



ITU-APT Foundation of India



National Workshop
on
“Advances In
Satellite Technologies ”



27th March 2019 At Hotel Shangri La

Introduction

In the last 60 years of their use, satellites have become most valuable pieces of advanced technology in the world. While geostationary satellites, also known as GEOs, help uphold many of the world's most vital communications systems, for both commercial and defense purposes, LEOs are also now pioneering a new value propositions in space with thousands of LEOs planned for launch beginning in 2019, to deliver affordable Internet access globally.

ITU-APT foundation will host a one day national workshop on Wednesday, 27th March 2019 at Hotel Shangri La, Ashoka Road, New Delhi on "Trends and Advances in Satellite Technologies".

The workshop will feature a number of international experts from most of the Global satellite operators including Intelsat, SES, Viasat, Asiasat, MEASAT, Inmarsat, etc at the workshop.

The workshop will also be addressed by senior officers from Department of Space, Department of Telecom, WPC- India's spectrum regulator, TRAI- India's telecom regulator, TEC- the Technical arm of DOT as well as Indian operators, manufacturers and telecom experts.

The workshop will cover advances in Satellite Technologies & their impact on cost, capacity and spectrum, uniqueness and major benefits of satellite service platforms, including for broadcasting, aeronautical, maritime and disaster recovery services as well as integration of satellites into 5G - Future benefits of satellite services.

The workshop will also cover the future spectrum roadmap and global Licensing trends for the Satellite as well as key issues for Satellite Industry at WRC-19 Technological innovations in the last decade leading to a high level frequency re-use and spot beam technologies which enables frequency re-use across multiple narrowly focused spot beams as in cellular networks are creating high-throughput satellites (HTS). Despite the higher costs associated with spot beam technology, the overall cost per circuit is considerably lower as compared to shaped beam technology.

HTS are primarily deployed to provide broadband Internet access service (point-to-point) to regions unserved or underserved by terrestrial technologies where they can deliver services comparable to terrestrial services in terms of pricing and bandwidth. While many current HTS platforms were designed to serve the consumer broadband market, some are also offering services to government and enterprise markets, as well as to terrestrial cellular network operators who face growing demand for broadband backhaul to rural cell sites.

For cellular backhaul, the reduced cost per bit of many HTS platforms creates a significantly more favorable economic model for wireless operators to use satellite for cellular voice and data backhaul. Some HTS platforms are designed primarily for the enterprise, telecom or maritime sectors. HTS can furthermore support point-to-multipoint applications and even broadcast services such as DTH distribution to relatively small geographic areas served by a single spot beam.

Recent Launch of GSAT-11 by ISRO is expected to enable much faster Internet services than now to users down home over the next 15 years. GSAT-11 will kick off effective satellite-based broadband services in remote, hitherto uncovered rural areas of the country. These and a few more upcoming HTS fleet will also innovatively enable the use of the superior and efficient Ka frequency band.

Industry analysts believe that high-throughput satellites will supply at least 1.34 TB/s of capacity by 2020 and thus will be a driving power for the global satellite backhaul market which is expected to grow to \$2.3 billion by 2021



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National Workshop



GLOBAL SATELLITE COALITION

On

Advances in Satellite Technologies

27th March 2019 , New Delhi

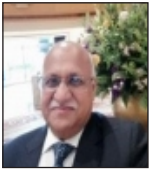
@ Hotel Shangri-La, Ashoka Road, New Delhi

Program

Timing	Topic
08.30 – 09.30	Registration- Tea/Coffee
09.30 – 11.00	<p>Presentation of Bouquets and welcome of dignitaries on the dais.</p> <ul style="list-style-type: none"> • Opening ceremony and Lamp lighting • Welcome address by Mr. R N Agarwal, Co - Chairman ITU-APT Foundation of India , Former wireless advisor to the Government of India and former member RRB, ITU • Introduction to the Conference Mr. Bharat Bhatia, President ITU-APT • Introduction to GSC and Advances in Satellite Technologies & their impact on costs, capacity and spectrum by Mr. Bashir Patel, • Future benefits of satellite services by – Mr. Sathya VP, Narayanaswamy, India, Viasat • Delivering Future Satellite services to rural areas– Mr. Gaurav Kharod, Country Manager, Intelsat India • Keynote Address by the Sh. R.B. Prasad , Joint Wireless Advisor to the Government of India • Key Note Address by the Guest of Honour – Shri M P Singhal, Sr. DDG TEC • Inauguration of the Conference by Dr. K Sivan, Secretary Department of space and Chairman ISRO (Remotely through Mr. S Sarkar, Space Applications Centre Ahmadabad. • Vote of Thanks by Mr. P K Ga rg, Former wireless advisor to the Government of India, former member RRB and Vice

<p>11:30 – 13:30</p>	<p><u>Session on Advances in Satellite Technologies and Future Spectrum roadmap for Satellites</u></p> <p>Key Note address and Session Chair: Mrs. Revathi, Sr. Dy Wireless Advisor to the Government of India</p> <p>Presentations:</p> <ul style="list-style-type: none"> • Mr. S Sarkar –Advances in Satellite Technologies by ISRO • Satellite Integration into 5G and Future benefits of satellite services by Sathya Narayanaswamy, VP, India, Viasat • Satellite Service licensing trends and regulatory environment Dr. Tony Azzarelli, One Web • Future Spectrum roadmap - Satellite industry perspective by –Gaurav Kharod, Country Manager Intelsat India
<p>13.45 ---14:45</p>	<p>Lunch</p>
<p>15:00 - 16:30</p>	<p>Panel discussions on Advances in satellite technologies and discussions on WRC -19 agenda items relevant to satellite Industry</p> <ul style="list-style-type: none"> • Key Note Address and Session chair: Mr. Ashutosh Pandey, DDG Satellite TEC • Summary of CPM Report on Agenda item 1.5 of WRC -19 presented by Mr. Bharat Bhatia , ITU-APT • Summary of CPM Report on Agenda item 1.6 Presented by Mr. Rajesh Mehrotra, ITU-APT <p>Panel discussions on Advances in satellite technologies and WRC-19 Satellite related agendas</p> <p><u>Panellists:</u></p> <ol style="list-style-type: none"> 1. Mrs. Revathi, WPC 2. Mr. M P S Alawa, WPC 3. Dr. P K Jain , Associate Director, ISRO 4. Dr. Kumar Mohan, ISRO 5. Dr. Prafull Kumar, ISRO 6. Sathya Narayanaswamy, Vice President , VIASAT 7. Gaurav Kharod, Intelsat 8. Mr. Bashir Patel , Inmarsat 9. Dr. Toni Azzarelli, One web

Speakers Bio



MAHABIR PARSHAD SINGHAL

Advisor & Head, Telecom Engineering Centre

A 1981 Batch ITS (Indian Telecommunication Service) officer, with more than 35 years of experience in IT & Telecom, he joined Senior Deputy Director General and Head of Telecom Engineering Centre (TEC) which is Technical arm of Department of Telecom in Jan, 2018. Subsequently he was promoted to Advisor & Head TEC in Feb, 2019. Before joining TEC, Sh Singhal was working as Chief General Manger & Chief Vigilance Officer in BBNL (Bharat Broadband Networks Ltd).

He did his B. Tech in Electronics & Communication from Punjab Engineering College Chandigarh followed by Diploma in Management.

Shri Singhal had served in various capacity in India & outside India. He has a vast experience in the area of Information Technology, Wireless Communications, Mobile Technologies, Optical Fibre / GPON (Gigabit Passive Optical-fibre Network) Technologies, HRD & Vigilance functions.

IT systems like Network Management System (NMS) & Business Support System, Contact / Call Centre, Complaint Management System.



BHARAT BHATIA

President ITU-APT Foundation of India

Mr. Bharat Bhatia has over 43 years of experience in Telecom and ICT policy, regulations and spectrum management.

Mr. Bhatia is the President of ITU-APT Foundation of India and the founder President of the Core Group of Telecom Industries Association of India (CTIA).

Mr. Bhatia currently heads International spectrum and Regulatory team at Motorola Solutions' Government Affairs and leads a global team of Spectrum and regulatory resources in Motorola Solutions.

Mr. Bhatia is also the Chair of the Public Safety and Disaster Relief communications - PPDR working group under the ITU-R study group 5D .as well as the Chair of the APT Task Group on -PPDR and Earlier he was also the President of TEMA (Telecom Equipment Manufacturers Association of India) and a Vice President of Association of Telecom Industries of Singapore (ATIS). Mr. Bhatia is an expert on spectrum, ICT Policy, Regulations, public safety and emergency and disaster relief communications. Mr Bhatia works closely with many Asian, European and African governments on issues of Policy and regulations concerning PPDR, Spectrum, ICT technologies and services. Mr. Bhatia has attended all world radio Conferences for last 20 years as well as all meetings of ITU.



BASHIR PATEL

INMARSAT (Regional Advisor for SAMEA Region)

Bashir Patel is Inmarsat's Regional Advisor for the South Asia, Middle East and Africa (SAMEA) region. He is widely recognized as a highly experienced executive in ICT, satellite systems and defence aerospace. He has over 35 years experience in the high tech industry, working mainly in the telecom sector including satellites and defence industries, both in management consulting as well as in regional regulatory policy, business and market development. He has been working with the Governments throughout the regions and launched satellite communications technologies as far back as mid 1980 's. He is a passionate technologist with experience gained from his time spent in advance aerospace projects in BAe Systems, Inmarsat, ICO Global Communications and prior to re-joining Inmarsat in 2013 as the Chief Operating Officer (COO) of the Commonwealth Telecommunications Organisation (CTO), dealing with 54 Commonwealth Governments around the world.



GAURAV KHAROD

INTELSAT (Country Manager)

"Gaurav has been a satellite professional with 20+ years in Satellite communications and Broadcast markets with exposure in South East Asia markets. Currently Country Manager for India at Intelsat, Gaurav has understanding of satellite and ground-based technology and business. He has experience in regulatory affairs and public policy. Having worked across Hughes - a Service Provider, Viasat - a Network provider, and now Intelsat, Gaurav has the right mix of experience across the different aspects of a satellite communications service."



SATHYA NARAYANASWAMY

VIASAT (Country Manager)

Sathya Narayanaswamy is Country Manager, India for Viasat, a global broadband and satellite communications company. He is responsible for business development in India, and also growing the Viasat India engineering center, which he helped establish. In a previous role, Sathya also worked in Viasat's COMSAT Labs division and was in the design team for the Linkway product line. Sathya has also held other roles in Cisco, and Lucent.



SUMITESH SARKAR
ISRO (Scientist)

Shri Sumitesh Sarkar is an Outstanding Scientist at ISRO and has more than 31 years' experience in the field of satellite communication payload systems and hardware. He completed B.E. from University of Calcutta and M. Tech from Indian Institute of Science, Bangalore. He joined Space Applications Centre of ISRO at Ahmedabad in 1987 and worked in the field of Satcom Payload RF subsystems for 15 years. Subsequently he has worked on Satcom system engineering activities involving definition of satcom system architecture, Payload configuration and trade-off studies. As Deputy Project Director and Associate Project Director for communication payloads, he has made significant contributions in the definition and development of GSAT-6, 7, 7A and GSAT-19 payloads. As Associate Project Director he was responsible for the design and development of the communication payload of the first Indian High Throughput Satellite GSAT-11. Presently he is Group Director for the Satcom & Navigation Payload System Engineering, Integration and Checkout Group and is looking after the system engineering and integration/checkout related activities of INSAT/GSAT and IRNSS Payloads.



PAWAN GARG
Vice President ITU-APT

Mr. Pawan Garg is former Wireless Adviser to the Government of India (Head of national spectrum management organization) and was internationally elected Member* of the Radio Regulations Board (RRB) of International Telecommunication Union (ITU), Geneva from 2006 to 2014 (elected as Chairman of Board for 2013). ITU is the specialized body of UN system for ICT issues.

This specialized ITU Board resolves various issues concerning implementation of ITU Radio Regulations, an international treaty, for planning and use of RF spectrum & satellites globally; as well as resolution of disputes among countries, if any, regarding use / interference of radio spectrum.

Mr Garg has more than 45 years of experience in spectrum management and planning of various radiocommunication services - both terrestrial as well satellite based services. Also during his term as Wireless Adviser to Govt. of India (2002 - 2008), exponential growth of cellular mobile services took place in India and achieved the critical mass for further large growth.

Widely traveled since 1980, he has represented India on the Governing Council of ITU and chaired / spoken at large number of national and international conferences in his field, besides publishing many papers on related issues.



TONY AZZARELLI

ONEWEB (Vice President of Spectrum Licensing Affairs)

Tony Azzarelli is OneWeb's Vice President of Spectrum Licensing Affairs, responsible for global licensing, spectrum and international policy development. He also is Founder and CEO of Azzurra Telecom Limited (UK), providing strategic advice in market access, licensing and spectrum matters.

He holds a Doctor's degree in Electronics and has more than 25 years experience in the telecommunication sector with appointments at the UK Regulator Ofcom, Inmarsat, The Boeing Company, the European Space Agency and ICO Global Communications.

Tony has always strived to initiate, develop and promote global harmonized licensing and spectrum policies for space and terrestrial wireless technologies, and believes that this is necessary for the proper economic and societal growth and development of a country and its industry.

From 2015	Vice President Regulatory and Government Affairs OneWeb
From 2018	Founder and CEO, Azzurra Telecom Ltd (UK)
2010-2015	Principal Director of Space and Science Division Office of Communications, UK
2007-2010	General Manager, Azzurra Telecom Access Independent Consultancy, UK
2001-2007	Director Regulatory Affairs The Boeing Company, UK
1997-2001	Director Spectrum Affairs ICO Global Comms, UK
1994-1997	Spectrum Management INMARSAT, UK
1992	System Engineering, Trainee European Space Agency
1984-1986	Second Lieutenant, Counter Aircraft Group Italian Army



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