Next stops for European Rail

Delivering the future of asset Management: Update on Europe Rail's focus on asset management innovation

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EU-Rail, a R&I integrated Programme and a cooperation to deliver

- Adapt to changing customer requirements
- More cost-efficient solutions and services compared to today
- Need for improved performance and capacity
- Addressing workforce shortage
- Climate change adaptation and environmental sustainability
- Increased competitiveness
- Interaction with other modes, make rail central to future mobility
- Addressing legacy systems and obsolesce

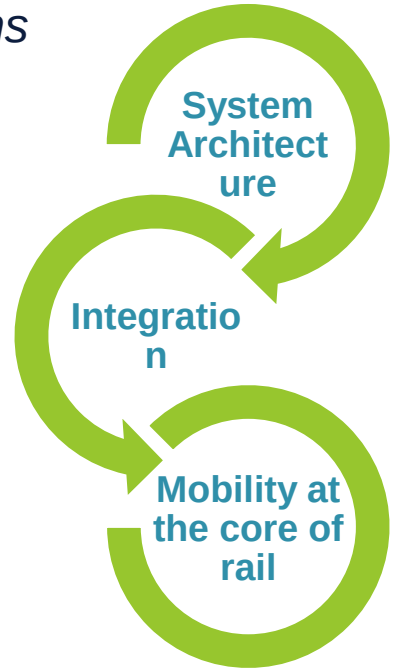
Our biggest opportunity

digital twin

autonomous decisions

Rail is a network
Rail is a system
Rail is supervised
Rail is predictive
Rail is GREEN

→ ***delivering*** *coordinated EU system transformation for the rail of the future through R&I and digital integration*



data driven processes

system management and interoperability

DELIVER AN **INTEGRATED EUROPEAN RAILWAY NETWORK** BY DESIGN

DEVELOP A **UNIFIED OPERATIONAL CONCEPT AND A FUNCTIONAL SYSTEM ARCHITECTURE** FOR INTEGRATED EUROPEAN RAIL TRAFFIC AND CCS/AUTOMATION

DELIVER A **SUSTAINABLE AND RESILIENT RAIL SYSTEM**

DELIVER A **COMPETITIVE, GREEN RAIL FREIGHT** FULLY INTEGRATED INTO THE LOGISTICS VALUE CHAIN

DEVELOP A **STRONG AND GLOBALLY COMPETITIVE EUROPEAN RAIL INDUSTRY**

EUROPE'S RAIL:

ONE INTEGRATED R&I PROGRAMME

SYSTEM PILLAR

OPERATIONAL CONCEPTS

FUNCTIONAL SYSTEM ARCHITECTURE

A SINGLE COORDINATING BODY FOR THE WHOLE SECTOR EVOLUTION

OPEN INTERFACES TO OTHER TRANSPORT MODES AND BUSINESSES

SYSTEM REQUIREMENT SPECIFICATIONS

INNOVATION PILLAR

TECHNOLOGICAL AND OPERATIONAL SOLUTIONS FOR SERVICES OF FUTURE

FLAGSHIP PROJECTS

LARGE-SCALE DEMONSTRATIONS

EXPLORATORY AND FUNDAMENTAL R&I

1	EUROPEAN RAIL TRAFFIC AND MOBILITY MANAGEMENT	Manage and improve rail traffic at EU level Adjust rail traffic management in function of the mobility demand
2	DIGITALISATION & AUTOMATION IN TRAIN OPERATIONS	ATO implementation Digital train operations
3	SUSTAINABLE AND DIGITAL ASSETS	Integrated assets testing & life-cycle framework Zero-emmission, silent rail system
4	COMPETITIVE, DIGITAL, GREEN RAIL FREIGHT	New digital customer interaction & innovative rail freight services Multimodal and rail freight innovation integration
5	REGIONAL RAIL SERVICES IN LOW DENSITY AREAS	New system approach to regional rail services in low density areas

DEPLOYMENT GROUP

FUTURE SOLUTIONS DEPLOYED IN A COORDINATED AND CONSISTENT WAY AT EUROPEAN LEVEL, TAKING INTO ACCOUNT ALTERNATIVE ROLLOUT SCENARIOS, BEHAVIOURAL AND ORGANISATIONAL CHANGES, SYNERGIES WITH OTHER MODES OF TRANSPORT

Founding Members

adif

ALSTOM

mermec
AN ANGEL COMPANY

AŽD

CAF

ceit
IK4 Research Alliance

CD

DB

DLR

eSGR
European Smart Green Rail

Faiveley Transport
A Wabtec Company

FERROVIE DELLO STATO ITALIANE

Hitachi Rail STS

indra
Talgo

Jernbane-direktoratet

KNORR-BREMSE

ÖBB
Immer in Bewegung

PKP
POLSKIE KOLEJE PAŃSTWOWE
Spółka Akcyjna

ProRail

SIEMENS
Ingenuity for life

SNCF

Strukton
Rail

THALES
Together • Safer • Everywhere

TRAFIKVERKET

RAILWAY SYSTEMS
by voestalpine

Flagship Project FP3 – IAM4RAIL

Holistic and Integrated Asset Management for Europe's RAIL System

106,9 M€ Total Project Cost (77,04 M€ Eligible Costs (inc. 46,22 M€ max. Grant amount)+ 29,9 M€ IKAA)

93 contributors : 29 partners+64 Affiliated Entities

Duration: 4 years (Dec 2022-Nov 2026)

7 Integrated Demonstrations, 8 Groups of Technical Enablers, 56 Use Cases)

FP3-IAM4RAIL: 29 Partners

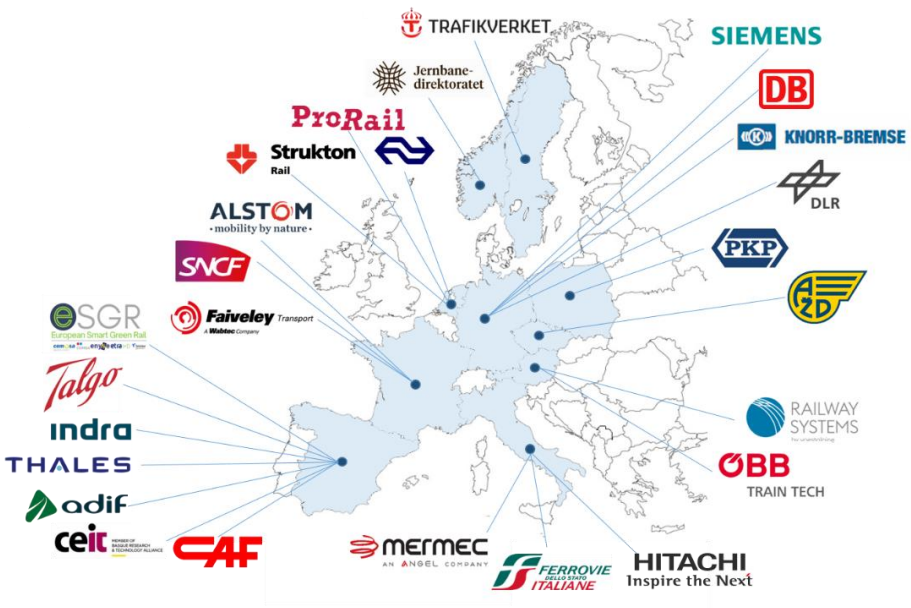
COORDINATOR

adif

OTHER PARTNERS

ALSTOM, mermec, A2D, CAF, ceit, DB BAHN, DLR, cemosa, COMSA, enyse, Tekniker, Faiveley Transport, FERROVIE DELLO STATO ITALIANE, Hitachi Rail STS, indra, Talgo, Jernbane-direktoratet, KNORR-BREMSE, ÖBB TRAIN TECH, PKP, ProRail, SIEMENS, SNCF, Strukton Rail, THALES, TRAFIKVERKET, voestalpine

- 9 Major Operators
- 17 Railway integrators & suppliers Plus 65 Affiliated Entiti
- and 3 research centers



An Advisory Board will bring more representation from other members states/countries and SMEs

Europe's Rail

Traffic Management System (TMS)

Design & Manufacturing

Infrastructure Assets

Digital Twins

Asset Management

Rolling Stock Assets

Interventions

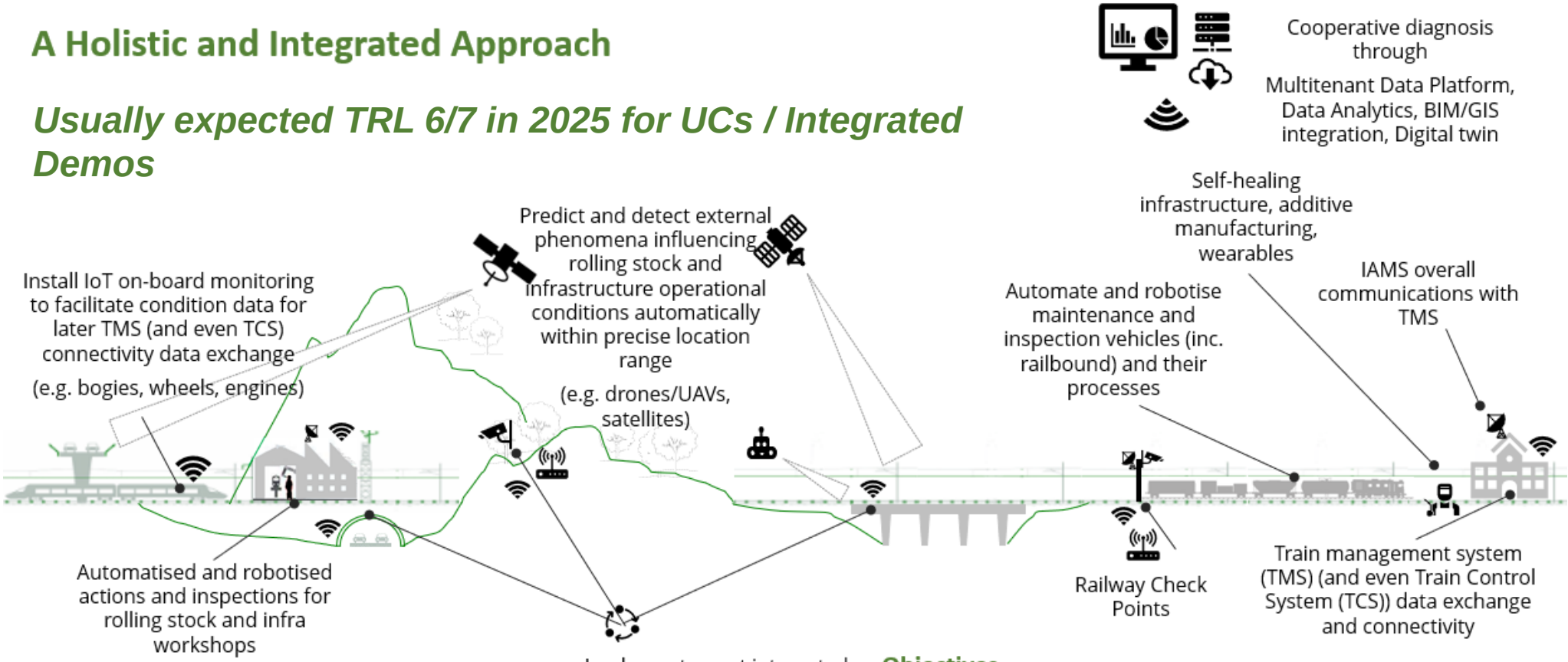
STATION

PLATFORM

What is Flagship Project FP3 – IAM4RAIL about? (2)

A Holistic and Integrated Approach

Usually expected TRL 6/7 in 2025 for UCs / Integrated Demos



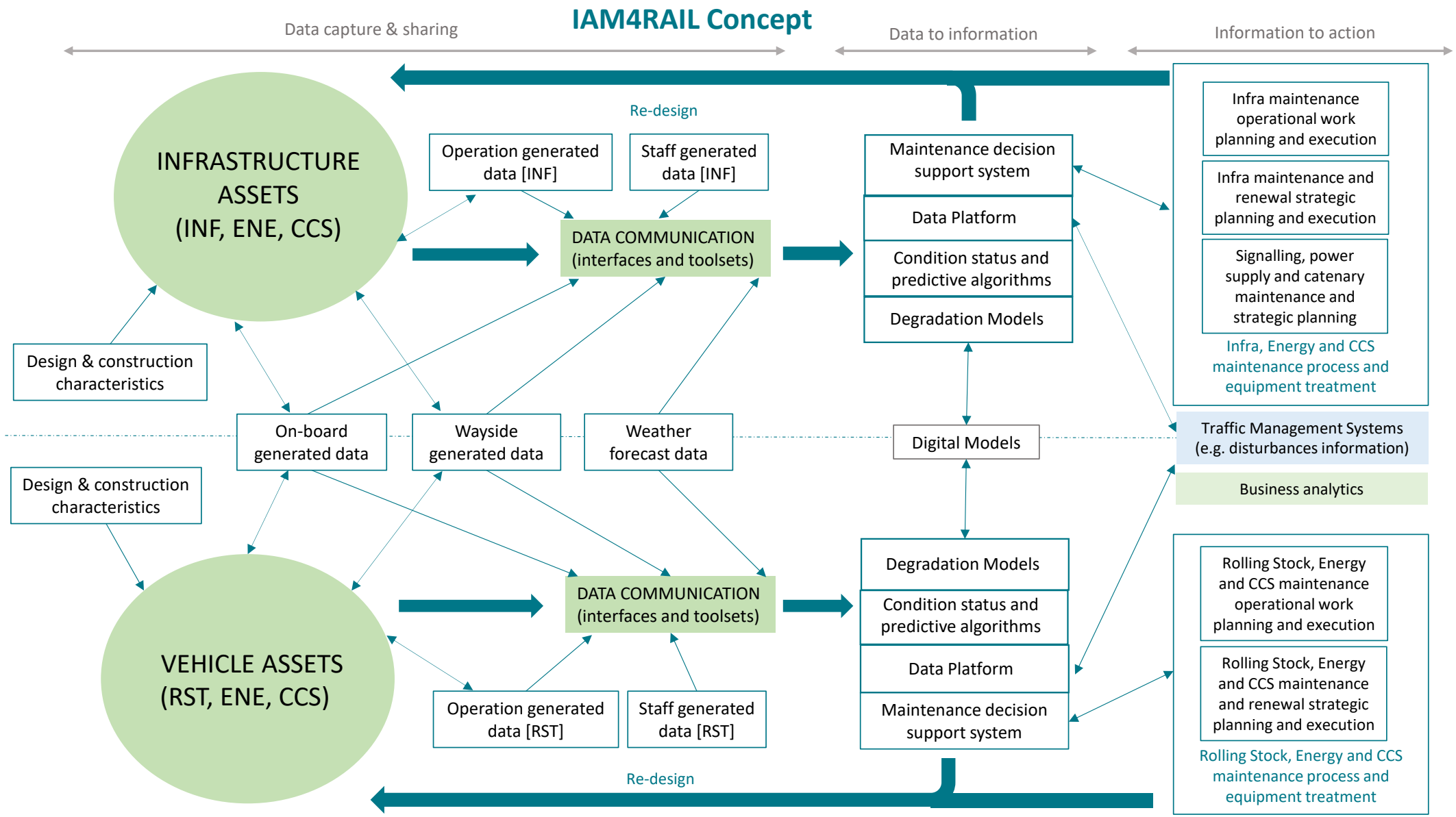
Uses Cases as Business Case

- *Reducing costs & making objective access charges*
- *Increasing automation level in M&O subsystem*
- *Harmonised EU frame added value projects*
- *EU common standards and tech specs*

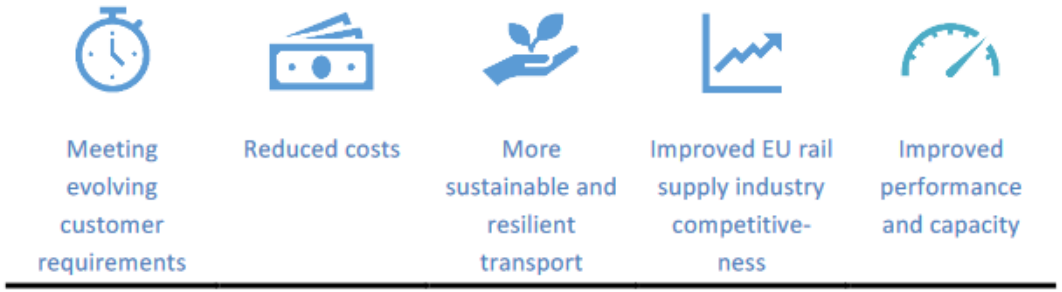
Objectives

- *Cost-effective asset management for the railway system*
- *Increase reliability and capacity of the overall system*
- *Increase level and technology for automation and robots in construction & maintenance*
- *Sustainable production of resilient assets with new techniques*

What is Flagship Project FP3 – IAM4RAIL about? (3)



Impact and KPI



#	Demonstrator Name	High level theme and result	KPI's
1	Asset Management & TMS	Integration of Intelligent Asset Management System (IAMS) & TMS	I. Qualitative and prompt integration of information, including reducing time to transfer asset condition status to TMS by 50 %, in specific use cases
2	Asset Management & Rolling Stock	Asset Management of Rolling Stock Operation, including specific solutions for freight	II. reduction of maintenance costs up to 10% in specific use case, and/or III. 25% reduction of in-service failures IV. increasing rolling stock availability respective reducing workshop downtime targeting 10% in specific use cases
3	Long Term Asset Management	Infrastructure & Rolling Stock long-term Asset Management	V. Tools which provide at least 3 possible strategies of long term management with an accuracy (as defined by ISO) improvement of 10%
4	Asset Management & Infrastructure	Asset Management of Infrastructure Operation	VI. reduction of maintenance costs targeting 10% in specific use case, and/or VII. 25% reduction of in-service failures
5	Asset Management & Digital Twins	Digital Twin Asset Management, addressing both Rolling Stock & Infrastructure	VIII. The number of assets managed and monitored by Digital Twins is increased by 25 %
6	Design & Manufacturing	Advanced and Holistic Design	IX. For repair: Extension of remaining life 25% X. 20% time reduction (from design to manufacturing) XI. 20% cost reduction
7	Robotics & Interventions	Remotely controlled and unmanned interventions	XII. Increased accuracy of inspections of 25% with respect to conventional interventions and/or XIII. Reproducibility of inspections of 25% with respect to conventional interventions XIV. Cost reduction of the interventions by at least 10%

You can apply to the EU-Rail call 2023-01

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-search?tenders=false&callIdentifier=HORIZON-JU-ER-2023-01

https://rail-research.europa.eu/calendar/europes-rail-info-day-2023/

Call opening: 4/10/23
Call closure: 7/02/24
Overall indicative budget: 21,2M€

Call topic text already in Annex VII of the EU-Rail Work Programme 23-24: https://rail-research.europa.eu/wp-content/uploads/2023/07/GB-Decision_08_2023_Annex_WP_23-24.pdf

Topics ranging from integration of air and rail networks planning to exploratory research activities, essential pathfinders for future R&I, covering topics such as noise and vibration, future metro systems, biodiversity, disruptive assets management solutions, extending the network of PhDs, and DAC fleet retrofitting and capacity plan

EU-Rail Call 2023

Opening: 4 October 2023; Deadline: 7 February 2024

DESTINATION Topics	Type of Action	Expected TRL	Expected EU contribution per project (EUR million)	Number of projects expected to be funded
HORIZON-ER-JU-2023-FA1-SESAR: EU-RAIL – SESAR SYNERGY: INTEGRATED AIR AND RAIL NETWORK BACKBONE FOR A SUSTAINABLE AND ENERGYEFFICIENT MULTIMODAL TRANSPORT SYSTEM	IA	6	5.0	1
HORIZON-ER-JU-2023-EXPLR-01: NOISE AND VIBRATIONS	RIA	5 / 6	4.1	1
HORIZON-ER-JU-2023-EXPLR-02: FUTURE METRO SYSTEMS	RIA	3 / 4	3.1	1
HORIZON-ER-JU-2023-EXPLR-03: BIODIVERSITY	CSA	-	2.8	1
HORIZON-ER-JU-2023-EXPLR-04 : DISRUPTIVE ASSETS MANAGEMENT SOLUTIONS, INCLUDING URBAN USE CASES	RIA	4 / 5	2.7	1
HORIZON-ER-JU-2023-EXPLR-05: EXTENDING THE RAIL NETWORK OF PHDS	RIA	1 / 2	2.0	1
HORIZON-ER-JU-2023-EXPLR-06: DAC FLEET RETROFITTING AND RETROFIT CAPACITY PLAN	CSA	-	1.5	1

EU-Rail Call 2023

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HORIZON-ER-JU-2023-EXPLR-04: DISRUPTIVE ASSETS MANAGEMENT SOLUTIONS, INCLUDING URBAN USE CASES

Research and Innovation Action – **TRL4/5**

Budget : **2.7M€**

Expected outcome:

Three innovative demonstrators of innovative

- assets monitoring solutions and/or
- inspections solutions and/or
- remotely controlled interventions solutions.

Among the proposed demonstrators, at least two urban specific use cases (metro/tramway/…) shall be addressed.

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