



Commitment towards a reformed space sector

Opening up of Space Sector

on the path to Atmanirbhar Bharat

“Technology is the most powerful weapon the government has to utilise, for good governance, transparency, and accountability”



“There should be no ‘space’ between common man and space technology”



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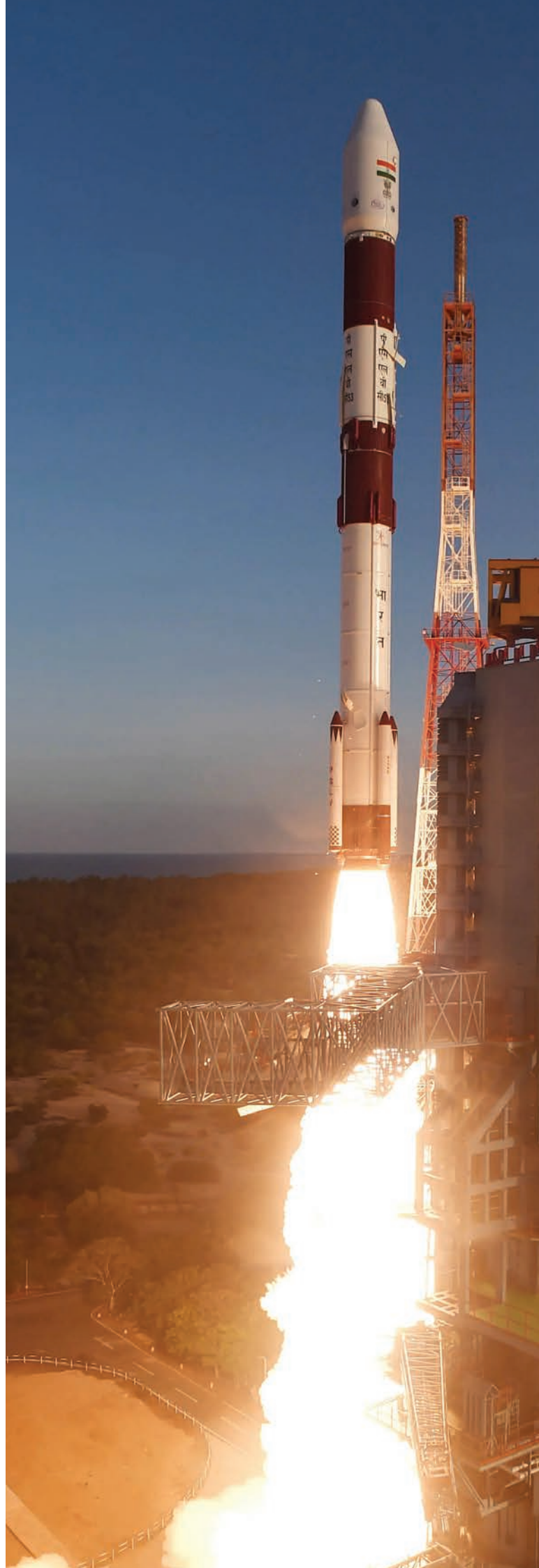
NEED FOR REFORMS

The global space economy is currently valued at about USD 360¹ billion. Despite being one among a few spacefaring nations in the world, India accounts for only about 2% of the space economy.

Over the last 2 decades, the private sector has played an increasingly important role in other spacefaring countries within the global space economy. Companies like SpaceX, Blue Origin, Virgin Galactic, and Arianespace have revolutionized the space sector by reducing costs and turnaround time, with innovation and advanced technology. In India however, players within the private space industry have been limited to being vendors or suppliers to the government's space program.

Thus, there was a need to provide scope for Non-Governmental Entities (NGEs) for enhanced participation in Indian space programme and playing key roles to boost India's market share in Global Space Economy.

¹<https://www.pwc.in/assets/pdfs/research-insights/2020/preparing-to-scale-new-heights.pdf>





Our Honorable Prime Minister has emphasized the need to promote private sector activity in all high technology areas including space, to fully unlock the potential of India's youth and entrepreneurs.

To realize this vision, it is necessary to enable private entities within the Indian space sector to establish themselves as independent players capable of end-to-end space activities. Many Indian private companies and start-ups have been showing keen interest in space activities, services, and applications, and are requesting a conducive policy environment for this.

Promoting the private sector will enable the Indian space program to remain cost competitive within the global space market, and thus create several jobs in the space and other related sectors.

Our Honorable Prime Minister is also convinced of the potential catalytic role that the space sector could play for high-technology industries and start-ups in the country.

The recent reforms have been warmly welcomed by all stake holders and the number of space sector players in India continue to expand.





PRIME MINISTER'S VISION

The guiding light for this reform has been the vision of our Honorable Prime Minister. As our talisman, he asserts that the benefits of space technology should be made known to every Indian citizen, who will in turn become stakeholders in the development of this sector.

He strongly believes that the optimal utilization of space technologies can revolutionize delivery of governance services and boost developmental efforts.

Our Honorable Prime Minister sees 'outer space' as an avenue to inspire scientific curiosity amongst the youth and to encourage them to look towards academic pursuits in STEM.

Above all, he maintains that the space sector has the potential to incubate a vibrant ecosystem of startups and private industries. By becoming a leading contributor to India's economic growth story, the space sector is replicating the success seen in the IT sector today. This would also increase India's share in the global space market significantly.

It is our Honorable Prime Minister's conviction that India also needs to actively participate in the emergence of cutting-edge space technology, to ensure national security and aligned strategic interests.



Indian space contribution
2% of global market share

Potential to capture
9% of global market share by 2030

% of global market share

US	40%
UK	7%
India	2%

Global space economy (in 2021)	USD 386B
India (in 2021)	USD 7.6B
India to grow (by 2025)	USD 50B

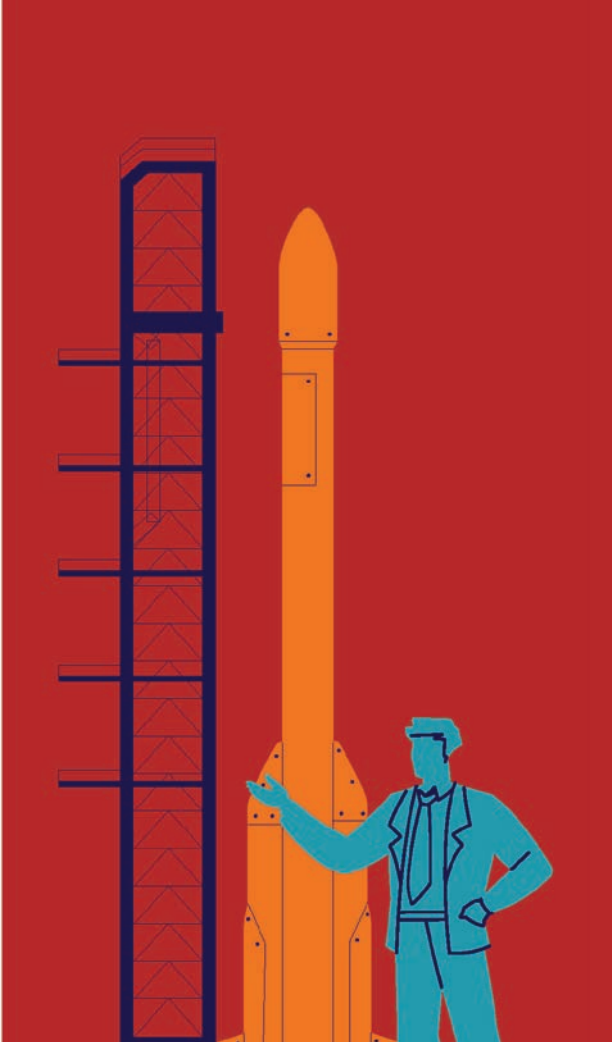






GUIDING PRINCIPLES OF REFORMS





Enable and promote Non-Governmental Entities (NGE) to carry out independent space activities

Provide a level playing field and favorable regulatory environment for players within the Indian private sector, to allow them to become independent actors in the space sector instead of being solely vendors or suppliers to the government program.

This can be achieved by enabling ease of business through single-window mechanisms, with predictable timelines. IN-SPACe has been the single window agency for promoting the NGEs and to receive the proposals online at www.inspace.gov.in

Open up ISRO Infrastructure and Facilities

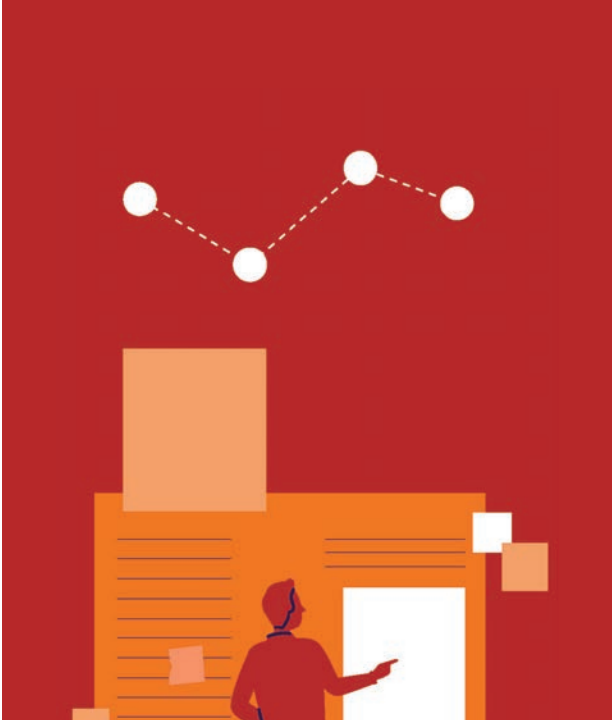
The reform also aims to make national space infrastructure developed over the years, available for use by the private industry through a business friendly mechanism.

Facilities pertaining to testing, tracking and telemetry, launch-pads, and laboratories, created by ISRO, would also enable the private space industry to climb the value chain.

A mechanism has been created, where industries can approach IN-SPACe for utilizing the ISRO facilities.

Demand-driven approach for development of space assets

Optimizing the utilization of space assets such as satellites and launch capacity by determining accountability amongst various stakeholders. Creation of new assets to be made contingent on confirmation of demand from user agencies/ entities.



Public sector to enable Transfer of Technology to Industries

Clear guidance has been provided that public sectors in the space domain will focus on enabling transfer of matured technologies to industries to avoid re-invention of wheel.

industry can approach IN-SPACe for obtaining new technologies in the space domain.

The reforms have also given NSIL an important role in transfer of technologies/ platforms from the public to private sector.

Previously developed and already proven technologies/ platforms would be transferred to the non-governmental entities through Transfer of Technology mechanism.



Smart India Hackathon

As part of a nationwide initiative by MHRD, ISRO organized a Smart India Hackathon 2022 grand finale software edition during August 25th – 26th, 2022. a 36-hr software product development competition covering 22 problem statements in space applications. 34 teams participated in the event.

ISRO's Virtual Museum

ISRO has launched virtual museum "SPARK-THE SPACE TECH PARK", which showcases information on ISRO's missions, video's on space applications for societal needs.



INSPIRE YOUNGSTERS AND DREAMERS

YUva Vigyani Karyakram (YUVIKA-2022)

YUVIKA is a two weeks residential programme organized at five ISRO centres which includes teaching and practical exposure to students in the 9th standard. 153 nos. of students from 36 states/UTs participated in the programme.



Space Tutor

Space Tutor is a collaborative programme between ISRO and NGOs/Start-ups/Institutions involved in promoting space education & STEM activities. 56 space tutors are registered across the country.



UNNATI (Unispace Nano Satellite Assembly & Training by ISRO)

UNNATI is a capacity building programme, it is a training on combination of theoretical course work and hands-on training on assembly, integration and testing of nano satellites for the foreign participants. ISRO had trained 60 participants from 33 countries in two batches and third batch training is in progress.



Atal Tinkering Labs (ATL)

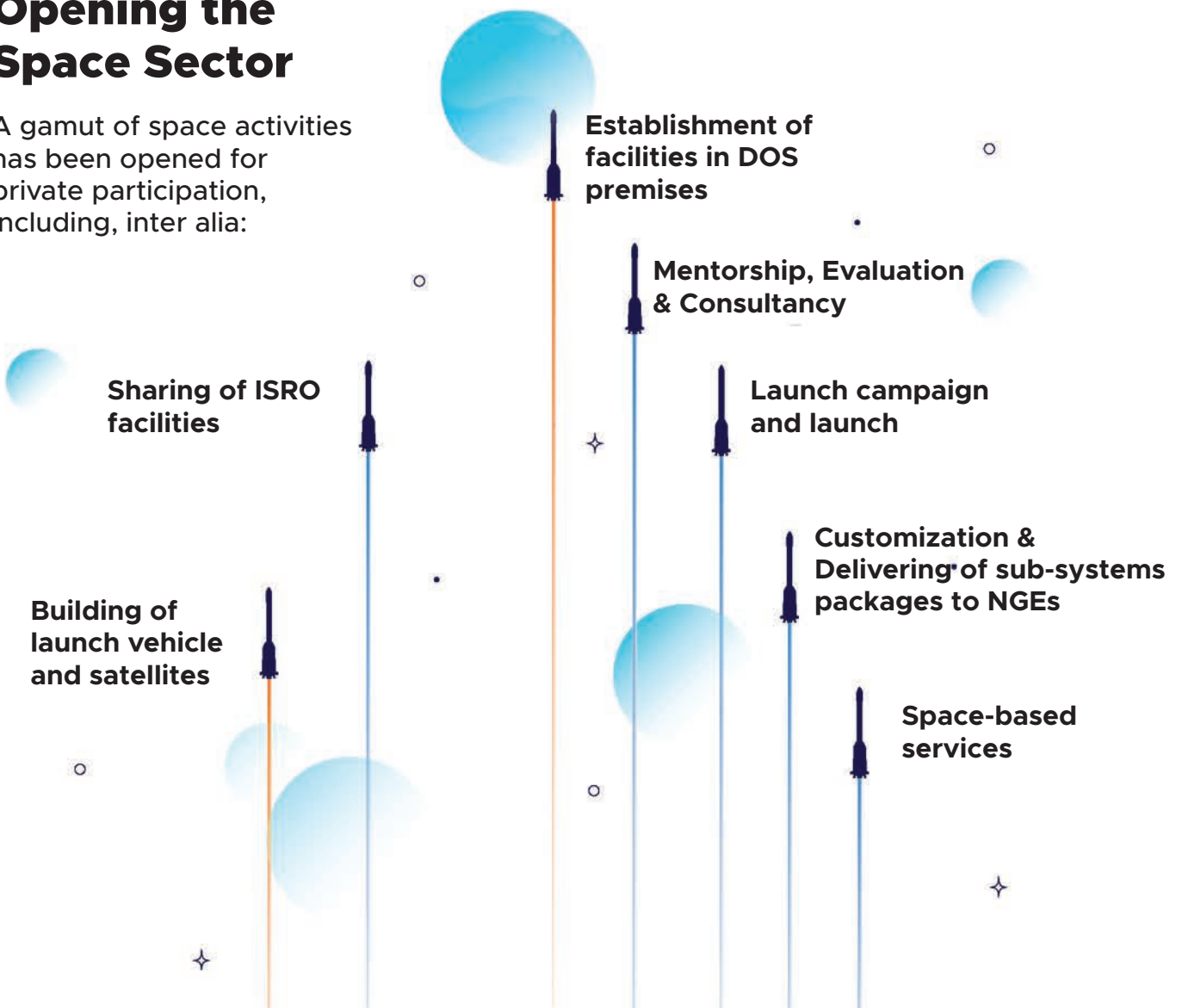
ISRO has adopted 100 Atal Tinkering labs established by Atal Innovation Mission, Niti Aayog across the country to promote space education in the schools. Two interactive sessions were organized with these schools for extending the mentorship.



IMPLEMENTATION STRATEGY

Opening the Space Sector

A gamut of space activities has been opened for private participation, including, inter alia:



SETTING UP OF IN-SPACE

To facilitate private sector participation, the government has created the Indian National Space Promotion and Authorization Centre (IN-SPACe), as a single-window, independent, nodal agency under Department of Space. Its main mandate is to promote and enhance the role of Non-Government Entities (NGEs) in the space sector through hand holding, support, and by providing them with a level playing field. It will also authorize the use of ISRO facilities by private companies, development of Indian satellite systems, and launch of rockets/vehicles developed by the private sector.



Provide a stable regulatory and policy environment

The reforms have strengthened the policy-making capacity of the Department of Space and an exercise has been initiated to create new business-friendly policy framework for Space sector covering remote sensing, satellite communication, navigation, technology transfer, space transportation, space situational awareness, human space flight, etc.

The draft space policy has been reviewed by Space Commission and consultation with industry & inter-ministries completed. The updated space policy has been submitted for approval of government.



ANNOUNCEMENT OF FUTURE OPPORTUNITIES FOR PRIVATE SECTOR

The reforms have tasked ISRO with identifying and announcing future opportunities in selected science and exploration missions for private sector participation.

ISRO will also share best-practices, protocols, and other relevant technical expertise with the private sector to enhance their capacity for space activities.



ENHANCING THE ROLE OF NEW SPACE INDIA LTD

The reforms have authorized the public sector company NSIL to act as the exclusive public-sector aggregator for both demand and supply of space assets/ services on a commercial basis, including imaging, communication transponders, launch services etc. In its role as a demand aggregator, NSIL will acquire satellites, launch vehicles, and

other assets developed by ISRO or the private industry. In its role as a supply aggregator, NSIL will commercialize assets and services like transponder capacity, imaging services, launch capacity etc, on ISRO-developed satellites and launch vehicles.

OneWeb India 1 Mission



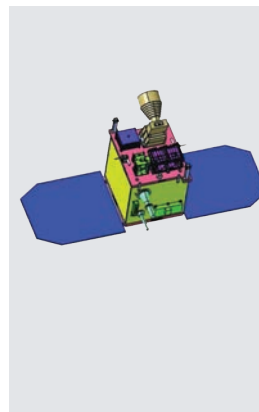
NSIL has executed a dedicated commercial mission on demand driven mode for placing 36 nos. of OneWeb satellites in LEO using LVM3 launcher.



Narendra Modi ✓
@narendramodi

Congratulations [@NSIL_India](#) [@INSPACeIND](#) [@ISRO](#) on the successful launch of our heaviest launch vehicle LVM3 with 36 OneWeb satellites meant for global connectivity. LVM3 exemplifies Atmanirbharta & enhances India's competitive edge in the global commercial launch service market.

9:32 am · 23 Oct 2022 · Twitter for iPhone



IMS-1, an end-to-end satellite bus technology for producing 100 kg class satellites was announced by NSIL for transfer. 10 Indian industries applied for acquiring the technology.

INDUSTRY PROMOTIONS

Bangalore Space Expo (BSX-2022)

Bangalore Space Expo (BSX-2022) was organized by CII in association with ISRO, **INSPACE** and **NSIL**, during September 2022. More than 15 technical sessions and 50 speakers deliberated on current issues in the space domain. 250 space industry and startups participated and showcased their capability in the exhibition.



India Space Congress 2022

First edition of the **India Space Congress 2022**, a three-day confluence organised by SatCom Industry Association (SIA-India) in association with ISRO, deliberated on startup community, technology & business models, business opportunities, growth & market access, standardisation, policy and regulatory landscape in the space sector. It witnessed 650 delegates, 180 speakers, 35 sessions over 30 nationalities.



Indian Space Association (ISpA) Conclave

A pivotal agency for connecting space start-ups, industry and governmental has organized a conclave to discuss the emerging trends in the space domain. Domain experts from ISRO shared the experience and current developments.



International Astronautical Congress (IAC) -2022

As a member of the **International Astronautical Foundation**, ISRO along with **NSIL**, **IN-SPACE** participated in the **International Astronautical Congress (IAC) -2022** at Paris, France during September 18 - 22, 2022. Participated in various technical sessions, participated in bilateral discussions with international space agencies and industry and showcased achievements & future plan Indian Space Programme. Six Indian space start-ups also participated in the Indian space pavilion.



IMPACT OF REFORMS

1. Industries, start-ups, and academia have warmly welcomed the space sector reforms, and the new IN-SPACE mechanism.

2. More than 150 proposals from start-ups, MSMEs and industries have already been received for future consideration by IN-SPACE, illustrating the overwhelming response to the system.

Following the reforms, several Indian space sector startups have been able to raise venture capital for their planned projects. Several new start-ups entered into space domain, the deep tech & application area and started interacting with Department of Space. This depicts the rising confidence amongst investors in the vibrant Indian space sector and the expected impact of this deregulation, as brought about by the reforms.

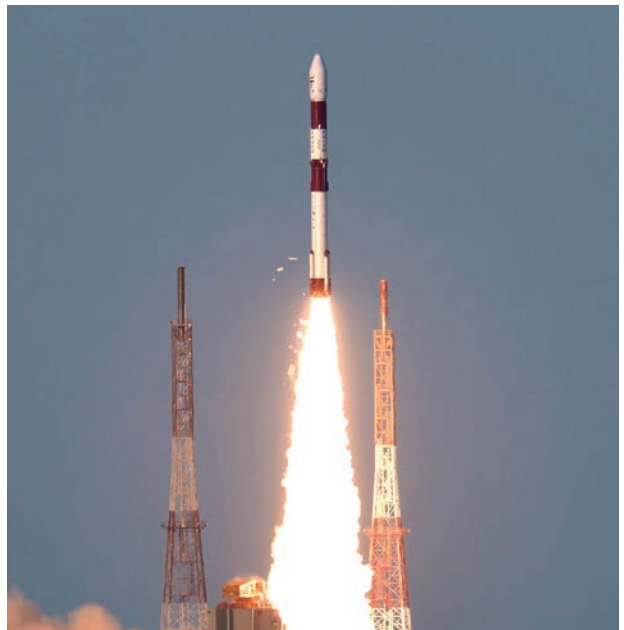
PSLV Productionisation

One of the major breakthrough in the commercialization is PSLV productionisation through Industry. NSIL and HAL exchanged the MOU for producing 5 nos. of PSLVs . L&T is partnering with HAL in the consortium.



Small Satellite Launch Vehicle (SSLV)

To capture the small satellite launching market ISRO has developed a **Small Satellite Launch Vehicle (SSLV)** with a view to transfer the technology to the industry. The first development flight was launched. And the technology will be transferred to the industry after successful qualification.



Non-Disclosure agreements and MOUs for transfer of technologies have been signed between ISRO centers and several private sector companies.

IFSCA entered into an MoU with DoS on July 29, 2022, at Ahmedabad in the presence of the Hon'ble prime minister to promote international investments in the Space sector.



Human Resource Development

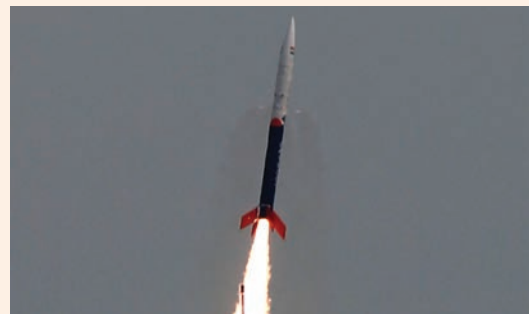
ISRO and **Ministry of Skill Development & Entrepreneurship (MSDE)** has launched a skill development programme in the space domain. 40 young professional from across the country and 100 ISRO staff were trained in the last 2 months at **National Skill Training Institutes (NSTI)** under MSDE. This Programme will continue every month for imparting skilled courses for ISRO Staff.

Capacity Building Commission (CBC) in association with STI-CB cell, PSA's office and ISRO has launched a Leadership Training Programme for 32 scientists from 8 science ministries. ISRO has taken lead in hosting the programme.



Private Launch Vehicles

M/s Skyroot Aerospace, India's space tech startup successfully launched Vikram-S first maiden flight from Sriharikota on 18th November, 2022. This mission named as "**PRARAMBH**", which is the first private rocket launch mission in the country authorised through IN-SPACe mechanism. Vikram-S is a single stage solid fueled, sub-orbital rocket manufactured using advanced technologies including carbon composite structures and 3D printed components.



As a part of MOU with IN-SPACe, **M/s Agnikul Cosmos Pvt. Ltd.** utilised VSSC facilities for testing (15Sec. hot test) of their Agnilet a semi-cryogenic Engine for their sub-orbital flight Agnibaan. The test was successfully conducted and qualified on November 4, 2022 which will enable them for their maiden flight expected to be launched from Sriharikota soon.



Non Governmental Entities in the Space Business in India



Indian Space Research Organisation
Department of Space
Government of India
Antariksh Bhavan, New BEL Road
Bangalore-560094, India