

Session 2: Satellite Spectrum Roadmap in India

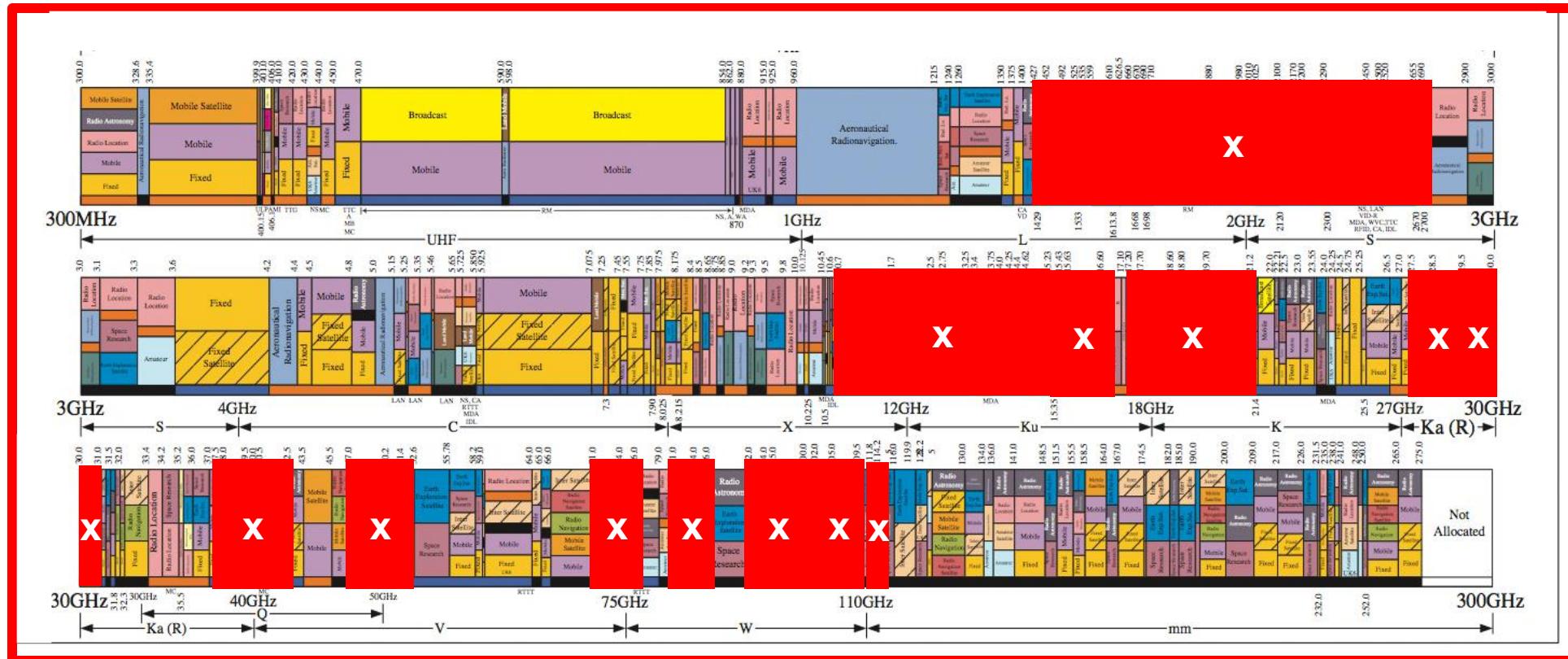
Spectrum Access, Spectrum-Orbit Security & Competition

New Delhi, December 2025



What is at stake – Spectrum, orbits themselves & access for NGSO newcomers

- NGSO Spectrum and Orbital resources overconsumed: FSS spectrum access no longer reliable
- Two LEO mega-constellations with a combined plan of over 50,000 satellites, spread across 444 km of the best orbits in LEO (250-700 km) with millions of beams and occupying 51 GHz of spectrum
 - *With virtually all satellite spectrum below 100 GHz and vast swaths of terrestrial mobile spectrum*
 - *Including over 20 GHz to be considered for new or enhanced purposes at WRC-27*



Seeking to dominate spectrum-orbit resources and markets

A real risk of monopoly or duopoly

THE WALL STREET JOURNAL.

EXCLUSIVE TELECOM

SpaceX Wields Power Over Satellite Rivals to Boost Starlink

Elon Musk's space company asked rival satellite operators to cede valuable spectrum rights during talks to negotiate launches

By [Emily Glazer](#) [Follow](#), [Dana Mattioli](#) [Follow](#) and [Micah Maidenber](#) [Follow](#)

Oct. 9, 2024 at 10:16 am ET



The screenshot shows a news article from Viasat. The header includes the Viasat logo (a yellow square with three horizontal lines) and the word "Viasat". There is a "Search" bar and a "Connectivity" category. The main title of the article is "Amazon CEO on Kuiper: There Will Be 2 Players in LEO". The article is by Rachel Jewett and was published on August 1, 2025. Below the article are social media sharing icons for Facebook, X (Twitter), LinkedIn, and Print, along with a Plus sign for sharing.

ViaSat

Search

Connectivity

Amazon CEO on Kuiper: There Will Be 2 Players in LEO

By Rachel Jewett | August 1, 2025

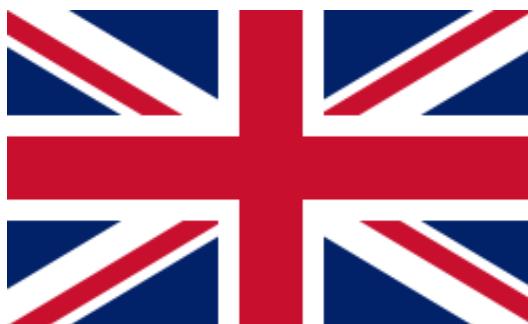
[Facebook](#) [X](#) [LinkedIn](#) [Print](#) [+](#)

International Policy Reactions – regulation



- › **Draft EU Space Act (2025)**
- › Aims to remedy some of the significant issues posed by large-scale NGSO systems
- › Seeks to address the safety and market risks related to large-scale NGSOs with specific attention to systems larger than 1,000 satellites
- › Recognises that large-scale NGSO constellations are increasingly becoming systems that augment the risk profile of space operations. Imposes obligations on large-scale NGSO systems

<https://epthinktank.eu/2025/09/22/eu-space-act-eu-legislation-in-progress/>



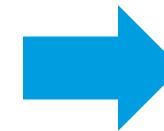
- › **UK Parliamentary Report (2025) “Act Now or Lose Out”**
- › Highlights the growing “spectrum grabbing” issues posed by large-scale NGSO systems
- › *“...the current policy approach was created before the world took a very different turn geopolitically” and “before we had the rise of mega constellations and very strong players monopolising various parts of the global space industry...”* (p.20)

Increasing large-scale NGSO interference in FSS spectrum bands would block competitive responses from GSO/Multi-Orbit operators and smaller or local NGSO constellations

LEO Mega-constellation offering



Limiting GSO/ Multi-Orbit operators & smaller NGSO constellations speeds, airtime prices, and user terminal sizes

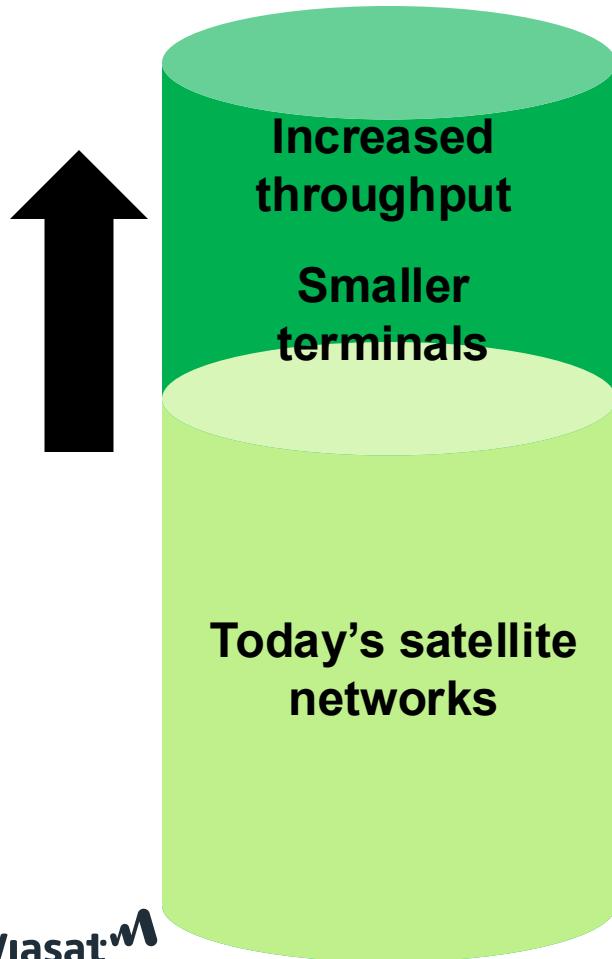


Increasing large-scale NGSO interference allowance would allow a narrow set of large-scale LEOs to avoid competition from innovative new GSO/ Multi-Orbit, smaller NGSO and local NGSO technologies:



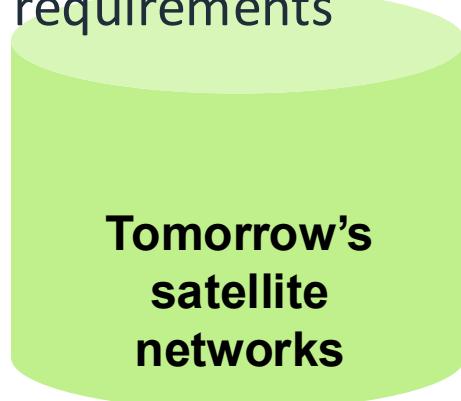
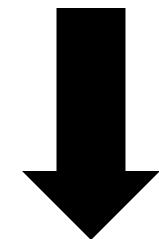
Proposals from two Large-Scale NGSOs to degrade EPFD ITU Rules in FSS: Hobble Competition from GSO/Multi-Orbit and Small NGSO Systems

Under long-standing rules



SpaceX/Amazon proposal

- › Significantly more interference
 - › Degraded throughput – Double the capacity loss
 - › Degraded availability – Absolute reduction in mission availability
- › Technology advances stifled
- › Other systems constrained in meeting requirements



Critical GSO/ Multi-Orbit operations – search and rescue, eye in the sky, in route command and control, HoS transport

Large-scale NGSO issues in FSS must be resolved before more FSS spectrum is opened up or modified for NGSO use at WRC-27

WRC-27 Agenda Item	Issues
AI 1.1	Existing Q/V band GSO-NGSO framework does not contemplate ESIM operations, which in the case of aeronautical and maritime ESIMs, occur without the same level of rain attenuation that is otherwise assumed to exist under the existing Q/V band approach. As a result, interference towards GSOs is underestimated
AI 1.2	Removing the limitations on the minimum earth station size of an NGSO system and consequential deployment of smaller earth stations in this band would further constrain NGSO-NGSO sharing environment, exacerbate look angle blocking by mega-constellations
AI 1.3	Existing GSO-NGSO framework in adjacent band should not be reflexively extended to 51.4-52.4 GHz. <ul style="list-style-type: none">• It underestimates the interference caused by NGSOs and its impact on GSO service level agreements (SLAs),• It is incomplete, and;• Due to its reliance on GSO reference links in Radio Regulations and S.1503, does not provide limits to protect GSO operations outside worst-case geometry
AI 1.4	Existing single-entry and aggregate EPFD limits must be applied in this band, ITU coordination inadequate for NGSO-NGSO sharing. Needs to consider how to apply aggregate limits, which is yet to be resolved.

There are many and significant **unresolved** technical and policy **issues** with large-scale NGSO systems

WRC-27 is critical to ensure opportunities for growth and innovation **are available to all.**

Thank you