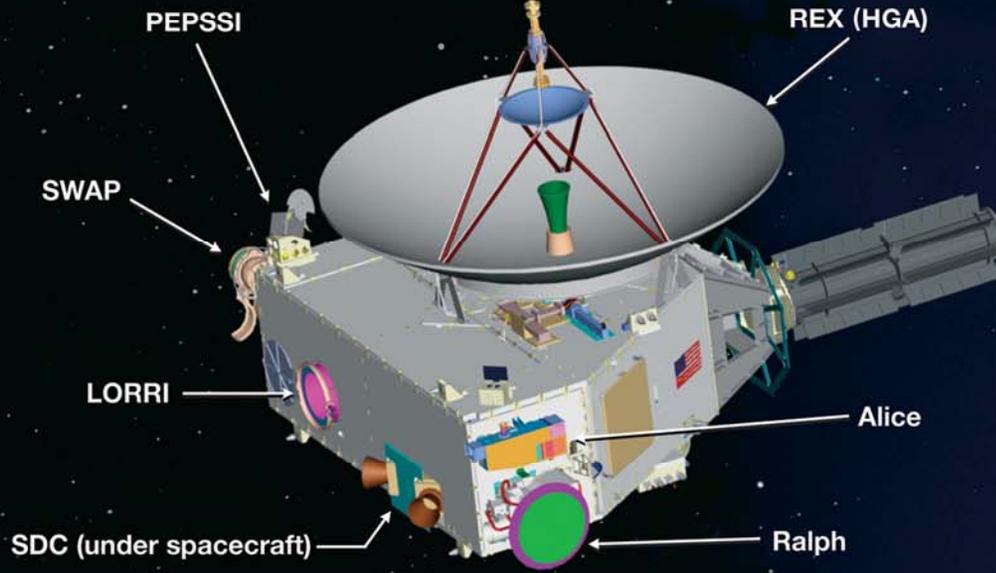


NEW HORIZONS

Shedding Light on Frontier Worlds



Science Payload

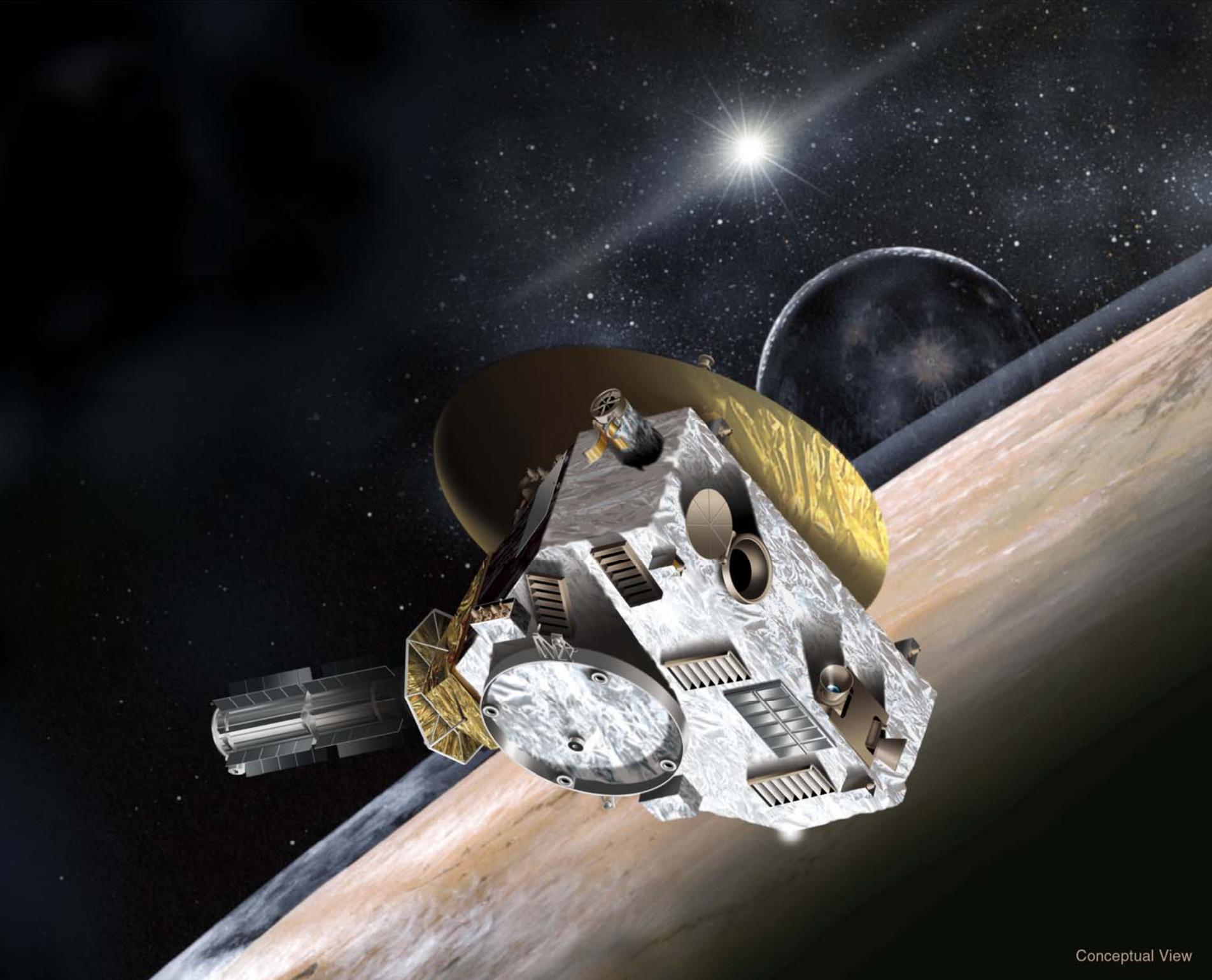
- Ralph: Visible and infrared imager/spectrometer; provides color, composition and thermal maps
- Alice: Ultraviolet imaging spectrometer; analyzes composition and structure of Pluto's atmosphere and looks for atmospheres around Charon and Kuiper Belt Objects (KBOs)
- REX (Radio Science EXperiment): Measures atmospheric composition and temperature; passive radiometer
- LORRI (LOng Range Reconnaissance Imager): Telescopic camera; obtains encounter data at long distances, maps Pluto's far side and provides high resolution geologic data
- SWAP (Solar Wind Around Pluto): Solar wind and plasma spectrometer; measures atmospheric "escape rate" and observes Pluto's interaction with solar wind
- PEPSSI (Pluto Energetic Particle Spectrometer Science Investigation): Energetic particle spectrometer; measures the composition and density of plasma (ions) escaping from Pluto's atmosphere
- SDC (Student Dust Counter): Built and operated by students; measures the space dust peppering New Horizons during its voyage across the solar system

Key Spacecraft Design Characteristics

- Small and agile; projected mass of about 1,000 lbs. (including propellant)
- Backup devices for major electronics, star-tracking navigation cameras and data recorders
- Modified "hibernation" capability saves costs during the cruise to Pluto/Charon
- 8 distinct beacon tones used during hibernation communicate spacecraft health
- Three-axis and spin-stabilized attitude control
- Propulsion system (used for pointing, course corrections, and KBO targeting) includes 16 hydrazine thrusters
- "Thermos bottle" design maintains safe operating temperatures in deep space
- First use of on-board regenerative ranging capability yielding up to 30dB improvement over standard ranging at long distances
- Advanced digital receiver consumes 60% less power than current deep space receivers
- Baseline power supply: radioisotope thermoelectric generator (RTG) provided by the Department of Energy



A NASA New Frontiers Mission



Conceptual View