

# NISE Net Online Workshop

Preparing for NASA Perseverance's landing on Mars

January 26, 2021



## Today's presenters:

Jim Bell, Arizona State University

Jeannie Colton, Arizona State University



## Welcome!

As we wait to get started with today's discussion, please:

**Introduce yourself!** Type your name, institution, and location into the Chat Box

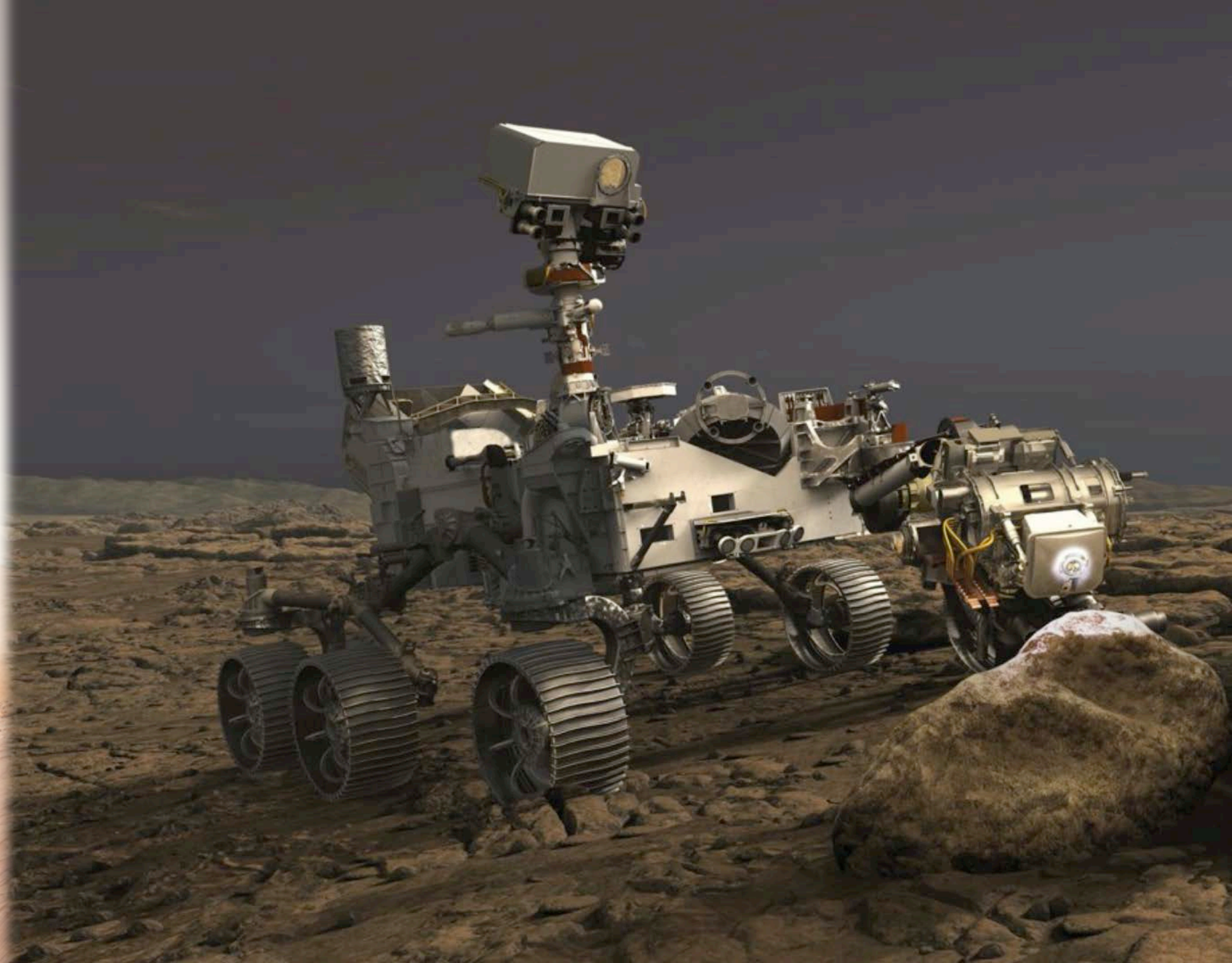
**Questions?** Feel free to type your questions into the Chat Box at any time throughout the webinar or use the raise your hand function in the participants list and we'll unmute your microphone.

**Today's discussion will be recorded and shared on nisenet.org at: [nisenet.org/events/online-workshop](https://nisenet.org/events/online-workshop)**



The NASA  
*Perseverance*  
Rover and the  
Mars 2020  
Mission to Mars

Jim Bell (ASU)  
Principal Investigator,  
Mastcam-Z camera  
investigation



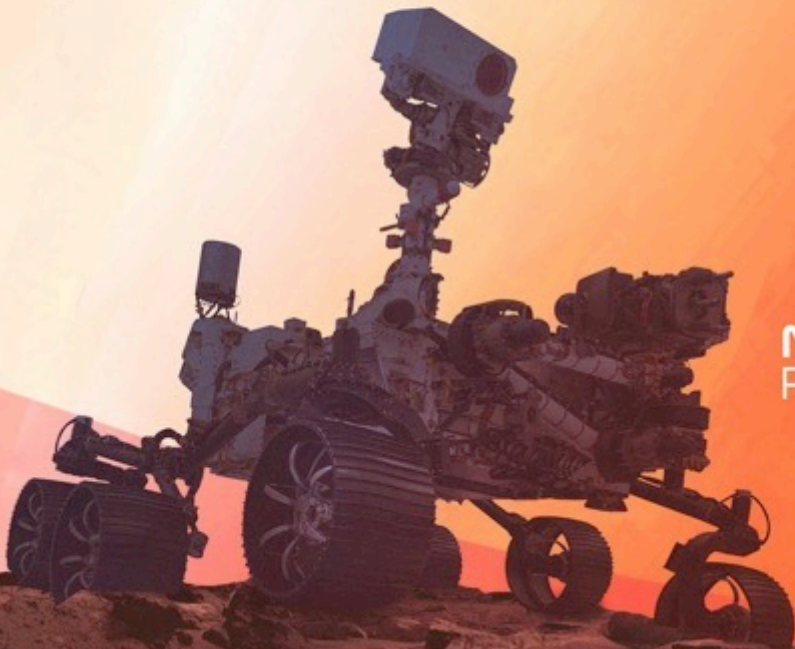


COUNTDOWN TO  
**MARS**

# The Mission

- **Mission Duration: At least one Mars year (about 687 Earth days)**
- **Robotic exploration to search for signs of ancient microbial life**
- **Characterize the geology and climate of Mars**
- **Help pave the way for human exploration**
- **First leg of a round trip to Mars!**

**MARS 2020**  
PERSEVERANCE



COUNTDOWN TO  
**MARS**

# The Launch

July 30, 2020

Cape Canaveral

Atlas V 541

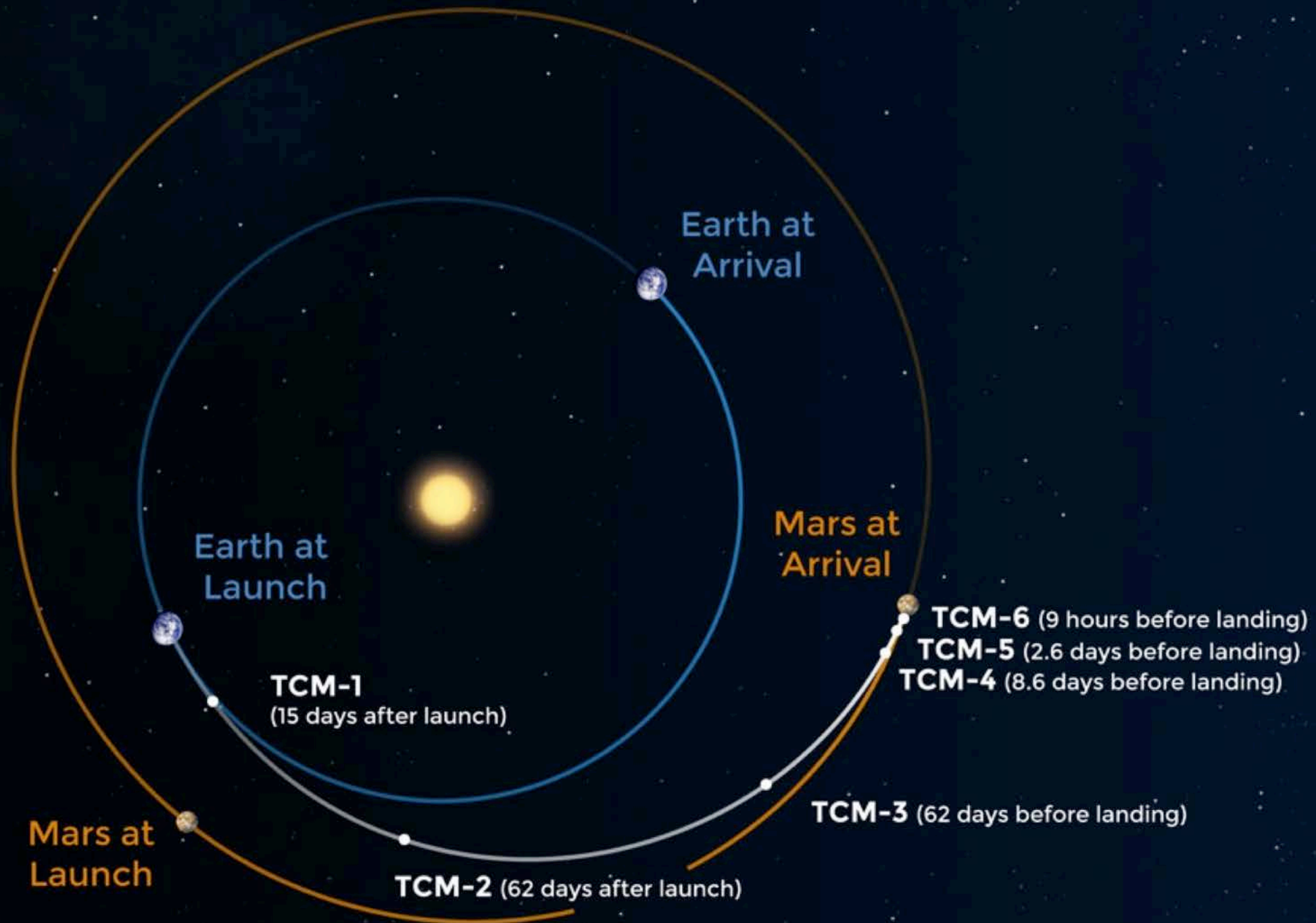




COUNTDOWN TO  
**MARS**

# Travel to Mars

290 million  
miles



COUNTDOWN TO  
**MARS**

# Landing Technique



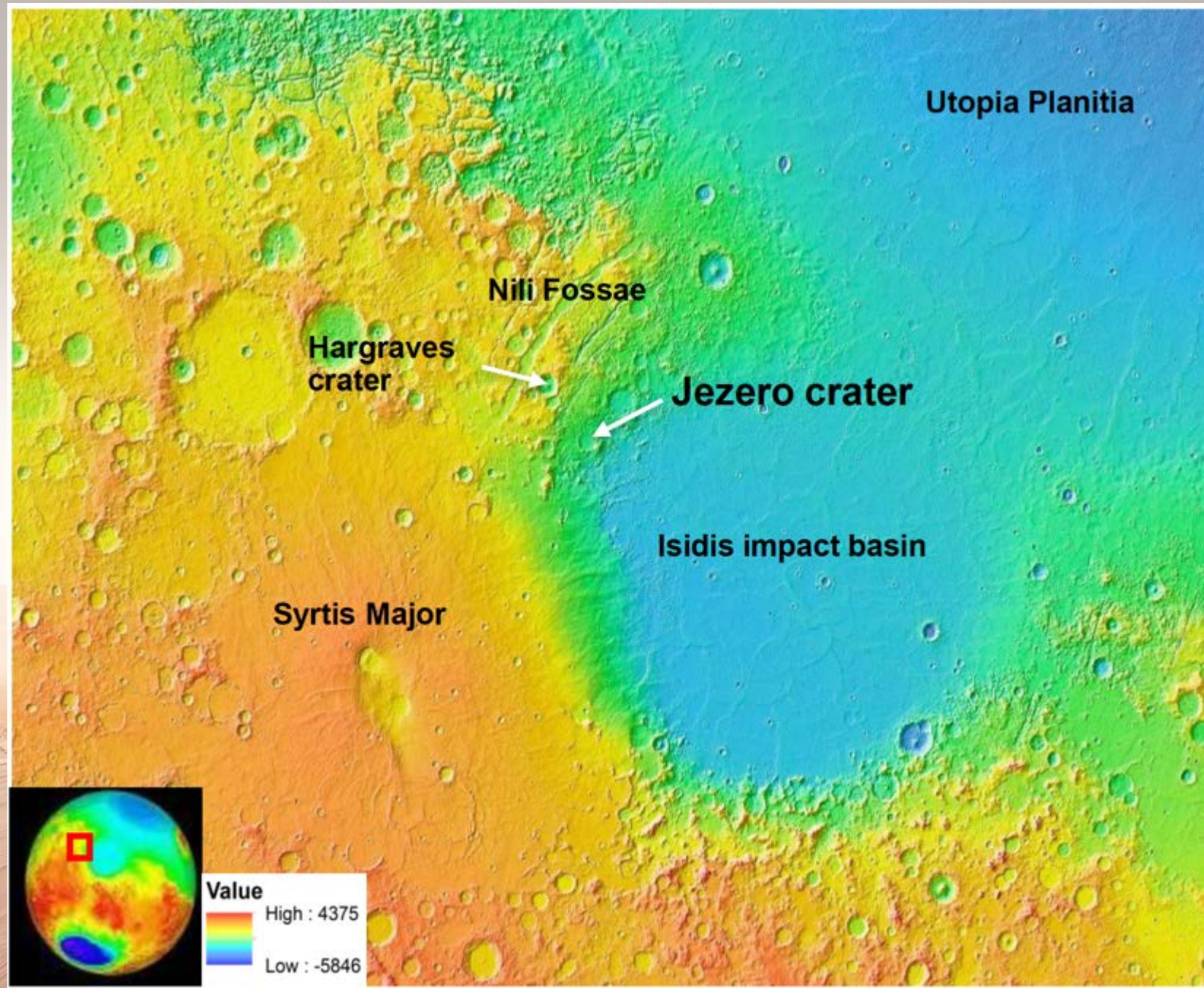


COUNTDOWN TO  
**MARS**

Landing Zone

Feb. 18, 2021

Jezero Crater,  
Mars



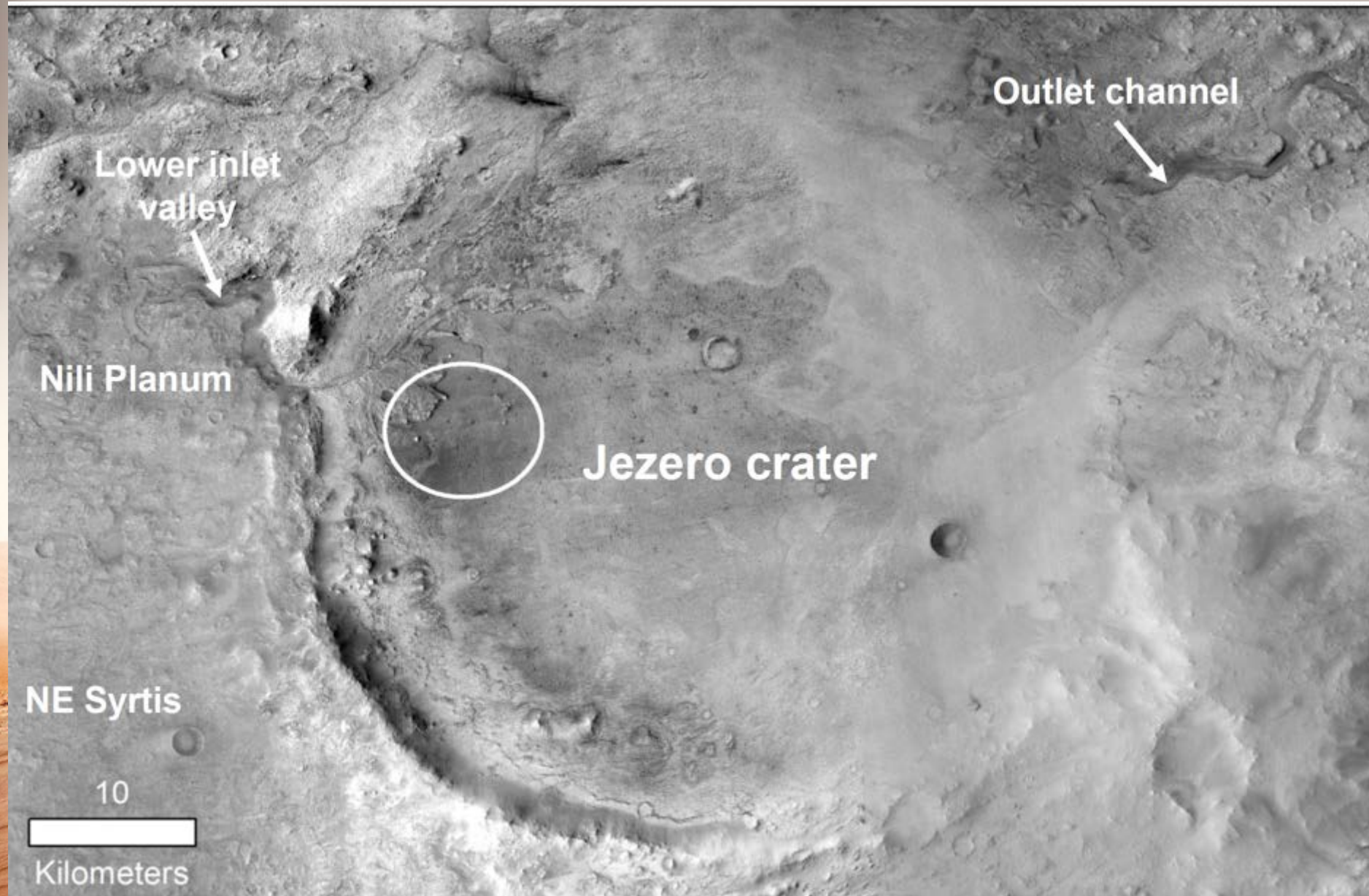


COUNTDOWN TO  
**MARS**

Landing Zone

Feb. 18, 2021

Jezero Crater,  
Mars





COUNTDOWN TO

**MARS**

Landing Zone

Feb. 18, 2021

Jezero Crater,  
Mars







# Perseverance Overview Video

[https://mars.nasa.gov/resources/25147/  
mission-overview-nasas-perseverance-mars-  
rover/?site=msl](https://mars.nasa.gov/resources/25147/mission-overview-nasas-perseverance-mars-rover/?site=msl)

MARS 2020  
PERSEVERANCE

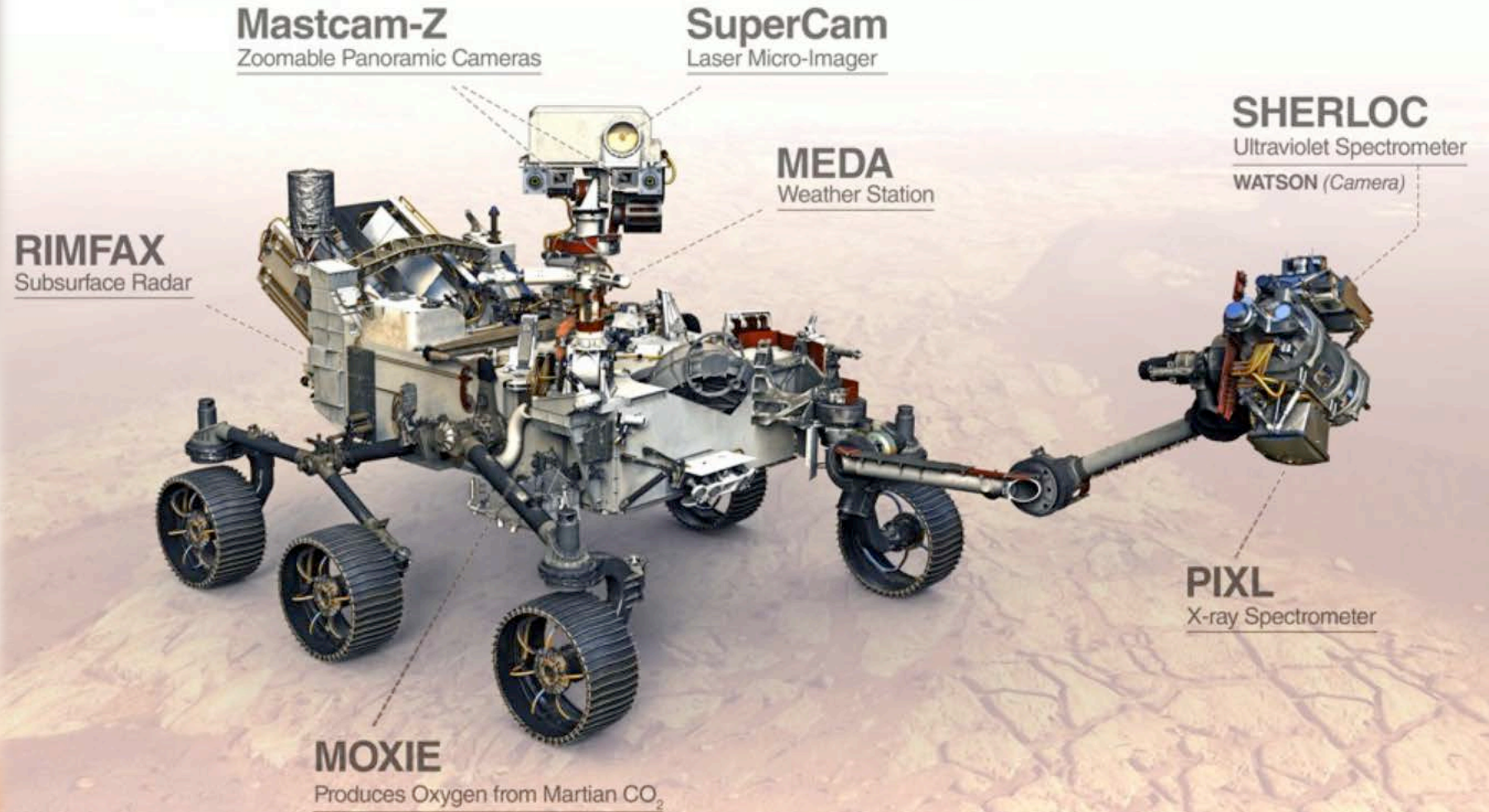




COUNTDOWN TO  
**MARS**

# The Perseverance Rover

The most sophisticated suite of instruments ever sent to Mars.



## Specifications

Car-sized: 10 ft long (not including arm), 9 feet wide and 7 feet tall  
2260 lbs (on Earth)



A detailed image of a Mars rover, likely a Curiosity rover, positioned in a vast, arid, reddish-brown landscape. The rover is a complex machine with six large, treaded wheels and a central body covered in various scientific instruments. On the front deck of the rover, a small, three-legged helicopter, the Ingenuity Helicopter, is standing upright. The background shows a flat, open plain under a hazy, orange-tinted sky, with distant, low mountains visible on the horizon. The overall scene conveys the isolation and harsh environment of Mars.

INGENUITY HELICOPTER





## Goals

**The Search for  
Signs of Ancient  
Microbial Life on  
Mars:**

**Sample Collection**





# Mars Sample Caching Video

<https://mars.nasa.gov/resources/25005/mars-2020-perseverance-rover-sample-caching-system/>







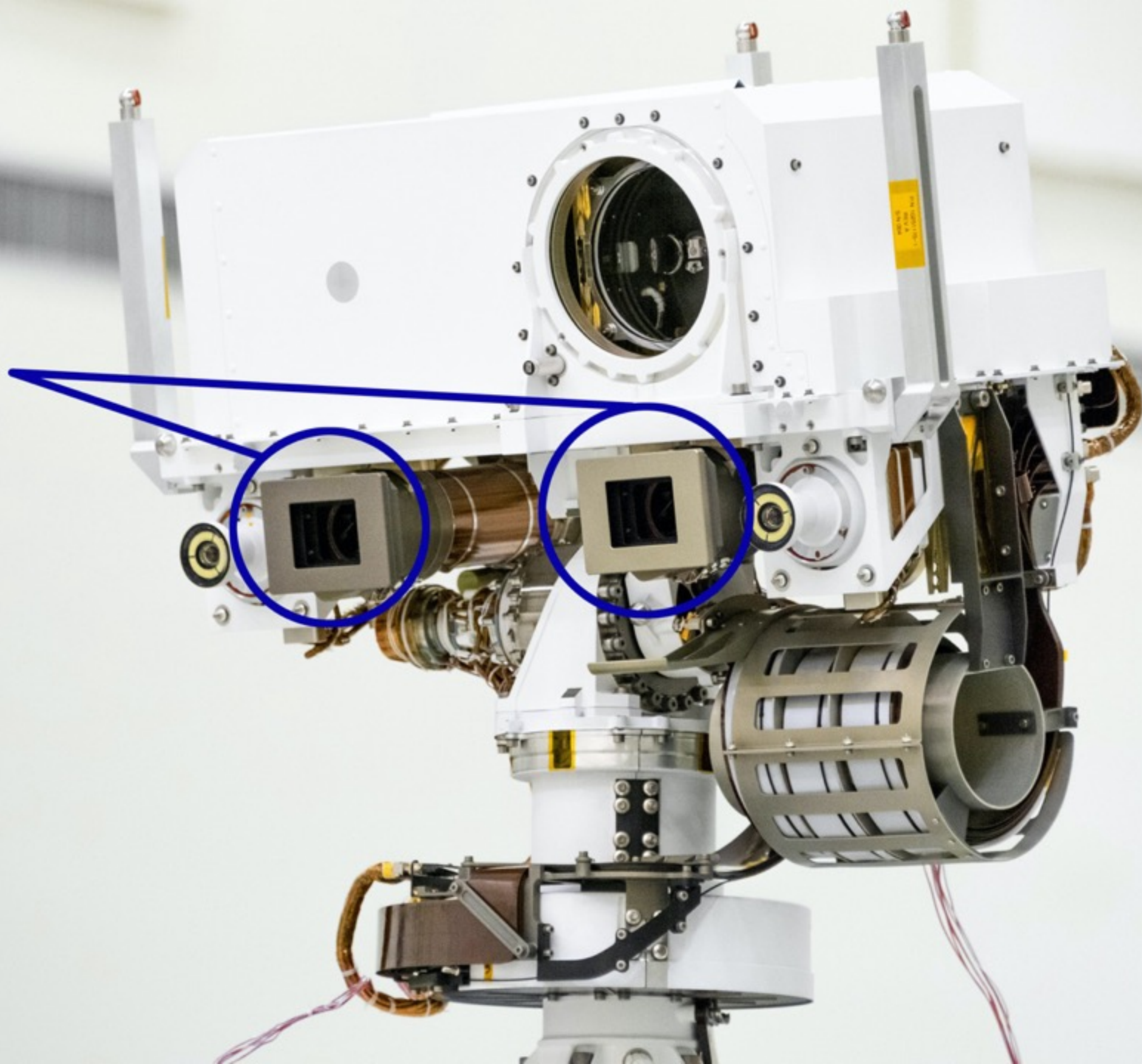
# The Perseverance Rover

**The most  
sophisticated  
suite of  
instruments ever  
sent to Mars.**

## **Mastcam-Z (ASU led!)**

An advanced camera system with panoramic and stereoscopic imaging capability with the ability to zoom. Mastcam-Z has cameras that can zoom in, focus, and take 3D pictures and video at high speed to allow detailed examination of distant objects. The instrument also will help to determine mineralogy of the Martian surface and assist with rover operations.

**Mastcam-Z**





COUNTDOWN TO  
**MARS**

Mastcam-Z





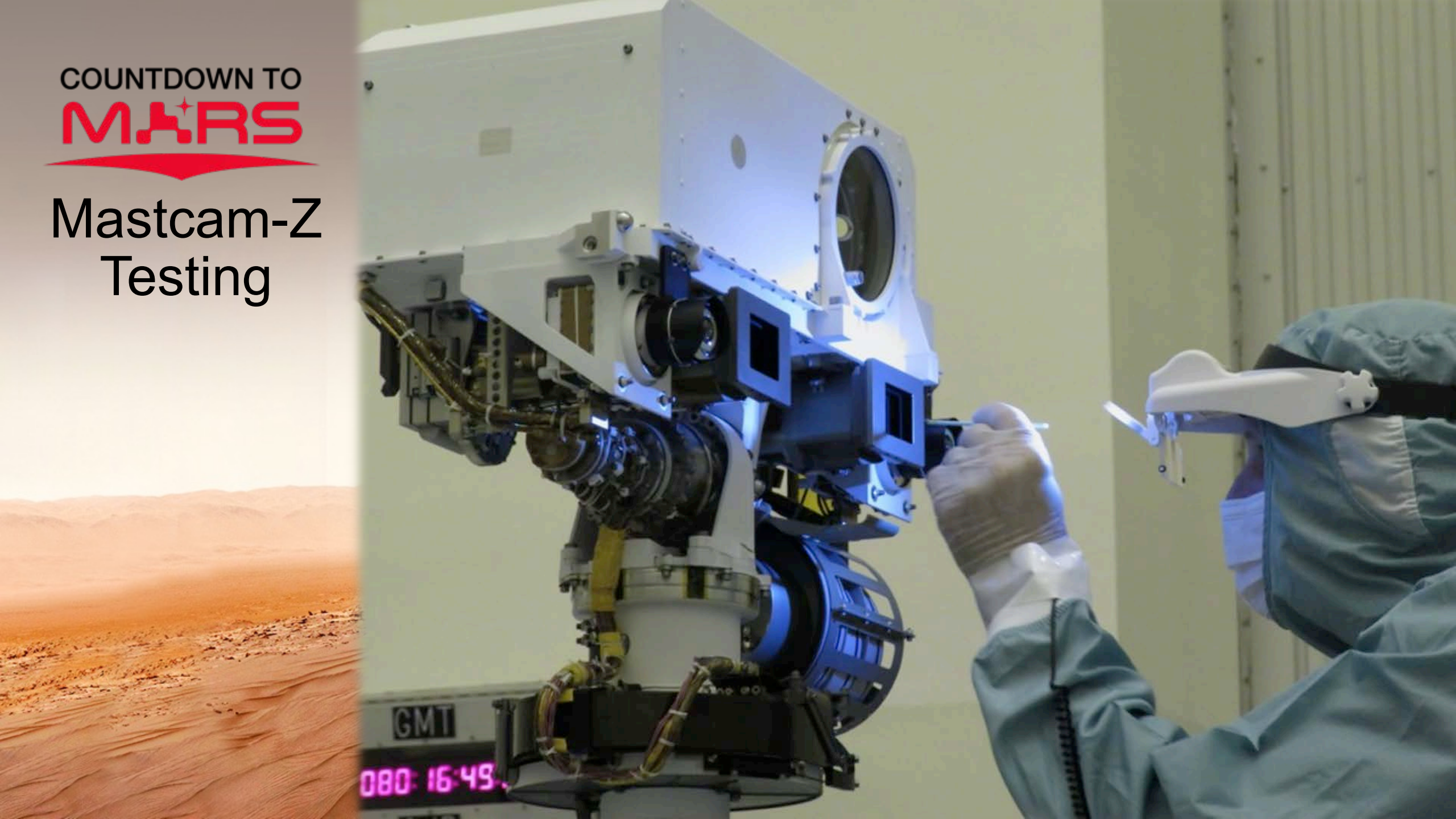
## Zoom Animation: Mastcam-Z





COUNTDOWN TO  
**MARS**

# Mastcam-Z Testing





COUNTDOWN TO  
**MARS**

# Camera Testing





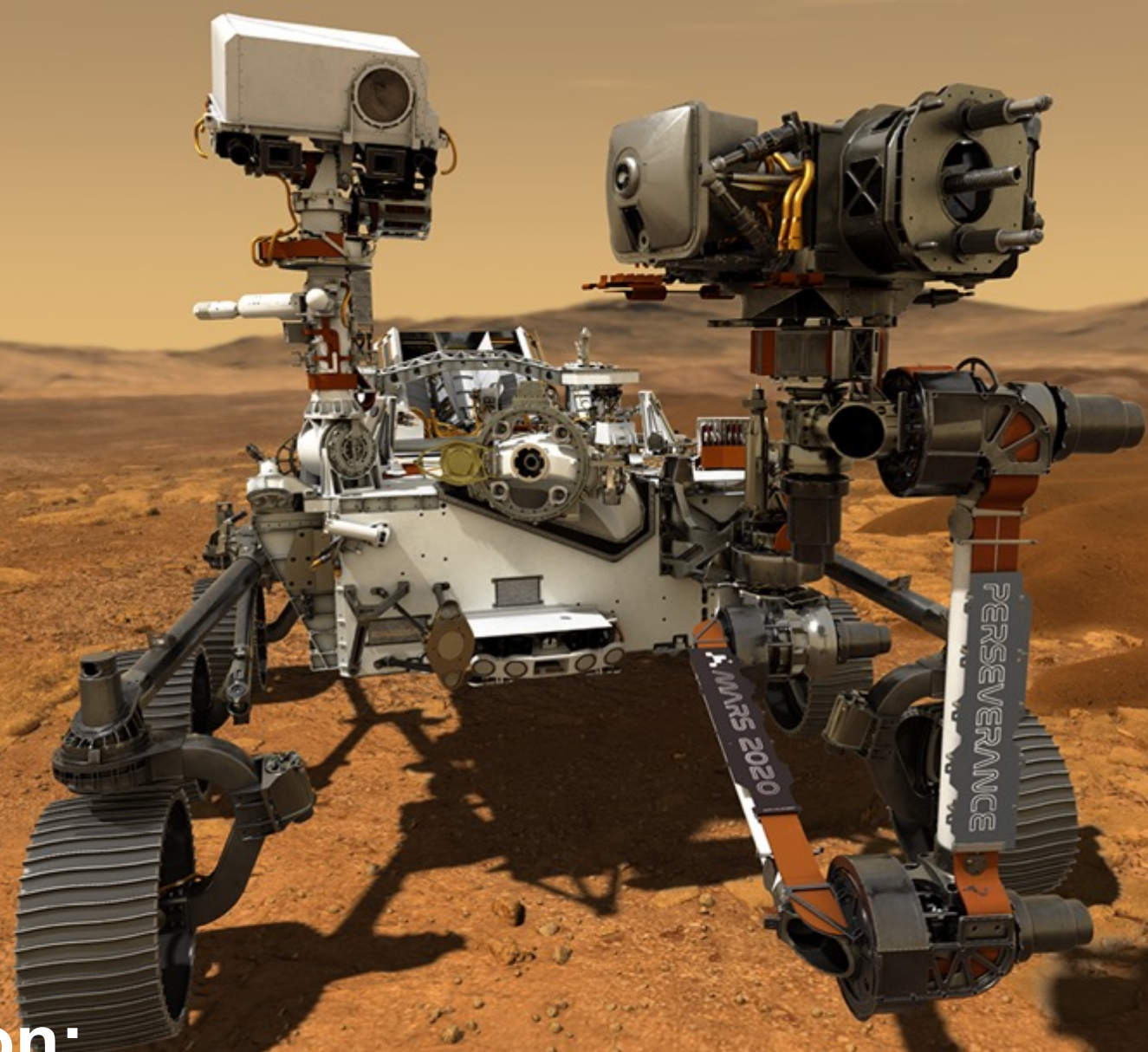
<https://mars.nasa.gov/resources/25134/getting-perseverance-to-the-launch-pad/>

# Preparing Perseverance for Launch Video





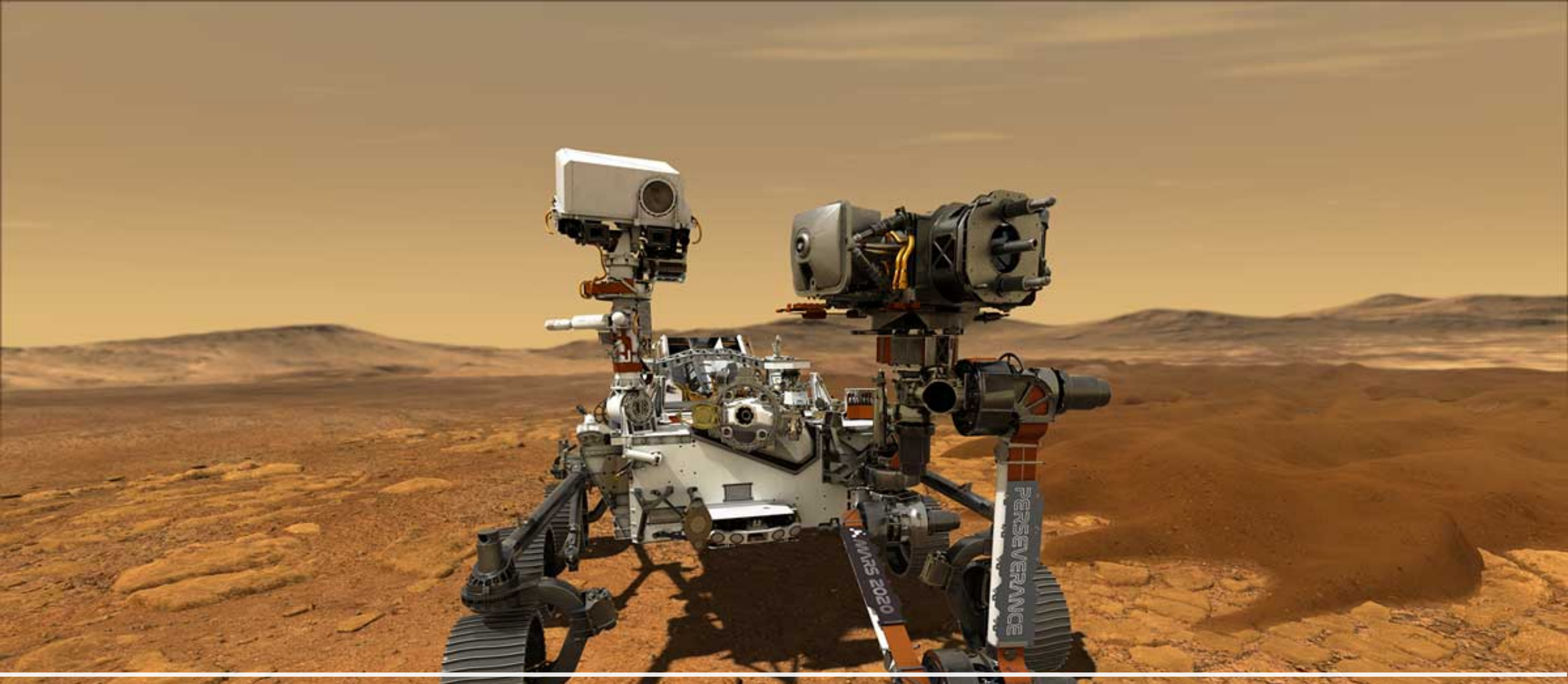
COUNTDOWN TO  
**MARS**



For more information:

<https://mars.nasa.gov/mars2020/>





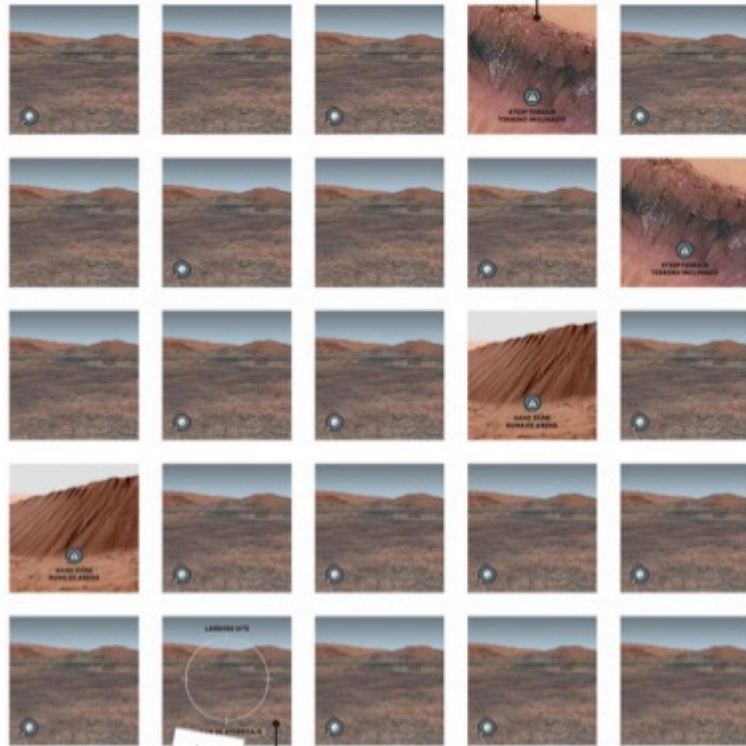
Explore Mars! A Rover Game



# Game Setup

## GAME TILES

5x5 grid



**ROVER PAWN**  
Place on Landing Site tile

Use 0-4 to adjust difficulty

## EVENT CARD DECK

Place face down



## DATA SAMPLE TOKENS

Place near Programming Console



## COLLABORATOR CARDS

Deal one card to each player

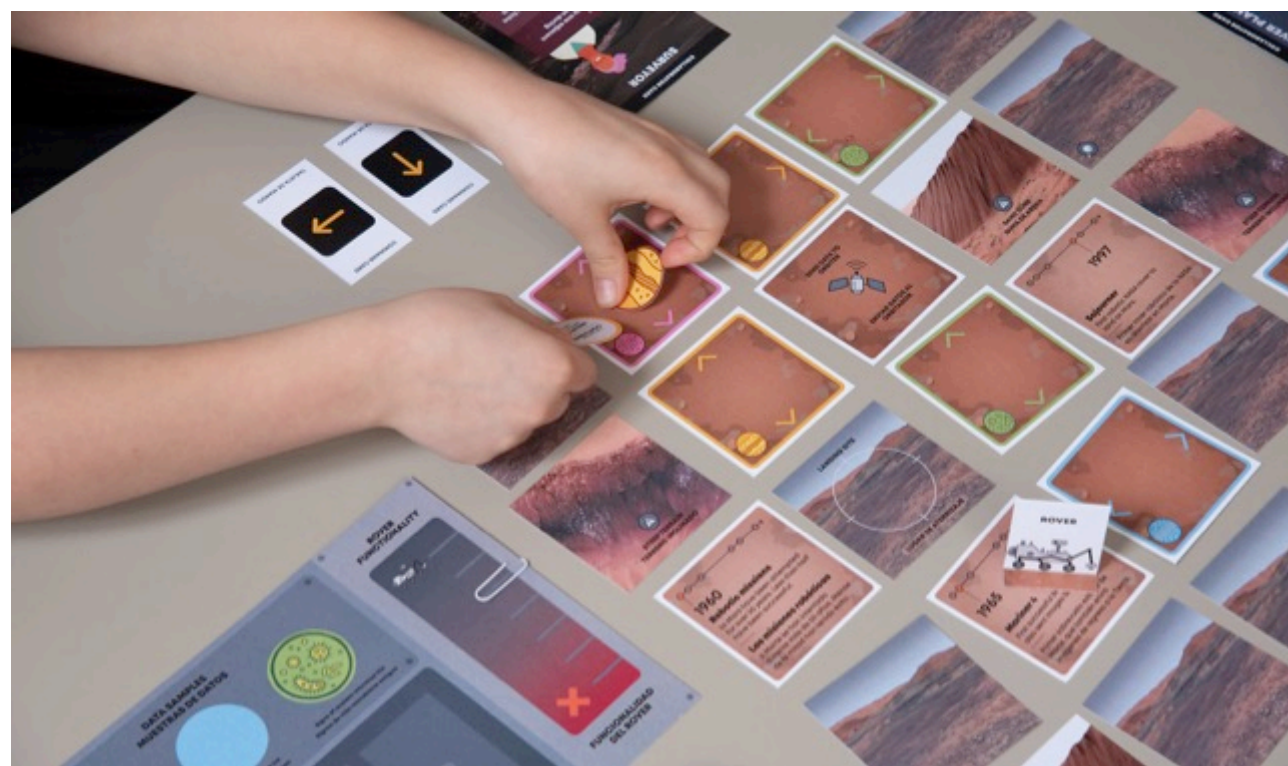
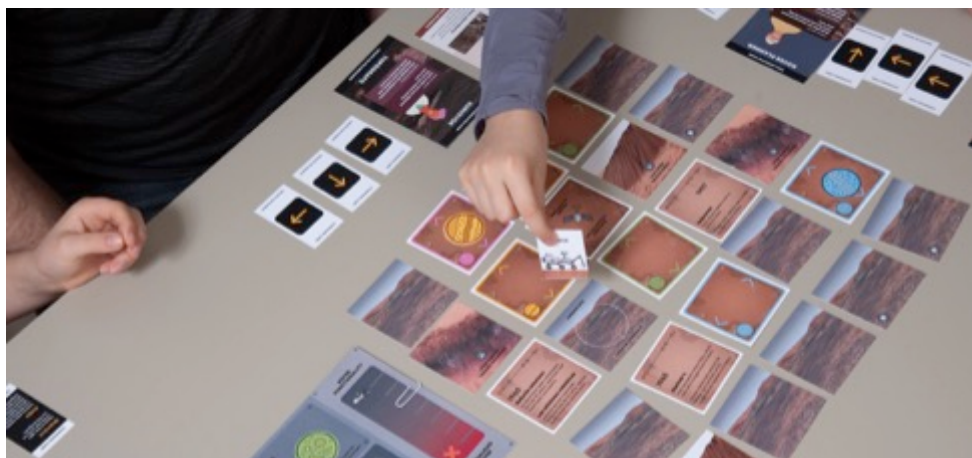


**COMMAND CARDS**  
Deal three to each player  
and place remainder  
here face down

**</run> COMMAND CARD**  
Place here to start

**PAPERCLIP**  
Place here to start







# Resources

- Mars resources
  - <https://www.nisenet.org/mars>
    - Links to print your own game
    - How to watch NASA TV broadcast live on Landing Day: Feb. 18, 2021
    - Where is the rover spacecraft now?
    - Perseverance mission page for the latest news and images
    - Related NISE Network Activities
    - Multimedia and Interactive Resources



# Future Online Workshops

**The COVID-19 Vaccine: What role can museums play in the rollout of the new vaccine?**

Tuesday, February 2, 2021

2pm-3pm Eastern / 11am-12pm Pacific

**Sustainability in Science and Technology Museums – Part 2**

Tuesday, February 9, 2021

2pm-3pm Eastern / 11am-12pm Pacific

**Learn more at [nisenet.org/events](https://nisenet.org/events)**





# Get Involved

Learn more and access the  
NISE Network's online digital resources  
[nisenet.org](https://nisenet.org)



**Subscribe to the  
monthly newsletter**  
[nisenet.org/newsletter](https://nisenet.org/newsletter)



**Continue the online  
conversation**  
[bit.ly/nisenetryver](https://bit.ly/nisenetryver)



**Follow NISE Net on social networking**  
[nisenet.org/social](https://nisenet.org/social)



# Thank You

