



Co-funded by the Seventh Framework
Programme of the European Union



Vi~~able~~ **W**agonload Production **S**chemes

Project Presentation
Status: May 2015

Further **develop SWL technologies & concepts**
tested & **proofed on the basis of real business cases**
to...

- Streamline last-mile operations
 - Improve flexibility and efficiency of equipment usage
 - Raise transport quality and reliability
 - Capture new markets
- **Improve competitiveness of (single) wagonload transport**

ViWaS Partners



Science & Consultancy



Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich



Services & Technology



SWL Infrastructure & Operations



Advisory partners



ViWaS - Components

Concepts

Technologies / ICT

Modified
container wagon

Advanced Flex
freight load unit

Intelligent
telematics system

Wagon data
interface service

Business models
and production
systems

Hybrid loco
based
traction schemes

New collection /
distribution
methods

Hub
management
conception

Services (Business cases)

1 Swiss-Split 2

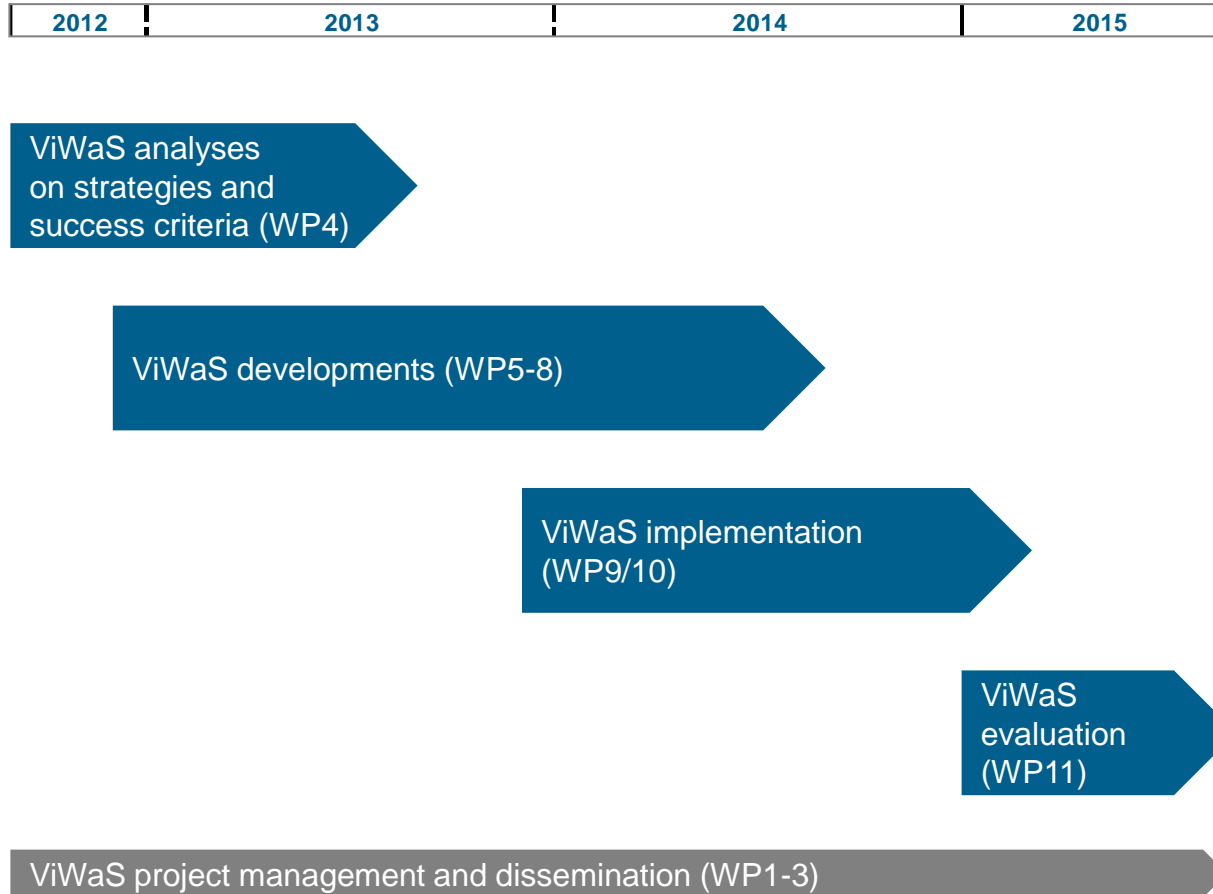
2 Re-connect
Southern Italy to
European SWL

3 Regional network
of rail logistics
centres

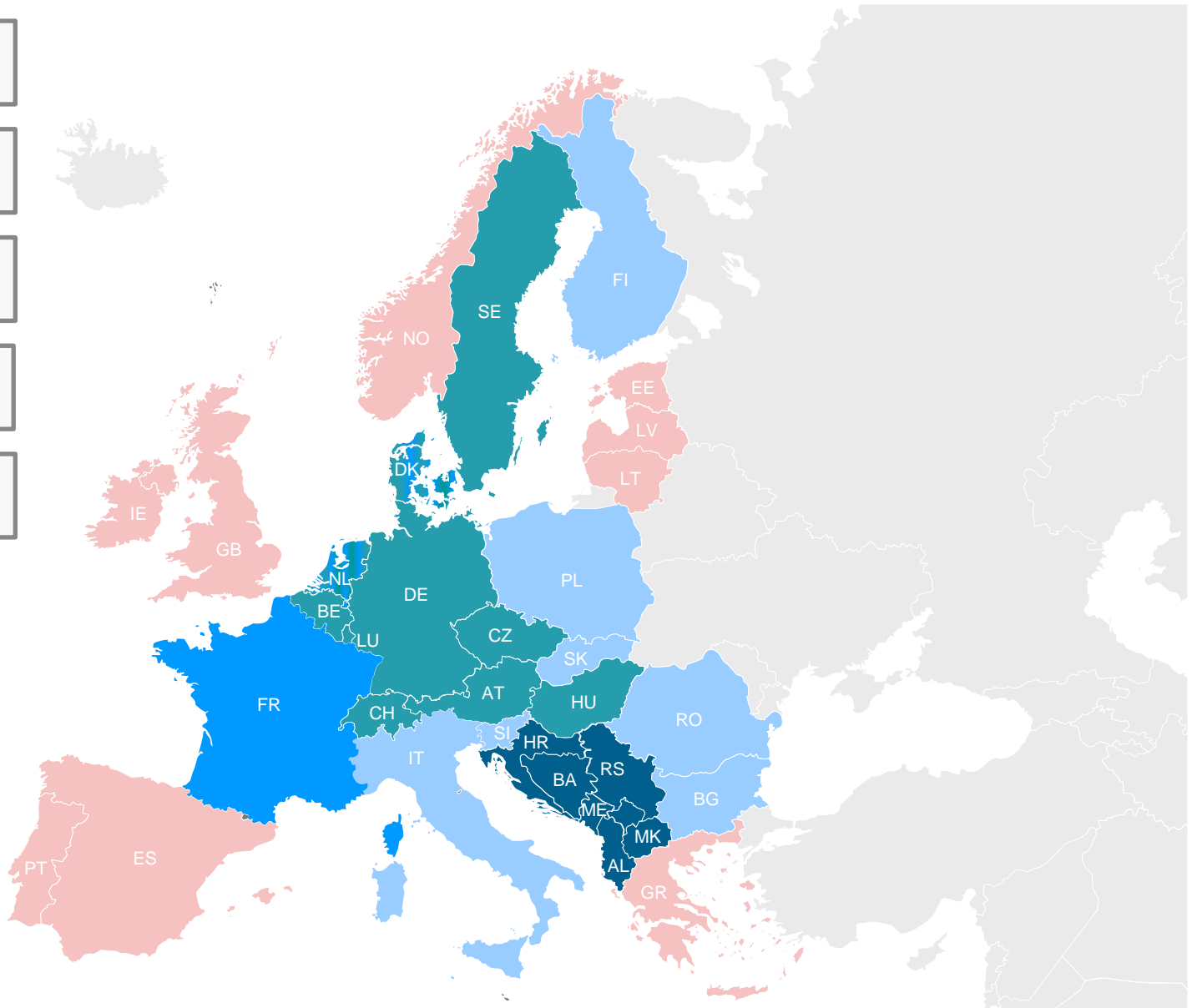
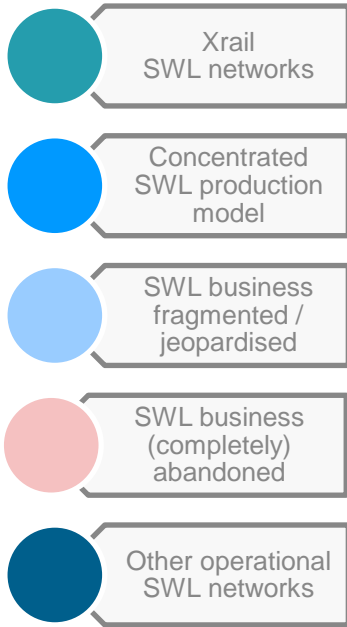
4 SWL based
special waste
transport chains

5 Last mile service
on French
secondary lines

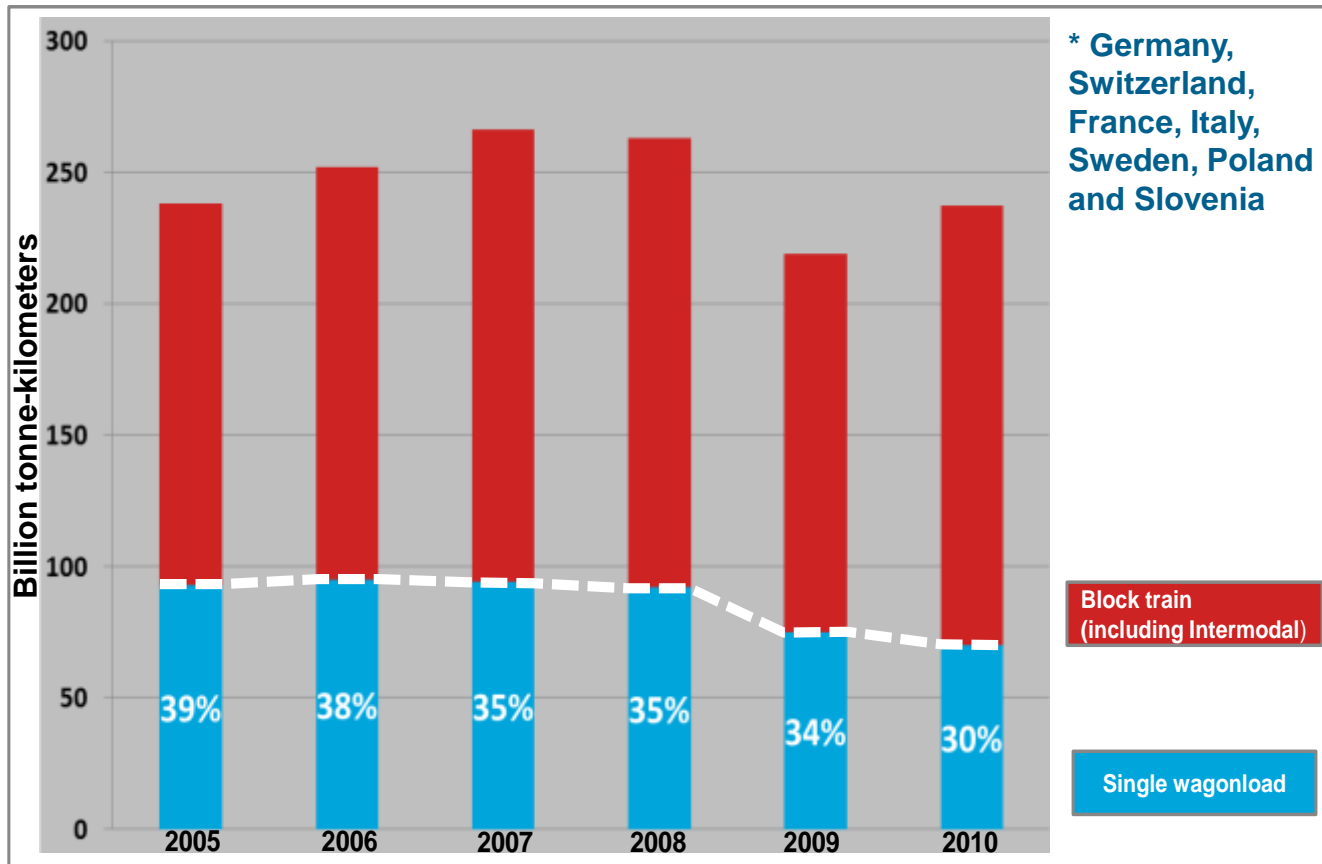
ViWaS – Components & timing



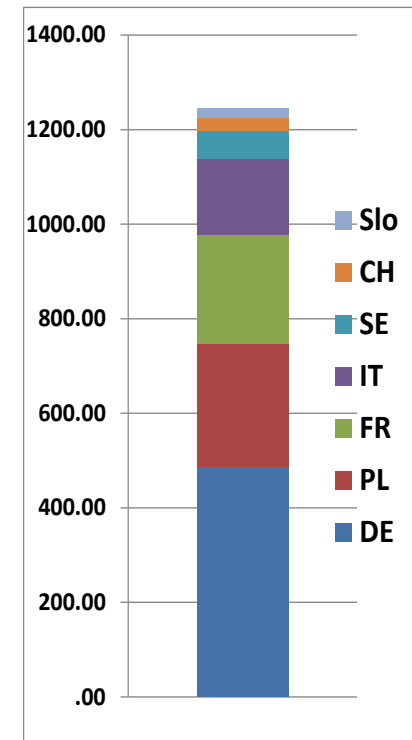
European SWL networks (WP4 analysis)



Rail freight transport performance 2005-2010 for selected European countries*



Total Freight market (Rail, Road, IWT)

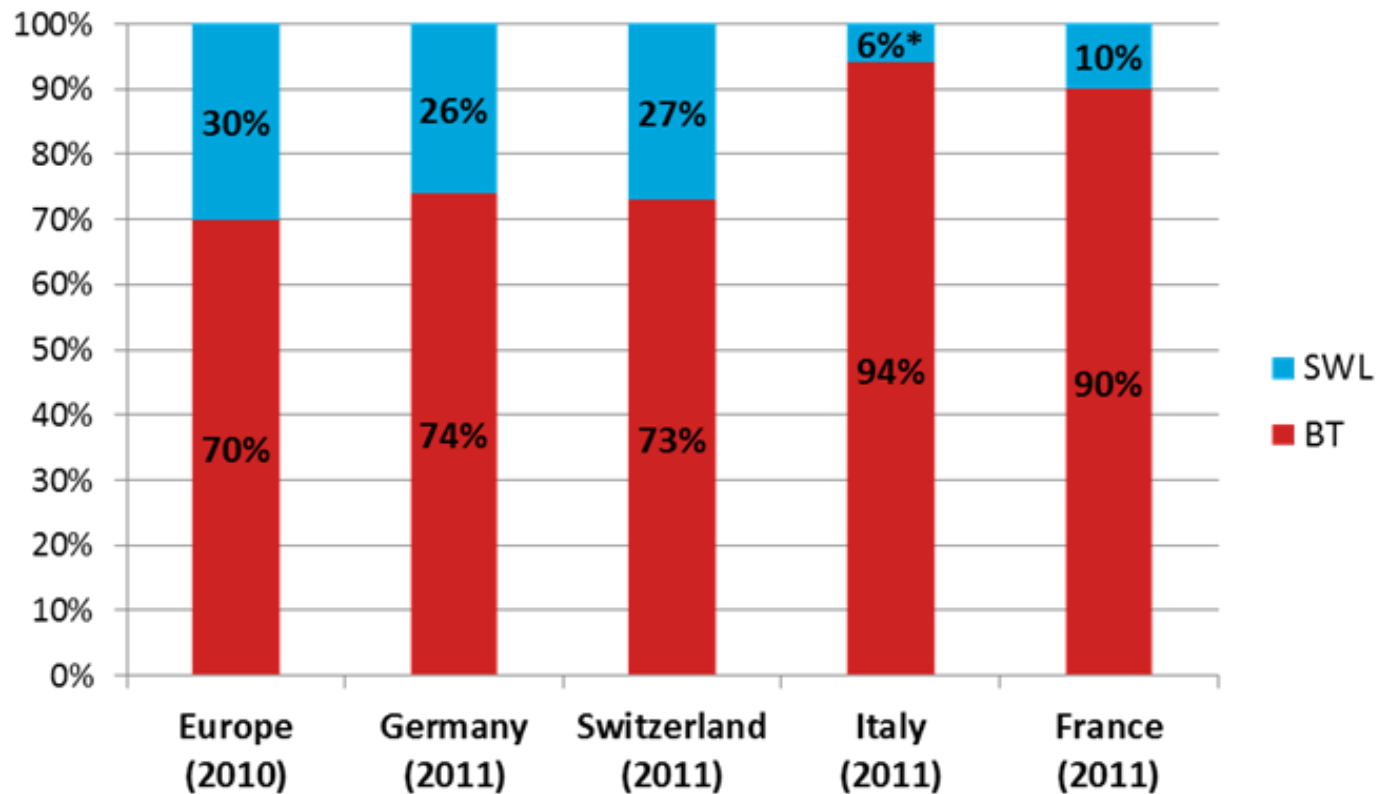


Source: Oliver Wyman 2011 based on EUROSTAT data

Comparison of SWL market shares (WP4 analysis)

Market shares of SWL in Europe and ViWaS countries

Based on tonne kilometres



* estimated

1) considering Germany, Switzerland, France, Italy, Sweden, Poland and Slovenia

SWL markets (WP4 analysis)

Current commodities/shares in SWL transport

Commodities	Questionnaires			DESTATIS Germany 2010	Forecast Germany 2025
	SNCF 2012	SBB 2012	BE 2012		
Agricultural products and live animals	0%	4%	50%	7%	5%
Foodstuffs and animal fodder	0%	4%	0%	2%	2%
Solid mineral fuels	0%	4%	0%	2%	1%
Petroleum products	26%	1%	0%	8%	5%
Ores and metal waste	15%	4%	0%	4%	3%
Metal products	29%	4%	35%	32%	29%
Crude and manufactured minerals, building materials	4%	7%	0%	12%	9%
Fertilisers	3%	10%	10%	1%	1%
Chemicals	13%	4%	0%	20%	22%
Machinery, transport equipment, manufactured articles and miscellaneous articles	10%	1%	5%	12%	23%
Paper, Wood, part-load traffic		43%			
Not known		13%			
Total	100%	100%	100%	100%	100%

High	≥ 15%
Medium	≥ 10% < 15%
Low	< 10%

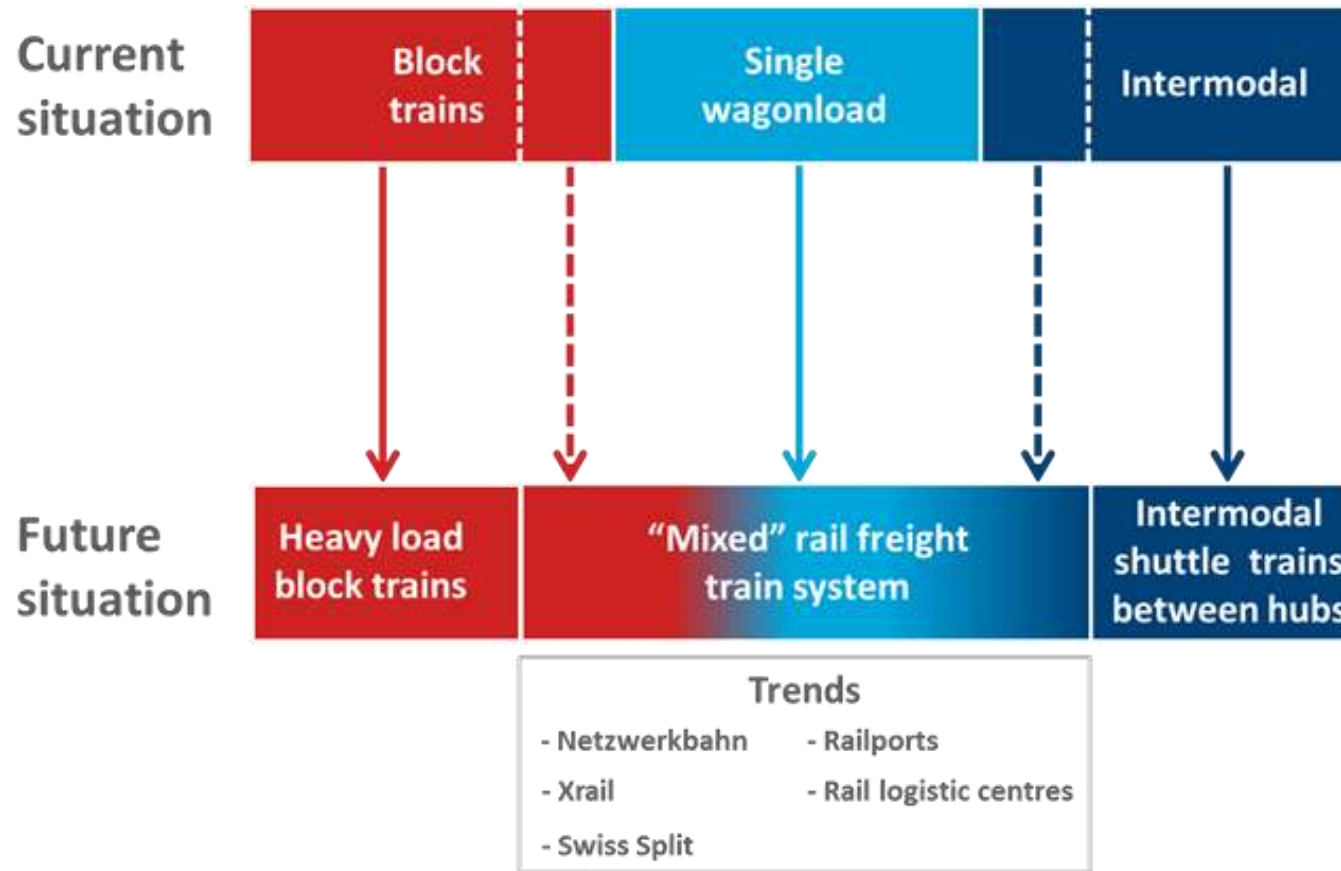
Perspectives for SWL transport in Europe

Potential markets for SWL			
Commodity	HWH - Study	Prognosis 2025 Germany	Bologna Workshop
Agricultural products and live animals	low	low	medium
Consumer goods, fine goods, trade	low	medium	high
Petroleum products	low	low	
Chemicals	high	medium	
Metal products	medium	low	medium
Machinery, transport equipment and electrical products	medium	high	high
Crude and manufactured minerals, building materials	low	low	medium
Waste and recycling material	high	high	high
Wood/paper	high	medium	



- 1) *Ableitung effizienter Organisationsformen im Schweizer Schienengüterverkehr in der Fläche*
- 2) *Prognose der deutschlandweiten Verkehrsverflechtungen 2025*

Current situation and trends



Technologies – Modified container wagon



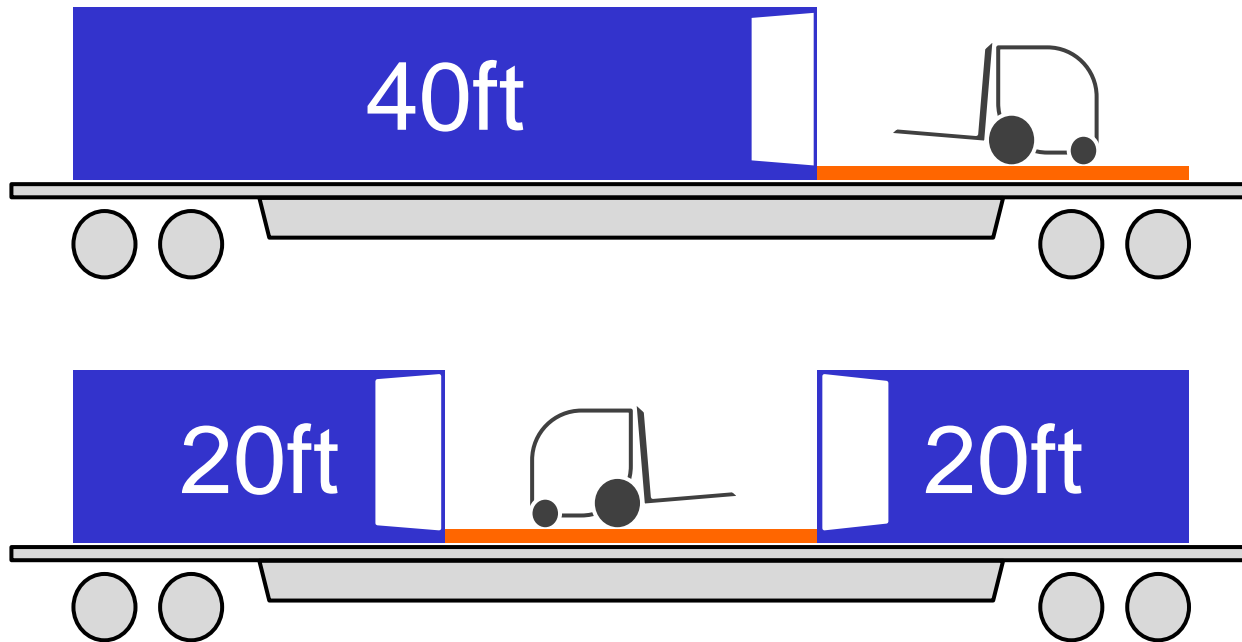
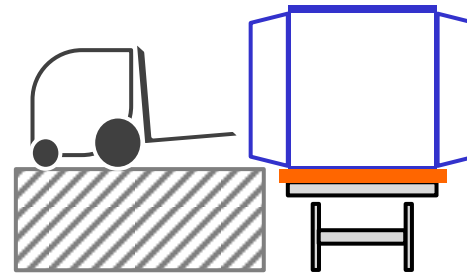
Development goal:

A new platform solution to allow driving onto the wagon with fork-lift trucks at the cargo station

Technologies – Modified container wagon

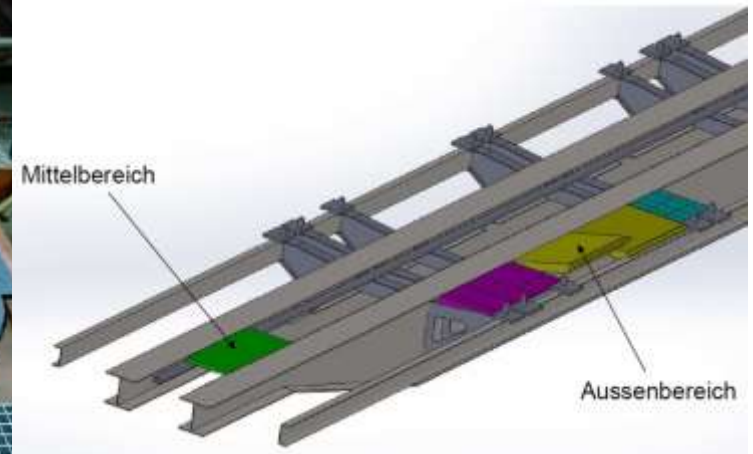
First concept

- First design for 20ft platform developed already in 2013



Prototype 1 «Flex Freight Car»

- Delivered in March 2014
- Field tests (Swiss Split business case)

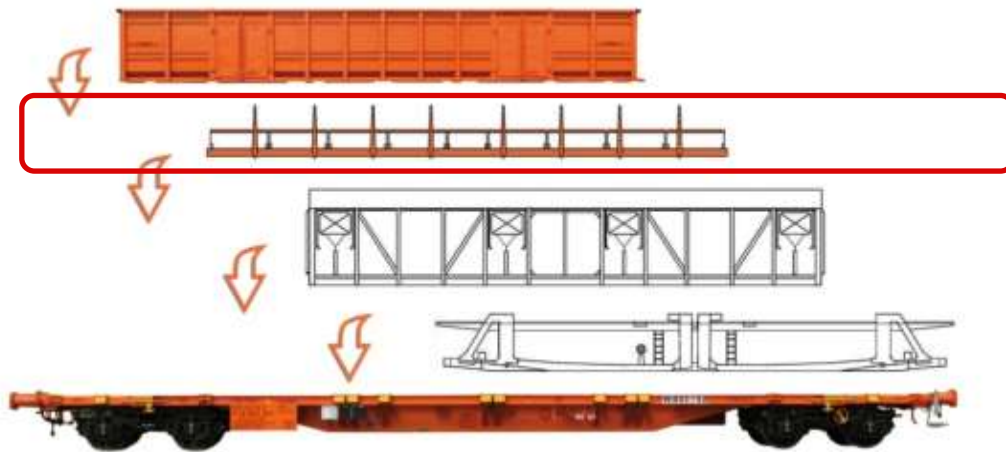


Prototype 1 «Plug-in floor»

- Delivered in April 2015
- 3 x 20' units
- Optimised for sidings' dimensions
- Field tests (Swiss Split business case) planned



Technologies – Advanced flex freight loading unit



wascosa
flex freight system®



Development goal:

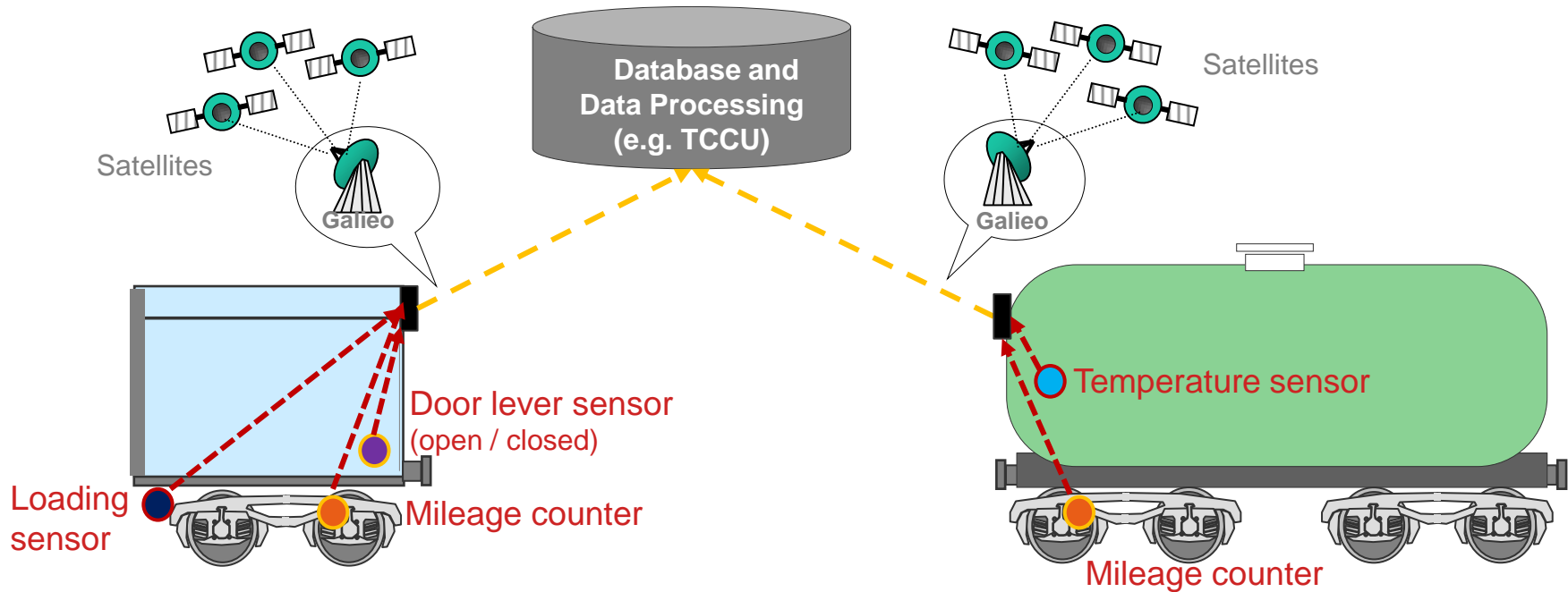
A new timber cassette solution with fold down extensions for transport of timber/lumber in one direction and containers/swap bodies in the other one.

Prototype «Flexfreight timber cassette with fold-down extensions»

- Prototype delivered in August 2014
- Field tests to be started in September/October 2014



Components and basic design

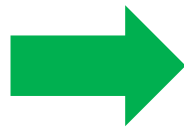


Development goal:

Advanced telematics hardware and installation/maintenance procedures;
improve capture of telematics data.

Optimisation of telematic on-board data processing unit (e.g. schedule implementation); Galileo implementation; Improving wireless sensor communication (e.g. RodoTAG); Improving existing sensor technology (Low cost loading sensor, 3 axis shock sensor); Simple telematic installation and service (on-site)

ViWaS goal: New, modular housing design: versatile, easy to install, less cost



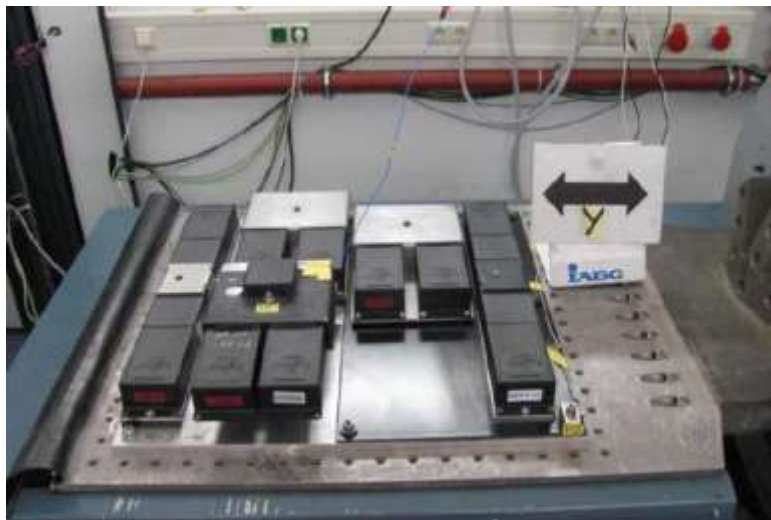
Advantages:

- Various mounting configurations
- Better fit into wagon frames
- Less visible
- In-field battery exchange
- Theft protection

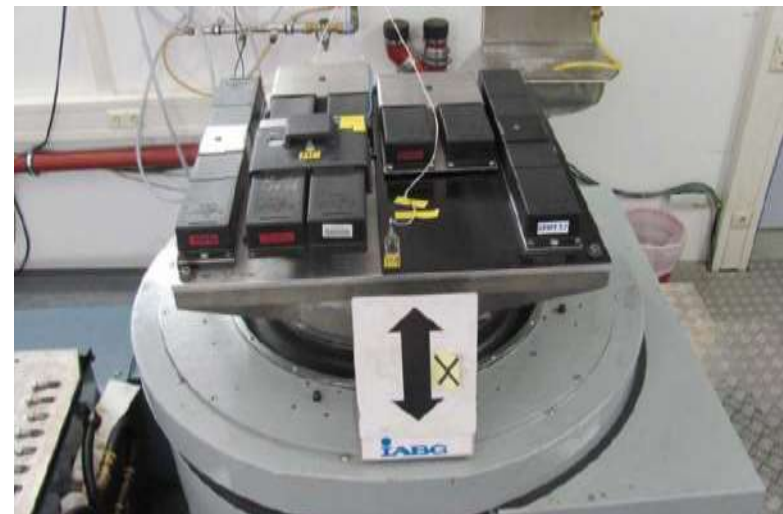
ViWaS Goal: Quick installation by a field service without the need of a workshop visit

Testing according to railway standards of

- Magnets
- Glue and adhesive tape

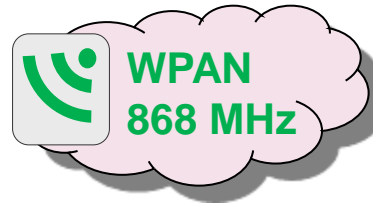


Shock and vibration testing in y-Direction

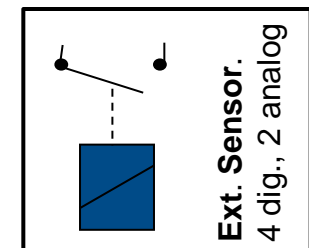
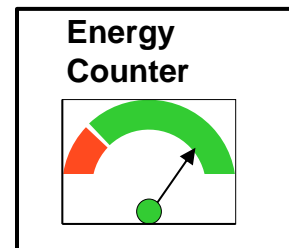
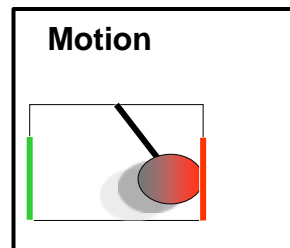
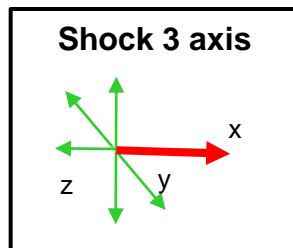
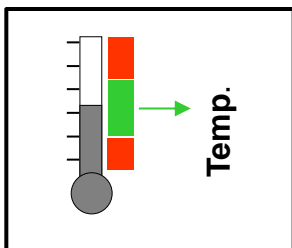
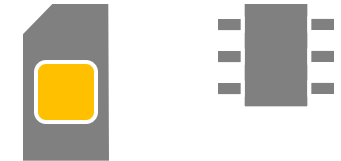


Shock and vibration testing in x-Direction

Technologies - Intelligent wagon telematics

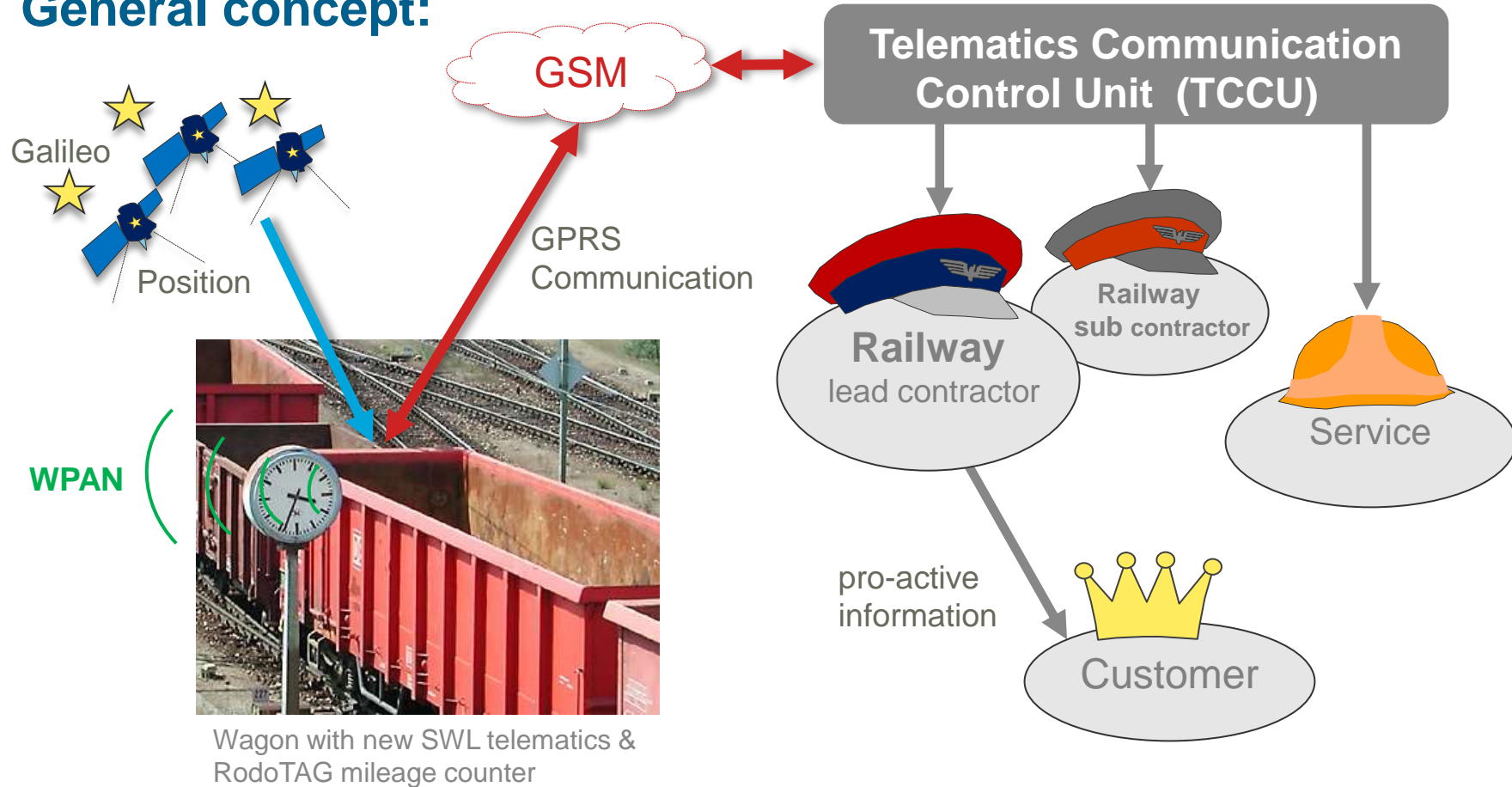


Next Generation
PCB of ViWaS
aJour Telematics



Technologies – Wagon data interface service

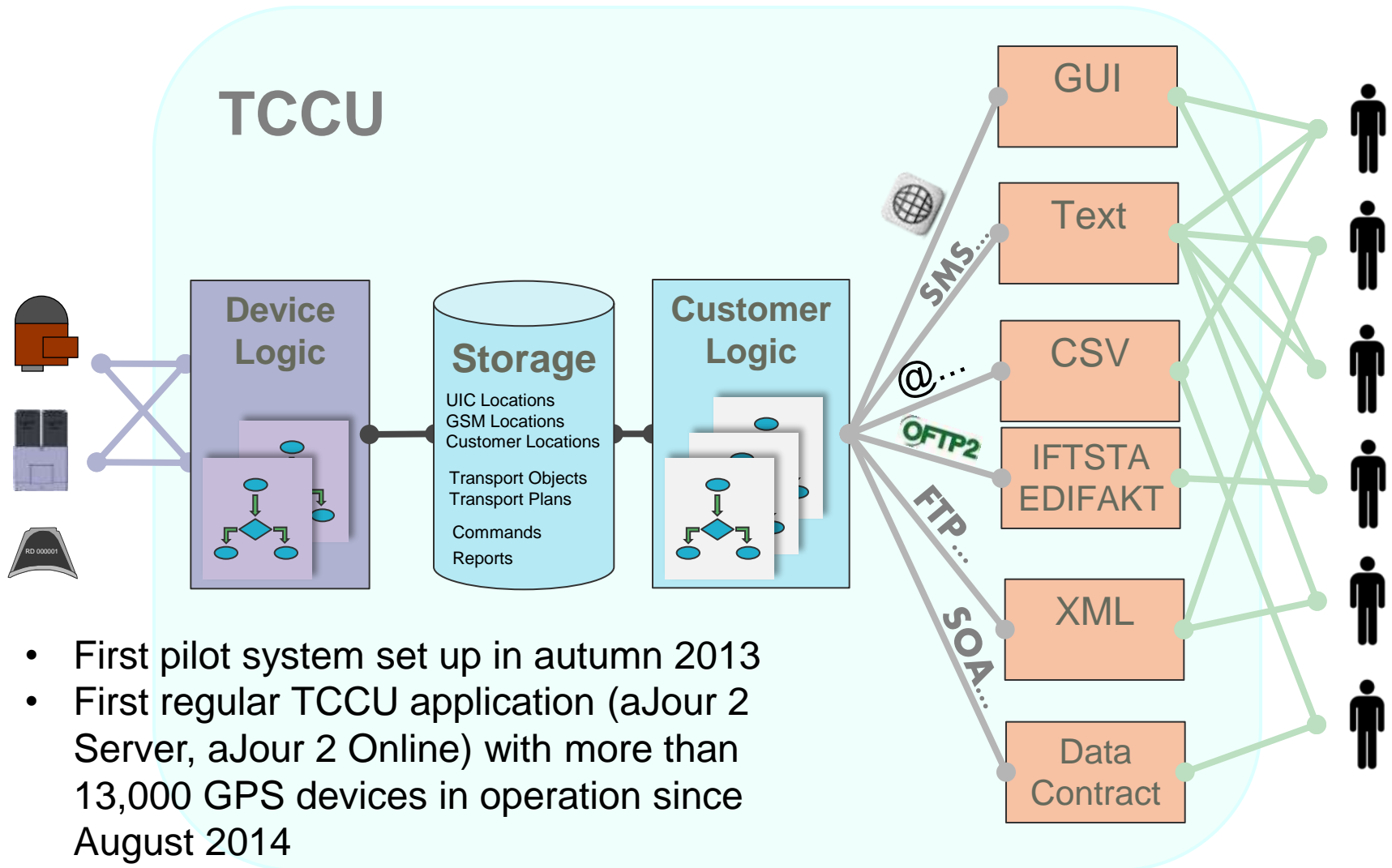
General concept:



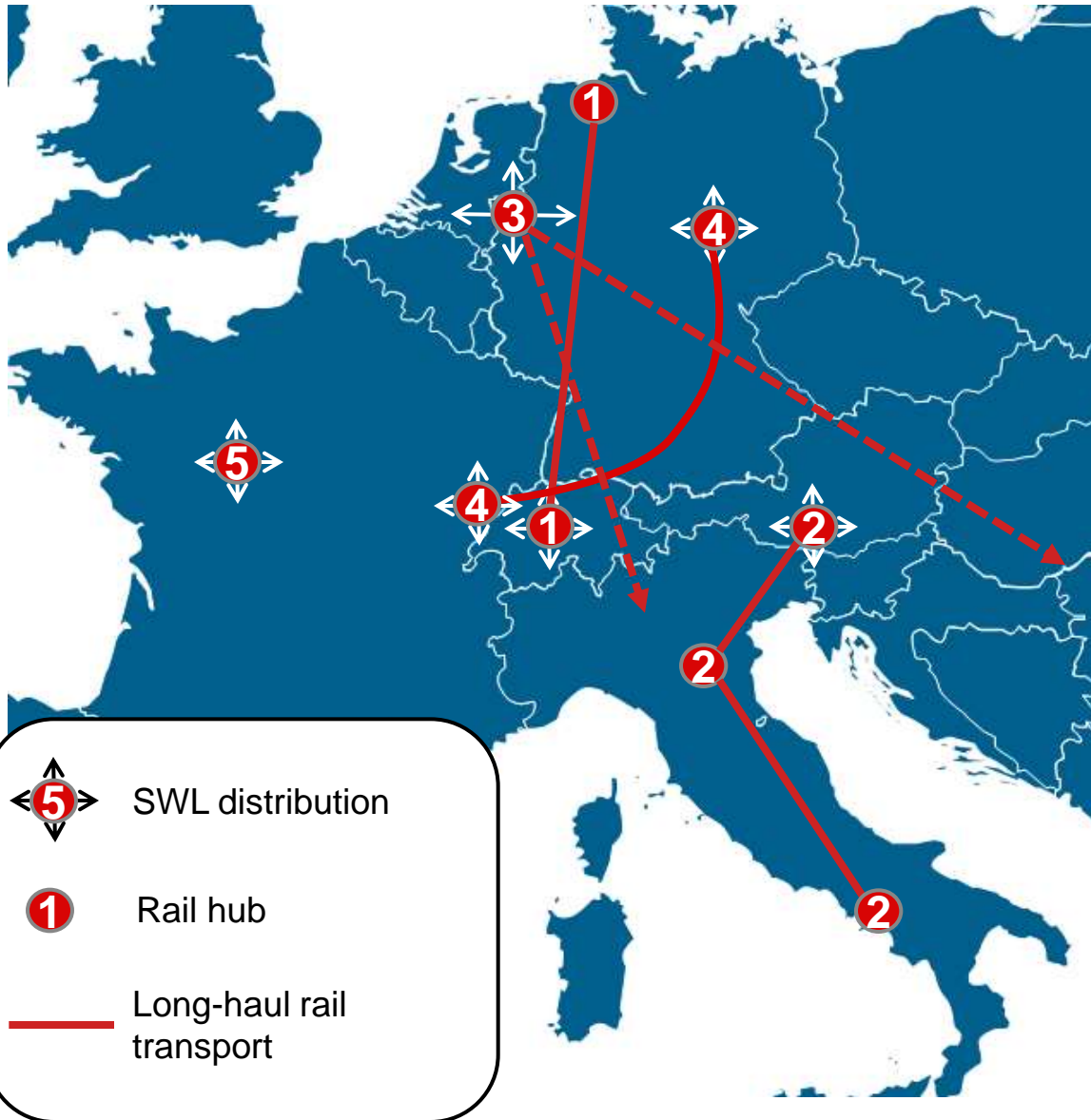
Development goal:

Set-up a telematics data interface service (software) that enables stakeholder to get the information they need (intelligent rule based filters, processed information); improve data processing / distribution.

Technologies – Wagon data interface service

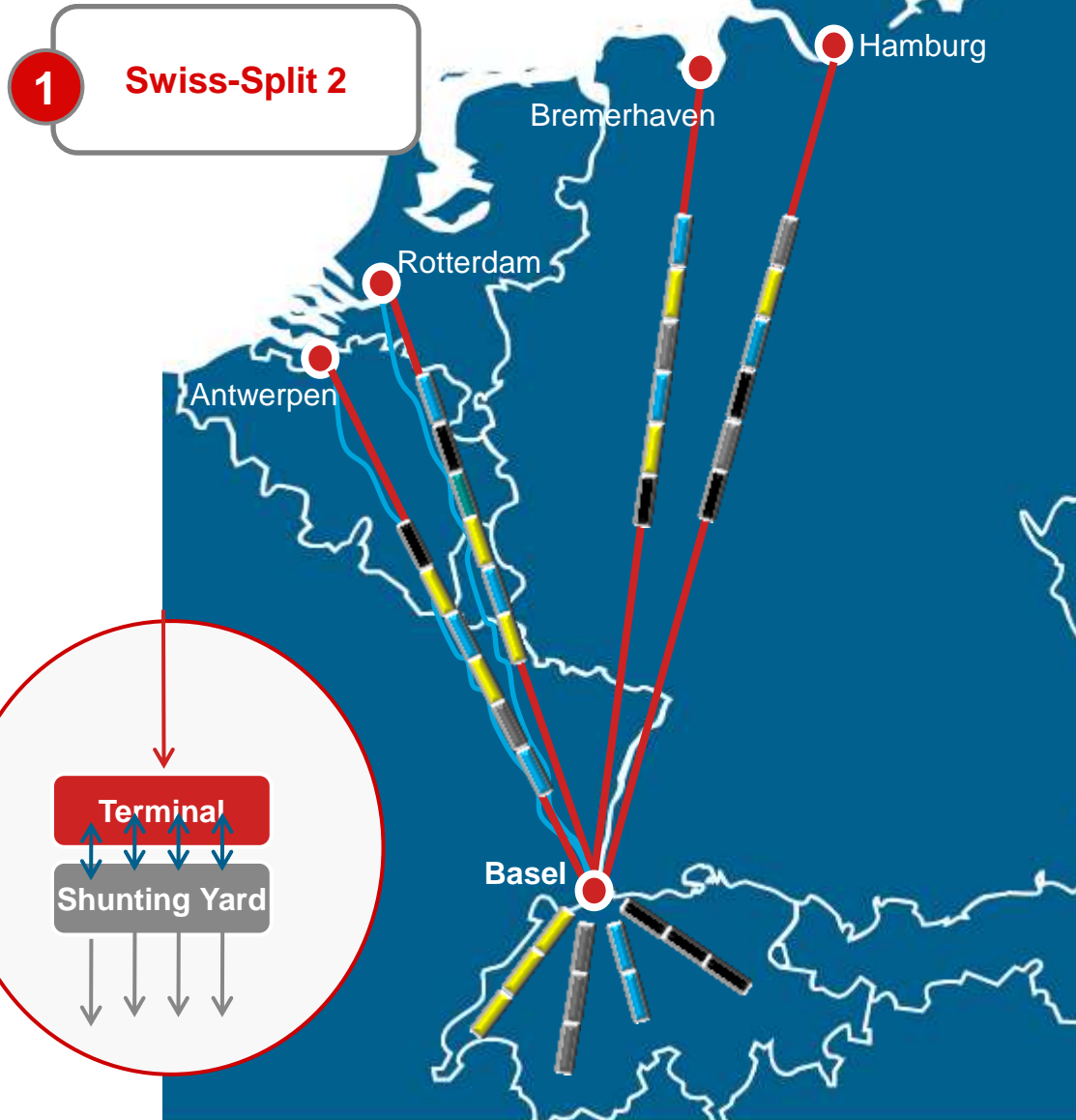


ViWaS – Business Cases



- 1 Swiss-Split 2
- 2 Re-connect Southern Italy to European SWL
- 3 Regional network of rail logistics centres
- 4 SWL based special waste transport chains
- 5 Last mile service on French secondary lines

Business Case: Swiss-Split 2



Optimisation of SWL processes:

- Operation of regional shunting (RCP-Teams)
- Operation in private sidings
- Operation in terminals of combined transport
- New Concepts for the distribution, e.g. Train-Coupling-and-Sharing
- Reduction of infrastructure requirements, e.g. electric overhead wires.



SBB Cargo | Hybrid locomotive SBB Eem 923 "BUTLER"

Business Case: Re-connect Southern Italy to European SWL

Initial idea:

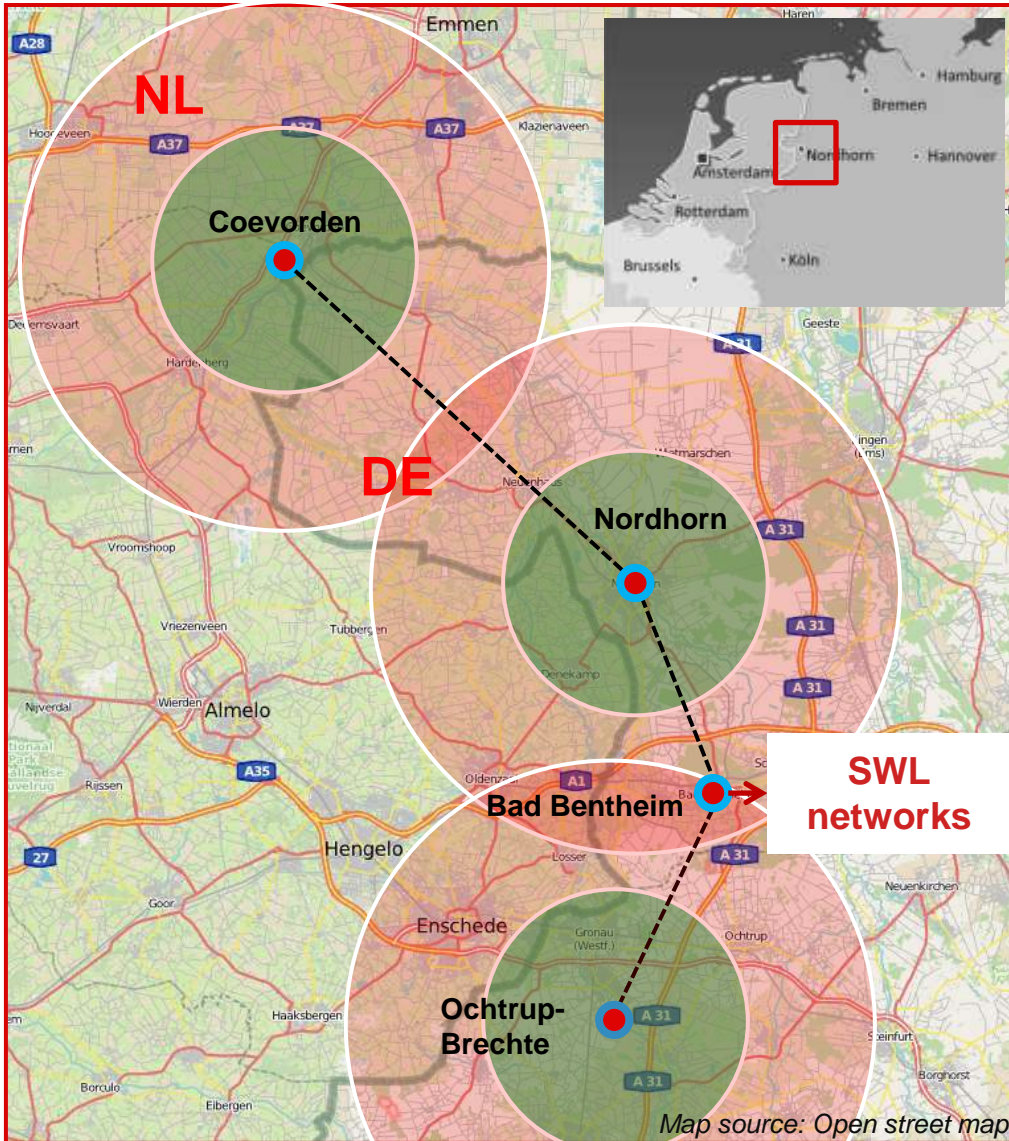
Connect Southern Italy to European single wagonload

Conduction of a dedicated workshop

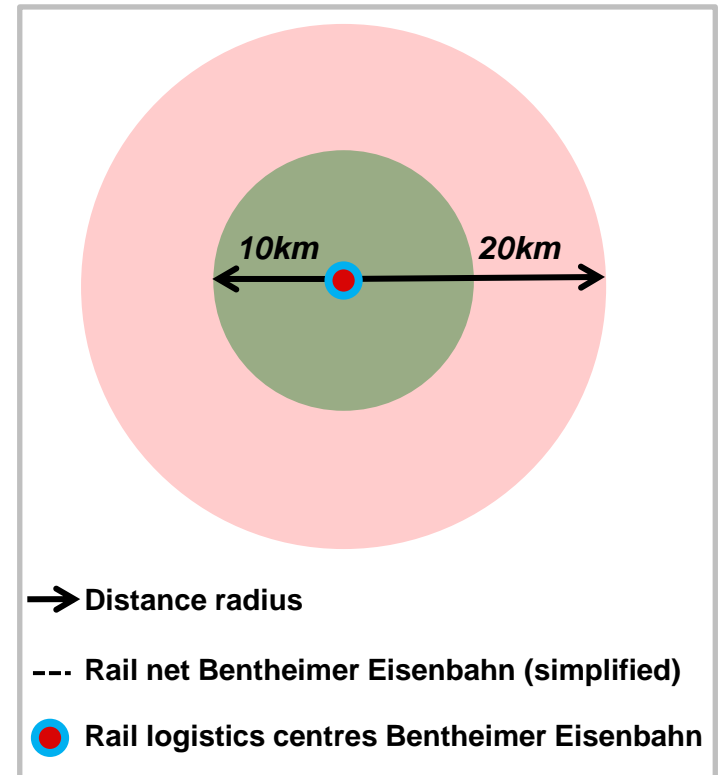
No demo



Business Case: Regional network of rail logistics centres



3 Regional network of rail logistics centres



Business Case: Regional network of rail logistics centres

Rail logistics centres

Development of complementary rail logistics centres (functional, catchment area)

Rail production

Optimised rail operation considering employment of hybrid locomotives and streamlining of transfer points

COMPONENTS

Logistics service profile

Extend service profile of rail logistics centres (e.g. buffer storage / just-in-time-delivery)

Transshipment processes

Development and integration of improved transshipment processes and technologies

3

Regional network of rail logistics centres

Business Case: Regional network of rail logistics centres

Development goal:

Extend service profile of rail logistics centres (e.g. buffer storage / just-in-time-delivery) e.g. for steel sheets

- Buffer storage of steel in BE logistics centre in Nordhorn; delivery on demand to steel dealers
- Volumes have been going up by 30 %
- Delivery of steel tubes in planning
- Other steel manufacturers are interested in this kind of warehousing!



Business Case: Regional network of rail logistics centres

Development goal:

Optimise rail operation considering employment of hybrid locomotives and streamlining of transfer points

- Analysis revealed potential cost savings from use of hybrid locomotives
- Bombardier TRAXX Last Mile locomotive chosen for test and potential deployment at BE
- Elaboration of extended requirements (e.g. bigger diesel tank necessary for operation on BE network)
- Tests of loco on BE network planned for mid 2015 depending on homologation of locomotive

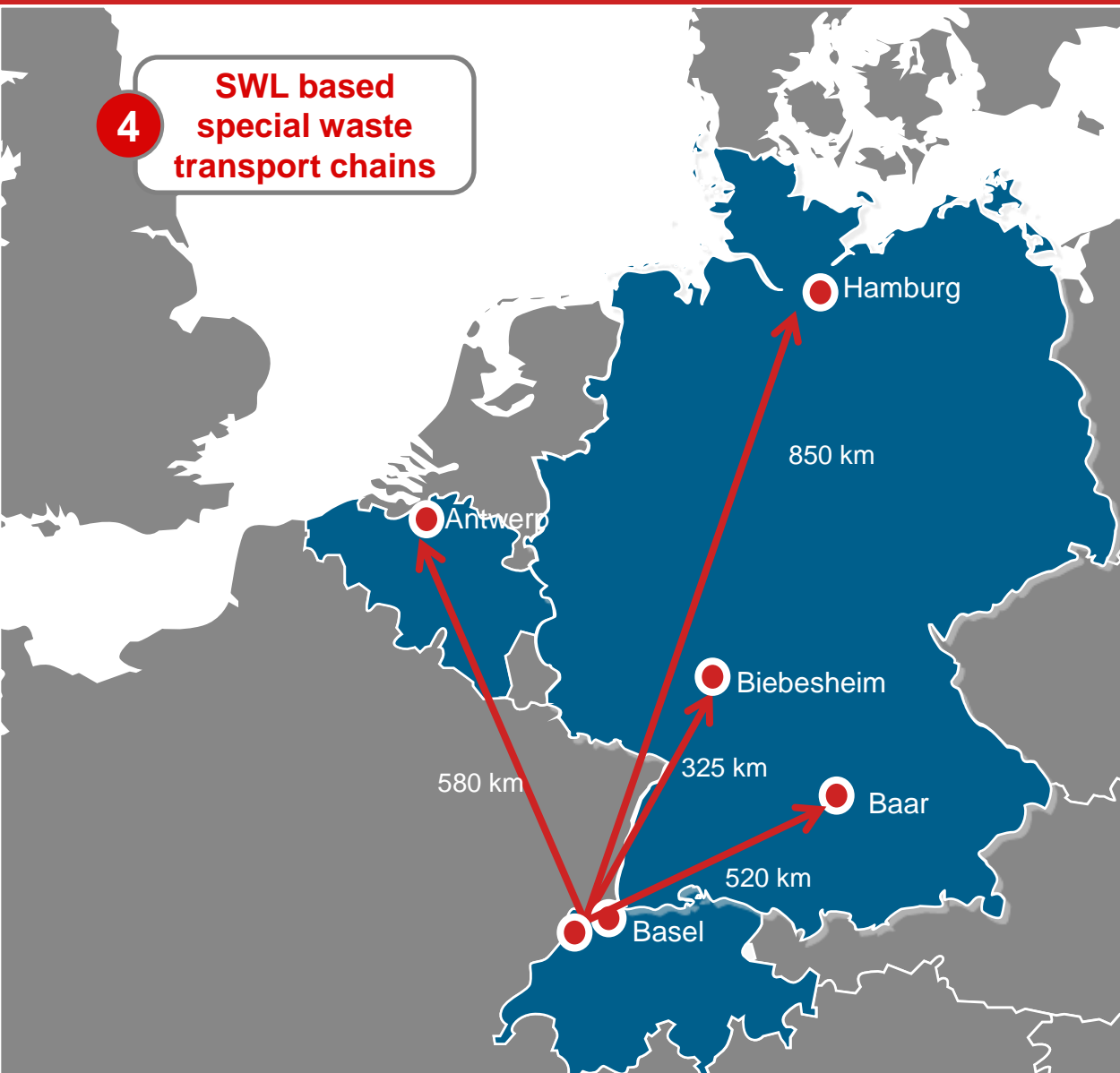


Source: Railpool

Business Case: Hazardous waste transport chains

4

SWL based
special waste
transport chains



Requirements:

- (Single) wagonload transport
- Intelligent Telematics / IT

Last Mile delivery/collection method - main ideas and expected benefits:

- Decouple the distribution train movement from the shunting for the very last mile delivery
- Last mile delivery / shunting will be done by a road-rail engine operated by a single agent
- It will not need any points in the sidings as it can leave the embedded track in the tarmac anywhere
- It reduces the number of tracks necessary on the private sidings
- It authorises the road-rail engine mutualisation between industries of the same cluster

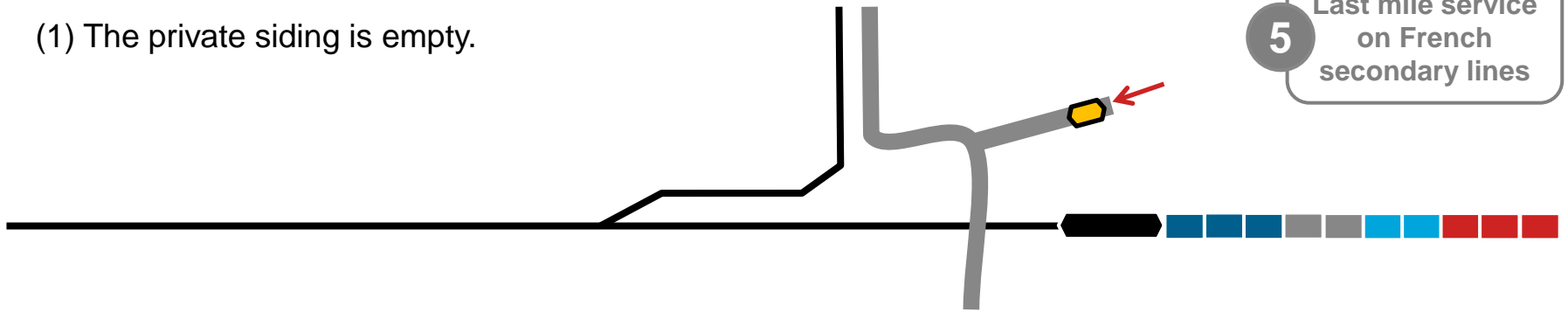


Road-rail engine (example)

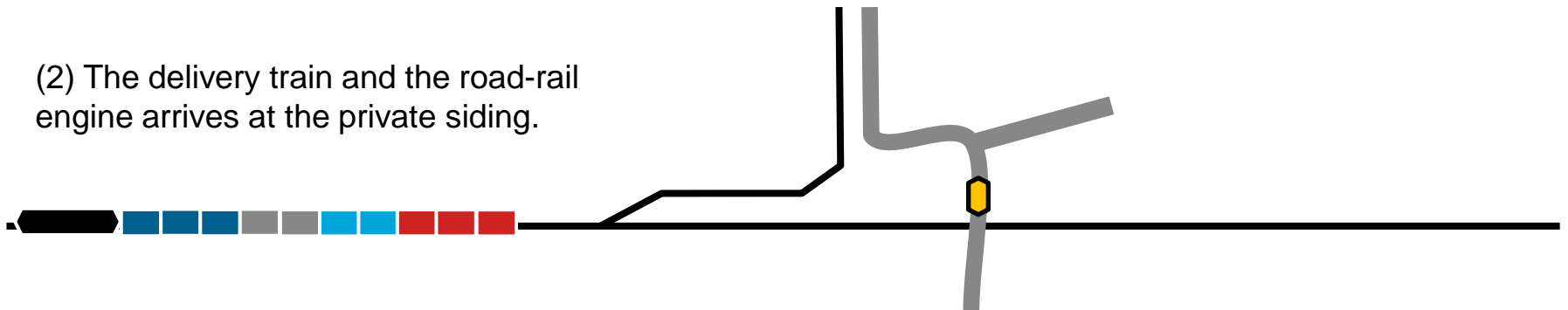
“Last Mile” delivery – Phase 1 (Arrival)

5 Last mile service on French secondary lines

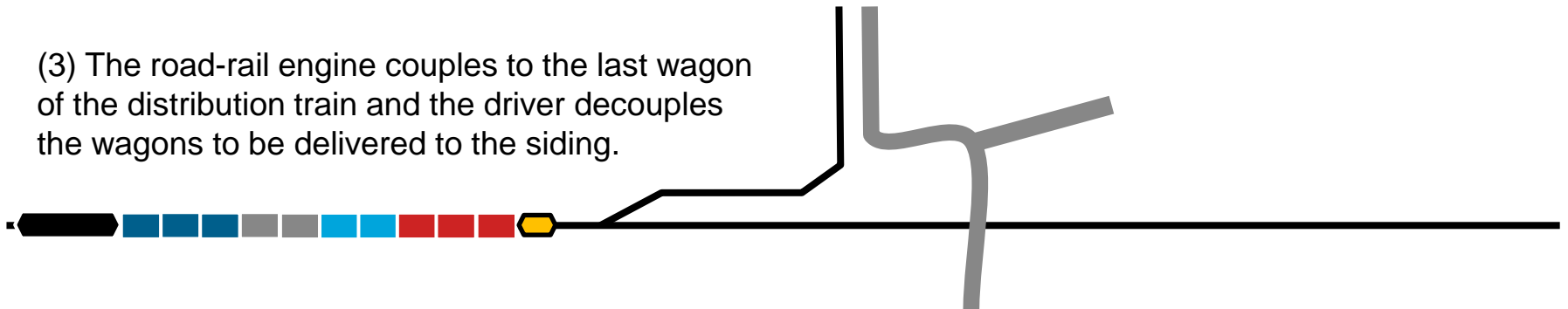
(1) The private siding is empty.



(2) The delivery train and the road-rail engine arrives at the private siding.



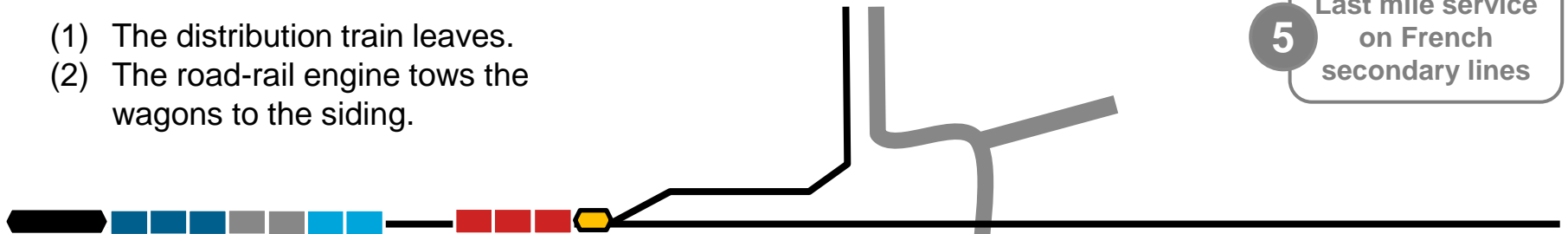
(3) The road-rail engine couples to the last wagon of the distribution train and the driver decouples the wagons to be delivered to the siding.



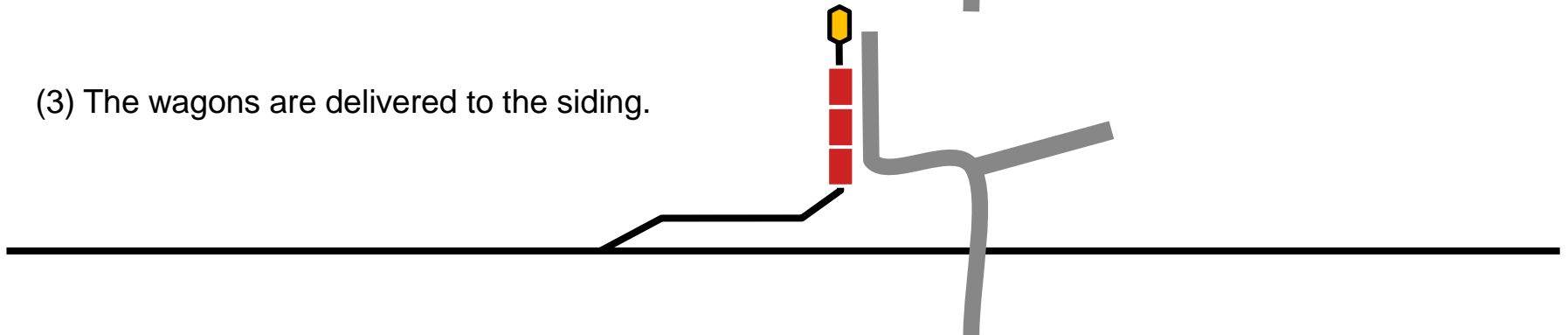
“Last Mile” delivery – Phase 2 (Delivery)

5 Last mile service on French secondary lines

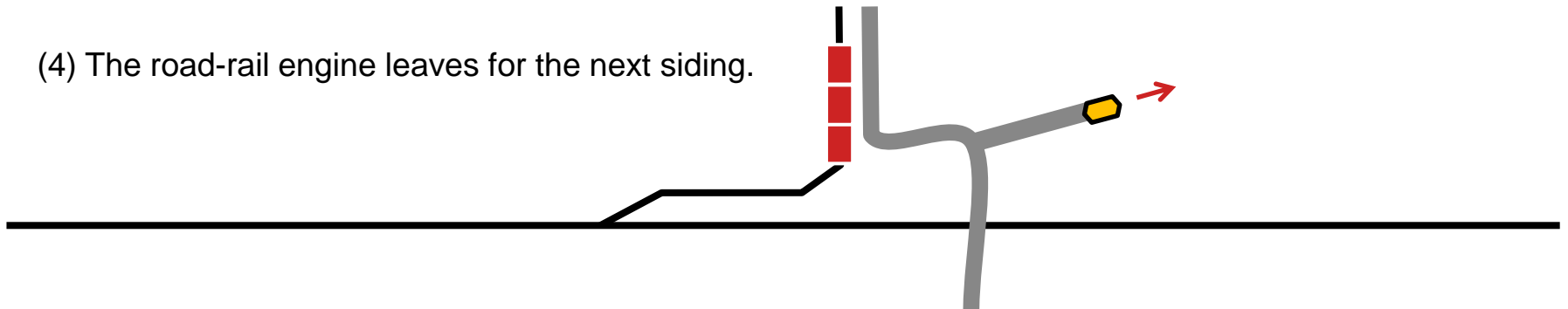
- (1) The distribution train leaves.
- (2) The road-rail engine tows the wagons to the siding.



- (3) The wagons are delivered to the siding.



- (4) The road-rail engine leaves for the next siding.



More information?

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