

## DECISION OF THE SYSTEM PILLAR STEERING GROUP

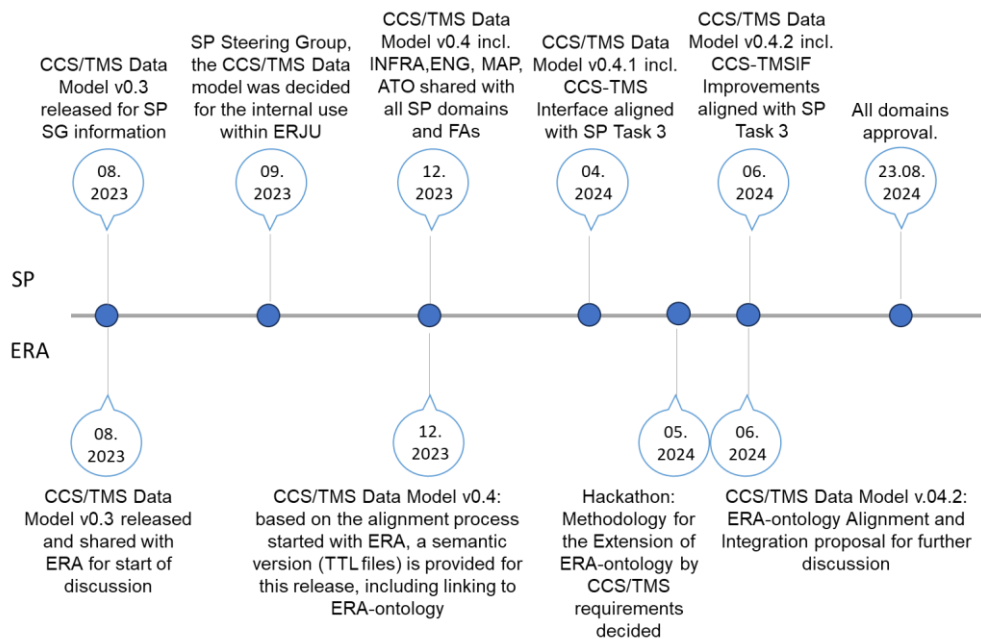
### adopting the publication of the CCS/TMS Data Model

N° 3/2024

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

- The general context for data and modelling within rail, namely
  - The latest Commission Staff working document on Common European Data Spaces (Jan 2024) refers to current legislative initiatives that will contribute to the mobility data space and – in particular- that the ERA ontology is to be extended to cover the overall rail system. This means a unique semantic data model for the rail sector to facilitate data interoperability and data exchange on all the regulated (TSI) use cases, and a unique TSI ontology. The goal is to avoid the fragmentation of modelling in the railway system, which is a key factor contributing to the lack of data interoperability.
  - Currently ERA ontology is covering the RINF regulation, part of ERATV. There is on-going work on EVR and ISS ontology and the intention is to gradually cover the overall rail system and related use cases under the safety and interoperability directive TSIs.
  - The data models which describe the B2G and B2B data exchange in the TSIs are key components of the regulatory framework for interoperability. The governance and publication of extended ERA ontology – unambiguously enabling the derivation of required data models - relies on the European Union Agency for Railways and is thus managed through the current processes for TSI change.
- That to support the development and harmonisation of approach to the future development of the CCS (and interface to TMS) systems based on radio-based ETCS-only deployment, it is necessary to have a shared data language applied at all relevant interfaces with similar exchange items.
- The data model and associated interface specifications must be comprehensive and sufficiently detailed to support at least the development of Functional Interface Specifications.
- The System Pillar Task 2 Transversal domain has therefore developed the CCS/TMS Data Model to align the data structures that are to be used on the relevant interfaces (for example communication, maintenance, diagnostics).
- The CCS/TMS Data Model covers the data exchanges in the ETCS-only railway system (encompassing ATO, TMS, freight automation including DAC, user interfaces, further).

- The CCS/TMS Data Model is function-driven, which means each data structure shall be linked to a functional use case, and will follow Model-based System Engineering principles to ensure a completeness and consistency of data structures. It is explicitly prevented to include national or supplier specific procedures or guidelines.
- The CCS/TMS Data Model has been developed from bottom-up inputs as per approaches defined in previous European projects, and from ongoing implementations in Innovation Pillar Flagship Projects.
- The content defined in this release v1.0 shall not be considered as fully finalized but rather a draft ready for continuous improvement.
- Nevertheless, the level of development is deemed sufficient to enable external publication, and indeed that publication is necessary to allow testing and validation of the model.
- The deliverable will be made public and the data model accessible to every stakeholder.
- The approval process within the System Pillar has been followed, and the relevant approvals granted.
- As set out, critical in the development and future use of the CCS/TMS Data Model is that the CCS/TMS should be a non-yet-legally binding extension of the ERA ontology.
- Consistent with the information provided to the SP-STG meeting 6, the CCS/TMS data model
  - Has been developed as a specific model for engineering and interface exchange, also consistent with EU data principles and a semantic approach - the ERA ontology
  - Will use and ensure consistency with the to be extended ERA ontology by enriching the ERA ontology by objects required for the design and operation of the future radio-based ETCS-only digital railway system.
  - The publicly available serialization of the CCS/TMS data model is a machine browsable TTL file from which it can be derive a consistent version in any other format, such as JSON.
- A cooperation and review process with ERA has been established. Over the last year, the following steps have been taken



- As a result of this collaboration, the EU-RAIL System Pillar CCS/TMS team is working to propose an extension to the ERA ontology and to derive the CCS/TMS JSON version from the ERA-ontology extended version. Formal publication relies of the CCS/TMS data model on an update of the ERA ontology. This update is expected to happen once ERA and EU-RAIL reach an agreement on the fully alignment of concepts in both ERA ontology and CCS/TMS model.
- On publication, the model will be published along with the following disclaimer allowing free access.

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The CCS/TMS Data Model has been developed from bottom-up inputs as per approaches defined in previous European projects, and from ongoing implementations in Innovation Pillar Flagship Projects. The content defined in this release v1.0 shall be considered a draft ready for continuous improvement, and further releases are expected.

Prior to the amendment of the ERA ontology the publication will add the following disclaimer: "to be aligned with ERA-ontology as soon as ERA-ontology has been extended to enable full derivation of the CCS/TMS Data Model"

- The elements of Version 1 of the CCS/TMS Data Model are as follows:
  - CCS/TMS Data Model - Introduction
  - CCS/TMS Data Model - "Infrastructure" → covers all infrastructure data objects
  - CCS/TMS Data Model - "ATO" → configuration of ATO Trackside
  - CCS/TMS Data Model - "ETCS Engineering" → Engineering of ETCS L2
  - CCS/TMS Data Model - "Train Protection" → configuration for TPS / Safety Logic
  - CCS/TMS Data Model - "Map Reference" → Digital Map, e.g. for Localisation
  - CCS/TMS Data Model – "Operational Plan" → used by CCS-TMS Interface Specification
  - CCS/TMS Data Model – "Subset 026" → used for Engineering of ETCS Telegrams, later also for configuration interface specification
  - CCS/TMS Data Model – "Equipment model" → imported from EULYNX for diagnostic purposes, will be extended in the next steps

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

- To publish on the EU-RAIL website the EU-RAIL System Pillar CCS/TMS data model.
- To publish an update, once the ERA extension is complete in the ERA github/gitlab as a non legally binding extension.

## ANNEX

- See associated document "CCS/TMS Data model – Scope and Approach for Collaboration and Specification"