



ANNUAL MEETING 2021 OF REGIONAL ADVISORY BOARD

D.T3.2.4

Work paper

Version 1.0
09.2021

1. Workshop documentation

This document provides a short description of the Annual meeting 2020 of Regional Advisory Board for Emilia-Romagna Region (D.T3.2.4)

1.1. Workshop overview

Annual Meeting 2020	Regional Advisory Board I
PP (number), host	PP8- PP10
Date, location or online	15th September 2021 Online
Form of workshop ¹	Webinar open to innovation ecosystem innovation in Emilia-Romagna
Number and type of participants ²	43 participants belong to: Emilia-Romagna' departments, ITL, Intermodal infrastructure managers, regional MTO, innovation agencies, regional intermodal cluster.

1.2. Summary of the meeting

ITL Foundation (PP8) and Emilia-Romagna region (PP10) organised the Annual meeting 2020 of Regional Advisory Board for Emilia-Romagna Region (D.T3.2.4) on 15th September 2021.

The Regional advisory board is a “networking group” composed by public and private stakeholders involved in rail transport issue. The main aim of the Regional advisory board is to co-create the strategies of REIF through integration of project findings into the regions, establishing a new permanent coordination mechanism to facilitate the realisation of infrastructures and service developments.

In the Annual meeting 2020 of Regional Advisory Board was presented the main finding of the Draft roadmap (D.T3.2.3), based on the priority list of action and cost estimation (D.T.1.4.2). During the meeting, the discussion focused on the definition of operational plan to support new infrastructures to launch new service to 2030 in Emilia-Romagna's area.

Mr. Sergio Barbarino - Chairperson of ALICE - The EU Logistic innovation Platform. Mr. Barbarino provided a speech about Digital services for efficient and sustainable logistics: myths, realities and perspectives.

During the meeting have been discussed the leveraging freight decarbonisation parameters to achieve a reduction by 2030, asset and infrastructure utilisation and how Physical Internet will bring efficiency and sustainability to Logistics. It cannot fully solve the “Decarbonization Challenge”, but it will make it less onerous to meet and can deliver results in the critical next 10 years.

1.3. Annex

Hereby you can find the participants list and two screenshots of the meeting. In the annexes it can be found the presentations about REIF project and the presentations illustrated by Mr. Barbarino.

¹ Physical, virtual, 1 to 1, recorded video sent to the participants

² Please do not forget to compile a signing list from all participants during the workshop or anything similar if it is realised virtual or in case a video was recorded and sent to the potential participants of the regional capacity building workshops



Table 1 - Participant's list Regional Advisory Board 2020

Name Surname	Organisation / Company
Sergio Barbarino	P&G - ALICE
Alfeo Brognara	PP10 - Regione Emilia-Romagna
Leonardo Diegoli	PP10 - Regione Emilia-Romagna
Sabrina Mingozzi	PP10 - Regione Emilia-Romagna
Andrea Bardi	PP8 - Fondazione ITL
Francesco P. Nanni Costa	PP8 - Fondazione ITL
Anna Giarandoni	PP8 - Fondazione ITL
Giuseppe Luppino	PP8 - Fondazione ITL
Mignani Daniela	PP8 - Fondazione ITL
Claudia Sciommeri	PP8 - Fondazione ITL
Antonio Dallara	PP8 - Fondazione ITL
Guido Fabbri	PP8 - Fondazione ITL
Denis Grasso	PP8 - Fondazione ITL
Crespi Sergio	Interporto Bologna
Marco Spinedi	Interporto Bologna
Giuseppe Dall'Asta	Interporto Bologna
Matteo Crema	CEPIM spa
Fabio De Vivi	Terminal Rubiera
Gino Maioli	Dinazzano Po
Alessandro Saponi	Lavoropiù Spa
Fabrizio Ossani	Federservice
Ilaria Aquilano	Rekeep
Stefania Settevendemie	Demetra Formazione
Giuseppe Confessore	CNR
Massimo Carnevali	Clust-ER Innovate
Antonio Corradi	Clust-ER Innovate
Giuseppe Mineo	Inwind
Raffaello Cioni	Port manager
Luigi Lanza	
Francesco Florastella	
Lorenzo Crudo	
Marcello Pinna	TRT
Andrea Rosa	Meta
Sabrina Bini	Autorità di Sistema Portuale del Mare Adriatico Centro Settentrionale



Luca Montanari	Città Metropolitana di Bologna
Leonardo Figna	
Danilo Piscopo	
Luca Tura	ITIS Ravenna

Figure 1 RAB 2020 Screenshot





Figure 2 RCB3 Screenshot

The screenshot shows a Zoom meeting in progress. At the top, there is a grid of participant video thumbnails. The main screen displays a presentation slide titled "PARTNERSHIP" featuring a map of Central Europe with red dots indicating project locations. To the right of the map is a list of project partners.

Project Partners

1. Thuringian Ministry for Infrastructure and Agriculture
2. University of Applied Science Erfurt
3. Regional Government of Styria
4. Institute for Traffic and Transport Ljubljana
5. Port of Trieste
6. Intermodal Transport Cluster
7. Central European Transport Corridor EGTC
8. Institute for Transport and Logistics Foundation
9. Port of Koper
10. Emilia Romagna Region

At the bottom of the slide, it says "TAKING COOPERATION FORWARD" with a logo. The Zoom interface includes a status bar at the bottom with icons for Microfono, Fotocamera, Schermo, and Abbandona, and a name tag for "Andrea Bardi sta presentando".

TAKING
COOPERATION
FORWARD



D.T3.2.4 Annual Meetings 2020 of the regional advisory boards
15 September 2021



Progetto REIF – Draft Roadmap WP.T3



REIF | Emilia Romagna region | PP8 ITL | PP10 RER | Francesco Paolo Nanni Costa

AGENDA

Obiettivi e
dati chiave
del Progetto

Partenariato

Struttura del
progetto

WP.T1:
Priority list
of action

WP.T2: Draft
Roadmap



OBIETTIVI DEL PROGETTO



L'obiettivo principale del progetto REIF è promuovere il **trasporto merci ferroviario regionale** quale **infrastruttura di raccordo** a supporto del **trasporto ferroviario delle merci** lungo i **corridoi di trasporto europei** (reti TEN-T).

Le attività mirano a istituire dei comitati consultivi (*advisory board*) permanenti che realizzino e monitorino il piano operativo (*road map*) per lo sviluppo del trasporto intermodale regionale e a rafforzare la cooperazione degli stakeholder sulle tematiche di progetto



REIF: TIMEPLAN E FINANZIAMENTI



- **REIF** - Regional infrastructure for railway freight transport – revitalized
- Co-finanziato dal Programma Interreg Central Europe
- Durata del Progetto: 04/2019 – 03/2022
- Budget di Progetto : 2.215.341,50€ (di cui 1.811.200,65€ da fondi FESR)



PARTERNARIATO DI PROGETTO



Parternariato di progetto

1. Ministero delle Infrastrutture e dell'Agricoltura della Turingia (Germania)
2. Università delle Scienze Applicate di Erfurt (Germania)
3. Governo Regionale della Stiria (Austria)
4. Institute for Traffic and Transport Ljubljana (Slovenia)
5. Porto di Trieste (Italia)
6. Intermodal Transport Cluster (Croazia)
7. Central European Transport Corridor EGTC (Polonia)
8. Fondazione ITL (Italia)
9. Porto di Koper (Slovenia)
10. Regione Emilia-Romagna (Italia)



STRUTTURA DEL PROGETTO

WP.M

Project management del progetto

WP.T1

Strumenti di governance per il potenziamento del trasporto merci regionale ferroviario

WP.T2

Implementazione e coordinamento di azioni pilota per superare i colli di bottiglia regionali e rafforzare i servizi intermodali

WP.T3

Promozione, integrazione nelle politiche locali e trasferimento dei risultati raggiunti

WP.C

Comunicazione



ATTIVITÀ WP.T1

Strumenti di governance per il potenziamento del trasporto merci regionale ferroviario

- Analisi dello status quo e dei trend futuri del settore del trasporto merci ferroviario regionale e raccolta di buone pratiche
- Analisi del mercato potenziale
- Identificazione dei colli di bottiglia nelle infrastrutture e nei servizi
- Conclusioni e definizioni di misure di policy



ATTIVITÀ WP.T2

Implementazione e coordinamento di azioni pilota per superare i colli di bottiglia regionali e rafforzare i servizi intermodali

- Macro-tema 1: Istituzione di piattaforme innovative di governance (Azione pilota #1,#2)
- Macro-tema 2: Identificazione di misure per la rimozione dei colli di bottiglia sulla rete intermodale a livello regionale (#3,#4,#5)
- Macro-tema 3: Analisi di fattibilità per l'attivazione di nuovi servizi ferroviari di trasporto merce (#6,#7,#8)
- Sintesi e apprendimento reciproco dei risultati raggiunti



ATTIVITÀ WP.T3

Promozione, integrazione nelle politiche locali e trasferimento dei risultati raggiunti

- Disseminazione dei risultati raggiunti nelle attività di progetto (Regional capacity building workshop)
- Definizione di un piano operativo «Road Map» per le azioni di potenziamento del sistema intermodale regionale
- Integrazione dei risultati negli strumenti di policy regionali
- Trasferimento e condivisione dei risultati raggiunti nell'area di Programma



STAKEHOLDER COINVOLTI



I principali stakeholder coinvolti nelle attività del progetto REIF sono i componenti del cluster ER.I.C.



TAKING COOPERATION FORWARD



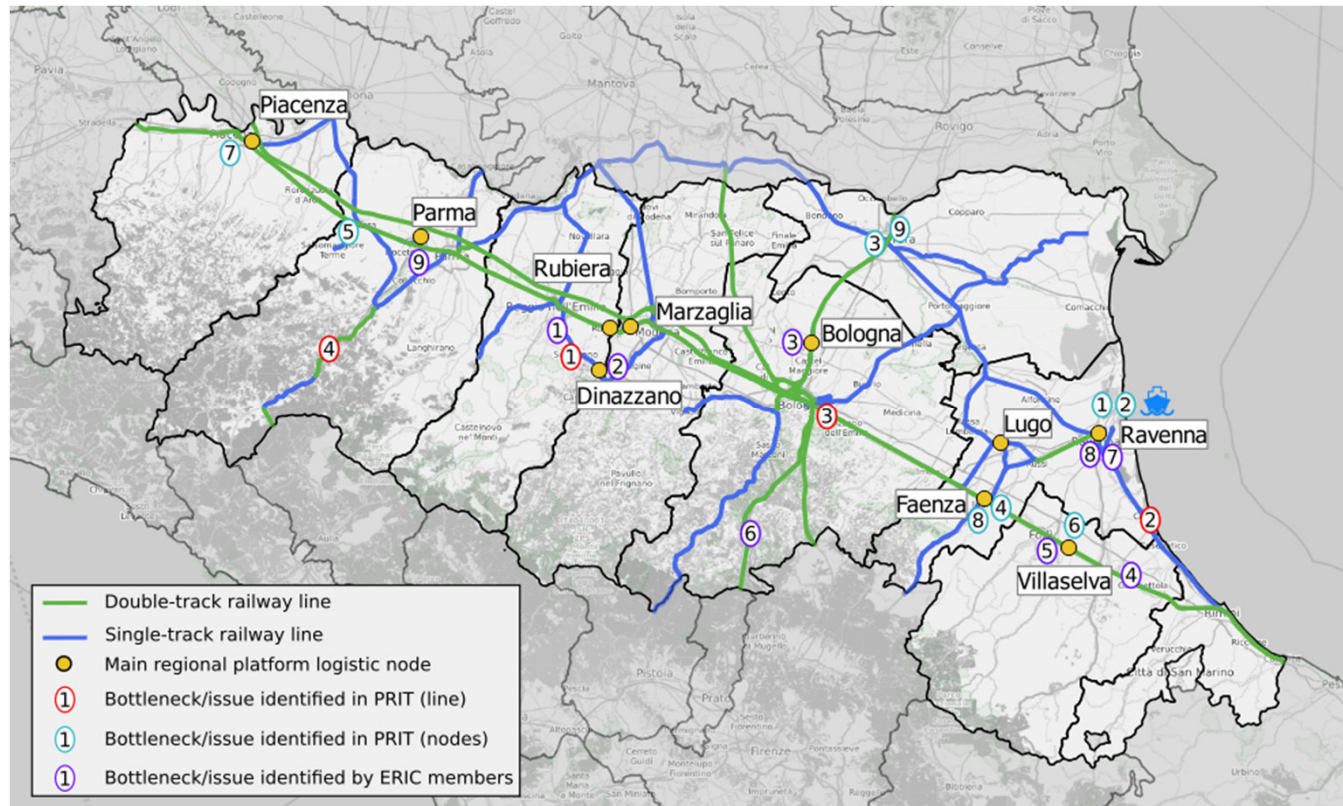
INTERVENTI PRIORITARI E STIMA DEI COSTI -

D.1.4.2

Action	Priority area	Challenges/ results, impact of action	Priority level	Area/level	Timeframe (start of action)	Estimated costs €	Potential indicators to measure the success of the action	Responsible entity
Upgrade of the left shunting track of Ravenna Port	Transport infrastructures	The action will improve the rail accessibility to the rail terminal located on the left bank of Ravenna Port	H	Ravenna Port	L (in more than 5 years)	21.000.000	- Number of trains shifted from Ravenna passenger station to Candiano freight station - Increasing volume of freight moved by train from Ravenna Port	RFI – Rete ferroviaria italiana (railway infrastructure manager)
Upgrade of the right shunting track of Ravenna Port	Transport infrastructures	The action will improve the rail accessibility to the rail terminal located on the right bank of Ravenna Port	H	Ravenna Port	L (in more than 5 years)	26.700.000	- Number of trains shifted from Ravenna passenger station to Candiano freight station - Increasing volume of freight moved by train from Ravenna Port	RFI – Rete ferroviaria italiana (railway infrastructure manager)
Doubling of railway line between Parma and Vicofertile stations and upgrading of Parma station	Transport infrastructures	The action will increase the capacity of Parma-La Spezia railway line	H	West area of Emilia-Romagna region	L (in more than 5 years)	247.000.000	- Increased capacity of railway line	RFI – Rete ferroviaria italiana (railway infrastructure manager)
Upgrade of Reggio Emilia-Sassuolo railway line	Transport infrastructures	The action will increase the capacity of Reggio Emilia - Sassuolo railway line	H	Central area of Emilia-Romagna region	S (1-2 years)	10.000.000	- Increasing of capacity of railway line	FER – Ferrovie Emilia-Romagna (railway infrastructure manager)
Construction of the new freight railway line between Dignazzo and Marzabotto freight station	Transport infrastructures	The action will improve the capacity of freight rail network of Emilia-Romagna region	H	Central area of Emilia-Romagna region	L (in more than 5 years)	To be defined ²	- Increasing of capacity of freight rail network of Emilia-Romagna region	FER – Ferrovie Emilia-Romagna (railway infrastructure manager)
Regional law on incentive for regional rail transport	Legislation	The action is stimulating the rail freight transport	H	–	S (1-2 years)	3.000.000	- Number of new freight rail transport services - Tons of CO2 avoided	Emilia-Romagna region
Financing training activities	Administration	The action will finance training activities for new professional figures in the logistic ad intermodal system	M		M (in 3-5 years)	20.000		Emilia-Romagna region
Financing support activities to ERIC's members	Administration	The action will provide support the activities of ERIC's members	M		M (in 3-5 years)	130.000		Emilia-Romagna region
Establishment of Simplified Logistic Zone (ZLS)	Administration	The action will support the development of industrial and logistic activities connected to Ravenna Port	M		L (in more than 5 years)	7.000.000		Emilia-Romagna region



IDENTIFICAZIONE COLLI DI BOTTIGLIA- D.T1.3.3



INTERVENTI PRIORITARI E STIMA DEI COSTI -

D.1.4.2



- **Transport infrastructures:**
 - Upgrading of the left shunting track of Ravenna Port
 - Upgrade of the right shunting track of Ravenna Port
 - Doubling of railway line between Parma and Vicofertile stations and upgrading of Parma station
 - Upgrade of Reggio Emilia-Sassuolo railway line
 - Construction of the new freight railway line between Dinazzano and Marzaglia freight station
- **Legislation**
 - Regional law on incentive for regional rail transport
 - Establishment of Simplified Logistic Zone (ZLS)
- **Administration**
 - Financing training activities
 - Financing support activities to ERIC's members



DRAFT ROADMAP



- A partire dai risultati delle attività condotte nel WP.T1 e, in particolare dalla priority list, è stata redatta la «**Road Map**» ovvero un **piano operativo per l'implementazione delle azioni di potenziamento del sistema intermodale regionale**
- La prima definizione della Road Map è stata redatta nel mese di Marzo 2021. La versione definitiva sarà pubblicata a Settembre 2021, in seguito ai **risultati raggiunti dalle attività pilota (WP.T2)** e dalla **presentazione della stessa ai tavoli degli *advisory board***
- La Final Road Map sarà anche arricchita dalle evidenze emerse **nell'individuazione delle potenziali misure di policy e delle fonti di finanziamento** necessarie alla sua implementazione (*Settembre 2021*)
- Lo sviluppo della Road Map è focalizzato su azioni ritenute prioritarie



STRUTTURA ROADMAP



- Introduzione
- Capitalizzazione dei risultati emersi dalle attività del WP.T1 e WP.T2
- Sviluppi e sfide per l'implementazione delle azioni
- Identificazione delle azioni prioritarie e dei relativi costi
- Descrizione dettagliata di una azione per ambito di intervento
- Conclusioni



DRAFT ROADMAP EMILIA-ROMAGNA



- *TRANSPORT INFRASTRUCTURE* -> Raddoppio della linea ferroviaria Pontremolese nella tratta compresa tra Parma e Vicofertile
- *LEGISLATION* -> Legge regionale di incentivo al trasporto ferroviario delle merci (L.R. 30/2019)
- *LEGISLATION* -> Istituzione della Zona Logistica Semplificata (L 205/2017 e DPCM n.12 del 25.01.2018)



GRAZIE PER L'ATTENZIONE



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COOPERATION
FORWARD

Physical internet

alice

Alliance for
Logistics Innovation
through Collaboration
in Europe



D.T3.2.4 Annual meeting 2020 of the regional advisory board
15th September 2021



Servizi digitali per una logistica efficiente e sostenibile: miti, realtà e prospettive



REIF | ITL Foundation & Emilia Romagna region | Keynote speech: Sergio Barbarino

INDICE

Introduzione e presentazione

Aspirazioni per una logistica sostenibile

Physical Internet. Definizione, Roadmap

Modularizzazione come elemento fondante della PI

ICT per la logistica. Iniziative Europee

Progetti CEF (Fenix)

Il fattore tempo: JIT, Sincronizzazione, Sincromodalita'

GeoVisibilita: esperienze sul campo

Nuovi modelli di Business per la PI

Conclusione





Sergio Barbarino, FRSC, MBA, MSc



Born in Naples 1967

Chemical Engineer in 1991 (Federico II Napoli)

MBA 2004 Solvay Business School Brussels

1991: Joined P&G in Belgium - Process Development Mr. Clean/Viakal

1998: Italy - Section Head Global Bleach Process design

2002: Relocated to Belgium - Principal Engineer Process Breakthrough

2007: Cincinnati Ohio - Leader Low cost Manufacturing demo project

2008: Brussels First Externally funded project on Microprocessing: P&G

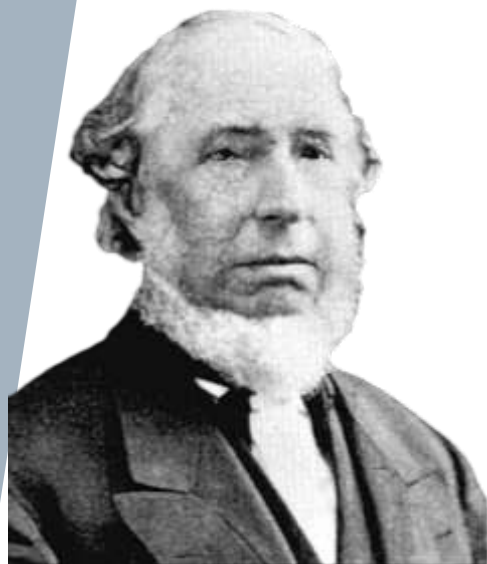
Leader of IMPULSE and F3 FP7 Projects

2009: Founder & Leader: P&G Supply Network Innovation Center

2011: Research Fellow (P&G Top Technical Talent Position)

2016-2019 Chairperson of ALICE The EU Logistic innovation Platform





P&G | EST. 1837



TOWARDS

A framework and process
for the development of a
**ROADMAP TOWARDS
ZERO EMISSIONS
LOGISTICS 2050**

December 2019

alice

Alliance for
Logistics Innovation
through Collaboration
in Europe

Physical Internet



TAKING COOPERATION FORWARD

ALICE membership is bringing an holistic approach → All key logistics stakeholders represented!

Type of Organization	Members	EU/International Associations
Shippers & Retail	      	   
Logistics Service Providers, Courier and Postal operators & Freight Forwarders	               	  
Ports, Hubs, Intermodal terminals & Transport Infrastructure	          	 
Vehicle Manufacturers, Load Carriers & handling units	    	
Information and Communication Technologies & Consultancy	                        	 
Regional & National Logistics Clusters & Associations	         	
Research and technology Centers	             	 
European Technology Platforms / PPPs	    	
Member States and innovation Funding*	  	

* Involved in ALICE Mirror Group

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■ La lezione di Michelangelo

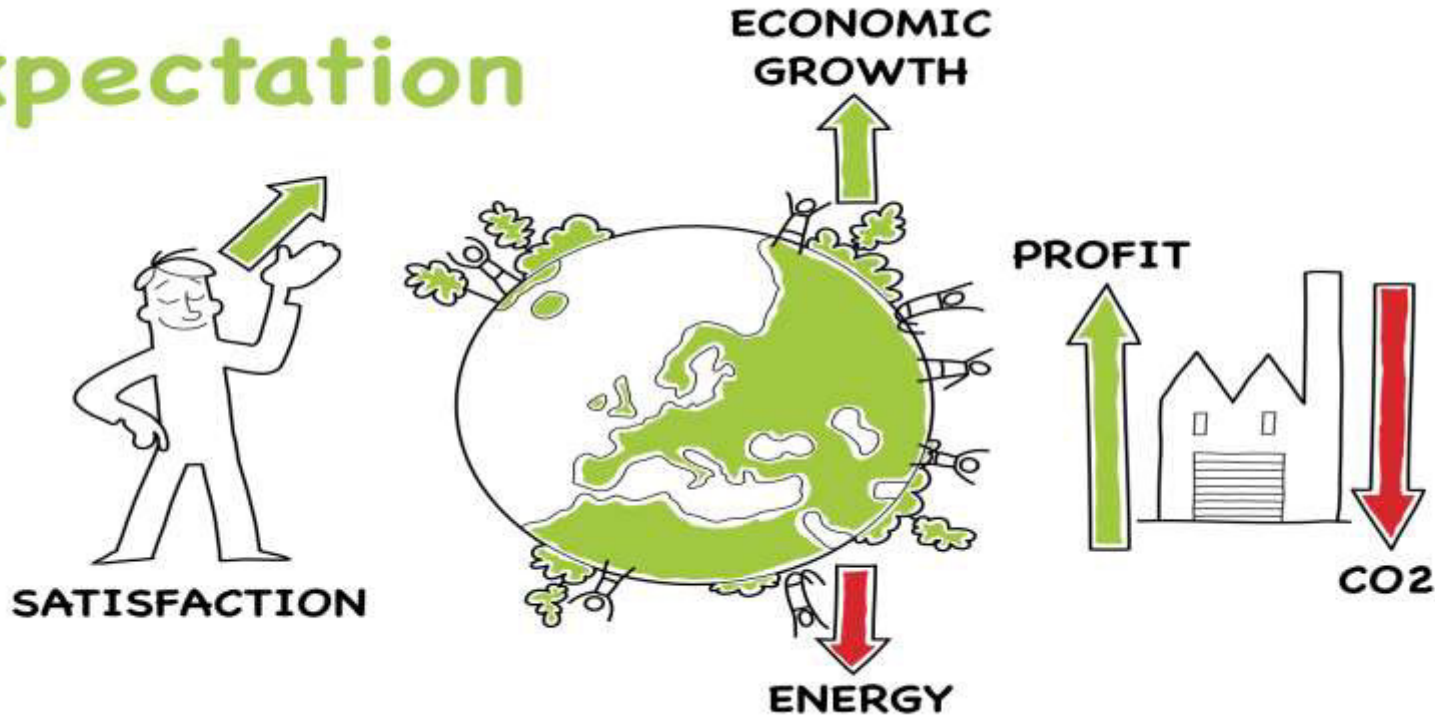


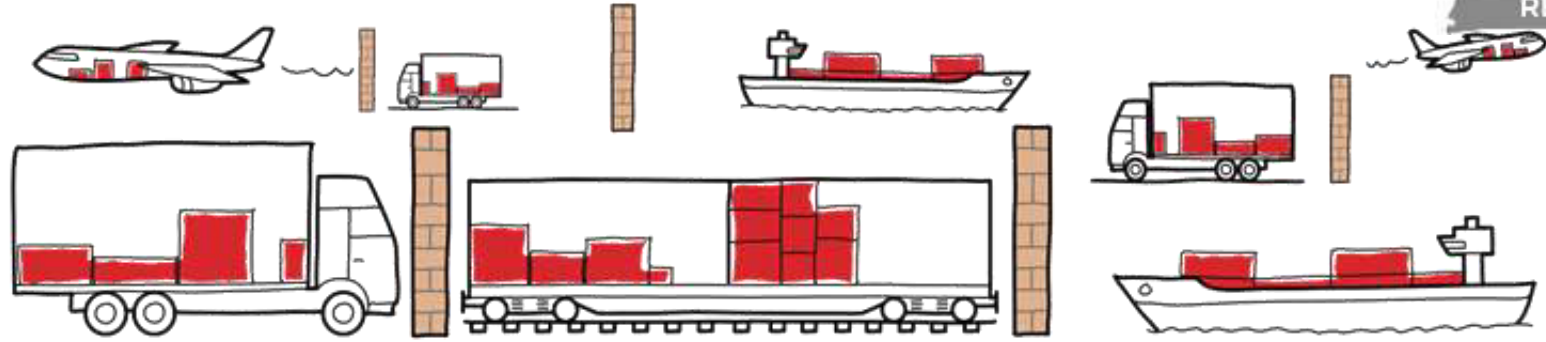
■ Miths and Hype



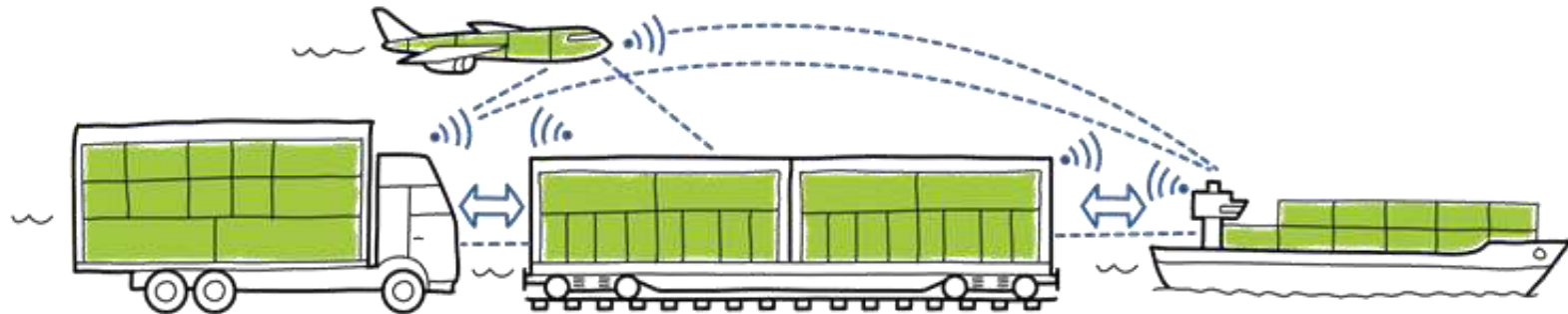
Sustainable Supply Chains

Expectation

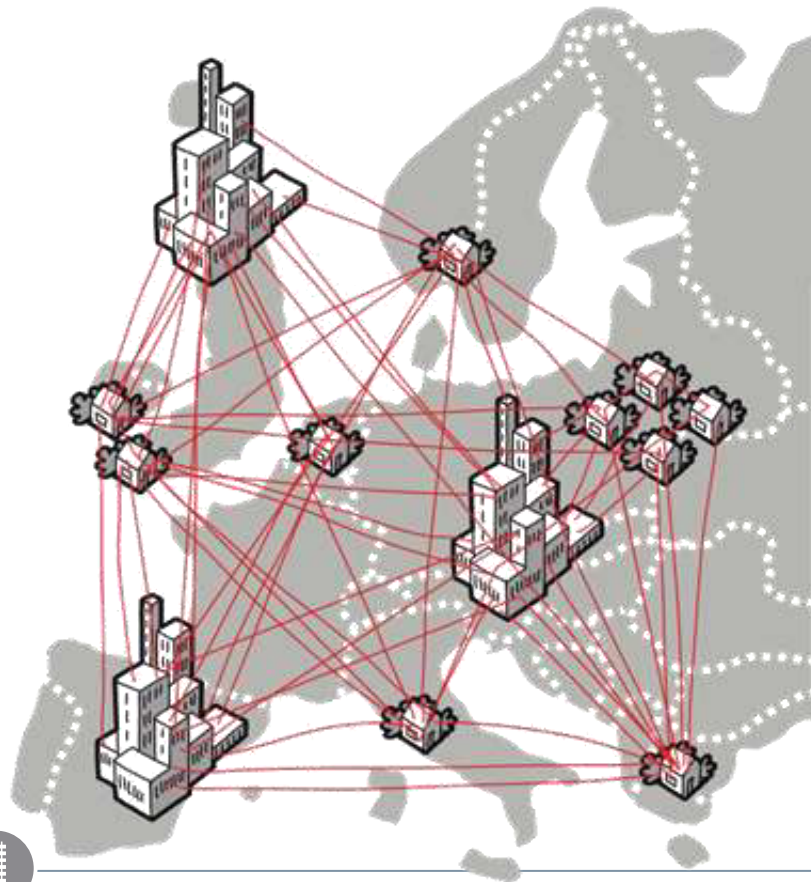




Challenge



Dream



International agreement to keep average global temperature 'well below' 2°C above pre-industrial times and 'endeavor to limit' it to 1.5°C – but already 1°C above 1850 temperature

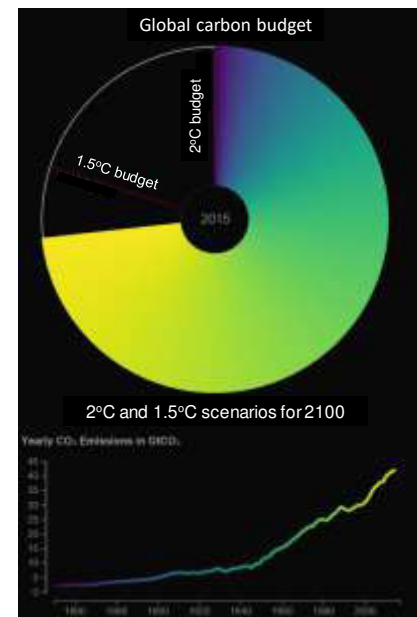
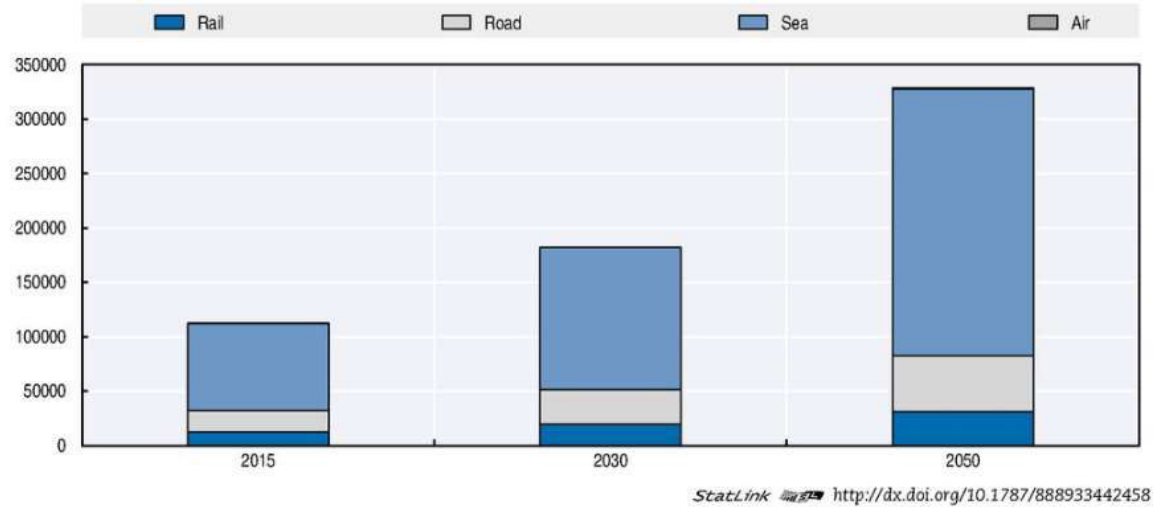
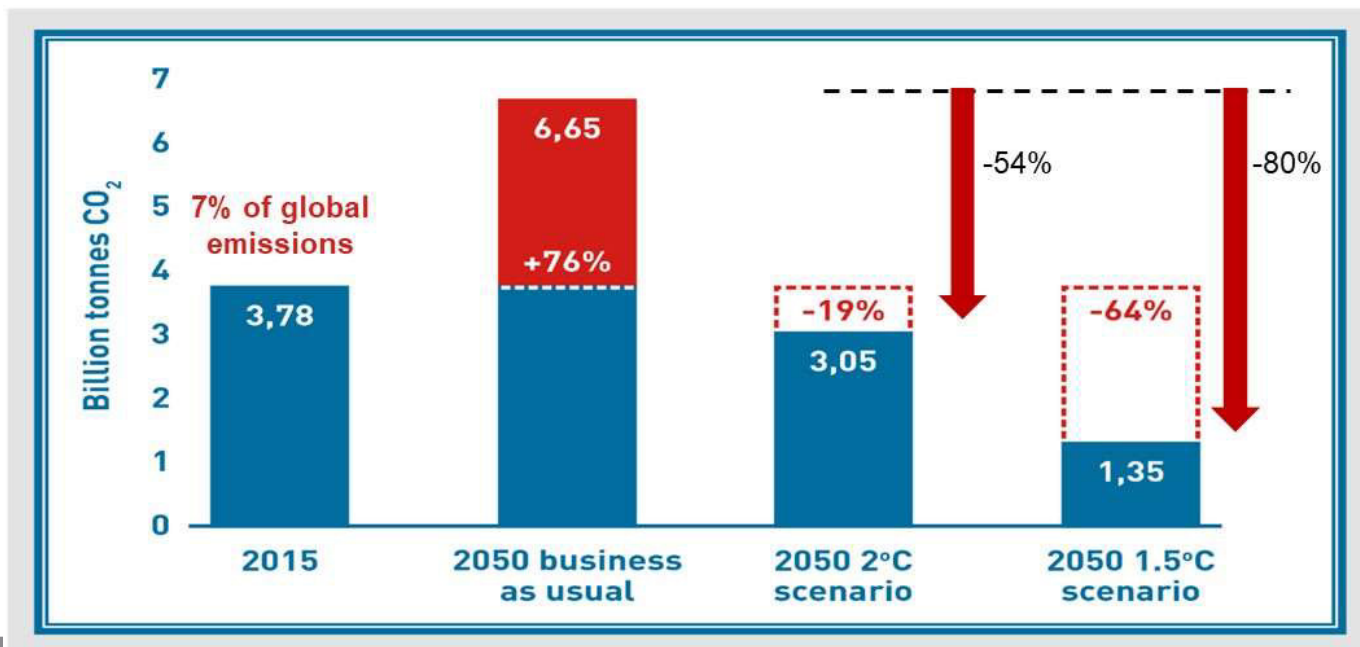


Figure 2.7. **Freight transport demand by mode**
Baseline scenario, billion tonne-kilometres



OECD PROJECTIONS (ITF 2017)

LOGISTICS EMISSIONS ON THE RISE BUT MUST COME DOWN



Smart Freight Centre (2017). Smart Freight Leadership, based on data from ITF Transport Outlook 2017 and SLoCaT 2016

N FORWARD

30%modal shift road to rail

*Rail improves energy efficiency by 50%
and reduces carbon intensity of energy by 50%*

+

20%improvement in routeingefficiency

+

30%increase in loading of laden vehicles

+

30%reduction in empty running

+

50%increase in energy efficiency

+

50%reduction in carbon intensity of the energy



83%reduction in carbon intensity

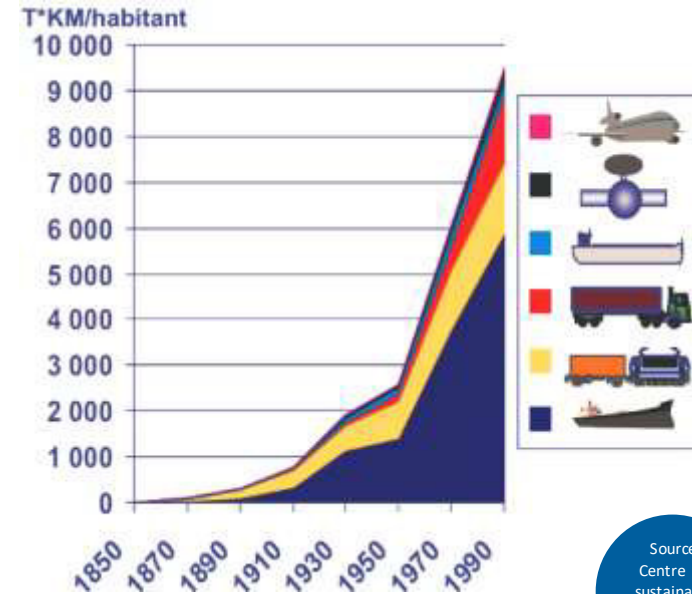
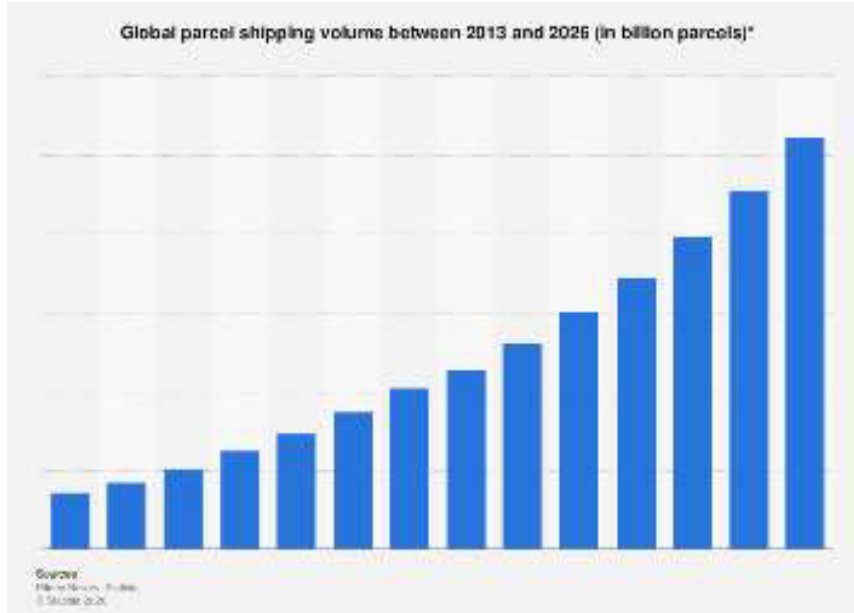
Factor 6

achievable in 20-30 years ?

may need to restrain
forecast growth in
demand for freight
transport



DEMAND FRAGMENTATION



Source:
Centre for
sustainable
transportation
Canada



Free Shipping

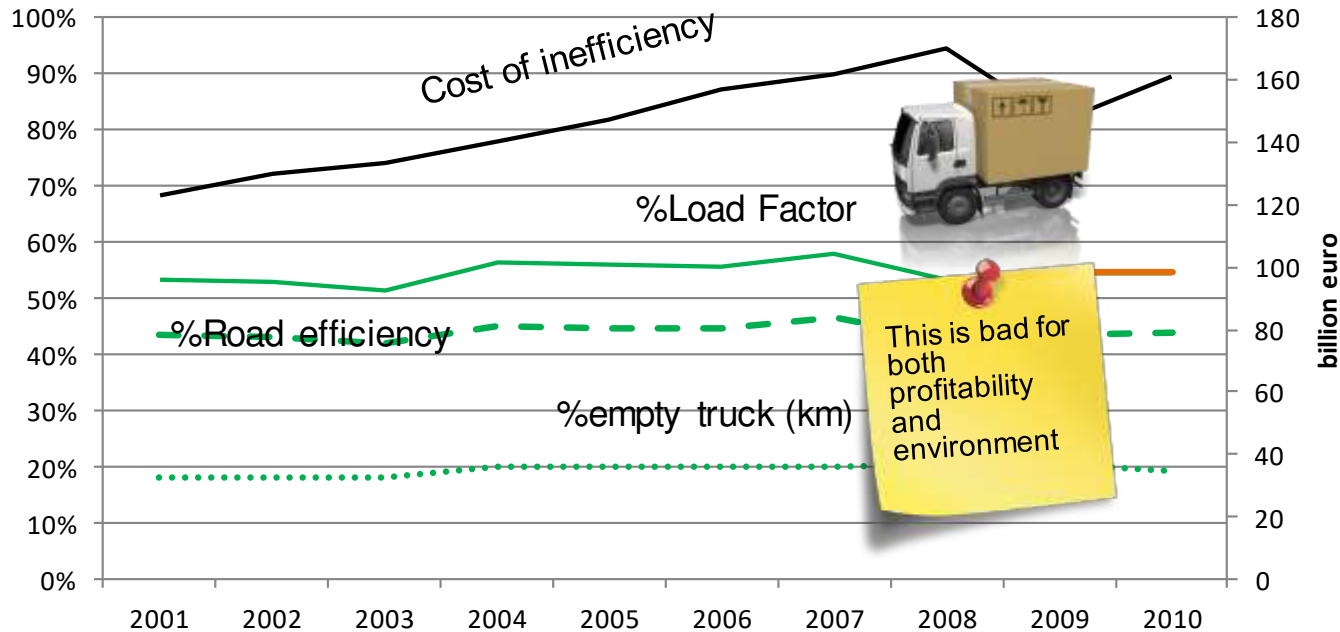


Free returns on items
purchased within the
last 60 days

CHALLENGE 2 ASSET UTILIZATION

Transport inefficiency is a €160 Billions loss and 1.3% of EU27 CO2 footprint!!!

10 YEARS: ZERO IMPROVEMENT ON LOAD FACTORS



CHALLENGE 2 ASSET UTILIZATION



100 % Full
But only 25% of weight limit



60% Full
But at 100% weight limit

This is bad for
both
profitability
and
environment

CHALLENGE 3

Infrastructure UTILIZATION



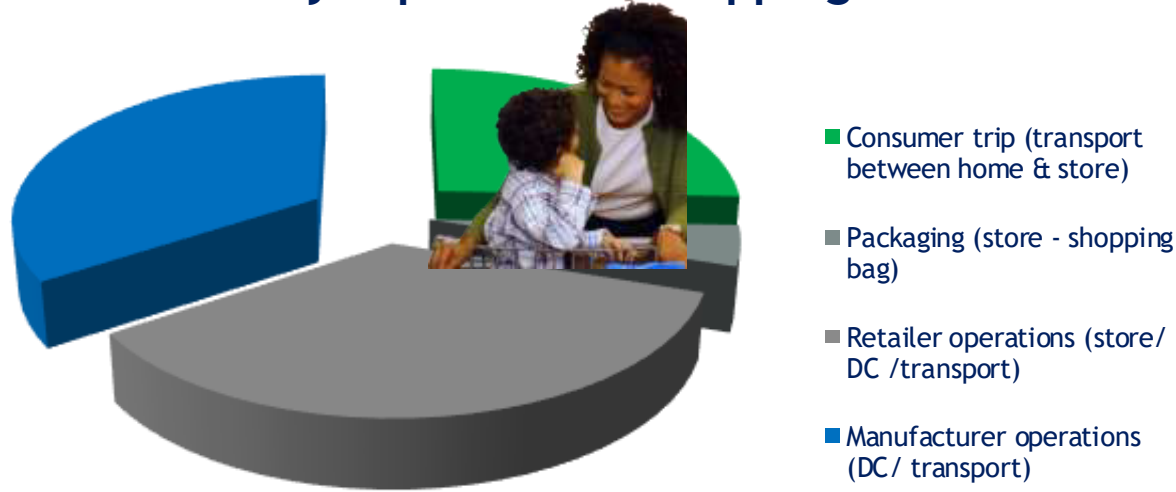
(Credit: F&L <https://www.linkedin.com/company/flforum/>)
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CHALLENGE 4

THE LAST MILE - BUT NOT THE LEAST

CO2 emitted by supermarket shopping



Source: LCA study, P. van Loon, J. Dewaele, L. Deketele - Heriot-Watt University / P&G
30 items/shopping basket - UK B&M supermarket - typical (average) travel behavior (distance, transport mode)

CHALLENGE 5

WASTE IN THE SUPPLY CHAIN

Food Waste Hotspots

We have established the waste profile for 25 of the most frequently purchased products so that we can identify those areas where we should prioritise our efforts. This infographic shows some of the key hotspots from five of the products we analysed and what we are doing to tackle waste across the supply chain.



Grapes

- Trading new varieties of grapes with a longer life
- New techniques to protect the grapes, e.g. plastic covers in some geographical areas
- Freely offering to get more fruit direct from our growers to our clients to ensure fresher products for our customers
- Consistent messaging around savings information on packs, online and integrated in customer communication

Total
Production
Wasted:
24%



Apples

- Growers involved in trials to reduce pest/disease in orchards by using natural predators
- Increased crop utilization through different product ranges
- Consistent messaging around savings information on packs, online and integrated in customer communication

Total
Production
Wasted:
40%



Bananas

- Improving use of off-cut top stems to make banana chips
- Taking off the left side support for a premium correlation in the banana segment
- More effective marketing of packs, ensuring the waste reduction on the top support release
- Free & tailored packaging depending on weight and ensuring the top cut stems become top cut chips
- Research partners to try produce banana chips

Total
Production
Wasted:
20%



Bagged Salad

- We will not offer availability in our biggest packs and, decreasing an old product promotion strategy to allow customers to try new and make it possible to
- Improving the available bags within the range following a trial on 100% bagged lettuce
- New pack offer to ensure the highest level of consistency to customers

Total
Production
Wasted:
68%



Bakery

- Supplier level from making sure the animal feed
- Sales based optimized for use to store business in 600 largest stores
- Building more accurate IT systems for ordering stock and planning daily production to store
- Training bakery managers on managing to reduce waste without reducing quality and availability
- Real time online provides tips and hints on how to use up the bread and bakery products

Total
Production
Wasted:
47%



Total food waste along the value chain:



Agriculture & supply



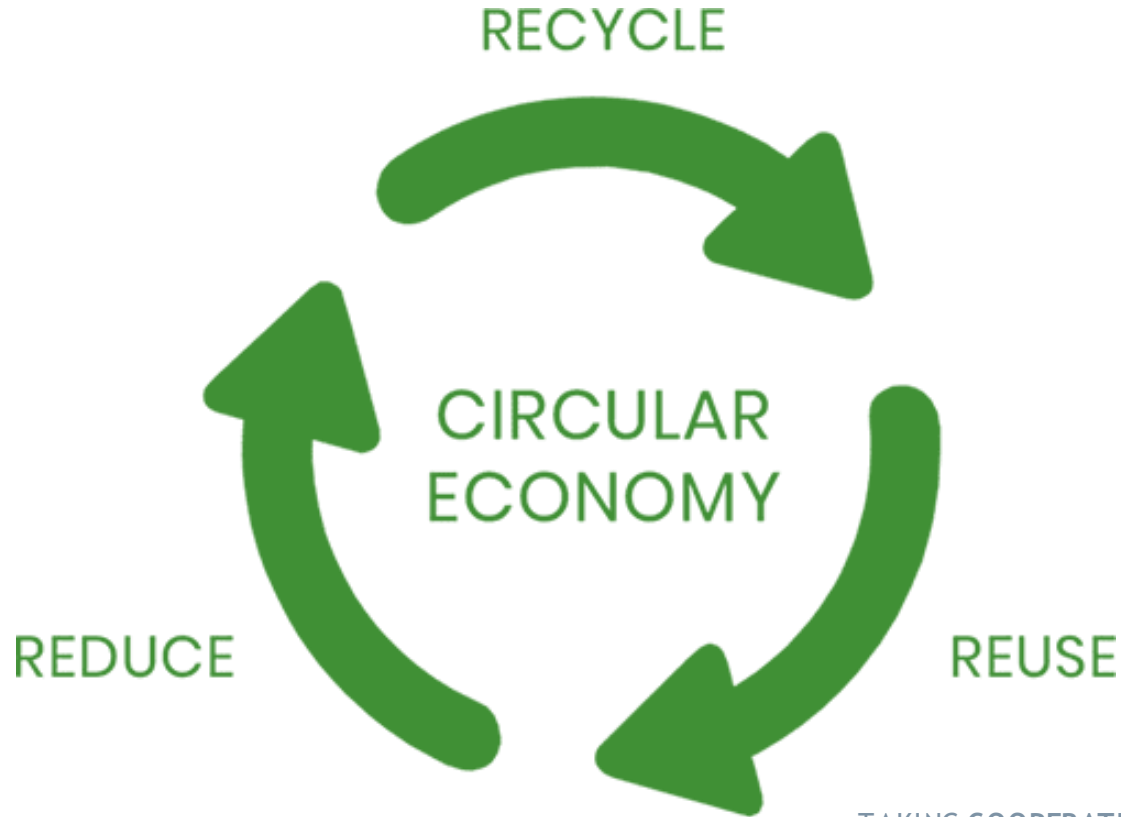
Retailer



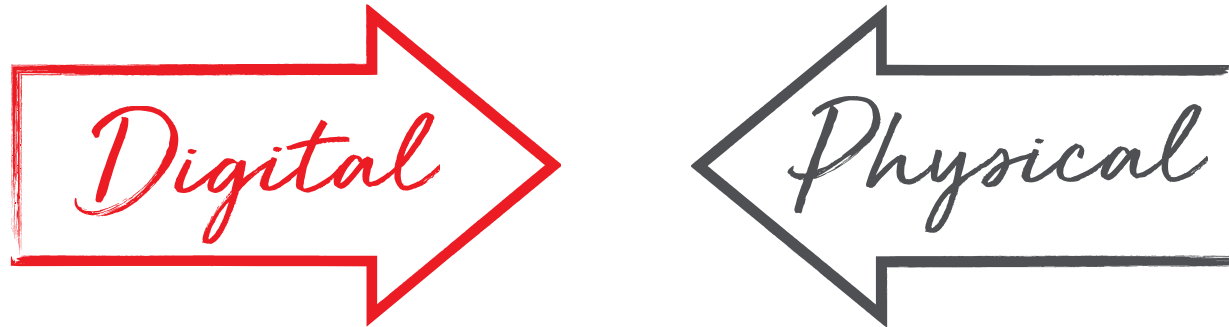
Consumer



CHALLENGE 6 SHIFT TO A CIRCULAR ECONOMY



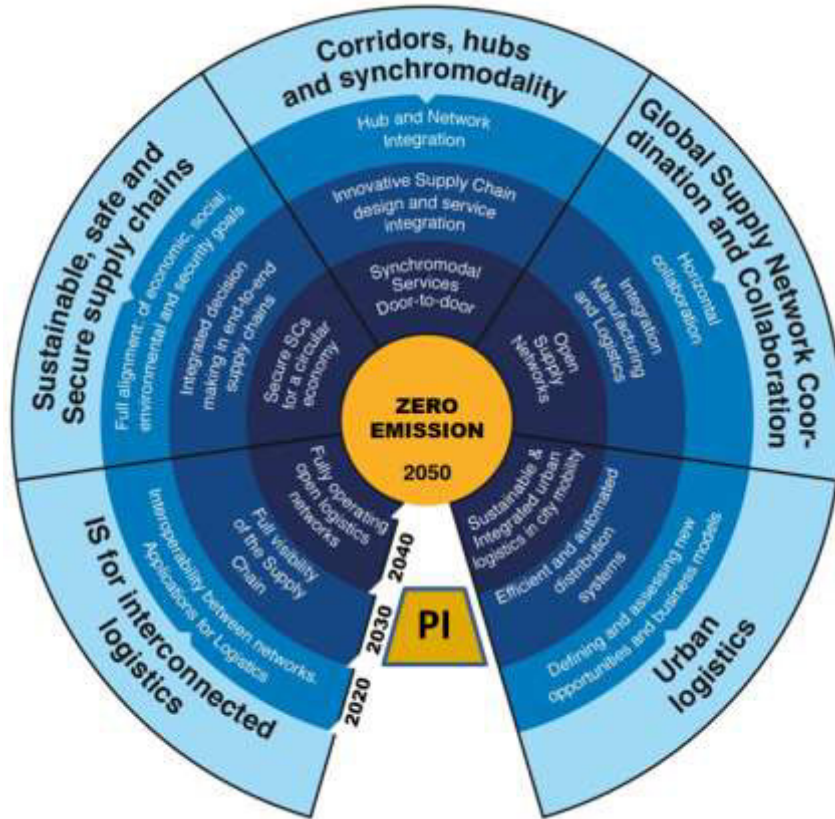
■ Where is the solution?



Physical Internet



The PI Roadmap



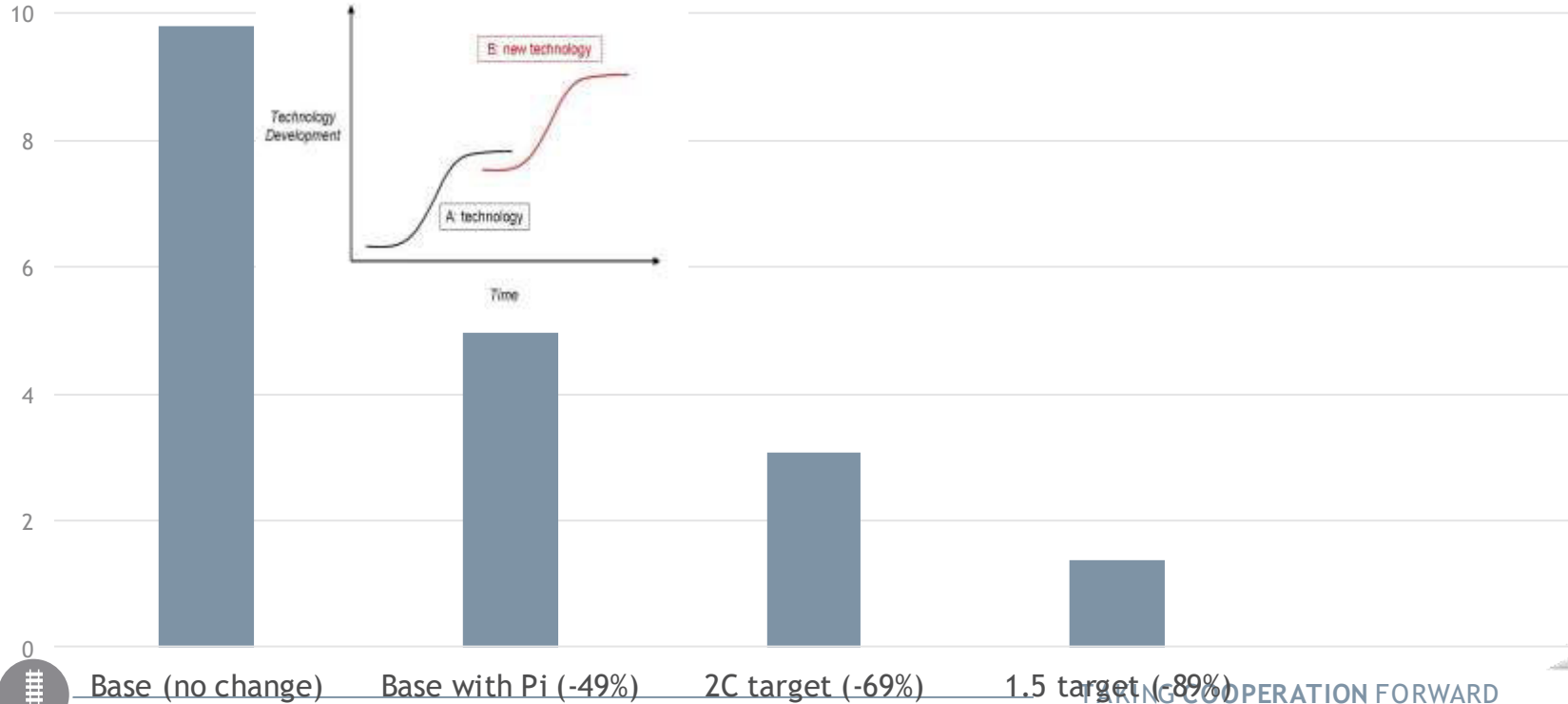
PI by 2030

Physical Internet will bring efficiency and sustainability to Logistics. It cannot fully solve the **Decarbonization Challenge**, but it will make it less onerous to meet.

And can deliver results in the critical next 10 years

2050 Freight Transport Scenarios

Footprint (in Billions Tons of CO₂)



ROADMAP IMPLEMENTATION

FREIGHT DEMAND GROWTH IS MANAGED



- Supply chain restructuring
- Localization and nearshoring
- Decentralization of production and stockholding

- Consumer behavior

TRANSPORT MODES ARE SMARTLY USED AND COMBINED



- Increased use of rail
- Increase use of short sea shipping and inland waterways
- Modular road and rail transport

- Multi-modal optimization
- Synchromodality

FLEETS AND ASSETS ARE SHARED AND USED TO THE MAX



- Load optimization
- Load consolidation and asset sharing
- Reduce empty moves
- Modular packaging and pallets
- Open transport

- Warehouses
- Increase storage density and energy efficiency

FLEETS AND ASSETS ARE ENERGY EFFICIENT



- Cleaner and efficient technologies
- Efficient vehicles and vessels
- High capacity vehicles / duo trailers
- Driving behavior
- Fleet operation
- Fleet maintenance

FLEETS AND ASSETS USE LOWEST EMISSIONS ENERGY SOURCE FEASIBLE



- Electric / hybrids
- Solar / Wind
- Biofuels
- Hydrogen
- CNG/bio-LNG
- Cleaner diesel
- Fuel management

Physical Internet

Physical Internet as the center piece towards decarbonization: Roadmaps and ALICE Themes interlinks?

ALICE Thematic Groups

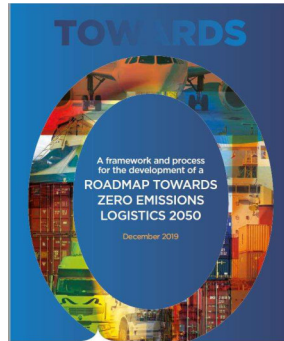
**Sustainable
Logistic Supply
Chains**

**Corridors, hubs
and synchro-
modality**

**Systems and
Technologies for
Interconnected
Logistics**

**Global Supply
Network
Coordination &
Collaboration**

**Urban
Logistics**



[Link to the document](#)



© Smart Freight Centre and ALICE-ETP based on A. McKinnon 'Decarbonizing Logistics' (2018)

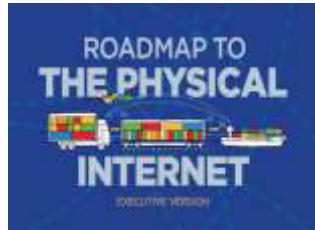
Roadmap Towards Zero Emissions Logistics 2050: ALICE (2019) www.atp-alice.eu

More focus needed

PI PHYSICAL
INTERNET

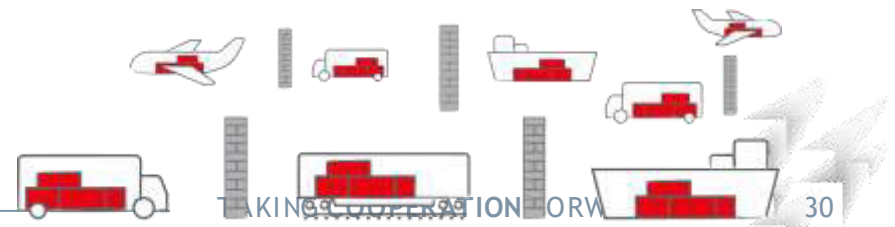
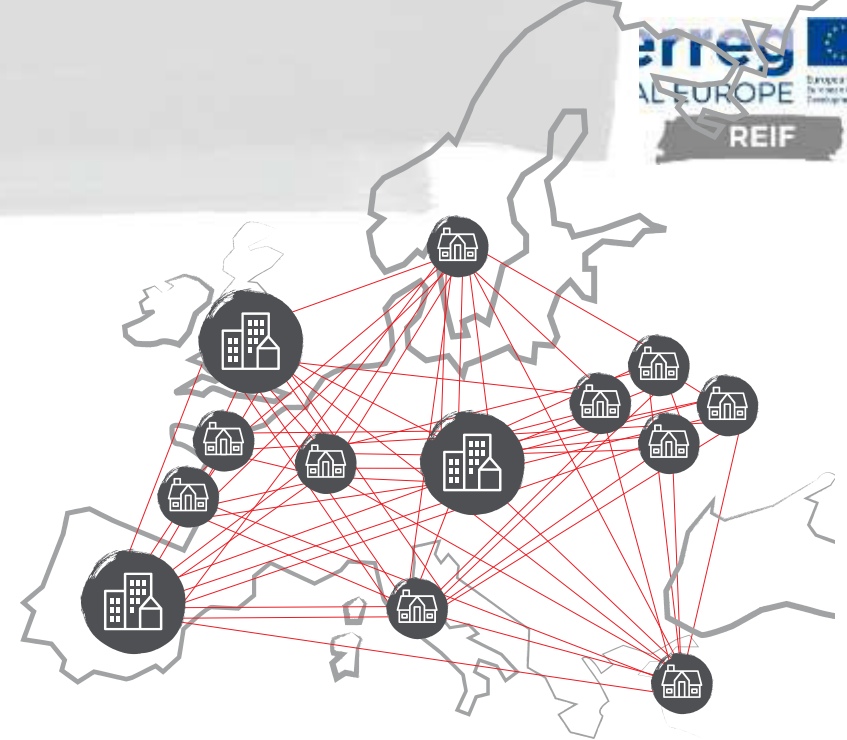
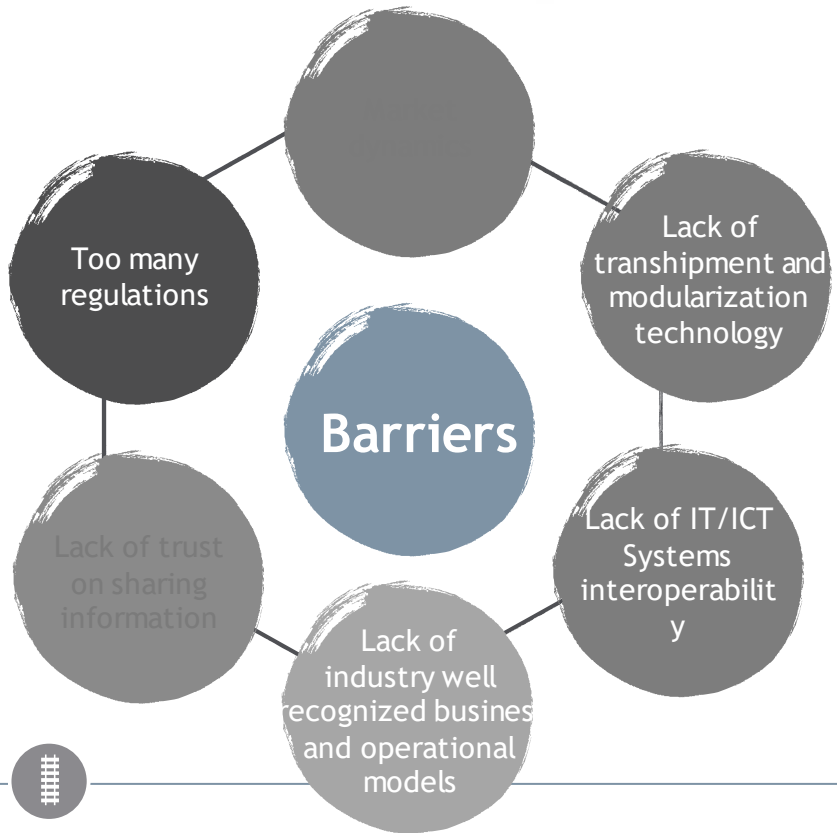
Current focus

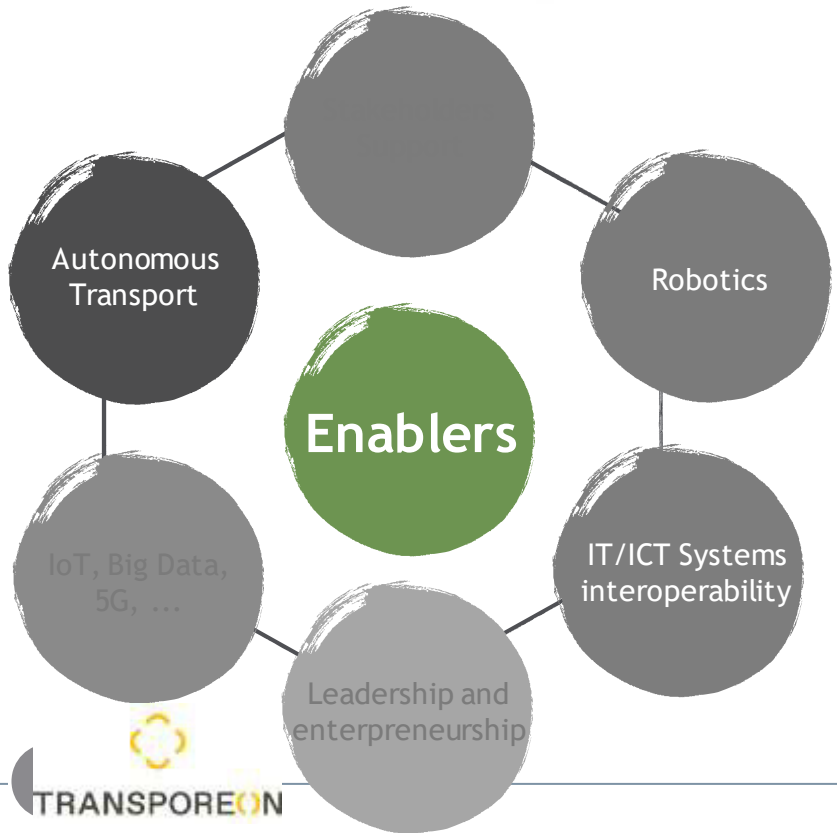
Making assets transition affordable!



[Link to the document](#)







WHAT HAS BEEN DONE ON THE PHYSICAL INTERNET?



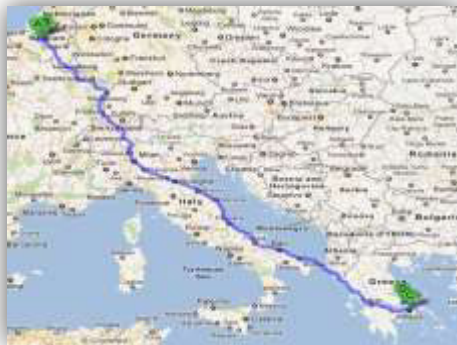
“Cube-Fill” Concept





BUT IT'S NOT ALWAYS EASY...

1. HORIZONTAL COLLABORATION



>15% less Cost

Save > 2M Tons CO₂



Vehicle Cube Fill
improvement

55% → 85%
by heavy & light mixing
Optimize Warehouse
Productivity



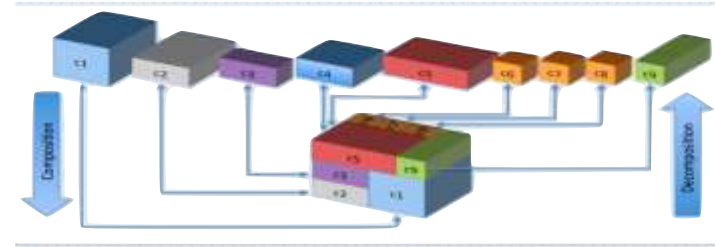
Show Industry

Leadership



■ The key to an open network approach: modules

- A generalization of containerization



Montreuil, B., Meller, R. D. and Ballot, E. (2010). Towards a Physical Internet : the impact on logistics facilities and material handling systems design and innovation. In: AL., K. G. E. (ed.) *Progress in Material Handling Research*. Material Handling Industry of America

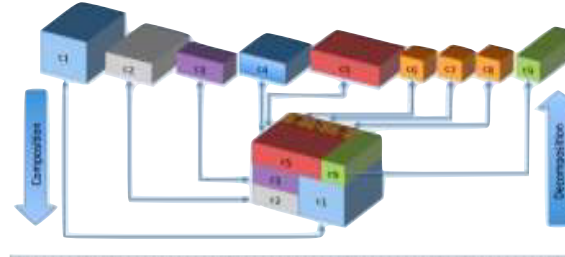
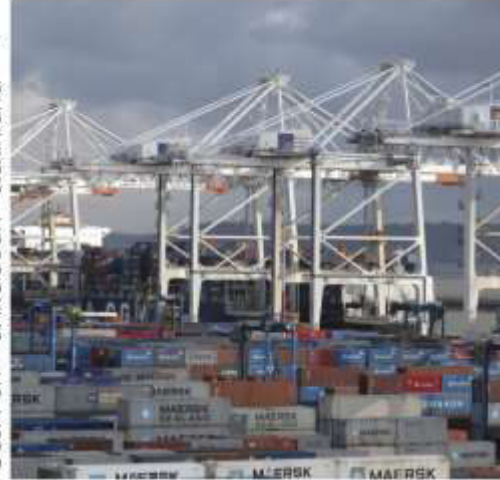
MODULARIZATION - THE EXPECTED IMPACT

The Box (2006) Marc Levinson, Princeton Press
Cost Port = 2x Ocean shipping = 2x Inland



>>

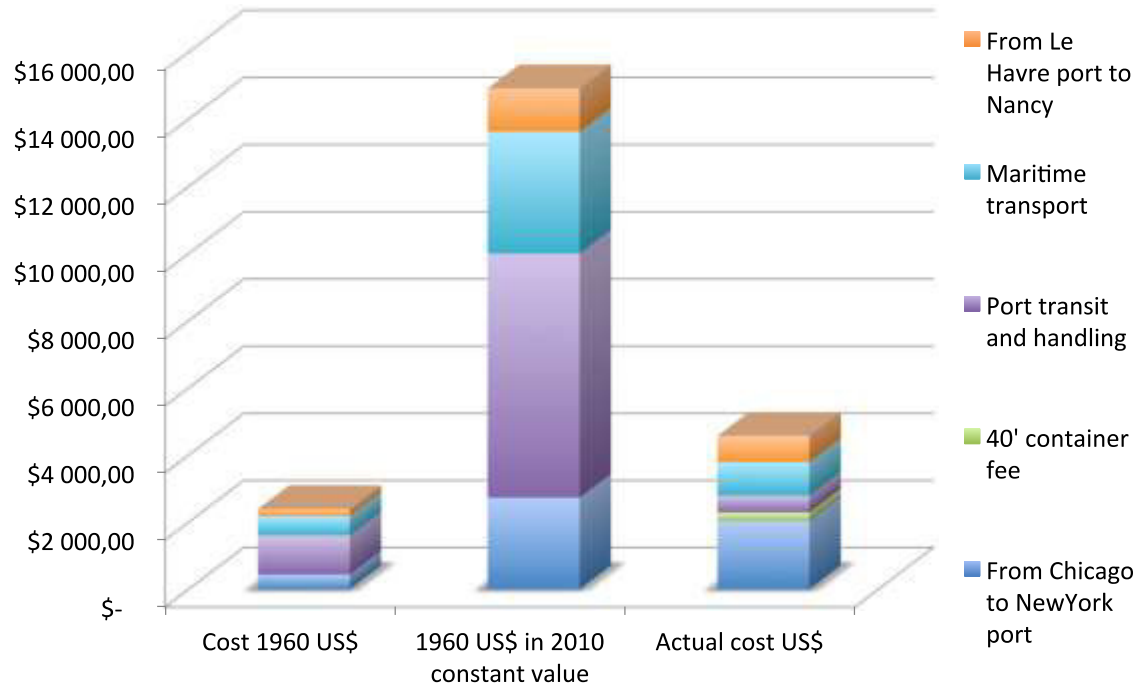
Cost Port = 0.4x Ocean = 0.8x Inland



Montreuil, B., Meller, R. D. and Ballot, E. (2010). Towards a Physical Internet : the impact on logistics facilities and material handling systems design and innovation. In: K. G. E. (ed.) Progress in Material Handling Research. Material Handling Industry of America

COOPERATION FORWARD

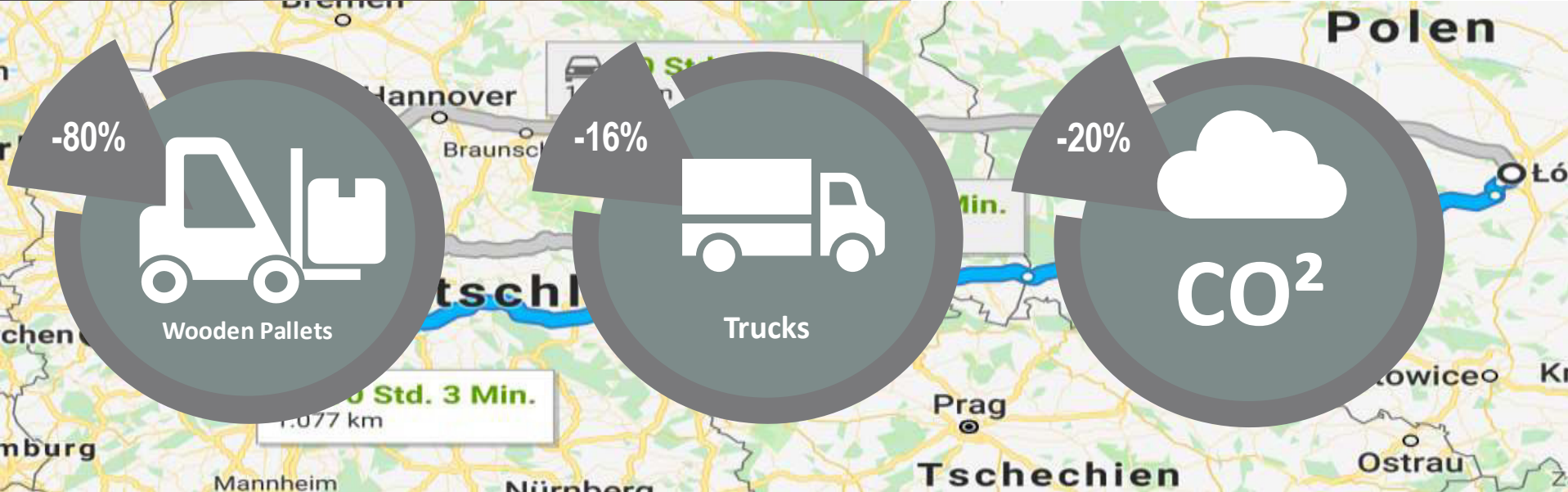
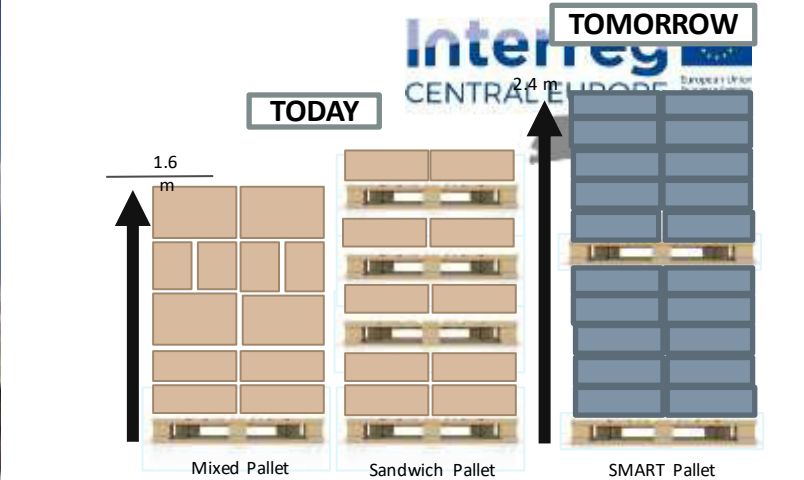
MODULARIZATION - THE EXPECTED IMPACT



Cost evolution
Source The
Box, HAROPA
& JB Hunt

EDEKA	Müller	Rossmann	dm	GS1
<p>Stauchdrucktest 3-er Stapel** 1.200 daN</p>	1.100 daN	1.000 daN	1.400 daN	FEM-Berechnung
<p>Bodendurchbiegung* 30Kg- 5mm Gewicht:3,2 Kg LKR-Boden,10mm</p>	<p>7,5kg – 12mm Gewicht: 2,3 Kg Einfacher Boden,</p>	<p>20kg – 11,3mm Gewicht: 2,8 Kg Einfacher Boden</p>	<p>30kg – 1,7mm Gewicht: 3,2 Kg Doppelboden</p>	<p>Gewicht: 2,7 Kg FEM-Berechnung, Wert zu definieren Doppelboden</p>
				

Efficient Transportation



TG 3 New topics / technologies

Digital Twins

Artificial Intelligence

Blockchain / DLT

5 G

(www.dtlf.eu) ; (<https://www.internationaldataspaces.org/>)



TG3 Systems and Technologies for Interconnected Logistics

Launching a **Artificial Intelligence** Interest Group

Blockchain Applications for Logistics Interest Group

New clustering of topics

ICT components and focused applications

Secure Data Exchange

System Level Integration

IoT Appl.

Big Data & Data Analytics

C-ITS applications

Governance

AI Applications

Automation and Robotics

Blockchain/DLT Applications



Follow up and share state of play with members of:

- Digital Transport and Logistics Forum (www.dtlf.eu) and related projects: FENIX & FEDERATED.
- International Data Space Association (<https://www.internationaldataspaces.org/>)

Leadership team internal discussion to link DTLF, FENIX, FEDERATED, IDSA

- **Document on EU Data Strategy & Data Spaces**
- Expert group on cooperative, connected, automated and autonomous mobility (E03657) ([Link](#))
New group created! Horizon Europe Partnership: CCAM-Connected, Cooperative Autonomous Mobility ([Link](#))
- Launch a questionnaire to members to identify which applications/technologies are more interesting for them, their experience and in which topics would like to focus on the activity. → September



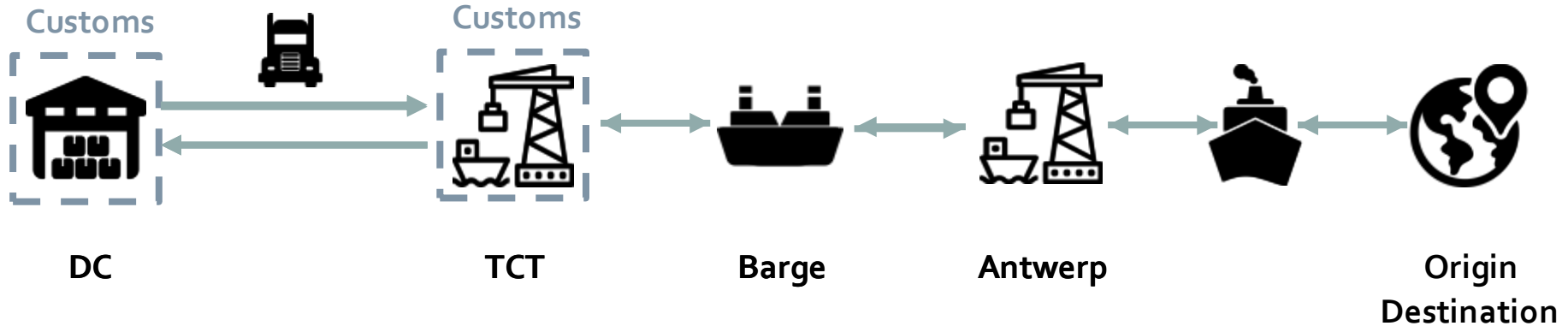


FENIX - P&G BELGIUM PILOT SITE



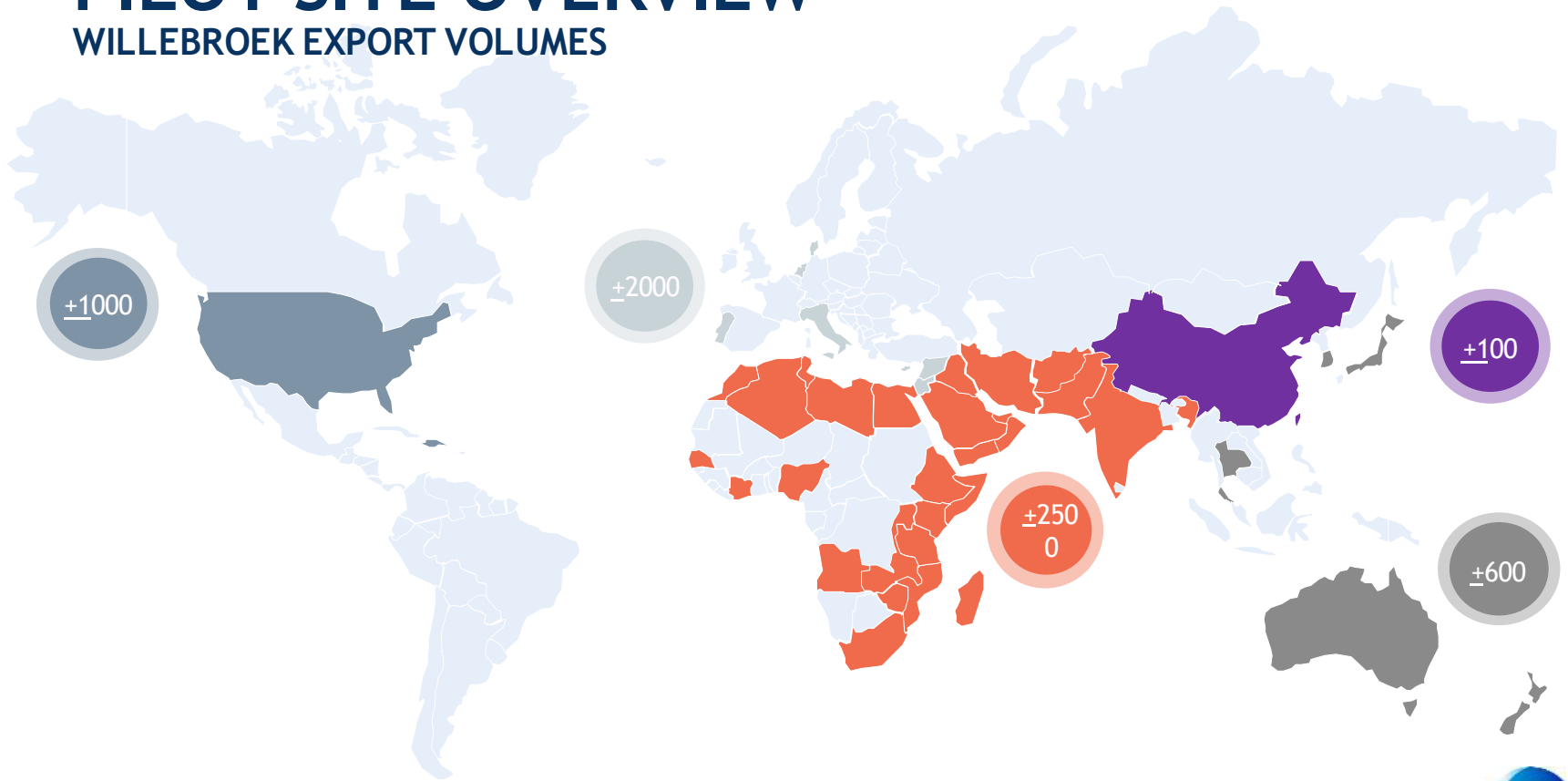
PILOT SITE OVERVIEW

WILLEBROEK SUPPLY CHAIN OPTIMIZATION - EXPORT AND IMPORT FLOW



PILOT SITE OVERVIEW

WILLEBROEK EXPORT VOLUMES



*Expressed in number of containers – data based on P12M



USE-CASE OVERVIEW



Use-case 1

On-time delivery

Utilization of data exchange between stakeholders will enable planning optimization

- Integration phase

Use-case 2

Track - and trace

Increased container visibility throughout the end-to-end supply chain

- Integration phase

Use-case 3

Dangerous goods services

Automated dangerous goods data exchange and validation between stakeholders

- Analysis phase

Use-case 4

A2B - and B2A services

Utilization of data exchange and true location information to trigger a compliant customs clearance process

- Analysis phase

Use-case 5 (A/B)

Sustainability (CO2 - Nox reduction)

UC is split in two main sub-deliverables: accurate emission data visibility (A) and development of the right toolset to enable sustainability related decision making (B)

- Integration phase (A), Analysis phase (B)

LOCAL PARTNERS AND STAKEHOLDERS

Pilot leader



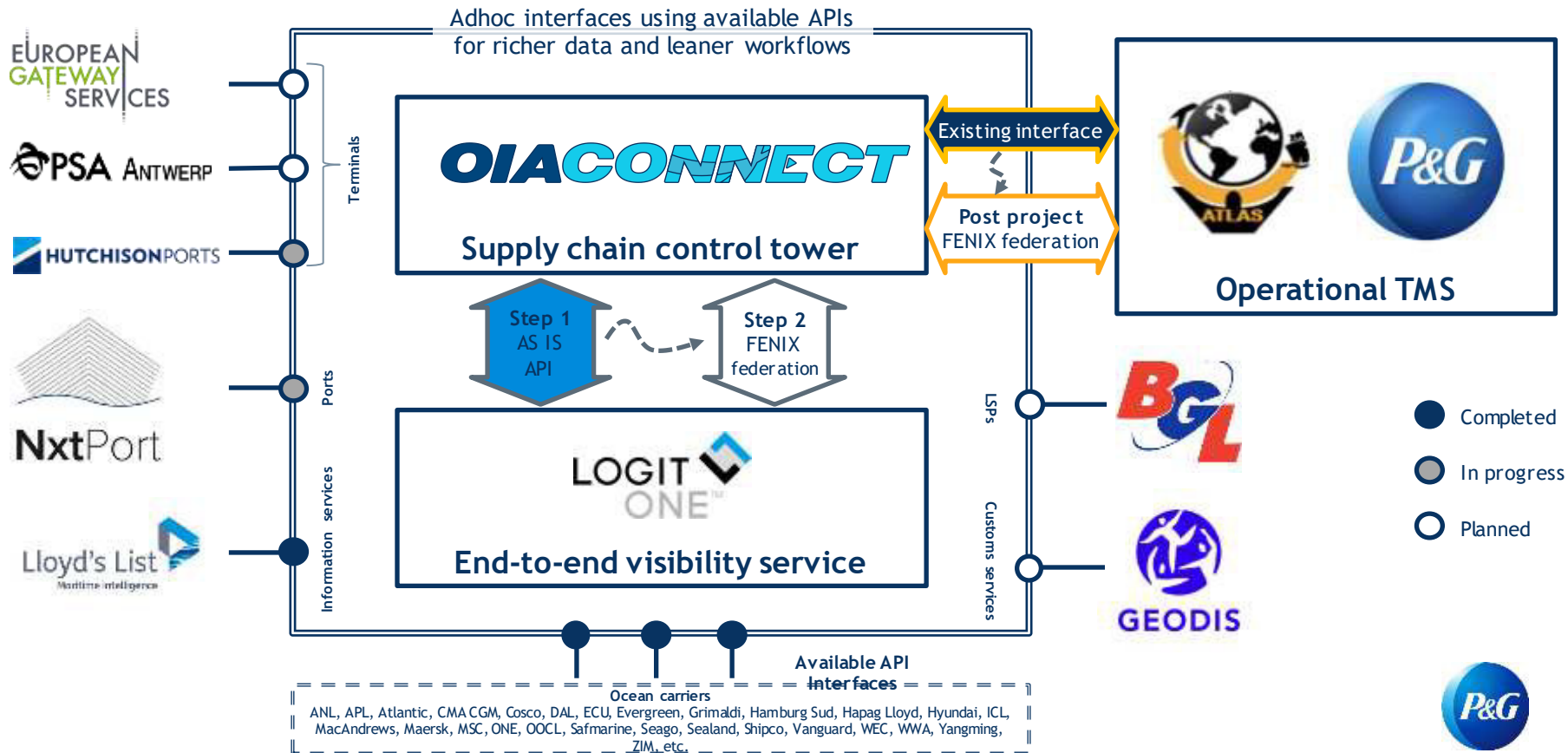
Partners



Stakeholders



THE FENIX ECOSYSTEM



TIME IN SUPPLY CHAIN





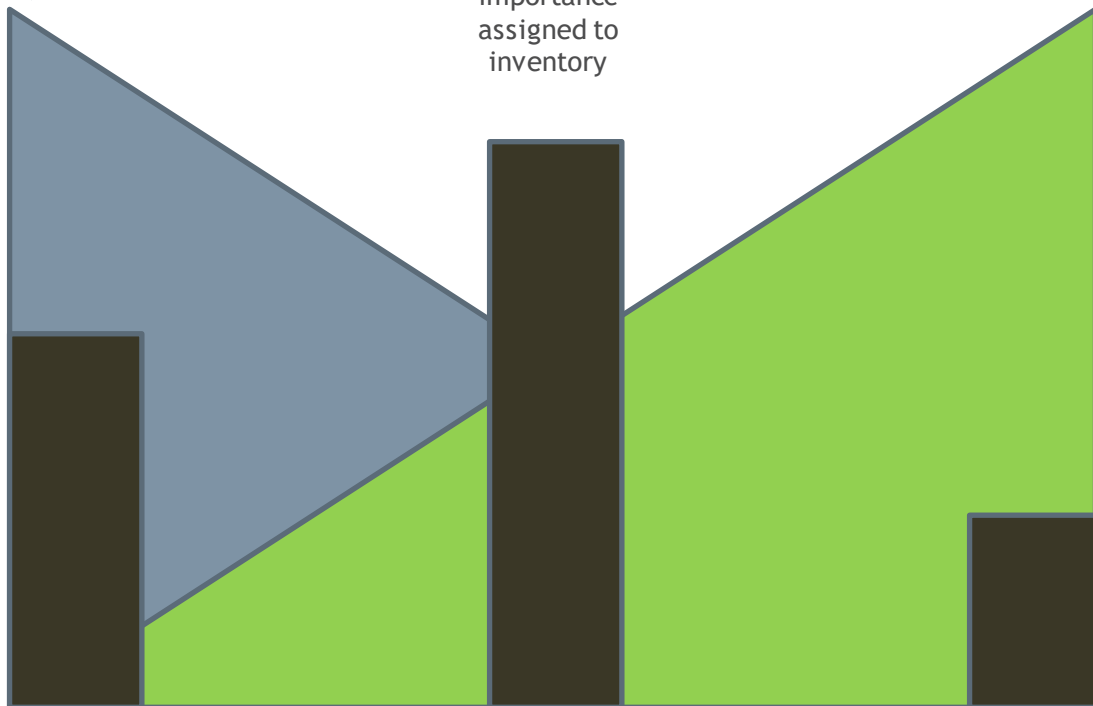
CONSEGNE IN MEZZORA: CUI PRODEST?



INNOVAZIONE
O CATTIVA
GESTIONE
DEGLI
INVENTARI?



Demand
Uncertainty



P&G

Customer

Consumer



“Usefulness
of Inventory”



A new enabling concept: SYNCHROMODALITY





SYNCHROMODALITY

THE ALPHA ALPHA CASE



**ZARAGOZA REGION
THE BEST
ALPHA ALPHA GRASS**



**THE NETHERLANDS
THE BEST
MILK COWS**



SYNCHROMODALITY

HOW DO WE GET THE GRASS TO THE COWS?

ALPHA ALPHA LOADS
ARE NOT URGENT
AND USED
AS A FILLER



ALPHA ALPHA GRASS LOAD



REGULAR LOAD

REAL-TIME-VISIBILITY: WHO ACTUALLY USES IT? DOES IT ALWAYS REQUIRE A DEVICE?



ICONET



TAKING COOPERATION FORWARD





P&G TRACING TEST ON LONG INTERNATIONAL TRADELANES

ARIEL PODS PVA FILM SUPPLY CHAIN



TAKING COOPERATION FORWARD



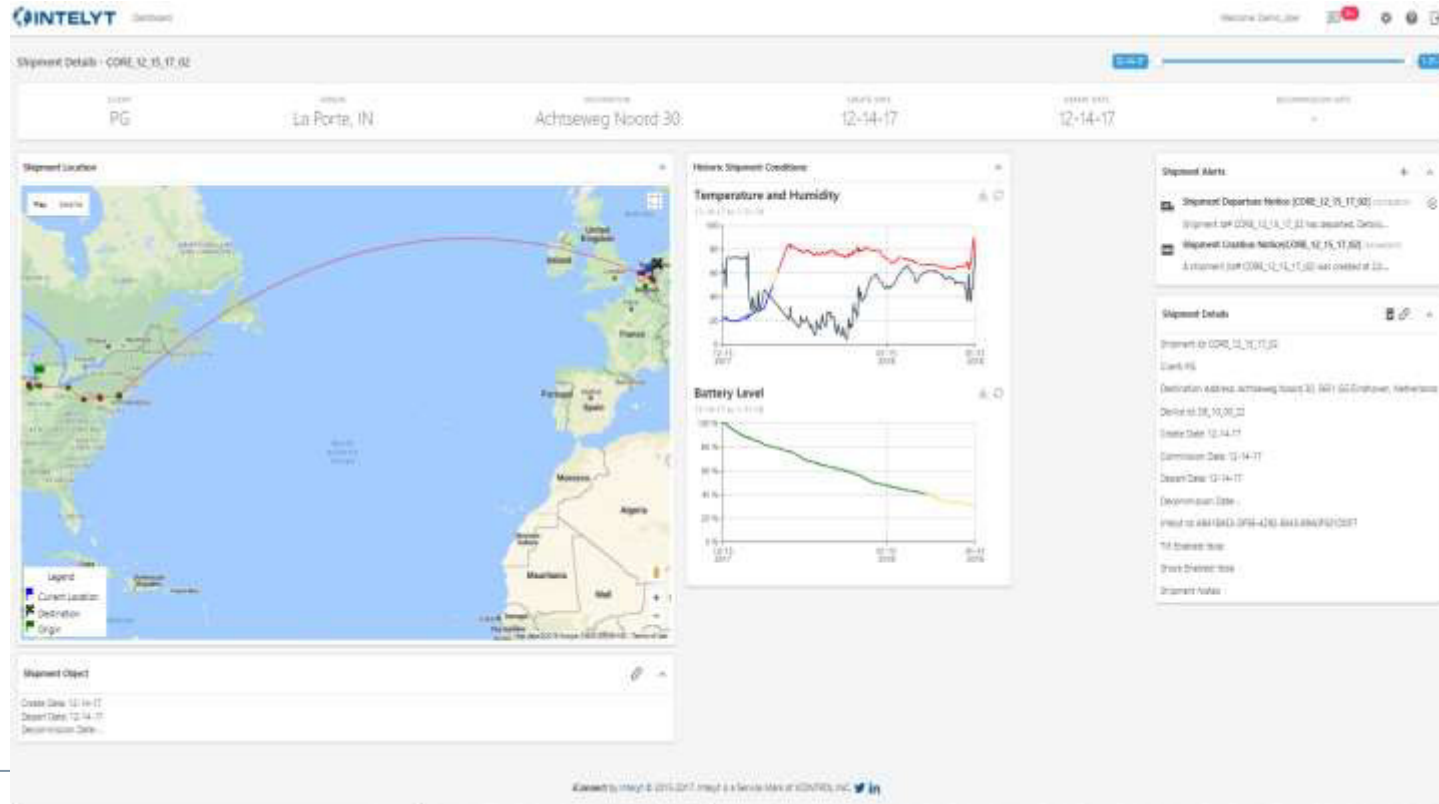
Attached to
container with
double-sided tape



SAVI/PANALPINA SOLUTION



INTELYT SOLUTION WITH T/RH TRACKING



OCEAN INSIGHTS EDI ONLY SOLUTION



CONCLUSIONS

For tradelanes with very long transit times (weeks):

Real time Visibility via Devices is great:

- To qualify new tradelanes
- For Hypercare cases

Tracking via EDI Data exchange is great:

- For classic visibility purposes (e.g. ETA)



Learnings:

React only to information close to the planned ETA, if Costs are equivalent (Purdue Simulation)

In some countries devices pose an IMPORT/EXPORT ISSUE





ICONET: Simulating a PI Corridor

Procter & Gamble, Inlecom, VLTN, NGS, ITAINNOVA, CLMS

ICONET PROJECT

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement No. 769119



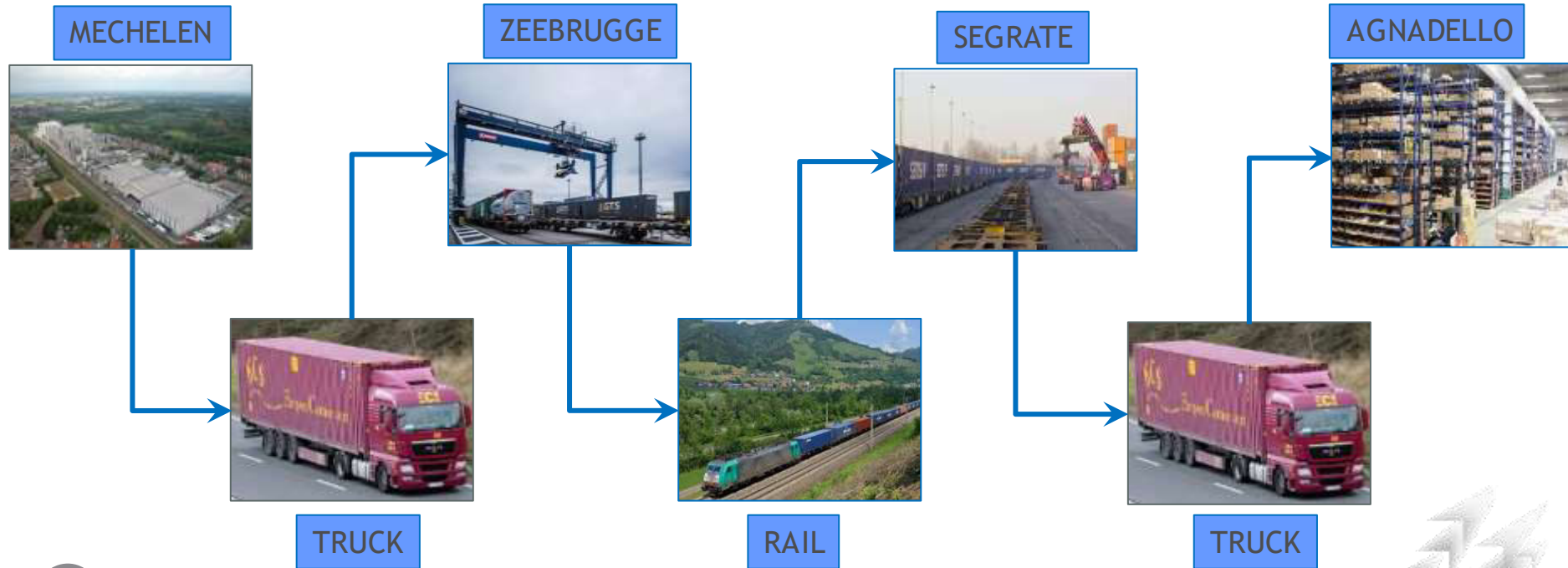
Living Lab 2- PI Corridor

Tracking Intermodal lanes is more complex



Living Lab 2- PI Corridor

Corridor 02 - Mechelen - Agnadello



Use Cases

Intermodal Tracking

- End-to-end visibility through the entire corridor between Mechelen and West Thurrock
- Interfacing with PGBS back-end system
- Physical installation of Smart Tracker in the Corridor and activation of the tracking service

Smart-Contracts Monitoring

- IoT Sensor's monitoring vibrations on a container carrying fragile goods
- Tracking Service transmitting vibration over a pre-defined threshold
- Shipment redirection to a warehouse due to SLA violation

Dynamic Routing

- Road Corridor monitoring detects long waiting times due to a road accident
- Smart Container carrying sensitive goods, transmits rapid temperature decline
- Rerouting to train is executed

Container Prioritization

- Containers with fast moving SKUs at risk of violating an SLA (being either late, or about to become late) to be handled with priority

Living Lab 2- PI Corridor

Consolidated Simulated Results & Estimations

KPIs	UC1	UC2 & UC3	UC4a	UC4b
		Qualitative Assessment		
CO2	-20% (190 to 150 gr/km)	N/A	N/A	-33% due to trains
Lead Time (Actual, Not Contractual)	-25%	Reduced	-8% for high priority order	+0.3% - A bit slower but within SLA
(Overall) Transport Cost	-10% (intermodality & Optimized Resource Planning)	Reduced due to earlier issue realization and reaction	Similar (fast lane premium handling cost - SLA violation savings)	-5% due to lower train rates
Reliability % increase of on-time delivery	+5% (90% to 95%)	Increased due to informed and timely reaction	+17% of on-time delivery of priority order, - 10% SLA violations	N/A
Multimodal Share	+50% (from 20% to 30%)	N/A	N/A	+18% in rail transport
Reaction Time (on incidents)	N/A	Significant reduction due to real-time awareness of cargo and Network status	N/A	N/A

- UC1 Intermodal Tracking
- UC2 Smart Contract Monitoring - Operational Level
- UC3 Dynamic Rerouting - Operational Level
- UC4a Container Prioritization - Macro Level
- UC4b Route Optimization & Modal Shift - Macro Level

Physical Internet Roadmap



Transition Management (business models, regulations and governance).



PI business and governance models

Collaboration Models Initiated by the Shippers

Warehousing business model: Subletting of warehouse space



Main observations:

- A horizontal collaboration model with a low complexity which is implemented at an ad-hoc basis.
- Opportunistic and its implementation is bound by specific timings and locations. environment between the shippers.

Transportation business models: Roundtrips



Main observations:

- A horizontal collaboration model with low complexity.
- Its implementation is bound by specific locations and shipment volumes.
- A competitive character towards the business models of incumbent transportation companies and LSP.

PI business and governance models Collaboration Models Initiated by the Shippers

Transportation business models: Vehicle fill

Main observations:

- A horizontal collaboration model with a high complexity because three requirements need to be met on top of the location, transportation mode and time criteria: density, product compatibility and operational capacity.
- A competitive character towards the business models of transportation companies and LSPs which optimize Less than Truckload (LTL) shipments on an ongoing basis using the same principles as for collaborative vehicle fill business models.



Collaboration Models Initiated by the Shippers

Conclusions:

-> Logistics collaboration business models initiated by shippers are specific to the business context and are as such shipper dependent, consequently, they are difficult to scale.

-> However, innovative start-up companies implementing for example the subletting of collaborative warehouse space business model provide an excellent example of dynamic matching of supply and demand. Their development will be an accelerator for the PI.



PI business and governance models

Collaboration Models Initiated by the Logistics Service Providers

Collaborative corridor management

Main observations:

- A business model that offers unique capabilities with regards to synchromodality.
- Could be a key foundation for the development of the physical internet.



Collaboration Models Initiated by the LSPs

Conclusions:

Logistics collaboration business models initiated by LSP have a much larger value creation potential due to the fact that these are less focused on a specific business case and are as such more open, flexible and scalable.



PI business and governance models

Collaboration Models Initiated by the Public Sector

Logistic clusters collaboration

Main observations:

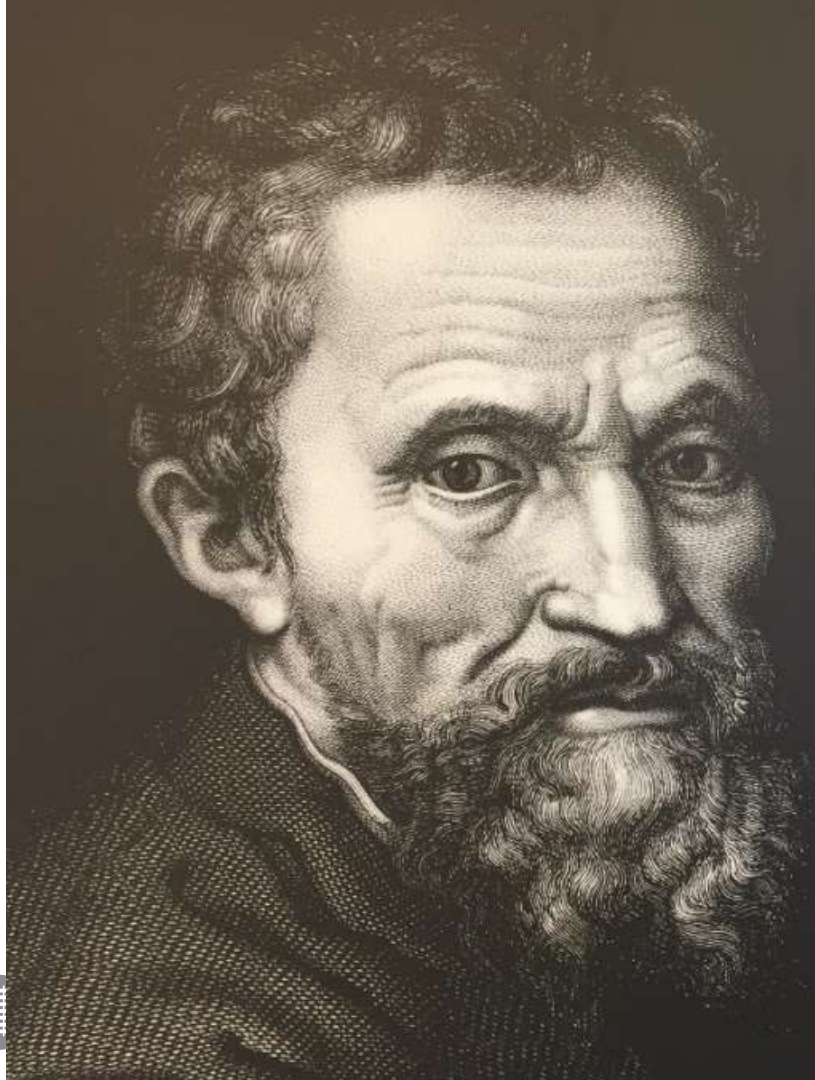
- More a business development approach than a business model.
- They are a unique enabler to drive collaboration.
- They have the opportunity to act as a neutral and trusted data manager.



WILL PI BE IMPLEMENTED TOP DOWN BY DOMINANT PLAYERS?

- MAERSK AND MSC
SYNCHROMODALITY (Trains from
Asia)
- AMAZON AND
EMPTY MILES (Pony
Express Fleet
Management)





**“THE GREATEST
DANGER FOR MOST
OF US IS NOT THAT
OUR AIM IS TOO HIGH
AND WE MISS IT,
BUT THAT IT IS TOO
LOW AND WE
REACH IT.”**

Michelangelo

THANK YOU FOR YOUR KIND ATTENTION!



Sergio Barbarino (P&G - ALICE)



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Sergio Barbarino

