



# Starship

## Why in News?

Recently, [SpaceX](#) launched an **uncrewed test flight** of its **Starship cruise vessel** from the Super Heavy rocket. However, the **vehicle exploded when the upper-stage Starship** failed to separate from the **lower-stage Super Heavy**.

- **SpaceX is a private company founded in 2002** by Elon Musk.

## What is the Starship Project?

- SpaceX's **Starship spacecraft and Super Heavy rocket** – collectively referred to as **Starship** – represent a **fully reusable transportation system** designed to carry both crew and cargo to **Earth orbit, the Moon, Mars and beyond**.
  - Starship will be able to carry up to **150 metric tonnes fully reusable and 250 metric tonnes expendable**.
- **Starship Super Heavy** is powered by an array of Raptor engines, which are fueled by **liquid methane (CH<sub>4</sub>) and liquid oxygen (LOX)**.
  - A total of **33 Raptor engines power the first-stage booster**.
- It leverages tanker vehicles (essentially the Starship spacecraft minus the windows) to refill the Starship spacecraft in **low-Earth orbit**.
- Development and manufacturing of Starship takes place at **Starbase**, one of the world's **first commercial spaceports designed for orbital missions**.

## What are the other Major Projects of Space X?

- **Falcon 9:**
  - **Falcon 9** is a **reusable, two-stage rocket for the reliable and safe transport of people and payloads into Earth orbit and beyond**.
- **Falcon Heavy:**
  - SpaceX claims **Falcon Heavy** to be the most powerful rocket in the world by a factor of two.
  - It is composed of **three Falcon 9 nine-engine** cores whose 27 Merlin engines **together generate more than 5 million pounds of thrust** at liftoff.
    - Merlin engines use a **rocket grade kerosene (RP-1) and liquid oxygen** as rocket propellants in a **gas-generator power cycle**.
- **Starlink and Starshield:**
  - **Starlink** provides high-speed, low-latency broadband internet across the globe.
    - Its high-speed, low-latency service is made possible via the **world's largest constellation of highly advanced satellites** operating in a low orbit around the Earth.
  - **Starshield leverages Starlink technology** and launch capability to support national security efforts.
    - While Starlink is **designed for consumer and commercial use**, **Starshield is designed for government use**.

## What are India's Efforts in Commercialisation of Space?

- [Skyroot's Vikram S](#) series and [Dhawan engines](#)
- [Draft Spacecom Policy 2020](#)
- [IN-SPACE](#)
- [NewSpace India Limited \(NSIL\)](#)
- [Indian Space Association \(ISpA\)](#)
- [Antrix Corporation Limited \(ACL\)](#)

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