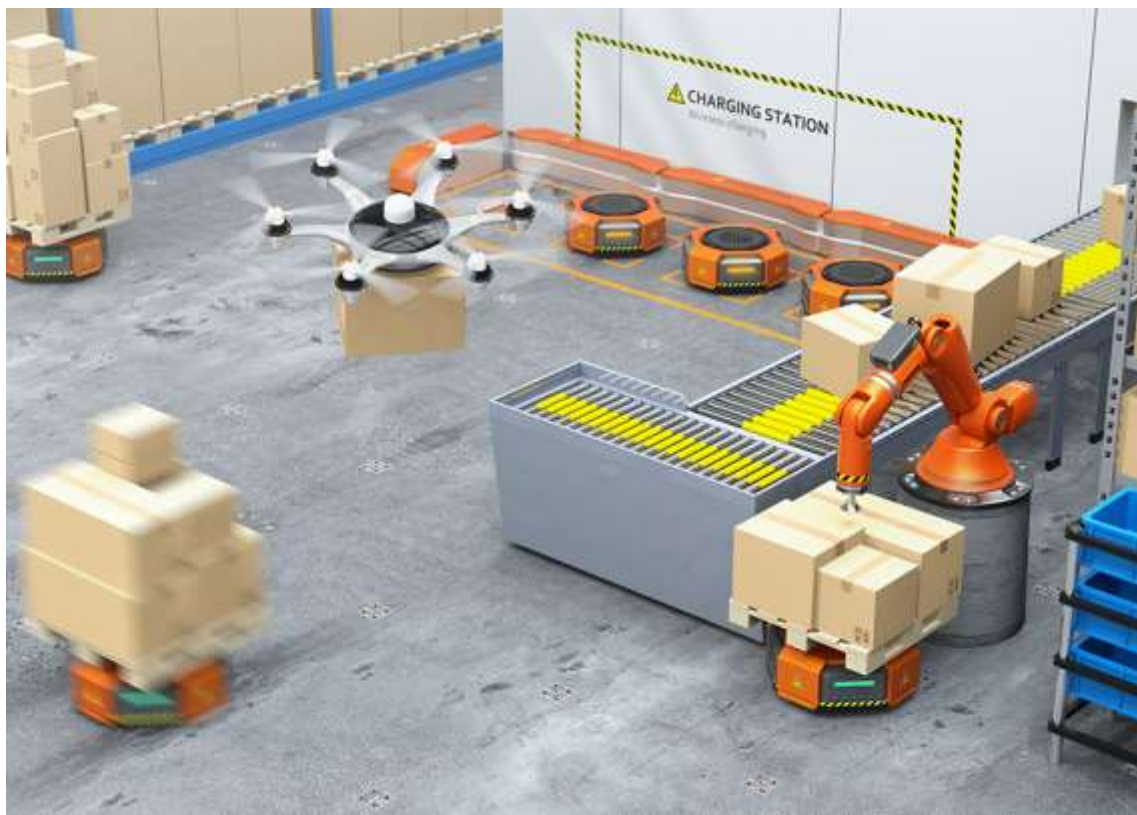


Intermodal services for routing and network optimization to enable modal shift in simulation, collaboration and operational scenarios

04th July 2024, web-conference

Florian Krietsch (PTV)



FALC / Fully Automated Logistics Center – picture: @shutterstock|Chesky



Source: Ansys: <https://www.ansys.com/de-de/blog/self-driving-trucks>



Disruption categories

Transport delays

Natural disasters

Information
distortion, delay,
or breach

Economic
fluctuations
affecting prices

Worker skills,
strikes, and
shortages

Infrastructure
breakdowns due
to insufficient
maintenance

Technological
disruptions

Policies and
processes

Acts of war,
terrorism, political
instability

Cultural
differences

Diseases/
pandemics

Unreliable energy
sources



Source: VDI Foto: imago images/Eibner/Jörg Niebergall

During the operation phase challenges appear



- The traffic situation of one or more networks changes
- Network disruptions appear
- A vehicle breaks down, a driver is sick
- Planned time windows can't be fulfilled
- Services can't be performed within planned time
- Mode specific delays
- Train, barge, ferry is
- Delayed, cancelled
- Journey sequence changed
- Truck is stuck in traffic, driver can't continue due to break restrictions
- And even more madness ...



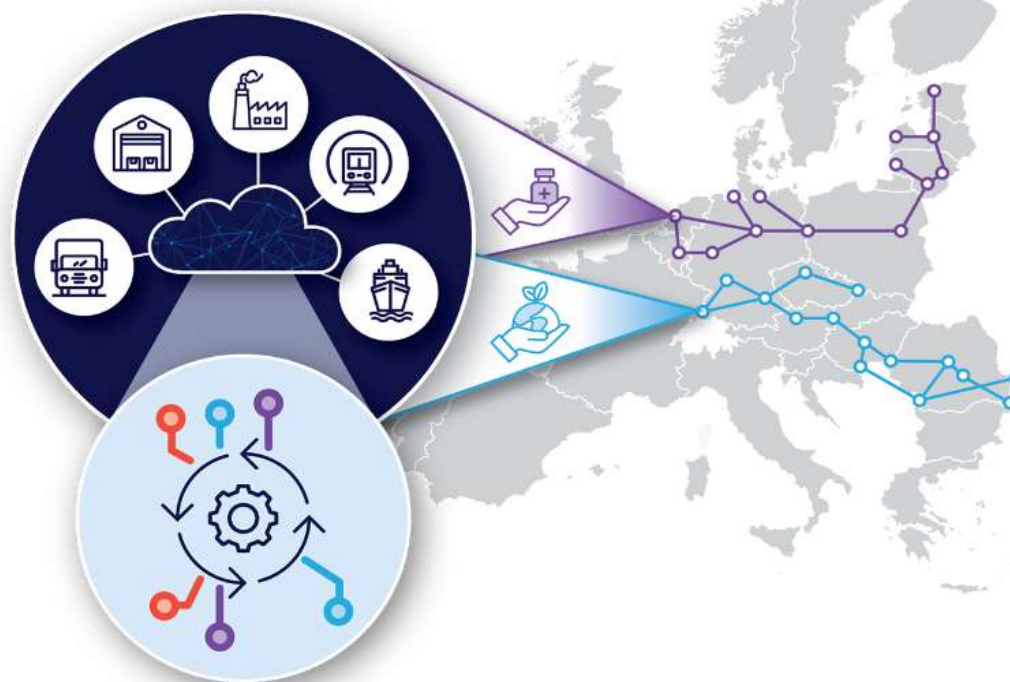
Funded by
the European Union

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ReMuNet corridors



Source: Directorate-General for Mobility and Transport, European Commission



PILOT 1: NORTH SEA BALTIC

PILOT 2: RHINE - DANUBE

Focus - Strategic Phase

Motivated by the Physical Internet concept

- Identification and clustering of potential modal shift shipment categories
 - Identification of relevant transport networks (modes, hubs, operators, services, capacities).
 - Analyze As-Is scenario and potential future scenarios.
 - Transport demand
 - Services and costs
 - Generation of critical mass for modal shift towards green modes if possible,
 - Collaboration between shippers, logistical nodes and lane managers (inside and across companies)
 - Harmonization of data and process interplay.
- Phase result: A strategic plan on the transport network layout.
- What are the main nodes?
 - What are the main lanes?
 - What is to be transported intermodal, and what to be trucked?



Digital data support - Infrastructure

Logistics nodes

- Terminals
- Hubs

Networks


- Road
- Relay Transport
- Rail
- Inland water way
- Sea
- Air

Network connectivity



Terminal		Address	
EXTID	347	COUNTRY	AT
NAME	WIEN WIENCONT	POSTCODE	1020
DESCRIPTION	WienCont Container Terminal	CITY	Wien
MODE	<input checked="" type="checkbox"/> Road <input checked="" type="checkbox"/> Rail <input checked="" type="checkbox"/> Inland waterway <input type="checkbox"/> Short sea <input type="checkbox"/> Deep sea <input type="checkbox"/> Air	STREET	Freudenauer Hafenstraße
		HOUSENR	8
		LATITUDE	48,18249
		LONGITUDE	16,46612
		UPDATETIME	02.07.2024 19:35:30
		UPDATEUSER	admin
TSC			
UPDATETIME	28.09.2021 12:53:14		
UPDATEUSER	PTVIT		
<input type="button" value="New"/> <input type="button" value="Save"/> <input type="button" value="Cancel"/> <input type="button" value="Back"/>		<input type="button" value="Geocode"/> <input type="checkbox"/> Overwrite with geocoded address	

COUNTRY	POSTCODE	CITY	CITY2	STR
Select AT	1020	Wien	Leopoldstadt Freu	Hafen





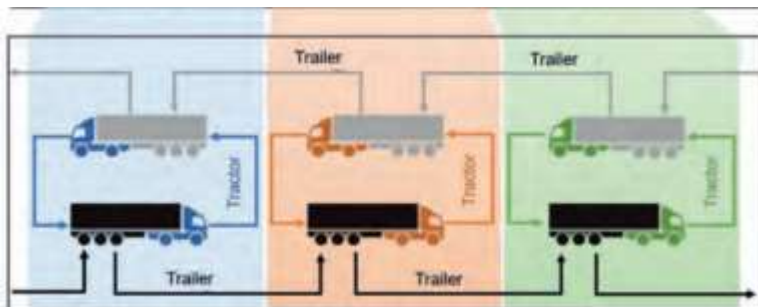
Digital data support - Services

• Intermodal timetables

- Lanes
- Frequencies
- Service days
- Times
- Costs
- Restrictions

• Operators

- Name
- Contact



Line Schedule

EXTID: 3000_003_563_111111_414_10 00-00 00

NAME: 3000_003_563_111111_414_10 00-00 00

MODE: RAIL

DATE: 01.01.2024

VALUE FROM: 01.01.2024

VALUE UNTIL: 01.01.2024

Operator: HUPAC S.p.A. - Hupac SpA (3000)

DESCRIPTION: Service C70 C400 P400

UPDATE TIME: 01.01.2024 10:01:14

UPDATE USER: admin

Save Cancel Back

Operator

EXTID: 3000

NAME: HUPAC S.p.A. - Hupac SpA

COUNTRY: IT

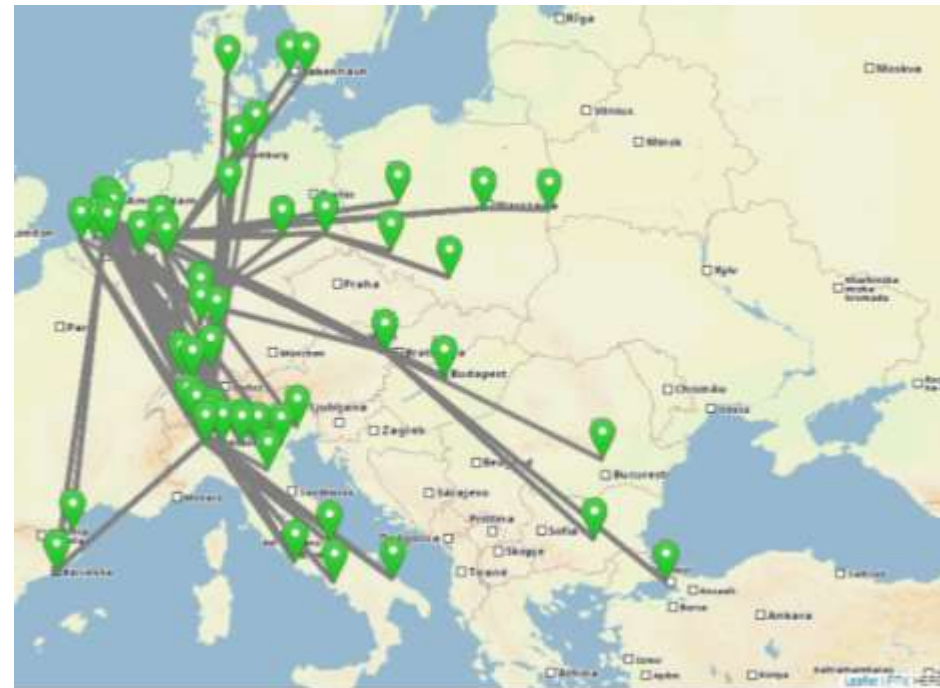
POSTCODE: 20100

CITY: LANCIONE

SS	TERMINAL	ARRIVAL	A. DAY	READY FOR PICKUP	DEPT. DAY	CLOSING DAY	DEPARTURE DAY	DEPT. DAY	DEPT. DAY	LOAD POS	UNLOAD POS	G- PREC	G- PREC	G- PREC	G- PREC
1	RATY	BRIDLAHKE													
2	SCHWABEIDE 0000		1	0000	1					20					

ADD

DATE: 01.01.2024

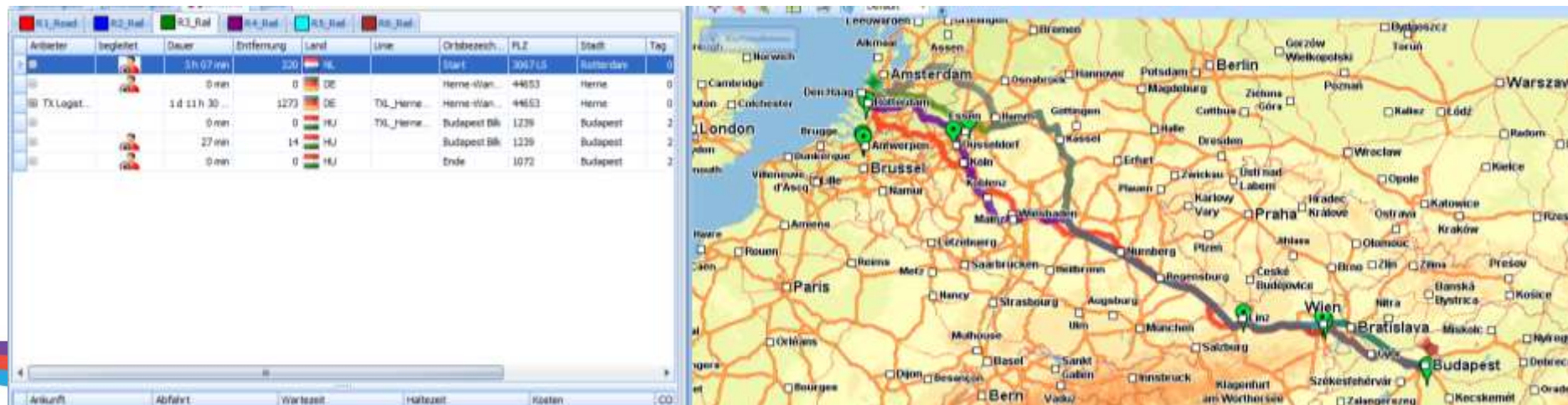




Tools for planning and optimization

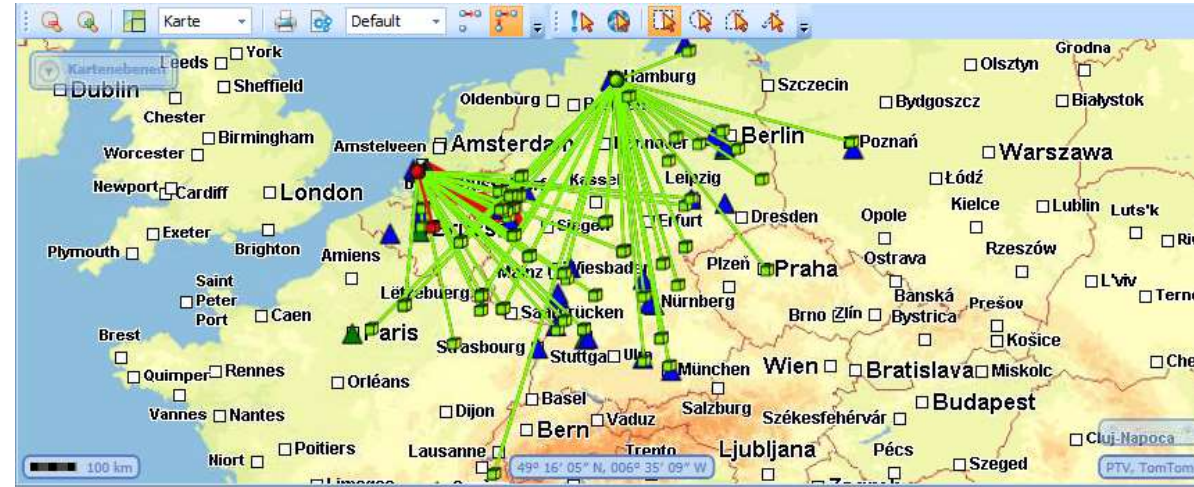
Based on regular services of multiple modes of transport such as rail, barge, air, road, sea ReMuNet provides possible intermodal door-to-door routes, in general with a road leg at the beginning and at the end.

While aiming for “optimized” door-to-door chains in order to support efficiency and decarbonisation of transports, the challenge is to provide meaningful and optimized solutions already at the stage of the initial chain composition. To achieve this task, constraints and performance indicators have to be respected and assessed.

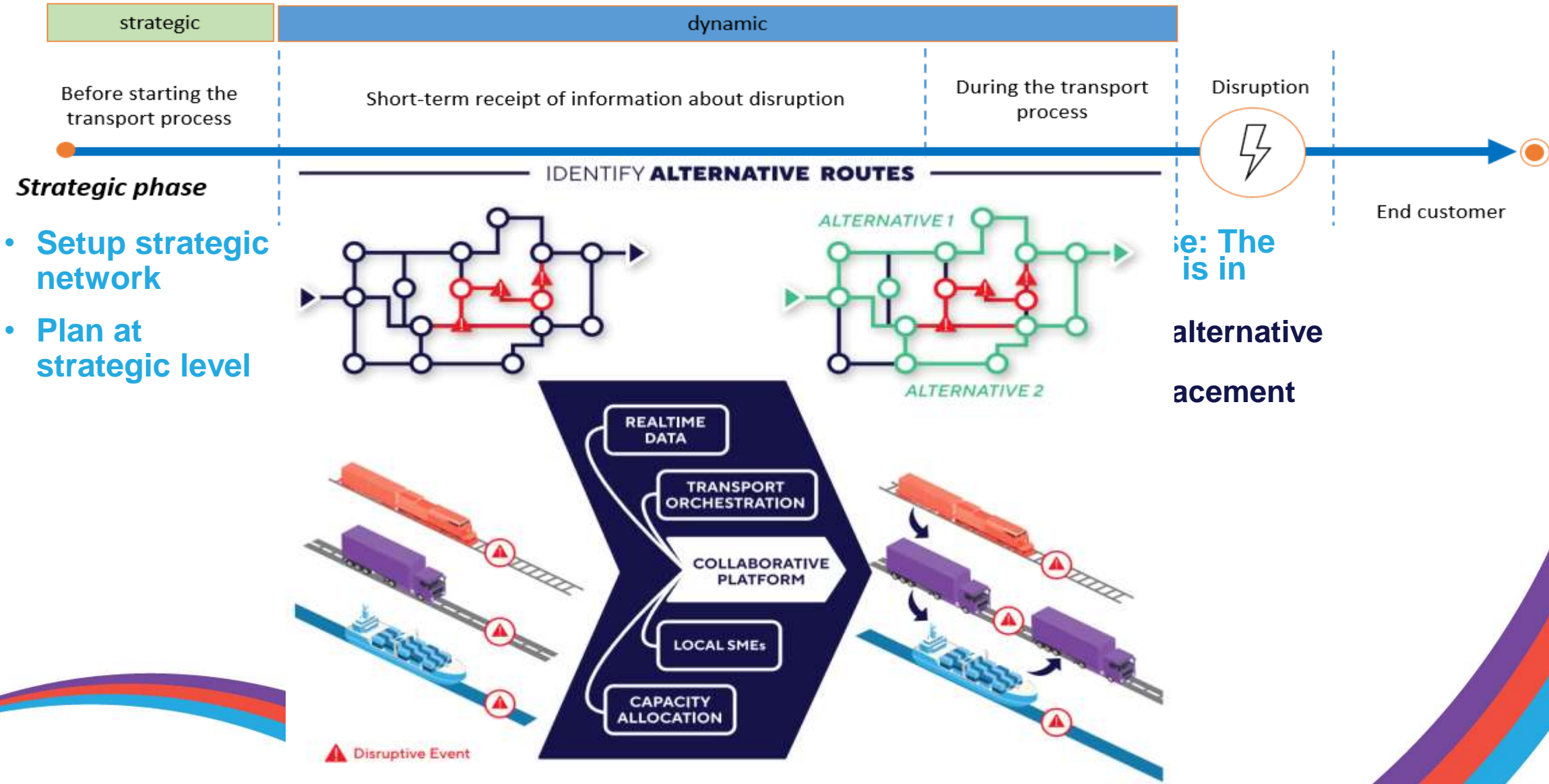


Tools for planning and optimization

- Provides a suggestion, how the orders should be transported in an optimal way based on the given resources and costs.
- This includes the decision on mode selection (whether planning should be done intermodal or by road only)
- If intermodal:
 - the transport chain is based on one or more transport modes
 - the concrete voyages per transport leg
 - the capacity reservation instruction per voyage
- If trucking: direct trucking or relay transport



Focus - Dynamic Phase and **Disruption**





Summary

Strategic level

- Information on transport networks is a key enabler
- Strategic decision how to transport modally and with which networks
- IT tools can support planning and optimization at large. However, the decision for collaboration is often not done by IT, but by company management

Tactical & operational level

- Disruptions occur across all networks. The impact of the disruption often variates.
- A transportation desk, managing the transport has several option to react to disruptions.
- IT tools can support analysis of disruption impact and support potential alternative transport options

Thank you for your attention

Questions?

Contact: Florian Krietsch
Florian.krietsch@ptvgroup.com