NUCLEUS RESEARCH

WMS TECHNOLOGY VALUE MATRIX™ 2024

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THE BOTTOM LINE

Supply chain customers demand warehouse management systems (WMS) that meet complex requirements, automate repetitive tasks, and offer actionable insights. They want solutions that scale as needed, incorporate robotics, and use AI for decision support. In response, vendors increasingly offer low-code/no-code options, unifying execution and planning functions, adding new generative AI and machine learning capabilities, and forming Robotics partnerships. With these product innovations, vendors are enhancing both the usability and functionality of their technology, empowering customers to achieve faster ROI through streamlined and efficient warehouse operations. Leaders in the 2024 matrix include Blue Yonder, Infor, Körber, Oracle, Manhattan Associates, and Tecsys.

OVERVIEW

The warehouse management technology market is evolving, driven by customer demand for adaptable, automated, and intelligent systems that address complex operational needs. Traditionally, WMS solutions focused on core functions like inventory tracking, order processing, and seamless integration with existing systems. However, rising supply chain volatility has shifted customer expectations. Today's WMS platforms must scale with

demand, incorporate robotics for task automation, and provide AI-driven insights for real-time reporting and operational analysis. Low-code/no-code customization options are also highly sought after, enabling quick deployment and easy adjustments. Additionally, customers are looking for platforms that integrate execution and planning functions to reduce IT complexity and reliance on multiple providers.

Labor shortages drive many medium-to-large enterprises to adopt autonomous mobile robots (AMRs) to automate repetitive tasks like pallet movement, picking, and replenishment. Complementary technologies like drones, RFID, and IoT sensors are also gaining traction, enhancing real-time inventory visibility and streamlining operations. For example, RFID-enabled cabinets have gained prominence in the pharmaceutical sector, allowing organizations to track inventory automatically entering or leaving a particular cabinet. In a recent supply chain survey, Nucleus found that 47 percent of surveyed companies currently use robotics in warehouses, and nearly half plan to adopt these tools within the next two years (Nucleus Research Y88 – Supply chain agility index 2024 – June 2024).

Analysts found that retailers have become strong buyers of WMS as they are also investing in distribution centers capable of handling complex mixes of in-store, online, and third-party orders. These centers must adapt to varied order types, packaging needs, and delivery schedules, requiring WMS solutions that respond quickly to fluctuating order flows.

In response to these evolving customer priorities, vendors are creating integrated supply chain management and execution platforms that enable customers to coordinate all aspects of their supply chain, from planning to execution and vice versa. The trend toward unified platforms is often achieved through strategic acquisitions and partnerships. To create an all-in-one supply chain offering, WMS software providers acquire or partner with supply chain planning (SCP), order management, and transportation management software providers. To further support automation demands, vendors are forming partnerships with robotics providers or creating Robotics-as-a-Service (RaaS) models, providing customers access to a network of robotic providers to rent or lease robotic systems through subscription-based contracts. This enables companies to integrate industrial robotics without the substantial upfront costs of purchasing and maintaining equipment, offering a more flexible and scalable approach to automation. Vendors are tailoring WMS solutions for industries with strict regulatory and operational requirements, such as healthcare, manufacturing, retail, and 3PL, by providing capabilities that ensure compliance and support specialized workflows. For example, healthcare-focused WMS features often include Drug Supply Chain Security Act (DSCSA) compliance through direct integrations or partnerships.

AI and machine learning within WMS platforms have improved to provide efficiency in areas such as workforce management and warehouse reporting. By analyzing data from past and current workflows, vendors now offer AI capabilities to suggest optimal shift schedules and

assign roles based on worker strengths. Vendors have also worked on AI functionality to help managers anticipate staffing needs to improve scheduling accuracy and how organizations align resources with demand peaks. Some vendors have also rolled out AI abilities to generate personalized, interactive briefs for warehouse managers, summarizing critical metrics and insights for each shift. These briefs highlight key data like fill rates, pick rates, labor productivity, and high-priority orders, providing managers with a clear, actionable overview. Instead of sifting through dashboards or multiple reports, managers receive a concise summary that includes root cause analyses and suggested next steps.

Some WMS vendors now offer low-code/no-code capabilities, enabling users to customize workflows and build integrations without extensive technical expertise. This flexibility allows companies to quickly adapt their warehouse processes to changing needs, such as new order types or inventory requirements, without lengthy development cycles. With low-code/no-code tools, warehouse teams can configure and scale their systems independently.

These advancements in WMS functionality and usability reflect a shift towards solutions that are operationally effective and ROI-driven. Vendors who align closely with customer demands enable their clients to realize tangible value through improved efficiency and reduced manual workload. As these technologies mature, vendors prioritizing customer-centered design and seamless integrations are positioned to deliver greater returns on investment, supporting clients in meeting the dynamic supply chain execution market.

In the 2024 Warehouse Management Technology Value Matrix, vendors are positioned according to the relative usability and functionality of their respective solutions, as well as the value that customers realized from each product's capabilities (Nucleus Research X222 – Understanding the Value Matrix – December 2023) and presented as a snapshot of the current market rather than an empirical ranking of vendors. The arrows indicate perceived momentum in the indicated direction with respect to usability and functionality. Positioning and momentum are informed primarily by conversations with end-users, along with the most recently released capabilities/features and areas of vendor investment.

LEADERS

The 2024 WMS Technology Value Matrix leaders include Blue Yonder, Infor, Körber, Oracle, Manhattan Associates, and Tecsys.

BLUE YONDER

Blue Yonder is a leader in the 2024 WMS Technology Value Matrix, recognized for its enterprise-level WMS platform. It supports organizations in the Automotive, Distribution,

Food and Beverage, Grocery, High-Tech, Consumer Goods, Life Sciences, Logistics Service Providers (LSP), E-commerce, and Retail hard-line and soft-line verticals. Blue Yonder provides a portfolio of supply chain management solution suites, including warehouse management, warehouse execution, workforce/labor management, transportation management, supply chain planning (SCP), merchandising and retail planning on a common data platform. Blue Yonder WMS' core processes include inbound and outbound workflows, yard management, inventory tracking, labor management, and coordinating activities across personnel, robotics, and third-party logistics.

Blue Yonder's WMS solution automates the allocation of put-away locations and guides drivers for inbound processing based on item characteristics, storage strategy, and warehouse workload. Cross-docking workflows handle high-priority orders efficiently. Its Yard Management feature, natively integrated into Blue Yonder WMS, enables users to assign dock doors, staff, and material handling equipment to balance workloads across docks and prevent bottlenecks. It considers arrival times, vehicle contents, and destinations to optimize yard activities. Blue Yonder's inventory management provides visibility and control over stock by tracking on-hand balances, inbound and outbound flows, specific item details like serial numbers and expiration dates, and location data and automatically manages the rotation of that inventory based on user-configured rules. Blue Yonder's WMS platform also supports capabilities for outbound order orchestration, optimizing batch picking, routing, cartonization, parcel, and load building. The WMS system also offers tools for workload forecasting, performance goal setting, task list generation based on location and skillset, and real-time productivity tracking for labor management processes. Blue Yonder's WMS includes microservices such as a label generator for warehouse tasks like picking and shipping and a report generator for creating packing lists, Bills of Lading, and import/export documents.

Blue Yonder's warehouse execution system, Warehouse Tasking, optimizes warehouse work by incorporating information regarding due dates, resource capabilities, and the physical location of inventory to orchestrate tasks to available resources. It employs bidirectional prioritization, adapting to changes in the warehouse, such as off-schedule transportation arrivals, to direct resources and tasks as warehouse conditions change throughout the day. Users can establish prioritization rules that can apply weights to variables, such as priority or proximity, and then determine which task to send to users requesting directed work. The tour-building feature creates a single task by combining two or more pick lists. It does this in real-time, using information like who is doing the work, their equipment, their current location, and the importance of certain factors like distance and priority.

Organizations can also leverage Blue Yonder's cloud-based Robotics Hub platform to enhance operational efficiencies in the warehouse and accelerate the adoption and management of robotics in their warehouses. It provides a single interface for managing multiple robotic platforms and solutions. It offers various features, including robot

onboarding and configuration, real-time visibility and monitoring, fleet management and optimization, and data analytics and reporting. Blue Yonder partnership community includes organizations such as EY, Accenture, Capgemini, HP, Infosys, Zebra Technologies, Honeywell, Tyron Solution, Locus Robotics, Starware, and EC net.

Recent product updates and announcements include:

- On August 1, 2024, Blue Yonder announced that it had completed its acquisition of One Network Enterprises. One Network offers numerous capabilities that are complementary to Blue Yonder Warehouse Management. Notably, One Network's Appointment Scheduling functionally supports complex scheduling policies. It enables carriers to look at schedules and pick slots to deliver. Drivers also have access to appointments through a standard mobile app to update appointment status and reflect progression as it occurs. One Network's Global Logistics Gateway (GLG) offers carrier visibility and workflow capabilities. Data is aggregated and processed from various sources, providing a single connection point and a unified view of all the loads carriers need to engage across the network. Carriers can transact through the GLG as well and process events such as tender acceptance, dock door scheduling, providing status updates, and closing invoices.
- In 2024, Blue Yonder acquired software vendor flexis AG. Some of flexis AG's capabilities complement Blue Yonder's WMS and TMS, including order slotting and sequencing, configuration to order, and transportation capacity planning.
- Blue Yonder Billing Management solution became generally available to customers in 2024. The solution automates invoice creation based on supply chain activities, provides a complete audit trail, and enables visibility into LSP contract profitability.
- In late 2023, Blue Yonder acquired returns management software vendor Doddle. Doddle specializes in end-to-end returns management and drop-off automaton. Doddle's returns orchestration capabilities allow Blue Yonder WMS users to apply rules to data to determine the speed, method, and location of the returned item based on the size, weight, returns reason, SKU, consumer, value, and inventory strategy. Doddle provides a self-service return interface for purchases to update the returns process online. Users can also access Doddle's self-service drop-off kiosks that let customers scan, bag, and drop off returns.

INFOR

Infor is positioned as a leader in the 2024 Nucleus WMS Technology Value Matrix, recognized for its tier-one WMS platform built on the Infor OS infrastructure services. The solution offers cloud-based and on-premises deployment options and integrates with various Infor technologies, including Infor Birst for analytics. The vendor serves the global

consumer goods, aerospace and defense, automotive, technology, third-party logistics, manufacturing, energy and natural resources, hospitality, healthcare, financial, construction, and distribution industries.

Infor's WMS capabilities include appointment scheduling for receiving, directed putaway strategies, batch inventory tracking, serial number management, task interleaving, and wave planning supported by configurable rules. Its order optimization features support workflow-based wave release, order allocation rules, unit-of-measure conversion, and integrated shipping to ensure efficient order processing across diverse fulfillment channels. The system integrates built-in labor management tools for workload forecasting, staffing plan generation, and task assignments. With embedded analytics, through Infor Birst, users can create dashboards and reports, providing insights into orders, inventory, equipment, and labor. Infor leverages 3D visual analysis tools to create a digital representation of the warehouse environment for simulation and identifying optimization opportunities. In addition, Infor WMS integrates with various warehouse automation systems, including pick-to-light, put walls, conveyors, sorters, and robotics, ensuring a smooth workflow between workers and equipment.

Infor OS platform allows for customizable web and mobile user experiences tailored to specific user and workflow needs. Infor's open API gateway facilitates integration with ERPs, WCS, automation systems, and other supply chain technologies. At the same time, middleware supports RPA integration and process intelligence, empowering rapid customization through low-code configuration. Infor recently launched a new feature called "Portal Adoption" that allows customers to customize the look and feel of users' screens. This customization enables users to tailor the interface to a user's specific preferences. Additionally, the update includes in-screen help, making it easier for users to navigate and understand the system.

Recent product updates and announcements include:

- Over the last 12 months, Infor introduced the Product Volume Forecasting feature, which uses machine learning to predict product volumes at both the item and item group levels. This allows customers to better anticipate future inventory needs, enabling proactive adjustments to warehouse layouts for improved space utilization and more efficient labor allocation.
- In 2024, Infor added AI-driven Product Location Recommendations to optimize product placement within the warehouse. By analyzing shipping patterns and product movement, this feature helps minimize picking times by placing frequently shipped items closer together, resulting in increased labor productivity and faster order fulfillment.

- Over the last year, Infor released Advanced Cartonization, a feature that employs AI to optimize packing by reducing the number of cartons required, minimizing space, and improving weight distribution. This helps customers cut packaging and transportation costs while supporting sustainability by reducing material usage.
- In the past 12 months, Infor has implemented Generative AI tools like the Shift Startup Script and Facility Review Reports. These tools allow warehouse managers to input natural language queries to identify inefficiencies and bottlenecks before shifts, facilitating proactive decision-making and enhancing resource allocation.
- Recently, Infor introduced the 3PL Billing Revenue Forecasting feature, which offers third-party logistics (3PL) providers more precise financial forecasting. This tool incorporates seasonal trends and customer profitability data to inform revenue projections, aiding in accurate pricing strategies and budget planning.
- In 2024, Infor released the Anomaly Detection feature for Slotting Efficiency. This tool uses machine learning to identify undersized storage locations and optimizes slotting based on historical shipping data. This enhances warehouse flow and minimizes labor inefficiencies by making fast-moving items more accessible.

KÖRBER

Körber Supply Chain Software is a leader in the 2024 WMS Technology Value Matrix, recognized for its Warehouse Edge and Warehouse Advantage solutions. Körber supports global SMB and Enterprise organizations in retail, consumer goods, food and beverage, and third-party logistics. Körber's WMS solutions are part of the Körber One Platform, including solutions for order management, transportation management, yard management, voice, robotics, simulation, and labor management. The platform allows for adaptation to diverse warehouse layouts, business workflows, and automation technologies without requiring coding. Körber's core WMS functionality supports receiving, putaway, inventory management, order picking, shipping, and cycle counting.

Körber Supply Chain Software offers a Warehouse Advantage for enterprise-level customers. This includes automation integration through Körber's Warehouse Control System (WCS) to coordinate storage and retrieval systems, conveyors, sorters, and robotic technologies. Warehouse Advantage also provides customers yard management, labor management, and dock appointment scheduling modules to optimize inbound processing. It includes dedicated 3PL functionality, including tools to help 3PL users quickly set up processes for new clients and a billing feature to track activities for invoicing. The system can be adjusted to meet each client's needs, from simple setups to more complex operations.

Körber Supply Chain Software offers Warehouse Edge for small and medium-sized businesses. This solution also includes eCommerce order processing and shipping management capabilities outside the core capabilities and has built-in integrations with major ERPs like NetSuite and SAP.

Over the past few years, Körber has extended its robotic service partnership through a Robotics-as-a-service program. This gives businesses access to a global network of robotics service partners, allowing them to evaluate and leverage multiple AMR types and vendors in a single environment.

New announcements in the last 12 months:

- On October 1st, 2024, Körber Supply Chain Software announced its completion of the acquisition of TMS vendor MercuryGate to extend its supply chain execution portfolio. This move addresses the rising customer demand for integrated supply chain management solutions that can increase supply chain visibility, operational efficiency, and collaboration while reducing costs and avoiding additional IT expenses by utilizing a single platform. Körber, known for its strengths in WMS, order management (OMS), warehouse control (WCS), voice, simulation, and robotics, aims to enhance its platform capabilities by integrating MercuryGate's TMS into the Körber One Platform.
- On March 19th, 2024, Körber Supply Chain Software launched two new tools to enhance warehouse operations. The first, Gamification, is designed to boost worker engagement by introducing targets and milestones that encourage teamwork and increase productivity; the second is slotting.IQ optimizes inventory placement using smart algorithms, making order picking faster and more accurate. These tools aim to save time, boost efficiency, and create a better warehouse work environment.
- On November 12th, 2023, Körber Supply Chain Software announced its partnership with ProShip, a carrier shipping management software provider. This partnership combines ProShip's parcel shipping software with Körber's transportation business intelligence tool, myShipINFO. It will offer tools for better carrier selection, reporting, and sustainability tracking, making transportation management more efficient and cost-effective.

MANHATTAN ASSOCIATES

Manhattan Associates is a leader in the 2024 WMS Technology Value Matrix, recognized for its domain expertise, platform ease of use, and ability to deploy WMS platform modules within hours. Through its cloud-based or on-premises WMS platforms, Manhattan supports SMBs and global enterprise organizations in the consumer goods, food and beverage, manufacturing, pharmaceutical, retail, distribution, and third-party logistics industries.

Manhattan supply chain products are built on top of the Active Platform. This cloud-native, microservices-based platform also provides modules for supply chain execution, supply chain planning, and omnichannel commerce. Manhattan's supply chain partner ecosystem comprises organizations such as Locus Robotics, Zebra Technologies, Honeywell, ProShip, sendflex Technologies, Everest Technologies, Arrow88, Google Cloud, and Cognizant.

Manhattan Active Warehouse Management provides WMS functionality for complex, high-volume operations. It leverages machine learning to optimize fulfillment workflows and resource utilization across the distribution center. Manhattan Active WM provides real-time orchestration between workflows, robots, and workers through its integrated Warehouse Execution System. This enables seamless coordination across all resources to maximize throughput times. The system utilizes Order Streaming technology to adjust work assignments based on real-time conditions and priorities on the warehouse floor, while unified workflows simultaneously process direct-to-consumer, wholesale, and omnichannel orders using optimal fulfillment. The slotting optimization engine improves pick density by managing slotting and re-slotting activities. It provides optimization capabilities, including wave management, batch picking, and optimized order routing to maximize fulfillment efficiency. The solution can manage multiple brands, distribution centers, and business units from a single platform through its multi-tenant architecture. Manhattan Active WM delivers real-time visibility and control over critical warehouse resources, including inventory, orders, labor, slotting, and material handling equipment. Integration with various types of automation, such as pick-to-light, put-to-light, and voice-directed workflows, enables optimized, technology-driven processes. Manhattan Active WM provides native functions for replenishment, yard management, optimized load building, and customizable workflows, forms, reports, and alerts to meet specific operational needs. Manhattan Associates Yard Management solution links yard, warehouse, and transportation management, giving real-time updates on dock doors, trailer status, and yard activities to make the supply chain run more smoothly.

Manhattan SCALE delivers core warehouse management capabilities with flexible on-premises or cloud deployment for small to medium-sized businesses. It provides robust functionality for receiving, putting away, replenishing, picking, shipping, and other basic warehouse operations. Configuration is enabled through low-code tools and wizard-based setup guides tailored to each customer's warehouse environment and workflows. Manhattan SCALE can integrate with automation, ERP, and other external systems using REST APIs and web services. Embedded optimization engines help improve slotting, routing, and labor planning efficiency. It enables rapid implementation through configurable workflows, forms, alerts, and reports. Manhattan SCALE provides versatility through cloud or on-premises deployment and easy integration capabilities.

Recent product updates and announcements include:

- At the Momentum Conference in May 2024, Manhattan Associates launched its Active Supply Chain Planning solution to unify supply chain planning and execution. This solution aims to eliminate the traditional gaps between planning for inventory, labor, transportation, and warehouse operations by coordinating them in real-time under one comprehensive plan. It uses AI to integrate both internal data and external influences, producing more accurate demand forecasts. By synchronizing all aspects of the supply chain, the platform helps businesses make better decisions, reduce costs, and improve efficiency.
- Over the last 12 months, Manhattan Associates introduced two new AI tools: Manhattan Active Maven and Manhattan Assist. Manhattan Active Maven is a built-in chatbot that answers customer questions about orders, payments, and product availability, making service faster and cheaper. Manhattan Assist helps users quickly find answers about how Manhattan's systems are set up and how they work, supporting different roles and needs.
- in January 2024, Manhattan Associates announced updates to its Manhattan Active Point of Sale (POS) app to make store operations smoother and more reliable for modern sales associates. The upgraded app includes faster checkout, the ability to continue working even when offline, and new tools to personalize customer service. Designed to handle unstable internet connections seamlessly, it keeps essential data on the device for quick access, ensuring sales are not disrupted. The app supports Windows, iOS, and Android, allowing retailers to customize its layout to fit their brand.

ORACLE

Oracle is a leader in the 2024 WMS Technology Value Matrix, recognized for its cloud-based Oracle Fusion Cloud Warehouse Management product. Oracle supports global enterprise organizations, including the Automotive, Communications, Healthcare, Oil and Gas, high-tech, Retail, E-commerce, Wholesale Distribution, Consumer Goods, Manufacturing, Logistics Service Providers, and Federal Government verticals. Oracle Warehouse Management is designed to be highly adaptable and capable of supporting multi-client, multi-site environments, helping stakeholders oversee operations across extensive distribution networks. Oracle's system integration partners include Accenture, AccelAlpha, Infosys, PricewaterhouseCoopers, Deloitte, and Flo Consulting. Technology partners include Zebra Technologies, Honeywell, and Samsung, among others. Oracle Warehouse Workforce Management helps supervisors manage labor productivity. Oracle Warehouse Management Automation features to streamline the process of integrating material handling equipment or robots in automated warehouses.

The warehouse management system provides wave and task management functionalities, enabling customers to allocate human and machine assets and optimize order picking across multiple channels and locations. Oracle Warehouse Management provides picking strategies that determine the most efficient and effective pick methodologies based on business rules. It manages incoming materials from suppliers and internal requisitions for inbound logistics with various methods, including receipt, sorting, quality check, value-added services, and the option of directed or suggested put away. Put-away rules leverage the AI/ML market basket analysis algorithm to recommend storing frequently ordered products close together in the warehouse. For outbound logistics, Oracle Warehouse Management automates the order-picking process with features such as wave picking that assign tasks to pickers based on various practices, ensuring efficient and accurate picking. Oracle Warehouse Management has a built-in label designer. It can also integrate with compliance labeling systems to generate labels based on customer and carrier preferences, streamlining the outbound logistics workflow and improving efficiency and customer satisfaction.

Over the past 12 months, Oracle Warehouse Management has enhanced modules like inbound and outbound logistics, inventory operations, mobile applications, and workforce management. These updates included a predictive slotting solution, real-time image capture, and document upload features for improved handling and visibility. Recently, Oracle announced new generative AI capabilities to help companies improve their supply chain operations. For example, AI will generate product descriptions and suggest potential suppliers, making procurement and inventory management more efficient. Additionally, Oracle introduced a Progressive Web App for a better mobile experience and added flexibility in handling units of measure (UOM) for various tasks.

TECSYS

Tecsys is a leader in the 2024 WMS Technology Value Matrix. Tecsys supports midsized to large enterprises in the distribution, healthcare, pharmaceutical, industrial, and third-party logistics sectors. Tecsys software capabilities include warehouse management, order management, pharmacy inventory management, transportation management, procurement, point of use (POU), and demand forecasting functionality. These solutions are built on top of the Tecsys Itopia Platform. The Itopia Platform provides low code/no code development capabilities and API-based integrations for customers with unique custom environments. The Tecsys Elite Enterprise WMS platform offers solutions for Industrial, Healthcare, and pharmaceutical requirements. Core Elite WMS functionality includes Receiving, Putting away, Cross -docking, Packing, Rule-based locator, Inspection / QA, Inventory management, Wave management, Truck loading, Business Intelligence, Manifesting, Replenishment, Location Management, Staging, Picking, Cycle counting, and Task interleaving. Tecsys' partner ecosystem includes well-known organizations such as AWS, Workday, Oracle,

Shopify, Zebra Technologies, Tracelink, Axway, rfxcel, Locus Robotics, KPMG, Deloitte, RiseNow, and Accenture.

The Elite Distribution WMS supports warehouse processes like receiving, putting away, and order picking; Elite Healthcare WMS is unique in offering end-to-end visibility and control over healthcare provider supply chain operations in the clinical setting. It enables centralized inventory management, optimized replenishment of clinical supplies, efficient kitting of surgical carts, and integration with track & trace solutions and healthcare ERP and IT systems. Tecsys's platform includes the Pharmacy Inventory Management (PIMs) module, 340B program support, and a DSCSA compliance module. They streamline pharmacy inventory management and ensure that pharmaceutical supply chains meet regulatory standards, enhancing safety, tracking, and compliance. Elite Enterprise WMS provides capabilities to optimize warehouse operations for wholesale distribution. This includes intake processing, wave planning for order fulfillment, operational intelligence, and analytics for supply chain visibility. The solution enhances productivity, task management, inventory accuracy, and order cycle times.

Tecsys launched its digital twin, 3D visualization, and heatmap functionality. These features enable out-of-the-box creation of virtual replicas of warehouses and facilities, allowing real-time monitoring and optimization. Heatmaps offer a visual representation of operational data, aiding in identifying areas for improvement and enhancing decision-making in the supply chain. Tecsys also introduced automation and robotics integrations through partnerships with SVT Robotics, Pendant Automation and Matthews Automation. These ready-made integrations make it easier for supply chain operations to adopt automation, speeding up deployment and reducing complexity.

Product updates in the last 12 months:

- On August 1st, 2024, TraceLink, a supply chain network solutions provider, partnered with Tecsys to increase network visibility across the pharmacy supply chain. This partnership integrates TraceLink's network of over 339,000 connections comprising distributors, contract manufacturers, healthcare systems, suppliers, logistics service providers, retail pharmacies, and life sciences companies with Tecsys' Elite WMS and PIMs.
- Over the last 12 months, Tecsys has earned the AWS Supply Chain Competency in three categories: Move, Enable, and Plan. This designation recognizes Tecsys as a WMS provider that has achieved this status across these three critical categories, underscoring the company's commitment to providing innovative cloud-based solutions.
- Over the last year, Tecsys released new features, including operational tools like a picking control tower, electronic shelf labels, and item master data cleansing. In

addition, the customization capability of the Itopia low-code application platform continued to expand.

- Tecsys has taken a practical approach to using AI/LLM technology for focused use cases and has announced a series of capabilities in support of Master Data Product Identification and drug shortage management.

EXPERTS

Erhard Partner Group, Reply, SAP, and Softeon are among the experts in the second edition of the WMS Technology Value Matrix.

ERHARDT PARTNER GROUP

Ehrhardt Partner Group (EPG) is an expert in the 2024 WMS Technology Value Matrix. EPG supports global midsized to large automotive, healthcare, electronics, food and beverage, manufacturing, third-party logistics, and e-commerce enterprises. EPG's supply chain solutions encompass warehouse management, warehouse control, workforce management, route optimization, contracts and billing, transportation management, and voice solutions, all integrated within their EPG ONE Supply Chain Execution Suite.

The Ehrhardt Partner Group's Logistics-Focused Solution (LFS) is a modular and highly configurable warehouse management system (WMS) that optimizes warehouse operations. LFS system offers a comprehensive set of capabilities tailored to maximize each phase of warehouse management. In retrieval, it supports diverse picking methods like pick and pack, multi-order, and multi-stage picking, along with advanced options such as path-optimized picking, pick-by-voice, and RFID-supported picking. Additional features like pick-to-belt and pick-to-carton, combined with cross-docking and quality assurance, ensure accuracy and efficiency. The packing module allows for serial number scanning, barcode labeling, and delivery label creation, with two-stage packing and consignment data provisioning for complex needs. Location consolidation and detailed printouts further streamline packing and dispatch. EPG provides path calculation, empty trip avoidance, and priority handling for transport, optimizing internal warehouse movement. In shipping, routing, and loading features are enhanced by tracking, pallet accounting, load space calculation, and freight cost estimation, with integrated shipment tracking and delivery notifications to keep customers informed. Lastly, the transportation module covers route planning, telematics, transit management, tracking idle times, and optimizing order transmission. It supports multiple transporters, making it ideal for businesses managing complex distribution.

EPG's system allows users to gain supply chain insight and control through multiple capabilities. Statistics modules provide metrics for warehouse occupancy, picking times, performance statistics, order tracking, and cycle times for each order. It analyzes areas such as reach analysis, item frequency, and allocation overviews, supporting A-B-C categorization and access frequency tracking to help monitor and optimize operations. The Graphic User Interface includes a digital product image display, web-enabled interface, graphical statistic displays, and 3D visualization of warehouse processes. Quality Assurance features manage quality status, process orders for quality checks, record status changes, and authorize personnel, ensuring high standards across the supply chain. In Resource Management, the system optimizes resources and improves planning by factoring in available resources, shift schedules, and vehicle availability. It also visually compares current and projected workloads, helping organizations plan based on order volume and service level agreements (SLAs).

Customers can also access EPG's LYDIA Voice software, a voice recognition system that enhances warehouse operations' efficiency, accuracy, and workflow control. LYDIA Voice allows hands-free, headset-free interaction using VoiceWear, which includes built-in speakers and a microphone. The software uses deep neural networks for precise voice recognition, designed to work reliably in loud environments without needing traditional voice-template training. It integrates directly with over 25 warehouse management systems, including SAP, and supports various Android devices, such as those from Zebra and Samsung. LYDIA Voice directs workflows for tasks like order picking, receiving, replenishment, and loading, adapting across different operational areas. In 2023, EPG expanded its LYDIA Voice Demo App, now available for free on Google Play. It showcased a fully voice-controlled picking process with new multi-language support to cater to diverse workforces. EPG's Lydia Voice 9 also received certification for integration with SAP S/4HANA and SAP NetWeaver for Extended Warehouse Management (EWM), allowing seamless SAP integration without middleware. Key features include real-time multi-language recognition, support for multi-core processing, and a smart voice grammar editor, all aimed at enhancing voice-directed workflows and efficiency in warehouses using SAP technology.

REPLY

Reply is an expert in the 2024 WMS Technology Value Matrix, recognized for its Logistics Execution Architecture (LEA) Reply and Click Reply warehouse management platforms. Reply supports global midsized to tier-one organizations within the Automotive, Retail, Fashion, Food and Beverage, Telecommunications, e-commerce, and Third-Party Logistics industries. Its flagship cloud-based supply chain platform, LEA Reply, includes warehouse management, dock management, yard management, store logistics, drop shipping, resource planning, supply chain visibility and network, and last-mile solutions. These solutions are developed in Reply's microservices architecture. Customers can integrate LEA

Reply with automation technologies like autonomous mobile robots, pick-to-light systems, conveyors, sorters, and robotic arms. The configurable Click Reply supply chain execution platform provides warehouse management, yard management, labor management, warehouse performance, and warehouse billing products that can be deployed on-premises and in the cloud. The system integrates with ERPs, material handling equipment, and automatic data capture technologies, including RFID and voice picking.

LEA Reply WMS provides capabilities like batch and serial number tracking advanced pick logic based on FEFO, expiration dates, and product dimensions for inventory management. The platform can define storage zones, slotting assignments, and replenishment strategies based on historical data and the real-time state of the warehouse. The solution has configurable wave planning, batch building, and order orchestration capabilities. Orders can be released in batches optimized for zone picking. Workflows can be scheduled based on worker availability, priority, and other rules. LEA Reply WMS also enables multi-order picking and dynamic task allocation to maximize productivity. Packing and shipping processes are validated and verified through the system. The solution automatically generates compliant shipping documentation like packing slips, labels, and bills of lading.

LEA Reply Dock Scheduling helps organizations manage and optimize the scheduling of loading and unloading appointments at warehouse docks. The system provides a portal where carriers and suppliers can view dock availability and book appointments for deliveries or pickups. The dock scheduling engine enables configurable compatibility rules, dock restrictions, and appointment time windows. Carriers and yard planners can collaborate to adjust delivery appointments based on changing needs in real time. The solution provides visibility into dock schedules, carrier ETAs, and real-time updates on arrivals and departures. Key features include appointment calendar views, dock restriction management, ETA tracking, check-in and checkout, and analytics. LEA Reply Yard Management bridges transportation and warehouse management systems to optimize yard operations. The solution provides real-time yard visibility, including the inventory of trailers and containers and their locations within the yard. Additional capabilities include gate appointment scheduling, dock assignment, stocking/retrieval of trailers in designated zones, and trailer pool management.

Click Reply leverages optimization algorithms and pick logic to enhance productivity across manual and automated warehouse environments. For receiving, the system registers incoming orders and goods, capturing critical attributes and quantities. Putaway workflows intelligently direct inventory to optimized storage locations based on dimensions, turnover, expiration dates, and other parameters. Click Reply's inventory management functions provide expiry date control, batch and serial number tracking, and cycle counting for accuracy. The solution offers wave planning, batch building, zone picking, and dynamic tasking to maximize order fulfillment efficiency. Workers are guided by system-directed, paperless workflows optimized for each task type. Shipping processes are streamlined

through compliant documentation, cartonization rules, loading optimization, and carrier interfaces. Real-time dashboards give visibility into orders, inventory, throughput, utilization, and other key metrics. The solution's open architecture enables rapid integration with warehouse automation, including pick-to-light systems, conveyors, AS/RS, carousels, AGVs, and robotic arms. Reply's partner ecosystem includes Google, AWS, Oracle, SAP, Adobe, Microsoft, and Salesforce.

SAP

SAP Extended Warehouse Management (EWM) is an expert in the 2024 WMS Technology Value Matrix leader. SAP caters to large global organizations, serving the energy (chemical, mining, oil, and gas), professional services, consumer goods, retail, wholesale distribution, mill & mining, industrial machinery and components, aerospace and defense, automotive, technology, manufacturing, life sciences, and government industries. SAP EWM is a comprehensive warehouse management system that provides capabilities to optimize and automate warehouse operations. SAP EWM seamlessly supports various functionalities, including inbound processing, which encompasses gate appointment scheduling, yard management, put away, cross-docking, and quality inspections of incoming inventory. EWMs' putaway functionality allows users to enable rules-based putaway strategies that optimize storage locations based on product characteristics, storage types, velocities, and capacities. EWM also facilitates the planning and execution of stock movements, including transfers, replenishments, and re-warehousing. EWM provides a range of capabilities for picking operations, including wave planning and batching to optimize workflows and support picking methods such as cart, batch, and zone picking. It integrates seamlessly with pick-by-voice systems and dynamically optimizes pick paths. EWM's packing capabilities feature packing profiles with customizable rules, verification, and license plate labeling functionalities. The system adeptly manages shipping operations with unified package building, containerization rules, shipping documentation, and customs processing. SAP EWM covers physical and cycle counting, ensuring real-time inventory updates through automation integration. The material flow system within EWM orchestrates warehouse processes while providing extensive visibility of stock levels and locations.

EWM allows users to directly control warehouse automation processes, encompassing conveyors, sorters, AS/RS systems, and robots. It also extends its capabilities to include extensive integration and direct control of warehouse automation systems, including robotics solutions. This integration is facilitated through the Material Flow System (MFS) component, which allows EWM to connect with various warehouse automation devices, such as AS/RS, automated guided vehicles (AGVs), and robotic arms. EWM can assign robot-picking tasks through the MFS and specify optimal travel paths to maximize efficiency. The system maintains real-time visibility into the status and locations of robots, proactively adjusting task assignments when needed. EWM supports standard robotics integration

protocols like Transmission Control Protocol/Internet Protocol (TCP/IP) and Message Queuing Telemetry Transport (MQTT) for seamless connectivity. Also, SAP EWM integrates with SAP Warehouse Robotics, which eliminates proprietary dependence on robotics solutions and can integrate multiple robots (AMR, AGV) vendors and instances across facilities directly or one or more robot fleet management systems using standard APIs.

Over the past year, SAP has introduced major updates to its Warehouse Management capabilities in SAP S/4HANA EWM. In March, machine learning (ML) was added for slotting to streamline storage planning by analyzing historical data, along with segmentation features to organize materials based on quality or customer segments. A new SAP Fiori app was also launched to simplify loading and unloading freight orders. The October release of EWM 2023 introduced enhancements like Quality Management improvements, expanded Transportation Unit integration, RF picking and packing updates, and customizable RF screens. These updates improve warehouse processes' integration, user experience, and operational efficiency.

SOFTEON

Softeon is an expert in the 2024 WMS Technology Value Matrix. Besides its WMS offerings, Softeon offers labor management, yard management, parcel management, warehouse execution, and distributed order management modules. Softeon's service-oriented architecture (SOA) enables it to provide customers with scalable solutions that cater to unique markets like digital product logistics. Through its new LUCA platform, Softeon provides low-code and prebuilt integrations with various material handling systems and automation vendors. Softeon supports midsized to tier-one businesses in Retail, Third-Party Logistics, Consumer Goods, Food and Beverage, Healthcare, High-Tech, and Manufacturing verticals.

The system supports warehouse management workflows, from receiving and quality checks to putaway, inventory control, order picking, packing, and shipping. Softeon WMS improves visibility across all warehouse processes, empowering managers to monitor inventory, track orders, and manage resources dynamically. The software integrates with ERP systems, robotics, and various material handling technologies, such as pick-to-light and automated sortation, allowing seamless operations within high-tech warehouse environments. Advanced features include order grouping, wave planning, and multiple picking methods to match specific fulfillment needs, while intelligent allocation and replenishment logic ensure efficient stock management. Softeon WMS also includes a task-based module that optimizes labor by assigning tasks based on the worker's skills and equipment availability, thus enhancing productivity. Virtual zoning and layout planning tools improve space utilization by positioning fast-moving items in optimal locations, with tools to manage and adjust warehouse layout.

Product updates in the last 12 months:

- Recently, Softeon announced that it has expanded its operations to Australia and New Zealand (ANZ), aiming to bring warehouse management solutions to a growing logistics market.
- Softeon has partnered with IBM to integrate IBM's Sterling Order Management System (OMS) with Softeon's Warehouse Management System (WMS). This collaboration aims to enhance distribution center processes by automating warehouse functions, optimizing resources, and improving efficiency.
- In July, Softeon launched solutions to help the pharmaceutical industry meet the Drug Supply Chain Security Act (DSCSA) compliance requirements, set to be enforced in November 2024. The DSCSA aims to protect public health by improving drug traceability throughout the supply chain. Softeon's Warehouse Management System (WMS) offers key features for tracking, verifying, and reporting drug movements, including the ability to trace each item to individual packages, manage temperature-sensitive inventory, and integrate with global serial number repositories. These tools support pharmaceutical companies in achieving full compliance, ensuring product safety, and maintaining high standards in storage and distribution.
- Softeon's Spring 2024 update to its WMS introduces new features to improve efficiency, customization, and integration for 3PL, healthcare, and food and beverage industries. Key upgrades include a more user-friendly interface, faster onboarding for new clients, and tailored setups for different warehouse roles, simplifying task completion. The release also enhances automation integration, allowing various warehouse systems to work together more efficiently, and adds a feature for prioritizing picking tasks to reduce delays.
- Softeon has partnered with enVista to offer enhanced warehouse management solutions that combine Softeon's advanced WMS technology with enVista's expertise in system implementation. This alliance aims to help companies achieve greater efficiency and reliability in warehouse operations through seamless WMS integration and faster implementation, reducing downtime and increasing productivity. enVista brings extensive experience in implementing and managing WMS solutions, guiding companies through setup, training, and ongoing support, while Softeon's technology supports automation and operational optimization.

ACCELERATORS

Accelerators in the 2024 WMS Technology Value Matrix include Made4Net, Microsoft, Nextworld, Savant Software, and Synergy Logistics.

MADE4NET

Made4net is an accelerator in the second edition of the WMS Technology Value Matrix, recognized for its WarehouseExpert and Synapse 3PLExpert WMS products. Made4nets' two distinct WMS offerings are part of its SCExpert platform, which provides labor management, transportation management, yard management, last-mile delivery, route optimization, and omnichannel fulfillment capabilities. It takes a modular approach to supply chain management, offering an integrated WCS, TMS, YMS, and proof of delivery for comprehensive end-to-end visibility. The Made4net supply chain platform is built on Microsoft technology with a micro services architecture (supported by data access, business logic, and user interface layers) featuring high configurability that allows easy adaptation to changing needs without extensive coding. Made4net supports midsized to large global organizations in the Consumer Goods, E-commerce, Food and Beverage, Manufacturing, Retail, Third-Party Logistics (3PL), and Wholesale Distribution industries.

WarehouseExpert is Made4net's core WMS solution for midsized to tier-1 organizations. Designed on a single, cohesive platform, it provides full WMS capabilities, from inbound receiving, put-away, and inventory management to picking, packing, and shipping. It offers additional labor, yard, and transportation management functions. Synapse 3PLExpert warehouse management system is designed for third-party logistics providers. It excels in optimizing complex, multi-client warehouse operations with real-time task optimization across critical 3PL functions, encompassing multi-client billing, financial reporting, cross-docking, trans-loading, services like kitting and packaging, returns processing and disposition, and ensuring inventory visibility across multiple facilities and clients. One of the standout features of Synapse 3PLExpert is its reconfigurability, allowing it to adapt to changing customer requirements down to the item level. Both WMS products integrate financial systems, ERPs, e-commerce platforms, warehouse automation systems, and transportation management solutions.

MICROSOFT

Microsoft Dynamics 365 is an accelerator in the 2024 WMS Technology Value Matrix. Dynamics 365 Supply Chain offers a comprehensive solution to enhance supply chain resilience, with features for planning and forecasting, inventory, procurement, manufacturing, order management, warehouse operations, and asset maintenance integrated within the Microsoft Cloud Platform. Microsoft Power BI can be embedded into

the module. Microsoft Dynamics Supply Chan Management supports global organizations within the automotive, financial services, consumer goods, defense and intelligence, government, healthcare, manufacturing, media, retail, and telecommunications industries. Microsoft's partner ecosystem includes organizations such as Cognizant, Cronos Group, KPMG, Capgemini, Brennan IT, Software ONE, Accenture, and C.H. Robinson. Organizations often opt for Microsoft Dynamics 365 Warehouse Management Systems due to its seamless integration with existing Microsoft products, such as Dynamics 365 Sales, Dynamics 365 Finance, and Dynamics 365 Human Resources. This enables organizations to manage their core processes from a unified platform.

Microsoft's Warehouse Management module allows customers to optimize and oversee warehouse operations by supporting processes like receiving, putaway, replenishment, picking, packing, shipping, and inventory management. The system allows for configuring various workflows for inbound and outbound material handling through components like work templates, location directives, and work pools. This enables customers to tailor warehouse processes to facility layouts, inventory types, and specific business requirements. For instance, wave templates can be defined to release picking work in batches to process outbound orders efficiently. Location directives employ query logic to assign putaway and pick locations based on product characteristics, inventory levels, and storage restrictions. Work templates govern how different work orders move through various work processes. The Warehouse Management module integrates with other supply chain processes by linking source documents such as sales orders, purchase orders, transfers, and production orders, ensuring seamless workflow handoffs between departments. For example, when a sales order is released, delivery requirements are communicated to the warehouse for fulfillment through autogenerated picking work. Microsoft's MWS capabilities encompass wave management for batch order processing, containerization of orders into pallets, integration with warehouse automation, cross-docking, and support for detailed inventory tracking utilizing batch and serial numbers.

The Warehouse Management module utilizes message processor messages to enable asynchronous processing of specific workflows. For instance, when a warehouse worker closes the final container during packing, a "Run packing slip for container" message is generated to create and post the packing slip in the background. These messages are queued for processing by the Message Processor batch job on a scheduled basis. Additionally, business events can be configured to deliver alerts on failed message processing results. Message processing ensures non-blocking execution of warehouse workflows that may encounter delays when interfacing with other systems.

Over the last few years, Microsoft has made several product updates, including improved handling of license plate information to simplify data structure, faster location directive queries, and new tools for setup and maintenance. The platform now supports iOS devices, broadening mobile access for tasks like receiving and picking. Updates to the mobile app

introduced detour features, like auto-submit and multi-level detours, allowing workers to switch tasks and return.

Product updates in the last 12 months:

- In June 2024, Microsoft updated its Dynamics 365 Supply Chain Warehouse Management platform to support a centralized warehouse management model, allowing a single entity to manage logistics and warehousing for multiple divisions or legal entities through the Warehouse management-only mode. This setup is ideal for organizations with several sales offices or branches that rely on a shared warehouse for inventory and delivery. Now, companies can create a legal entity solely for handling warehousing tasks, which improves efficiency and lets each division focus on its core activities. It also introduces an inventory tracking feature that distinguishes item ownership between legal entities. This update builds on the previous feature that enabled integration with external ERP systems, so organizations can now manage internal and external warehouse processes within one system and location.
- Microsoft Dynamics 365 Supply Chain Management now gives warehouse teams more flexibility in managing customer returns. Operators can inspect items before deciding how to handle them, which allows for better quality control. Using the mobile app, workers can process returns without needing to assign a disposition code immediately and print return labels during packing. Additionally, a new batch job automatically clears outdated return data, streamlining record-keeping.

SAVANT SOFTWARE

Savant is recognized as an accelerator in the 2024 WMS Technology Value Matrix for its scalable solutions tailored to SMB, and Enterprise needs within the manufacturing and distribution sectors. Savant's portfolio includes three platforms—WMS Lite, Pro, and Enterprise—all engineered on a unified code base, database, and UI/UX design, enabling a seamless "Land and Expand" approach. This architecture allows users to scale from Lite to Enterprise as business demands grow, offering exceptional flexibility and ROI for evolving operational requirements.

Savant Lite is a subscription-based WMS ideal for small to mid-sized warehouses. It covers all foundational WMS processes, such as receiving, put away, inventory management, picking, and shipping. Designed for ease of use, Savant Lite leverages mobile technology and barcode scanning for real-time inventory accuracy and streamlined order management, ensuring minimal setup and quick deployment. Its ERP integration capabilities, including Acumatica and others through REST APIs, offer a versatile fit for diverse operational environments, with compatibility across almost all mobile devices.

Savant Enterprise caters to high-demand distribution and manufacturing enterprises, delivering modular, highly configurable functionality aligned with large-scale growth. The platform includes advanced modules such as Container Tracking, which offers real-time visibility and management across shipment journeys by capturing container details, seal numbers, carrier information, and voyage data. The Return Merchandise Authorization (RMA) module automates the returns process through streamlined validation, approval, and tracking workflows. With its Box-Building Algorithms, Savant Enterprise optimizes packaging efficiency, reducing costs and errors by recommending box sizes based on order items and dimensions. The Shipping Manifest feature enhances fulfillment by automating carrier selection, rate shopping, document generation, and address validation, ensuring a seamless order-to-delivery process. The ASN (Advanced Shipping Notice) module also provides item-level tracking for efficient electronic data flow, enhancing the customer-receiving process.

Savant's commitment to integrating IoT technology is demonstrated through its partnerships with Keyence, Locus Robotics, Rapyuta, PHD Solutions, Honeywell, Zebra Technologies, and Newland AIDC, further enhancing accuracy and productivity across distribution and warehouse operations.

SYNERGY LOGISTICS

Synergy Logistics is an accelerator in the 2024 WMS Technology Value Matrix, recognized for its SnapFulfil cloud-based warehouse management solution. SnapFulfil is built on a rules engine architecture, allowing low-code or no-code configuration to support customer-specific and industry-specific requirements. It specifically supports SMB to tier-one organizations within the retail, 3PL, wholesale distribution, manufacturing, food and beverage, and high-tech industries. SnapFulfil manages core tasks such as inventory tracking, picking, packing, and shipping. Other features include real-time visibility and traceability of inventory and personnel movements, automated task allocation, and optimized picking paths to reduce travel time. The system supports efficient put-away and replenishment processes, guided by system-directed rules for ideal stock location. The configurability of the platform allows it to quickly adapt to the unique requirements of various warehouse layouts, using data on receiving, shipping, and inventory locations to design efficient operations. It also integrates with returns processing to handle reverse logistics and can scale to accommodate seasonal demand fluctuations. SnapFulfil has integration options (e.g., XML, flat file, and web APIs) and partnerships with vendors such as NetSuite, Auctane, and Celigo. The solutions analytics tool, SnapData, powered by Tableau, provides real-time access to metrics like inventory levels, order accuracy, picking efficiency, and overall warehouse performance. Users can view KPIs and drill into detailed reports for specific areas, like shipping performance or space utilization. For customers using robotics in the warehouse, Synergy Logistics offers the SnapControl platform, which provides device-agnostic integration, work prioritization, and conversational rules to improve the

orchestration between robot devices and humans. This platform can be deployed independently of SnapFulfil.

CORE PROVIDERS

Logiwa, Mantis, Mecalux, NorthStar, and Vinculum are core providers in the 2024 WMS Technology Value Matrix.

LOGIWA

Logiwa is a core provider in the 2024 WMS Technology Value Matrix, recognized for its Logiwa IO WMS product. Logiwa IO is a supply chain fulfillment management platform that provides warehousing, shipping, e-commerce, and analytics modules. Logiwa supports midsized North American organizations within the Consumer Goods, Distribution, Third Party Logistics, and E-Commerce industries. Logiwa's integration network consists of e-commerce shipping ERP robotics and EDI vendors, including SAP, NetSuite, Locus Robotics, Shipium, ShipStation, Amazon, Squarespace, and Shopify.

Logiwa WMS is a cloud-based warehouse management system that optimizes warehouse operations and order fulfillment processes. The system provides inventory management, order processing, warehouse task management, and analytics capabilities. Logiwa WMS maintains a central database that stores information about inventory, orders, warehouse layouts, and other operational data. Users access and update this information through the Logiwa web interface or mobile applications. The system utilizes barcode scanning technology to enable real-time inventory tracking through receiving, putaway, picking, packing, and shipping processes. Logiwa WMS supports advanced functions like directed put away, zone-based storage, cycle counting, and cross-docking for inventory management. The system provides visibility into inventory levels across multiple warehouses and automatically routes orders to the optimal fulfillment location. Users can configure automated rules to optimize putaway locations based on product velocity and fragility, for example. Order processing in Logiwa WMS utilizes wave and batch picking to optimize fulfillment workflow. The system creates picking waves based on logical groupings of orders, considering factors like shipping cutoff times and item availability. Pickers are guided through optimized pick paths based on item locations.

For analytics, Logiwa provides dashboards and reports on essential warehouse KPIs like inventory accuracy, order cycle times, employee productivity, and warehouse utilization. The system is also customizable, allowing users to tailor the interface, define workflow rules, set up warehouse zones, and configure automation to suit their fulfillment processes. Logiwa

coordinates automated cross-docking workflows to redirect incoming pallets directly to shipping areas and streamlines handling for high-velocity products. Logiwa optimizes yard moves based on proximity, vehicle availability, and priority. The system tracks dock door assignments and collects updates on load status.

Notable product updates from the past year include:

- On December 13th, 2023, Logiwa and FreightPOP announced a partnership to improve freight shipping and logistics for high-volume businesses. By integrating Logiwa with FreightPOP's transportation management software (TMS), the partnership enables enterprises to manage inventory and shipping better in one unified platform. This integration offers end-to-end order tracking, automated carrier rate selection, faster delivery times, and enhanced shipment and inventory data visibility. The collaboration aims to help businesses save costs, streamline operations, and navigate the digital supply chain more efficiently.
- On December 5th, 2023, Logiwa and PopCapacity partnered to offer services to brands and 3PL providers. This collaboration combines Logiwa's fulfillment management system with PopCapacity's platform that connects brands to the right 3PL providers through data-driven insights. Together, they aim to simplify supply chain management by providing tools that help businesses make informed logistics decisions, leveraging AI and advanced technology for greater efficiency and value in today's market.

MANTIS

Mantis is a core provider in the 2024 WMS Technology Value Matrix, recognized for its core WMS product Warehouse Vision (WV). WV is part of a larger supply chain execution suite, the logistics vision suite (LSV), that also provides dock and gate management, 3PL billing, parcel management, analytics, warehouse control and automation, and traceability modules built on Microsoft DOT NET. The system is based on a 3-tier structure including User Interface (UI), Business Application Logic (BL), and Data Access (DA) layers. Mantis supports mid-sized global organizations in the Retail, Third-Party Logistics, E-Commerce, Pharmaceuticals, High Tech, Fashion, Food and Beverage, Distribution, and Manufacturing verticals.

From an inbound perspective, WV's capabilities cover Purchase Order (PO) and Advance Shipping Notice (ASN) management. POs represent the orders the company places with suppliers and include details like product codes, quantities, and any specific packing needs. ASNs, provided by suppliers, outline expected arrival details and vehicle information. POs and ASNs can be entered manually or imported from an ERP system. The system's Logistics Link Manager supports automated import, and ASNs are linked to POs to match actual

receipts against expected ones, noting any discrepancies and updating the PO. WV also allows administrators to create detailed receipt plans for SKUs, which include receiving steps and priority levels. During receiving, the system checks for sales order shortages, capacity at picking locations, and stock levels to guide the process. Barcode scanning supports accuracy in receiving, with options for labeling pallets, boxes, or individual items.

For outbound processes, WV manages sales orders (SOs) and customer delivery requests. SOs can be manually entered or imported from an ERP, and the system's Stock Control module ensures the correct stock is allocated to each order, supporting rules such as FIFO or LIFO. Advanced stock rotation and allocation rules help match stock attributes to order requirements, and the system creates optimized picking lists based on container and order requirements. WV supports various picking methods, like zone picking and batch picking, and directs tasks to the best-suited workers or forklifts. Packing, loading, and shipping functions are tailored to meet customer requirements, with automated label generation, packing lists, and tracking up to delivery. Cross-docking is supported for items that need direct transfer from receiving to outgoing shipments, and inventory management tools, like stock counting and transfers, ensure accuracy across the warehouse.

WV includes reporting capabilities powered by SAP Crystal Reports that provide detailed insights into warehouse operations, covering essential areas such as inventory levels, stock movement, order fulfillment, and workforce efficiency. Additionally, it features a more advanced module, the Supply Chain Intelligence subsystem, which offers deeper analysis and customizable reporting for supply chain metrics. Mantis supports Automated Material Handling Systems (AMHS), enabling more efficient material handling, particularly in Goods-to-Person picking scenarios using automated storage, conveyors, and robotics technologies. The Voice Picking and Cross-Docking feature is integrated with Mantis WV, allowing concurrent access to picking locations through various technologies and collectively improving overall efficiency. Furthermore, Mantis provides a Vision-Voice-RFID (VVR) Picking module, leveraging Smart Glasses with advanced voice recognition capabilities and wearable RFID devices. This approach optimizes traditional picking processes, such as piece picking, case picking, and sorting, enhancing efficiency and accuracy within the warehouse environment.

Notable product updates from the past year include:

- On July 17th, 2024, Mantis partnered with PopCapacity, a digital marketplace for warehousing and fulfillment, to make its LVS available to PopCapacity's 3PL customers. This partnership allows 3PLs to access Mantis's advanced warehouse management tools through PopCapacity's platform, simplifying the process of finding and securing warehousing space that meets specific needs.

MECALUX

Mecalux is a core provider in the 2024 WMS Technology Value Matrix, recognized for its Easy WMS product, available as a cloud or on-premises solution. Mecalux offers three versions of its WMS: Lite, primarily used for training and educational purposes; Enterprise for manual environments; and Robotics to support customers that require automation. Mecalux also offers Easy solutions and advanced modules for distributed order management, multi-carrier shipping labor management, WMS for slotting, 3PL, manufacturing, store fulfillment, and WMS and pallet integrations. It offers products and services for warehouses, ranging from the manufacturing of racking and shelving to automated MHE and associated consulting on design. Mecalux supports SMB organizations within the Consumer Electronics, Retail, Industrial Manufacturing, Chemical and Pharmaceutical, 3PL, Automotive and Auto Parts, and Food and Beverage industries. The organization's partner network includes vendors like Microsoft, Oracle, SAP, Zebra, and MySQL. Mecalux uses Microsoft Azure for cloud deployments.

Mecalux core WMS capabilities include Receiving, Cross-docking, Putaway, Replenishment, Inventory counts and management, Picking and packing, Shipping, and Supply Chain Analytics. With receiving, Easy WMS verifies incoming stock, captures product details, assigns docks and staging areas, and supports labeling, quality inspection, and blocking when necessary. Its cross-docking capabilities allow goods to be routed directly to outgoing orders if needed, bypassing storage or storing near outbound docks for quick access. The Putaway feature optimizes storage location assignments based on product type, turnover rates, and designated storage areas while supporting detailed slotting strategies and location management. Easy WMS' Replenishment capabilities keep picking well-stocked zones by automatically moving items based on the defined minimum and maximum stock levels. For Inventory Management, Easy WMS enables real-time control with flexible counting methods—such as blind, informed, and guided counts—and performs inventory comparisons to ensure accuracy. Picking and Packing processes are optimized through task assignments and advanced picking strategies, like order grouping and path optimization, with support for packing list generation, manual order splitting, and labeling. Shipping management handles outbound order tracking, route planning, vehicle loading, and shipping documentation. Customers use the Supply Chain Analytics feature to turn warehouse data into actionable insights, offering customizable dashboards with KPIs like fill rate, picking accuracy, and space utilization.

NORTHSTAR

NorthStar is a core provider in the 2024 WMS Technology Value Matrix. NorthStar supports North American SMB organizations within Manufacturing, Third-Party Logistics, Wholesale Distribution, Food and Beverage, and E-commerce verticals. The NorthStar Automation

Platform is a WMS designed to enhance warehouse operations and streamline inventory management. It offers extensive features that enable auto allocation of inventory to both work orders and sales orders. With the option to lock down chosen inventory to specific kits or customer orders, businesses gain control over order fulfillment, ensuring complete, partial, and non-fill order management. The platform facilitates the creation of zones within the warehouse, which is ideal for businesses dealing with a vast range of products and delivery requirements. Users can customize the warehouse layout based on unique business rules and security levels, offering flexibility in managing tasks such as receiving, put-away, picking, packing, and shipping. The NorthStar WMS provides real-time visibility through features like SnapShot and KPI dashboards, enabling quick insights into warehouse activities. It also offers comprehensive functionalities, including repacking, unit-of-measure conversions, and lot number tracking for traceability. The system optimizes warehouse operations with load management, vendor management, wave creation, and report generation features. Moreover, its mobile module enhances barcode-based transactions, while the Pack Order module simplifies order packing and shipping. NorthStar WMS empowers users to oversee and control every warehouse process directly from their mobile devices, ensuring operational flexibility and real-time management capabilities. NorthStar has integrated Vertical Lift Modules (VLM) within its WMS to allow organizations to automate the picking and packing process. NorthStar integration portal consists of ERP, eCommerce, shipping carriers, and data collection vendors such as Zebra Technologies, Voxware, Mobile, DHL, UPS, USPS, FedEx, amazon, eBay, Magneto, Microsoft Dynamics, Sage, and Oracle NetSuite.

VINCULUM

Vinculum is a core provider in the second edition of the WMS Technology Value Matrix, and it is acknowledged for its cloud-based Vin WMS product. Vinculum also offers customers product information management, catalog listing, retail management, and marketplace payment reconciliation products. Vinculum serves fashion, healthcare, electronics, home goods, and sports organizations.

The software Fulfillment capabilities centralize inventory management, enabling order processing and tracking for B2B and B2C channels. It features Automated Replenishment based on daily orders, ensuring stock availability and integrating with clients' ERP systems and various online marketplaces and web stores. Integration with 50+ last-mile transporters improves coordination for final deliveries, and the system supports Multiple Order Allocation and Soft Blocking to manage inventory availability across multiple channels. Other features include 3PL Billing and Contract Management, which simplifies the onboarding of logistics partners, tracking contract terms, and generating invoices. The Reverse Logistics feature handles returns from vendors and customers, supporting automatic pickup and delivery. Vin WMS supports a Complete Warehouse Setup, optimizing

space with configurable zones, bins, and lots, and offers inventory synchronization across all channels. Analytics & Reporting tools also provide pre-configured and customizable reports covering orders, inventory, and returns.

Vin WMS's Competitive Advantages include its configurable business rules, scalable microservices-based architecture for rapid deployment, and a design optimized for omnichannel commerce. Its Pay-Per-Use model offers cost flexibility, adapting to business volume changes.