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ACCOMPANYING REPORT N. 011REC1028 TO THE RECOMMENDATION OF THE EUROPEAN UNION AGENCY FOR RAILWAYS

on

the amendment of COMMISSION REGULATION (EU) 2016/919 on the technical specification for interoperability relating to the 'control-command and signalling' subsystems of the rail system in the European Union

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1. Executive summary

This accompanying report complements the recommendation N. 011REC1028 of the European Union Agency for Railways on the amendment of the Commission Regulation (EU) 2016/919 of 27 May 2016 concerning a technical specification for interoperability relating to the 'control-command and signalling' subsystems of rail system in the European Union. (CCS TSI) [10]

It details the legal basis for the revision of these legal acts, the workgroup, the working methods, the main aspects covered and the position of the stakeholders. It also contains the reasoning behind each recommended text change in the legal act above.

The main target of this amendment is to align the legal act above with the new provisions of the Directive (EU) 2016/797 [7], in order to take into account changes in the procedure for placing mobile subsystems on the market, including the checks before the first use of authorised vehicles and provisions applicable to existing subsystems and vehicles, in particular in the event of their upgrading and renewal.

In the revision procedure, some additional topics has been agreed with the stakeholders in the meetings held, that complements the scope of the revision. For all these topics the Change Control Management procedure [3] has been followed, defining one change request for each of them. The content of each change request is detailed in this report.

The scope of the revision is the CCS TSI annex text and there are no changes on the technical documents in Annex A that defines the baselines for ETCS and GSM-R, to preserve the stability of the specifications.

2. Introduction

This accompanying report complements the recommendation N. 011REC1028 of the European Union Agency for Railways on the amendment of the Commission Regulation (EU) 2016/919 of 27 May 2016 concerning a technical specification for interoperability relating to the 'control-command and signalling' subsystems of rail system in the European Union. (CCS TSI) [10]

It deals with the technical and organisational aspects, which lead to the text of the recommendation whereas another accompanying document to the recommendation - impact assessment - deals with the related economic aspects.

Delegated Decision (EU) 2017/1474 [8] sets out the specific objectives applicable to all TSIs and to specific TSIs. Its Article 7 defines the specific objectives applicable to CCS TSI.

The whereas 13 of the Delegated Decision [8] above states that: *'Article 4(3)(h) of Directive (EU) 2016/797 allows TSIs to include provisions applicable to existing subsystems and vehicles, in particular in the event of their upgrading and renewal. Those provisions can give rise to legal uncertainty in case of authorisations which are already issued, therefore there should be particular attention to the preliminary analysis of the related costs and benefits and to the definition of the modification works which require an application for a new authorisation.'*

The whereas 14 of the Delegated Decision [8] above states that: *'In order to ensure efficiency in the processes of placing on the market and placing in service of vehicles, the TSIs should provide certainty as to which parameters of a vehicle should be checked as part of the authorisation procedures in accordance with Articles 21 and 24 of Directive (EU) 2016/797 and which parameters should be checked by the railway undertakings after the delivery of the vehicle authorisation for placing on the market and before the first use of the vehicle to ensure compatibility between vehicles and the routes on which they are to be operated. The TSIs should also clarify the procedures to be followed by the railway undertakings to ensure compatibility between complete trains, including intermodal transport units, and the routes on which they are to be operated as well as, to the extent possible, the information to be provided by the infrastructure managers and the conditions under which railway undertakings should be granted network access to carry out related tests.'*

A letter from the European Commission to the European Union Agency for Railways entitled *'Request for recommendations to the Commission pursuant to Article 5 paragraph 2 of the Directive (EU) 2016/797'*, ref. MOVE/C.4/BC/tg [1], mandates the European Union Agency for Railways *'the integration of additional chapters as required in Article 4 of the Interoperability Directive (EU) 2016/797'* plus specific objectives set out in Article 7 of the Delegated Decision [8] above with a deadline of December 2018.

The legal base for the European Union Agency for Railways to issue the recommendation is Article 4(a) of Directive (EU) 2016/797 [7]: *'The Agency may address recommendations to the Commission concerning the application of Articles 13, 15, 17, 19, 35, 36 and 37.'* as well as Article 19(1)(a): *'The Agency shall address recommendations to the Commission on the TSIs and their revision, in accordance with Article 5 of Directive (EU) 2016/797'*. Also the Articles 4(a) and 19(a) of the Regulation (EU) 2016/796 on the European Union Agency for Railways [6].

3. Workgroups

3.1. CCS TSI working party

Working party meetings were organised, to which participants came from 6 representative bodies (CER, EIM, NB-RAIL, ROC IG, UITP, UNIFE) and from 15 national safety authorities (AT, BE, CH, DE, DK, ES, FI, FR, IT, NL, NO, PL, SE, SI, UK).

The European Commission participated to meetings of the working party as they deemed necessary.

3.2. Train detection compatibility working group

The Train Detection Compatibility (TDC) working group has the specific scope of dealing with the train detection compatibility and EMC between the rolling stock subsystems and the train detection part of the trackside control command and signalling subsystem. Meetings were organised, to which participants came from 4 representative bodies (CER, EIM, NB-RAIL, UNIFE).

3.3. Meetings participation

The tables 1 and 2 below summarise the attendance of all representative bodies, national safety authorities and other organisations, which replied to the Agency's invitation to the working party and the workgroup.

Table 1 – CCS TSI working party

Organisation	Kick-off CCS WP #40 11/05/2017	Meeting CCS WP #41 13/12/2017	Meeting CCS WP #42 04/10/2017	Ad-hoc Meeting #1 13/12/2017	Ad-hoc Meeting #2 24/01/2018	Meeting CCS WP #43 07/02/2018	Meeting CCS WP #44 18/04/2018	Meeting CCS WP #45 27/06/2018	Meeting CCS WP #46 05/09/2018
CER	Y	Y	Y	Y	Y	Y	Y	Y	Y
EIM	Y	Y	Y			Y	Y	Y	Y
NB-RAIL	Y	Y	Y	Y	Y	Y	Y	Y	Y
ROC-IG	Y	Y	Y			Y	Y	Y	Y
UITP							Y	Y	Y
UNIFE	Y	Y	Y	Y	Y	Y	Y	Y	Y
NSA AT			Y	Y				Y	
NSA BE	Y	Y	Y	Y	Y	Y	Y	Y	Y
NSA CH				Y	Y		Y	Y	Y
NSA DE	Y	Y	Y	Y	Y	Y	Y	Y	Y
NSA DK	Y	Y	Y		Y	Y	Y	Y	Y
NSA ES	Y		Y	Y	Y	Y	Y	Y	Y
NSA FI				Y		Y	Y	Y	Y
NSA FR				Y	Y	Y	Y	Y	Y
NSA IT							Y		
NSA NL					Y		Y	Y	Y
NSA NO	Y		Y	Y	Y	Y	Y	Y	

Organisation	Kick-off CCS WP #40 11/05/2017	Meeting CCS WP #41 13/12/2017	Meeting CCS WP #42 04/10/2017	Ad-hoc Meeting #1 13/12/2017	Ad-hoc Meeting #2 24/01/2018	Meeting CCS WP #43 07/02/2018	Meeting CCS WP #44 18/04/2018	Meeting CCS WP #45 27/06/2018	Meeting CCS WP #46 05/09/2018
NSA PL								Y	Y
NSA SE	Y	Y	Y	Y	Y	Y	Y	Y	Y
NSA SI								Y	Y
NSA UK		Y	Y			Y		Y	Y

Table 2 – TDC work group

Organisation	TDC WG #39 22/06/2017	TDC WG #40 21/09/2017	TDC WG #41 29/11/2017	TDC WG #42 01/02/2018	TDC WG #43 17/04/2018	TDC WG #44 13/06/2018	TDC WG #45 20/09/2018
CER	Y	Y	Y	Y	Y	Y	Y
EIM	Y	Y	Y	Y	Y	Y	Y
NB-RAIL				Y	Y	Y	Y
UNIFE	Y	Y	Y	Y	Y	Y	Y

4. Working methods

The Agency chaired, managed and coordinated the meetings. It ensured interface with its other activities and tasks. It applied relevant internal procedures and guidelines (e.g. procedure on issuing a recommendation or guide for drafting TSIs). It took into account the final output of the WP; however, it had the right to deviate from it, when justified.

The represented organisations were required to ensure continuity of their representative members for the duration of the WP. Whenever possible, the representative members were required to express their organisation's position in advance of the WP meetings through written methods, such as commenting on the draft documents or the draft minutes of the WP meetings. Representative members were also required to express the view of their organisation during the WP meetings. If this opinion has not been validated by their represented organisation, it should have been indicated as such. In order to achieve a common and agreed position of their organisation, the members should have shared pre- and post- meeting information within their organisations. The organisations were expected to facilitate the internal exchange of opinions and the elaboration of their position.

The text of the recommendations was prepared by the Agency based on a working document, which gathered together the current legal texts and the amendments to them needed to align it with the new provisions of the Directive (EU) 2016/797 [7].

The working documents was thoroughly discussed during every WP meeting. Before each WP meeting, the Agency prepared a new version and set a deadline for receiving comments to it from the WP members. After this deadline, the Agency incorporated all comments received and this document formed the basis for the discussions during the WP meeting. Based on these discussions, the Agency prepared a new version for a next WP meeting. In the working party meetings 4 draft version of the CCS TSI revision were discussed and the last version included in this recommendation, named version 5, consolidates the comments received to the 4 previous versions.

To facilitate exchange of documents, an extranet workspace of the project was established at:

<https://extranet.era.europa.eu/CCSWP>.

This workspace gathers all documents of the project and is accessible to the working party members and their deputies as well as to all experts involved in other working parties organised by the Agency.

According to the CCM procedure [3], 10 CR were initially defined to cover the topics agrees to be included in the CCS TSI revision:

- CR 001: Modifications in authorized subsystem
- CR 002: Route compatibility
- CR 003: Chapter 6 – Testing and Validation
- CR 004: Train detection compatibility
- CR 005: Editorial & Miscellaneous updates
- CR 006: Harmonization of NoBo documentation (Template for deviations)
- CR 007: Incorporation of Opinion 2017/5 about test specifications
- CR 008: Levels and in-fill options inconsistent provisions
- CR 009: Common Safety Methods Risk Assessment and CENELEC Safety standards
- CR 010: Migration provisions for the Next Generation Communication Systems

The two first CRs (CR 001 and 002) are the main objective of the CCS TSI revision to include the required elements in the Interoperability Directive (EU) 2016/797 [7] in articles 4.3.h and 4.3.i.

The CR 003 was initially included to review the scope of chapter 6, but it was agreed to be superseded by the previous CR mentioned above, that already includes the changes on that chapter.

The CR 004 covers all the topics discussed in the TDC workgroup, in particular, the definition of the axle counter as an interoperability constituent and the version 4 of the ERA/ERTMS/033281 interface document.

The CR 005 includes all the editorial and clarification updates, together with some other general request from the sector.

The CR 006 was rejected because the scope is covered by the Agency work on the templates for the EC Declaration for Verification.

The CR 007 includes the changes proposed in the Agency's opinion ERA/OPI/2017-5 on the ETCS test specifications.

The CR 008 includes the necessary clarifications on the CCS TSI text about the application levels and in-fill options on the CCS trackside subsystem, and the relation with the CCS on-board subsystem.

The CR 009 covers the necessary clarifications of the relation between the Common Safety Method on Risk Assessment [18] and the CENELEC safety standards mentioned in the CCS TSI Annex A Table A.3.

The CR 010 provides general migration provisions toward the Next Generation Communication System which specifications are currently being develop by the sector.

In the following section, the content of the included CR is detailed together with the final proposed amendment to the CCS TSI. As result of the CCM procedure, it is available a track changed version of the CCS TSI Annex A identifying each proposed change with the corresponding CR.

5. Main aspects covered

5.1. CR 001 - Modifications in authorized subsystems

5.1.1. Introduction

As indicated in the recommendation 006REC1025 the Agency took into account the Articles 13, 15 and 16 of the Commission Implementing Regulation (EU) 2018/545 [9] plus Decision 2010/713/EC [17].

The CCS related BDCs were defined for the on-board subsystem, together with the conditions to classify the changes triggering a version or a variant according to the criteria defined in article 15 of the Implementing Regulation 2018/545 establishing practical arrangement for vehicle authorisation [9]. These versions and variants will be recorded in ERA TV [15].

Also the changes of the trackside subsystem that will require a new authorisation were analysed on the basis of the Interoperability Directive 2016/797 [7] Article 18(6).

As requested by Delegated Decision (EU) 2017/1474 [8] in the Article 7.4 *“the CCS TSI shall provide a mechanism for a swift correction of errors taking into account the compatibility between trackside and on-board subsystems. That mechanism shall include corrective measures to ensure compatibility of ERTMS implementation without jeopardising the stability of the ERTMS. Additional measures to ensure technical compatibility between trackside and on-board subsystems shall be included where appropriate”*.

Following that request it was defined the process and the related conditions, in relation with the previously defined BDC, to allow the correction of the errors that does not have an impact on the intended functionality, the compatibility between the subsystems or the interfaces of the on-board subsystem. This kind of error corrections can be implemented in the CCS on-board subsystem without the need of new authorisation.

5.1.2. Proposed amendments

The proposed amendments to include the definition of the ESC/RSC compatibility checks were introduced in sections 4.5, 6.5, new section 7.2.1a to define the BDC and the corresponding criteria for triggering versions or variants, 7.2.2b to define the CCS TSI criteria for changes trackside requiring a new authorisation.

5.1.3. Position of stakeholders

5.1.3.1. UNIFE (UNISIG)

1.) Process to handle minor modifications without triggering a new authorization;

Error corrections for already authorized systems are an important means to improve safety and quality of the railways. Error corrections are often only minor modifications, which do not have any impact on the basic design characteristics. Nevertheless, it is common practice to re-authorize the on-board CCS subsystem after almost every modification however small its significance or impact. In the vast majority of minor modification the same process has to be carried out as with major upgrades e.g. from BL2 to BL3. This entails independent internal checks of the manufacturer by system validation according to EN50128/50129 as well as third party assessments by NoBo, DeBo, ISA, AsBo and the NSAs. The costs of carrying out even a minor modification are substantial, and consequently activities to increase quality and safety of the affected system slow down. Experience has shown that after system modifications, which do not affect basic design characteristics and which only have a stabilizing effect on the already approved target functions, findings by conformity and safety assessment bodies are very limited.

We are still concerned that the currently proposed text is difficult to interpret. This will trigger discussions between suppliers, external conformity and safety assessment bodies and authorising entities.

In addition, the replacement of SIM card has been added in column 3 of table 7.1. We believe this is a mistake and is not consistent with table 6.2 which states “Changing the SIM card with another one compliant with the TSI is not a modification of the Subsystem.”. The fact that changing SIM card is now classified as a change impacting a Basic Design Characteristic will trigger an update of technical file by the NoBo, a new type version and an update of the type register (ERATV). This approach is substantially different from the previous TSI in which changing a SIM card was not considered a modification of the subsystem (as still stated in table 6.2).

5.1.3.2. NSA DE

In principle, NSA DE appreciates the efforts of the Agency to describe the procedure and criteria for modifications in authorised systems in the draft CCS TSI. At the beginning of the process of revising the CCS TSI there was the common expectation of the stakeholders that this procedure shall provide clarity in which cases a modification to an authorized system requires a new authorisation. From the point of view of NSA DE, this goal is not achieved with the current text proposal of the Agency. Especially Table 7.1 leaves room for interpretation, does not provide clarity at all and might lead to misinterpretation among stakeholders. Therefore, NSA DE strongly recommends to revise chapter 7.2 including Table 7.1 for a better comprehension.

Apart from the need of editorial improvement, NSA DE considers it necessary to include criteria related to safety in the CCS TSI with regard to modifications in authorized systems. Explicit safety criteria would help to have a harmonized European approach for deciding which modifications trigger a new authorization and which modifications do not. In the current draft only the interoperability aspect is covered. To include safety criteria in the TSI is in line with what is stated in the Interoperability Directive 2016/797 Art. 21 (12) c).

In addition, we do not see the value of establishing a similar process for CCS trackside equipment as it is a task of the NSA to authorize infrastructure/ trackside CCS.

5.2. CR 002 – Route compatibility

5.2.1. Introduction

As already indicated in the recommendation 006REC1025 [2], it is important to explain differences between:

- Technical compatibility between a vehicle and the network(s) in the area of use that is demonstrated by an applicant at **authorisation level** (article 21.3(d) of ID [7]) and,
- Route compatibility check, done **after authorisation** and before the use of a vehicle, (article 23 of ID [7]) between a vehicle and an intended route checked by a railway undertaking on the basis of :
 - o Vehicle characteristics (as authorised);
 - o Route characteristics using RINF and information from Infrastructure manager(e.g. when RINF is not yet populated);

Once authorised, the technical compatibility check with the networks of the vehicle’s Area of Use shall not be repeated by the railway undertaking or the infrastructure manager at the time of the route compatibility check.

Due to the variance in national CCS equipment (e.g. interlocking’s), engineering and operational rules, deficiencies in the specifications, different interpretations, design errors or equipment being installed incorrectly and the status of the migration to fully compliant CCS Subsystems, checks shall be performed in order to demonstrate the technical compatibility of the CCS Subsystems in the area of use of a vehicle. The necessity of this checks shall be considered as a temporary measure to increase the confidence on the

technical compatibility between the CCS subsystems. The radio part of the CCS trackside subsystem in many cases was placed in service much earlier than the on-board subsystems, according to versions of the specifications no longer referenced in the Annex A of CCS TSI, which may raise doubts on their compatibility.

These proposed checks are defined in the proposed section 4.2.17 as:

- **ETCS System Compatibility (ESC)** shall be the recording of technical compatibility between ETCS on-board and ETCS trackside parts of the CCS subsystems within an area of use.
- **Radio System Compatibility (RSC)** shall be the recording of technical compatibility between voice or data radio and GSM-R trackside parts of the CCS subsystems.

ERA will publish and manage a technical document describing those checks. The Infrastructure Manager shall notify to the Agency the definition of the necessary check to demonstrate this technical compatibility. The code assigned will be the one to be used in RINF [16] to identify the necessary ESC/RSC.

Infrastructure Manager (IM) shall classify each sections of their lines the necessary checks for ESC and RSC, for demonstrating technical compatibility between vehicle and networks of area of use. Can be one type for the complete network in one or several Member State(s) or several types for several lines.

For the demonstration of the technical compatibility of the vehicle with the selected area of use for the vehicle authorisation, the applicant shall perform the checks defined in the relevant ETCS & Radio System Compatibility rules and provided the evidence to include the results on the authorisation for the vehicle. These evidences of the result of the ESC/RSC are checked NoBo based on the technical document from the Agency. It is clarified that the NoBo shall not check again any aspect already covered by the subsystem certificate.

For the route compatibility no mandatory tests are foreseen. The RU shall made a comparison between the ETCS & Radio System Compatibility value required in RINF and the one included in the vehicle authorisation. The CCS on-board subsystem BDC Table 7.1 is updated to include all the necessary elements in ERA TV [15] to be check with the relevant parameter in RINF [16].

The current proposal is based on the sector inputs from the Testing & Validation workgroup of the ERTMS Stakeholder's platform. It's a starting point for increasing the transparency on the current situation where the compatibility checks are required nationally to run on each infrastructure. With this proposal a higher level of harmonisation is expected among the required checks, aiming to a future reduction of the number of different checks, once the confidence and the compliancy of the products is increased.

The proposal is based on the possibility of performing a higher proportion of the checks in labs, increasing the efficiency of the procedure. Also it is possible to avoid the repetition of the already executed checks and to consider the checks already performed at the interoperability constituent level. In this sense a greater level of proven technical compatibility of the on-board subsystem can be achieved.

Clarification of the relations between SS-076, the Operational Test Scenarios, and the former compatibility test were also considered.

5.2.2. *Proposed amendments*

The proposed amendments to include the definition of the ESC/RSC compatibility checks were introduced in sections 4.1, 4.2.17, 4.9, 6.1.2, 6.2.5, Table 6.2, 6.3.3.1, Table 6.3, 6.5, 7.5a.

The parameters to be updated in Annex 2 of ERA TV [15] are already included in Annex 3 of the Agency's recommendation 006REC1025 [2].

The parameters indicated in section 4.9 to perform the Route Compatibility Checks, are considered in Appendix D1 of TSI OPE [14], and already included in Annex 4 of the Agency's recommendation 006REC1025 [2].

5.2.3. Position of stakeholders

5.2.3.1. UNIFE (UNISIG)

2.) ETCS system compatibility;

One of the key objectives of ETCS is to ensure full European-wide interoperability of train control systems and reach a situation where the “free circulation of ETCS equipped vehicles” over ETCS-equipped lines in Europe is technically possible. One of the essential requirements for ETCS interoperability is ETCS System Compatibility (ESC).

ESC requires Technical Compatibility of the on-board and trackside subsystem built by (separate) manufacturers. Even if each manufacturer takes all endeavours to build quality into its own part, combining subsystems into one system under real operational conditions discloses new failure modes that are not apparent when viewing the parts separately. ESC is influenced by the interaction among TSI CCS requirements, Operational Scenarios, Engineering Rules, on the interpretation of these requirements by each involved stakeholder and the specific technical solutions of each ETCS on-board and Trackside Supplier. This is required to gain confidence in the technical compatibility of the CCS onboard subsystem in a specific area. Thus, the purpose of ESC is to define a harmonised organisational framework for the conduct of ETCS Test Campaigns in an efficient, flexible and reliable way, which will include a description of the overall test process, its participants and their respective contributions.

Unisig appreciates the fact that the Agency revised its position on reauthorisation (extension of area of use) when additional ESC Statements are added to the vehicle technical file. It is also crucial that the ESC process is independent from the EC verification procedure; this was also improved in revision 5 of the TSI.

5.3. CR 004 – Train detection compatibility

5.3.1. Introduction

As requested by Delegated Decision (EU) 2017/1474 [8] in the Article 3.5 “the TSI shall, where appropriate, include provisions which:

(a) take into account possible impact on and interfaces with other TSIs[...]

(c) close the remaining open points [...]

(g) review the number of interoperability constituent and, where appropriate, increase it”

The Annex A Index 77 ERA/ERTMS/0332181 document defines the requirements for the interface between the train detection equipment of the CCS Trackside Subsystem and the RST subsystem.

Also the content of the opinion OPI 2017-04 [4] about the minimum axle distance and minimum wheel diameter is included.

The following of open points are closed or partially, and the annex G is updated accordingly. Where justified, the specific cases are included in section 7.2.6:

- Minimum wheel diameter for speed greater than 350 km/h
- Minimum axle distance for speed greater than 350 km/h
- Metal and inductive components free space between wheels
- Characteristic of sand applied to tracks, closed for 1520 mm networks
- Electromagnetic interferences is now also closed for the track circuits, but some technical parameters for the conducted interference still are open points.
- Use of magnetic/eddy current brakes, closed following the approach of the RST TSI.

A new open point is included relating the characteristics of flange lubricators.

With the definition of the axle counters as an interoperability constituent, the assessment can be done at component level and only once for each product and not for each project. This would create benefits for suppliers and applicants: A supplier would engage his preferred Notified Body in the design and production phase of an axle counter in order to issue a certificate of conformity; for the applicant, the demonstration of conformity to the TSI requirements would be simplified. The Notified Body in charge of EC subsystem verification would solely ask for the existence of the IC certificate and thus the costs for the assessment of conformity would be negligible at project level.

5.3.2. *Proposed amendments*

The proposed amendments on the requirements to be assessed at interoperability constituent level and the requirements to be assessed at the integration within the trackside subsystem are proposed in sections 4.2.1, Table 5.2.a and Table 6.3.

The correct reference to the WAG TSI [13] is updated in Section 4.3.2.

A clarification regarding the requirements for the train detection equipment that provides information to be used by other systems, e.g. level crossings, is made in section 7.5.

After the closure of the open points the Annex G is updated and the necessary Specific Cases were added to section 7.6.2 as requested by CZ, DE, FR, IT, NL and SE.

The updated version 4.0 of the ERA/ERTMS/0332181 is proposed to be updated in this recommendation. The reference is updated in the Index 77 of the tables A.2 of the Annex A. The reference to this document in the LOC&PAS [12] and in the WAG [13] TSIs should also be updated.

5.4. **CR 005 – Editorial and miscellaneous updates**

5.4.1. *Introduction*

Under this CR are included the changes to update the references to the new Interoperability Directive 2016/797 [7] and the editorial corrections and clarifications proposed to the TSI text.

Some of the principles stated were already present in the current or previous versions of the TSI, like the requirement that the Set #1 of the specifications of Annex A is only applicable for trackside subsystems after 01/01/2019 or the requirement to deploy ETCS in the High Speed Network.

There is no change on the ETCS and GSM-R baselines to preserve the stability of the specifications and the technical and geographical scope is aligned with Directive (EU) 2016/77 [7] as requested by Delegated Decision (EU) 2017/1474 [8] in the Article 3.2 “*The geographical and technical scope of each TSI shall be reviewed to take into account the requirements set out in Article 1(3) to (5) of Directive (EU) 2016/797*”.

5.4.2. *Proposed amendments*

The proposed amendments covers several sections of the TSI where the reference to the updated directive needs to be updated.

In particular it can be highlighted the following changes in chapter 7:

- 7.4.1.1 The requirement for deployment ETCS in the High Speed Network is reintroduced from Commission Decision 2012/88/EU [11].
- 7.4.2.1(3) it is reworded to reflect the deadline already indicated in Regulation 2016/919 [10]. The vehicles type authorisations according to set #1 of specifications shall not remain valid. Vehicle shall

only be authorised according to set #2 or #3 of the specifications in Annex A. This is in accordance to Article 24.3 of the Interoperability Directive 2016/797 [7]

5.4.3. *Position of stakeholders*

5.4.3.1. *NSA DE*

NSA DE supports the will of the Agency and the Commission to push the deployment of ETCS on the European high-speed network. Still, we have several concerns regarding 7.4.1.1. point 2 which is planned to be reintroduced in the CCS TSI. This provision applies to all upgrades of the existing train protection part of a CCS Trackside Subsystem except for the mitigation of safety defects, independently if it is reasonable from an economical or operational point of view. E.g. funds for ETCS are limited and therefore they have to be used where they generate the most benefit. It has to be avoided that there are very short isolated track sections to be equipped with ETCS because of a marginal upgrade of the existing trackside train protection system. Eligible adjustments of the network (e.g. fitting for 740m trains, possibility of bi-directional traffic) might be prevented by this provision. Thus, NSA DE proposes not to reintroduce it.

The wording of chapter 7.4.2.1(3) of the CCS TSI draft has changed several times during the work of the working group. NSA DE always expressed its concerns that this provision could affect also vehicles already in service, in so far that vehicles based on a Baseline 2 vehicle type authorisation will lose their authorisation or have to be upgraded to Baseline 3 respectively.

In addition, it is questionable that decisions taken by national authorities such as giving an authorisation for a vehicle type are revoked by EU-legislation.

5.5. **CR 007 – Include ERA OPINION 2017-5 on Test Specifications**

5.5.1. *Introduction*

The ERA opinion OPI 2017-5 [5] proposes to update of the reference of the some documents in the CCS TSI Annex A, related to the test specifications that are currently marked as reserved.

5.5.2. *Proposed amendments*

The proposed amendments in OPI 2017-5 [5] for Annex A Table A2.2, Table A2.3 and Note 13 were included.

5.6. **CR 008 – Levels and in-fill options inconsistent provisions**

5.6.1. *Introduction*

The section 4.2.2 defines that the some function are options on the CCS on-board subsystem, while the section 7.2.6 explicitly lists these on-board options, which becomes mandatory only when trackside requires it, under specific conditions.

Also the section 2.3 uses the term "A train equipped with Class A on-board train protection for level x", which can be understood as if the class A on-board could be fitted with a level. This section 2.3 brings even more confusion because it can be deduced that it is necessary to be connected to a train integrity device for an on-board to be "equipped for level 3".

Actually the so called ETCS application level is a trackside implementation choice and this notion must not be misunderstood by the on-board subsystem to an extent beyond what is defined in the ETCS SRS.

For instance when a train enters a line fitted with level 3 only, the ETCS on-board shall make the transition to level 3, regardless the on-board is able to confirm the train integrity or not.

This is why when the trackside does not require the on-board use one of the defined options, it could not be an on-board supplier choice to make the use of such option impossible, under the pretext that the on-board is "not implemented".

If such implementation is made in one on-board subsystem for the in-fill options, this deviation from the TSI must be recorded as a restriction or condition for use, using the template proposed by the Agency.

5.6.2. *Proposed amendments*

The proposed amendment to sections 2.3, 4.2.2, Tables 5.1.a, 5.1.b and 7.2.6, clarify that the optional application of the levels are options are for the trackside application and that the functional part of the on-board subsystem must fully implemented according to the Annex A specifications.

5.6.3. *Position of stakeholders*

5.6.3.1. *UNIFE (UNISIG)*

3.) Changing Infill functionality from optional to mandatory.

The change on infill requirements implies that the SW/the kernel of an ETCS on-board must have implemented completely the infill functionality. From the UNISIG point of view this is a fundamental modification on functionality, which is out of scope of this TSI CCS update. For the UNISIG companies this is also not in line with the subsets.

We understand the political will that ETCS on-board systems have to generally implement all possible functionality in their core. But introducing Radio Infill and Euroloop as mandatory functions on-board will introduce complexity to the SW without any added value, as in most of the Member States the in-fill functions are not used. We therefore, and with respect to the Agency's regulation, recommend to study beforehand these significant changes in an impact analysis.

UNISIG strongly opposes to changing optional Infill functionality to mandatory.

4.) Train integrity

Unisig has strong concerns about the impact of the latest introductions in the TSI regarding train integrity since the corresponding CR 940 is not part of the official set of specifications. The fact that not only Level 3 trackside can impose the train integrity function to on-boards will potentially affect a very high number of on-board projects, not only Baseline 3 R2 (for which CR940 is concerned) but also other Baseline 3 and 2 on-boards. This topic should be further investigated to fully determine the impact on past, existing and future projects.

5.7. CR 009 – Common Safety Methods Risk Assessment and CENELEC safety standards

5.7.1. *Introduction*

The Commission Implementing Regulation 2018/545 establishing practical arrangement for vehicle authorisation [9] in Article 13 requires to use the Commission Implementing Regulation 402/2013 on CSM-RA [18] as the mandatory methodology for the assessment of the essential requirements related to Safety.

Therefore it is necessary to clarify in the CCS TSI the relation between the CSM RA and the CENELEC safety standards. This is done by updating the way the CENELEC safety standards are referenced in the CCS TS Table A.3.

The scope of the AsBo accreditation/recognition needs to be CCS and Safe Integration for the purposes of the CCS TSI. The existing accreditation/recognition of AsBos as defined in Regulation 402/2013 [18] does not need to be amended.

NoBo assessment is not changed: the NoBo is responsible for the assessment of conformity with the Essential Requirement related to safety as today, taking into account the AsBo assessment instead of the CENELEC ISA assessment.

5.7.2. *Proposed amendments*

The proposed amendment to chapter 3.2.1 and the Annex A Table A.3 is done to reflect it allow to apply the CENELEC standards and the use of a CSM-RA AsBo for carrying out the independent safety assessment as an acceptable mean of compliance with the requirements of the CSM-RA. If then CENELEC standards are applied this way, no further CSM work is needed.

It is also clarified that if different standards from the CENELEC ones are applied, at least equivalence shall be demonstrated with the CENELEC standards.

5.8. **CR 010 – Migration provisions for the Next Generation Communication Systems**

5.8.1. *Introduction*

This CR covers the possible provisions to be introduced in the CCS TSI at this moment as requested by Delegated Decision (EU) 2017/1474 [8] in Article 7.5 *“The CCS TSI shall enable migration of technologies that can be used by both the trackside and on-board subsystem, from GSM-R to a next generation communication system, taking into account the balance between railways specific and general telecom standards”*.

This has been also request from CER and EIM to include an indication in the CCS TSI about the migration to the Next Generation Communication System in order to support the budget plans for the period after 2020 and to anticipate the on-board prefitting (if system specifications are usable before TSI CCS 2022).

5.8.2. *Proposed amendments*

It is proposed to amendment chapter 7.4.4 to include the Class A Radio System in the scope of the National Implementation Plans and to indicate that the this plans shall take into account the migration to the next generation communication system.

5.9. General comments

5.9.1. Position of stakeholders

5.9.1.1. UNIFE (UNISIG)

UNISIG would like to thank the Agency and the Sector for the constructive discussions held in the last two years regarding the changes to the TSI CCS 2019. There are three topics which are of outmost importance not only for the industry but also for the efficiency of authorization processes that are crucial in all ETCS projects, these are: 1.) Process to handle minor modifications without triggering a new authorization, 2.) ETCS system compatibility, and 3.) Changing Infill functionality from optional to mandatory.

We are still concerned that in the coming modifications of the TSI CCS text the concepts 1.)¹ and 2.)² might be undermined. In particular for point 1 the currently proposed text is difficult to interpret. This will trigger discussions between suppliers, external conformity and safety assessment bodies and authorising entities. On point 3.)³ UNISIG strongly opposes to changing optional Infill functionality to mandatory.

A new point that was changed in the Revision 5 of the TSI is the fact that it will no longer be possible to authorise “series vehicles” which conform to an existing Baseline 2 vehicle **type** (point 7.4.2.1 paragraph 3). This is a substantial change from the previous Revision 4 for which new types with Baseline 2 could no longer be authorised, but existing projects conforming to an existing type could still continue to exist. The fact that the word “*type*” was deleted means that contracts that are already ongoing and for which a vehicle type has been already authorised and “series” vehicles are being produced in conformity to that vehicle type will never be able to run (because each individual vehicle of the series needs an authorisation). We may come to situations in which the suppliers, in order to execute their contracts, will produce the vehicles requested in the contract but the RUs will never be able to use them.

Further comments on Revision 5 of the TSI will be sent. Due to the short deadline it was not possible to conclude all the comments for the accompanying report

5.9.1.2. NSA DE

NSA DE considers it necessary that transitional provisions are defined in the articles of the legal text of the CCS TSI 2019. The transitional provisions have to take into account projects in an advanced stage of development.

¹ CR 001 Modifications in authorized subsystem

² CR 002 Route compatibility

³ CR 008 Levels and in-fill options inconsistent provisions

6. Annex 1: Definitions and abbreviations

6.1. Definitions

Table 3: Table of definitions

<i>Definition</i>	<i>Description</i>
The Agency	European Union Agency for Railways
CCS TSI	Technical specification for interoperability relating to the 'control-command and signalling' subsystems of rail system in the European Union [10]

6.2. Abbreviations

Table 4: Table of abbreviations

<i>Abbreviation</i>	<i>Description</i>
4RP	4 th Railway Package
AT	Austria
BE	Belgium
CCM	Change control management procedure [3]
CCS	Control-Command and Signalling subsystem
CER	Community of European Railway and Infrastructure Companies
CENELEC	European Committee for Electrotechnical Standardization
CH	Switzerland
CR	Change request
CSM	Common Safety Methods
DE	Germany
DK	Denmark
EC	European Commission
EIM	European Rail Infrastructure Managers
EMC	Electromagnetic Compatibility
EN	European Standard
ERA	European Union Agency for Railways
ERATV	European register of authorised types of railway vehicles referred to in COMMISSION IMPLEMENTING DECISION 2011/665/EU [16] of 4 October 2011 on the European register of authorised types of railway vehicles

<i>Abbreviation</i>	<i>Description</i>
ERTMS	European Rail Traffic Management System
ETCS	European Train Control System
ES	Spain
ETF	European Transport Workers' Federation
EU	European Union
FI	Finland
FR	France
GSM-R	Global System for Mobile Communication - Railway
ID	Interoperability Directive [7]
IM	Infrastructure Manager
INF	Infrastructure subsystem
IT	Italy
LOC&PAS	Locomotives and Passenger Rolling Stock
MS	EU and EFTA Member State
NA	Not Applicable
NB-Rail AISBL	Notified Bodies Association
NL	The Netherlands
NO	Norway
NRs	National Rules
NSA	National Safety Authority
OPE	Operation and Traffic Management subsystem of the rail system in the European Union
PL	Poland
RC	Route Compatibility
RCC	Route Compatibility Check (s)
REC	Recommendation
RINF	Register of Railway Infrastructure referred to in COMMISSION IMPLEMENTING DECISION 2014/880/EU [17] of 26 November 2014 on the common specifications of the register of railway infrastructure and repealing Implementing Decision 2011/633/EU
RISC	Railway Safety and Interoperability Committee

<i>Abbreviation</i>	<i>Description</i>
ROC IG	Railway Operational Communication Industry Group
RST	Rolling Stock
RU	Railway Undertaking
SE	Sweden
SI	Slovenia
SMS	Safety Management System
SRS	System Requirements Specifications
TDC	Train Detection Compatibility
TSI	Technical Specification for Interoperability
VA	Vehicle Authorisation
UK	United Kingdom
UIC	International Union of Railways
UITP	Union Internationale des Transports Publics
UNIFE	The European Rail Industry
UNISIG	Union industry of signalling
WAG	Freight Wagons rolling stock
WP	Working Party

7. Annex 2: Reference documents

Table 5: Table of reference documents

<i>N°</i>	<i>Title</i>	<i>Reference</i>	<i>Version</i>
[1]	Request for recommendations to the Commission pursuant to Article 5 paragraph 2 of the interoperability Directive (EU) 2016/797	MOVE/C.4/BC/tg	22/09/2017
[2]	Recommendation N. 006REC1025 of the European Union Agency for Railways on the amendment of Commission Regulations on the technical specification for interoperability relating to the subsystems: 'rolling stock – locomotives and passenger rolling stock' subsystem of the rail system in the European Union Commission Regulation (EU) No 1302/2014, 'rolling stock – freight wagons' of the rail system in the European Union – Commission Regulation (EU) No 321/2013 'operation and traffic management' subsystem of the rail system in the European Union – Commission Regulation (EU) 2015/995, and the amendment of Commission Implementing Decision on the European register of authorised types of railway vehicles (2011/665/EU)	006REC1025	19/07/2018
[3]	European Union Agency for Railways Change Control Management Procedure	PRO_CCM_002	26/04/2017
[4]	Opinion of the European Union Agency for Railways to the European Commission regarding a possible revision of CCS TSI - rolling stock compatibility with axle counters	ERA/OPI/2017-4	05/02/2018
[5]	Opinion of the European Union Agency for Railways to the European Commission regarding a possible revision of CCS TSI - test specifications	ERA/OPI/2017-5	10/11/2017

8. Annex 3: Reference legislation

Table 6: Table of reference legislation

N°	Title (*)	Reference	Official Journal
[6]	Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016 on the European Union Agency for Railways and repealing Regulation (EC) No 881/2004	Agency Regulation	OJ L 138, 26.5.2016, p. 1–43
[7]	Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union (recast)	Directive (EU) 2016/797 or Interoperability Directive	OJ L 138, 26.5.2016, p. 44–101
[8]	Commission Delegated Decision (EU) 2017/1474 of 8 June 2017 supplementing Directive (EU) 2016/797 of the European Parliament and of the Council with regard to specific objectives for the drafting, adoption and review of technical specifications for interoperability	Delegated Decision for TSIs	OJ L 210, 15.8.2017, p. 5–15
[9]	Commission Implementing Regulation (EU) 2018/545 of 4 April 2018 establishing practical arrangements for the railway vehicle authorisation and railway vehicle type authorisation process pursuant to Directive (EU) 2016/797 of the European Parliament and of the Council	Implementing Regulation on Practical Arrangements for Vehicle Authorisation	OJ L 90, 6.4.2018, p. 66–104
[10]	Commission Regulation (EU) 2016/919 of 27 May 2016 on the technical specification for interoperability relating to the ‘control-command and signalling’ subsystems of the rail system in the European Union	CCS TSI	OJ L 158, 15.6.2016, p. 1–79
[11]	Commission Decision 2012/88/EU of 25 January 2012 on the technical specification for interoperability relating to the control-command and signalling subsystems of the trans-European rail system (notified under document C(2012) 172) Text with EEA relevance	CCS TSI 2012	OJ L 51, 23.2.2012, p. 1-65
[12]	Commission Regulation (EU) No 1302/2014 of 18 November 2014 concerning a technical specification for interoperability relating to the ‘rolling stock — locomotives and passenger rolling stock’ subsystem of the rail system in the European Union	LOC&PAS TSI	OJ L 356, 12.12.2014, p. 228–393
[13]	Commission Regulation (EU) No 321/2013 of 13 March 2013 concerning the technical specification for interoperability relating to the subsystem ‘rolling stock — freight wagons’ of the rail system in the European Union and repealing Decision 2006/861/EC	WAG TSI	OJ L 104, 12.4.2013, p. 1–56

<i>N°</i>	<i>Title (*)</i>	<i>Reference</i>	<i>Official Journal</i>
[14]	Commission Decision 2012/757/EU of 14 November 2012 concerning the technical specification for interoperability relating to the 'operation and traffic management' subsystem of the rail system in the European Union and amending Decision 2007/756/EC	OPE TSI	OJ L 345, 15.12.2012, p. 1–76
[15]	Commission Implementing Decision 2011/665/EU of 4 October 2011 on the European register of authorised types of railway vehicles	ERATV Decision	OJ L 264, 8.10.2011, p. 32–54
[16]	Commission Implementing Decision 2014/880/EU [15] of 26 November 2014 on the common specifications of the register of railway infrastructure and repealing Implementing Decision 2011/633/EU	RINF Decision	OJ L 356, 12.12.2014, p. 489–519
[17]	2010/713/EU: Commission Decision of 9 November 2010 on modules for the procedures for assessment of conformity, suitability for use and EC verification to be used in the technical specifications for interoperability adopted under Directive 2008/57/EC of the European Parliament and of the Council	Modules Decision	OJ L 319, 4.12.2010, p. 1–52
[18]	Commission Implementing Regulation (EU) No 402/2013 of 30 April 2013 on the common safety method for risk evaluation and assessment and repealing Regulation (EC) No 352/2009	CSM RA Regulation	OJ L 121, 3.5.2013, p. 8-25

(*) and subsequent amendments, if any.