

6G-NTN White Paper explores the role of Non-Terrestrial Networks in the 6G networks

Sophia Antipolis, France - The 6G Non-Terrestrial Networks (6G-NTN) project proudly announces the release of an important White Paper titled “**Vision on Non-Terrestrial Networks in 6G systems (IMT-2030)**” that explores the future of connectivity in the 6G ecosystem, the next generation of wireless communication technology.

Non-Terrestrial Networks (NTN) are communication networks that extend beyond the Earth's surface to provide global or regional connectivity. In the evolving landscape of global connectivity, NTN are pivotal to the future 6G ecosystem, bridging the gap between traditional terrestrial networks (TN), like cell towers and fiber-optic cables, and the new space-based communications, thereby ensuring ubiquitous, resilient, and sustainable connectivity across the globe.

The 6G-NTN White Paper, released during the ETSI Conference on “Non-Terrestrial Networks, a Native Component of 6G” (Sophia Antipolis, France, 3-4 April 2024), provides a consolidated view on the importance of NTN in 6G, identifying market segments, connectivity scenarios, and general design principles for NTN integration. It also proposes a standardisation approach to ensure seamless integration and enhanced connectivity for users.

Key findings from the White Paper include:

- **Market segment description:** Consumers with smartphones and wearables seek extended coverage and a seamless transition between satellite and terrestrial networks. Enterprises operating in rural or underdeveloped regions require connectivity solutions where traditional terrestrial networks are unavailable. Additionally, specific verticals such as aviation, railways, and

government entities have unique demands for autonomy, security, and sovereignty.

- **Connectivity scenarios:** NTN can provide direct access to smartphones and wearables, even in light indoor or in-car environments. They can enable broadband connectivity for land vehicles, catering to passenger and driver services. Drones (UAVs) can leverage NTN broadband for observation and telecommunication purposes. NTN can also deliver low-latency connectivity to homes and small offices, ensuring a high-quality experience. Furthermore, they can offer high-speed broadband to transportation platforms, supporting assistance and entertainment services, as well as rapid connectivity deployment for utilities and public safety in operational areas.

To integrate NTNs with TNs effectively, the White Paper also outlines several key requirements, such as integration at the network and service management levels, low latency for high-quality user experiences, and the ability to contribute to ubiquitous and resilient connectivity. Additionally, the integration should aim to reduce overall energy consumption, aligning with sustainability goals.

The White Paper positions NTN as pivotal in achieving the 6G vision of universal connectivity, supporting innovative applications such as augmented and virtual reality, digital twinning, and autonomous systems.

About 6G-NTN

The 6G-NTN project envisions a NTN component fully integrated into the future 6G infrastructure. Compared to the current 5G NTN, this vision will better meet the vertical industry's needs and consumer market expectations.

In order to accomplish this ambition, 6G-NTN will research and develop a revolutionary three-dimensional (3D) network infrastructure concept for 6G with the ambition to provide, through unification with the TN component, a ubiquitous coverage with high data rate communication at quasi ultra-low latency while providing a disruptive concept of high accuracy and reliable location service. The project will define a roadmap for the development of the necessary technical, regulatory and standardisation building blocks to enable integrated NTN service provisioning and disruptive market offer in the 2030-35 timeframe. This will foster Europe's technological leadership in the NTN sector and empower vertical domains well beyond the current 5G capabilities.

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