



India Spectrum Management Conference (ISMC-24)

Eutelsat OneWeb

7 November 2024

Agenda

- Eutelsat Group Overview
- Physical Sharing between NGSO constellations
 - Current Situation
 - Three Core Principles
- Spectrum Sharing
 - FSS 13.75-14 GHz Agenda Item 1.2
 - Advantages of NGSO FSS 13.75-14 GHz use
- Unauthorized operations of NGSO terminals Agenda Item 1.5



How it Works



Space

- 654 LEO satellites; orbital planes
- ~1200 km altitude
- Innovative beam technology
- Commercial service already started
- Low latency



User Terminal

500 MHz
Uplink

Ku band

2 GHz
Downlink

Spectrum

- 2.5 GHz of Ku band for Terminals
- 3.3 GHz of Ka band for Gateways



Ka band

2 GHz
Uplink

1.3 GHz
Downlink



Gateway

3.4m Antenna

Ground

- 50+ Gateways across the globe
- A range of UTs to meet varying markets
- Many can be easily installed
- Operations Centers in London and Virginia

Res. 74 Space sustainability - Current Situation

Exploring new orbits, from a GEO dominated space environment to a multi-orbit dominated one. Currently exploring LEO space environment where:

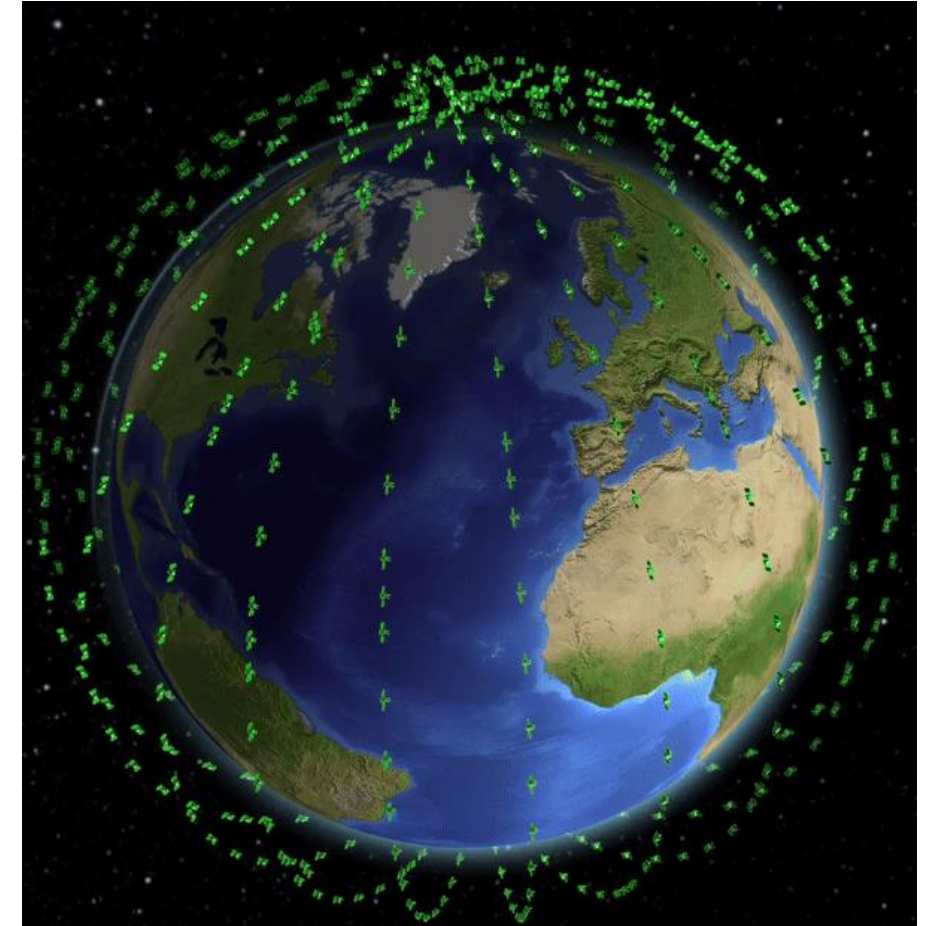
- Easier to reach (launch) & cheaper platforms
- Dynamically more complex environment
- Much faster-paced context, commercially, technically and physically

Importance of STM (Space Traffic Management) during servicing phases but even more importantly, during **transit** (ascent/deorbit).

OneWeb - 654 sats. Injection at ~450km, service altitude at 1200km.

Thousands of sats around the 450-1200km altitude regime to follow:

- Constellations from SpaceX, Kuiper, Telesat, Rivada, Shanghai Spacecom Satellite Technology, China Satellite Networks Limited...



Physical Sharing – Three Core Principles

1. Maintain quality predicted ephemerides and spacecraft manoeuvrability **status information** for the organisation's vehicles, and regularly **update** this information with the chosen Collision Avoidance (CA) screening authority
2. Perform rapid and reliable CA **risk assessment** to identify high-risk conjunctions that require proactive mitigation
3. Pursue adequate mitigation actions to avoid high-risk conjunctions and ensure that these are properly and transparently **coordinated**

Outstanding Question: How do we share ephemeris data and plan manoeuvres between international operators?

Some SSA (Space Situational Awareness) platforms that Eutelsat Group actively uses:

LeoLabs

SpaceTrack

See <https://oneweb.net/about-us/responsible-space>

Spectrum Sharing - FSS 13.75-14 GHz WRC-27 Agenda Item 1.2

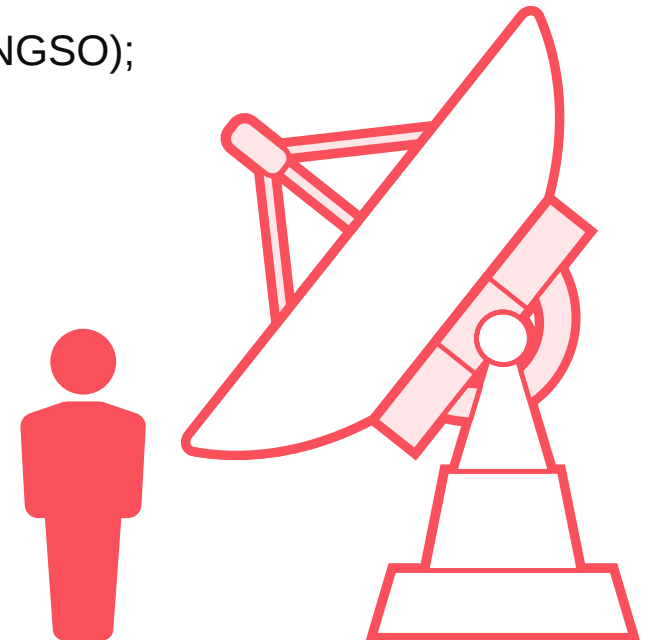
Currently EutG uses the frequencies from **14 to 14.5 GHz** for its User Link Uplink



- The band is shared with **Radiolocation** on a primary basis, and **Space Research Service** on a secondary basis, imposing technical limitations to balance operational needs of existing services
- The current minimum size of the earth station antenna (1.2m for GSO and 4.5m for NGSO);



Different antenna sizes



4.5-meter antenna

Advantages of expanded NGSO FSS use of 13.75-14 GHz

1. Equipment Compatibility and Infrastructure

- Shared hardware
- Transmitter/receiver tuning

2. Spectrum Reuse

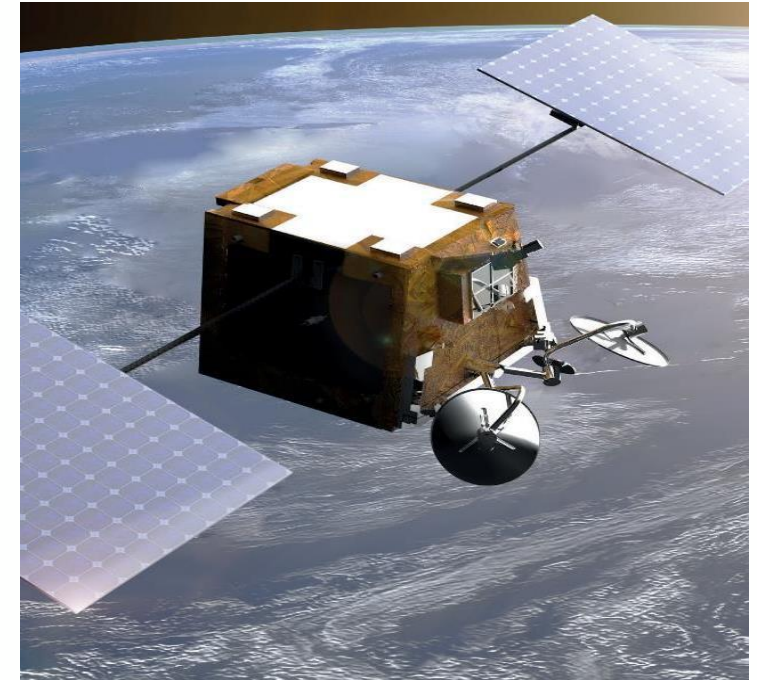
- Similar propagation characteristics
- Regulatory ease
- Additional spectrum to accommodate increasing number of operators

3. Operational Continuity

- Smooth transition

4. Cost Efficiency

- Lower CAPEX:



Required Studies:

- Technical and operational studies to evaluate the impact of smaller antennas in the 13.75-14 GHz band.
- Examination of coexistence conditions between FSS and primary/secondary services (RLS and SRS) to propose necessary regulatory adjustments.

Agenda item 1.5: Unauthorized use of earth stations transmissions

- **Regulatory Frameworks:**
 - Existing regulations (Article 18 of the Radio Regulations) require licensing and authorization for transmitting earth station operations.
 - Resolution **22 (Rev.WRC-23)** and Resolution **25 (Rev.WRC-23)** emphasize the need for measures to limit unauthorized transmissions and ensure compliance.
- Any possible additional measure should not adversely affect the provision of service of the non-GSO satellite system. It will be important to also analyze the corresponding **potential negative impacts** of such measures such as increased costs and complexity for existing and future satellite systems.
- Focus on **limiting unauthorised earth station uplink operations**. OneWeb has the capability to switch off its terminals when entering a non-authorised area (other operators have this capability too!).



Thank you!

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