

PROJECT

## DAYDREAMS

### Development of prescriptive Analytics based on artificial intelligence for iAMS

**Funding:** European (Horizon 2020)

**Duration:** Dec 2020 - May 2023

**Status:** Ongoing

**Total project cost:** €1,709,875

**EU contribution:** €1,709,875



**Call for proposal:** H2020-S2RJU-OC-2020

[CORDIS RCN : 232399](#)

#### Objectives:

The overall DAYDREAMS objective is to move forward the integration and use of data and artificial/human trustworthy intelligence together with context-driven HMI for prescriptive Intelligent Asset Management Systems (iAMS) in railway by:

1. advancing in maintenance approach towards prescriptive asset management;
2. improving the decision-making process by developing multi-objective decision optimisation approaches taking into account all implications of iAMS decisions in the railway environment; and
3. reinforcing the role of the person-in-the-loop by designing and developing advanced context-driven HMIs to allow context- and risk-aware multiple-options decision-making processes.

The HMI will allow the person-in-the-loop to:

1. properly access and visualise predictions/metrics and models;
2. assess why and how the model predicts something;
3. Steer models by setting parameters; and
4. evaluate alternatives using parameter steering and extending this process through speculative execution.

The DAYDREAMS objective will be assessed by validating the proposed solution using the following two-step approach:

1. A first validation at TRL 4 of the approaches (developed prescriptive asset management) using several internal scenarios and one scenario provided by the CFM IN2SMART2 project;
2. A further validation of the DAYDREAMS methodologies integrated in a TRL 5 prototype using at least two scenarios: at least one internal scenario and the IN2SMART2 scenario. The validation will cover both the performances of the prototypes and its trust for future adoption in multi-actors environments.

The validation will be carried out by defining evaluation and validation metrics and KPIs:

1. linked to asset management problems to be solved by the involved Infrastructure Managers (IMs) and related baselines;
2. quantified and measurable;
3. referred to high-level KPIs defined in the S2R IMPACT2 CFM project; and
4. useful to address multi-objective optimisation.

#### Parent Programmes:

[H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport](#)

**Institute type:** Public institution

**Institute name:** European Commission

**Funding type:** Public (EU)

**Other programmes:** S2R-OC-IP3-02-2020 Technology Development for Railway Systems Asset

## Lead Organisation:

### Union Des Industries Ferroviaires Europeennes - Unife

**Address:**

AVENUE LOUISE 221  
1050 BRUXELLES  
Belgium

**Organisation Website:**

<http://www.unife.org>

**EU Contribution:** €146,875

## Partner Organisations:

### Rete Ferroviaria Italiana

**Address:**

Piazza Della Croce Rossa  
161 Roma  
Italy

**Organisation Website:**

<http://www.rfi.it>

**EU Contribution:** €179,813

### Institute Of Accelerating Systems And Applications

**Address:**

PANEPISTIMIOU 30  
10024 ATHINA  
Greece

**EU Contribution:** €91,000

### Cefriel Societa Consortile A Responsabilita Limitata

**Address:**

VIALE SARCA 226  
20126 MILANO  
Italy

**EU Contribution:** €192,500

### Stimio Sas

**Address:**

52 RUE DU NIL  
44470 CARQUEFOU  
France

**EU Contribution:** €90,500

### Rina Consulting Spa

**Address:**

VIA SAN NAZARO 19  
16145 GENOVA  
Italy

**Organisation Website:**

<http://www.dappolonia.it>

**EU Contribution:** €88,750

**Trainose Metafores-Metaforikes Ypiresies Epivatou Kai Fortiou Ae****Address:**

Karolou Str 1  
10437 Athina  
Greece

**Organisation Website:**

<http://www.trainose.gr>

**EU Contribution:** €98,000

**University Of Bristol****Address:**

BEACON HOUSE QUEENS ROAD  
BRISTOL  
BS8 1QU  
United Kingdom

**Organisation Website:**

<http://www.bristol.ac.uk>

**EU Contribution:** €77,688

**Universitat Konstanz****Address:**

UNIVERSITATSSTRASSE 10  
78464 KONSTANZ  
Germany

**Organisation Website:**

<http://www.uni-konstanz.de/>

**EU Contribution:** €264,375

**Università Degli Studi Di Genova****Address:**

N/a  
16126 Genova  
Italy

**EU Contribution:** €273,875

**Zenabyte Srl****Address:**

VIA CESAREA 2  
16121 GENOVA  
Italy

**EU Contribution:** €206,500

**Technologies:**

Digital transformation of rail operations

**Development phase:** Validation

Life cycle analysis  
Model tools for life asset management of onboard systems

**Development phase:** Validation

**STRIA Roadmaps:** Other specified

**Transport mode:** Rail transport

**Transport sectors:** Passenger transport, Freight transport  
Digitalisation, Other

**Transport policies:** specified

**Geo-spatial type:** Other