

Real-time IoT Inventory Management On-track at a Major Car Manufacturer

About the Company

A premium car manufacturer producing over 2.5m vehicles per year. This client is increasingly relying on innovations such as logistics robots, autonomous transport systems at plants and digitalisation projects for managing its end-to-end supply chain.

The Challenge

Production lines in the modern car manufacturing industry are highly automated, fast-moving environments requiring real-time management. With a car being completed every 90 seconds it is critical that components are delivered to precise locations at exactly the right time. Any deviations to the schedule can result in delays to production, or fitting of incorrect parts, with knock-on effects including retrospective correction of errors to several vehicles.

The client identified the need to track tens of thousands of inventory components, such as pallets, crates, and trailers, across the whole site in real-time. Similar requirements exist for application of the technology for managing site security. They quickly determined that developing and implementing this capability was outside their skill set and engaged Xoomworks Technology to deliver a solution

Highlights

- ✓ Rapid development of requirements and design
- ✓ Deployment of a proof-of-concept tracking solution within 7 months
- ✓ Real-world experience of the system is informing further development

The Solution

In May 2018 Xoomworks Technology initiated a programme to define the requirements, design a solution and implement a proof-of-concept operation. The chosen technology, based on Internet of Things (IOT) principles, uses Radio-frequency Identification (RFID) tags and sensors, coupled with a bespoke web/mobile application.

Xoomworks uses a 'One Team' approach to projects, with key resources deeply embedded in the client's organisation. This guarantees close cooperation and transparency in the delivery of the project. With this approach, requirements can be clearly understood, and the right solution delivered rapidly.

Xoomworks held workshops to explore the requirements, develop specifications and define a Minimum Viable Product (MVP) to be deployed as a proof-of-concept system. The workshops identified which items needed to be tracked, where they moved within the plant and who needed to know where they were at any one time. A solution proposal was submitted, based on this analysis and agreed by the client.

Given the diversity of potential use-cases it was felt the most pragmatic way to develop the product was a "core" platform, with generic functionality, on which solutions can be built to address individual customer applications as needed.

The key factors setting out the development roadmap in this way included:

- ✓ Creating as much value as early as possible for a tightly defined group of users by releasing a minimum viable product (MVP).
- ✓ Broadening out to satisfy a more diverse range of users as the product matures, creating wider value in a series of rapid, incremental releases.
- ✓ Maximising the probability of creating a tool with overall business benefit by balancing bespoke applications and more generic functionality.

Xoomworks development teams in Romania quickly delivered an integrated system which was able to read tags fixed to a range of inventory components, and to report their whereabouts in real time. Since no mock-up of the production plant existed at the development site, the system was deployed in the real-world environment across two major car manufacturing sites in December 2018.

Work has now commenced on the next phase of the project, to productionise the solution for all the logistics components that need to be tracked. This work will include developing a software package that can be deployed by the client's staff, tagging of over 15,000 components, deployment of 150-200 readers, the training of several hundred users and provision of 100+ devices. Finally, the reporting facilities of the solution will be developed, including real-time mapping of component locations.



Key Benefits

Rapid Deployment: The rapid deployment of the proof-of-concept has enabled the car manufacturer to appreciate the capability of the technology, further refine their requirements and plan for the full deployment of the tracking solution.

Real-time logistics: With real-time logistics tracking, the client will be able to track the locations and movements of a very wide range of objects servicing their production lines. Instances of lost or damaged components will be reduced and any issues will be identified more quickly and resolved in real-time.

Reduced down time: In addition to the monitoring of logistics components, core information provided will assist in the scheduling and management of equipment maintenance, reducing the down time of key elements of the production line.

Informed decisions: The experience gained through the proof-of-concept will also help decisions to be made about the application of the tracking system to security patrols and/or roll-out to their other manufacturing locations.