



The Case for Robotics in Order Fulfillment and Returns Processing

A lot of people in the supply chain industry have been cautiously watching the **robotic technology** space for the past few years waiting for a sign that it's safe to go in the water.

Understandably, the hold-up for many has been finding answers to questions like:

1. Will robotic technology really improve automation efficiencies or just offer a different approach to solving problems already being solved by other equipment?
2. Will it be a reliable, sustainable investment? Or will early adopters be saddled with outdated systems as technology advances?
3. Will robotics providers go beyond offering anecdotal improvements to specific processes and actually deliver comprehensive solutions that yield a strategic edge?
4. Will the providers that dominate during the boom for robotics still be in business after the market consolidates?

And then there are the subjective concerns of companies trying to envision incorporating robots into their operations like:

1. How will robotics address and solve their unique automated fulfillment and returns challenges?
2. How will they avoid the multiple layers of disparate software that could accompany a combination of task-specific solutions from different providers?

It's little wonder many have been reticent to embrace this emerging technology.

But if you're one of those who have been waiting for a sign, read on, because in this blog we will not only provide you with answers to the questions above, but also share with you some impressive analysis along with a step-by-step guide to finding the best application for utilizing robotics in your operation.

Let's Dive In

At Invata we've been developing our robotics technology offerings in the same manner we do all our solutions, through extensive evaluation, testing, computer simulation modeling, and analysis of our findings.

The bottom line for us is always the same:

- If we can't justify a technology by showing real improvements to process and significant reductions in operating costs, we won't recommend it.

In doing so we have learned many things. The most important of those is that there are a multitude of applications in which robotics can offer impressive improvements in efficiencies over more traditional automated fulfillment processes.

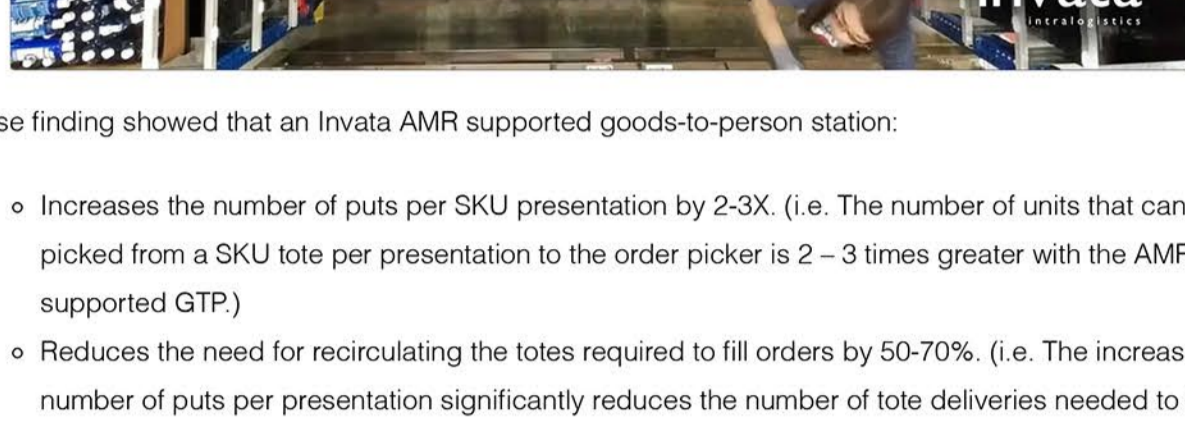
Let's start there.

Impressive Improvements in Efficiencies

A primary focus of our offerings is to continually find ways to improve the order fulfillment and returns process. So we have spent a good deal of time evaluating whether robotic technology would in fact yield efficiencies over more traditional technologies.

Since goods-to-person stations already enjoy a reputation for maximizing picking efficiencies, such as those seen in ASRS and conveyor supported GTP stations, we challenged ourselves to see if we could improve upon an already proven approach.

What we found surprised us.



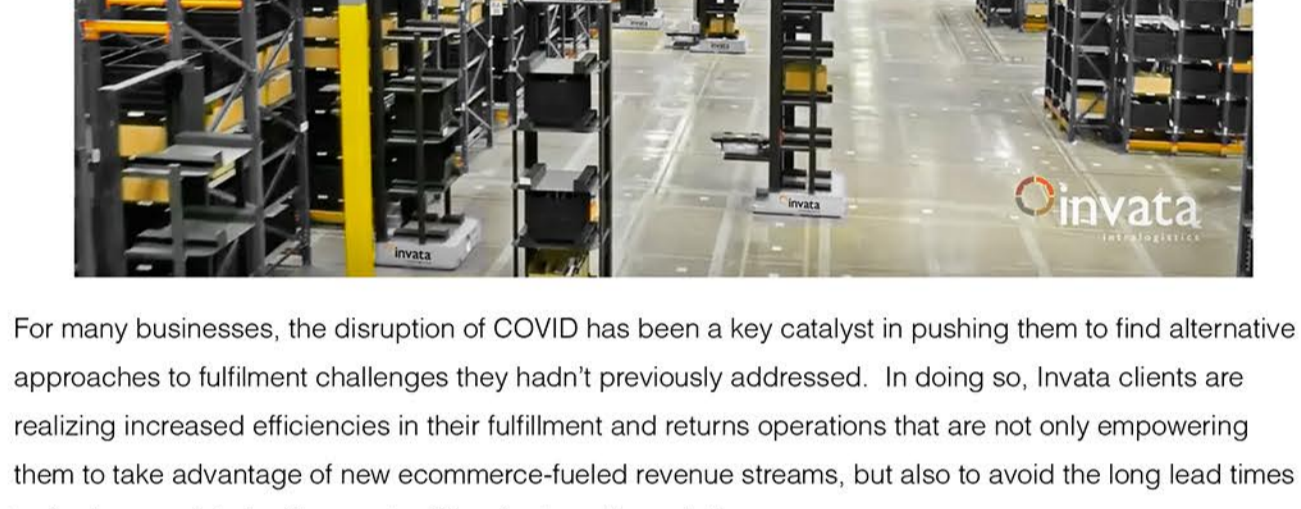
In comparing a traditional goods-to-person (GTP) station to an automated mobile robot (AMR) supported GTP (as shown above), we found significant increases in efficiencies in key metrics including the:

- o Number of orders that can be filled at one time.
- o Requirements for recirculating SKU totes used in the order fulfillment process.
- o Number of puts per SKU presentation (a key stat in optimizing GTP productivity).



Those findings showed that an Invata AMR supported goods-to-person station:

- o Increases the number of puts per SKU presentation by 2-3X. (i.e. The number of units that can be picked from a SKU tote per presentation to the order picker is 2-3 times greater with the AMR supported GTP)
- o Reduces the need for recirculating the totes required to fill orders by 50-70%. (i.e. The increased number of puts per presentation significantly reduces the number of tote deliveries needed to fill orders.)
- o Can support significantly more orders per station 20+ orders at a time versus 10 or less.
- o Can be easily expanded/scaled/moved into a larger deployment effort/location or even incorporated into an alternate processing strategy like a person-to-goods picking operation.
- o Can be implemented without changes to an existing warehouse. (Nothing needs to be bolted to the warehouse floor.)
- o Can even be operated in reverse. (Think returns processing. This is big!)

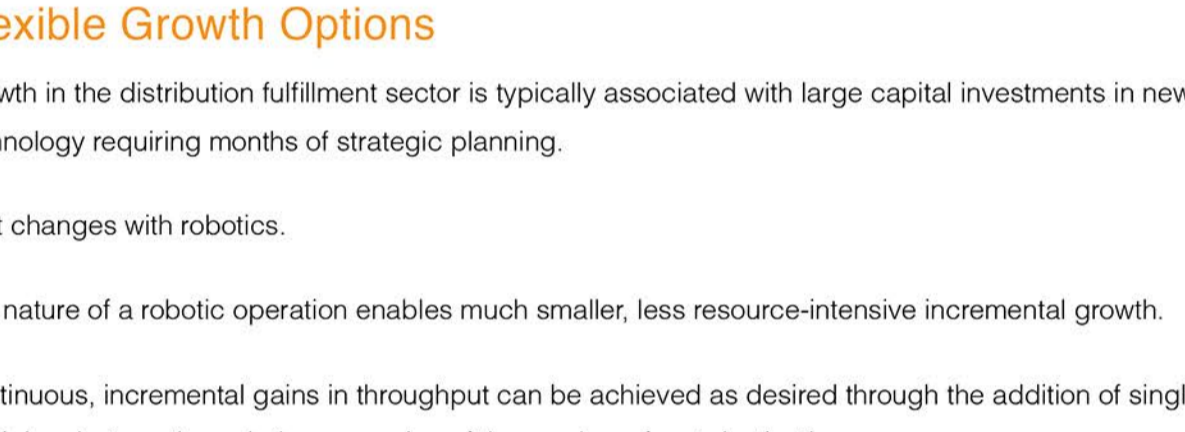


And that's just one of the areas in which we have been evaluating possibilities for robotics technology applications.

Serendipitous Improvements and Safeguards

For businesses looking down the double barreled shotgun of warehouse labor scarcity and a pandemic, the option of a partially robotic workforce couldn't come at a better time.

By opting for robotic alternatives in areas where human labor might otherwise be scarce or at risk, businesses can take advantage of the increased e-commerce demand COVID-19 has brought, while lowering labor costs and lessening the expenses associated with worker safety protocols like screening, cleaning, maintaining social distancing, and reducing population density in work areas.



For many businesses, the disruption of COVID has been a key catalyst in pushing them to find alternative approaches to fulfillment challenges they hadn't previously addressed. In doing so, Invata clients are realizing increased efficiencies in their fulfillment and returns operations that are not only empowering them to take advantage of new e-commerce-fueled revenue streams, but also to avoid the long lead times typically associated with more traditional automation solutions.

Simply put, for these businesses robotics is a win-win that enhances their competitive edge while safeguarding against potentially crippling threats to operational stability.

Better Equipment Utilization

Because of the linear, fixed nature of traditional fulfillment automation technology, equipment utilization in legacy operations is relatively poor on average.

With robotics technology, equipment utilization improves dramatically as automated mobile robots can be more closely aligned with an actual workforce in that they are not bolted to a warehouse floor or limited to serving a singular function.

The flexibility of a robotic workforce empowers companies with the ability to automatically shift technology to areas where it is needed most throughout the day, enabling a better overall utilization of that technology over time.

Flexible Growth Options

Growth in the distribution fulfillment process is typically associated with large capital investments in new technology requiring months of strategic planning.

That changes with robotics.

The nature of a robotic operation enables much smaller, less resource-intensive incremental growth.

Continuous, incremental gains in throughput can be achieved as desired through the addition of single or multiple robots or through the expansion of the number of sort destinations.

This organic approach to growth will be better suited to many companies, allowing greater flexibility in determining the best growth paths for their businesses.

More Improvements to Come

One of the challenges with automated mobile robotics is managing routing efficiencies. The more AMRs you use to get the job done, the greater the traffic congestion on your warehouse floor. That means that throwing more robots at a problem is not always the best approach.



The challenge of finding and continuously maintaining the sweet spot for AMR utilization efficiencies is a problem that has not yet been solved. That means there is still room for improvement and will be for some time to come. We know, because it is an area in which we are showing continuous improvement, which is why the robotics team at Invata focuses a majority of its research on the software that governs robotic devices versus the particular devices — because that is where the greatest efficiencies can be found.

That is good news for those who have held off on robotic technology due to worries about getting saddled with outdated robotic systems, because it means that improvements in the **software that orchestrates a robotic workforce** will continuously enhance that workforce's ability to deliver efficiencies over time.

That, combined with the simplicity of automated mobile robots and the versatility they have over equipment that's bolted to the warehouse floor, bodes very well for continuous efficiencies for robotics investments versus the obsolescence many worry about.

How to Incorporate Robotics into Your Fulfillment / Returns Operation

When considering enhancements to any fulfillment and returns operations, we advise our clients to:

- o Seek solutions to strategic challenges versus looking to solve singular issues with one-off improvements.
- o Make improvements on the timeline that works best for your business.

This applies when considering robotics as well.



Step 1: Consider Comprehensive Solutions

Begin by answering three questions:

1. What's not working?
2. What do you need to accomplish that you can't with the tools you have?
3. What do you want to achieve?

Don't think robotics. Just think about your strategic challenges.

Next, find a solutions provider.

With the robotics space becoming increasingly crowded with upstart companies, finding systems that solve specific challenges is easy. But unless you provide to be saddled with a variety of systems all running on disparate software, then you'll find a provider who can craft comprehensive solutions and be accountable for all aspects of those solutions.

Finding a provider that is not beholden to one robotics manufacturer is also a good practice.

And, of course, finding one with a proven track record of successful installations is a must.

Step 2: Let the Data Lead You

A good solutions provider is going to begin its discovery process by understanding your business from a data perspective.

This is critical to the success of any solution they might offer, because that is the key to developing a solution that will solve your specific strategic challenges.

To do so, the right provider will offer a meticulous process of computerized **data preparation, data synthesis, and simulation modeling** that will be used to unveil the secrets in your company data that are key to developing the best solution for your business' unique challenges.



This ensures the solution you get is built from insights gained through data analysis and not just from one-size-fits-all recommendations that a provider might want to push. If done right, your solution will be accompanied by elaborate OpEx and CapEx financial justification analyses that provides you with what you need to know to make an informed decision.

The Intralogistics Science Team at Invata has led the material handling automation industry in the creation of a proprietary, industry-specific AI tool-set our data scientists use to develop strategic solutions for our customers. We have detailed the process in our blog: **Strategic Automated Fulfillment Solutions vs Guesswork: How to Ensure You Get the Right Result**

If your provider doesn't offer this level of scientific data analysis, expand your search for solutions.

Step 3: Enable and Enhance Your Technology Assets

Many view robotics as an all or none proposition wherein they either chose robotics or stick with traditional technology. This is especially true for companies with established, large scale order fulfillment automation and returns operations.

For these companies, the idea of incorporating robotics often carries with it the misconception that in order to upgrade technology they would first have to rip out all the massive equipment systems they are currently using that are bolted to the warehouse floor.

Such a daunting proposition has kept many companies limping along with inefficient, aging systems for a seeming lack of better options.

But that does not have to be the case.

In fact, while robotics can be used to create standalone solutions, it can also be used as an enabling technology — which when combined with existing technology, can provide cost-effective enhancements to the overall functionality and efficiencies of legacy systems.

By incorporating robotics as an enabling technology, businesses can create innovative, reliable, and easily deployable solutions that can not only be used to fill many of the efficiency gaps in a company's existing fulfillment and returns operations, but also give those operations the flexibility to take on new opportunities that wouldn't otherwise be possible with existing technology.

By combining enabling technology with existing technologies, forward thinking businesses can achieve a strategic edge they can use to pivot toward new opportunities such as the increased e-commerce demand that has accompanied the COVID-19 pandemic. And they can do so at whatever pace best fits their financial/growth timelines.

A number of Invata clients are currently using pilot programs developed through our proprietary rapid solution development, testing, and proof of concept software tool set. These programs enable our clients to test the robotics waters at the same time they dramatically enhancing their overall production capabilities and taking on new growth opportunities.

They are data-derived solutions specifically developed based on each clients unique business data profile and are deployed in ways that can be easily expanded within the same facility or deployed to other facilities on whatever timeline best suits each specific business.



Everybody in the Pool!

If you've been cautiously watching the robotic technology space for the past few years waiting for a sign that it's safe to go in the water, the information in this blog will hopefully assure you that the water's fine.

In fact, it's not only safe, but in many cases highly advantageous.

We have shown specific robotics applications improve upon some of the most efficient processes in order fulfillment and returns processing. So odds are good you can use technological change to your advantage as well.

If you need more reassurance, we'll be happy to share our findings in detail on projects including the use of:

- o Robotic arms for picking items ranging from polybags to randomly shaped items
- o Automated put-walls for touchless order fulfillment
- o Automated Mobile Robots (AMRs) for order fulfillment, returns processing, conveyance, sorting, picking and more
- o Laser guided forklifts for pick-up and put-away

And we can even model your success in using robotic technology before a single piece of equipment is purchased.

For a demonstration on how you can use robotics to improve your order fulfillment and returns processing operations, set-up a free consultation with our team.

Walter High is VP Marketing at Invata Intralogistics, where he has worked since 2012.