

India's Human Spaceflight Programme: GAGANYAAN

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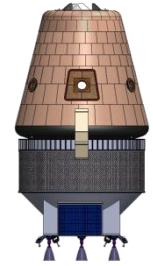
Gaganyaan Programme

***Government of India has approved Indian Human
Spaceflight initiative***

**To launch 3 member crew onboard GSLV Mk-III and bring
them back safely
before 75th Year of Independence in 2022**

Indian Perspective on Sustained Human Space Flight Programme

- ➔ Technology development phase
- ➔ Two unmanned and one manned flights
- ➔ Capability to launch humans and stay in space for 7 days



Orbital Module

Dec 2020



1st Unmanned Flight

July 2021



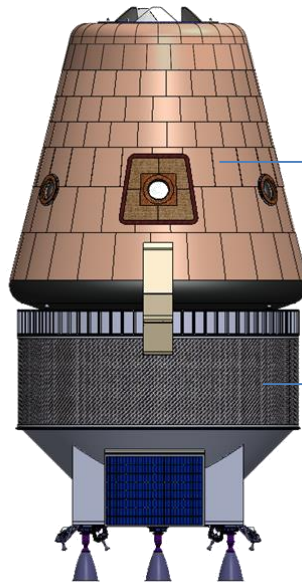
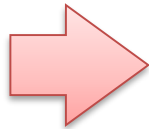
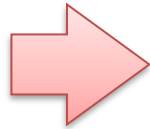
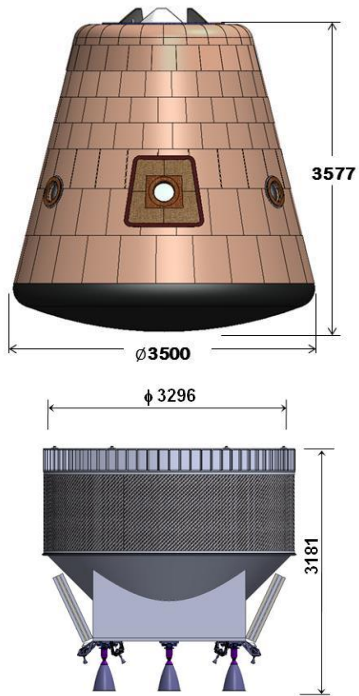
2nd Unmanned Flight

Dec 2021



Capability for human space flight

Gaganyaan Mission



Crew Module: Habitat of Astronaut

Service Module: Does on-orbit servicing

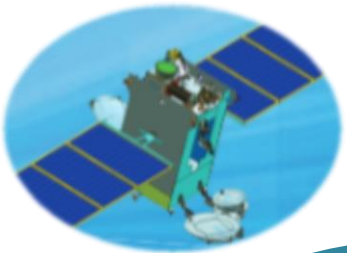
Orbital Module
3 Astronauts; 7 days in space



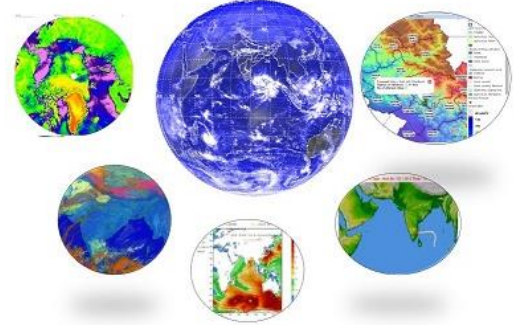
Human Rated Launch Vehicle
(GSLV MKIII derived)



Space Transportation Systems



Satellite Systems



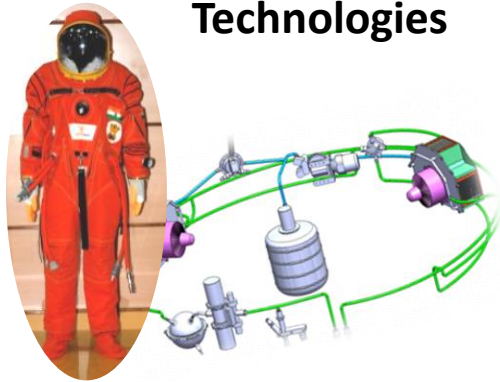
Space Applications



Human Rated Platforms



Astronaut Training and Facilities



Human Life Support Technologies

Harmony of Engineering and Human Science



Crew selection

Basic training

Advanced training

Specific Training

Crew Readiness

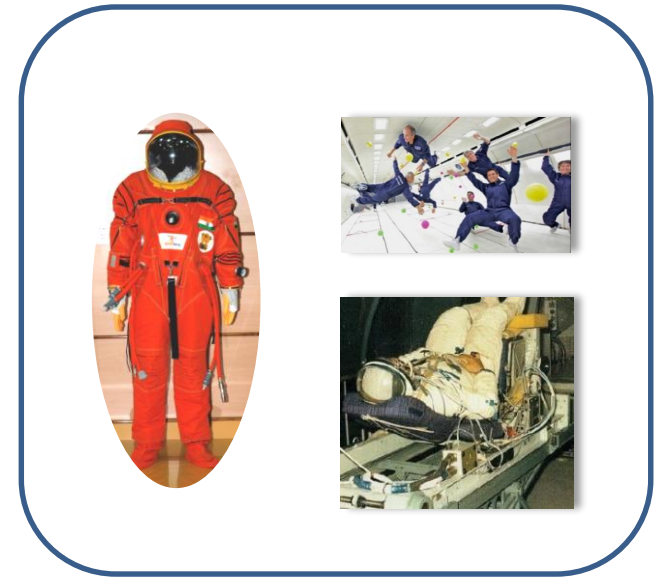


Life Support System & Flight Suit

Human Sciences & Bioastronautics

International Collaboration

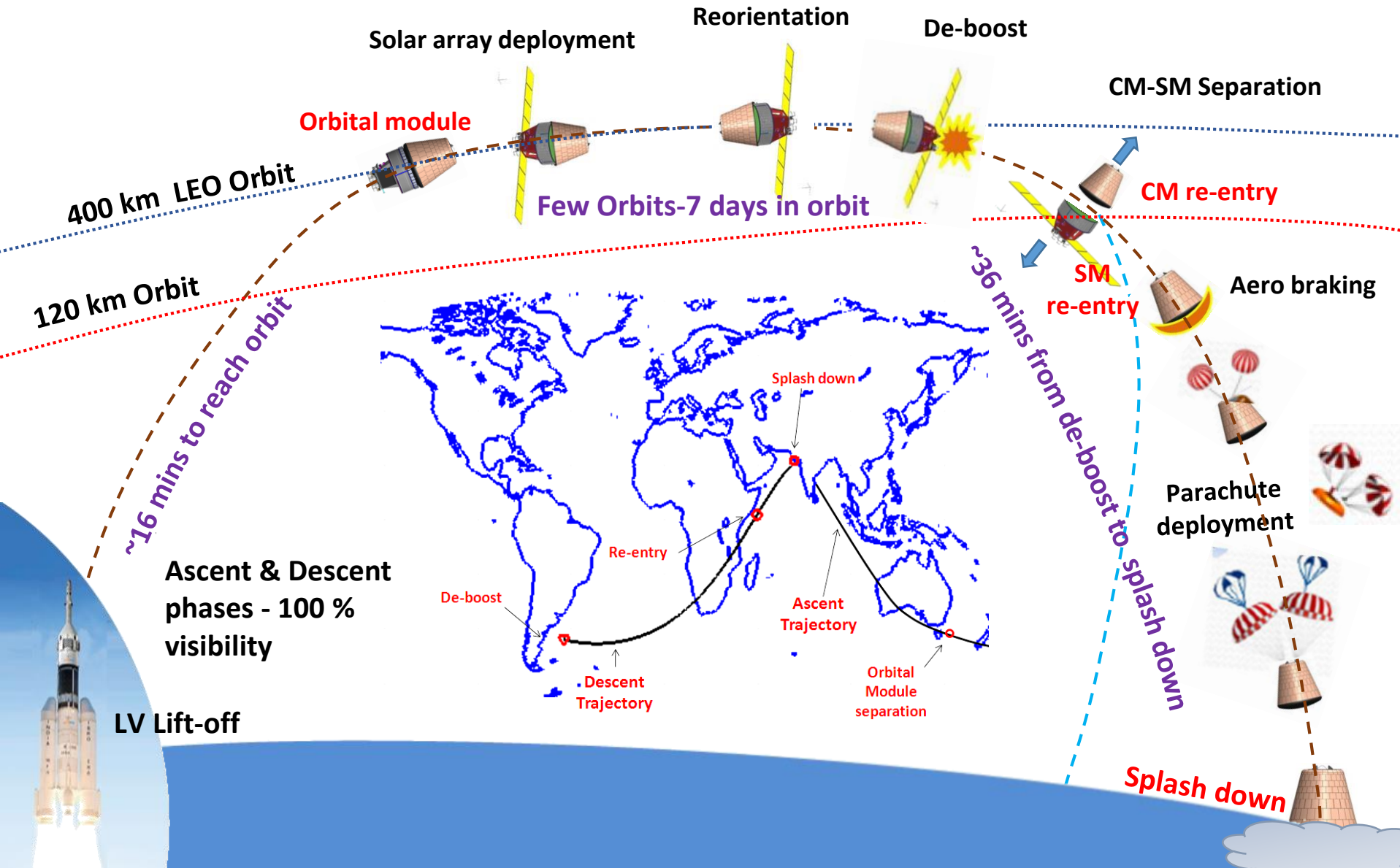
ISRO's Expertise



- **Human rated launch vehicle**
- **Orbital module**
- **Launch pad systems**
- **Certification**

- **Crew Training**
- **Life support system**
- **Flight suit**

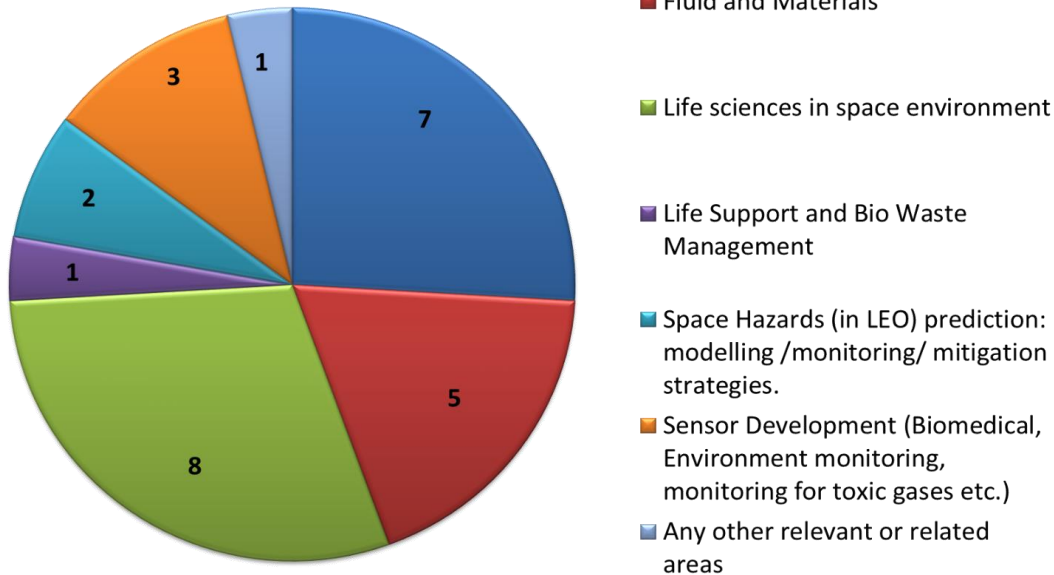
GAGANYAAN Mission Profile



Gaganyaan-Scientific Research Platform at National level

“Announcement of Opportunity for microgravity experiments in LEO” published on 8th Nov, 2018

Number of microgravity proposals received in different categories



S.No	Experimental Categories
1	Astro biology/ Astro chemistry
2	Space Medicine (including testing of medical equipments)
3	Fundamental Physics
4	Fluid and Materials
5	Life sciences in space environment
6	Life Support and Bio Waste Management
7	Space Hazards (in LEO) prediction: modelling /monitoring/ mitigation strategies.
8	Sensor Development (Biomedical, Environment monitoring, monitoring for toxic gases etc.)
9	Micro-biology experiments such as biological air filters, biosensors etc.
10	Space to ground communication technologies.
11	Any other relevant or related areas

Opportunity offered to International Community

Thank You