

RAN Plenary 91-e  
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# NTN-IoT – An Opportunity for 3GPP

Source: Hughes/EchoStar, Eutelsat, Inmarsat, Intelsat, Ligado, Sateliot, Kepler, Gatehouse, Novamint, ESA, Avanti, Hispasat, University of Bologna

# Satellite Industry

- Satellite offering feasible/viable solutions to complement terrestrial networks for global IoT deployment
- Growing investment in satellite industry
- Recent public live trial validated key Release 17 proposed IoT NTN adaptations over existing GEO and LEO satellites [1][2]

[1] [RP-201702](#), “Demonstrating NB-IoT viability for Satellite use”, Inmarsat, MediaTek Inc. Institute for Information Industry – September 7<sup>th</sup>, 2020

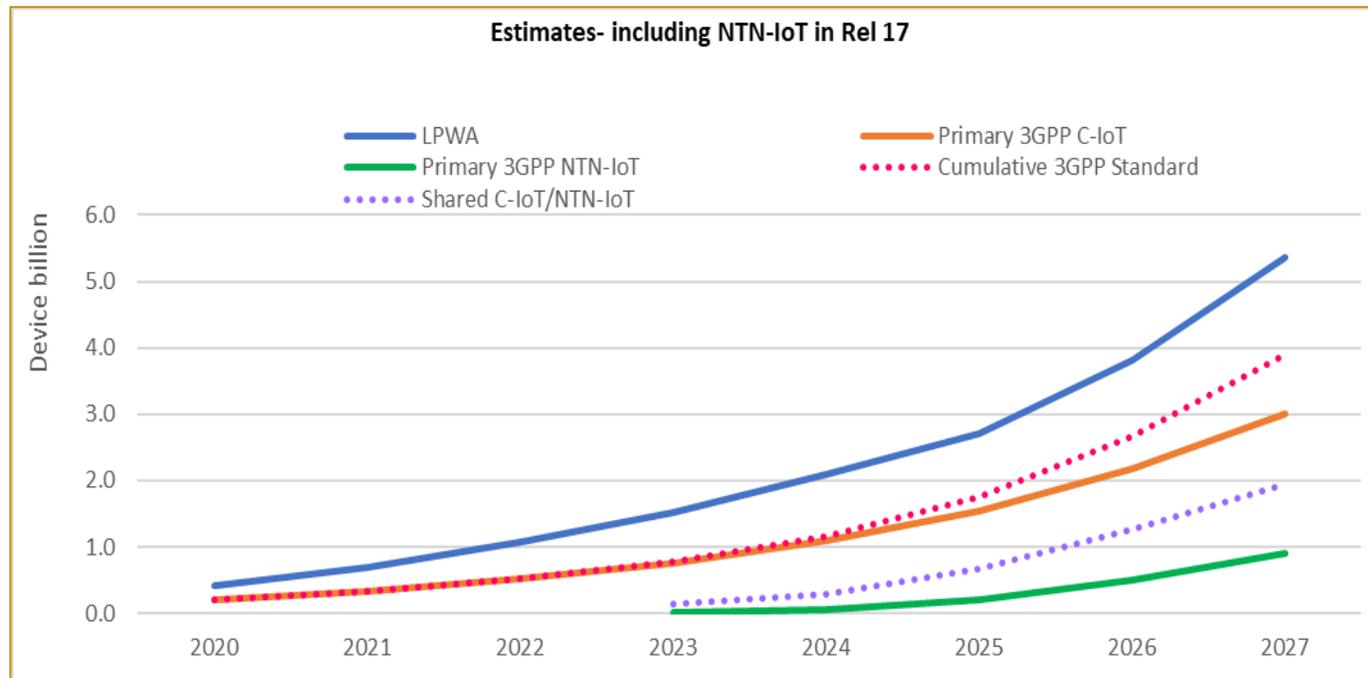
[2] [R1-2007882](#) “NB-IoT Waveform Tests over LEO Satellite” – October 26<sup>th</sup>, 2020

# Urgent Market Need for Standards-Based NTN IoT

- 3GPP CIoT is a well established technology in cellular networks
  - Lack of global coverage and international roaming are main causes slowing down further mass adoption [3]
- “Digital divide” for low data rate services worldwide
  - Expanding access to a variety of IoT applications to help mitigate inequality
- Increased global demand in established verticals and consumer markets
  - Rapidly emerging markets to meet new challenges – e.g., climate change, medical, environmental monitoring...
- COVID-19 has had a major impact on 3GPP timeline
  - Satellite constellations being deployed today without the assurance of a timely 3GPP solutions
  - Acceleration of non-3GPP IoT solutions uptake risk 3GPP market – e.g. Sigfox, LoRa...
- Standardized NTN IoT solution needed in Release 17
  - Fully leverage standards-based economies of scale
  - Mutual benefit to cellular and satellite ecosystems
  - Meet demand for IoT applications with global coverage

[3] <https://the-mobile-network.com/2020/11/nb-iot-rollout-good-but-not-good-enough>

# Potential Growth in NTN-LoT



- Estimated 5 Billion LPWA devices by 2027 of which about 3 Billion will be connected via C-LoT
- **With NTN-LoT in Rel-17**, there will be a substantial increase in devices connected through 3GPP Standard
- Shared benefit to cellular and satellite ecosystems

## References:

[1] IoT Business News: <https://iotbusinessnews.com/2020/11/20/03121-global-iot-device-connections-to-reach-11-7-billion-in-2020-surpassing-non-iot-devices-for-the-first-time/>

[2] Ericsson Mobility Report, November 2019

[3] ABI Research

# Recommendations

- RAN to specify NTN IoT solution in Rel-17 – A satellite ecosystem cannot wait until 2024
- First release for NTN IoT can be minimum working solution without optimization
- Eventually a spectrally-efficient full NTN standard for the mass market should be the goal, but first a working solution is required urgently