EBOOK

AMRs: The new wave of flexible automation

Transform your fulfillment operation with Autonomous Mobile Robots (AMRs)

infios
a Körber company

The opportunities, options and use cases for AMRs

As the eCommerce industry continues to flourish worldwide, there is widespread interest in automation to solve the increasing demands being placed on fulfillment and distribution operations.

In this ebook we will look at some of the barriers to entry for automation, the various use cases of agile and flexible autonomous mobile robots (AMRs) and some of the latest technology available today.

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SECTION 01

Ripe for disruption

Fifty-four per cent of retail, manufacturing and logistics professionals are currently investing in warehouse automation.[1] Furthermore, 63 per cent of warehouse managers say their top barrier for implementing warehouse automation is budget approval.[1]

1. Future Procurement and Supply Chain Innovation Report, Raconteur, 2020

One of the biggest factors fueling this interest in automation is the rise in eCommerce worldwide. In 2015, eCommerce share of total global retail spend was 7.4 per cent, in 2023 this is projected to reach 22 per cent.[2]

High labor costs in developed nations, complex manufacturing and logistics processes, an increased emphasis on high productivity and a lack of suitable workforce has led to a huge increase in automation.

Alongside the rising demand for faster and more efficient fulfillment processes is the falling price in robots. Over the past 30 years, the average robot price has fallen by half, while the cost of labor has continued to rise.[3]

A recent Infios survey found that 91 per cent of supply chain professionals are struggling to stay ahead of manufacturing and fulfillment challenges. Additionally, technology integration and customer demand are ranked as among the top challenges for today's supply chain.[4]

This increase in demand, coupled with a lower barrier to entry has led to an opportunity for retailers and logistics providers to offer a better service and faster fulfillment through flexible and agile automation solutions.

While there are a number of automation solutions available for the retail, warehousing and logistics industry one solution has seen significant growth in the past few years—Autonomous Mobile Robots (AMRs).

91%

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2. Worldwide e-commerce share of retail sales 2015-2023, Statista, 2019
3. Automation, robotics and the factory of the future, McKinsey, 2017
4. 2020 State of Supply Chain Complexity Survey, Körber, 2020

SECTION 02

AMRs: The new age for automation

The global AMR industry generated $29.3 billion revenue in 2019 and is expected to reach $220.6 billion by 2030.[5] This market is experiencing rapid growth with a compound annual growth rate of 18.3 per cent.

The global logistics industry is finding significant opportunities around productivity and efficiency with AMRs. When compared to large-scale traditional fixed automation, AMRs compete on both cost and efficiencies.

5. Autonomous Mobile Robots Market Research Report, ResearchAndMarkets.com, 2020.

Globally, the Asia-Pacific region dominated the AMR market in terms of revenue, this is largely due to many countries in this region, such as China and South Korea, offering a highly sophisticated and thriving eCommerce industry.

So, what exactly is an AMR?

Commonly used in warehouse settings to sort, pick and drop products they offer supply chain operations the ability to scale up and down when volume increases or decreases and can easily be redeployed to improve efficiencies wherever demand is at a particular time.

Compared to fixed automation, which requires a very high investment as well as comprehensive warehouse layouts, AMRs offer the flexibility to cater for a variety of warehouse layouts and sizes.

They also benefit from quick implementation timelines, often less than four weeks, and a significantly lower investment than large-scale fixed automation.

Offering a flexible and agile solution, a low barrier to entry and rapid deployment time, AMRs present a compelling solution with a fast return on investment for a number of areas in the global supply chain.

An AMR is any robot that can operate on its own without direct human oversight.

AMRs for eCommerce and retail

Amazon Prime, two-day deliveries, same-day grocery deliveries and fast delivery initiatives have changed consumers' expectations.

AMRs make order fulfillment in retail and eCommerce more efficient by moving shelving quickly, transporting products, sorting parcels and handling returns with speed.

With warehouse space becoming increasingly scarce as well as rising in cost, AMRs provide the ability to navigate tight spaces and carry out package retrieval and replacement in very small areas.

The AMRs can also operate vertical storage options. Depending on the type of AMRs used, the robot may be able to reach higher shelving areas on its own, allowing the opportunity to increase storage space without having to increase the size of the warehouse.

Companies that use AMRs can also expect an increase in order accuracy in their warehouses. AMRs are programmed to perform and repeat tasks in the most efficient way possible, which means they can learn and relearn optimum routes to specific items and fulfil orders with higher rates of accuracy using technology such as artificial intelligence.

AMRs can pick, sort and return packages in a warehouse setting with ease.

AMRs can pick, sort and return packages in a warehouse setting with ease. Once they have selected the most efficient route to navigate within a warehouse, they can repeatedly select and transport those packages to and from a warehouse setting. They may transport from a warehouse to a front-of-house employee handling customer service, move shelving across a warehouse to a selected location and accurately move packages to their previous destination during returns.

AMRs for cold chain

A common issue across the cold chain and refrigerated warehouse sector is the limited amount of time that employees can spend in freezing temperatures.

Operators can only work in the freezer for a short amount of time, before needing to regulate their body temperature. Even with thermal protective clothing on, the body starts to feel the extreme temperature after a long period in the freezer, this can also have a long-term impact on health as well as significant impact on the number of workers needed and throughput rates achieved.

Employees who work in a freezer environment are also required to hold specific certifications and licenses. With access to qualified supply chain and logistics professionals continuing to be a worldwide challenge, AMRs offer the ability to work alongside the current workforce to improve efficiency and throughput rates.

As the AMRs can operate in the freezer environment for longer periods of time, refrigerated warehouse industry workers do not need to spend as much time in the challenging and uncomfortable refrigerated and freezer environment to reach the same level of efficiency and throughput.

Some AMR models can also withstand a negative-temperature environment, these include Infios's Geek+ AMR and AutoSort Mobile solutions, which are built to work and operate in the refrigerated and freezer environment.

A further challenge in the cold chain and refrigerated warehouse is the large amount of energy required to keep large warehouse spaces cold.

AMRs can operate in a dense area with low ceilings and work at a more efficient level in what would be considered an impaired work environment for human operators.

Offering a smarter use of land and warehouse design the agile and nimble AMRs enable logistics providers in the cold chain to take advantage of smaller workspaces instead of investing in larger chillers and freezers.

AMRs offer the ability to work alongside the current workforce to improve efficiency and throughput rates.

AMRs for 3PLs

While distribution and fulfillment services are in high demand, many 3PL providers are hesitant to invest in technology. This is largely due to the fact that contracts in this area tend to be short-term—making the case for automation and innovative investment a tough one to argue.

Any decision around investment needs to benefit the overall business and deliver a better outcome for the end customer. As well as the issue of short-term contracts, demand for particular customers can vary month to month.

We've seen this during COVID-19, it has been very difficult to predict consumer demand and behavior and depending on what area of retail a customer operates in, there has been largely unpredictable trends. AMRs offer the ability to scale up to meet increased volume very quickly and they are a much more efficient and affordable solution than increasing the workforce through traditional picking processes.

An AMR Goods-to-Person solution offers the ability for multiple products in a warehouse to simultaneously head directly to an operator, enabling the fulfillment of a number of orders in a faster and more efficient way.

Storage and warehouse space are also critical issues for 3PLs. Warehouse availability close to consumers is increasingly difficult to come by as well as rapidly rising in cost.

AMRs enable logistics providers to make better use of storage in the space they already have. As opposed to traditional storage, AMRs provide the opportunity to increase the number of SKUs in the same space and offers greater density across the board.

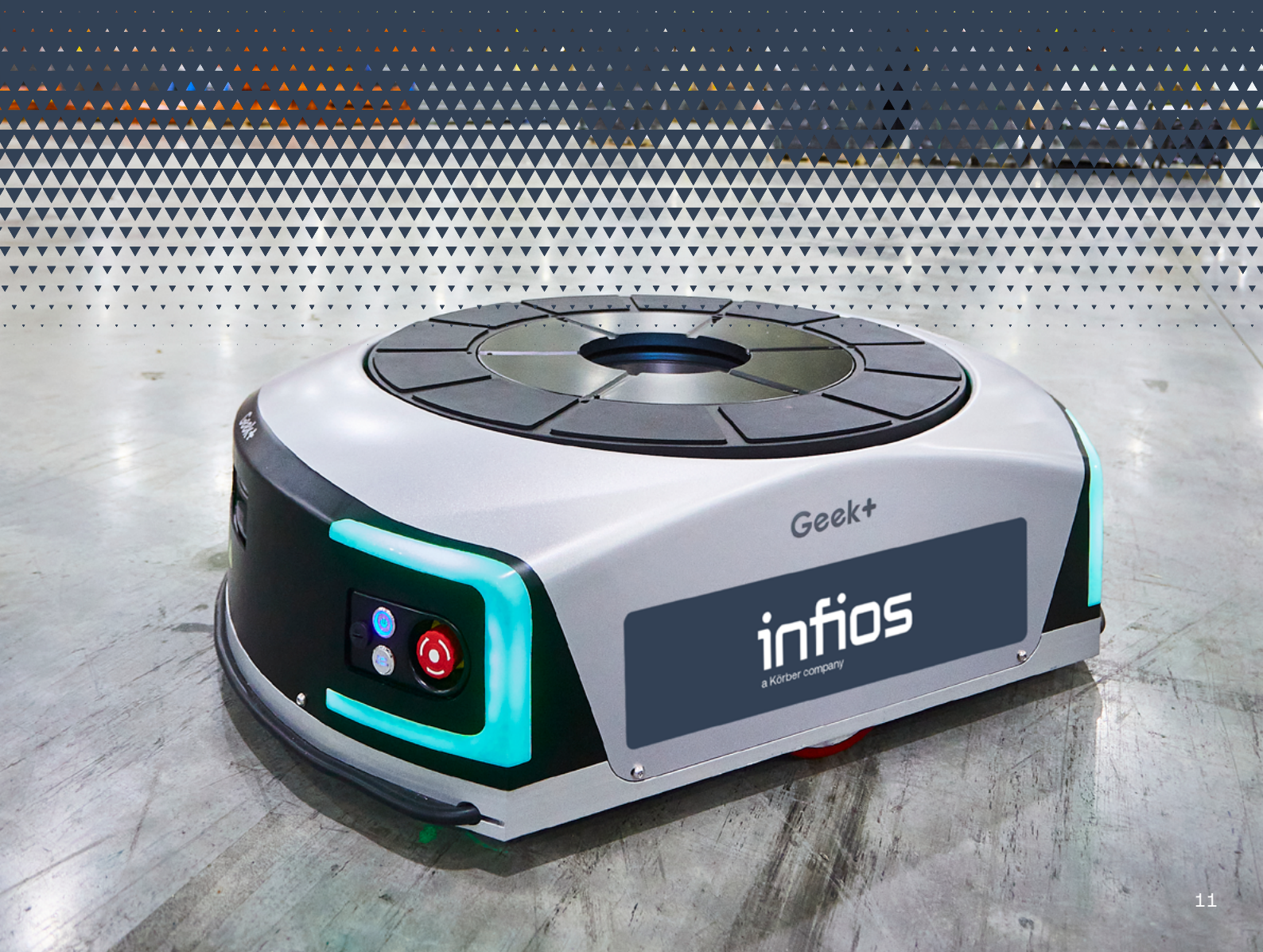
By introducing AMRs, a 3PL can demonstrate to its customers that they are committed to the success of their business by investing in flexible and agile technology solutions that can adapt to any changes in demand.

AMRs enable logistics providers to make better use of storage in the space they already have.

SECTION 03

What AMR solutions are currently available?

Since pioneering AMRs into Australia and New Zealand in 2018, Infios's portfolio increased to three distinct and world-class AMR solutions to offer more diverse, versatile and agile automated mobile robot solutions. The next few pages feature some of the latest solutions available.



Geek+
AMR solution by Infios

GEEK+ is an innovative and a leading technology provider that applies advanced robotics and AI technologies to realize high-flexibility and intelligent logistics automation solutions.

The Geek+ Picking System utilizes Goods-to-Person (GTP) picking by enabling robots to carry shelves, breaking from the traditional Person-to-Goods law. This reduces the travel path for operators, thus achieving fast, accurate and efficient order delivery.

Reduce the travel path for operators, thus achieving fast, accurate and efficient order delivery with the Geek+ Picking System.

Locus Robotics
AMR solution by Infios

Infios has an exclusive partnership with Locus Robotics to deploy Locus Robotics' AMR solutions across Asia Pacific. Based in Massachusetts in the US, Locus Robotics designs and builds AMRs that work collaboratively with workers in fast-paced logistics and fulfillment facilities.

Locus Robotics solutions have proven to deliver a 200 to 300 per cent productivity boost for many of the world's largest retailers and logistics providers.

The Locus Robotics solution significantly reduces travel time for operators in the distribution center by bringing the goods to the operator. The solution can also batch multiple orders and increase the location hit rate, offering further efficiencies. The solution can be implemented into a facility in a matter of days and the infrastructure does not need to change at all due to Infios's connector software enabling a seamless integration with existing systems and infrastructure. The solution is scalable, and the management of the solution is simple. It is also very easy to implement the Locus Robotics solution with Warehouse Management Systems or existing DC operational systems.

The Locus Robotics solution significantly reduces travel time for operators in the distribution center by bringing the goods to the operator.

Fetch Robotics
AMR solution by Infios

Infios has formed a strategic partnership with Fetch Robotics, a California-based intralogistics automation company that pioneered the world's first cloud robotics platform for delivering on-demand automation in any facility.

Fetch Robotics is unique in that it provides a cloud robotics platform that autonomously moves and tracks virtually anything in any warehouse or manufacturing environment and is the only autonomous mobile robot solution that deploys in hours as opposed to days or weeks and do not require extensive changes to warehouse environments or existing processes. The Fetch Robotics solutions offer immediate efficiency gains around travel and labor time. Providing significant efficiency and productivity gains, warehouse operators instead have the time to focus on higher-level and more productive tasks.

The Fetch Robotics solutions offer immediate efficiency gains around travel and labor time.

Infios AutoSort Mobile AMR table-top sorting solution

Set to be a game-changer for the ANZ supply chain and logistics industry, the Infios AutoSort Mobile AMR table-top sorting solution will give logistics operators the opportunity to maximize operational capabilities through flexible, affordable and scalable automation.

This product is manufactured by Zhejiang Libiao Robotics Co., Ltd. (AIC Systems), a modern high-tech enterprise specializing in R&D, manufacturing and the sale of robotic products. The company leads the way in research and innovation in the field of artificial intelligence and automation projects in logistics. Infios AutoSort Mobile allows dynamic sortation, taking the shortest and most direct path. Now logistics and retail businesses can free up space in their distribution centers and reduce their investment in traditional and fixed automation. The independence and scalability of Infios AutoSort Mobile table-top AMRs can expedite the sortation for parcels, eCommerce, wholesale and store replenishments on table-top as well as mezzanine levels.

Logistics and retail businesses can free up space in their distribution centers and reduce their investment in traditional and fixed automation.

SECTION 04

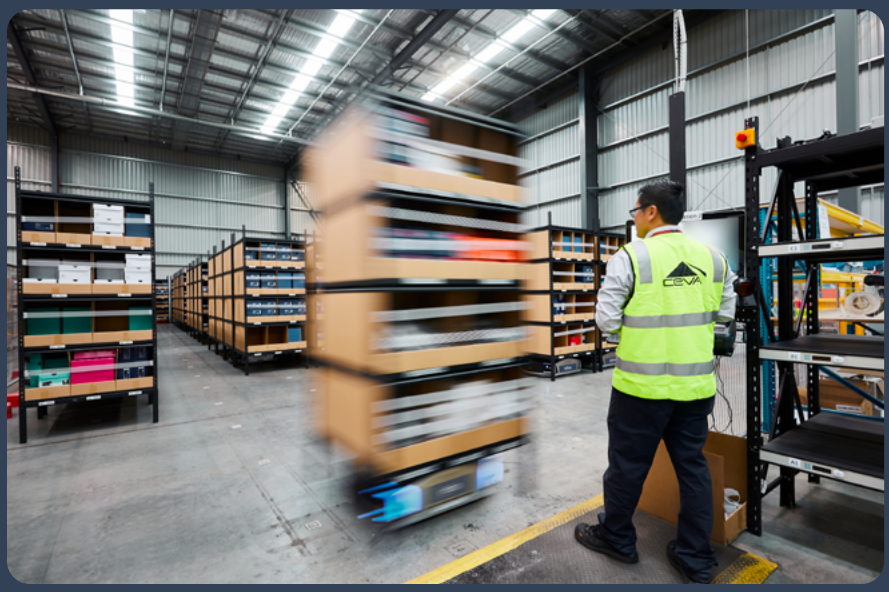
The AMR implementation process

The first step to implementation is taking a deep dive into the current processes and opportunities for efficiency gains.

From here, the Infios team will walk through the warehouse and operation to understand what a normal workflow run-through entails and determine what solution needs to be deployed.

After careful assessment of the operational flows and considerations, a solution design is drafted and presented for how AMR technology can significantly improve the current process. This solution will allow for future scope, capacity or expansion plans, and will take into consideration where the business is going in the next three to five years.

Following the evaluation and process design, the implementation begins. Site implementation includes software integration and development. This generally takes a few weeks to complete, which is followed by onsite training and guideline review with the client.



Are you ready to learn more about how AMR can transform your fulfillment operation? **Get in touch with the team today.**

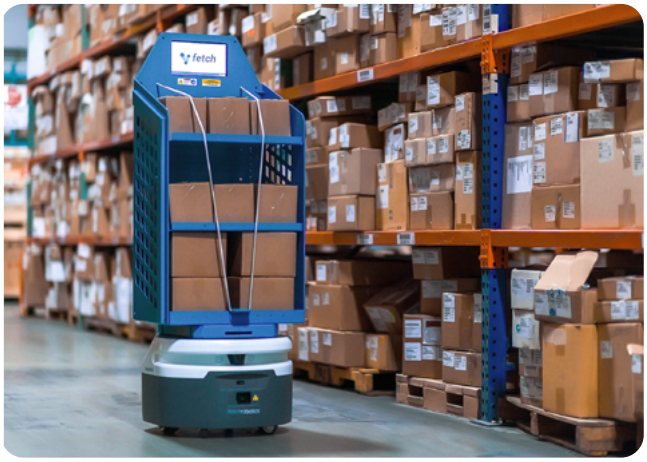
Jump right in with four AMR options

Geek+

High-flexibility and intelligence
A highly advanced logistics automation solution that utilizes Goods-to-Person technology to reduce travel path, improve accuracy and enhance efficiency.

Locus Robotics

Reduce travel time and increase productivity by 300%
Designed to work collaboratively with humans, Locus Robots are proven to deliver up to 300 per cent productivity boost. With minimal set-up requirements, the solution can be deployed in a matter of days.



Fetch Robotics

Silicon Valley's award-winning solution
The world's first cloud robotics platform offers on-demand automation in any facility. By offering a cloud-based solution, implementation can be done in a matter of hours delivering immediate efficiency and productivity gains.

AutoSort Mobile AMR

A game-changer for mobile automation
A table-top robot that enables dynamic sortation, the AutoSort Mobile AMR will always take the shortest and most direct path. By freeing up space in the distribution center and maximizing operational capabilities, this solution offers ultimate scalability and flexibility.

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