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**7th edition of BSX 2022  
International Conference and Exhibition  
5 - 7 September 2022; Bengaluru**

**MAIN SESSION**

**DAY 1 - 05 September 2022**

1000 - 1130 Hrs	Inaugural Session
1130 - 1200 Hrs	Tea/ Coffee Break
1200 - 1300 Hrs	Inauguration of Exhibition
1300 - 1400 Hrs	Lunch Break
1400 - 1515 Hrs	New Space in India: Current Scenario, Policies, Challenges & Way Forward
1530 - 1645 Hrs	India's Private space sector at rise – Business opportunities
1645 - 1730 Hrs	Driving India's Space Sector through Startup ecosystem.

**DAY 2 - 06 September 2022**

1030 - 1145 Hrs	Earth Observation Applications- Emerging trend, opportunities and enabling technologies
1200 - 1315 Hrs	Enhancing Space Transportation Technological Capabilities and Research –a new paradigm.
1315 - 1415 Hrs	Lunch Break
1415 - 1530 Hrs	Satellite communications- Emerging Trends, Technologies, Opportunities & Issues
1545 – 1700 Hrs	High Talk: Human Spaceflight and Space Exploration Missions

**DAY 3 – 07 September 2022**

1030 - 1145 Hrs	International collaborations in space sector- Towards sustainable development: Avenues and opportunities
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**COUNTRY AND FOCUSED SESSIONS**

**DAY 2 – 06 September 2022**

1030 - 1130 Hrs	The Netherlands Session
1200 - 1300 Hrs	The UK Session
1315 - 1415 Hrs	Lunch Break
1500 - 1800 Hrs	Start-up Investor Meet

**DAY 3 – 07 September 2022**

1200 - 1300 Hrs	Australia's Space Ecosystem: Accelerating Australia-India space collaboration
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**MAIN SESSION**

**Day 1- 5 September 2022, Jacaranda Hall  
Session 1**

**1400 - 1515 Hrs New Space in India: Current Scenario, Policies, Challenges & Way Forward**

India's space sector has made tremendous growth over the decade. The country has seen the rise of NewSpace with over 50 new companies that have been formed in the space sector for the last 5 years. At present, India's share in global space economy is around 2% today, however offers the great potential to increase Space commerce for the new players. The formation of Indian National Space Promotion and Authorization Centre (INSPACe) and opening-up of Space sector for the private sectors have also provided the foundation for India to integrate into the global space economy. In addition, efforts taken by the Department of Space (DoS) towards revising the space policies including the FDI policy for the space sector has another endeavor to spur the growth of private sectors, increase industry's share in the Indian Space and global space market.

The session will deliberate on current status of NewSpace in India, new reforms & policies and will take into account the current opportunities, challenges and provide a perspective on how Indian industry can develop new products/services that can plug into meeting demand both locally and globally.

1400 - 1405 Hrs	Opening remarks & chaired by	T Victor Joseph, Associate Scientific Secretary, ISRO
1405 - 1515 Hrs	Panelists	A Arunachalam, Director, NSIL  Dr. Praful Kumar Jain, Director, PMA, IN-SPACE  Subba Rao Pavuluri (Dr), CMD, Ananth Technologies  Laxmesh, Head, Aerospace L&T  Vinod Chippalkatti, President, Centum Electronics  Sunil Indurti, Director, Azista BST  Rahul Vatts, Chief Regulatory Officer, Airtel India & Director, OneWeb  Nitish K. Singh Co-founder & CEO, Astrogate Labs



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## 7th edition of BSX 2022 International Conference and Exhibition 5 - 7 September 2022; Bengaluru

Day 1- 5 September 2022, Jacaranda Hall  
Session 2

### 1530 - 1645 Hrs India's Private space sector at rise – Business opportunities

India has emerged as one of the most successful nations to have developed the capacity to develop satellites for services and interstellar missions, with vigorous and determined efforts of ISRO. ISRO had been working with over 500 industry partners for their overall operations and activities so far. Today India's space economy is barely USD 7 bn, which is less than 2% of the global market. With new reforms, ISRO and Indian industries have been attempting to go beyond the vendor-supplier relationship and work on developing space-based services and bolster the Indian space economy.

As the floodgates to the Indian private space sector is being opened up it is important to understand how the industry believes it can grow and mature. There are several approaches every company can consider growing themselves within the different verticals in the industry. Some of them may look at demand coming locally, and the others may look at taking a risk of building products and services that target global customers.

This panel shall discuss the significance of Indian Industries in Space sector, their capabilities and various approaches and opportunities that the private companies in Indian space sector can take over the coming years.

1530 – 1535 Hrs Opening remarks & Radhakrishnan D, Chairman and Managing Director, NSIL  
chaired by

1535 – 1645 Hrs Panelists Rajiv Jyoti Director, TD, IN-SPACE

Lt Gen Anil Kumar Bhatt (retd), Director General, ISpA

M.V. Reddy, Joint Managing Director, Astra Microwave Products Ltd

Col HS Shankar, CMD, Alpha Design

Dhiraj V Keskar, Head- Aerospace and Defence Business, Walchand Industries Ltd.

Yashas Karanam, Director, Bellatrix Aerospace Private Limited

Dr Zaffar Sadiq Mohamed-Ghouse, Executive Director, Spatial Vision

Chanabasappa S Shirkoli, Head, Business Development, Lakshmi Machine Works Ltd



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# 7th edition of BSX 2022 International Conference and Exhibition 5 - 7 September 2022; Bengaluru

## Day 1- 5 September 2022, Jacaranda Hall Session 3

### 1645 - 1730 Hrs Driving India's Space Sector through Startup ecosystem.

Space start-ups are making impactful marks across the Space Value Chain across the world. Over the last few years, the world including India has also seen the rise of innovative space ventures with start-ups aiming to build their own satellites, launch vehicles, communication, and geospatial services.

Today, India accounts for only 2% of the global space economy and start-ups operating in the satellite tech space will play a major role in boosting the country's capabilities and presence in the space sector. India space tech startups would play a major role in developing/designing multiple downstream applications. Moreover, ISRO with the recent reforms and recognizing the significance of start-ups to propel India in fulfilling its space dreams has been taking proactive steps towards facilitating the Space start-ups ecosystem across the country. With the foundation available from ISRO's legacy of established suppliers and human resources base, a plethora of new ventures can take shape in Indian space sector with this as a launch pad.

- Role of existing start-ups driving the space tech across world and India
- Capabilities of start-ups and new entrepreneur
- Drivers for creating a robust start-up ecosystem in India
- Measures and support to catalyze the maturity of space startups in India.
- Way forward to develop the ecosystem for start-ups and new entrepreneur
- Startup's role in supporting commercialization of space applications in India
- Role of government in facilitating the space start-ups.

1645 - 1650 Hrs Opening remarks & chaired by N Sudheer Kumar, Director, CBPO, ISRO HQ

1650 - 1730 Hrs Panelists Start-ups India

Vinod Kumar Director, PD, IN-SPACE

Chintan Vaishnav, MD, Atal Innovation Mission

Sanjay Nekkanti, CEO, Dhruva Space

Harshan V, Program Director (Principal), Mach33.Aero

Srinath Ravichandran, Co-Founder & CEO, AgniKul Cosmos

Karthik Govindhasamy, Co-Founder & CTO, Antaris Space

Vish Sahrsranamam, Co-Founder & CEO, FORGE Accelerator

Ram Kuppusamy, CEO and Founder, Space Angel



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**Day 2- 6 September 2022, Jacaranda Hall  
Session 4**

**1030 - 1145 Hrs Earth Observation- Emerging trend, opportunities and enabling technologies**

Earth Observation is one of the fastest growing verticals within the space economy. The availability of remote sensing data assets with both free and commercial sources ramping up have led to mushrooming off the number of applications possible. This makes it a very lucrative moment for applications within emerging countries like India and for export of products and services from India in this domain. In addition, ease of spatial data availability, the companies and start-ups are leveraging the technologies such as AI, 3D data visualization, cloud computing technologies and blockchain to provide the value-added service in near real time using data from multiple sources.

The session deliberates on

- Current and emerging trends within the Earth observation
- Applications and the impact in various industrial value chains
- Emerging players, opportunities, and challenges
- Evolving space applications and commercial opportunities
- New technologies and their roles

1030 – 1035 Hrs	Opening remarks & chaired by	Dr. Prakash Chauhan, Director, NRSC
1035 – 1145 Hrs	Panelists	<p>Dr Rashmi Sharma, SAC, ISRO</p> <p>M Jayachandran, Project Director, K-GIS, Karnataka State Remote Sensing Applications Centre</p> <p>V Venkateshwara Rao, NRSC, ISRO</p> <p>Prateep Basu, Founder, Satsure</p> <p>Rohan Verma, CEO &amp; Executive Director, MapmyIndia</p> <p>Krishna Rao TVB, ESRI India</p> <p>Dr Nicola Sasanelli AM, Director: Partnerships and Outreach, SmartSat Cooperative Research Centre</p> <p>UK Representative</p>



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**Day 2- 6 September 2022, Jacaranda Hall  
Session 5**

**1200 - 1315 Hrs Enhancing Space Transportation Technological Capabilities and Research – a new paradigm.**

Space transportation has evolved over the last 10 years rapidly with the rise of reusability and small rockets that can offer dedicated launchers to small satellites. There are also several new architectures that are being tested out and developed to offer reliable and low-cost access to space and on orbit.

Even the Indian government, while encouraging the private players to play a significant part in the space sector with policy reforms, has also been focusing on R&D and building technological capabilities for space exploration and reusable rockets. India has put in place a technological & regulatory framework with a release of draft National Space Transportation Policy, by Department of Space. At recent past, two (02) start-ups- Agnikul and Skyroot had also signed agreement with ISRO to use their expertise and access facilities to test and qualify its small rocket that can launch into low orbit.

This panel shall discuss how India can play a greater role in providing space transportation and on orbit propulsion capabilities to the burgeoning demand in the world market.

1200 - 1205 Hrs Opening remarks & chaired by Dr S Unnikrishnan Nair, Director, VSSC

1205 - 1315 Hrs Panelists  
VT Baskar, PD, GSLV Mk III  
H K Mishra, General Manager, HAL  
Maneck Behramkamdin, Assistant Vice President, Godrej Aerospace  
Rajat Kulshrestha, CEO and Co-founder, Space Machines Co  
SS Vinod, PD, SSLV  
Pawan K Chandana, Co-Founder & CEO, Skyroot Aerospace  
Rohan Ganapathy, Founder & Director, Bellatrix  
Tushar Jadhav, Co-founder, Manastu Space  
Chris Verhoeven (Dr), Associate Professor, Electronics Research Lab



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**Day 2- 6 September 2022, Jacaranda Hall  
Session 6**

**1415 - 1530 Hrs Satellite communications- Emerging Trends, Technologies, Opportunities & Issues**

Satellite communications is continuously evolving with the emergence of Low Earth Orbiting (LEO) constellations providing services such as broadband and IoT. The increase in small satellites, the use of low-Earth orbit (LEO) and realizing LEO satellite constellation for satellite communication, launches on reusable rocket launch vehicles and new use cases for 5G, 6G, and Internet of Things (IoT) are some of the most important developments to watch. Further, we are witnessing innovation in ground equipment (e.g flat panel antennas, virtualization, etc) that goes hand in hand with the space segment. At the same time there is still a large interest and demand for services such as broadcasting from GEO operators.

Additionally, India with its large market for mobile and data-based services attracts investment from major players who aim to improve the consumer experience and drive down user costs.

This panel shall discuss the emerging trends, technologies, opportunities and intricacies with respect to satellite communications from both traditional and a new space perspective through India-specific outlook from different market players.

1415 - 1420 Hrs	Opening remarks & chaired by	M Sankaran, Director, URSC
1420 - 1530 Hrs	Panelists	<p>Hanumantharayappa, SATCOM, ISRO HQ</p> <p>Dr Chadra Prakash, SAC, ISRO</p> <p>Ganendra Selvaraj, Associate Vice President, Measat</p> <p>P J Nath, Managing Director &amp; CEO, NELCO</p> <p>Gaurav Kharod, Country Manager- India, Intelsat</p> <p>Lloyd Jacob Lopez, CEO &amp; Strategic Partnerships, HEX 20</p> <p>SES representative</p> <p>Divya Sethi, Senior Vice President, OneWeb</p> <p>Venkat Ramu Katkuri- Country Head and Head of Sales, India &amp; South Asia, ADS</p>



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**Day 2- 6 September 2022, Jacaranda Hall  
Session 7**

**1545 – 1700 Hrs Highlight Talk: Human Spaceflight and Space Exploration Missions**

India has announced its maiden human spaceflight mission Gaganyaan that is expected to fly Indian astronauts to space onboard an Indian rocket. This mission can lead to significant capacity development in the country which can form the foundation to have India's own space station in the coming years. This panel shall discuss various aspects of potential collaboration towards human space flight and explanation based on cooperation.

1545 – 1550 Hrs Opening remarks & chaired by R Umamaheswaran, Director, HSFC

1550 – 1700 Hrs Panelists  
R Hutton, PD Ganganyan  
Dr T M Kotresh, Director, Defence Bioengineering and Electromedical Laboratory (DEBEL), DRDO  
Dr Anil Dutt Semwal, Director, Defence Food Research Laboratory (DFRL), DRDO Space Food & Medicine  
Commandant IAM  
Fredrik Gisle, Head of APAC region, Satellite Management Services, Swedish Space Corporation  
Karl Rodrigues, Executive Director, International Engagement, Australian Space Agency  
S Rangarajan, Chairman & Managing Director, Data Patterns





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**Day 3- 6 September 2022, Jacaranda Hall  
Session 8**

**1030 - 1145 Hrs International collaborations in space sector - Towards sustainable development: Avenues and opportunities**

World has always recognized that space has dimension beyond national considerations, which can only be addressed through international collaboration. The scope for cooperation has become multifaceted. There are several challenges that society is facing due to the impact of climate change and its effect on sustainable development. These are already impacting several emerging countries and stifling their growth. Outer space is a critical arena to derive data and offer support to tackle some of the challenges arising from these challenges.

Besides this, Space agencies across the world including India Space agency, ISRO has also been collaborating with each other with the aim of building and strengthening existing ties between countries; taking up new scientific and technological challenges; refining space policies and defining international frameworks for exploitation and utilization of outer space for peaceful purposes. Today, the scope of international cooperation has become wider and diverse, with tremendous progress in recent time.

This panel shall discuss different opportunities and avenues that forged between space agencies and companies in a collaborative fashion to support space sector and further sustainable development.

1030 - 1135 Hrs	Opening remarks & chaired by	Shantanu Bhatawdekar, Scientific Secretary, ISRO
1135 - 1145 Hrs	Panelists	<p>Dr D Gowrishankar, Director, OIIC, ISRO HQ</p> <p>Vinod Kumar Director, PD, IN-SPACe</p> <p>Christopher Pyne, Chairman &amp; Former Australian Defence Industry Minister, Pyne and Partners</p> <p>Dmitry Loskutov, Director General, Glavkosmos, JSC</p> <p>Joseph Joshy, Chief Technology Officer, IFSCA, GoI</p> <p>Narayan Prasad, CEO, Satsearch</p> <p>UK Representative</p> <p>Pierre-Alexis Joumel, Director, Airbus</p> <p>Johan Liejtens, Founder &amp; Owner, Lens R&amp;D</p>



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**PARALLEL AND FOCUED SESSIONS**

**Start-ups and Investors Meet  
DAY 2, 6 September 2022, Cassia Hall**

<b>1500 - 1525 Hrs</b>	<b>Opening Session</b>	
1500 - 1505 Hrs	Opening remarks and moderator by	Susmita Mohanty (Dr), Spaceport SARABHAI
1505 - 1515 Hrs	Address	Sudheer N Kumar, Director, CBPO, ISRO HQ
1515 - 1525 Hrs	Address	Vinod Kumar (Dr.), Director, INSPACE
1525 – 1535 Hrs	Address	Shankar Sivaprakasam, Co-founder, Antaris Inc
<b>1535 - 1615 Hrs</b>	<b>Investing into space startups in India at seed and series stages</b>	
	Panelists	Ravi Singh, Partner, Kallari Vishesh Rajaram Partner, Speciale Invest Rahul Seth, Investor and Director, Antler Sheetal Bahl, GrowX Ventures Abhi Anuket, Founder, Magnivia Ventures
<b>1615 - 1800 Hrs</b>	<b>Start-ups Pitch Presentation (10 mins ppt with 05 mins Q&amp;A)</b>	
	Start-ups	Advait Kulkarni, Founder, Vasundharaa Geo Technologies Pvt. Ltd. Apurwa Masook, CEO, Space Fields Pvt. Ltd. Nitish K. Singh, Co-Founder & CEO, Astrogate Labs Nikit Pawar, Co- Founder, Tathya Earth Amit Mishra, VP- Marketing, Vassar Labs Manoj Kumar, Co- Founder and CEO, Eon Space Labs Kannan, Director, Augsense Labs Tushar Jadhav, Co- Founder & CEO, Manastu Space Ankit Bhateja, Founder & Director, Xovian Aerospace Pvt. Ltd. Suyash Singh, Co- Founder & CEO, GalaxEye Space Pvt. Ltd.



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**Day 3- 7 September 2022  
Australian Session, Jacaranda Hall**

**1200 - 1315 Hrs    Australia's Space Ecosystem: Accelerating Australia-India space collaboration**

Australia has a strong and dynamic space sector, with high ambitions and great potential – expected to grow to \$12 billion by 2030. This session will provide an overview of Australia's space industry ecosystem, global trends accelerating the adoption of space technology, R&D and services, and Australia's value proposition as a space partner, investor and innovator. The Australian Space Agency and industry players will share insights on a new \$25 million (INR144 crore) India stream of the International Space Investment Initiative, Australia's planned support for Gaganyaan, and how Australia can support launches, space exploration, earth observation, satellite communication, and navigation. This will assist Indian industry, startups and institutions better understand opportunities for collaboration, incubation and engagement across Australia's dynamic space sector.

1200 - 1205 Hrs	Opening remarks & chaired by	Australia Speaker
1205 - 1215 Hrs	Address	Arvind Ramana, Director, Office of the CTO, Australian Space Agency
1215 - 1215 Hrs	Address	ISRO
1405 - 1515 Hrs	Panelists	James Brown, CEO, Space Industry Association of Australia  Jasmine Vreugdenburg, Director, Innovation and Collaboration Centre, University of SA  Guler Kocak, Founder and CEO, SPACELIS  Phil Ridley, CEO, Quasar Satellite Technologies  James Palmer, Founder, Space Centre Australia  Anirudh Sharma, CEO, Digantara