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Skyroot and beyond: India's space startups aim high

While rocket launches grab headlines, private firms are working in tandem with Isro to do everything from earth imaging to space weather monitoring

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India is unlikely to produce an Elon Musk or a Jeff Bezos any time soon, but the domestic space sector has grown to display some promise in recent months. On Friday, Skyroot Aerospace's sub-orbital mission, 'Prarambh', marked the beginning of private launch activity albeit on a micro scale. As Isro chairman S Somanath says, the launch of (Skyroot's) Vikram-S, a small, single-stage rocket, will "demonstrate that young people with a dream to build something big can actually do so in India".

While Skyroot is the first, there are already other private companies gearing up for missions, not just from the rocket side, but also satellites and applications. Ramesh Nagasamudram, vice-president, Anisara SpaceCom, a consultancy that specialises in satellite services, believes the space sector is poised for growth like the IT sector.

"One welcome change has been Isro's support. Isro is walking the talk with a visible willingness to listen and encourage as well as extend its infrastructure resources. Also, startups are more industry and revenue focused, addressing global markets," he says.

One major milestone in the private sector's journey so far is the contract the HAL-L&T consortium bagged to manufacture five Polar Satellite Launch Vehicles (PSLV) outside of Isro for the first time. The formal contract worth around Rs 860 crore was signed in September.

Given that a rocket launch is the most visible aspect of the space sector, it often overshadows other equally significant work being carried out. Even a mammoth Isro suffers from this with its work almost always measured by the number of launches it carries out.

But not all news is from the launch segment. From patents on critical technologies to indigenous

product development and projects that have the potential of giving India an edge, there have been a lot of developments in the months following June 2020, when India announced its intent to open up the sector. And some interesting projects are in the pipeline too.

In 2021, Agnikul Cosmos, Bellatrix and Pixxel had signed MoUs with Isro, while also working closely with the Indian National Space Promotion and Authorization Center (IN-SPACe), India's space regulator and promoter.

In the last few months, several tests that validated key technologies built by private firms have been carried out, while some have been kicked off operations. Pixxel launched Shakuntala — India's first privately built earth imaging satellite — on a SpaceX rocket. The firm will launch its second satellite, Anand, on a PSLV later this month. Digantara and Dhruva Space have launched tech demonstration payloads on a PSLV ear-

INDIAN SPACE ECONOMY: ROOM TO GROW

Segment	2020 (\$bn)	2025 (\$bn)	Estimated Growth
Satellite & application	3.8	4.6	4%
Ground segment	3.1	4.0	5%
Sat manufacturing	2.1	3.2	9%
Launch services	0.6	1.0	13%
Total	9.6	12.8	6%

Source: Mordor Intelligence, Allied Market research, EY analysis

er this year. Digantara has also signed an MoU to set up India's first private ground-based space observatory. Digantara CEO Anirudh Sharma says, "We've identified that space weather is a crucial aspect that will help enhance the accuracy of our solution. Which is why we launched the patented weather monitor on PSLV."

IN-SPACe helps coordinate between private space firms and Isro. "From facilitating access to various Isro infrastructure to

mentoring and promotions, we're providing end-to-end support," says Vinod Kumar, its director-promotions. IN-SPACe has 294 entities registered with it, of which 89 are startups. It is vetting another 158 project applications.

Following Skyroot, Agnikul will launch its sub-orbital mission. It recently received a key system from Isro, another first as a system built for Isro rockets has never before been used by a private entity. "The industry now has clarity

about whom to approach from Isro or IN-SPACe and they've been working very closely with industry," says Agnikul co-founder Srinath Ravichandran.

Isro and IN-SPACe support being key is something Ajay Kumar, founder-CEO, Vellon Space, and Pawan Kumar Chandana, CEO, Skyroot, also echo. Chandana, in fact, credits Vikram-S' fast turnaround time to this.

Isro's PSLV, through its commercial arm NSIL, will be launching multiple commercial payloads — Pixxel's Anand, two satellites from Dhruva Space and four US payloads — on November 26. NSIL has already launched 36 OneWeb satellites and another batch of satellites is slated for early next year. As Lt Gen (ret'd) AK Bhatt, director-general, Indian Space Association, put it: "The last few months have been marked by several firsts and Friday's launch was another indicator of what concerted efforts can achieve in the space sector."