

India's Space Exploration Roadmap

Presentation by Indian delegation

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Gaganyaan: Indian in Space

Objective

Demonstration of human spaceflight capability by launching crew of 2 members to an orbit of 400 km for a 3 days mission and bring them back safely to earth, by landing in Indian sea waters.



Service Module + Crew Module

- Orbit: 170 x 408 km, inclination 51.5°
- Orbital Module (OM) Mass : 7.5 Ton
- Mission Duration : 2 Crew members for 3 days (max)



Human Rated LVM3 (HLVM3)



Test Vehicle flight

Bharatiya Antariksh Station (BAS)



Key Technology elements



Indian Human Spaceflight Missions – Journey to the MOON





NGLV – Generic, Human Rated & Super Heavy

Launcher

HLVM3

Mission

Indian Lunar Scientific Missions







Chandrayaan-3 Successfully landed near Lunar South Pole region



Sample return mission



Chandrayaan Series

Long duration Missions

> Robotic Missions

ISRU technology validation

Lunar research infrastructure

Upcoming Science & Exploration Missions – Studies in progress



DISHA: Dual Aeronomy Mission

Global characterization of thermosphericionospheric response to space weather



Venus Orbiter

Comprehensive Study of Venus-System-Science



Mars Lander

Landing on Martian Surface and conducting scientific experiments

Next Astronomy Missions

INSIST: (Indian Spectroscopy and Imaging Space Telescope) Daksha (Gravitational Wave events follow-up and transient/variable astronomy)



ExoWorlds Mission

Atmospheric Characterization of Exoplanets



- ✓ Sustained Human presence in Space
- ✓ Fostering collaboration Scientific Research | Technology Development | Exploration

Sharing of Scientific data and findings

- Joint studies, payload hosting
- Development of Advance Technologies
- International standards & interfaces -Interoperability with global partners
- Trans-hub & potential fuel depot for interplanetary exploration

Ground infrastructure and ground network

> Impact @ Global scale

- Ground-based analogues
- Applications in Space
 - Bio-astronautics & Space Medicine,
 - Materials,
 - 3D printing etc...
- Crew training infrastructure
- International crew missions









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