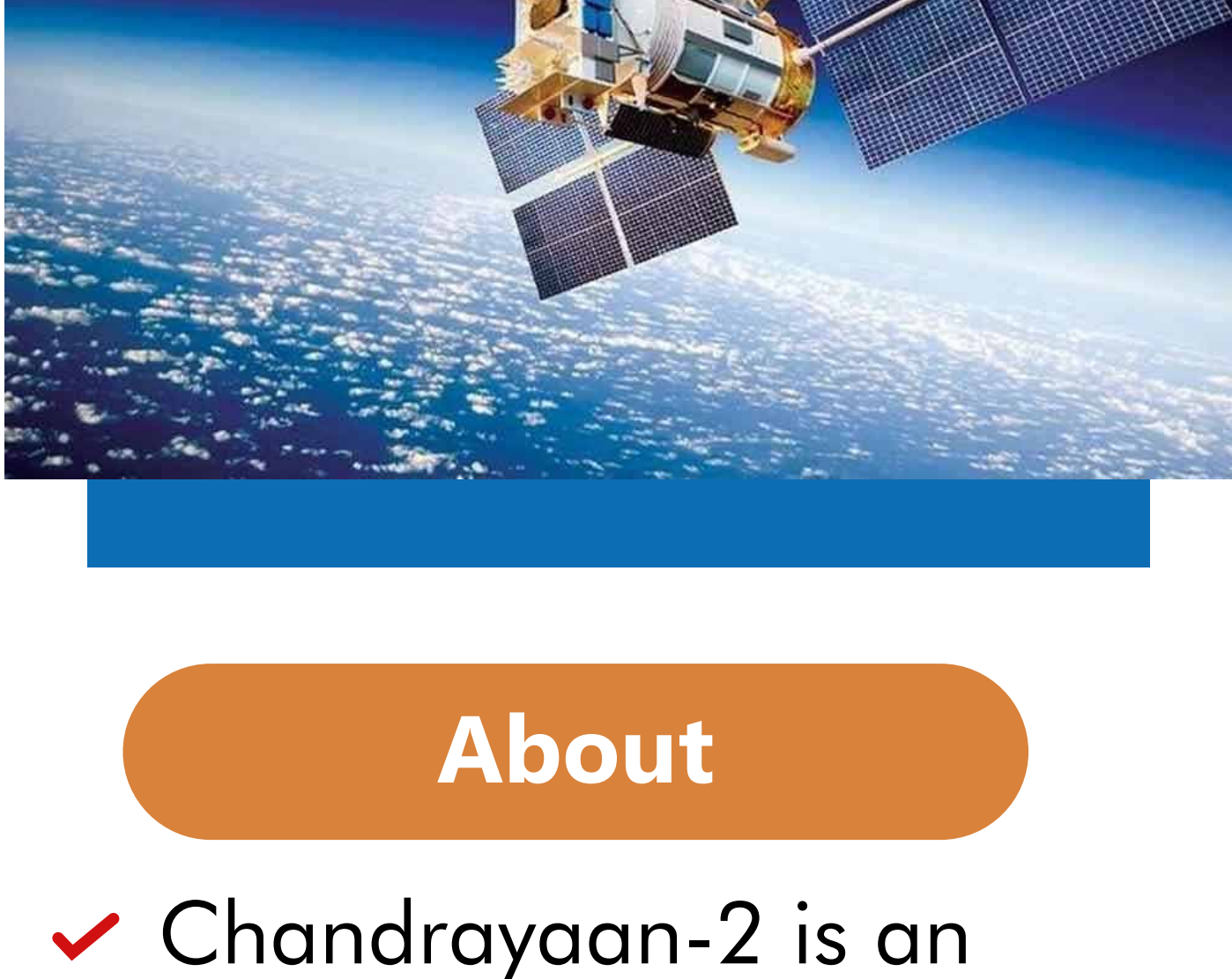


# Chandrayaan-2



## About

- ✓ Chandrayaan-2 is an Indian lunar mission which was sent to explore the uncharted south pole of the celestial body by landing a rover.
- ✓ On September 7 2019, India attempted to make a soft landing on to the lunar surface.
- ✓ However, lander Vikram missed the primary landing site and communication from Vikram lander was lost and data is still being analysed.

## Failure

- ✓ The lander and rover malfunctioned in the final moments and crash-landed, getting destroyed in the process.
- ✓ But that did not mean the entire mission had been wasted.
- ✓ The Orbiter part of the mission has been functioning normally, and in the two years since that setback, the various instruments onboard have gathered a wealth of new information about the Moon and its environment.

## Information gathered

- ✓ The Orbiter is carrying eight instruments.
- ✓ Through different methods, these instruments are meant to carry out a few broad tasks:
  - Study in more detail the elemental composition of the lunar surface and environment,
  - Assess the presence of different minerals, and
  - Do a more detailed mapping of the lunar terrain.
- ✓ ISRO has said each of these instruments has produced a handsome amount of data that sheds new light on the moon, and offers insights that could be used in further exploration.

## PRESENCE OF WATER

- ✓ Its presence on the Moon had already been confirmed by Chandrayaan-1.
- ✓ But the instrument used on Chandrayaan-1 was not sensitive enough to detect whether the signals came from the hydroxyl radical (OH) or the water molecule (H<sub>2</sub>O, which too has OH).
- ✓ Using far more sensitive instruments, the Imaging Infra-Red Spectrometer (IIRS) onboard Chandrayaan-2 has been able to distinguish between hydroxyl and water molecules, and found unique signatures of both.

## MINOR ELEMENTS

- ✓ The Large Area Soft X-Ray Spectrometer (CLASS) measures the Moon's X-ray spectrum to examine the presence of major elements such as magnesium, aluminium, silicon, calcium, titanium, iron, etc.
- ✓ This instrument has detected the minor elements chromium and manganese for the first time through remote sensing, thanks to a better detector.

## STUDYING THE SUN

- ✓ One of the payloads, called Solar X-ray Monitor (XSM), besides studying the Moon through the radiation coming in from the Sun, has collected information about solar flares