

WINNING THE LAST MILE IN THE SUPPLY CHAIN RACE
USING MICRO-FULFILLMENT TO SYNERGIZE ONLINE &
STOREFRONT

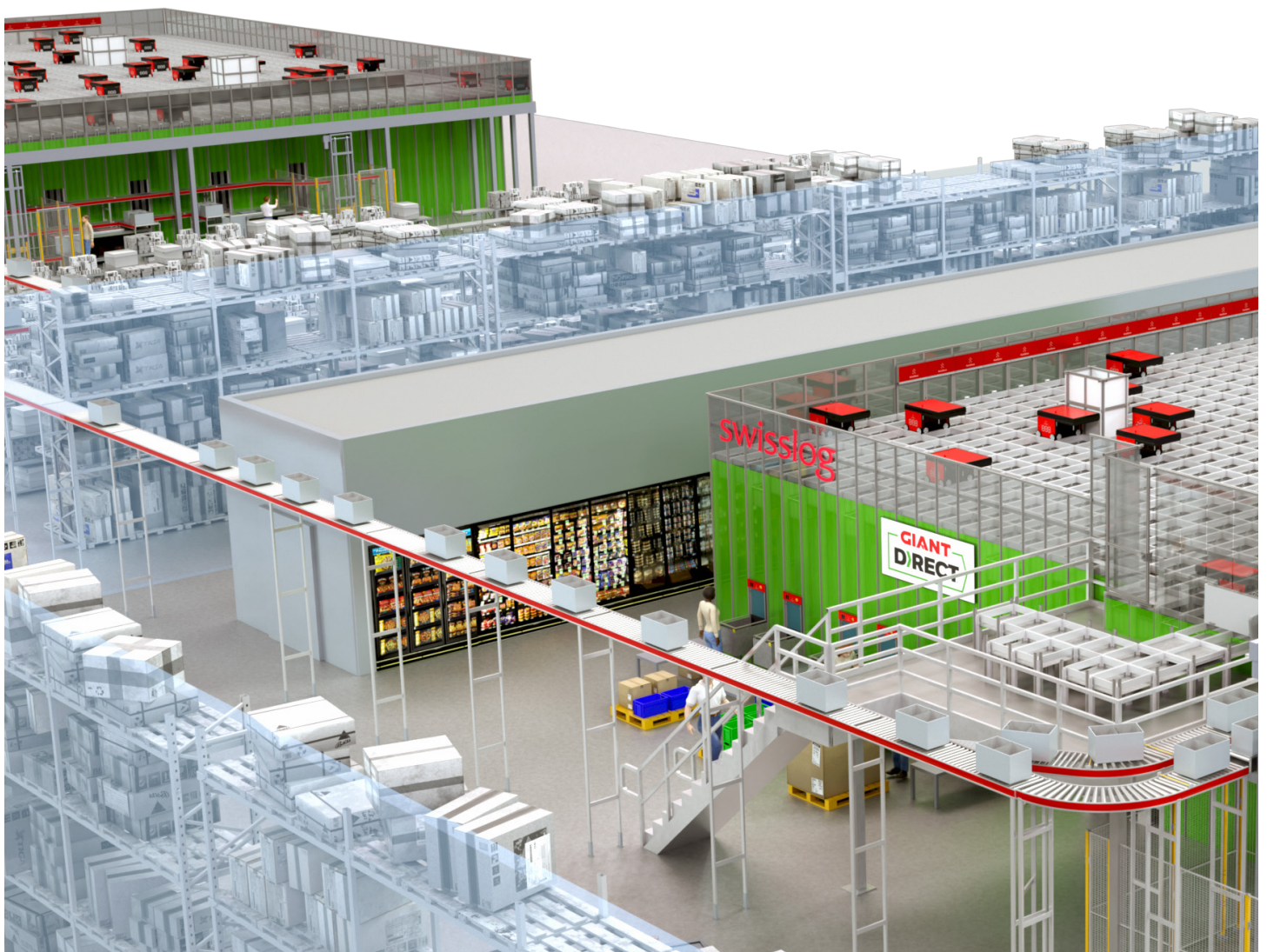


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MICRO-FULFILLMENT CENTERS

Micro-fulfillment centers (MFCs) are the next step in creating a harmonious omni-channel supply chain. Ongoing shifts in the retail landscape, driven by e-commerce, along with changing customer demands and expectations, are creating increased need for fast, efficient local fulfillment.

Automated MFCs allow companies with or without a brick-and-mortar footprint within a particular area to move fulfillment closer to customers in order to reduce transportation costs and enable shorter delivery times, benefitting both the retailer (or Fast Moving Consumer Goods (FMCG) producer), and the customer. Companies can build a micro-fulfillment center as a standalone facility, or inside or bolted on to an existing location, to expand fulfillment capacity. MFCs can support customer curb-side pick-up, too, or a hybrid of pick-up and delivery.

While one company's definition of an MFC may not match another's, due to the scale of each one's operations, in this white paper, we will take a broad definition of an MFC, and include any local fulfillment center designed to "shorten the last mile" of the supply chain to reduce delivery times and increase logistical efficiency.

Since their introduction around 2018, MFCs have continued to expand in popularity. According to Interact Analysis, MFCs have experienced 80% annual growth between 2018 and 2021, and globally they are expected to grow sixfold in 2021 alone. Of course, it's important to note that starting from nothing will always show large growth figures initially.

There are a number of factors contributing to the growth of MFCs, including consumer demand for faster deliveries and more options; grocers wanting to compete with pure e-commerce companies, plus each other; grocers wanting to compete with service providers like Instacart in the U.S., and more recently, Covid-19, which has led more people to shop online to avoid in-store contamination risks.

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The mutual benefits of MFCs are likely to drive their continued expansion, as supply chains look to further increase their efficiency and profitability. For consumers, it is all about increased choice, shorter delivery times or the ability to order online and arrange curbside pick up as quickly as possible. For grocers and retailers, it is a more efficient method of order fulfillment. It reduces labor and transport costs, avoids clogging retail stores with pickers and supports higher order demand levels. In other words, MFCs create a more efficient supply chain.

There are further benefits to both the customer and the grocer as a result of order fulfillment happening through a dedicated fulfillment centre, rather than in-store. For example, having a known inventory position that is not influenced by in-store variability provides customers better accuracy from the first click to the final item delivery.

THE RISE OF MFCs

With 80% annual growth since 2018, it is clear that MFCs are on the rise. For full or partial online retailers, it is a logical next step to a more profitable supply chain. According to Logistics Trends & Insights "some operations can eliminate up to 75% of picking costs through automation."

Not only does an MFC reduce costs, but if automation is used, it also increases the efficiency of the picking process. According to an inc42 article, it takes around 60 minutes for picking an e-Grocery order manually from the shop floor, which makes the segment an unnecessarily burdensome for grocers. Micro-fulfillment centers can shorten picking time in some applications to as little as eight minutes.

An automated MFC can reduce picking costs, increase picking efficiency, and often it can do this with a much smaller physical footprint than alternative distribution models. From a competition and profitability point of view, an MFC makes good financial sense.

Depending on how it is set up, an MFC can be equipped to handle demand spikes, such as seasonal peaks or a new product campaign, or it can stock additional products, to make sure demand can be better met with availability of goods. Goods are closer to consumers, creating a more positive experience and reflecting well on the company's brand.

Another benefit is that in-store shoppers are not inconvenienced by e-commerce pickers. Often likened to waves of locusts, some stores have up to 30 pickers on the floor at once, causing congestion and meaning that the store stock requires re-facing after every pick wave. Automated systems provide a more planned order build process, compared to a person following a list until their order tote is full. The ability to pick an order into a smaller number of delivery totes means less consolidation post pick, and more orders being able to be loaded for delivery.

This white paper will also look at the importance of synergizing online with storefront, how automation can boost efficiency and profitability, and where MFCs are heading in the future.

Automation systems provide a gentler level of handling than some manual systems are able to provide – to the point where even products like eggs can be safely stored and retrieved in an Automated Storage and Retrieval System (ASRS) like AutoStore.

But there may still be some goods that grocers prefer not to store in an ASRS, such as carbonated beverages, which may be shaken due to the force of the moving bins. In these cases, manual handling can be easily integrated into the MFC, thereby experiencing the best of both worlds and further enhancing efficiency.

Sometimes high cubic velocity products (eg bananas) or bulky (eg bottled water, large bags of charcoal) may not make sense to process through automation, so these can be strategically identified and handled manually. These products are a known part of every MFC, and they can be managed, picked and consolidated for delivery by an intelligent Warehouse Management System (WMS) like Swisslog's SynQ.

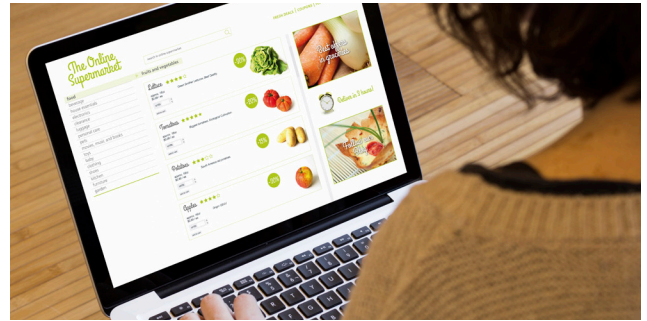
SynQ not only manages the automated equipment within the MFC, but it also coordinates picking from the MFC's manual areas, and provide overall order consolidation in preparation for delivery.

COVID-19 ACCELERATES MFC GROWTH

The growth and expansion of MFCs that was already happening at a rapid rate has been further accelerated due to Covid-19. Consumers have recognized the convenience of online options, to avoid being in crowds, or touching surfaces where there's a risk of community transmission of the virus.

The trend is particularly noticeable in the e-grocery sector, which often has some resistance from consumers who want to choose fruit, vegetables and other produce themselves. The ability to touch, smell and see produce has always driven more consumers in store for basic grocery needs. But Covid has made consumers seek alternative options, as they prioritized minimization of exposure over getting the perfect piece of fruit.

Since Covid entered the world, several years' worth of projected growth in online grocery sales was realized in just a few months. The most optimistic growth targets from the year before were suddenly exceeded every month.



CHALLENGES TO THE GROWTH OF MFCs

Utilizing an MFC powered by automation may seem like a no-brainer, since it has benefits for both the retailer and the consumer, but there are still a few challenges that inhibit the growth of MFCs globally.

In countries where labor is cheap, and widely available, there is very little incentive – or advantage – to adding an MFC, since it will always be more economically viable to utilize cheap labor for picking, transport and delivery.

Another challenge can be finding the right land space. Real estate is becoming more scarce in most major cities around the world, and this leads to higher costs, plus less available space to construct an MFC.

Many grocers, particularly in the U.S., are working on 'store compression' initiatives, where they take an existing store operation and re-plan the space usage to free up 10,000-15,000 square feet (approx. 930-1,395 square metres) that can be refocused into an MFC, all within the original footprint. There will naturally be some repurposing and facilities related costs, but it avoids the high up-front cost of new real estate.

Government regulations must also be taken into consideration when setting up an MFC. There may be additional taxes, or restrictions on where an MFC can be established, and how close it can be to residential areas. Residents may object to the increase in delivery vehicles, increased carbon emissions and noise pollution – all of which would make it more difficult to secure a planning or development permit.



SYNERGIZING ONLINE AND STOREFRONT

To achieve the greatest return from an investment in an MFC, grocers and retailers should look at synergizing their online sales and physical storefront. This involves using an existing network of physical point-of-sale infrastructure or real estate property for logistics automation, so the grocer will not need to build new pure online facilities.

Grocers that can remove the cost of new land from the equation have an easier path to ROI, especially at the early stages of an MFC automation rollout.

This online and storefront synergy also adds flexibility to operations, which enables expansion in the future. For example, curb-side pick-up could easily be added to meet customer demand.

Many grocers are facing increased competition from major corporations offering free two-hour home delivery, so anything they can implement to shorten the last mile and reduce delivery costs will help them remain competitive.

Synergizing online and storefront also:

- Reduces delivery costs
- Offers more flexibility within supply chain networks
- Implements automation on lower supply chain levels
- Allows the flexibility to run new business models
- Enhances the customer buying experience, as well as the customer service level



PARTNERING WITH AN EXPERIENCED AUTOMATION PROVIDER

MFCs are a relatively new retailing strategy, so to maximize return on investment, it is important to partner with an experienced automation provider – ideally one that already has extensive experience with other models such as Dark Stores and Central Fulfillment Centres (CFCs).

An automation partner will not only have knowledge from other grocery projects, but they will have existing software with required functionality, and they will know the intricacies of handling delicate products or the requirements of cold storage, for example.

With more than 2,000 warehousing and logistics automation projects completed worldwide, Swisslog not only has fundamental knowledge in food and beverage, e-commerce and retail, but it has the ability to deliver logistics automation for the whole supply chain network within these industries, starting with large CFC and moving through Dark Store, down to MFC.

The needs of grocers can be quite different from one company to the next, so different operational strategies may be required. Some companies will opt for full automation, while others select only B or C movers to be automated. Swisslog can deliver a system best suited to the individual requirements of each company's automation strategy, and can consult with the grocer to determine the best technology and best implementation strategy to suit their needs.

Most automation providers will use either a shuttle ASRS or a cube ASRS, such as AutoStore, to provide the functionality to an MFC. There are other technologies that can be utilized too, including Goods-to-Person AGV (Automated Guided Vehicle) solutions. Swisslog has expertise in all these advanced technologies, including being the world's top AutoStore integrator, with over 200 projects installed in over 20 countries worldwide.



PARTNERING WITH AN EXPERIENCED AUTOMATION PROVIDER CONTINUED

Software experience

In addition to experience with automation equipment, it is important to choose an automation partner with experience in software, too. The software drives the solution, keeps track of data, and analyses that data to further improve processes in the future.

Swisslog's modular WMS, SynQ software provides warehouse management, material flow, automation and 3D visualization all from a single point of control. It has been designed for dynamic, data-driven supply chains, such as those found in retail and e-grocery industries.

SynQ encompasses warehouse management (WMS), material flow (MFC/WCS), and automation control systems (ACS) functionality, along with an array of business intelligence tools to further optimize warehouse performance. An advanced automation system, driven by an intelligent WMS like SynQ, provides a track and trace functionality, giving a complete overview of data and stock availability. This type of

system can provide 100% inventory accuracy and high DIFOTA (Delivered In Full On Time with Accuracy) ratings.

SynQ's functionality supports the e-grocery industry and its unique associated processes. Swisslog's depth of experience in the grocery industry has resulted in enhanced standard functionalities within SynQ, creating in-built efficiencies. The knowledge gained from new MFC installations will be used to further enhance e-grocery and MFC applications.

In addition to software expertise, Swisslog also has experience with different supply chain network concepts and strategies in food, retail and e-commerce industries, including experience with National Distribution Centres (NDCs), CFCs (Central Fulfillment Centres), Dark Stores and MFCs. This experience also includes how to best integrate an MFC within a complex supply chain network.

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WHERE NEXT FOR MFCs?

MFCs are still in their infancy as a technology, but are already providing significant cost efficiencies and profitability benefits to retailers seeking to compete in the online space.

In the future, as MFCs become even more prevalent, we might see a trend towards fully autonomous order fulfillment and customer delivery, where automation is utilized throughout the full supply chain end-to-end.

MFCs could also be used for urgent supplies, such as medical supplies, or spare parts, to decrease delays in the delivery of these crucial items. They could also be used to increase food availability on a local level, thereby reducing food overall food waste in the supply chain.

CASE STUDY: PEAPOD DIGITAL LABS, USA

Peapod Digital Labs, Ahold Delhaize USA's digital and e-commerce engine, is working with Swisslog to pilot micro-fulfillment technology with The GIANT Company in the Philadelphia market.

The GIANT Company operates full-scale supermarkets under the Giant and Martin's brands, along with small-scale urban stores under the Giant Heirloom Market brand.

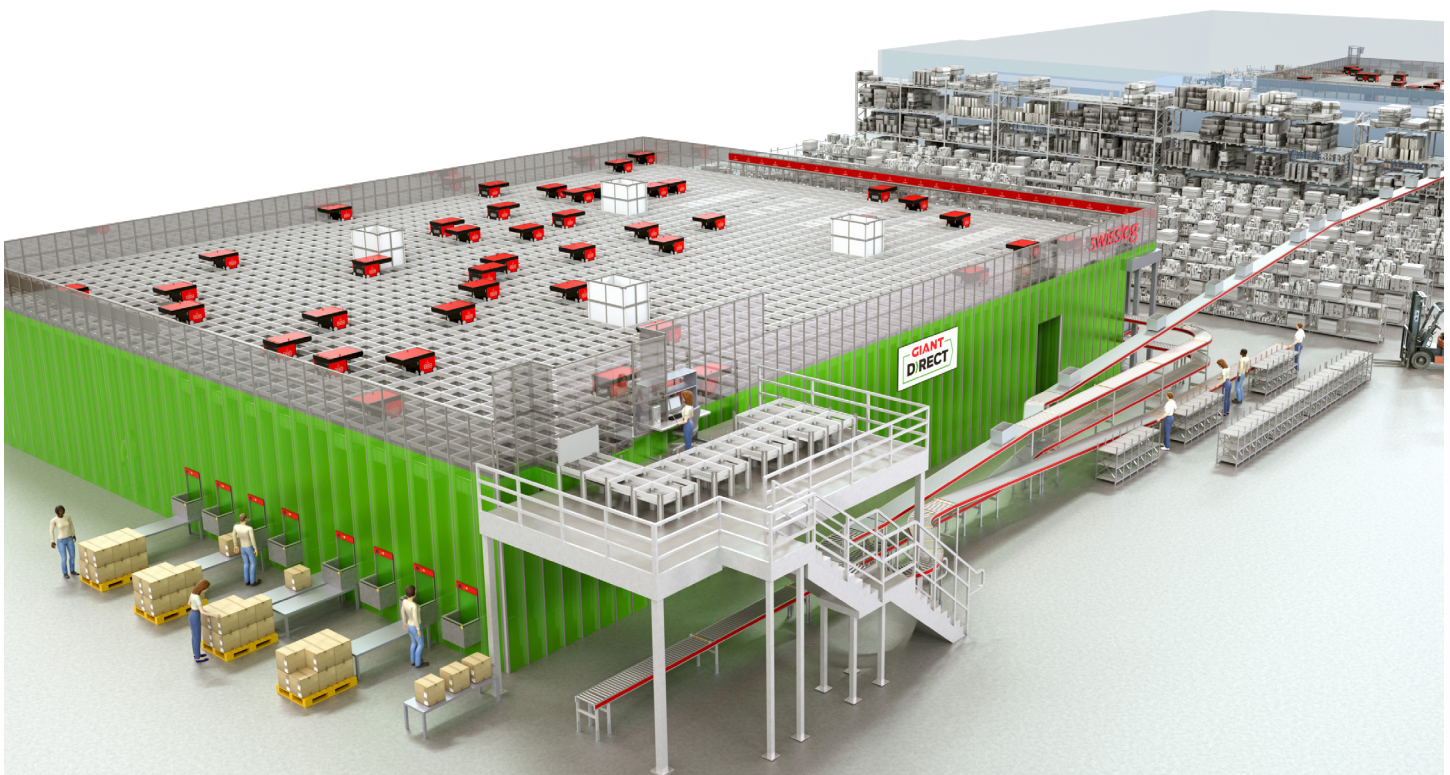
The pilot leverages Swisslog's warehouse automation solutions, including AutoStore technology empowered by Swisslog's SynQ software, as well as Peapod Digital Labs' proprietary manual picking capabilities.

Combining the advantages of the AutoStore grid storage density and goods-to-person productivity gains with Peapod Digital Labs' picking system created a flexible solution ideal for streamlining grocery e-commerce order fulfillment.

JJ Fleeman, president of Peapod Digital Labs and chief e-commerce officer, said all Ahold Delhaize USA companies have seen a tremendous increase in online sales growth over the past year.

"As we think about shifting consumer expectations and the future of omni-channel shopping, we know we must have the right infrastructure in place for both pick-up and delivery," he said. "We're excited to kick off this pilot with The GIANT Company and Swisslog as we continue to build our e-commerce fulfillment capabilities, including micro-fulfillment, which we believe will be key in supporting continued omni-channel growth," said Mr Fleeman.

"Moving storage and fulfillment closer to consumers while maintaining the agility to quickly relocate those functions as market demand shifts or supply chain needs change is an essential characteristic of the supply chain of the future. And with Swisslog's help, companies like Peapod Digital Labs and The GIANT Company are leading the way in showing the value micro-fulfillment technology can bring to e-grocery."



CONCLUSION

An omni-channel supply chain, utilizing MFCs to shorten the last mile, provides benefits to both the grocer and the consumer.

As demand for e-grocery services increases, MFCs have become an ideal solution for grocers wanting to move fulfillment closer to customers for curbside pickup or home delivery. It can also be particularly attractive to pure-play e-grocers that don't have retail stores that can serve as fulfillment hubs, easily storing between two to five days of grocery inventory.

MFCs are already growing rapidly on a global scale, due to their ability to shorten lead times, reduce delivery costs, offer greater supply chain flexibility and ultimately improve ROI. And this trend is likely to continue, especially with Covid changing consumer shopping patterns and increasing consumers' willingness to shop online.

Choosing an experienced automation partner is key in helping e-grocery and retail companies to optimize their results when including an MFC as part of their supply chain.

Implementing a flexible, data-driven and robotic MFC solution that won't become obsolete as the market changes allows these companies to leverage new technologies as they emerge. Grocers can optimize the center by efficiently integrating automated and manual picking to deliver the best results.

Micro-fulfillment centers are quickly becoming an essential part of the supply chain. They hold much promise for helping reduce delivery costs and shortening the last mile and the time to consumer. They are also an ideal solution for fulfilling online orders for curbside pickup. With the right approach and automation technology, they can help grocers and retailers meet changing expectations and enhance customer experience.

Swisslog has a comprehensive portfolio of solutions to meet the needs of retail, e-commerce and e-grocery customers. From large distribution centers to smaller fulfillment centers, there are a wide range of technologies available to address today's challenges and demands.

