

TRENDS THAT WILL SHAPE THE FINAL-MILE

TECHNOLOGY PREDICTIONS FOR 2025



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Technology that increases responsiveness to customer needs and fosters internal carrier productivity will become increasingly important in 2025. That's what two of the industry's technology thought-leaders, Pratik Jagad, COO of [nuVizz, Inc.](#) and Sushanth Raman, CEO and Founder of [Pallet](#), saw on the horizon for those in our industry.

Here's what they told CLDA Mag as they look towards the future:

CLDA Mag: What are the three most significant tech trends that you believe will impact the industry in 2025?

Jagad: The industry is rapidly evolving. Speed, efficiency, and flexibility are more critical than ever in an increasingly complex supply chain.

Three major trends are likely to make an impact on the industry next year:

1. Cost-effective AI and cloud solutions: As the cost to develop and deploy technology tools continues to drop, logistics companies will increasingly adopt flexible, cloud-based solutions. This will make it easier and more affordable for businesses of all sizes to access tools that can optimize operations and streamline workflows. This shift will drive more widespread adoption of scalable, cost-efficient solutions, enabling even smaller logistics organizations to afford them.

2. The rise of last-mile TMS: Transportation management systems offer end-to-end visibility

and control over the last-mile process. These will emerge as a trend for logistics providers in 2025. This class of cloud-enabled solutions focuses explicitly on managing planning, execution, customer experience, and billing throughout the lifecycle of a last-mile order across the provider's network. This class of solutions will empower logistics providers to deliver a seamless and efficient last-mile experience, which has become increasingly important in the industry, especially to meet the growing demands of e-commerce.

3. Expansion of last-mile technology: Last-mile delivery technologies are continuing to evolve beyond their traditional scope of delivery, pick-up and drop-off. We expect these solutions to expand their capabilities to cover cross-dock operations, including receiving, staging, loading, and returns reconciliation. This broader functionality will enhance operational efficiencies by automating and optimizing additional stages of the logistics process. The result will be faster, more reliable deliveries and better resource management throughout the supply chain.

Raman: Increased productivity for carriers, complete order visibility, and easier-to-use systems will dominate the landscape for carriers in 2025. Watch for these trends:

1. Employees will be more productive due to

AI: Ten percent of carriers' revenue goes towards front and back-office tasks that AI could automate. These tasks include order entry, tracking, scheduling, and even quoting for routine orders. In an industry with narrow profit margins, carriers that adopt technology correctly will have employees who become ten times more productive and will see increased profitability and expansion.

2. Shippers will demand complete order vis-

ibility: Shippers demand accurate and live transit tracking, delivery times, warehouse location, environmental impact, and more. The carriers that reliably collect and share all these data points will be able to earn more business, all while running more efficient operations. Carriers unable to service these data requirements will be forced to turn down work.

3. Carriers want technology that works:

The tech that many logistics professionals use today is frequently clunky and disappointing, especially compared to consumer products like Netflix and Uber. Poor business technology means inefficiency, demoralized employees, and mistakes. The entire ecosystem of next-generation TMS, driver apps, and ELDs will give every carrier the tools to build a modern business operating system.

CLDA Mag: Why will these trends be significant to those in the final-mile?

Jagad: As the supply chain becomes increasingly complex, the convergence of AI, cloud technology, and last-mile innovation is shaping a more

agile and responsive supply chain that will better meet the demands of logistics and commerce in the future.

The rise of AI-based technologies and cloud solutions has made building applications with fewer resources significantly easier. AI is automating a significant portion of the coding process, reducing development times and costs. Cloud technologies are eliminating the need to maintain costly, in-house hardware infrastructure. Together, logistics companies can have a more cost-effective, reliable, and scalable approach to managing delivery operations. With cloud deployment, logistics organizations can focus on optimizing their service offerings without worrying about IT infrastructure, enabling them to adapt to fluctuating market demands faster than ever before.

As the logistics industry evolves, shippers and carriers require more versatile delivery management solutions. Traditional systems that only support limited, point-to-point delivery operations are no longer enough in today's more sophisticated supply chain environment. Previously, carriers were only focused on a handful of industries and the technology aligned with those industries. Today, last-mile TMS platforms provide greater flexibility and visibility that enables logistics providers to manage deliveries across various sectors – furniture, clothing, hardware, or even hazardous chemicals – in a single system with comprehensive tools to handle planning, execution, and customer communication. This flexibility is crucial as carriers continue to broaden their portfolios to serve additional industries and meet the demands of these industries, as well as more complex last-mile operations with operational efficiency and a superior customer experience.

Finally, the collapse of several large national freight operators has opened doors for regional logistics providers to expand their businesses to serve enterprise shippers. But with new opportunities come new challenges. To meet the expectations of enterprise shippers, regional providers must offer capabilities that extend beyond point-to-point deliveries. They must also provide cross-docking, sorting, and multi-leg delivery options, as shippers expect full visibility and reporting throughout the supply chain. Last-mile platforms are responding by integrating features that support more complex logistics operations, including light warehousing and cross-docking capabilities. These expanded and evolving last-mile TMS solutions enable logistics providers to capture new business while maintaining the operational flexibility necessary to meet the needs of various customers in today's supply chain.

Raman: On average, front and back office operations cost 10% of revenue, while the industry operates with narrow profit margins. For that reason, carriers that can increase employee productivity by 10x will see increased profitability and expansion.

Carriers need to have order visibility because their shippers will demand this data to serve the end customer. Additionally, deploying AI will require carriers to collect this data in a structured, unified way.

Most carriers are still using technology that hasn't kept pace with the changes in their business, leading to inefficiency and mistakes. For example, carriers often cobble together multiple TMS sys-

tems for different transportation modes, such as line haul and last-mile, because one system isn't flexible enough to support both.

CLDA Mag: *How will the use of AI increasingly impact last-mile providers in 2025?*

Jagad: The use of AI in last-mile logistics has the potential to fundamentally transform logistics providers' operations through advanced data processing and decision-making capabilities. AI isn't just the latest technology that is helping improve productivity. It goes beyond that. This innovation raises the bar for how last-mile providers optimize and customize every aspect of the delivery ecosystem and process to serve their customers. This goes from delivery location accuracy to route optimization, customer communication, billing, loss prevention, and more. As AI adoption becomes increasingly widespread, last-mile providers can and should leverage it to improve efficiency, accuracy, and customer satisfaction.

One critical area where AI will be especially impactful is delivery location accuracy. AI-driven systems can enable real-time adjustments that consider environmental factors, traffic conditions, and even last-minute delivery detail changes. AI will also significantly enhance route optimization, as algorithms continuously analyze current and historical traffic data, weather patterns, and fleet availability to determine the most efficient routes, saving time and fuel costs.

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AI also has the power to optimize customer communication through chatbots and virtual assistants. These will free up team members to perform more strategic tasks and improve the customer experience by providing proactive updates, resolving customer inquiries in real-time, and even anticipating potential delivery delays.

This technology can also automate the process of matching delivery data with financial records, reducing errors and speeding up billing reconciliation. Furthermore, AI and machine learning (ML) algorithms can even be used for loss prevention by detecting anomalies in the supply chain and automatically flagging potential issues before they lead to financial losses.

Last-mile carriers that embrace AI and ML will have a competitive advantage, especially those who invest in technologies with self-healing or self-learning capabilities. These technologies can process large amounts of data and learn to adapt over time. They can refine their outputs based on real-world performance or challenges without the need for human intervention. These technologies also enable carriers to go beyond data visualization by automatically providing actionable insights without manually inputting or interpreting data.

Carriers adopting AI can easily understand and access critical insights through AI-driven dashboards, enabling them to take immediate

action through simple commands or automated workflows. This will dramatically reduce operational bottlenecks, improve decision-making and speed-to-decision, and allow for a more agile, responsive last-mile ecosystem.

CLDA Mag: Where will AI have its most significant impact on last-mile providers, and why?

Jagad: Last-mile providers serve shippers who send their orders through diverse sources like BOL documents, emails, and customer calls. All this data needs to be digested into a structured form that can be fed into a delivery management system for visibility and execution. Generative AI technologies can interpret order information from varied sources and convert them into structured formats readable by downstream systems. This will save a lot of manual processing time that providers currently dedicate to order creation.

Similarly, AI-based technology can provide information about the progress of orders to end customers through automated customer service digital agents. These reduce the burden of customer inquiries on customer support desks. Machine learning AI algorithms can automatically detect deliveries dropped off at the wrong locations and analyze mis-scans to track down missing packages.

AI-based algorithms can also improve traditional route optimization methodologies by identifying the

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best-suited algorithms and picking the one with the highest impact by analyzing the tradeoffs between coverage, mileage, asset usage and cost.

CLDA Mag: *Are there new uses for AI that you expect to be introduced in 2025?*

Raman: The industry standard for communicating with customers is EDI, which uses structured data in a standardized way. However, 20-50% of communications still happen by email, which requires employees to manually read and respond, even for routine requests like order tracking. Enter AI assistant “workers” for email. These tools can understand and reply to emails automatically. Imagine if you gave ChatGPT access to your inbox and business systems and trained it to take orders, track orders, schedule appointments, and do customer service. The first batch of AI workers will be deployed alongside human operators who will approve their work. And in the coming years, routine tasks will be offloaded, and human operators will spend their time with relationship building, problem-solving and escalations.

CLDA Mag: *What improvements in route optimization do you expect to see in 2025?*

Jagad: One of the critical advancements will be AI’s evolving ability to mimic human intuition. As AI continues incorporating more sophisticated logic and adaptive learning, route-building and route-optimization algorithms will adjust dynamically to various operational scenarios. For example, AI can optimize routes in dense urban clusters by grouping stops more effectively or planning around major highways to avoid traffic congestion during peak times. Additionally, AI-based algorithms will im-

prove at incorporating preferential logic, enabling logistics companies to prioritize fleet utilization before assigning deliveries to third-party providers or independent contractors. By maximizing fleet capacity first, AI enables cost efficiency and reduces unnecessary dependency on third-party providers. This will help organizations maintain control over operations and reduce costs. This enhanced level of customization in routing logic will enable logistics companies to optimize various routes while balancing fleet capacity and third-party providers more effectively.

CLDA Mag: *How will technology help last-mile providers meet rising consumer expectations within the next 12 months?*

Jagad: In the next 12 months, technology will become increasingly instrumental in helping last-mile providers meet higher-than-ever customer expectations for speed, accuracy, convenience, and transparency. Consumers have come to expect real-time delivery updates on their phones, so last-mile providers must adopt mobile technologies that accurately track packages, including estimated time of arrival and driver location tracking. Customers want to know exactly where their package is and when it will arrive. These technologies provide that level of service and are key differentiators. Providers that do not adopt them risk falling behind and losing customer loyalty.

Automated notifications, either through text messaging or push notifications through the last-mile provider’s mobile app, sent at various stages of the delivery process, can significantly improve customer satisfaction and enhance customer loyalty. These notifications help ensure customers feel

informed and in control of their deliveries. Last-mile providers offering delivery options through their mobile app will further increase customer convenience and satisfaction. By allowing customers to modify their delivery times, locations or delivery instructions, providers can better accommodate changing customer schedules and needs. This helps carriers provide seamless and satisfying delivery experiences.

Raman: Shippers expect total order visibility and instantaneous customer service on-demand. Meeting these expectations is an operational and tech problem. How will you configure your staff to use your systems to enable this? The carriers that can meet these expectations will earn more business.

CLDA Mag: *What technology solutions will be introduced in 2025?*

Jagad: In 2025, we anticipate introducing intelligent route optimization technologies. These will allow last-mile providers to evaluate and compare multiple route planning strategies and automatically select the best option based on specific delivery requirements such as orders, route availability constraints, and real-time data. This AI-powered solution will assess delivery patterns in particular locations such as dense urban areas, remote, rural locations, or routes along major highways or interstates. They will optimize planning to ensure the fastest and most cost-effective delivery routes. This technology will also help maximize the use of in-house assets by prioritizing available internal resources before assigning deliveries to third-party carriers. These often come with higher costs and

lower margins. This strategic decision-making capability will enable providers to improve operational efficiency and profitability while better managing the complexities of last-mile logistics.

CLDA Mag: *What will we see in technology that we haven't seen before, and why will it become an essential tool for last-mile providers?*

Jagad: Generative AI technologies will continue to advance. A vital part of that evolution will include their ability to comprehend and process the context of human-generated data such as emails, text messages, documents, and other forms of communication. They will then be able to transform this information into structured data sets compatible with various systems such as order management, delivery platforms, ERP systems, and billing systems. This capability will streamline manual input or import of customer order information. This will create workflow efficiencies by reducing the time customer service teams spend on order processing, shipment details, or payment alerts received through various channels. Integrating data from multiple sources and offering actionable insights and recommendations will make AI solutions even more essential to last-mile logistics providers.

Providers that invest in technologies to optimize data handling and operational efficiency will move closer to achieving fully autonomous, self-healing, and self-learning platforms. That will enable them to respond to customer needs more quickly and efficiently.

CLDA Mag: *What technology solutions will become outmoded in 2025?*

Providers that invest in technologies to optimize data handling and operational efficiency will move closer to achieving fully autonomous, self-healing, and self-learning platforms. That will enable them to respond to customer needs more quickly and efficiently.



Jagad: Next year, technologies that only provide point-to-point solutions for specific verticals will be completely antiquated. These solutions limit last-mile providers' ability to diversify their service offerings. They force carriers into relying on work for single shippers or types of deliveries.

Carriers need scalable solutions across various industries and regions, making point-to-point, vertical-specific technologies less viable. Additionally, systems that cannot accommodate managing multiple facilities or support a carrier's expanding network will struggle to remain relevant for the same reason. They cannot manage various locations and scale seamlessly. Technologies that lack flexibility will become obsolete.

Finally, technologies with fixed workflows that do not allow carriers to configure customer processes will be phased out. As last-mile operations increase in complexity and carriers scale to serve a broader range of customers, they will require adaptable solutions that do not require tedious, manual workarounds. Inflexible platforms are unsustainable as the last-mile logistics industry continues to evolve.

Raman: Assembling a disconnected web of incomplete software is the wrong foundation for adopting modern technology. For example, some carriers use disparate tools for warehousing, dis-

patch, routing, and billing. The data and processes are stored in various places, making it difficult or impossible to get a unified view of business or deploy AI.

***CLDA Mag:** What else should last-mile providers know about upcoming changes in technology in 2025?*

Jagad: In 2025, last-mile providers should review their current technologies to assess whether they are too rigid or limit future growth. Providers locked into inflexible technology systems or multi-year contracts that restrict their ability to scale or upgrade may find adapting to the industry's fast-paced changes challenging.

It's essential to evaluate various tools and invest in more strategic solutions, like last-mile TMS, that enable providers to manage diverse operations within a single, scalable platform.

Providers should also prioritize working with technology partners whose values align with their own, particularly those committed to helping solve their delivery challenges through AI and ML technologies. These tools can optimize existing operations and help ensure built-in flexibility to adapt to future demands without being locked into long-term, restrictive agreements. **CLDA**