

# 7 Reasons Why Warehouse Robots Beat Traditional Automation







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## OVERVIEW

In 2020, global retail e-commerce sales are expected to grow to \$4.88 trillion, more than double 2017 figures<sup>1</sup>. The Amazon effect is at the heart of this e-commerce boom: consumers are



empowered to demand what they want and when. These demands aren't what they used to be, catching retailers and service providers ill-equipped to keep up. With shrinking store footprints and faster product turns, warehouse operators have been shifting to accommodate more SKUs and lower order quantities, while struggling to staff for growing demand and supporting service level goals. This new fulfillment landscape is forcing the hands of supply chain executives, leaving them no option but to automate or fold.

Warehouse operators traditionally turn to large-scale automation solutions to handle these challenges. They buy multi-million dollar conveyor, shuttle and automatic storage and retrieval systems that take up to a year to implement and nearly six years to see return on investment. The only problem? Suppliers without the regular-season volume or space to justify the cost and size of such systems are left out.

These smaller operations can't justify the bolted-down, caged-off systems, which add complexity and cost to warehouse layouts and budgets.

### A new way to automate

Most logistics leaders agree that warehouse automation is a must to remain relevant in today's economy. And now, there's automation that provides the flexibility of manual cart picking with the performance of traditional automation. Collaborative mobile warehouse robots have emerged as the leading solution to help fill the gap for fulfillment providers, with the likes of DHL, XPO Logistics and others already using robots to fulfill orders.

### What are collaborative mobile warehouse robots?

To understand what collaborative mobile warehouse robots are, operators need to understand the different types of warehouse robots on the market. Bob Trebilcock, editor of *Modern Materials Handling*, coined methodologies of leading warehouse robot solutions in a 2018 piece<sup>2</sup>:

- **"Lead me" approach:** The robot is integrated into the site's Warehouse Management System. It leads the picker by displaying the item and quantity of the pick at each location.
- **"Follow me" approach:** The robot, an automated cart, acts like a tugger pulling other carts behind it. It follows a picker who controls the bot with a device.
- **"Swarm me" approach:** The robot, integrated with the Warehouse Management System, waits for nearby pickers to interact with it.
- **"Holy Grail" approach:** The robot has piece-picking capabilities and travels autonomously to a pick location and does the picking. This approach does not involve humans.

## Defining ‘collaborative’

Many vendors use the label “collaborative warehouse robot” loosely, but exactly what makes a robot collaborative? Just like the name implies, collaborative mobile warehouse robots are autonomous and work alongside humans in the warehouse. The “lead me” approach most closely resembles the spirit of this definition, as these robots continuously work with warehouse associates throughout the day. These robots lead pickers through their work and help them stay on task by directing their workflows and improving their productivity, even providing gamification to stimulate competition and drive up performance.

## What is traditional warehouse automation?

Traditional automation includes the technologies warehouses and distribution centers have been using for decades to meet increasing demand. These systems include:

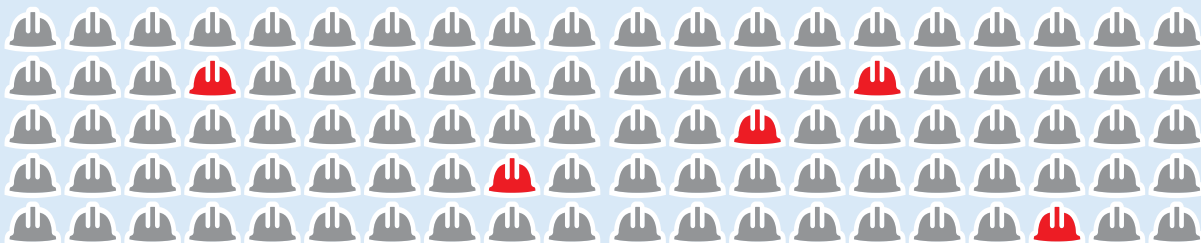
- Conveyor systems
- Pick-to-Light systems
- Pick-to-Voice systems
- Enhanced Cart Picking (with pick-to-voice or cluster picking capabilities)
- Automated Guided Vehicles
- Unit Sorters, with post-pick sortation of batch picked items
- Goods to Person (GTP) - AS/RS, Shuttle, or Kiva-like systems

Traditional automation is a viable approach to optimizing a warehouse, but collaborative robots outperform traditional automation on several significant fronts. This white paper explores seven reasons why collaborative mobile warehouse robots are a better approach to automation than traditional approaches.

## I. SAFETY

Warehouses are facing labor shortages: the demand for workers far exceeds the supply of qualified candidates<sup>3</sup>. Operators struggle to attract quality labor in part because of the physical demands warehouse work entails and the dangers that come with it.

### WORKPLACE SAFETY PER 100 WORKERS



*In 2016, there were five workplace injuries for every 100 full-time employees in the warehousing and storage industry.*

Source: U.S. Occupational Safety and Hazard Administration



Fully automated warehouses try to address safety concerns by removing human operators entirely from the picture. In fact, workers are advised not to touch conveyor equipment. But accidents still happen. In 2016, there were five workplace injuries for every 100 full-time employees in the warehousing and storage industry<sup>4</sup>. The U.S. Occupational Safety and Hazard Administration regularly logs serious and fatal accidents involving conveyor automation.



No one technology will create an injury-free warehouse. But collaborative mobile warehouse robots offer a different way of solving the injury puzzle:

- **They're designed to work with humans.** Robot technology meets OSHA and ANSI standards, and collaborative robots adhere to rigorous stop accuracy.
- **They navigate around obstacles.** Using sensor technology, robots know where they are going in the warehouse, and they know how to move around humans and other equipment.
- **They create a hands-free picking environment.** The machine moves on its own, creating a hands-free environment for operators to work safely.

## II. FLEXIBILITY

In a 2017 survey, global industry leaders named improving supply chain flexibility as one of their top five biggest future challenges.<sup>6</sup> Traditional automation solutions are the opposite of flexible: they are bulky, anchored down systems that demand significant space, leaving warehouses less adaptable to the future. What happens when their business, or the economy, changes?

Collaborative robots are a modern and customizable approach to warehouse automation. Many warehouse robot companies offer flexible rental pricing structures that operators can take advantage of during peak seasons. This means that companies can rent more robots to meet seasonal demand, and return them when regular demand returns. Instead of sizing an automation solution around a few big months of seasonal demand, operators can use robot rentals for busy months and make a capital purchase for only what they need now.

Additionally, collaborative mobile robots require no new physical infrastructure. Unlike traditional automation, they don't require racking, bolts and shuttles to get started.

### III. PRODUCTIVITY

When it comes to productivity, warehouse operators are concerned about two things: adequately staffing their businesses, and equipping their staff with the right equipment and tools to get work done as fast and safely as possible. But adequately staffing a warehouse is no easy feat. While the demand for quality labor is great, the supply isn't. The job market reflects this: from 2013 to 2015, wages grew up to 13.2% across labor and freight jobs in metro areas for warehousing, according to a 2018 presentation by XPO Logistics. In some areas of the U.S., fully burdened wages are approaching \$25 per hour.



Warehouse operators struggling to hire labor are looking for ways to optimize their current workforce to reduce costs and get orders out faster. In short, they are looking to improve their workers' productivity. They turn to traditional automation or ask more of their legacy WMS systems, only to find that both options are lengthy and costly.

Alternatively, collaborative robots help warehouses achieve rates that rival goods to person solutions. Sites using collaborative mobile robots report anywhere between 2–3X increase in productivity, reduction in errors and happier associates. Often times collaborative mobile robot solutions come with software that can enhance the WMS and WES.

#### **Intelligence**

Traditional goods-to-person automation — technologies that bring inventory directly to associates — nearly eliminate walking for

each pick. But there are all sorts of tasks in the warehouse, not just picks. What if there was a smarter way to group similar jobs together?

Collaborative mobile robots are an intelligent automation solution that do just that, by making decisions in real-time based on current work assignments and status of the warehouse floor. Using machine learning and artificial intelligence, they reduce needless walking by making pick paths as dense as possible and reducing steps in between every task, helping associates accomplish more tasks in the same amount of time.

## IV. COST

Logistics leaders need cost-effective automation solutions with a reliable return on investment. While warehouse automation comes in many shapes and sizes, traditional automation tends to be the most expensive, intrusive type of automation available, with lengthier ROI.

### Affordability

Traditional automation comes at a hefty price. Depending on warehouse sizes and business needs, traditional solutions start at \$1 million, while fully-automated solutions can cost \$25 million or more<sup>5</sup>.

In addition to up-front costs, traditional automation can cost warehouses in a number of other ways:

### Continuing costs

Because of its scale, traditional automation includes more moving parts and requires higher levels of maintenance. Warehouses often need to budget for spare parts and technical expertise.

### Time To go live

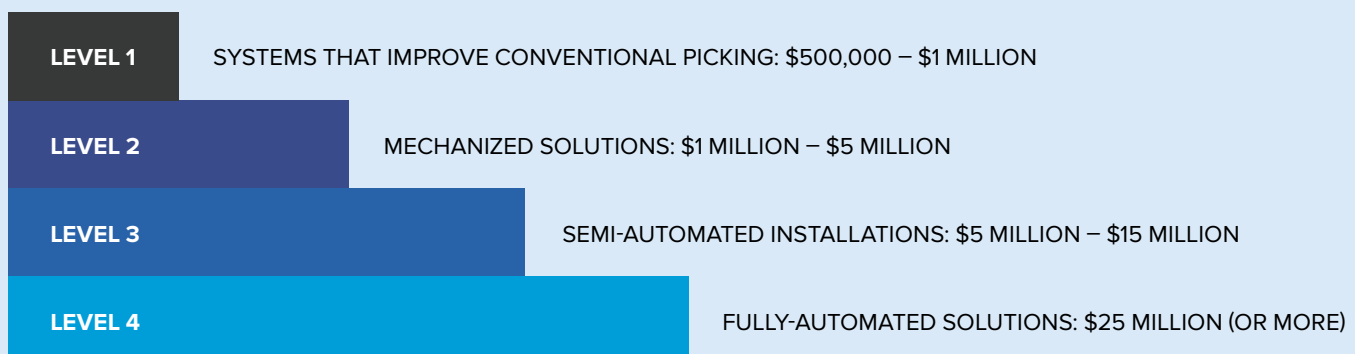
As traditional automation is larger and more complicated, the project scope can expand and grow out of control, and any benefit (denominator on payback) is delayed until the project is live.

### Cost of capital

Spending \$25 million today is expensive, while spending \$5 million over the next five years is less so. Mobile robots allow warehouses to delay spend and grow their system as needed. This frees up operators to repurpose capital investments.

In the past, operators have undertaken these large capital expenses because there weren't any other options. Not so anymore. Today's pay-as-you-go landscape has given rise to new automation options. Collaborative mobile robots cost less, while delivering almost the same level of productivity as traditional solutions. They range in price from \$30,000– \$50,000 per bot. A starter kit of robots costs \$250,000<sup>6</sup>. Unlike traditional automation where most of the cost is in the expensive infrastructure and required services, the main cost drivers for robots is software, sensors and electronics, which will continue to drop in price. This will reduce the future cost to build robots, further improving customer payback.

#### TRADITIONAL AUTOMATION BROKEN DOWN INTO FOUR TIERS



Source: Viastore Systems

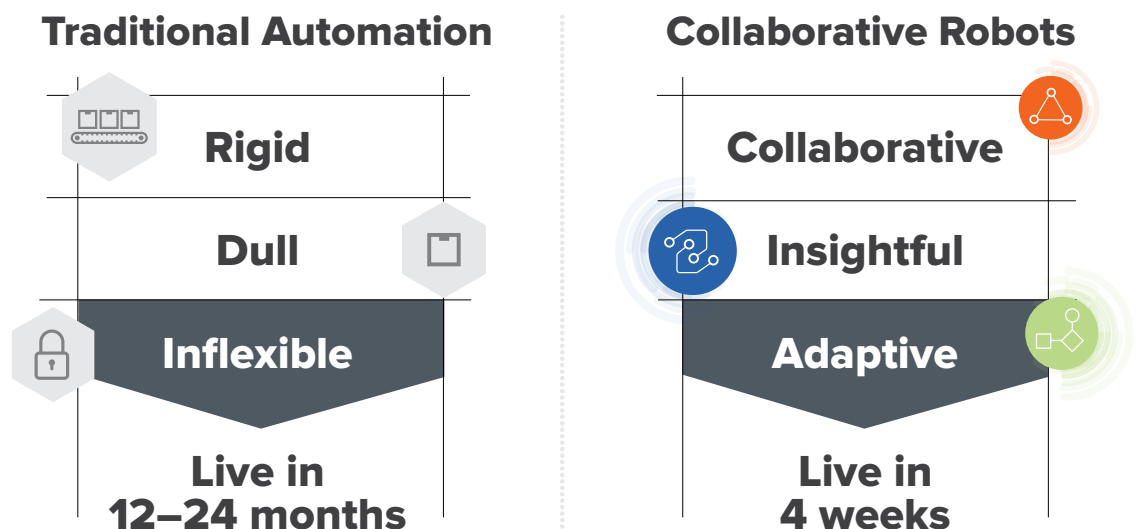
## V. SPEED

The faster an automated solution can get to work, the quicker warehouse operators see return on investment. Traditional projects take 12 to 24 months to go-live, with a five year payback, according to industry analysts, although some conveyor technologies have improved in recent years<sup>7</sup>. Meanwhile, collaborative robotic solutions can go live within four weeks, and offer a one-year return on investment.

Alternatively, the bigger the level of automation, the more complex the project becomes, and the greater the risk of delays and losses. Take the very public warehouse automation failure at Sainsbury in 2000<sup>8</sup>. As one of the largest supermarket chains in the UK, Sainsbury embarked on a warehouse automation project. The project hit snags and lags, with the company reporting massive losses in revenue by 2004.

Collaborative robots are quick to get to work for a number of reasons:

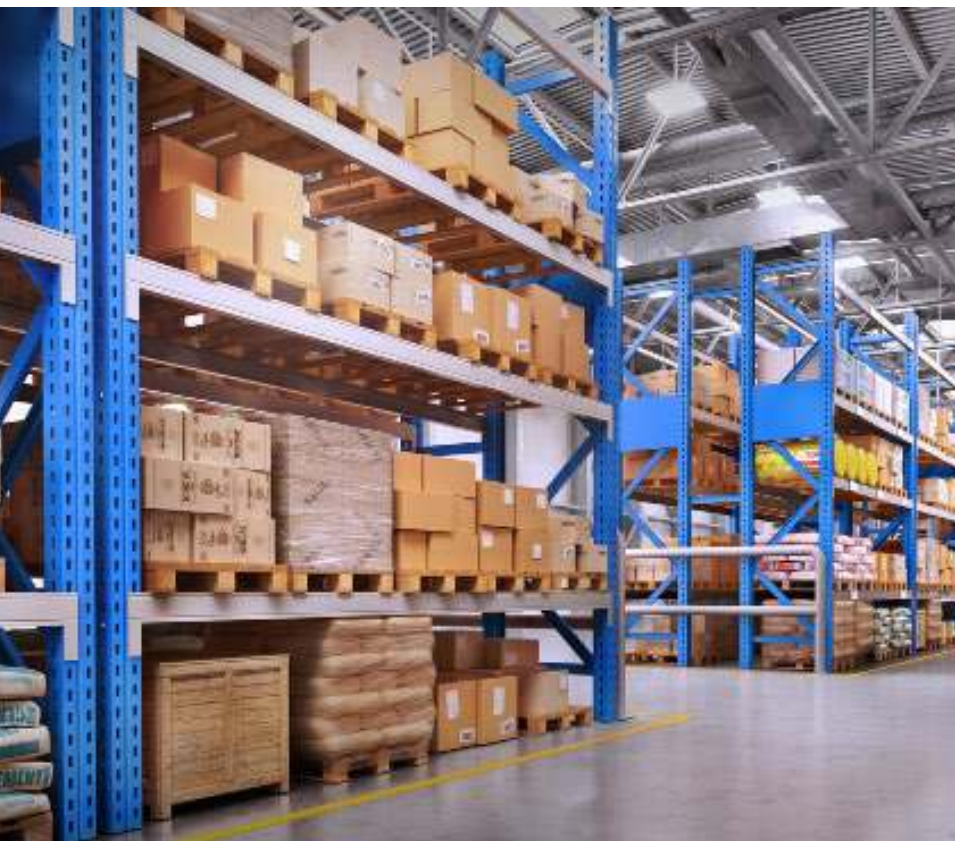
- **Design.** Collaborative robots benefit from technology used to make autonomous cars. Robots can map out warehouses once they're on the ground. Traditional solutions, on the other hand, require months of design, slowing down implementation time.
- **Streamlined integration.** Collaborative robotics offer a quicker go-live through a streamlined WMS integration that focuses on a list of key tasks to get warehouse workers started. Some solutions don't even require warehouse to have a WMS.
- **Training.** Onboarding new hires is easier with collaborative robotics, as training is built into the design of the solution. The system has fewer mechanical touch points and integrations, and leads associates through the pick process.
- **Lighter infrastructure.** Operators need less equipment with collaborative robots because robotic solutions are designed out for year one, versus year five to seven, like traditional solutions.





## VI. SCALABILITY

There's no easy way to scale a traditional automation solution: it's fixed infrastructure that is meant to handle your volume all year round. But what if your volume shifts? Warehouse operators need to carve out lots of space to make way for traditional solutions. With warehouse real estate already priced at a premium<sup>9</sup>, loading buildings with heavy equipment that will barely be used year-round is not exactly the best use of capital for many companies.



Alternatively, mobile robots can be added at much smaller increments of capacity more quickly. They don't need any new infrastructure, so they scale far more effectively. Operators can choose to rent additional capacity during peak. They're also easy to relocate to different facilities, if needs shift across distribution and fulfillment centers.

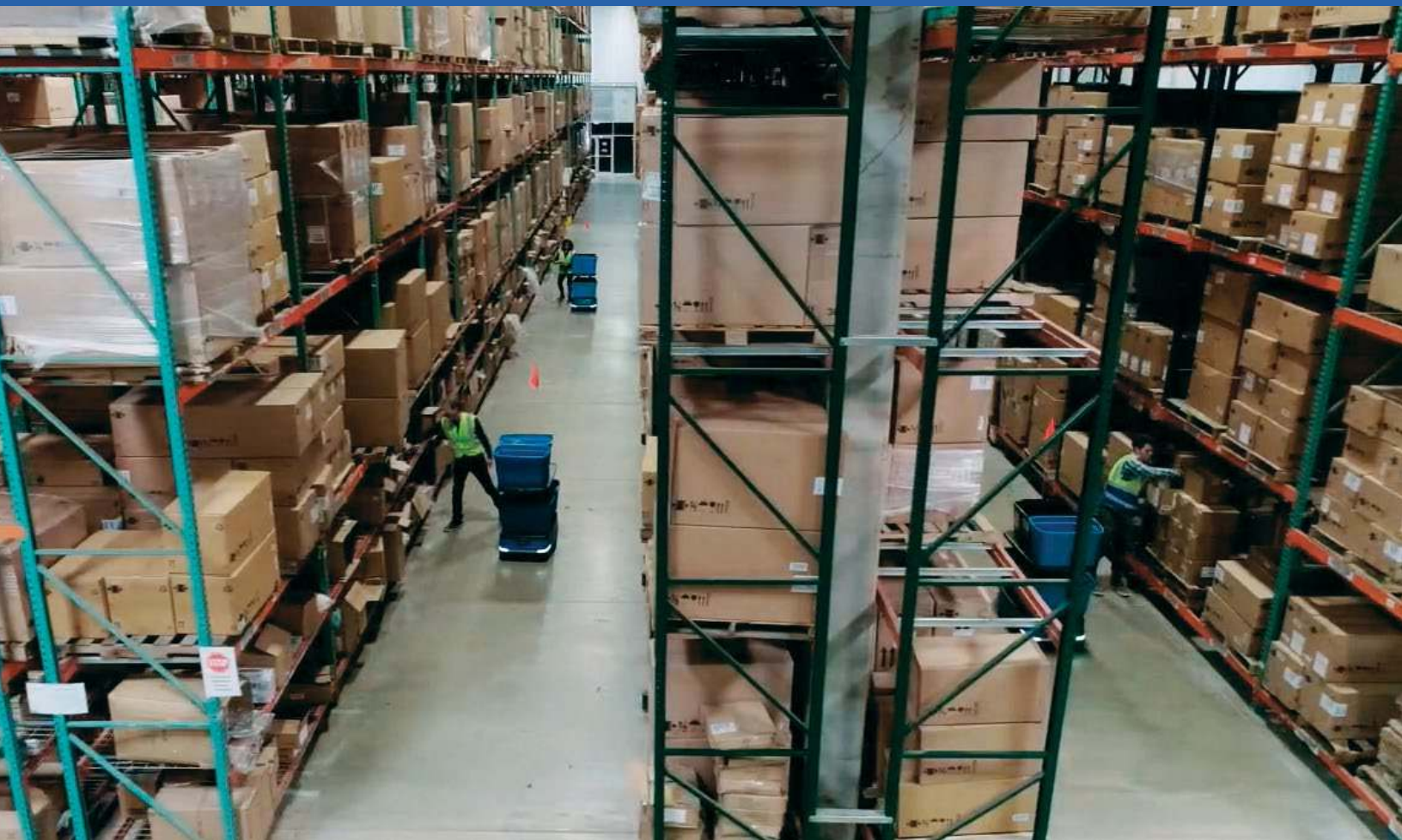
## VII. RELIABILITY

Equipment reliability is essential to running a successful warehouse. If warehouse operators can't depend on their systems to do the job, then they can't depend on getting orders fulfilled. Warehouses and fulfillment centers play an important role in a company's brand: as one of the final stops before an order reaches a consumer, fulfillment (or lack thereof) can make or break customer experiences.

Warehouse operators put all their eggs in one, large basket with traditional automation such as conveyors. For example, if a belt on a conveyor goes down, a whole warehouse can grind to a halt, leaving hundreds of workers standing around or being sent home. Meanwhile, if one collaborative mobile warehouse robot goes down, there's no impact to the warehouse's throughput or operation, because other robots pick up the slack. With collaborative robots, warehouse operators create a decentralized fleet of autonomous mobile workers, ensuring reliability across their entire operation.

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## ABOUT 6 RIVER SYSTEMS

Today's buying habits have changed the world of fulfillment forever. Customers demand better service but operators are stuck in the trenches, fighting today's problems with yesterday's tools. 6 River Systems knows that fulfillment is key to customer satisfaction. Starting with Chuck, a collaborative mobile robot, 6 River Systems is building fulfillment solutions that power the winning warehouses of the future.

**Want to learn more about Chuck? Schedule a call with our solutions team (866) 602 4825, or visit our website at [www.6river.com](http://www.6river.com).**



The background of the entire page is a solid blue color. Overlaid on this is a complex, abstract circuit diagram in white and light blue. The diagram consists of numerous thin lines, circles, squares, and arrows, creating a sense of interconnectedness and flow. Some lines are thicker and more prominent than others. The overall aesthetic is technical and modern.

# 6 RIVER SYSTEMS

FOLLOW THE LEADER

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