

# ERTMS Specifications inside CCS TSI 2023/1695

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W. Malfait & J. Hernandez Fernandez






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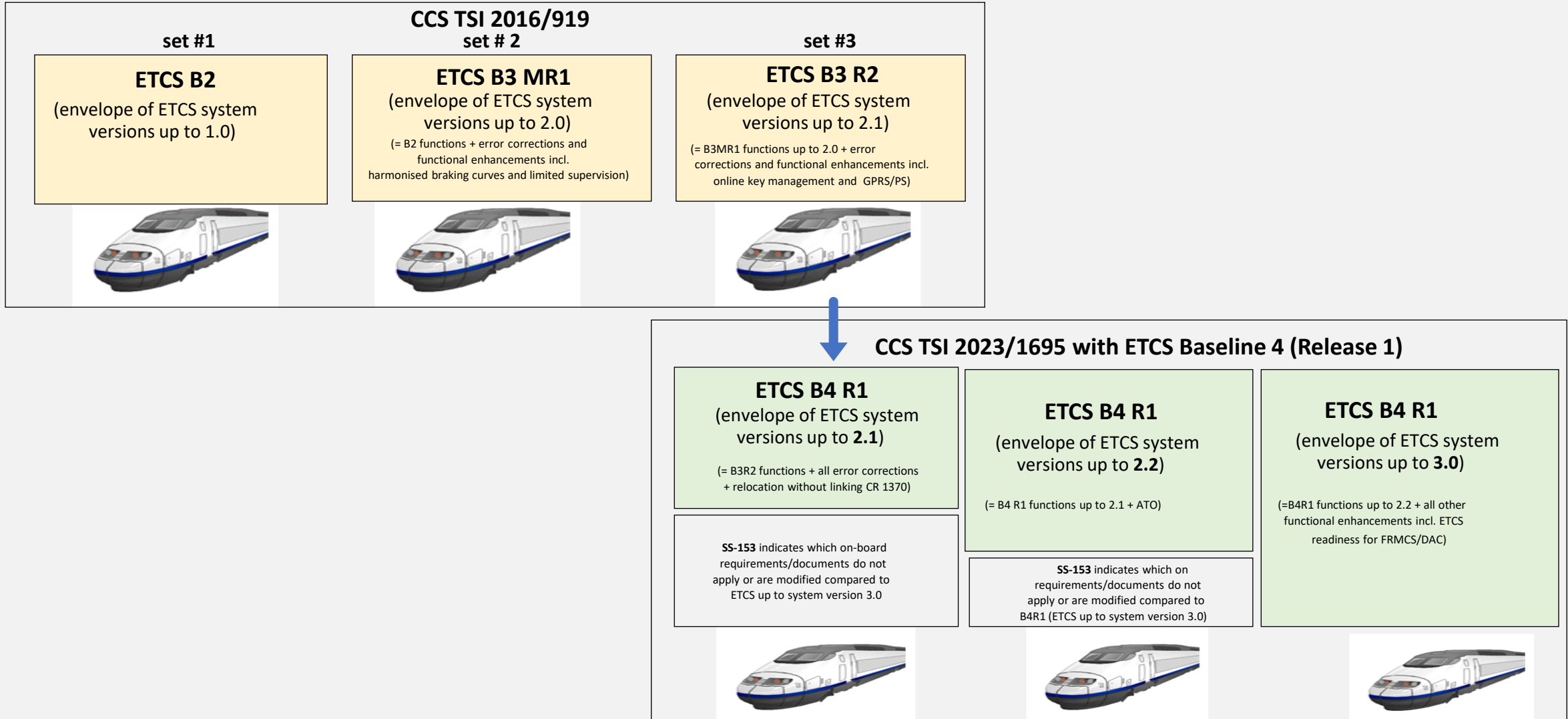
# Agenda

- **Topic 1: ERTMS Specifications inside CCS TSI 2023/1695**
- Topic 2: Transition framework inside CCS TSI 2023/1695

# ERTMS Specifications – Digital and Green Rail

Mandate/scope for specifications in CCS TSI 2023/1695	Link with strategic objectives	Status
<b>Automated Train Operation</b> GoA 1 and 2	ATO provides capacity benefits and reduces energy consumption (green rail).	
<b>ETCS Readiness for FRMCS</b> 5G based communication	GSM-R (2G) will become obsolete between 2035-2040 and shall be replaced by FRMCS (5G). Further digitalisation of rail as 5G opens many possibilities.	
<b>Digital ETCS reducing trackside assets</b>	Hybrid Train Detection: Train integrity allows capacity increase and/or reduced trackside train detection systems. Supervised manoeuvre: Supervised manoeuvre allows safety increase and when using digital automatic coupling will allow to get rid of shunting signals	
<b>On-board modularity</b>	On-board modularity enables further market opening which allows integration of different interoperability constituents/subsystems from different suppliers (open market). ERTMS specifications include additional specifications which provide on-board modularity focusing on a common Ethernet based system and providing harmonised interfaces between ATO, ETCS, FRMCS parts and RST-subsystem.	
<b>Additional changes to further optimise capacity, safety &amp; security, cost reductions</b>	The ERTMS specifications are further optimised with additional change requests based on return of experience of ERTMS projects.	

# ERTMS Specifications – Evolution of ETCS Baselines/ETCS System versions



# Agenda

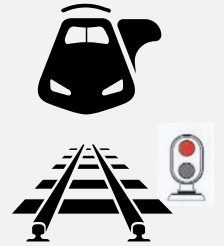
- Topic 1: ERTMS Specifications inside CCS TSI 2023/1695
- **Topic 2: Transition framework inside CCS TSI 2023/1695**

# CCS TSI 2023/1695 – Transition regimes for innovations based on National Implementation Plans

- **Balancing IM/RU economic interests:**

How to handle innovations for the railway system which have a different business case for the Infrastructure Managers and Railway Undertakings.

*Example:* Reduce trackside assets ('digital rail') might require new mandatory on-board functions to be implemented for existing and new vehicles (e.g. Digital Automatic Coupling, Train Integrity, FRMCS and associated changes to interface ETCS with FRMCS).



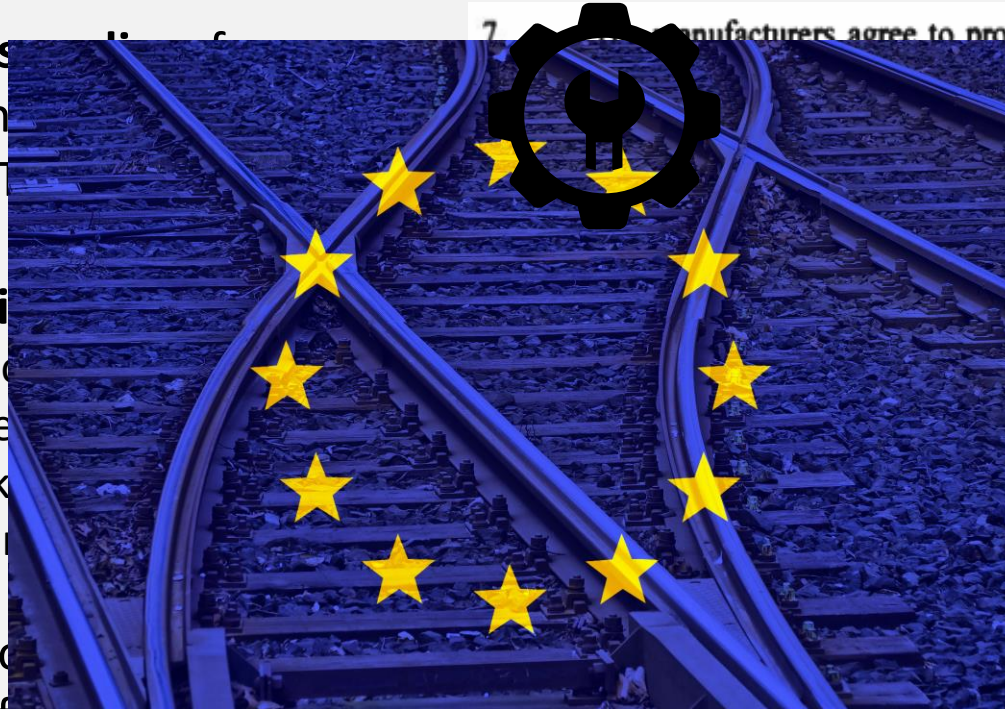
- **CCS TSI 2023/1695:**

- **National Implementation Plan:** Member State's obligation to balance different expressed needs between impacted stakeholders (IM and RUs) to decide on ATO implementation, new FRMCS radio system or new ETCS system version;

- If implementation of new functions occurs, **framework** of a minimum timeframe (notification period) of **at least 5 years** shall be provided.

# CCS TSI 2023/1695 – Transition regimes for error corrections (maintenance process)

- **EU Policy objective:** Providing fully compliant ERTMS products (without errors/deviations/partial fulfilment) allowing vehicles to operate across the EU (without additional restrictions/modifications if the area of use of a vehicle is extended).
- IMs/RUs **depend on their suppliers** for the maintenance of the system.
  - Integration of error correction in the maintenance process
  - ↪ Key Commitment #7 of ERTMS
- **Balancing IM/RU economic interests**
  - IMs would like that on-board software updates can be removed
  - RUs would like that trackside software updates can be removed
- **CCS TSI 2023/1695:** Responsibility for implementation of error corrections in products; If **errors are preventing normal service** in specific projects, IMs and RUs shall implement those corrections within a **maximum timeframe of 3 years**.

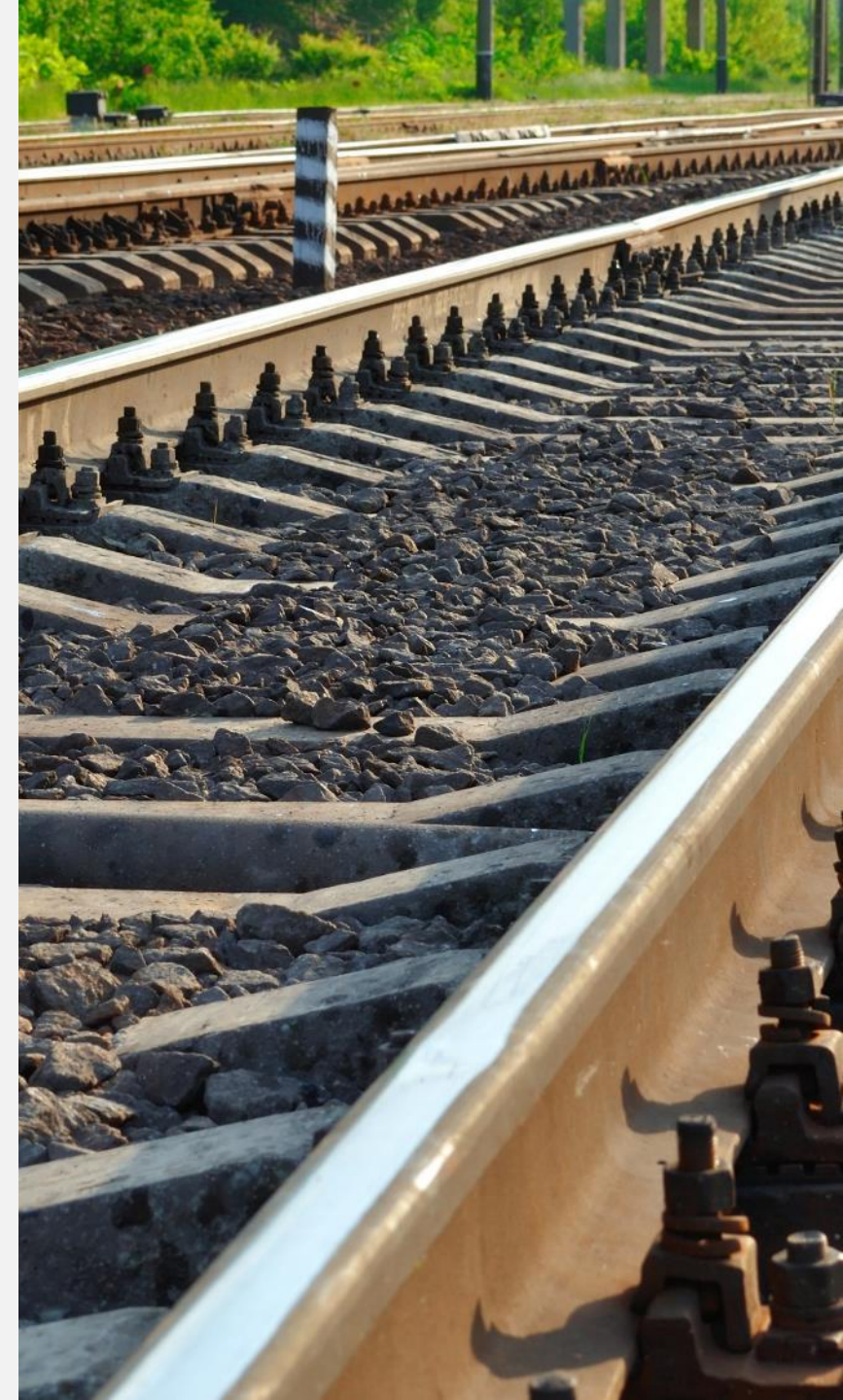


7. Manufacturers agree to propose, for future ERTMS projects, updated software that automatically include the corrections of errors in the system in the frame of the Change Control Management process. This mechanism shall not encompass new requirements or specifications.

es in order that temporary mitigation measures can be removed in order to allow the implementation of new projects in order to allow the

liers for implementation of error corrections in products; If errors are preventing normal service in specific projects, IMs and RUs shall

# Feedback from WS 10c & 11b







# THANK YOU

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