

## NexTrust Pilot 2.1, 2.2 & 2.3 Case Study:

“Full-truck-load” (FTL) transportation via road



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## 1. Introduction and Objective

Europe is considered as one of the leaders in logistics sector globally. Six EU Member States are ranked among the top 10 countries in terms of logistics performance for year 2014 (World Bank, 2014), while the market size of the logistics sector in Europe has been estimated equal to €878bn in 2012 (European Commission, 2015).

On the other side, logistics costs remains a significant part of total cost in various sectors - 12% of total cost in manufacturing sector and more than 20% of total cost in retail sector (European Commission, 2007). Moreover, the logistics' efficiency remains low: 24% of goods vehicle-km in EU moves empty while the average load factor for vehicles is equal to 57% (World Economic Forum, 2009).

Towards the improvement of logistics sector, collaboration is the answer. More efficient synchronized networks and decrease in operational costs are the main benefits for the companies involved in cooperation schemes (Lehoux et al., 2010). Cost savings and efficiency gains of 6-10%, according to Transport Intelligence (Graham, 2011), or a reduction of 9-30% in distribution costs (Vanovermeire and Sorensen, 2014), could be expected.

NexTrust is an EU project funded under the Horizon 2020 EU programme, focused on the enhancement of collaboration in the logistics industry and aiming to increase efficiency and sustainability in European logistics. The innovative idea of NexTrust is the development of interconnected, trusted networks that collaborate along the entire supply chain towards the establishment of long-term solutions.

The main objective of the project is to establish a new way of working together, to solve real problems of inefficiency in the logistics sector on a

sustainable basis. Within this framework, the project coordinates over 23 different pilots which address actual problems across the length and breadth of European logistics, categorized according to their focus area:

1. Less-than truckload transportation,
2. Full-truck load transportation,
3. Intermodal transportation and
4. e-Commerce

The main goal of Pilot Category 2, examined here, is to reduce the impact of Full-truck load shipments (FTL) on the environment as well as empty mileage, i.e. the percentage of trucks running empty across Europe. Various pilot cases have been developed under this category, focused on the identification of overlapping vehicle movements across multiple industry sectors. In these cases, shippers that collaborate could share the same truck in order to operate round trips (backhauls) or participate in continuous movements (unload/re-loads). In addition, bundling of freight flows from several shippers and shifted from road to intermodal transport modes is analysed in this pilot category.

Currently, road transport is the primary mode of transportation for transfer of business-to-business (B2B) goods in Europe. However, significant inefficiencies are observed due to the empty vehicle movements causing a high level of unnecessary GHG emissions.

According to Eurostat (2014), road transportation accounts for the biggest share among the transport modes in EU, equal to approximately 75% of total GHG emissions. At the same time, about 24% of trucks in Europe are running empty (measured as empty kilometres) (Doherty and Hoyle, 2009).

The main reason for empty trucks is the different origin and destination of their movements. As every truck movement has a distinct origin and destination (O/D), each truck needs to be repositioned for the next O/D pair, which is, as expected, different.

In addition, the fact that the European transport market is extremely fragmented, exacerbates the situation. Thousands of shippers purchase transport services separately, while at the same time hundreds of thousands of transport companies offer their services independently. More specifically, multiple manufacturers (shippers) are outsourcing the transport flows to one single carrier company (Logistic Service Provider LSP), assigning individually a carrier for their transshipments based on a unilateral carriage contract. As a result, shippers and carriers do not have visibility of the entire sector and any possible bundling of flows by the carriers is achieved only “by chance”, based on geographical criteria. This limited comprehension of the FTL sector results in transport system's inefficiency and makes collaboration challenging or even impossible.

## 2. Fundamentals

The freight supply chains across Europe account for 25% of the CO2 and particulate emissions. In addition, the lack of collaboration in the use of motive and warehousing assets leads to high levels of inefficiency when looked at from a European perspective although for individual organisations their operations appear optimised particularly for Customer Service.

Actors in the supply chain: manufacturers, importers, retailers, exporters and logistics companies are generally reluctant to pilot or utilise new methodologies or new routes to market as there are many examples of costly implementation failure. NexTrust a EU grant funded Horizon 2020 project (Grant 635874) was setup to bring together like-minded actors in the supply chain to raise asset utilisation levels and reduce Green House Gas emissions through collaborative pilots.

The most important aspects for successful collaboration were:

- Careful planning of the project
- An agreement to, transparently, share the savings generated net of any additional costs
- Agreements on the planning and administrative processes to be used
- Routes to deal with any disagreements
- **Importantly** the use of a Trustee to receive data, analyse the best matched routes and distribute back the plans. This would be a daily (at least) dynamic process. The Trustee also covered the confidentiality and anti-trust concerns about the pooling of data.

## Goals and objectives of the pilots

- 2.1 Cross-shipper, FTL collaboration on closed loop and round trips (backhauls)
- 2.2 Cross-shipper, FTL collaboration, specifically for the transport of fresh and frozen foods
- 2.3 Cross-shipper, FTL collaboration on continuous movements (re-loads)

## 3. NexTrust Methodology

The methodology used across all the pilots is based on a 3 Step process which was first tested on a small scale in the EU funded CO3 project.

The 3 Steps are:

- **Identification:** freight flows and potential partners
- **Preparation:** Selecting best matches, benefit sharing agreement, administration, contracts)
- **Operation:** supporting execution, monitoring agreed KPIs



- **Validation:** To ensure that collection and analysis of the result data was consistent and verifiable, the results were audited and confirmed by Vlerick University before any publication.

## 4. Application of Pilot

Aim of pilots 2.1, 2.2 & 2.3, developed within Pilot Category 2, focused on “Full-truck load” transportation on road, is to build a pro-active collaboration among shippers. The main concept of the pilots is the establishment of “lane combinations” instead of fixed single trips, offering to carriers the maximum operational flexibility, while at the same time providing improved predictability in transport flow balance. The proposed horizontal collaboration results in a restructured transport network, where more efficient movement of road transportation flows, maximum asset utilization and economies of scale are achieved.

Various shippers participated in these pilots, testing collaborative networks that connect producers, retailers and carriers in order to reduce emissions, fuel waste and costs, as well as traffic congestion.

Apart from shippers, a neutral trustee company participated in the pilots, to guarantee that commercially sensitive information would not be shared among the shippers and therefore no anti-trust behaviour would be conducted. The role of the trustee was critical to address the current fragmented logistics, though the enhancement of visibility and accessibility across the various participants, eliminating at the same time the existing “silo concept” and connecting the shippers into an accessible and easily interconnected network. In addition, several carriers were involved in the pilot cases, essential to synchronize the new efficient freight networks and extend the collaboration to the asset owner.

Shippers	Beiersdorf	Mndelez	Panasonic	Philips Lighting	Unilever	Tesco
Trustees	Giventis International (GIV)	Pastu Consult (PAS)	2 degrees (2d)		ALPEGA (Wolters Kluwer Transport Services)	
Audit	Mazars (MAZ)					

Table 1: Pilot 1.1 Participants Summary

### 4.1 Partners

Six multi-national shippers were involved in the pilot cases during the first phase: Beiersdorf, Mondelez, Panasonic, Philips Lighting, Unilever and Tesco.

Giventis International (GIV), Pastu Consult (PAS), 2degrees and ALPEGA (Wolters Kluwer Transport Services) acted as the trustees in the pilots. The Giventis ELG-Web platform was used to identify synergies between the shippers, enabling smart visibility across them, thus allowing a more intelligent and sustainable supply chain to be built. The platform acted as the neutral hub, collecting all needed data and information for matching up shipments and users that could share trucks, facilitating in this way the overall process.

In addition, the audit company Mazars (MAZ) supported the FTL pilot cases on demand, in

The pilots were tested on a pan-European level, through the following collaborations:

1. Mondelez- Unilever
2. Mondelez- Beiersdorf
3. Mondelez- Panasonic
4. Mondelez- Philips Lightening
5. Beiersdorf- Unilever
6. Beiersdorf- Panasonic
7. Panasonic- Unilever
8. Mondelez- Tesco
9. Unilever- Philips Lightening

### 3-steps to collaboration



Figure 1: Horizontal Collaboration FTL Pilot Cases



Figure 1: Horizontal Collaboration FTL Pilot Cases Routes

### 4.2 Methodology

The 3-step Methodology, developed within the project, was applied in this pilot.

#### NexTrust Pilot Case Life-Cycle: 3-steps in 36 Months



General Schema by Dr. Patrick Stumm, Mike Bogen

Each phase and step has dedicated and pre-defined tasks to conduct. The first focusses on the identification of the freight flows, the technical set up and the management process to address the inefficiency and need for trusted collaboration. The Identification Phase aimed to analyse the as-is situation, create the network, match the opportunities and define the benefits.

The second phase defines the steps to prepare the actual implementation of the demonstrator, it puts the opportunities in place by addressing operational requirements and finding operational solutions.

The third phase defines the steps to start the management of the daily collaboration for planning and real time freight execution. The operation phase validates and modifies/improves the trusted collaboration framework and calculates the potential positive sustainable impact that can be achieved with this innovative collaboration business model. For each phase a time frame of 6 to 12 months was foreseen.

The Trustee collected and analysed transport flow data of shippers/ LSPs who had expressed the interest to identify collaboration synergies between them. The process was managed in complete confidentiality, supported with an agreement between partners: any commercially sensitive information was shared only and exclusively through the trustee. The precondition was the design of an anti-trust compliant legal framework that defines how to handle the collected data between the stakeholders. The role of the trustees in this framework was to be neutral and free of commercial conflict of interest.

“Mapping & matching” analyses of transport data flows were accomplished based on a specialised, cloud-based “big data” ICT software, The ELG-Web developed by Giventis.

## 5. Results/Impacts

The implementation of collaboration in case of Full-truck load transport was explored within NexTrust project through the establishment of pilot cases 2.1, 2.2, 2.3. According to the evaluation of the pilot cases, this innovative concept met

considerable success, despite the adverse market conditions (reduced market capacity) in the second half of 2017.

More specifically, the results of the FTL research activities demonstrated the tremendous market benefit which can be achieved through horizontal collaboration among shippers with the cooperation of carriers:

- In the period 2016/17, the first FTL collaboration optimized 21,480 shipments of 6 shippers to 61 roundtrip (closed loop) lane combinations across Europe.
- In the period 2017/2018, around 100,000 FTL shipments of 9 shippers were optimized into 198 roundtrip combinations, while 377 continuous move combinations were created, bringing the entire number of collaboration combinations to 575.

According to the initial results, estimated using the GLEC (Global Logistics Emissions Council) calculations, a reduction of up to 40% of greenhouse gas emissions (GHG) and up to 46% of empty vehicle kilometres could be achieved on single freight lanes.

The FTL collaborative combinations demonstrated a positive impact on sustainability, in average a CO<sub>2</sub> reduction of 27.7% and a reduction of 36.0% of vehicle-kilometres VKM.

## 6. Lessons Learnt

Useful information concerning the successful implementation of innovative ideas and concepts in logistics sector was derived from the examined pilot actions. As it was demonstrated through the pilots, there is a critical need to align internal shipper functions and corporate objectives, especially among departments representing sustainability, logistics procurement and logistics operations. However, the pre-education of carriers is essential to secure their participation to a process where they share both the risks and the benefits of collaboration. In addition, the dissemination and communication after the implementation of the pilots is equally important, underlining that these pilot cases are not benchmarking exercises and that the business

sector will be supported, with the designation of right conditions, to insure collaboration in the future.

Apart from the above, the critical role of the trustee was identified for the establishment of a trusted network business model. This role applies mainly to horizontal collaboration, but it could also be extended to vertical collaboration, in cases of intermodal business models.

The main obstacle faced during the implementation of the pilots was, as expected, the development of a multi-party non-disclosure/ confidentiality agreement template (NDA), as all companies participating in the pilots have internal legal departments, requiring their requirements to be requirements to be addressed. The main issues emerged regards to competition law and data confidentiality.

Furthermore, a small minority of shippers involved in the pilot cases did not proceed beyond the identification phase, due to reasons ranging from resource constraints, corporate culture or taking a wait and see attitude vs. that of an early adopter, up to unwillingness to accept the project's collaboration protocols. However, most shipper participants have accepted the concepts delineated in the NexTrust collaboration business model, and more just as importantly, the trusted network protocols. This acceptance and success of the current pilot cases has provided the momentum to expand pilot cases to additional shippers.

## 7. Conclusions

This is the first time ever in the European logistic supply chain history that, on such a large scale, shippers are pro-actively cooperating to reduce together the environmental impact and create logistic efficiency gains.

Demand sided horizontal collaboration is now at the "tipping point" of transition, towards the market acceptance in European logistics. The current pilots aimed to present collaboration opportunities that could enable smart visibility across the shippers and build a more intelligent and sustainable

trusted and collaborative supply chain. Within this framework, the FTL team succeeded to transform the current concept of fragmented logistics, where shippers act individually, to a "cross-shipper" efficient connected trusted transport network. Trustees acted as the neutral coordinators for the horizontal collaboration between shippers.

According to the pilots' results, the competitiveness in the European logistics market can be increased in terms of efficiency and sustainability, through the demand sided horizontal collaboration. Regarding the GHG emissions, the initial results in operation phase indicated that with road bundling and potential mode conversion, GHG reductions of 30% up to 80% of could be achieved.

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