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Smarter Connected Logistics™

WHITE PAPER

LAST MILE TRANSPORT OF THE FUTURE

All change in the last mile:
Are robot couriers just round the corner?

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WHITE PAPER
Last mile transport of the future

PUBLISHER:
EPC – Ehrhardt + Partner Consulting GmbH
Alte Römerstraße 3 | 56154 Boppard-Buchholz | Germany
Phone: (+49) 67 42-87 27 0 | Fax: (+49) 67 42-87 27 50
Email: info@epg.com | Internet: www.epg.com

RESPONSIBLE FOR CONTENT
EPC – Ehrhardt + Partner Consulting GmbH
Marcel Wilhelms

EDITORIAL

Dear Reader,

Last mile service providers are facing huge challenges. They have to cope with a large volume of orders, which is constantly growing, driven by online retail. At the same time, customer tolerance of delivery services is also declining with last mile service providers facing complaints about double-parking, air pollution in city centers and higher delivery costs. And that is just one issue among many, as delivery to the recipient is the most cost-intensive and time-consuming stage of the entire logistics chain. The last mile is a challenge.

What ways are there to optimize the delivery process? What role does digitalization play in all this? And what scenarios could soon be reality?

This white paper provides an overview of the current situation for the last mile, discusses alternative delivery options and takes a look into the future. Are robot couriers just round the corner?

Find out for yourself. I hope you enjoy reading.

Yours,

Marcel Wilhelms,
Managing Director EPG CONSULTING

THE LAST MILE –

THE CHALLENGES FOR A SECTOR

The section from the parcel service provider's to the recipient, know as the last mile, is an extremely cost and time-intensive stage of the supply chain. This is because of the small delivery quantities, the wide distribution of delivery addresses and an average of four failed delivery attempts. The last mile also involves traffic congestion, pollution and noise.

This stage of the transport chain will likely continue to be a major challenge due to the continuing growth in e-commerce and the associated volume of deliveries. Academic and industry experts are working on developing new concepts and expanding established solutions to optimize last mile logistics.

ONLINE RETAIL AS DRIVER

One click in your shopping cart and an order is on its way. e-commerce provides a quick and convenient way to order goods from the comfort of your sofa and have them delivered directly to your front door. No wonder then that online trade, and in particular the B2C sector, is seeing high growth. According to a forecast by the statistics portal, Statista, e-commerce sales in 2018 will be around 53 billion euros (2016: 44 billion euros). The increase in the volume of last mile shipments is closely linked to the boom in online retail. According to the 2019 last mile study by the German Parcel and Express Association (BIEK), 3.52 billion parcels were sent in 2018, which is an increase of around 4.9 percent compared to the previous year.

Volume of parcels on the German last mile market
(2000 to 2018, in million parcels)

– More than 3.5 billion parcels on the last mile market in 2018 –

(Sources: CEP Study 2018; Survey of CEP companies 2019, KE-CONSULT market analysis)/BIEK_KEP-Studie_2019.pdf

THE DILEMMA FOR THE LAST MILE INDUSTRY –

COST V WILLINGNESS TO PAY

However, the rising order volume is putting last mile service providers under increasing pressure, as customer expectations are becoming more and more demanding. But tolerance for delays and mistakes is falling almost in step with the rise in expectations.

Same day delivery is now taken for granted, especially in the food sector. And the time window for delivery is continuing to shrink. Certain fresh produce, for example, requires same hour delivery. Customers do want additional services, but only very few are willing to pay for them. The last mile industry faces a dilemma. While the financial burden on the last mile is constantly increasing, the costs cannot be passed on to end customers, because of the lack of acceptance. "The consequence of this situation is that the last mile of logistics is the most expensive part of the logistics chain for the last mile market, accounting for 50 percent of total costs," says Dr. Boris Zimmermann, professor at Fulda University of Applied Sciences, specializing in logistics.

Data transparency is the basis for maximum efficiency in the last mile.

NEW STRATEGIES TO COUNTER POOR REPUTATION

High costs are, however, just one aspect contributing to the poor reputation of the last mile. Last mile traffic is literally exploding as a result of the enormous volume of parcels for e-commerce and decentralized delivery locations. Particularly in urban areas, this means noise nuisance, emissions and traffic jams, as cities often lack suitable parking and stopping areas for delivery vehicles in the city center, which means last mile service providers double-park, blocking traffic.

The current situation for last mile logistics companies can essentially be described as short distance, but maximum effort. To prevent the last mile system from collapsing, there is an urgent need for new strategies to be developed alongside established solutions to ease the pressure.

FRONT DOOR DELIVERY

PREFERRED

There are two basic directions for delivery in the last mile. One is "**goods to customer**" and the other is "**customer to goods".** Data transparency is necessary for an effective last mile, however, in either direction. That means all parties must have access to the relevant information to coordinate and deliver an order as quickly as possible. An uninterrupted data flow is also important, so that information can be accessed in real time – by both last mile service providers and customers. Smart IT platforms can be used to achieve this at reasonable cost.

CUSTOMER TO GOODS

There are already established solutions for the "customer to goods" model, which are used to varying degrees.

- **Parcel** shops are points for dropping off and picking up parcels. When placing an order online, the private customer has the option of having the parcel delivered to a preferred parcel shop instead of to the door. Parcel shops are often attached to smaller shops, such as gas stations and kiosks. As soon as the parcel arrives, the customer gets a confirmation that the parcel is ready for collection from the shop. Generally, it is also possible to drop off returns free of charge at parcel shops.

  All major parcel service providers currently offer this service. Although this option is a viable solution, especially for working people, acceptance is relatively low. According to a study published by accounting firm PricewaterhouseCoopers ("Awakening on the Last Mile – New Opportunities for City Logistics"), around 51 percent of those surveyed stated that they had not previously used the delivery service to a particular parcel collection point and did not need this service.

- DHL provides **Packstations** for its customers, which can be used to deliver anything from oversize letters to parcels. Items are stored in a form of safe deposit box and the automated booths are available around the clock. Customers can pick up or drop off items at any time. However, customers must register and pass an identity check. This is to prevent anyone from accessing the contents of the Packstation without authorization. Although Packstations ensure greater flexibility, as customers do not have to stick to opening hours, they can only be used for DHL shipments. The dimensions of the mailboxes also limit the size of the items.

- **Parcel lockers and parcel boxes** are a blend of the "customer to goods" and "goods to customer" models. They are installed in front of houses and apartment blocks, similar to a letterbox. The courier accesses the parcel locker or parcel box with a code or a key. The customer can pick up the item at any time and right next to where the customer lives. These types of solution are generally not last mile-specific. Although the advantages are clear, these systems have so far played only a minor role.

GOODS TO CUSTOMER

"Goods to customer" delivery concepts are very popular. Customers prefer to get their orders conveniently right to their door. But as customers are at work and not at home during the day, there is an increasing demand for **time-slot deliveries**, so that customers can choose specific time windows for delivery. The advantage is that the customer is very likely to be home and the courier does not have to make several delivery attempts. An alternative is to **divert** a delivery using parcel tracking, as offered by Hermes, for example. The options that customers can select include delivery to a neighbor. It is also possible to ask for the delivery to be left in a secret, private place. Some employers also allow their employees to have **parcels delivered to the workplace.** In this case, the delivery address is the company address instead of the customer's private address.

REDUCING ENVIRONMENTAL POLLUTION

WITH E-MOBILITY

Two approaches are currently being pursued intensively to optimize last mile logistics. **Track & trace** has already proven valuable in the past, but there is still room for improvement. Parcel service providers must work to provide customers with even more accurate and reliable data – such as route and arrival time – in real time. Another major issue is **e-mobility** to reduce environmental pollution, especially in cities.

The last mile is the most expensive part of the logistics chain in the last mile market, accounting for 50 percent of total costs.

Noise and emissions cause harm to the natural and social environment and are therefore less and less tolerated. Electrically powered delivery vehicles can help, as they are significantly quieter and have lower emissions than vehicles with combustion engines. e-mobility is indeed a promising approach for a low-emission and low-noise last mile. Nevertheless, further development is essential. One obstacle is the range of electric vehicles, which is limited by battery capacity. The cost of electric vehicles is also a significant factor for competitiveness. Electric vehicles still cost much more than vehicles with a combustion engine.

ARE ROBOT COURIERS

JUST ROUND THE CORNER?

New approaches to optimizing the last mile are increasingly based on the opportunities offered by digitalization and trending modern technologies.

TRANSPORT DRONES

- There is a lot of discussion around using **transport drones.** The idea is to fly orders to customers. The drones have a standard speed of up to 50 km/h and can transport loads of up to 2.5 kg. So far, however, drone delivery has not progressed beyond testing. The biggest obstacles are range and battery performance. Legal restrictions, however, also currently limit the possible uses. In Germany, for example, there are clearly defined no-fly zones. Drones are therefore more suitable for use in sparsely populated areas, where their strengths can be exploited most effectively, as they are not dependent on an existing infrastructure. Other conceivable applications include delivery by drone to hard-to-reach areas, such as islands and mountain villages, or to deliver medicines urgently. However, experts like Prof. Dr. Boris Zimmermann assume that mass delivery by air is still a long way off. "At the moment, there are still too many restrictions preventing commercial drone deployment for parcel delivery."

"At present, there are still a lot of restrictions preventing the commercial use of drones for parcel delivery."

Prof. Dr. Boris Zimmermann, Professor at the University of Applied Sciences in Fulda, specializing in logistics

DELIVERY ROBOTS

- **Delivery robots**, also known as land drones, are being considered as assistance systems for parcel couriers. They have the role of independently transporting items over short distances to the recipient. Given that each parcel courier lifts three to five tons per shift, as reported by the MM Maschinenmarkt online industry portal, the potential for reducing the load is significant. The courier can hand over heavy shipments to the delivery robot while completing administrative tasks, preparing the next delivery or making the next delivery.

It is also conceivable that delivery robots could be placed at several decentralized locations. The courier puts the parcel in the robot, then the recipient is notified that the parcel is ready for delivery. Once the customer has confirmed, the robot travels to the delivery address. This approach shortens the last mile to the distance between the robot depot and the nearby delivery location. The downside is that delivery robots have limited mobility. Stairs, for example, are currently still an insurmountable obstacle. This type of delivery is also mainly aimed at the B2C sector, as the capacity of robots is limited. Robot delivery is therefore not suitable for large parcels, as is common in B2B.

GARAGE OR TRUNK DELIVERY

- **Garage and car trunk delivery** could solve the problem of customers who are not at home. In both cases, the courier gets a code to access a garage or car trunk. The courier can then safely deposit the item until the recipient picks it up. Prof. Dr. Boris Zimmermann believes garage delivery in particular is a concept that could become common in future for the last mile. "I think garage delivery will play an important role in the future, especially in rural areas, as it can be done at relatively low cost. Rural areas also often have detached houses with appropriate spaces."

CONCLUSION:

THERE IS NO UNIVERSAL REMEDY

One thing is clear.
New concepts are needed to make the last mile cost-efficient and environmentally friendly – both in terms of delivery and vehicle drive technology. However, there is clearly no one solution that meets all the challenges.

Each of the above approaches has strengths and weaknesses. Not every strategy meets the specific needs of urban and rural areas either. Last mile service providers therefore need to develop new solutions, test their practical suitability and make appropriate investments. But customers also have to accept new technologies for the last mile and the extra costs for delivery to their door.

COMPANY PROFILE

EPG – Smarter Connected Logistics

EPG is one of the leading international providers of comprehensive Supply Chain Execution Systems (SES) and employs 700 people at 19 locations worldwide. The company supplies its more than 1,500 customers with WMS, WCS, WFM, TMS and voice solutions to optimise logistics processes – from manual to fully automated logistics environments. EPG solutions cover the entire supply chain, from warehouse and road to ground and cargo handling solutions at airports. EPG's comprehensive portfolio of solutions is complemented by logistics consulting, cloud services and managed services, as well as logistics training courses at the company's own academy.

EPG IN NUMBERS

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EPG CONSULTING

CONTACT

MARCEL WILHELMS
Managing Director of the division
EPG CONSULTING at EPG

EPC – Ehrhardt + Partner Consulting GmbH
Alte Römerstraße 3 | 56154 Boppard-Buchholz, Germany
Phone: +49 6742 8727-0 | Fax: +49 6742 8727-50
Email: info@epg.com | Internet: www.epg.com

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