

Midterm Plenary

16.05.2024









While some activities among competitors are both legal and beneficial to the industry, group activities of competitors are inherently suspect under the antitrust/ competition laws of the countries in which our companies do business.

Agreements between or among competitors need not be formal to raise questions under antitrust laws. They may include any kind of understanding, formal or informal, secretive or public, under which each of the participants can reasonably expect that another will follow a particular course of action or conduct. Each of the participants in this initiative is responsible for seeing that topics which may give an appearance of an agreement that would violate the antitrust laws are not discussed. It is the responsibility of each participant in the first instance to avoid raising improper subjects for discussion, notably such as those identified below.

It is the sole purpose of any meeting of this initiative to provide a forum for expression of various points of view on topics

- (i) that are strictly related to the purpose or the execution of the initiative,
- (ii) that need to be discussed among the participants of the initiative,
- (iii) that are duly mentioned in the agenda of this meeting and
- (iv) that are extensively described in the minutes of the meeting.

Participants are strongly encouraged to adhere to the agenda. Under no circumstances shall this meeting be used as a means for competing companies to reach any understanding, expressed or implied, which restricts or tends to restrict competition, or in any way impairs or tends to impair the ability of members to exercise independent business judgment regarding matters affecting competition.

As a general rule, participants may not exchange any information about any business secret of their respective companies. In particular, participants must avoid any agreement or exchange of information on topics on the following non-exhaustive list:

- 1. Prices, including calculation methodologies, surcharges, fees, rebates, conditions, freight rates, marketing terms, and pricing policies in general;
- 2. any kind of market allocation, such as the allocation of territories, routes, product markets, customers, suppliers, and tenders;
- 3. production planning; marketing or investment plans; capacities; levels of production or sales; customer base; customer relationships; margins; costs in general; product development; specific R&D projects;
- 4. standards setting (when its purpose is to limit the availability and selection of products, limit competition, restrict entry into an industry, inhibit innovation or inhibit the ability of competitors to compete);
- 5. codes of ethics administered in a way that could inhibit or restrict competition;
- 6. group boycotts;
- 7. validity of patents;
- 8. ongoing litigations.









Funded by the European Union



The project is supported by the Europe's Rail Joint Undertaking and its members.







Time	ΤΟΡΙϹ
10:30 – 11:00	Welcome and Opening messages
11:00 - 11:45	Key Notes by Europe's Rail and FP5 representatives
12:00 - 13:00	Lunch Break
13:00 - 13:45	Session 1: Status of the technology development on DAC, energy/data and Train functions
13:45 - 14:30	Session 2: Progress and challenges on FDFTO Testing, Demonstration, Authorisation and Yard Automation
14:30 - 14:50	Coffee Break
14:50 - 15:35	Session 3: Past and future Milestones on the Interaction of the Innovation Pillar, System Pillar and EDDP
15:35 - 16:00	Keynote: Paving the way towards innovative Freight Assets
16:00 - 16:45	Session 4: Progress and challenges on Seamless Rail Freight
16:45 - 17:00	Closing and conclusions





Mark Topal

CTO ÖBB Holding Chairman FP5-TRANS4M-R Steering Committee







Paolo Pagliero

CTO Wabtec Corporation

Vice-Chairman FP5-TRANS4M-R Steering Committee







Javier Ibáñez de Yrigoyen

Senior Programm Manager Europe's Rail Joint Undertaking





Towards a reliable integrated European railway network

Europe's Rail

Javier Ibáñez de Yrigoyen Senior Programme Manager



Vision

To deliver a **fully integrated European railway network for citizens and cargo**.





Objectives

General

Single European Railway Area

Transition to integrate European rail system into the wider mobility system

Strong European rail industry

Specific

- Integrated European railway network
- Sustainable and resilient rail system
- Unified operational concept and a functional, safe, and secure system architecture
- Competitive green rail freight
- Demonstration projects
- Strong and globally competitive European rail industry
- Synergies with other EU policies, programmes, initiatives, instruments, or funds





Towards a green and digital Europe



EU-Rail will play an instrumental role in the achievement of the specific milestones for rail research and innovation







Building on S2R achievements





Forward-looking activities

Disruptive technologies and thinking (SMEs, start-ups, and research community)

Exploratory research



DELIVER Sustainable and Smart Mobility Strategy rail OBJECTIVES



Single R&I Programme based on a system view



DEPLOYMENT GROUP



Implementation

• Ensure that the functional system architecture

- Flexibility in implementation
- Ownership of results

SYSTEM

DEPLOYMENT

INNOVATION

Members contribution up to €576 million

Call 2022 (50% of R&I) Call 2025/2026 (30%) Call 2027: activities until 2031

Launching calls for proposal/tenders to explore new areas of rail R&I

Bridge research and innovation to future coordinated deployment

Overview of the various DAC projects



	DACcelerate	FP5TRAN 54M-R Trattoring Europe to all Provide	DACcord	
	 Description: Accelerating DAC adoption through EDDP streamlining Standardizing DAC specifications for seamless integration Guiding comprehensive DAC integration by 2030 → Integration 	 Description: Core project for developing the DAC for Europe Development of 16 rail freight innovations, including DAC Type 4 +5, automated shunting, → Innovation 	 Description: Aligns DAC implementation for rail freight Creates deployment roadmap aligned with EDDP goals Facilitates funding and activity coordination for DAC deployment. Management 	 Description: Drives the implementation of DAC Ensuring smooth transition of vehicles and facilities to DAC, optimizing logistics efficiency. → Transformation
× ×	Partners: ViF, hwh, Molinari, OWITA, TRV, SNCF, RINA	Partners: 75 Diverse Participants - Includes rail end users, industry, operators, SMEs, academia	Partners: Railiable, Railenium, TRV, LSP, UNIFE, Union International des Chemins de Fer	Partners: DBC, k+v, Instytut Kolejnictwa, VUKV, BME ITS, VERS, IML
	Duration: 06/21 - 12/22	Duration: 07/22 – 12/26	Duration: 04/23 – 03/26	Duration: 24 months
.	Lead: VIF	Lead: DB	Lead: RAILIABLE GMBH	Lead: DB
€	EUR: 2,1 M. EUR.	EUR: 95,1 M. EUR	EUR: 1,5 M. EUR	EUR : 1,5 Mio. EUR



GAP Phase

Overview of the various DAC projects



	DACcelerate	FP5TRAN 54M-R Trastering Europe Full Freque		Future FA5 Projects
	 Description: Accelerating DAC adoption through EDDP streamlining Standardizing DAC specifications for seamless integration Guiding comprehensive DAC integration by 2030 → Integration 	 Description: Core project for developing the DAC for Europe Development of 16 rail freight innovations, including DAC Type 4 +5, automated shunting, → Innovation 	 Description: Aligns DAC implementation for rail freight Creates deployment roadmap aligned with EDDP goals Facilitates funding and activity coordination for DAC deployment. Management 	Call 2024
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ن وں ا	Duration: 06/21 -12/22	Duration: 07/22 – 12/26	Duration: 04/23 – 03/26	
.	Lead: VIF	Lead: DB	Lead: RAILIABLE GMBH	
€	EUR: 2,1 M. EUR	EUR: 95,1 M. EUR	EUR: 1,5 M. EUR	





Deployment Group from innovation to market



- **Diversity** of situations across the EU
- European **coordination** of deployment
- Technical/operational migrations plans
- Investment plan, funding, and **financing**

TODAY'S FOCUS:

- Future Railway Mobile Communication System FRMCS / future radio
- DAC a comprehensive migration strategy to coordinate deployment, in accordance with COM(2023)441 on Greening Rail Freight Transport







Shift2Rail Programme END 2023

All S2R resources were committed for the Programme activities and all planned activities within the scope of the Innovation Programmes (IPs) and Cross-Cutting Activities (CCA) were running in granted over 30 projects.

IPs 1-5	CCAs	IPX
95% completion of Technical Demonstrators	Estimated completion of 98%	Disruptive Innovation and Exploratory Research:
		2 projects administrative closure
		2 projects finalised end 2022

The main objective under Work Programme 2024 involves the contractual **closing of the Horizon 2020 project activities** launched under S2R.



EU-RAIL PROGRAMME Innovation Pillar END 2023

6 Flagship Projects



8 Explorative and disruptive research projects

> Topics were launched including a first

joint call with SESAR JU



Main objectives 2024

Monitoring and performance analysis Results 2022-2023

Ramping-up of the Call 2023 projects

complement the Flagship Projects with exploratory research activities

EUSPA and ESA

Ongoing close collaboration

Collaboration with IMs and RNE

Operationalise digitalisation of capacity and traffic management

Launching Call 2024 (Q1)

Enlarge Flagship Projects with more anticipated activities per Flagship Area

 Provide a platform for disruptive innovation in Hyperloop technologies and concepts

Main objectives under work 2024

- Improve System Pillar organisational structure and processes
- Delivering **Standardisation and TSI Input** plan: strategic view, agreed with the Commission, ERA, and the broader railway sector
- Delivering and building
 System Pillar Tasks and Domains
- Including Harmonised European Railways Diagnostics as a new subject
- Fully setting up the Deployment Group







Thank you

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Molley Williams

Project Manager FP5-TRANS4M-R

Europe's Rail Joint Undertaking / Deutsche Bahn AG











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Before going into detail, I have some questions....















What does this have to do with FP5...







A clear target and determination will keep us moving







Establish rail freight as backbone of the lowest emission and most resilient logistics chain in Europe, fulfilling the end customer requirements







How to reach this ambitious target...

















Three clusters enable "Transforming Europe's rail freight"









Complexity is reflected in governance









Numerous dependencies

- FP5 Governance does not cover overall complexity
- Especially for DAC EDDP and System Pillar play a crucial role within EU-Rail
- External stakeholders (EC/ERA and ESO) also influence success of FP5
- Seamless has numerous interfaces with other Flagship Projects
- Additional calls further increase complexity









Why are we determined despite the complexity...









		Financial & Political Pressure	
Economic Growth	Demographic Change	 Factors such as cost and flexibility put rail freight 	Climate Change
 Increase in capacity, productivity, efficiency and flexibility to secure the economic growth in Europe Secure and further develop the world leading position of Europe within the global econmy 	 Average age of employees is increasing Less people available for physical demanding work especially in yards such as train preparation, coupling, uncoupling and further operational processes 	 transport structurally under pressure in comparison with road transport Willingness for political support has increased Respond to customer demands in a timely and 	<text><list-item></list-item></text>











 Let's face challenges with confidence.

 Together, we can master any complexity.







Lunch break until 13:00

Check out our **homepages** or register for our **Sounding boards** in the meantime



FP5 Homepage



EDDP Homepage



Europe's Rail Homepage



FP5 DAC Sounding Boards





Session 1: Status of the technology development on DAC, energy/data and Train Functions

Keynote:

Johan Åhman | Dellner Couplers Aktiebolag

















Generating added value to the user



• gray: future extensions



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Train functions – pre-requisites





Step 1 Upgrade to Digital Automatic Coupler (DAC)

DAC 4 or DAC 5 development as interoperability component

The Automatic coupler AC2 will by itself also generate benifits



Step 2 Establish energy supply system

From locomotives to wagons

- 400V AC system 2* 1 phase (redundant for coupler contacts)
- 3.5 kVA loco power supply
- 2 * 2 contacts per coupler
- Wagon power supply incl. board battery system 48V DC



Step 3 Implement train communication system

- Ethernet train backbone acc.
 IEC61375 with a new physical layer: SPE (single pair ethernet)
- 2 * 2 cables (redundant)
- 10 Mbit / s













Operational procedures

Preliminary Operational Procedures

FDFTO User Requirements Specification

Authorisation strategy and overall safety plan

Architecture

System Requirement Specification FDFT

Physical reference system architecture FDFT

Digital/Data reference system architecture FDFT

Specifications

5.1 Train Function5.2 DAC Wagon andlocomotive5.3 Validation & Test DAC5.4 Communication system5.5 Yard Automation

Basic structure of the CEN NWIP WI00256A0K:

- General requirements
- Mechanical coupler
- Electric coupling
- Coupler Draft gear
- Vertical support and centering
- Pivot point
- Using UIC hook with pivot pin of DAC draft gear
- Technical interface specification of wagon DAC
- Product specification of Locomotive Hybrid Coupler
- Future work items





















Verification and Validation -Progress



















DAC	Energy & Data	Automation	Yard
Interoperability up to level 5	Implementation	Implementation	Definition of demonstrators
Hybrid loco tests	Interoperability Lab testing	Interoperability Lab testing	Safety and Secruity Analysis
Install demo trains	100 wagon Field test	Field testing	Implementation

FP5-TRANS4M-R Flagship Demo trains

FP5TRANS4M-R Transforming

Europe's Rail Freight

Session 1: Status of the technology development on DAC, energy/data and Train Functions

Panelists:

Christian Bedau | Siemens Mobility GmbH Michael Gutemann | Knorr-Bremse Systeme für Schienenfahrzeuge GmbH Victoria Jäger | DB Cargo AG Johan Åhman | Dellner Couplers Aktiebolag David Raoult | Faiveley Transport (Wabtec Corporation)





Session 2: Progress and challenges on FDFTO Testing, Demonstration, Authorisation and Yard Automation

Keynote:

Anna Björkman | Lindholmen Science Park





Progress and challenges on FDFTO Authorisation



Scope

- Get FDFTO-trains operated
- provide needed documentation and process for authorisation of FDFTO-equiped trains for whole Europe

Achievements

- authorisation strategy \rightarrow the way to go for authorisation is aligned
- risks and dedicated safety requirements for the FDFTO-system are analysed
- a TWG with ERA, NSAs and ERJU on authorising Pre-Deployment Trains as a milestone end of 2026 started work

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Next steps

- get the Pre-Deployment Trains operated end of 2026
- preparing needed documents for authorisation given by the 4th railway package







- Test interoperability & reliability of solutions
- Test solutions regarding **safety requirements**
- Test solutions regarding **operational processes**
- Provide validation tests for **certification**
- Provide input for the decision regarding certain technical solutions (e.g. energy & data, e-coupler)











PLUS technology and hump shunting









Opening of the train test lab



Test for e-coupler assessment









Installation of DAC in preparation of commercial demo train in Sweden



Test with Powerline PLUS technology in Switzerland



FP5TRAN 54M-R Transforming

Europe's Rail Freight

Session 2: Progress and challenges on FDFTO Testing, Demonstration, Authorisation and Yard Automation

Panelists:

Anna Björkman | Lindholmen Science Park Cesar Augusto Osorio Mendoza | Mercitalia Intermodal SpA Ralf Tadje | Siemens Mobility GmbH Thomas Erpenbeck | DB Systemtechnik GmbH Daniel Wolfram | DB Cargo AG Sandy Zähringer | European Commission, DG Move











Coffee break until 14:50

Check out our **homepages** or register for our **Sounding boards** in the meantime



FP5 Homepage



EDDP Homepage



Europe's Rail Homepage



FP5 DAC Sounding Boards





Session 3: Past and future Milestones on the Interaction of the Innovation Pillar, System Pillar and EDDP

Keynote:

Johannes Gräber | Knorr-Bremse Systeme für Schienenfahrzeuge GmbH











The remit of the System Pillar in a nutshell:

 Through the work in Task 4, mainly regarding the high-level specifications and providing the system view, System Pillar will be supporting the improvement of freight train composition, operation and capacity of tracks.

The outputs of the System Pillar are primarily:



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- The aim is to harmonise processes, standardise architecture and solutions, and allow continuous (digital) development, contributing to the Common Business Objectives and finally our shared objective: the Single European Railway Area (SERA).
- Through the **Standardisation and TSI Input plan (STIP)**, a coordinated and transparent view of all the harmonisation elements from EU-RAIL (both System Pillar and Innovation Pillar) in order to define a clear and agreed plan for the evolution of the railway system.

Main activities of the System Pillar Task 4:

- Writing a **Rule Book** based on the Operational Procedures provided by FP5-TRANS4M-R
- Define requirements for **interfaces to the "outside world"**, with focus on ERTMS
- Defining "Central Instance" for handling of Software Download/Data Upload



Interaction between System and Innovation Pillar







System Pillar Organisation and Principles



- Defined set of standardization areas (*Tasks*). For each area a joint leadership team with one representative from Railways and Suppliers each will work together
 - Task 1 will specify the Business Process Architecture for the Railway System
 - Task 2: CCS
 - Task 3: CMS/TMS
 - Task 4: DAC/FDFTO
- Integration of sector standardization activities (OCORA, RCA, EULYNX, ERTMS, ...)

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								Task1	Railway S
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		Ar	Opera rchitect I	CCS ational ture Cc Migrat	l Desig oordinc ion	n ation			
Task 2	 Traffic Control and Supervision 	Trackside Assets	Train Control and Supervision	Transversal CCS Components	Field Force CCS Applications	Communications	Computing Environment		Task 3





FP5TRAN 54M-R Transforming

Session 3: Past and future Milestones on the Interaction of the Innovation Pillar, System Pillar and EDDP

Europe's Rail Freight

Panelists:

Constanze Bannholzer | ÖBB-Holding Jens Engelmann | railiable GmbH Johannes Gräber | Knorr-Bremse Systeme für Schienenfahrzeuge GmbH Andreas Haller | DB Cargo AG Frédéric Henon | UIC Javier Ibáñez de Yrigoyen | Europe's Rail Joint Undertaking

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Paving the way towards Innovative Freight Assets

Keynote:

Jürgen Klarner | Voestalpine Tubulars Gmbh & Co Kg

Íñigo Adín | Asociación Centro Tecnológico CEIT





Paving the way towards \mathbf{R} **Europe's Rail** Innovative Freight Assets



Topic 3



Topic 1

- •T22.1 Conceptual analysis on a small-scale multimodal container demonstrator
- •T22.2 Functional requirements and preliminary design of a multimodal
- •T23.1 Multimodal container implementation and preliminary system validations
- •D22.1: System Specification **Combined Container**
- •D22.4: Functional requirements and conceptional design for multimodal hydrogen container
- •D23.1: Wagon prototype for multimodal container

VATUB, IF, OEBB-RCA



Self-propelled wagon

Topic 2

•T22.3 Needs analysis and preliminary concepts for selfpropelled wagon •T22.4 System specification and validation strategies for selfpropelled wagon concept •T23.2 Traction system for selfpropelled freight wagon validations under controlled environment

•D22.3: Use cases and conceptual system specification for Self-Propelled Wagon

•D23.2: Reports for the traction applied to self-propelled wagon concept and energy efficiency recommendations

DLR, CEIT, RENFE, TRV, KTH, Chalmers, LSP, Alstom



•T22.5 Analysis for energy efficiency •T23.3 Energy efficiency strategies for

•D22.2: Reports for efficient loading/unloading, aerodynamic characteristics and efficient driving specifications

DLR, CEIT, RENFE

