Perspectives on
Automated Train Operation (ATO)

ERA and the Digitalization of Railways
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Automated Train Operation (ATO)

Automation (ATO) functions in railways are mainly functions which provide information to the train driver for optimisation of the train operation, and which automate actions that are otherwise executed manually by the train driver.

Increase capacity, safety, performance, efficiency, punctually and passenger comfort, …

Decrease costs, energy consumption and rail noise pollution, …

Plug and play
only when a market exists/parties involved will invest

Align EU funded activities (e.g. Shift2Rail IP2 project)

Ensure interoperability

ATO (GoA2) functions shall be functionally decoupled
(safe train operation functions shall be ensured by the train protection (safety) system (ETCS)
and automation functions (GoA2) shall be ensured by the ATO-system)

ATO usable for urban rail, high speed services, rail freight services, and mixed traffic lines

Use existing information/experience as input
* UNISIG-EUG activity (Cr 1238)
* Experience from ATO users (e.g. SNCF)

ATO implementation (up to GoA4) is available for metros and mass transit

Within the railway sector, the implementation of ATO functionality is expected to evolve in 2 phases

Phase 1

- ATO (GoA2) program with non-safety related automation functions ('quick-wins' before 2018/2019)

Phase 2

- ATO (GoA3/GoA4) program with focus on autonomous ATO functionality (potentially including safety related functions and use of sensors) with implementation at longer term (in synchronization with the development of S2R)

The ATO business case might be different for the different market segments (mass transit/freight/mixed/ high-speed) and between IMs and RUs

ATO (GoA2) program with non-safety related automation functions (validation by prototypes before 2018/2019)

Key Actions:

1. **Functional breakdown in function of business/market interest (IM/RU) in order to investigate the required regulatory framework**
   Business cases for main lines (high-speed; freight corridors and mixed traffic lines)
   Identification of safe and non safe ATO functions
   Regulatory (implementation) framework to allow RUs to develop GoA2 applications on-board

2. **Feasibility study of the different ATO system concepts**
   IM sends info via ETCS communication channel or other means of communication;
   RU is sending the ATO information

3. **European harmonized system concept - develop standards for interchangeable ATO components (interfaces between ATO and ETCS for GoA2 (based on IP network))**
   Plug and play but also allowing integrated solutions

Note: to be synchronised with S2R activities/outputs

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