

IM "Lessons Learned"

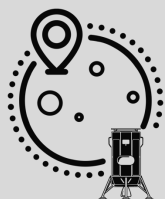
Dr. Ben Bussey
Chief Scientist

bbussey@intuitivemachines.com

Intuitive Machines at a glance

A vertically integrated lunar service provider for delivery, data transmission, and infrastructure

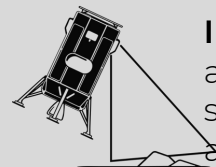
Enabling commercial lunar ambitions with end-to-end services



Delivery: Orbital and lunar surface delivery for light and heavy cargo



Data Transmission: Pay-by-the-minute lunar data relay satellite constellation



Infrastructure-as-a-Service: Lunar assets autonomously providing services needed for building, living, and working on the Moon

Since 2018



1st

Commercial company to land on the Moon



6

Networked lunar distance ground stations



16

Days of spaceflight operations



4

NASA-awarded lunar delivery missions



10

Year NASA contract for cislunar data relay services



177

Hours of lunar surface operations



>200 kg

Payload delivered to the lunar surface



5

Contracted lunar data relay satellite deliveries



2

NASA-awarded infrastructure contracts

Surface Missions



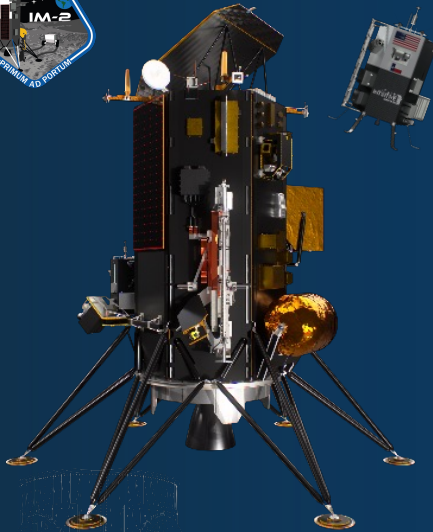
IM-1



Feb 2024



IM-2



Mar 2025



IM-3



Q1 2026

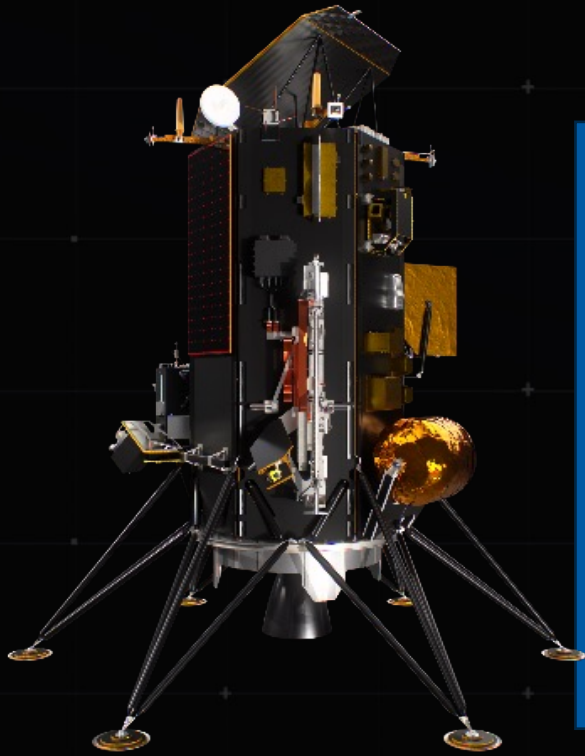
IM-4



Q4 2027

Nova-C is a Technology Leader...

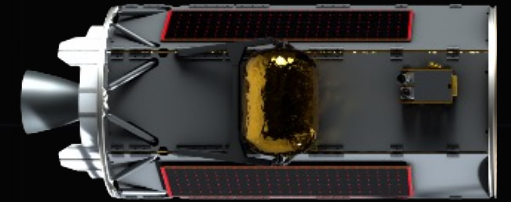
...to Multiple Capabilities



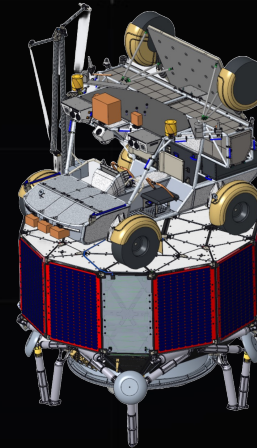
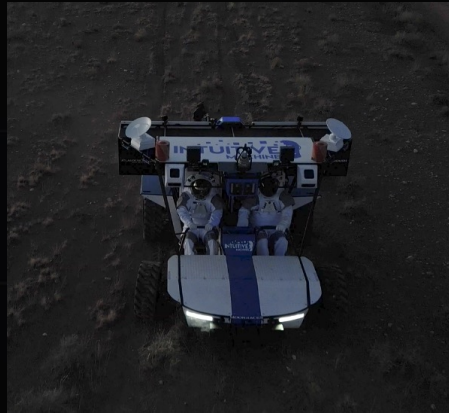
NOVA-C is an autonomous communications satellite that lands on the Moon.



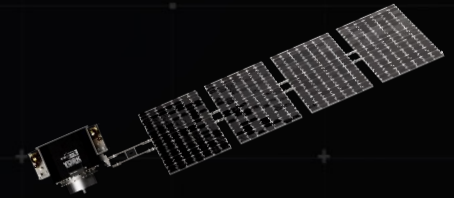
μ Nova Hopper (built)



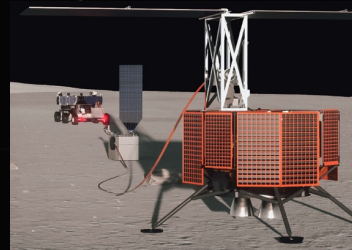
Nebula High Energy Orbit Transfer Vehicle



Lunar Terrain Vehicle + Nova-D



Lunar Data Network Satellites

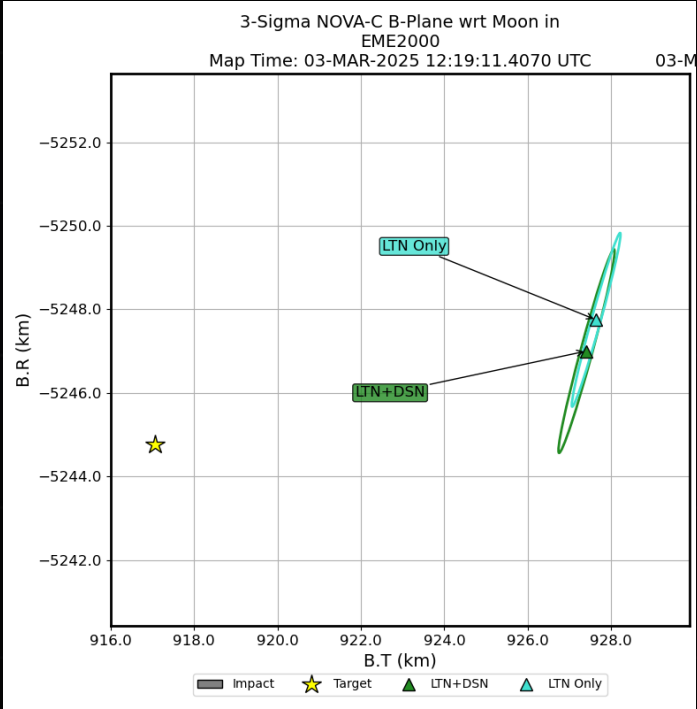
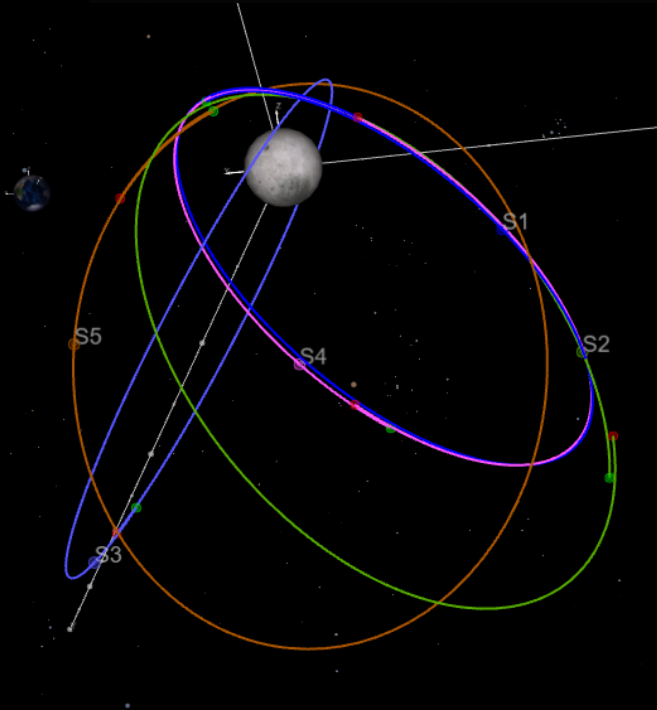


NASA/AFRL Fission and Radio Power



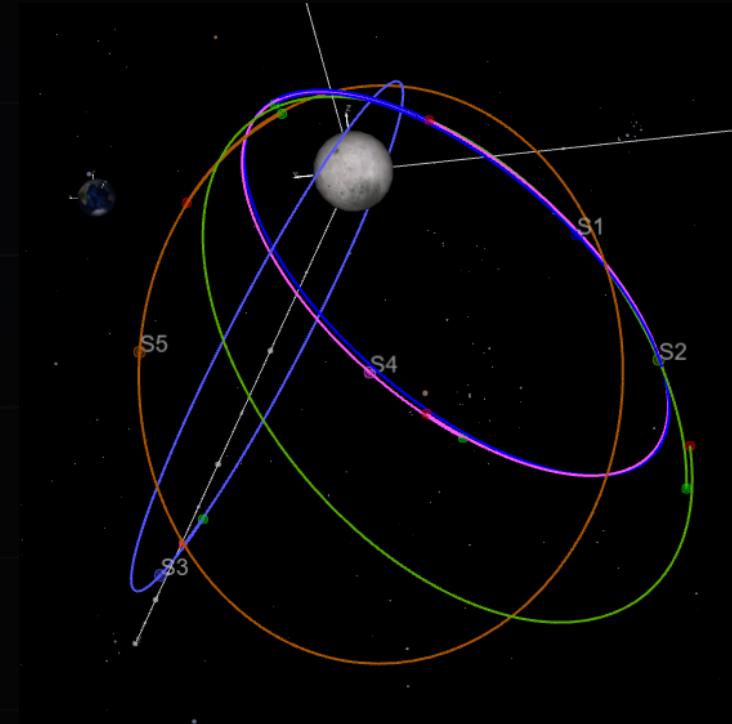
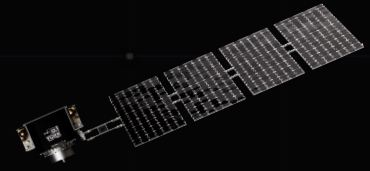
Zephyr Earth Entry Vehicle

Commercial Lunar Data Network: LDN



MURRIYANG, CSIRO'S 64M PARKES RADIO TELESCOPE

LDNS-Hosted Payloads



- IM's LDNS architecture consists of 5 satellites in elliptical lunar orbits
 - Orbits are selected to maximize comm/PNT for the Moon's south polar region, in support of NASA's Near Space Network contract
 - Orbits: $\sim 1,000 \times 18,000$ km
 - 6th s/c could be placed into a different orbit, more amenable to surface imaging
 - Each LDNS s/c has ~ 40 kg available for additional payloads
 - IM intends to fly additional payloads on every LDNS satellite
- LDNS-1 Hosted Payloads:
1. Multispectral – Scanway – Poland
 2. Thermal imager – U Hawaii
 3. Radiation – U New Hampshire
 4. HD video – Raptor – United Kingdom



IM-1: February 15, 2024



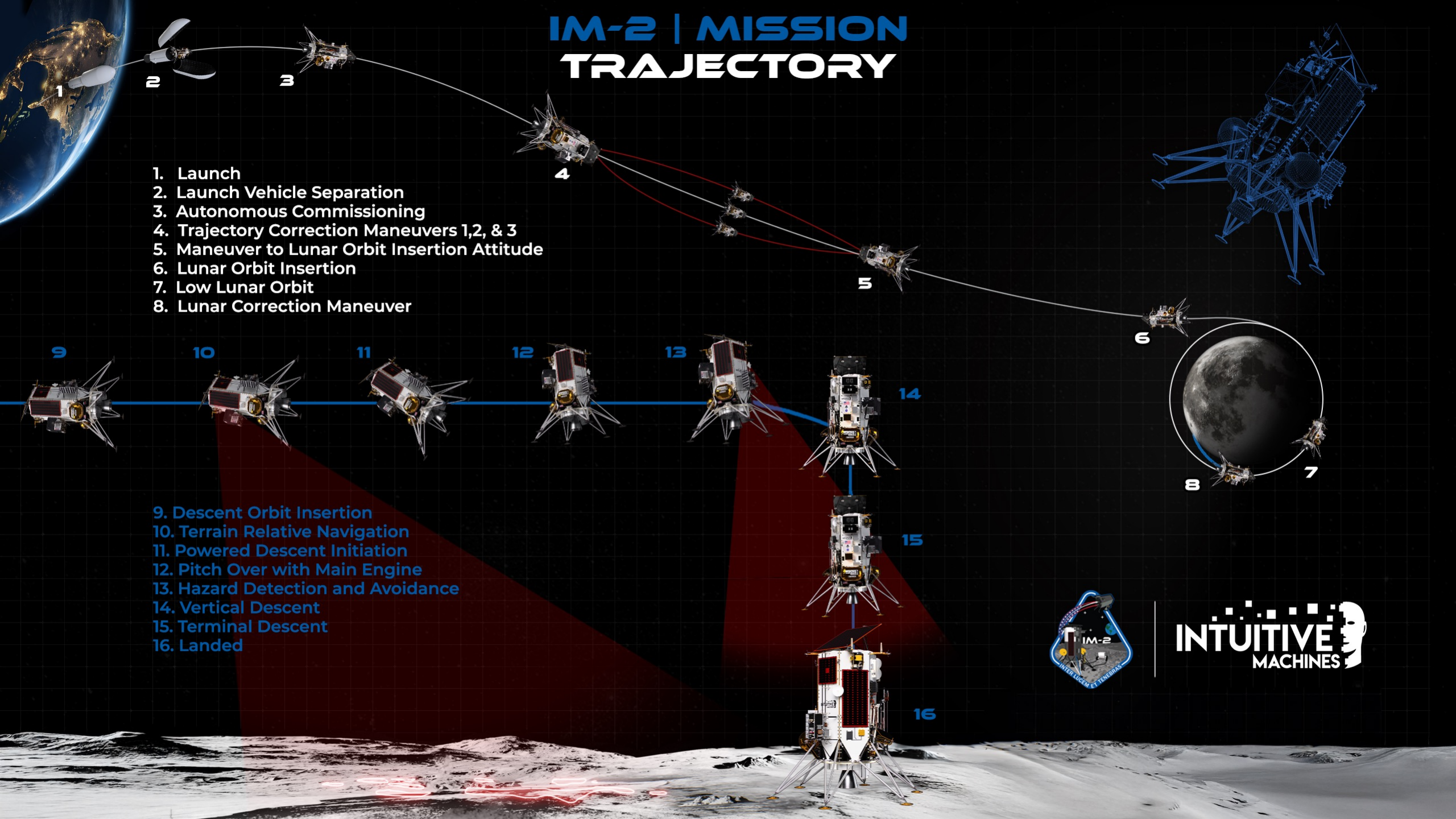
IM-2: February 26, 2025



IM-2 | MISSION TRAJECTORY

1. Launch
2. Launch Vehicle Separation
3. Autonomous Commissioning
4. Trajectory Correction Maneuvers 1, 2, & 3
5. Maneuver to Lunar Orbit Insertion Attitude
6. Lunar Orbit Insertion
7. Low Lunar Orbit
8. Lunar Correction Maneuver

9. Descent Orbit Insertion
10. Terrain Relative Navigation
11. Powered Descent Initiation
12. Pitch Over with Main Engine
13. Hazard Detection and Avoidance
14. Vertical Descent
15. Terminal Descent
16. Landed



INTUITIVE
MACHINES

LV Separation

Panel C



2025-02-26 19:01:50.069 | 0.32 ms | 300x speed

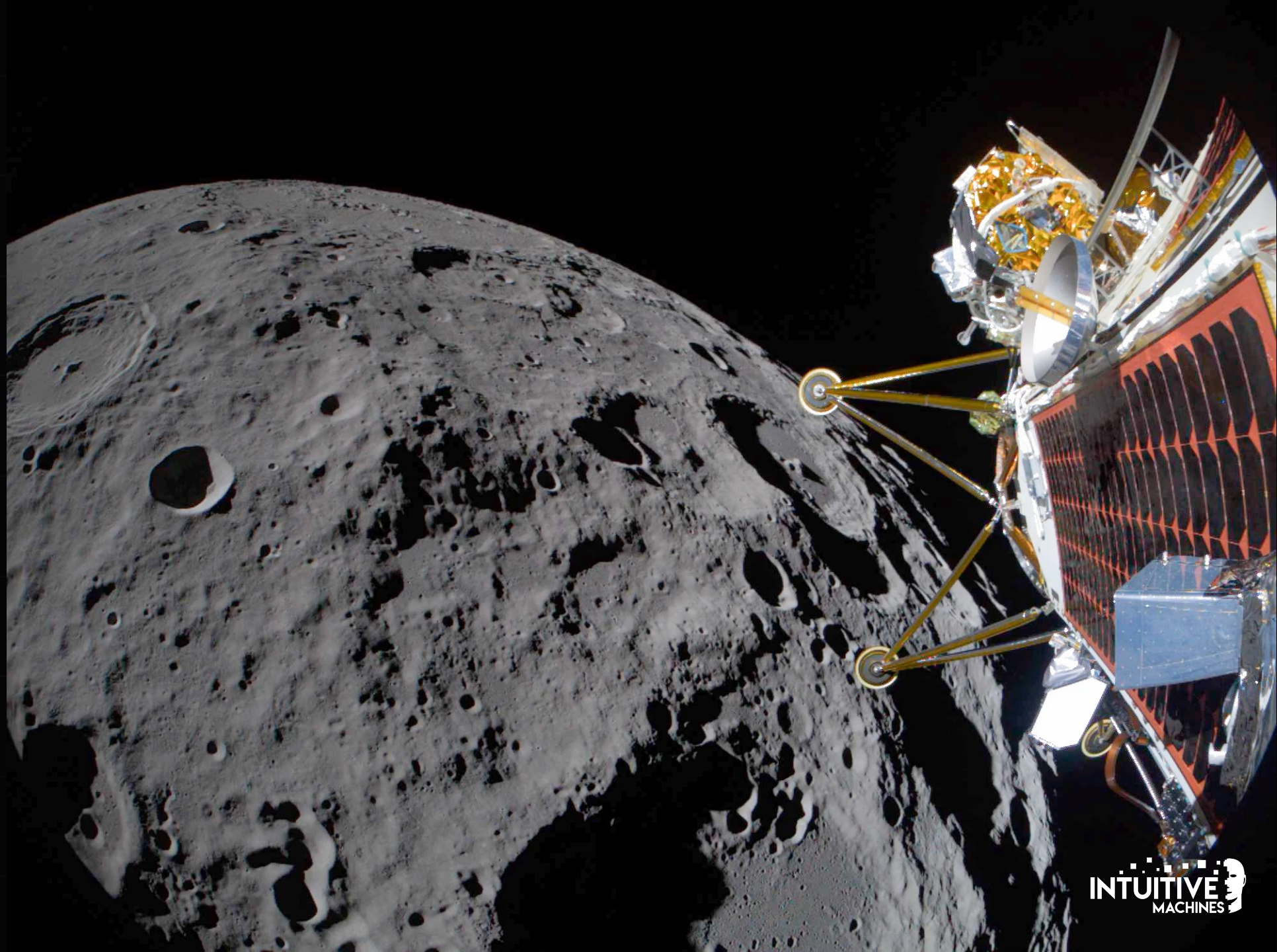
Lunar Orbit

Panel C



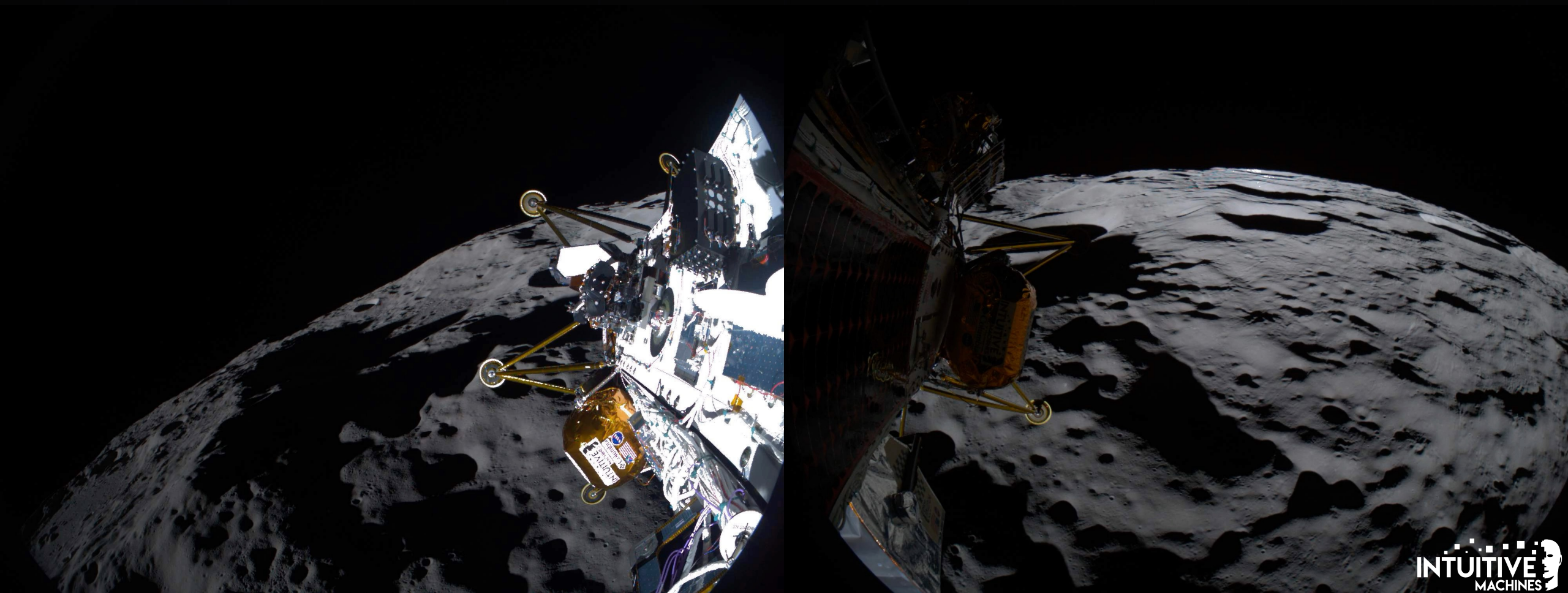
Lunar Orbit

Panel B

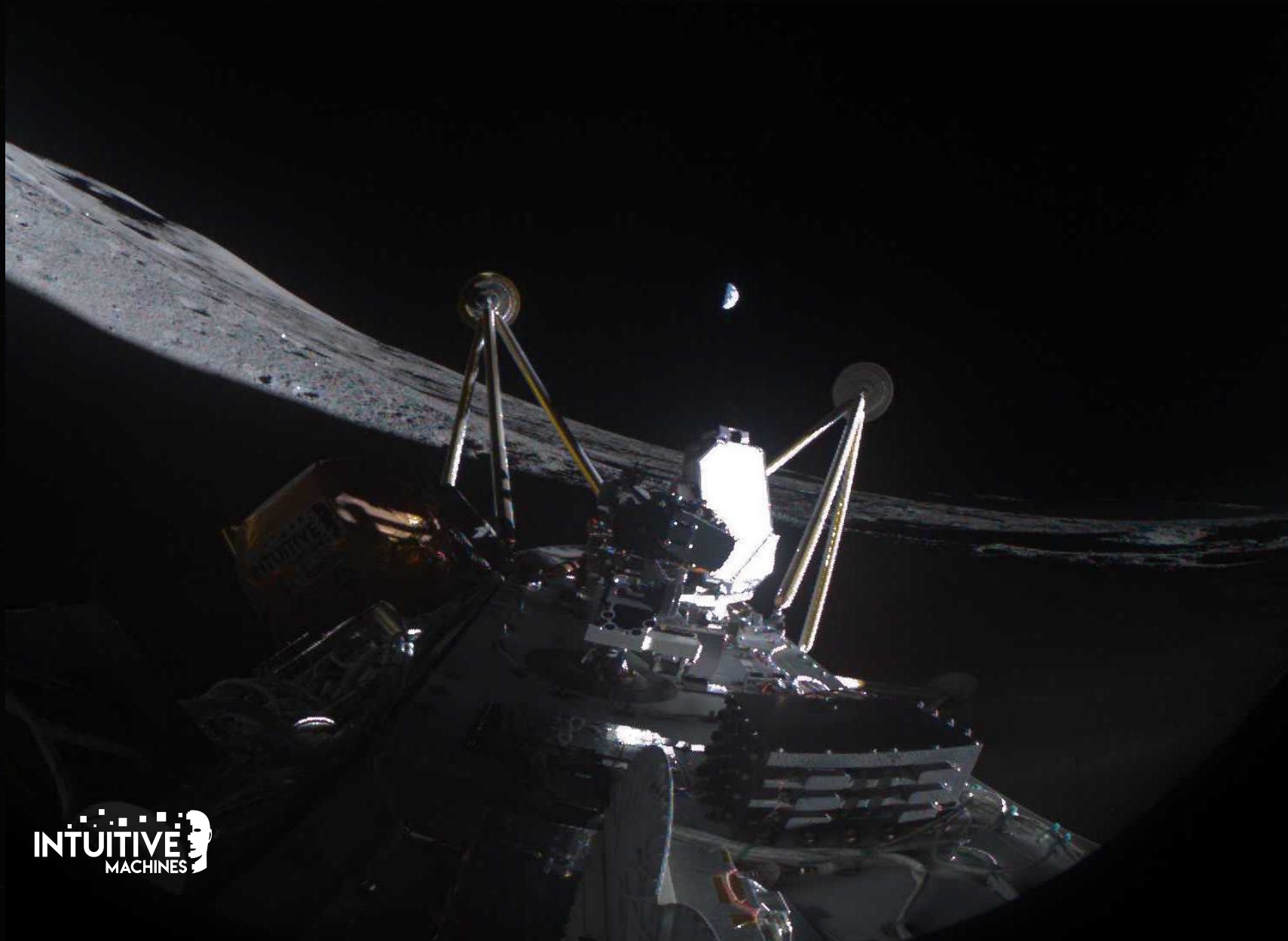


Braking Burn

Panels C & F



Surface Operations





THANK YOU!

