



Proudly Partnered With:



PEREGRINE LUNAR LANDER

The background of the slide is a photograph of the Moon's surface. In the foreground, a gold-colored lunar lander with four legs is positioned on the dark, cratered terrain. In the upper right corner, a small portion of the Earth is visible against the blackness of space.

Peregrine is a product line that will serve Astrobotic's payload missions to the Moon

One Lander, Any Mission

High Reliability, Low Complexity

Proven Partners and Suppliers

\$1.2 million / kg of payload

PEREGRINE PRODUCT LINE



STRUCTURE



GNC



POWER



AVIONICS



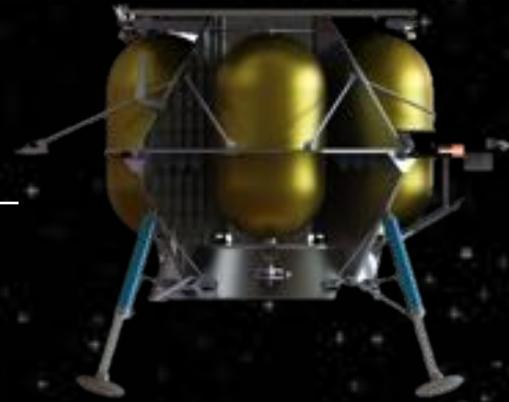
PROPULSION



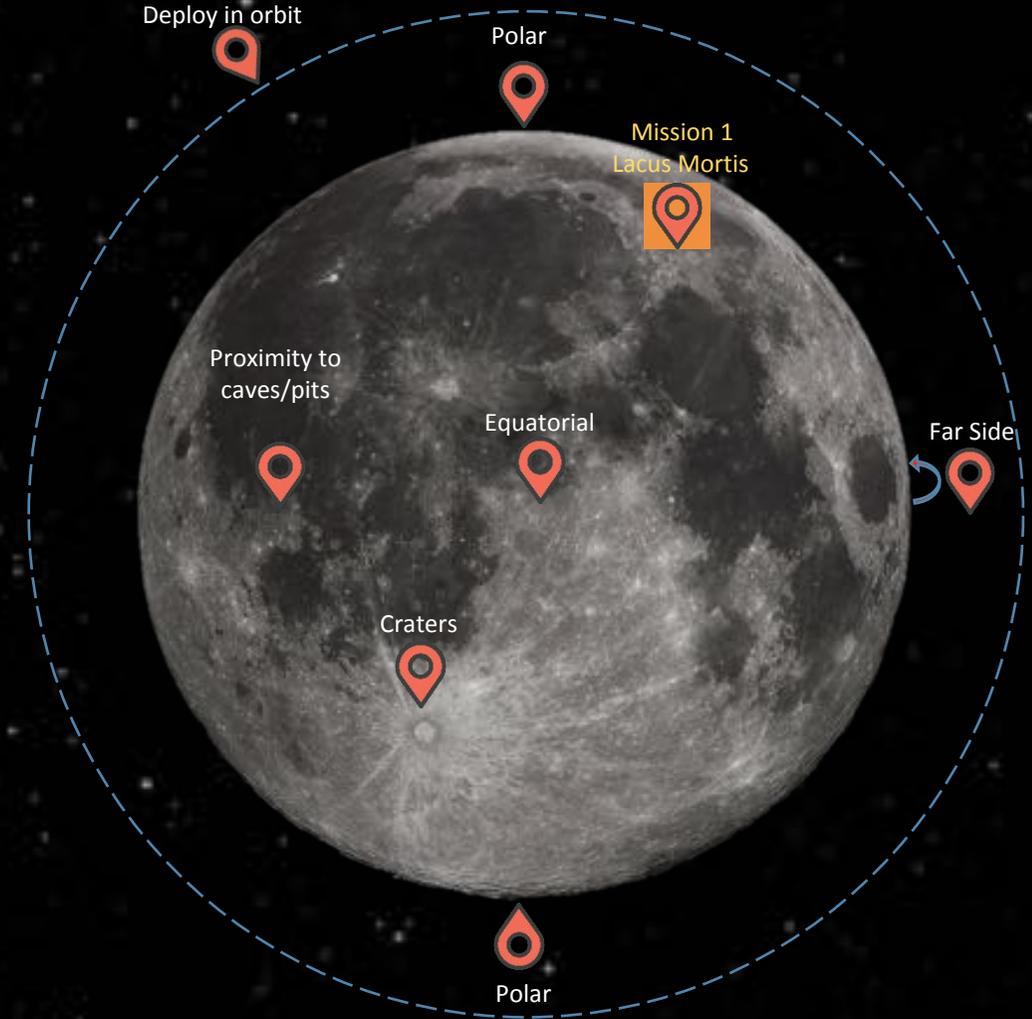
THERMAL CONTROL



COMMUNICATIONS



**PEREGRINE
SPACECRAFT
BUS**



**UP TO 265 KG TO
ANY DESTINATION**

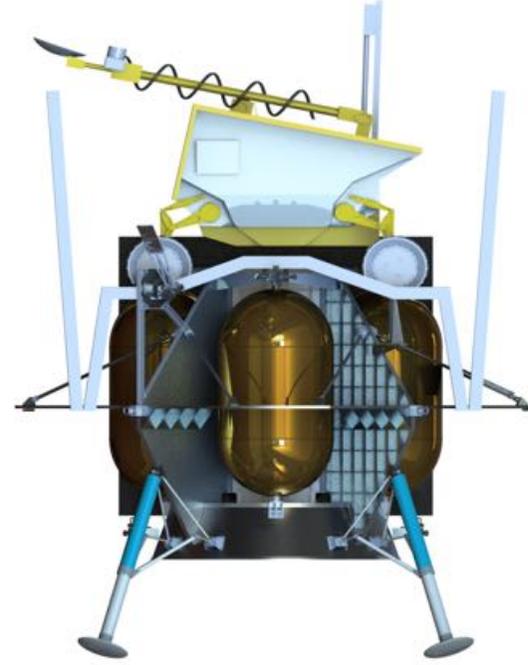
PEREGRINE CONFIGURATIONS



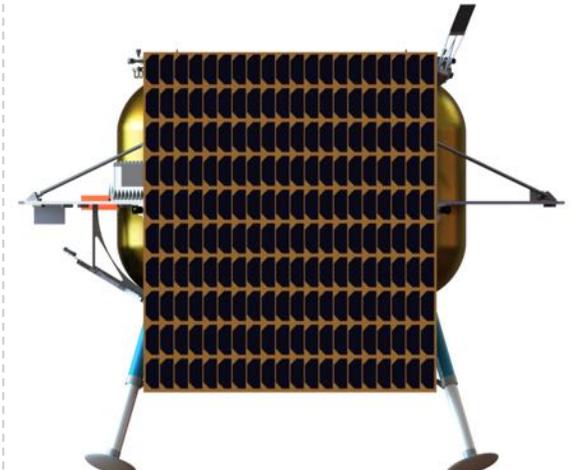
CORE BUS



HIGH LATITUDE



TOP DECK MOUNTED



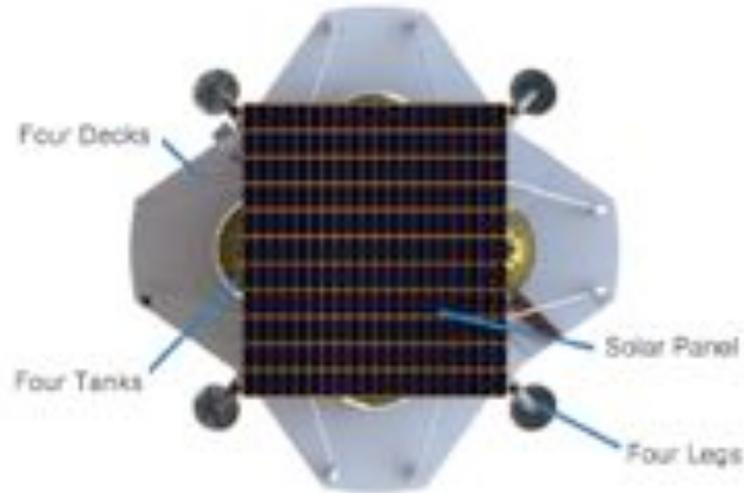
FAR SIDE POLAR

**PEREGRINE
SPACECRAFT
BUS**

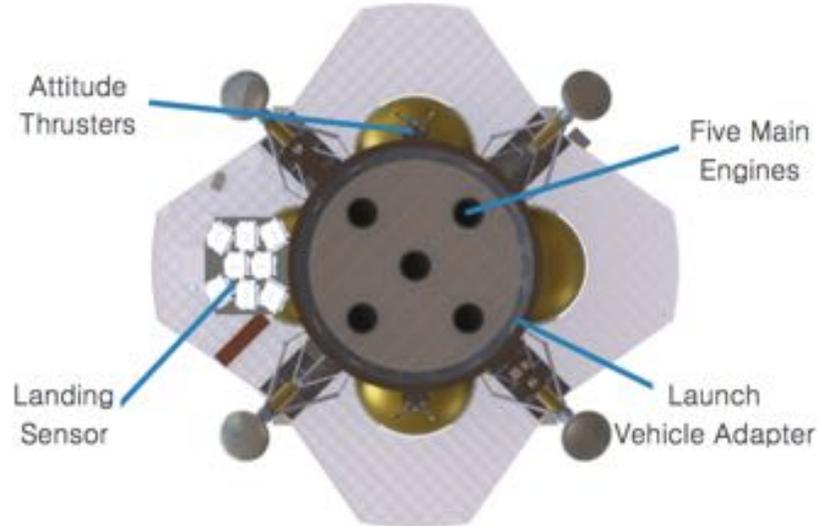
**EXAMPLES OF FLEXIBLE CONFIGURATIONS
FOR PAYLOADS & LANDING LOCATIONS**

PEREGRINE M1 CONFIGURATION

ABOVE DECK



BELOW DECK



Launch: Secondary Payload on Atlas V

Capacity: 35 kg of non-NASA payload

M1 Surface Ops: 8-Earth Days

Comm: 2.8 kbps per kg

Power: 0.5 W per kg

Area: 0.5 m² per deck surface (top & bottom)

Landing: Lacus Mortis (45N, 25E)

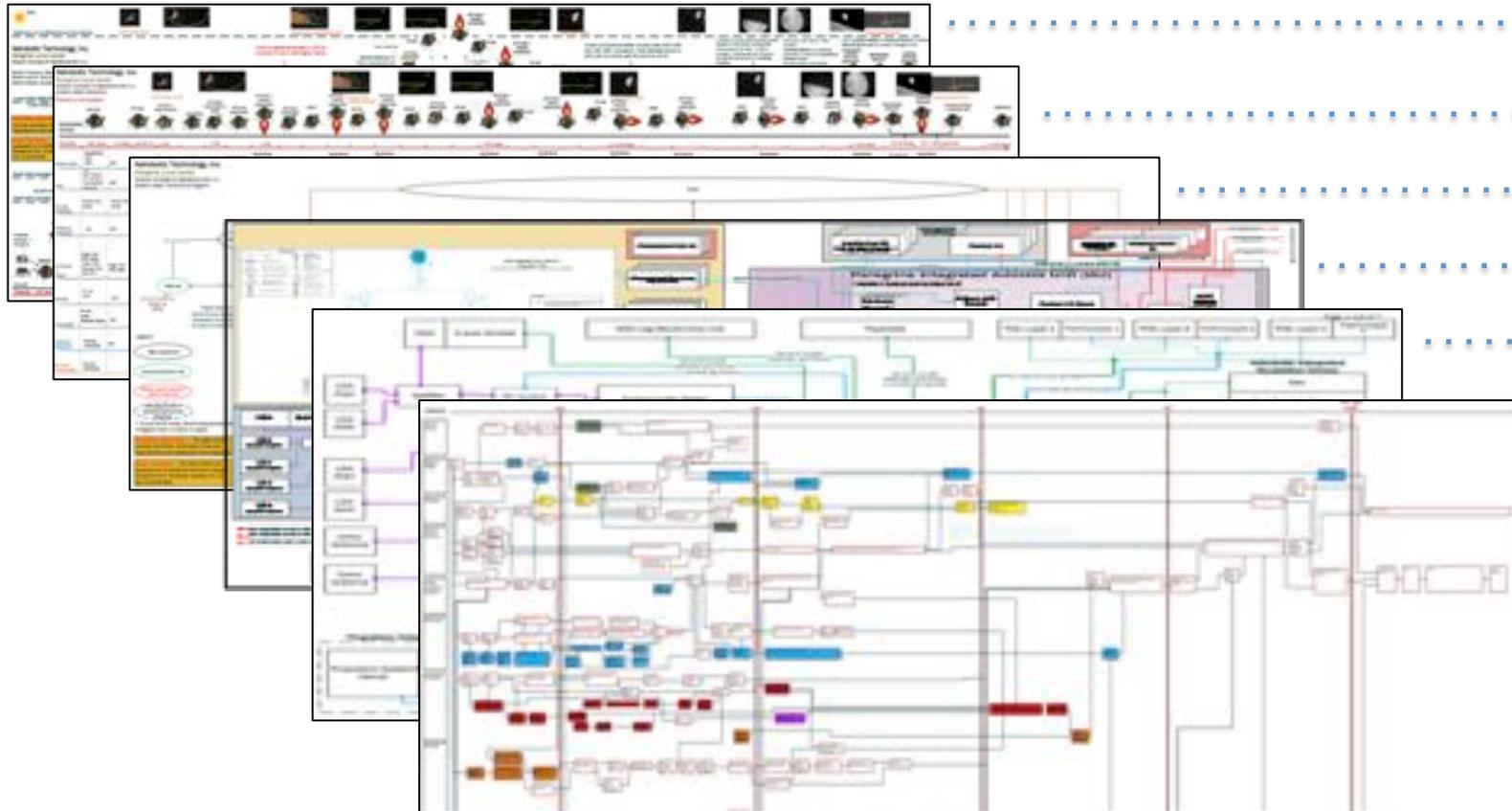
Ideal Payload Mass: small (1-5 kg) to medium-sized (5-10 kg) payloads to lunar orbit or the lunar surface

Typical Payload Types: CubeSats (from 1U to 6U), small rovers, resource instruments, seismometers, retroreflectors, and telescopes

PEREGRINE MISSIONS

					
	M1	M2	M3	M4	M5
PAYLOAD CAPACITY	35kg	175kg	265kg	265kg / 265kg	265kg / 265kg
ORBIT	LEO	LEO	LEO	TLI	TLI
CONFIG	Secondary Payload	Secondary Payload	Secondary Payload	Primary Payload	Primary Payload

PRELIMINARY DESIGN REVIEW COMPLETE



Mission Concept of Operations

System State Operations

System State Transitions

System Block Diagram

System Layout

Assembly, Integration & Test Flow

WORLD CLASS PARTNERS

NASA

NASA Lunar CATALYST Program Partner
Personnel and Test Facility Contributions

AIRBUS

Landing System & Systems Engineering



Transportation logistics



America's Ride to Space

Launch Partner

MISSION ONE: MANIFEST

DHL



PULI



iSPACE



AEM



ASTROSCALE



ATLAS



ELYSIUM



LM1



ANGELICVM



MOONARTS



DHL MOONBOX



TOTAL DEALS:

11

COUNTRIES REPRESENTED:

6

NASA PAYLOAD BUY IMMINENT

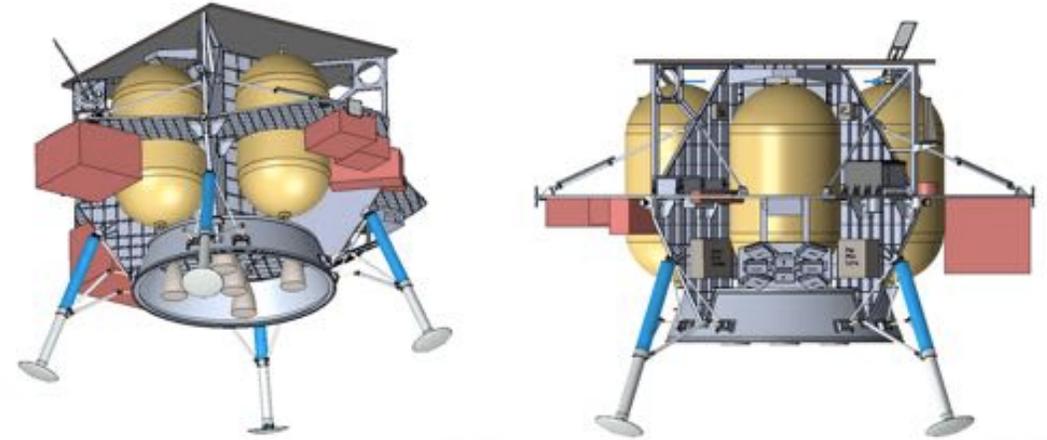
Jason Crusan of NASA Advanced Exploration Systems Office
(Space Subcommittee Hearing, 7 Sept):

*“What we are now looking at doing is **actually buying landed delivery services** in the next fiscal year here, of **actually buying the first ability to land small payloads... this is a sign of our growing confidence in the commercial industry...**”*



PREPARING YOUR PAYLOAD

- ✓ **Check your Payload for Compatibility:**
Payload User's Guide
- ✓ **Design with Confidence:**
Interface Design Document
- ✓ **Integrate with Peregrine:**
Use our Peregrine CAD File
- ✓ **Get Personalized Service:**
Utilize Your Astrobotic Payload Liaison



MECHANICAL INTERFACE

PEREGRINE ACCOMMODATES A WIDE RANGE OF PAYLOAD TYPES INCLUDING LUNAR SATELLITES, ROVERS, INSTRUMENTS, AND ARTIFACTS.

Mounting locations are available above and below the aluminum lander decks. Alternate mounting locations are available as a non-standard service.

THERMAL INTERFACE

Payloads provide a thermally isolating adapter plate to the payload mounting deck. This allows the payload to effectively manage its own thermal environment through passive methods such as radiation or conduction. Peregrine will provide power throughout the mission to attached payloads, which may be utilized for internal heaters.

For availability of standard payload package sizes or the accommodation of specific payload geometries, please contact Astrobotic.

POWER INTERFACE

THE PEREGRINE LUNAR LANDER SUPPORTS PAYLOAD OPERATIONS WITH POWER SERVICES.

Peregrine provides nominal power services throughout the cruise to the Moon and on the lunar surface.

Power services are only available via the electrical connector while the payload is attached to the lander. Deployable payloads will take full control of their own power consumption and generation after release from the lander.

The Peregrine Lunar Lander maintains control of all power lines to ultimately ensure spacecraft and mission safety. The main features of the power interface are:

- 0.5 W per kilogram of payload nominal power
- Regulated and switched 28 ± 0.5 Vdc power line
- 60 second 30 W peak power signal for release mechanism activation

For additional power needs, please contact Astrobotic.

ELECTRICAL INTERFACE

PEREGRINE PROVIDES POWER AND BANDWIDTH SERVICES VIA A SINGLE ELECTRICAL CONNECTOR.

- Static payloads employ a straight plug screw type connector.
- Deployable payloads employ a zero separation force connector.

Both connector types will provide the same standard pin configuration:

Legend:

- Power Return
- Power
- Power Signal
- Data
- Not Connected

Additional points of contact, of the payload structural and conductive elements as well as the payload's electrical circuit common ground, are required for effective grounding to the spacecraft chassis.

A photograph of the lunar surface showing a rover on the right and the Earth in the upper left. The text "THANK YOU" is centered in white.

THANK YOU