Specialization: Transport Engineering and Logistics

Report number: 2018.TEL.8307

Title: How will instant freight transport evolve in the context of intermodal transport?

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Title (in Dutch) Hoe zal het onmiddellijke vrachttransport zich ontwikkelen in het kader van intermodaal transport?

Assignment: literature assignment

Confidential: no

Initiator (university): dr. B. Atasoy

Supervisor: dr. B. Atasoy

Date: January 04, 2019

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How will instant freight transport evolve in the context of intermodal transport?

Maurits van Pampus
January 2019

Abstract

With growing demands on speed and amount of freight transport and simultaneous technological progress in data processing and the development of mobile applications, possibilities for the freight transport sector arise. In this paper we specifically look into the latest developments in the field of instant freight transport, i.e. services providing on demand delivery that starts within two hours - by either private individuals, independent contractors, or employees - by connecting shippers, carriers, and recipients via a digital platform. First the known literature is discussed and thereafter multiple examples from the practice are reviewed.

While challenges exist in making the instant last-mile freight transport successful, multiple companies have overcome these challenges and have made advanced software to connect shippers, carriers and recipients. It is expected that in the nearby future companies will also focus on non-food instant last-mile transport. Although the instant long distance freight transport is lagging behind, since 2016 multiple companies have launched platforms focused on long distance, in most cases road transport. It is expected that these platforms will improve and offer simple solutions for intermodal transport in the nearby future.
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1 Introduction

The freight transport sector is growing rapidly; it is expected that by 2030 the global freight volumes will have grown by 70 percent compared to 2015 [1]. Part of this is due to the growing e-commerce, that is showing a strong upwards trend, as can be seen in Figure 1 [2]. At the same time the demands on the speed of the transport are becoming higher. With more freight that has to be delivered faster, opportunities arise for the freight transport sector.

It seems that the freight transport sector is seeing these opportunities as well, as venture capitalists are investing more and more in trucking tech start-ups, as can be seen in Figure 2 [3].

A clear trend in the passenger transport sector is the usage of mobile applications for instant transportation. This trend may be continuing in the freight transport sector. Nowadays in the e-commerce it is already usual to be able to receive ordered goods the next business day. Besides, the technological progress in data processing and the development of applications offer opportunities for new business models based on instant freight transport.

This paper will discuss the latest developments in the field of instant freight transport. Both literature and business models will be considered. It is expected that the business may be ahead of the literature in some aspects in this case due to the fast changes and arising opportunities in the instant freight transport sector. This paper will mainly focus on those changes and innovations mentioned in the literature as well as shown in business models. The aim is to get a broad overview of the instant freight transport, including intermodal instant freight transport. After that overview, a future vision will be presented to give insights in how instant freight transport may evolve.

In order to give a future outlook, two approaches are used in this paper. First the state-of-the-art will be discussed, separated in last-mile and long distance transport. The focus will be on current shortcomings - or areas for improvement - and clear opportunities for instant freight transport. Secondly multiple examples from the practice will be reviewed, also separated in last-mile and long distance transport. Per company a short description of the activities and some basic information will be given. Then for every company the following characteristics will be discussed:

- The kind of carrier that takes care of the transport (i.e. freelancer, employees, or external trucking company)
- The methodology for matching that connects shippers, carriers and recipients
- The pricing strategy
- The options for real-time routing
- The collection of user data
- The means of transportation that are allowed to use

Using both information sources, we present possible outlooks for the evolution of instant freight transport.
As various papers use different definitions, the definitions used in this paper will be explained now. We explain the term ‘instant freight transport’ as follows: ‘instant freight transport services provide on demand delivery that starts within two hours - by either private individuals, independent contractors, or employees - by connecting shippers, carriers, and recipients via a digital platform’. This definition resembles the definition [4] proposes, but differs in the sense that in this definition the delivery process must start within two hours while in their definition the delivery must end within two hours. In our definition the long distance deliveries are not excluded.

The ‘last-mile’ is defined as the last leg in a transport chain and the destination of that leg is thus the end destination of the transported good(s). We only refer to ‘last-mile’ transport if the transport takes place in a city and thus ‘last-mile’ transport covers per definition short distances. All the distances that are not categorized as ‘last-mile’, will be categorized as ‘long distance’.

‘Crowdshipping’, ‘crowd logistics’ and ‘crowdsourced delivery’ will be interpret literally as shipments performed via the crowd. This is also the definition [5] uses.

All the above mentioned definitions can also be found in Table 1.

<table>
<thead>
<tr>
<th>Term</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instant freight transport</td>
<td>On demand delivery that starts within two hours using a digital platform</td>
</tr>
<tr>
<td>Last-mile</td>
<td>The last leg in a transport chain (in a city)</td>
</tr>
<tr>
<td>Long distance</td>
<td>All the distances not categorized as 'last-mile'</td>
</tr>
<tr>
<td>Crowdshipping</td>
<td>Shipments performed via the crowd</td>
</tr>
<tr>
<td>Crowd logistics</td>
<td>&quot;&quot;</td>
</tr>
<tr>
<td>Crowdsourced delivery</td>
<td>&quot;&quot;</td>
</tr>
</tbody>
</table>

An overview of the most recent literature in the field of instant freight transport will be presented in Chapter 2. Thereafter, in Chapter 3 an overview of recently created businesses related to instant deliveries will be discussed. In Chapter 4 future visions will be presented and finally in Chapter 5 a conclusion will be drawn.
2 State-of-the-art

In this chapter the latest literature about instant freight transport will be discussed. A distinction between last-mile deliveries and long distance deliveries has been made.

2.1 Instant last-mile freight transport

According to [6] the last-mile is the most expensive leg of the freight transport chain. This could explain the amount of articles examining the last-mile delivery of freight (the term 'last mile freight transport' inserted in Google Scholar led to 14100 results written since 2014). The last-mile delivery often consists of the transportation of goods from a warehouse to its end users and that makes it easy to understand why the last-mile is so expensive. In the legs before the last-mile, big volumes can be transported from point A to point B, while in the last-mile smaller volumes have to be shipped to multiple destinations. Besides, although distances in the legs before the last-mile are larger, the last-mile delivery must cope with lower speeds and more delay of transport vehicles due to the city structure.

Next to the transportation of goods from a warehouse to its end users which grows along with the rising of the e-commerce, another more old-fashioned form of last-mile delivery is the food delivery. While the total food delivery market (which contains about 1 percent of the total food market) has matured in most countries with an overall annual growth rate estimated at 3.5 percent for 2016 - 2020, in 2016 McKinsey&Company expected the online delivery of food 'to grow by 25.0 percent per year from 2015 to 2018 in key markets, after which it will taper off to 14.9 percent per year until 2020' [7]. This will thus not have a major effect on the amount of instant last-mile deliveries, but it will have an effect on the way the deliveries are organized.

It is estimated by [4] that in 2017 instant deliveries already have accounted for 2.5% of all freight delivery trips in Paris and that the amount of instant deliveries is growing.

Despite the fact that the amount of instant last-mile deliveries is growing, some challenges still exist in making the instant last-mile delivery successful. First of all the last-mile deliveries already represent an expensive part of the total freight transport chain as showed above. At the moment consumers demand shorter delivery times but multiple researches show that consumers are not willing to pay much (or even at all) for such services [4] [5]. Instant last-mile deliveries therefore may not be profitable [4] [8]. Secondly the increased amount of small vehicle movements, induced by the growing amount of last-mile deliveries, may lead to more traffic jams in big cities [4] [8]. Thirdly the increased amount of small vehicle movements could lead to negative effects for the environment (e.g. air pollution, greenhouse gas emissions and noise) [8].

Crowdshipping as solution for instant last-mile freight transport

The challenges indicated in the previous section are being dealt with in different manners. A solution could be using small electric vehicles or bikes instead of cars or vans. For example in the Paris region instant deliveries are mainly being made by bicycle (88%), and by motorbike or scooter (9%) [4]. This is very different from urban freight in general in the same region with 57% of the deliveries being made by vans, 39% by lorries, 3% by motorbikes, and 1% by bicycles and cargocycles [4].

Another interesting option suggested by the literature is crowdshipping. The idea of crowdshipping is that everyday commuters or travelers could transport goods along their commute or routes that are taken anyway [9]. The literature is divided over the success of crowdshipping. According to [9] 'Crowdshipping is becoming a serious actor in the shipping industry', but [4] states that crowd-sourced deliveries are rare. Also [5] shows that in practice various crowdshipping initiatives failed due to low involvement rates. [10] investigates co-modality, a form of crowdshipping that integrates passenger and freight transport systems. The article shows that in an idealized scenario co-modality has advantages compared to conventional transport methods. This makes sense as time would be saved if freight and passengers that have the same
starting point and the same ending point would ride together. However in the real world this requires a lot of involvement and it should then not be allowed to make a significant detour. A recent research of a crowdshipping platform in Belgium showed that half of the trips made by the crowd were dedicated to delivering parcels [6]. This led to higher costs and a much higher environmental impact compared to traditional parcel deliveries.

2.2 Instant long distance freight transport

In contrast to the high amount of literature about the instant last-mile delivery, not so much literature about instant delivery outside the last-mile is found. Despite the lower amount of literature, the importance of instant long distance delivery is growing, together with the e-commerce and demands for instant deliveries as already appointed in Chapter 1. After all, the whole transport chain has to become faster, not only the last-mile.

When a certain aspect, object, or idea is growing in importance, new terms arise. In this case a frequently heard, new term that would describe instant long distance freight transport is ‘Uber for Freight’ (UFF). As a master thesis (2017) described it: 'Although a significant body of literature exists regarding the operational nature of brokers and 3PLs\(^1\), the UFF concept has only been described in nonacademic news releases about new companies in this space.' [11]. The definition of Uber for Freight in this master thesis is as follows: A business model in which a company ‘matches shippers directly with carriers, typically through application-based algorithms that optimize routing and cost for both parties’ [11].

Uber for Freight could be a cheaper replacement of the transportation spot market (used for unfulfilled and urgent demands [12]). If a shipper does not have a long term contract for a certain shipment, shippers must actively seek carrier capacity on the spot market. In a lot of cases shippers hire third party brokers who take responsibility for seeking carrier capacity [12]. These brokers can command fees as high as forty percent of each transaction [13]. UFF companies will minimize the costs for the broker by using an application-based algorithm and with that reducing labour costs.

Just as is the case in the last-mile freight transport, crowdshipping could be a solution in an ideal world. This would again only be lucrative if a sufficient amount of people are participating in the concept and no detours have to be made. While it would probably be harder to find a crowdshipper that has the same starting and ending point as a to be transported package for long distances, other requirements for finding a crowdshipper seem however lower, as delivery time and managing the shipping process become less important [9].

Although the amount of literature about instant long distance freight transport is limited, a lot of companies that made a business out of the instant long distance freight transport were found. These will be explained in Chapter 3.

2.3 Summary

The amount of instant last-mile deliveries is growing, but three challenges still exist in making the instant last-mile delivery successful: Instant last-mile deliveries may not be profitable, the growing amount of last-mile deliveries might lead to more traffic jams, and the growing amount of last-mile deliveries may lead to negative effects for the environment. Two suggestions to overcome these challenges have been proposed: 1) making use of small electric vehicles or bikes for the delivery, and 2) letting the crowd do the shipping. The first solutions seems accepted, the second is debatable.

On the other hand instant long distance freight transport - or Uber for Freight - is relatively new, but the importance of it is rising. By using an application-based algorithm the labour costs of a broker can be reduced and hence shippers using instant freight transport may have to spend less money on transportation.

\(^1\)Third-party logistics
3 State-of-the-practice

In this chapter the businesses created out of opportunities in the field of instant freight transport will be discussed. As in Chapter 2 a distinction between last-mile delivery and long distance delivery has been made.

In the last section of this chapter a table will be provided which shows an overview of the companies and their used methodologies.

3.1 Instant last-mile freight transport

Companies focusing on instant last-mile freight transport will be discussed here. As already noted by [4] and [5] crowdshipping initiatives are rare, but some initiatives have been started, these will also be considered. The companies that will be discussed here are:

1. MyWays
2. Bringr & Parcify
3. Deliveroo
4. Postmates
5. UberEats
6. Picnic

3.1.1 MyWays

In 2013 DHL started the crowdshipping initiative MyWays as a trial in Sweden. MyWays was a platform on which individuals could both ask for the delivering of a package (recipients) and indicate that they are interested in delivering packages (carriers). After ordering a product online, the recipient could specify a time and location for the delivery in Stockholm and determine the fee for delivering the package. A user of the MyWays platform registered as carrier could then via a specifically developed mobile app choose to deliver the package for the already determined fee [14], [15]. Mostly students handled the deliveries and the reactions have been positive according to DHL [14]. The trial only ran in 2013, it is not known why DHL did not continue MyWays. It is also not known what the revenue of MyWays was.

According to a promoting video of DHL [16], MyWays could show the location of the nearest to be delivered packages and relate that to the location of a carrier if the carrier opened the MyWays application. The application provided also a real-time routing between the location of the package and its end destination [17]. For its services, MyWays took ten percent of the by the recipient specified fee as remuneration [17]. Furthermore we were not able to determine if MyWays collected user data to improve their service. An overview of the methodologies used can be found in Table 2.

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Matching system</th>
<th>Pricing strategy</th>
<th>Real-time routing</th>
<th>Collecting user data</th>
<th>Means of transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private individuals</td>
<td>Carriers react to requests</td>
<td>Recipient provides price</td>
<td>Probably</td>
<td>Not known</td>
<td>Free to choose by carrier</td>
</tr>
</tbody>
</table>

3.1.2 Bringr & Parcify

The company Bringr is created in Belgium by Bpost in 2016 [18], while a year before, also in Belgium, Parcify was founded [19]. In the end of 2017 Bpost bought Parcify and merged Bringr and Parcify under the name Parcify [20] [21]. Currently Parcify is available in big parts of Belgium and in 2017 Parcify experimented even with the delivering of packages by kayaks and paddle boards in Amsterdam [22]. We were not able to find and figures about the revenue of Parcify and Bringr.
Bringer was originated as a crowdshipping platform that brought together shippers and private individuals as carriers. Interesting is that Bringer determined the fee based on the delivery distance and weight of the package [23]. A part of the fee is for Bringer, the rest goes to the carrier. The same is true for the current Parcify: Private individuals can register as carriers to deliver with a bicycle, scooter or car. Parcify matches a to-be-delivered package to carriers based on availability, position and means of transportation of the carrier. Then, based on the same terms as Bringer did, Parcify determines the fee for the delivery of a package. Furthermore Parcify provides real-time routing for the carriers and enables real-time communication between shipper, carrier and recipient via a mobile application. Finally Parcify collects user data, but it is not clear what Parcify does with that information. [24]  

An overview of the methodologies used can be found in Table 3.

### Table 3: Overview of the methodologies used by Bringer and Parcify

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Matching system</th>
<th>Pricing strategy</th>
<th>Real-time routing</th>
<th>Collecting user data</th>
<th>Means of transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private individuals</td>
<td>Based on availability, position, and means of transport</td>
<td>Based on distance and weight of the package</td>
<td>Yes</td>
<td>Yes</td>
<td>Bicycle, scooter, or car</td>
</tr>
</tbody>
</table>

#### 3.1.3 Deliveroo

In 2013 Deliveroo was founded in London with the mission to bring the best local restaurants direct to people’s doors [25]. Deliveroo is a platform on which recipients can order food from diverse restaurants. The food will be delivered by freelancers affiliated with Deliveroo [26] [27]. When a recipient orders food, the matching algorithm of Deliveroo determines which carriers will be invited to accept the delivery order based on the location of restaurants, carriers and recipients [25]. With the help of machine learning and based on user data, Deliveroo predicts the time it will take to prepare an order and with that Deliveroo optimizes their delivery time and efficiency [25]. To ensure a fast delivery, Deliveroo provides real-time routing for the carrier, which can also be seen by the recipient. In that way the recipient can track the carrier. The recipient pays Deliveroo for the meal as well as for the delivery, thereafter Deliveroo pays the restaurant. In 2017 the revenue of Deliveroo was $ 361 million [28].

An overview of the methodologies used by Deliveroo can be found in Table 4.

### Table 4: Overview of the methodologies used by Deliveroo

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Matching system</th>
<th>Pricing strategy</th>
<th>Real-time routing</th>
<th>Collecting user data</th>
<th>Means of transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freelancers</td>
<td>Based on availability and position of restaurant, carrier and recipient</td>
<td>Restaurant’s price plus delivery fee</td>
<td>Yes</td>
<td>Yes</td>
<td>Bicycle or scooter</td>
</tr>
</tbody>
</table>

#### 3.1.4 Postmates

In 2011 Postmates was founded, a company that focuses on urban logistics. In 2017 Postmates had a revenue of around $ 250 million [29] and currently Postmates delivers in 550 cities in the US, covering 60 percent of the US [30]. Postmates provides a platform comparable with the platform of Deliveroo, with the main difference that Deliveroo focuses on the delivery of food and Postmates does not have such a focus. Just as Deliveroo, Postmates works with freelancers [31], but where Deliveroo has a preference for the bicycle, Postmates carriers can deliver with car, scooter, bicycle, or even by foot. The pricing strategy of Postmates is based
on distance, the kind of merchant from which the article is ordered (if a recipient buys from a partner merchant, the price is lower), service fees and the time at which the package needs to be delivered (at peek times, rates go up) [32].

The matching algorithm of Postmates assigns orders to its carriers based on the estimated preparation time, means of transportation of the carrier and the location of the pick up points, the carriers and the recipients [33]. The mobile application of Postmates provides a real-time routing option for the carriers which shows the fastest route. The recipient can also track the carrier on the mobile application, which also shows what the expected time of delivery is [32]. Finally Postmates makes use of their customer data, but it is not entirely clear what Postmates does exactly with the user data [34].

An overview of the methodologies used by Postmates can be found in Table 5.

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Matching system</th>
<th>Pricing strategy</th>
<th>Real-time routing</th>
<th>Collecting user data</th>
<th>Means of transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freelancers</td>
<td>Based on prep. time, means of transport, availability, and position of restaurant, carrier, and recipient</td>
<td>Merchant’s price plus delivery fees based on multiple variables</td>
<td>Yes</td>
<td>Yes</td>
<td>By foot, bicycle, scooter, or car</td>
</tr>
</tbody>
</table>

### 3.1.5 UberEats

In August 2014 Uber started with a pilot to delivering food in Los Angeles [35]. This was a success and subsequently Uber launched Uber Eats in April 2015 [36]. While no figures about the revenue of Uber Eats can be found, it can be seen that Uber Eats is now active in all continents. Uber Eats delivers in 208 cities in North America, 11 cities in South America, 106 cities in Europe, 24 cities in Australia and New Zealand, 22 cities in Asia and 4 cities in Africa [37]. The platform provided by Uber Eats resembles the platform of Deliveroo. Recipients can order food from different restaurants via the platform. Freelance carriers deliver the food from the restaurant to the recipient with their own means of transportation (car, scooter, bike or even by foot) [38] [39]. Uber Eats asks a delivery fee, but does not reveal on what factors it is based. A part of that fee goes to Uber Eats and the rest to the freelance carrier. Uber Eats also charges the restaurants, according to [39] this is about 30 percent of the revenue that the restaurant earns via Uber Eats, [38] claims that this is 35 percent.

Uber Eats does not reveal anything about their matching system, but it is clear that Uber Eats provides a routing system. The recipient can see the status of the order and from upon the moment the carrier receives the package, the recipient can track the carrier on the map in the Uber Eats application [40]. Using machine learning models fed with GPS data of its freelance carriers combined with motion sensor data from their phones, Uber Eats improves its models to accurately calculate delivery times for each specific restaurant [41]. Uber Eats uses this for their matching system, but its exact methodology for matching carriers for certain orders is not known. It is also not known if Uber Eats also uses the data of its recipients.

An overview of the methodologies used by Uber Eats can be found in Table 6.

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Matching system</th>
<th>Pricing strategy</th>
<th>Real-time routing</th>
<th>Collecting user data</th>
<th>Means of transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freelancers</td>
<td>It uses the position of restaurant, carrier and recipient</td>
<td>Restaurant’s price plus delivery fees based on multiple variables</td>
<td>Yes</td>
<td>Yes</td>
<td>By foot, bicycle, scooter, or car</td>
</tr>
</tbody>
</table>
3. STATE-OF-THE-PRACTICE

3.1.6 Picnic

Online supermarket Picnic was founded in 2015 and it is expected that their revenue will grow to €200 million in 2018 [42]. Picnic is available in approximately 60 cities in The Netherlands and a few cities in Germany [43]. Picnic offers a mobile application for their customers (recipients) where they can order groceries. If recipients order before 22:00, the groceries can be delivered the next day by employees of Picnic in small electric vehicles [44]. Although this does not correspond to our definition of instant freight transport, Picnic is using a fast and interesting delivery model and therefore Picnic will still be discussed here. Recipients do not have to pay for delivery and Picnic claims that the prices of all their products are lower than the prices for the same products in other supermarkets that offer nationwide deliveries [45]. Recipients do have to order for at least 25 euros.

To reduce the cost of delivery, Picnic optimizes its delivery rounds. Every day only a few delivery windows of an hour are possible to choose for the recipients per district. In this way Picnic’s carriers do not have to go back and forth in a district, but they can make an optimized delivery round [46]. In the morning of delivery, the recipient will receive a message with the delivery time within the chosen hour accurate to ten minutes. As soon as the carrier is on the road, the recipient can track the carrier [44]. Finally the application of Picnic uses user data to show personalized advertisements and to analyze their sales [47].

An overview of the methodologies used by Picnic can be found in Table 7.

Table 7: Overview of the methodologies used by Picnic

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Matching system</th>
<th>Pricing strategy</th>
<th>Real-time routing</th>
<th>Collecting user data</th>
<th>Means of transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>Only a few delivery windows per day per district</td>
<td>No delivery fees</td>
<td>Yes</td>
<td>Yes</td>
<td>Small electric vehicle</td>
</tr>
</tbody>
</table>

3.2 Instant long distance freight transport

A lot of companies focusing on the instant delivery of larger distances and in most cases bigger shipments have arisen. The companies that will be discussed here are:

1. Salooodo!
2. Sjipit
3. Uber Freight
4. Ontruck
5. Freightos
6. Shipwell
7. Quicargo

3.2.1 Salooodo!

In September 2016 DHL started a test with a digital freight platform called CILLOX that functioned as a digital marketplace that connects shippers and carriers on demand [48]. In January 2017 the test phase ended and DHL changed the name of the platform into Salooodo! [49]. Figures about the yearly revenue on Salooodo! cannot be found, but Salooodo! is now active in more than 25 countries and has over 6000 associated carriers. Shippers can place a transport request on the platform provided with details such as weight, size, quantity and place of pickup and delivery. Over a time period of three hours once the transport request has been posted, carriers can make offers from which the shipper can choose. It is assumed that Salooodo! adds their margin to the price and then shows it to the shipper. It is also possible for carriers to set automatic offers. Shippers can then instantly book the offer according to the criteria specified by the carrier [50].
Saloodo! will be the contract party for both the carriers and shippers and is thus also responsible for the payments. Furthermore Saloodo! offers a driver application that allows carriers to assign transport jobs to drivers, plan truck routes and get real-time status updates. The driver can confirm pick-up and drop-off times as well as scan and upload the proof of delivery documentation via the app. Saloodo! suggests also transport requests that match the trade lanes of the driver if he sets his current routes in the app. The app also provides information about available parking spaces on the routes. [50]

An overview of the methodologies used by Saloodo! can be found in Table 8.

### Table 8: Overview of the methodologies used by Saloodo!

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Matching system</th>
<th>Pricing strategy</th>
<th>Real-time routing</th>
<th>Collecting user data</th>
<th>Means of transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport companies</td>
<td>Carriers react to requests</td>
<td>It is assumed that Saloodo! adds their margin to the offer of the carriers</td>
<td>Not indicated</td>
<td>Not indicated</td>
<td>Truck</td>
</tr>
</tbody>
</table>

#### 3.2.2 Sjipit

The in 2016 originated Dutch start-up Sjipit is a marketplace for transporting freight, mostly used by private individuals that cannot transport big objects themselves. The carriers have to be registered at the Chamber of Commerce and have to make agreements with the shippers without intervention of Sjipit. Shippers do not have to pay for Sjipit, carriers have to pay a monthly fee if they want to carry out more than two shipments per month. Furthermore Sjipit does not explicitly mention that they use user data for other means than to connect shippers to carriers [51].

In conclusion, Sjipit provides only a platform that connects shippers and carriers, but does not offer other features. An overview of the methodologies used by Sjipit can be found in Table 9.

### Table 9: Overview of the methodologies used by Sjipit

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Matching system</th>
<th>Pricing strategy</th>
<th>Real-time routing</th>
<th>Collecting user data</th>
<th>Means of transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everyone who is registered at Chamber of Commerce</td>
<td>Carriers react to requests</td>
<td>Carriers pay a monthly fee when often used</td>
<td>No</td>
<td>Not indicated</td>
<td>Free to choose by carrier, mostly used: car</td>
</tr>
</tbody>
</table>

#### 3.2.3 Uber Freight

Uber launched Uber Freight in May, 2017 to connect trucking firms with companies that need to transport freight [52]. Uber does not reveal the revenue of Uber Freight, but currently Uber Freight has such a robust network of carriers that the application can be used everywhere in the US [53]. Shippers can place transport requests on the Uber Freight platform whereafter Uber Freight instantly provides the price which is based on conditions such as driver availability, distance, location, time of year and cargo type, among other factors [52]. Uber Freight also determines the fee for the carrier, who can choose to react to a request. At the moment Uber Freight is only available for carriers that have a 53’ dry van or reefer [54].

Besides pricing, The Uber Freight application also provides a recommended route for the carrier, suggestions for loads based on the history of the carrier, document management for both the carrier and shipper, and a real-time location of the freight for the shipper [53] [54] [55].
3. STATE-OF-THE-PRACTICE

An overview of the methodologies used by Uber Freight can be found in Table 10.

Table 10: Overview of the methodologies used by Uber Freight

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Matching system</th>
<th>Pricing strategy</th>
<th>Real-time routing</th>
<th>Collecting user data</th>
<th>Means of transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport companies</td>
<td>Carriers react to requests</td>
<td>Uber Freight determines the price for the shipper and fee for the carrier based on diverse conditions</td>
<td>Yes</td>
<td>Yes</td>
<td>53' truck</td>
</tr>
</tbody>
</table>

3.2.4 Ontruck

The Spanish-based company Ontruck is a logistics platform that provides instant price quotes to shippers for delivering ambient palletized goods in the preferred time interval [56]. Ontruck was founded in 2016 in Madrid and expanded to the UK in September 2017 [57]. Ontruck did not release figures about its revenue, but in March 2018 Ontruck handled more than 5,000 consignments a month and had in total 1,000 UK shipping consignments [57]. The way of operating of Ontruck is similar to Uber Freight’s way: Shippers can place a request consisting of a specification of the freight and a preferred time interval and will immediately get a price quote. Ontruck determines the fee for carriers for the specific request and will notify carriers via the mobile application. Next to single orders, shippers can also place recurring orders and tenders [58]. It is not clear how Ontruck determines to which carriers they send a notification when a shipper places a request.

The shippers using Ontruck can trace their shipment throughout the journey, due to the notifications that carriers will send at every contact point. For the carriers Ontruck provides recommended routes to helping optimize their time on the road. Furthermore Ontruck claims being able to offer predictive assistance that anticipates issues or incidents thanks to their data technology [58].

An overview of the methodologies used by Ontruck can be found in Table 11.

Table 11: Overview of the methodologies used by Ontruck

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Matching system</th>
<th>Pricing strategy</th>
<th>Real-time routing</th>
<th>Collecting user data</th>
<th>Means of transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport companies</td>
<td>Carriers react to requests</td>
<td>Ontruck determines the price for the shipper and fee for the carrier based on diverse conditions</td>
<td>Yes</td>
<td>Yes</td>
<td>Truck</td>
</tr>
</tbody>
</table>

3.2.5 Freightos

In 2012 Freightos was founded in Israel as a company that provides pricing data for users of freight forwarding services and Freightos launched its platform in 2016 [59] [60]. The revenue of Freightos is unknown, but so far Freightos has raised $ 94.4 million of funding [60]. Freightos allows shippers to instantly compare air, ocean and trucking freight quotes from over 75 providers. If the shipper has booked a carrier, he can follow his (intermodal) shipment due to the notifications that the carrier sends [61].

Once the carrier has shared his pricing strategy with Freightos, the carrier can determine his quotes using the system of Freightos, which then instantly gives a recommended quote [62]. With this information, Freightos also estimates freight rates instantly.

An overview of the methodologies used by Freightos can be found in Table 12.
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#### 3.2.6 Shipwell

The shipping platform Shipwell was founded in Austin, Texas in 2016 [63]. No revenue figures are known, but the total funding is now $12.1 million [60]. Shipwell offers a platform where shippers can place transport requests and their carriers relations can place quotes. Whereas other shipping platforms cut out the brokers, Shipwell offers their platform not only to carriers and shippers, but also to brokers. Shipwell does not focus on connecting new carriers to shippers, but focuses on making the communication between carriers, shippers, and brokers as easy as could be [63].

Shippers that use Shipwell can trace their freight using the real-time tracking updates. Besides shippers, brokers, and carriers can exchange messages via the platform to keep everyone informed. Furthermore all the necessary documents including proofs of delivery can be uploaded on the platform [63].

An overview of the methodologies used by Shipwell can be found in Table 13.

#### 3.2.7 Quicargo

In 2017 the Dutch start-up Quicargo was launched. Quicargo is an online platform that connects (partially) empty trucks to shippers of ambient palletized goods in The Netherlands, Belgium and Germany [64]. With a total funding of €1.3 million, it is expected that the revenue will be €2 million in 2018 [65]. Special about Quicargo is that they embed their technology into the existing systems of their clients, instead of offering an external platform [64].

Carriers can indicate if they have any space left in their truck(s) for certain lanes and if so, what the price per volume per kilometer will be for the determined lanes. When a shipper wants to ship freight, he will get instant quotes from Quicargo, that matches shippers and carriers based on the planned trips and availability of space in the trucks of carriers [66]. Quicargo can provide a mobile application on which shippers can track their freight during the transport. After the transport, the proofs of delivery will be send immediately to all parties. Quicargo will be the contract party for both the carriers and shippers and is thus also responsible for the payments. Furthermore the total price is based on the by the carrier desired price per volume per kilometer, the volume and distance, and a fee for Quicargo [64] [66].

An overview of the methodologies used by Quicargo can be found in Table 14.
Table 14: Overview of the methodologies used by Quicargo

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Matching system</th>
<th>Pricing strategy</th>
<th>Real-time routing</th>
<th>Collecting user data</th>
<th>Means of transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport companies</td>
<td>Based on planned trips and available space of carrier</td>
<td>According to pricing strategy of carrier</td>
<td>Yes</td>
<td>Not indicated</td>
<td>Truck</td>
</tr>
</tbody>
</table>

3.3 Summary

An overview of all the characteristics of the different companies is shown in Table 15. In the table also the differences between the last-mile and long distance companies become clear. While the last-mile companies use different types of carriers (crowdshippers, freelancers or employees), almost all the long distance companies hire an external company as carrier. Besides it can be seen that the matching algorithms of the last-mile companies are on average advanced, while the long distance companies use simple matching algorithms. Long distance companies do however make use of advanced mobile applications to enable communication between carrier and shipper, to upload proof of delivery, and to track the location of the freight.

Furthermore, where the last-mile companies mostly determine the prices and fees, four of the six long distance companies are not involved in the pricing strategy of the transport. Besides, all applications of the last-mile companies are able to provide real-time routing, and only from three long distance companies it is known for sure that this is possible. Finally the means of transportation used by the last-mile companies are more diverse than those used by the long distance companies as could be expected.

The above mentioned observations give the impression that the companies focusing on the last-mile are further in their development than the companies focused on the long distances. In Chapter 2 it became clear that the last-mile is the most expensive leg of the freight transport chain, so it would make sense that last-mile companies were launched earlier than long distance companies and thus will be further in their development.

Table 15: Summary of the characteristics of the reviewed companies

<table>
<thead>
<tr>
<th>Company</th>
<th>Carrier</th>
<th>Matching</th>
<th>Pricing</th>
<th>Real-time routing</th>
<th>Means of transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>MyWays</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X X X X X</td>
</tr>
<tr>
<td>Parcify</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X X X</td>
</tr>
<tr>
<td>Deliveroo</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Postmates</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X X X X</td>
</tr>
<tr>
<td>UberEats</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X X X</td>
</tr>
<tr>
<td>Picnic</td>
<td>X</td>
<td>X</td>
<td>(X)</td>
<td>X</td>
<td>(X)</td>
</tr>
<tr>
<td>Saloodo!</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>(X)</td>
<td>X</td>
</tr>
<tr>
<td>Sjipit</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X X X X X X</td>
</tr>
<tr>
<td>Uber Freight</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Ontruck</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Freightos</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X X X</td>
</tr>
<tr>
<td>Shipwell</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Quicargo</td>
<td>X</td>
<td>X</td>
<td>X²</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

²While Quicargo is involved in the pricing, the carrier determines the biggest part of the price
4 Future outlook

The current situation of instant freight transport is described in the previous chapters. Based on that information, possible future scenarios will be described in this chapter. The main goal of this chapter is to inspire and therefore some of the scenarios may not be possible (yet). Again a distinction between the last-mile and long distance freight transport is made.

4.1 Instant last-mile freight transport

While the instant last-mile freight transport is quite developed at the moment, most instant deliveries in the last-mile concern food transport. It is therefore expected that non-food industries such as e-commerce will offer more possibilities for instant deliveries in the nearby future. We expect that crowdshipping will not play a part, but that more companies such as Postmates, Deliveroo and UberEats will arise, but then focused on non-food.

Currently it seems that personnel costs are a big part of the total costs of instant transport companies. If the last-mile transport could be done with autonomous (electric) vehicles, this would have major impact on the direct costs per package and this could be a motivation for e-commerce businesses to promote instant deliveries.

Another interesting possibility in the future could be that a recipient could indicate the time slots when freight (e.g. packages) cannot be delivered, for example because nobody is home. Currently this is sensitive information, but if that information is not processed by human beings and protected by blockchain, it is not harmful anymore. If carriers have multiple delivery addresses, the sequence of delivery can then be optimized.

4.2 Instant long distance freight transport

It is expected that the instant long distance freight transport will lag behind the instant last-mile freight transport, this is also supported by [67]. However in the nearby future it could be possible that long term contracts between carriers and shippers will no longer exist and all transport will be arranged via online platforms such as Uber Freight and Ontruck. If all carriers and shippers are connected, this will significantly reduce transport costs due to the reduction of empty rides.

When processes in big distribution centers become faster due to for instance automation, it will be possible for, among others, e-commerce businesses to have a small inventory in the distribution hubs just outside the last-mile as long as they can rely on instant transport from the bigger distribution centers. It is therefore expected that when these processes become faster, the amount of instant long distance freight deliveries will grow. This will also apply to intermodal transport. For instance if a ship can be automatically loaded from a distribution center next to the port in a very short time period, it will be unnecessary to have a large inventory in the distribution centers near the last-mile because of the possibility of fast transport. Of course the amount of freight must be large enough to fill the ships or trucks.

At the moment it seems that companies are afraid to share data for competition reasons. However with blockchain technology that would no longer be a problem, since data could be anonymous. Another observation is that currently no companies offer instant freight transport of hazardous materials. The reason here could be that it is too complicated to arrange all the insurances and to check whether the carrier complies with all regulations. With blockchain technology, all the necessary paperwork could be written in an underlying file, without risking that 1) the paperwork is false, because it is validated by the blockchain and 2) competitors could make use of the information because it is secured by the blockchain [68].

Besides, if contractual agreements would be easier to make using blockchain, making arrangements for intermodal transport using digital platforms would also become easier. It is expected that in the near future platforms such as Freightos would look more like platforms such as Uber Freight and Ontruck, which determine the total price and fee and are more advanced. For shippers it is then easy to ship their freight, even if it requires intermodal
transport and consists of hazardous materials. Carriers will have to upload all their information regarding insurances, quality marks, and authorizations. However with use of blockchain technology that information is safe. Accepting loads will only be a matter of mouse clicks for the carriers and if multiple carriers are needed, the software could automatically determine the sub-destinations so carriers can accept the loads for a certain part of the route.
5 Conclusions

It is clear that the total amount of instant deliveries will rise in the upcoming years, mostly due to the growth of e-commerce. This will have influence on the freight transport sector and will offer opportunities to it. The conclusions that can be drawn will be discussed below in the same manner as the rest of this paper, using a distinction between last-mile and long distance freight transport.

5.1 Instant last-mile freight transport

Concerning the instant last-mile freight transport, three issues arise: Instant last-mile deliveries may not be profitable, the growing amount of last-mile deliveries might lead to more traffic jams, and the growing amount of last-mile deliveries may lead to negative effects for the environment.

The literature suggests two options for the problems: 1) making use of small electric vehicles or bikes for the delivery, or 2) letting the crowd do the shipping. While the first solution seems accepted, the second is debatable. In an idealized scenario (certain formats of) crowdshipping has advantages compared to traditional parcel deliveries. However in the real world this is not proved and it is demonstrated that a crowdshipping platform in Belgium led to higher costs and a much higher environmental impact compared to traditional parcel deliveries.

However two crowdshipping start-ups were discussed: MyWays and Parcify, whereof the first one does not exist anymore. The fact that Parcify still exists means that crowdshipping could be profitable.

Out of the other discussed start-ups focused on instant last-mile transportation Deliveroo and UberEats only deliver food and Postmates and Picnic deliver among other things also food. The business models of Deliveroo, Postmates and UberEats resemble each other. All three use advanced matching systems, pricing strategies of their suppliers with a fee added, and real-time routing. Besides, all three companies hire freelancers as carriers and make use of the collected user data.

Considering that the start-ups focusing on food have working and similar business models, it would not be unexpected if the coming years big start-ups that focus on non-food instant last-mile transport arise with likewise business models.

5.2 Instant long distance freight transport

The importance of instant long distance delivery is growing, but not much literature on this subject was found. Nonetheless it is clear that when a digital platform is used for the matching procedure between shippers and carriers, cost can be spared on brokers. Thus instant long distance freight transport services, according to our definition consisting of a digital platform, can be a cheaper replacement of the transportation spot market.

The analysis of the discussed start-ups supports this statement as all the start-ups still exist and seem to be growing. It makes sense that all but one start-up choose transport companies as carriers, due to the long distances. In contrast to the last-mile start-ups, the long distance start-ups mostly give an overview of requests of shippers and let the carriers react on the requests. It could be that the start-ups use matching systems that determine the order of requests that can be seen by particular carriers, but no evidence is found. The start-ups use advanced mobile applications that can be used to contact the other party (shipper or carrier), to upload proof of delivery, and to track the location of the freight. A part of the analyzed start-ups uses the pricing strategy of the carrier, while another part of the start-ups determines the price for the shipper and fee for the carrier.

Most start-ups only offer road transport, but Freightos also offers intermodal transport. It is not surprising that instant long distance freight transport services first focus on road transport. An intermodal transport relies on multiple carriers and bringing them together is more difficult and implies higher risks than road transport. Given that all the platforms were only launched in 2016 and that the platforms on road transport seem to work, it could be a
matter of time before other start-ups next to Freightos will focus on intermodal instant freight transport.

Both instant last-mile and instant long distance freight transport are getting more important. Start-ups arise and transport solutions are being sought in advanced digital platforms that connect shippers and carriers. Environmental issues are taken into account in the last-mile, and by using trucks more efficiently due to the digital platforms also on the long distance emissions can be reduced.
References


REFERENCES


