GSMA
Foundry

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CASE STUDY



Keeping **Vehicles Connected**

Skylo Technologies is extending direct-to-device (D2D) satellite connectivity to vehicles

Executive Summary

- As vehicles increasingly adopt cellular connectivity, a key challenge remains—large segments of the world's roadways are still without terrestrial coverage.
- Using 3GPP industry standards, Skylo Technologies is expanding its direct-to-device (D2D) capabilities to support automotive solutions that promise to deliver seamless connectivity across terrestrial cellular and non-terrestrial networks (NTN).
- At the 5G Automotive Association (5GAA) F2F week in Paris in May 2025, Skylo, alongside BMW, Deutsche Telekom, Cubic³, Qualcomm, HARMAN and Viasat, conducted multiple live demonstrations showing commercially-available vehicles connecting seamlessly to satellite .
- Following the demos, four new automotive telematic control units (TCUs) entered Skylo's certification process for commercial deployment.
- Skylo anticipates TCUs supporting its satellite connectivity will begin to appear in commercial vehicles from 2027.

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The challenge - many of the world's road s lack terrestrial coverage

Modern vehicles increasingly rely on connectivity for navigation, hazard warnings, remote diagnostics and emergency communications . After decades of network buildouts, cellular networks still don't cover long stretches of highways, rural roads, and cross-border routes, compromising safety and limiting connected-vehicle features. .

With integrated satellite connectivity, vehicles could remain connected anywhere there is access to the open sky. The automotive industry is beginning to explore integrating these new technologies into new vehicles, which will typically remain on the road for a decade or more.

The solution - integrated D2D connectivity

In May 2025, Skylo Technologies expanded its D2D capabilities to provide an automotive solution that promises to deliver seamless connectivity across terrestrial cellular and NTNs. Skylo has leveraged 3GPP industry standards to integrate D2D satellite connectivity seamlessly with existing cellular chipsets, modules and devices.

Skylo's connectivity solution is designed to work with Qualcomm Technologies' Snapdragon Auto 5G Modem-RF Gen 2, a leading automotive chipset. It supports both 5G connectivity and 3GPP R17 NB-NTN Skylo satellite communication.

"This embedded integration at the core firmware level allows vehicles to automatically switch between terrestrial and satellite networks without requiring additional antennas or specialised hardware," explains Tarun Gupta, Co-founder and Chief Business Officer of Skylo Technologies. "The result is a truly ever-present connectivity experience, one that ensures continuous access to telematics, navigation, safety alerts and emergency SOS features, regardless of location."

In parallel, Skylo teamed up with Cubic³ to develop what they describe as the world's first unified automotive embedded SIM (eSIM) solution supporting both terrestrial and satellite connectivity. ESIMs can be easily programmed to switch to different networks as they cross national borders or move beyond the coverage of the default cellular network. With Skylo's commercial NTN service now live in 36 countries, it is already able to offer automakers extensive international coverage.

"This 3GPP-compliant solution eliminates the need to support multiple networks or hardware upgrades, ensuring that vehicles powered by Snapdragon Auto 5G Modem-RF solutions from Qualcomm Technologies, stay securely connected to critical services anywhere there is open sky - similar to the requirements of GPS," explains Tarun Gupta.

A new member of the 5GAA, Skylo conducted multiple live over the air demonstrations from commercially-available vehicles at the 5GAA F2F week in Paris in May 2025, with key partner Viasat, a major provider of satellite communications.

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Tarun Gupta - Co-founder and Chief Business Officer of Skylo Technologies.

Working with BMW, Deutsche Telekom, Cubic³, Qualcomm, HARMAN and Viasat, Skylo provided a live connectivity layer for five distinct on-road demonstrations on the streets of Paris during 5GAA F2F week. "Our primary goal at 5GAA Paris was to demonstrate the immediate commercial readiness of our D2D solution to the world's largest automakers and mobile network operators," explains Tarun Gupta.





"Skylo, as the non-terrestrial network operator, orchestrated a multi-month engineering sprint to align disparate teams on 3GPP Release-17 compliance and customer entitlement."

For example, the partners showed how a BMW iX2 vehicle can connect to Skylo's NTN using a standard SIM provided by Deutsche Telekom. "This MNO-first approach will allow users to maintain their current relationship with their mobile operator while complementing terrestrial connectivity with satellite," notes Tarun Gupta.

The partners also showcased live hazard alerts, emergency messaging, and real-time navigation updates transmitted bi-directionally over satellite. By projecting the "Satellite Connected" status directly onto the vehicle's native infotainment screen, the field trial aimed to make the abstract concept of "NTN connectivity" palpable and visceral for the media representatives, automaker executives and guests attending the event.

A key goal for Skylo in Paris was to show that satellite connectivity can be unobtrusive, utilising existing antennas, hardware, TCUs and chipsets already present in modern vehicles. The demos also underscored how effortlessly vehicles can transition between cellular and satellite networks, managed via standard SIMs and eSIMs without user intervention – much like international roaming. The third objective of the demos was to show that Skylo's satellite connectivity is sufficiently reliable to be an essential "always-on" layer for safety and navigation across both the micro and macro holes in terrestrial coverage. "We wanted the audience to leave understanding that mass-market satellite connectivity isn't "coming soon"—it is here, it creates no friction for the OEM, and it is powered by Skylo," adds Tarun Gupta.

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One of the demos at 5GAA F2F in Paris highlighted Skylo's work with Qualcomm and HARMAN to support enhanced emergency services, including bidirectional emergency messaging directly from the HARMAN Ready Connect TCU. Using the Skylo network, the demo vehicle sent emergency alerts and received real-time updates, including adverse weather conditions, when out of cellular coverage.

Skylo says the demos were the world's first live showcase of seamless switching between terrestrial and satellite coverage using a single standard SIM card on the Snapdragon Auto 5G Modem-RF Gen 2. "This effectively killed the myth that satellites require separate billing or proprietary hardware," says Tarun Gupta.

Impact - the auto industry explores the integration of satellite connectivity

By showcasing what is possible, the Paris demos boosted automakers' enthusiasm for satellite connectivity, paving the way for always-on safety and data services in vehicles, thereby enhancing driver protection and satisfaction, according to Skylo, which says many automotive OEMs are now requesting NTN as part of their connectivity RFPs. Since the 5GAA event, Skylo has been working closely with chipset partners and automakers and mobile operators to provide NTN connectivity solutions for commercial vehicles that will appear in 2027 and beyond.

Skylo says the demos at 5GAA F2F provided concrete evidence that the technology works and is commercially ready – as they rode in the demo vehicles, journalists and executives were able to witness the connectivity handover happen in real-time as they drove through suburban Paris. "There were no pre-recorded videos; participants saw the cellular

signal cut and the Skylo satellite connection take over instantly to deliver hazard warnings," says Tarun Gupta. "The on-site team facilitated Q&A sessions with Skylo leadership directly inside the vehicles, turning the drive into a four-wheeled briefing room. This tactile, participatory approach—letting the user feel the reliability of the connection—converted sceptics into believers and generated organic, first-hand media narratives that a press release never could."

Skylo says the demos were covered by eight major international tech and mobility publications (including Heise.de, Golem.de, Automobile Propre), achieving a combined reach of more than 31.8 million unique monthly visitors, together with a 1,256% surge in organic impressions and a 1,891% increase in engagement on LinkedIn during the event window.

Following the demos, four new automotive TCUs entered Skylo's certification process, the company says. "We were able to convert an idea and media buzz into tangible roadmap commitments with key global technology partners and automotive OEMs, validating the need for consumers who demand to always be connected," adds Tarun Gupta.

Next steps - more demos, more services and building the business case

For Skylo, the "Rolling Showcase" approach it took in Paris has become a new blueprint for experiential marketing. As Skylo is a software-defined network that runs on standards, it doesn't need to build custom hardware for every event. "We can replicate this model at CES, MWC, and regional mobility shows by simply activating the existing modems in partner vehicles," notes Tarun Gupta. "Additionally, by leveraging the 3GPP standards, auto OEMs are not locked into proprietary hardware or walled gardens. They are free to work with the entire available ecosystem to best run their business and operations to do what is best for their customers."

Although the 5GAA trials were focused on consumer vehicles, commercial fleet managers can adopt the technology today via "after-market" TCUs as Skylo is

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providing commercial service across 36 countries and plans to add further markets. These add-on units can be installed in existing trucks and vans to support asset management and tracking. Always-on connectivity will be particularly important to support self-driving vehicles employed in remote farms, mines or other industrial facilities.

Following the Paris demos, Skylo is helping vehicle makers evaluate the business case and identify potential business models and routes to market. Skylo says the cost of the satellite connectivity should be low enough to enable many automakers to bundle emergency communications into the upfront cost of the vehicle, so the consumer won't need to subscribe to a separate plan in the case of an emergency. But some mobile operators may also choose to integrate satellite connectivity into dedicated tariff plans for vehicles and offer consumers a wider range of services, such as real-time updates on potential hazards and weather warnings. Consumers that buy such packages could potentially benefit from lower auto insurance premiums.

"Skylo's approach is aligned with GSMA's vision for standardised, interoperable satellite connectivity - no matter the end device or use case," concludes Tarun Gupta. "By embedding satellite capabilities directly into the connected vehicle ecosystem, Skylo is transforming vehicles into always-connected platforms, redefining mobility, improving the customer experience, and unlocking new business models for automakers."



About the GSMA

The GSMA is a global organisation unifying the mobile ecosystem to discover, develop and deliver innovation foundational to positive business environments and societal change. Our vision is to unlock the full power of connectivity so that people, industry, and society thrive. Representing mobile operators and organisations across the mobile ecosystem and adjacent industries, the GSMA delivers for its members across three broad pillars: Connectivity for Good, Industry Services and Solutions, and Outreach. This activity includes advancing policy, tackling today's biggest societal challenges, underpinning the technology and interoperability that make mobile work, and providing the world's largest platform to convene the mobile ecosystem at the MWC and M360 series of events.

For more information, please visit the GSMA corporate website at gsma.com

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About the GSMA Foundry

The GSMA Foundry is the go-to place for cross-industry collaboration and making positive change happen, supported by leading technology organisations and companies. By bringing together members and key industry players, engaging, and unifying the end-to-end connectivity ecosystem, the GSMA is solving real-world industry challenges.

Our vision is to unlock the full power of connectivity so that people, industry, and society thrive. This enables the mobile industry's mission: to connect everyone and everything to a better future.

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About Skylo

Skylo Technologies is a global Non-Terrestrial Network service provider based in Mountain View, CA, offering a service that allows smartphones, wearables, vehicles, and IoT cellular devices to connect directly over existing satellites. Devices connected over satellite are managed and served by Skylo's commercial NTN vRAN, featuring a 3GPP standards-based cloud-native base station and core. Skylo works with existing satellite operators, network operators, and device makers to provide subscribers an anywhere, anytime connectivity solution between terrestrial and satellite networks. Skylo's focus is on enabling connected services for people outdoors and connected workflows for machines at work across critical industries such as agriculture, maritime, logistics, mining, and others, in addition to mass-market consumer devices.

For more information, visit: www.skylo.tech

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