



Demonstrating the power of D2D for the automotive sector.

Viasat and partners help open the door for widescale adoption of satellite connectivity for automotive use cases, with the first-of-its-kind demonstration of direct-to-device (D2D) connectivity for the automotive sector.





Direct-to-device (D2D) connectivity is an emerging technology with the potential to transform how we connect people, devices, and things. It means devices and things which previously could only be connected through terrestrial means, will now also be connectable via satellite – meaning they can connect beyond the reach of cellular networks.

Viasat has partnered with GuardianSat, Quectel, Accelaronix, and Skylo to demonstrate how D2D can be implemented in a variety of vehicles in Brazil. This first-of-its kind D2D trial underlines how the technology can help drivers stay safe and how it can enable the automotive industry to become more efficient and effective.

The challenge

A 250km highway between Curitiba and Blumenau connects the populous Southern Brazilian states of Santa Catarina and Paraná. This highway crosses a diverse and rugged landscape which often suffers from cellular black spots.

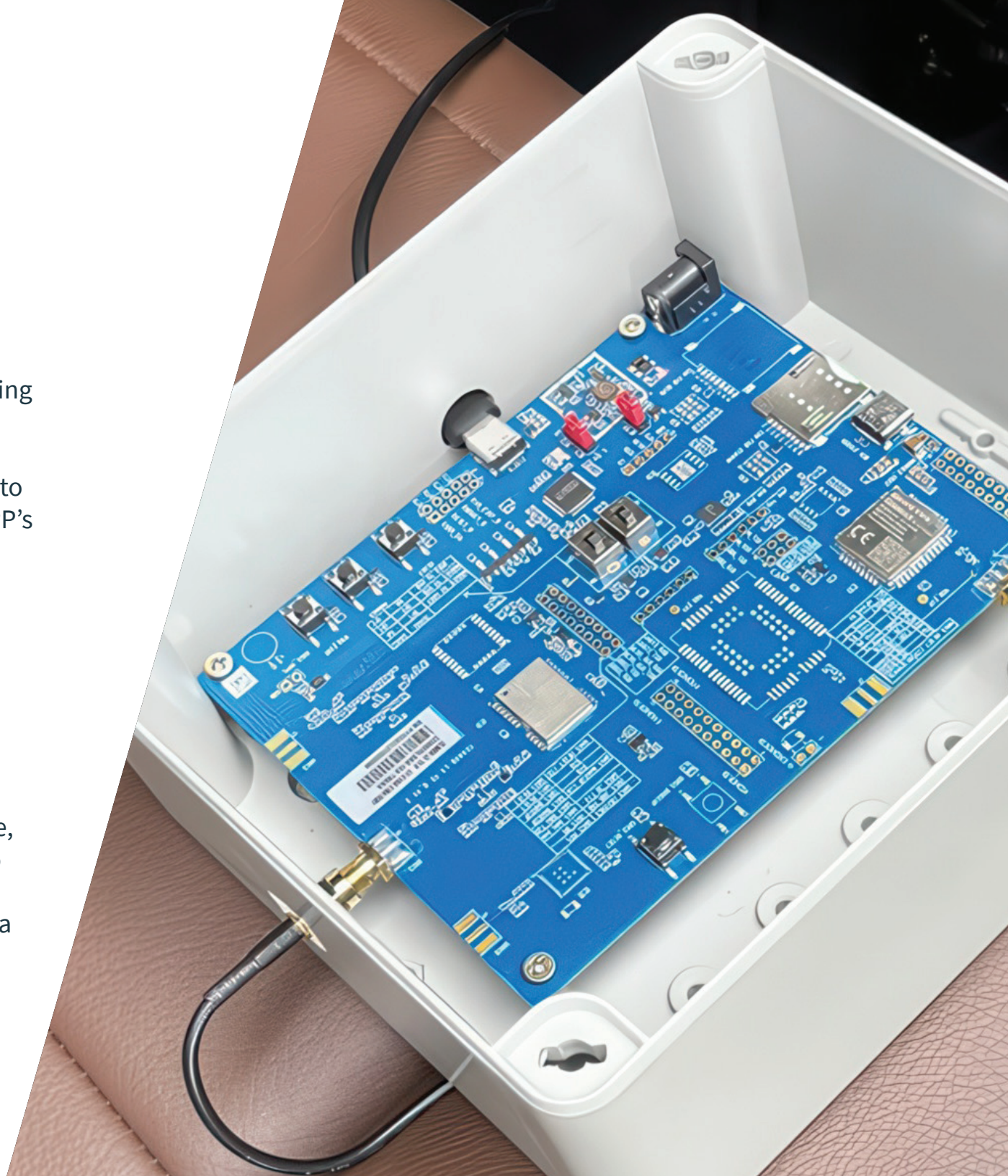
With more than 20 years of experience in helping logistics, transport, and agriculture businesses tap into the power of satellite-enabled Internet of Things, GuardianSat are well-positioned to take on this problem with an innovative approach.



The solution

From their headquarters in Blumenau, GuardianSat developed a device, incorporating Quectel's CC660D-LS Dev PCB module, that can be easily line-fitted or retro-fitted in vehicles to share telemetry data using 3GPP's Release 17 open-standard D2D connectivity.

The chipsets within the Quectel module enables the device to connect to both cellular and satellite networks, and to seamlessly switch between the two. The antenna hardware is placed on the roof of the vehicle, and the module is connected to the vehicle's electronic control unit (ECU) via the controller area



network (CAN) bus protocol, without requiring any cutting of wires. Integrating the device into a vehicle is simple, as is finding connectivity via satellite or cellular. The device can connect to cellular towers in areas where there is coverage and connects directly to Viasat's highly reliable L-band satellites to provide narrowband tracking, monitoring and messaging capabilities in areas with no cell coverage.



The trial

GuardianSat equipped a variety of vehicles with the device. Over the course of 40 days, these vehicles drove over 35,000km along the Curitiba to Blumenau highway, across a variety of terrain and weather conditions, including heavy rain.

The devices both sent and received data from the headquarters in Blumenau, and the system achieved excellent performance, even in difficult weather conditions. The vehicles successfully transmitted data to the headquarters in 3 to 5 seconds on average, and on average received data back from headquarters within 18 seconds of the message being sent.

The solution can collect a vast array of data about the vehicle and can enable a variety of telemetry deployments. It can be used to track the vehicle's precise location, to understand its acceleration, to read the temperature of the exhaust – there are over 1,000 parameters that can be monitored and visualized using an Acceleronix dashboard.



The future

Latin American consumers, businesses, and governments all rely on logistics firms to transport goods and commodities by truck over large distances, across diverse and difficult terrain lacking reliable connectivity.

Open-standards based D2D can help them get connected in these areas economically and with less hassle, so that they can operate more safely and efficiently. This trial paves the way for innovative businesses to build connectivity solutions that car manufacturers can easily incorporate into their latest models or retro-fit to large fleets of inter-city coaches or logistics vehicles.



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