Drone Warehouse Inventory Reconciliation Solution

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About Tata Consultancy Services Ltd (TCS)
Tata Consultancy Services is an IT services, consulting and business solutions organization that delivers real results to global business, ensuring a level of certainty no other firm can match.
TCS offers a consulting-led, integrated portfolio of IT and IT-enabled infrastructure, engineering and assurance services. This is delivered through its unique Global Network Delivery Model™, recognized as the benchmark of excellence in software development. A part of the Tata Group, India’s largest industrial conglomerate, TCS has a global footprint and is listed on the National Stock Exchange and Bombay Stock Exchange in India.

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IT Services
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Keeping accurate inventory records can be seen as an important management tool, with multiple benefits such as effective planning of business operations, reduced order turnaround time, and superior expense control. To improve the supply chain, companies with a significant amount of inventory are looking to make the inventory-checking process more effective and efficient with the use of drone technology. Drones can help organizations eliminate human errors and complete the reconciliation process in a timely, accurate, on-demand, and fully automated manner.

Tata Consultancy Services’ (TCS’) Drone Warehouse Inventory Reconciliation Solution uses smart, context-aware drones to enhance inventory reconciliation capabilities, increase warehouse productivity, and reduce dependence on material and human resources. The solution consists of a warehouse manager portal and an out-of-the-box mobile application for the drone pilot. It smoothly integrates with warehouse management systems to enable a comprehensive view of the inventory.

Overview
For inventory reconciliation, traditional warehousing relies on labor-intensive processes carried out manually by inventory auditors with the help of forklifts. Hence, reconciliation is prone to inaccuracies, affecting the stock availability, movement, ordering, and replenishment. Moreover, it posess a security risk for auditors and forklift operators. Streamlining warehouse operations in large warehouses and distribution centers and enabling re-shoring requires effective labor management practices, while minimizing costs to meet dynamic, high-volume demand. This necessitates automation of the inventory reconciliation process through emerging technologies such as drones, artificial intelligence, chat bots, and advanced analytics.

TCS’ Drone Warehouse Inventory Reconciliation Solution helps drones that understand the warehouse layout maneuver intelligently in a constrained and GPS-denied operating environment while following a user-defined flight path. Equipped with state-of-the-art cameras and sensors, advanced computed vision for autonomous flight navigation, and machine learning-driven chat bots for search-and-find operations, the drones enhance inventory control. The solution helps reduce pilferage and increases visibility into stock levels by performing reconciliation more regularly without human intervention. Further, the time taken for reconciliation is significantly reduced, thereby increasing operational efficiency and driving top-line growth.

Our Solution
TCS’ Drone Warehouse Inventory Reconciliation Solution includes the following salient features:

- **Non-intrusive and Warehouse-aware Mission Planning:** Offers on-demand, automated mission planning for targeted aisles, racks, or shelves, without requiring modification to existing warehouse processes.
- **Autonomous Flight Control and Navigation:** Comes with safe operational capabilities built into drone flight control and navigation, making it easier to train the existing staff and simplify operations.
- **Automated Data Processing Pipeline:** Improves performance by using powerful algorithms driven by machine learning, human-aided learning, and computer vision systems.
- **Enterprise WMS Integration:** Enables bidirectional data exchange and creates detailed verification and reconciliation reports at the end of every mission through close integration with the enterprise warehouse management system (WMS) in a vendor-agnostic manner.

Benefits
With TCS’ Drone Warehouse Inventory Reconciliation Solution, you can reap the following benefits:

- **Enhance Operational Efficiency and Safety:** Enable automated, on-demand inventory counting to boost productivity. Release forklift fleet and operators for core warehouse operations and eliminate potential safety hazards for workers.
- **Increase Counting Accuracy and Turnaround Time:** Improve stock reliability and service quality by checking the goods and verifying their location on a regular basis. Identify and resolve storage errors by tracking the inventory in an accurate and timely manner.
- **Increase Visibility on Stock Levels:** Facilitate a single view of warehouse activities by ensuring tight integration with the warehouse management system and ensure that all inventory counts are up to date.
- **Optimize Operating Expenditure:** Reduce personnel costs with manpower rationalization.

The TCS Advantage
By partnering with TCS, you can leverage the following differentiators:

- **Rapid Prototyping:** TCS has drone test beds with certified pilots, integrated solutions, and ready-to-deploy solutions, accelerating proof of concept creation, and enhancing ROI for drone-based warehouse management solutions. We also provide holistic support for hardware, communication protocols, and process intelligence and help boost interoperability by standardizing data and improving information semantics.
- **Domain and Technical Expertise:** Our team of domain specialists and drone engineers has extensive experience in executing complex projects for global organizations across industries, enabling companies to scale up prototypes into pilot production runs quickly. TCS has a deep understanding of enterprise systems and processes, helping you realize the full potential of the drone solution with end-to-end enterprise integration. We build customized, risk-minimized, and cost-effective drone-centric solutions, and enable faster adaption with the help of our rich repository of pre-built solutions and accelerators.
- **Agile Methodology:** TCS improves speed-to-market for drone technology by employing a lean, agile-based startup methodology, with 30-60-90-day delivery cycles. Using an incremental and iterative approach towards solution development and an unequivocal focus on continuous improvement throughout the development lifecycle, we deliver high-quality tailored solutions on time and within the budget.
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