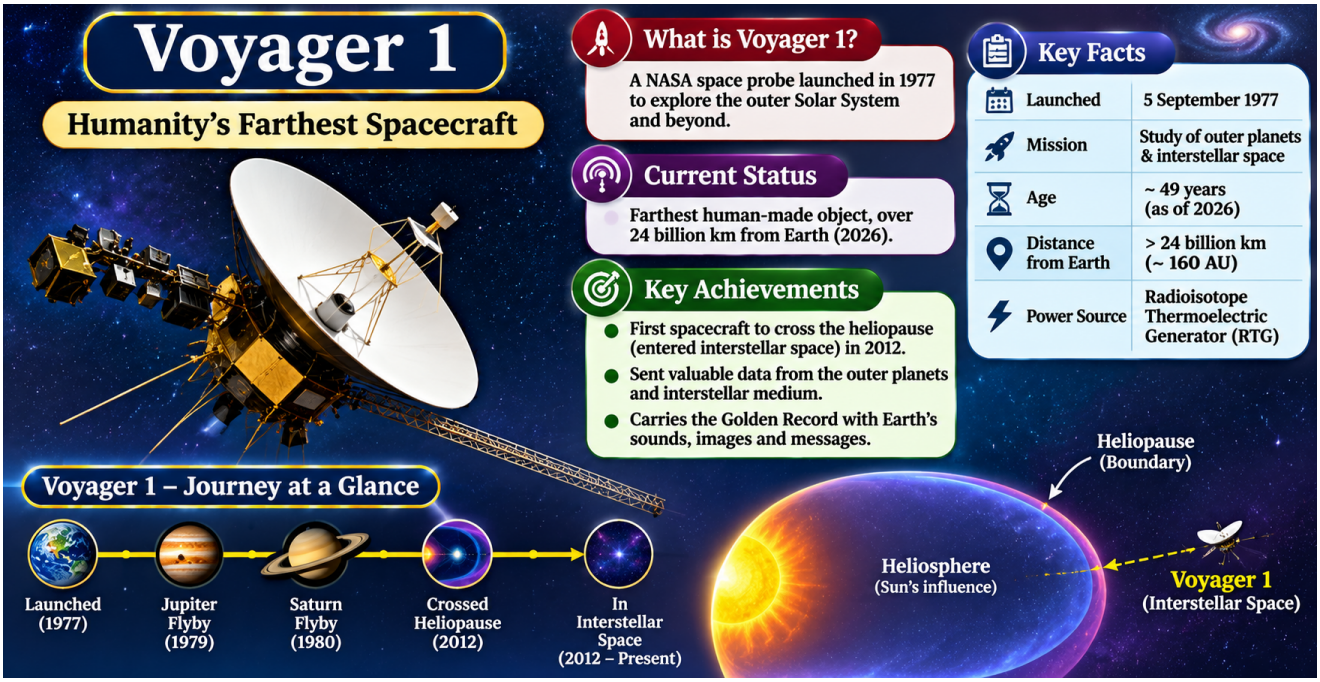
Voyager 1 reaches One Light-Day from Earth

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Why in News?

NASA's Voyager 1 spacecraft, the farthest human-made object in history is crossing a monumental cosmic milestone by reaching a distance of one light-day from Earth.

- **Launched on** - September 5, 1977.
- The threshold represents the distance that a particle of light travels through a vacuum in 24 hours - approximately 16.094 billion miles (25.902 billion kilometers) or about 173 astronomical units (AU).
- **Communication Lag-** At a distance of one light-day, any command transmitted from NASA's Deep Space Network takes a full 24 hours to reach the probe, and the corresponding telemetry data takes another 24 hours to travel back, resulting in a ***48-hour round-trip communication delay***.
- **Interstellar Explorer -** Crossed the heliopause into interstellar space in 2012.
- Voyager 1 continues to gather sparse plasma and magnetic field data despite operating on a dwindling power supply from its decaying plutonium-238 radioisotope thermoelectric generators.
- **Current Operating Region** - Interstellar Space (beyond the heliosphere boundary).
- **Power Source-** Radioisotope Thermoelectric Generators (RTGs) losing ~4 watts annually.
- **Global Celebrations -** NASA organized public outreach initiatives, including a global "Shine Bright for Voyager's Light-Day" campaign inviting space enthusiasts to flash Voyager's historic call sign (**V-G-R**) in Morse code using smartphone lights.
- **Cosmic Distances via Light Travel Time**
  - **The Moon:** ~1.3 seconds away
  - **The Sun:** ~8 minutes and 19 seconds away (1 AU)
  - **Neptune:** ~4 hours away
  - **Voyager 1:** 24 hours (1 Light-Day) away
  - **Proxima Centauri (Nearest Star System)-** ~4.24 light-years away (~1,550 days of continuous travel at light speed)
- **The Golden Record -** Both Voyager spacecraft carry a gold-plated phonograph record containing sounds, scientific data, spoken greetings in 55 languages, and musical selections representative of Earth's culture and biodiversity.



Reference

[NASA | Voyager 1 One-Light Day Activities]

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