



PROMOTING COOPERATIVE SOLUTIONS FOR SPACE SECURITY

# “Orbital Slots and Spectrum Use in an Era of Interference”

Interference and Telecommunication  
Services

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# Presentation Outline

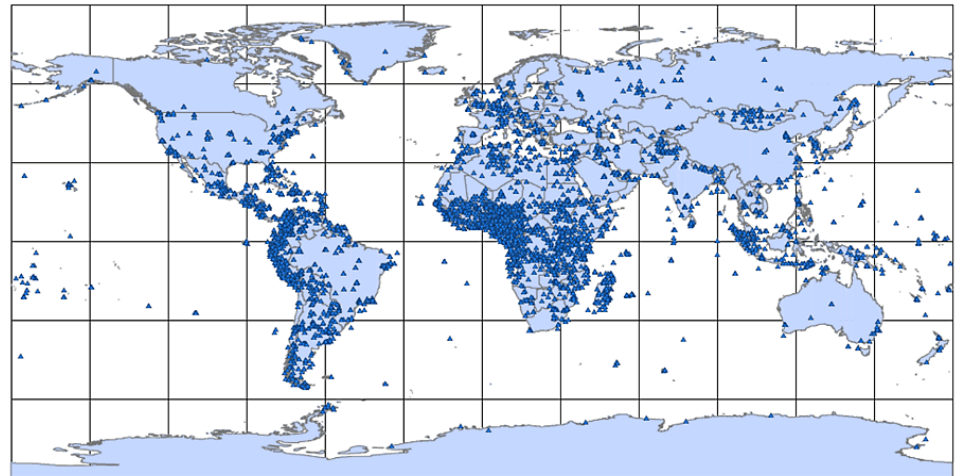
- Interest in C Band
- Sharing compatibility
- Consideration for the future of C-Band
- Conclusion

# Interest in C Band

- Satellite services in C band are very popular because of their resistance to rain attenuation, hence popular for critical services requiring high reliability such as:
  - Banks backhaul link
  - Defense
  - Health care
  - Emergency etc

Image from  
Satellite  
Spectrum Initiative

[http://satellite-spectrum-initiative.com/content.php?s\\_ID=27](http://satellite-spectrum-initiative.com/content.php?s_ID=27)



▲ Denotes a site that may include one or more stations

- Terrestrial services on the other hands have been looking for allocation in the C Band for IMT application since WRC-07.
- Though WRC-07 did not allocate C Band globally, some administrations adopted IMT opt-in footnotes in the band 3.4- 3.6 MHz
- WRC-15 A.I 1.1 seeks additional spectrum allocation for IMT on primary basis.
- Frequency bands identified in the scope of A.I 1.1 includes C Band

# Sharing compatibility between Fixed Satellite Services (FSS) and IMT in C Band

- Different studies have shown difficulties in sharing C Band with IMT.

## In Band sharing

- Studies show that the required separation can go up to 100 Km, and in some cases up to 500 Km (in case of sharing between FSS and IMT micro cells).
- Sharing of IMT-Advanced small-cell outdoor deployment scenarios the required separation go between 30 to 100 km.

## Adjacent Band Sharing

- the required separation distance is to tens of km for IMT-Advanced macro-cell
- Up to 5 km for IMT-Advanced small-cell outdoor deployments.

- Sharing between IMT and the FSS in C-Band is feasible **but** prior regulatory measures need to be taken to restrict IMT power within the separation distance.
- Additional measures like shielding or filtering can be used to reduce to reduce the separation distance.
- Sharing should also take into consideration the protection of current services and protect future deployment of the incumbent services in C-Band.

- The report of the WRC Conference Preparatory Meeting (CPM) on the sharing between IMT and FSS in C-Band further concludes that  
“ Deployment of IMT-Advanced would constrain future FSS earth stations from being deployed in the same area in the bands 3 400-4 200 MHz as shown by the studies.”

# Consideration for the future of C-Band

- Agenda Item 1.1 of the WRC seeks additional spectrum allocation for IMT

“1.1 to consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications.”



- Different methods have been provided in the report of Conference Preparatory Meeting (CPM).
- In deciding which method to satisfy the Agenda Item 1.1 of WRC-15 for C-Band, key rationales should include:
  - The justification of additional frequencies for IMT in C-Band
  - The protection of the incumbent services
  - Consideration of future deployment of incumbent services in the geographical area of interest

# Conclusion

- With the development of Broadband services, frequency Band with the capability of more reliability and coverage have experienced an increasing demand.
- Frequency Spectrum being a scarce resource, services seeking additional allocation should clearly justify the need for additional resources in the band of interest.
- In deciding whether to share C-Band between FSS and IMT, Administrations should first consider the protect of incumbent services.

**Thank you**