Global Airline Modernizes Maintenance Supply Chain with WMS, TMS, and AIT Strategy

ALPINE
Supply Chain Solutions

1   Introduction

A global low-cost airline operating a point-to-point network across more than 117 airports in 11 countries has a maintenance supply chain that supports a highly distributed operating model that depends on speed, reliability, regulatory compliance, and empowered local decision-making at both hub and line-station locations. As the airline's network continued to expand and system complexity increased, leadership recognized the need for standardized, integrated supply chain systems and engaged Alpine Supply Chain Solutions for support.

2 Challenge

Airline maintenance supply chains face a high-cost failure mode: when parts are not available at the right place and time, the result is aircraft delays, costly expedites, and rework. As the airline grew, its reliance on fragmented systems and site-specific workflows created variation in execution, inconsistent data capture, and limited network-wide visibility across maintenance inventory locations.

Leadership also faced a delicate balance between improving operational control and preserving the organization's empowerment culture. Standardization could not come at the expense of local decision-making. At the same time, the airline needed to reduce cost, improve asset utilization, and ensure any new WMS, TMS, and AIT investments aligned with a broader enterprise roadmap to migrate core systems to the cloud over the next two to three years.
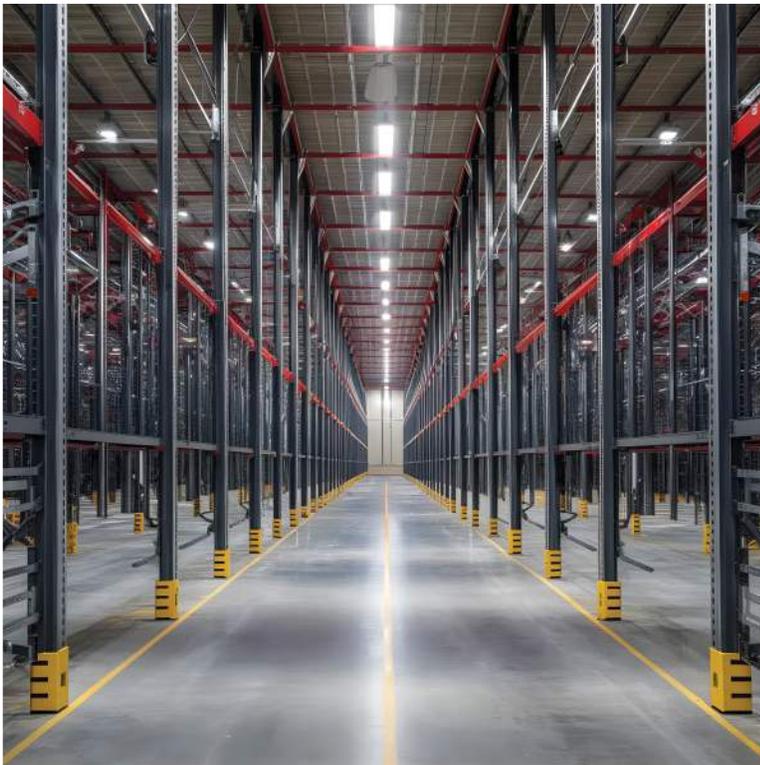
3 Solutions

Alpine partnered with the airline to lead a structured requirements capture and technology readiness initiative designed to build a defensible business case for selecting one enterprise WMS, one enterprise TMS, and Automatic Identification Technology (AIT) vendors. The approach focused on creating "clear guardrails" through standardized processes, consistent data capture, and shared visibility—while still enabling fast, informed decision-making at the local level.

The solution included a comprehensive readiness assessment, development of a detailed requirements library, and creation of effort-versus-value and ROI scenarios across a 12–36 month horizon. Alpine also aligned all recommendations to the airline's enterprise cloud roadmap, ensuring that technology selections would integrate cleanly and support future-state architecture without creating stranded investments.
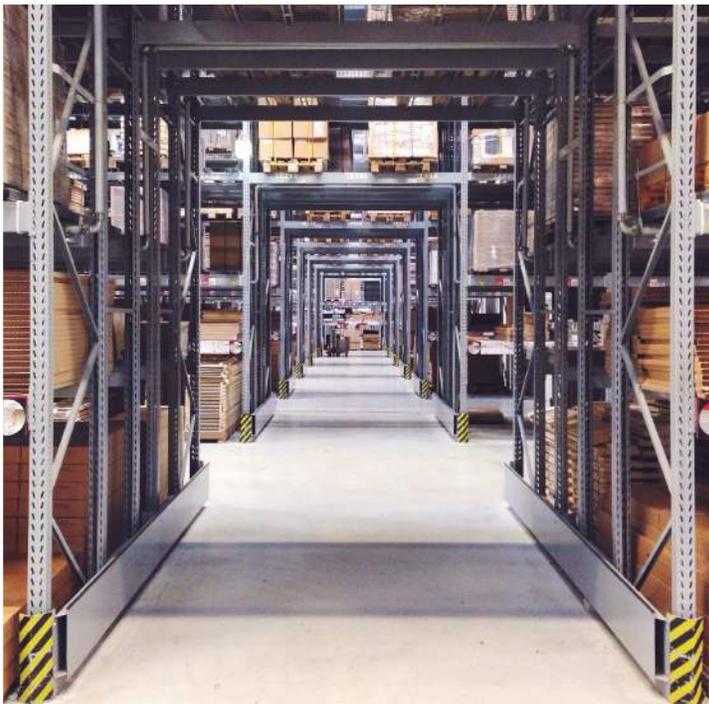
4 Implementation

Alpine conducted site visits at four hub and line-station locations to observe workflows, identify variability, and capture site-specific operational requirements. A corporate-level working session aligned leadership on business case assumptions, ROI methodology, and enterprise technology direction. These inputs informed a technology fit roadmap outlining how WMS, TMS, and AIT would integrate into the airline's broader systems landscape over the next two to three years.

Before vendor evaluation, Alpine delivered a comprehensive readiness assessment covering data quality, organizational ownership models, resource availability, and full program cost structure—including software, implementation, devices, labeling, training, and ongoing support. Alpine then documented more than 400 functional, integration, reporting, and security requirements, with FAA compliance and serialized part tracking defined as non-negotiable must-haves. Five vendors in each category (WMS, TMS, and AIT) were identified and evaluated using a structured, criteria-driven framework to support objective comparison and executive governance.

5   Results

By the conclusion of the engagement, the airline had a complete, defensible foundation to move confidently into procurement and vendor selection. Leadership gained clear visibility into what improvements would deliver the most value, what effort and dependencies were required, and how timing aligned with the enterprise cloud migration roadmap.

Key outcomes included a quantified effort-versus-value view of modernization initiatives, ROI scenarios across a 12–36 month horizon, and a vendor short list aligned to aviation-specific requirements, scalability, and cloud readiness. Collectively, the deliverables positioned the airline to launch a modernization program that improves labor productivity, reduces inventory write-offs and obsolescence, lowers transportation costs, strengthens regulatory compliance, and supports long-term growth—while preserving the organization's culture of empowered execution.