

## **Deploying CCS TSI 2022 – Jumping over the current challenges**

Joint CER, UNIFE/UNISIG, AERRL paper

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### **Context and general objective**

The on-going revision of the CCS TSI reveals several challenges for the railway sector. This paper describes what those challenges are and proposes a common sectoral solution to keep the railway sector competitive, safe and interoperable and to prevent undue costs.

It is our sectoral belief and recommendation to the Agency, the Commission and the Member States that the CCS TSI requires substantial improvements on the following topics, to keep the railway sector competitive before it can be accepted:

1. Error corrections through the maintenance of specifications: improvements are needed in the process and the timeline to give the actors a reasonable timeframe to correct specification errors affecting the safety or operation with an unacceptable level of performance.
2. Train modularity: We need to further improve the specifications to the level of detail and quality that will satisfy both suppliers and users.
3. CR1370: a practical solution for Baseline 3 trackside and vehicles is required under the authority of ERA.
4. Request for a clause on exceptional deviations to replace Partial fulfilment
5. Suitable funding and financing options programs in place for feasible evolutions: an EU subsidization scheme based on realistic unitary costs and on a realistic view of the industry's capabilities must be developed.
6. Sectoral agreement requested prior to adoption of ETCS Baseline 4 (ETCS System version 3.0) and RMR Baseline 1

### **1 - Improvement needed on the process and timeline regarding specification maintenance in CCS TSI**

The sectorial agreement reached early 2021 on error corrections welcomed that the current error correction process should be improved whenever safety or operations are endangered. Yet this agreement left open the feasibility and the timeline of the new error correction process, the necessary logistical resources and the time to modify the fleet and infrastructures, and as well as the cost impacts for implementing the corrections. We do believe, as suggested by the Commission, that a sound cost /benefit analysis must be performed. We strongly recommend a full impact assessment on the batch of error corrections, as required by a specific transition regime.

The cost of correcting specification errors for a concerned fleet ranges between 10 M€ and 33 M€ for series of 30 to 100 vehicles and would require increasing the fleet size to maintain the same level of

traffic. Those figures include the cost of development, product certification and qualification, assessment, and of the modification on fleet in workshops.

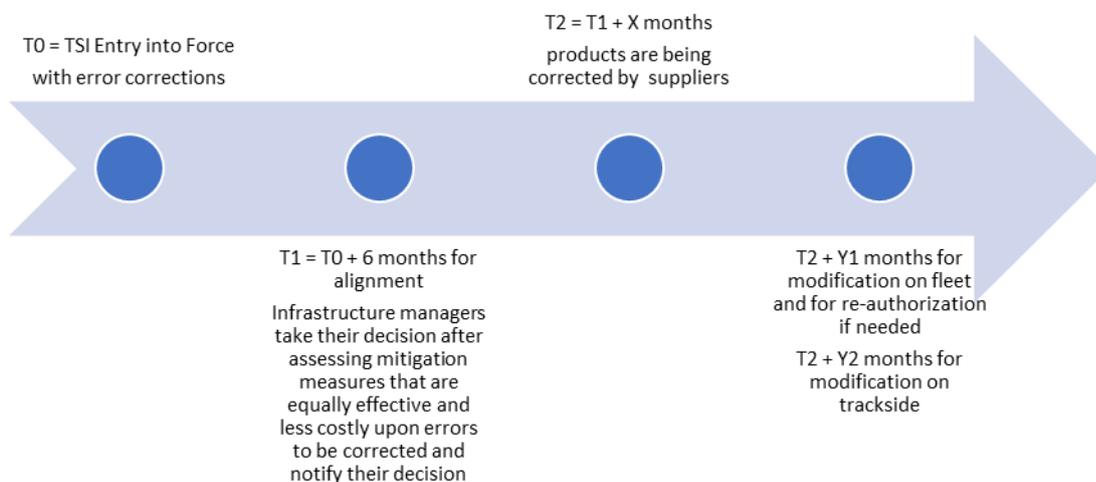
The cost of correcting specification errors for a concerned infrastructure ranges between 3 M€ and 100 M€ for a medium line (450 km). Those figures include the cost of development, engineering, studies, modification of the trackside and re-authorization.

The implementation schedule cannot be drawn up until the following elements are defined:

- Errors that need to be corrected and impacts analysis on design;
- The lines and paths affected by these corrections in specifications in order to analyze and prioritize the rolling stocks affected by these errors from those which are not;
- Lead times for the design of equipment to integrate these changes in rolling stock, prioritizing cases according to the second point.

From this moment only, it will be possible to build an application schedule on the concerned rolling stocks and trackside.

Below, a feasible timeline is presented for on-board specification error corrections based on current experience on that respect. This timeframe takes in assumption **that human and financial resources are available at both suppliers and operators' side:**



So far, from past experiences, specification error corrections could never be proposed by suppliers in delivered IC and products in operation, but through a functional change to align with supplier's strategical product plan. If a supplier is not able to apply error corrections for products in operation, **then a change in the generic product line in this process is dramatically time-consuming and costly for the fitted existing fleet: new authorization, greater risks on specific products, etc....** An achievable process needs therefore **to clearly separate the deadlines for suppliers and operators.**

We propose to split the timeline between suppliers and operators (IM and RU) as agreed by ERA and to adjust the default transition timeline for the operators to an achievable timeline:

- X months for suppliers and
- Y1 or Y2 months for operators, once products are updated and available.

**The process should also propose a more flexible deadline for operators:** Give a possibility in the TSI to extend the transition timeline for implementation in the TSI to be able (e.g.) to link it with the upgrade cycle as already planned and agreed by RUs and IMs.

A tangible way-ahead regarding error corrections process timeline is proposed as follows:

- Start 6 months after the Entry into Force because IMs must assess the impact on their network and address alternative solutions and because suppliers must identify the concerned products.
- Give priority to mitigation measures if they are equally effective and less costly.
- Suppliers need then to answer when they can deliver an update for each impacted existing fleet and infrastructure:
  - Assess the implementation costs for existing products and ICs and when updated products can be available,
  - Assess a complete package of specification errors and estimate the achievable timeline.
- Relax the period of TSI (maintenance) to avoid an avalanche effect of assessments, certifications and re-authorizations. The planning of maintenance release should be done with all concerned parties under the authority of ERA depending on the content.
- Clearly specify in the CCS TSI that specification error corrections will have no impact on vehicle authorization and will only lead to a new version of the authorization type.
- Limit the error correction process to only the trackside and vehicles concerned in their area of use considering their conditions of use.
- Introduce funding schemes for correction of specification errors in rolling stock and trackside on European level.
- Organize the return of experience of the error correction process.

DG Move and ERA expressed in their letters (28/02/2022 to UNIFE; 11/02/2022 to CER) the opportunity to agree between the concerned stakeholders (including keepers) on an implementation for a given set of specification errors. This opportunity seems to be defined now in the latest version of the CCS TSI, however the texts remain under further evaluation.

## **2 - Train modularity**

1. We share similar views on what is expected of the CCS TSI specifications to enable the large-scale roll out in a healthy competition (i.e., ease of adaptation, optimized modularity and reusability for retrofit and new fleets, reach sustainable total cost of ownership and avoid project investment risks).
2. The long-term discussion on this subject needs to be resolved in ERJU SP for subsequent TSI releases.

**Way forward:** A close collaboration between CER, UNIFE/UNISIG, AERRL and ERA is needed to improve the relevant CCS TSI specifications in the ERJU SP for a subsequent TSI.

This discussion should continue in ERA's on-board architecture TWG until it can be handed over and be infused into the ERJU SP.

### **3 - CR1370 Relocation without linking**

1. Determination of this CR1370 as an enhancement CR for the TSI CCS 2022 creates compatibility issues, introduces a new system version and conformity obligations.
2. A harmonised solution, fully supported by the railway sector, is needed.

Related CR's:

- CR1313 : Unclear train position on unlinked BG
- CR782 : Reset of confidence interval

**Way forward:**

1. Existing or future vehicles with partial implementation of CR782 will be allowed to continue operation or be placed in operation based on NTRs, as long as there is no harmonized solution solving the issues of the added complexity to the current on-board with unmanageable implementation risks and excessive cost.
2. We take CR1370 out of the TSI 2022 basket and postpone it for later inclusion. We still appreciate a harmonized solution, but this will give us more time to achieve a fully supported solution by the railway sector. Therefore, CR1313 should be restored in the basket for TSI 2022. Notwithstanding, we will continue to propose a cost-efficient harmonized solution for CR1370 together with ERA, which shall be implemented as early as reasonably possible.
3. We change the classification of CR1370 to error CR. This will provide the legal basis to be able to use NTRs during the time until the harmonized solution solves the points above and is thus operational. It will also make it possible to introduce the harmonized solution as an agreed error correction before the next maintenance release of the TSI after 2022, with an appropriate transition regime.
4. The involved railways will try, together with the industry, to harmonize the NTRs. This would avoid that new entrant RUs are confronted with diverging requirements. Such a harmonized NTR could even be the basis for a new harmonized solution for the CCS TSI.
5. To keep the impact for the on-board as small as possible, we could investigate if it is worthwhile to implement only the relevant scenarios in the on-board part of the harmonized solution and exclude the unnecessary scenarios by means of engineering restrictions (Subset-040).

### **4 - Request for a clause on exceptional deviations to replace Partial fulfilment**

Current status: TSI chapters about "partial fulfilment" are deleted. Products have to implement all functions in 100 % compliance to the CCS TSI, even if some functions are not requested for the area of use. Partial fulfilment has been quite a common practice until today, all projects make use of this as it enables rolling stock owners to decide what functionality is needed to operate in their chosen area of use. For the future, this must be changed and all functions within the interoperable system core (= all mandatory requirements) must be implemented. Our common goal should be the interoperability and

safety of the rail network system – the compliance to the specifications is a means to that goal, not an objective in itself.

Way forward:

- Exceptional deviations may be necessary when resulting from immature requirements, (introduced for new functions), immature test cases or errors in the specifications;
- Exceptional deviations with the CCS TSI are to be further described for the TSI text. An exceptional deviation is a deviation discovered during the integration, verification or validation activities;
- Conformity to the CCS TSI is the expected outcome of any project and product. When exceptional deviations have no impact on interoperability, technical compatibility, nor safety, the TSI should clarify how a NoBo can accept deviations in order to avoid blocking projects and products;
- If the reason for deviation is an error in a specification or in a test case, it has to be ensured by processes that the corresponding requirement or test case is further analysed and if needed corrected;
- Without a new formulation on the acceptance criteria for deviations and the core functionalities on which it applies, the chapters should remain as in the former CCS TSI.

## **5 - Suitable funding and financing programs in place for feasible evolutions**

With 46% of new vehicles equipped with ETCS in recent years between 2014 and 2019 and even more after that, ETCS on-board deployment is a success. The introduction of any evolution should be submitted to an economic and feasibility analysis. Any impacts on existing projects or the installed base should by principle be avoided, for economic and environmental reasons (obsolescence risk and circular economy).

Avoiding bespoke individual solutions helps the suppliers in producing budget compliant solutions. Nevertheless, if clear indicators can be produced that manufacturers can timely face the evolutions, the EU should conceive an extended funding program based on new criteria.

ERA planning and transition period must be linked with clear industrial capabilities and commitments on one hand and based on the needs of the railway undertakings to reach the market share development on the other hand. No on-board upgrade should be compulsory if not based on clearly defined needs of railway undertakings.

The investments in rolling stock related to ERTMS equipment hereto, are mainly on the account of the keepers of locomotives and trainsets. The subsidies granted by the European Commission are today far too low and barely cover 20% of the investments made, this level being even lower for rolling stock that is over 15 years old. As a result, the past subsidy policy of very small steps must be replaced by a consistent funding plan especially for rolling stock, which as a result will also support a consistent and stringent deployment plan for ERTMS. Rolling stock keepers are ready to take up the challenge of installing ERTMS to decommission Class B systems. We consider that upgrade and update ambitions are only possible on the sole condition of full (100%) subsidy support by Europe with -at least partial-

upfront payment and with a parallel cost control policy in order to avoid speculative increase of prices. In addition, a compensation should be foreseen for previous investments and for upgrade down time.

Finally, project processes should be reviewed to give more flexibility to the grant duration (considering issues of fleet availability in case of retrofit) and to reduce the administrative burden on beneficiaries, especially after the first series is completed.

## **6 - Sector agreement requested prior to the adoption of ETCS Baseline 4 (ETCS System Version 3.0) and RMR Baseline 1**

We need stabilisation of the applicability of ERTMS technology. More generally, a stable Baseline roadmap makes it possible to gain control over the roll-out of ERTMS and its continuation. We see limited incentives to invest for the CCS European market from 2023 if there is no sufficient functional added-value and if the specifications are not yet at a sufficient level of maturity to give confidence in the roll-out.

**Way forward:** A sectoral agreement between all economic actors is needed to guarantee that deployment in Europe is conducted under **a long-term planning of the evolution of the specifications for ETCS and RMR**. A major change in system version is taken when the considered step is significant for the roll-out and when it meets customer needs (given the improved competitiveness of the final product). Each mandatory evolution for the On-Board equipment is clearly motivated by the needs of the railway undertakings to reach the market share development and the capability of suppliers to implement a stable solution for new technologies in IC and rolling stock.

## **Conclusion**

CER, AERLL, and UNIFE/UNISIG strongly believe in the need to move towards a single, interoperable European railway area as a key to improve the competitiveness of rail system as a mode of transport and ensure it supports Europe's path towards climate neutrality.

TSI implementation provisions are a critical enabler of this transition, as they set the pace for investment decisions towards the target system.

Thus, a proper balance must be found to prioritize make the best use of the sector's limited financial and human resources on activities with the highest added value: this is the underlying principle supporting the proposals outlined above. Our aim is to prevent mandatory investments with limited or no added value for the rail system and its customers.

We look forward to our continued engagement with the ERA, EC and Member States on the topics outlined above. We reiterate that without these improvements, the result would be detrimental to the railway competitiveness. If the improvements we propose are not accepted, we all (CER, AERLL, UNIFE/UNISIG) strongly believe that it would jeopardize the railway competitiveness.