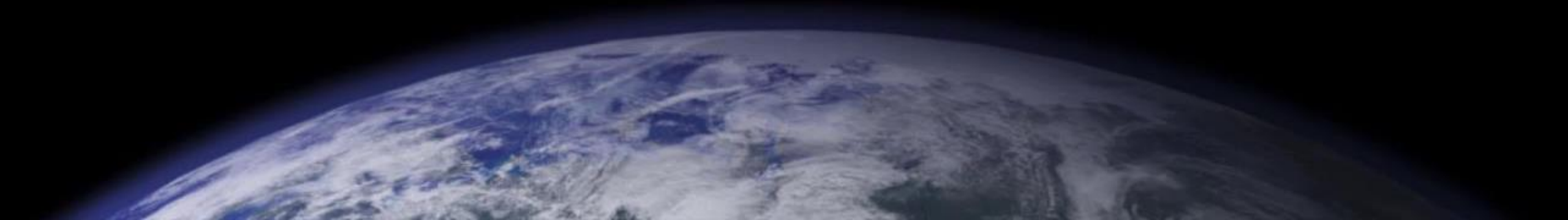




مركز محمد بن راشد  
للفضاء

MOHAMMED BIN RASHID SPACE CENTRE



A composite image of Earth, the Moon, and Mars in space. The Earth is the central focus, showing the Middle East and surrounding regions. The Moon is visible in the upper left, and Mars is in the upper right. The text 'The Arab world's first mission to explore Mars' is overlaid on the right side of the image.

The Arab world's  
first mission to  
explore Mars

# Program Objectives

- Program goals announced by UAE's Government on 16 July 2014:
  - Complete Mars orbiter insertion by the UAE's 50th anniversary in 2021
  - Contribute to the development of the Science and Technology Sector in the UAE
  - Develop UAE Scientific Capabilities
  - Increase UAE's Contribution to the Scientific Community
- Program Requirements
  - The mission should be unique, and should aim for significant discoveries.
  - The mission should have impactful contributions to the ongoing work of the global space science community, and should be of a great value to humanity.
  - The mission should help build a sustainable outer space exploration program in UAE.
  - The mission should include valuable contribution from UAE engineers and scientists.



Measure the weather on Mars



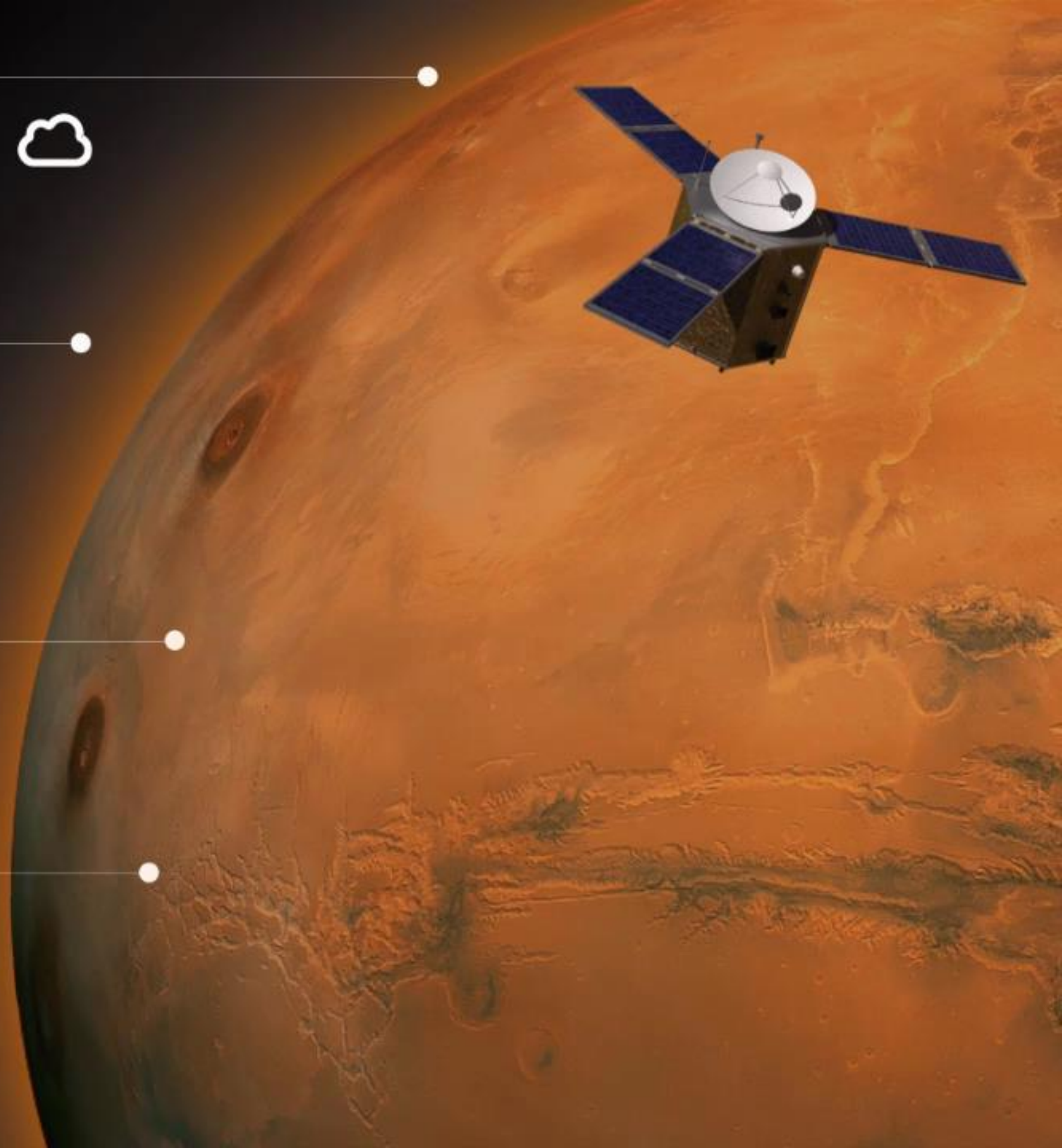
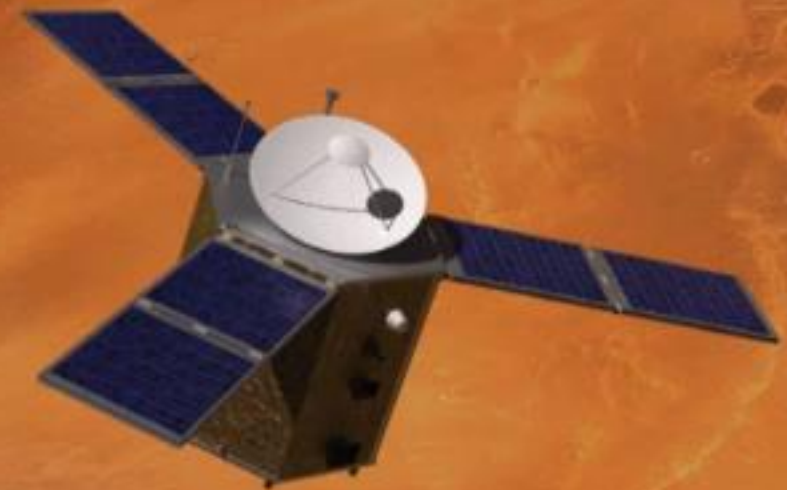
Study impact of changes in the lower atmosphere on the upper atmosphere



Study the erosion of the Martian atmosphere



Study seasonal climate cycles





We will study the Martian atmosphere  
24 hours a day  
Through all seasons

A dark, semi-transparent image of four men in suits standing in a meeting room. They are positioned in front of a whiteboard that has a large circular diagram on it. The diagram appears to be a network or flow chart. The men are looking towards the camera. The overall tone is professional and collaborative.

Academic Partners

# Partnerships to share knowledge

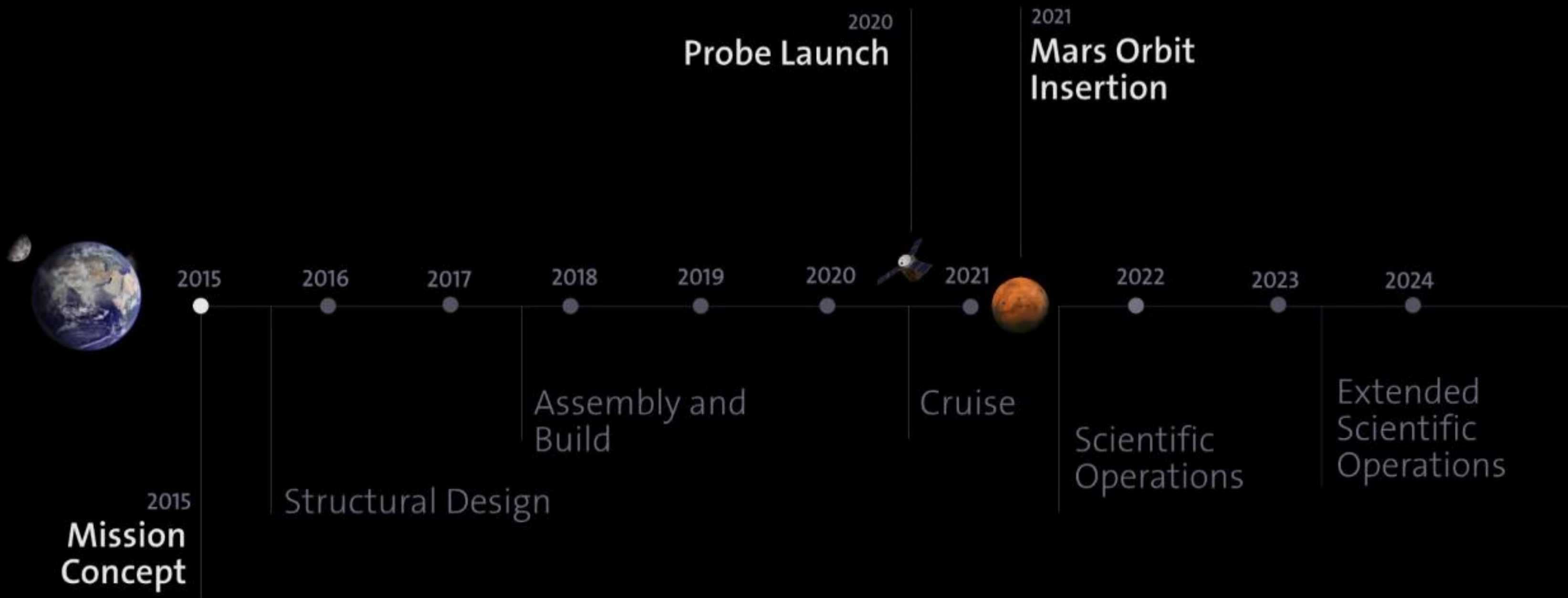
A composite image showing Mars on the left with a satellite, and Earth on the right with a large satellite dish antenna on the ground.

1000 GB of new  
data about Mars

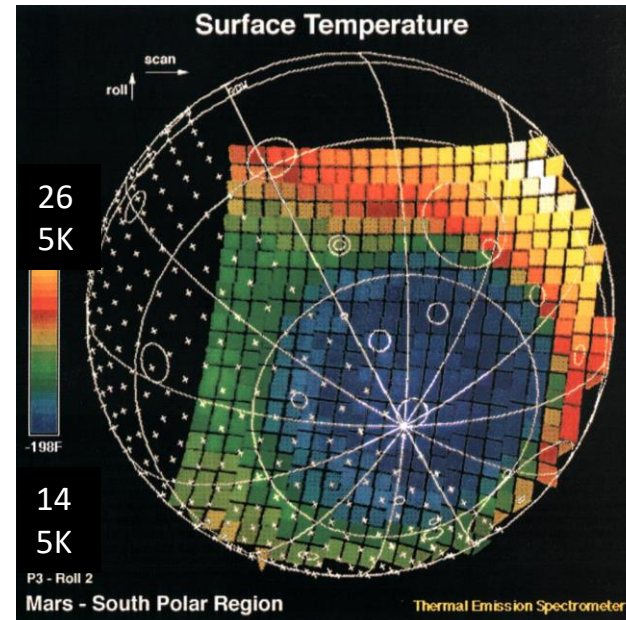


Scientific contribution to the  
development of knowledge  
about the *Martian* atmosphere



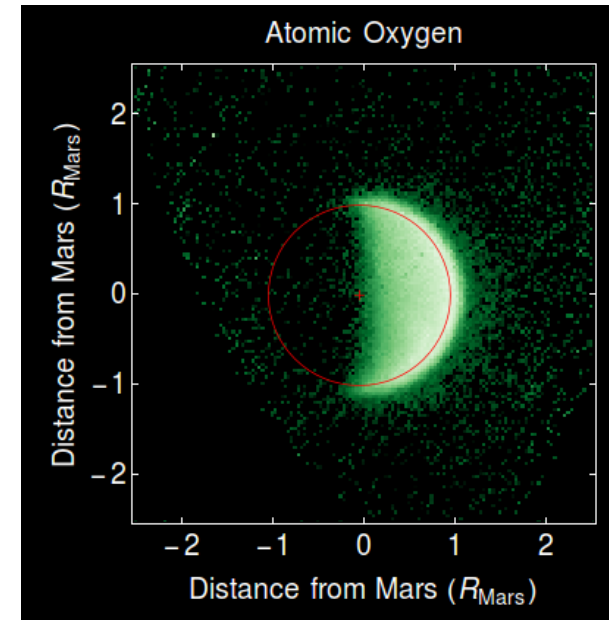


# EMM Instruments



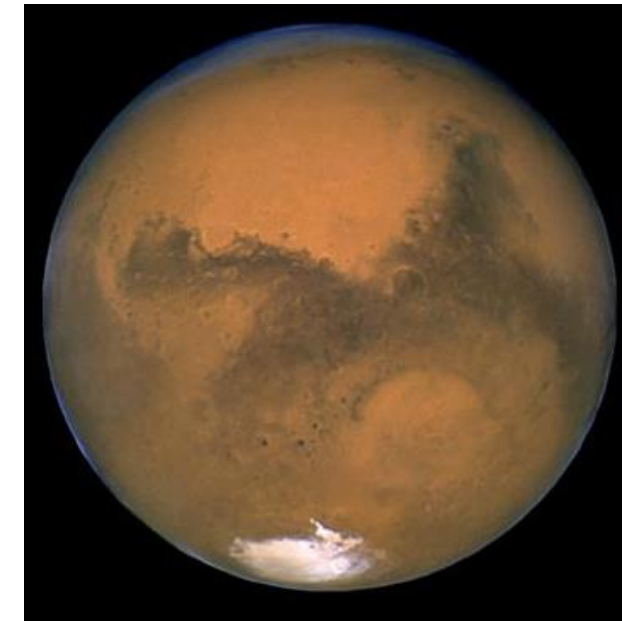
## EMIRS (ASU/MBRSC)

Fourier Transform IR  
Spectrometer



## EMUS (LASP/MBRSC)

Ultra Violet Imaging  
Spectrometer



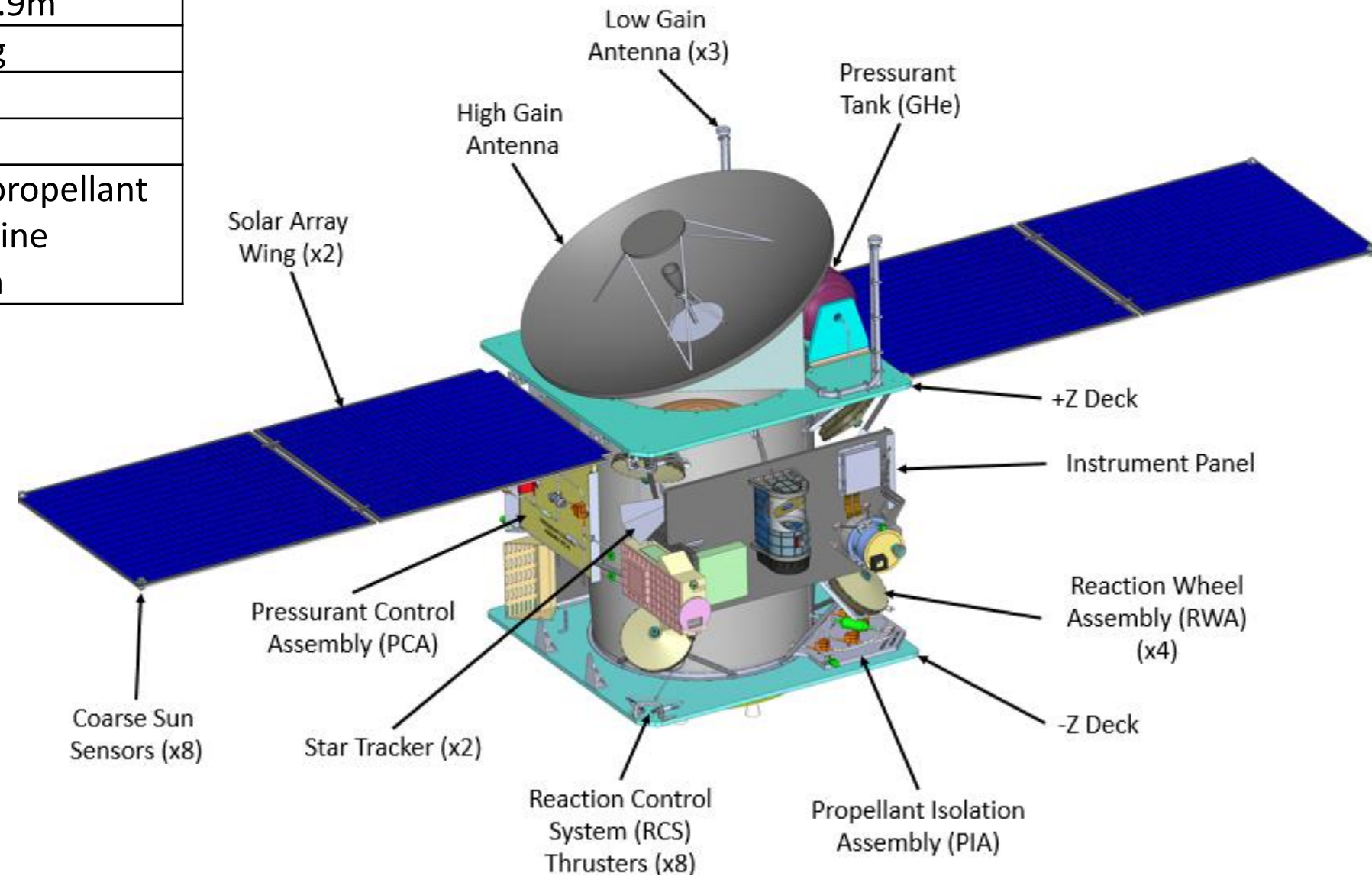
## EXI (LASP/MBRSC)

Imager with 12 MP  
camera with 6 bandpass  
filters (VIS/UV)

# Spacecraft – Hope Probe

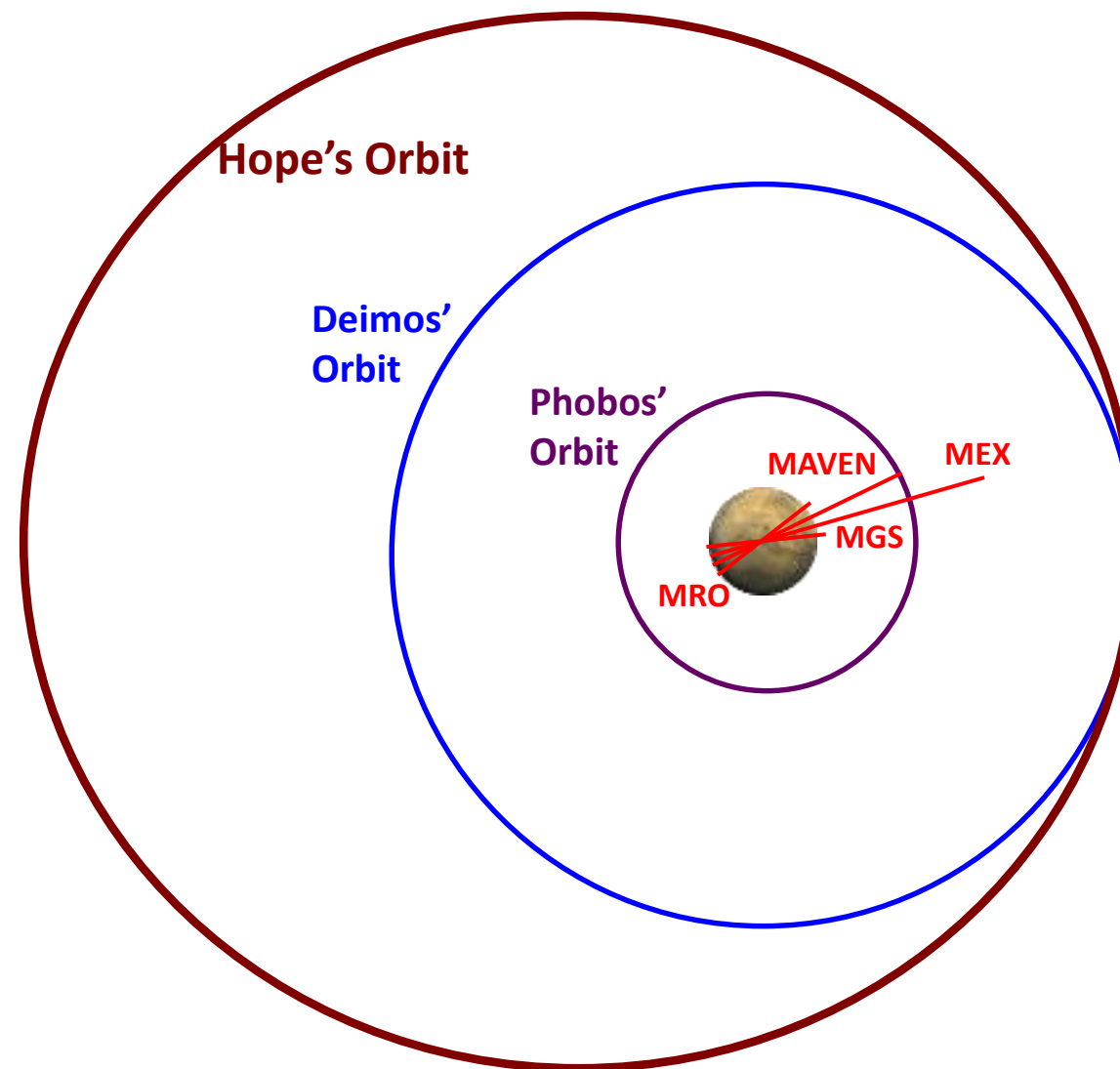
- Spacecraft Design is Low Mass and High Heritage

Technical Specifications	
S/C Dimension	3m x 7.9m
Wet Mass	1500kg
RF Band	X Band
Power Requirement	477 W
Propulsion Type	Monopropellant Hydrazine System



# Science Orbit

- EMM's target orbit is exciting! No spacecraft has flown an orbit like it. Further, it is low-risk, simple to fly, and produces excellent opportunities to collect EMM's science.



## Key Features:

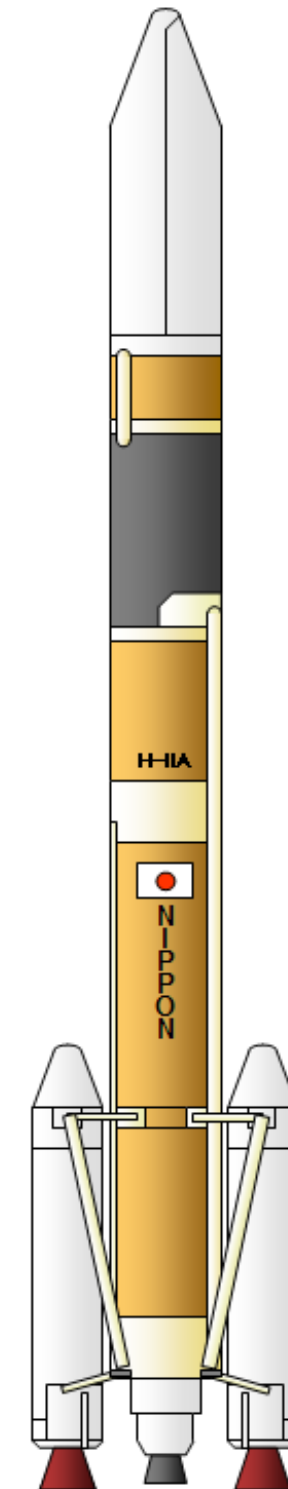
- Periapse altitude: 20,000 km
- Apoapse altitude: 43,000 km
- Orbital period: 55 hours  
3 orbits per week  
~2.24 sols
- Inclination: 25 deg
- Periapse placed near equator:  
AOP: 177 deg
- Primary science collection  
starts ~May 2021

# EMM Launch Segment

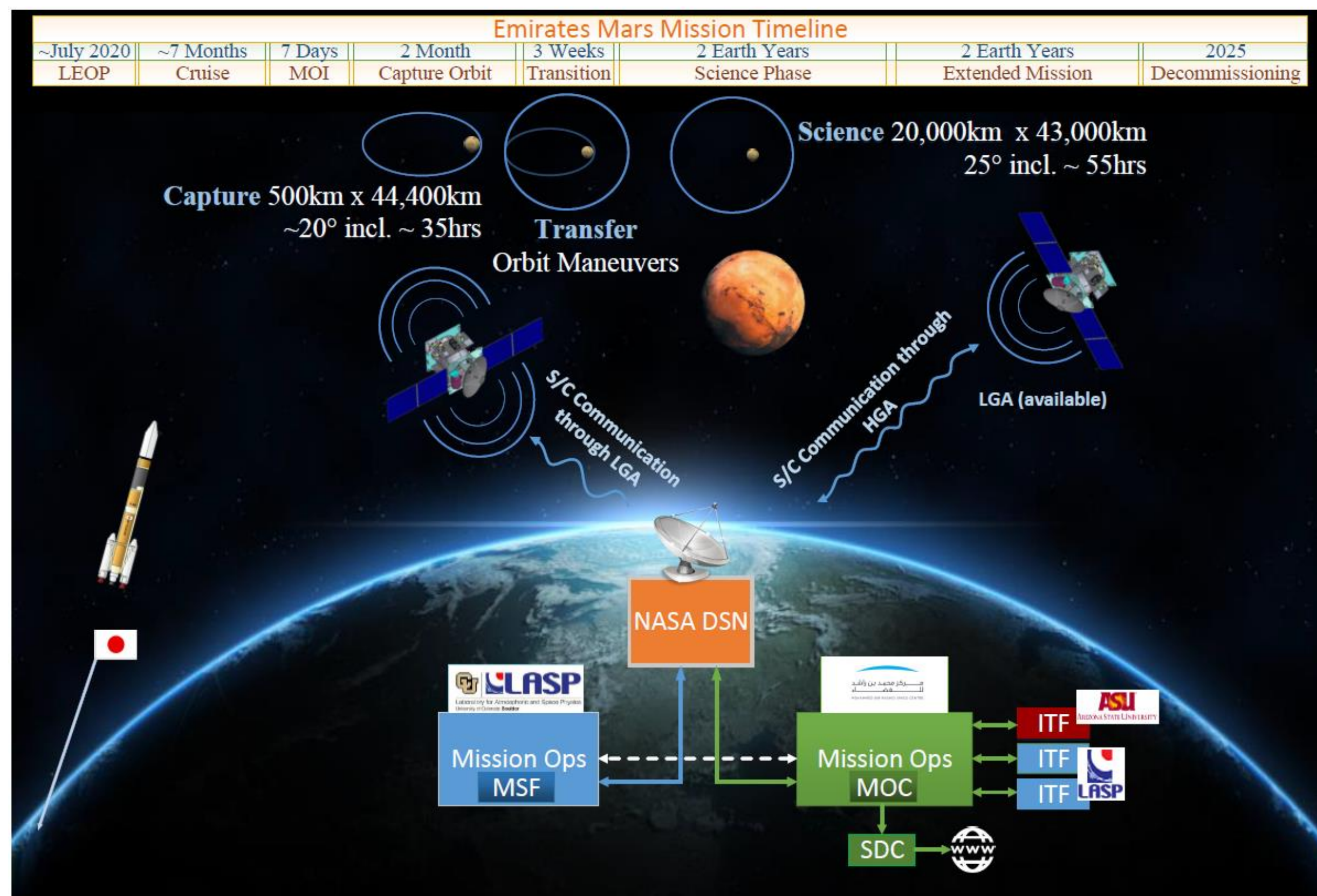


- Mitsubishi Heavy Industries, LTD (MHI) H-IIA launch vehicle
- Tanegashima Space Center, Yoshinobu Launch Complex

Launch scheduled for summer 2020



# Mission Architecture Diagram



# Emirates Mars Mission [Hope Probe]

