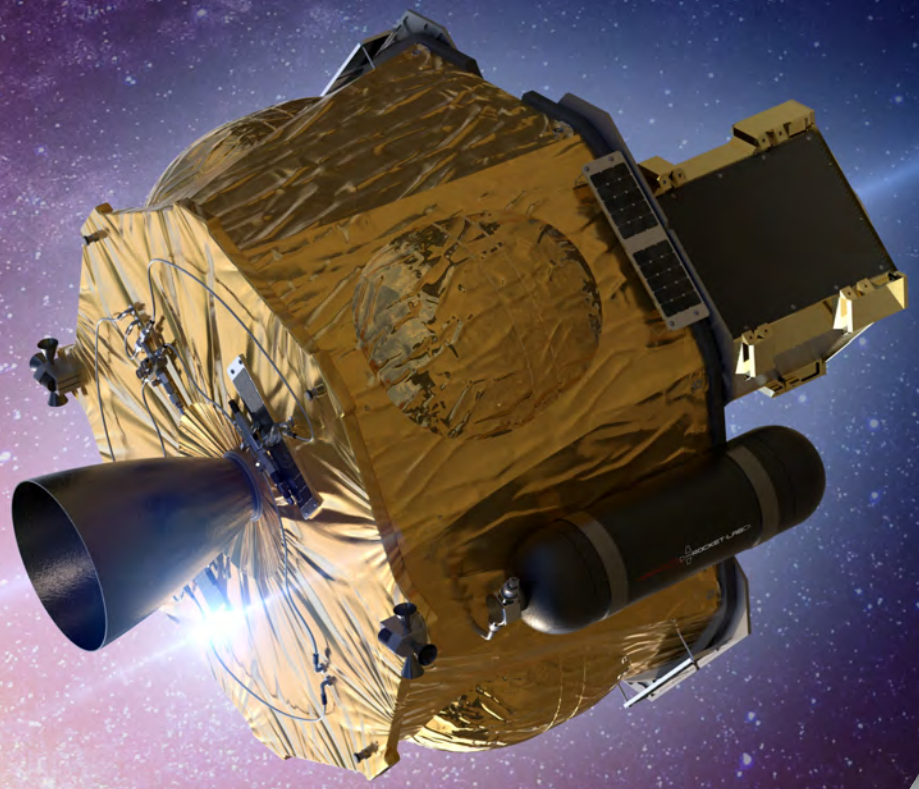
PHOTON

THE SPACECRAFT SOLUTION FOR EVERY SMALLSAT MISSION



RICHARD FRENCH, DIRECTOR
GLOBAL GOVERNMENT LAUNCH SERVICES
ROCKET LAB

SMALL LAUNCH IS SOLVED

ROCKET·LAB

THE GLOBAL LEADER IN SMALL LAUNCH

- Founded in 2006 by Peter Beck
- US company, $288M raised, valued at over $1B
- 11 launches, 48 satellites, 100% mission success
- HQ in Long Beach, CA with global infrastructure
- 2 launch sites, 3 launch pads, including the only private orbital launch site in the world
- First 3D printed rocket engine
- First electric pump cycle rocket engine
- First fully carbon composite vehicle
- First NASA Cat 1 certified small launch vehicle

ELECTRON

OVERALL

LENGTH
17M

DIAMETER (MAX)
1.2M

STAGES
2 + KICK STAGE

VEHICLE MASS (LIFTOFF)
13,000KG

MATERIAL/STRUCTURE
CARBON FIBER COMPOSITE/MONOCOQUE

PROPELLANT
LOX/KEROSENE

PAYLOAD

NOMINAL PAYLOAD
150KG TO SSO

PAYLOAD DIAMETER
1.08M

PAYLOAD HEIGHT
1.91M

FAIRING SEP SYSTEM
PNEUMATIC UNLOCKING, SPRINGS

STAGE 2

PROPULSION
1X RUTHERFORD VACUUM ENGINES

THRUST
5500 LBF VACUUM

ISP
343 SEC

INTERSTAGE

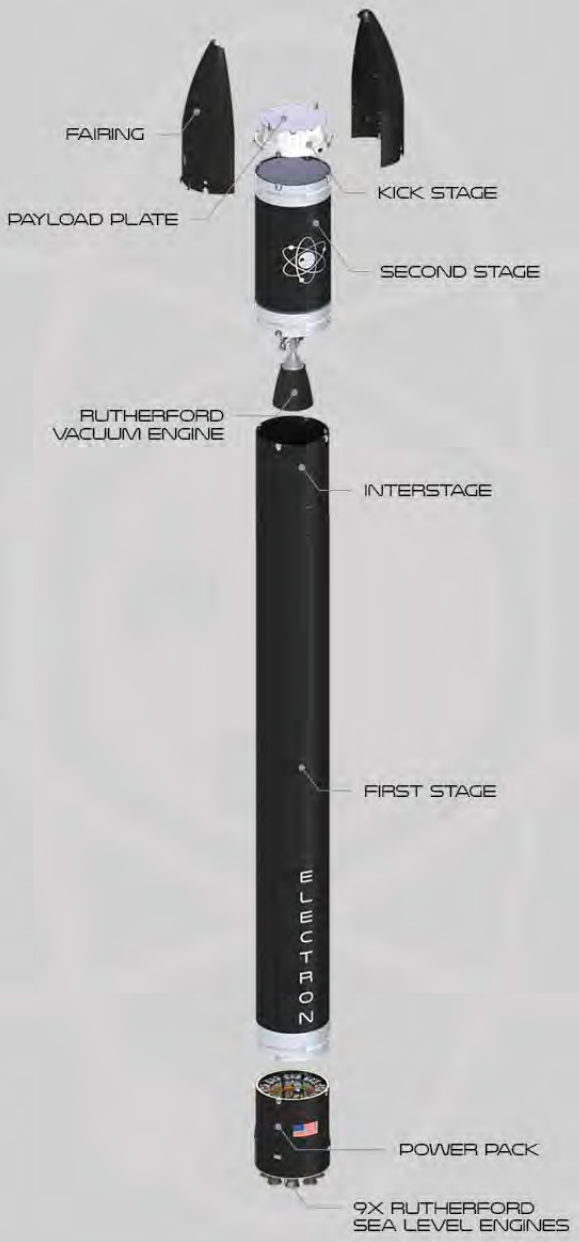
SEPARATION SYSTEM
PNEUMATIC PUSHER

STAGE 1

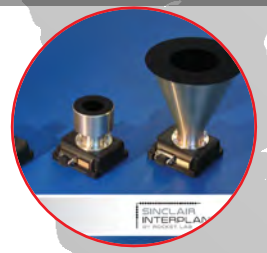
PROPULSION
9X RUTHERFORD SEA LEVEL ENGINES

THRUST
5500 LBF SEA LEVEL (PER ENGINE)

ISP
311 SEC



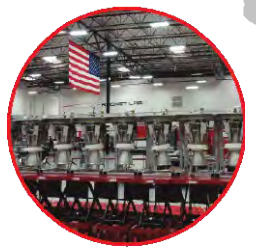
GLOBAL INFRASTRUCTURE

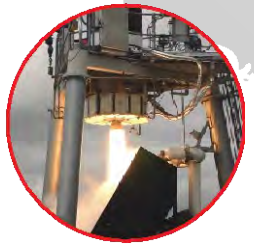


Sinclair Interplanetary
By Rocket Lab

LAUNCH COMPLEX 2

Rocket Lab HQ
Long Beach





PROPULSION
TEST COMPLEX

AUCKLAND
PRODUCTION
COMPLEX

LAUNCH COMPLEX 1

MISSION HERITAGE

A ROCKET EVERY WEEK

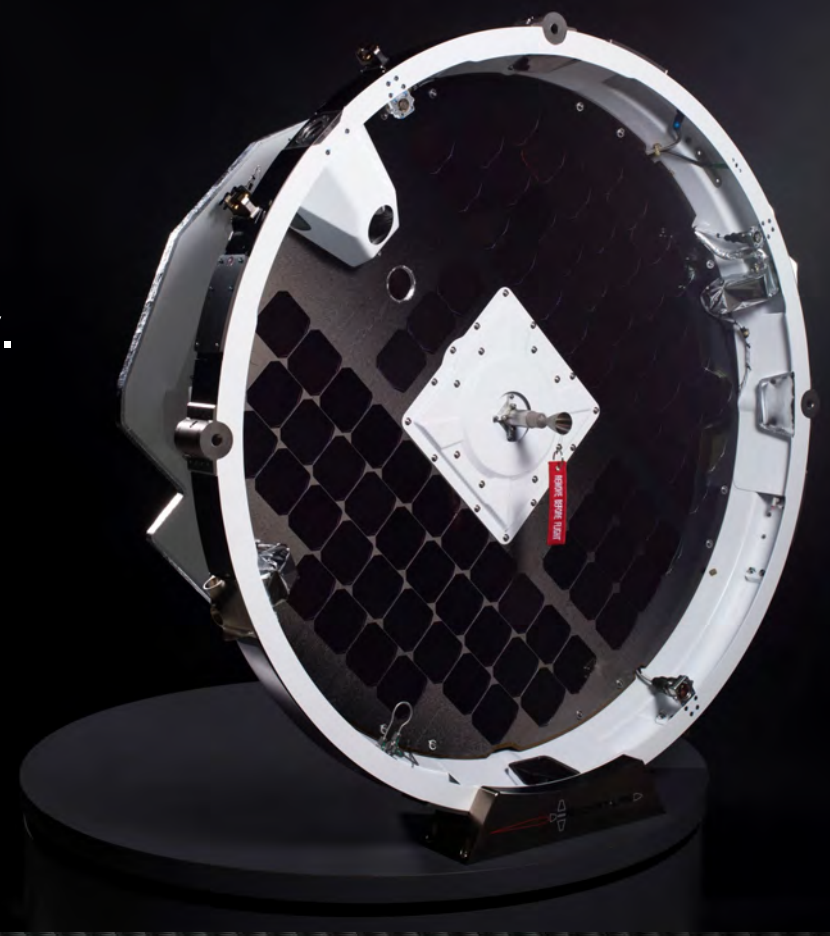
SMALL LAUNCH IS SOLVED

ROCKET·LAB

NOW WE'RE SOLVING SATELLITES

Focus on your payload, we do the rest.

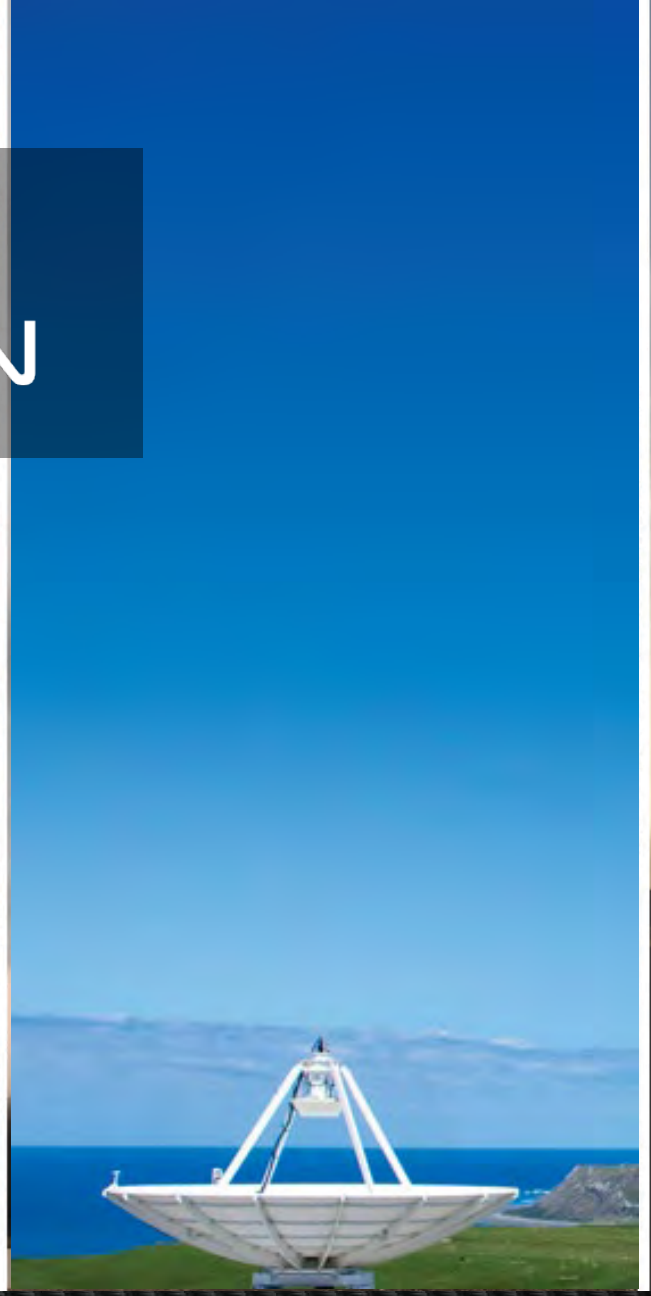
- Don't worry about the spacecraft.
- Focus on the thing that provides revenue or capability.



IMAGINE IF YOU HAD TO BUILD A CELL PHONE EVERY TIME YOU WANTED TO CREATE AN APP?

This is where we are today in space.

THE COMPLETE MISSION SOLUTION



KSAT PARTNERSHIP ENABLES GLOBAL GROUND STATION COVERAGE

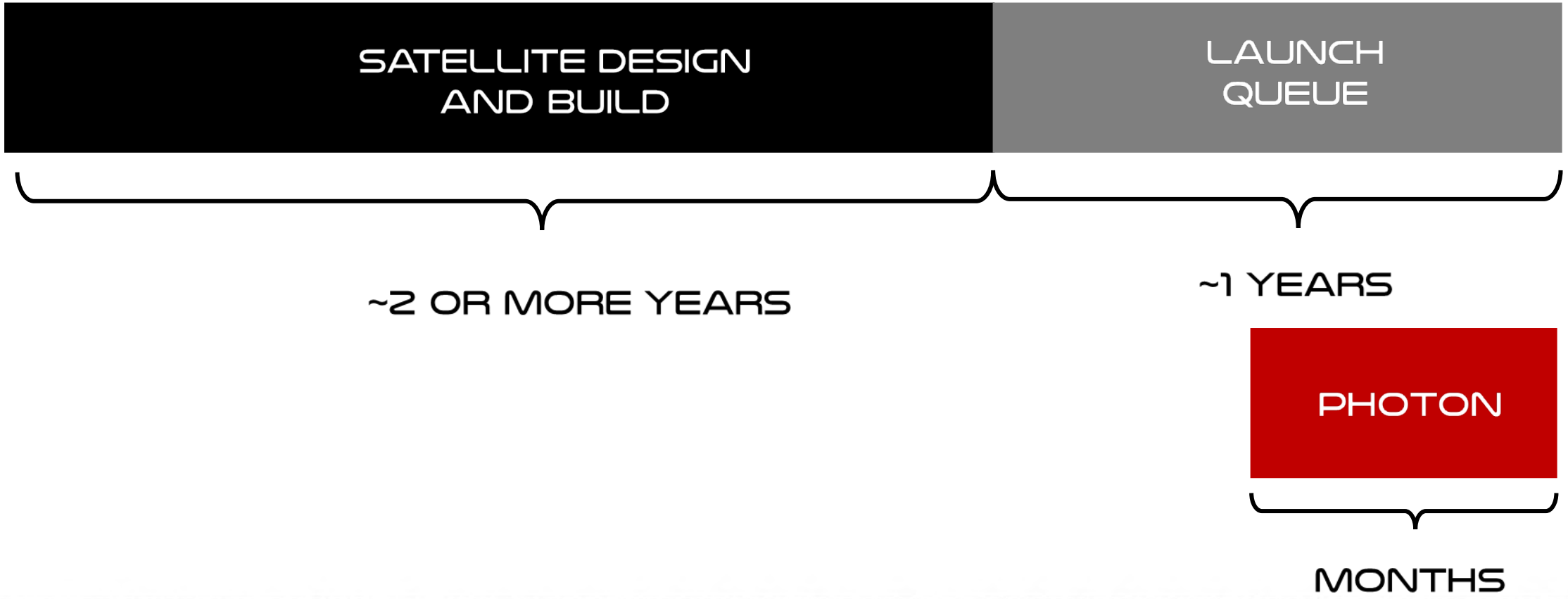
PHOTON

"**Photon**" noun': "*A collection of components configured in such a way to produce a satellite that also shares some commonality with its launch system.*"

PHOTON

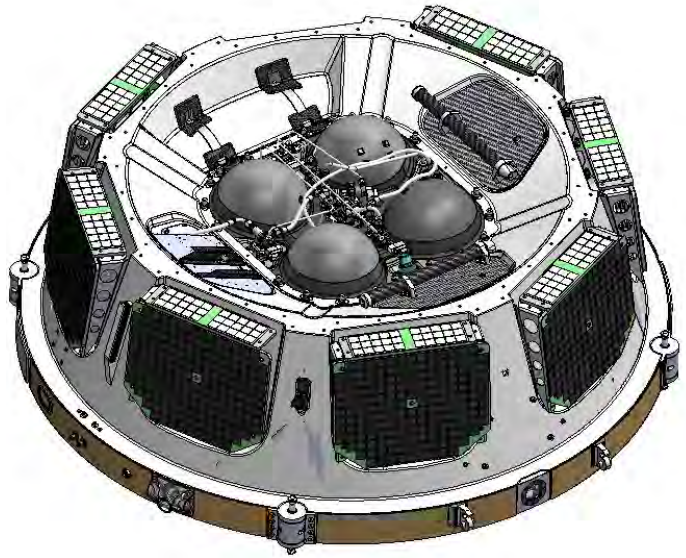
"**Photon**" noun': "*a force carrier emitted by an Electron in a higher than normal orbit.*"

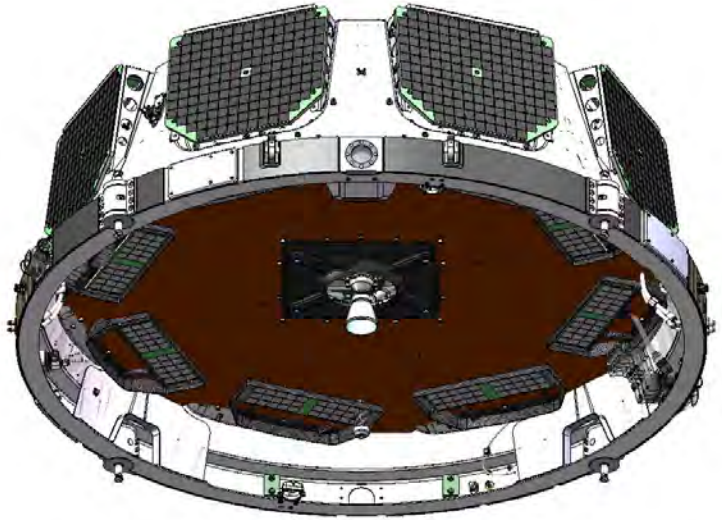
STREAMLINING THE PATH TO ORBIT



GET MORE, SPEND LESS, GET THERE FASTER

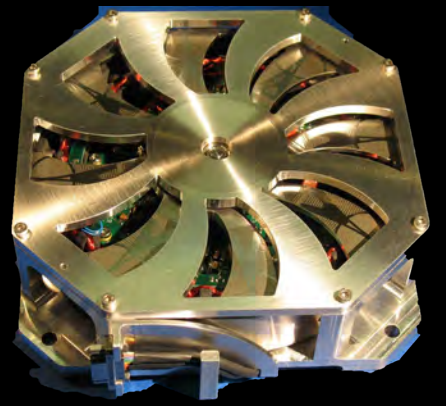
- Launch + satellite + ground + operations as a bundled service
- Based on Rocket Lab's heritage Kick Stage, leveraging significant orbital flight heritage.
- Adds high power generation, high-accuracy attitude determination and control, radiation-tolerant avionics, and high-speed downlink.
- Configured for your mission
- LEO and Beyond LEO capabilities
- Versatile platform for Earth observation/remote sensing, telecommunications, science, research, technology demonstrations, hosted payloads

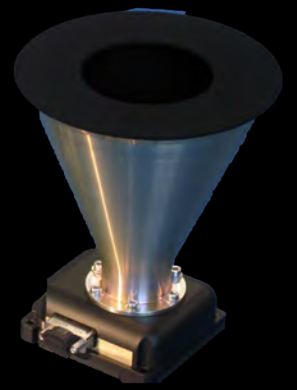


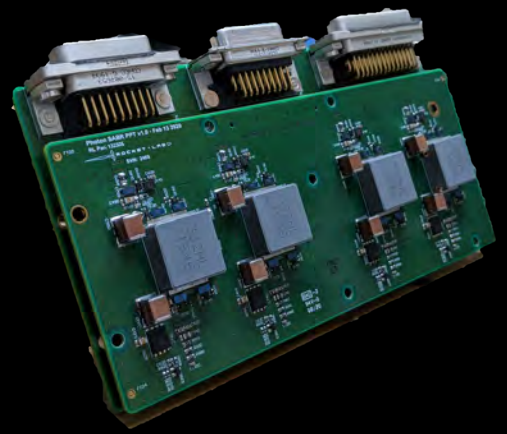


NEW SUBSYSTEMS IN PRODUCTION

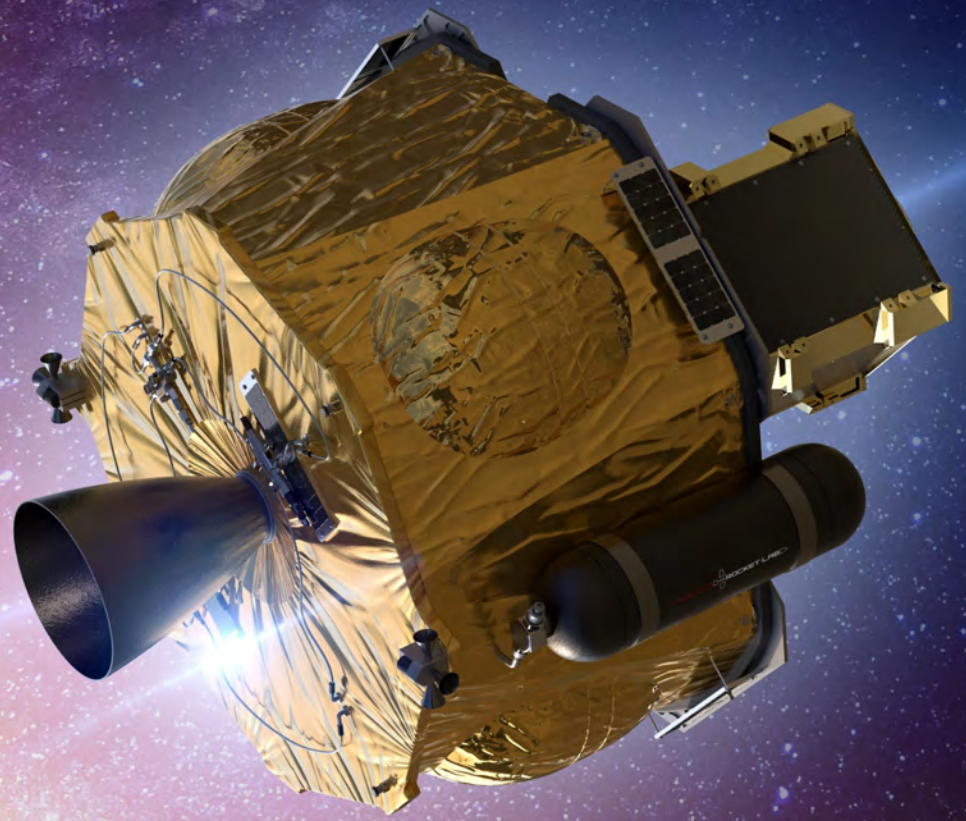
- ATTITUDE CONTROL SYSTEMS
- TORQUE RODS
- POWER MANAGEMENT SYSTEMS
- FLIGHT COMPUTERS
- REACTION CONTROL SYSTEMS
- IN-SPACE PRIMARY PROPULSION
- MOTOR CONTROLLERS
- REACTION WHEELS (SINCLAIR)
- STAR TRACKERS (SINCLAIR)



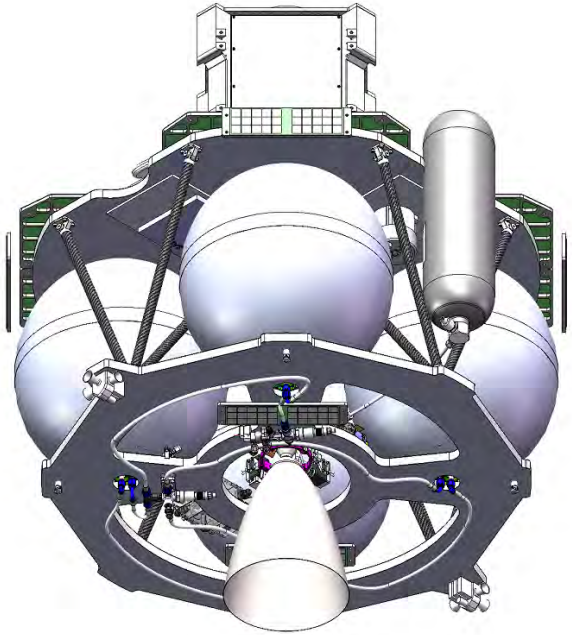


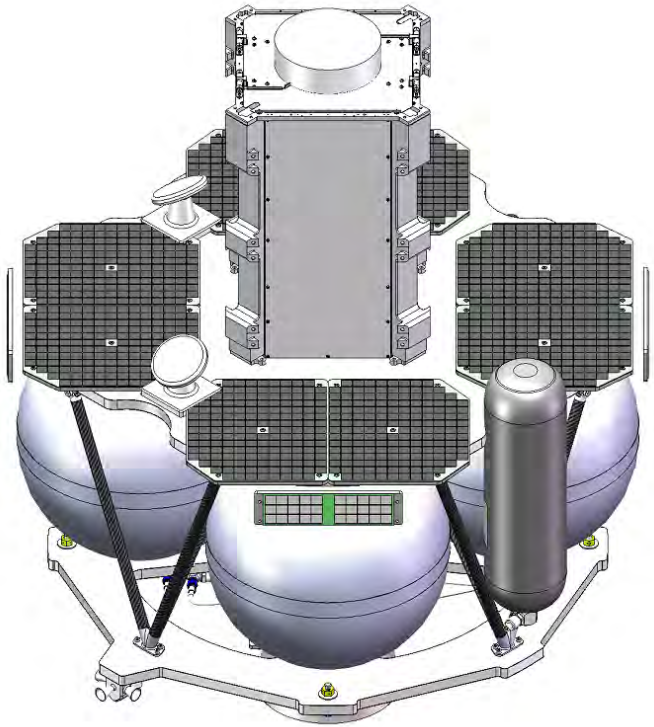


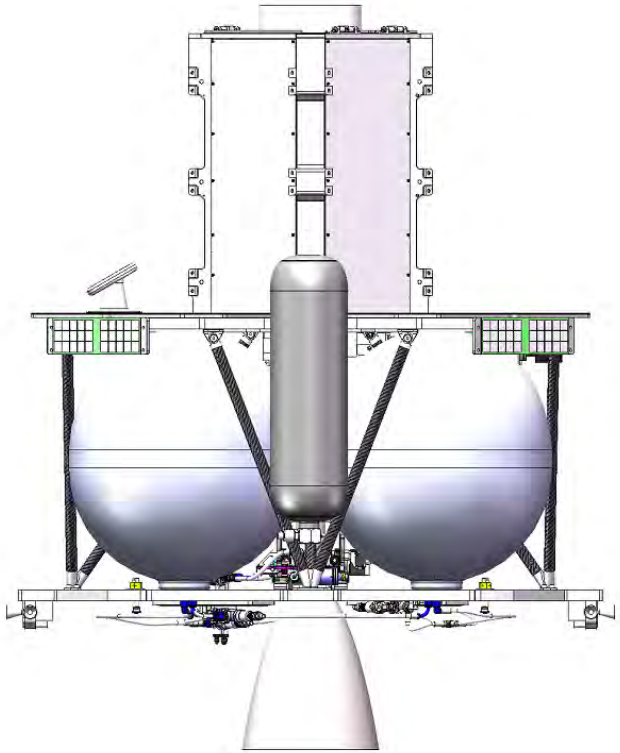
PHOTON IS TAKING NASA TO THE MOON



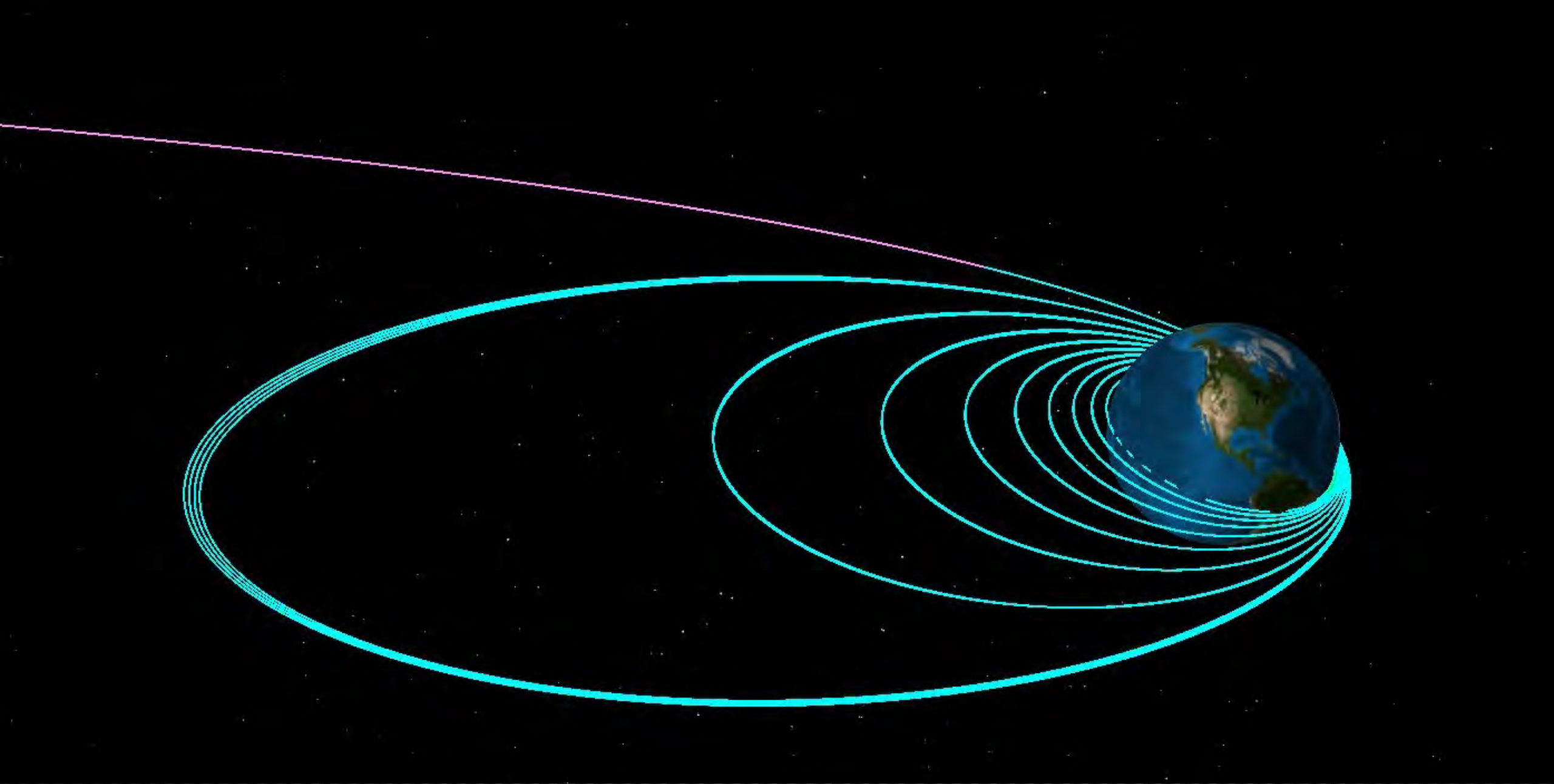
PHOTON LUNAR

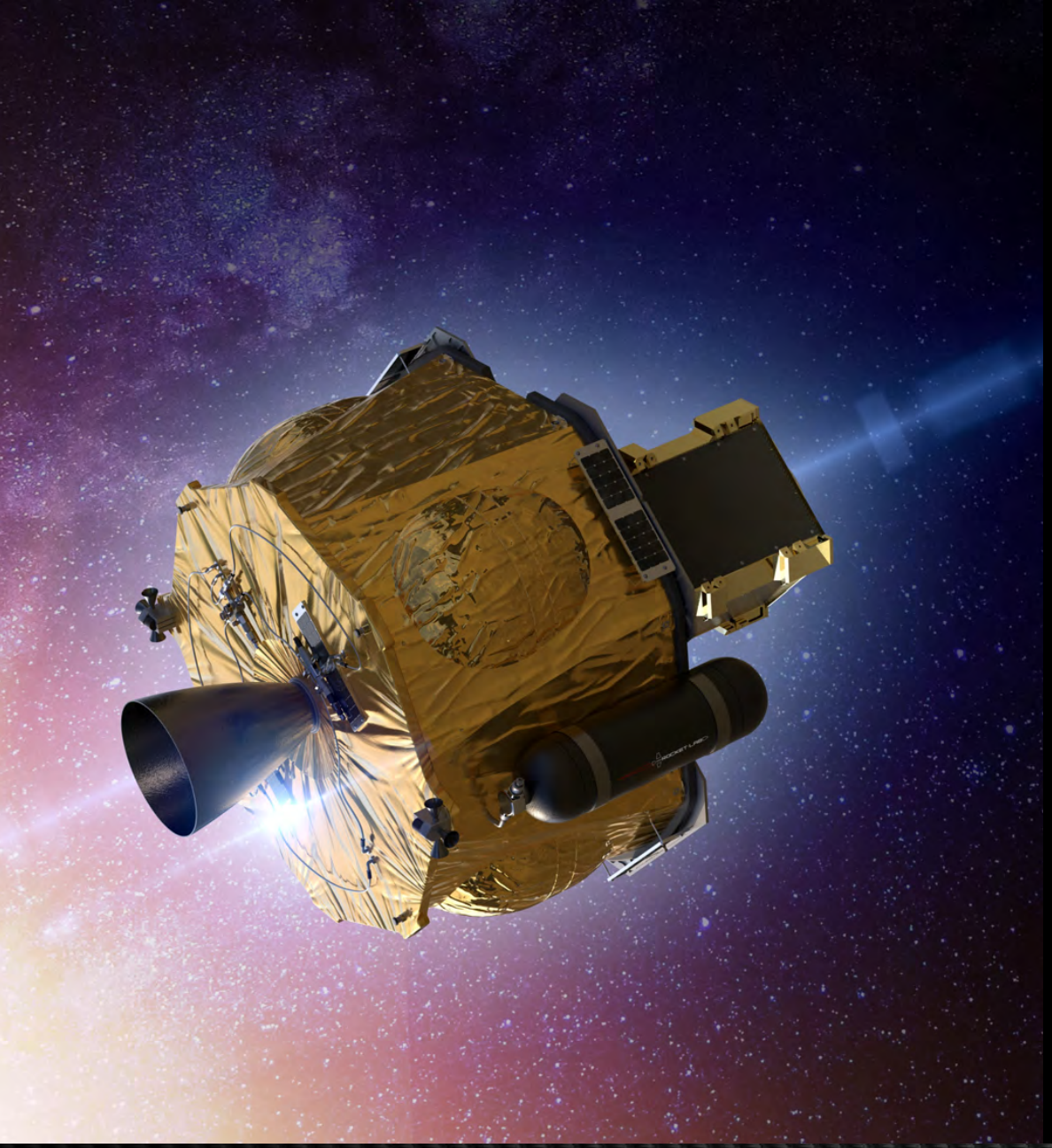


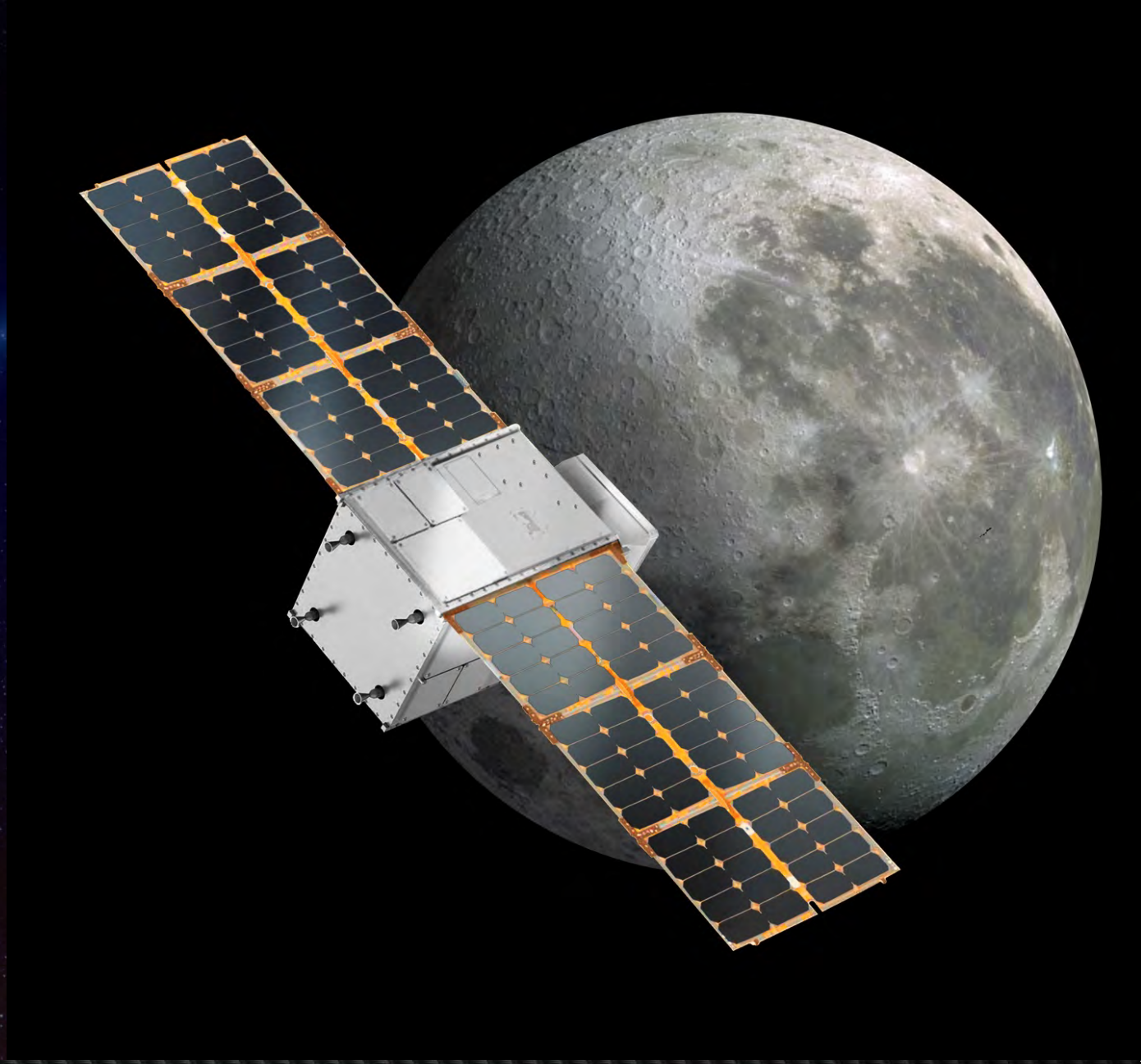




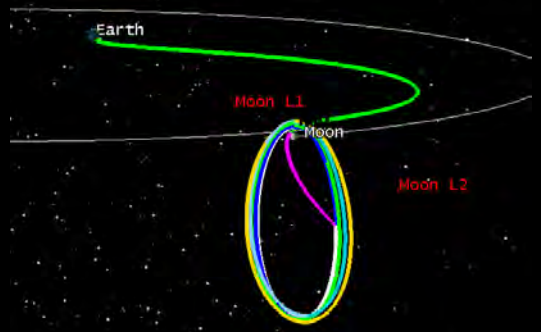
LAUNCH FROM LC-2



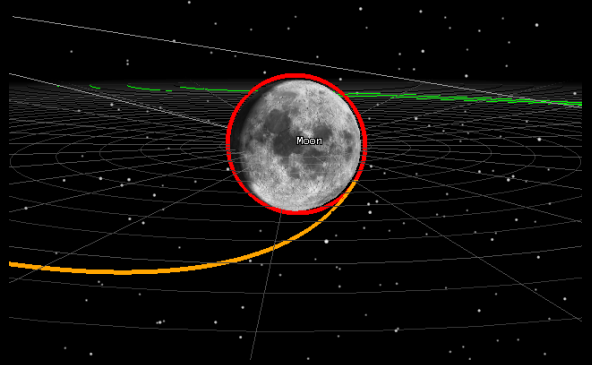




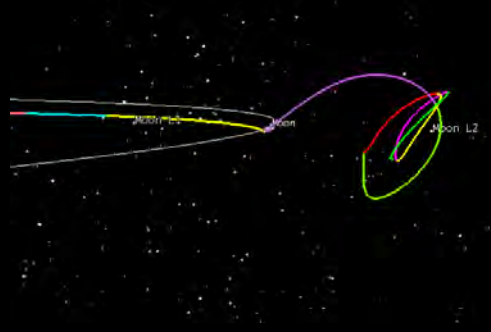
ENABLING CISLUNAR



Lunar NRHO



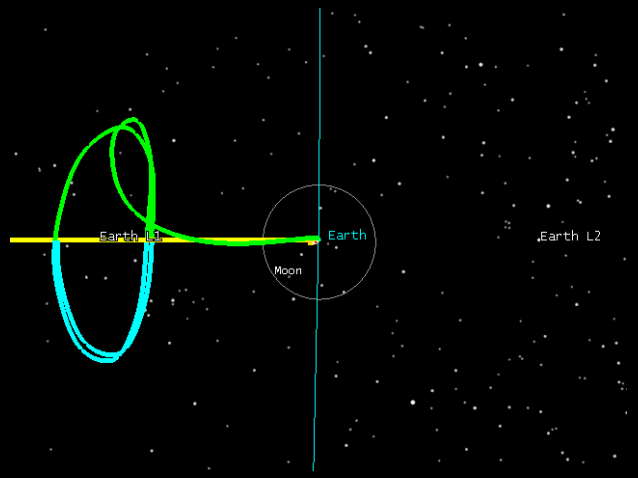
Low Lunar Orbit



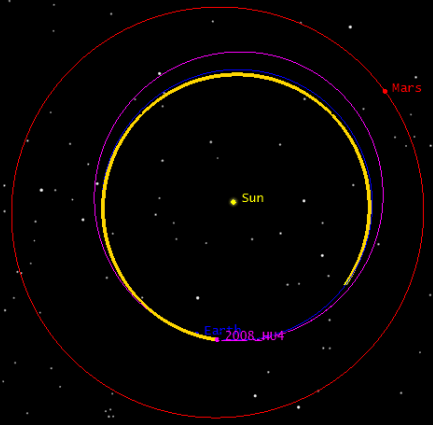
Earth-Moon L2

Earth-Moon L1

DEMOCRATIZING DEEP SPACE

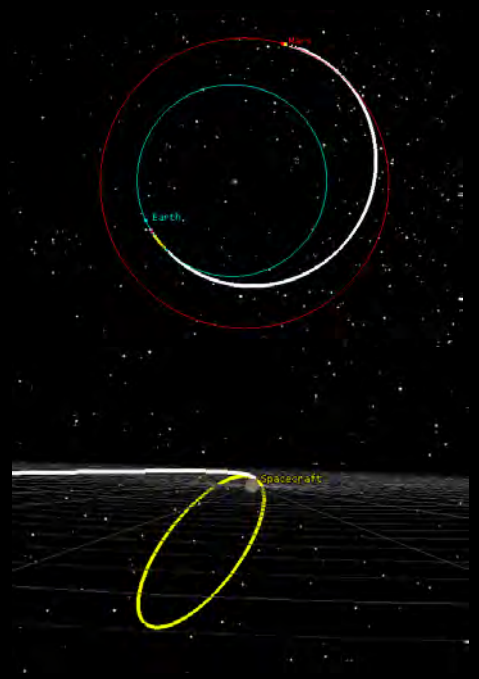


Earth-Sun L1

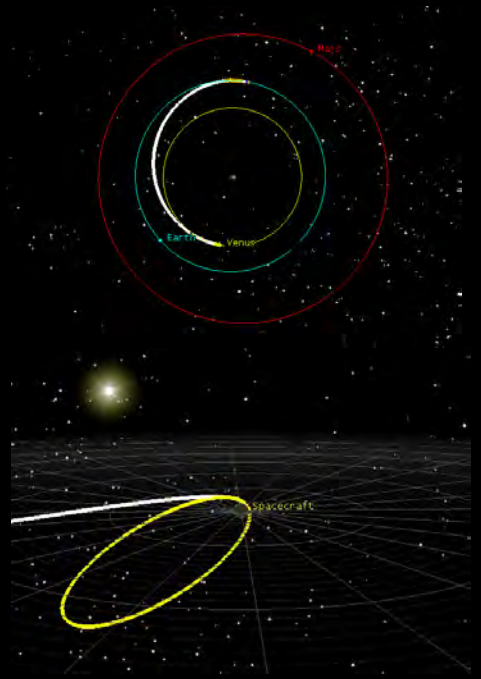


Near Earth Objects

Oort Cloud comets



Mars



Venus

QUESTIONS?

Richard French
Director, Global Government Launch Services
r.french@rocketlabusa.com
(734) 717-4760