



Shure Eutelsat Group Slides

1st November 2024

Agenda

- Physical Sharing between NGSO constellations
 - Current Situation
 - Three Pillars of Operational Excellence
 - Space Sustainability
- Spectrum Sharing
 - FSS 13.75-14 GHz Agenda Item 1.2
 - Advantages of NGSO FSS 13.75-14 GHz use

Physical Sharing – Current Situation

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

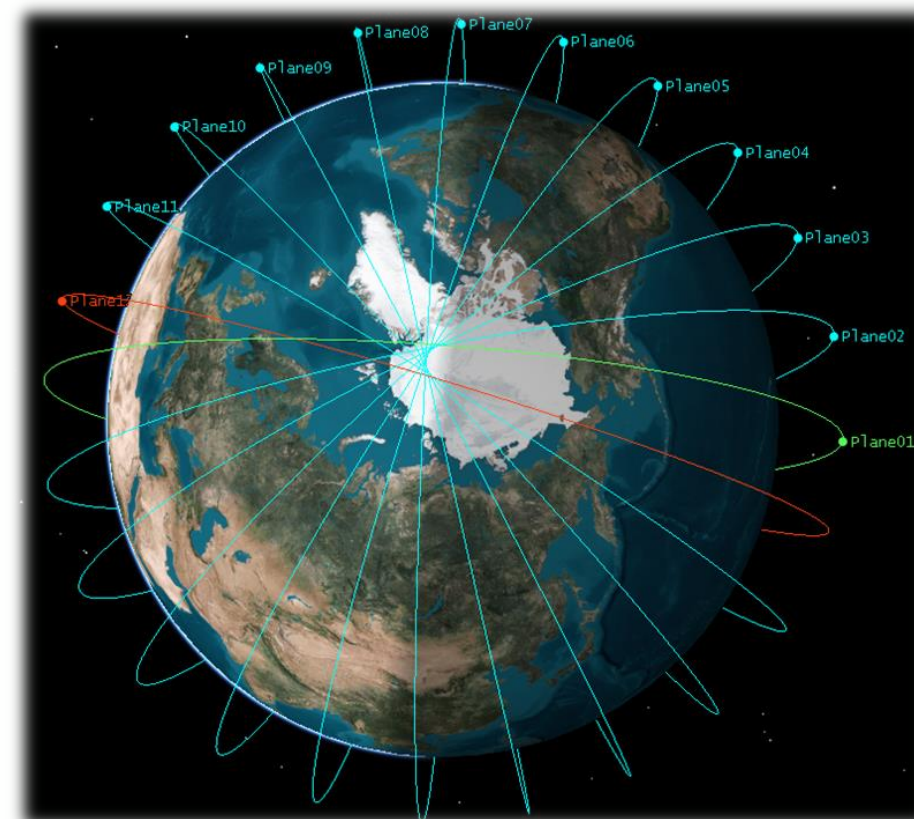
- Easier to reach (launch) & cheaper platforms
- Dynamically more complex environment
- **Much faster-paced context, commercially, technically and physically**

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...



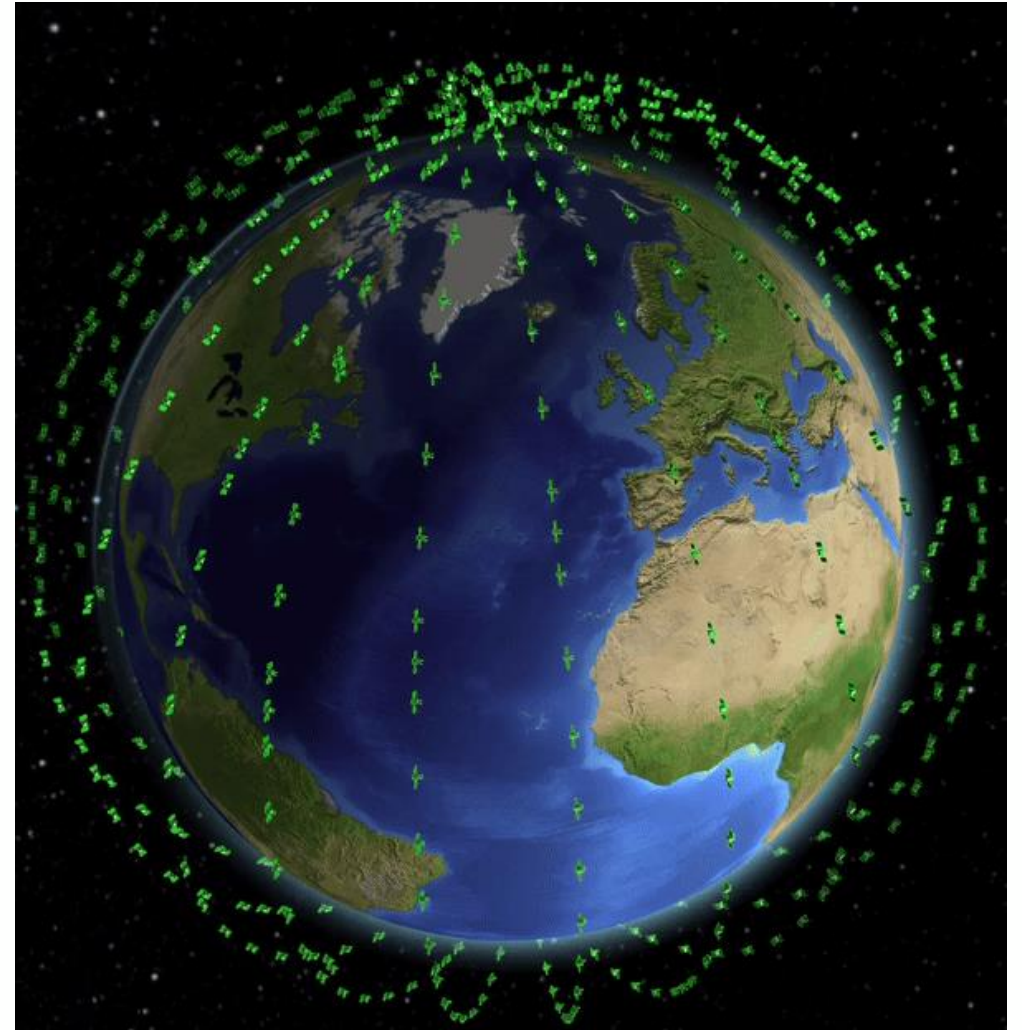
Physical Sharing – Three Core Principles

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**

Physical Sharing – Space Sustainability

- Responsible Space Commitment
 - Space Situational Awareness is highest priority
 - Transparent Space Traffic Management and coordination among largest operators
- **Outstanding Question:** How do we share ephemeris data and plan manoeuvres between international operators?
- Some SSA 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

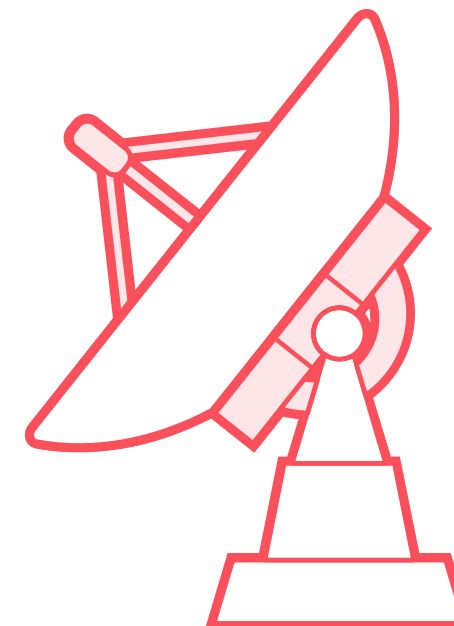
Currently EutG uses the frequencies from **14 to 14.5 GHz** for its User Link Uplink



- 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

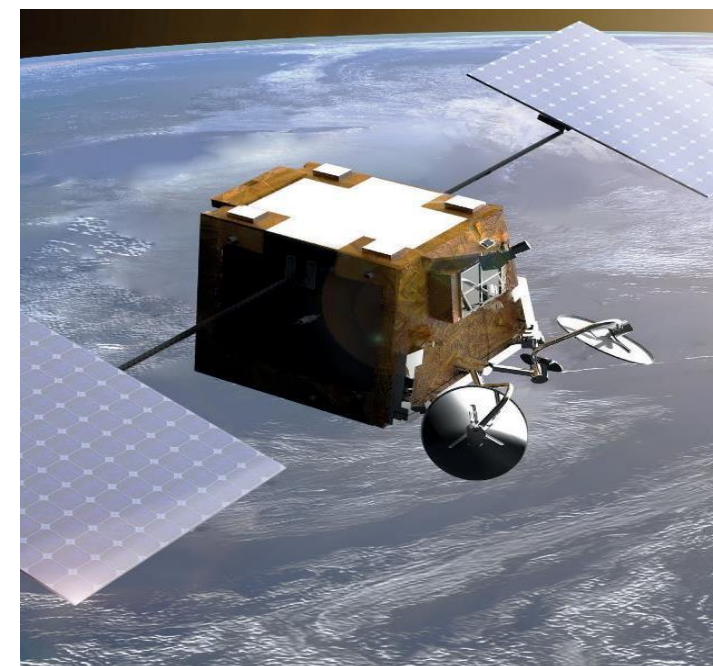
- Smooth transition

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.





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