VEHICLE TRACKING AT AIRSIDE (VETA) PROJECT WITH CHANGI AIRPORT GROUP (CAG)

Overdrive IoT has developed the Vehicle Tracking at Airside (VETA) System, which offers Changi Airport Group (CAG) and its ground-based assets real-time visibility and analysis capabilities. The VETA project is an essential data enabler that facilitates Changi Airport Group's pursuit of key outcomes in safety, capacity, and efficiency. Its implementation represents a significant step towards realizing Changi Airport Group's long-term vision.

The Challenge

The need to improve passenger experience and safety has led CAG to seek IoT solutions. With the surge in air travel demand, CAG recognized the need to enhance safety and revisit new ways of resolving challenges in the airside operations. This includes the need to identify potential safety hazards, increase capacity, improve efficiency and detect unsafe events that go unreported.

1. On safety

To address safety concerns, CAG sought a solution that can detect potential safety hazards and identify unsafe events in the busiest areas of the airport, where rules and regulations must be strictly adhered to at all times.

2. On capacity

To increase capacity, CAG needed a platform to identify delays, bottlenecks, and congestion occurrences. This data can be used to maximize available spaces and improve long-term capacity planning.

3. On efficiency

To improve efficiency, CAG required a platform that can monitor real-time roadway conditions and trigger alerts on delays due to the absence of vehicles for immediate intervention and coordination. With these improvements, CAG aims to provide passengers with a safe, seamless, and efficient travel experience.
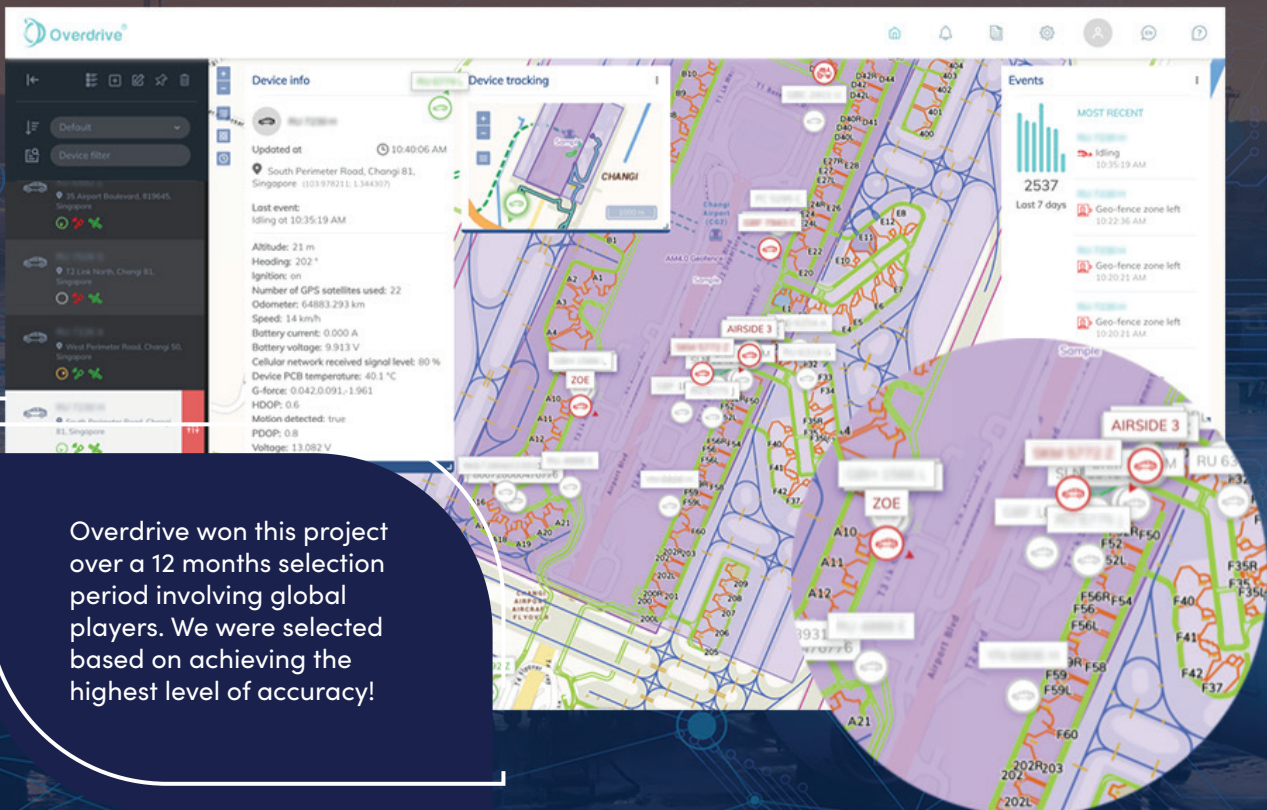
The Solution

Overdrive has developed the Vehicle Tracking at Airside (VETA) Platform to provide CAG with a comprehensive overview of the entire air site and monitor the movement of vehicles and non-motorized units with greater situational awareness. The platform seamlessly integrates with the airport's existing systems, various GHAs, and other companies' tracking data.

The VETA System aims to collect the tracking data of all airside vehicles into an integrated asset tracking system, incorporating fleet management functionalities. Designed to monitor up to 4,000 vehicles, it is scalable to accommodate future expansions. This ensures that all vehicles and non-motorized units operate efficiently and comply with local regulations, while minimizing operation and maintenance costs.

The VETA System can track a variety of vehicles, including passenger buses, baggage transport, cargo vehicles, runway sweeper trucks, tank trucks, as well as occasional visitors such as medical and civil defense vehicles. The system captures critical data such as real-time flight information and CAG's local airside map. This provides an overview of the aircraft turnaround status at each aircraft stand based on the presence of vehicle types benchmarked against the flight information.

With the VETA Platform, Overdrive empowers CAG to manage the airside operations with greater precision, efficiency, and safety, paving the way for a seamless and enjoyable travel experience for passengers.

Number of Assets: 4,000 vehicles & growing

Overdrive won this project over a 12 months selection period involving global players. We were selected based on achieving the highest level of accuracy!

How does it work?

Our installation of GPS trackers with Bluetooth capabilities enables accurate location, movement, and condition monitoring of all air site vehicles. To track non-powered assets, Bluetooth sensors are tagged to them, which continuously broadcast signals. The GPS trackers, acting as gateways, pick up these signals, capturing all assets within proximity.

This technology provides an accurate data connection for all airport vehicles and equipment into a mesh network. With this system in place, airport operators can monitor the movement and condition of all assets in real-time, enabling them to make informed decisions and ensure efficient operations.
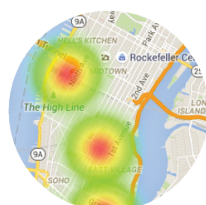
The combination of GPS trackers and Bluetooth sensors enhances the precision of asset tracking and enables the system to capture data from all airport vehicles and equipment. This leads to improved operational efficiency, cost savings, and a better passenger experience, ultimately making the airside operations safer and more reliable.

Our platform offers essential features that gather and arrange real-time data, enabling CAG to remain focused on its primary mission.

Non–Motorised Monitoring
Monitor non-powered assets and scan their proximity using Bluetooth Technology

Heat Map
Identify and display location and timing of roadway traffic bottlenecks at the airside

Air Flight API Integration
Receive and display flight information through flight API for easy monitoring of aircraft stands

Data Extraction
Allows extraction of data by 3rd party platform

Real-time Alerts

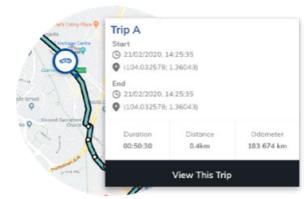Get instant alerts on vehicles and allow incoming updates from other platforms

Geo-Fence

Create zone-based rules and trigger alerts when vehicles are in restricted areas

Fleet Overview

Gain full control over fleet operation in a centralised platform

Trips Monitoring

Track vehicle's location from start to finish

Location History

Playback historical events to examine and generate track reports

Vehicle Statistics

Keep track of vehicle's speed, current engine revolutions and fuel levels to identify any potential issues

Live GPS Tracking

Capture real-time updates on vehicle's location, status and activities

Driver Behaviour

Keep drivers safe by risky driving behaviour such as harsh braking, cornering and accelerating

The Benefits

Comprehensive visibility of all airside vehicles and non-motorized units for enhanced safety and security

Promotion of safe driving culture by continuously monitoring driving behavior

Early detection of potential safety hazards and timely intervention to ensure passenger safety

Identification of congestion occurrences for optimal use of available space and smooth airport operations

Elimination of delays in aircraft turnaround process to improve operational efficiency

Real-time visibility on roadway conditions for faster response to incidents and emergencies

Improved long-term capacity planning to cater to increasing passenger demand

Enhanced overall passenger experience by providing a safe and seamless travel experience

The Results

The VETA platform developed by Overdrive is a transformative solution that leverages smart sensors, connected devices, and analytics to redefine CAG's airside operations. By automating routine tasks and ensuring the smooth operation of all airport assets, the platform delivers a seamless travel experience to passengers while reducing the reliance on manual labor.

The implementation of VETA has resulted in increased accuracy of data, enhanced operating efficiency by 300%, and a significant reduction in costly operating downtime, amounting to USD 150K per day. Overall, the VETA platform is a game-changer for airport operations, providing a reliable and efficient solution to streamline processes and enhance passenger safety and experience.

Who Are We

Overdrive is the leading real-time asset monitoring IOT company in Asia that provides end-to-end IoT solutions and automates data sensing of various types of assets within a business ecosystem, from vehicles and machinery to facilities and people – all under one roof.

What We Do

Specialises in

- Vehicles Monitoring
- Airport Management
- Vessel Tracking
- Heavy Machinery Monitoring
- Smart Hygiene
- Environmental Monitoring
- Sustainability Solution