

NexTrust Deliverable 1.1 Report – Results of identification phase

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Executive Summary

The main objective of the NexTrust research project is to increase efficiency and sustainability in European logistics by designing interconnected, trusted networks that collaborate together along the entire supply chain. Its innovative business model aims to create long-term solutions. NexTrust acknowledges the current successful collaboration efforts and models in place in the market. It is focussing, in a first step, to establish a new way of working together, targeting where efficiency gains are needed, and where it is possible to achieve a breakthrough to solve real problems of inefficiency in the logistics sector on a sustainable basis.

NexTrust is hereby following a 3-step trusted network research methodology. The first research step is the “*Identification*” of opportunities, followed by *Preparation*, implementing potential matches into pilot scenarios, and then the *Operation* phase, where we validate the trusted network pilot scenarios in real market environments.

The herein presented Deliverable (1.1) Results of identification phase of European Less-than-truck-load (LTL) transport flows across shippers is the first research step of “*Identification*” to combining and optimizing them in a trusted network environment to create “collaborative FTLs”, all while maintaining required service levels and replicating the benefits of just in time delivery inventory management.

Many shipments in Europe are not large enough to economically fill a truck on their own. They can use one vehicle on an exclusive basis, but at much less than full capacity (average efficiency is estimated at 43%) or they can use Less Than Truckload (LTL) ‘groupage’ services provided by logistics service providers that consolidate and transport shipments from numerous shippers to economically fill vehicles.

For the first period, the NexTrust research activities have confirmed that *smart visibility* is needed to enable a more intelligent, sustainable supply chain. In this way, European logistics will be able to build trusted collaborative networks by bundling transport flows, so as to yield significant reductions in greenhouse gas (GHG) emissions while simultaneously improving transport cost efficiencies. NexTrust research methodology has been assessing the market with the focus on building up multiple LTL pilot cases, several of which will move into the operational phase in the second half of 2016.

The research activities resulting in the establishment of a NexTrust “protocol”, a conceptual collaboration framework to build these trusted FTL networks bottom up with like-minded partners (“communities”). The common understanding of approaching collaboration, even between competitors, was one important aspect prior to start the identification phase for potential bundling opportunities. NexTrust learned that the identification phase needs the appropriate collaboration components to achieve the breakthrough. The challenge is that “collaboration” has historically been seen a buzzword that invariably has different meanings and attitudes among key stakeholders in the supply chain.

The key prerequisite of NexTrust is that horizontal and vertical collaboration in the supply chain requires *Trust* in order to become a sustainable practice. Facilitating the process is the “neutral trustee” function, which is absolutely required to guarantee anti-trust compliance with EU law, to insure that companies’ own legal compliance rules are respected and that confidentiality is in place, allowing the exchange of non-commercially sensitive information between the trusted collaborative partners. Furthermore, the trustee is responsible to ensure that the collaborative network will be constructed in such a way that a fruitful long term, *sustainable* relationship between partners can be maintained on a flexible, community basis.

The trustees who are responsible for the identification phase related and consequently this deliverable (1.1) is conducted by the NexTrust consortium members GS1 Belgium & Luxembourg (GS1-BE), GS1 Germany (GS1-DE), Giventis International (GIV), Pastu Consult (PAS), Elupeg (ELU), TriVizor (TRV) & Norwegian Logistics (NOL) who are coordinating and supporting the entire collaboration life cycle of the potential LTL pilot cases, from the identification of opportunities between partners in the network, to building the business case required to “package” the collaboration in a sustainable way.

The trustees were responsible for initially organising the NexTrust shippers/pilot case participants, explaining the NexTrust protocols and collaboration rules, developing collaboration legal guidelines with the support of the consortium partner law firm Kneppelhout Korthals Lawyers (KKL). Once a common “cultural” mind-set was in place, and an understanding of a new innovative way of trusted collaboration was established, the NexTrust shippers agreed with the trustees on the data collection and pilot case direction.

NexTrust’s main premise for the cultural mind-set is that re-engineering the supply chains can be used to carve out the currently fragmented logistics “silos” into smaller, manageable components that can then be restructured and replaced with more efficient connective networks to achieve benefits across entire supply chains. Enabling visibility across these fragmented “silos,” allows us to match and thus consolidate freight flows, creating synergies across shippers and LSPs that are not visible today. Information and communication technology (ICT) including collaborative tools (C-ITS) is clearly identified as a major supportive need to add value as catalyst and enabler for trusted collaborative networks. The ICT enabling function is the key component and door opener to identify the accurate appropriate and efficient collaboration opportunities. At the same time, it shall be underlined that NexTrust learned that tackling cooperation only from ICT side will not lead to success, if the cultural mind set is not in place. Hence, NexTrust research is to find and establish in the near future successful innovative collaboration scenarios under market conditions, which will be then supported by scalable ICT solutions.

The freight flow analysis and in particular the NexTrust LTL Network Identification phase has involved the participation of 30 NexTrust multi-national shippers and 5 retailers, representing five industry sectors.

The first identification results confirm that creating *smart visibility* is a cornerstone for the second step of preparation to come. The plan is now to put the identified LTL lane matches into distinct pilot case scenarios to create a new, more efficient network organisation. Furthermore, with active support from selected LSP’s, trusted collaborative networks including necessary physical building blocks such as cross-docks, multi pick-up/multi-drop processes and routes will be set up; collaborative hub and spoke networks; multi-user depots, etc. will be investigated.

The next deliverables will be able to report more about the results of the second research step “preparation” and the start-up of first pilot cases in market environment.

Table of Contents

Executive Summary.....	II
Table of Contents	IV
List of Figures	V
Introduction.....	1
Project Overview.....	1
Purpose and Scope of NexTrust Deliverable 1.1 Report –Results of identification phase	2
Evidence of the deliverable : Identification Phase	2
Acronyms and Abbreviations.....	11

List of Figures

Figure 1: NexTrust 3-Step Methodology	8
Figure 2: NexTrust Trusted Network Function/Task Checklist-identification	9
Figure 3: NexTrust Transport Data Format.....	10
Figure 4: NexTrust Transport Lane Matching Software Platform Screens : ELG-Web	10

Introduction

This deliverable is the report for D1.1, Results of identification phase, due month fourteen (June 2016). The report describes the application and top line results of the “identification” phase of the NexTrust Three-Step *Trusted Network* Methodology as it relates to pilot activities in Work Package (WP) 1, *Inbound retail and Less Than Truckload (LTL)*

First results of the pilot cases are expected to be presented in the Autumn of 2016.

Project Overview

NexTrust's objective is to increase efficiency and sustainability in logistics by developing interconnected trusted collaborative networks along the entire supply chain. These trusted networks, built horizontally and vertically, will fully integrate shippers, LSPs and intermodal operators as equal partners. To reach a high level of sustainability, we will not only bundle freight volumes, but shift them off the road to intermodal rail and waterway. NexTrust will build these trusted networks ideally bottom up, with like-minded partners, adding multiple layers of transport flows that have been de-coupled and then re-connected more effectively along the supply chain. We will develop C-ITS cloud based smart visibility software to support the re-engineering of the networks, improving real-time utilization of transport assets. NexTrust will focus on research activities that create stickiness for collaboration in the market, validated through pilot cases in live conditions. The action engages major shippers as partners, plus SME shippers and LSPs with a track record in ICT innovation.

The pilot cases cover the entire scope of the call and cover a broad cross section of entire supply chain (from raw material to end consumers) for multiple industries. The creation and validation of trusted collaborative networks will be market oriented and implemented at an accelerated rate for high impact.

The main pilot case sectors (looking from supply and demand side):

- LTL (less-than-truck load) transportation (WP1)
- FTL flows optimisation including FTL road conversion to intermodal (WP2)
- Optimising carriers network capacity (road and intermodal) (WP3)
- E-Commerce (multi-vehicle collaborative delivery network) (WP4)

The herein presented deliverable D.1.1 belongs to the sector of LTL and WP1.

NexTrust shall achieve a high impact with improved asset utilization and logistics cost efficiency, creating a sustainable, competitive arena for European logistics that will be an inspirational example for the market.

Purpose and Scope of NexTrust Deliverable 1.1 Report – Results of identification phase

The purpose of this report is to show evidence of the research work done to date in the “identification phase” of pilot cases in WP 1. Activity has encompassed pilot cases that will address different segments of the supply chain, targeting :

- Transport flows to retailers
- Other high volume business sectors where there are opportunities to improve transport efficiency and sustainability

Specific purpose: creation of shared collaborative networks

- The average European transport vehicle efficiency is estimated at 43%. One important reason is simply that many customer orders (shipments) are not large enough to economically fill a truck on their own.
- An important contributor to this are the JIT (just-in-time) inventory practices; customers want more frequent deliveries so as to minimize the cost of holding inventory, while at the same time always have products available, “just” when needed.
- Shippers can then use one vehicle for a shipment on an exclusive basis, but at much less than full capacity or they can use LTL groupage services provided by logistics services providers that consolidate and transport shipments from numerous shippers to economically fill vehicles.
- The retail sector in particular relies on LTL services to transport orders from thousands of food and non-food suppliers, many SME-size shippers, to retail distribution centres all over Europe.

Identifying freight flow matches

- NexTrust is using a neutral trusted ICT platform to match freight flows and trade lanes of different supply chain actors.
- The plan is to move from independent supply networks (“silos”) to open anti-trust compliant global networks where resources are compatible, accessible and easily interconnected
- NexTrust envisages creating a trusted network-powered environment, connecting the actors into a transport community, addressing the lack of visibility and accessibility across the industry players.

Evidence of the deliverable: Identification Phase

Three-Step Trusted Network Methodology

The NexTrust methodology to test and validate pilot cases for collaborative trusted networks is following a proven Three-Step-trust-approach (see Figure 1) first designed and tested on limited small scale by the NexTrust trustee partners TRI-VIZOR, Giventis, Kneppelhout Lawyers and Pastu in the EU FP7 funded CO3 *project*. Deliverable 2.1 encompasses the “**identification phase**” of the 3-Step Methodology.

This methodology will be further tested and developed, and, in a successful scenario, further standardised for the EU logistics arena.

In the **identification** phase, the trustee collects and analyses transport flow data of shippers/LSPs who have expressed the interest to identify collaboration synergies between them. It is important that this process is managed in complete confidentiality - supported with agreement between partners - and that any commercial sensitive information is shared only and exclusively through the trustee. The precondition is the design of an anti-trust compliant legal framework that defines how to handle the collected data between the stakeholders. The role of the trustee in this framework has to be neutral and free of commercial conflict of interest.

The “mapping & matching” analyses of transport data flows are being executed with specialised, cloud-based “big data” ICT software, ELG-Web™ developed by Giventis, which has demonstrated its effectiveness in the NexTrust first research activities.

In order to meet the analysis demands across multiple pilot scenarios and modes, the ICT platform has been improved and enhanced to meet the analysis requirements for NexTrust specific pilot scenarios. Starting with the deployment of an upgraded cloud based framework, these enhancements are now supporting the analysis of FTL road bundling/backhauls, but also other WP's, such as LTL bundling in different logistics sectors, and multi-modal full load flow bundling for mode conversion. These enhanced capabilities have enabled NexTrust pilot teams to utilise the results of precise simulations and visualisations, especially for mode conversion.

The **identification** phase encompasses a clearly defined set of tasks and activities, as illustrated in the *Trusted Network Function/task Checklist* (see Figure 2).

As described in the checklist, the three primary task groups cover **legal, pilot participation, and data collection/analysis**.

Legal: Partner KKL, with support from GIV and PAS, developed a multi-party non-disclosure/confidentiality agreement template similar to any NDA's existing on the market for use in pilot cases by LSPs, shippers, and NexTrust project partners acting as neutral trustees. The key elements of this document/template provided structure for the *identification* and *preparation* phases of NexTrust pilot cases in NexTrust. The task was complex in that companies participating in the pilots, all of whom have internal legal departments, required their specific internal compliance requirements be addressed with regards to competition law and data confidentiality, among other requirements.

Partner KKL, with support from GIV and PAS, developed a comprehensive set of collaboration legal guidelines first draft for use in the pilot cases. The guidelines encompass key tasks of the NexTrust pilot case, Three-Step Methodology, with a heavy emphasis on competition law and anti-trust legal compliance.

Pilot Participation: The pilot teams of WP 1 discovered that more volumes had to be added in order not only to attain critical mass but also to be able to fill FTL on a structural basis throughout the year. Consequently, NexTrust partners invited additional shippers to participate in pilot cases. Selection criteria are based on their willingness to accept NexTrust protocols. Just as important, these shippers share a common cultural mind-set that supply chain collaboration in and of itself can be a strategic imperative.

Data collection/analysis: The on-going challenge for this deliverable is the capture and analysis of transport data. It is complicated in that we must convince pilot participants to follow a common data format for the submission of their transport data so as to produce *accurate* and optimal analysis results. NexTrust partner GIV, with support from PAS, developed a transport data format template to be used as a standardised form for the collection of shipper and LSP transport data (Figure 3). Additional input was provided by GS1 Germany (GS1-D) in order to incorporate GS1 Standards, where applicable. As such, GS1's Global Location Number (GLN) has been incorporated as a potential future unique location identifier in the ELG-Web platform.

Partner GIV used the data format templates received from shippers and LSPs to upload transport data to the ELG-Web™ transport analysis software platform (Figure 4). Multiple analysis algorithms and constraints were employed for:

Creating shared, smart visibility: research individual shipment across shipper and different segments of the supply chain, targeting transport flows to retailers as well as other high volume business sectors where there are opportunities to improve transport efficiency and sustainability.

Combining and optimizing: describe different optimisation scenario's for the LTL flows in target; search lanes and identify bundling opportunities focused on mutual destination and/or origin.

Top line, aggregated results:

Below it is described the identified pilot cases for LTL freight flows, which then will be further elaborated and designed in the next research step of preparation (step 2).

Pilot	Pilot description/geography	Participants	current status
1.1	Improving the efficiency of inbound transport to retailers in the Benelux	2 (food)retailers + potentially >10 manufacturers of ready baked cookies => focus on supplier verticals	data collection, pilot scope definition
1.2	Large shipper Just in Time (JIT) flows to retailers in the UK	3 major retailers & 13 high profile food manufacturing organisations	data collected & analysed, scenario building
1.3	Combining SME-size shipper flows to retailers (extended for DIY/Home improvement and construction sector) in the UK / France / Netherlands	2 scenario's : builders agent: construction materials home improvement retailer	data collection + pilot scope definition
1.4	Flows from fresh and frozen food shippers across Europe, included shared warehousing and transport	7 manufacturers (private label & branded) in the frozen & chilled sector bundling their flows from mutual departure area, to common delivery areas or both	Data analyzed, scenario building
1.5	Flows from high-tech / electronics shippers across Europe	4 high tech/ electronics/industrial/white goods suppliers and 1 FMCG manufacturer	Data analyzed, scenario evaluation
1.6	Extending WP1 pilots: adding impacts of order behaviour on transport capacity /Germany	One international operating retailer + 2 European FMCG manufacturers	pre-development stage

NOTE: Network Identification is on-going as more transport flows are added to the data base and shippers agree to pursue new collaborative route scenarios.

Identification results per pilot category

Overall, 31 companies, representing 6 industry sectors participated in the Network identification phase, as presented by sector here below.

Shipper industry sectors

FMCG-food (19)	FMCG (2)	Tech (2)	Industrial (2)	Retail (5)	White goods (1)
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For the Network Identification phase we have combined data analysis and lane matching tasks across 4 pilot categories. In pilots 1.3; 1.4; and 1.5 the source data was the same format as is the analysis output. The objective was to maximize the potential and to be able to combine optimally.

Key identification findings:

Pilot 1.1: joint pilot with 2 major retailers in Belgian market where we are focusing on supplier verticals. Suppliers are showing high interest in the possible solution. Exact scope of the pilot is being finalized.

Pilot 1.2: nearly 22.000 LTL orders for 1700 locations were analysed and the potential reduction that could be made if deliveries were consolidated where volume permits and location visits combined according to day, half week or even full week was revealed.

Pilot 1.3: 2 scenarios with optimizing deliveries of construction material using specialized equipment.

Pilot 1.4: analysis of data flows of 6 manufacturers of frozen and fresh branded products and private label in Western Europe and the UK, both analysing mutual front end solutions and common delivery points. 3 potential scenarios already identified across 2 geographic corridors.

Pilot 1.5: 3 potential scenarios identified between 5 manufacturers across 3 geographic corridors.

Pilot 1.6: analysis of the order behaviour of 2 shippers on the transport flows towards a retailer.

The identification phase is still ongoing and the first pilots going into preparation phase will be started up in Q3 2016.

Issues-challenges

Legal

All pilot participants have executed confidentiality agreements (NDA) with NexTrust neutral trustees in order to protect their data during the NexTrust methodology of the 3 pilot phases (ID, Prep, Ops).

As lane matching analysis is completed and collaborative scenarios identified between the shippers, they are as a matter of normal business practice and internal legal compliance requiring bi-lateral confidentiality agreements with any party with whom they intend to collaborate.. This has in certain situations delayed pilot case development.,.

This issue will be addressed further by Kneppelhout as a technical requirement for ongoing trusted network collaboration.

Operations

Also in the WP we are confronted with the incompatibility of transport equipment based on size and service requirements. As example, due to the temperature sensitive nature of the assortment in scope in the pilot 1.1 this can lead to sub-optimisation. Where it is was obvious for the pilots 1.4 and it therefore also plays an important role in pilots 1.1 and possibly also in pilots 1.2 and 1.3. In the pilot 1.5 it is more the restrictive service constraints and the transport security due to the high value and fragility of the products that makes it less obvious to combine shipments. To overcome this barrier, we have been able in many cases to resolve transport equipment disparities with the shippers agreeing to a minimum equipment type for potential collaborative lane combinations. It remains to be seen in the preparation phase how the transport market will react.

ICT

In order to accurately identify opportunities for FTL lane matching (both intermodal and road bundling), the network identification software, ELG-Web™ required upgrades and enhancements to support the dual mission and requirements for identifying both FTL “round trips” and load bundling to support intermodal conversion as well as LTL bundling (WP1). These enhancements and the integration of the software required to support on-going network identification tasks for pilots across WPs 1,2, 3 and has been completed and the enhancements deployed.

Figure 1: NexTrust 3-Step Methodology

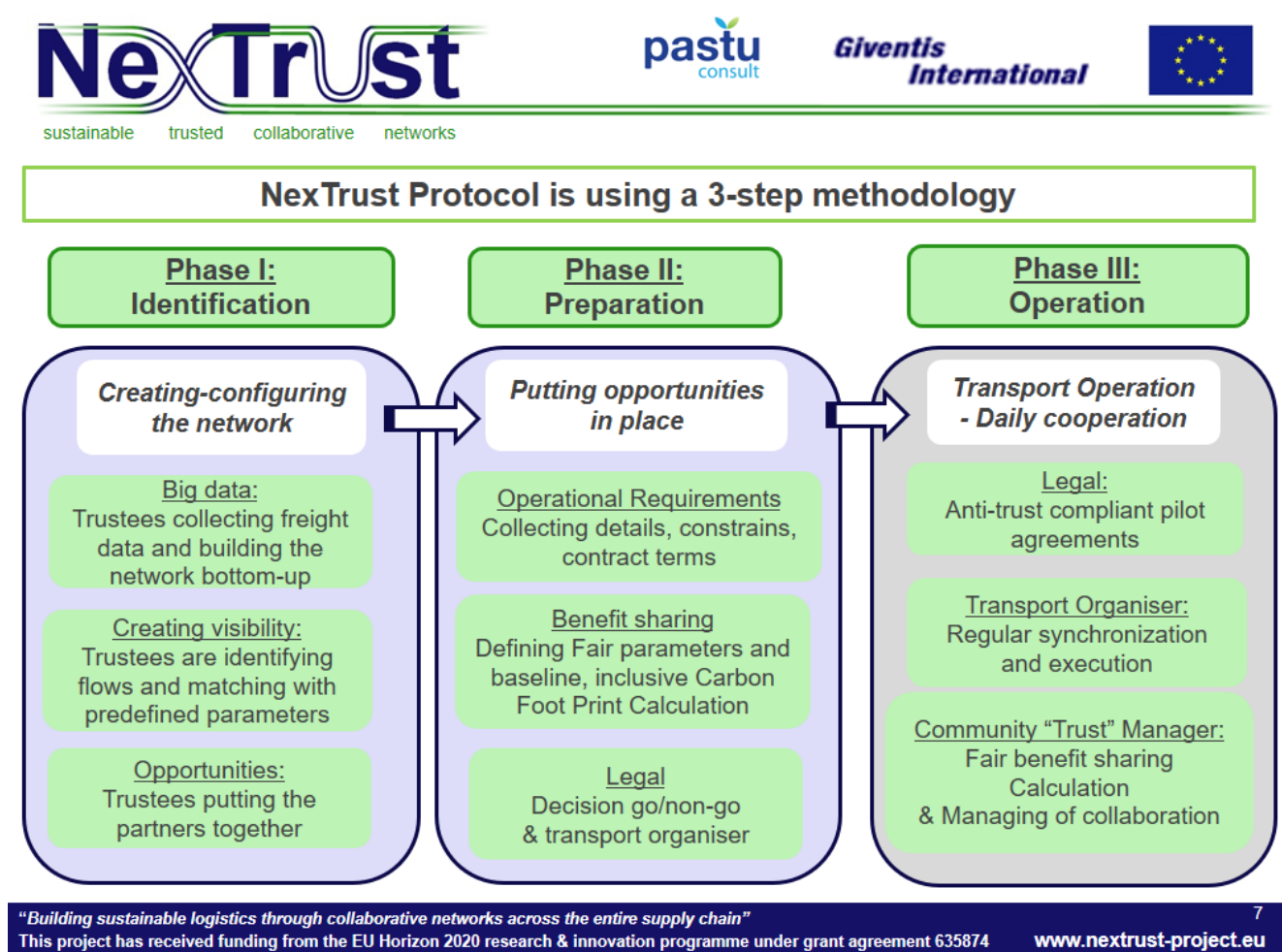


Figure 2: Trusted Network function/task checklist-identification

					
"Coordination of Trust" for Pilot Cases					
Trusted Network Functions-Checklist					
PILOT ID:					
PILOT COORDINATOR:		ROLE (shipper/retailer/supplier)			
Team member (1)		Trustee (1)			
		Trustee (2)			
Identification	Task #	ROLE	RESPONSIBLE PARTIES	START DATE	STATUS
Pilot participant recruiting (if applicable)		TEAM			
NDA's for data collection-participation		TRUSTEE			
Legal documentation: Anti-Trust Compliant Collaboration Guidelines		TEAM			
Capture transport flow data		TEAM			
Standardization: incorporate GS1 standards, e.g. GLN, etc. if appropriate		TEAM/WP6 (standardization)			
Intermodal: identify-capture specific attributes, parameters applicable to rail, barge, sea, etc.		TEAM/WP3 (LSP/intermodal)			
Cleansing /normalization of flow data (responsibility of data provider)		TEAM			
Analysis of synergy opportunities		TEAM			
Selection of best matches		TEAM			
NDA to share matches between specific partners (if required)		TEAM			
Share "best match" opportunities with applicable partners		TEAM			
Agree on opportunities for business case development with partners involved in business case (GO / NO GO)		TEAM			
Situation analysis:" how does it look today; how could it look tomorrow?"		TEAM			

Acronyms and Abbreviations

Before issuing a document, check that all used acronyms and abbreviations are listed in the table in this section.

Please list **only** the acronyms used in the document

ACROYNM	EXPLANATION
2D	2 Degrees Network
ARC	Arcese Transporti
BDF	Beiersdorf
BLU	Bluewave
BOR	Borealis L A T
CI (dissemination level)	Classified, as referred to in Commission Decision 2001/844/EC
C-ITS	Co-operative Intelligent Transport Systems
CO (Dissemination level)	Confidential
COL	Colruyt Group
CRI	CRITT Transport et Logistique
CT	Co-ordination team
DEC (deliverable type)	Websites, patent fillings, videos, etc.
DEL	Delhaize
DEM (deliverable type)	Demonstrator, Pilot, Prototype
EC	European Commission
ELU	ELUPEG
EVO	EVO Dutch Shippers Council
FIEGE	FIEGE Logistik
FTL	Full Truck Load
GHG	Green House Gas
GIV	Giventis

GPP	General Project Partners
GS1-BE	GS1 Belgium and Luxembourg
GS1-CH	GS1 Switzerland
GS1-D	GS1 Germany
ICT	Information and Communications Technology
INEA	Innovation and Networks Executive Agency
KC	Kimberly-Clark Europe
KKL	Kneppelhout & Korthals
LSP	Logistics Service Provider
LTL	Less Than Truckload
PAN	Panasonic Europe
PAS	Pastu Consult
PING	Pinguin Foods Polska
PU (Dissemination level)	Public
R (deliverable type)	Document, Report
RV1	Review Number
SME	Small and Medium-sized Enterprise
TRL	Technical Readiness Levels
TRV	Tri-Vizor
TX	TX Logistik

UNI	Unilever
VLE	Vlerick Business School
VU	VU University of Amsterdam
WEN	Wenzel Logistics
WKTS	Wolters Kluwer Transport Services
WP	Work Package
WPL	Work Package Leader
WPLG	Work Package Leader Group
YSC	Ysco