India’s space industry is blasting off

Thank Nehru, Modi and Musk

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Sky-high ambitions

ON APRIL 10TH Artemis II, an American lunar mission that carried four astronauts farther than humans have travelled before, splashed down safely in the Pacific Ocean. Next year the Indian Space Research Organisation (ISRO) aspires to meet its own celestial ambition. Its Gaganyaan mission will seek to add India to the small group of countries—comprising America, Russia and China—that have achieved crewed space flight.

That goal is not as otherworldly as it may sound. In recent years India has built a thriving commercial space industry that works closely with ISRO. Its success is thanks largely to three people.

The first is long dead: Jawaharlal Nehru, India's first prime minister. Nehru had a passion for science—big cities are littered with planetariums bearing his name—and established the precursor to ISRO in 1962, at the urging of Vikram Sarabhai, a leading physicist. Unlike the cold-war agencies of America and the Soviet Union, India's was devoted to development goals, such as monitoring monsoons. It has since become a rare example of a widely respected Indian government institution.

Yet until 2020 India's space sector remained a cottage industry. A limited ecosystem of companies worked with ISRO, mostly small manufacturers producing components for its missions. Graduates of the Indian Institute of Space Science and Technology (IIST), a dedicated university, had few opportunities outside the public sector. That changed thanks to Narendra Modi, India's current prime minister and the second pivotal figure. His government opened up space to the wider private sector in 2020, creating IN-SPACe, a "single window" where companies could obtain licences for space activity of all sorts as well as access to ISRO's launch capacity. The government estimates that the private space industry's total revenues now exceed $8bn, with 400 or so startups, many of them set up by IIST alumni.

Third is Elon Musk, the world's richest man. The Falcon 9 reusable rockets developed by SpaceX, which he founded and runs, have dramatically reduced the cost of launching satellites, making more space-based businesses viable. Would-be Indian space tycoons hope that the public listing of Mr Musk's colossus sometime this year will prove that the industry can be a lucrative investment. They also hope that a "SpaceX mafia" of investors and employees that get rich as a result will redeploy some of the bounty in India.

The country boasts a handful of space clusters. One is in Bangalore, long a centre of the aerospace and defence industry: aeronautics labs were established there shortly after independence, close to what had been a British military base. Another is in Chennai, which is near ISRO's launch site. AgniKul Cosmos, a startup based in the city, wants to become a "taxi" for satellites (as opposed to SpaceX's "buses"). Using 3D printers, it plans to build smaller reusable rockets than the Falcon 9, which could be launched from wherever a client wants and put their satellite in precisely the required orbit. The first commercial launch is scheduled for later this year.

For the moment, space chiefly means defence, says Anirudh Sharma of Digantara. His startup first imagined itself as an orbital air-traffic controller, helping clients monitor the risk of their satellites colliding with debris. It soon realised that its satellite-mounted lasers could track missiles on Earth just as easily as extraterrestrial junk. Its offices in America, staffed with a mix of local citizens and green-card holders with security clearances, supply various American defence contractors. India's defence establishment has also developed an interest in the industry. The brief conflict with Pakistan in 2025 showed the need for capabilities in space, says Mr Sharma. China reportedly provided Pakistan with satellite images during the clash.

The other anchor client is ISRO. India's government wants to use its space mission to give a further boost to its private space industry. It is taking inspiration from America, where SpaceX won the contract with NASA, the country's space agency, to provide the landing system that is intended to take astronauts back to the Moon's surface in a future stage of the Artemis mission. If Gaganyaan succeeds next year, it should help draw greater attention to the businesses that supported it. India's goals in space may have shifted since Nehru's day, but development remains an important part of the plan. Its government hopes that the sector will contribute to India's rise as a powerhouse of advanced manufacturing. It is shooting for the Moon —but may just succeed. ■