



Confederation of Indian Industry



Indian Space Research Organisation



Antrix Corporation Limited

INTERNATIONAL CONFERENCE ON SPACE BUSINESS

WORLD SPACE-BIZ 2016

September 1 - 3, 2016 at BIEC, Bengaluru, India

DAY 1 - September 1, 2016 (Thursday)

INAUGURAL SESSION - 0930 - 1100 Hrs

<u>TIME</u>	<u>AGENDA</u>	<u>SPEAKER</u>
0930 Hrs	INVOCATION	
0935 Hrs	Opening Remarks	Mr. Deep Kapuria Chairman, CII Trade Fairs Council
0945 Hrs	LIGHTING THE LAMP	
0950 Hrs	Special address	Mr. Ravi Raghavan, Chairman, CII, Karnataka Council
0955 Hrs	What's new in BSX 2016	Mr. S. Rakesh Chairman cum Managing Director, Antrix Corporation Limited
1005 Hrs	Keynote & Inaugural Address	Dr. A.S. Kiran Kumar Secretary - DOS, Chairman - Space Commission, Chairman - ISRO
1025 Hrs	Chief Guest	Shri Arvind Jadhav, Chief Secretary, Government of Karnataka
1045 Hrs	Vote of Thanks	Mr. Samir Pal Director, Business Development Antrix Corporation Limited
1053 Hrs	Inauguration of BSX 2016 – Ribbon Cutting & Exhibition Visit	
1100 Hrs	Tea/Coffee	



DAY 1 - September 1, 2016 (Thursday)

TIME	TOPIC
1200 - 1215 Hrs	Address by President, CNES, France
1215-1300 Hrs	Meet and Greet

OPPORTUNITIES IN SATELLITE AREA
SESSION I - Turnkey Satellite System realisation

SESSION CHAIRPERSON	Dr M Annadurai, Director, ISAC, ISRO	
RAPPORTEUR	Dr GNV Prasad, Group Director, PPEG, ISAC, ISRO	
<p>Indian space program has built over 80 advanced satellites for applications in telecommunications, navigation, weather forecasting, earth observation, space science and planetary missions. It is systematically planned to roll out more satellites and towards this, the capability at industry is being strengthened. Today, Indian industries are involved in supply of sub systems and components for realising satellites. Further, participation of industry is being envisaged for undertaking satellite assembly, integration and testing activities. However, in order to meet the increased demand, there is a need for increased collaboration from Indian industry for realising end to end satellite systems for meeting programmatic goals and achieving self reliance.</p>		
TIME	TOPIC	SPEAKER
1400 - 1410 Hrs	Opening Remarks: Enhanced Participation in spacecraft realisation - EOI and Beyond	Session Chair
1410 - 1500 Hrs	Presentation by Ananth Technologies	Dr Subbarao Pavuluri CMD, Ananth Technologies Limited
	Presentation: Turnkey satellite System Realization	Mr. S Rangarajan CEO, Data Patterns India Ltd
	Presentation: Industry-Space Centre-Academia multi dimensional collaboration for system realisation	Prof. Dr. Volker Gass Director, Swiss Space Centre
<i>Open House Discussion & Concluding Remarks by Session Chairperson</i>		



DAY 1 - September 1, 2016 (Thursday)

SESSION II - Tapping New Market for Satellite Sub-Systems

SESSION CHAIRPERSON		Dr M Annadurai, Director, ISAC, ISRO
RAPPORTEUR		Dr GNV Prasad, Group Director, PPEG, ISAC, ISRO
The demand of space assets for meeting the national requirement in communication/ broadcasting, remote sensing, meteorological and navigation areas are growing. With the augmentation of existing systems and newer forays into domains like satellite navigation, the prospects for satellite sub system manufacturers is encouraging. In order to meet the increased demand for satellites in orbit, serving various applications, it is imperative that Industry joins hand with space program not only for meeting national requirements but also to explore potential opportunities for export and tapping newer markets.		
TIME	TOPIC	SPEAKER
1500 - 1600 Hrs.	Presentation: Potential Opportunities for Sub Systems from ISRO	Mr. Samir Pal Director, Business Development (SSS) Antrix
	Presentation: Airbus Space Equipment-Make It In India	Mr. Jean Pierre Domenget Head, Space Equipment, Airbus Defense and Space, France
	Presentation by Spectrolab	Mr. Jeff Krogen Sr. Director, Solar Cell Products & Technology, Spectrolab (a Boeing Company), USA
	Presentation: Satellite Sub System requirement for COMSAT platforms	Mr. Ryuta Suzuki General Manager, Space Systems Department (SATE), Mitsubishi Electric Asia Pte Limited
	Presentation: FPGAs for next generation satellite	Mr. Daniel Elftmann Director, Aerospace & Defense Markets, Xilinx, USA
	<i>Open House Discussion & Concluding Remarks by Session Chairperson</i>	
1600 - 1615 Hrs	<i>Tea/Coffee</i>	



DAY 1 – September 1, 2016 (Thursday)

OPPORTUNITIES IN LAUNCH VEHICLE AREA

SESSION III – Launch Vehicle Productionisation through Industry

SESSION CHAIRPERSON		Dr K Sivan, Director, VSSC, ISRO
RAPPORTEUR		Mr. MS Anurup, Associate Director, LVPO, ISRO HQ
<p>ISRO has forged a strong relationship with a large number of industrial enterprises, both in public and private sector to implement its projects. In recent years, the throughput in terms of number of launch vehicles realised have seen an upward trend. In line with its manifest, ISRO is constantly encouraging increased participation from domestic industry in India's space program. Indian industry today is on threshold of entering into a new era where it is poised to assume greater responsibility in making the nation self reliant. The need of the hour is for Industry to come forward and become a risk sharing partner in end to end realisation of launch vehicles.</p>		
TIME	TOPIC	SPEAKER
1615 – 1630 Hrs	Opening Remarks I: Synergising ISRO and Industry capability for launch vehicle production	Session Chair
	Opening Remarks II	Mr. S Somnath Director, LPSC, ISRO
1630 – 1715 Hrs	Presentation: Challenges in Productionization of complex system of systems and solutions for the same	Mr. Laxmesh BH Head, Precision Manufacturing Systems Complex, Larsen & Toubro
	Presentation: Launch Vehicle Productionization through Industry	Mr. Apparao Mallavarapu CMD, Centum Group
	Presentation: Arianespace evolution	Mr. Florent d'Heilly Vice President Sales, Arianespace
	<i>Open House Discussion & Concluding Remarks by Session Chairperson</i>	

**DAY 2: September 2, 2016 (Friday)**

TIME	TOPIC	SPEAKER
0930 -1015 Hrs	Highlight Address Advances in Satellite Technology- Small Satellites	Mr. Wade Larsen President & CEO, Urthecast, Canada

SATCOM APPLICATION AREA**SESSION IV – Connecting the Un-Connected: Unlocking Potential through HTS**

SESSION CHAIRPERSON	Mr. Tapan Misra , Director, SAC, ISRO
RAPPORTEUR	Mr. DK Das , Associate Director, SAC, ISRO

High throughput satellites using spot beam technology and frequency re-use have the potential to become driving engines of the satellite industry. This new breed of satellites primarily addresses the growth in demand for broadband connectivity. This dawn of HTS heralds a new era in the industry. With better broadband connectivity and optimum bandwidth management across multiple spot-beams, applications like Rural Connectivity, Digital Broadband, Cellular Backhauling, Banking, Maritime, Education, e-Governance etc shall gain strength. HTS is also of significance to Government initiatives like Digital India and making available free broadband internet at villages and small towns. Dovetailing existing services with HTS could pose challenges, however, with reliable network and ground infrastructure, the service delivery is assured.

TIME	TOPIC	SPEAKER
1100 - 1110 Hrs	Opening Remarks: An Overview on High Throughput Satellites-Global Scenario	Session Chair
1110 - 1300 Hrs	Presentation: ISROs High Throughput Satellite: Paradigm Shift in Satcom	Mr. PK Gupta Project Director, ISAC, ISRO
	Presentation: Technology for Ground Segment for HTS Service Delivery	Mr. Sathya Narayanaswamy Vice President and Country Manager, India, ViaSat
	Presentation: HTS VSAT Network	Mr. Vinod Kaul General Manager, South Asia, Gilat Satellite Networks
	Presentation: Innovations on Ground Aligning with HTS Opportunities in Sky	Ms. Sahana Raghunandan Technical Manager, iDirect
	Presentation: Like Horses for Courses: HTS Satellites and their Applications	Mr. Deepak Mathur Sr. Vice President, SES
	Presentation: High Throughput Satellite Services : The viability in Asia Pacific	Mr. K Krishna Vice President & CTO, HCIL
	Presentation by Intelsat	Mr. Patrick French Head, Business Development, Intelsat
	<i>Open House Discussion & Concluding Remarks by Session Chairperson</i>	
1300-1400 Hrs	Lunch	



DAY 2: September 2, 2016 (Friday)

SESSION V – NAVIC and GAGAN: The Opportunities Ahead

SESSION CHAIRPERSON		Mr. KS Parikh , Deputy Director, SAC
RAPPORTEUR		Mr. Hanumanthrayappa , Deputy Director, SCNPO, ISRO HQ
<p>IRNSS is an independent regional navigation satellite system designed to provide position information in the Indian region and 1500 km around the Indian mainland. The successful launch of IRNSS-1G, the seventh and final member of IRNSS constellation, signified the completion of the IRNSS constellation-‘NavIC’ (Navigation Indian Constellation). The system offers applications for marine and air navigation and can be integrated into mobile phones. GAGAN – the ISRO and Airport Authority of India GPS Aided Geo Augmented Navigation project is to establish, deploy and certify satellite based augmentation system for safety-of-life. This is first of its kind Satellite Based Augmentation System (SBAS) for the Indian Airspace. Though primarily designed for aviation, the project benefits can be extended to many other user segments such as intelligent transportation, maritime, highways, railways, surveying, geodesy, security agencies, telecom industry, personal users of position location applications etc.</p>		
TIME	TOPIC	SPEAKER
1400 – 1410 Hrs	Opening Remarks: Opportunities and Challenges in utilising navigation signals over Indian region	Session Chair
1410 – 1510 Hrs	Presentation: Vehicle Tracking, Traffic and Fleet Management in Metro Cities	Mr. Manish Kumar Head, IT, Delhi Integrated Multi Modal Systems Limited (DIMTS)
	Presentation: GAGAN Application for beyond Indian Region	Mr. SV Satish General Manager, Airport Authority of India (AAI)
	Presentation: Potential of GAGAN/IRNSS for dissemination of Tsunami Early Warning and other ocean forecast services of INCOIS	Mr. V Venugopala Rao Scientist, INCOIS
	Presentation: Marine Navigation-Find your Road in Sea	Capt. SS Darokar Directorate General of Shipping
	Presentation: Applications of Space Technologies in real life projects and making a difference to the bottom of the pyramid	Mr. Vinay Prasad Director & Co-Founder, Telematics4U
<i>Open House Discussion & Concluding Remarks by Session Chairperson</i>		
1510-1525	<i>Tea/Coffee</i>	

TIME	TOPIC	SPEAKER
1525-1600 Hrs	Lightning Talk: How the World Will Communicate in 2030	<i>Bharti Airtel</i>



DAY 2: September 2, 2016 (Friday)

SESSION VI – GIS and Navigation Enabling and Trends

SESSION CHAIRPERSON		Dr PG Diwakar, Scientific Secretary, ISRO
RAPPORTEUR		Mr. Nilesh M Desai, Deputy Director, SNAA, SAC
<p>IRNSS (Indian Regional Navigation Satellite System) Constellation of Seven Satellites is complete. NavIC (Navigation with IRNSS constellation) is already getting ready for rolling out Position, Navigation and Timing Services. Apart from NavIC Receivers, Smart-phone/mobiles are the most potential flag-bearers for bringing NavIC to masses through Location Based Services (LBS). Low cost surveying and Land-mapping are also feasible with today's sophisticated navigation and geodetic receiver technologies. Integration of positional technology with GIS (Geographical Information System) also creates a wonderful platform for urban development in general and smart city solutions in particular. Multi-Constellation positioning receivers are becoming norm and inclusion of IRNSS with operational GPS/GLONASS constellations improves the availability and accuracy in GNSS challenged environments. Like other GNSS Technologies, NavIC has a potential to become an important Growth enabler in India through its varied applications and usage in various sectors like LBS, Transport, Agriculture etc.</p>		
TIME	TOPIC	SPEAKER
1600 - 1605 Hrs	Opening Remarks	Session Chair
1605- 1730 Hrs	Presentation: NAVIC (IRNSS) Applications and Enabling Technologies	Smt S Saumi SNAA, SAC, ISRO
	Presentation: GNSS : Beyond Positioning	Prof Alain Geiger ETH/Zurich
	Presentation: Bhuvan applications towards Location based Services and Navigation	Dr. Vinod Bothale Group Director, NRSC, ISRO
	Presentation: Enabling Geospatial solutions for land records	Mr. Nikhil Kumar Director (Tech. Marketing), Trimble Navigation India Pvt. Ltd.
	Presentation: Mobility in India getting NAVIC Ready	Mr. Kuldeep Malik Head, Corporate Sales MediaTek India
	Presentation: Indigenous NAVIC Receiver Technology	Mr. T Narayana Rao Vice President, Accord Software & Systems Pvt. Ltd.
	Presentation: Experience of using Navigation tools for NLRMP Gujarat GCN network	Mr. Krishnakant Kumar Sr. Manager, Scanpoint Geomatics Ltd.,
	<i>Open House Discussion & Concluding Remarks by Session Chairperson</i>	



DAY 3: September 3, 2016 (Saturday)

SPACE START UP

TIME	TOPIC	SPEAKER
0930 - 1015 Hrs	Lightning Talk Internet from Space, the Current and Future of it	Dr Prasad HL Bhat Founder, Chairman & CTO, Astrome Technologies

SESSION VII - The New Face of Industry- Space Start Ups

SESSION CHAIRPERSON		Mr. Rakesh S, CMD Antrix
RAPPORTEUR		Mr. Jayaram K, Deputy Director, Special Projects, ISRO HQ
<p>There is a ripe opportunity to start disruptive companies in the final frontier: SPACE. Space startups include nano-satellite makers, earth-imaging and weather-tracking technology developers, and ventures with ambitious plans to mine asteroids. Space start-ups, with financially viable innovations, are gaining momentum. In this high technology driven field of science, the journey of an idea to a viable product takes years of R&D, planning, identifying resources and numerous failures before the breakthrough occurs. These space innovations results in significant and irreversible changes in the space industry. A number of space start-ups are going to be game changers in the near future.</p>		
TIME	TOPIC	SPEAKER
1015 - 1030 Hrs	Opening Remarks	Session Chair
1030 - 1130 Hrs	Presentation: Agile Aerospace	Mr. Chester Gilmore Vice President, Planet Labs, USA
	Presentation: Eco System for Space StartUp in India	Mr. Dilip Chabria Co-Founder & Business Lead, Team Indus
	Presentation: Nanosatellites, where are they going?	Mr. Abe Bonnema Marketing Director, ISL, Netherlands
	Presentation: Small Satellites enabling Successful Start Ups	Mr. Narayan Prasad Co Founder, Dhruva Space
	Presentation: Radar and multi-band communications for CubeSats	Mr. Dominic Bavey Sr. Scientist, HEIG VD, Switzerland
<i>Open House Discussion & Concluding Remarks by Session Chairperson</i>		

TIME	TOPIC	SPEAKER
1130-1200 Hrs	Talk: Australian Capabilities in Space Sector	Australian Delegation

TIME	TOPIC	SPEAKER
1200-1235 Hrs	Valedictory BSX 2016	