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D.3.1

CNI Description of the minimal data set

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Abstract
<p>WP3 aims to establish logistics clusters integration into a high performing synchromodal transportation network on a EU scale. WP3 addresses the shift towards low emission transport modes and consolidated freight management between logistics clusters following a demand driven approach. One of the ways to achieve this is to establish a dynamic transaction platform for collaboration resulting in cargo pooling and optimising asset usage. To feed the relevant information into the platform in order to be able to create insights that will lead to efficient cargo pooling, we need to establish a common data set to be asked to shippers. This deliverable focuses on that data set.</p>

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Abbreviations and Acronyms

Acronym	Definition
CNI	Cluster Network Integration
VAS	Value Added Services
LSP	Logistic Service Provider
WP	Work Package
CS	CargoStream

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1. Executive Summary

The Clusters 2.0 CNI platform creation and management task will develop the CargoStream platform in order to enable the optimized network design based on i) the Clusters aggregated transport demand data and ii) the available services, to provide bundling and new services recommendations. After reviewing the functional requirements with all actors, we define in this document the required data set that is needed to perform Value Added Services such as optimized network design, cargo pooling, imbalanced lane optimization between different European logistic corridors and backhaul opportunity detection. These VAS are detailed in deliverables D3.7 and D3.8.

This deliverable describes the common data set as it has to be proposed to European shippers in order to gather the necessary info to feed the VAS. To do so, it is crucial to explain the overall benefit of CargoStream: Why do we need it, what is it and how does it work?

1.1 Why is there a need for CargoStream?

It is our common responsibility to drive the sustainability of our supply chains, while we also have to improve service, inventory and cost levels. On top, congestion and truck driver shortages are very important upcoming challenges that will impact the reliability of the transportation system. Horizontal supply chain collaboration between all stakeholders provides an answer to the challenges above, as it enables either an optimization of road transportation through round trips and empty mile reduction or a modal shift, moving transportation from road to rail or inland waterways. Currently there is not enough scale however to industrialize horizontal supply chain collaboration. A challenge for which CargoStream provides the solution.

1.2 What is CargoStream?

CargoStream is an independent Pan-European platform that creates scale among shippers to drive horizontal supply chain collaboration through bundling their transportation needs with other shippers. With CargoStream we support the vision of the EU Commission to drive more sustainability in transportation.

Figure 1 – CargoStream Cloud: type of actors

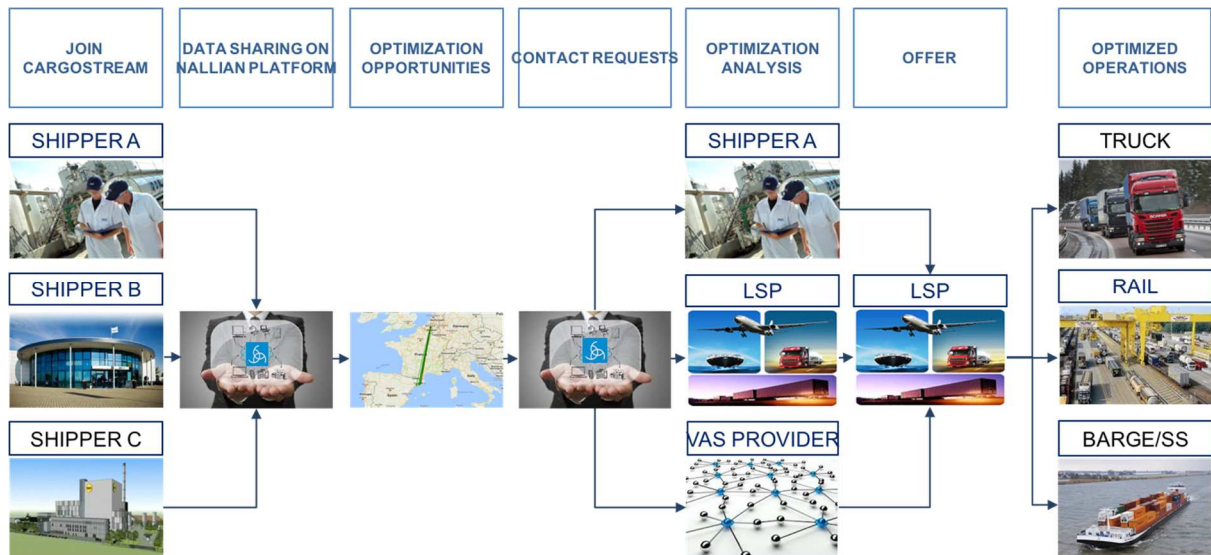


CargoStream is an interconnected, neutral and open network on which shippers, intermodal terminals, rail & barge operators, logistic service providers, trustees and optimizers collaborate by synchronizing supply chain requirements with the right mix of transport modes (see picture 1: CargoStream cloud)

1.3 How does CargoStream work?

Shippers communicate their regular transportation needs to the CargoStream platform. The CargoStream platform anonymises and aggregates the needs of multiple shippers, and makes these data available to VAS, LSP's and terminals or hubs, who analyze, optimize, and generate collaborative proposals that benefit the community. Nallian will act as neutral trustee for the governance of data sharing among the various CargoStream stakeholders. An example of a typical business flow from the point of view of a shipper is given in Figure 2.

Figure 2 – CargoStream: typical business flow for a shipper



The CargoStream platform contains a growing set of Apps which offer additional functionalities for the community. Think about Apps showing the potential efficiencies on your own lanes and on collaborative round trips, or Apps showing the availability of free slots on intermodal lanes, or even the creation of new lanes.

2. Introduction

2.1 Purpose of Document

The description of the minimal data set will be the guideline to come to an agreement on which shipper data is necessary to run successful collaborations between shippers. This document describes the data set and sets forward a methodology to agree on the data set, to collect the data set, to keep the uploaded data from different companies up to date and to broaden or change regularly the agreed data set.

2.2 Intended Audience

The required data set is a 1 year overview of all European transport orders from a shipper. Preferably last 12 months on a rolling basis and on detailed level (order per order). Therefore we shall ask data directly to Shippers and indirectly to their Logistic Service Providers, Terminals and hubs. The actors in CargoStream that will use the data are in a first stage the VAS, but can also be other actors such as LSP, Terminals and hubs.

2.3 Data to be delivered

Shippers' transport information can be used to look for bundling opportunities, co-buying opportunities and more in the CargoStream community.

Transport information based on historical data are captured and stored in the CargoStream cloud. This information contains the typical From and To location data together with the shipment metrics such as number of shipments, number of pallets, shipment weight / volume, type of shipment, etc.

2.4 What CargoStream provides

The CargoStream community brings shippers, LSP, VAS and more together to make use of the available transport data and increase their value with and for the community.

As a first step, transport bundling opportunities will be looked for, based on full truck or container equivalent loads. Transport data is the first source of information used to feed the CargoStream community and its members. Being part of the CargoStream community members can consume information that is part of the community, provided that the source of information agrees that the member can see the data.

On top of the CargoStream Cloud several additional services are being setup to get more information from your data.

Basic transport information as a limited set of data-fields is made anonymous by eliminating any identity related items. Statistical high-level community information will be extracted in the future to help the community grow and bring basic insight to its members.

For CargoStream, the following fields are part of this set:

- From Place Name
- From Country Code
- From Country Name
- From Postal Code
- To Place Name
- To Country Code
- To Country Name
- To Postal Code
- Instruction Loads
- Instruction Load Unit of Measurement
- Instruction Weight
- Instruction Weight Unit of Measurement

2.5 CargoStream bundling

The first service that is part of CargoStream is the bundling service. Based on the available From-To combinations in a shipper's data and the other shippers' data, bundling combinations are looked for, based on city - geocoding information that is added to the data. For these combined flows, basic bundling information is returned to the user. An example is shown in figures 3 and 4. Figure 3 shows bundling opportunities in the same direction. Figure 4 gives backhaul possibilities.

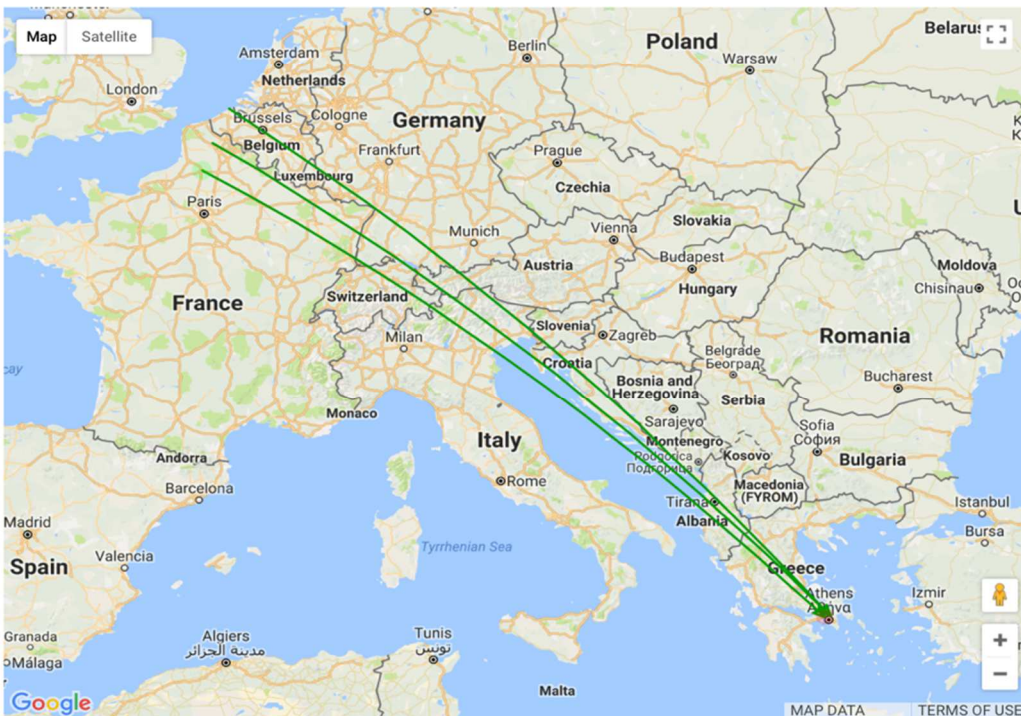
Figure 3 – CargoStream bundling opportunity

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BUNDLING:

Lane number	Shipper	FROM			TO			Lane distance (km)	Weight (TNE)
		City	Postal code	Country	City	Postal code	Country		
21173	S16			FR			GR	2141	6 704.29
15736	S0219			BE			GR	2180	581.22
18622	S0219			FR			GR	2165	562.39



When bundling opportunities are found, and a bundling activation is wanted by one of the shippers in the opportunity, this shipper will contact CargoStream (part of the bundling output) to activate the initial bundling process of bringing the opportunity shippers together. The participating shippers can agree on the next steps, such as there are: one of the shippers investigates the opportunity, an LSP is chosen to investigate, a transport optimizer is chosen to continue.

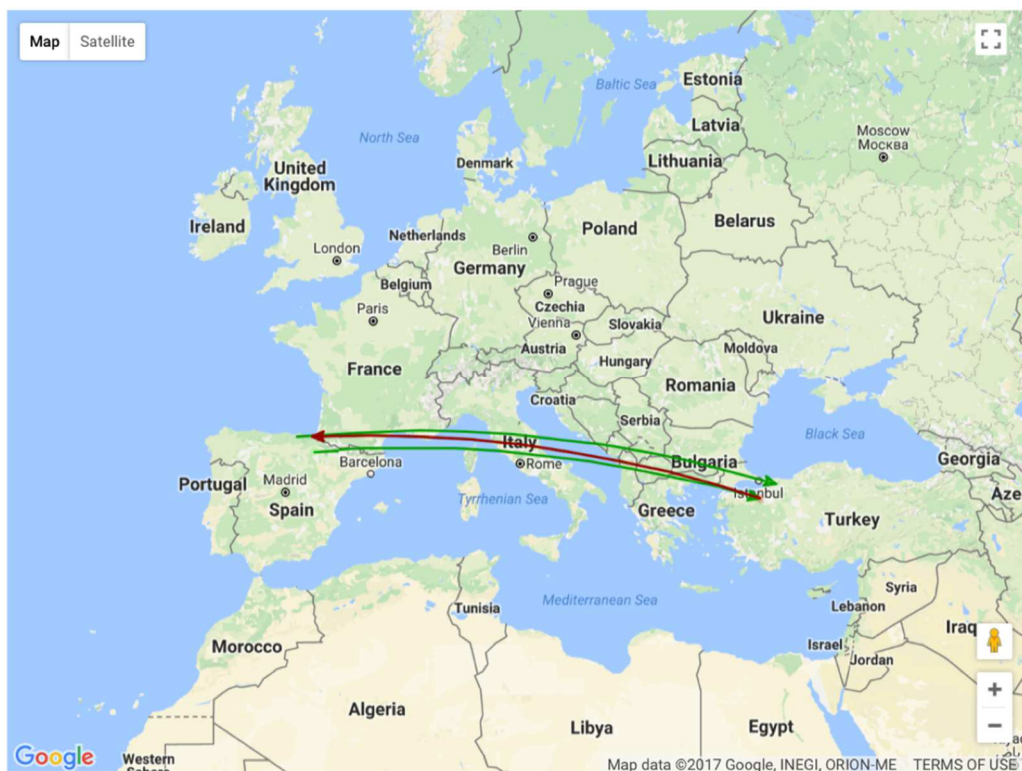
The shippers transport data can be shared on the CargoStream Platform with the relevant parties. Here, files (transport instructions) can be exchanged in a safe manner.

Figure 4 – CargoStream backhaul opportunity
Opportunity 92
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BUNDLING:

Lane number	Shipper	FROM			TO			Lane distance (km)	Weight (TNE)
		City	Postal code	Country	City	Postal code	Country		
16227	S18			ES			TR	2571	1 180.87
21433	S18			ES			TR	2577	976.94
5862	S0219			ES			TR	2727	1 658.99

BACKHAUL:

Lane number	Shipper	FROM			TO			Lane distance (km)	Weight (TNE)
		City	Postal code	Country	City	Postal code	Country		
19043	S18			TR			ES	2577	65.56



2.6 CargoStream house rules

CargoStream defines a set of principles for its users (consumers) as well as for the VAS providers to understand and comply with. Users provide their data to the CargoStream platform and for that a set of rules needs to be set in place.

- Shipments are the basis for data captivity.
- App providers will only receive the data that is required for their app.
- The user of the CargoStream platform will receive an overview of the data-requirements for each App of the CargoStream offer. He can then decide whether he wants to grant the app access to his data.
- Data will be required based on the data input requirements document. (see further)
- Certain data will be transformed (translated) into a more standard format, for a better use by the CargoStream apps. (E.g. country codes, weights, ...). A full list of this is provided in the data requirements document.

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- The shipment data will be used in an anonymous way for apps that can provide the user with functionalities that require a community-wide data set. The user agrees to the use of his data to serve the community.
- When a new App becomes available to the CargoStream community, requiring anonymous data, the user will be informed of this.
- A user can join the CargoStream platform by activating the CargoStream app in his account.
- Data that is provided to the system once, should not be provided again to the system.

3. Data input requirements for CargoStream

In this chapter, we give the basic description how the data to be provided by a shipper should look like. It is intended for the IT responsible of the company and is presented as an .xls file to be completed (ERP/TMS dump) and is accompanied with a .pdf explaining the overall purpose and the meaning of the different data fields.

3.1 Context

- Goods transport information: Transport instruction, Transport Order, Forwarding Instruction, ...
- Popular terms: IFTMIN, Shipment, Transport Instruction, Truck, Rail, ...
- Shipments that leave from single location to another single location.
- Shipper sends the shipment and is able to provide the data for this shipment.

3.2 Data source parties

- Shipper

3.3 Data consumers

- Shipper, via the CargoStream Apps
- VAS, via their Apps or via shipper request
- LSP via shipper request
- Terminal and hub via shipper request

3.4 Common messages formats

- EDIFACT, XML, CSV, ...

3.5 Range

- Historical data: “raw” data dump (ERP...) – Repeatedly/Periodically
- Live data: Transactional data (ERP...) – Copy / Live

3.6 Data

- Level (No aggregated data)
 - Shipment level (TI level)
 - Shipment line level (TI Line level)

3.7 Content

- *.csv, *.xlsx, *.xls
- Csv delimiter: “,”
- Header row has to be provided

3.8 Data input fields

The data input fields are bundled in an overview in table 1.

Table 1 – Data input list and field description

Field name	Field type	Field description	Man. Opt.
InstructionDateTime	dateTime	CCYYMMDDHHMMSS (we assume UTC) CCYYMMDDHHMM (we assume UTC) 2016-04-04T10:07:00 (we assume UTC) 2016-04-04T10:07:00Z 2002-05-30T09:30:10-06:00	M
InstructionReference	Text (70)		M
FromName	Text (175)		O
FromCity	Text (35)		M
FromPostalCode	Text (17)		M
FromStateCode	Tekst (5)		O
FromCountryCode	Text (3)	ISO 3166-alpha2 Country code ISO 3166-alpha3 Country code	M
FromCountryName	Text (70)		O
ToName	Text (175)		O
ToCity	Text (35)		M
ToPostalCode	Text (17)		M
ToStateCode	Text (5)		O
ToCountryCode	Text (3)	ISO 3166-2 Country code ISO 3166-alpha3 Country code	M
ToCountryName	Text (70)		O
ExpectedDeliveryDateTime	dateTime	CCYYMMDDHHMMSS (we assume UTC) CCYYMMDDHHMM (we assume UTC) 2016-04-04T10:07:00 (we assume UTC) 2016-04-04T10:07:00Z 2002-05-30T09:30:10-06:00	O
ActualDeliveryDateTime	dateTime	CCYYMMDDHHMMSS (we assume UTC) CCYYMMDDHHMM (we assume UTC) 2016-04-04T10:07:00 (we assume UTC) 2016-04-04T10:07:00Z 2002-05-30T09:30:10-06:00	O
ExpectedCollectionDateTime	dateTime	CCYYMMDDHHMMSS (we assume UTC) CCYYMMDDHHMM (we assume UTC) 2016-04-04T10:07:00 (we assume UTC) 2016-04-04T10:07:00Z 2002-05-30T09:30:10-06:00	O
ActualCollectionDateTime	dateTime	CCYYMMDDHHMMSS (we assume UTC) CCYYMMDDHHMM (we assume UTC) 2016-04-04T10:07:00 (we assume	O

		UTC) 2016-04-04T10:07:00Z 2002-05-30T09:30:10-06:00	
TransportModeCode	Codelist (4)	10 = Maritime transport 20 = Rail transport 30 = Road transport 40 = Air transport 60 = Multimodal transport 80 = Inland water transport	M
TransportModeCodeName	Codelist (35)	Maritime transport Rail transport Road transport Air transport Multimodal transport Inland water transport	O
LoadCarrierName	Text (70)		O
ServiceLevel	Text (5)		O
ProductLabel	Text (140)		O
ProductType	Text (70)		O
ProductCategory	Text (70)		O
InstructionOuterQuantity	Decimal (18)		O (M)
InstructionOuterQuantityUom	Text (3)	UoM: PCK, PCE, CT	O (M)
InstructionGrossWeight	Decimal (18; 12,6)		M
InstructionGrossWeightUom	Text (3)	UoM: KGM, TNE, LBR	M
InstructionGrossVolume	Decimal (18; 12,6)		O (M)
InstructionGrossVolumeUom	Text (3)	UoM: MTQ, LTR, FTQ	O (M)

(M) = Mandatory to be available

(O) = Optional to be available

4. Data collection methodology

After we described the data set in chapter 3, we set forward a methodology to agree on the data set, to collect the data set, to keep the uploaded data from different companies up to date and to broaden or change regularly the agreed data set.

4.1 How to agree on the data set?

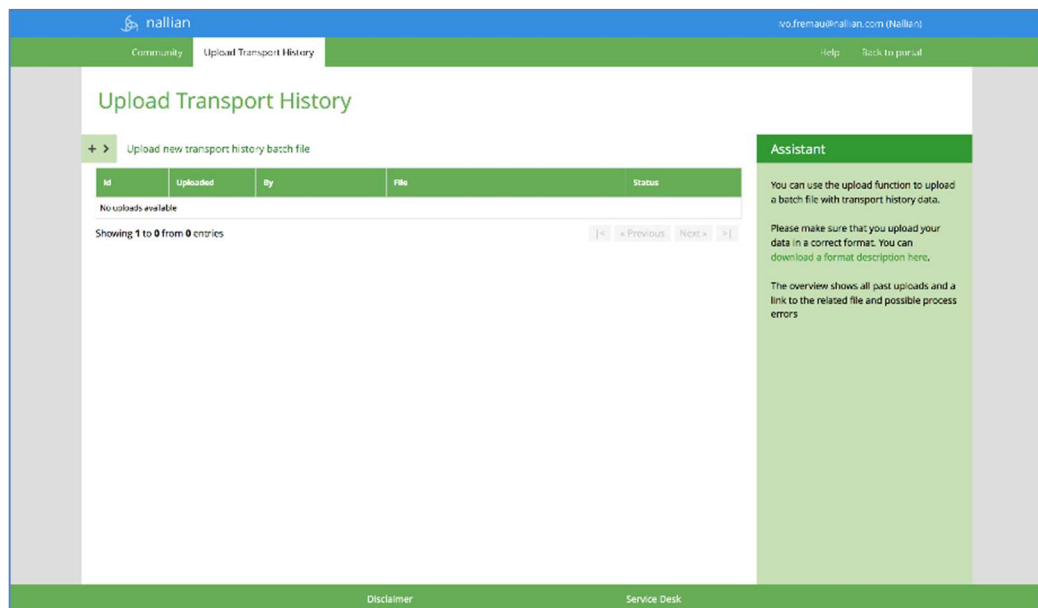
As CargoStream is a community with a common approach, the first version of the data set has been agreed upon between the first CargoStream members, being Nallian as data trustee, a major shipper, a VAS provider and an intermodal Terminal. After iteration, more members of each category will give input on the data set in order to continuously optimize the set.

4.2 How to collect the data set?

CargoStream data can be collected in two ways:

- Manual upload of a .csv file. The member that wants to use this way of data upload (example: see figure 4) needs to register to the CargoStream platform and become member of CargoStream. If a shipper prefers, he can also proceed via secure file transfer.

Figure 4 – Manual data upload



- Integrated data exchange via a B2B connections. By integrating once with the CargoStream platform, a shipper can copy all his transport instructions in real time to the platform. This way of working ensures that CargoStream is always analyzing the last 12 months of data. The connection needed to set up is typically a B2B connection where a shipper can choose the message format (XML, EDI, ...) and the connection type (HTTPS, ...)

4.3 How to keep the uploaded data from different companies up to date?

CargoStream provides the possibility to shippers to upload data in 2 ways: manually and integrated. In the integrated way, the data is in real time updated and the last 12 months is always available. In this case, data is always up to date.

In case of manual upload, CargoStream will compare already uploaded data vs new uploaded data and will filter the doubles or replace the old files with the new ones.

4.4 How to broaden or change regularly the agreed data set?

Together with the community of users, the CargoStream data input set will regularly be revised, broadened and updated. Therefore users are invited to give their input, both on a shipper's side as on a VAS side.

5. Conclusion and outlook

By providing a common data input file to all members of the CargoStream community, we can guarantee that transport optimization insights based on this data can be deducted. After a first data set, the WP3 consortium members will now test with this data, come back with insights and set the base for improved data sets. During the iterations in the Living Labs, input will be collected and improved data sets will be proposed.