



**Broadband  
India  
Forum**

...enhance, expand & usher the true value of broadband



5G

**BROADBAND**

Bits & Bytes

**A BIF Communiqué**

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[www.broadbandindiaforum.com](http://www.broadbandindiaforum.com)

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**Mr. P K Garg**

Principal Adviser,  
Broadband India Forum

## Foreword

After the mobile telephony revolution in India more than 10 year ago, and the dramatic change in Indian data usage, mainly with the entry of a new player, the next remarkable thing is 5G. It is not merely a technology upgrade like 2G to 3G and to 4G, rather it would bring about a paradigm shift in the human life style. The 5G, along with associated internet of Things (IoT), Machine-to-Machine (M2M) communications, Connected Devices will bring a revolution. These applications would lead to larger developments in Machine Learning/languages, Big Data and its analysis, Artificial Intelligence and other related fields.

The mobile telephony revolution could be achieved with combined efforts of the Government and Regulator through their facilitating roles as well as innovative approaches adopted by telecom service providers. A similar concerted effort on the part of all these stakeholders is necessary in the 5G area also. Government of India has taken an important step in the right direction, by allocating sizable funds so that India can play its rightful role in 5G.

An important aspect is to make the global standards take note of our specific needs. Acceptance of the Indian proposal for Low Mobility Large Cell (LMLC) standard, to meet the specific needs of rural areas in India (and many other developing countries), in the set of standards for 5G services, is an important achievement. We have to continue our efforts at various international forums. Equal thrust is required for satellite based component as well.

‘Content’ has already acquired the centre place in the telecom (& complete ICT) scenario and it is going to play a much more crucial role for the sustainability of telecom services. The telecom service providers are aware of this and they are taking necessary steps to meet the customer’s needs, rather to foresee their needs and offer various applications, to win their loyalty. Ensuring Cyber Security is also crucial.

Enhanced indigenous manufacturing of infrastructure equipment and devices is inescapable so as to reduce the cost for operators and customers; as well as to keep the import bill within reasonable limits.

With exponential increase in data usage, spectrum requirements are bound to increase. Even if some spectrum in different frequency bands can be made available – for licensed and unlicensed usage – increase in spectrum efficiency is inescapable.

Extensive efforts, on all related fronts, are essential for India to retain its lead. We are happy to bring this present Quarterly Newsletter with the theme of 5G.



**5G IS NOT MERELY A  
TECHNOLOGY UPGRADE  
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HUMAN LIFE STYLE”**

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**TV Ramachandran**  
President,  
Broadband India Forum

## From the President's Desk

*Dear Readers,*

Welcome to the First Edition of our Quarterly Newsletter for FY19 – Broadband Bits & Bytes on trends and perspectives related to Broadband sector in India. The Newsletter focusses on all the key areas such as spectrum and licensing, content and applications, SatCom, infrastructure, security, new technologies and innovations, which could lead to proliferation of Broadband in India.

BIF is dedicated to enhance the potential of the entire ecosystem to deliver broadband across the whole of India. BIF's mission is to support and enhance all policy, regulatory & standards initiatives for the proliferation of high quality broadband in the country in a technology-neutral and all-inclusive manner. We have, in the short time frame of less than three years, contributed to several regulatory and policy consultations and been working closely with all concerned Government agencies providing credible inputs on Broadband to assist and facilitate the process of policy making.

The Newsletter is divided into several sections. In the “Spotlight” section, the focus for this Edition is 5G. We discuss how the TRAI recommendations on 5G auction guidelines fall short. We have views on what is most important for ensuring expeditious rollout of 5G in India in the “Industry Speak” section, and I would like to thank the industry experts personally for sharing their valuable thoughts. In our “Newsflash” section, we have summarized the significant happenings in the Broadband sector over the last quarter. In the “Events” section, we give you a glimpse of the past and proposed BIF Events.

In an effort to make this newsletter more useful to you, we would appreciate your comments and suggestions that you may have on this issue as well as topics that you would like us to feature in the forthcoming issues.

Happy reading!

A handwritten signature in black ink, appearing to read 'Ramachandran' followed by a stylized flourish.



**BIF IS DEDICATED TO  
SUPPORT AND ENHANCE  
POLICY, REGULATORY &  
STANDARDS INITIATIVES  
FOR PROLIFERATION  
OF BROADBAND IN THE  
COUNTRY”**

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# SPOTLIGHT: TRAI'S 5G AUCTION

## Guidelines fall short

**Opportunity Missed to Shed Legacy Shackles due to inadequate auction sales, low rise of final price over reserve price and poor correlation between bands.**

**We are at** the threshold of the new 5G era with almost unbelievable benefits of bandwidth and a new digital society. Much will, of course, depend on the adequate availability of appropriate spectrum. The eagerly-awaited regulatory recommendations for spectrum auction, including the all-important 5G spectrum, have just been announced. Are there rejoicings and celebrations everywhere? Unfortunately not; while the recommendations are very good in many respects, a few important aspects have been overlooked and, in the context of India's need to embrace the digital benefits, this represents huge opportunities missed.

### Firstly, the good news

A huge quantum of spectrum in multiple bands—as many as eight bands—is sought to be auctioned. Not only this, the quantum of spectrum recommended for auction is enormous—as much as 8600 MHz! So, effectively, this is a mega auction. The earlier big bang auction of 2016 featured only 2355 MHz or less than 30% of the current recommendation. The availability of such a large quantum of spectrum and so much

choice should indeed help, reserve prices being right, to get a rational price discovery in the auction. Apart from the above positive aspect, there is another significant feature—a 42% reduction in valuation and reserve price of the prized 700 MHz spectrum which regrettably featured a complete auction failure earlier. In other bands also, there is a RP reduction ranging from 10% to 40%. On the face of it, this also looks very commendable.

A third and highly laudable recommendation is the introduction of spectrum audits by an independent agency to ensure the efficient usage of this precious resource by all users, both private and public. This is a longstanding need and with air waves being the property of the citizens of India, it is indeed important to audit its usage by an independent expert body.

Why then are we disappointed?

To understand this, one needs to first appreciate that our e-auctions of spectrum since 2010 can, by no stretch of imagination, be termed to have been successful. Quite





the opposite: There have been continuing issues with our spectrum pricing that have, unfortunately, not been addressed by TRAI.

The accompanying graphic shows that if one looks at all the 6 auctions held since 2010, only about 62% of the cumulative spectrum has been sold. Of course, there have been a few 100% sale auctions but most of these were due to abnormal pressures like the spectrum roadmap not being clear or licence extension compulsions, etc.

The above view is strongly reinforced when one notes that most of the sold spectrum went at the fixed reserve price or very close to it, namely, there has been very little market

discovery of the true value of the spectrum and only a sort of administered or allocated price has been the result invariably. Under such a serious situation, mere price adjustments will not suffice and it needs a radical review of the price valuation fundamentals.

Also, importantly, the value of licensed spectrum is not proportional with the market realities. There is no correlation of value amongst different bands in the same circle or band-wise correlation amongst various circles. In summary, these three characteristics of inadequate auction sales, low rise of final price over reserve price and poor correlation between bands as well as circles, together inarguably constitute the description of unsuccessful auctions and warrant a relook



at the complete methodology, especially in the context of an uncertain business case for 5G and, most probably, low margins per unit.

Against the above background, Broadband India Forum (BIF) had formally proposed, to both TRAI and DoT, a practical solution for valuing spectrum linking it to revenue-earning potential. This has regrettably been ignored, and has not been discussed or even acknowledged. We are not claiming that this is the right solution or only solution; what we seek is consideration of a practical solution of this type and the discontinuation of a past practice that has not yielded the desired results.

A 5G price of Rs 492 crores may, in isolation, not seem very high but considering that i) 5G is completely uncharted waters in respect of use cases and business potential and that, ii) even Korea, a far more affluent country and one of the most advanced in the globe for broadband and 5G, auctioned this spectrum for about one-fourth of TRAI's recommended sum.

TRAI also, very significantly, missed making recommendations for the special framework required for 5G trials. This is extremely important for network operators and their partners to have enough appetite for this project. TRAI could have made recommendations like keeping the trial spectrum free and the mandating of the trial period for at least 6-12 months after the trial setup is ready. Moreover, at the end of the trial, if the operator wishes to continue using the

same spectrum, it should have the right of first refusal on matching the later-discovered auction price. Without such a bold and progressive approach, we may not see much headway in the 5G trials because no operator would like a complete spectrum disruption after all the troubles of trials and proving the difficult business case with possibly low and tight margins. Last but not least, since 5G is a national priority, it is important to recommend that a significant part of the heavy funding for trials should be borne by the Centre.

While 3.5 GHz is a good general purpose 5G spectrum, one also needs the specialist ultra-high capacity millimetric wave to be able to architecture the specialist applications that only 5G can serve. While a 28GHz is fraught with difficulties, consideration of 25 GHz is a good possibility. This unfortunately has been not considered. This miss is particularly significant since India is highly deficient in fixed line availability.

All in all, these TRAI recommendations, though good in parts, do not seem to have exploited the excellent possibilities for 5G through bold, far-seeing recommendations. We are continuing with old chains when the promise of the new 5G generation could well justify the discarding of legacy shackles. The 5G tide has started rising elsewhere in full flow, but we seem to be in danger of missing it.

Author is President of Broadband India Forum. Views are personal. Views are personal. Garima Kapoor provided research input for the article.



# Industry Speak:

## What according to you is most important for ensuring expeditious rollout of 5G in India?

*"In order to expedite roll out of 5G, the regulatory cost like license fees and price of spectrum needs to be drastically reduced. Only then will the operators get motivated to commit sufficient investments to maximize 5G coverage to benefit most Indians"*



**Parag Kar**  
Vice President,  
Government Affairs,  
India & South Asia,  
Qualcomm

*"Availability of adequate access spectrum for 5G services at reasonable and realistic price, liberal policy for the use of E and V bands for access and short range back haul, as well as increase in the unlicensed bandwidth in 5 GHz band for outdoor use are a must for an expeditious rollout of 5G in India"*



**Dr. Kuldip Singh**  
Principal Adviser,  
Broadband India  
Forum





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## Newsflash: Updates and Achievements

### SPECTRUM & LICENSING

- TRAI released recommendations on Auction of Spectrum in 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz, 2500 MHz, 3300-3400 MHz and 3400-3600 MHz Bands.
- TRAI released Recommendations on Method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS) including auction, as a transparent mechanism.
- TRAI submitted its response to DoT reference back on Recommendations on Ease of Doing Telecom Business dated 30th November 2017.

### SATCOM AND BROADCASTING

- Broadband India Forum is going to host a SATCOM event on 20th and 21st November 2018 in Delhi.
- TRAI released Recommendations on Issues relating to Uplinking and Downlinking of Television Channels in India.
- TRAI submitted a response to a back reference dated 12th March 2018 received from Ministry of Information and Broadcasting (MIB) on TRAI's Recommendations on "Issues related to New DTH Licenses" dated 23rd July 2014.

### 5G

- The high-level 5G Forum, set up by the government, recommended that free bandwidth be assigned for trials for a fixed time frame to allow setting up of the network.
- In July 2018, Broadband India Forum (BIF) had set up a '5G committee' to push the momentum on

rollout of 5G trials with key industry players, and help convert the 5G-linked policy goals to business-friendly implementation.

- BIF along with Bharat Exhibitions hosted the 2nd International Conference on 5G India 2018. The event was held at The Leela, Mumbai on 17th and 18th May 2018.

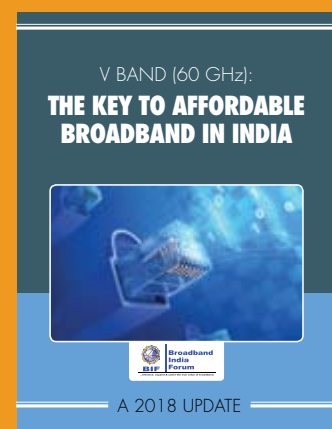
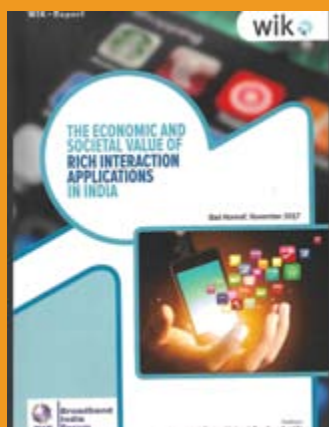
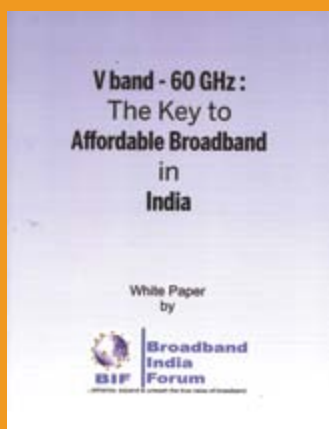
### OTHERS

- DoT has asked telcos to give road map for building public Wi-Fi system: DoT hopes to rapidly roll-out around 5 lakh Wi-Fi hotspots across the country by the end of 2018, with at least one in every village in India.
- TRAI released Recommendations on Privacy, Security and Ownership of the Data in the Telecom Sector
- TRAI also released Recommendations on Making ICT accessible for Persons with Disabilities.
- Apple and NOKIA have joined Broadband India Forum as Patron and corporate members respectively.
- QuadGen, WiSig and CEWiT joined BIF as startup/institutional members.





# Reports & White/V Band Papers from BIF





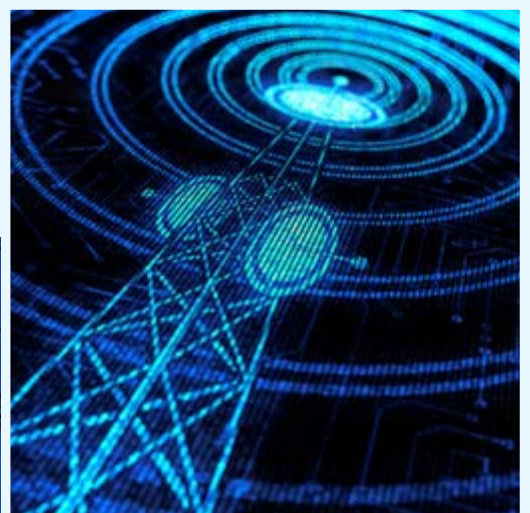
# Interesting Articles

**BELOW ARE THE ARTICLES AUTHORED BY BIF PRESIDENT, MR. TV RAMACHANDRAN WHICH HAVE BEEN PUBLISHED IN LEADING BUSINESS DAILIES:**

- ❖ Changing the Game: Implications of 5G for other verticals. [\[LINK\]](#)
- ❖ IPR in Digicomms era: An essential constant amidst welcome changes. [\[LINK\]](#)
- ❖ Innovation in the age of data protection. [\[LINK\]](#)
- ❖ The negatives of data localisation. [\[LINK\]](#)
- ❖ Srikrishna committee report: Draft privacy Bill impractical and protectionist. [\[LINK\]](#)
- ❖ Digital Infrastructure Comprises Several Vital Elements. [\[LINK\]](#)
- ❖ TRAI's 5G auction guidelines fall short. [\[LINK\]](#)
- ❖ Many hills to climb before Digital India. [\[LINK\]](#)

## **FEW OTHER ARTICLES THAT YOU MAY FIND INTERESTING:**

- ❖ Govt wants to know from telcos if social media apps like WhatsApp, Facebook can be blocked. [\[LINK\]](#)
- ❖ Trai rejects industry concerns over spectrum pricing; expects demand for 5G, 700MHz bands. [\[LINK\]](#)
- ❖ India ranks below Kenya, Bangladesh, Pakistan in urban-rural mobile ownership. [\[LINK\]](#)
- ❖ Trai has failed to suggest ways to make India a global telecom R&D hub: BIF [\[LINK\]](#)
- ❖ Broadband India Forum sets up 5G committee; 5G trials on public safety, manufacturing and Internet of Things in offing. [\[LINK\]](#)
- ❖ Telcos' demand for V-Band spectrum auction is anti-consumer and anti-Digital India: BIF [\[LINK\]](#)
- ❖ Broadband forum asks govt to allocate spectrum in 700 MHz, 850 MHz for 5G. [\[LINK\]](#)
- ❖ The Need for Upgraded Quality Optic Fibre Cables for High Bandwidth. [\[LINK\]](#)



# Events: Upcoming Events

## India Satcom 2018



### Chief Guest\*



**MR. MANOJ SINHA**

Hon'ble Minister of Communications & MOS, Ministry Railways

### SPECIAL GUESTS OF HONOR\*



**Mr. R S Sharma**

Chairman, TRAI



**Dr. K Sivan**

Chairman, ISRO



**Ms. Aruna Sundararajan**

Chairman, Telecom Commission & Secretary, Telecom

### Other Eminent Speakers\*

**Mr. N. Sivasailam**

Special Secretary, Telecom

**Mr. S K Gupta**

Secretary, TRAI

**Mr. U K Srivastava**

Pr. Advisor, (NSL) TRAI

**Mr. K Krishna**

Vice President and CTO, Hughes Communications

**Mr. Abhishek Malhotra**

Bharucha & Partners

**Mr. Louis Boswell**

CEO, Asia Video Industry Association

*\*Invited*

**Mr. P J Nath**

Managing Director, Nelco Ltd.

**Mr. Gaurav Kharod**

Country Head, Intelsat India

**Mr. Sathya Narayanaswamy**

Country Manager, Viasat

**Mr. Vern Fotheringham**

Executive Chairman V Satcast

**Ms. Susan Irwan**

Chairman, Satellite Event, DC.

**Mr. Harit Nagpal**

CEO, Tata Sky

**Mr. Paul Brown Kenyon**

CEO, Measat

India Satcom 2018, being organized by Broadband India Forum (BIF), offers you a unique opportunity to meet with the key decision makers and business leaders driving the development in bringing satellite Communication in mainstream of India.

Register today to gain the knowledge and access you will need to make your organisation part of this growing market for satellite communications services in India.

### Join Us in New Delhi for India Satcom 2018 to:

- ❖ Learn about the Role of Satellite in the Communications & Broadcasting Ecosystem of India
- ❖ Talk to the Key Government Policy Makers on Policy Formulations, Regulatory Interventions & Policy Implementation Guidelines
- ❖ Attend Knowledge Sessions which deliberate and formulate strategies related to;
  - India 2020: Economic Potential of the Satellite & Broadcasting Sector
  - Affordability of Satcom Bandwidth - key to enable Digital India
  - CXO Round Table with Policy Makers
  - Next Generation Satellite Technologies & Applications in Satcom - LEO, MEO, HTS, Connected Cars, IFC, Maritime Applications, etc.
  - Next Generation Satellite Services for delivery of 5G & M2M/IoT
  - Ease of Doing Business in Satellite & Broadcasting

### What are the Opportunities for you?

- ❖ Unique networking opportunities with Government officials, Business Leaders and Senior Executives from the world's major satellite operators, manufacturers and equipment providers.
- ❖ Create awareness within the Government at all levels regarding importance of the role of Satcom in providing broadband pan India including rural India.
- ❖ Get access to key decision makers in the Government on matters related to policy, regulation & business opportunities in Satellite Communications.
- ❖ Attend panel discussions on Market Growth, Policy & Regulatory Issues, Role of Satcom in Digital India, Ease of Doing Business, Satcom Mobility & other related topics.
- ❖ Offering from Satcom in the new National Digital Communication Policy 2018 (NDCP)

### Who can attend?

- ❖ Satellite Operators
- ❖ Satellite Manufacturers
- ❖ Broadband Service Providers
- ❖ Internet Service Providers
- ❖ VSAT Manufacturers & Distributors
- ❖ Value-added service Providers
- ❖ User Organisations (Banks, Oil & Gas, Defence Security Forces, etc.)
- ❖ DTH Service Providers
- ❖ Government Representatives
- ❖ Spectrum & Regulatory Experts
- ❖ Start-ups and innovators
- ❖ Attorneys & Consultants
- ❖ Telecom Service Providers
- ❖ Broadcasters

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**Via Satellite**

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# 2<sup>nd</sup> Edition FTTH India Summit 2018



## Events: Past Events

### BIF as Knowledge Partner at 5G Event in Mumbai

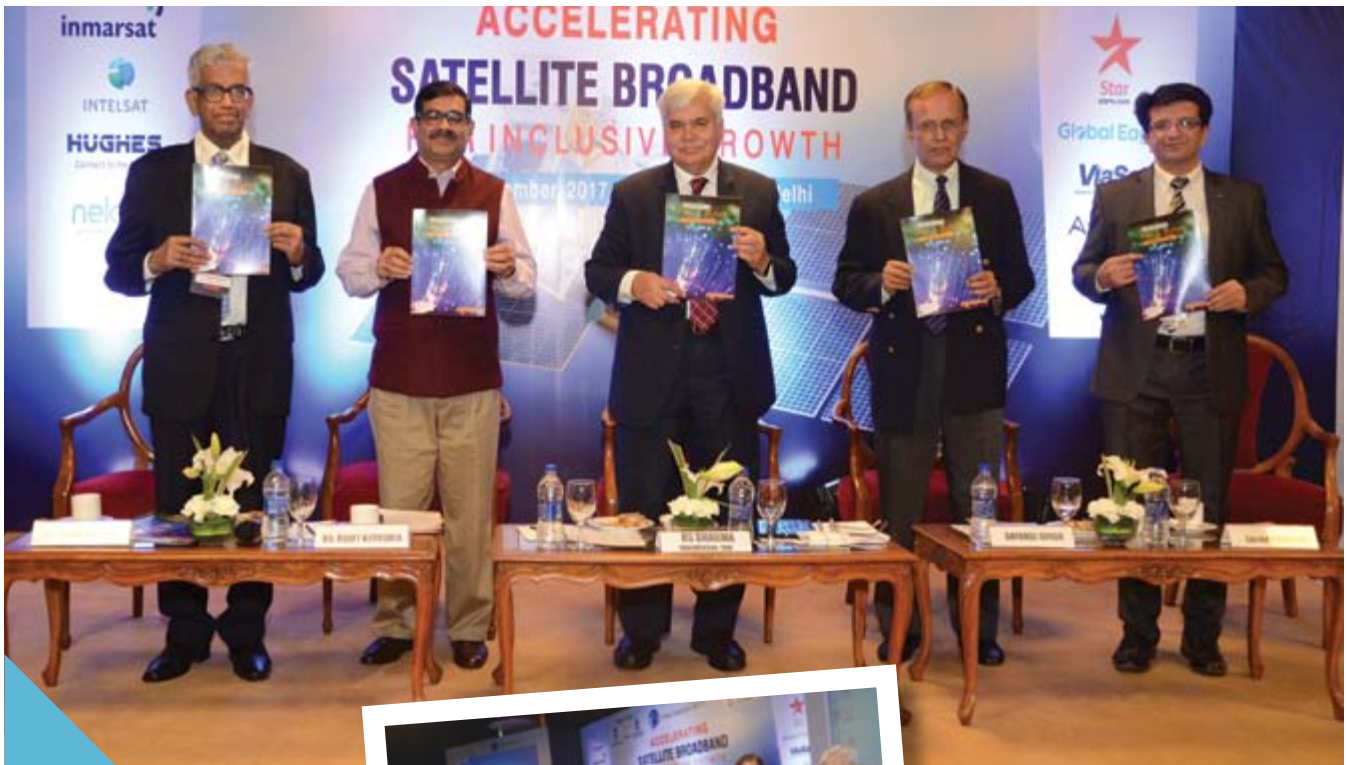


- ❖ 5G India 2018 was held on 17 & 18 May at Leela Mumbai with close involvement of BIF as a Knowledge Partner and Mr. TV Ramachandran, President was Chairman of the Conference Organising Committee.
- ❖ The dignitaries from DoT and the Ministry were apparently satisfied with the overall proceedings. “Splendid” and “outstanding” were words used by top ranking DoT and Ministry officials describing the event, with one stating the following “..one of the best conferences, I have attended. Heart and Soul effect! Can’t get better than this, I am inclined to think. But then records are meant to be broken! Expectations for the next one are definitely higher.”
- ❖ It was a massive success with accolades received from the Minister of Communications and Secretary Telecom, both of whom were kind enough to come on both days of the Conference and lauded the role of BIF.
- ❖ The first time ever demo’s of 5G use cases taking place at such an event in India, which were demonstrated by Intel India, BSNL & Nokia, Reliance Jio.



# Events:

## India Satcom 2017



- ❖ The event was graced by the VVIPs – Shri Manoj Sinha, Hon'ble Minister of Communications (IC) & MOS, Ministry of Railways, Shri R S Sharma – Chairperson, TRAI, Smt. Aruna Sundararajan, Secretary, DoT and other leading dignitaries.
- ❖ Participation from the Government, Regulator, Academia, Satellite Operators, Teleports, VSAT players, Broadcasters, etc.
- ❖ More than 100 delegates participated the summit from all around the globe.
- ❖ The 1st International Satcom Industry CXO roundtable with Indian Government was held where CXOs from more than 10 International companies participated. The extremely vibrant and interactive CXO roundtable enabled CXOs to address their issues and concerns as well as their wish list face to face with Secretary, DoT.
- ❖ Highly educative & interactive session on In-flight Connectivity.
- ❖ White Paper on Satellite Broadband & Digital India was released.



Launch of BIF-Wik  
Report - The Economic  
And Societal Value  
of Rich Interaction  
Applications In India

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Launch of BIF-TARI  
Report - Mobile  
Telephony in India

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Signing of MoU with  
Macquarie University

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Signing of MoU with  
The European  
Telecommunications  
Standards Institute

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BIF Rural Workshop



BIF represented at  
APG-3 (ITU) event in  
Perth, Australia



# BIF Eminent Members

## Corporate Patron Members



## Corporate Members



## Startup & Professional Members





# Panel of Principal Advisers



Mr. P K Garg



Dr. Kuldip Singh



Mr. B K Syngal



Dr. Mahesh Uppal



Dr. B M Baveja



Mr. Sudhir Gupta



Valsa Williams



Mr. J V Ramamurthy



Mr. D P Singh



Mr. Abhishek Malhotra



Mr. Rajesh Mehrotra



Mr. K V Seshasayee

## BIF High Level Committees

S.No.	High Level Committees	Chair and Co-Chair	Mentor (Pr. Advisor)
1	Spectrum, Regulatory Framework & Standardisation	Chair: Parag Kar, VP, Govt. Affairs, India & South Asia, Qualcomm, Co-Chair: Naveen Tandon, Director, International External Affairs, AT&T India Co-Chair: Avinash Ramachandra, Director Public Policy, Amazon India	Dr. Kuldip Singh, former Member TDSAT & CMD, MTNL Shri PK Garg, former Wireless Advisor to Govt. of India & former Chairman RRB-ITU Shri Rajesh Mehrotra, former Expert Dr. Mahesh Uppal, Sr. Telecom Consultant
2	Broadband Infrastructure	Chair: Swati Rangachari, Chief of Corporate Affairs, Sterlite Technologies Co-Chair: SN Gupta, MD, Blue Town-India	Shri Umang Das, Chief Mentor ATC & Vice-Chairman, TAIPA
3	Manufacturing	Chair: Harish Krishnan, Managing Director at Cisco Systems India and SAARC Co-Founder Public Affairs Forum of India Co-Chair: Parag Kar, VP Govt. Affairs, India & South Asia, Qualcomm,	Shri BK Syngal, former CMD, VSNL Shri JV Ramamurthy, former Director, HCL,
4	Content & Application	Chair: Ashwani Rana, Head of Connectivity Policy, Facebook Co-Chair: Rahul Jain, India Manager-Public Policy, Google India Co-Chair: Avinash Ramachandra, Director Public Policy, Amazon India Co-Chair: Ms. Kshipra Jatana, Group General Counsel, Viacom18	Dr. Mahesh Uppal, Sr. Telecom Consultant Shri Umang Das, Chief Mentor ATC & Vice-Chairman, TAIPA Dr. Kuldip Singh, Former Member TDSAT & CMD, MTNL Shri Rajesh Mehrotra, former Expert Radiocommunications at ITU, Geneva
5	SatCom & Broadcasting	Chair: PJ Nath, MD & CEO, Nelco Ltd Co-Chair: Gaurav Kharod, Country Manager India, Intelsat Co-Chair: K Aravamudhan, Senior Vice President, Star India Private Limited	Shri Rajesh Mehrotra, former Expert Radiocommunications at ITU, Geneva Shri PK Garg, former Wireless Advisor to Govt. of India & former Chairman RRB-ITU Shri BK Syngal, former CMD, VSNL
6	Rural Digital Initiatives	Chair: Reliance Jio Co-Chair: SN Gupta Co-Chair: Shefali Mishra, Senior Vice President at Star TV Network (21CF), India	Shri KV Seshasayee, MD, Win Broadband, former Chairman, Hinduja TMT
7	5G	Chair: Mathew Oomen, President, Network, Global Strategy and Service Development, Reliance Jio Co-Chair: Rahul Jain, India Manager-Public Policy, Google India Co-Chair: Jitendra Singh, Sr. Director, GA, Qualcomm India	Dr. BM Baveja, former Sr. Director MeitY and currently Consultant MeitY
8	New Technologies & Innovations (Robotics, AI, Cloud Computing )	Chair: Vipin Tyagi, ED-C-DOT Co-Chair: Rishabh Dara, Public Policy, Manager, Facebook, India	Dr. BM Baveja, former Sr. Director MeitY and currently Consultant MeitY
9	IoT (Big Data, Analytics, MTC) (New Committee)	Chair: Dr Rishi Bhatnagar, President, Aries Communication & Chairman IOT Congress Co-Chair: Naveen Tandon, Director, International External Affairs, AT&T India	Dr. BM Baveja, former Sr. Director MeitY and currently Consultant MeitY
10	ICT for Inclusive Ability (New Committee)	Chair: Dr. Nirmita Narasimhan, Sr. Fellow and Program Director G3ict Co-Chair: Mr. Dinesh Chand Sharma, Director – Standardization, Policy and Regulation in EU Project SESEI Co-Chair: Karishma Chhabra, Microsoft	Shri PK Garg, former Wireless Advisor to Govt. of India & former Chairman RRB-ITU Shri Rajesh Mehrotra, former Expert Radiocommunications at ITU, Geneva

# About Broadband India Forum



**Mr. Anil Prakash**  
*Director General  
Broadband India Forum*

**Broadband India Forum (BIF)** functions as a policy-forum and think-tank that works for the development & enhancement of the entire broadband ecosystem in a holistic technology-neutral and service-neutral manner. BIF seeks to be a thought leader and a credible and effective voice to help propel the nation to achieve the country's ambitious vision of creating a Digital India. To achieve this, BIF works to promote the rapid

development of policies to promote affordable and high speed ubiquitous broadband throughout the country.

Registered as IPTV Society, its brand - BIF was formed in October 2015 and is a fairly nascent but dedicated Forum with participation from all stake holders, including Technology Providers, Telecom Operators, Internet Service Providers, Value-Added Service Providers, Satellite Operators and service providers, MSO, Broadcasters, startups and professional entities as well as seasoned Industry professionals who are familiar with different technologies, operations, regulations and policies.

The Forum's senior leadership team includes renowned and respected professionals from background of Industry, Regulator and Government.

1. Mr. Shyamal Ghosh, Former Secretary-Telecom and co-founder of IPTV Society, is the Chairman Emeritus.
2. Mr. M. F. Farooqui, IAS (Retd.), former Secretary-Telecom, is the current Chairman
3. Mr. T. V. Ramachandran, Hon. Fellow of the IET (London), former Resident Director-Regulatory Affairs

and Government Relations, Vodafone, and first Director General of COAI, is the President of the Forum.

4. Mr. Parag Kar, Sr. VP Govt. Affairs, India and South Asia-Qualcomm and Mr. Ashwani Rana, Head Connectivity Policy-Facebook are current Vice Presidents.
5. Mr Anil Prakash is the Director General.
6. Mr. S. N. Gupta, seasoned technocrat and senior luminary who has worked in DoT and as a Principal Adviser to TRAI (Regulator) is the Treasurer.

BIF functions through many specialist committees for the advocacy, coordination, facilitation and promotion of all activities with the objective of furthering the goals of the National Telecom Policy in Spectrum, Licensing and Standardisation, Broadband Infrastructure, Manufacturing Rural Digital Initiatives, Content & Applications, SatCom & Broadcasting, 5G, New Technology & Innovations, IoT and ICT for Inclusive Ability.

The activities of the Forum broadly relate to coordination, promotion and formulation of expert opinion on topical subjects related to Broadband. To act as a bridge between Industry on one side and Government and the Regulatory Bodies on the other, front ending several issues related to policy & regulation.

***"We present you the fifth Edition of the Newsletter, Broadband – Bits and Bytes. Our endeavor is to keep you updated with latest technology, standards, innovation, policy and regulation, which embark on and facilitate speedy and affordable broadband proliferation in the country."***

*- Anil Prakash*





**Broadband  
India  
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...enhance, expand & usher the true value of broadband

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