

AGRICULTURE

Hardened, Open-Linux telematics for the most demanding Agricultural landscapes



About Owasys

Based in **Bilbao**, Spain, Owasys has been a specialist in the design and manufacture of advanced telematic gateways for vehicle and industrial machinery data acquisition since **2002**. Our team of expert engineers provides more than just hardware; we offer a **true partnership** through end-to-end consultancy for customized software development.

We focus on empowering **System Integrators and OEMs** to bridge the gap between their vehicles and the cloud, enabling smarter, data-driven operations.

The owa Units

Our platforms are characterized by their open **Linux Operative System** (supporting Debian and Yocto), offering the total freedom to develop and deploy customized applications using most common programming languages (**C, C++, LUA, Python, Containers**, etc).

To meet diverse project needs, we provide a versatile range of hardware with different processing and connectivity capabilities. Our units are engineered for any environment, featuring flexible I/O configurations and protection ratings ranging from **IP40** to **IP67** and **IP6K9K**.

Furthermore, Owasys gateways are **RED directive, E-Mark, FCC, PTCRB, AT&T and Verizon** compliant, and certified for major global markets, ensuring a secure and reliable foundation for your data.



Not only Hardware

Besides the platforms, we provide a comprehensive ecosystem designed to simplify the development of telematic solutions. Through our **Developers Portal**, customers gain immediate access to essential **APIs, libraries, and microservices**, alongside direct technical support throughout the entire process.

Our gateways are designed to help you integrate advanced features such as:

- Remote Monitoring & Fleet Management
- Predictive Maintenance
- Edge Data Analysis & Machine Learning
- Customized Software Application Deployment



The Agriculture Sector

The agricultural landscape is undergoing a profound digital metamorphosis. As growers embrace digital solutions, the capacity to **oversee heavy equipment** from a distance has transitioned from an innovative perk to a cornerstone of modern field management.

Commercial farming enterprises commit massive capital to their specialized machinery. Within the narrow, high-pressure windows of the growing season, there is virtually no room for error. A neglected warning sign—be it a subtle shift in hydraulic fluid viscosity or an irregular sensor reading in the planter—can trigger a total mechanical collapse. These failures represent more than just a repair bill; they create “stagnant acreage,” where the inability to move quickly results in missing the optimal weather conditions for the crop.

By leveraging advanced telematics, agricultural firms secure a two-fold benefit:

- **Logistical Clarity:** Live telemetry regarding engine run-times and field coverage enables surgical scheduling. This data-backed approach ensures that every piece of equipment is deployed at maximum capacity, reducing idle time across the farm.
- **Anticipatory Servicing:** Farm managers can now detect “early-warning” anomalies. By addressing minor wear-and-tear before it manifests as a total engine seize, they can pivot to shop-based maintenance on their own terms, avoiding the chaos of a mid-harvest breakdown.

The Indicated Gateways

owa5X Processor: i.MX8 M Plus Quad A53, 64 bit Memory: 2GB LPDDR4; 1GB NAND Flash SLC; 8GB EMMC GSM Communication: Global LTE Cat 4 Interfaces: Up to 4 CAN FD Bus; Wifi&BT 5.2, etc. Rugged Enclosure: IP67 / IP6K9K	
	owa4X Processor: ARM Cortex A8 32 bit, 800MHz Memory: 512MB DDR3; 1GB NAND Flash GSM Communication: Global LTE Cat 4 Interfaces: Up to 4 CAN; Wifi&BT 4.2; Audio Codec, etc... Rugged Enclosure: IP67

Engineered with industrial-grade resilience (boasting IP67 and IP6K9K ratings), superior processing power, and versatile connectivity, the **owa5X** and **owa4X** are perfectly calibrated for the grueling environments of modern agriculture. Whether facing the thick dust of a harvest or high-pressure steam cleaning in the yard, the owa5X—with its 64-bit Quad-core processor—and the owa4X provide the rugged reliability required for mission-critical farm telemetry.

Choosing between the high-performance i.MX8 architecture of the owa5X or the proven Cortex A8 efficiency of the owa4X **depends on your specific data demands and fleet scale**. Please reach out to discuss your project requirements; we look forward to collaborating with you to deploy the most resilient and effective digital infrastructure for your agricultural machinery.

Case Studies

Fleet Management

One of our key customers created a suite that utilizes the **owa5X** and **owa4X** as high-performance Connectivity Units (RCU) to bridge the gap between heavy agricultural machinery and the digital cloud. This open, Linux-based platform allows for **real-time monitoring** of vital health and performance data—from **fuel consumption to hydraulic pressure**—ensuring tractors and harvesters remain at peak efficiency during critical seasonal windows.

By leveraging the processing power of the **owa5X** and the versatility of the **owa4X**, agricultural enterprises can deploy advanced **Edge Computing** and **Over-the-Air (OTA) updates**. This enables immediate diagnostics and seamless software management without leaving the field, providing a ruggedized, future-proof infrastructure that thrives in the most demanding rural environments.

Precision Farming



Another high-impact use case for the **owa5X** involves its role as the primary connectivity engine for a leading global precision agriculture platform. In this scenario, the gateway is integrated across a diverse fleet of tractors, combines, and sprayers to facilitate a “Farmer-First” digital strategy. By leveraging the **owa5X’s 64-bit quad-core processing power**, the platform can aggregate and process **high-resolution agronomic data** directly on the machine, enabling everything from sub-meter guidance to real-time seed placement **analysis** across mixed-brand fleets.

The **rugged IP6K9K** design is particularly critical here, as it allows the unit to be factory-fitted or retrofitted onto machinery that faces **extreme field conditions** and frequent **high-pressure washdowns**. Utilizing the gateway’s **Global LTE Cat 4** and **multi-CAN FD** interfaces, the platform provides seamless, brand-agnostic telematics that link the cab to the office. This ensures that growers can **manage their entire operation**—from fuel efficiency and engine health to complex prescription mapping—**through a single, unified cloud interface**, maximizing both productivity and sustainability throughout the crop cycle.

Integration of Control Systems

This use case highlights a more specialized application of the **owa4X** (integrated as a core telematics module), focusing on its role as a “Soft Telematics Controller” and HMI host.

While previous examples focused on the high-speed data crunching of the 64-bit **owa5X**, this implementation uses the ARM Cortex A8-based **owa4X** as a bridge for advanced machine-to-user interaction. Its identifying feature here is the ability to host **expanded HMI functionality**, allowing the gateway to push real-time machine data to mobile devices via Dual-band Wi-Fi (2.4 GHz and 5 GHz).



This allows an operator to step out of the cab and still **monitor complex process control or troubleshooting diagnostics** on a tablet, essentially moving the “dashboard” to wherever it is needed most.

Beyond communication, this specific use of the **owa4X** leverages its built-in **9-axis sensor** (accelerometer, gyroscope, and magnetometer) and an **optional Li-ion backup battery**. These are critical for agricultural safety and security, as they enable the unit to **detect and report collisions** or roll-overs even if the vehicle’s main power system fails. By combining IP67 ruggedness with Global LTE Cat 4 and a modular Linux platform, this configuration turns the gateway into a multifunctional tool that handles everything from Over-the-Air (OTA) software distribution to precise 72-channel GNSS positioning, ensuring the machine remains a connected, **intelligent asset** in any rural environment.