



Infinite Mobility: Hybridizing LEO Satellites with Terrestrial Networks for Maximum Coverage

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Canada's Coverage Gap Problem

More than **70%** of Canada remains unserved - - including along major highway corridors

This represents a key limitation in the deployment of 5G services and a digital discrimination factor for people who live, work or travel in those unserved areas

Being connected and safe is no longer an option, it's a necessity



The Emerging Hybrid Solution: NTN D2D Satellite

Non-Terrestrial Network (NTN) Direct-to-Device (D2D) services let standard, unmodified smartphones roam or connect directly to satellites using cellular protocols.

Mobile Operators add GEO satellite and/or LEO constellations as space-based extensions of their mobile networks, so phones attach automatically when terrestrial coverage is unavailable – no special handset or app required

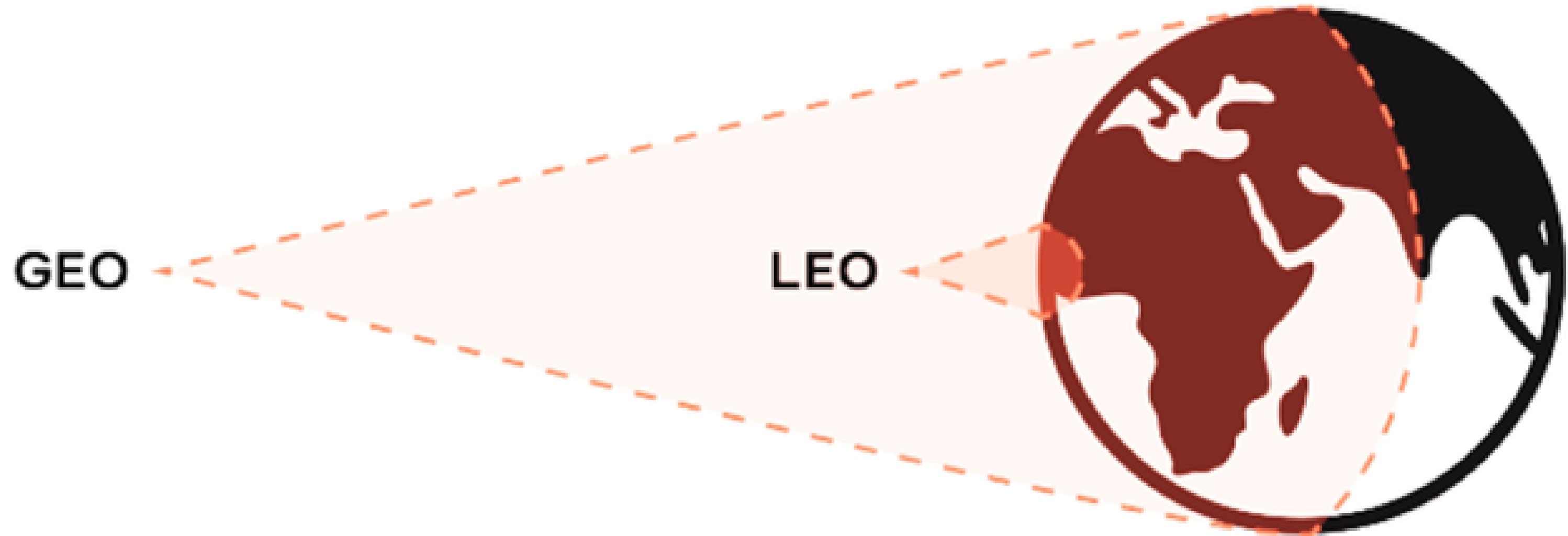
Ubiquitous Coverage – eliminates persistent dead zones across remote land, oceans, mountains, and rural areas where building cell towers is uneconomical

Emergency Lifeline – keeps SOS, messaging, and voice reachable during disasters, power outages, and off-grid travel when terrestrial networks fail

Hardware-Free Adoption – works with everyday 4G/5G smartphones; users keep their phone number, plan, and apps through their existing carrier

Seamless Extension – integrates terrestrial and satellite under one subscription, switching transparently to deliver continuous service anywhere

Why is Low Earth Orbit (LEO) important?



LEO vs GEO

- LEO operates closer to the earth (~350-700 km) than GEO (36,000 km) - - providing better technical performance but requiring many more LEO satellites for coverage (100x)
- LEO delivers ~1000x better technical performance than GEO - - but 1000x less than cellular... LEO is complementary - - it will NOT replace cellular and will not work indoors
- LEO has lower latency than GEO (similar to cellular) - - therefore better for voice calls

Consumer Benefits of 5G NTN LEO

1. Seamless Connectivity Everywhere

Your existing smartphone connects directly to LEO satellites when no cell tower is nearby – no special equipment needed. Whether hiking, traveling, or in areas with poor coverage, you stay connected for calls, texts, and data

2. Low-Latency, High-Speed Experience

LEO satellite orbits are typically between 350 – 700 km above Earth, delivering round-trip latency of 20–40 ms – comparable to terrestrial 4G. This enables smooth video calls, real-time streaming, and responsive browsing from virtually anywhere

3. Enhanced Safety and Emergency Access

NTN LEO provides a critical lifeline in emergencies by maintaining connectivity in disaster zones, remote wilderness, and maritime environments where terrestrial networks are unavailable

Benefits for Rural & Remote Communities

1. Bridging the Digital Divide

5G NTN LEO extends reliable broadband to communities where building cell towers is economically unviable – mountains, islands, arctic regions, and sparsely populated areas. Geography no longer determines access to connectivity

2. Enabling Seamless Mobile Connectivity, Telemedicine and Digital Education

Remote users gain access to real-time telehealth consultations, remote diagnostics, and digital learning platforms. LEO's low latency supports interactive video sessions that were previously impossible with legacy satellite services

3. Supporting Local Economic Growth

Farmers access real-time weather, soil, and logistics data for precision agriculture. Local businesses connect to digital marketplaces. Emergency responders maintain reliable communications during wildfires, floods, and other natural disasters

NTN D2D Commercial Availability in Canada

- **Satellite SOS:**
 - 2023 Apple iPhone – Globalstar (iPhone 14 consumer launch)
 - 2025 Galaxy S25 and Pixel – Skylo (Terrestar Echo T1 GEO)
- **D2D SMS:**
 - 2024 Apple iMessage via Globalstar (iOS 18, Canada consumer)
 - 2025 Rogers Satellite – SpaceX/Starlink Direct-to-Cell SMS
 - 2026E Terrestar GEO Direct-to-Cell SMS
- **5G NTN Voice:**
 - 2026E Rogers Direct-to-Cell voice via Starlink (Canada commercial)
 - 2026E Terrestar GEO SatCompanion voice
 - 2027E broad 3GPP Rel. 20 voice rollout (Canadian tier-1 carriers)
- **5G NTN Data:**
 - 2026E Rogers Satellite – Starlink D2D app data (Canada nationwide)
 - 2026E Iridium NTN Direct 5G NB-IoT (Canada IoT commercial)
- **5G NTN Gen 2:**
 - 2027E Rogers/Starlink Gen 2 5G NTN direct-to-cell broadband (5G speeds)
 - 2028E AST SpaceMobile BlueBird Gen 2 5G NTN (via Canadian MNO partners)



Rapidly evolving Ecosystem

*We are on the path to a truly
‘Cellular-like’ Canada-wide
Hybrid 5G service*

2025

Strigo App + SatCompanion development
NB-IoT deployments on T1 GEO

2026

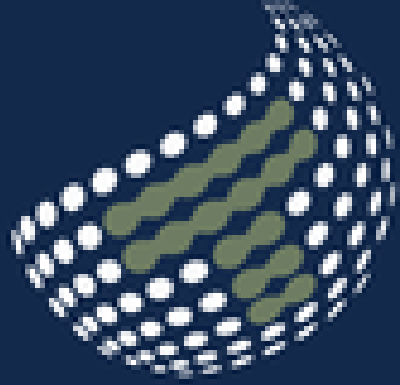
Rogers Satellite (Starlink) Text + Apps
Terrestar GEO Service + SatCompanion

2027

Rogers (Starlink Gen2) D2D Talk/Text/Data
Canadian MNO rollout (initial-intermittent)

2028+

NTN LEO Constellation(s) deployments
Terrestar CaStar LEO + Arctic coverage



Terrestar
solutions

THANK YOU

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