



ARGoPS Solution to 2017 AAS Student Competition Mission Design to Asteroid (469219) 2016 HO3



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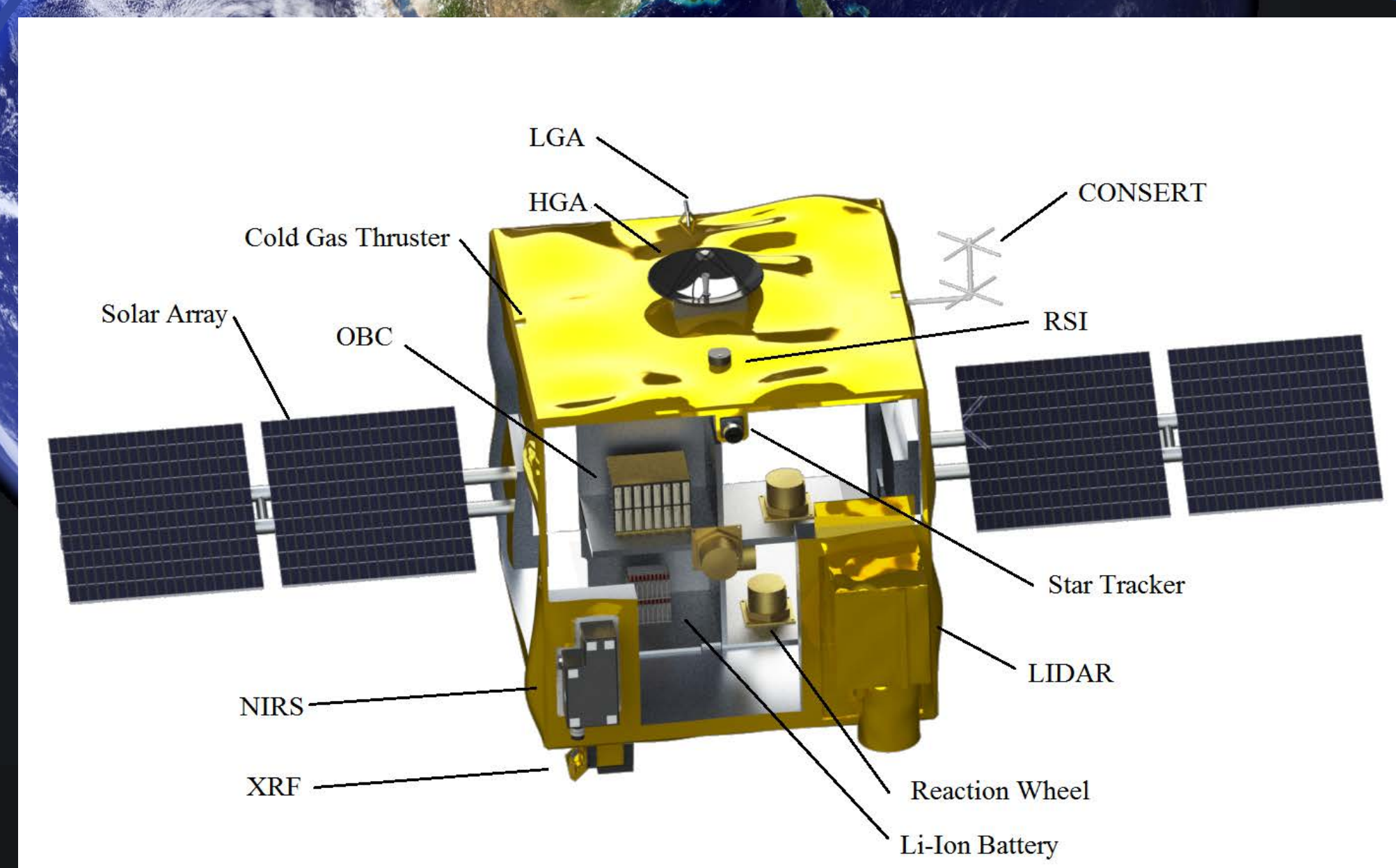
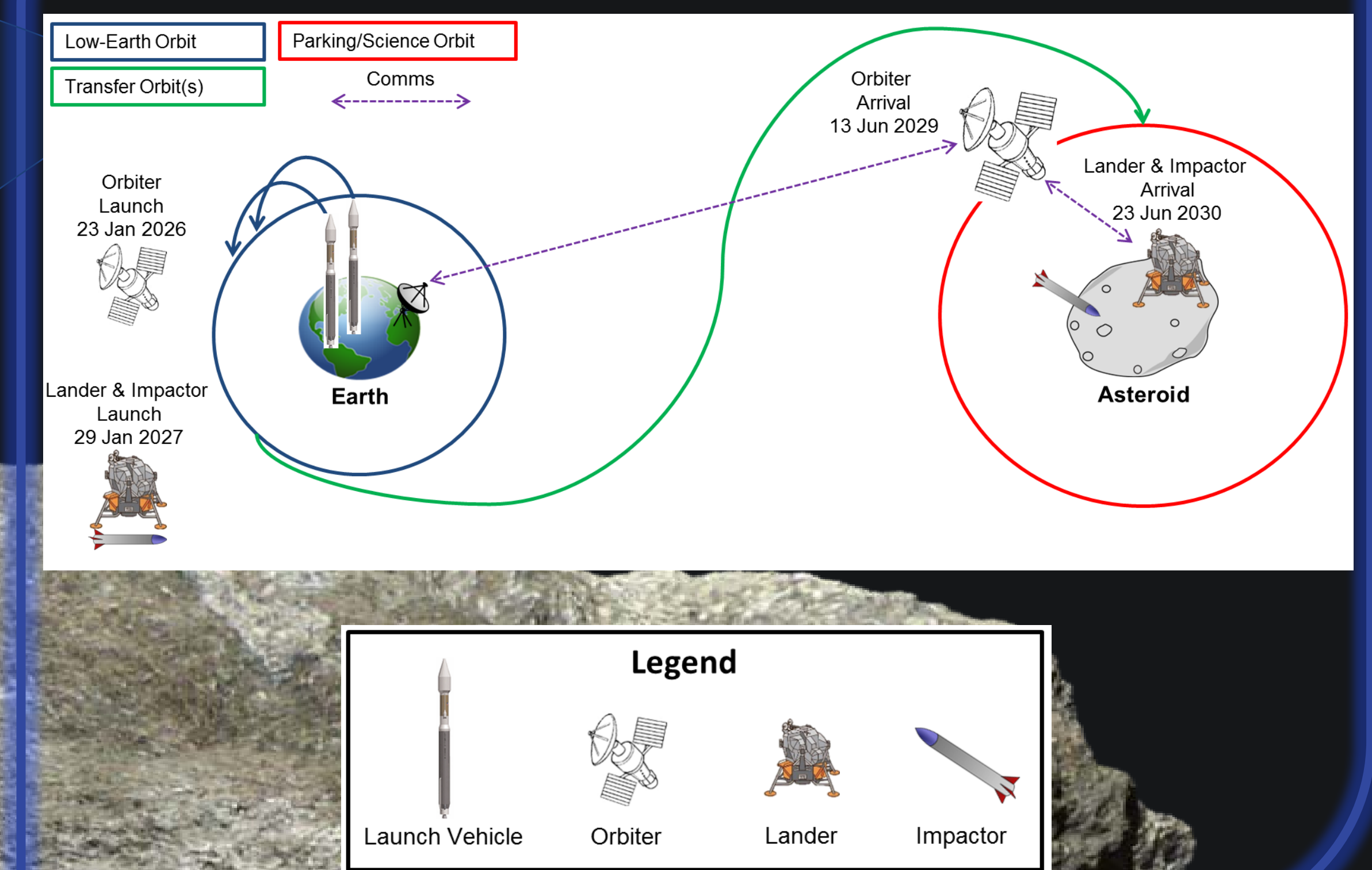
Mission Statement

The objective of this mission is to collect valuable information on the properties and composition, and take high resolution images of Asteroid (469219) 2016 HO3 for use in determining the danger it may pose to Earth, whether it contains valuable minerals, and provide mission designers with information necessary for planning potential future missions to the asteroid.

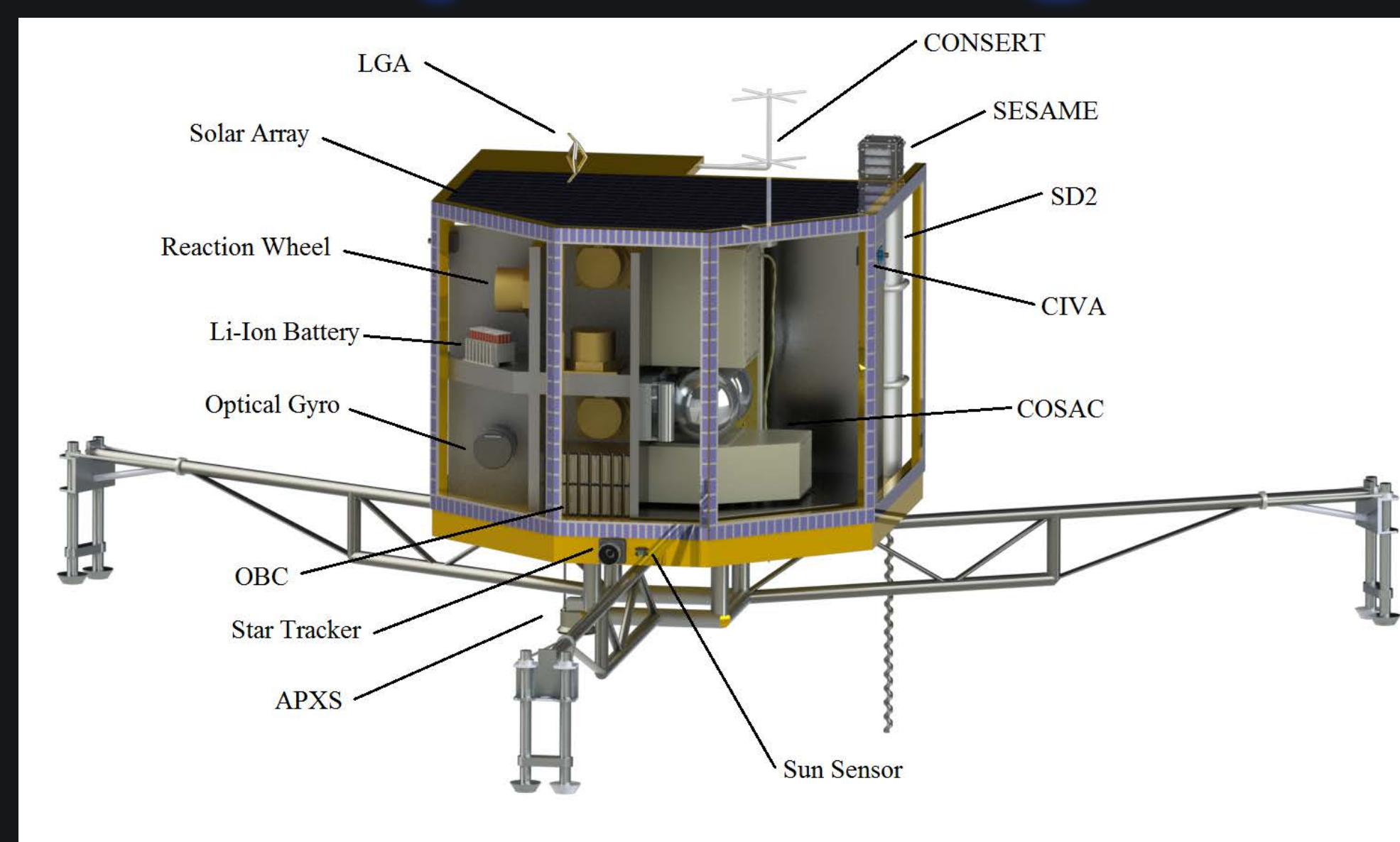
Mission Objectives

- **Measure:**
 - ✓ Mass and volume to an accuracy of 10%
 - ✓ Spectral properties of the surface at a few decameter resolution
 - ✓ Thermal properties
 - ✓ The strength of the surface at one site
- **Image:**
 - ✓ Lit surface at 1 m² resolution
 - ✓ At least one 10 m² region at 1 cm² resolution
- **Determine:**
 - ✓ Composition
 - ✓ Coefficients of the gravitational field
 - ✓ The moments of inertia and spin state
 - ✓ Dielectric properties
 - ✓ Space environment near the surface
- **Develop:**
 - ✓ Global shape model to 5 m accuracy

Concept of Operations



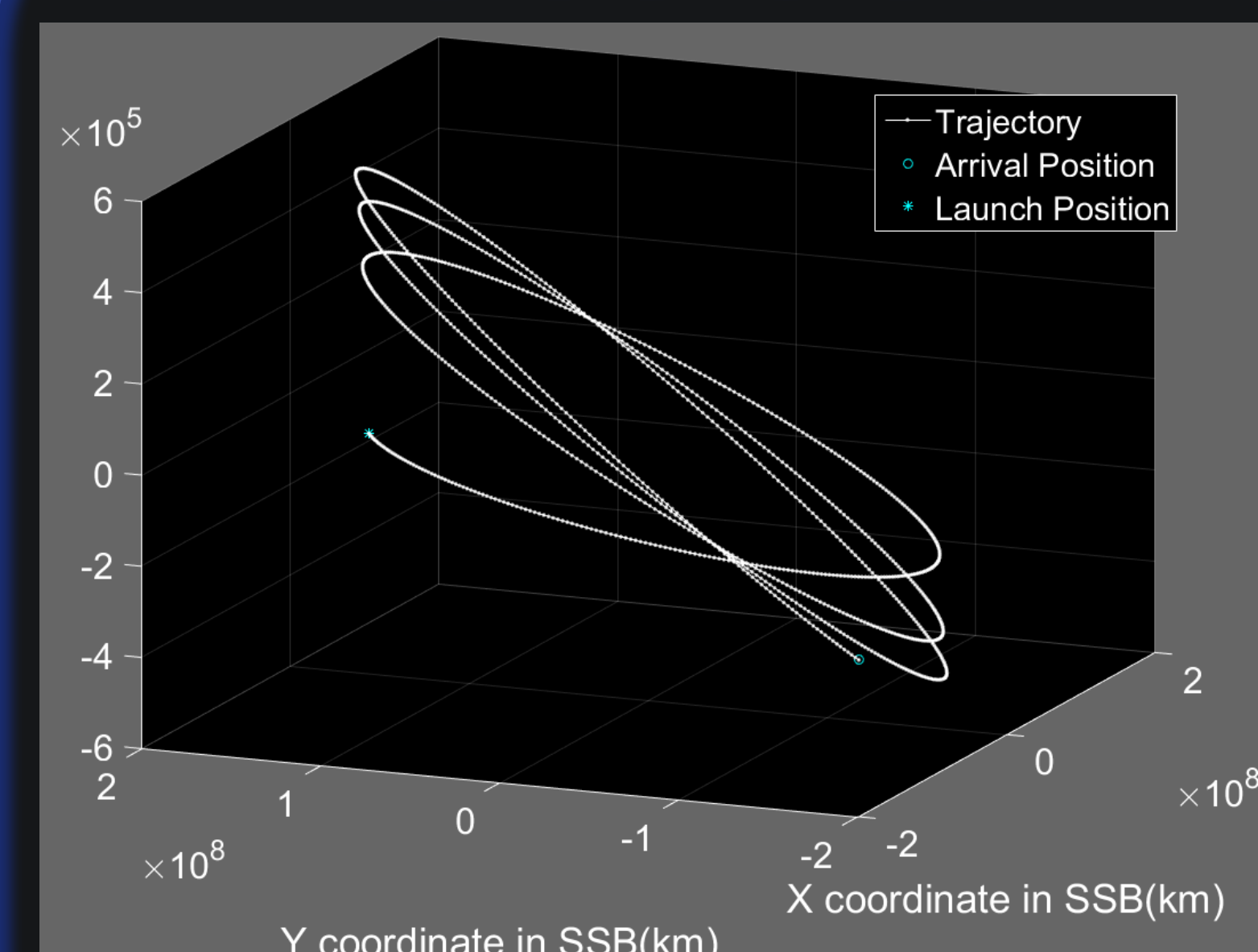
Spacecraft Design



Cost Analysis

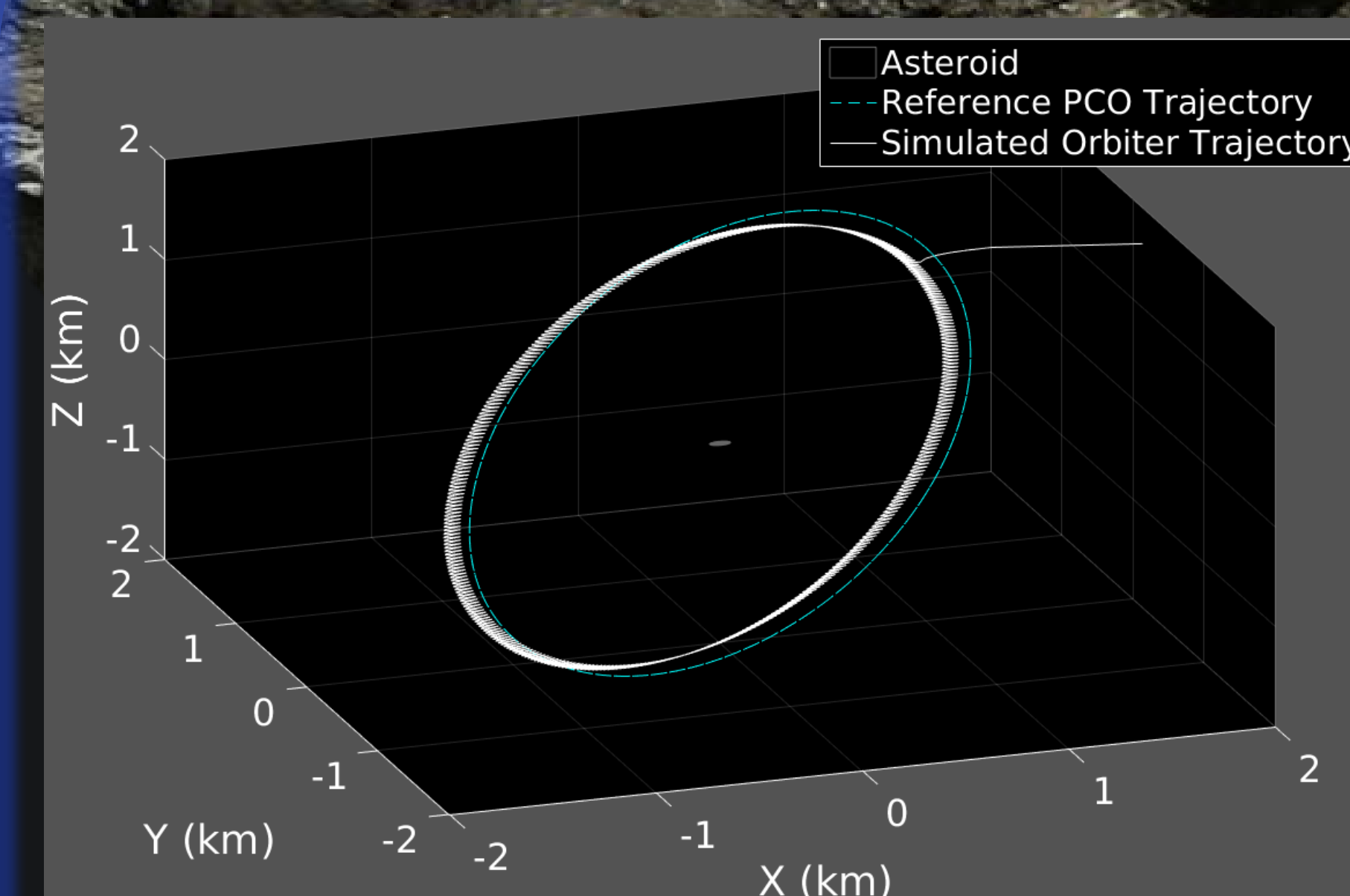
Cost Type	Cost (1k\$)
Orbiter	35,800
Operations Cost (Orbiter)	10,300
Lander	58,500
Operations Cost (Lander)	17,700
Total	122,300

Transfer Orbit



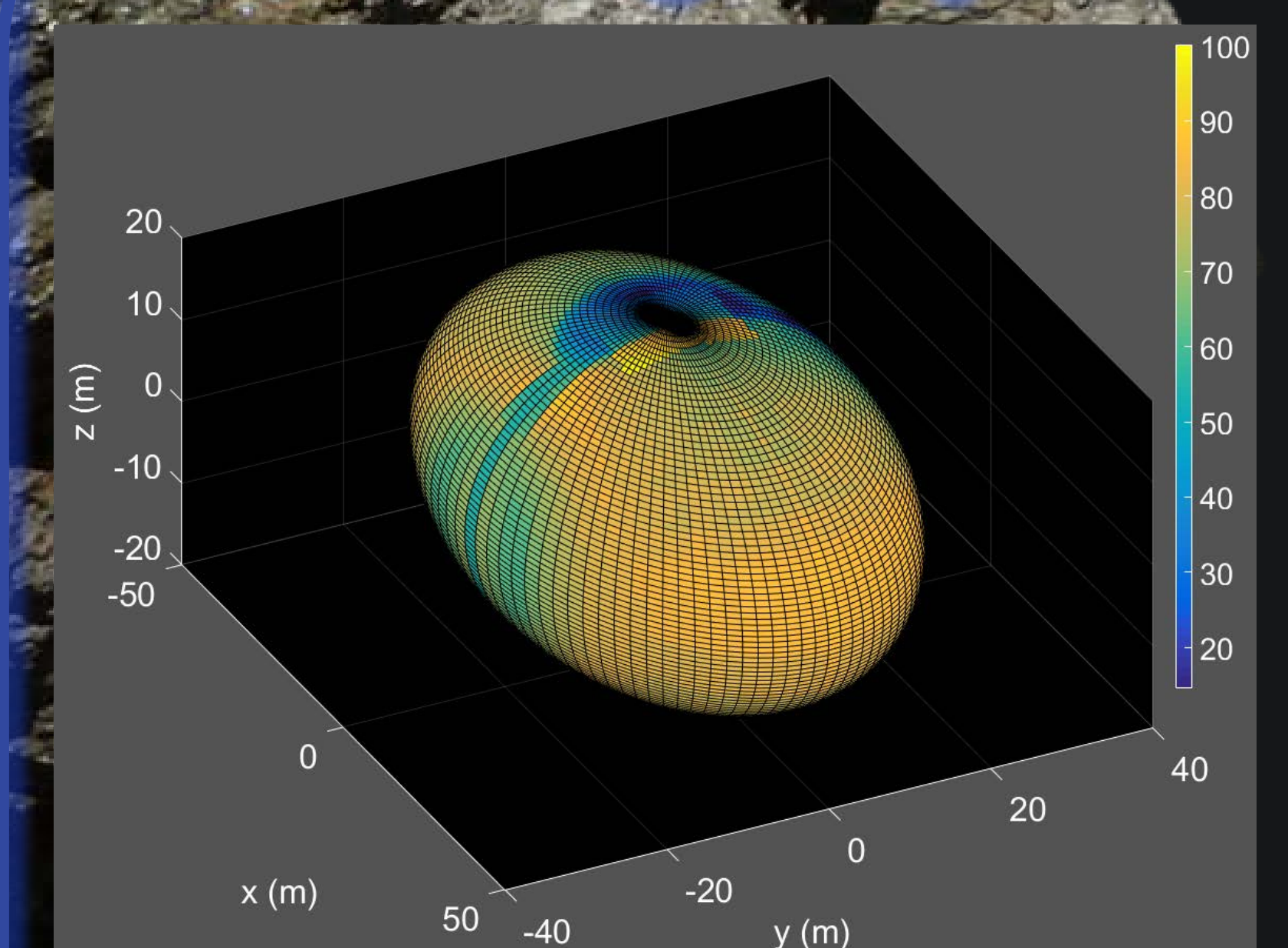
Orbiter: 01/23/2026 → 06/13/2029
Lander: 01/29/2027 → 06/23/2030

Asteroid Orbit



Mean altitude: 2,000 m
Station keeping: 5.6 m/s per year

Coverage Map



Normalized coverage time (0 – 100)