DECISION OF THE SYSTEM PILLAR STEERING GROUP

Approving the Concept for Central Instance Organization for DAC/FDFTO as a basis for future implementation work and adoption.

N° 04/2026

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

- The FDFTO (Fully Digitalized Freight Train Operation) based on the DAC (Digital Automatic Coupler) system, is defined by an articulated set of specifications and requirements generated and currently maintained by the FP5-TRANS4M-R system engineering team. It is assumed said system team will continue to maintain the FDFTO System Specification till the end of the FA5.

- The expected DAC system evolutions during the FDFTO life after the end of FA5 will potentially require a new System Authority Organization in charge of maintaining the evolutions through a proper change requests governance, ensuring continuous FDFTO system integrity and interoperability.

- The FDFTO based on the DAC technology will be strongly supported by on-board advanced Information Technology systems, in charge of controlling the DAC automatic functions (e.g “train initialization”, “brake test”, “coupling/uncoupling”, “run-time diagnosis”), to manage the train operations in yard and on main line, and to provide safety related functions as “Safe Train Length” and “Safe Train Integrity” information delivery to the on-board ETCS.

- During operations, all DAC systems will generate operational, diagnostic and commercial data belonging to different data users in the sector, e.g. Wagon Keepers, Railways Operators, System Suppliers, including:

    - Structured-standardised IT infrastructures (Central Instance) shall manage data upload from vehicles and data dispatching to data owners and restricting further data distribution only to pre-defined allowed data users, under strict Cybersecurity protection (procedures, methods, tools)

    - Standardised protocols and standardised data structures are requested for information interoperability.

    - A recognized form of Contract must regulate all contractual topics for the use of the infrastructure (management costs, maintenance costs), and any relationships between data owners and users of said data

- In the coming years, tens of thousands of European freight vehicles are expected to be equipped with DAC systems supplied by different industry suppliers, each supplier developing its own software derived from common standardized FDFTO specifications, scope of the TRAS4M-R project.

- FDFTO system changes will generate software updates for the on-board IT systems creating potential issues on operations, considering that in some specific cases simultaneous/synchronised different updates (coming from different suppliers) should be performed to avoid interoperability issues between vehicles.

- Due to the huge number of vehicles involved in the software update at the same time, the only possible applicable technology will be On-The-Air (almost) contemporary download from remote.

- To prevent said interoperability issues, robust procedures are required to ensure harmonized operations between all actors involved in the generation of new software versions, in interoperability checks, and above all in synchronizing remote automatic software-download operations in all vehicles.

- Cybersecurity precautions shall protect the complete software download, from supplier delivery to vehicle installation through the OTA download process.

- Following the previously reported topics, System Pillar Task 4 has generated a document addressing all said topics, proposing a global organization and connected IT infrastructure architecture together capable to provide a global integrated solution.

- The document “System Concept for Central Instance - Part C WP4.5” specifying the FSO (FDFTO System Organization) is structured in three main pillars:

    1. FDFTO System Authority (FSA), managing the FDFTO system oversees and authorising the process steps of Change Requests related to the whole FDFTO system and to the major components such as Software, Mechanical and Electronic hardware and organising further development activities.

    2. FCI (FDFTO Central Instance) platform management with a data broker and a proposed multilayer IT architecture

    3. FCI contractual management, managing contracts and financial issues between the involved stakeholders

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

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

- The approval and release of the following document:
    - System Concept for Central Instance - Part C WP4.5