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# Capsule 2.2.3 Source 4

## Global summary:

The continuous double-digit growth of e-commerce is putting enormous pressure on retailers and logistics companies. Customers' expectations for fast and convenient deliveries are growing, as is their intolerance of delays or errors.

In the future, technologies such as autonomous vehicles and robotics, or the green transition to electric vehicles, will increasingly help to **improve efficiency and reduce the huge carbon footprint** created by the order fulfilment process. At present, however, these solutions require a significant capital investment and long-term commitment. Retailers and logistics companies need to make the changes today that will allow them to quickly gain the **agility and scalability** needed to meet demand and expectations in a cost-effective manner.

From the **first mile** (picking, packing and shipping triggered by the receipt of an order) to the **last mile** (physical delivery to the customer), the current model requires continuous adjustment and change to enable the flexibility and responsiveness that are absolutely essential. This white paper examines the must-have technology solutions that are helping retailers win the battle for excellence in both the first and last mile.

## The first time must be the right time

Globally, last mile delivery for the e-commerce market was worth some $3,020 million in 2019 and is expected to reach $5,403 million by 2025, growing at an estimated average annual rate of 10.5%.

One of the main drivers of inefficiency is the huge volume of parcels that are not successfully delivered on the first attempt. attempt. Research in Japan, a fast-growing e-commerce market, shows that almost 20% of deliveries fail the first time. of deliveries fail the first time, and this percentage is even higher in urban areas. It is clear that adding extra rounds adds significantly to costs and is a huge drain on resources.

A study by **PCA Predict** estimates the cost of missed and failed deliveries at €15 per delivery, a very significant figure when so many companies are operating on extremely tight margins. **As the last kilometre can account for 30% of total order fulfilment costs** (labour, transport and fuel), it is simply not possible to turn a blind eye to delivery inefficiencies.

## Elastic logistics model

Fluctuations in demand have an impact on every link in the supply chain. The challenge is to be able to adapt order fulfilment activities to the intensity of business The challenge is to be able to adapt order fulfilment activities to the intensity of the business, with minimal disruption to service and efficiency.

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During seasonal peaks, daily parcel deliveries can double, forcing logistics companies to call on tens of thousands of extra people to support their operations. logistics companies to employ tens of thousands of extra people to support their warehouse and delivery warehouse and delivery operations to cope with the increased demand. Hiring staff on demand becomes a major a major problem, especially when unemployment is low. These temporary workers must become productive quickly, without compromising the accuracy or speed of operations - in other words, without These temporary workers need to become productive quickly, without compromising accuracy or speed of operations - in other words, without damaging the value of the brand - and with little training time.

Retailers cannot increase margins by sacrificing service excellence. Therefore, they must work smarter and exploit technologies that optimise critical processes to maximise an elastic logistics model.

### Working smarter from the first to the last mile

A range of innovative technologies are being considered and tested to reduce costs and improve the service experience. service experience. Unfortunately, many of these, such as robotics, are still in their infancy, while others have fundamental flaws that will hinder their development.

Drones, for example, can only handle small and light packages and can only reasonably be used safely in rural areas. Autonomous trucks cannot deliver food to apartment buildings unless secure lockers are available on site. available on site. In the short to medium term, none of these technologies, however exciting, is a panacea: Humans remain an essential part of the execution process, from of the execution process, from the first to the last mile.

Technologies play a key role in enabling warehouse operators or delivery people to be more productive and efficient. The systems must be easy to use and, most importantly, they must require minimal investment in training and management.

## Reinventing productivity and precision throughout the first mile

Companies are increasingly exploring new ways to manage the increasing demands on fulfilment, particularly in cities. At the same time, a growing number of smaller fulfilment centres are being created outside of major metropolitan areas. Typically, these sites cannot make large investments in fixed and automated infrastructure, so instead they are looking to adopt new, innovative and scalable technologies.

**Machine vision and image capture technologies** are transforming the shipping processes within the processes within distribution centres, including parcel sorting operations. Not only do they improve efficiency, but they also eliminate errors altogether.

### Efficiency based on machine vision

For example, **Visual Sort Assist** (VSA) is an innovative technology that uses machine vision to optimise parcel sorting and van loading operations. When parcels reach the final sortation point on a conveyor, **Visual Sort Assist** automatically reads the parcel barcode and projects a number and colour corresponding to a specific picker.

This approach is incredibly simple and requires minimal training, which means that temporary workers are immediately productive. It improves productivity, reduces errors and avoids the risk of injury and

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damage. What's more, this solution can be quickly upgraded by simply extending the conveyor and combining projectors, sensors, and readers.

Machine vision data capture is also at the heart of the **ImageID** technology. This uses specialised camera recognition technology to simultaneously read and verify all barcoded items on a pallet. In addition to eliminating the human error and manual overhead associated with reading each barcode, **ImageID** has the added benefit of highlighting exceptions, which immediately informs the worker and prevents shipping errors (e.g. missing product, wrong product or wrong pallet on the wrong truck).

In addition, this technology minimises the manpower required to check loads (thus speeding up the process considerably), reduces errors and the process), reduces shipping errors by 100%, and creates an indisputable audit trail for every for every shipment.

### Multi-modal voice recognition

**Voice picking** has been used by logistics companies for many years. The benefits of this technology are numerous, including improved efficiency and reduced error rates. The latest voice solutions offer multi-modal functionality and are based on speaker-independent systems. As they do not require time-consuming training, these voice systems instantly improve the productivity of of seasonal or temporary workers. In addition, for maximum operational flexibility, these systems allow for a combination of technologies, such as voice control and barcode scanning.

## Intuitive proof of delivery to improve last mile efficiency

In the logistics sector, a robust **proof-of-delivery** (ePOD) solution plays an essential role in last-mile delivery operations. Proof-of-delivery applications installed on mobile phones or dedicated rugged devices are becoming increasingly common to eliminate paper-based errors, provide real-time delivery confirmation and speed up the work of delivery personnel. But this is only part of a complex and stressful job.

From the moment the driver enters the picture, technology can help **improve the experience**. Guidance systems can help the driver when performing mandatory vehicle checks to ensure that no steps (starting with checking tyre pressure) are missed. Secondly, load scheduling helps the driver to load the parcels according to the delivery route to speed up unloading, **improving efficiency and minimising the time spent at each drop-off point**. In addition to voice guidance, multilingual systems allow workers of all ethnic backgrounds to work together confidently throughout the delivery process.

These systems have been designed to enable people with varying levels of experience (and knowledge of technology) to quickly understand the requirements, from controlling vehicles to following complex delivery routes. delivery routes. In addition, because they operate in real time, these mobile solutions provide companies with detailed information that **greatly improves last-mile management**.

Drivers' routes can be changed on the spot to avoid delays caused by traffic. Proof of delivery can be extended to include returnable assets (e.g. trolleys), the loss of which has a huge impact on the bottom line. Detailed last mile tracking, second by second, allows companies to **reduce costs while improving efficiency and customer experience**.

## Optimising processes with end-to-end visibility

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Control is at the heart of an efficient and profitable logistics model. With the pressures on retailers and logistics partners to get the right product to the right place at the right time in the most efficient, cost-effective and environmentally friendly way possible, **real-time control** is essential. However, this is only possible if retailers have **real-time visibility of the entire process**.

## Improving operations through a collaborative supply chain

Large retailers are increasingly looking for a single, harmonised view of their carriers' ETAs. Knowing the location of all vehicles and goods at all times helps to optimise unloading at warehouses and points of sale and to control staffing requirements. As a result, companies minimise the need for additional staff during peak periods.

Sharing information throughout the supply chain enables end-to-end collaboration, which in turn enables companies to become more efficient at all levels. By breaking down silos and creating an intelligent By removing silos and creating an **intelligent, connected and collaborative supply chain ecosystem**, companies can, for example, quickly identify the causes of a product shortage. In addition, by sharing information across the supply chain, companies can from intensive and complicated management to a much more efficient model based on alerts. With management by exception management that triggers real-time visual alerts, a company can react immediately to solve problems and avoid damage to the brand's reputation.

This knowledge also feeds into predictive analytics. With deep insights into the different performance of each carrier, retailers are able to better understand and optimise end-to-end operations. Mapping this information to customer demand trends can help a business become much more agile and respond quickly to new opportunities.

## Harnessing intelligence to transform the customer experience

A company that can accurately locate its carriers can more easily establish customer expectations and, more importantly, provide accurate and up-to-date delivery notifications. This is a critical asset, especially since the Japanese study cited above points out that the number one cause of re-delivery is not knowing when the delivery driver will arrive. **42% of customers were unaware that a delivery was in progress** - meaning they were away from home or had failed to offer an alternative delivery or safe location. If the company can accurately inform its customers that a delivery is in progress, the number of re-deliveries should decrease, which would significantly reduce costs.

With better information on customer demands and carrier activities, companies can more objectively assess the potential of new logistics processes. Night deliveries are increasingly being considered, especially in urban areas where traffic density can significantly increase delivery times. According to McKinsey, night deliveries could cut commercial delivery times in half, reduce costs by up to 50% and cut gas emissions.

Capturing all product movements in the supply chain and centralising the information on a collaborative platform, allows a company to explore new avenues of efficiency, gain agility, and consider moving to new technologies (such as automated vehicles) as its maturity level evolves.

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## Conclusion

In the future, there is no doubt that robotics will play an increasing role in making processes more efficient and seamless. Electric vehicles will solve the CO2 emission problems associated with parcel delivery. Autonomous vehicles will mean that fewer new drivers will be needed, despite the limitations of unloading parcels.

However, in the meantime, the sector has a chance to **act immediately to be more efficient from the first to the last mile**, addressing environmental concerns and gaining a competitive advantage through an excellent customer experience. There are many avenues for improvement, whether the goal is to achieve perfect deliveries the first time around, or to make the most of resources and assets through **end-to-end visibility**, to control costs, or to proactively manage every step of the process.

To take full advantage of the innovative options available, retailers need to ensure that their infrastructure is supported by an agile, **scalable and connected fulfillment solution**.

19.6% of all parcels sent had to be redelivered due to the recipient's absence.

### Technology checklist

Machine vision-based technologies help improve productivity and reduce errors. Visual Sort Assist uses a colour/number system to help workers move goods more efficiently. **ImageID** technology uses camera recognition to simultaneously read all barcodes on a pallet, instantly flagging exceptions to allow staff to remove items loaded in error.

Next-generation voice recognition systems can improve the efficiency and accuracy of warehouse and accuracy of warehouse operators while providing **greater flexibility and scalability for the future**. scalability for the future.

The harmonisation of real-time event and status data collected at each critical point in the supply chain (e.g., the critical points in the supply chain (up to proof of delivery to the end customer) enables **optimise processes and improve the customer experience**. Provided that customers are informed of deliveries in a timely manner, re-deliveries can be reduced - a provided that customers are informed of deliveries in good time, re-deliveries can be reduced - a benefit in terms of cost and environmental impact.

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