

The IoT Connection.2024.v2: Hyperconverged TMT Networks... Space + Terrestrial Multi Play

D2D: the standard approach – already a reality
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3GPP & NTN



- 3GPP is working on satellite/NTN since 2017 (Rel-15)
- Lead to 2 key activities:
 - NR NTN (mobile broadband and more)
 - IoT NTN
- Satellite is addressed across all stages and all groups of 3GPP
 - SA1 – Service Requirements
 - SA2 – Architecture
 - RAN (1/2/3), RAN 4 – RF, RAN 5 – Mobile Terminal Conformance Testing
 - Other groups such as CT1, SA3, SA5, SA6...
- Satellite community is strongly involved with 20 very active companies representing the whole value chain (Satellite operators, System Integrators, Technology Providers, Research Institutes, SME, Space agency...)
- Award for **3GPP NTN as Technology of the Year 2023** at the Satellite 2024, Washington DC

3GPP – NTN – Features



Rel.	NR NTN	IoT NTN
15/16	Study phases: channel model for the non-terrestrial networks (deployment scenarios, parameters, impacts on NR)...	
17	Support for : <ul style="list-style-type: none"> • Transparent payload based LEO scenario with both Earth fixed &/or moving cell scenario • Transparent payload based GEO scenario addressing UE with GNSS capability. • Provisioning of ephemeris... • NR-NTN support for FR1 & FR2 bands • Band L/S (n255 / n256) => First phase for work item on satellite	<ul style="list-style-type: none"> • Study to support a 1st minimum essential solution in Rel-17 => Baseline for 1st Deployments • LEO / GEO • IoT NTN specific enhancements not covered by NR_NTN: <ul style="list-style-type: none"> • Support for EPC • Mobility and Tracking Area • Support of discontinuous coverage without excessive UE power consumption • Band L/S (b255 / b256)

3GPP – NTN – Features



Rel	NR NTN	IoT NTN
18	<ul style="list-style-type: none"> • Coverage Enhancements • Network verified UE location • NTN-TN and NTN-NTN mobility and service continuity enhancements (Cell reselection, Handover...) • NR-NTN deployment in above 10 GHz bands • LS Band (n254) • Ka-bands (n510, n511, n512) 	<ul style="list-style-type: none"> • Performance Enhancements (HARQ, GNSS operation) • Mobility Enhancements • Enhancements to discontinuous coverage • LS band (b254) • Extended L (b253)
19	<ul style="list-style-type: none"> • Downlink Coverage enhancements • Uplink Capacity/Throughput Enhancement • Support of Broadcast service • Support of Regenerative payload => Mesh Topology: UE-SAT-UE communication • LTE to NR NTN mobility • Support of higher Tx power UE in FR1 bands • Extended L Band (n253) • Ku bands 	<ul style="list-style-type: none"> • Support of Store and Forward • Uplink Capacity Enhancement • Support of PWS • Support of higher Tx power UE in selected FR1 bands

3GPP – NTN – Rel-20



Release	Item ref	Lead WG	Title	3GPP doc	Completion	Rapporteurs
20	SI "5GSAT" ph3	SA1	Study on using Satellite Access phase 4; Stage 1 (Release 19)	TR 22.887	March 2025	Novamint

Current topics covered by SA1 study

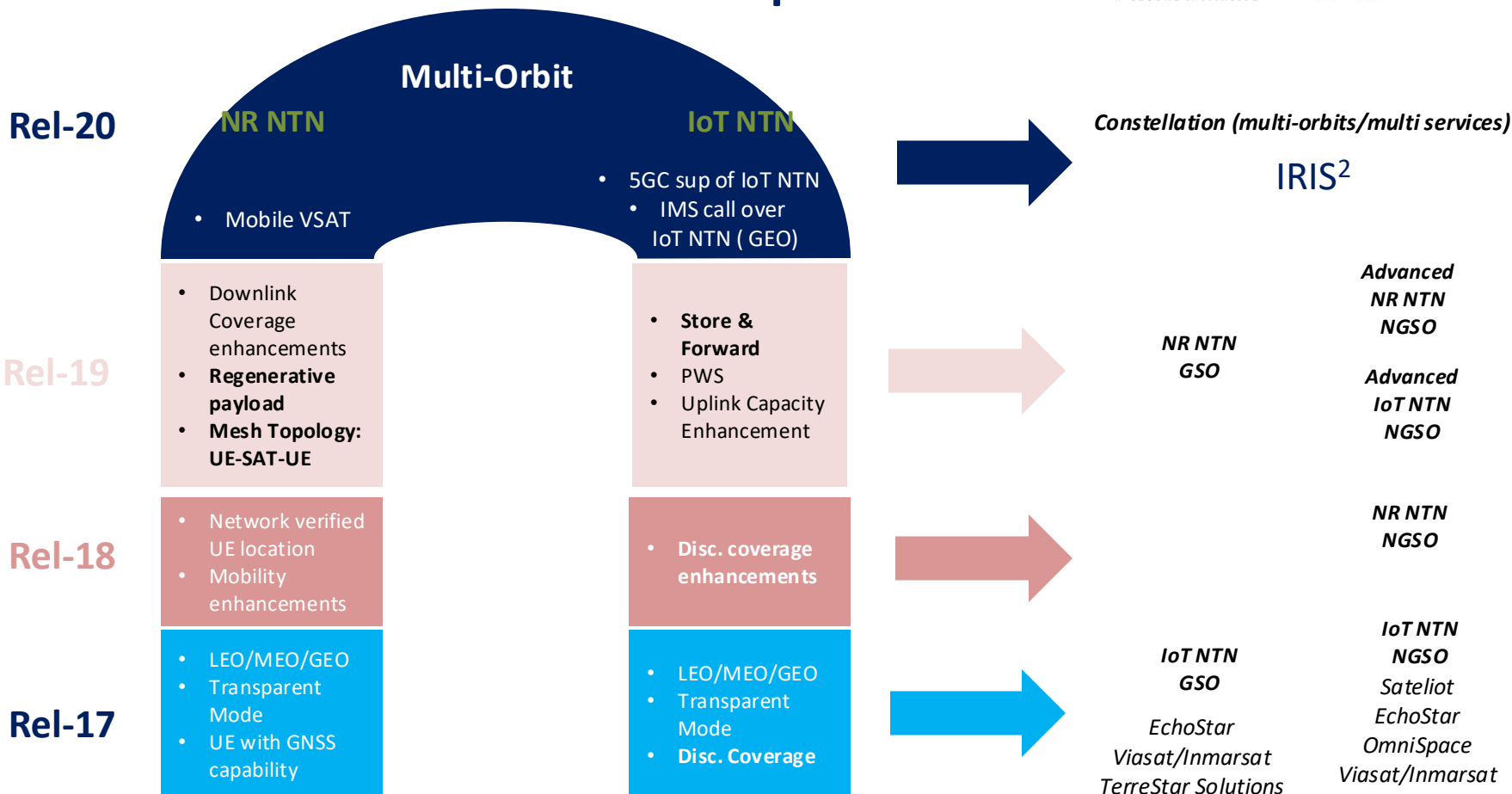
- Multi-orbit
- Enhancement for emergency communication & critical services
- IMS voice call over GEO (on IoT NTN)
- Resilient Notification

Scope for Release 20 for next stages (SA2 & RAN) under definition

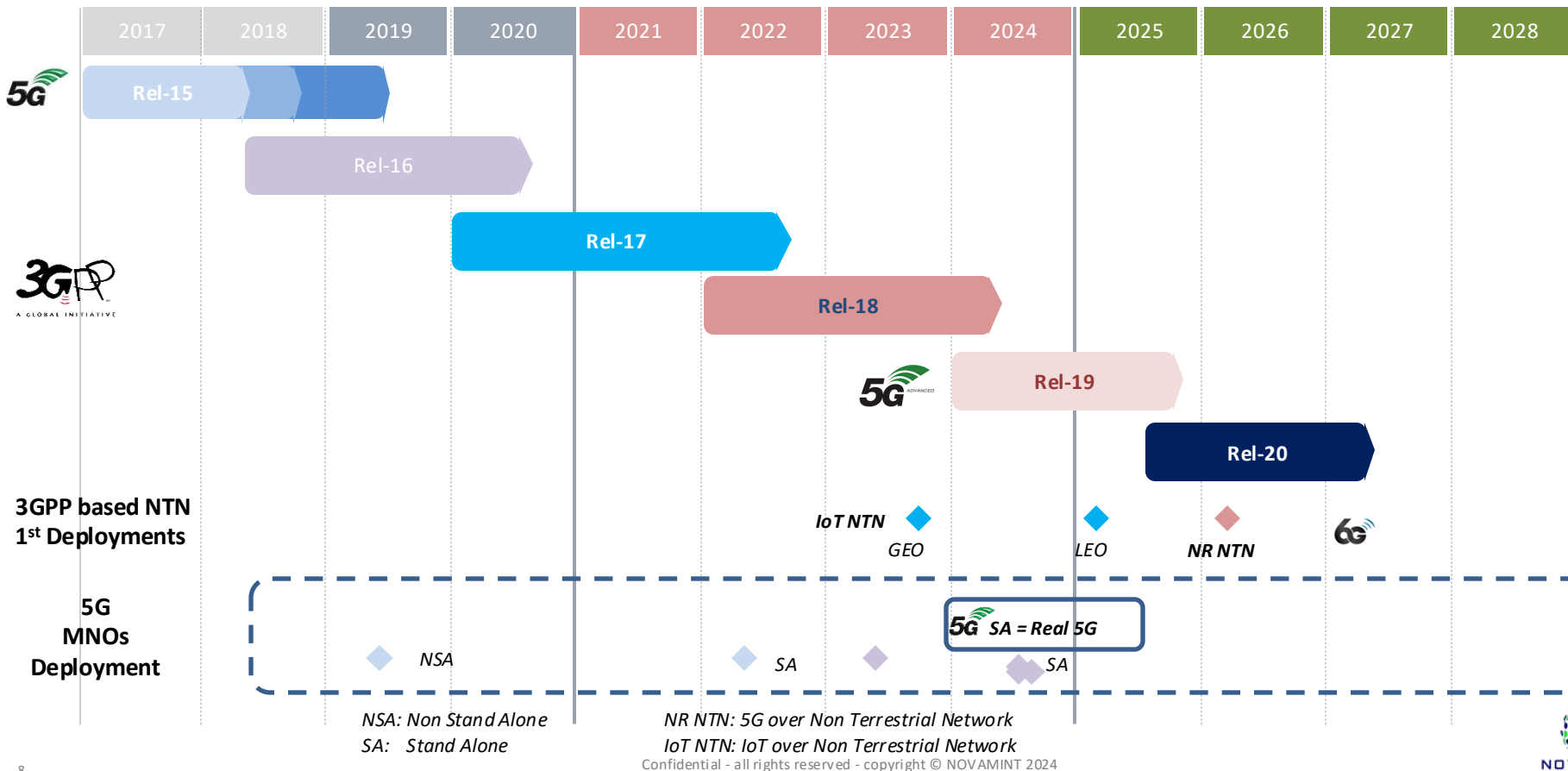
=> 1st scoping workshop in December 2024 (3GPP Plenaries RAN & SA)

⇒ Scope Rel-20 to be agreed in June 2025

3GPP – NTN – Roadmap to D2D



5G – From standard to reality



3GPP NTN & D2D – Summary



- D2D is already supported for IoT NTN:
 - GEO – already commercial
 - NGSO - commercial launches in 2025
- NR NTN is to follow in the next 2/3 years
- In only 4 releases, 3GPP will have addressed all aspects allowing to support all D2D perspectives and all satellite deployments types
- Slower than proprietary – However it is made right
 - Fully standardized and interoperable
 - Interworking natively with Terrestrial networks
 - Will develop a large interoperable ecosystem beneficial for all – no lock in
 - Will allow proper certification



3GPP NTN – Conclusion



- Interested in Satellite ?
 - Come to us & challenge us
 - We are preparing 6G
 - Bring your use cases, your requirements...
 - We will integrate it in the standard path
-
- You can also join the new initiative from the satellite community – **NTN Forum**
- => <https://connectivity.esa.int/form/ntn-forum-registration-page>

Novamint – Who we are



Novamint

- ✦ We are **independent and entrepreneurs at heart**
- ✦ We help **our clients embrace and leverage STANDARDS to achieve sustainable performance** for their business
- ✦ We offer consulting services that include individual consultants and Project Management Office (PMO) team
- ✦ We have 30 years experience **from the inside** at the heart of the **Internet/Telecom/cellular/IoT evolution**
- ✦ We have an unique combination of **system-level expertise, Deep knowledge of the telecommunications industry** and Expertise in **cutting-edge technologies**
- ✦ We have **Leadership on driving 3GPP/GSMA/ITU** standardization and a **proven influence on 5G/cellular IoT devices/chipsets roadmaps, Industry Initiatives and release scope**
- ✦ **Well known and recognized in standards** to represent verticals perspectives with a **Unique and Independent voice**
- ✦ We develop technical specifications and solutions that will be standard that will be services & products
- ✦ We **work with key telecommunications operators, suppliers and infrastructure managers** across the world

What we do – very well

- ★ **STANDARDIZATION:** We work to Integrate Verticals & Corporations Use Cases into 5G/IoT requirements and standards



- ★ **INNOVATIONS:** We develop IoT & Telecom projects for Corporations or Associations



The Benefits we deliver

- ✓ We take **full responsibility / Ownership** of your project
- ✓ we deliver **on time + on budget + to quality**
- ✓ we **reduce your costs OPEX + CAPEX**
- ✓ We **accelerate the time-to-market** of your project



Novamint actions in standards



- **Active participation to the meetings:** online AND physically worldwide
- **Drive an end-to-end process through Standardisation across multiple Working Groups**
- **Preparation + Analysis of contributions:** Study & Work Items / Technical Report / Technical Specification
- **Socialise your position, Finding supporters** (MNOs, chipsets/device makers, Network vendors, Satcom players, verticals...)
- **Alignment meetings** with some key 3GPP players
- **Presentation/defending the contributions** in meeting (with potential revisions)



About me



Thierry Bérisset

Director IoT/Telecom, Spectrum and Standards at Novamint

30 years experience **from the inside** at the heart of the **Internet/Telecom/cellular/IoT evolution** with SFR (launched SMS), Vivendi Universal, Vodafone, Proximus (launched 3G), Deutsche Telekom (launched 4G)

Active member in telecom standards (ETSI, 3GPP...) since 2017

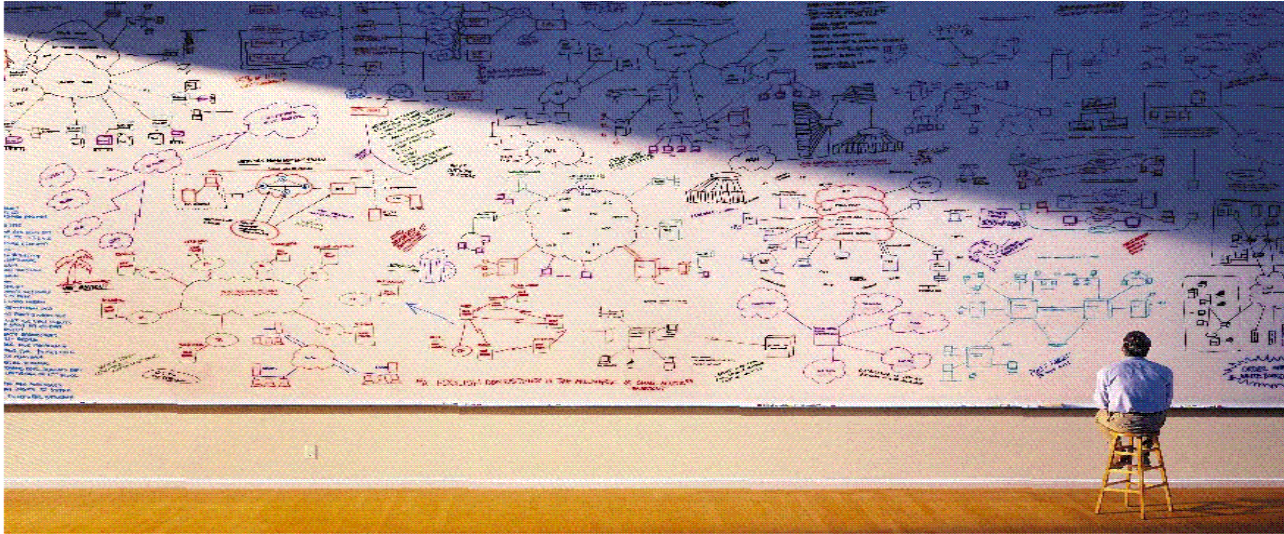
Top 1 contributor in 3GPP SA1 in 2023 & 2024 (before key telecom companies)

Board Positions:

- **EUWENA:** Board member/ Chair of the Use case Working Group
- **ETSI:** Elected Board member since 2023
- **NTN Forum:** Vice chair of the Steering Board / Chair of the Verticals Working Group



Challenge us with your Projects!



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