

# #FIT FOR #FREICHT

Data exchange



# UIC Freight – new website



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## FREIGHT

Let's MODAL SHIFT to an environmentally sustainable future where rail plays a central role in mobility and, asserts itself as its unwavering backbone. To support this ambition, UIC is a key partner working with its members to drive modal shift. This is achieved by harmonising business, operational and information processes which are at the heart of rail freight's daily business activities.

### WAGON UTILISATION

Wagons area a key asset in rail freight transport. The work of the competence centres ensures interoperability, availability, easy and safe hand over wagons, this bearing a direct impact on capacity and overall cost of operation. [Read more...](#)

ATTI Claim Settlement

Corrective Maintenance / Restoring fitness to run

GCU Technical Inspection

Wagon Utilisation

### COMBINED TRANSPORT

Combined transport (CT) is key to achieve a carbon neutral transport sector in the context of the European Green Deal. Combined Transport, presenting a range of benefits, contributes towards a better quality of life and proposes a seamless transport solution in order to improve the productivity of the entire chain. [Read more...](#)

### CORRIDOR DEVELOPMENT

The development of intercontinental rail freight corridors opens extremely promising perspectives to the growth of rail transportation over long distance, as an alternative to other modes - maritime or road transport - or as an effective partner in the global logistic chain. [Read more...](#)

### DANGEROUS GOODS

The transport of dangerous goods is subject to specific regulatory measures stipulated by the competent international, European, or national authorities, as well as certain measures taken by companies themselves. Dangerous goods safety on the railways is based on general railway operations safety. This area is managed by UIC in close consultation with its members and in cooperation with other stakeholders. [Read more...](#)

### TRAIN OPERATION

Harmonisation is the basis for a seamless international and border crossing freight traffic. UIC facilitates best practice sharing to ensure interoperability as well as increase commercial speed of train traffic. Key part of this competence centre is corridor development, ensuring that significant traffic flows are being prioritised and investments being put in place. [Read more...](#)

ECCO Exceptional Consignments

Freight Forwarders Operations Pallets

Quality XBorder

### SEAMLESS DATA EXCHANGE

Digitalisation is key tool to facilitate business growth, reduce future costs and mitigate errors. UIC manages and develops a broad portfolio of transversal digital solutions, enabling efficient data exchange between supply chain partners. At utmost importance it the development of DP-RAIL, an RFF initiative to create an open European Digital Ecosystem to facilitate seamless interoperable information flows between all rail freight entities. [Read more...](#)

Coding DIUM DIUM/NHM GRU

IT working group NHM RailData

### LOAD SAFETY

The safety of goods is pivotal in rail freight transport. Hence, UIC has produced Loading Guidelines to clearly outline the key principles and technical recommendations for loading methods, which will ensure that goods reach the intended destination unscathed. [Read more...](#)

Loading guidelines

Loading Guidelines - Working group

UIC Pallets



# UIC Freight – competence centres

**LOAD  
SAFETY**

**WAGON  
UTILISATION**

**DANGEROUS  
GOODS**

**TRAIN  
OPERATION**

**COMBINED  
TRANSPORT**

**DATA  
EXCHANGE**

**CORRIDOR  
DEVELOPMENT**



# UIC Freight month programme

<b>2 November</b>	<b>UIC Freight month grand opening</b>
<b>3 November</b>	<b>Deep dive: Data exchange</b>
<b>4 November</b>	<b>Deep dive: Load safety</b>
<b>8 November</b>	<b>UIC Combined transport Executive committee</b>
<b>9 November</b>	<b>Combined transport report 2022</b>
<b>14-16 November</b>	<b>Translate4Rail at TAR 2022 in Lisbon</b>
<b>17 November</b>	<b>UIC Freight Forum</b>

<b>18 November</b>	<b>Deep dive: Dangerous goods</b>
<b>21 November</b>	<b>RAME: Southern &amp; middle corridor development</b>
<b>25 November</b>	<b>ATTI morning</b>
<b>28 November</b>	<b>ECCO: European corridor development</b>
<b>29 November</b>	<b>CEF PSA UBS final conference</b>
<b>29 November</b>	<b>UIC Pallets at Logistics Hall of Fame</b>
<b>30 November</b>	<b>UIC &amp; FIATA: Latin America corridor development</b>

For details visit: <https://uic.org/events/fit-for-freight-freight-month>



# DEEP DIVE INTO DATA EXCHANGE

# UIC Freight – competence centres

**LOAD  
SAFETY**

**WAGON  
UTILISATION**

**DANGEROUS  
GOODS**

**TRAIN  
OPERATION**

**COMBINED  
TRANSPORT**

**DATA  
EXCHANGE**

**CORRIDOR  
DEVELOPMENT**





# DEVELOPING FOR THE FUTURE

**Carel Jonckheere**  
RailData General Manager



# #FITFOR #FREIGHT

#Data exchange



November 2022



# Who is RailData?

An aerial photograph of a large freight train yard. The yard is filled with numerous tracks, each lined with freight cars. The cars are in various colors, including blue, red, yellow, and white. In the background, there are tall utility poles and some buildings, suggesting an industrial or urban setting. The overall scene is a busy hub of rail freight operations.

RailData is special group of the UIC, established in 1995.

We develop and run Data Exchange platforms for European freight railway undertakings.

We are a non-profit service provider, owned and steered by UIC-RUs.

Our RU users represent over 70% of yearly ton-km in EU.



# Why was RailData established?

- RU's win-win
- Competition & cooperation
- Before TAF TSI
- **...by improving the RU's interoperability**





# Mission of Raildata

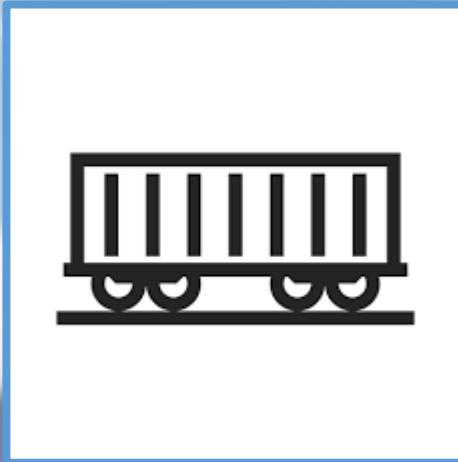
Enable seamless connection for RUs and the logistic chain:

- Simple
- Standard
- Digital





**RailData  
is part of a  
community**

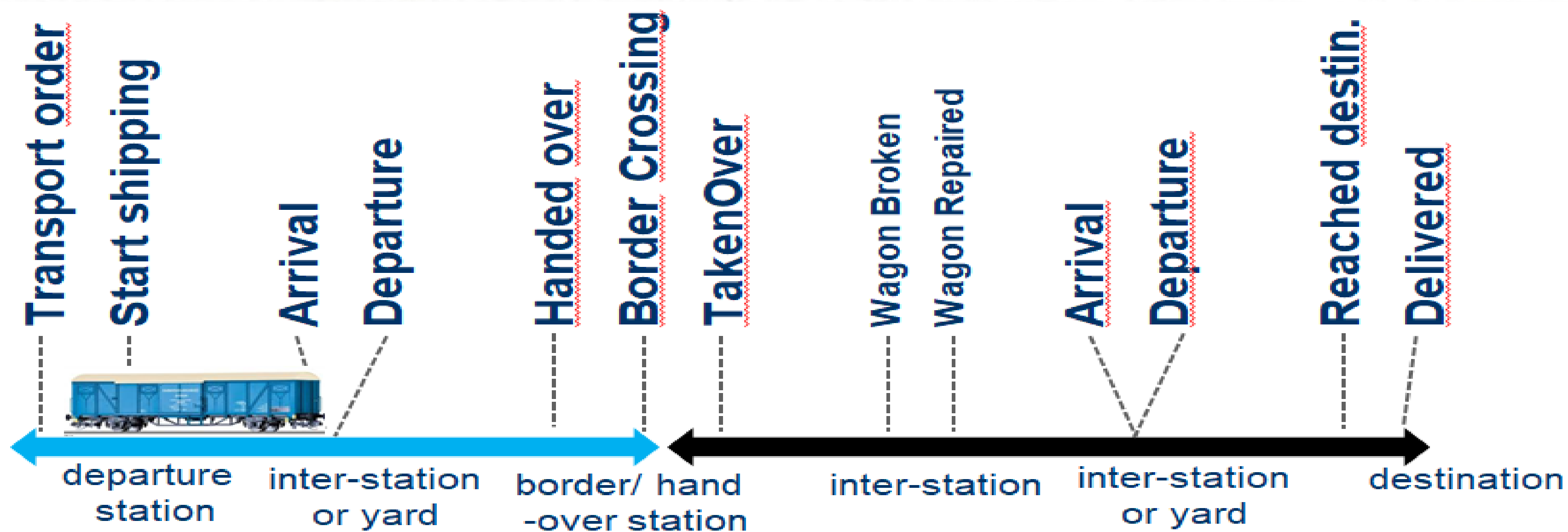
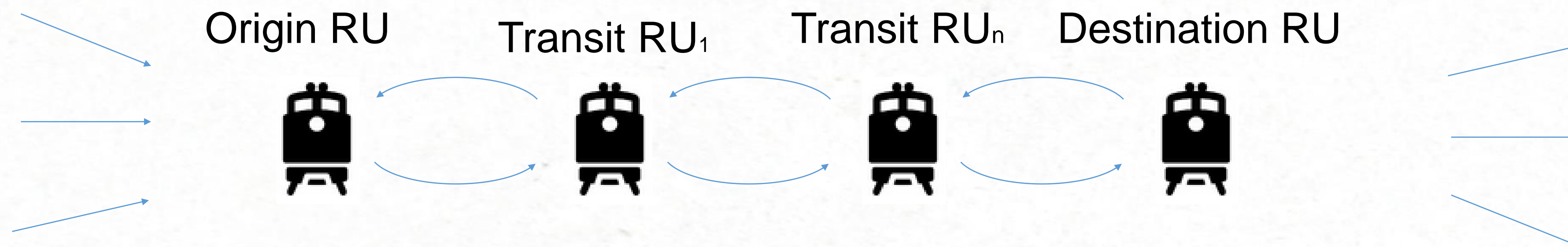




# What data exchange ? Where, When, What, How, Condition

First mile

Last mile



Rail Data



Data exchange  
and data sharing  
are key

green  
cargo

LINEAS  
YOUR FREIGHT FORCE

ZSSK CARGO

MERCITALIA  
Slovenske železnice

SNCF

Cargo

DB

SBB CFF FFS Cargo

renfe

Rail Cargo Group

CFL cargo

HŽ CARGO



# RailData's users and partners

## Clients



## Partners



## Members





# Products of Raildata

Our tools are the core element for digitalization of international rail transport:

- Exchange of data about wagons position and status  
ISR
- Exchange of consignment note data  
ORFEUS
- Database of commercial responsible for wagons  
CoReDa
- Trains and wagons handover quality management  
ATTI





# Services of RailData

- Exchange of consignment note data (enabler for ECN): ORFEUS
- Tracking & tracing of wagons (using WSM, Hermes 30): ISR
- Train run information (input from RNE TIS): RTIS
- Connecting partners for first and last mile (using Hermes 30, WSM): WDI, MARS
- Train and wagon handover Quality Management: ATTI
- Wagon performance from RUs to Keepers: ISR mileage
- Wagon responsible data for fleet management: CoReDa
- TAF TSI compliance (ISR since March 2018, ORFEUS in progress)





# ORFEUS – overview

ORFEUS is the standard application used for rail freight Consignment Note data exchange between RUs

- In advance / in parallel to a paper CIM consignment note accompanying the transport/goods (ECTD flow)
- ORFEUS also covers transport of empty wagons based on CUV + “General Contract of Use for Wagons (GCU)” agreement
- Part of transports run with just Electronic Consignment Note as paperless transport (ECN flow)





# ISR Overview

ISR = International Service Reliability.

= information system developed and operated by RailData.

= common tool of ISR railway undertakings for concentration and exchange information about **movements of freight wagons** in international traffic through a central platform.

It makes possible to track both loaded and empty freight wagons and consignments across significant part of Europe.

ISR has several functions



# ISR Information Sources

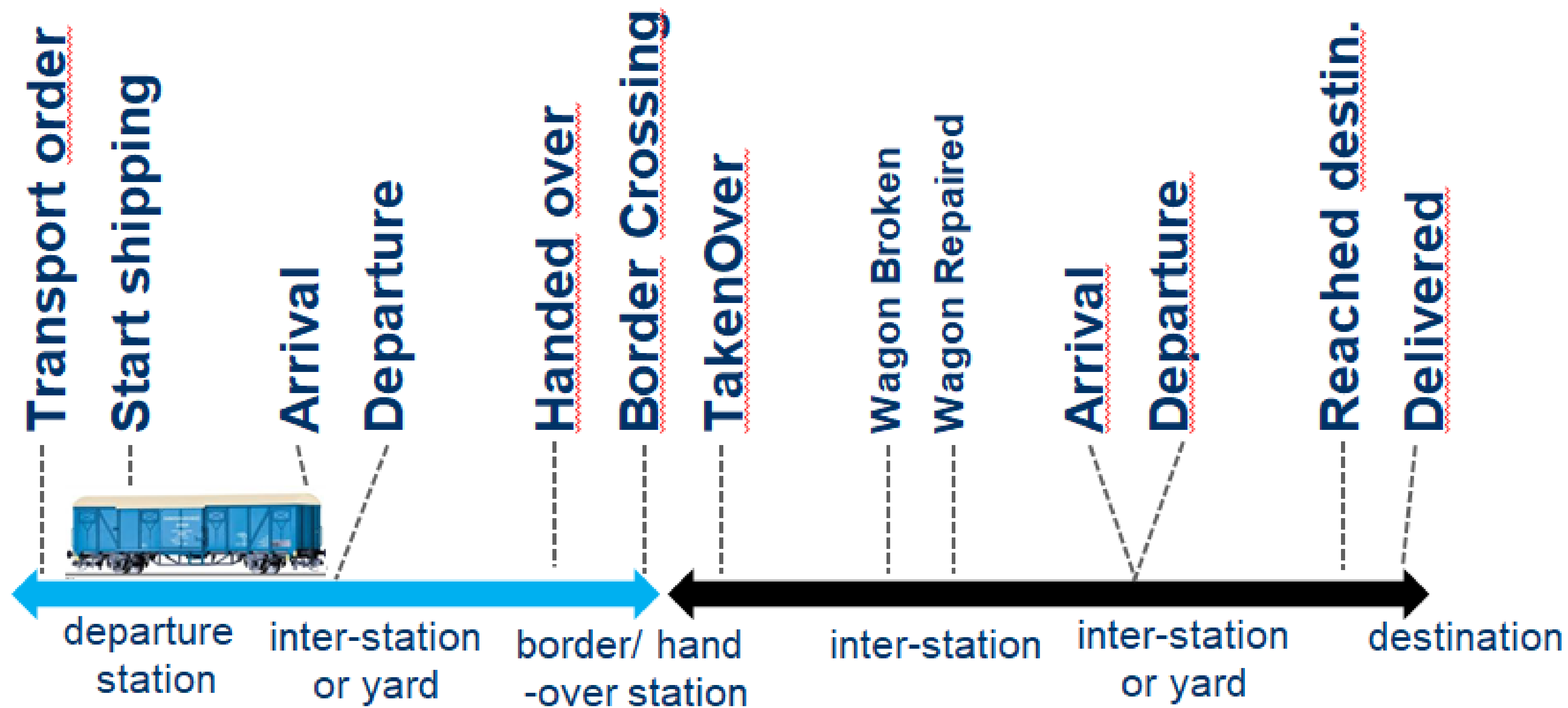
- The main source of the wagon status information are the systems of RUs, who register wagons in their trains and send wagon movement information to ISR.
- A subset of the consignment note data is taken over from ORFEUS to create Transport Description.
- In addition, ISR gets train movement information from the Train Information System of RNE





# ISR = event-driven wagon Track & Trace

Simple example with basic events



monthly  
14 000 000 events received  
400 000 train preadvices  
30 000 000 events for RUs



# Agreement on freight Train Transfer Inspection

- Inspection planning : Technics, Operations, Dangerous Goods (RID)
- Web-Application „ATTI-QMS“- Quality management system which is needed for :
  - Inspection planning (ISO 2859) of interoperable freight trains/wagons, which one RU operate with other RU´s
  - calculation of sample size of inspections
  - consolidation and calculation of quality indicators
  - documentation and reporting of irregularities
- RU´s are obliged to provide the authorities with information

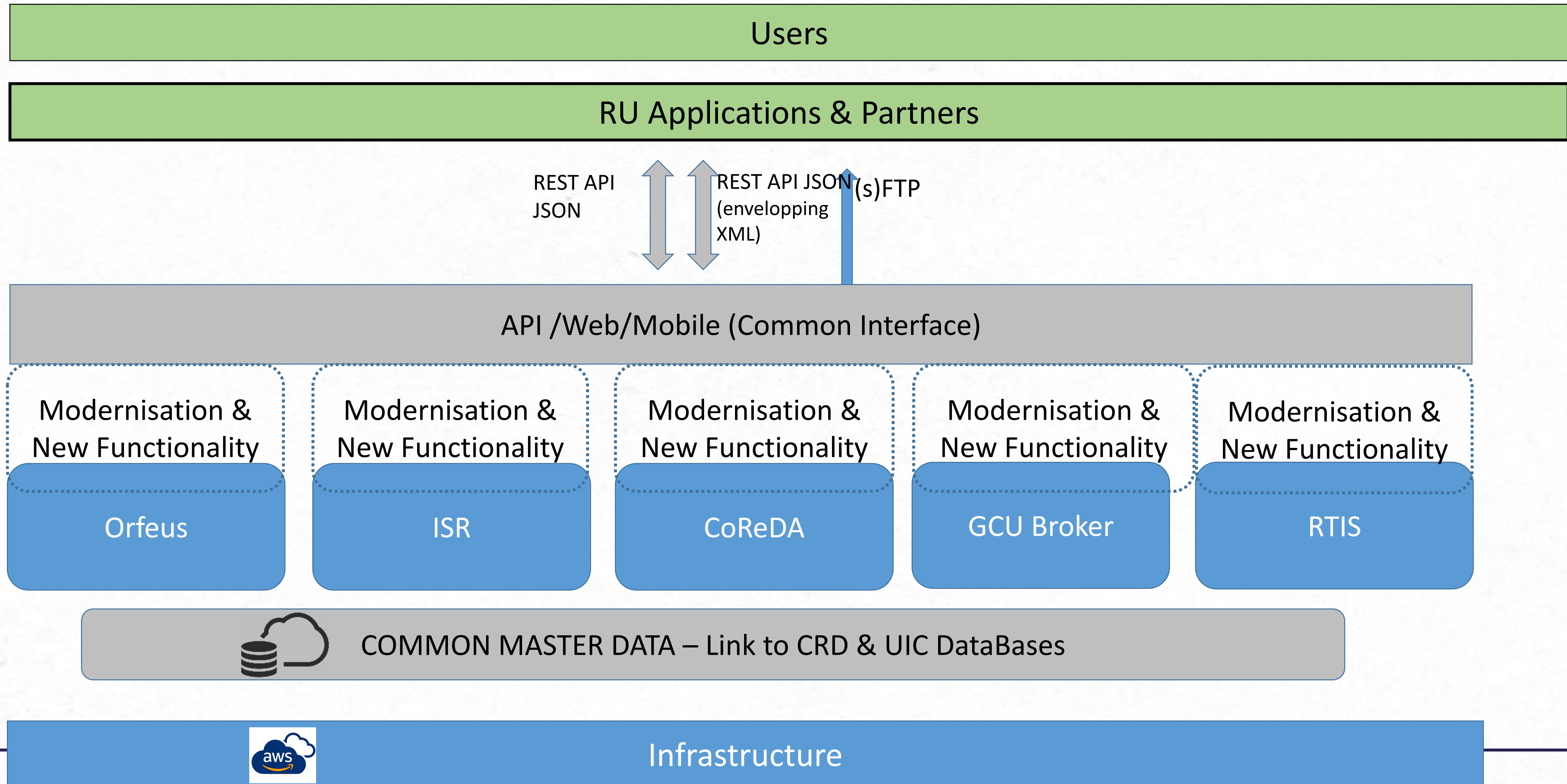


# RailData: plans for the future

- Technical Interface modernization (REST APIs)
- Continue in effort to further improve data quality
- Coverage of ORFEUS extension
- ISR mileage redesign (with use of GCU Broker)
- Better link between trains and wagons (we ask RUs to send either H30 or TCM for all trains)
- Introduction of MARS tool for small first/last mile RUs
- Leading role in Digital Platform tools development



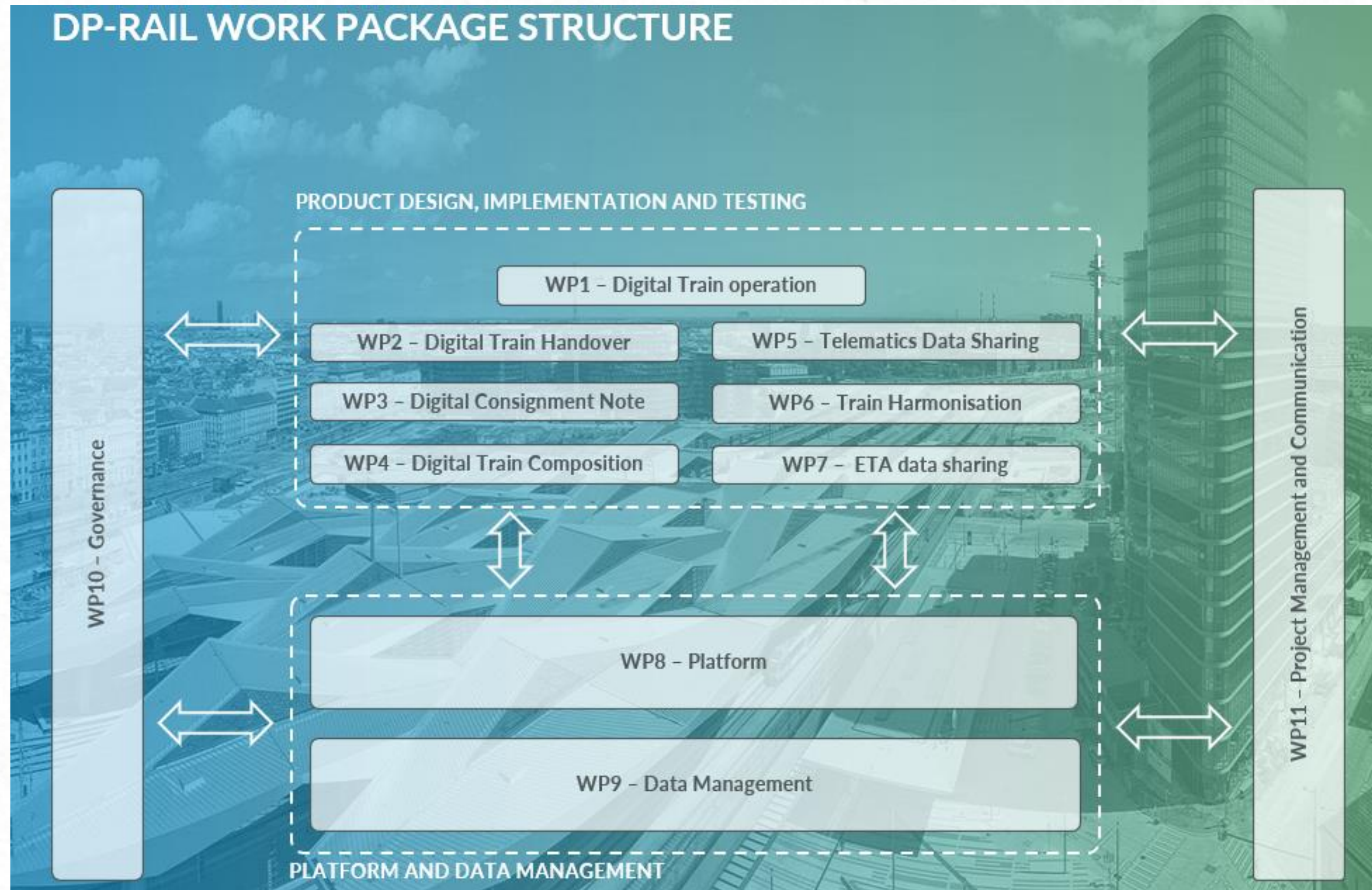
# New simple way of connecting to the platforms – Paving the way for the future





# DP RAIL - Seven solutions to improve rail operation

Solutions suitable for market uptake by 2025 addressing core rail operational processes

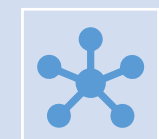




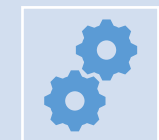
# Moving forward and adapting our organisation

## Digital services in Europe

### CONSULTING services



Implementation services for new tools / users



Migration services



Advisory services regarding standardisation (e.g. TAF/TSI)

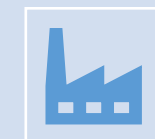


Performance analysis

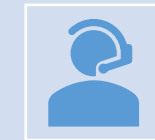


Project Management & Business process alignment

### RUN services



Production – 24x7



Monitoring services – 24x7

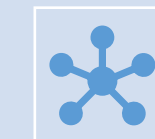


Data Mgmt. incl. Data Quality Monitoring



Maintenance and support services

### BUILD Services



New Applications



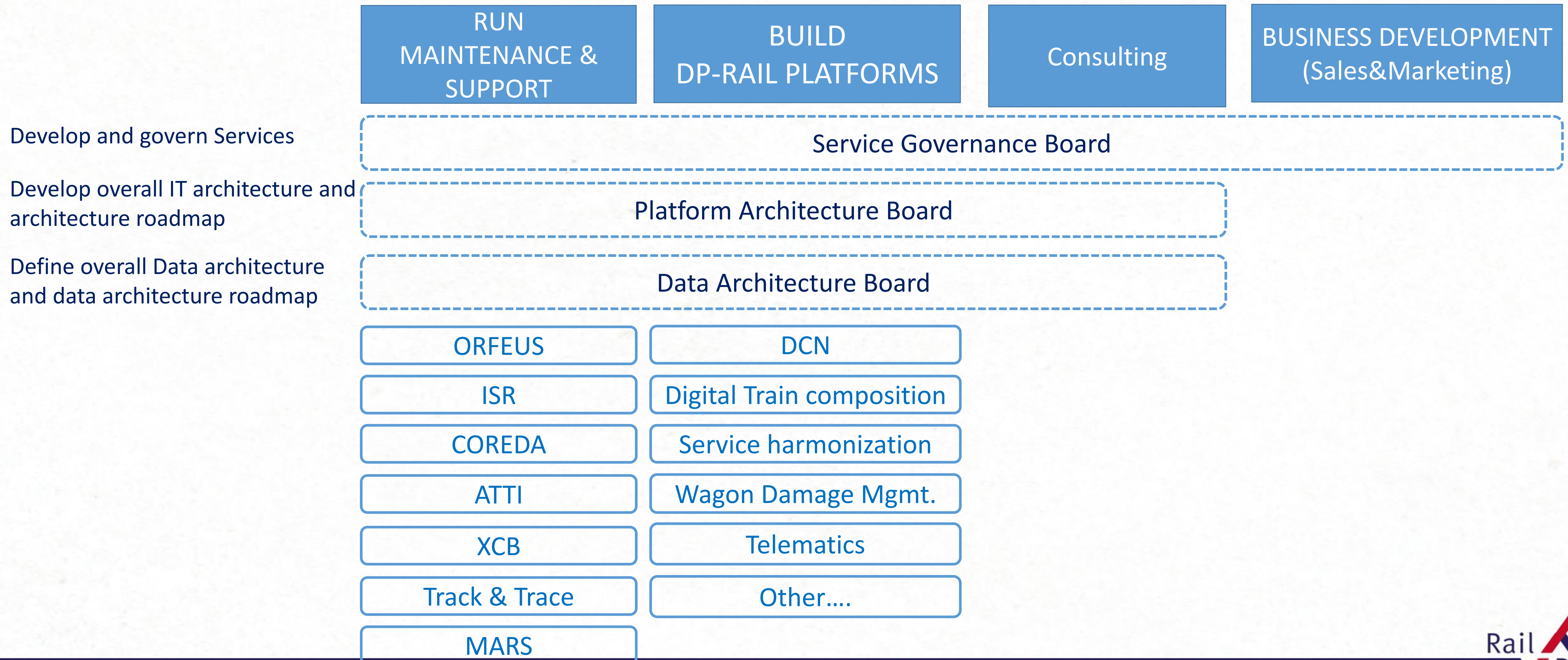
New Releases



New Service API



# Governance on overall platform architecture, data architecture and services





# RailData Contacts



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# UIC CODING ASSETS

**Parinaz Bazeghi**  
UIC Senior Freight Advisor



# Railway telematics coordination

- UIC is a unique platform that provides benchmarks, experience and best practice sharing.
- Digitalisation is key tool to facilitate business growth, reduce future costs and mitigate errors.
- **UIC manages and develops a broad portfolio of transversal digital solutions**, enabling efficient data exchange between supply chain partners.

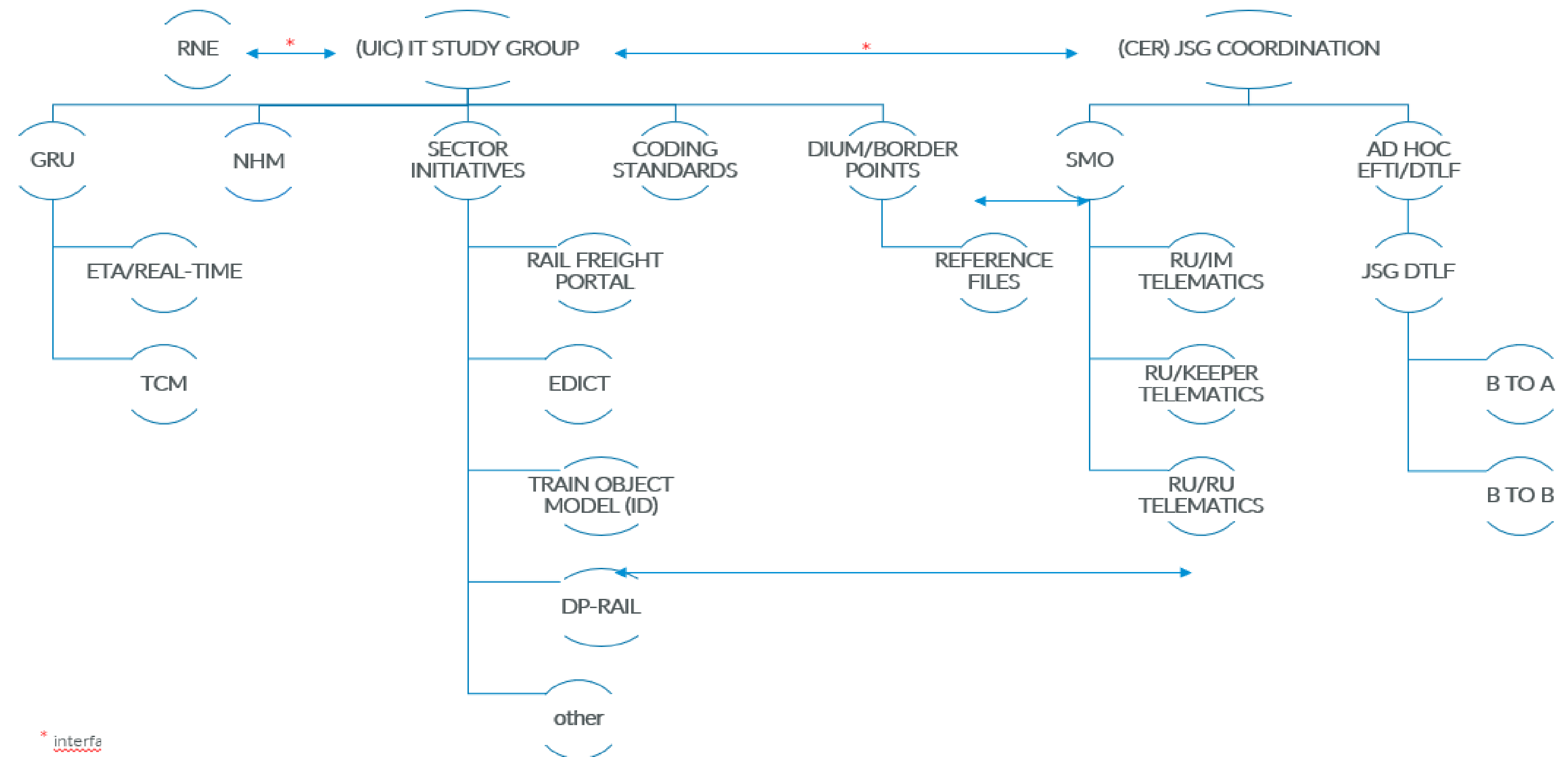




# Railway telematics coordination

- Train operations require data flow services, **UIC leverages & further develops key assets to facilitate efficient data exchange.**
- **UIC IT study group** steers the development of key coding assets.

- Interested to join us?  
Reach out to Parinaz  
– [bazeghi@uic.org](mailto:bazeghi@uic.org)





# Location coding: BORDER POINTS

- **Border point coding** is the unique identification of border points between national and / or infrastructure (IM) borders.
- Border points are **allocated and maintained by UIC in the Central Reference Database (CRD)**.
- UIC assigns these codes at the request of allocation authority (RU / IM / RU & IM).



data set	required in / for	enabling
Border points	Train handover	DIUM RailData ORFEUS RailData ISR HERMES 30 train composition message



# Location coding: DIUM

- **DIUM** (Uniform Distance Table for International Freight Traffic), location coding and updates of EU Subsidiary Location Coding (SLC) for rail freight operation points.
- **DIUM is used for identification of loading / unloading points** for freight operations and distances between stations in order to calculate the tax payable on a journey and offers other commercial and / or technical information for the journey.
- **UIC publishes the DIUM list** twice per year (July and December).
- DIUM Subsidiary Location Code is **allocated and maintained by UIC in the Central Reference Database (CRD)**.

data set	required in / for	enabling
DIUM	COTIF CIM consignment note COTIF CUV wagon note	RailData ORFEUS RailData ISR HERMES 30 train composition message



# Harmonised commodity codes: NHM

- **NHM** (Nomenclature Harmonisée des Marchandises) are based on the international standard Harmonised System which describes and codes goods in international trade published by the **World Customs Organisation** (WCO).
- **NHM is a standard and compatible commodity code** which facilitates compilation, comparison and analysis of data exchanged between customers, RUs and administrative bodies.
- **UIC assures their alignment and usability for the rail sector** since use of NHM is mandatory for RUs when classifying and coding goods.
- In international freight tariffs, NHM codes may be used for setting transport prices depending on the goods concerned.



**World Customs  
Organization**



# Standardized message: HERMES

- **HERMES** (Handling through European Railways Message Electronic System) message **contains the data to be exchanged for the operation of trains**, forwarding of wagons, intermodal units, and other rail vehicles.
- **Data is exchanged** using the XML format in respect of the train, wagon, loading units and consignments, **and compiled for all vehicles** in freight trains and traction units in principle.
- **HERMES** message has also been accepted by European Union Agency for Railways (ERA) as **an official Train Composition Message for use in compliance with the TAF TSI**.
- **HERMES** messages are **available in Excel and XSD formats**.







# STANDARDIZED MESSAGES

**Jürgen Hiller**  
DB Cargo / UIC GRU



# Data Exchange – Train preparation

## RU – RU communication

- **HERMES (Handling through European Railways Message Electronic System)**
  - HERMES is the operational communication message for international and interoperable freight traffic.
  - HERMES forms the basis for ensuring that the operational data required for the continuation of the train at the handing-over point from RU to RU does not have to be recorded again.
  - HERMES-data exchange is carried out in accordance with the UIC leaflets / IRS 40404-2 and 90920-13 (coding).



# Exchange – Train preparation

## RU – RU communication

- **Rough content of the HERMES message:**

- Train-related message - Identification of the train or group of wagons

- Boundary points or transfer- handing-over points

- Wagon-sequence in the train with their respective technical data including technical

- List of all damages or defects, assigned to the respective wagons

- Actual braking weights of the vehicles, both for the service brake and for the parking brake

- Vehicle-related allocation of the commercial data: weight of the load, dispatch and receiving station, type of goods, routing, information concerning intermodal loading units and for customs

- Listing of dangerous goods including RID classification and UN-No.

- Identification of exceptional transport



# Exchange – Train preparation

## RU – RU communication

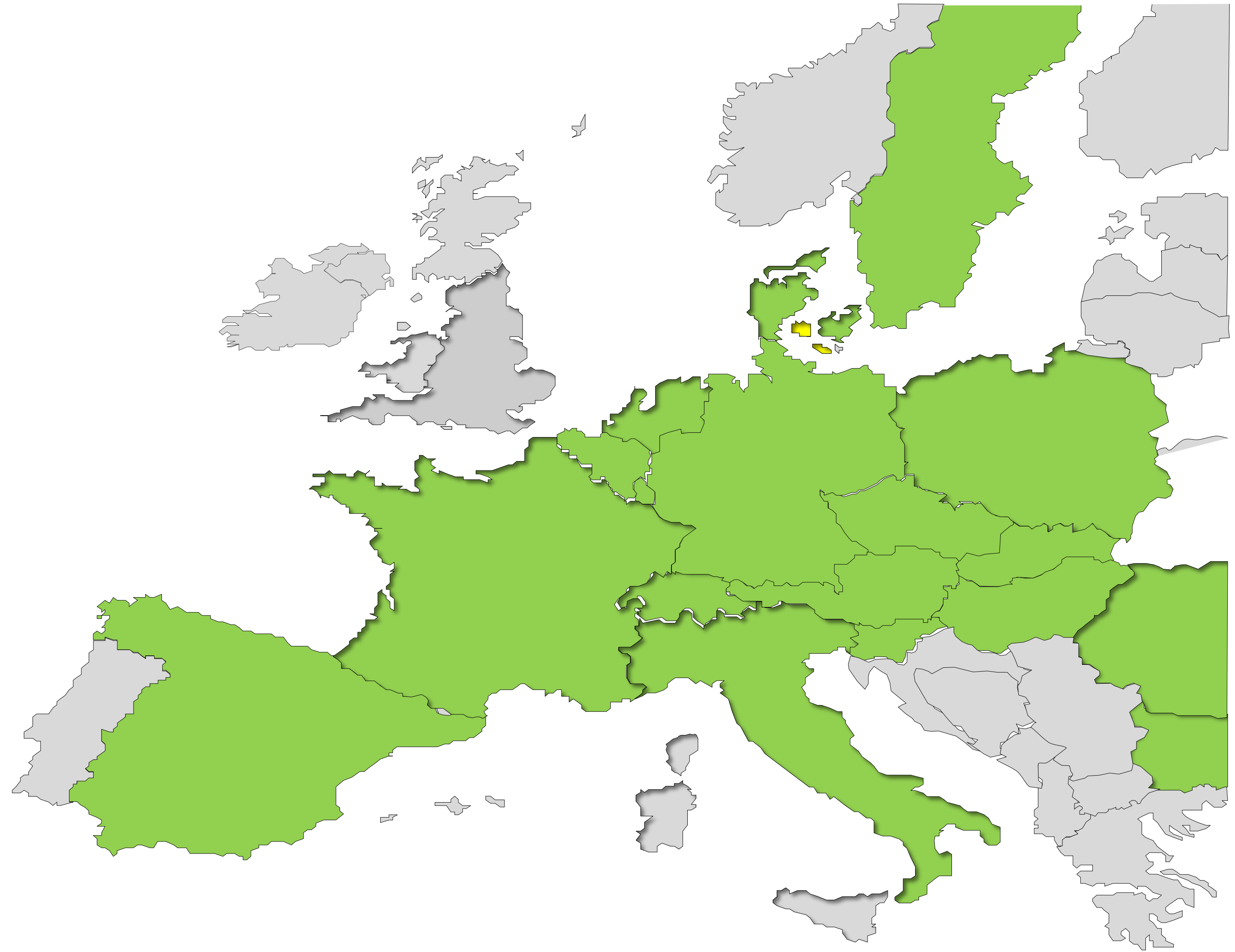
- **Rough content of the HERMES message:**
  - All location codes can also be transferred as CRD-codes
  - **HERMES from V2.0 is TAF compliant**
  - **RU-RU communication with HERMES V2.0 is TAF compliant!**





# HERMES

Countries with  
HERMES using RU





# Exchange – Train preparation

## RU – IM communication

- **TrainCompositionMessage (TCM) according TAF TSI**
  - TCM is a subset of HERMES
  - Purpose: To inform the IM about train content to improve the disposition of the trains based on the actual load, length and brake-force as well as about exceptional transport and RID
  - Due to a lot of requirements concerning „NetworkSpecificParameters“ the TCM gets more and more of the content of the HERMES



# Data exchange – Train preparation

## Essential differences HERMES <-> TCM

### HERMES

- Technical Wagondata
  - Brake-equipment
  - Length and weight
  - Loadmatrix
  - REV-Daten
  - Actual brake-data
  - restrictions
- Information about damages of the wagon
- Exceptional transport information
- RID information
- Dispatch and destination station of each wagon
- Information about wagon-routing
- NHM-number
- Information for customs
- Information about intermodal loading units

### TCM

- Technical Wagondata
  - Length and weight
  - Actual
  - restrictions
- Exceptional transport information
- RID information



# Data exchange – Train preparation

## Essential differences HERMES <-> TCM

### HERMES

- **Purpose:** To enable the taking-over RU to continue the operation of the train without any additional data-input
- Message is related to the content of the train at the handing-over point

### TCM

- **Purpose:** To inform IM about the train content in order to improve the disposition of the train on the route
- Message is related to the route



# Data Exchange – WagonMovement RU – RU communication

- **WagonMovement / WagonStatus Messages**

→ Information from the operational RU (operating the train) to the contractual carrier about the status of the wagon:

→ Pulled

→ Handed over

→ Arriving/Departure at a yard

→ Delivered at the destination



# Data Exchange – WagonPerformance RU – WagonKeeper communication

- **WagonPerformanceMessage**

- Information from the RU using the wagons to the keeper of the single wagons about the mileage
- Important and safety-relevant message since more and more wagon keepers change the Revision from a time-based revision to a mileage-based revision



# Data Exchange – RSRD WagonKeeper – RU communication

- **RSRD message**

→ Information from the WagonKeeper to the wagon-using RU about the technical wagon data





INTERNATIONAL UNION  
OF RAILWAYS

# QUESTIONS & ANSWERS

<b>RD</b>	<b>Carel Jonckheere</b>	<b>Developing for the future</b>
<b>UIC</b>	<b>Parinaz Bazeghi</b>	<b>UIC coding assets</b>
<b>DBC</b>	<b>Jürgen Hiller</b>	<b>Standardized messages</b>





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**[www.uic.org](http://www.uic.org)**



**#UICrail**

**Thank you for your attention.**



# Fit for Freight – Data exchange podcast

