

MARTIAN MYSTERIES

Perseverance and the Search for Life on Mars

Mars has always been a source of marvel. It captivated ancient civilizations, its red hue setting it apart from other points of light in the night sky. Even in recent history, some suggested it was home to alien life, until Mariner 4 got close enough to reveal a lifeless and barren planet. However, in the last few decades the true nature of Mars has begun to emerge. We've discovered a place that has substantially changed over time. An environment where water once shaped the landscape and still sits within icy polar regions and deep underground. And a planet where microbial life may have once existed, and perhaps against all odds still does.

Our greatest tools in this journey of discovery are the Mars rovers, a series of robotic vehicles laden with scientific instruments. The latest addition to these intrepid explorers is Perseverance. It will build on the impressive legacy of the previous rovers; seeking new knowledge, searching for evidence of life, and helping to prepare us for a day in the not too distant future when Martian explorers will leave footprints rather than tire tracks.

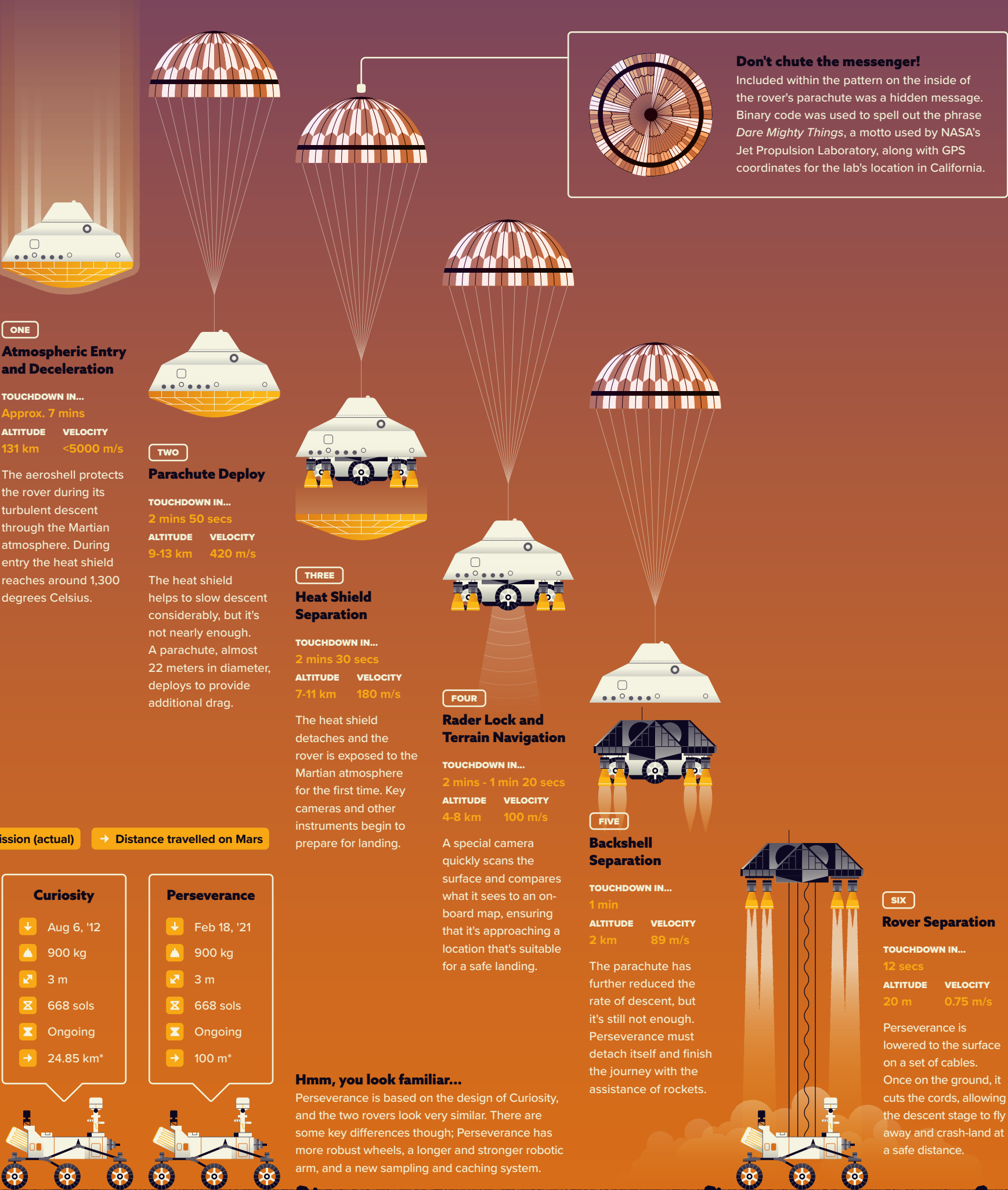
This infographic provides a comparison of Mars rovers, explores the arrival of Perseverance on Mars, and details its tools and mission objectives.

Mars Rovers by the Numbers

- ↓ Touchdown
- ▲ Weight
- ↗ Height
- ⌂ Mission (planned)
- ⌂ Mission (actual)
- Distance travelled on Mars

Sojourner	Spirit	Opportunity	Curiosity	Perseverance
↓ Jul 4, '97	↓ Jan 4, '04	↓ Jan 25, '04	↓ Aug 6, '12	↓ Feb 18, '21
▲ 11.5 kg	▲ 174 kg	▲ 174 kg	▲ 900 kg	▲ 900 kg
↗ 65 cm	↗ 1.6 m	↗ 1.6 m	↗ 3 m	↗ 3 m
⌂ 7 sols	⌂ 90 sols	⌂ 90 sols	⌂ 668 sols	⌂ 668 sols
⌂ 83 sols	⌂ 2208 sols	⌂ 5,352 sols	⌂ Ongoing	⌂ Ongoing
→ 100 m	→ 7.73 km	→ 45.16 km	→ 24.85 km*	→ 100 m*

1 sol is approx. 24 hours, 39.5 minutes. *As of March 2021



Mission Objectives

- Looking for Habitability**
Exploring the Martian landscape to discover environments that could have once supported microbial life.
- Seeking Biosignatures**
Studying suitable environments in search of evidence of ancient Martian lifeforms.
- Caching Samples**
Collecting rock and soil, to be stored until a future mission can collect them for analysis on Earth.
- Preparing for Humans**
Testing oxygen production in Mars' hostile atmosphere, to help inform future human missions.

Mission Technology

- Ingenuity Helicopter**
A small autonomous helicopter that will attempt the first powered flight on another planet.
- Mastcam-Z**
A camera that can capture high-res images and video of the Martian surface and atmosphere.
- MEDA**
A tool that will measure things like weather, temperature and dust levels in the Martian atmosphere.
- MOXIE**
An experiment to produce oxygen on Mars, in preparation for future human missions.
- PIXL**
An X-ray spectrometer that will study the chemical composition of Martian rocks at a tiny scale.
- RIMFAX**
A tool that uses radar waves to discover geological features underneath the surface of Mars.
- SHERLOC**
A suite of cameras, spectrometers and a laser to detect minerals and potential biosignatures.
- SuperCam**
A collection of tools to identify the composition of rocks and soils, down to an atomic and molecular level.

Sources: NASA, JPL and Wikipedia. Infographic by James Round. See more at www.jamesrounddesign.com