ORAN Enabling NTN Deployments - Opportunities and Synergies

5 February 2026 Rome Italy

5G to 6G : NTN pathfinders

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ESA Strategic Programme Line Space for 5G/6G & Sustainable Connectivity

NTN-Forum

Contents

- Technical areas and Industry's interests
  - Workshops with Industry
  - Standardisation
  - NTN Forum

- Framing boundaries and priorities (top down)
- Emerging gaps (bottom up)

NTN the wunderkind !
5G Advanced NTN to 6G NTN : no time to lose !

- Narrowband NTN (NB-IoT) is there
- Broadband NR-NTN starts proving itself / Experimentation started / Scale up needed
- Interoperability TN-NTN is the real test case
- Urgency to validate and optimise mechanisms:
  - TN-NTN-TN handover mechanisms, Beam handover extend-experimentation, QoS, authentication support
- Joint beam-forming / digital payload resources management / TN-NTN services orchestration
- Services experimentation and validation
- Spectrum sharing & interference management

Experimentation - World's first 5G NTN Rel19 demos over LEO – November 2025

OneWeb constellation connected to ESTEC Lab

MEDIATEK AIRBUS ROHDE&SCHWARZ

Key features:

- 3GPP compliant Rel-19 protocol stack over FR2
- Newly developed Conditional Handover (CHO) protocol
- Stable bi-directional link between gNB and 5G NR NTN UE
- Strong partnership with Sharp (UE Antenna) and ITRI (gNodeB)

ITRI Industrial Technology Research Institute

SHARP

In-Orbit Experimentation

MIXELS
gNB in space

ThalesAlenia Space

Deutsches Zentrum für Luft- und Raumfahrt (DLR)

Telefónica

Evoelectronics

KEPLER

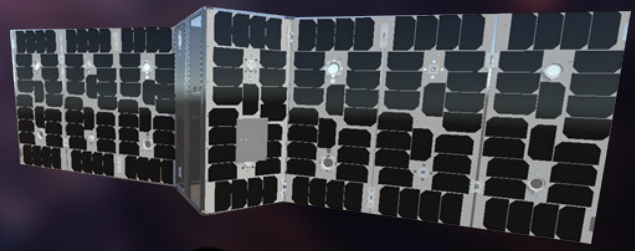
Direct 5G Broadband Access from LEO To VSATs
Launched July 2025

tyvak International SRL

r.a.m.e.

TIM

6G Laboratory In-Orbit LINO



TESAT

AIRBUS

VTT

Deutsche Telekom

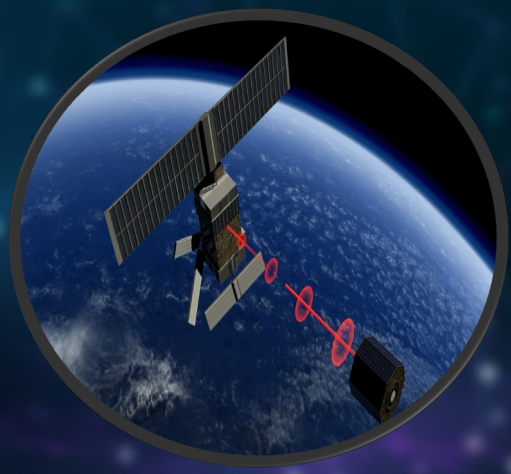
Fraunhofer IIS

OPEN COSMOS

UNIVERSITY OF SURREY

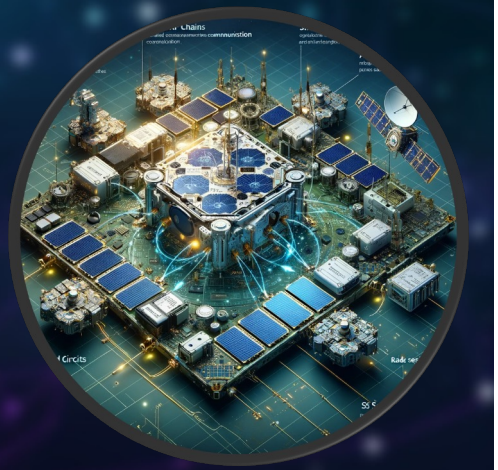
Framing Boundaries and Priorities towards 6G NTN

- Multi-tenancy and Federated Space Networks
  - ✓ Hybrid Regenerative and Transparent satellite nodes
  - ✓ Federated constellations
  - ✓ Decentralised management and Edge AI
- Dynamic Routing in Multi-Layer Networks
  - ✓ Semantic Routing
- Modular and reconfigurable payloads
  - ✓ Dynamic real time reconfiguration of payload
  - ✓ NTN network self configuration
  - ✓ Satellite nodes discovery and service transfer - security framework
  - ✓ Semantic Control Plane ?
- Integrated Communication and Sensing (ISAC)
  - ✓ Payload-as-a-Service: Comm/EO use cases
  - ✓ Lab testbed validations of concept and functionalities of single satellite node
  - ✓ Tailored ISAC system optimisation at constellation level
  - ✓ Minimum Convincing Mission and Constellation to enable experimentations
- GNSS free

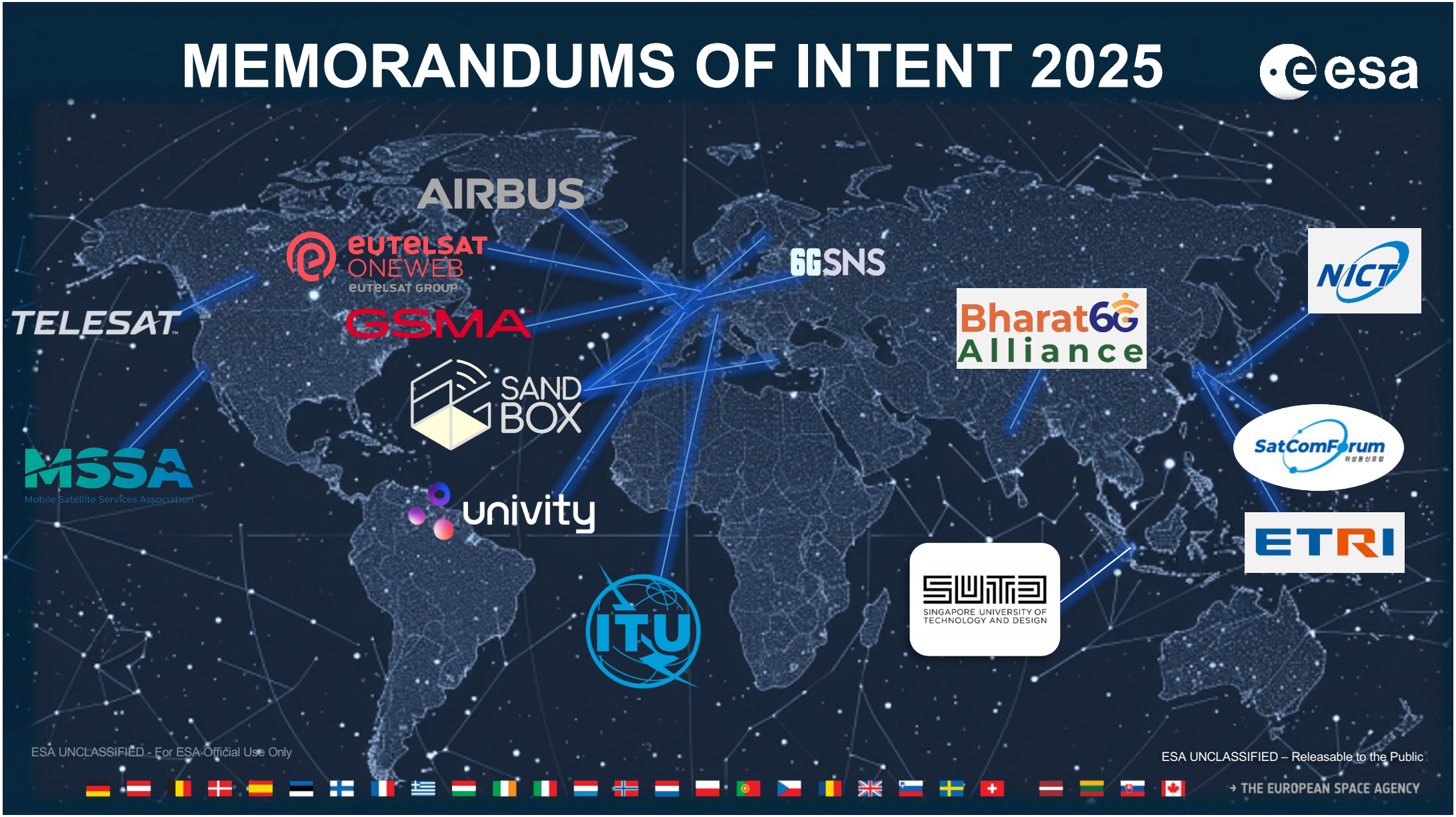


Enable Faster Development/Deployment :
Validation of new 3GPP and ORAN releases
Reduce Terrestrial – Space Structural Development Gap

- Extend experimentation from experimental single satellite node to convincing minimum constellation - federation of experimental satellites – digital twinning
- Unified framework for configuration, deployment, dimensioning and planning of e2e system considering NTN multi-purposeness i.e. serving several market scenarios and services
- Middleware ecosystem which with minimal changes can operate across available and foreseen test satellites
- Scale up in orbit experimentation: From one shot towards a process that later can transform in an overall digital satellite process



MEMORANDUMS OF INTENT 2025



Thank you !

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