Integrating 5G NB-IoT into India's Satellite Spectrum Strategy
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We are the **first 5G NB-IoT telecom operator from space** providing standard-based, low-cost and global connectivity, implementing **roaming agreements** and working as an extension of the local **MNOs** current footprint.

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Context:

Rural connectivity in India still faces coverage and costs constraints

- India's telecom operators have achieved broad 4G coverage, but NB-IoT availability remains limited, concentrated primarily in urban and semi-urban zones.

- Extending terrestrial IoT networks into remote areas is capital-intensive, especially across agricultural belts, forests, deserts, mining regions, and maritime zones.

Critical sectors need continuous, low-cost, wide-area IoT connectivity.

SATELIOT's value proposition

Standards-based satellite IoT aligned with India's ecosystem

Operator-centric, not competitive *(wholesale approach)*

Nationwide massive IoT at minimal incremental costs

Complements existing government and private-sector connectivity initiatives

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Why NB-IoT requires a distinct spectrum approach

NB-IoT is a narrowband, low-interference, standards-based service that is **fundamentally different** from broadband NGSO systems and therefore warrants a **distinct, proportionate spectrum framework** within India's satellite roadmap.

Bandwidth and interference considerations
- NB-IoT NTN uses kilohertz-level narrowband channels
- Minimal interference footprint; high coexistence potential

Network and service architecture
- Sateliot's NB-IoT is **B2B/wholesale**, integrating via MNO cores
- Not a direct-to-consumer broadband service
- Lower regulatory & security complexity than broadband satellite

Power and terminal characteristics
- Devices use existing NB-IoT chipsets and low power levels
- Fundamentally different from broadband NGSO terminals

Socioeconomic impact profile
- Massive IoT enables millions of low-cost, high-development-value connections
- Warrants a proportionate, lighter-touch framework relative to broadband NGSO

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- Existing MSS service link allocations are congested and often locked by legacy systems.

- Despite increasing market demand, LDR MSS systems are often unable to secure spectrum rights due to these limitations, delaying service roll-out and regional integration.

AI 1.12 - Four bands are being studied for potential LDR MSS NGSO allocations

1 427–1 432 MHz (space-to-Earth) - Requires careful consideration of adjacent passive services (radio astronomy, EESS).

1 645.5–1 646.5 MHz (Earth-to-space) - Offers a narrow MSS segment but may be viable due to low duty-cycle transmission patterns (IMO GMDSS considerations).

1 880–1 920 MHz (bi-directional) - Sits adjacent to IMT systems and requires compatibility studies with mobile terrestrial services.

2 010–2 025 MHz (bi-directional) - Already allocated to MSS in some regions but is often constrained by legacy coordination filings.

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A proportionate licensing framework for NB-IoT NTN

Licensing NB-IoT NTN under a **light-touch, service-appropriate framework** enables rapid, affordable IoT expansion across India without the complexity of broadband satellite rules.

Tailored landing rights for narrowband IoT services

Because NB-IoT NTN is a narrowband, low-interference, machine-type service, it is suited to a lighter, service-appropriate landing rights framework, including administrative Spectrum pricing for this technology

Standard NB-IoT devices are not traditional satellite terminals

NB-IoT NTN uses the same low-power NB-IoT modules already deployed terrestrially in India, so device approval can follow existing NB-IoT certification pathways without satellite-specific terminal licensing.

Flexible gateway & integration requirements

Sateliot connects through virtualized roaming interfaces with MNO cores, meaning gateway requirements can remain flexible and need not follow traditional broadband satellite models.

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National-scale use cases enabled by NB-IoT

MARITIME

IoT would boost its potential to **increase trade flows** but always keeping the assets and containers secured and tracked.

CROPS & LIVESTOCK

Applying smart farming would help achieve more **efficient** and **sustainable** production, also increasing sustainable production of smallholder farming communities and their **livestock production** by **monitoring** the animals conditions and their needs.

RAILWAYS AND ROADS

Enable tracking of trains and vehicles, support efficient traffic management, and provide **critical data for infrastructure** planning and maintenance, improving operational efficiency and safety while reducing environmental impact.

MINING

Satellites provide the mining industry with **critical data for exploration**, monitoring, efficiency and sustainability.

ASSET TRACKING

Using IoT-enabled **tracking** devices, to track not only the **containers**, but **assets** in general, monitoring its condition and **ensuring security**.

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A call to partnership

A unified licensing pathway integrating landing rights, gateway approvals, spectrum assignment, and service authorization would accelerate global operators' participation and improve India's positioning as a satellite innovation hub.

- A distinct, proportionate framework for NB-IoT NTN will enable India to seamlessly adopt standardized satellite IoT as part of its broader 5G and emerging 6G ecosystem.

Working with Indian MNOs to extend nationwide IoT coverage

- Sateliot's roaming-based model complements—rather than competes with—Indian operators, enabling low-cost IoT reach into rural, remote, and maritime areas.

Supporting India's national digital priorities

- NB-IoT NTN can accelerate progress in agriculture, logistics, disaster resilience, maritime safety, and environmental monitoring—areas central to Digital India and Viksit Bharat 2047.

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Because a **connected world** is a **better world**

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