



Smarter monitoring cuts costs by 15% and boosts productivity by 20% for Uruguay's major forestry company

THE WINNER

IOT PROJECT OF THE YEAR 2024

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Challenge

Timberfor is one of the largest forestry service providers in Uruguay, with operations focused on timber management, harvesting, and transportation. The company manages a fleet of 90 forestry machines — including harvesters, forwarders, fellers, and excavators — distributed across roughly 15 forest sites in rural areas where internet connectivity is often unreliable or limited.



Timberfor's fleet comprises 90 forestry machines

One of the key challenges Timberfor faced was the lack of real-time visibility into its field operations. Maintenance tracking, operator shift records, and idle time monitoring were all handled manually, which resulted in slow and inefficient processes. Each operator had to complete a paper productivity form for every shift — with daily and nightly shifts, two forms were completed for each machine every 24 hours across the company. These forms had to be collected from the field and manually entered into the company's ERP system, a process that was time-consuming and prone to errors, misunderstandings, and delays.

The company's reliance on paper-based documentation meant serious limitations in analytical capabilities, no real-time visibility into operations, and even potential data loss or inconsistencies. As a result, it was difficult to gain accurate insights into each machine's downtime, which was crucial for boosting efficiency and reducing operational costs.

The company was looking to modernize its operations by digitalizing processes and implementing vehicle tracking for forestry fleets — creating a system to accurately record essential data such as machine working hours, maintenance logs, vehicle locations, and the extent of harvested areas covered.

In search of an effective, transparent, and tailored forestry software solution, Timberfor reached out to [Maqsat](#), Wialon's trusted partner in Uruguay, to help transform their fleet operations and drive better performance.

Solution

Before moving into active development, Maqsat created a proof of concept. It was tested in the field and then refined based on Timberfor's feedback to ensure the solution fully aligned with the client's specific needs.

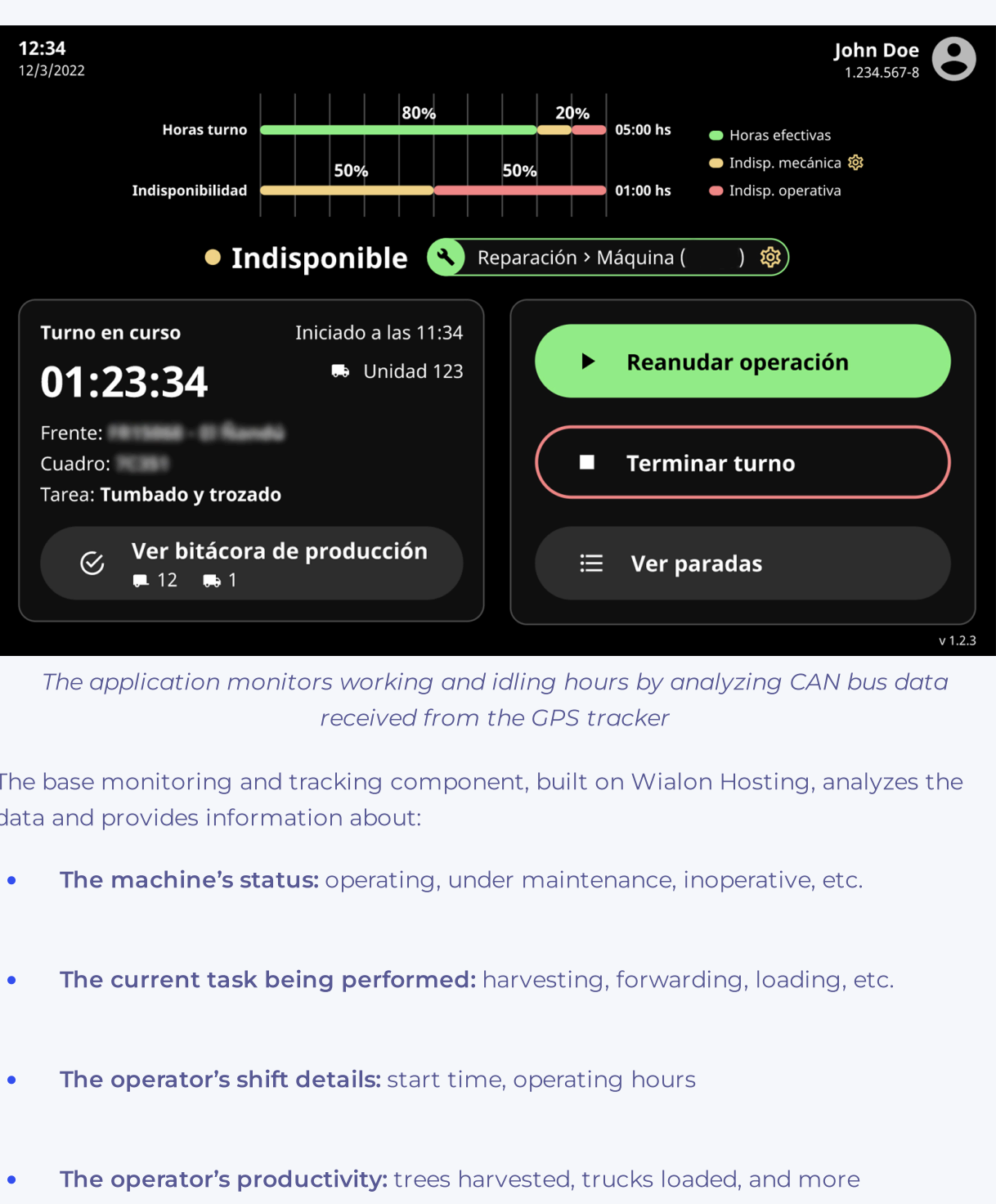
The implemented system consists of several custom hardware and software layers, with the Wialon [fleet digitalization platform](#) serving as its core — specifically tailored to address and minimize the challenges the client was facing.

Hardware-wise, a durable Android tablet, specially designed for in-vehicle use, was installed inside each machine's cabin.



Cabin hardware setup

Maqsat developed a special mobile Android app, designed with an offline-first approach, to run on in-vehicle tablets. The app receives data from a programmable GPS device — DCT's Syrus 4 model with CAN bus integration — which also served as the internet gateway for the tablet via a LAN connection. All collected data is transferred to the cloud once the Syrus 4 enters a network coverage area, giving operators full visibility into machine operations that occurred during periods of limited connectivity.



The application monitors working and idling hours by analyzing CAN bus data received from the GPS tracker

The base monitoring and tracking component, built on Wialon Hosting, analyzes the data and provides information about:

- **The machine's status:** operating, under maintenance, inoperative, etc.
- **The current task being performed:** harvesting, forwarding, loading, etc.
- **The operator's shift details:** start time, operating hours
- **The operator's productivity:** trees harvested, trucks loaded, and more

A cloud-based web application serves as the frontend of the solution, offering a monitoring dashboard, full CRUD operations, reporting tools, and other administrative functionalities.

Additionally, the solutions includes two supporting components:

- **A tablet management platform** that allows Maqsat to remotely monitor, configure, and perform OTA updates to tablet firmware and software. This is crucial for operating in remote areas where manual updates are often impractical due to vast territories, limited accessibility, and slow on-site processes.
- **A GPS device management platform** that enables Maqsat to remotely monitor, configure, update, and troubleshoot any issues related to the GPS devices in the field.

In addition to the forestry industry, the application can also be adapted for use in mining, road construction, and agriculture.

Deployment process and post-launch support

The first stage of development focused on building detailed prototypes of the mobile and web applications, which were reviewed and approved by the client. Once the initial versions were ready, the system was installed on three machines at a single harvest area and thoroughly tested by the operators.

One of the main challenges during implementation was helping operators adjust to changes in their usual routines. To ease the transition, the team involved operators from the early stages of the project, encouraging them to test the solution and share feedback for improvement. Multiple training sessions were conducted, and supportive materials — including videos and slide presentations — were developed to make onboarding easier. Additionally, the mobile app was designed with maximum simplicity and usability in mind to ensure smooth adoption.



Operator training included easy-to-follow materials and hands-on sessions

There were also some technical challenges. Due to the wide range of technology used in forestry, the company's fleet consists of diverse machinery, resulting in varying behavior of CAN bus data across different units. This required additional effort to ensure proper integration and consistency in data collection.

To support the rollout, after-sales service includes Level 1 customer support available 5 days a week during business hours, and Level 2 support available 24/7, since operations run both day and night shifts.

Results

The implementation of the solution brought measurable improvements across various aspects of Timberfor's operations. Drawing on best practices and emerging technologies in the timber industry, the new digital forestry tools helped the company streamline workflows, improve data accuracy, and make more informed decisions — all of which contributed to better overall efficiency and control even under connectivity constraints.

15% increase in daily machine uptime

Timberfor gained real-time visibility into each machine's operating and idle periods, resulting in an average 15% increase in daily machine working hours.

15% less maintenance costs

Maintenance-related expenses dropped by approximately 15%, thanks to better preventive maintenance planning and improved traceability of tasks.

Paperwork elimination

The digital forestry solution eliminated the need for time-consuming and error-prone manual logging processes.

20% increased operator productivity

Operator productivity rose by an average of 20%, driven by the extended operational time of the machines and the introduction of performance-based incentive policies made possible through digital data tracking.

Company profile

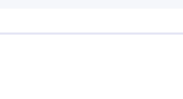
IoT project of the year nomination: Growing fleets

Country: Uruguay

Industry: Agriculture

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