Why Does Your Facility Stop Working When Your Employees Go Home?

inVia ROBOTICS | SUPPLYCHAINDIVE

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Executive Summary

Robotics has recently made significant headway in industrial markets as manufacturers seek to combat labor shortages and mitigate the risk of employee stress injuries by automating repetitive tasks. While the logistics sector also has labor shortages, it has struggled to keep pace with manufacturing in terms of robotics because warehouse robots require more versatile capabilities and sophisticated control. Within warehouses and distribution centers (DCs), automation has traditionally been limited to bulky and expensive conveyors and similar equipment.

Where early industrial robots repeatedly perform a simple, stationary task, warehouse robots must be able to move efficiently about the facility, identify inventory and take it where it needs to go. Early iterations for fulfillment activities could follow only predetermined tracks or paths, which severely limited functionality.

Warehouse automation has risen in recent years, with 2018 boasting a 13% sales increase year-over-year in warehouse-automation technologies[1] even before the 2020 pandemic hit the United States and forced many warehouses and fulfillment centers to operate with a fraction of their normal staff because of the risk of COVID-19 infection. As essential warehouse workers were forced to quarantine and some facilities temporarily closed, logistics operators became more aware than ever of the value of automated warehouse solutions.

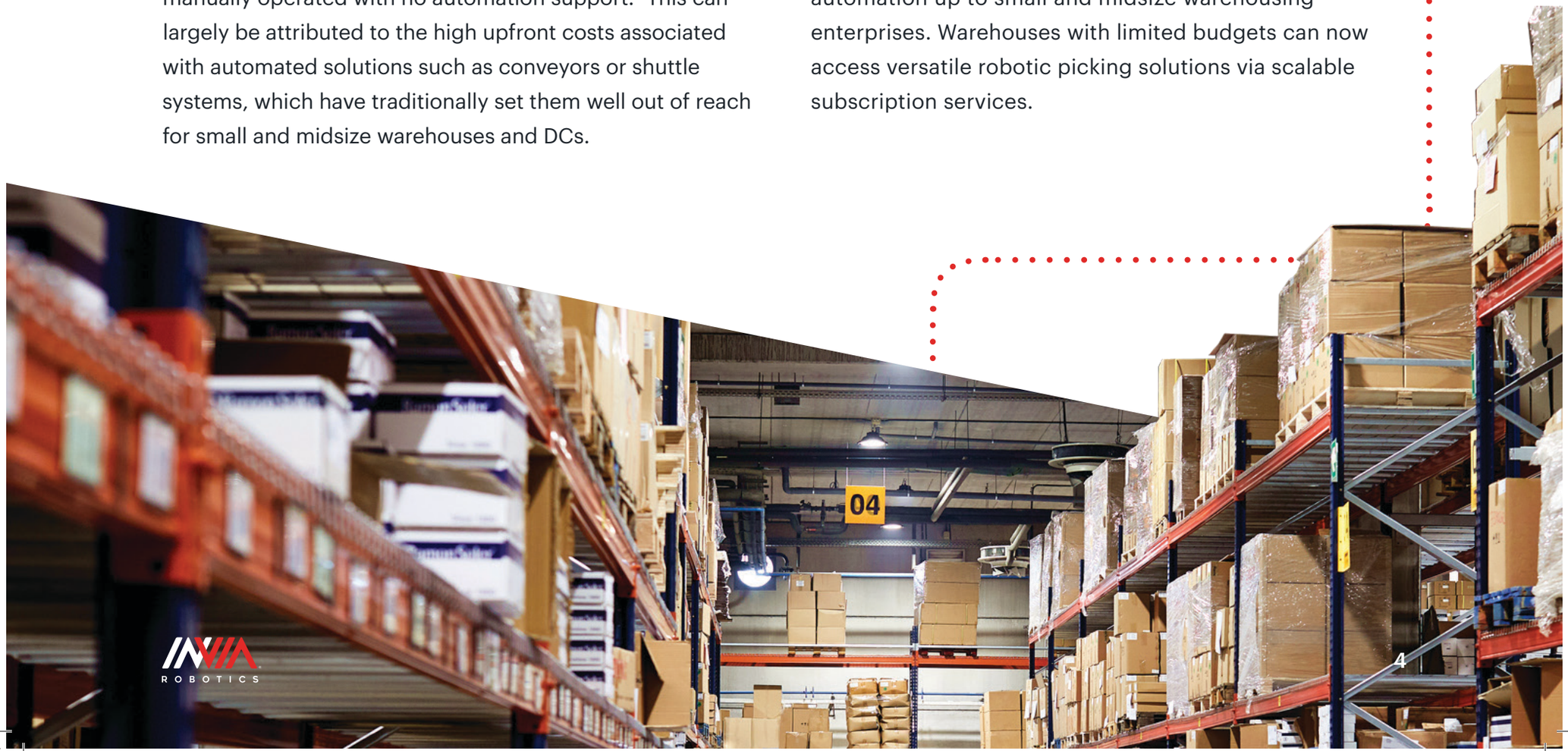
While DCs operated with socially distanced skeleton crews or shut altogether, e-commerce sales increased dramatically from a quarantined population. Even major retail players with huge distribution operations began to miss standard two-day delivery windows by days or weeks. Many online retailers experienced order volumes as high or higher than what they would normally see during peak holiday shopping periods. An 18% increase in e-commerce sales was countered by a 14% decline in brick-and-mortar sales,[2] causing many retailers to permanently shift additional inventory from brick-and-mortar stores into understaffed fulfillment centers.

This level of supply chain disruption identified a weakness in current logistics models, leaving warehouse managers and logistics executives scrambling for automated and robotic solutions that go beyond simple picking capabilities and into replenishment, returns, cycle counting, sortation and other processes that support more streamlined order fulfillment. Fifty-one percent of employees at DCs and warehouses now say their company is more willing to invest in robotics and automation,[3] which can in no small part be attributed to their urgent need to optimize the capabilities of smaller labor forces and gain the ability to move operations forward uninterrupted even after the lights go out at the end of the day.

Robotics-as-a-Service Evens the Automation Playing Field

As recently as 2016, 80% of warehouses reported they were manually operated with no automation support.[4] This can largely be attributed to the high upfront costs associated with automated solutions such as conveyors or shuttle systems, which have traditionally set them well out of reach for small and midsize warehouses and DCs.

Robotics-as-a-Service (RaaS) recently opened automation up to small and midsize warehousing enterprises. Warehouses with limited budgets can now access versatile robotic picking solutions via scalable subscription services.



"Most small and medium warehouses and third-party logistics providers are operating manually because the cost for large-scale automation is difficult to justify," said Kurt Nantkes, chief revenue officer for inVia Robotics, a RaaS service provider. "They are likely tackling core fulfillment using a person-to-goods, labor-intensive workflow. Using a RaaS solution, they get the benefits of large-scale automation by changing to a goods-to-person workflow and will see dramatic productivity improvements within the labor force regarding picking and putaway units or lines per hour. They see these improvements in one-tenth the time it takes to set up, train and implement other large-scale automation packages."

The most comprehensive RaaS models allow warehouses to avoid the burdens of equipment ownership and pay only for the productivity of the robots. These solutions offer around-the-clock monitoring and support, artificial intelligence (AI) software with upgrades included, and the services of the robots themselves at a fraction of the cost of traditional automation. These advanced capabilities facilitate lights-out movement in fulfillment centers and DCs, where robots can pick the next shift's orders without supervision by personnel.

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Chief revenue officer for inVia Robotics

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"The biggest challenge of robotics has been the ability to adapt to various infrastructures and environments," said Lior Elazary, CEO and co-founder of inVia Robotics. "Think about it, we're working on self-driving cars right now instead of putting railroad tracks everywhere because of the cost. We're building cars that adapt to the existing roads and current conditions. We're doing the same thing in the warehouse. In the past, with shuttle systems and conveyors, you had to build a lot of tracks. Now, the robots adapt to the warehouse and significantly reduce the cost."

Though many warehouse operators are reluctant to spend in 2020, 22% still plan to spend money on robotics within the next two years.[5]

"Recessions force you to look at ways to minimize costs," Nantkes said. "This is why you should always use a cost-benefit analysis when selecting a RaaS provider. Using RaaS enables you to pull from your operating-expense budget and justify the investment. Your operating costs will be significantly reduced based on the efficiencies and productivity improvements."

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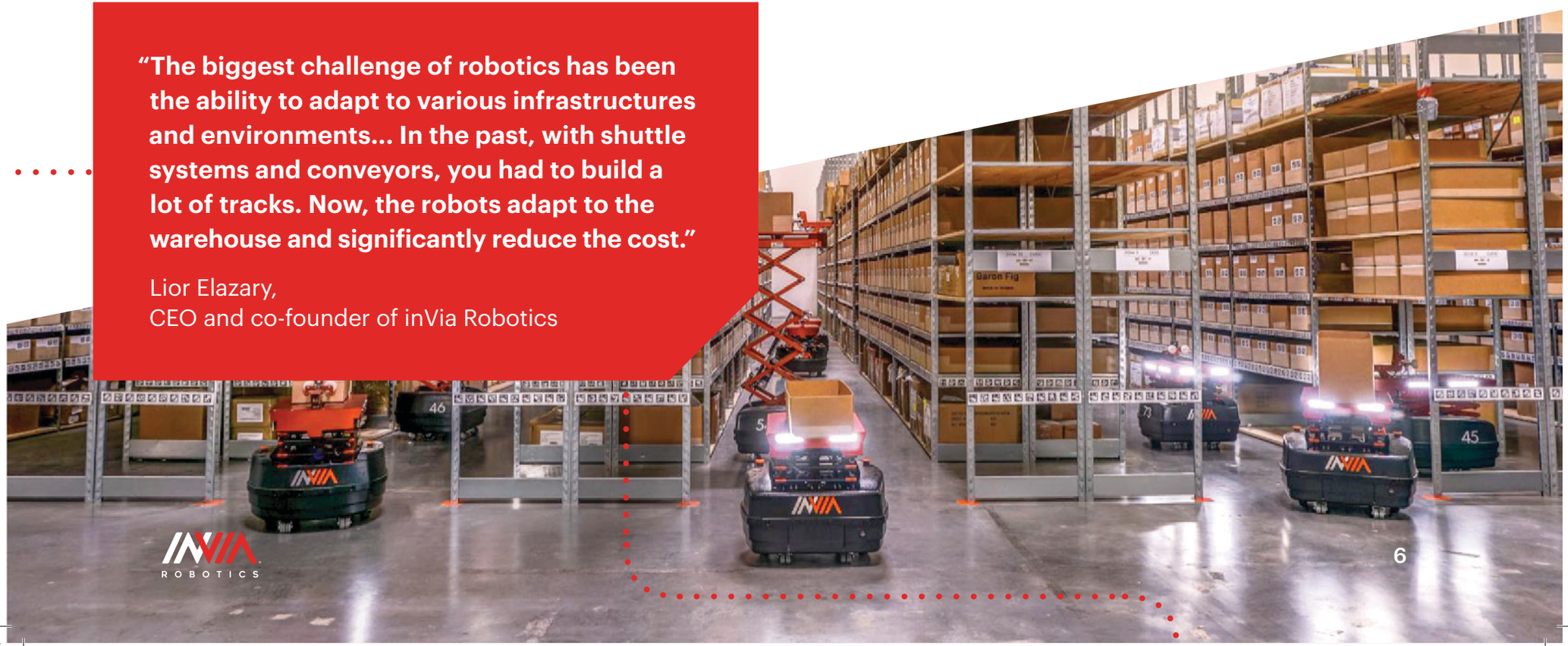

RaaS offers a more affordable means to implement automation in the warehouse. Some of the benefits of RaaS include:

- **Affordability.** RaaS offers an affordable method to implement robotics-based automation in the warehouse without significant upfront investment, making it an ideal solution for this period in history.

- **Easier scalability.** Robots on a RaaS program scale much more affordably than owned equipment, allowing businesses to easily add equipment to keep pace with demand.

- **Faster ROI.** A subscription model facilitates a higher and faster ROI than large investments in owned robotic equipment, or expensive and long installations of conveyors and other automation.

- **Accommodate shifting needs.** The fluidity of RaaS allows companies to change robot workflows to keep up with changing needs in the warehouse. For example, robots can be easily directed to do more picking and less cycle counting in the face of labor shortages.

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As warehouse managers look to cut costs in the face of a recession, RaaS offers faster, streamlined access to the variety of benefits that mobile robotic order fulfillment provides, such as:

- **Short lead times.** Mobile robots can be deployed much more quickly than dedicated warehouse-automation systems.

- **Adaptability.** Large, traditional automation, such as conveyor systems, doesn't move or learn, while modern robots can adapt to current or updated racking systems and other facility infrastructure as needed and they learn from their environment to continually make improvements in the fulfillment process.

- **Relocation.** Mobile automation solutions can be moved to new facilities easily, as opposed to large legacy automation, such as conveyors or shuttles, which is fixed and designed to fit the specifications of the building that contains it.

- **Optimized labor.** Automation can help combat the skills shortage and optimize smaller warehouse crews.

- **Eliminate walking.** Mobile robots reduce the miles of walking and much of the repetitive motion that manual warehouse workers must typically endure. Walking is one of the costliest activities that happens in a warehouse. Eliminating it reduces labor costs and lessens the potential for stress injuries and associated costs.

Perhaps the greatest benefit offered, however, is intelligence. Robots use AI-enabled software that learns over time.

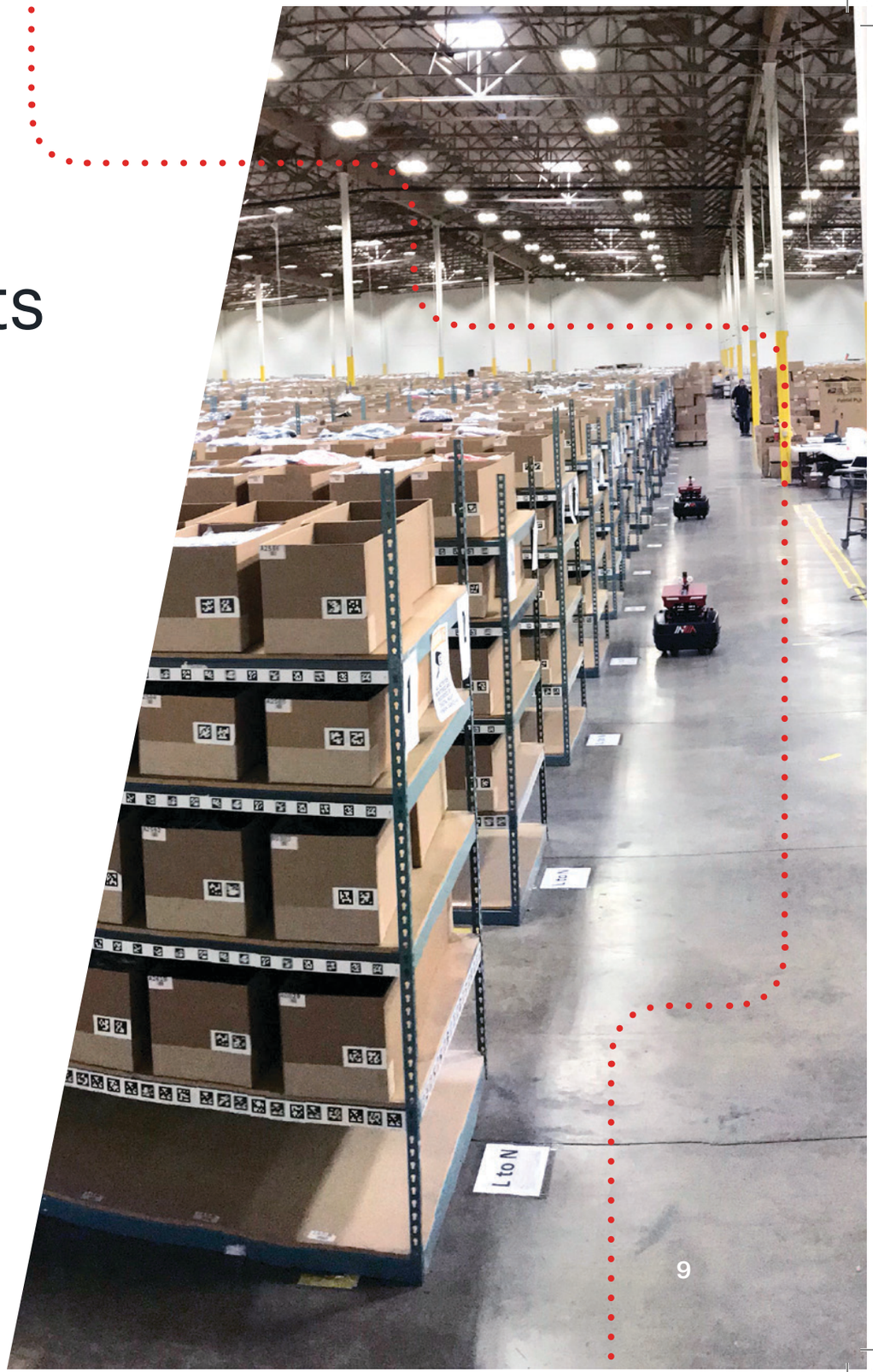
"It's constantly learning," said Lauren Ziccardi, vice president of solutions development for inVia Robotics. "Say it's July Fourth and hot dogs are flying off the shelves. A manager has to tell employees to get more hot dogs and put them somewhere easy to grab. The AI is doing the same thing. It's looking at the trends and saying 'people are buying a lot of hot dogs, let's get a pallet and put it up front where it's ready' before it's even ordered. The AI tries to think ahead so warehouse managers don't have to."

When Employees End Their Day, Robots Keep Working

The latest in RaaS warehousing solutions offer around-the-clock monitoring and support, which means robots can continue picking and returning items even after facility staff have all gone home for the evening.

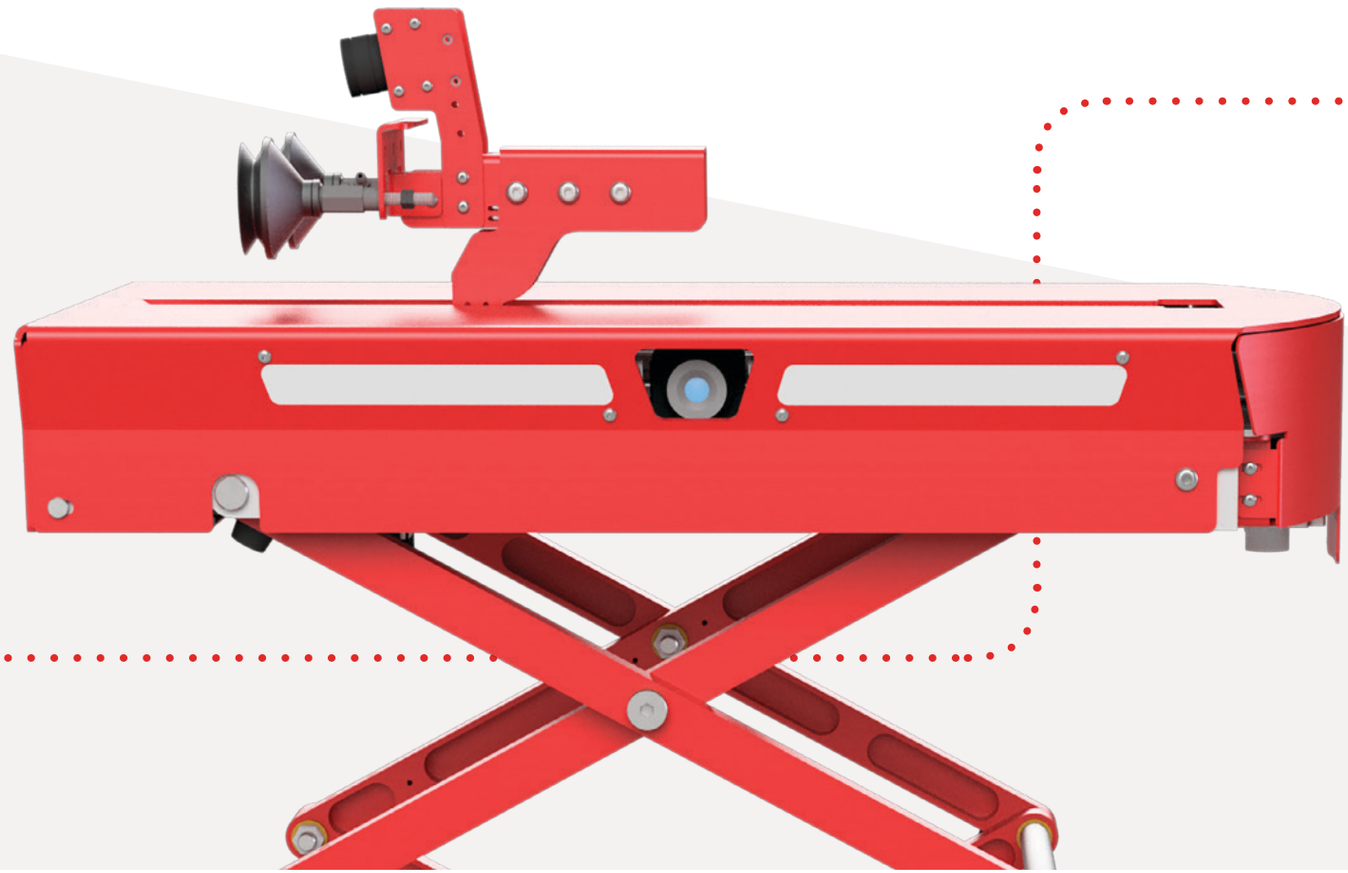
The most advanced RaaS solutions no longer require direct interaction with a warehouse employee. Instead, a virtual wall, modeled in the inVia Robotics Picker Wall, can be built by the controlling AI software, with warehouse workers on one side and robots on the other. Allowing the robot to keep working without dependency on staff members avoids slowdowns when the picker takes a break or gets interrupted.

"It's difficult to sustain repetitive work for a long time," Elazary said. "A picker may work for an hour or two hours, then they need a break because they get tired or bored. By decoupling these two halves of the system, the robot can keep staging totes for the picker to use when they are ready."



Robots can place totes with all the ordered goods for the day on the virtual putwall and continually add goods to keep pace with new orders throughout the shift, while also returning the totes back into inventory — all without being slowed down by any work stoppages. When left to work overnight, the robots then front-load the next day's picks for immediate sorting and packing by warehouse workers in the morning, virtually eliminating the usual order backlog that tends to build up overnight in manual facilities.

Premium RaaS solutions, such as inVia Robotics', will provide support through 24/7 monitoring from a staffed operations center. The service provider's staff can remotely manipulate robots, deploy additional or replacement robots to the floor on command, and support other features that keep products moving when the warehouse is otherwise empty. This sort of functionality is extremely useful in the age of e-commerce, where customer orders come in at all hours, but most warehouses have only pickers and packers on shift during the day.



"The picker barely needs to walk, everything is right in front of them," Ziccardi said. "With a virtual picker wall solution in place, we've seen a picker go from 70 units per hour to 1,200 units per hour. It just increases the amount that one person can pick significantly."

Of note, AI-driven robots have more functionality options now than ever before. The RaaS service provider maps the warehouse to optimize paths, enabling robots to perform many tasks beyond picking, extending into returns and put-backs, cycle counting, replenishment, or organizing and putting away tossed-aside goods from triage areas where employee mistakes were tossed safely out of the way during the busiest periods of the shift.

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inVia Robotics is an award-winning robotics company that provides the next generation of warehouse automation solutions. Our system leverages autonomous mobile robots and AI-driven warehouse execution system software to help e-commerce businesses and 3PLs automate and optimize material flow across fulfillment centers. We deliver our comprehensive automation services as a subscription, and our systems are built to deploy quickly and without disruption to existing operations. The results are a 3-4X increase in productivity and accuracy rates of 99.9% at a fraction of the cost of traditional automation.

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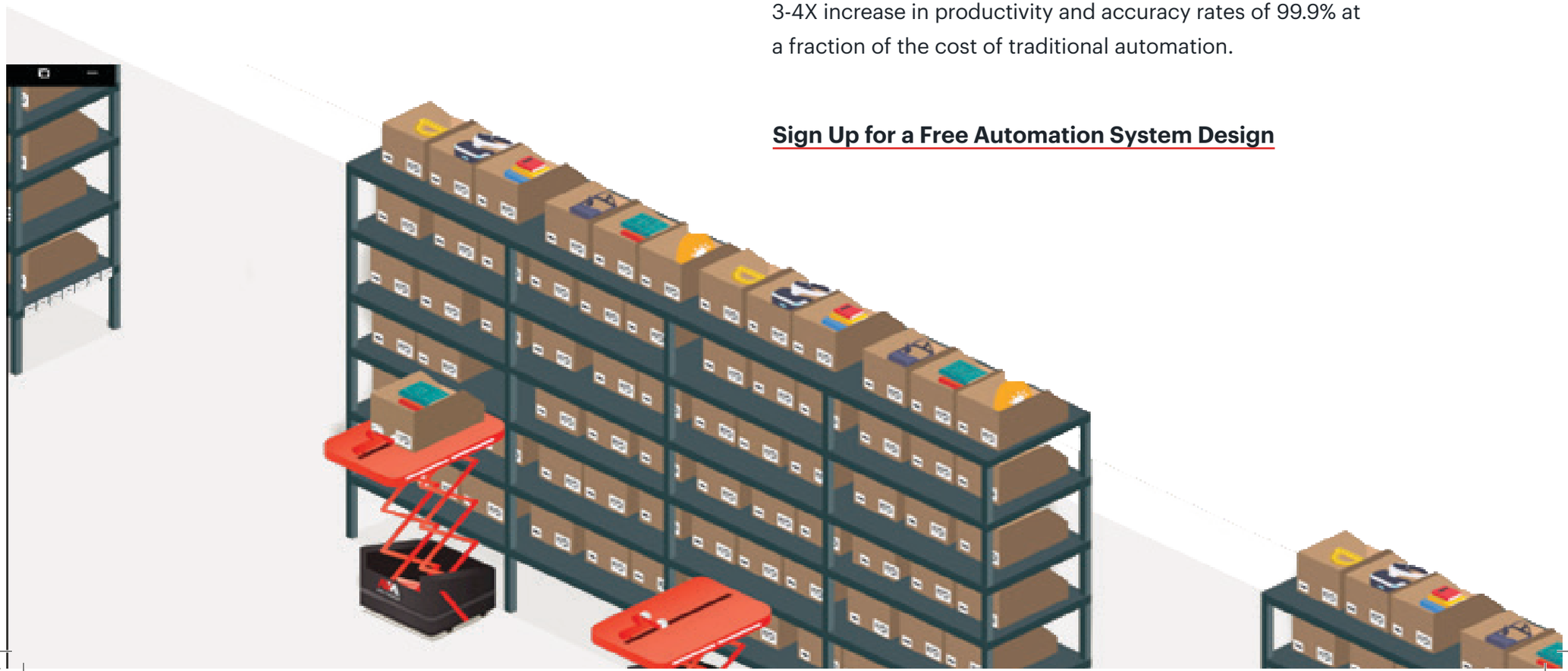

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