Intelligent Warehousing

A High-Tech Enterprise Realizes Full-Process Transparency and Traceability in Smart Warehousing with H60T and WMS Integration

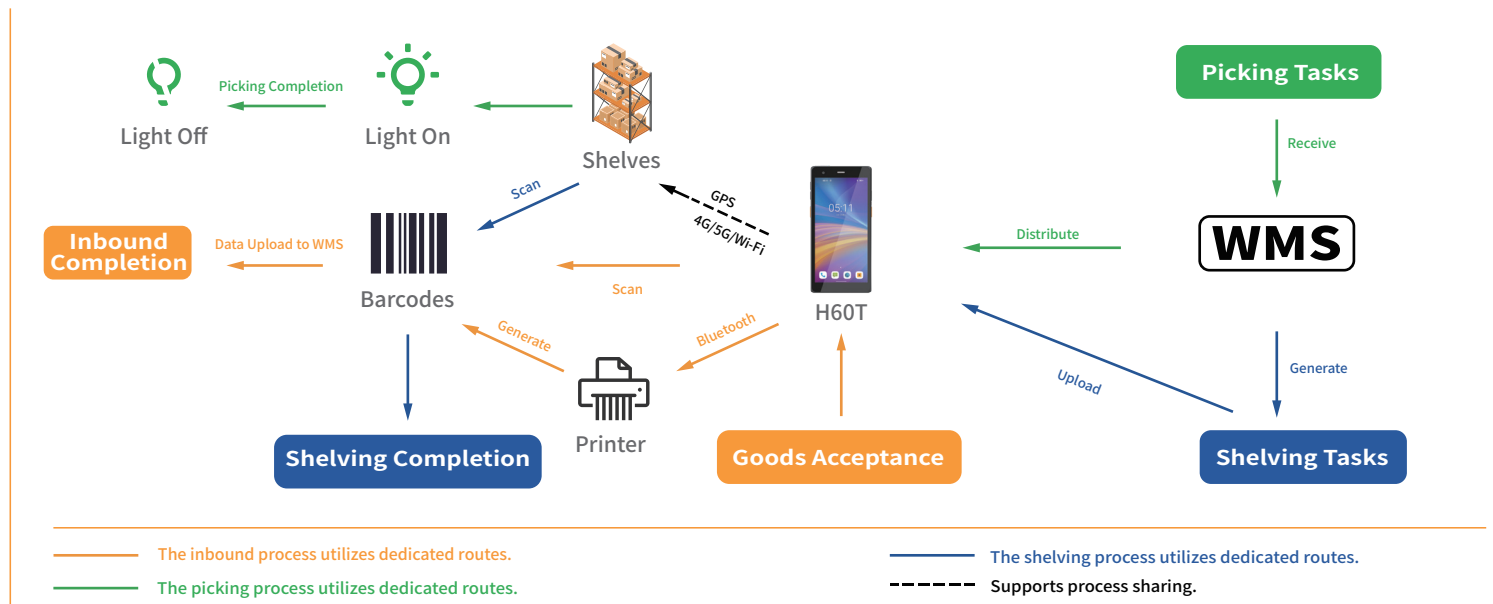| **100%**	**99.5%**	**20%**	**25%**
Process Traceability	Accuracy	Faster Deliveries	Lower Labor Costs

Abstract

A leading electronic technology enterprise has digitized its full-process warehousing by deploying the rugged handheld H60T and integrating it with the WMS. This implementation has significantly reduced operational errors, optimized efficiency, and established a robust foundation for sustainable warehouse management.

Client Overview

The client is a top-tier high-tech enterprise specializing in the development and manufacturing of advanced rugged mobile terminals and industry terminal solutions. With a self-owned factory covering 10,000 square meters and a 2,000-square-meter warehouse, the company produces over one million units annually, serving industries worldwide with digital and intelligent solutions.

Workflow

Picking Completion → Light Off
Light On → Shelves
Shelves → Scan → Barcodes
GPS 4G/5G/Wi-Fi → H60T
Barcodes → Data Upload to WMS → Inbound Completion
Barcodes → Generate → Printer
Printer → Scan → H60T
Printer → Bluetooth → H60T
Barcodes → Shelving Completion
Goods Acceptance → H60T
H60T → Distribute → WMS
WMS ← Receive ← Picking Tasks
WMS → Generate → Shelving Tasks
H60T → Upload → WMS

The inbound process utilizes dedicated routes.
The picking process utilizes dedicated routes.
The shelving process utilizes dedicated routes.
Supports process sharing.

Challenge

The client is a high-tech enterprise in the electronic technology sector that previously relied on manual warehouse management. However, rising order volumes, diverse products, and expanding operations have revealed the limitations of this approach. Key processes depended on manual recording, which was time-consuming and prone to errors, complicating the storage and retrieval of paper records. Discrepancies between inventory data and actual stock made tracing issues difficult.

For instance, the placement of goods relied heavily on staff experience, leading to human errors during tasks like inbound shelving, replenishment, and returns. This caused confusion over product locations and inaccurate inventory data. Additionally, the picking process lacked real-time verification, resulting in significant inventory discrepancies and inefficient picking.

These challenges severely affected the authenticity, efficiency, and traceability of warehouse management. Factors such as dim, humid environments and unstable signals in enclosed warehouses further complicated operations. To address these challenges, the client required an automated and intelligent warehousing solution to improve efficiency, accuracy, and real-time visibility, enabling better adaptation to complex and dynamic scenarios.

Solution

To address inefficiencies in traditional warehouse management, the client adopted Emdoor's rugged H60T rugged handheld and integrated it with the WMS, achieving full digitalization and visibility. Powered by an ARM Octa-Core processor, the H60T supports dual-mode 5G, Wi-Fi, and Bluetooth for efficient data processing and real-time transmission. Its 4500mAh battery and IP65 protection ensure reliability in harsh environments.

With the H60T and WMS working together, goods are accurately recorded from the moment they enter the warehouse. Staff verify items, and upon confirmation, batch information is uploaded to the WMS. Key details—such as product codes, names, specifications, quantities, and production dates—are clearly displayed on the H60T, supporting effective inventory

management and product traceability. Additionally, Bluetooth functionality enables quick printing of shelving labels, enhancing the efficiency of inbound operations.

Before shelving, the WMS system assigns optimal storage locations based on product attributes and storage rules, with detailed instructions delivered via the H60T. The device's GPS functionality helps staff locate target positions quickly, while its 1D/2D barcode scanner ensures real-time data updates upon scanning both storage locations and goods.

During inventory checks, staff scan shelf items with the H60T, allowing the system to generate inventory reports automatically and update the WMS, facilitating quick assessments of stock levels for replenishment.

The H60T supports real-time wireless receipt of picking tasks, generating pick lists with employee details, product specifications, quantities, and location codes. When pickers scan the barcodes, corresponding lights illuminate, and the picking route is transmitted to the H60T via 4G/5G/Wi-Fi. This allows pickers to quickly locate items and complete tasks efficiently, with lights turning off as items are picked. The collaboration between the handheld terminal and shelf lighting enables efficient and precise discrete, cluster, or batch picking.

When goods are shipped, the system adheres to the "FIFO" principle to prevent inventory backlog. Staff scan outbound goods with the H60T, allowing the system to verify order information and provide real-time feedback, ensuring shipment accuracy. Outbound data is updated instantly, generating reports for management to monitor shipping status.

The H60T-WMS integration achieved end-to-end automation, precision, and efficiency, eliminating manual errors and enhancing operational performance, laying a foundation for lean management.

Benefits

Achieving Full Visibility in Warehouse Management

The H60T rugged handheld deeply integrated with the WMS system, enables real-time inventory monitoring, precise data analysis, and instant reporting, empowering businesses to optimize inventory control. This ensures timely replenishment decisions, prevents

stockouts or overstocking, and accelerates cash flow. Detailed analytics provide a scientific foundation for long-term warehouse management, driving smarter decision-making.

Establishing End-to-End Traceability

The H60T supports rapid data entry and seamlessly updates the WMS with real-time information on inbound, picking, and outbound operations, generating reliable inventory reports for audits. It also enables quick access to the full lifecycle of goods, pinpointing issues to enhance efficiency, ensure compliance, and maintain transparent operations.

Boosting Efficiency and Accuracy

With robust network capabilities, the H60T ensures real-time data updates, allowing operators to access the latest inventory status instantly. This eliminates errors like misplaced or missed items, standardizes workflows, and reduces human error, improving overall accuracy.

Enhancing Employee Experience and Supervision

The H60T's intuitive interface reduces training time and workload, enabling precise inventory management without paper records. It also logs detailed task information—such as timestamps and responsible personnel—in real time, strengthening supervision and supporting better incentive mechanisms to improve work quality.

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> After implementing the Smart warehouse solution, our warehouse management efficiency has undergone a qualitative leap. The use of the H60T rugged handheld terminal has made every process efficient and accurate, significantly enhancing our user experience.
>
> — **Warehouse Manager, Client Company**
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