ZEBRA

Unlocking Fulfillment Potential

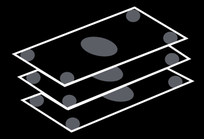
Robotic-Assisted Picking Engineered to Boost Your Profits

EXPLORE >

Autonomous Mobile Robots (AMRs) Revolutionized Fulfillment.

But Does Their Performance Justify Their Costs?

We Think It Should, but Here Are Today's Realities ...



BARRIERS TO ENTRY

Many operations have been held back by high costs, integration issues or fears that AMR technology isn't ready yet.

UNDERUTILIZED ROBOTS

Sites that have deployed AMRs have seen some gains, but traditional systems waste time and money, erode productivity, and struggle to evolve.

If these challenges sound familiar, it's time to reconsider.

FEWER ROBOTS. FASTER PROFITS.

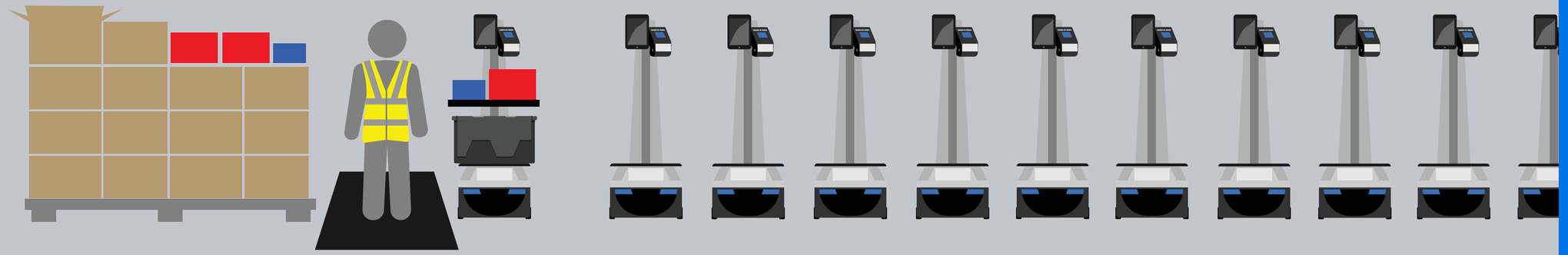
In this e-book, you'll discover how Zebra Robotics Automation is revitalizing AMR-assisted picking to optimize fulfillment efficiency and productivity with up to **30% fewer robots** than other leading systems.

You'll also learn how this innovative methodology can significantly **lower your overall variable cost per unit** by combining human workers and robots into a streamlined partnership that enhances throughput, accuracy and performance.

The Utilization Problem

AMR “Conga Lines” Waste Time and Money at Induction and Takeoff

If you visit (or operate) a warehouse with a traditional AMR system, you’ll probably see a long line of idle robots at the beginning and the end of the process:



Why is this happening? Because order picking paths — the routes pickers follow to collect items from various locations — are highly variable. Robots and pickers are either overloaded or underutilized, depending on demand and timing.

This inconsistency frequently results in surges of robots or workers waiting for availability, especially at common bottlenecks like induction and takeoff.

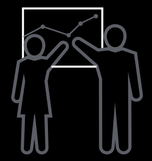
Buffering is essential to prevent downtime, leaving operators with two bad choices:

1. Hire or reallocate more labor.
2. Buy more robots.

Neither option is good for your bottom line.

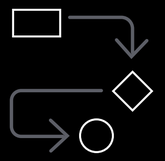
Why Are AMR Utilization Issues So Common?

Hint: Most Robot Vendors Aren't Logistics Companies.



BAD MATH

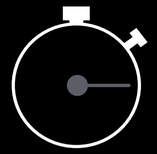
Many AMR fleets are designed to handle average order volumes. This leads to costly inefficiencies because order variability causes pick-path imbalances that significantly impact AMR requirements.



UNDIRECTED WORKFLOWS

Traditional systems often result in pickers zigzagging across the warehouse floor, searching for the right robot in a chaotic swarm.

Common zone-based picking strategies also contribute to imbalanced resources.



INFLEXIBLE DESIGNS

Today's leading AMR solutions struggle to adapt to new order profiles, workflows or buildings.

In addition, the underlying concepts behind most AMR solutions haven't evolved in more than a decade.

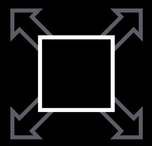
Driving Down Your Cost per Unit

Fewer Robots. Faster Profits.

The **Zebra Symmetry™ Fulfillment** ecosystem was created specifically to help you realize the full potential of AMR-assisted picking. A threefold strategy enables workers to pick more items in less time while reducing robot fleet sizes:

UTILIZATION BALANCE

Achieve more cost-effective accumulation by buffering with inexpensive carts, instead of additional robots or labor.



MORE CUBIC CAPACITY

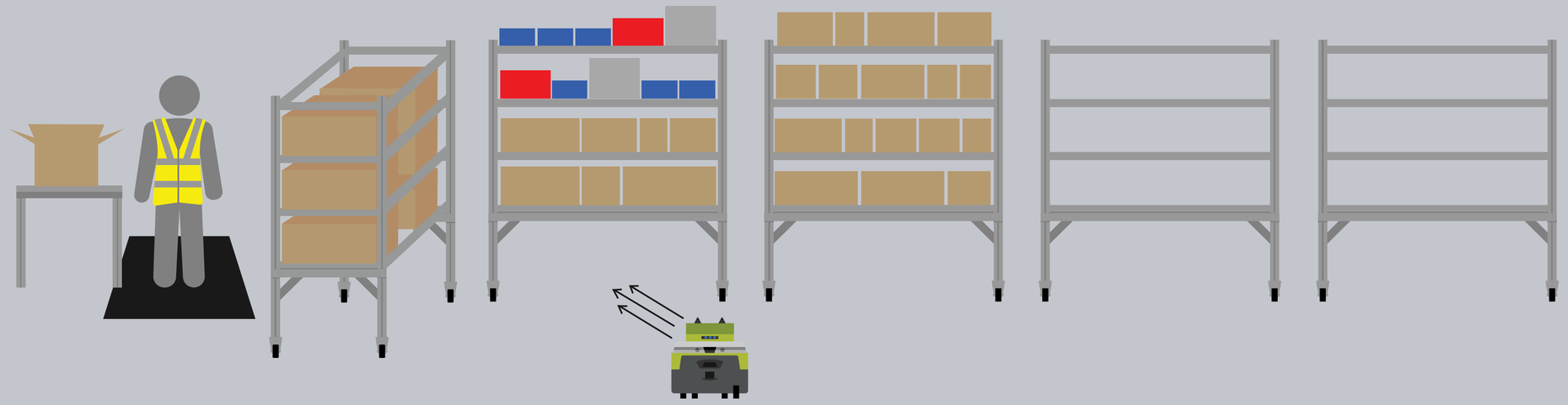
Carts eliminate AMR wait times and boost pick density, reducing your robot count while handling up to 300% more capacity.

OPTIMIZED PICK PATHS

Workers and robots always have orchestrated work assignments. There's never a robot without a picker or a picker without a robot.

Utilization Balance

Robots and Pickers Spend Less Time Waiting



Zebra Symmetry Fulfillment buffers system capacity with low-cost carts. This allows AMRs to deliver and disengage from carts with completed orders. The robot can immediately move on to pick up a cart that's been prepared for a new order picking assignment. The result is continuous utilization, with no waiting for loading or unloading.

Decoupling AMRs from carts significantly reduces the impact of variability on robot demand. This approach also provides the flexibility to manage high or low workloads without an excessive buffer of robots or labor.

More Cubic Capacity

Fewer Robots = Faster Returns and More Free Cash Flow

Cart buffering enables you to achieve the same throughput with up to **30% fewer robots** compared to AMR solutions with integrated payloads. Better order allocation and greater pick density allow AMRs to handle **150 to 300%** more cubic capacity.

In addition, the latest Zebra Symmetry Fulfillment AMRs can run for **two full shifts on a one-hour charge,** further reducing your robot count by increasing utilization.

Pick More Items in Less Time

Achieve Unrivaled Efficiency With Team Intelligence

The **Team Intelligence** methodology, exclusive to Zebra Symmetry Fulfillment, coordinates each picker with a team of robots in a precise, directed workflow. This approach improves throughput, reduces cost per unit, and empowers operational decision-making.

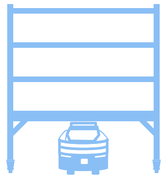
Team Intelligence is designed to improve AMR-assisted picking in three ways:

1

Increase pick density by creating optimized "pick tours" — intelligently planned order picking paths.

2

Eliminate the time pickers waste trying to find the right robots.



3

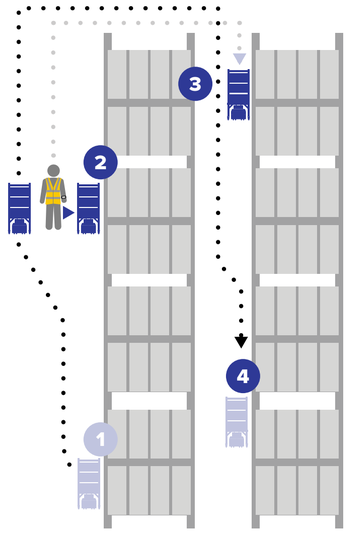
Minimize the time robots spend waiting for pickers to find them.

Boost Throughput With Orchestrated Pick Paths

Team Intelligence: How It Works

IN THE RIGHT PLACE AT THE RIGHT TIME

Team Intelligence improves throughput by routing robots ahead of pickers in a “leapfrog” pattern. Robots don’t sit idly, and the right AMR is always exactly where it’s needed when the picker arrives.

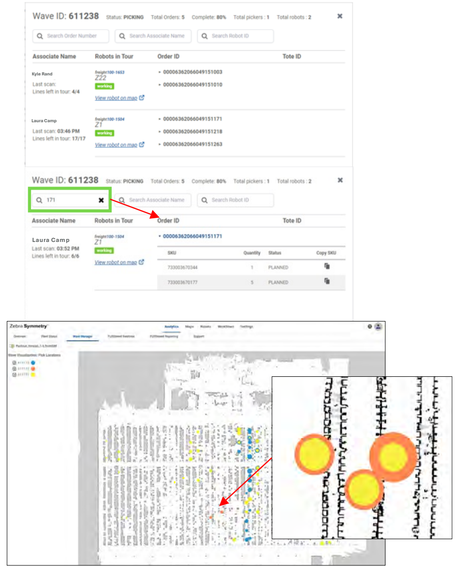


WEARABLE TECHNOLOGY ENABLES A DIRECTED WORKFLOW

Zebra offers the industry’s most efficient and seamless integration of AMRs, lightweight wearable computers and specialized software to provide pickers with real-time guidance and instructions. Pickers always know their next tasks and locations. Ring scanners improve speed and accuracy.

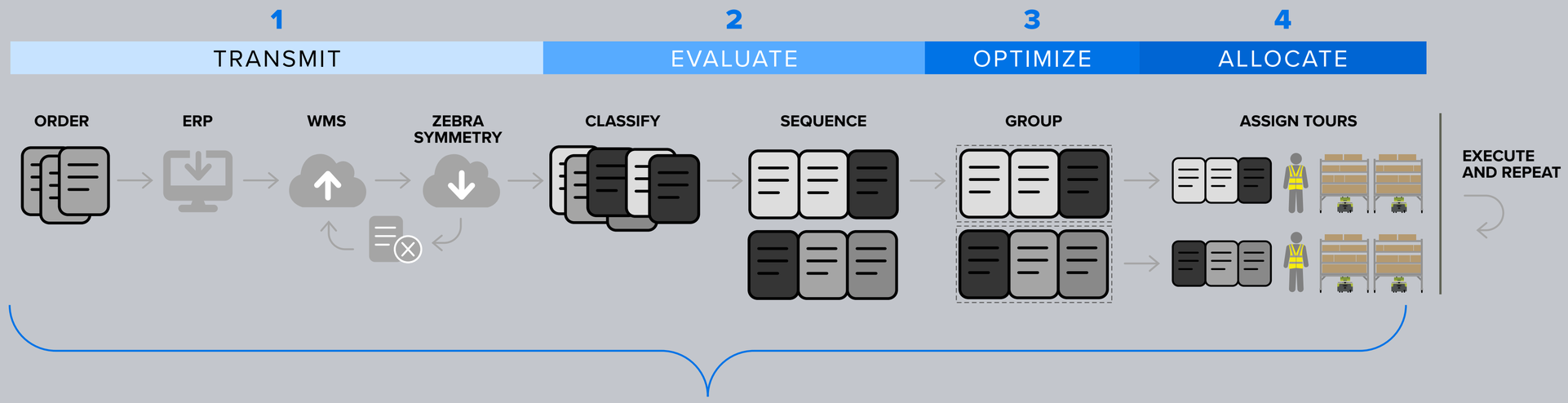
EMPOWERING LEADERSHIP

Wearables provide operations leaders with real-time visibility of both workers and robots, allowing them to reallocate resources at a moment’s notice for rush orders or changing conditions.



Powering Execution

How Zebra Symmetry Fulfillment and Team Intelligence Work Together



RESULT: REDUCED VARIABLE UNIT COST PER PICK

Zebra Symmetry provides the orchestrating power behind the Team Intelligence methodology. The software integrates seamlessly with your WMS, evaluating, batching and allocating orders based on size, location, priority and other factors. Efficiently planned tours are then assigned to teams, maximizing pick density while minimizing congestion on the warehouse floor. AMRs are continuously assigned, ensuring high utilization of labor resources with little or no loss of time between assignments. Performance improves over time in response to data-driven insights and exceptions reported by pickers.

The result is a warehouse operation where every movement is purposeful, every task is completed with precision, and productivity reaches its peak.

No Wasted Movements

Optimized Pick Tours

Team Intelligence drives the precise execution of the optimized picking paths orchestrated by Symmetry. Each item to be picked is assigned to a predetermined location on the robot that will be most efficiently placed at any given moment during the picking tour.

These meticulously planned routes minimize the distance pickers need to travel while maximizing the number of items collected in each pass. Higher pick density streamlines order fulfillment and enhances throughput while eliminating the congestion and chaos common to other leading methodologies.

Optimized pick tours reduce physical strain on pickers by minimizing unnecessary movements. This enhances worker satisfaction while reducing the risks of fatigue and related injuries.

A Better Way to Invest in Automation

While other AMR fleets continue to rely on low asset utilization management strategies, Zebra Symmetry Fulfillment and the Team Intelligence methodology are transforming traditional warehouse processes into finely tuned machines. This winning combination delivers higher productivity with fewer robots, lowers your costs, and creates a more satisfying work environment for pickers.

Whether you've been waiting for technology to improve, "disqualified" by another vendor, discouraged by barriers to entry, or dissatisfied with the ROI potential of current AMR systems, a winning path is now open to your fulfillment operation.

Connect with a Zebra team member.

Fewer Robots. Faster Profits.