New era in India's Space Odyssey: The rise of the private sector

by Bhargav Addagulla

Primer on the global space-tech landscape

The Cold War era (1945-1991) witnessed a 'Space Race' where the two blocs constantly pushed the envelope of technology. From artificial satellites to landing on the moon, this period spurred development in rocket propulsion, which demonstrated that no distance is beyond reach. The unhindered Space Race raised fears of an arms race since the devastating atomic bomb explosions in 1945 in Japan had an indelible impact on humankind. With the intervention of the UN, the Outer Space Treaty 1967 came into being, successfully preventing a full-fledged space war. Despite these circumstances, India pioneered a space program through the Indian Space Research Organization (ISRO) that was focused on applying technologies to real problems of society.

The post-Cold War era saw unprecedented cooperation between significant space-faring nations, the most prominent example of which was the establishment of the International Space Station (ISS) in 1998. While this reinforced the global relevance of space technology, a parallel transformation was palpable with the onset of the commercial era in the space sector. The last 25 years have witnessed the rise of non-state commercial enterprises with adequate capabilities to design, deliver, and operate assets in space and offer these services commercially to users all across the globe. Applications include location-based services powered by navigation satellites like GPS, DTH satellite capacity, satellite imagery that powers weather forecasting, disaster management, urban planning, etc.

India's rising private space sector

The Government of India initiated space sector reforms in 2020 to make the country's private sector a co-traveler in the national space odyssey.

Towards this end, the **India National Space Promotion and Authorization Centre (InSPACe)** has been established. In the last five years, 200+ space tech start-ups have been set up. This is in addition to ISRO's existing contractors who have invested in producing their own space assets. Investors have responded positively, with these start-ups receiving $330 million cumulatively in FYs 2022,23 & 24. The government released the Indian Space Policy 2023 and a new FDI policy for space (in March 2024), allowing Non-Governmental Entities (NGEs) to participate in all domains of space activities.

Key roles played by InSPACe

In the last two years, at least three Indian (private sector) entities have built their satellites, and two rocket-building start-ups have conducted sub-orbital launches of rockets designed and built on

their own. The Union budget of 2024 has allocated a ₹1000 crore VC fund for enabling start-up endeavours, perhaps the first for any sector.

Space: A limitless export opportunity

The tremendous success of ISRO's Chandrayaan-3 mission with the Vikram rover soft landing on the moon has only vindicated the belief reposed in the space program by successive governments. It also enables enhanced interest in the country's talent and investment pool. Regarding funding, India is the eighth largest space nation in the world and yet only the fourth nation to land on the Moon. It is pertinent to mention that any space system designed to operate in space is a natural export opportunity. Space-grade hardware in one country would be space-grade in any other country, and the end deployment medium is the same, i.e., space. Investors and start-up founders recognize this potential, which is why the sector is poised for growth on the back of an enabling regulatory environment in India.

In addition, space tech applications encompass a wide range of domains, especially sustainability. A 2018 study jointly undertaken by the UNOOSA (United Nations Office for Outer Space Affairs) and the European GNSS Agency (GSA) pointed out that close to 40% viz. 65 out of the 169 targets enunciated under the Sustainable Development Goals (SDG) 2030 agenda benefit directly from the European Space Agency's (ESA) Copernicus and European GNSS programs, which are earth observation and geo-location services, respectively. Considering that India has similar capabilities, services emanating from the sector would be globally relevant and find demand in use-case-driven applications.

Conclusion

Over the last 70 years, space technology has percolated across applications, from GPS to weather forecasting and urban planning, invisibly touching many facets of human life. ISRO's recent socio-economic survey results have indicated that for every dollar spent in the space sector, there was a multiplier effect of $2.54 on the Indian economy and that the sector's workforce was 2.5 times more productive than the country's broader industrial workforce. These data points would only accelerate the participation of private-sector investors.

India's space sector is poised for a transformation, with the private sector taking gradual steps to spread and amplify the benefits & capabilities emanating from the state-led space program.

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