SIAINDIA
Satcom Industry Association

Unified Voice for SATCOM Industry in India

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About SIA-India

- SIA-India is a non-profit association created to represent the interests of the communication satellite ecosystem in India. A vibrant body, SIA-India represents satellite operators, satellite systems, launch vehicles and ground and terminal equipment manufacturers as well as application solutions providers to the Government, Regulators, Policymakers, and domestic and international standards bodies. As the apex representative body for the satellite communications ecosystem, we aim to present the industry's interest to the highest Government levels for policy-making and regulatory and licensing matters.
- Our vision is to be the unified voice for the Communication Satellite industry in India.

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Leadership Team

Dr. Subba Rao Pavuluri, President

Anil Prakash, Director General

Sudhir Gupta, Board Member

Ravi Ailawadhi, Board Member

DS Govindrajan, Board Member

Pawan Kapur, Board Member

Bashir Patel, Board Member

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Advisory Panel

Aarti Holla, Secy Gen, ESOA

David Hartshorn, CEO - GWF

Dr.SM Sharma, Former Jt. Wireless Advisor, GOI

Gregg Dafner, CEO, GAPSAT

Ingvar Herland, Director, Pacific Satellite

John Medeiros, Sr Policy Officer-AVIA

SC Ahluwalia, Ex. DDG-Satellite-DOT

Tony Azarelli, CEO, Access Space Alliance

Acknowledgements @ SIA-India Luanch on 30 March 2021

NITI-Aayog: "We hope that SIA India plays its role as a unified voice for the satellite communications industry and helps in the implementation of the policies. We, from Niti Aayog, look forward to this new Association fulfilling its promise to the industry"- Dr. VK Saraswat, Honourable Member, NITI Aayog

ISRO- Dept of Space: "……I wish the Association a great success in all its endeavors towards realisation of its mission to address the challenges of the industry and creating an enabling business environment in India'-
Mr. K Ratnakara-Director-SatCom PO, ISRO-HQ

ITU: "The launch of SIA-India is an important development for the communication satellite industry in India. Satellites help save lives in emergencies, provide critical knowledge about our planet and climate and enable a range of solutions for digital, financial services, better healthcare and smart cities"- Mr. Malcolm Johnson, Dy. Secretary General-ITU

Antrix corporation: "SatCom domain is now in process of being de-regulated thanks to the timely action of the GoI. I am sure SIA-India's involvement as an industry voice will be crucial to the development of the sector as new technologies evolve and make SatCom a household service in the near future"- Mr. Rakesh Sasibhushan, CMD, Antrix

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Global Partners

ACCESS.SPACE

APSCC
Asia-Pacific Satellite Communications Council

avia
ASIA VIDEO INDUSTRY ASSOCIATION

Geeks
without frontiers

GVF
Satellite. Solutions. The World.

ESOA
EMEA SATELLITE OPERATORS ASSOCIATION

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Plan Activities

- SIA-India Hi-Level Meeting with Sr. Govt. Officers and Agencies
- Response to TRAI Consultation Paper
- Webinar on “ Atamanirbhar Bharat: Challenges in Satellite Manufacturing and Exports”.
- Position Paper on Satellite Industry in India-Way Forward
- International 2 Days Workshop on GEO-MEO-LEO mapping Manufacturing and R&D in India

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The Indian Economy - *Powered by Satellite*

INDUSTRY

GOVT.

RURAL

125,000+ VSATs in Bank ATMs;

5 Billion ATM transactions annually

Networking the $2 Trillion Equity Market

> 50,000 Gas Stations Automated

> 1000 Movies distributed annually;

20% piracy reduction

> 40,000 Villages empowered by e-Governance

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Expanding Application Set

Enterprises

Banking

Community Wifi

4G/5G Backhaul

Digital Cinema

E-Learning

Mobility

Bridging Digital Divide

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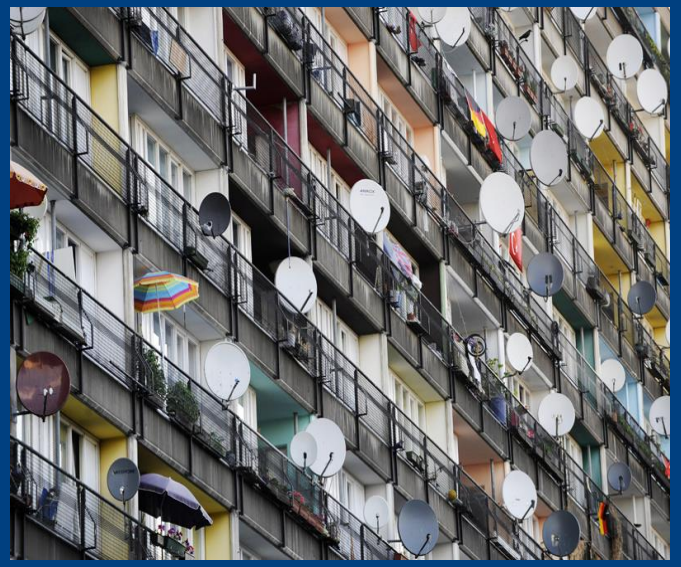
Helping to Close a Significant Digital Divide in India

E-learning - E-health - E-government - E-farming

Access to information & broadband services



Natural disasters - Emergency situations

TRAI Telecom Performance Indicators, nearly 69 crores rural Indians (57% of India's population) remain unconnected to broadband. New generations of very high throughput satellites (VHTS) are already enhancing broadband connectivity throughout the country, including connecting 5,000 Gram Panchayats that otherwise would not be connected by fibre or cable solutions.

Connectivity for everyone - Opportunities for ALL

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Untapped India Potential,

Benchmarked with Global Potential tapped

Uses for Satcom	Relative Market Size/Potential (Out of 100)	India Potential currently tapped (%)	Global Potential tapped (%)	India vs. Global
Consumer Broadband	200	0%	20%	Worse
Cellular Backhaul	100	5%	35%	Worse
BharatNet/Villages	100	10%	15%	Worse
Banking/Financial Inclusion	50	80%	20%	Better
Govt. Networks	50	50%	40%	Better
Petro/Oil & Gas	40	70%	70%	Same
E-Learning/Schools	40	10%	20%	Worse
Rural WiFi Hotspots	40	0%	5%	Worse
Mobility (Air/Sea/Land)	40	5%	70%	Worse
Mobile Satcom/IoT	40	2%	20%	Worse
Business Connectivity	30	60%	45%	Better
Defense	20	50%	30%	Better
Disaster Management	10	5%	10%	Worse
Content Distribution	10	0%	2%	Worse
Digital Cinema	10	90%	5%	Better
TOTAL	**780**	**20%**	**28%**	Worse

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Untapped India Potential, Key Inhibitors

Uses for Satcom	Relative Market Size/Potential (Out of 100)	India Potential currently tapped (%)	Global Potential tapped (%)	India vs. Global	Key Inhibitors (and current outlook)
Consumer Broadband	200	0%	20%	Worse	Ka HTS Capacity, Low Cost-per-bit, Space policy
Cellular Backhaul	100	5%	35%	Worse	Ku HTS Capacity, Cost-per-bit, USO projects, Telecom regulations, LEO systems
BharatNet/Villages	100	10%	15%	Worse	DCC Policy for satcom use in BharatNet
Banking/Financial Inclusion	50	80%	20%	Better	
Govt. Networks	50	50%	40%	Better	
Petro/Oil & Gas	40	70%	70%	Same	
E-Learning/Schools	40	10%	20%	Worse	DCC Policy for USO school broadband, MHRD policy, Ka HTS Capacity,
Rural WiFi Hotspots	40	0%	5%	Worse	Ka HTS Capacity, Low Cost-per-bit, LEO systems
Mobility (Air/Sea/Land)	40	5%	70%	Worse	Land mobility regulation, Demand generation from users, Ka HTS Capacity, Foreign maritime providers operating in Indian economic zone, LEO systems
Mobile Satcom/IoT	40	2%	20%	Worse	DCC Policy, MHA guidelines
Business Connectivity	30	60%	45%	Better	
Defense	20	50%	30%	Better	
Disaster Management	10	5%	10%	Worse	NDMA Programs, State Programs
Content Distribution	10	0%	2%	Worse	Ka HTS Capacity, Low Cost-per-bit
Digital Cinema	10	90%	5%	Better	
TOTAL	**780**	**20%**	**28%**	**Worse**	

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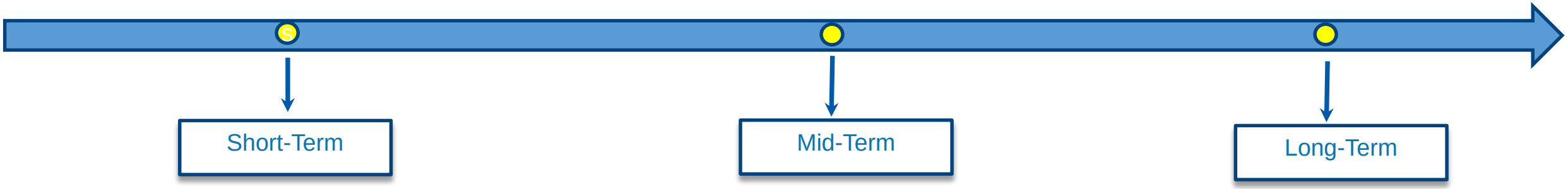
GEO HTS/LEO/MEO Satellites over India- In addition to ISRO's satellites



Short-Term

Operator	Satellite	Capacity	Year
INTELSAT Epic NG	IS33e	5 Gbps	2016
SES	SES-12	5 Gbps	2017
AVANTI	HYLAS-3	6 Gbps	2019
SES	O3B	7.5 Gbps	2018
Total		24 Gbps	Available today

Mid-Term

Operator	Satellite	Capacity	Year
OneWeb	LEO	11 Gbps	2022
SES	MEO	7 Gbps	2022-24
Telesat	LEO	>100 Gbps	2024
SPACEX	LEO	7.5 Gbps	2021-2023
Total		>125 Gbps	In addition to ISRO' capacity

Long-Term

Hughes, Viasat, SES & many others are waiting to get approvals under the Indian Satellite System

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Atamnirbhar Bharat; Manufacturing & Designs

- **Case Study: Ananth Technologies Ltd.**
- **World class satellite manufacturing facilities under one roof – from subsystem manufacturing to satellite assembly, integration and testing (AIT).**
- **Contributed in –**
  - **88 + Satellites**
  - **67 + Launch Vehicles**
- **Design, development and manufacturing of satellite and launch vehicle systems for global and domestic customers**
- **Mission: Creating the Indian space entity in private sector to serve national needs and international clients.**
- **1200+ Employees across 5 Centers.**

A "Win-Win" Approach to the 28 GHz

India enjoys the benefits of both broadband satellite connectivity and 5G

- Preserve 27.5-29.5 GHz for satellite (2 GHz of spectrum)
- Allocate 5G in 24.25-27.5 GHz (3.25 GHz of spectrum)
- Allows 5G and 28 GHz satellite services to be deployed in the same areas

Wins for 5G Sector

- 3.25 GHz of globally harmonized millimeter wave spectrum for 5G
- Up to 800 MHz for each MNOs (same as S. Korea)
- Leaves at least 50 MHz for local / private 5G
- Better chance of a competitive spectrum auction with no unsold spectrum lots
- No exclusion zones required for 5G
- Future expansion in other globally harmonized millimeter wave bands (a total of 14 GHz identified)
  - 37-43.5 GHz, 45.5-47 GHz, 47.2-48.2 GHz, 66-76 GHz, 81-86 GHz

Wins for Satellite Sector

- 2.0 GHz of spectrum for existing and new High Throughput Satellite (HTS) systems for India
  - ISRO GEO – e.g. GSAT-11, GSAT-20 and more
  - Other GEO – e.g. IPStar, Inmarsat GX, Intelsat EPIC, SES-12
  - Non-GEO – e.g. O3b/mPower, OneWeb, StarLink
- Hundreds of Gbps of satellite capacity available to accelerate Connect India 2022 Goals under National Digital Communications Policy, 2018
- Invites additional satellite investment in India in 28 GHz, while preserving billions of dollars in such investments worldwide
- Increases broadband competition in India

"Second Best" Approaches to 28 GHz

Shared Use of 27.5-28.5 GHz by 5G and satellite

- Impairs satellite investments in GEO, MEO and LEO HTS systems
- May require exclusion zones to protect 5G and sharing rules for future earth stations
- Requires 5G power limits to protect satellite uplinks

2nd Best – Private 5G Only in 28 GHz

- Private / local 5G only in 27.5-28.5 GHz, with public 5G in 24.25-27.5 GHz and ubiquitous satellite above 28.5 GHz
- Low power levels and/or indoor use appropriate for private / local 5G deployments
- No protection for private 5G from satellite uplinks
  - No exclusion zones required
  - Future deployments of future earth stations not precluded by private 5G operations
- May preclude 28 GHz private 5G and satellite uplinks from being deployed in the same geographical area
  - Reducing options for broadband competition
  - Eliminating synergies for combining 5G and satellite

3rd Best – Coordinated Use of 28 GHz

- Co-primary, coordinated deployment of 5G and satellite uplink stations in 27.5-28.5 GHz, ubiquitous satellite above 28.5 GHz
- 28 GHz 5G and satellite uplinks cannot be deployed in the same geographic area
  - Lessening broadband competition
  - Eliminating synergies for combining 5G and satellite
- Exclusion zones (tens of kilometers depending on terrain) required around satellite uplink stations to protect 5G
- Skyward 5G power limits required to protect against aggregate interference into satellite uplinks
- Sharing rules to enable future earth stations to be deployed on a co-primary basis

Satcom Industry in India-Way Forward

- IMT requirement for 5G spectrum MUST be carefully balanced against the needs of other Users within ICT eco-system including the Satellite industry especially in Ka-band (27.5-29.5 GHz).
- The substantial level of investment undertaken by the satellite sector is placed at risk if there is regulatory uncertainty regarding the continued availability of the full band 27.5- 29.5 GHz of spectrum for used by broadband satellite networks.
- Continue C-Band (3.6-4.2 GHz) as possible available for deployment and use by the Satellite Industry for Media Broadcast services within India and the region
- Need of Hour; Center for Excellence for Satcom Design and Manufacturing under Atamnirbhar Bharat
- Govt. Polices implementation in Letter and Sprit.

Evolutionary Development for Atmanirbhar Bharat

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THANK YOU

www.sia-india.com

Also find us on:

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