

Usage of Satellite Technologies in Mobile Communications: Regulatory Considerations

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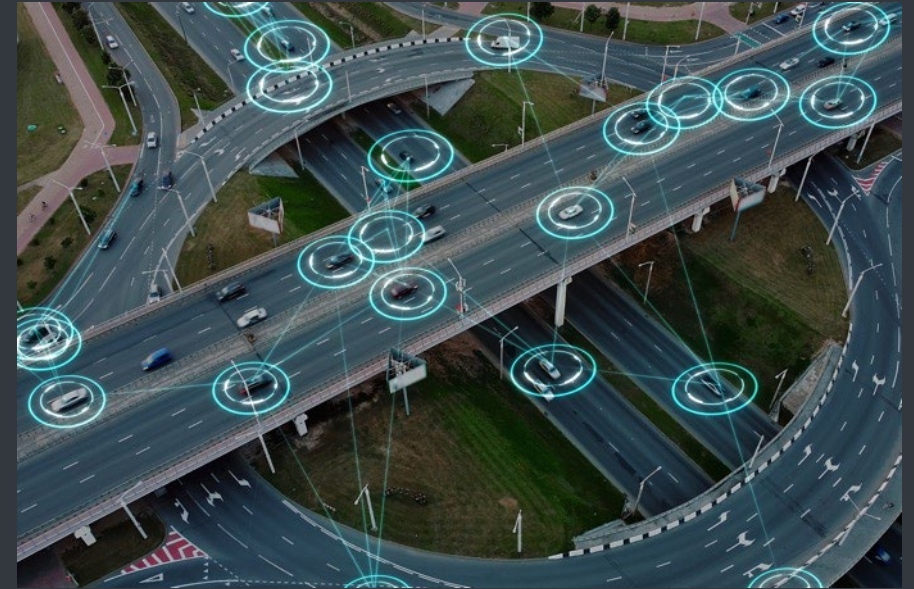




Iridium's Plan for 5G NB-IoT

We will implement 5G NB-IoT on our current constellation because:

- Our satellites are flexible and programmable
- Our intersatellite links will allow low latency and global coverage – advantages compared to new smallsat networks & geostationary alternatives
- Our solution will allow for global coverage at launch versus regional shared terrestrial spectrum solutions
- It takes advantage of our \$3B Iridium NEXT investment and network lifecycle (projected to operate through at least 2035)



PROJECT STARDUST

Bringing the reach of the Iridium network to the global market

Standardizes Iridium waveform as part of 3GPP, allowing chipmakers to enable Iridium NB-IoT on devices with zero incremental cost in BOM



IRIDIUM SATELLITE

Allows Iridium to address the standardized global IoT and direct-to-device market



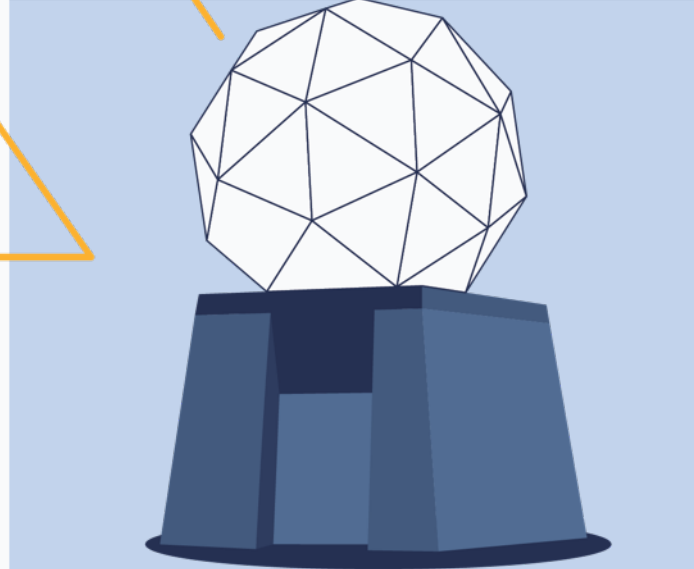
IRIDIUM® AND IRIDIUM CONNECTED™ PRODUCTS



INTERNET



CELLULAR MOBILE NETWORK



IRIDIUM GATEWAY



Stardust Key Applications & Use Cases: Satellite Specific



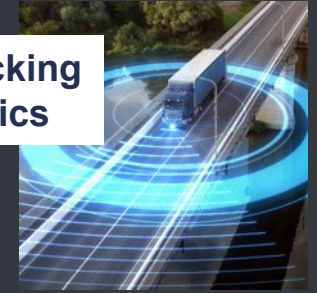
Utility & Infrastructure



D2D & Personal Comms



Asset Tracking & Logistics



Automotive



Climate & Environment



Agriculture



Project Stardust will support 5G IoT-NTN for Safety, Messaging and IoT



Satellite D2D – Regulatory Challenges. Or Not?

There are two distinct models for D2D communications:
MSS Spectrum and / or Terrestrial MS Spectrum

Satellite MSS D2D

- Can start services today
- Always via MSS spectrum
- Regulatory framework is already in place
- No additional spectrum studies needed. Frequency bands are not shared with roaming partners
- No international boundaries
- No regulatory actions needed

Satellite Terrestrial D2D

- Agreements between satellite and terrestrial operators in each country
- Addressing cross-border interference
- ITU satellite coordination is essential to negotiate power levels
- In support of WRC-27 Agenda item 1.13, the ITU will undertake studies for possible new MSS allocations within terrestrial IMT frequency band

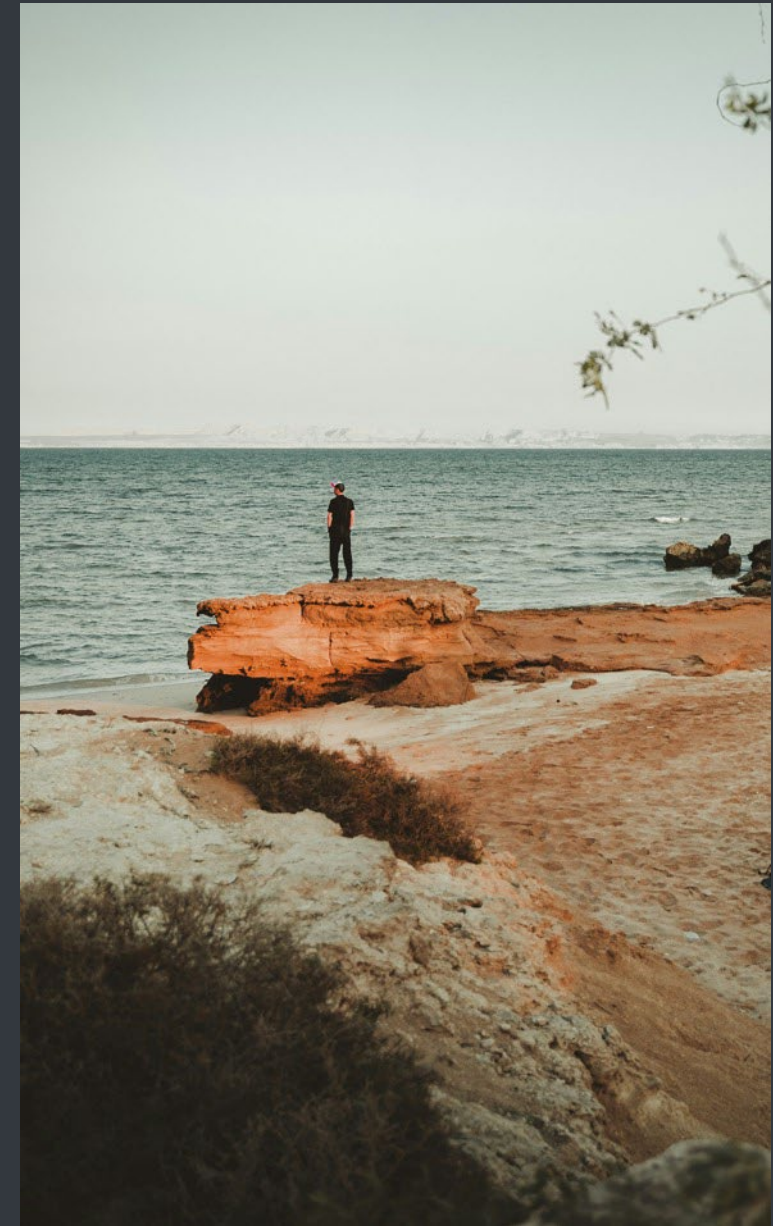


When creating or assessing regulatory frameworks, it is imperative to not apply unneeded regulations or regulatory barriers to fast developing D2D solutions



3GPP, ITU IMT-2020

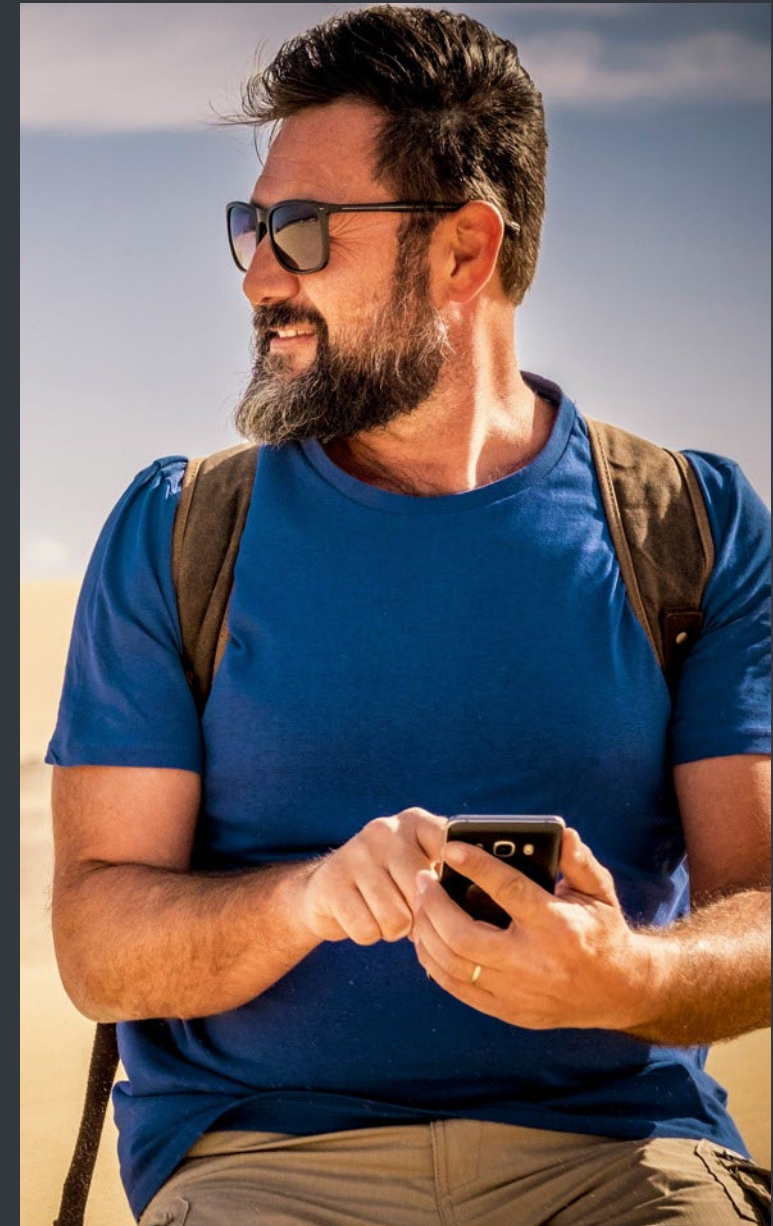
- 3GPP connectivity have opened an opportunity for terrestrial communication service provider to cooperate with satellite operators to create a global non-terrestrial network (NTN) ecosystem
- Integration of TN and NTN a step towards enhancing mobile broadband to consumer handsets and IOT devices
- 3GPP releases drive ITU's work on the satellite component of IMT
- 3GPP and ITU processes are complementary
- 3GPP and IMT-2020 and IMT-2030 provide regulatory certainty





Additional Regulatory Considerations

- Increasing demand for satellite D2D
- Terrestrial services cover ~15% of the globe;
- How to find a balanced approach to bring innovative services to countries and not create regulatory barriers
 - Local gateway
 - Local presence requirements
 - Emergency service (machine-to-machine, human involvement)
 - Roaming – no need to address interference for MSS D2D, the frequency bands have been already allocated/coordinated through ITU procedures, MNOs will roam into satellite network
 - Lawful intercept





Thank You