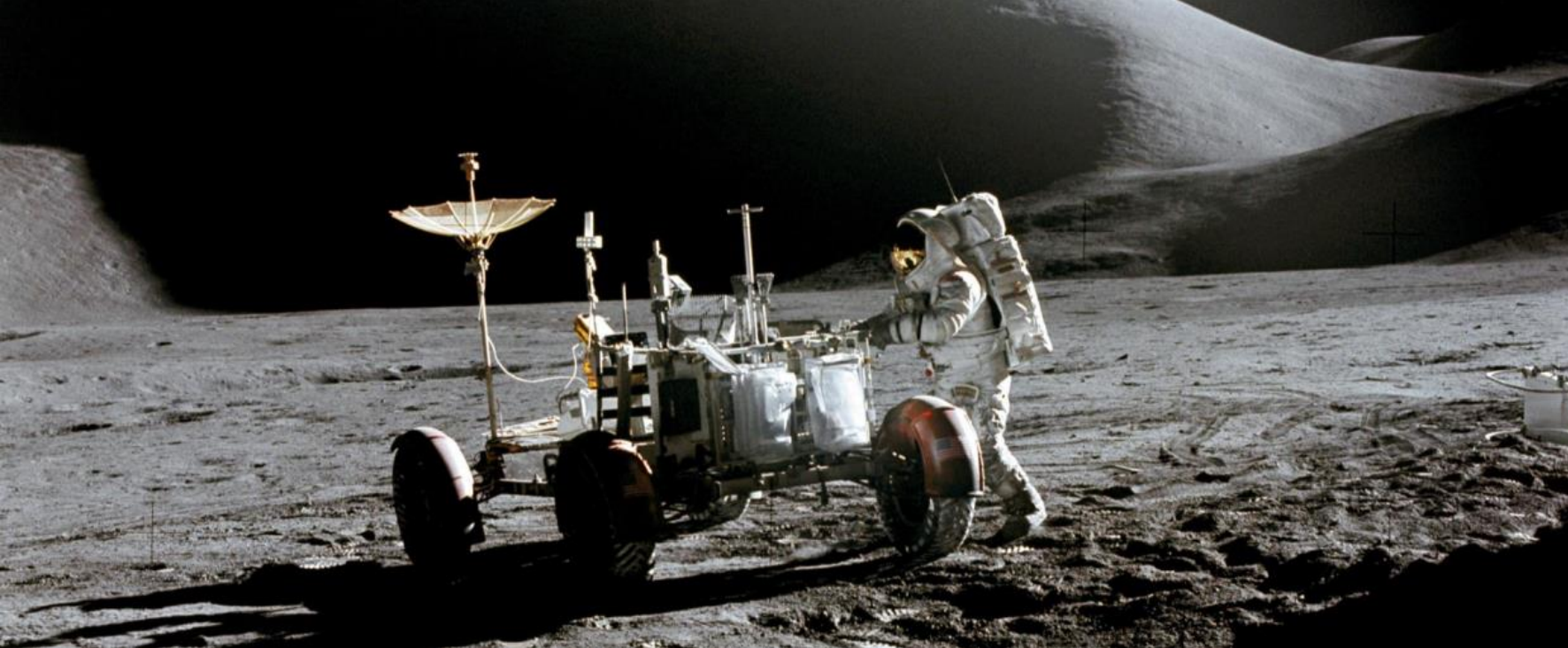


The Lunar Mobility Vehicle (LMV)

by

LOCKHEED MARTIN 





LOCKHEED MARTIN 

**Defining a
New Era of
Space
Mobility**



**Unlocking
the Lunar
Surface for
Science &
Industry**

Space Heritage



Lockheed is responsible for engineering many of humanity's boldest and most challenging space missions

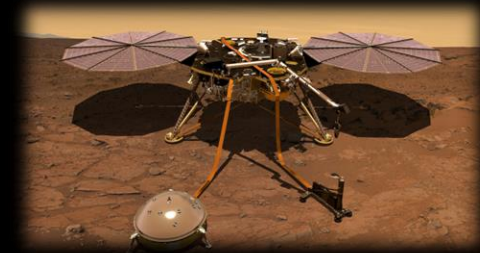
Experienced Team

Established Facilities

Flight-Proven Subsystems



OSIRIS-REx



InSight Mars Lander



Orion

The Next Generation Of Lunar Rover

LOCKHEED MARTIN 

Commercial Lunar Mobility
& Mission Support Services

Long Range, High Data
Rate, Multi-Mission Support

Priced to Expand Access
and Enable Impactful New Missions

Advance
Space
Science

Unlock the
Lunar
Economy

Alleviate
Customer
Infrastructure
Needs

Explore
New
Possibilities



Unique Capability

LOCKHEED MARTIN 

Far Side and Permanently Shadowed Operations

Over 1,000 km Range per Lunar Day

1,600 kg+ Surface Payload Capacity

Robotic Arm with 70 kg+ Capacity and 2.5 m Reach

50 Mbps Data Downlink Rate to Earth

Robust Native Sensor Package

Launching to the Moon in 2027



Explore the Moon

LOCKHEED MARTIN 

Surface Mapping

Asset Imaging

Cinematic Filming

360° Illumination

Stills, Video, and Tessellated 3D Models

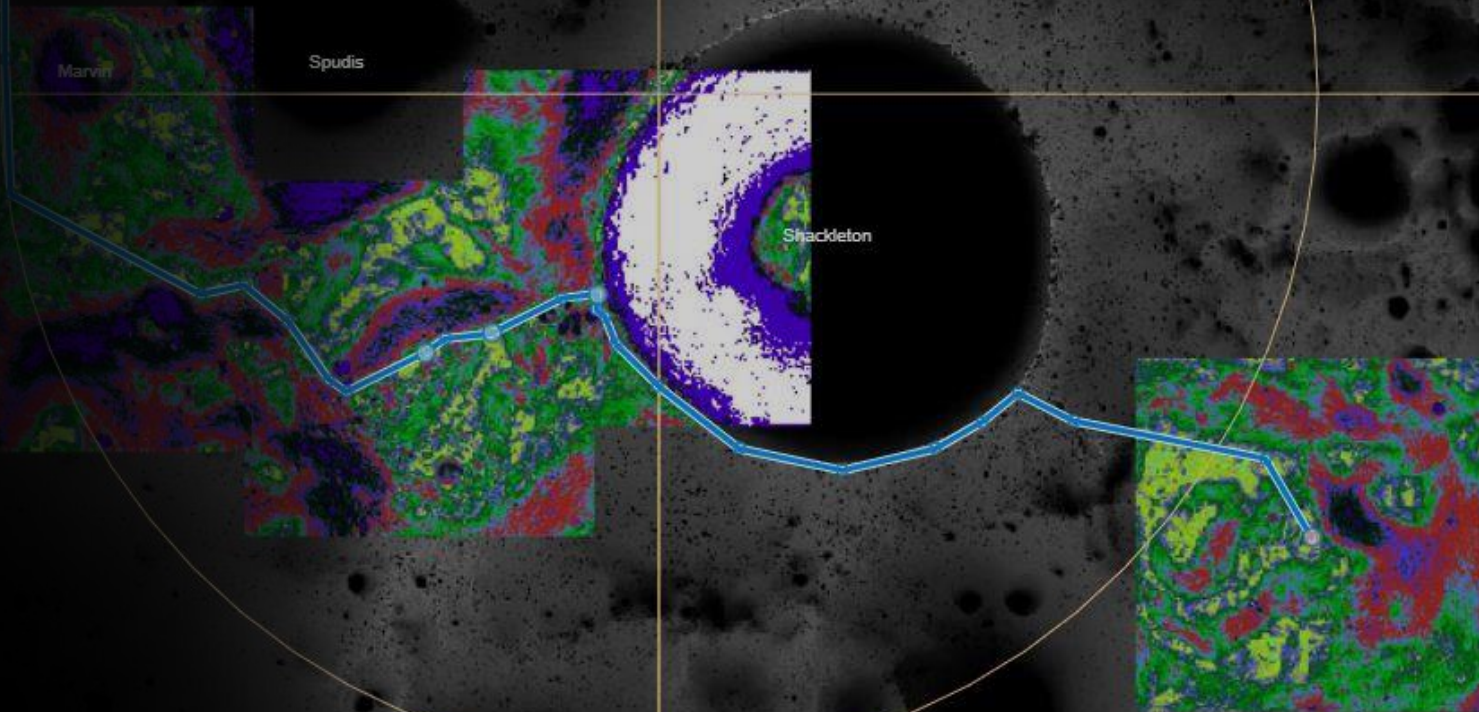
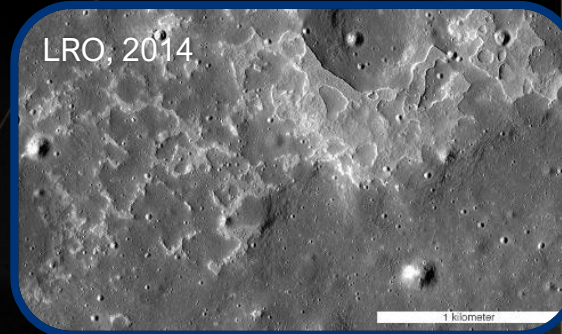
Robust, Multispectral Sensor Suite:

VIS/NIR
HD & 4K
Cameras

Radar &
LiDAR

Neutron
Spectrometer

More than 10 km² of Mapping Per Lunar Day



Hanson

Survive The Darkness

Vehicle Designed to Survive the Full Lunar Night and Support Payloads Throughout

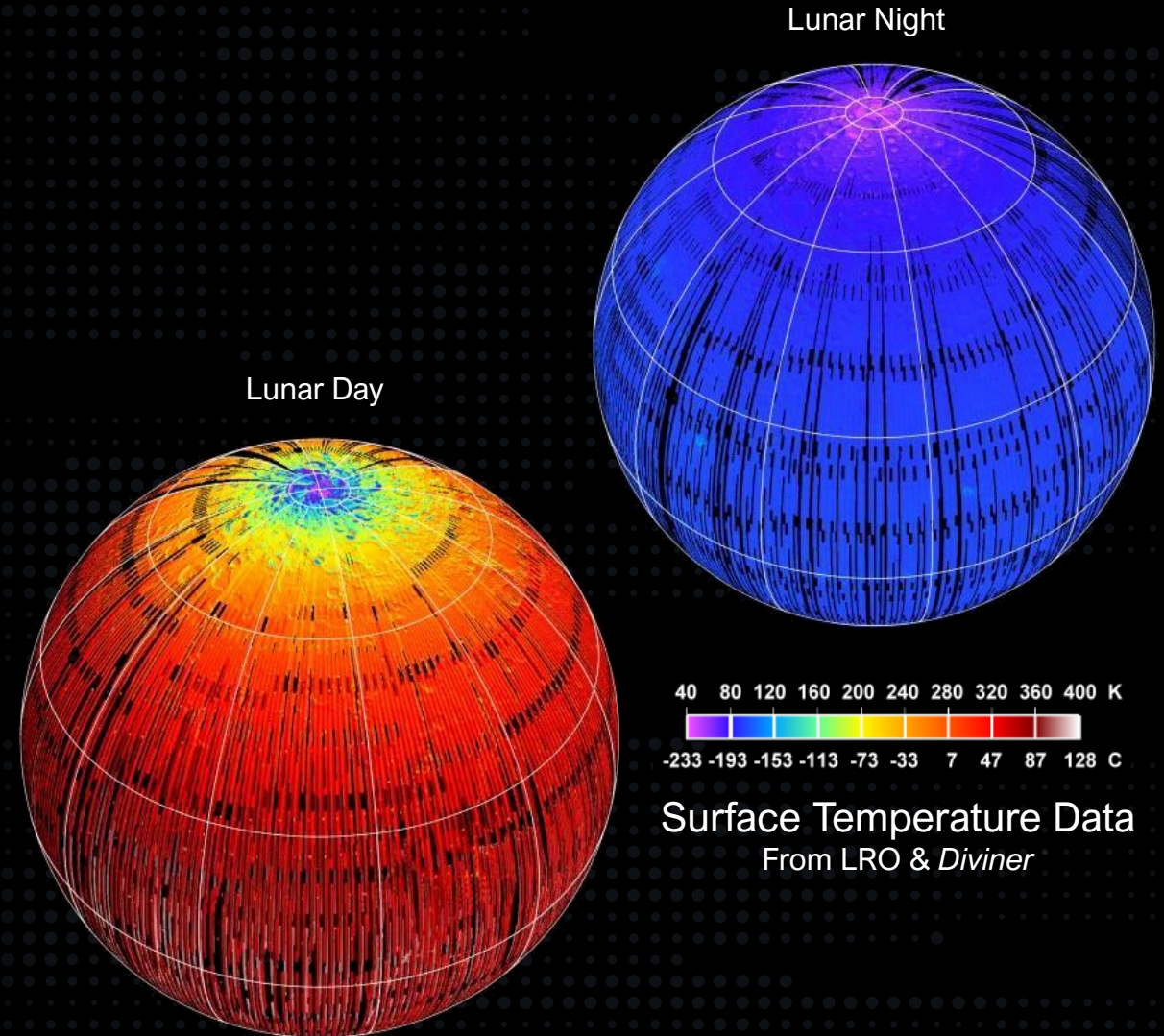
Continuous Lunar Night Payload Power Availability for Year-Long Mission Operations

Muti-Day Operational Capacity in Permanently Shadowed Regions

Prospecting,
Sampling &
Mining

Location
Monitoring
& Analysis

Nighttime
Space
Science



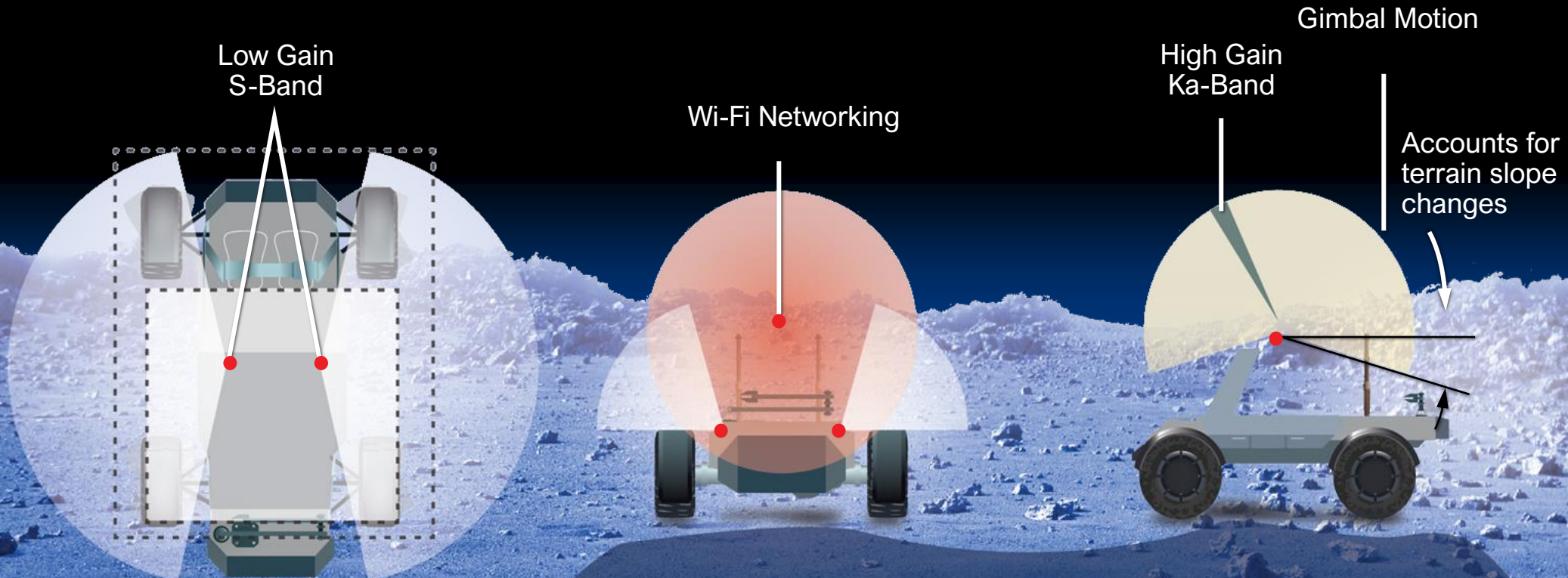
Meaningful Data Collection & Transmission

Ka-Band HGA & S-Band LGA

50 Mbps Downlink & 15 Mbps Uplink

Ethernet and Local Wi-Fi Networking

Significant Onboard Data Storage



Simplify Development

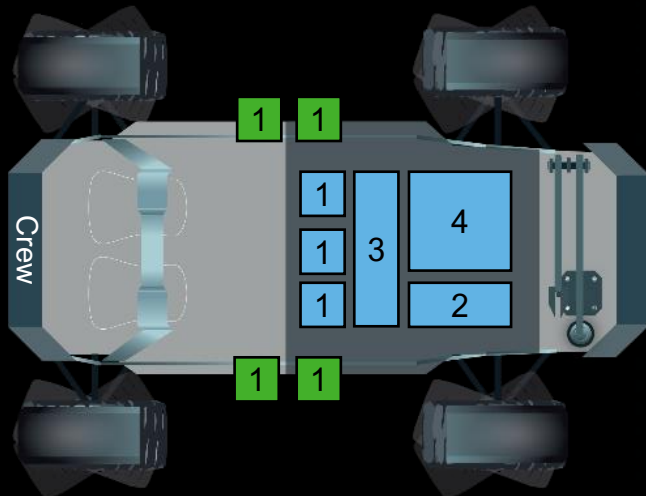
Standardized, Multipurpose Payload Support Configuration

Expandable Building-Block Model for Large Payloads

LM-Provided Interface Plates to Streamline Manufacturing

Payload Bed and Side-Slung Slots Available

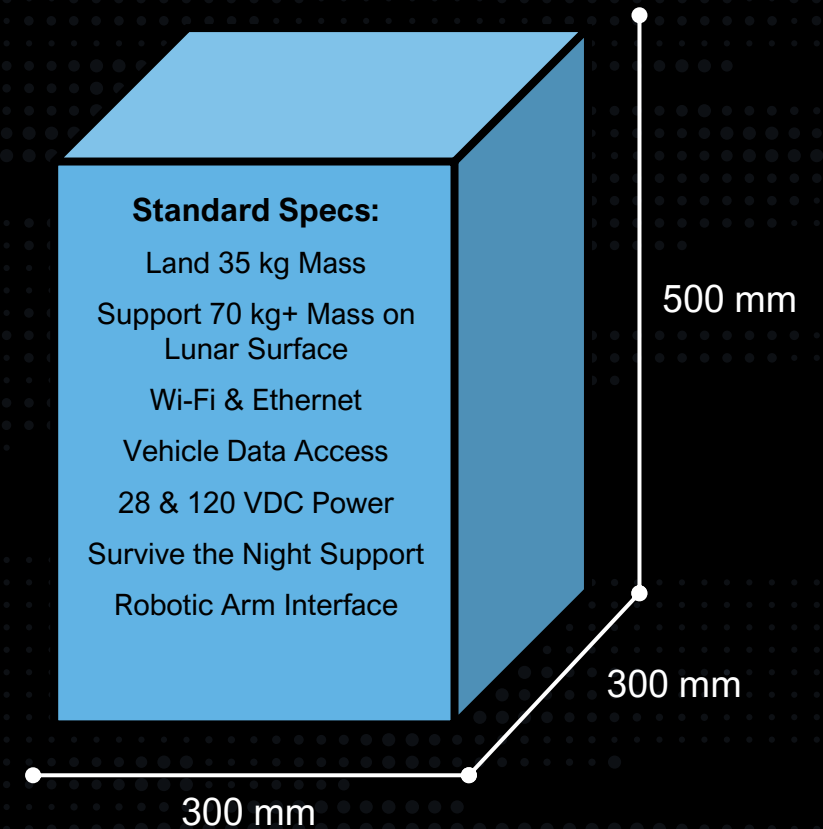
Customizable for Specific Needs



Single-Slot Universal Payload Adapter System (UPAS)

Standard Specs:

- Land 35 kg Mass
- Support 70 kg+ Mass on Lunar Surface
- Wi-Fi & Ethernet
- Vehicle Data Access
- 28 & 120 VDC Power
- Survive the Night Support
- Robotic Arm Interface



Imagine New Possibilities

Investigate, Explore and Experiment

- **Multispectral Surface Mapping**
- Sample Analysis
- Close-Proximity Asset Imaging
- Long-Term Lunar Biology
- **Deep Space Observation**
- Mobile Space Situational Awareness
- Low-Gravity Manufacturing
- Lunar Geology & Planetary Science
- **Survivability Testbed**
- Cinematic Event Capture
- Lunar Gravity & Magnetism
- Permanent Habitat Scouting & Staging

Prospect, Mine, and Survey

- Mobile Power & Comms Network Services
- Surface Spectrometry
- **Core Sampling**
- Regolith Drilling
- Load Carrying
- **High Fidelity Resource Ground Truth**
- Resource Extraction & Processing
- Shadowed Region & Lava Tube Exploration
- Refueling Demonstrations
- **Volatiles & Rare Resource Sensing**

Transport and Deliver

- **Asset Relocation**
- Sample Collection
- **Crew Transportation**
- 3rd Party Lander Unloading
- Cargo Hauling Heavy Mass Lunar Surface Landing
- Sample Flagging for Crew
- Microrover Positioning & Sustained Support
- **Critical Infrastructure Emplacement**
- Geophysical Instrumentation Delivery

Construct, Service, and Assemble

- Landing Pad Preparation
- **Asset Rescue & Maintenance**
- Landing Zone Mapping
- Power, Transportation, PNT, and Comms Network Development
- Habitat Construction
- **Additive Manufacturing**
- Recycling & Asset Reconstitution

Mission: Lava Tube Explorer

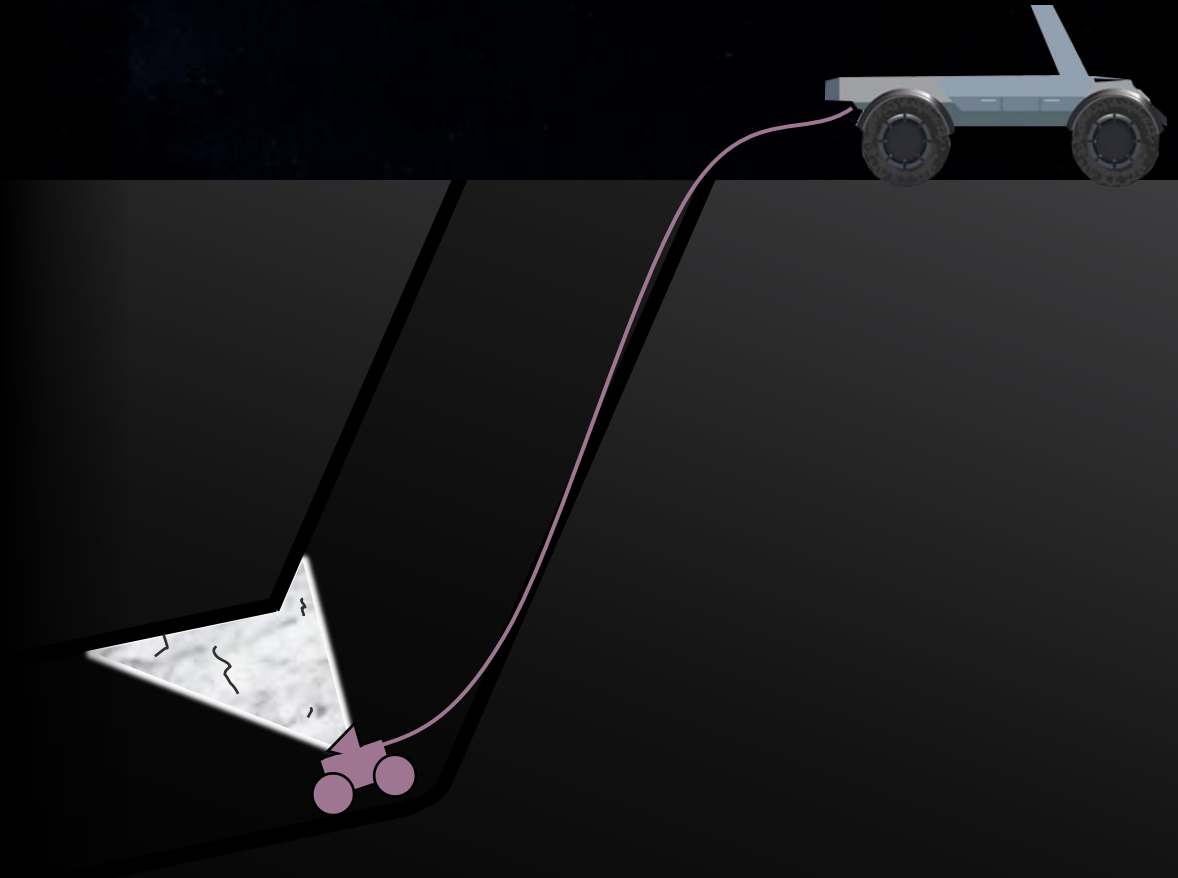
- **Mission Duration:**
 - 300 Hours
- **Objectives:**
 - Deliver Lava Tube Rover to an Opening in the southern Mare Australe
 - Provide Data & Power to Lava Tube Rover
 - Transmit 500 GB of Lava Tube Mapping & Geology Data
- **Distance Traveled:**
 - 5 km

Mission Key



Lava Tube Rover

———— Data, Power, and Winch



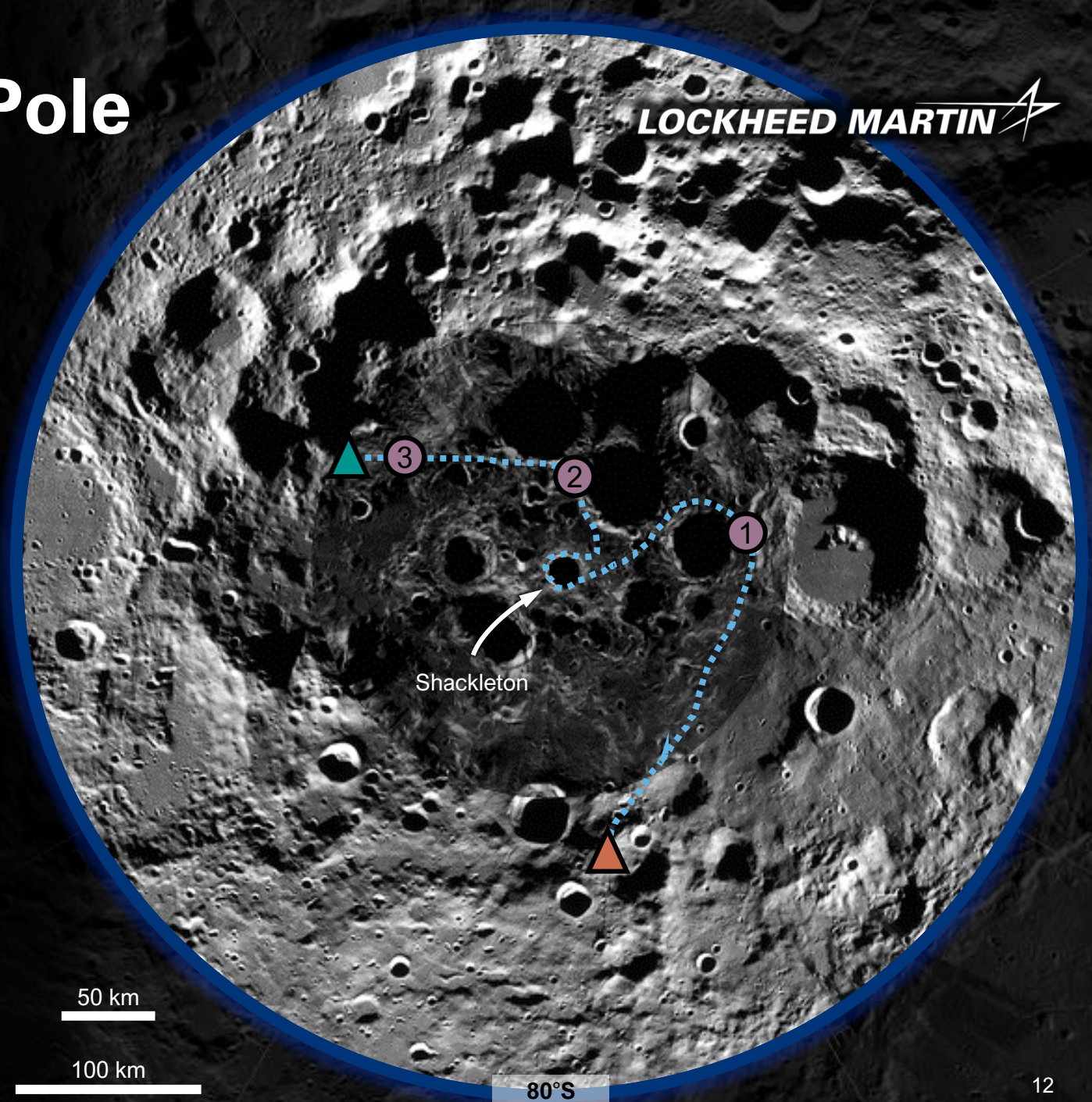
Mission: Lunar South Pole

LOCKHEED MARTIN 

- **Mission Duration:**
 - 180 Hours
- **Objectives:**
 - Map Shackleton Crater Rim
 - Deliver Three Comms Payloads
 - Passive Magnetotelluric Sounding
- **Distance Traveled:**
 - 500 km

Mission Key

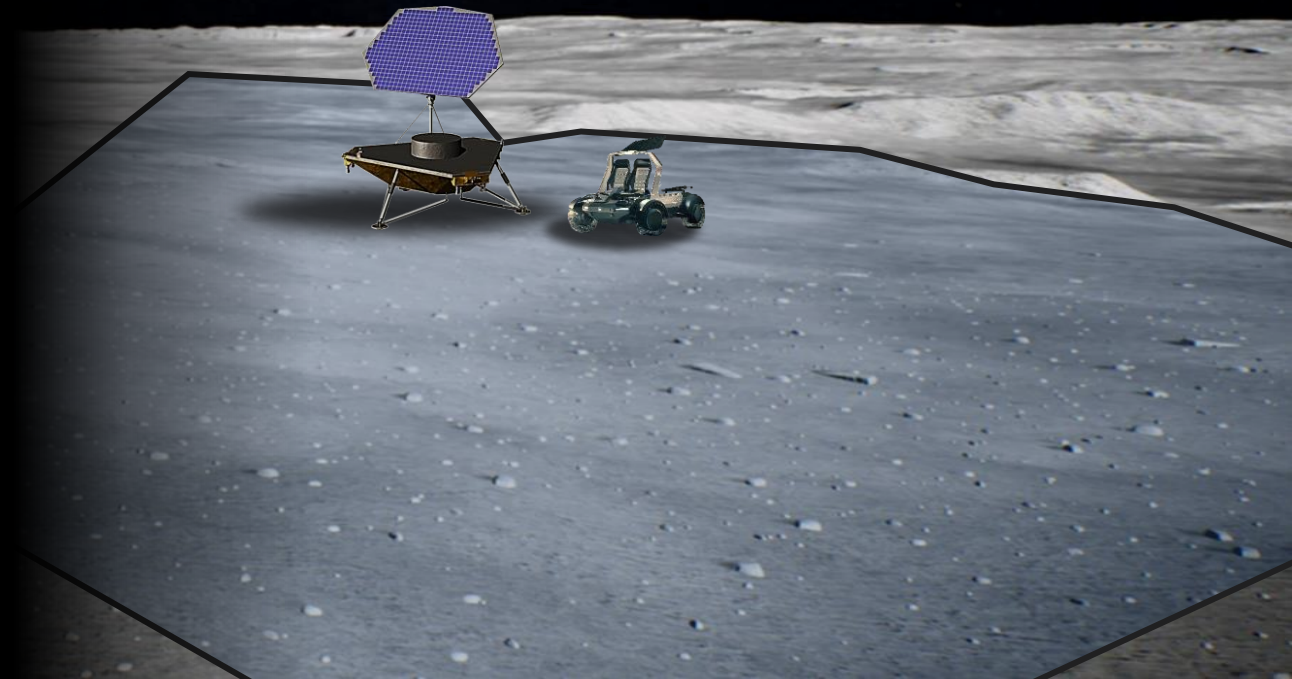
- Path of Travel
- # Comms Payload
- ▲ Landing Zone / Start
- ▲ End Point



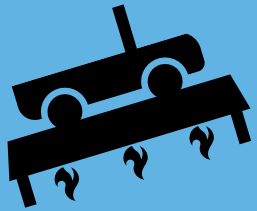
Mission: Lander Staging & Inspection

LOCKHEED MARTIN 

- **Mission Duration:**
 - Two Lunar Days
- **Objectives:**
 - Scout Landing Zone for Hazards
 - Prepare Landing Zone Terrain
 - Provide Lander with PNT Beacon
 - Film Lander Descent with 4K Camera
 - Close-Proximity Post-Descent Lander Inspection
 - Offload Lander Payloads into LMV Payload Bed
 - Depart Landing Zone
- **Distance Traveled:**
 - 50 km



Basic Services



Landing

Payload delivery direct to the lunar surface. First mission in 2027.



Rideshare Payloads

Payloads that collect data independent of the LMV's primary tasked missions.

Transportation & Active Payloads

Payload missions that require specific tasking including asset delivery, surface interactions, robotic arm operations, or a specific location.



Mapping & Imaging

Mapping and imaging missions using native LMV sensors including cameras, LiDAR, radar, and neutron spectrometer.

