

National Aeronautics and
Space Administration



EXPLORE SCIENCE

Commercial Lunar Payload Services (CLPS) Cs-3 Task Order

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Commercial Lunar Payload Services (CLPS)



- CLPS is a firm fixed price (FFP) innovative, service-based, competitive acquisition approach that enables rapid, affordable, and frequent access to the lunar surface via a growing market of commercial providers.
- NASA wants to be one of many customers for CLPS services.
- CLPS deliveries are CLPS Provider missions (not NASA missions)
- We have awarded 10 task orders for deliveries to the Moon
- We have manifested more than 50 science instruments and tech demos.
- We have committed more than \$650M to lunar activities.
- There are commercial payloads planned for every mission delivering NASA payloads



LUNAR MISSIONS

2022-2026+

CLPS NASA PAYLOAD GOALS

PEREGRINE-1

- Regolith volatiles composition
- Local radiation environment

1ST NOVA-C

- Plume/surface interactions, charged particles near surface
- Lander prop tank gauge test

2ND NOVA-C

- Drilling for volatiles

1ST BLUE GHOST

- Characterize Earth's magnetosphere and Moon's interior

3RD NOVA-C

- Lunar Magnetic Anomalies

GRIFFIN-1 & VIPER

- Search for volatiles, below surface & shadowed regions

SERIES-2

- Geophysics of the Schrödinger Basin

2ND BLUE GHOST

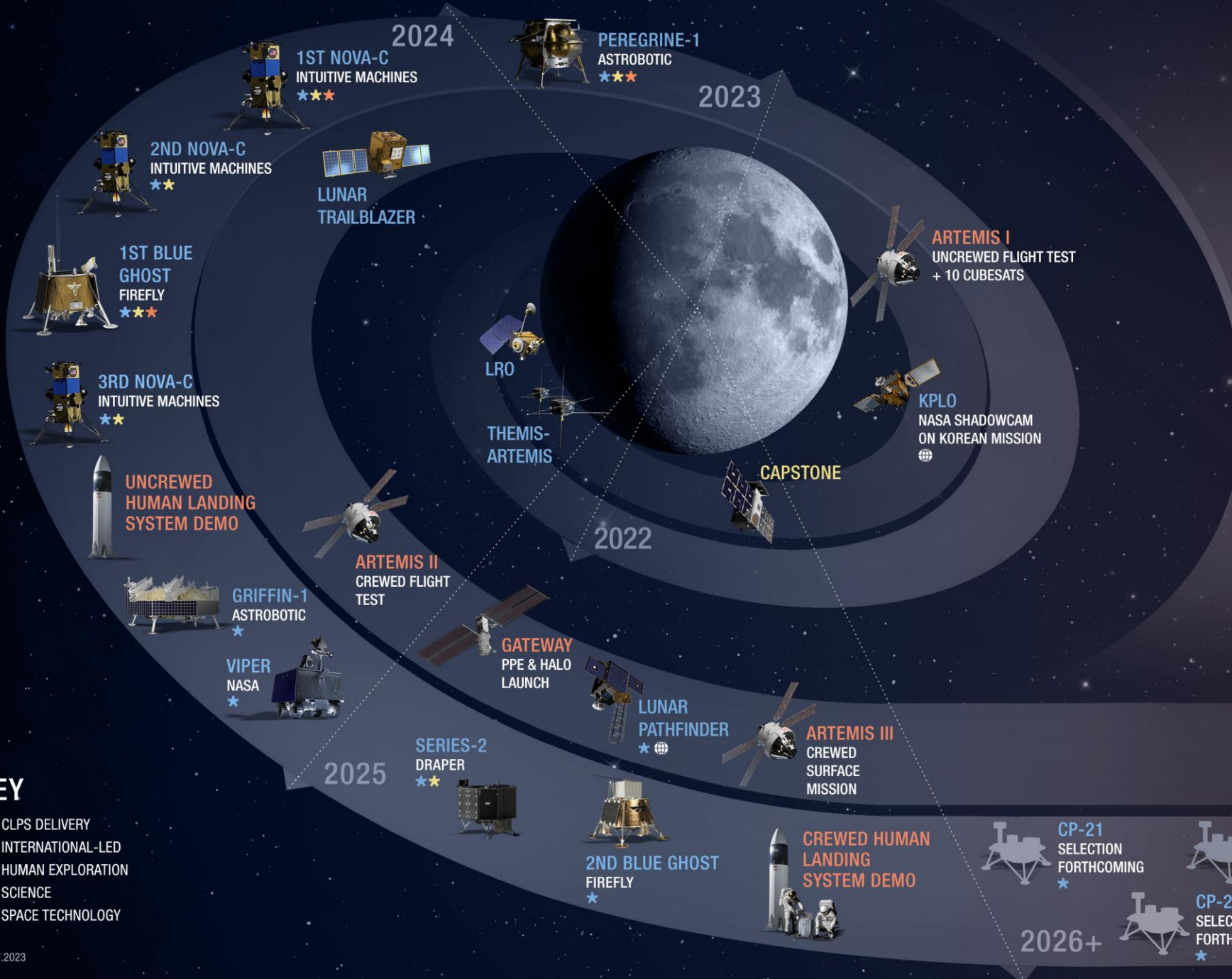
- Dark Ages observations from the lunar far side
- ESA lunar comm relay satellite deployment

ORBITAL MISSIONS

SURFACE MISSIONS

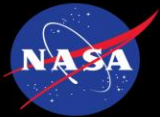
KEY

- ★ CLPS DELIVERY
- 🌐 INTERNATIONAL-LED
- 👤 HUMAN EXPLORATION
- 🔬 SCIENCE
- 🚀 SPACE TECHNOLOGY



COMMERCIAL LUNAR PAYLOAD SERVICES **LANDING SITES**

National Aeronautics and
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NEAR SIDE

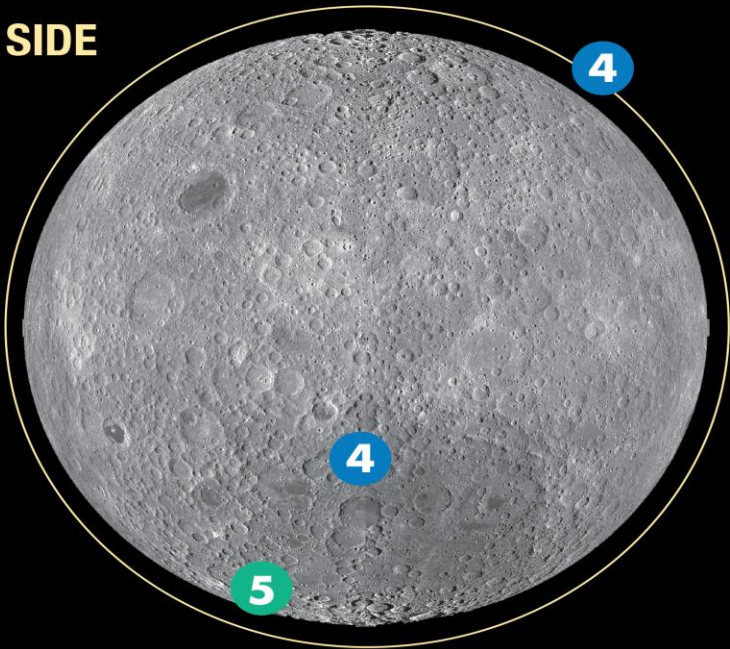


1 Astrobotic Peregrine Mission-1
LANDING SITE: Sinus Viscositatis
LANDER NAME: Peregrine
CLPS CONTRACT AWARD: TO 2-AB

2 Intuitive Machines IM-3
LANDING SITE: Reiner Gamma
LANDER NAME: NOVA-C
CLPS CONTRACT AWARD: TO CP-11

3 Firefly Blue Ghost Mission 1
LANDING SITE: Mare Crisium
LANDER NAME: Blue Ghost
CLPS CONTRACT AWARD: TO 19D

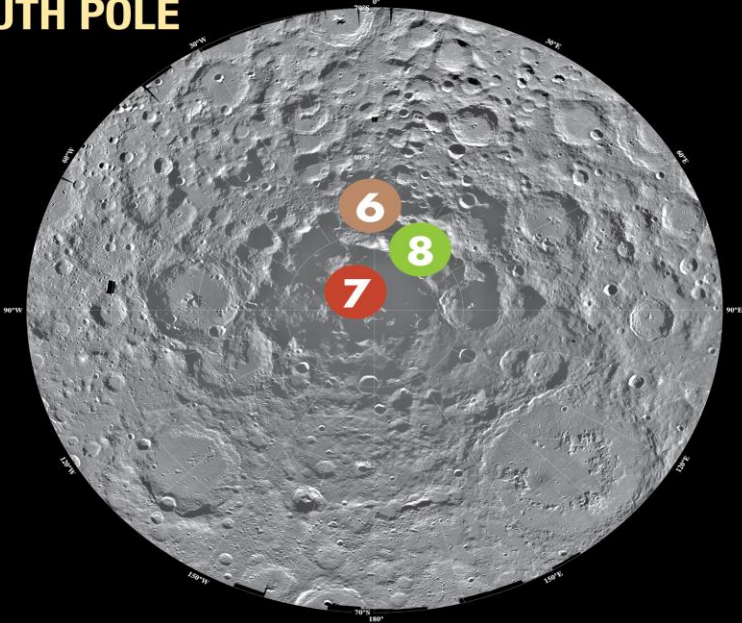
FAR SIDE



4 Firefly Blue Ghost Mission 2
LANDING SITE: Lunar Farside and Orbit
LANDER NAME: Blue Ghost
CLPS CONTRACT AWARD: TO CS-3 and CS-4

5 Team Draper
LANDING SITE: Schrödinger Basin
LANDER NAME: SERIES-2
CLPS CONTRACT AWARD: TO CP-12

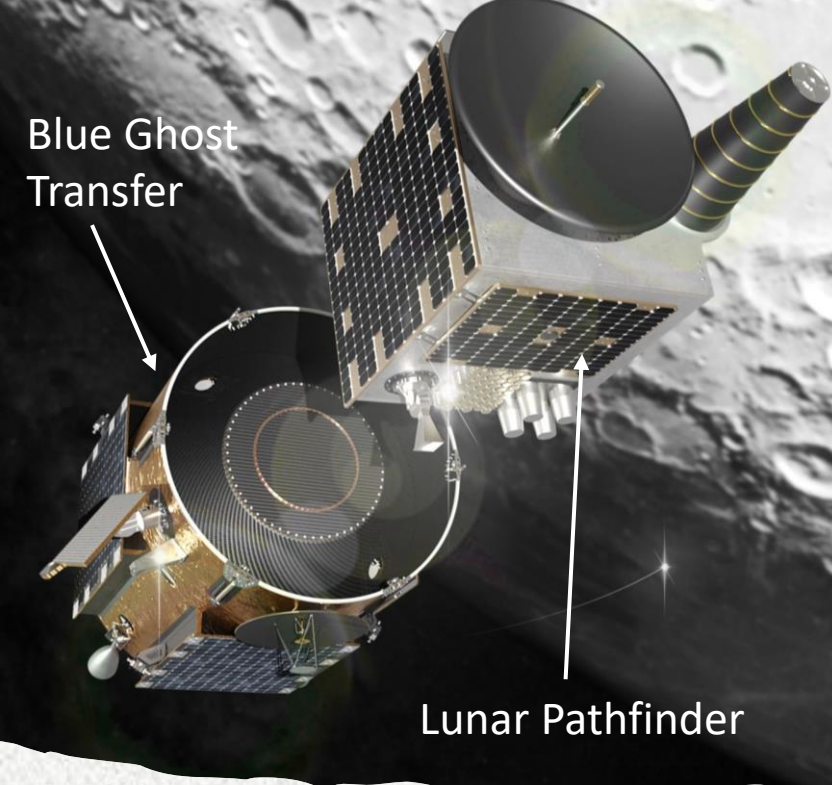
SOUTH POLE



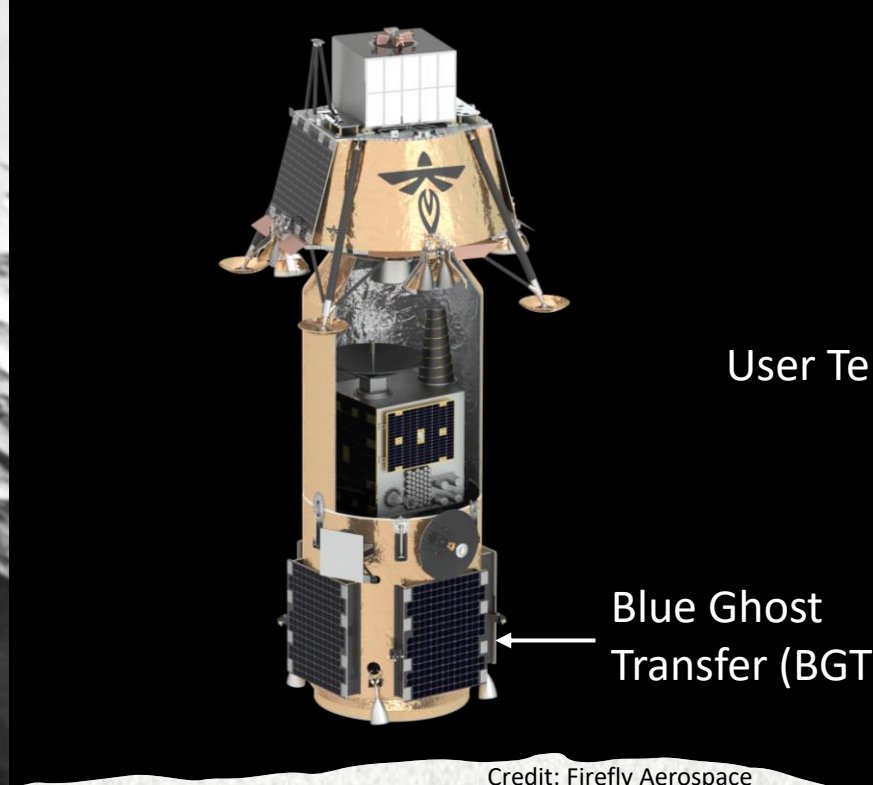
6 Intuitive Machines IM-1
LANDING SITE: Malapert A
LANDER NAME: NOVA-C
CLPS CONTRACT AWARD: TO 2-IM

7 Intuitive Machines IM-2
LANDING SITE: Shackleton Connecting Ridge
LANDER NAME: NOVA-C
CLPS CONTRACT AWARD: TO PRIME-1

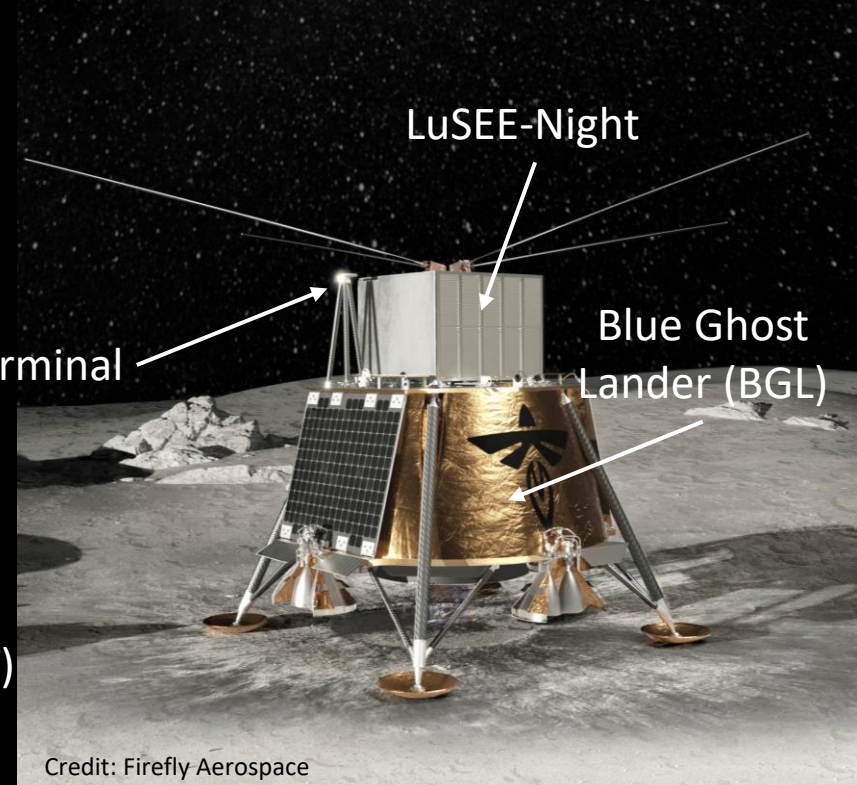
8 Astrobotic Griffin Mission-1
LANDING SITE: Mons Mouton
LANDER NAME: Griffin
CLPS CONTRACT AWARD: TO 20A (VIPER)



Credit: Firefly Aerospace



Credit: Firefly Aerospace



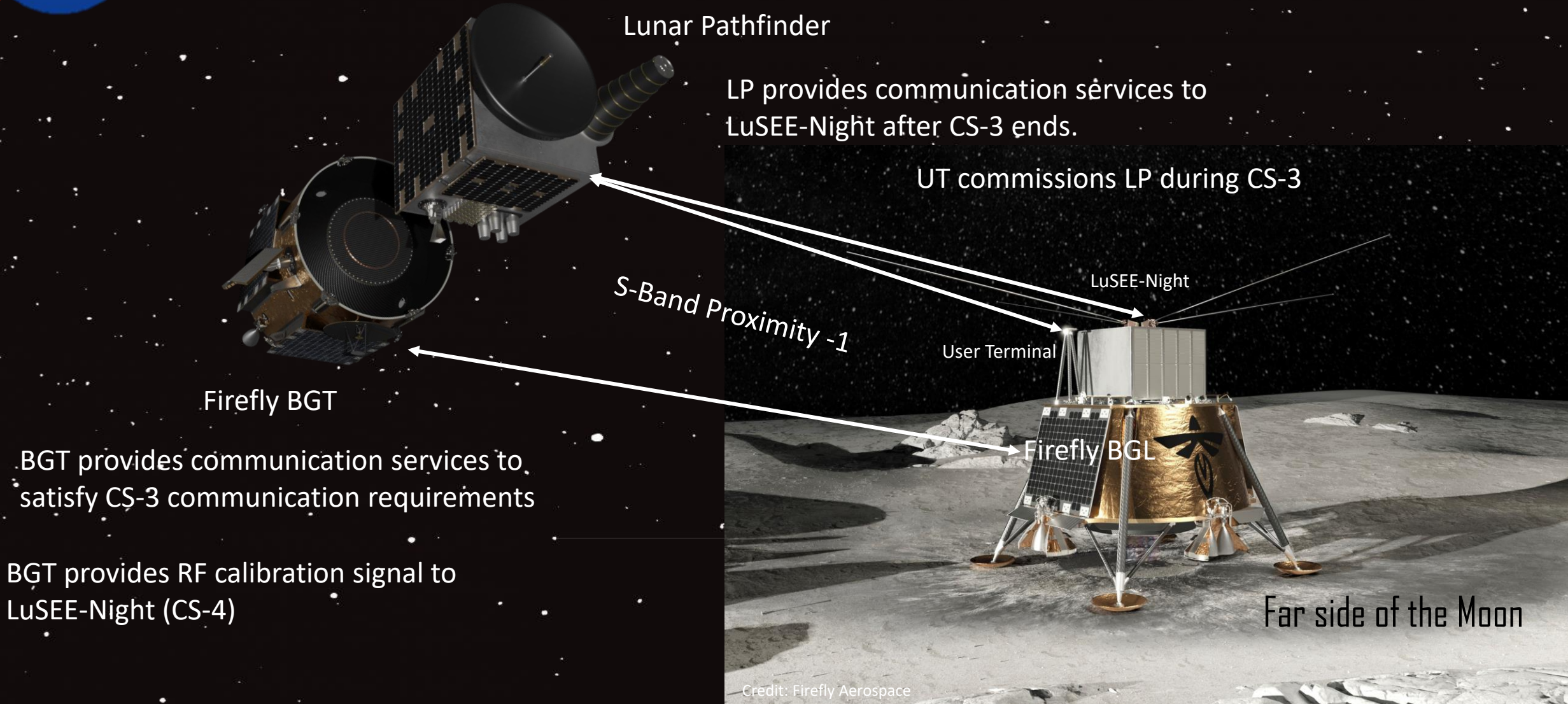
Credit: Firefly Aerospace

CLPS CS-3 Task Order

- Launch end of 2025
- 365 kg to lunar orbit and 130kg to lunar surface
- \$112M award value
- Two surface and one orbital payloads
- CS-4 provides RF calibration signal to LuSEE-Night



CS-3 Communication Architecture

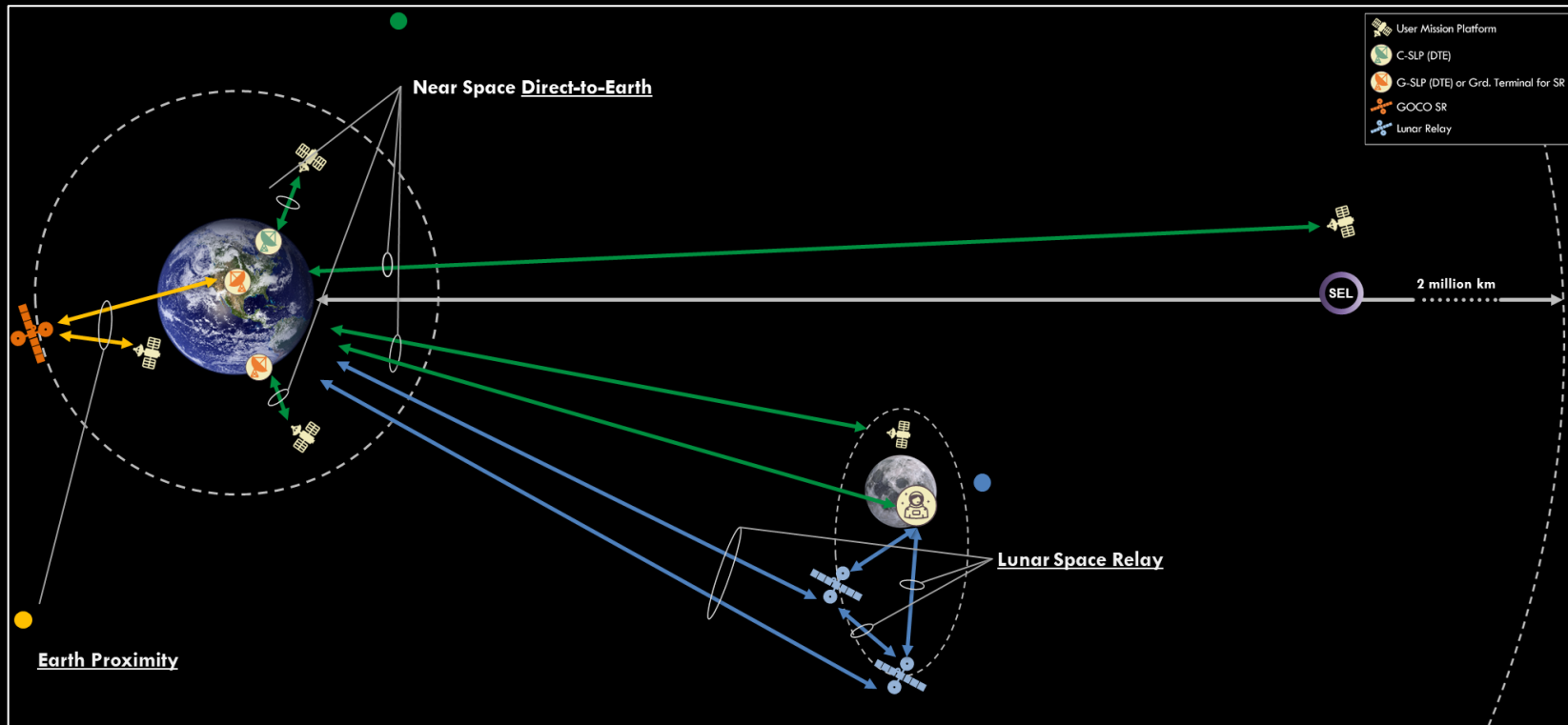




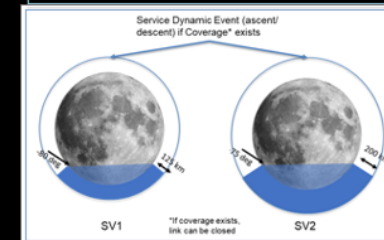
NASA Lunar Communications Relay and Navigation Services (LCRNS)



- NASA's Near Space Network provides communications and navigation services out to 2 million km
- The Near Space Network Services procurement, released in February 2023, includes a category for Lunar Communications and Relay Navigation Services
 - Proposals were received in April 2023 and evaluation is underway
 - The LunaNet Interoperability Specification (LNIS) provides the source for standards and interoperability requirements



Initial Operating Capability Increments			
	Increment-Alpha	Increment-Bravo	Increment-Charlie
Effectivity	2025	2027	2028
Capabilities	•Communication support •RF and waveform compatibility with LNIS •AFS	•Enhanced communications support •RF and waveform compatibility with LNIS •Multiple AFS	•Full set LCRNS SRD IOC requirements
% of SRD IOC RQMTS	75%	83%	100%



Service Volume 1, Service Volume 2 identify the minimum space (service) volume where coverage and performance requirements must be met per Lunar Relay SRD

Phase-Increment	Inc-Alpha			Inc-Bravo			Inc-Charlie		
	Ka-band	S-band	AFS	Ka-band	S-band	AFS	Ka-band	S-band	AFS/ LANS
Number of simultaneous links	1	1	1	1	1	2	2	2	4
Forward/Return Link	R only	F+R	F only	F+R	F+R	F only	F+R	F+R	F only
Service Volume	SV1			SV1			SV2		
Min. % Coverage of an Earth Day	70% (TBR)			75%	90%	70%	40%	75%	90%
									40% (with max. spatial GDOP<6)



"Ten years ago the Moon was an inspiration to poets and an opportunity for lovers. Ten years from now it will be just another airport."

- Emmanuel G. Mesthene, Writer

Let us inspire humanity and build the lunar airport (LUN)
together!