



Solar-powered Outer Solar System SmallSat (OS4) Architecture and Technologies



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How can we explore differently, to the orbit of Neptune+?

Classical approach, with very sophisticated, high-yield missions with broad objectives

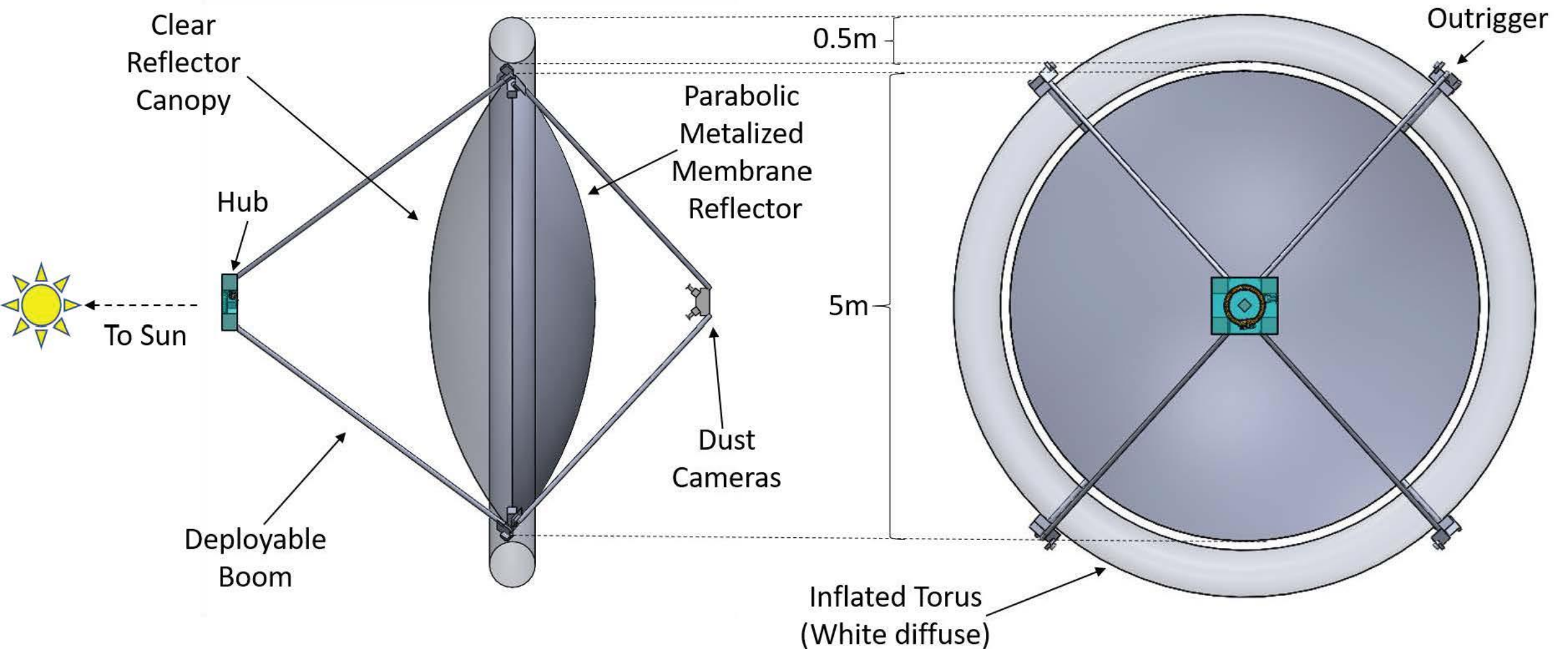
- *New Horizons, Voyager 1 & 2, and Pioneer 10 & 11* are the only spacecraft to venture beyond Saturn's orbit. 5 missions in 5 decades (1970 – 2020)
- Each weighed >250 kg (some >>250 kg),
- Cost >FY19US\$300 M (most >>\$300 M),
- Operations teams with 10s of people (100s at peak).
- Radioisotope power.

**Cost information contained in this document is of a budgetary and planning nature and is intended for informational purposes only. It does not constitute a commitment on the part of JPL and/or Caltech.*

Focused SmallSat approach, very specific objectives

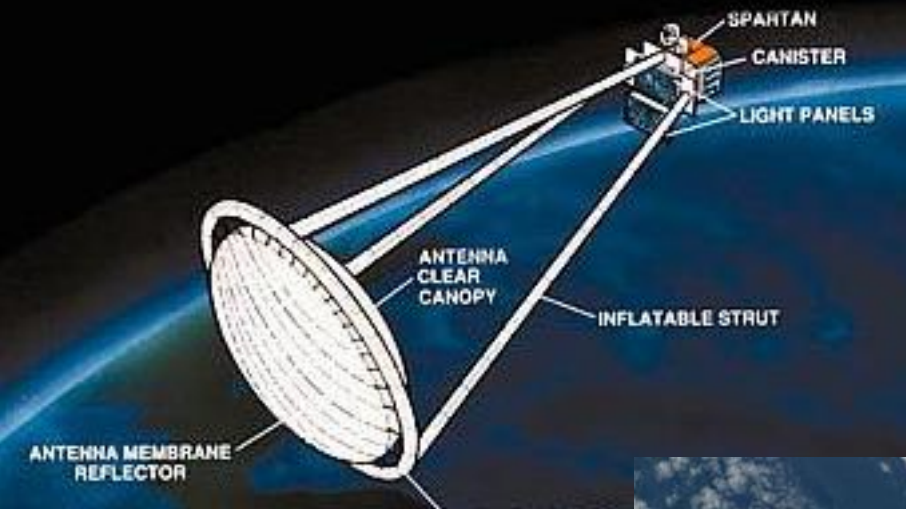
- Launched as secondary payloads along with primary missions to the Outer Solar System,
- Solar powered,
- Inspired by the CubeSat/SmallSat revolution in small, low power electronics and miniature instruments,
- 1/10th the cost* and mass,
- 1% of the equivalent continuous power level and
- 1 - 10% operations staffing of such missions today.
- Use Jupiter swingbys to target different sectors of the heliopause.

Enabled by inflatable dual function solar concentrator/high gain antenna

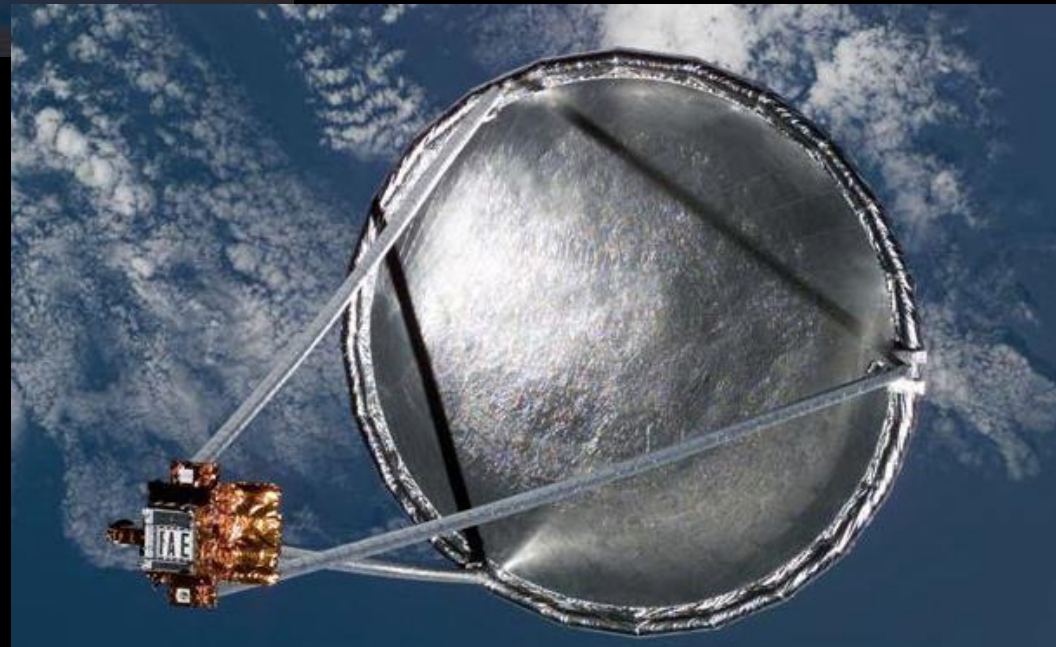


Inflatables demonstrated for another application

Spartan 207 / IAE
Experiment Orbital Configuration



14 m



~5 m

NASA/JPL/L'Garde 1997 in orbit

?*Affordably* explore the outer Solar System with SmallSats?

See more in the main session...

Thank you!

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