sections of PIP).

MOLA = Mars Orbiter Laser Altimeter ; SFL-SAG = Search for Life Mission Science Analysis Group

Future Mobility System Characteristics:

A variety of desirable science instrument payload masses, mission durations, and total mobility ranges are conceivable for future missions, depending many factors, including mission objectives, cost, risk, and landing precision.

Surface vehicles, example size classes of interest include:

- **"Small" vehicles** to take a few kilograms of instruments a few meters or 10s of meters distance from a lander that might otherwise interfere with instrument measurements.
- **"Medium" vehicles**, analogous to MER size, with ability to carry roughly 20 kg or more of instruments plus "enabling" equipment, such as a mast, arm, or similar device to point instruments at or place instruments near targets of scientific interest.
- **"Large" vehicles**, analogous to Perseverance size, with ability to carry roughly 100 kg or more of instruments plus enabling payload.

Aerial vehicles, example size classes of interest include:

- Payload capability from a few grams to > 5 kg is of interest.

Desired mission duration and total mobility range are tightly linked.

- Total rover ranges of 10s of km have been achieved by missions to date.
- Total ranges of up to 100 km or more can be justified easily for medium and large surface vehicles and for aerial vehicles.
- At the far extreme, range on the order of 1000 km could allow a vehicle to access two distinctly different geologic units in the same mission [Matthies 2022].
- Required mission duration for a mobility system often is derived from the desired mobility range and the expected rate of progress. The ability to survive and operate for at least one Mars year (687 Earth days) would provide operational flexibility and is often useful when mission science objectives include climate-related investigations
- Appendix A of [Culbert 2021] shows how vehicles in these size classes might relate to Mars science investigations defined in the 2020 revision of the MEPAG goals document.

Overview of Mars Environment Characteristics

Covering the following topics, with references to sources of more information:

- Temperature
- Solar illumination
- Dust accumulation
- Terrain conditions
- Atmospheric density
- Radiation environment

See PIP A2.3. Mars Environments Background for more details

Model Contract

Model Contract

Model Contract 80HQTR26C___

SECTION B – SUPPLIES OR SERVICES AND PRICES/COSTS

B.1 GSFC 52.211-90 SUPPLIES AND/OR SERVICES TO BE PROVIDED) (APR 2023)

The Contractor shall provide all resources (except as may be expressly stated in the contract as furnished by the Government) necessary to deliver and/or perform the items below in accordance with the Statement of Work (SOW), incorporated as Attachment A.

Item	Description	Reference	Schedule	Delivery Method/Addresses
1	Services and Deliverables in accordance with Attachment A, SOW	As Defined in Attachment A, SOW	As Defined in Attachment A, SOW	As Defined in Attachment A, SOW
2	Reports of Work	Section H NFS 1852.235-73	As Required in Clause NFS 1852.235-73	As specified in Clause
3	Reporting of Inventions	Section G NFS 1852.227-72 Section G NFS 1852.227-70 Section I FAR 52.227-11	Final Report 3 Months after Contract Completion	Electronic or Hard Copy Format/New Technology Representative or Patent Representative
4	Information System Security Plan	Section I NFS 1852.204-76 Deviation 21-01B, Attachment I	Submitted with proposal & Annual Updates As Required	Electronic Format/CO
5	Concept Study: Track A Interim Report	As Defined in Attachment A, SOW	45 Days After Contract Effective Date	Electronic Format/COR/ NASA POC as defined in Solicitation, Section 5
6	Concept Study: Track B Studies Final Report	As Defined in Attachment A, SOW	90 Days After Contract Effective Date	Electronic Format/COR/ NASA POC as defined in Solicitation, Section 5

NOTE: Unless otherwise specified, "day" means "calendar day".
*Contracting Officer's Representative (COR)
**Contracting Officer (CO)

(End of clause)

Contracting Officer:
Shana Faris

Email: shana.n.faris@nasa.gov

FAQs

Question:
Must proposers choose a track at submission?

Answer:
Yes. Proposers must explicitly select Track A or Track B in their proposal. NASA reserves the right to suggest an alternative track during evaluation based on technical content

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Question: For Track B final deliverables, is it acceptable to demonstrate only a subsystem, or must the demonstration include the full vehicle system?

Answer: Track B may include development of novel subsystems for use in a Mars environment but must culminate in demonstration with consideration of the full vehicle system - i.e., the final demonstration cannot be of only a subsystem or component but must show how the developed novel subsystem will work in a full vehicle system.

Question:
Are specific science instruments or missions required?

Answer:
No. STRIDE does not define specific science instruments or mission destinations. Instead, it defines representative ranges of payload mass, latitude, and elevation to allow proposers flexibility in designing broadly applicable mobility concepts.

Question:
What activities are explicitly out of scope?

Answer:
- Out-of-scope activities include:
  - Earth-to-Mars transportation
  - Orbiters
  - Science instrument development
  - Entry, Descent, and Landing (EDL)

Question:
Is there a limit on the number of proposals an organization may submit?

Answer:
There is no restriction on the number of proposals an organization may submit as either the lead organization or a subcontractor; however, each proposal must be a separate, stand-alone, complete document for evaluation purposes.

Question:
Why are NASA civil servants, Jet Propulsion Laboratory (JPL) employees, government laboratories, and Federally Funded Research and Development Centers (FFRDCs) not eligible to propose or team for STRIDE?

Answer:
The goal and motivation of STRIDE is to identify key capability gaps in commercial robotic mobility systems and to help advance the broader landscape of robotic exploration at Mars, while also seeding American industry to support future Mars exploration potential.

Question & Answer

NASA Science
MARS EXPLORATION

QUESTIONS?

Questions after today may be addressed to

hq-stride@mail.nasa.gov

STRIDE Points of Contant:

- Erica Montbach
- Lane Painter