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The Voice of European Railways

CER Position Paper

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European ERTMS Governance

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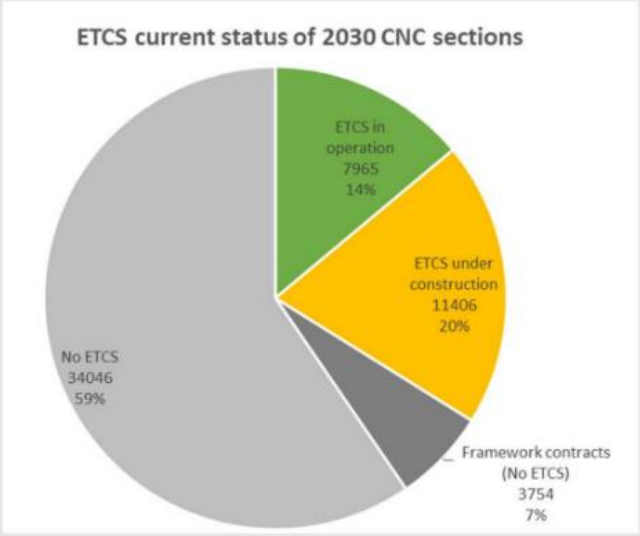
Background

The European Rail Traffic Management System (ERTMS) is a key enabler to improve cross-border operations by providing a single European command, control and signalling system, ensuring transport reliability, increasing capacity and improving safety levels. The concrete benefit is different country by country.

In accordance with the second ERTMS Work Plan, published in July 2022, only 14% of the Core Network Corridors lines are equipped with ETCS (i.e. 7.965 km) and 60% with GSM-R. Furthermore, most of the ETCS lines are not yet equipped with radio-based ETCS but still with ETCS Level 1 that is outdated and not upgradeable towards digital railways requirements.

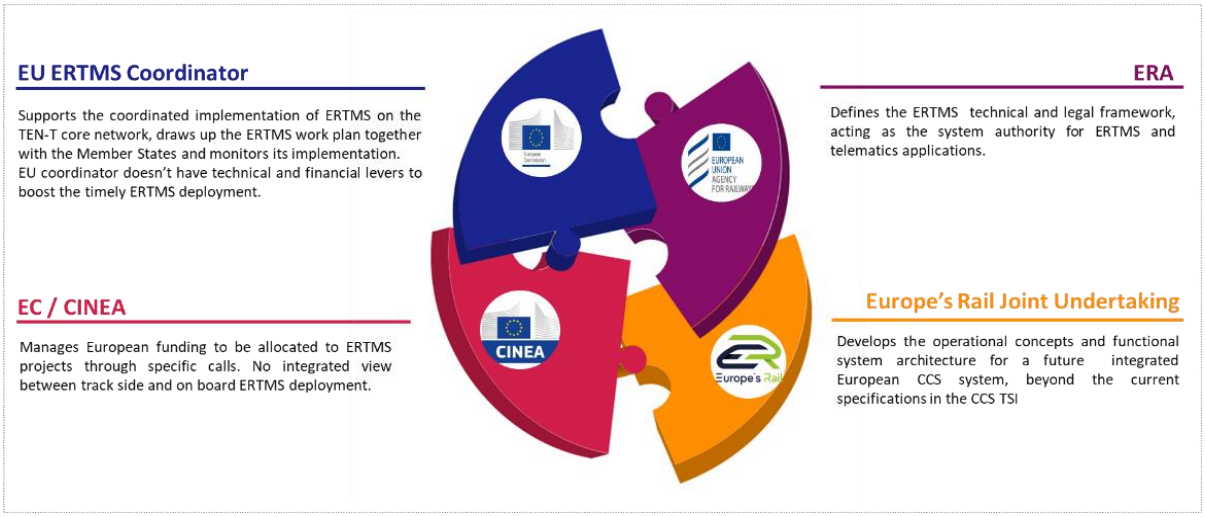


ERTMS Work Plan – Second edition (July 2022)

ERTMS trackside and onboard deployment is progressing much slower than expected. Single national ERTMS implementations are developing at a different pace, undermining the benefits of a systemic Europe-wide ERTMS deployment.

Synchronised and harmonised trackside and onboard ERTMS deployment is vital to achieve the modal shift targets envisaged in the Green Deal, under the precondition of having suitable funding and financing options in place. Today the ERTMS governance is spread along a number of different bodies (EU ERTMS coordinator, CINEA, ERA, ERJU), each one

responsible for a single component of the value-chain, generating a clear need for an integrated approach, in order to improve at least consistency between objectives and fundings.



CER believes that ERTMS deployment needs to be boosted and to this purpose a future centralized EU Level ERTMS governance and Program Management could help regulating funding, coordination of National Implementation Plans (NIP), resourcing, market uptake, migration and transition. The EU ERTMS Coordinator with all the stakeholders shall devise and promote such governance.

A new European ERTMS Governance

CER believes that a centralised EU Level ERTMS governance and Program Management would enable to strengthen the cooperation among the different institutions and stakeholders in order to:

- Ensure the alignment of National Implementation Plans (NIP) with the EU programs and deadlines
- Facilitate a synchronised and harmonised ERTMS deployment both track-side and on-board
- Ensure the added value and benefits of the projects
- Continuously improve interoperability and safety
- Accelerate the coordinated ERTMS rollout including the upgrade of equipped lines and vehicles ensuring backwards and forwards compatibility
- Coordinate funding resources for both track-side and on-board investment needs, fostering strategies to support cross-border traffic and increase operation with ERTMS
- Define a set of core common operational rules to be applied on lines equipped with radio based ERTMS stand-alone (ETCS only, i.e. ETCS L2 without lineside signalling)[1]
- Set common principles for development, procurement and liabilities

[1] Requires DAC for freight trains

- Safeguard existing investments and assure the backward compatibility of current ETCS specifications
- Set up a European digital platform publishing the level of the characteristics, as well as the planning of deployment of the ERTMS on the European core network corridors.
- Simplify significantly authorisation and approval procedures (both trackside and on board) and ensure unique approach across Member States.
- Promote the introduction of the new ERTMS or subsystem suppliers in order to increase the competition on the manufacturers' market.

Organization

Setting up a ERTMS EU centralized governance and Program Management by an enforcement role of EU ERTMS Coordinator

Outcomes

- **Recommendations**
- **Guidelines**

Role

Decision making, coordinating, planning, organizing, monitoring

Fields of action

- **ERTMS Integrated trackside & onboard strategy**
- **Coordination and monitoring of ERTMS NDPs**
- **Synchronized ERTMS financing / funding trackside & onboard**
- **System Version Management & backward compatibility**
- **CCS Standard and specification evolution**

CER welcomes the EU Commission revision proposal of the TEN-T Regulation aiming at strengthening the role of the EU ERTMS Coordinator ensuring consistency between the EU ERTMS programs and the ERTMS national plans and promoting the establishment of a centralized governance for managing all ERTMS aspects. The EU ERTMS Coordinator shall support Member States in the implementation of ERTMS deployment obligations and related national investments.

In particular, the new TEN-T provisions enlarge the current mandate of the EU ERTMS coordinator in terms of:

- Defining an ERTMS work plan setting the priorities for infrastructure and investment planning and ensuring the related advancement and consistency of the national investment plan for EU funding (art.51 and 54.1).
- Cooperation between EU ERTMS coordinator and Member States by the designation of a national coordinator for ERTMS (art.52.4)

- Close collaboration with the ERA and Europe's Rail in order to fully share the ERTMS technical specifications evolution (art.54.6).

In the framework of the TEN-T revision, European institutions seem to converge in recognizing a major role to the EU ERTMS Coordinator as promoter and facilitator of ERTMS implementation.

CER strongly favors an enhanced role of the EU ERTMS Coordinator to make radio based ERTMS the backbone of the future digital rail in Europe by means of a centralized approach focused on the following key priorities:

1. ERTMS onboard & trackside synchronized deployment strategy

ERTMS can only bring the expected benefits if both trackside and onboard are deployed in a coordinated way in order to fulfil the ERTMS implementation deadlines set by TEN-T EU legislation.

Considering that between 2015 and 2019, 54% of new locomotives put into operation were not equipped with on board ERTMS, the sector urges for an accelerated implementation of an integrated European onboard and trackside strategy ensuring both innovation and a sustainable migration process.

In parallel, the EU ERTMS Coordinator should identify the best conditions by which Class B systems could be dismissed in a coordinated way between IMs and rail operators setting a sufficient transitional period which would allow the railway undertakings to adapt their fleets accordingly.

In the long term, decommissioning of class B systems may bring significant maintenance savings for infrastructure managers considering the costs and the complexity of deploying ERTMS and of keeping dual trackside systems for a prolonged period.

The European Commission proposes Member States to decommission class B systems trackside by 2040.

It is our belief that, where infrastructure managers can guarantee full interoperability and full access to *on-board ERTMS only* equipped rolling stock, the decision to decommission Class B systems should be left with IMs.

It is necessary, for the ERTMS deployment targets fulfilment, to ensure enough capacity on producer side including high level of service (upgrade availability) and reliability of testing and approval authorities.

CER will support the efforts of the EU ERTMS Coordinator to cooperate closely with the to-be-designated National ERTMS coordinators in order to achieve a coordinated implementation between on-board and trackside ERTMS since it has been recognized that the deployment of trackside ERTMS only makes sense if the corresponding on-board deployment takes place at the same time.

2. Availability of funding

The timely realisation of the ambitious goals of ERTMS deployment will strictly depend on the availability and efficient use of financial resources at national and EU level. In other words, there should be consistency between the TEN-T objectives and the related availability of fundings for both on track & onboard deployment otherwise the overall roll out of ERTMS could be jeopardized.

The European Court of Auditors (ECA) estimated in 2017 that the capital investment for track side ERTMS deployment on the entire TEN-T core network amounts at €80 billion, including digital interlockings, and the costs for onboard retrofitting of the entire fleet are quantified in additional €11 billion. Although these figures shall be updated to the real current costs, it is sure that EU funding can cover only a limited share of these overall costs. Between 2007 and 2020, €3.9 billion were allocated from the EU budget to ERTMS roll-out projects – this is less than 5% of the total deployment costs for the overall network, which explains why global ERTMS deployment is progressing so slowly. The ECA mentioned the need to target cross-border sections and core network corridors, and onboard units for international traffic.

The European governance of ERTMS should have among its objectives the promotion of a coordinated ERTMS trackside-onboard funding, in order to incentive the "dual-onboard" migration and to harmonize and synchronize the rail system-wide ERTMS migration plan.

The sector recognizes that railway undertakings cannot be left alone to equip their fleet and it is crucial to provide improved support both at EU and a national level for the renewal of the fleet or the retrofitting of existing vehicles. In addition, the Directive establishing a Single European Railway Area (Directive 2012/34/EU as amended by Directive 2016/2370) provides for the opportunity for IMs to apply differentiated track access charges to promote ETCS onboard deployment.

The centralized governance should promote an optimised use of the available national and European funding sources (such as CEF -including Blending Facility, the Cohesion Funds, InvestEU as well as the Recovery and Resilience Facility) and establish an open dialogue with the DG Competition for a smoother evaluation and approval of the financial measures, potentially considered as state aid, included in the large-scale ERTMS implementation plans.

CER supports the new governance in promoting financial incentives for radio based ERTMS full deployment taking into account the best practice carried out at the national level, facilitating the access to EU and national funds pushing for an increase of the limit of 50% eligible costs currently contained in the Union Guidelines for State Aid to RUs up to 100%. It is necessary for these targets fulfilment to ensure enough capacity on producer site including high level of service (upgrade availability) and reliability of testing and approval authorities.

3. Systems Versions stability and backwards/forwards compatibility

The main challenge in the ERTMS longer term perspective is how the optimal balance between stability on one side and the evolution of ERTMS specifications and ERTMS

products on the other side can be achieved, while safeguarding interoperability in the most cost-efficient way.

The evolution of specifications is linked to the ongoing technical innovations, the operational needs development and it includes the remaining set of enhancement change requests in the ERTMS specifications database.

Stability is expressed in a different way:

- for vehicle owners means ensuring cost certainty during a sufficient long period and no remaining error corrections in the specifications or products which could endanger the interoperable operation of on-board equipment.
- for Infrastructure Managers means no restrictions in ERTMS deployment at trackside due to not fully compliant ERTMS on-board units or due to remaining errors in the specifications.
- for suppliers means sufficient time between two ERTMS system versions to have sufficient market volume and costs reduction.

The "game changers initiatives" contributing to the future ERTMS evolution shall be developed according to an agreed planning (leaded by a shared and commonly agreed business case) and recognising the compatibility concept to solve the dichotomy between stability and evolution of the ERTMS system.

FRMCS represents one of the 'game changers' of ERTMS in the long-term perspective. Therefore, the migration from GSM-R to FRMCS must take into account the preservation of investment for both on-board and trackside constituents already in service and shall ensure especially a compatibility of FRMCS to Baseline 3 (SV 2.1) on-board units.

The upcoming phase-out of the Global System for Mobile Communications-Railway (GSM-R) in favour of the Future Railway Mobile Communication System (FRMCS) poses an immediate and complex challenge for the railways. GSM-R, the backbone of train communication and signalling since the 1990s, is becoming outdated and less secure. In contrast, FRMCS, based on cutting-edge 5G technology, promises higher data rates, lower latency, and better cybersecurity. Yet, it is anticipated that GSM-R will gradually phase out from 2030-2032 onwards, contingent on (national) maintenance agreements. A core issue lies in the compatibility—or lack thereof—between FRMCS and vehicles using the European Train Control System (ETCS) Baseline 3. The current technical guidelines (TSI CCS 2023) do not provide interoperability between these two systems. This problem arises from the specific technical architecture chosen for ETCS Baseline 3. While ETCS System Version 3.0 (Baseline 4, and beyond) is expected to be compatible with FRMCS, there's a glaring gap for existing Baseline 3 equipped fleets or fleets in the process of Baseline 3 implementation. From our analysis based on the situation within eight European countries, by 2030-35, nearly 31,600 vehicles will require migration to FRMCS. Of these, approximately 10,900 are equipped with ETCS Baseline 3. Migrating these vehicles to Baseline 4 is not only expensive—with estimated sunk costs ranging from €3.3 billion to €8.7 billion—but also practically infeasible given the tight timeframe. Even if these costs were somehow recouped, achieving FRMCS compatibility for the existing ETCS fleet is a monumental task.

The introduction of new functions, in a compatible way, is not always feasible, therefore technical solutions should be developed enabling the trackside subsystem to act differently based on the system version supported by the connected on-board subsystem, at least for ERTMS radio-based applications. This will facilitate the migration towards new functions without limiting the operation of the existing vehicles not yet retrofitted and, at the same time, to start getting advantages for the vehicles embedding the new functions.

It is necessary to:

- find acceptable balance between innovation process and investments protection.
- take into account, that it is not about financial support of upgrade only.
- put vehicles out of service for long period especially in retrofit cases.

In addition, there is a need for an automated ERA Conformity to Type to accelerate the overall process of ERTMS rollout, when it comes to retrofitting rolling stock.

The rail sector calls for the completeness and maturity of system version 3 including all specifications as required by the 2023 CCS TSI and a postponement of requirements in case of the absence of mandatory specifications.

The rail sector is fully aware that the ERTMS evolution should take place in a non-disruptive way, and, to this end, a broader standardisation approach should be privileged. In addition, technical solutions should be implemented in order to embed future ERTMS developments while leaving enough time to amortise current investments.

4. Harmonised operational rules (TSI OPE 2023, Appendix A)

CER considers essential the harmonisation of relevant ERTMS operational rules. In order to fulfil the potential of ERTMS contributing to the modal shift required under the Green Deal, the current harmonized ERTMS operational rules have to be further developed and/or extended in parallel with harmonization of trackside engineering rules, as much as reasonably possible. To that end, the harmonization effort taking place in the System Pillar must be supported.

The governance should facilitate the application of harmonised common operational rules on lines equipped with ERTMS only.

5. Simplified authorisation and approval procedures

Up to now, the way to authorise any sub-system (trackside or on-board) is a unique combination of:

- verifications, certificates, declarations of conformity, proof of compliance, examination procedures… (all these words are used in chapter 6 of the CCS TSI).
- which needs lot of tests, test sequences, checks, assessments, impact analysis, verifications, validation processes, controls, (all these words are used in chapter 6 of the CCS TSI)
    - carried out by a lot of actors (AsBo, DeBo, NoBo, NSAs, ERA) according to documents not all easily findable (TSI, Subsets, ESC/RSC, NTR, specific cases, strictly local rules…).

Concerning Trackside Approval (TA): the current procedure goes far beyond what is required by the legal texts (Directive 2016/797 art 19.2): *"In order to ensure the harmonised implementation of ERTMS and interoperability at Union level, before any call for tenders relating to ERTMS track-side equipment, the Agency shall check that the technical solutions envisaged are fully compliant with the relevant TSIs and are therefore fully interoperable."* Considering the first return of experience from IMs, in concrete, ERA

asks detailed information available only in advanced project stage, therefore it is not possible to close the approval procedure earlier.

For this reason, it is necessary to optimize the Trackside Approval process in order to only evaluate the tender documents to be in line with the above art. 19. Similarly, all potentials to further streamline the on-board authorization process should be identified and implemented to improve efficiency and reduce costs.