HYBRID PICKING

SOLVING FOR DEMAND FLUCTUATIONS

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Introduction

Demand is always fluctuating. Data analysis, forecasting volumes, resource planning, leasing additional resources — you do everything you can to ensure that you reach your business and operational goals even when unpredictable spikes in orders make it difficult.

However, your estimates and actual likely vary when you're trying to predict the whims of the market, and you're probably wondering what you can do to better control the outcome in these situations.

The problem isn't that you aren't planning effectively; it's that planning can only get you so far. If you underestimate the volume of orders, then you struggle to cope with the demand, and if you overestimate it, you spend money on resources that don't get fully utilized. It's a difficult situation to be in, and you need more than predictive analytics to get out of it.

One solution is a flexible, hybrid picking solution that runs on an AI-powered orchestration platform. You can't control the market, but hybrid picking solutions with the right capabilities can let you control how your warehouse reacts to it.

This ebook covers the market drivers of this technology, what existing picking automation solutions lack and an overview of how a hybrid solution can help you.

How ecommerce is driving changes

A report from BCG[1] indicates that ecommerce is poised to capture 41% of Global Retail Sales by 2027 — up from just 18% in 2017. According to their study, Winning Formulas[2] for Ecommerce Growth, global growth is expected to achieve a 9% compound annual growth rate (CAGR) through 2027 — more than double the projected brick-and-mortar retail growth of just 4%. This becomes even more relevant during the holidays.

Holiday shopping moved online during the pandemic, and it appears that it's going to stay that way. According to data from Statista, online retail sales[3] during the 2023 holiday season were predicted to reach $254 billion. Experts expected Cyber Monday and Black Friday to remain the most active holiday[4] shopping days in 2023 with estimated sales of ~$2 billion and ~ $9.6 billion, respectively.

Overall, online holiday retail sales in the US grew by 6% in 2022, and predictions suggested they would grow by another 11.3% in 2023.
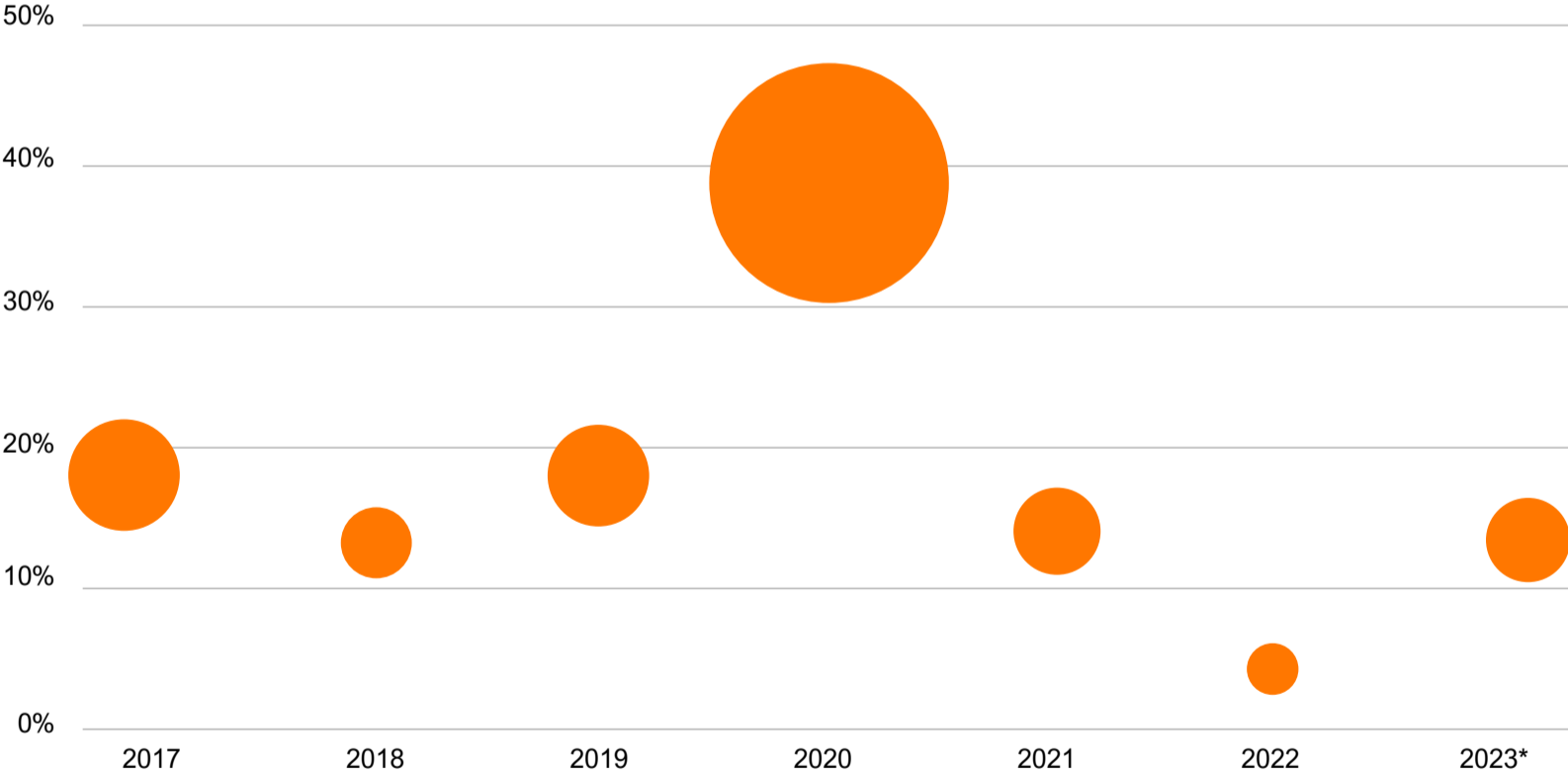
*Copyright - Statista 2023

Furthermore, the majority of holiday shoppers have indicated that they prefer[5] online-only retailers for their holiday shopping. More than 60% of consumers responded that they would rather do their holiday gifts from e-commerce-only merchants; department stores were the first choice for only about 24%.

How this affects the warehouse

The continued growth of ecommerce and the proliferation of SKUs, coupled with the increasing prevalence of customers expecting same-day and next-day delivery, is making it difficult for warehouses to keep up with orders. At the same time, the industry is experiencing a shortage of skilled operators (e.g., pickers, packers, forklift drivers, truck drivers, etc.). These challenges become exacerbated during peaks, whether they occur on a seasonal, intra-month, intra-week, or intraday basis. Combined, these factors are causing the industry to look towards automation for a solution.

## AUTOMATION IS A NECESSITY, NOT A CHOICE

When it comes to warehouse automation technology, there's a lot to choose from. Solutions range from Person to Goods (P2G) cobots, Rack to Person, Tote to Person, Intralogistics, and much more. What solutions a warehouse chooses to use will vary based on use case and budget, but there's no ignoring the ROI that automation offers the industry.

THE PREFERENCE FOR EACH TYPE OF ORDER FULFILLMENT ROBOT VARIES BY REGION

RELATIVE AMR MARKET SHARE FOR ORDER FULFILLMENT - UNITED STATES
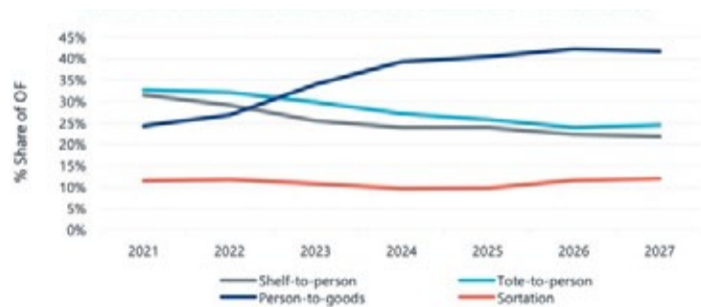
RELATIVE AMR MARKET SHARE FOR ORDER FULFILLMENT - EMEA
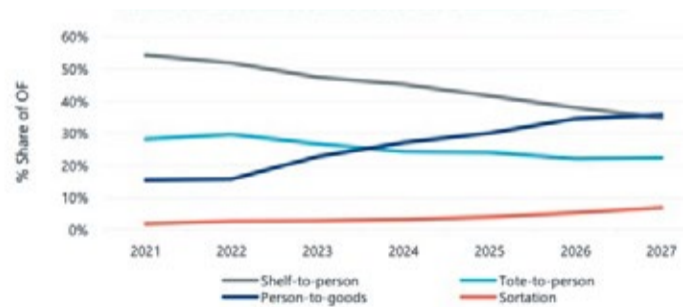
Copyright - Interact Analysis

Based on the The Mobile Robot Market – 2022 report from Interact Analysis[6], P2G solutions are rapidly growing in popularity, and their market share by 2027 will dominate the warehouse automation and order fulfillment sectors.

Considering their rapid growth, maturity and overall flexibility, this ebook focuses explicitly on P2G solutions. P2G solutions are cost-effective and, while they are predominantly used in brownfield facilities, they can be leveraged in greenfield ones as well. Overall, P2G automation technology is extremely versatile and beneficial to any ecommerce operation.

The benefits of P2G technology

Depending on the solution(s) you choose, the cost of implementing automation can easily exceed $1 million, except in the instance of P2G technology, which has a much lower up-front cost. Additionally, P2G solutions are easy to scale, don't require significant infrastructure changes and are safe to operate alongside people. These factors make them a great option for customers who are limited on budget or looking to start small.

There are two primary use cases for P2G solutions in today's market: each picking and case picking.

Each picking is most useful for ecommerce operations, where orders are picked one item at a time in small quantities across a wide variety of SKUs. In case picking, robots and workers pick cases of items onto pallets, which is helpful for store replenishment, production facilities and DC-to-DC operations. It offers a 40% reduction in required operators for the same throughput.
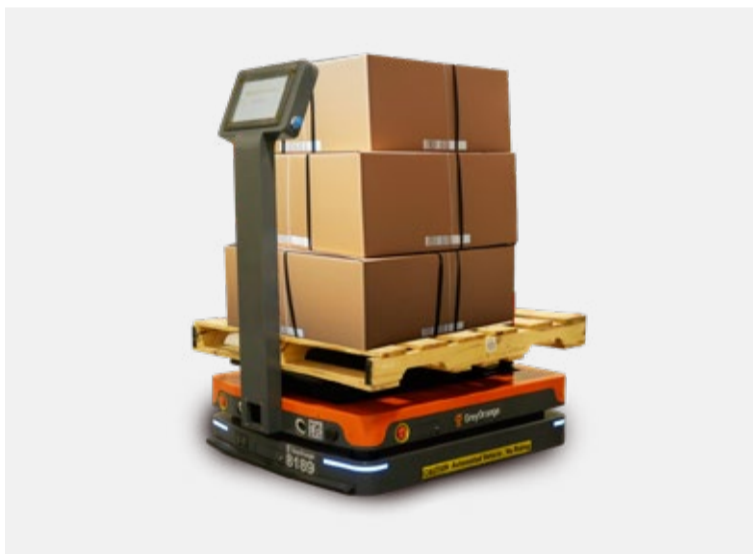
P2G CASE PICKING: A CLEAR NEED FOR AUTOMATION

A study of warehouse throughput and labor estimates by Interact Analysis[6] suggests that close to 150,000 FTEs were required for case picking in the US alone in 2021 and, by 2027, the average warehouse will need to assign 16% of all FTEs to case picking to keep up with demand. Using a P2G solution for case picking reduces the need for forklift operation and, by extension, qualified forklift operators, which can help warehouses remain in business in the face of labor shortages.
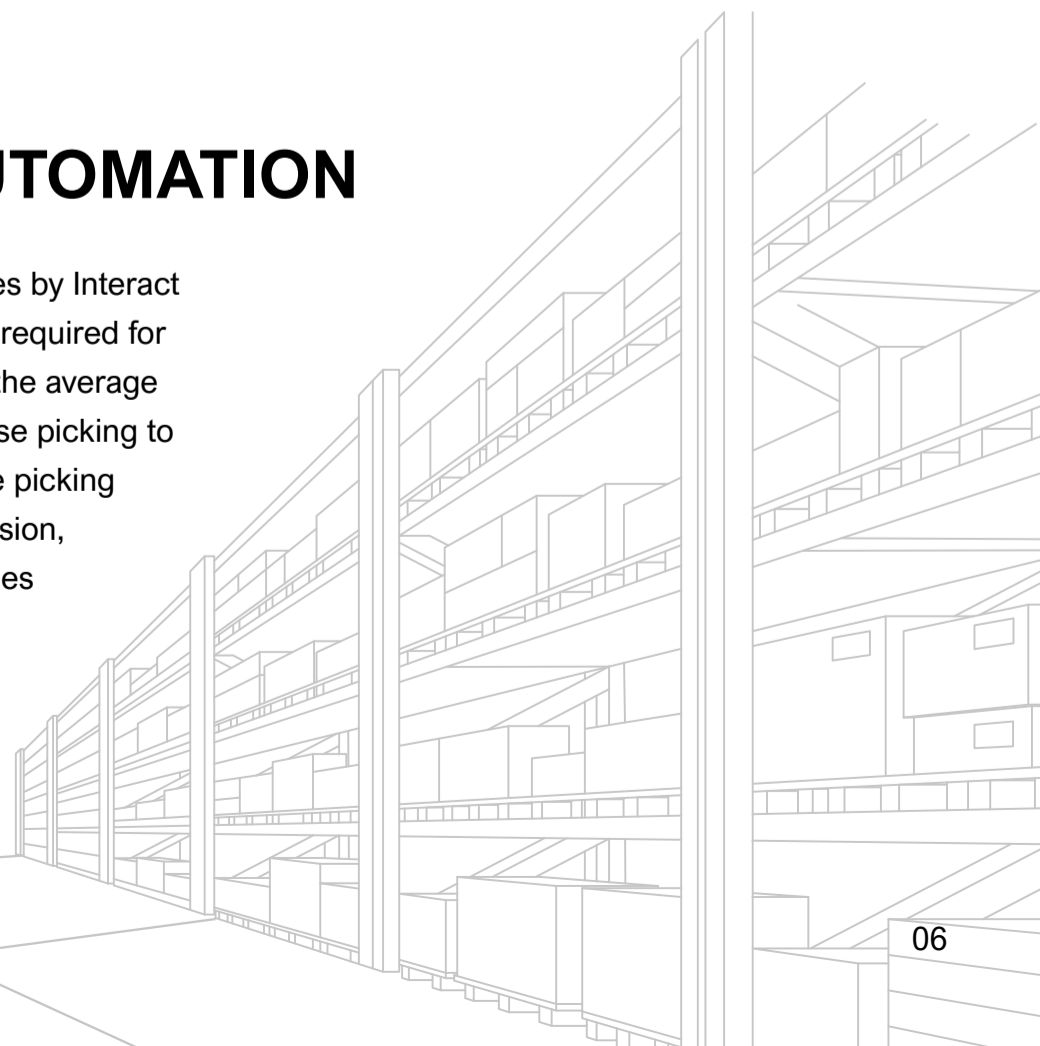
The shortcomings of traditional P2G solutions

In P2G-enabled warehouses, people and robots coexist; the robot's primary objective is to assist people in getting more done safely and precisely in less time. Using any cobot solution provides customers with numerous benefits, creating potential efficiency increases of 2 - 2.5x when compared to manual operations.

The technology is good, but it doesn't solve the problem we outlined at the beginning of this ebook, which is that it's extremely difficult to predict demand surges and react accordingly. Planning based on historical data and patterns can help control uncertainty to an extent, but the volatility of customer behavior makes this approach vulnerable to errors.

For example, the operation floor buzzes during Black Friday, and warehouse operators can safely plan for increased demand. To prepare, they ask their automation partners for additional robots. The partners ship the requested bots for use during the season and, once the holiday is over, the warehouse returns them, retains them within the facility or sends them to a different location/customer as per the agreement. While it can be effective, doing things this way requires accurate planning and presents logistical challenges due to increased shipping demand, peak season surcharges, etc. Essentially, it only fixes the problem sometimes, and even when it works, it can be expensive.

For example, let's say an automation partner offers additional bots at $1,000-3,000 per bot and that there are no season-specific premiums to worry about. As we've come to understand, the bot-to-picker ratio is usually most effective between 2 and 2.5. So, adding two bots to the floor costs $2,000-7,500. During the holiday peak season, it's not uncommon for partners to charge more for additional bots, and some warehouses only have one shift running, which is to say that this approach can get costly quickly if a sudden shift in demand causes a need for a large increase in bots.

Another major issue with traditional P2G solutions is that software capabilities vary from vendor to vendor. Many solutions lack a way to optimize tasks like picking, routing, allocating and navigation. In the industry, we refer to activities such as walking (with and without goods), searching and assigning as "muda," a Japanese term for waste. A good solution cuts down on muda, saving time, increasing productivity and contributing to worker health and safety. To achieve this, the software piece of the solution should be able to direct both human and robot activity. We call solutions with this capability hybrid solutions.

Hybrid theory: one step closer to operational efficiency

To address the cost and fulfillment challenges of not only **seasonal peaks but also intraday, intra-week, or intra-month demand surges**, organizations should adopt hybrid picking solutions.

As the name suggests, hybrid picking solutions optimize both robotic and human operations on the warehouse floor. If a human and cobot pairing is the most efficient way to handle both each and case picking, then it follows that optimizing the process requires an orchestration platform that takes the humans and robots into account.

Synchronized hybrid picking enables manual and automated picking for both eaches and/or cases in the same area. A single interface and fulfillment orchestration application can guide operators, regardless of whether they are picking manually via a trolley/cart or picking via bot. The actions of both people and bots are continuously optimized, and the orchestration platform handles load-balancing by intelligently directing people and bots so that every aisle is manageable.

People working with and without bots use the same interface, eliminating the need for two or more applications and reducing the learning curve and training time needed to make full use of the solution. And because manual and automated pick processes are connected for easier and faster adaptation to peak demand fluctuation, a hybrid picking solution reduces overall costs and bot dependencies, while also increasing the efficiency of the manual pick operator.
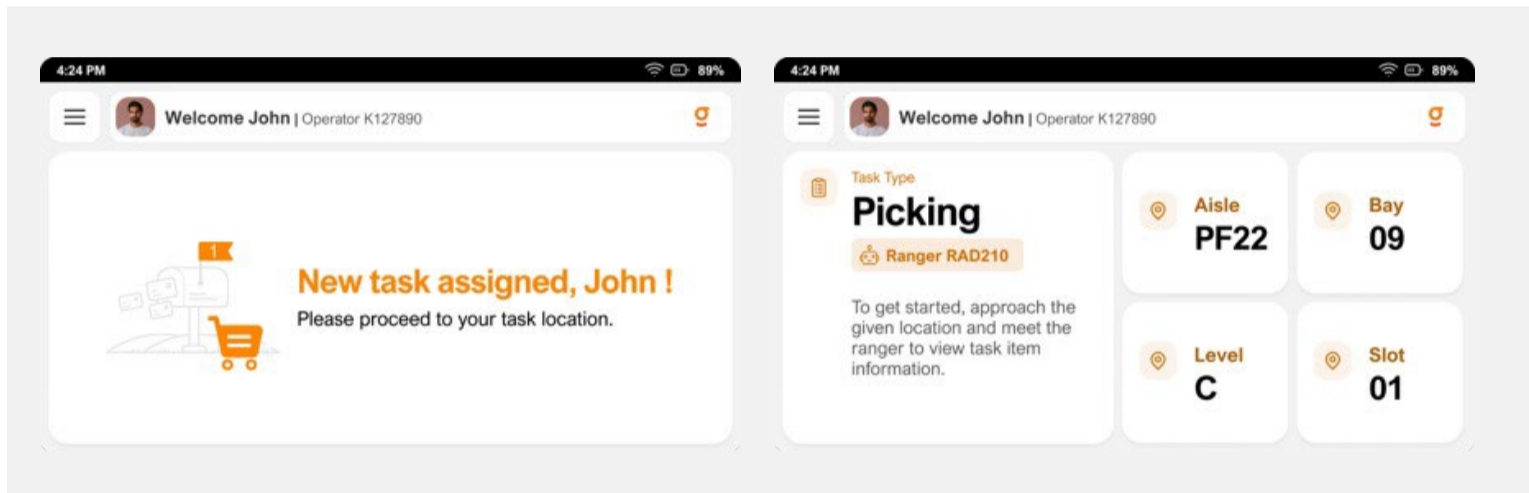
Hybrid picking solutions allow for streamlined operations and eliminate the challenges of inventory management. Combined with a strong orchestration platform, they also prevent unexpected surges from turning into logistical nightmares and reduce the amount of human planning needed to manage the floor.
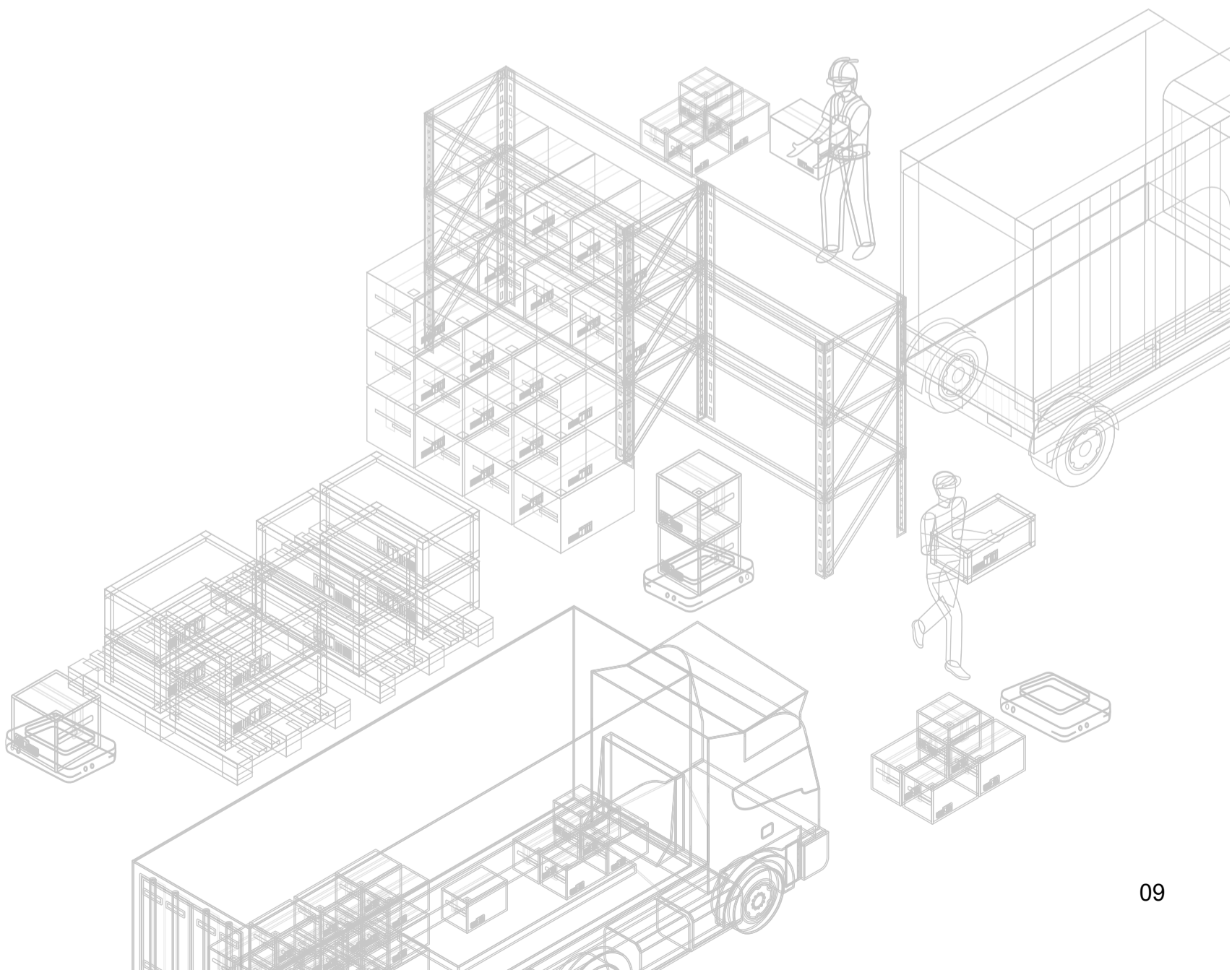
KEY USE CASES
FOR HYBRID PICKING

Hybrid solutions cater to manageability and scalability, making them ideal for a variety of scenarios. Here are several use cases where we believe hybrid solutions best cater to warehouse needs and budget-friendly deployments:

Automation journey acceleration

Peak (seasonal/intraday/intra week) scaling

Need for increased efficiency

Picking of garments on hangers

HYBRID PICKING WITHOUT ORCHESTRATION

Many hybrid picking solutions are designed around the vendor offering peak support in the form of additional robots as needed.

During demand surges, the two most common scenarios we've seen across industries are:

Bustling floor operations

No opportunities to reslot

With most cobot solutions, the Warehouse Management System (WMS) is responsible for order prioritization and inventory management, which adds complexity. Putting new robots on the floor during a peak requires load-balancing within the aisle. Otherwise, the robots can get in each other's way and congest the floor, which also makes it more difficult for people to get around. A solution with hybrid orchestration capabilities performs load balancing in real-time and takes human traffic into account, which makes adding robots easy.

It is important to highlight that customers can develop real-time hybrid orchestration on their own, but it comes at a significant time and monetary cost.

Combining brains with brawn — the benefits of using GreyMatter™

GreyOrange's hybrid picking solution runs on GreyMatter™, our AI-powered, proprietary orchestration software that optimizes workflows, manages orders and more, opening up additional benefits over traditional automation solutions.

OVERRIDES ON DEMAND

Most cobot solutions require operators or supervisors to assign and reassign bot tasks, reducing operational efficiency and increasing costs. GreyMatter controls allocation on its own; the system can override particular tasks for improved efficiency in real time. As a result, our hybrid picking solution optimizes operator and bot performance without the need for human oversight.
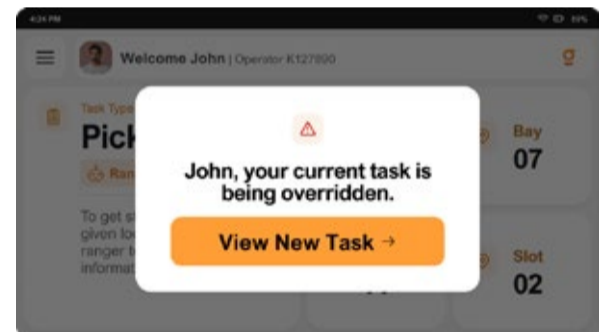
A SINGLE, CONTROL-CENTER VIEW

GreyMatter provides a dashboard overview of the entire warehouse that shows operators all the tasks in progress on the floor, whether the work is being done by people or bots. This makes it easier for them to see what is happening in their warehouse at any given moment.
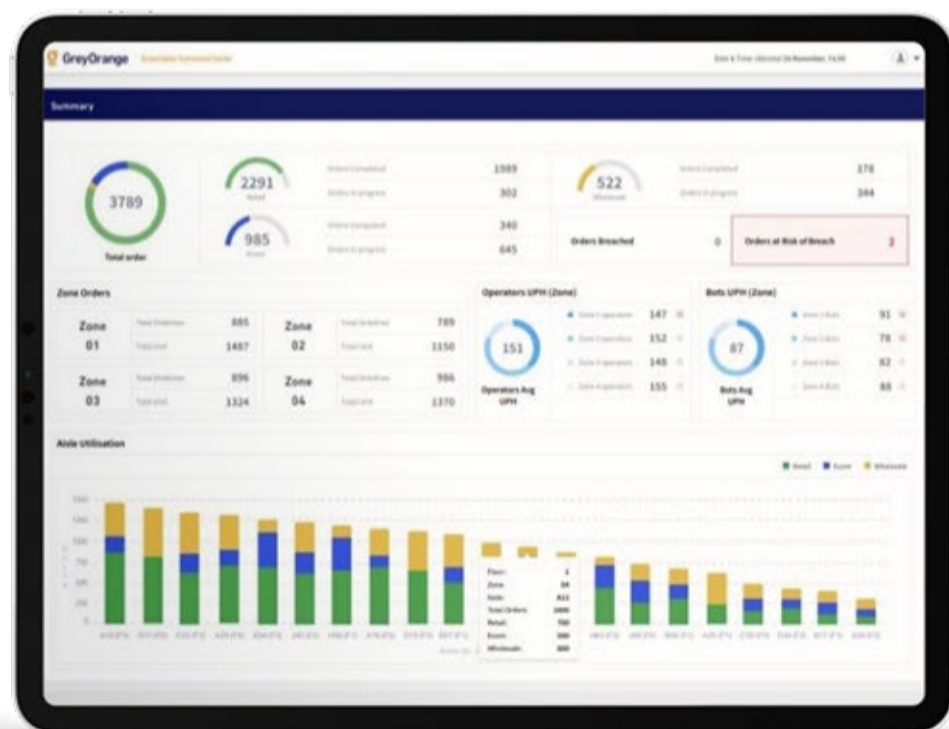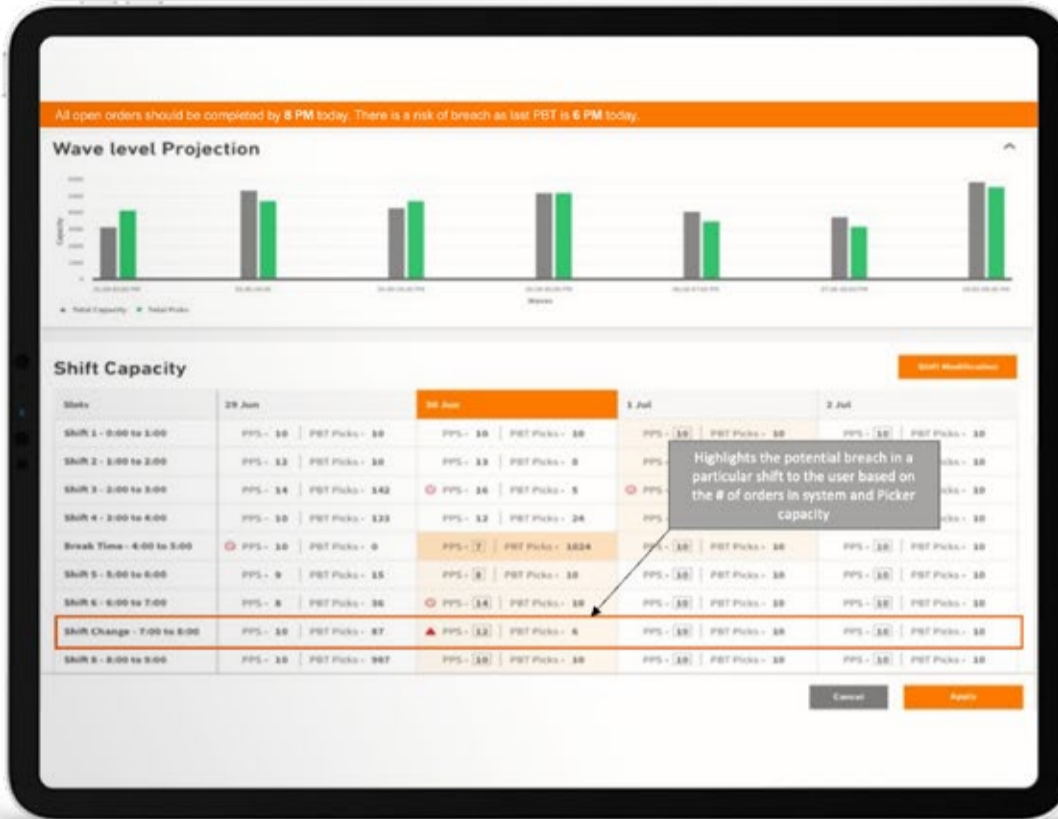
GreyMatter also uses predictive analytics to support the operations team in managing capacity to control undesirable operational outcomes like order breaches.

PUTTING GREYMATTER TO WORK

At a customer site during a peak period, five or six aisles were the source of approximately 40% of the total picks. Adding more robots would have caused congestion, so we opted for a hybrid picking solution instead. Since pick density was high and travel time was low, our customer was able to optimize operator picking efficiency. In areas with increased travel time, the bots took the heavy loads, improving operator performance. The GreyMatter-driven solution reduced the number of robots required by 25-30%, maximized human and robot efficiency, increased productivity, and decreased costs.
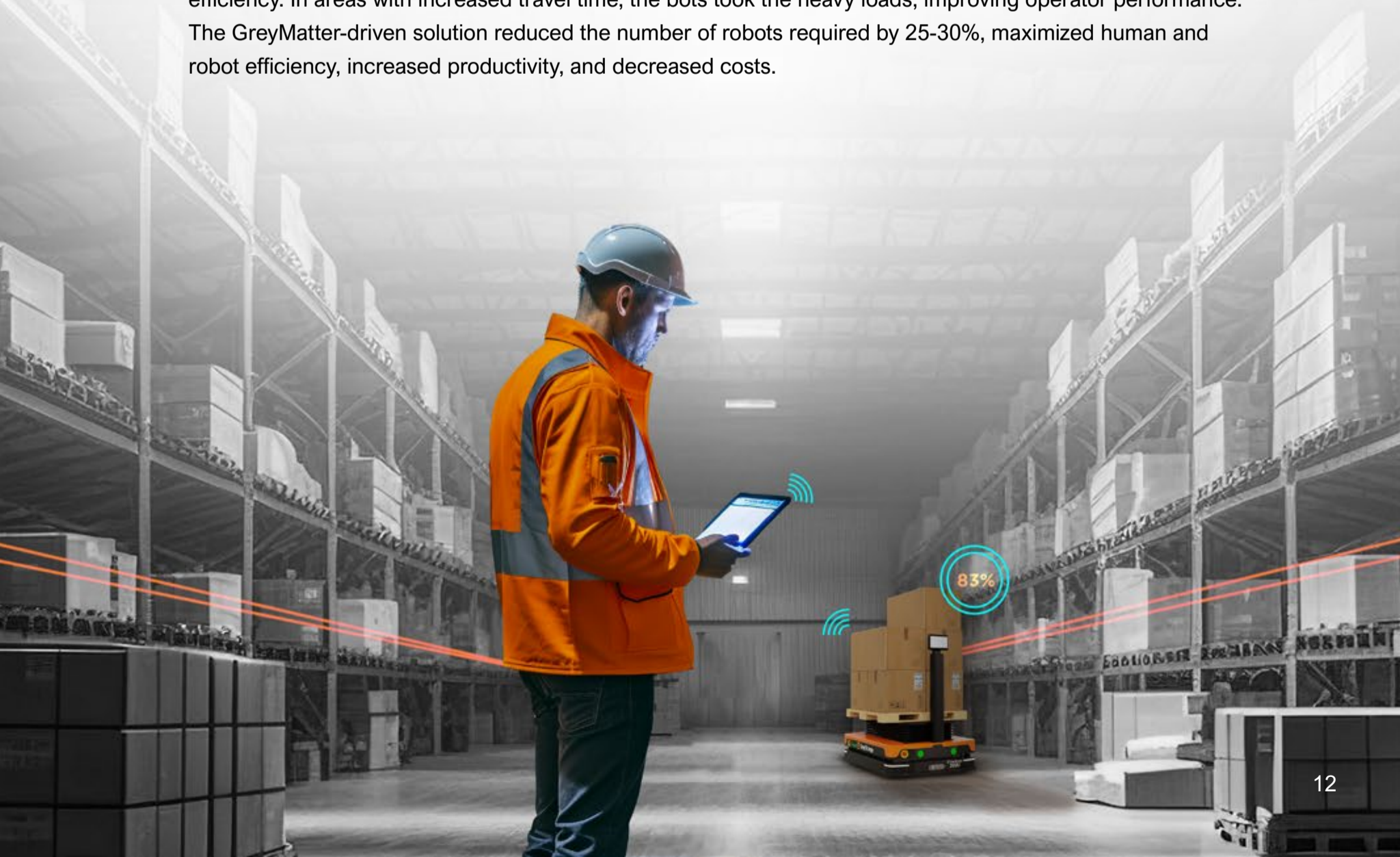
Make the hybrid pick for your warehouse

GreyOrange is the first company to provide its customers the flexibility of hybrid picking using Ranger Assist powered by GreyMatter, solving scaling issues without significant time or hardware investments.

Hybrid picking solutions are a game-changer in warehouse automation. The flexibility to manage peak seasons via orchestration software sets hybrid picking apart from traditional P2G practices. It optimizes operations for current automation users and provides a cost-effective entry point for those considering adoption.

Learn what a hybrid picking solution can do for your warehouse.

Request a demo

Sources:

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