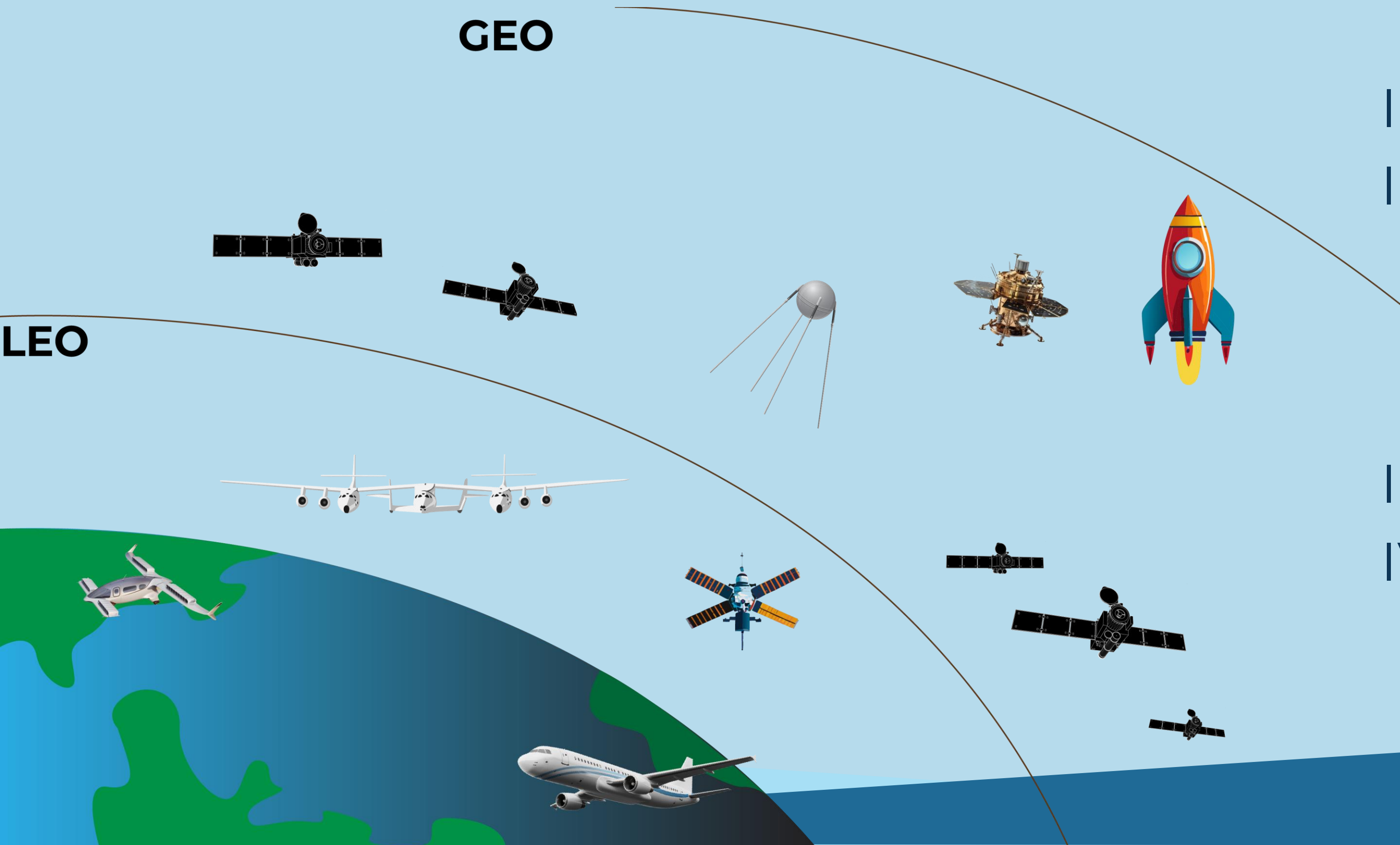




# BLUESHIFT

## Space Tech Expo

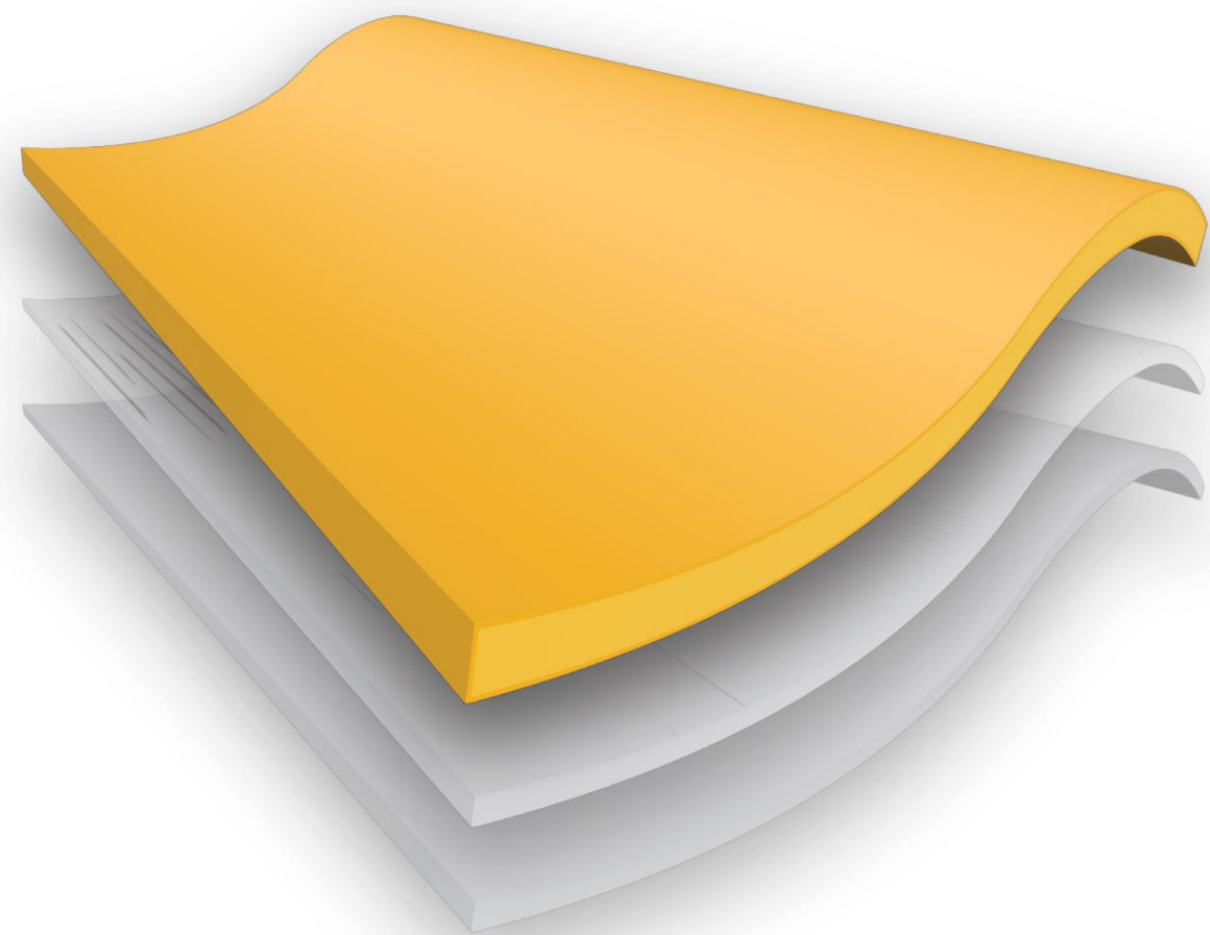
# Discussion Today



- I. Blueshift Intro
- II. NASA Artemis Program:
  - I. Gateway
  - II. Blue Ghost
- III. The Space Race
- IV. What's Next

# Blueshift Intro

We are ***thermal material experts***



- - → **AeroZero®**

- - → **Adhesive**

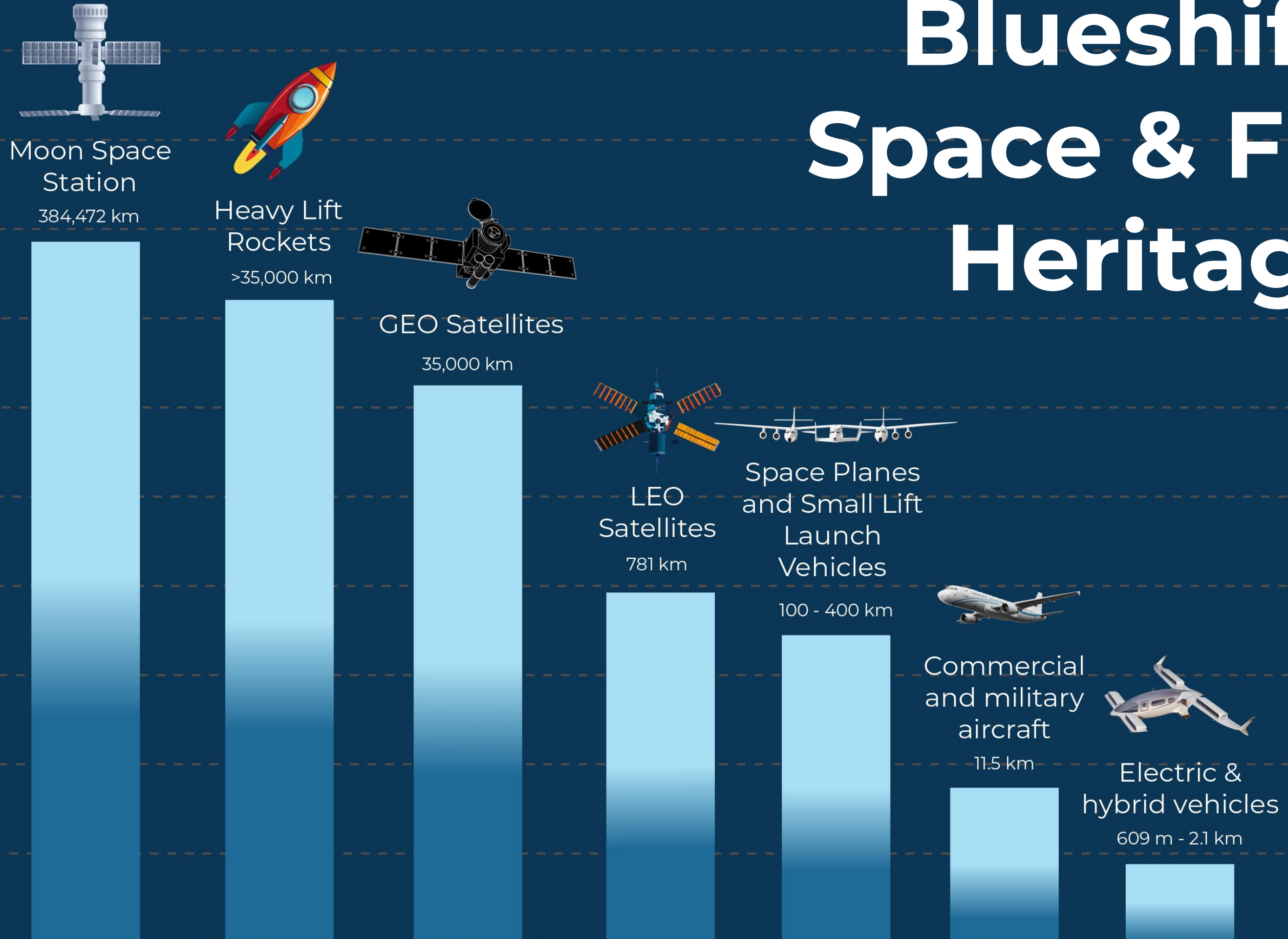
- - → **Release Liner**

## **10+ Commercial Products**

- Handling transient temps ranging from -200 °C to **+2,400 °C**

- 50,000 ft<sup>2</sup> Manufacturing Facility
- 10,000 ft<sup>2</sup> R&D Technology Center
- 100-Acre Shared Campus
- AS 9100D/ISO 9001:2015 Certified
- 30+ FTE's

# Blueshift's Space & Flight Heritage



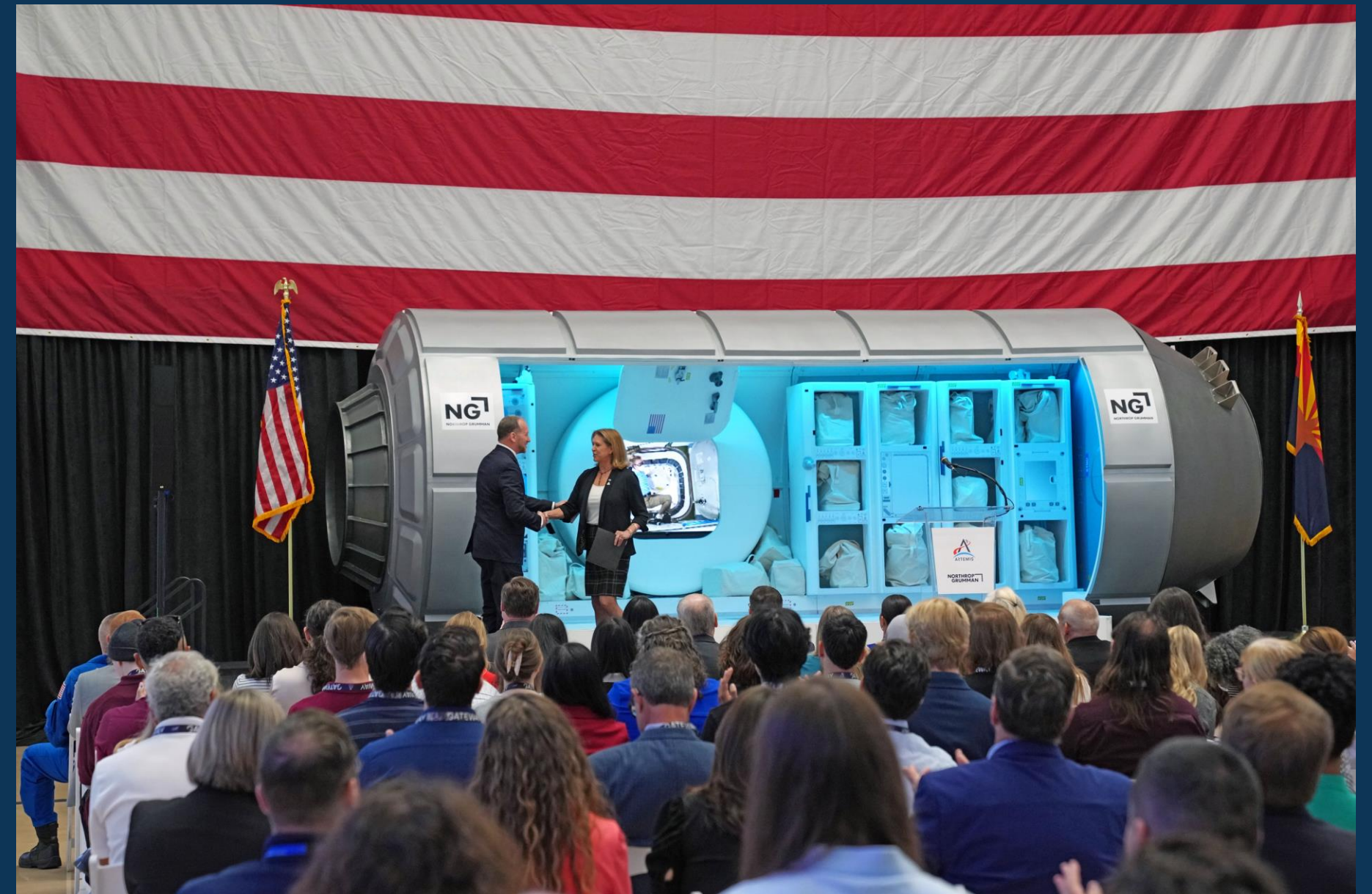
# The Artemis Program

## A long-term initiative to:

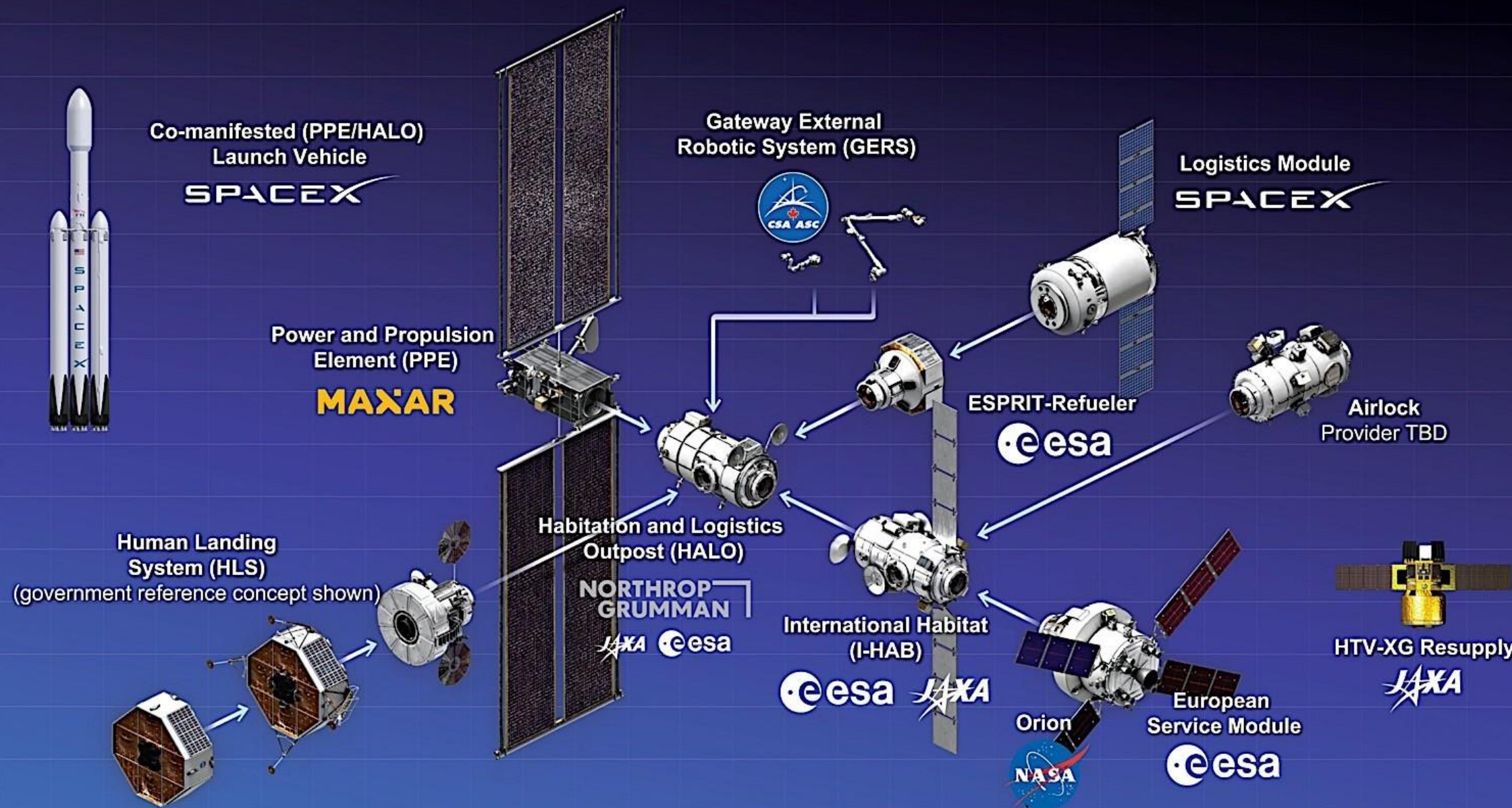
- Return humans to the Moon
- Establish a sustainable lunar presence
- Use the Moon to prepare for Mars missions

## Key Components:

- Crewed Missions (e.g., Artemis I–III)
- Surface Systems (landers, rovers, habitats)
- Support Infrastructure (e.g., Gateway)
- Commercial Partnerships (e.g., CLPS with Blue Ghost)



# GATEWAY Integrated Spacecraft Configuration



# NASA Gateway

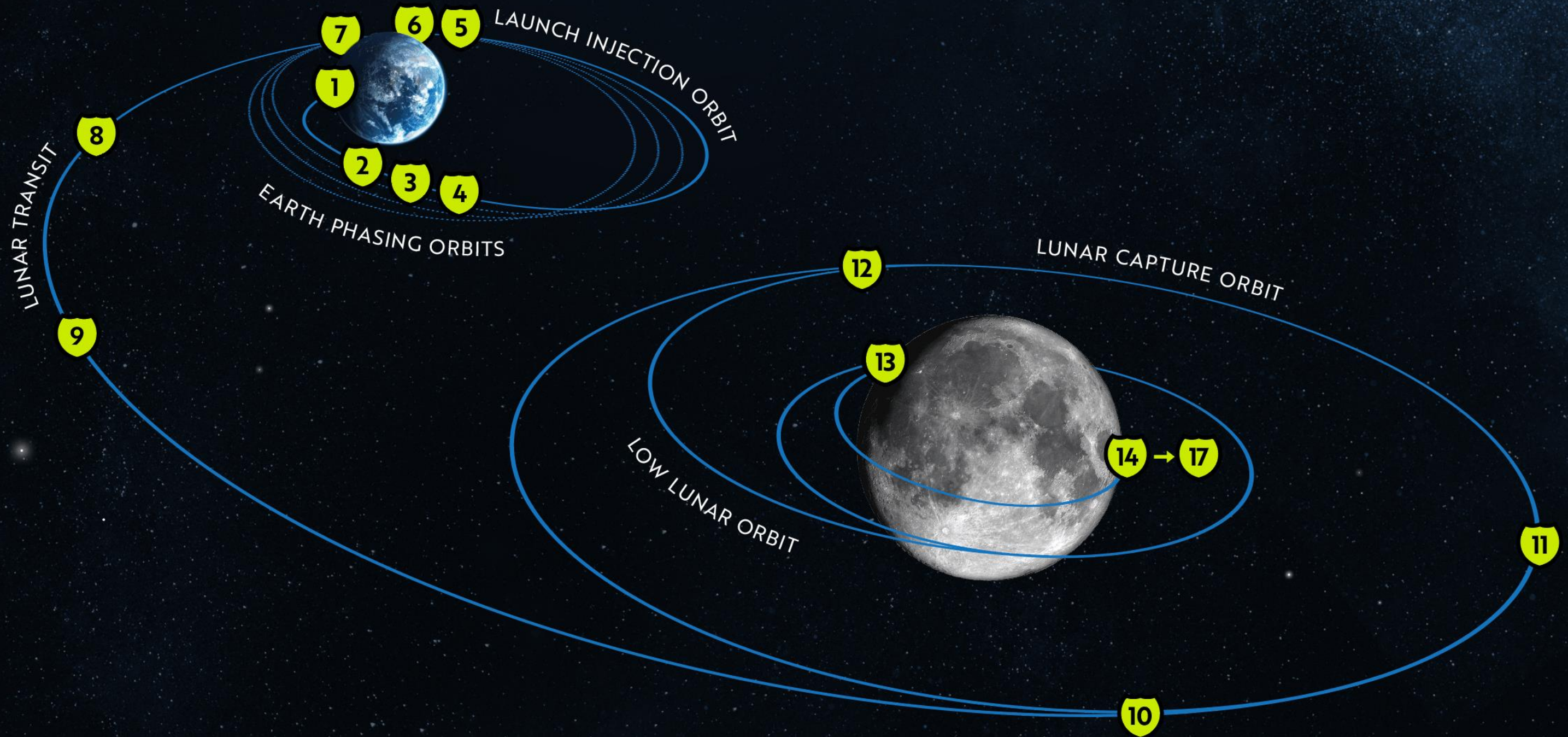
**A small lunar-orbit space station to support:**

✈ Purpose

- Docking station for astronauts
- Staging point for Moon surface missions
- Platform for science operations

🔗 Artemis Integration

- Essential for Artemis III+
- Enables missions beyond equatorial regions
- Acts as a logistics & communication hub


**LAUNCH**  
 1 HOUR

- 1** LAUNCH
- 2** LAUNCH VEHICLE SEPARATION

**ON-ORBIT COMMISSIONING**  
 8 HOURS

- 3** SIGNAL ACQUISITION
- 4** ELECTRICAL & PAYLOAD CHECKOUTS
- 5** ENGINE CALIBRATION

**EARTH ORBIT**  
 25 DAYS

- 6** EARTH ORBIT PHASING
- 7** ON-ORBIT PAYLOAD SCIENCE BEGINS

**LUNAR TRANSIT**  
 4 DAYS

- 8** TRANS LUNAR INJECTION
- 9** TRAJECTORY CORRECTION MANEUVER(S)

**LUNAR ORBIT**  
 16 DAYS

- 10** LUNAR ORBIT INSERTION
- 11** VISION NAVIGATION CALIBRATION
- 12** LOW LUNAR ORBIT INSERTION

**DESCENT**  
 1 HOUR

- 13** DESCENT ORBIT INSERTION
- 14** TOUCHDOWN

**SURFACE OPERATIONS**  
 14 DAYS

- 15** SURFACE COMMISSIONING
- 16** SURFACE PAYLOAD SCIENCE
- 17** LUNAR NIGHT OPERATIONS

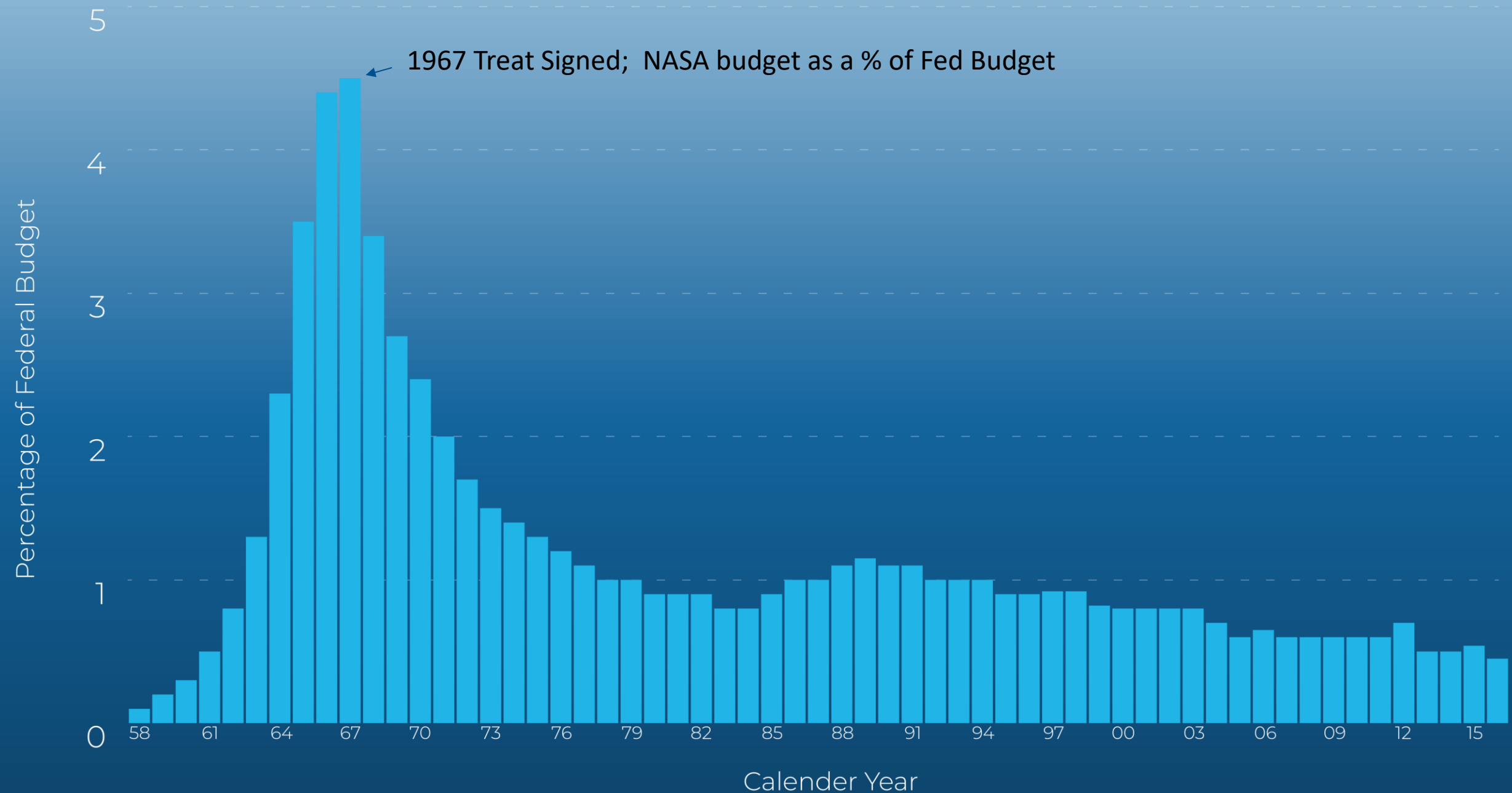
# Blue Ghost Landing

- First **successful** moon landing launched by US since 1960s
- Timed landing at start of a moon day (14 earth days long) to maximize time to execute experiments
  - Built time into the lunar travel schedule to allow for any complications
- Stopped functioning as night temps dropped to -150 °C
  - No atmosphere to insulate temperature swings
  - 127 °C during the day
- Mission Role: Deliver science and tech payloads to the lunar surface
- Artemis Link: These payloads support the development of lunar surface systems, environmental monitoring, and tech demos crucial for future crewed Artemis landings
- Blue Ghost's contributions are early-stage, enabling scientific and technological prep work

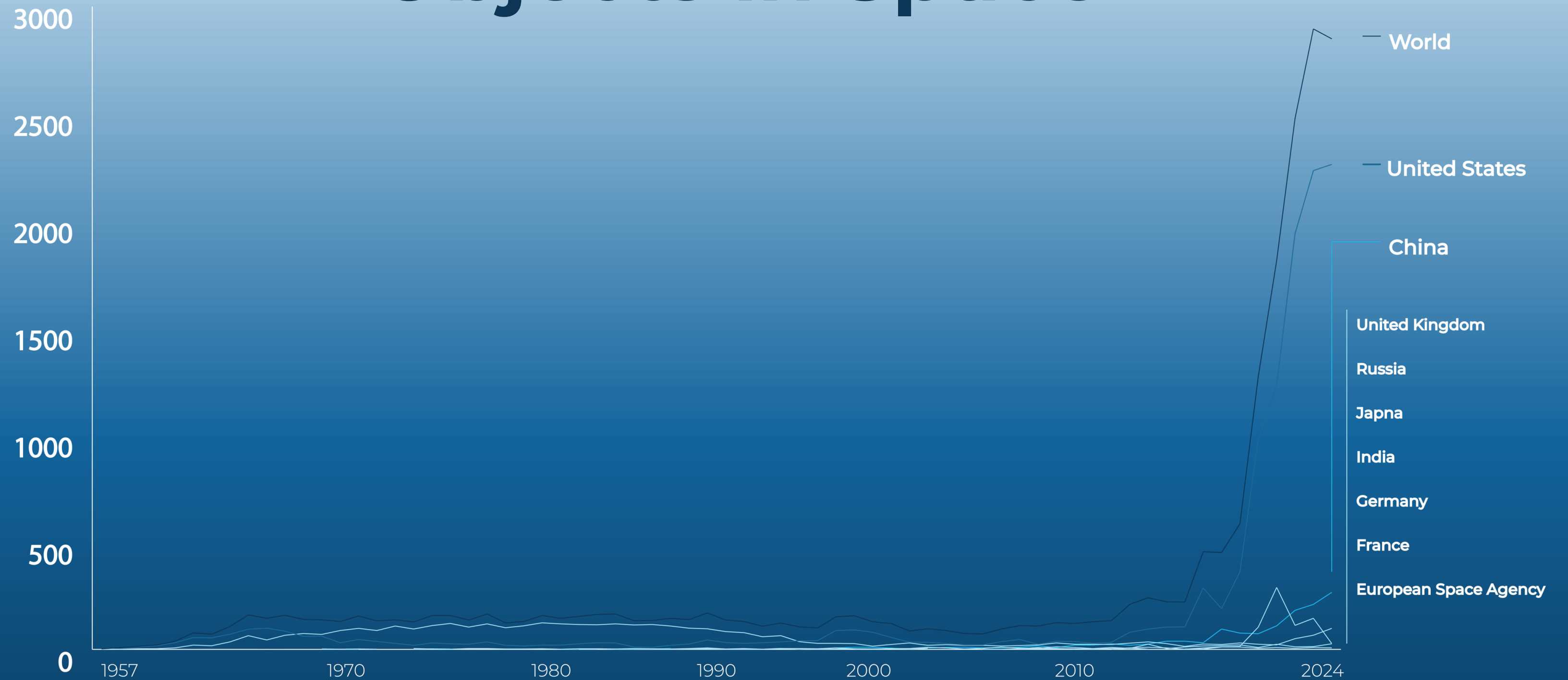


# An International Space-Race

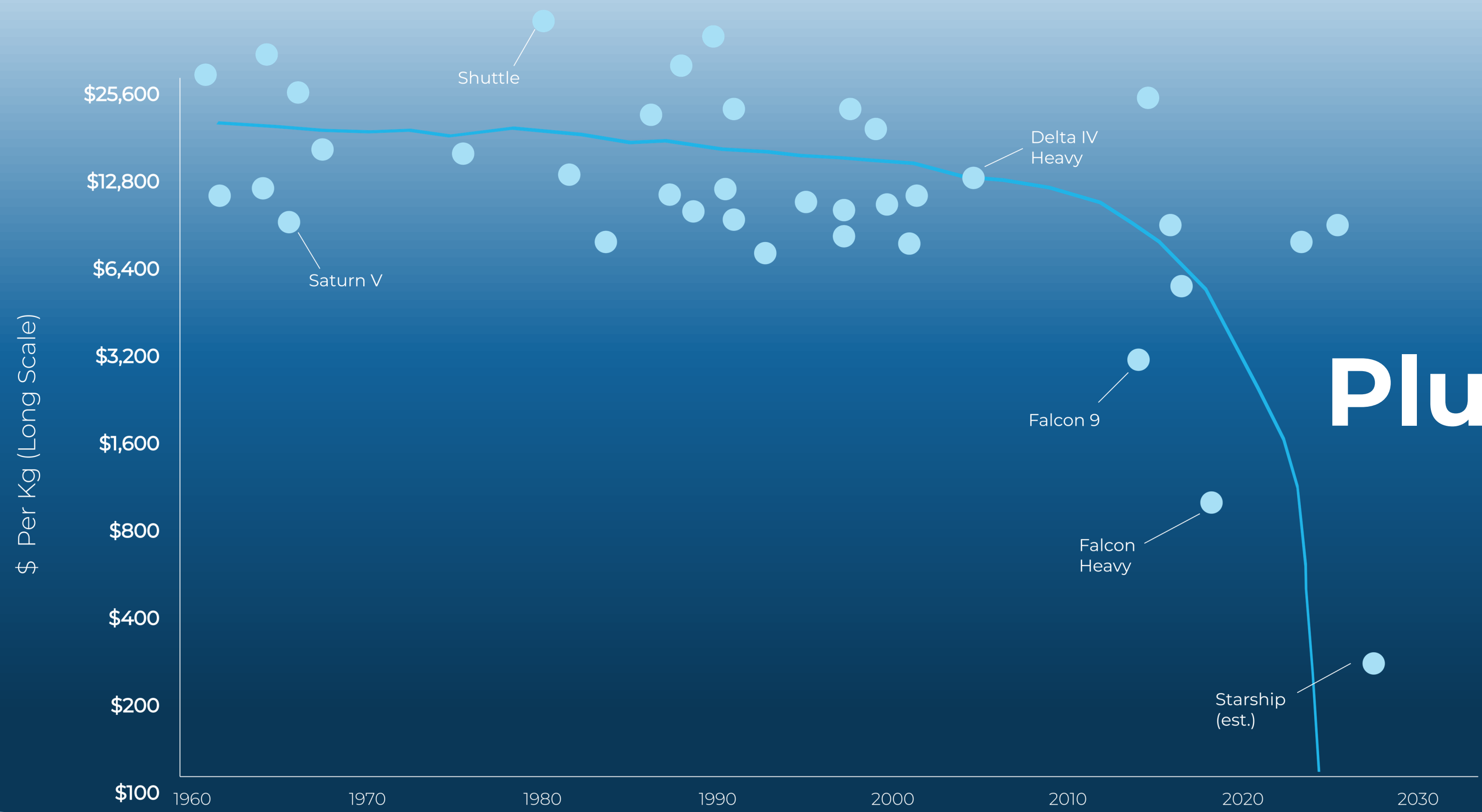
- **Treaty Tensions:** 1967 Outer Space Treaty under strain as China & Russia pursue lunar bases
- **Rocket Launches:** 30+ launches in early 2024
- **Lunar Goals:** Joint moon station with Russia; China's flag on far side of the moon
- **Tech Advances:** SpaceX-style launch systems slashing launch costs
- **Spacewalk Record:** 9-hour EVA from Tiangong station
- **Satellite Surge:** China to help drive total satellites to 55,000 by 2030



# Exponential Increase of Objects in Space



# Cost of Space Travel Plummet



# What's Next?

**Will NASA's new leadership under Jared Isaacman usher in an era of change?**

- Will there be changes to the Artemis program?
- Negotiate a new Outer Space Treaty?
- Where will we go next?



# Questions?

Our team of thermal experts is excited to provide you with answers.

Be confident in your thermal solutions with **Blueshift**.

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