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HRD may dump Aakash, hints Raju

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NEW DELHI, MARCH 22

FOUR months after he took over the Human Resource Development Ministry from Kapil Sibal, Pallam Raju on Friday indicated that his ministry may give up its much-publicised $35 Aakash tablet aimed at bridging the digital divide.

Marking a major shift in the thinking of the ministry on the subject, Raju said that instead of "an obsession with hardware", the focus should be on enabling students with educational content — also allowing them to choose the device they want.

"Aakash is only a tablet... there are other such devices as well. While work will continue to develop it and increase its productivity, manufacturing is obviously a problem," Raju said of the $35 tablet that now stares at an uncertain future.

The HRD Ministry has also decided to hold back its proposed tender for procuring 5 million Aakash tablets. It has alongside instituted two committees to review the Aakash tablet project as well as the National Mission on Education through ICT (NMEICT) and will take a final view on the much publicised tablet depending on these reports.

This is the first instance of Raju attempting a clear reversal of an education policy and position that was strongly backed by predecessor Sibal and in fact by the UPA in its first avatar under Arjun Singh as well.

On the ground, Canadian manufacturer Datawind has only managed to supply 20,000 Aakash tablets so far even as it stares at a March 31 deadline for delivery of the remaining 80,000 devices. An unhappy HRD Ministry also recently shot off a letter to IIT Bombay — that tests and preps the Aakash tablet for target users — to take action against Datawind for not meeting delivery deadlines. The ministry is even considering getting Datawind blacklisted if it fails to deliver the remaining devices.

Secretary Higher Education Ashok Thakur admitted the Datawind experience was a big setback for the project. Thakur said the ministry would have been more confident about taking forward the tender for 5 million such devices, if the one lakh tablets had been delivered and assessed through student use. Two committees — one under academic Prof Goverdhan Mehta who is also Chairman BoG IIT Jodhpur and another headed by NIIT Chairman Rajendra Pawar — are currently reviewing the Aakash project.

The Aakash tablet which was to be made available to students across educational institutes at a subsidised rate of Rs 1,130 instantly gathered global attention with its price tag but it has been quite a non-starter on most other counts also attracting damaging negative publicity along the way. If the first lot of devices were termed as rather substandard by users, IIT Jodhpur, which was originally handling the contract, and Datawind got into a serious conflict over the testing of the tablet forcing the ministry to intervene and transfer the project to IIT Bombay.

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Production snag delays supply of Aakash-2 tablets

Manash Pratim Gohain | TNN

New Delhi: The future of the ambitious low-cost Aakash tablet seems to be running into rough weather. Supply of 1 lakh Aakash-2 tablets by March 31, 2013, the extended deadline after missing the December 2012 deadline, hangs in balance and the HRD ministry looks non-committal on the next phase.

While accepting the "failure" in production, HRD minister Pallam Raju on Friday said the ministry is awaiting a report from a committee headed by Rajendra Pawar reviewing the National Mission on Education through Information and Communication Technology (NMEICT) before taking a call on the prospects of the device.

According to HRD officials, until a week ago, the vendor — Datawind — could manage to supply just 20,000 units of Aakash-2 as opposed to a commitment of 1 lakh units. The HRD ministry has written to IIT Bombay, the executing body, to ensure the vendor meets the terms and conditions and the supply order by March 31, failing which action could be initiated.

"The product is there, but we have not been able to productionise it as per the requirement..." said Raju. When asked about the future of the product, the minister said, "One should not be obsessed with the hardware. Even if the supply of Aakash is not there as per the requirement, there are enough devices in the market catering to the low-cost tablet segment."

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A Ragtag Team Living a Once-in-a-Blue Moon Dream

Lone Indian in Google Lunar X Prize competition, Rahul Narayan is fighting to raise resources

ET EXCLUSIVE

SRUTHIJITH KK
NEW DELHI

There comes an age in everybody's life when you must lock up your childhood fantasies. Rahul Narayan is well past that age. He has a family to feed. He is 39. He has neither rich parents, nor indulgent benefactors. He has sunk all his savings and nearly two years into a hobbyist project. He needs upwards of $20 million to see it through. When he meets potential funders with his plan, it elicits looks of amusement. Some people laugh, asking him if his whole project is just an elaborate con.

For a year and a half now, Narayan has neglected the IT company he runs with partners — some are classmates from IIT-Delhi — to set up a ragtag team of dreamy graduates fresh out of engineering college, trying to do what only big governments with classified budgets have done before — land a spacecraft on the moon.

Narayan is the leader of Team Indus, a Delhi-based startup that is the lone entrant from India in the Google Lunar X Prize competition. With a purse of $30 million, the competition will reward the first privately funded team to soft-land on the moon, travel 500 metres and transmit back to earth, at a distance of nearly 4 lakh km, pictures, video and data.

The competition was announced in 2007. Registration closed in December 2010 and the target must be achieved before December 31, 2015. Of the 34 teams that registered, 23 remain active around the world. Many are superbly funded and staffed. The US-based Astrobotic, for instance, is based out of Carnegie Mellon University. Its lead, William Red Whittaker, is a research professor of robotics at the university and something of an authority in the field.

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on Narayan's Dream

Whether or not they succeed eventually will depend on whether they can marshal the resources and support on time. But that is immaterial to me. What India needs are teams like these doing ambitious things.

K KASTURIRANGAN
Former Chairman, ISRO

A STARRY TREK: Rahul Narayan (6th from right) with his team of spacefarers

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Narayan's Moon Venture Pretty Modest

Moon Express, a team funded by India-born billionaire Naveen Jain, is based out of NASA Research Park and bought out another team altogether.

In comparison, Narayan's venture is modest. His team works out of a nondescript office building in Noida. Tea and samosas sourced from a local stall are served at lengthy tech review meetings that discuss threadbare mathematical equations on propulsion, trajectories, liquid fuel engines and space batteries.

But Team Indus has an advantage that no other team has. India's commercial space programme is the cheapest in the world. And scattered in the country's premier institutions and engineering companies lie the knowhow and ability to do everything Narayan needs to get done. If he can design a flawless mission, marshal support and sponsors and convince the Indian Space Research Organisation (ISRO) to let him hitch his lunar dreams and his rover on to its workhorse PSLV rocket, Narayan might well get a clear shot at the moon, and winning this surreal and prestigious race.

And this, irrespective of Team Indus' real chance of winning the prize, makes it an effort that many find appealing and worth supporting. Planning Commission member and former ISRO chairman K Kasturirangan, who has seen a Team Indus presentation, told ET he was impressed most of all that a team of young people had taken upon themselves a challenge as awesome as this.

"It is not easy to define a mission of this scale and do a competent mission analysis. I felt like they had done their homework. On the surface of it, I didn't find any area that they had not properly factored in. They have mapped the entire gamut of sequence and they understand the challenges involved. Whether or not they succeed eventually will depend on whether they can marshal the resources and support on time. But that is immaterial to me. What India needs are teams like these doing ambitious things. It made me happy. Every institution in this country that can contribute in any way should support them. There should be no hesitation," he said.

THE FLYING FOOL

In 1919, the French-born New York hotelier Raymond Orteig announced a challenge. He would award $25,000 to the first non-stop transatlantic flight between New York and Paris. While a number of reputed aviators and teams vied for the prize and built multi-engine planes with two or three pilots, Charles Lindbergh, a young airmail pilot flying alone in a single-engine plane, the Spirit of St Louis, won the prize. Before he won, his chances were regarded so dismal, some dubbed him the 'Flying Fool'.

The Orteig prize is estimated to have spurred investments and innovation worth multiples of the prize purse. Lindbergh's extraordinary feat generated so much interest in civil aviation that a subsequent phenomenon called the 'Lindbergh boom' saw a 30-fold rise in air traffic.

In 1994, American engineer and entrepreneur Peter Diamandis read The Spirit of St Louis, Lindbergh's Pulitzer-prize winning book about the historic flight. Inspired, he created an incentive competition for a privately funded space flight. The $10-million Ansari X Prize, won in 2004 by a team funded by Microsoft co-founder Paul Allen, is estimated to have resulted in more than $100 million in investment by the 26 teams that participated. The winning team formed the technology core of Richard Branson's Virgin Galactic, which plans to offer tourist flights to space. A launch date is yet to be announced. That hasn't stopped more than 500 people from paying up to $200,000 to book a seat.

The Google Lunar X Prize was announced in 2007 to spur research and investments in low-cost lunar exploration. Of the 23 teams participating, only Astrobotic has announced a launch date — October 2015, two months away from the December 2015 deadline.

OUR MAN IN THE MOON

When Narayan and his partners decided to commit the $50,000 required for registering a team in December 2010, his familiarity with space was limited to watching episodes of Star Trek and Carl Sagan's Cosmos in his childhood.

"Early on, we realised that finding the knowhow was easy, but the money wasn't," Narayan says. His spending so far — upwards of Rs1 crore — was raised from "friends, family, extended family, extended friends".

In early 2011, he decided to pursue the dream full-time, and gradually the project attracted competent advisors and engineering graduates who wanted to work full-time. Advisors include former ISRO engineers who worked on the Chandrayaan-1's Moon Impact Probe, project management specialists and media and marketing experts. Team Indus' website and Facebook page already attracts a great deal of attention from space enthusiasts.

The design philosophy of Team Indus has emphasised on simplicity, low cost and reliance on local vendors and ecosystem as far as possible. "We decided in the beginning that we will not try to reinvent the wheel and we will not be distracted trying anything fancy," Narayan says. This means the team's lander is light at 250 kg. It also means there are few backup systems. Everything from sensors to batteries to circuits should be designed and engineered to work just perfectly. There is no Plan B.

Soft-landing on the moon is among the most complex things man can attempt. The last soft-landing on the moon happened in 1976. Only five entities have so far reached the lunar surface — the US and erstwhile USSR have soft-landed while the European Space Agency, Japan, India and China have reached the lunar surface by crashing into it. India's Chandrayaan-1 ejected a Moon Impact Probe that crashed into the lunar surface.

In other words, Narayan and other participants in the Google Lunar X Prize competition are attempting what neither China nor India has as yet achieved.

The awesome challenge involved in winning the prize is the greatest asset to any team that attempts a landing. A privately funded team attempting a moon landing would usher in a new era in lunar exploration. And the hype surrounding the event, which would be publicised and webcast by Google, creates immense marketing and media potential for brands and institutions that support such an effort.

CHALLENGES, SUPPORT

Team Indus' lunar mission will be a non-starter if ISRO does not agree to launch them. If Team Indus gets a launch on the PSLV (they estimate a third of the mission cost to be the launch fee), their lander will be pushed towards the moon at the right velocity and angle, with some mid-course correction done with cold gas jets and a mechanism known as reaction wheels — all controlled by ground signals or onboard computers.

Landing on the moon is the difficult part. The moon's so-called sphere of influence (where moon's gravity begins to be felt) begins at roughly about 30,000 km from the lunar surface. After this point, the craft will accelerate towards the moon and will achieve an impact velocity of 2.4 km per second, roughly twice the speed of a typical bullet. Team Indus' mission involves an operation that will fire onboard liquid fuel rockets to provide reverse thrust at a distance of 200 km from impact. This is how the spacecraft applies its brakes.

These rockets must kill the velocity of the craft so precisely that velocity should be zero when it is 10 metres from the moon's surface. From there, it gently falls on to the surface. Gravity on the moon is a sixth of what it is on earth — a fall from 10 metres is only a sixth as hard on your spine. The craft will survive. It must then eject the rover, which should then travel 500 metres and transmit back pictures and high-definition video. Due to low gravity and a sticky surface with superfine sand, travelling 500 metres on the moon takes time and energy.

These manoeuvres are tough to execute. There are very few vendors around the world who can deliver the space-grade equipment, such as rockets, batteries, metal, chips, sensors, altimeters and suchlike, that can withstand the vagaries of deep space — the hard vaccum, radiation and extreme temperatures. On the moon, the temperature varies from 120 degrees Celsius to minus 120 degrees Celsius.

"There is very low margin of error. We have to be more than 100% certain about all systems," said M Loganathan, a former ISRO scientist who is advising Team Indus. Loganathan and RK Sharma, another former ISRO scientist who reviewed Team Indus' technology at a recent exercise, said the group of young engineers led by Narayan had climbed a steep learning curve and were working hard.

A PEOPLE'S PROJECT

Narayan has met with a number of institutions such as the Council of Scientific & Industrial Research and IIT-Madras. He asks all of them to sponsor a sub-system. Under the competition's rules, 10% of the project cost can be in the form of a government grant, and there is no limit to how much data a team can sell at a reasonable rate to state agencies. There is no bar on financing the entire project this way, either.

Several agencies and private corporations have promised support. After a recent presentation, CSIR Director-General Samir Brahmachari immediately directed colleagues to explore ways to support Team Indus. "How often do young people from India compete on the global stage? We should support them," he told ET.

Kasturirangan told ET he has told the ISRO chairman that he should not only meet the team, but also support them in any manner the space agency can.

Narayan's partner Julius Amrit, who is handling the funding and investor relations, says the company is in talks with a number of investors. While private equity investors and high net-worth individuals have laughed in their faces in the past, Narayan and his team have taken research to a level where the value of the intellectual property appears formidable. Nobody laughs at them anymore.

If specialised institutions sponsor sub-systems such as propulsion, telemetry and communication, and with standing promise from a large engineering corporation to build the lander and rover for them, Narayan only has to fine-tune his design and find the money to procure equipment. His funding strategy is to raise $4-5 million in cash, and $5-6 million worth of non-cash partnerships. The rest is the cost of launch that he has to pay ISRO. For that, he wants to raise the money from ordinary Indians before the planned January 2015 launch.

Narayan grew up in an age when space was the frontier of technology. He trained as a computer science engineer. He dabbled in startups and ran IT companies all his life. This is his one opportunity to soar above the ordinary. "I will sell T-shirts and caps. All sorts of merchandise. But I want our people to think about and experience the wonder of space when our lander lifts off and lands on the moon. I want them to own our mission," he said.

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