

Spectrum and regulatory issues in preparation for WRC-23 Focus on LEO and GEO satellites issues and Wi-Fi in 6 GHz band

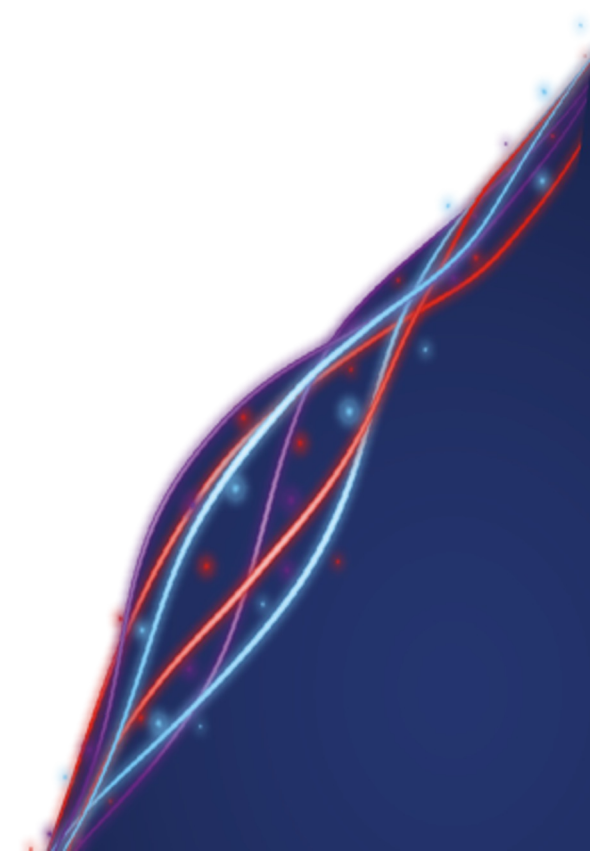
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Chairman, ITU-R Group on Private 5G

Chairman, APT Group on WiFi



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ABOUT ITU APT FOUNDATION OF INDIA (IAFI)

IAFI is a non-profit, non-political registered society supporting all telecom and IT sectors: 4G/5G, GSO /NGSO Satellites, WiFi, CNPN, etc.

IAFI is recognized by the ITU as an International/Regional Telecommunications organization

IAFI

Celebrating 20 Years

IAFI is a Sector Member of ITU-R, ITU-T and ITU-D and Affiliate member of APT.

IAFI is an active participant in ITU and APT study groups having submitted 30 contributions to ITU and APT in last one year

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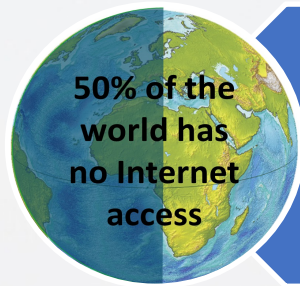
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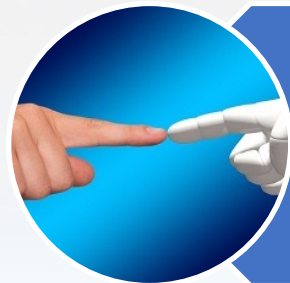
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NDCP-18 Objective was to provide Broadband for All by 2022

Over 40% of the country's population is yet to access any broadband connection



Over 40% of the population does not have access to broadband to meet their needs of education, health, commerce & farming



New satellite and Wi-Fi technologies can cost effectively connect this deprived population with broadband



However, the rollout of new Satellite and WiFi Technologies is hindered by Regulatory hurdles

BENEFITS OF MODERN SATELLITE COMMUNICATIONS

Truly global coverage

Works in all terrain, remote & Hilly Areas, Islands, Ships, Flights, etc.

Low latency and small size/ handheld terminals

High broadband speeds with HTS and LEO

Seamless and Ubiquitous mobility

Low cost – almost similar to terrestrial 4G/5G

OPPORTUNITIES FOR SATELLITES AND WIFI6E IN INDIA

- **Increased Broadband and Backhaul Connectivity:**
 - **Rural connectivity:** education, health, government, security/emergency, agriculture (e.g., backhaul BB, IoT, WiFi, LTE/5G backhaul)
 - **Urban connectivity:** complementing terrestrial security/emergency and broadband services (e.g., LTE/5G backhaul, DTH Broadband)
 - **Remote Connectivity:** Islands, Mountains and Deserts.
 - **Aero and Maritime:** passenger and crew broadband services, crew and airline communications, airline

OPPORTUNITIES FOR INDIA

- **Gateways deployment and operations**

- NGSO LEO constellation can have their feeder-link gateway in India and such gateway could make use of the technical and operational expertise of India.

- **User terminal manufacturing**

- NGSO operators need low cost manufacturing of Satellite User Terminals. Indian may offer the capabilities to support the NGSO operator in this endeavor.

- **Launchers**

- NGSO operator require flexible and small rockets to launch satellite batches of different sizes.
- India may consider offering launchers of such capacity compliant to global regulations

- **Access to Global WiFi software market**

WHAT CAN WE DO TO REMOVE REGULATORY HURDLES

- Immediate Spectrum assignments for GSO and NGSO gateway earth stations through administrative assignment.
- Time bound and clear process for satellite service license
- Published Process for ITU registration of Indian Private GSO and NGSO satellites
- Deregulations and easier rules for importation of satellite equipment and user terminals.
- Recognition of global ITU mandated equipment standards – e.g., through mutual recognition
- As LEO satellites increase in number, we should also be worried about space debris

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SATELLITE RELATED WRC-23 AGENDA ITEMS

- **Agenda Item 1.15:** *Ku band for GSO Earth Stations in Motion (ESIM)*
- **Agenda Item 1.16:** *Use of 17-19 GHz and 28 GHz bands by NGSO ESIM*
- **Agenda Item 1.17:** *Inter-Satellite Links in Ku and Ka Bands*
- **Agenda Item 1.18:** *New allocations for narrowband mobile-satellite systems*
- **Agenda Item 1.19:** *New Allocation for FSS Downlink in 17 GHz in Reg. 2*
- **Agenda Item 7:** *Satellite Regulatory procedures – in particular the date of bringing into use*

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WRC-23 AGENDA ITEM 1.2

- **Agenda Item 1.2** is for identification of a number of mid bands (3GHz, 6 GHz, 10 GHz) for IMT (ITU term for 4G/5G)
- The **band 6425-7025 MHz** is to be considered for IMT **only in Region 1 (EMEA)**
- In India this band is extensively used for satellite services including for provision of TV channels to cable head ends
- **WRC-19** has **already decided** there will **no IMT in this band in Region 3 (Asia Pacific)**
- Studies submitted by IAFI to ITU indicate that unrestricted outdoor usage of 5G services even in Europe would cause interference to satellite services in India and disrupt TV broadcasts
- It is recommended India should oppose IMT identification in Europe at WRC-23, as it could adversely effect our satellite services.

6 GHz band is extensively being used in India for TV up-linking and VSATs and impossible to be used for Mobile Cellular

(But can be used by low power Wi-Fi without impacting these services)

- Cable Headend & HITS uplink: Free-to-air & pay TV channels
 - **Over 900** satellite TV channels Including 300+ Pay TV channels
 - **1600 Registered MSOs with 117 Million subscribers**
 - **Almost 200 Million TV households in India**
- Large satellite earth stations (feeder links), used for trunk & heavy traffic
- Telemetry, tracking, and command (TT&C) uplink, used for monitoring & control of the satellites
- VSATs (deployed ubiquitously), primarily used by businesses, military and government applications. **~300,000 VSAT Terminals in C and KU bands:**
- Niche services such as feeder links for MSS, navigation satellites, satellites ranging, etc.

Globally many countries around the world have found the new Wi-Fi spectrum in 6-7 GHz band

- In the US, the FCC has allocated 5925-7125 MHz available for unlicensed shared use
- In Asia, Australia, Hong Kong, Japan, Korea, Malaysia have allocated 5925-6425 MHz for unlicensed use and are considering 6425-7125 MHz
- In Brazil, the table of frequency allocations was changed earlier this year to allow for the full use of the 5925-7125 MHz band by Wi-Fi.
- In Europe, CEPT has developed draft regulation with harmonized technical conditions for license-exempt LPI and VLP use of the 5925-6425 MHz band in response to a European Commission Mandate.
- UK has already held a national consultation on their plans to open the 5925-6425 MHz band for license-exempt use.
- More than 35 countries in the world have either allocated or considering the whole 6425 to 7125 Mhz for low power indoor unlicensed shared use.

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THANK
YOU

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