ENSURING CROP HEALTH WITH 5G-ENHANCED DRONES

HIGHLIGHTS

- Preventing food insecurity has never been as important, yet with approximately 50% of all habitable land on Earth being used for agriculture, farms must rely on technology to adequately monitor crop health in such vast areas.

- Drones are perfect for the job, but the limitations of 4G latency prevent them from reaching their full potential, and often may even in their collision.

- The TRB500 industrial gateway provides the drones with a cutting-edge 5G speed of up to 1 Gbps, reducing latency to mere single-digit milliseconds and allowing them to reach their full potential.

THE CHALLENGE – THE HUNGER FOR OPTIMAL LATENCY

With the world's population on a fast track to hitting 8 billion, preventing food insecurity has never been as important. At the same time, with approximately 51 million km2 (50%) of all habitable land on Earth being used for agriculture, monitoring crop health to ensure people always have food on the table is no longer a task farm workers can accomplish. There is simply too much ground to cover.

To that end, 4G-powered drones have been an emerging solution these past few years. The idea is that drones can cover more ground than people, detect and analyze crop health faster and with greater accuracy, and can do so pretty much 24/7. So why aren't they flying over every piece of agricultural land on the planet? As with most things IoT, it all comes down to the smallest of details.

As incredible as drones are, their efficiency requires a level of latency 4G networks struggle to maintain. A momentary lapse between command and execution makes controlling the drones in real-time difficult, and can result in the drones colliding with one another. This isn't particularly good for the crops, as you might imagine, nor for the safety of farm workers.

TOPOLOGY
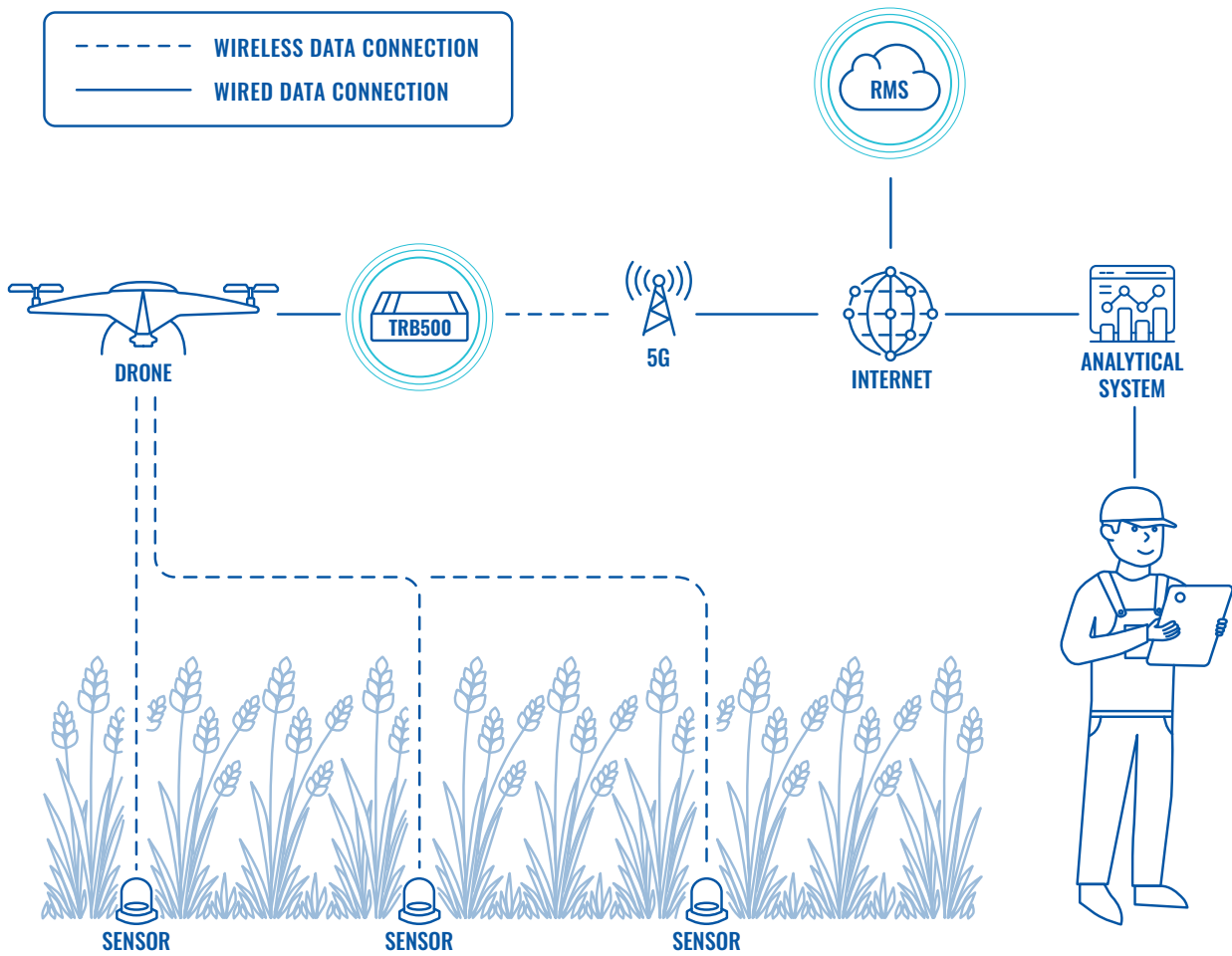
THE SOLUTION – BETTER LATENCY THAN NEVER!

If 4G has its limits when it comes to latency, the logical solution is to push beyond these limits – into the 5G frontier. The TRB500 industrial 5G gateway is the perfect device for enabling real-time command of agriculture drones and preventing their collision. With this gateway as part of its internal setup, a drone can communicate with its server with a speed of up to 1 Gbps, reducing latency to the minuscule realm of single-digit milliseconds. When you think so instantly, accidentally bumping into things becomes actively difficult!

In addition to this level of safety, the upgrade from 4G to 5G allows the drones to be better at their primary job: monitoring crop health. The increase in speed and capacity means the data they detect with the help of sensors is analyzed, interpreted, and responded to more efficiently, and edge computing can optimize this process even further.

The TRB500 isn't a one-trick pony , though. Its industrial, rugged design allows it to easily withstand the changing weather conditions the drones face out in the field. I/O versatility, a Gigabit Ethernet port, and a compact size help keep future compatibility as other parts of the drone get upgraded in the future. Last but not least, compatibility with our Remote Management System (RMS) and the typical top-tier security and reliability features you've come to expect from Teltonika Networks devices make the TRB500 not only a superb gateway – but truly the cream of the crop!