

CHANGE LEADERS - DRIVING TECHNOLOGY



Arup Dasgupta
Scientist, ISRO (Retd.)

“Space Industry has reached an inflexion point and we are going to see a burst of activity both in the upstream and downstream activities... And with 5G we will see a lot of satellite backhaul usage”

An outstanding Scientist, Arup Dasgupta did his Masters Degree in Electrical & Communications Engineering and has worked in the Space Applications Centre, Indian Space Research Organisation (ISRO), from 1970 to 2005. He began his career in the Satellite Instructional Television Experiment (SITE). Later he was involved in the management of applications programmes for several remote sensing satellites including Bhaskara and IRS as well as development of Image and Information Processing systems. He was responsible for research and development in applications using the convergence of communications and information technologies. He has pioneered the introduction of Geomatics in ISRO and has conducted advanced research and development in the convergence of Geomatics, Information Technology and Communications Technology in space applications. Currently the editor of Geospatial World, Arup Dasgupta gives his candid and forth-right views on Space Industry in India, in this interview with D.V. Venkatagiri, CEO, Explore The Space.

“Change Leaders”, is a series of interviews by Explore The Space & The Global Trade Driver with leaders in business, academia, technology and government, whose actions and ideas have a positive and big impact in their field of work.

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CHANGE LEADERS

1) Can you give your broad opinion on what is happening in the Indian Space Industry today?

The Indian Space Programme has been supported by Indian Industry since many years. This support is in the form of a client (ISRO) - supplier (Indian Industry) relationship. As a result, many industries, both big like Larsen and Toubro and Small Scale have developed the capability to supply space qualified systems. In recent times ISRO has been facing staff shortage and it was a matter of time before industry picked up Assembly, Integration and Testing or AIT and a company named Alpha Systems took up the AIT activities for the IRNSS-I satellite.

In parallel, a group of young entrepreneurs, some of them from ISRO, decided to strike out on their own. Some like Bellatrix (a private company) could

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link up with Antrix (the commercial arm of ISRO) to develop subsystems for ISRO. Bellatrix worked on electric propulsion systems for satellites for altitude control. Others like Satsure went the route of using satellite imagery for serving the crop insurance market. At least three groups are

developing small satellite launchers and one, Agnikul being incubated at IIT Chennai, has entered into an agreement with New Space India Limited (NSIL), a PSU of the Department of Space (DOS), to share ISRO knowledge and facilities. Another startup, Pixxel Aerospace has entered into an agreement for launching the first of their constellation of 30 remote sensing satellites in the first quarter of 2021.

Apart from this, there are other ex-ISROians who have set up companies after taking VRS from ISRO and working in the areas of instrumentation and computer systems for image analysis and processing. In particular Ananth Technologies has set up a satellite fabrication facility in Bangalore and has bagged an order from US satellite operator Saturn Satellites to build two communication satellites initially and launch them using the Indian space agency's workhorse PSLV rocket.

2) How is the direction and speed of the privatization of Indian Space Industry moving now?

I think, we have reached an inflexion point and we are going to see a burst of activity both in the upstream and downstream activities. Upstream are satellites and launchers, downstream is satellite applications. In satellite communications applications private industry has been very active in the DTH and Satellite News Gathering activities. Now with 5G we will see a lot of satellite backhaul usage. This is because 5G is essentially urban based and to connect different geographically separate urban areas, satellites will be used by the service providers. In remote sensing and position location, private industry is coming up very fast. One area is the design of hardware and computer systems and software, the other is in the applications for management of natural resources as well as the human built environment.



With Dr. A.P.J. Abdul Kalam (the then President of India), at Geospatial World Forum in Amsterdam



Receiving the Lifetime Achievement Award from the Secretary, Department of Science and Technology, Government of India



Being welcomed by Abbas Rajabifard on being elected to the GSDI Council



On COMPUTER... Arup Dasgupta with other ISRO Scientists

3) Are the Indian Companies doing enough in investing in Scientific R&D, with special reference to Space Technology?

Sadly, no. Most of the R&D has been in government labs or in industry under government contracts. The industrial capability to invest in long term research is limited. We are yet to produce Elon Musks or Charles Bransons even though we do have multi-billionaires like Ambani, Adani and Tata. Ambani's Jio, for example, is wholly built on imported technology. TCS does invest in R & D but in government funded projects.

The NewSpace India people are young and fresh but the level of funds they are able to raise from venture capitalists and angel investors are in millions where it should be in billions. In this respect, institutions like NSIL set up by DOS will help them to get access to world class facilities that ISRO has set up for a fee, which will be much lesser than the cost of setting up such facilities on their own.

4) What should India do to get and retain a pre-eminent place in the Satellite launch business in the global arena?

The satellite launch market is getting highly competitive. The Government of India has been supporting ISRO to a great extent. Even so, the much acclaimed PSLV is constantly under attack by other launchers. ISRO's dependence on solid motors makes launches less cost-effective. The development of semi cryogenic engines is being promoted by the small satellite launcher developers like Agnikul, but these have to be scaled up to the level of the SpaceX

Raptor to be usable in heavy launchers. That will be quite a task. We need to do much more and much faster to do reusable launchers like the SpaceX Falcon.

5) If you were to be made as the "decision maker" of Indian Space Agency today, what are the first three things that you will do?

Pretty much what has been done now, but I would have done it at least 10-15 years ago!

6) Any other points that you would like to highlight to foster Space Education in India?

We need to enthuse young minds from the school level. Work being done by young startups like Society for Space Education, Research and Development, SSERD and Rocketeers are steps in the right direction but they need support and encouragement. Such efforts need to expand. ISRO should emulate NASA in their outreach programme. Just exhibitions are not enough. We need to use the medium most young people prefer - social media. ISRO has a presence but it needs to be more interactive. Model making, software development, quizzes, etc are needed.

Secondly, we need to disabuse youth of the idea that only scientists and engineers can enter this field. We need medical people, social scientists, legal minds, marketing executives, creative artists as well because when space touches humankind all these are not just necessary but essential.

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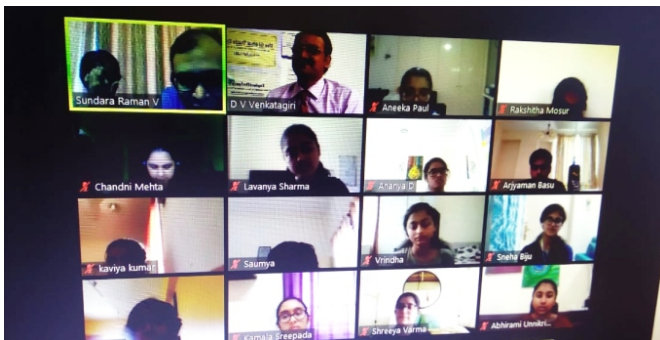
Glimpses of Explore The Space



Dr. P. Manisankar, Vice-Chancellor, Bharathidasan University, exchanging MoU with Mr. D.V. Venkatagiri, CEO, TGTD has signed an MoU with the renowned Bharathidasan University, Tiruchirappali - August 2018



Raman - Armstrong Lecture Series on Space - Edition 1 - Dr. Jayadeep Mukherjee, Director NASA FSGC along with Dr. G. Gopinath, Registrar, Bharathidasan University, Tiruchirappali - December 2018



A 5 days Webinar on "Opportunities in Space & Allied Industries" - November 24 - 28, 2020



Raman - Armstrong Lecture Series on Space - Edition 2, February 2020
Special Address by Prof. V. Ramamoorthy, Scientist, ISRO (Retd.) -



Explore The Space participating in a Job Fair organized by Bharathidasan University, Tiruchi, March 2020



Certificate Course on Introduction to Space Technology
Jobs, Internships, Business Opportunities
PSCMR College, Vijayawada, August 2019

"Explore The Space" is an educational NGO, registered in NITI Aayog, Government of India and works to promote awareness on Space Sciences and Technology among Schools and Colleges through seminars, quiz programmes, study tours and research. ETS connects Institutions and Industry through its programmes.

Established in 2010, The Global Trade Driver (TGTD), is a niche facilitator of Businesses connecting Indian Companies within the domestic market and International Markets, particularly USA through Business Delegations, B2B meetings, Strategic Consultancy, Advocacy and other programmes.

Explore The Space & The Global Trade Driver

595, Alagirisamy Salai, K K Nagar, Chennai 600 078 | Phone: 044-9790973789

Emails: info@explorespace360.com; info@tgtd.biz

Websites: www.explorespace360.com; www.tgtd.biz