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**D4.2 Assessment to connect Main
Hub with Avantida Container Re-
Use system**

**D4.3 Assessment to become
empty container depot**

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Author of the report

Name	Joris Gielen
Position	Head of Supply Chain
Entity	Lineas
E-mail	Joris.Gielen@lineas.net



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Table of abbreviations

ADR	Accord européen relatif au transport international des marchandises Dangereuses par Route
AEO	Authorised
CEFIC	European Chemical Industry Council
CO2	Carbon dioxide
CSR	Corporate Social Responsibility
D4.4	Deliverable 4.4 (LessThanWagonLoad)
DPW	Dubai Ports World
FT	Feet
IMDG	International Maritime Dangerous Goods
ISO	International Organisation for Standardization
ISPS	International Ship and Port Facility Security Code
IT	Information Technology
LORO	Left bank – Right Bank service (Dutch)
MPET	MSC PSA European Terminal
MSC	Mediterranean Shipping Company
PoA	Port of Antwerp
RID	Règlement concernant le transport international ferroviaire des marchandises dangereuses
RTG	Rubber Tyred Gantry Crane
RTO	Ruimte Tijdelijk Opslag 'Space temporary storage
SQAS	Safety & Quality Assessment for Sustainability
Sqm	Square meter
TEU	Twenty foot equivalent
WCO	World Customs Organisation
WP04	Work Package 4

Introduction

The deliverable is prepared out of the general deliverable about the development of an empty depot near Main Hub. It seemed fitting to tackle those two problems together. Nevertheless this deliverable is public and the general report is not.

As containers are spotted on board different means of transport mode (train, ship, lorry, barge, etc.) or in any port or inland terminal, they may be either full or empty. With the global container trade reached 130.9 million TEU in 2008, as many as 2.5 million TEU are sitting somewhere empty in different container terminals worldwide and 20.5% of the world total port turnover refers to empty container handling¹.

The Port of Antwerp is a major international port, the gateway to Europe, ranking 11th in the 20 largest ports in the world in terms of weight and 14th in terms of containers² With more than 200 million tons of maritime freight volume in 2015, it is the second largest port in Europe. Different types of maritime freight are loaded or unloaded in Antwerp, mostly containers and liquid bulk, but also important amounts of conventional bulk, vehicles and dry bulk.

The Port of Antwerp has numerous strategic partnerships with hinterland hubs and terminals to enhance the port competitiveness. These connections are often operated multimodal and generate container flows back and forth by rail, water & road between the PoA and the hinterland. A large part of these container flows is repositioning. Container repositioning results out of the need for harmonization between the point of empty container accumulation and the point of demand, and waiting time for the availability of the first next transport of cargo.

MARKET	EXPORT	IMPORT	IMBALANCE
Europe - North America	2,824,459	2,496,601	327,858
Europe - Asia	5,458,298	11,493,357	- 6,035,059
Europe - Sub Saharan Africa	1,093,687	591,975	501,712
Europe - ISC/Middle East	2,483,922	1,527,035	956,887

¹ Empty container logistics, University of Rijeka, Faculty of Maritime studies, May 22, 2012.

² VERBERCKMOES, S., *Antwerpen schuift plaats op top 100 containerhavens*, Flows, 28/03/2018. (<http://www.flows.be/nl/shipping/antwerpen-schuift-plaats-op-top-100-containerhavens>)

Intra Europe	1,026,767	736,689	290,078
Europe - Centr. & S. America	940,262	1,497,517	- 557,255
Europe - Australia & Oceania	374,901	181,527	193,374
Total Europe - All directions	18,522,701	14,202,295	4,320,406

Source : European Liner Affaires Association, <http://www.elaa>

In Rotterdam, the same situation enrolls itself, 25% of all the transported containers in the port area are empty. (Port of Rotterdam, 2013) It seems obvious that optimizing these flows can induce large efficiency gains due to the huge volume involved.

So there must be a smarter, greener and more efficient way to further reduce the mileages of transported empty containers. Within WP04 Multi-modal freight village with cross docking warehouse for pallets, the consortium researches if such an empty depot could be organized next to the Antwerp Main hub and, in doing so, attract more truck traffic towards rail.

First, we want to give a brief overview of the different activities that can be developed at the Main Hub. Next an overview is given of the possibilities to build an empty depot. Third, we want to describe how the depot will be system driven managed. Finally, a conclusion is formalized.

1. Avantida

The Avantida platform is an web-based IT-tool to make the empty container logistics more efficient. Together with the ocean carriers this platform provides a number of possibilities to be more effective to the community of transport companies and logistics service providers. The goal is to avoid unnecessary road congestion, reduce CO2 emissions, reduce paper-flows, etc. and create a more sustainable planet.

The platform is based on common cloud technology and one of the most advanced to transform traditional logistics processes into financial opportunities for all stakeholders. Currently about 3.000 transport companies and logistics service providers are active on the Avantida platform.

Avantida creates value for its customers through the following actions:

- a. Request changes in drop-off and pick-up locations that are useful for you.
- b. Check whether your empty container can be re-used for your export customer.
- c. Cross-border empty equipment opportunities really exist.

In general, the rule of the ocean carriers is that the pick-up and drop-off location of the used container are the same. Nevertheless this is not the most efficient way in most cases. The application, called Depot X, provides all the possible pick-up and drop-off locations so the transport or logistics company can choose the location which is the most convenient in the loop of the truck. Of course Avantida cannot assure that the ocean carrier will accept this. Changing the location of pick-up and/or drop-off of empty container has the following clear advantages for the logistics or transport company:

1. Optimise the planning of your trucks
2. Avoid congested areas
3. Avoid disputes with the ocean carriers
4. All ocean lines on one platform

Another efficiency gain for the customer is reUse. Imagine that rather than bringing back an empty container to the port or assigned depot, you could simply request permission to bring it straight to your export customer to get loaded. It is clear that the benefits are even greater if it is a cross-border case.

1. Save time and money: reducing the amount of empty runs
2. You will avoid waiting times at depots and terminals
3. Optimise the planning of your trucks

4. Avoid congested areas

Of course the services provided by Avantida are not free. Before the company can request changes, re-use or cross-border opportunities, the customer needs to upload currency into the portal. The money is transformed into credits which you can use freely for Avantida services. The currency is uploaded via online payment methods or regular wire transfer and although Avantida will issue an invoice for every amount you deposit on your account, they advise to deposit at least €100.

Once the payment is confirmed and received by Avantida the credit account will be credited (immediate for online payments) and you can start entering requests. The cost for each transaction can be different per type of transaction and per country. For reUse and depotX, the ocean carriers are defining the business rules and the pricing. For FlexGate these business rules and pricing are defined by the terminal operators and depots. The balance is automatically adjusted as soon as the transaction is approved and of course no charges are applied for cancelled or declined requests.

There are no restrictions to join the portal. Everyone can join the portal and register and start using the services of Avantida. The main issue in this story is the acceptance of the ocean carriers. Before transport companies can drop their container at you premises, the ocean carrier have to accept you as empty depot and include you in their empty depot strategy and system.

2. Permits and licenses

We want to offer our customers a safe and secure terminal service. Not only in terms of accessibility, but also in terms of safe storage. The following permits and licenses guarantee a safe and secure handling and storage of your containers :

- AEO
- SEVESO
- ISO9001
- SQAS
- Authorisation of the port captain
- (RTO) Ruimte Tijdelijke Opslag
- (ISPS) Port Security (Extended gate)

AEO

AEO (Authorised Economic Operator) is a certificate issued by Customs to international companies. It is based on a partnership Customs – enterprise set in order by the World Customs Organisation. Companies with an AEO-certificate are economical operators who answer to the strict criteria given in the custom legislation issued by the WCO.

The certificate does not only apply in Belgium but the whole European Union and in third countries with whom the European Union has an agreement f.e. Switzerland, Andorra, Japan, Norway, China.

Depending on the nature of the activities and place within the international supply chain you can choose between two types of AEO.

- AEO Customs or AEO-C

- AEO Security or AEO-S
 - A combination of the two
- ⇒ For a terminal operator who also operates trains itself both seem the best option.

Seveso

In Europe, the catastrophic accident in the Italian town of Seveso in 1976 prompted the adoption of legislation on the prevention and control of such accidents. The so-called Seveso-Directive (Directive 82/501/EEC) was later amended in view of the lessons learned from later accidents such as Bhopal, Toulouse or Enschede resulting into Seveso-II (Directive 96/82/EC). In 2012 Seveso-III (Directive 2012/18/EU) was adopted taking into account, amongst others, the changes in the Union legislation on the classification of chemicals and increased rights for citizens to access information and justice. (European Commission; 2017)

In order to organize an empty depot, normally the depot does not have to accord to the Seveso directives. Only if the empty depot also plans to provide storage services for full containers with dangerous goods, it is possible that Seveso regulation applies.

ISO 9001

ISO 9001:2015 sets out the criteria for a quality management system and is the only standard in the family that can be certified to (although this is not a requirement). It can be used by any organization, large or small, regardless of its field of activity. In fact, there are over one million companies and organizations in over 170 countries certified to ISO 9001.

This standard is based on a number of quality management principles including a strong customer focus, the motivation and implication of top management, the process approach and continual improvement. These principles are explained in more detail in the pdf Quality Management Principles. Using ISO 9001:2015 helps ensure that customers get consistent, good quality products and services, which in turn brings many business benefits. (International Organisation for Standardisation, 2015)

SQAS

Safety and Quality Assessment for Sustainability (SQAS) is a system of uniform third party assessments to evaluate the performance of Logistics Service Providers and Chemical Distributors. SQAS assessments cover quality, safety, security, environment and CSR (Corporate Social Responsibility). SQAS is not a certification system; it is an assessment system that provides a detailed factual assessment report. The SQAS assessment reports allow chemical companies to evaluate their logistics service providers according to their own standards and requirements. (CEFIC, 2017)

In this set-up, implementing SQAS is not required but desirable for self-assessment and accordance to the CEFIC directives.

Authorization of the port captain

In order to be able to operate dangerous cargo (ADR, RID or IMDG), the terminal needs authorization of the port captain. This entity is responsible for the safety and security within the port

area. Without their authorization handling dangerous goods of any kind whatsoever is forbidden. In most cases the port captain allows to handle the most common products, when reaching several criteria. Only for the handling of class 1 or 7 goods will require very extensive safety and security precautions.

RTO

RTO stands for 'Ruimte Tijdelijke opslag' or 'Space for temporary storage' approved by the Customs. It enables the empty depot to keep non-community goods in temporary storage for maximum 90 days in attendance of further customs actions. Afterwards the clearing process is simplified.

This service is common for empty depots as well as container storage facilities of course this is not necessary and can be considered as an extra value added service.

ISPS

International Ship and Port Facility Security Code or ISPS is a code developed by IMO after the attacks of 11th September and the vessels 'Limbourg' and 'USS Cole'.

The ISPS code is part of chapter IX-2 (special measures to enhance maritime security) of the International convention for the Safety of Life At Sea and is used worldwide. The goal of ISPS is to become close collaboration between local, national and international entities to ensure better protection for maritime installations.

If the empty depot also would like to be extended gate for maritime terminals, this certificate is needed.