zensar
An RPG Company

The Future of Warehouse Operations in the Age of AI and Generative AI



For decades, warehouse management systems (WMS) were built to answer one question: where is my inventory? Today, that question has evolved into harder ones: what should happen next, who should do it, and can it happen without a human clicking “approve”? Artificial intelligence and generative AI are rewriting the operating model of the modern warehouse, and the shift is no longer theoretical. It’s already running inside live distribution centers.

Why warehouses must embrace AI now

Two forces are pushing warehouses toward intelligent automation. On the labor side, 76% of supply chain and logistics operations report notable workforce shortages, with warehouse operations being among the hardest hit at 56% [1]. On the efficiency side, McKinsey’s 2026 research on distributors that have “rewired” their supply chains around AI found network cost reductions of 20%, a 20% improvement in on-time delivery, and 25%-30% reductions in scheduled labor hours at pilot sites, with many of these AI implementations requiring $1 million or less in initial investment [2]. Together, these pressures explain why the warehouse automation market is projected to nearly double from roughly $35000 million in 2026 to $65700 million by 2031 [3].



From task automation to autonomous decision-making

The first wave of warehouse technology automated physical tasks: conveyors, sorters, mobile robots. The current wave automates decisions. In one recent engagement, Zensar helped a leading global sportswear brand apply reinforcement learning to warehouse inventory data as part of a Manhattan WMS deployment. The model learned from fulfillment patterns and continuously refined stocking and picking decisions, improving operational performance over time [4]. That's the practical difference between "automated" and "intelligent": the system isn't just executing a fixed rule; it's improving its own decisions as conditions change.

Platform vendors are building this in natively, too. Manhattan Associates, named a Leader in the 2026 Gartner Magic Quadrant for WMS, now ships Manhattan Active Agents, autonomous agents that interpret intent, pull real-time data, and independently execute multi-step warehouse workflows, covering everything from labor deployment to fulfillment issue resolution[5].





Putting gen AI to work across warehouse operations

Beyond decisioning agents, generative AI is quietly removing friction from two of the least glamorous but most costly parts of running a warehouse: documentation and implementation. In a large-scale WMS environment Zensar supports for a major US omnichannel retailer, business and IT users were struggling to navigate 500+ pages of warehouse system documentation to answer routine configuration questions. Zensar built a GenAI-powered assistant trained on the documentation set. Users can now get answers instantly instead of raising support requests [4].

The same client used generative AI to accelerate the WMS implementation process: product, development, and QA teams were losing time on lengthy solution design document (SDD) reviews, so Zensar deployed a GenAI solution that auto-generates user stories and test cases directly from the design documentation. The result was faster delivery, more consistent testing, and less manual effort across teams, with GenAI accelerating warehouse technology delivery, not just its operation [4].

Building the foundation for AI-driven warehousing

None of this works without a modern foundation. When one of the largest department store retailers in the US commissioned an approximately $700 million, ~3 million-square-foot distribution center, Zensar implemented and configured Manhattan Active Warehouse Management and integrated it with automation systems including AutoStore and Knapp, significantly reducing order fulfillment times while enabling tighter integration between warehouse operations and automation systems [4]. In another warehouse modernization program, they integrated goods-to-person robotics and automated sortation into an existing Manhattan environment. The result was higher productivity, better space utilization, and support for continued business growth [4].

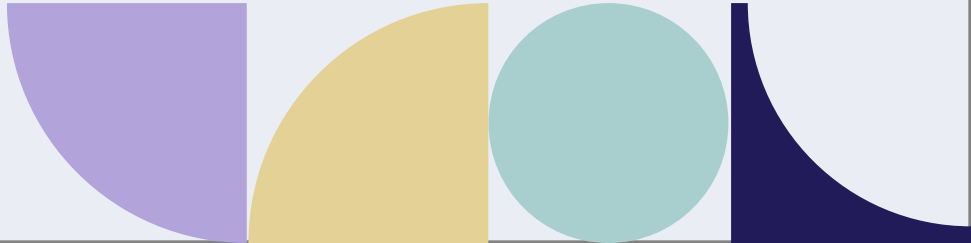
The operational payoff compounds once the platform is stable. For a multi-brand fashion and specialty retailer running Manhattan environments across 13 distribution centers, automation-driven health checks, auto-alerts, and automated fixes cut roughly 200 monthly incidents and reached 70% automation coverage for recurring issues. This suggests that AI's biggest near-term impact in the warehouse may be improved reliability and uptime rather than additional automation on the floor [4].

What's next: AI-powered WMS development and delivery

The examples above show AI accelerating individual tasks inside a WMS program, inventory decisions, documentation, and test writing. Zensar is now working on something that goes a step further: Active Pilot, an internal multi-agent AI workspace currently in development that turns a warehouse modernization program's entire product backlog into something teams can talk to [4]. So far, its results are forecasts based on testing the agents against a live Manhattan Active Warehouse Management solution design and backlog.

Active Pilot changes how WMS programs are delivered. Its agents review design documents, compare them with historical knowledge, and generate draft epics, features, and user stories. Product teams then refine the output instead of starting from scratch. Companion agents handle test case generation, test automation, defect root-cause analysis, and backlog management as a connected agent team, not separate tools. Early internal testing points to roughly 65% optimization in backlog management effort, 60% reduction in test design and automation effort, and about 3x more time freed up for product teams to focus on strategy instead of backlog mechanics [4].

The more interesting signal isn't the percentages, though - it's how the agent teams are being organized. Zensar's own design work maps these agents directly onto warehouse value streams: inbound and inventory operations, outbound waving, and pick-pack-ship. That's a meaningful shift in thinking. Today, AI in warehousing mostly means smarter decisions on the floor or faster delivery of the systems that run it. The next stage is AI embedded directly into delivery teams. The teams building and evolving a warehouse's WMS can then operate with the same speed and agility as the automated operations they support. This could significantly reduce the time between "the business needs a new warehouse capability" and "it's live and stable in the DC," shortening delivery cycles from quarters to a much faster cadence.



The road to intelligent, autonomous warehousing

The warehouse of the near future won't be defined by how many robots are on the floor, but by how much of its decision-making, from inventory optimization to release testing to answering "how do I configure this?" has been safely handed to AI. Getting there takes a modern platform, clean data, and an implementation partner who has actually run this playbook. Zensar has spent years modernizing Manhattan WMS environments for global retailers. Today, that work increasingly includes embedding generative AI into how warehouses are designed, operated, and supported - moving AI beyond experimentation and into everyday warehouse operations.

References

1. https://www.descartes.com/resources/news/descartes-study-reveals-76-supply-chain-and-logistics-operations-are-experiencing

2. https://www.mckinsey.com/industries/industrials/our-insights/distribution-blog/ai-is-transforming-distribution-supply-chains-turning-margin-pressure-into-a-competitive-advantage

3. https://www.mordorintelligence.com/industry-reports/warehouse-automation-market

4. Zensar internal case studies

5. https://www.manh.com/solutions/manhattan-active-platform/ai-agents-for-supply-chain-productivity



zensar

An RPG Company

At Zensar, we're 'experience-led everything.' We are committed to conceptualizing, designing, engineering, marketing, and managing digital solutions and experiences for over 145 leading enterprises. Using our 3Es of experience, engineering, and engagement, we harness the power of technology, creativity, and insight to deliver impact.

Part of the $4.8 billion RPG Group, we are headquartered in Pune, India. Our 10,000+ employees work across 30+ locations worldwide, including Milpitas, Seattle, Princeton, Cape Town, London, Zurich, Singapore, and Mexico City.

For more information, please contact: **info@zensar.com | www.zensar.com**