



RTLS Solution for Real-Time Clinical Specimen Tracking

QBurst deployed a customizable IoT platform for a premier healthcare organization, using advanced location-aware technology (RTLS) to track clinical specimens in real-time, drastically improving operational efficiency and the credibility of clinical laboratories.

Overview

QBurst integrated a customized IoT platform using BLE technology with existing hospital systems to digitize specimen tracking.

Real-Time Visibility: Deployed BLE tags and listeners to provide real-time location data for clinical specimens, eliminating the problem of misplaced items.

Process Automation: The solution replaced manual check-ins and pick-ups at collection points, leading to a standardized, accountable, and transparent transportation process.

Operational Efficiency: Analysis of reports helped balance carrier workloads and enabled the early detection of anomalies, significantly reducing overall turnaround time.



Client Profile

A premier healthcare organization with multi-specialty hospitals and healthcare centers in South India and the Middle East.

Challenges

- **Misplaced Specimens:** Human error was a common occurrence, despite close monitoring, resulting in critical clinical specimens becoming misplaced.
- **Lack of Accountability:** Absence of a system to automatically monitor and record delays in specimen pick-up from collection points, preventing root cause analysis.
- **Manual Data Analysis:** Analyzing the turnaround time (TAT) at each transit location was a manual, retrospective process that delayed corrective action and impacted efficiency.
- **Compliance and Quality Risk:** Transit delays adversely impacted the quality of specimens and risked the credibility of clinical laboratories.

IoT Clinical Specimen Tracking Solution

QBurst deployed SeeMyMachines™, a customizable IoT platform, utilizing advanced Real-Time Location System (RTLS) technology. This cloud-based solution leverages Bluetooth Low Energy (BLE) technology to track clinical specimens seamlessly throughout the hospital network.

Key Solution Components

- **BLE Location Tracking:** BLE tags were assigned to specimen bags and carriers. BLE Listeners placed at designated areas capture these signals to display the specimen's location in real-time.
- **Workflow Digitization:** The solution replaced manual check-ins and pick-ups, automatically monitoring and recording transportation between transit points to ensure transparency and accountability.
- **Operational Interface:** A robust Dashboard displays data on received/dispatched specimens and delivery performance. An Admin interface allows users to manage assets, users, and departments.
- **Reporting and Analytics:** Generated crucial MIS reports for transport segments and carriers, enabling workload balancing and analysis of turnaround times.

Technical Highlights

- **RTLS Technology (BLE):** Utilized energy-efficient BLE technology for precise, real-time asset tracking of carriers and specimens.
- **Cross-Functional Interface:** Included a mobile application that enables users to easily add carriers, scan barcodes, and track trips, integrating the solution directly into staff workflows.
- **Performance Reporting:** The dashboard provides role-based notifications on status and delays, enabling early detection of anomalies and timely corrective action.
- **Optimization Tools:** Integrated a trip tracking and route optimization feature into the platform's core to continually seek efficiency gains.

Impact: Driving Efficiencies and Productivity in Clinical Specimen Tracking

- **Reduced Turnaround Time:** Analysis of reports helped balance workload between carriers, resulting in an estimated 55% improvement in specimen processing turnaround time and efficiency.
- **Enhanced Transparency:** Transparency in specimen movement significantly reduced the time required for report publishing and eliminated the problem of misplaced specimens.
- **Improved Efficiency and Productivity:** Insights into specimen movement led to improvements in resource and task allocation, resulting in a 40% increase in efficiency and productivity.
- **Early Anomaly Detection:** Early detection of anomalies and delays enabled timely corrective action, reducing workflow distractions and preserving specimen quality.