



5GAA Position on the Secure Space-Based Connectivity Programme and Focus on the European Communication Satellite Constellation

5G Automotive Association
Position Paper



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This position paper outlines 5GAA's core priorities in the field of space-based connectivity and industry requirements for the European Communication Satellite Constellation. We are motivated to highlight the important role that NTN play in the development of both the automotive and telecommunications industries, and the wider deployment of connected and intelligent vehicles.

The 5G Automotive Association (5GAA) welcomes the Secure Space-Based Connectivity Programme and the European Commission's renewed attention on Satellite Communications.

5GAA is motivated to highlight the important role that NTN play in the development of both the automotive and telecommunications industries, and the wider deployment of connected and intelligent vehicles. Specifically, we wish to advocate for greater awareness of, and fuller discussion on, **the following topics**:

- Achieving continuity of service anywhere, any time while enabling applications for connected and intelligent vehicles and seamless interaction between terrestrial and NTN for the future vehicle industry.
- Fostering a European Communication Satellite Constellation to further strengthen European digital infrastructure and the durability of industry on the continent.
- Keeping the requirements of European mobile users, including terminal installation and operational constraints, at the heart of planning the European Communication Satellite Constellation.

More than anything else, 5GAA wishes to clarify that ubiquitous and uninterrupted connectivity can only be provided if **terrestrial and non-terrestrial networks are integrated seamlessly**, based on the guidelines of all stakeholders and experts. Moreover, non-terrestrial networks and NTN-capable user equipment should be compliant with 3GPP¹ standards and support mobility with terrestrial 4G and 5G networks. This is fundamental in order to be able to work to the highest degree with terrestrial networks and achieve an integrated approach addressing the needs of people and industry as well as facilitating security and stability.

Seamless service continuity

Achieving continuity of service anywhere, any time while enabling applications for connected and intelligent vehicles and seamless interaction between terrestrial and NTN for the future vehicle industry.

The automotive industry is at a turning point, with automation, connectivity, electrification, and personalisation becoming new key success factors. These features have real and tangible implications for consumers, such as the ability to initiate breakdown or emergency calls regardless of the location, the ability to control and service cars remotely, as well as over-the-air updates enabling new functions to boost vehicle security, traffic safety, and overall efficiency. Some features, such as software updates, should preferably be done remotely. Other updates, such as hazard warnings and HD-mapping of highly dynamic data, benefit from full or complementary NTN coverage. The integration of terrestrial and non-terrestrial networks is critical to ensuring all features are delivered efficiently and safely.

¹ "3GPP" (3rd Generation Partnership Project) refers to a number of standards organizations which together develop protocols for mobile telecommunications.

Contemporary and future transport features rely on data hosted securely in the cloud and are fundamentally dependent on continuous and reliable connectivity. From the perspective of 5GAA's telecommunications operators, a key priority is filling the white spots (remote/rural areas) that currently represent a commercial loss and hinder widespread deployment. Availability of spectrum plays a major role in this. There is also a strong business incentive to find cost-effective ways of serving these areas via terrestrial **or** non-terrestrial means.

Mobile users need to be at the centre of discussions regarding both terrestrial and non-terrestrial networks and should be a focus of EU investment in this field. For mobile network operators, providing connectivity in very low-density situations, such as in remote islands or in peripheral settlements, while relying solely on terrestrial networks, is virtually impossible. Non-terrestrial networks can play a key role in closing such gaps. Nonetheless, terrestrial networks will still prevail in stubborn white spots such as tunnels where satellite line-of-sight signals are obstructed.

Ultimately, even for urban areas, an **interoperable approach** combining terrestrial and non-terrestrial networks provides the best continuity of service solution.

Stronger European Satellite Constellation

Fostering a European Communication Satellite Constellation to further strengthen European digital infrastructure and the durability of industry on the continent.

Today, most of the satellite connectivity using high-frequency bands to boost bandwidth comes from low-earth-orbit (LEO) satellite constellations not based in Europe. This means they are not directly under European control, making it harder to extract the best value from space-based developments in everything from boosting energy efficiency and transport corridors to climate monitoring and smart agriculture.

Indeed, various parts of Europe are increasingly struggling with natural phenomena such as droughts, wildfires, flooding, and severe storms. Satellite connectivity plays a vital part in efforts to monitor and mitigate these climate hazards, keeping public and commercial applications running when terrestrial infrastructure is damaged or temporarily down.

Satellite connectivity is closely aligned to critical infrastructure and the EU and European industry need to be careful to avoid the vulnerability being witnessed in the chip manufacturing sector, which relies heavily on regions and factors outside Europe's control and influence. It is for this reason that 5GAA's European automotive members welcome the European Commission's renewed emphasis on the European Satellite Constellation **for true European autonomy**.

If done right, this initiative will foster new technologies, create new jobs as well as support European autonomy from other regions in the world.

Mobile user needs

Keeping the requirements of European mobile users, including terminal installation and operational constraints, at the heart of planning the European Communication Satellite Constellation.

The European Satellite Constellation should be configured in a way that the needs of **European mobile users** are at the centre of the design. But what does this mean for 5GAA and Europe? Mobile customers, from 5GAA's point of view, are those driving or being driven in cars, buses, and trucks. Their connectivity requirements are vastly different from those of stationary customers, such as administrations, businesses, factories, etc.

Mobile customer needs are very specific and should be properly considered in order for the European Communication Satellite Constellation to be effective and achieve its goals. For example, ground terminals have to be very small (approx. 20cmX20cm, or smaller), with energy consumption similar to handheld devices. Latency should be low and, importantly, bandwidths should support broadband digital services, at least in later stages.

The key goal, therefore, is seamless integration with European mobile networks to **achieve ubiquitous connectivity** for all mobile users, enabling a high penetration rate by 2030.

Conclusion: collaboration and commitment needed

Such a critical undertaking with fundamental ramifications for European sovereignty and security cannot be taken without proper and thorough engagement with all relevant stakeholders.

Experts and policymakers working at the institutional level hold a crucial role in the construction of a European Communication Satellite Constellation; as do Member States, industry, and commercial customers.

This endeavour will require a **truly collaborative approach** when it comes to knowledge, requirements, technological expertise, and financial commitment.

