

Europe's Rail Flagship Project 2

R2DATO

From Urban Rail Perspective

Why R2DATO matters for urban rail

Digital and Automated up to Autonomous Train Operations (DATO) is a practical route to safer, more flexible and more efficient rail services, including trams.

GoA4

target level for scalable automation by 2030

2025+

first tangible enabling technologies and demonstrators

Urban rail

included from the start: trams and light rail, not only mainline

For UITP, the value is not only the technology itself. The project gives urban rail operators a structured way to define where automation helps, how trams should behave, and what must be harmonised so solutions can scale beyond one local pilot.

- 48 Work Packages
- Nearly 600 Experts
- 200 Deliverables



FP2-R2DATO partners represent the railway sector in Europe :

Operators & Infrastructure managers



Association



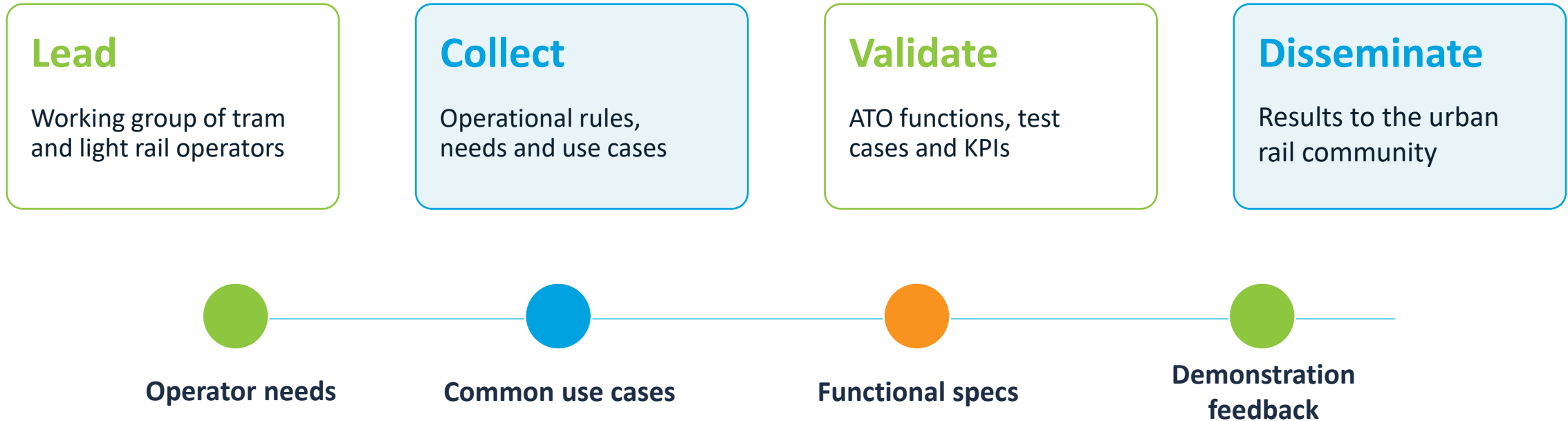
Suppliers



Research Institutes



UITP leads the urban light rail operator dialogue so R2DATO technologies are shaped by real operating needs.



Two questions drive the work

1. Where can automation help daily tram operation?
2. How should the tram behave in each operational context?

Collect

operator rules and operational procedures

Select

priority use cases with highest common value

Harmonise

principles across networks without losing local context

Translate

into specifications, test cases and KPIs

Outcome: automation that reflects the everyday constraints of depots and street-running tramways.

Priority use cases for urban light rail

UITP and the operators prioritised practical depot use cases first — the area where commonality is highest and implementation can start safely.

Remote shunting

Move trams between depot tracks for parking, maintenance or washing.

Pre-departure readiness

Remote checks and system control before service.

Remote washing

Automate routine external cleaning movements.

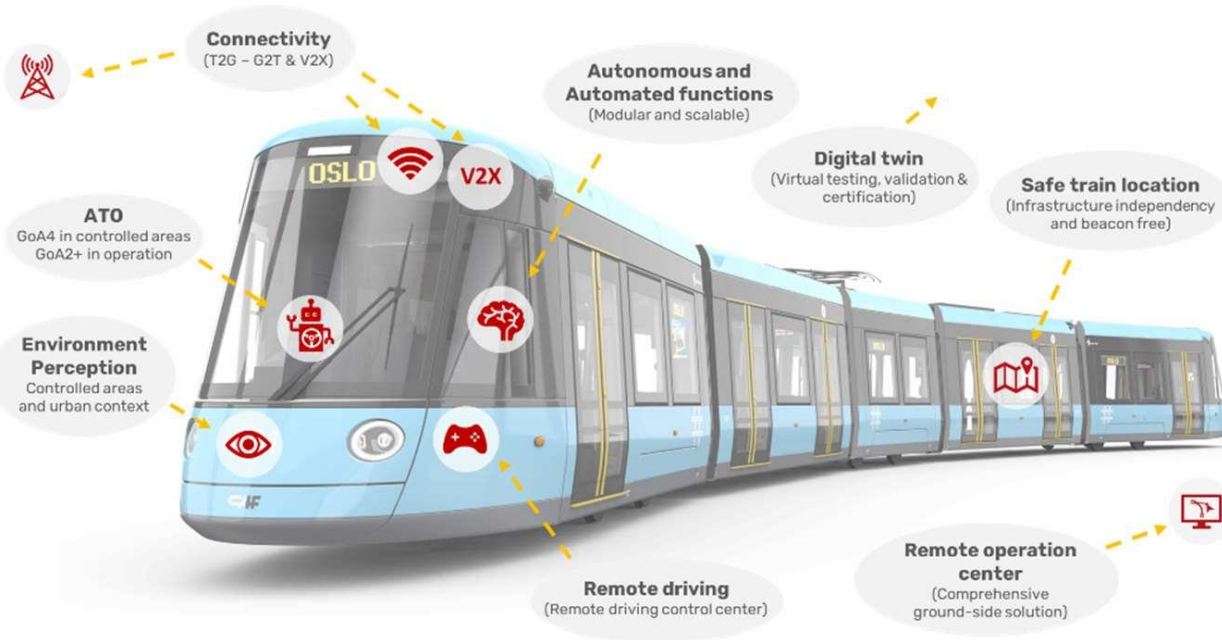
Vehicle replacement shunting

Manage trams in and out of service using V2X-enabled information exchange.



The street environment remains the hardest part: it requires more sophisticated perception, safety evidence and interaction with road users. Depot automation builds the foundations.

Technical enablers for the autonomous tram



- **Remote driving** Operator Controls Tram From a Remote Centre
- **ATO** Automated Driving Commands
- **Perception** Objects, Signals and Path Detection
- **Connectivity + V2X** Telecommands, Video and Data Exchange
- **Safe location** Accurate Position and Speed
- **Digital twin** Virtual Testing, Validation and Certification

Modular and scalable by design: single functions can be tested first, then combined into more complex scenarios.

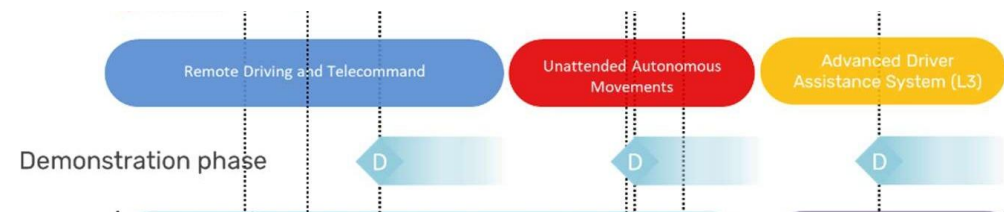


Two SL18 trams in Oslo are modified with perception sensors, computer and communication equipment while remaining able to return to commercial service when not in testing.

- 1
Remote tram driving in depot
 Holtet / Grefsen depots

- 2
Unattended autonomous depot movements
 First validation steps within R2DATO

- 3
Highly assisted driving in commercial service
 Planned in the following Europe's Rail phase



From automation to better urban rail services

R2DATO is about service quality as much as technology.

Safer operation

Better support in complex situations and reduced human exposure in depots

More resilient depots

Routine movements, washing and preparation can be organised more efficiently

Efficient & sustainable operations

Optimised driving reduce energy consumption and operational costs

Better use of staff

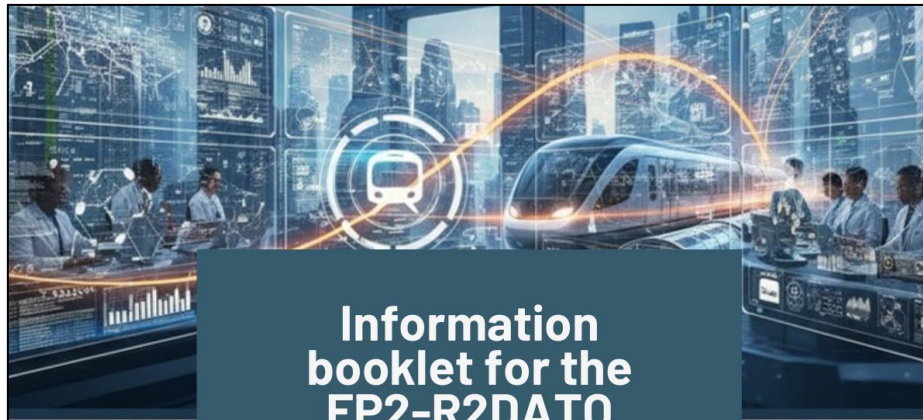
New roles such as remote tram operator can help address workforce pressure

Scalable solutions

Shared use cases and specifications lower deployment barriers

The demonstrators validate DATO technologies in controlled environments before wider deployment.

Meet R2DATO at the final event



**Information
booklet for the
FP2-R2DATO
project final
event**

3rd & 4th of June 2026
Prague – CZECH REPUBLIC

FP2–R2DATO Hybrid Final Event

3–4 June 2026

Prague, Czech Republic

Day 1: plenary session and demo booths
Day 2: demonstration site and test ride



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