ATO GoA4 construction in FP2-R2DATO

Contact at SNCF

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FP2-R2DATO in numbers

28
Partners

6 Clusters

48 WPs

588
Experts

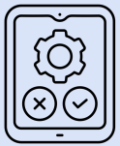
202
Deliverables

202 Deliverables

FP2-R2DATO Deliverables

FP2-R2DATO is producing 202 deliverables with a great variability of outputs:

15 Use Cases



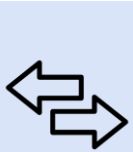
5 Simulations

13 Prototypes

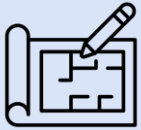
23 Demonstrators

2 Test benches

2 Business Case Analysis



1 Migration Strategies



11 Architecture

29 Specifications

19 Requirements

Inputs to TSI
(Technical Specifications for Interoperability)

35 deliverables for CL1: Automation processes	34 for CL2: Optimized headway	27 for CL3: Enabling digital technologies	33 for CL4: Fast and effective deployment	55 for CL5: Demonstrators

Cluster Automation Processes Cluster

What impact are we delivering ?

- Development of validated prototypes for different operational environments and uses cases of key **technical enablers** for automation, which are the **ATO technologies**, the **safe perception systems**, the **remote driving** and the **automating functions**.
- Collection of use cases and requirements and completeness of the architecture in collaboration with the System Pillar are previous steps leading to the development of building block prototypes and integrated demonstration, aiming to:
- Provide higher efficiency and flexibility to the railway system, enabling new operational approaches (e.g. on demand services) and optimising the available capacity.
- Reduce reactions times and increase resilience in case of accidents
- Improve overall productivity and reduce OPEX (OPerational EXpenses)
- Reduce the number of accidents in urban light rail operations, leading to reduce human fatalities or injuries and to increase of service reliability .

ATO GoA4 architecture

ATO up to GoA4 logical modules :

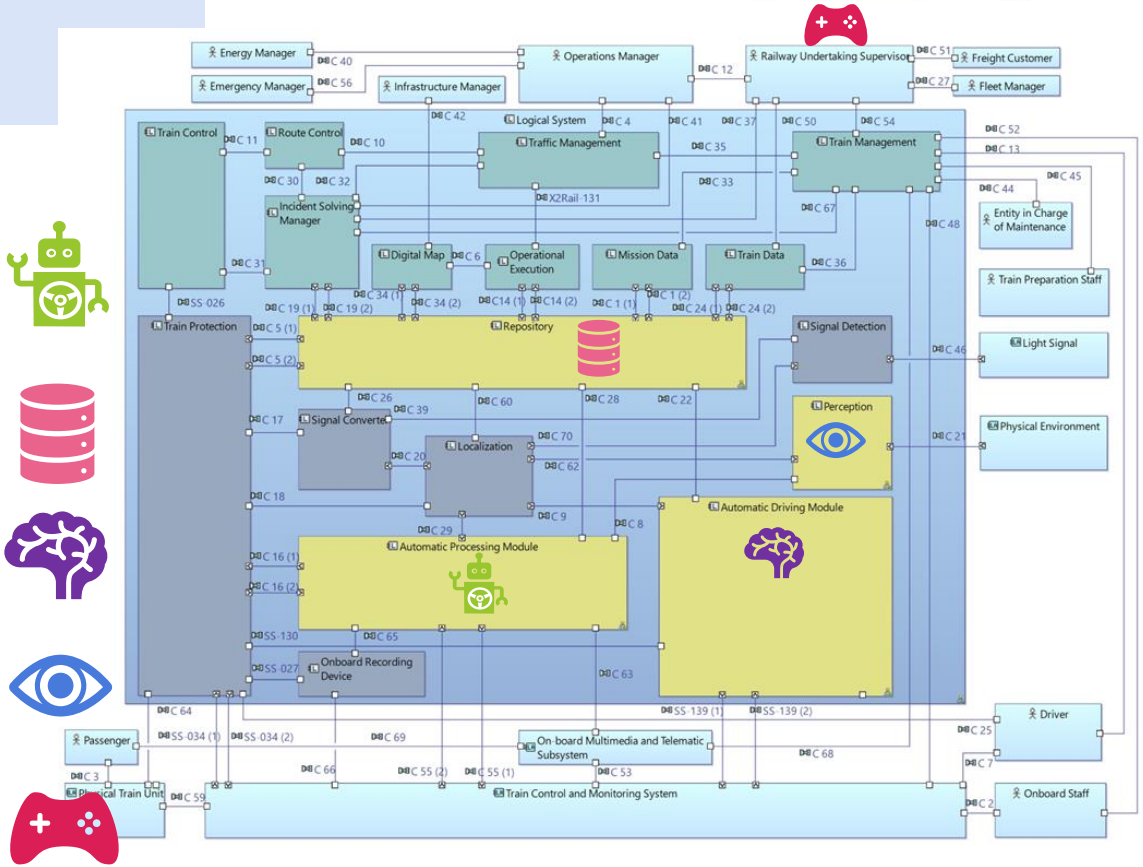
Automatic Driving Module

Repository yc digital map

Automatic Processing Module

Perception

Remote driving



FP2-R2DATO ATO up to GoA4 logical architecture

APC : Automation Processes Cluster

How does it contribute to our KPIs ?

Responsiveness	Safety	Capacity	Energy	Staff Productivity	Punctuality
Reduction from 2 hours to 2 min as reaction time to a request from TMS (Traffic Management System)	**50% decrease of no. of collisions** (ca. from 0.2 to 0.1) **with 3rd parties per 10.000 km travelled**	**10% increase of no. of trains** on line per hour and direction	**10% decrease in KWh consumption** compared to human driver average	**30% increase of productivity hours**	**50% decrease in delay minutes**
We will provide an improvement in the responsiveness, verified by measuring the time required to prepare a train for a new service from its switch on to the readiness to leave the depot or the yard. Automating functions and remote driving should contribute to the KPI.	Accidentology indicator for light urban rail. This KPI will be applicable in next steps of FA2, when the uses cases will refer to highly assisted driving in commercial service. Perception and ATO (Automatic Train Operation) Technologies (decision-making) will play a major role here.	We will lead to a capacity increase verified by measuring punctuality, headways and travel times during test runs in the demonstration phase and applying simulation tools for getting the whole network perspective.	We will lead to energy consumption reduction, verified by measuring consumption during test runs in the demonstration phase. Automating functions and ATO Technologies .	We shall lead to increased staff productivity, verified by measuring the reduction of waiting shuttling and commuting times of the working force in depots and yards in the demonstration phase.	With the stepwise introduction of the GoA3/4 technologies, the reduction of the human factors of the operators during operation will decrease and lead to the expected improvement. Automatic procedures react faster and more precisely to changes in operations.

Questions ?