

National Aeronautics and
Space Administration

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EXPLORING MARS TOGETHER

DRAFT Plan for a Sustainable Future for Science at Mars
2023 – 2043

Draft for Community Feedback

MEP Planning Team

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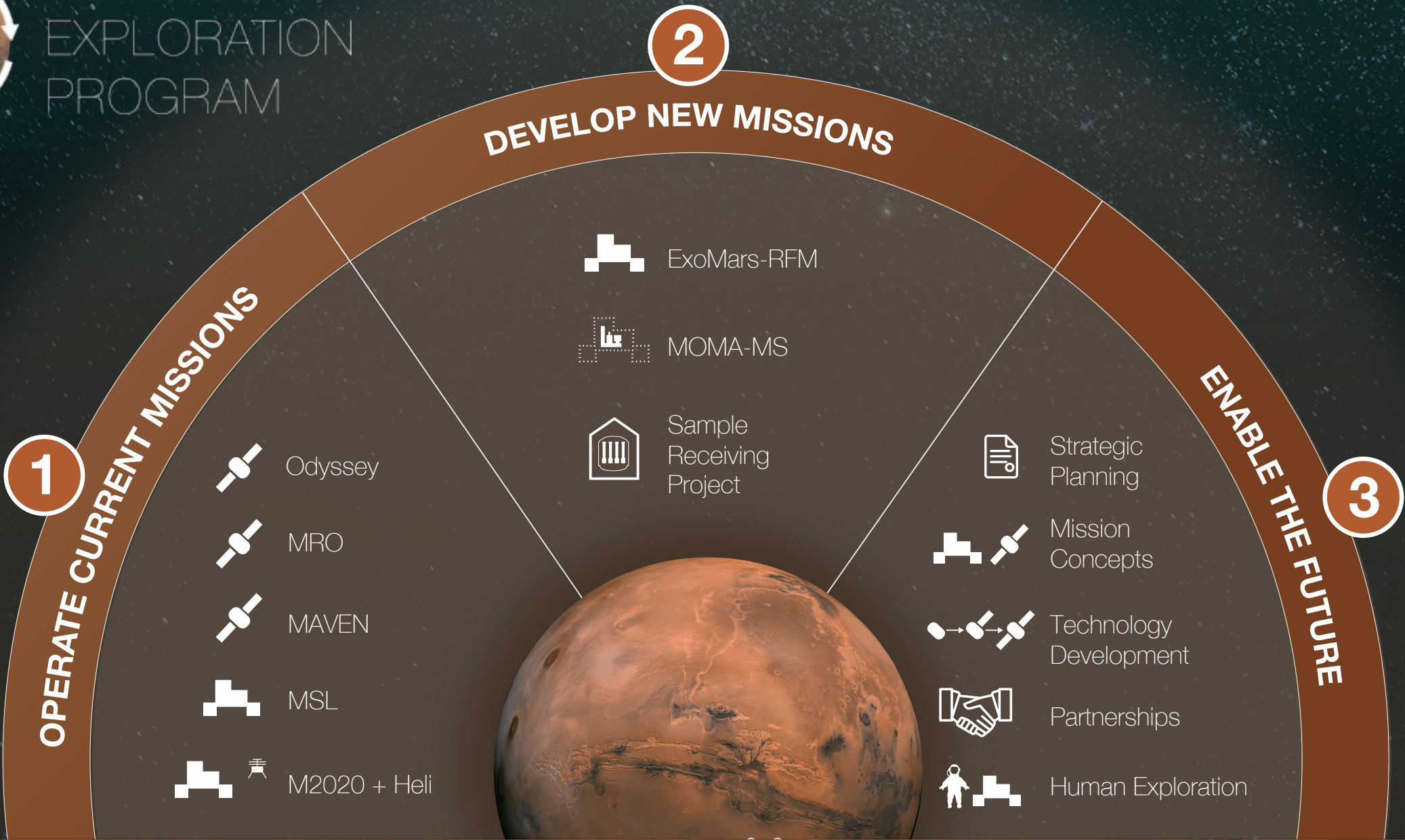
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MARS EXPLORATION PROGRAM



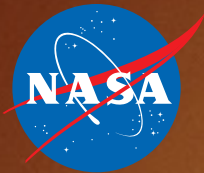
SCIENCE

ENGINEERING

MARS RELAY NETWORK

EDUCATION & PUBLIC OUTREACH

BUSINESS



PROGRAM CONTEXT

Over the past two decades NASA and the Mars Exploration Program (MEP) have been making progressive steps to better understand the planet and to search for past and present life at Mars through a series of orbiters, landers, and rovers

- Mars Pathfinder *
- Mars Odyssey
- Mars Spirit & Opportunity Rovers
- Mars Reconnaissance Orbiter
- Mars Phoenix
- Mars Science Laboratory (MSL) Curiosity Rover
- Mars Atmospheric and Volatile Evolution (MAVEN)
- InSight *
- Mars 2020 Perseverance Rover

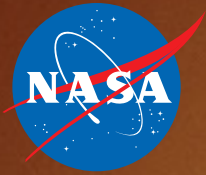
* Mars Missions managed under NASA's Discovery Program

This critical chapter in Mars exploration would culminate in the return of samples to Earth through the planned Mars Sample Return campaign

The Mars Exploration Program is now at an inflection point at which it must adapt to the changing space business environment (i.e., broadening international participation and expanding commercial interest/capability), address critical/aging infrastructure, and prepare for a human presence at Mars

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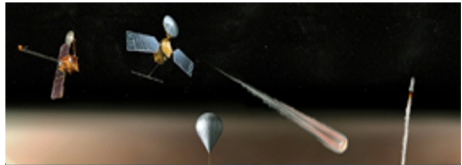


Program Initiatives for the Future of MEP



INITIATIVE 1

EXPAND OPPORTUNITIES TO EXPLORE MARS THROUGH COMPETED, LOWER-COST, MORE FREQUENT FLIGHT OPPORTUNITIES



INITIATIVE 2

STRENGTHEN AND BROADEN INFRASTRUCTURE AT MARS TO ENABLE A DIVERSE SET OF MISSIONS & NEW OPPORTUNITIES FOR PARTNERSHIPS



INITIATIVE 3

INVEST IN KEY TECHNOLOGIES TO ENABLE EXPANDED ACCESS TO, AND SCIENTIFIC UNDERSTANDING OF, MARS



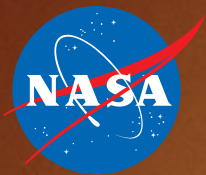
INITIATIVE 4

ENABLE PARTICIPATION IN MARS EXPLORATION FOR ALL COMMUNITIES

SECTION 3
INITIATIVES
FOR THE
NEXT TWO
DECADES

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Expand Opportunities to Explore Mars through Competed, Lower Cost, and More Frequent Flight Opportunities

Establish a regular cadence of science-driven, lower-cost mission opportunities as a new element of the MEP portfolio to provide rapid and flexible response to discoveries, to address the breadth of outstanding Mars questions, and to enable increased participation by the diverse Mars science community.

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LOW-COST MISSIONS

Targeted or
Discovery-Responsive Science

- Competed small missions at the \$100M, \$200M, or \$300M levels
- Intent: select missions for every Mars launch opportunity
- Considering one-step or two-step processes
- May select multiple smaller missions per launch opportunity
- Draws on experience from Commercial Orbital Transportation Services (COTS)/ and Commercial Lunar Payload Services (CLPS) programs

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MEDIUM-CLASS MISSIONS

Broad Science

- Strategic Decadal-class science
- More complex instrument suites
- New technologies in sample acquisition, mobility, autonomy
- Considering competing either at the mission or instrument level
- Scalable to significant discoveries

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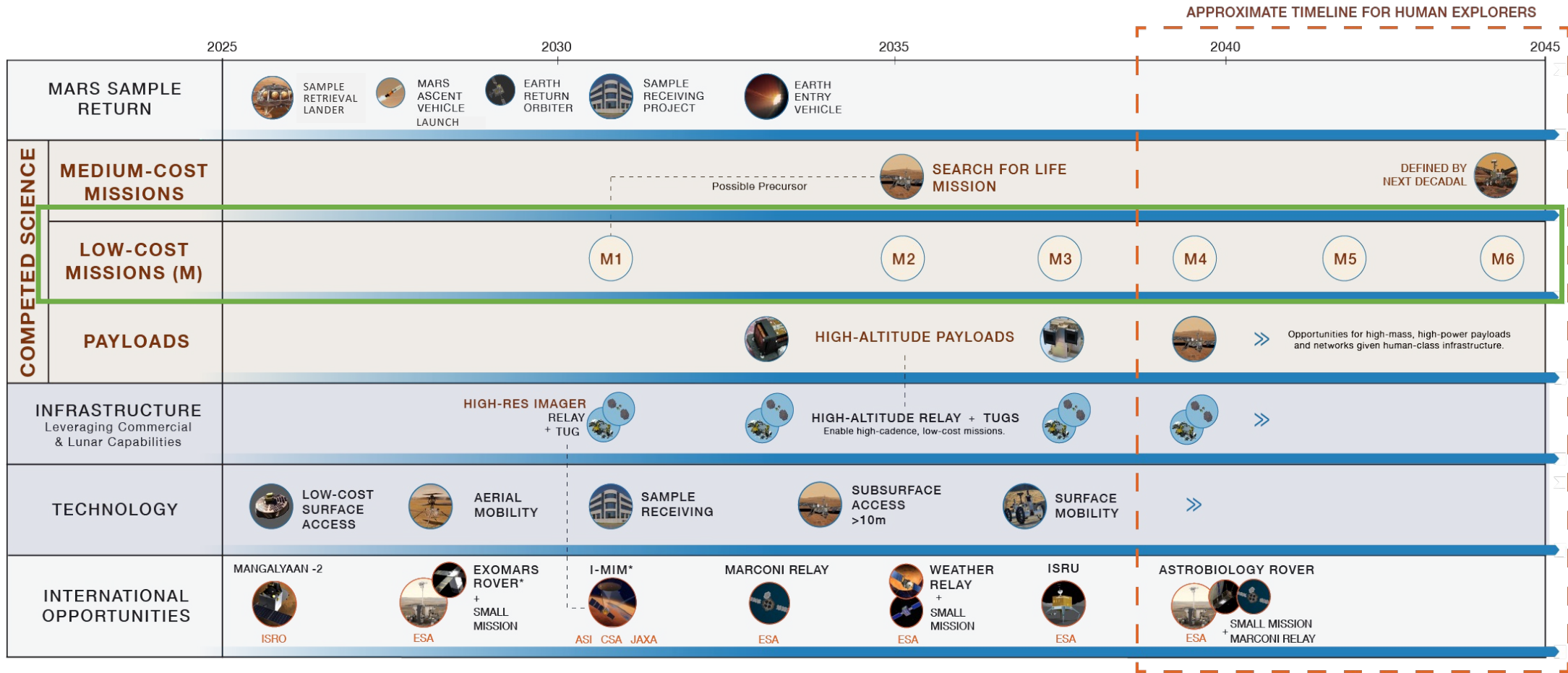
COMPETED PAYLOADS

Leveraging Commercial &
International Opportunities

- Missions of Opportunity
- Potentially competed or directed
- Could be science or infra-structure focused
- Flown on international or commercial missions



Aspirational MEP Timeline



* Launch Dates Fixed

This timeline should be considered hypothetical.

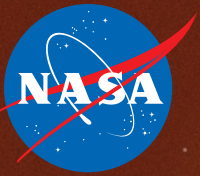
There is flexibility to adjust the phasing of activities if and when funding becomes available to begin implementation and to respond to discovery.

Draft for Community Feedback

SECTION 4
Aspirational
Program
Timeline

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We welcome your feedback!

Send comments/questions to:
HQ-MEP@mail.nasa.gov

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**The full slide package will be presented on
Wednesday 9 August 3:30-4:30pm in LSB 133**

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