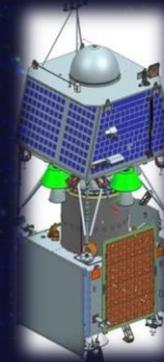
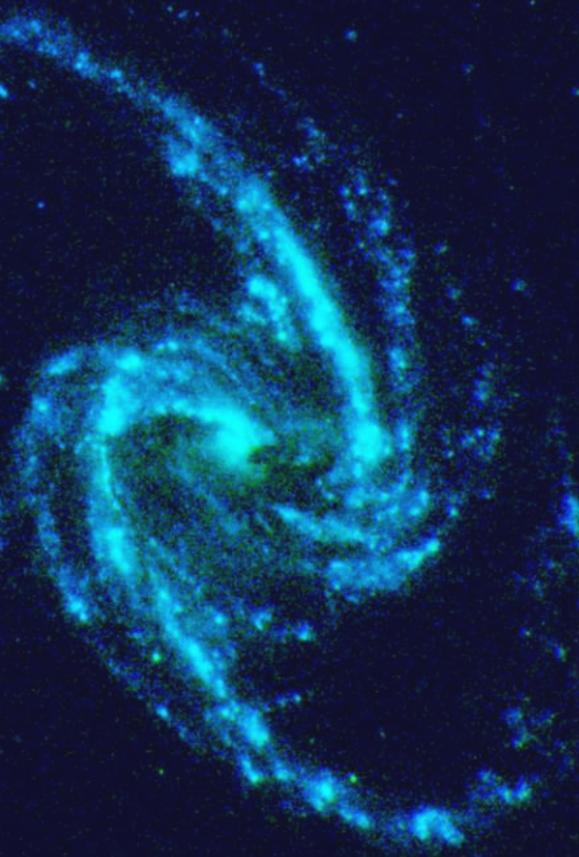


ISRO – Achievements

(from June 2018 to June 2019)



Presentation to
62nd Session of COPUOS
Vienna, Austria

Mr. R Umamaheswaran
Scientific Secretary
Indian Space Research Organization
Government of India

Accomplishments in Space: 182 missions

- SLV
- ASLV
- PSLV
- GSLV

**72 LV
MISSIONS**

GSLV Mk III

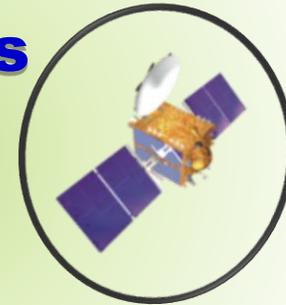
46 successful flights

5 successive successful flights with Indigenous Cryo Stage



105 Satellites

- Remote Sensing
- Communication
- Navigation
- Space Science



**10
Student
satellites**

5 Experimental missions

**Space Capsule
Recovery
Experiment**



**Crew Module
Atmospheric
Re-entry Experiment**



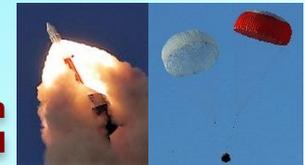
**Reusable Launch
Vehicle
Technology
Demonstrator**



**Scramjet Engine
Technology
Demonstrator**



**Crew Escape System
at Launchpad**



297 Satellites of 33 countries

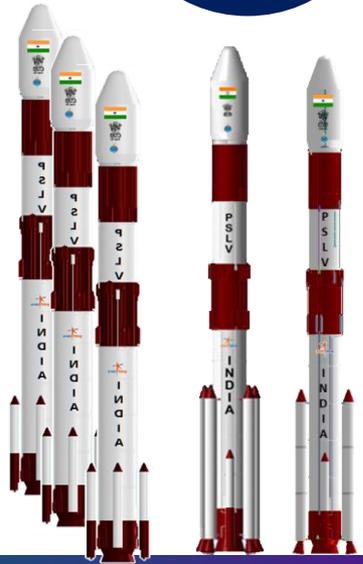
Space Technology Applications



Mission Accomplished

5 PSLV

C42, C43,
C44, C45,
C46



1 GSLV

F11



1 GSLV
MkIII

D2



CES
PAT

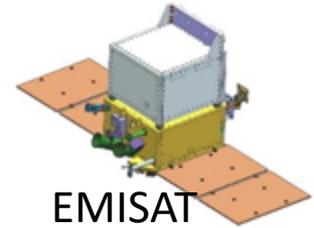


Sep, Nov 2018
Jan, Apr, May 2019

Dec 2018

Nov 2018

July 2018



EMISAT



GSAT-7A



GSAT-29

GSAT-11



Ariane Launches



HYSIS

60
Foreign
satellites

GSAT 31



PSLV-C42/NovaSAR & S1-4 MISSION

PSLV-C42



**16th Sept 2018
22.08hrs IST**

NovaSAR and S1-4



NovaSAR

- S-band Synthetic Aperture Radar (SAR) & Automatic Identification Receiver payloads
- Applications include forestry mapping, land use and ice cover monitoring, flood and disaster monitoring and maritime missions.

S1-4

- A high resolution earth observation satellite.
- Surveying resources, environment monitoring, urban management and disaster monitoring.

PSLV-C43/HySIS MISSION

PSLV-C43



HYSIS



Hyperspectral Remote Sensing Mission

29th Nov 2018
09:57:30 (IST)

PSLV-DL (A new variant of PSLV)

PSLV-C44



24th Jan 2019
23:37 (IST)



Microsat R

Kalamsat-V2

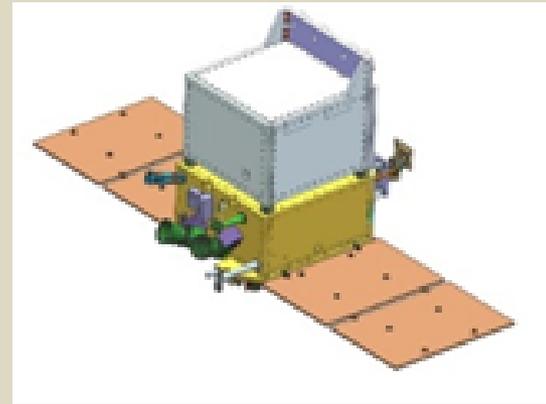
PSLV-C45/EMISAT MISSION

PSLV-C45



**April 01, 2019
09:27 hrs. (IST)**

EMISAT



28 international customer satellites

PSLV-C46/RISAT-2B MISSION

PSLV-C46



**May 22, 2019
05:30 hrs. (IST)**

RISAT-2B

RISAT-2B

RISAT-2B is a radar imaging earth observation satellite developed by ISRO.

SALIENT FEATURES OF RISAT-2B

Lift-off weight	615 kg
Altitude	557 km
Payload	X-Band Radar
Inclination	37 deg
Mission Life	5 years

Applications

- Agriculture
- Forestry
- Disaster Management Support

GSLV-F11 / GSAT-7A Mission

GSLV F11



**19th December 2018
16.10 hrs (IST)**

GSAT-7A



Communication satellite

- To provide communication capability to the users
- Ku-band over the Indian region.

GSLV MkIII-D2/ GSAT29 MISSION

GSLV MkIII D2



**14th November 2018
17.08 hrs (IST)**

GSAT- 29



Communication satellite

- Ku-band and Ka-band payloads
- To cater to the communication requirements of users including those from remote areas especially from Jammu & Kashmir and North-Eastern regions of India.
- Q/V-Band communication payload onboard to demonstrate the future high throughput satellite system technologies.
- Optical Communication Payload - to demonstrate data transmission at a very high rate through optical communication link.

GSAT 11 Mission



December 05, 2018

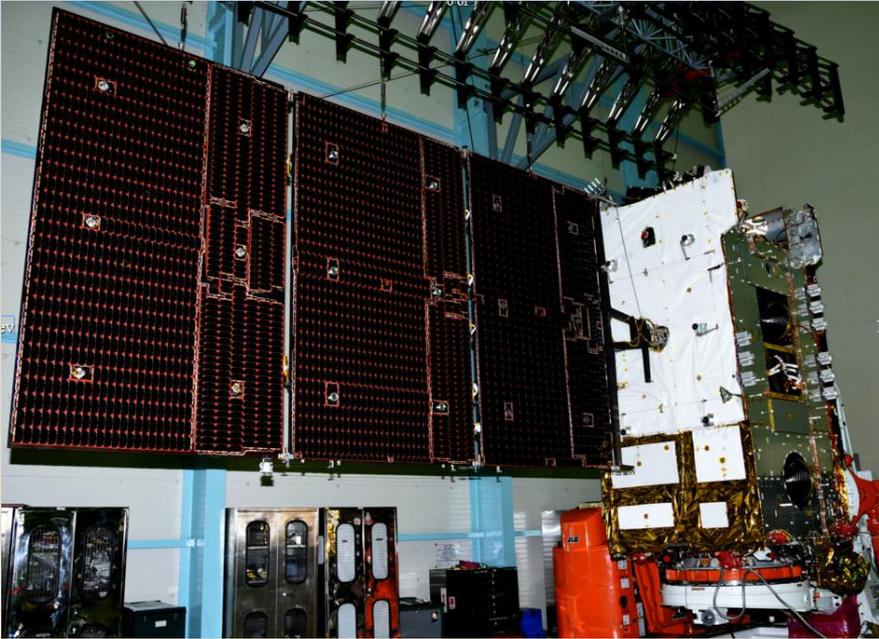
Launched in Ariane 5 VA-246

Communication satellite

- Advanced communication satellite with a Gregorian Antenna and many other new technologies.
- Weighing about 5854 kg, GSAT-11 is the heaviest satellite built by India.
- Boost broadband connectivity to rural and inaccessible Gram Panchayats in the country coming under Digital India Programme.

GSAT 31 Mission

Launched in Ariane 5 VA-247



February 06, 2019

Communication satellite

- Ku-band transponder
- To provide continuity to operational services on some of the in-orbit satellites.
- Derives its heritage from ISRO's earlier INSAT/GSAT satellite series.
- The satellite provides Indian mainland and island coverage.
- The designed in-orbit operational life is about 15 years.

Pad Abort Test Flight of Crew Escape System

Successfully conducted on

05th July, 2018 // 07:00 Hrs. IST

To prove the concept of Crew Escape System, by flight testing of the integrated CES, in a simulated pad abort scenario

OBJECTIVE

Altitude : 3 km

Ignition of Motors
Grid-Fin Deployment

Burn out

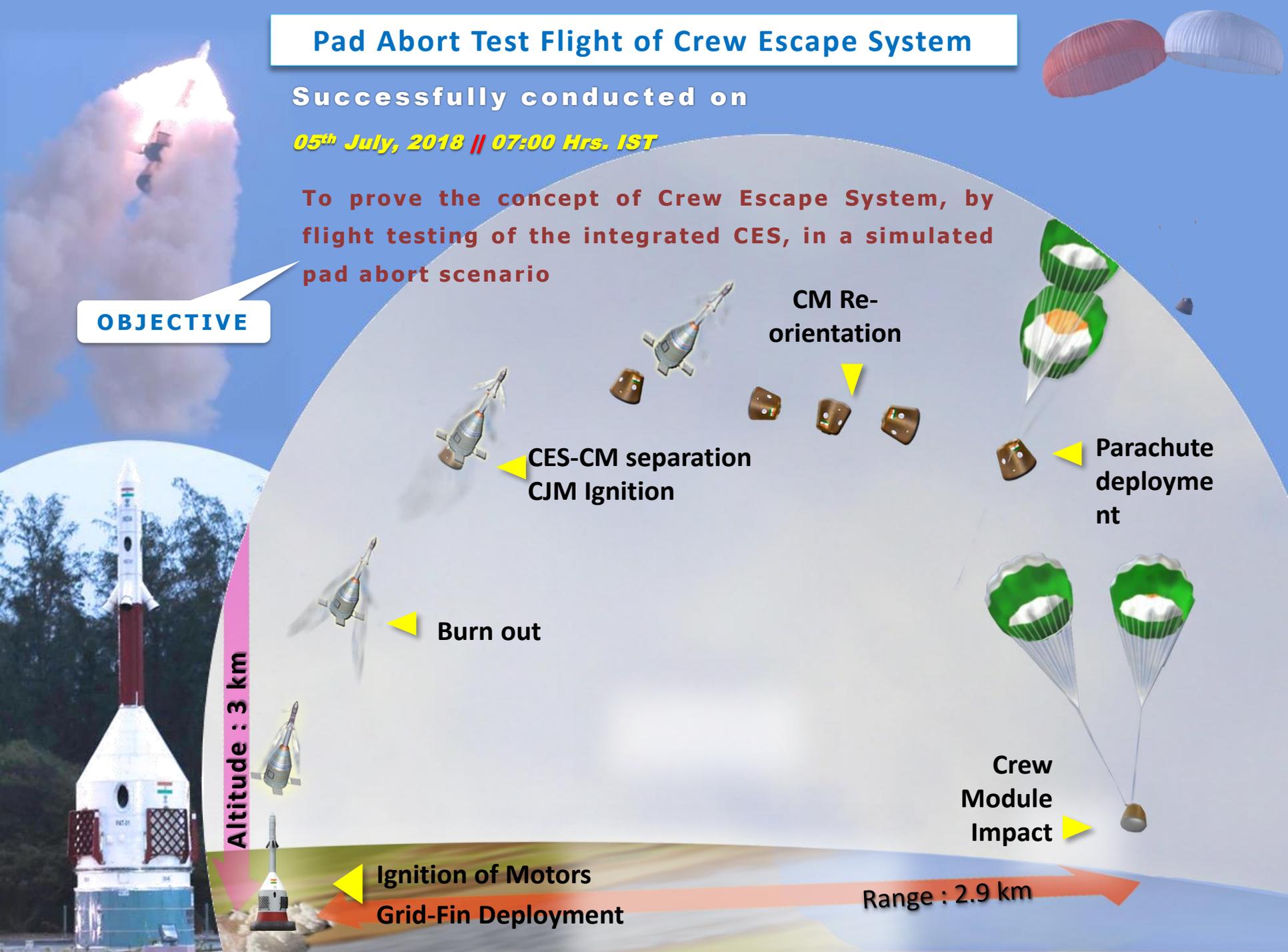
CES-CM separation
CJM Ignition

CM Re-orientation

Parachute deployment

Crew Module Impact

Range : 2.9 km





When India celebrates 75th year of Independence in 2022, an Indian Son or daughter will undertake a manned space mission onboard 'Gaganyaan' carrying the national flag.....

Gaganyaan Programme **Human Space Flight Centre**



Lunar Landing Mission- Chandrayaan 2



Lunar Orbiter
Lander - VIKRAM
Rover - PRAGYAN

**Capable of soft landing on a specified lunar site and
deploy a Rover to perform mobility and science
experiments.
Landing for the first time near the south pole**



Enhanced interaction with Ministries

Promoting Space Technology Applications in Governance & Development

Prime Minister of India urged Department of Space to pro-actively engage with all stakeholders to maximize the use of space science in governance and development.



National Meet deliberated on joint action plans on promoting space technology applications

22 Thematic Expert Groups formed for One-to-One Interactions with Ministries

- Joint Action Plan
- Proof of concepts
- Development of tools
- Capacity building
- Transfer of technology
- Space technology cells

160 Space Applications across **58** Ministries / Departments

Pre-National Meet

20

Ministries

- **160** Proposals
- Web & Mobile Apps : **200+**
- MoUs : **130+**
- Capacity Building : **11,000+**
- New Space Cells : **10**

Post - National Meet

58

Ministries

Agriculture, Water Resource, Forest, Environment, Urban & Rural Development, Rail & Road, Weather, Health, Education, Disaster management

Outreach activities



- **UNNATI:** 29 officials from 17 countries were trained on Nanosatellite building
- **CSSTEAP & IIRS:** 2800 officials from 109 countries benefitted on space technology applications
- 225 agreements with **53 countries** and 5 multi lateral bodies
- **YUVIKA:** creating awareness on space technology among middle school students
- **NAVIC:** Messaging and alert system for fishermen community; Power Grid Synchronization; Fleet & Logistics Management; Geo-fencing; Search & Rescue





Thank you