



ERTMS 2026 CONFERENCE



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era.europa.eu

Session 4: FRMCS specifications planning



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INTERNATIONAL UNION
OF RAILWAYS



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Project Officer



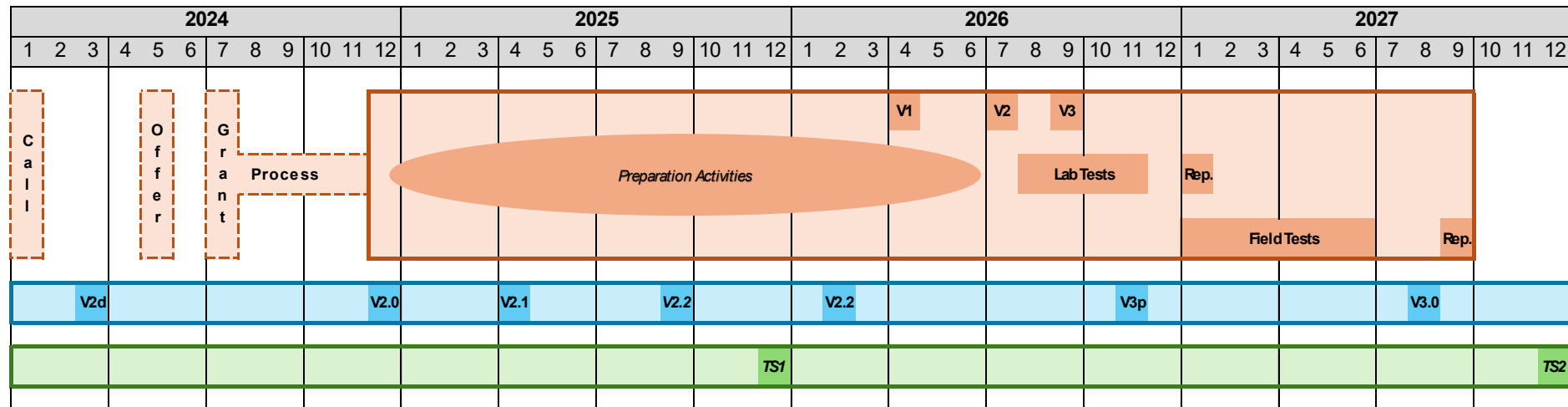
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TOBA FRS Prime	<i>Christian Nänni (UIC)</i>	<i>(Chair of FRMCS TOBA Group)</i>
FRMCS SRS Prime	<i>Guillaume Gach (UIC)</i>	<i>(Chair of FRMCS ATWG)</i>
FRMCS FIS Prime	<i>Vincent Caudron (UIC / Infrabel)</i>	<i>(Chair of FRMCS FIS Group)</i>
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Governance Body	<i>ERIG</i>	

FRMCS Specifications - Global Planning for V3 Roadmap

EU-Rail	Test Design and Planning (WP1)
Morane 2 (Extract)	Lab Test Preparations and Execution (WP3)
	Field Test Preparations and Execution (WP4)

UIC Specifications (FRS, TOBA, SRS, FIS, FFFIS)

ETSI TSs (information from ERIG#92 Report 02/25)



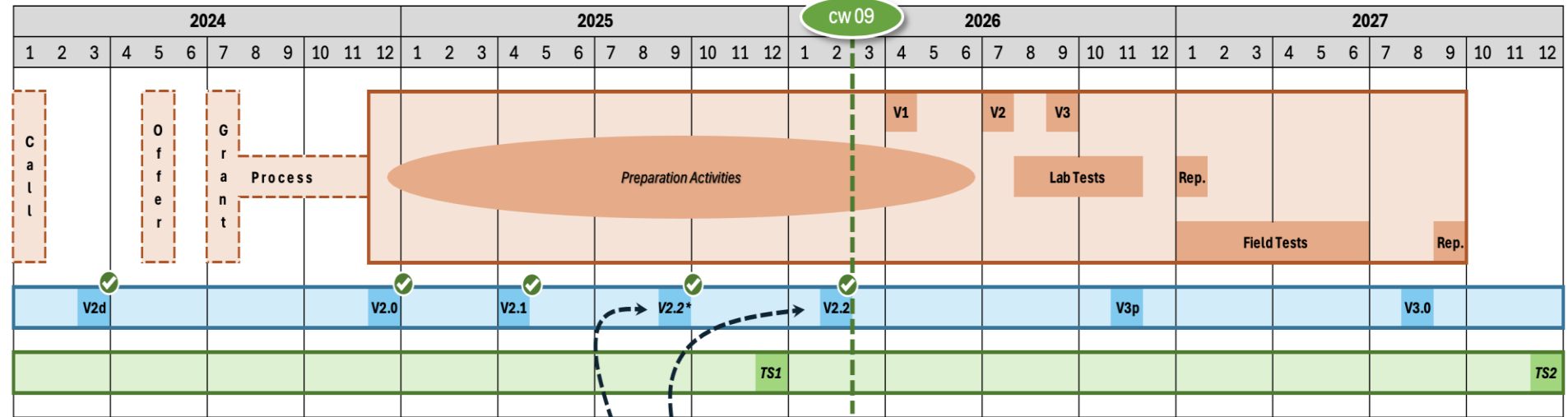
	Nature	Context	Objectives
v1	Test Plans in Morane 2	Preliminary version	Alignment in Morane 2
v2	Test Plans in Morane 2	Version for lab tests	Execution of lab tests in Morane 2 (3 labs)
v3	Test Plans in Morane 2	Final version	Execution of field tests in Morane 2 (5 lines)
v2d	UIC FRMCS Specifications	Draft V2 , issued for ERA/EECT process	
v2.0	UIC FRMCS Specifications	Version after EECT Technical Opinion	
v2.1	UIC FRMCS Specifications	Version EECT Technical Opinion Addendum	Sector agreement on Categorisation (Mandatory / Option / Information) and List of Open Points
v2.2	UIC FRMCS Specifications	Interim version FRS/ TOBA, proposed for EECT	Integrating the closing of functional Open Points
v2.2	UIC FRMCS Specifications	Interim versions SRS/ FIS/ FFFIS	Integrating the closing of system Open Points
v3p	UIC FRMCS Specifications	Provisional / Pre-test version, proposed for EECT	Stable and cleaned-up version - Considered as semi-definitive
v3.0	UIC FRMCS Specifications	Final / Post-test version, for ERA recommendation	FRMCS 1st Edition, amended from V3p when needed from Morane 2 results
TS1	ETSI Technical Specifications	Phase 1, post-review from NSOs	Based on UIC FRMCS V2.1
TS2	ETSI Technical Specifications	Phase 2, post-review from NSOs	Update for final versions

FRMCS Specifications - Global Planning for V3 Roadmap (Status March 2026)

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V2.0 <input checked="" type="checkbox"/> UIC FRMCS Specifications	Version after EECT Technical Opinion	
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V2.2* <input checked="" type="checkbox"/> UIC FRMCS Specifications	Interim version FRS / TOBA, proposed for EECT	Integrating the closing of functional Open Points
V2.2 <input checked="" type="checkbox"/> UIC FRMCS Specifications	Interim versions SRS / FIS / FFFIS	Integrating the closing of system Open Points
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- **Progress**
 - FRMCS FRS and TOBA FRS are processed successfully through EECT V2.2 and have been issued by ERA in Dec-25 / Jan-26 (as V2.2.0)
 - SRS V 2.2. delivery has been pushed on highest priorities for ATWG / FIS / FFFIS working groups to deliver on schedule EoFeb 2026
- **Key achievements**
 - SRS V2.2. has been delivered on time EoFeb 2026 fully in line with the initial planning (incl. FIS & FFFIS specification)
 - This represents a major achievement, enabled by the outstanding work and strong commitment of the Working Groups and their members in achieving the required level of completeness
 - Risk mitigations (e.g. resource / onboarding / prioritization) have been successfully implemented. However, several items on the critical path remain and will continue to require close monitoring throughout the V3p/V3 execution roadmap
- **Current status**
 - A few remaining topics (e.g. PTT- usage, MP, profiles) still require further development by industry / MORANE- 2 consortium within the framework of the MORANE-2 program in order to deliver proof of concept
- **Mitigations**
 - Numerous ad hoc and WG- sessions have been executed through Jan – Feb to discuss and agree on potential solutions / will continue
 - Some senior management has been provided to reinforce the agreed priorities, although contribution still shows room for improvement
- **Next steps / outlook**
 - Continue progressing on V3p – related topics across all working groups
 - ERA Workshop and follow up sessions on lessons learned and alignment as the foundation and guardrails for V3p/V3 period (03/ 26)

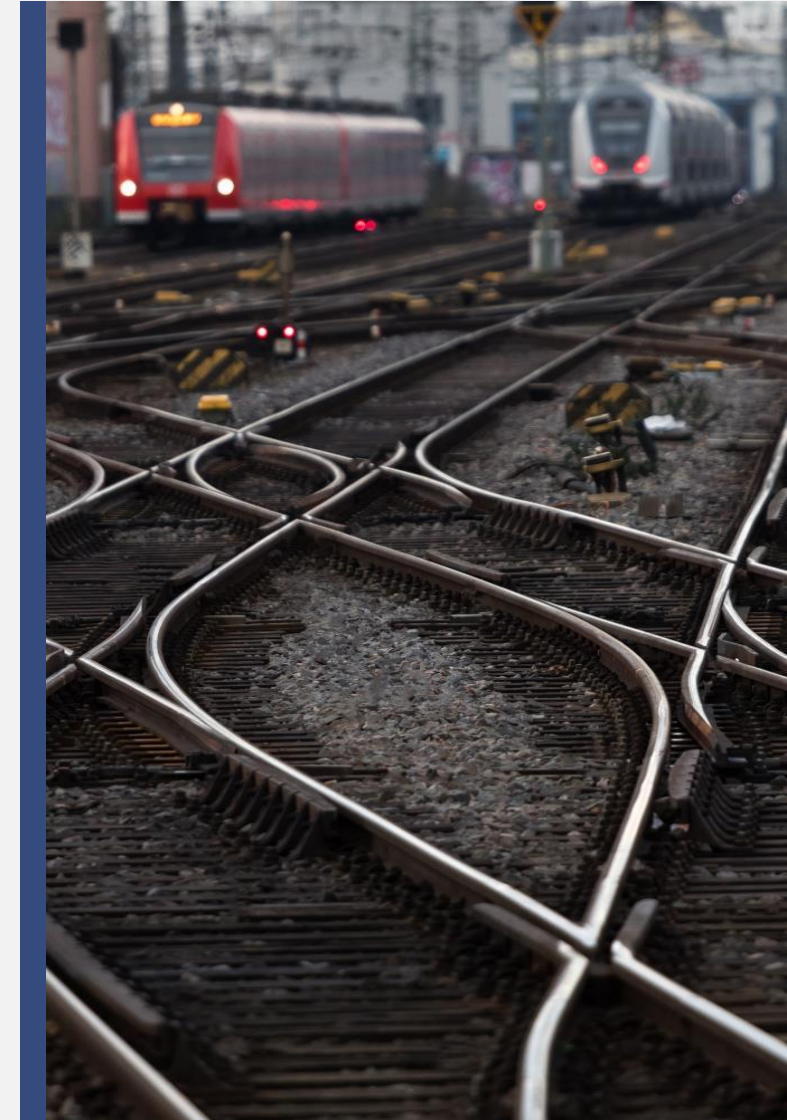
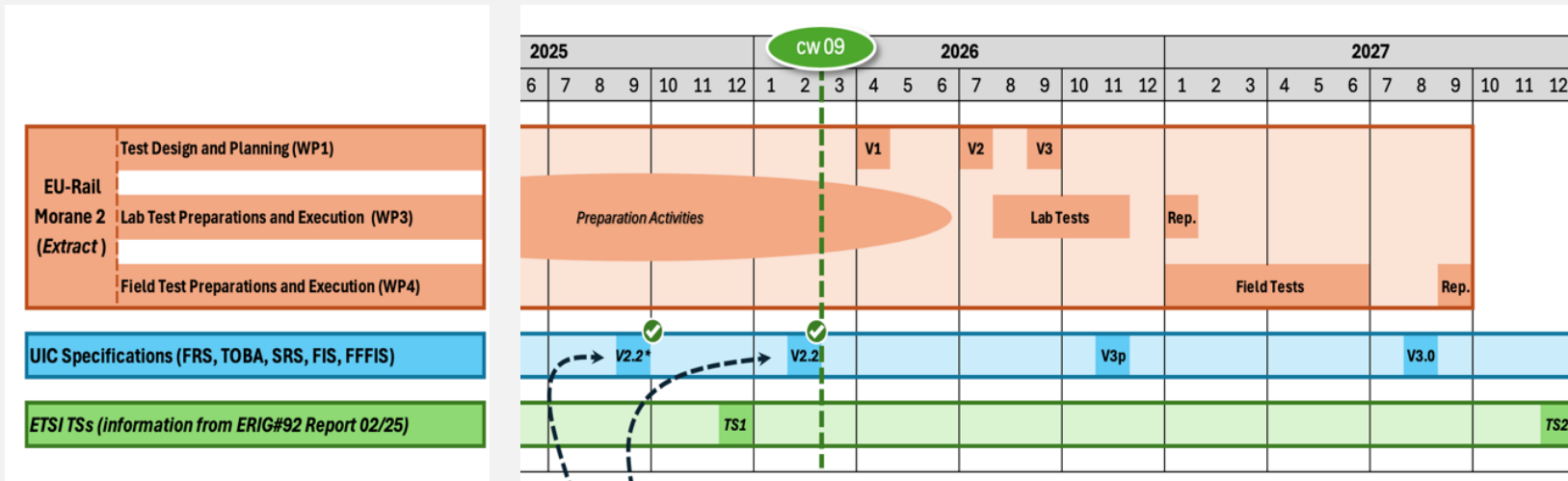
FRMCS Specifications - Risk Register (Status March 2026)

Risk Register for V2.2 / V3p

#	Risk	Criticality	Mitigation(s)	Owner (s)	Comment(s)
1	Non closing of SRS Action Points for V3p/V3	High	<ol style="list-style-type: none"> 1. More supplier involvement (leadership vs. review) 2. Efficient decision process 3. Identification of second priority items 	<ol style="list-style-type: none"> 1. US (UIC) 2. US (UIC) 3. GG (UIC) 	<p>Some elements need real supplier support because impacting product implementation.</p> <p>Increase collaboration /w industry</p>
2	No agreement with UNITEL on V3p/V3 candidates	High	<ol style="list-style-type: none"> 1. Prime(s) UNITEL to drive commitment 2. Rationality of railway demand 3. ERA EECT arbitration in case 	<ol style="list-style-type: none"> 1. xxx (UNITEL) 2. US (UIC) 3. TC (ERA) 	Enhance supplier engagement on pending and complex solution topics to meet the established requirements
3	Unavailability of key contributors from suppliers	High	<ol style="list-style-type: none"> 1. Designation by suppliers of key contributors with primeship commitment 2. Regular tracking on individual progress 	<ol style="list-style-type: none"> 1. xxx (UNITEL) 2. US (UIC) 	Additional involvement of technical high-level experts would derisk the plan
4	Non closing of ERA EECT Open Points for V3p	Medium	<ol style="list-style-type: none"> 1. Finetune time priority for each open points 2. Maintain permanent information channel with ERA 	<ol style="list-style-type: none"> 1. DM (UIC) 2. US (UIC) 	- ERA Lessons Learned Workshop Mar 26 to define all relevant actions and measures to support V3p/V3 delivery
5	No agreement with UNITEL on V3 candidate features for V2.2 ERA EECT Functional (30/09/2025)	Closed	<ol style="list-style-type: none"> 1. Prime(s) UNITEL to drive commitment 2. Rationality of railway demand 3. ERA EECT arbitration in case 	<ol style="list-style-type: none"> 1. xxx (UNITEL) 2. US (UIC) 3. TC (ERA) 	<p>- Promising pace for TOBA FRS</p> <p>- Better visibility for FRMCS FRS since 14/07/25</p>
6	Non closing of SRS Action Points by 31/12/2025	Closed	<ol style="list-style-type: none"> 1. More supplier involvement (leadership vs. review) 2. Efficient decision process 3. Identification of second priority items 	<ol style="list-style-type: none"> 1. US (UIC) 2. US (UIC) 3. GG (UIC) 	Some elements need real supplier support because impacting product implementation. Prioritization towards V2.2 topics, Incr. collaboration /w industry
7	Non closing of ERA EECT Open Points by 31/12/2025	Closed	<ol style="list-style-type: none"> 1. Finetune time priority for each open points 2. Maintain permanent information channel with ERA 	<ol style="list-style-type: none"> 1. DM (UIC) 2. US (UIC) 	<p>- Finetuning done by UIC, to be discussed with ERA</p> <p>- The ERA OPs cover the gap between V2 and V3: priority is to deliver V2.2</p>
8	Non closing of FFFIS Action Points by 31/12/2025	Closed	<ol style="list-style-type: none"> 1. Focus key contributors on their specification mission 2. Regular tracking on individual progress 	SA (UIC)	Good collaboration in FFFIS mixed group
9	Non closing of FIS Action Points by 31/12/2025	Closed	<ol style="list-style-type: none"> 1. Focus key contributors on their specification mission 2. Regular tracking on individual progress 	VC (UIC)	Good collaboration in FIS mixed group

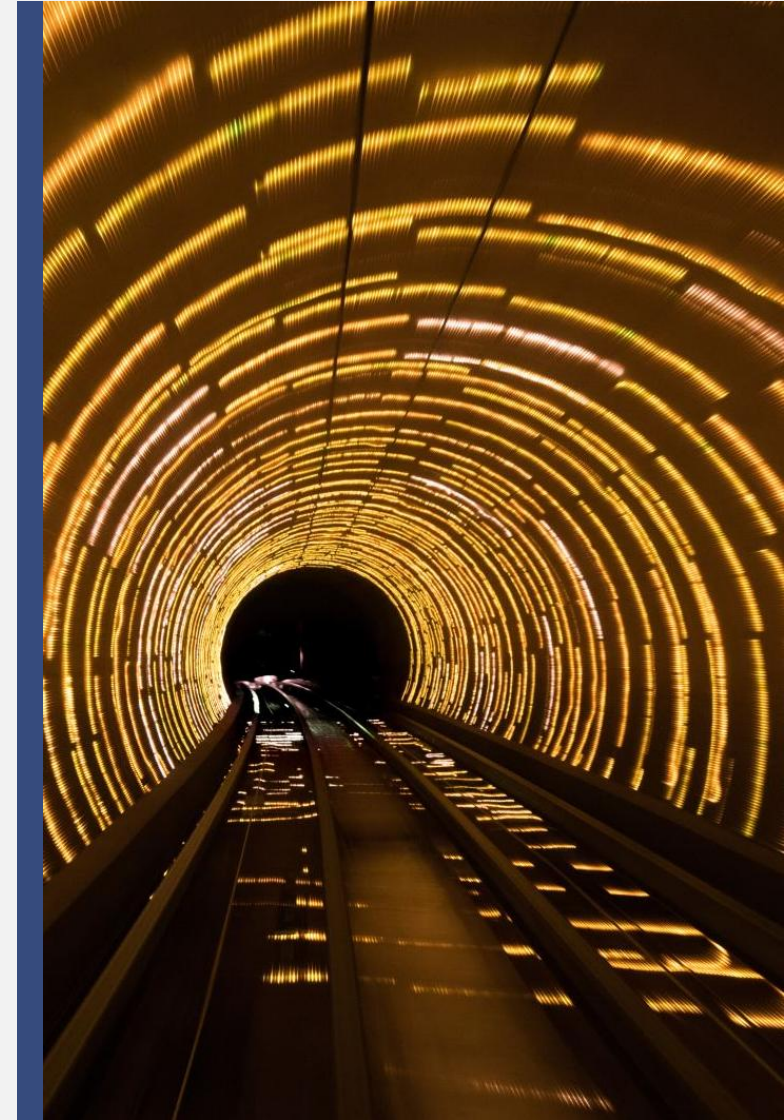
EECT from V2.2 to V3p/V3

- After EECT sessions 4Q 2025: FRS V2.2 and TOBA FRS V2.2: **Review completed**. Version 2.2.0 developed by UIC as output of EECT
- Next steps to prepare EECT V3p/V3:
 - **Input expected from UIC**, with initial estimation of the level of completeness of ERA OP after EECT V2.2 exercise (assessment of the v2.2 of the specifications available after EECT)
 - ERA CCM procedure: to ensure transparency on V3p modifications
→ **CRs to be opened per Open Points**



Preparation of EECT V3p

- Timeline
 - UIC input (as per V3 plan): November 2026
 - ERA maturity checkpoint: 1st Half December 2026
 - EECT V3p period: January-June 2027
- Scope
 - All following modified requirements to be reviewed
 - SRS/FIS/FFFIS changes compared to v2.1.0
 - FRS/TOBA FRS changes compared to v2.2.0
 - Modifications in FRMCS related subsets (e.g. SS-037-3)
 - Status check of GSM-R CRs "postponed" to FRMCS and of National Technical Rules existing in GSM-R.
- Methodology
 - Review focused on problem-technical resolution:
 - To ensure consistency and completeness of the solution: review per ERA Open Point for better EECT efficiency
 - To allow discussion in order of priority
 - To avoid that non-concluded discussions jeopardise the final delivery
 - Better tracking of changes as input version to EECT (pre-requisite for starting EECT)
 - For each change in each specification, tracking compared to previous EECT version
 - identifying the associated ERA OP (if additional subjects are found, new OP raised)
 - or "error correction"/"editorial improvement"



Recommendations from ERA TO EECT RMR process for FRMCS v3

Recommendation #3

The expected April 2025 validated list of Open Points should be used as a basis for a tracking mechanism in the discussions under the Change Control Management Procedure.

- Methodology agreed: discussion of solutions per Open Point or group of Ops

Recommendation #8

As mitigation measures, before starting the EECT RMR process for FRMCS V3:

1. Integration of Testing & Validation results into the draft V3 set of FRMCS specifications is agreed by the sector; taking into account the list of Open Points
2. Industry is involved in the drafting of the V3 set of FRMCS specifications
3. A maturity check is performed by EECT before committing resources and a timeline to approve the V3 set of FRMCS specifications.

- When receiving the documents, assessment of EECT V3p timeline feasibility (changes compared to previous EECT versions: number of associated comments)
- Consolidation of changes across all FRMCS specifications to be taken into account for final delivery
- Participation of the industry in the drafting of v3p has to be ensured



Recommendation from ERA TO Test & Validation activities

Recommendation #1

Any Test & Validation practical activity on FRMCS should be based on the addendum to be published in April 2025 to take into consideration the version 2.1.0 of the FRMCS specifications.

Recommendation #9

Any Test & Validation activity gaining relevant results for the validation of requirements in scope of the V3 set of FRMCS specifications should be communicated to ERA.

- CCS TSI Article 10

- Target: ERA and EC aware of who's going to test what and when, to anticipate input at EECT V3.0 milestone and to report to FRMCS Stakeholder Alignment Meeting

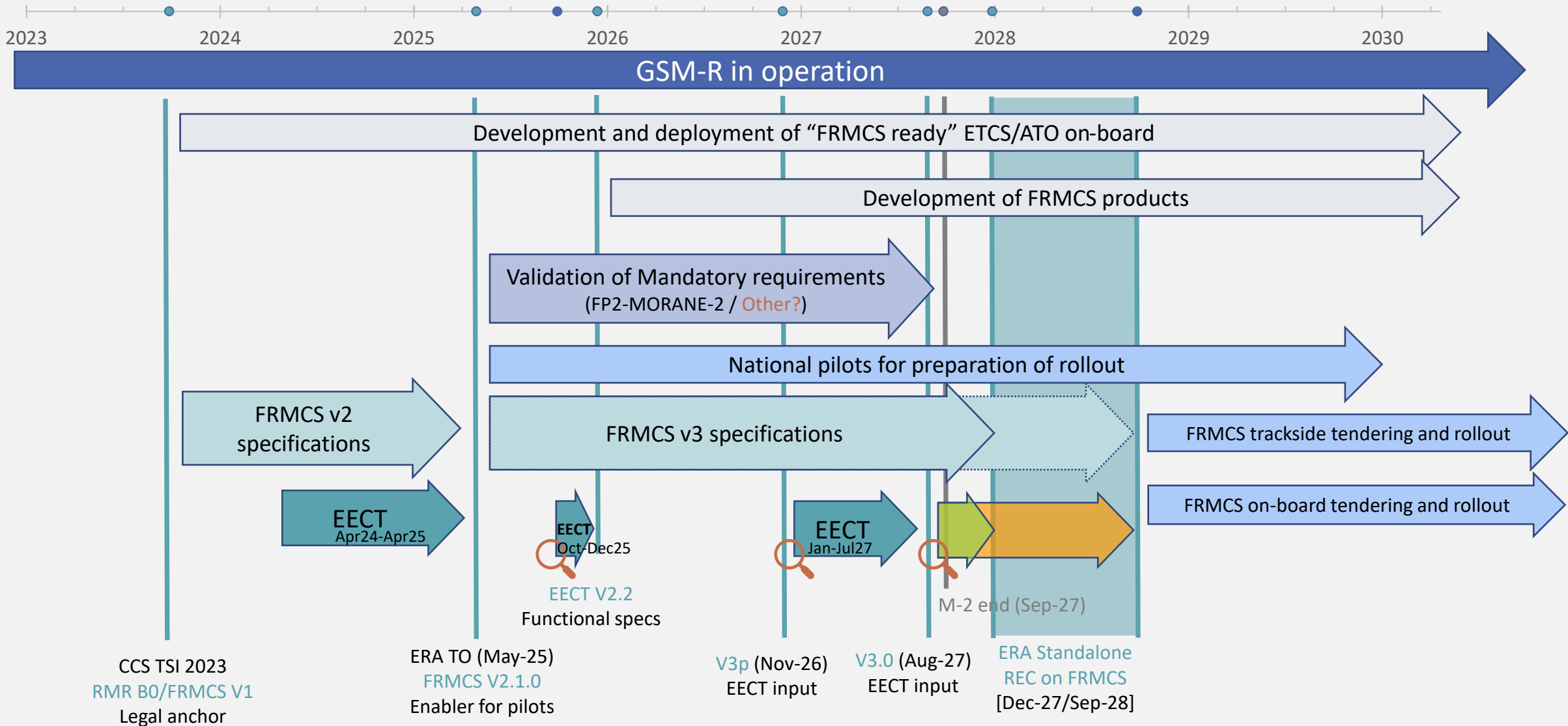
→ Full picture of planned tests coverage, e.g. which FRMCS V3 features not planned to be tested, which features planned to be tested in more than one T&V activity

- Template for Article 10 available in ERA web page:

[CCS TSI Art. 10 FRMCS Pilot reporting and template](#) | [European Union Agency for Railways](#)



ERA view on Timeline for FRMCS Recommendation





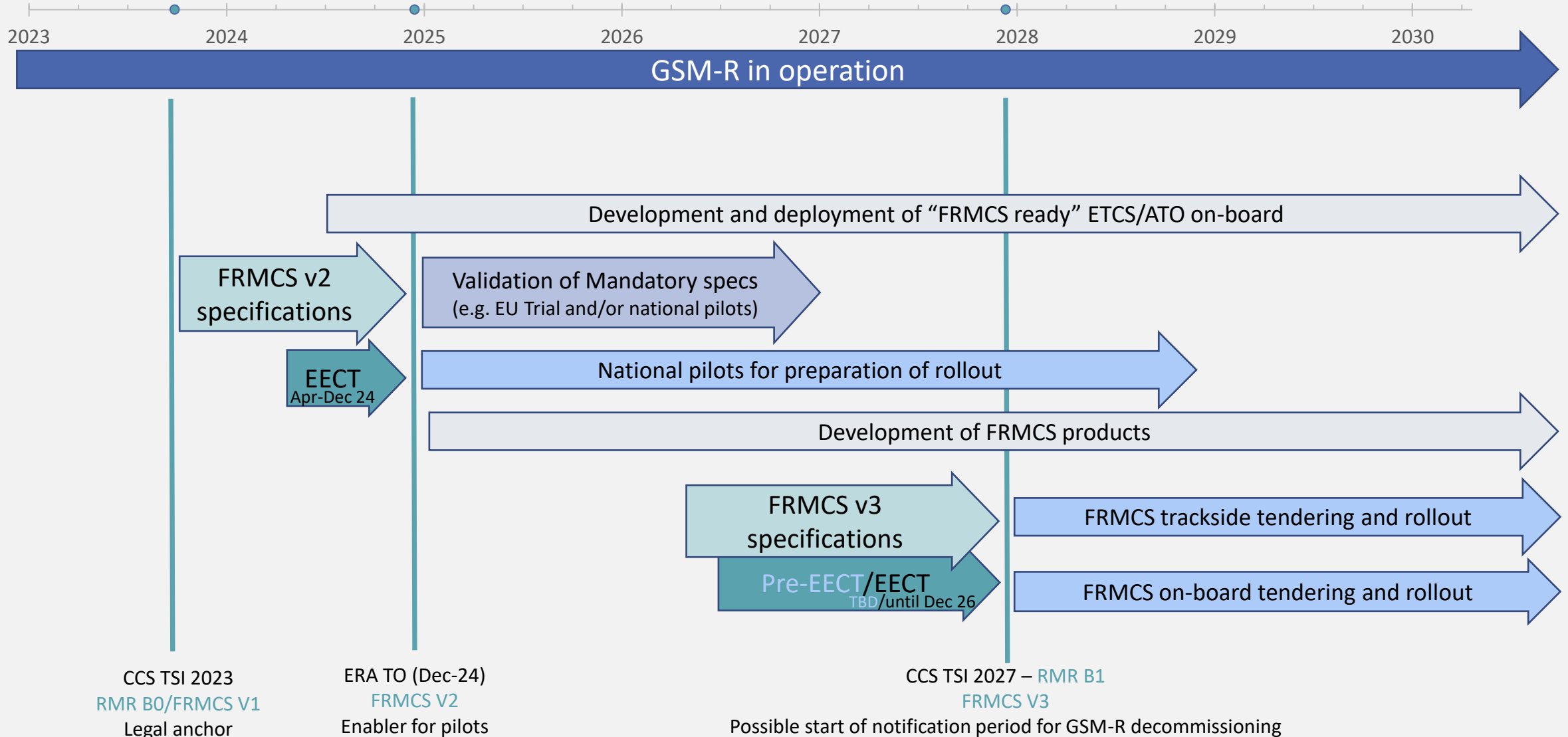
Thank You!

Backup

GSM-R CRs "postponed" to FRMCS

- National Technical Rules (NTRs) to be considered in FRMCS
 - BE, IT, FR: automatic notification from the DSD
 - EXPECTATION in FRMCS:
 - Harmonised interface used between DSD and DSD communication application or DSD and TOBA
 - Harmonised call/message destination
 - Harmonised communication content
 - PL, SK, CZ: Radio-Stop function
 - EXPECTATION in FRMCS:
 - Harmonised interface used between the “radio stopping” application and TOBA
 - Harmonised interface used between the “radio stopping” application and the braking system
 - Harmonised functional numbers
 - Selection of the radio network
 - EXPECTATION in FRMCS:
 - FRMCS configurable to allow both a manual and an automatic selection of the domain/network to be used; if via external trigger, interfaces to be harmonised (e.g. over OBapp between the application in charge of sending the command and the OB-FRMCS)
- Additional postponed CRs (i.e. "*Requirement shall be included when FRMCS is introduced.*")
 - CR 5046: Cab radio information to the train borne recorder (Summited by Italian NSA on 25/03/2019)
 - CR 5047: Driver Safety Device (DSD) alarm call (Summited by Italian NSA on 25/03/2019)

FRMCS v2/3 Timeline (pre-TO)



Recommendations from ERA TO Broader considerations

Recommendation #4

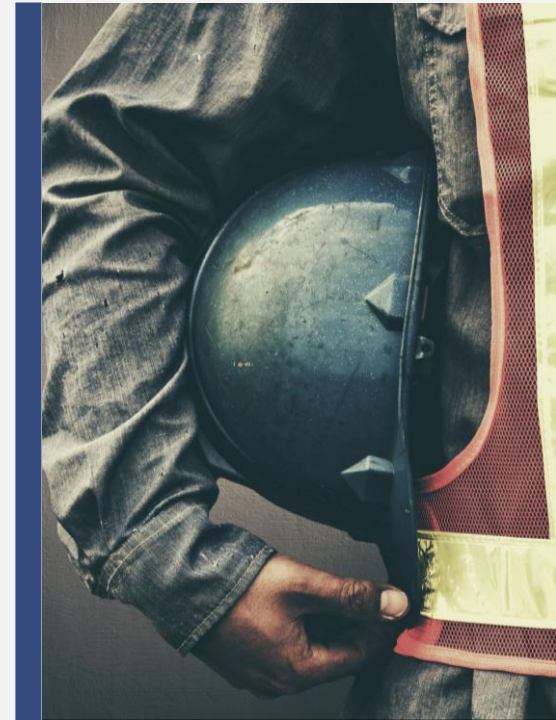
Studies should be performed on the innocuity of PMNO bands before confirmation of their mandatory support for On-board FRMCS in the V3 set of FRMCS specifications.

Recommendation #5

ERA's Impact Assessment for the recommendation on referencing the V3 set of FRMCS specifications in the next CCS TSI update should cover investigation on the added value of supporting specific mandatory features by On-board FRMCS, the need for granularity of FRMCS usage in Registers of Infrastructure (RINF), and the possibility to consider non-application of CCS TSI in very specific cases for On-board FRMCS.

Recommendation #6

EU-RAIL Deployment Group on FRMCS should provide advice on the aspects indicated in Recommendation #5.



Recommendations from ERA TO Test & Validation activities

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- CCS TSI Article 10
 - Target: ERA aware of who's going to test what and when, to anticipate input at EECT V3.0 milestone and to report to FRMCS Stakeholder Alignment Meeting
 - Full picture of planned tests coverage, e.g. which FRMCS V3 features not planned to be tested, which features planned to be tested in more than one T&V activity
 - FP2-MORANE-2 and other National Pilots: expectation to fill the Article 10 template

Recommendation #2

A final and fitting list of interoperability related requirements to be verified by Notified Bodies is necessary and should be delivered by ERA in parallel with the finalisation of V3 set of FRMCS specifications.

- To be considered in the planning, after EECT V3 and ERA Recommendation

