DECISION OF THE SYSTEM PILLAR STEERING GROUP

Approving the Concept for Safe Train Length and Train Integrity for DAC/FDFTO as a basis for future specification and development work

N° 03/2026

THE SYSTEM PILLAR STEERING GROUP OF THE EUROPE'S RAIL JOINT UNDERTAKING, NOTES

- To increase capacity on existing lines, European Railways are currently in the process of implementing ETCS Level 2 Moving Block and Hybrid Train Detection on dedicated lines. To run trains under such conditions, "Safe Train Length" and "Safe Train Integrity" function/information will become mandatory also for freight trains.

- In order to avoid cost and complexity impacts on the signalling ground infrastructure, the proposed architectural solution aims to provide "Safe Train Length" and "Safe Train Integrity" function/information solely by train on-board systems, without ground systems support.

- As well, it is expected to provide Safe Train Length" and "Safe Train Integrity" function/information without driver/human support, relieving train drivers from high safety requirements responsibilities, and preparing for future fully automatic operations (ATO-GOA4).

- Current FP5-TRANS4M-R develops the future solution for European Freight trains, based on DAC (Digital Automatic Coupler) technology, that provides high-performance digital information technology facilities on board of the freight vehicles.

- Product cost control is one of the most important drivers of the TRANS4M-R project, preventing the DAC technology to become an economical impracticable solution.

- SP Task 4 proposes a full on-board-train/driver-less architectural solution for the implementation of Safe Train Length determination and Safe Train Integrity detection for FDFTO (Fully Digitalized Freight Train Operations), aiming to limit product costs increase by using already existing functions provided by the current DAC technology, still respecting the overall system safety requirements.

- The purpose of the document "System Requirements Specification Train Integrity and Train Length_Part A WP3_1" is to specify on a high level the system requirements, functional requirements and interfaces that are planned to be fulfilled in order to provide an interoperable "Safe Train Length Determination" and "Train Integrity Status Determination" within the FDFTO Train Functions. This requires a consolidated

implementation plan with aspects of - Time, Cost/Financing, Migration and Authorization Planning

- Given the proposed architectural solution has impacts on the on-board ERTMS-ETCS system that will be the consumer of “Safe Train Length” and “Safe Train Integrity” information, the fundamental architectural and safety concepts have been developed in close cooperation with SP Task 2 Train CS and ARC, FP2-R2DATO, with the overall supervision of EUG (ERTMS User Group).

- Said architectural and safety concepts are innovative in the sector, and are currently investigated to be applied in other future use-cases

- To respect the DAC system architectural design and safety constrains, the proposed architectural solution has been developed in collaboration with FP5-TRASF4M-R experts.

- It has been agreed, between SP Task 2 and FP5-TRANS4M-R organization, that will be responsibility of FP5-TRANS4M-R and FA2 future calls to adapt the proposed architecture according to the evolution of the DAC technology.

- The Concept has been reviewed and approved by Core Group, System Pillar Task 2 and Task 4, FP2, FP5, and EUG..

- While the proposed solution has already been presented and positively discussed with European Railways Agency with the scope of possible future TSI introduction, it should be noted that the concept represents an intermediate milestone and further work is necessary to increase maturity of the specification.

THE SYSTEM PILLAR STEERING GROUP OF THE EUROPE'S RAIL JOINT UNDERTAKING, AGREES

- The approval and release of the following document:
    - System Requirements Specification Train Integrity and Train Length_Part A WP3_1