EUROPEAN UNION AGENCY FOR RAILWAYS

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OPINION

OPI 2020 - 2

OF THE EUROPEAN UNION AGENCY FOR RAILWAYS

for

THE EUROPEAN COMMISSION

regarding

Error correction to the CCS TSI

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1. General Context

1.1. In its letter Ref. Ares (2020) 622915 31/01/2020, the European Commission asked the Agency to provide an opinion regarding Commission Regulation (EU) N° 2016/919[1] (CCS TSI) and to address errors in the ERTMS specifications.

1.2. The European Rail Traffic Management System (ERTMS) is a complex software-based system that needs constant monitoring, update and upgrading. In its capacity as System Authority for the ERTMS, the Agency has set up a change control management system for the ERTMS specifications, involving the Sector organizations, in order to collect feedback from the implementation of the system.

1.3. The findings originating from those feedback and return of experience are logged in the database of Change Requests (CR), according to Article 28 of the Regulation (EU) 2016/796.

1.4. The Agency, in collaboration with the experts of the Sector organizations, has carried out the analysis and assessment of the CR in the database that can be considered as errors in the system specifications, with a view to identify those errors which could prevent the system to provide normal service according to Article 10 of the Commission Regulation (EU) No 2016/919. The results of this work is presented in this Opinion. The scope of the analysis is to report on

- the analysis of the compatibility between trackside and on-board within the existing baselines (i.e. B3R2, B3MR1 and B2), in the light of the problem description of all the error ETCS CRs that were logged in the ERA database at the date of 15 September 2019, that were open (neither packaged in any of the three existing baselines nor in the state “rejected” or “superseded”). For the error CRs whose consequences of the described problem do not allow the system to provide a normal service, trackside mitigation measures are defined for each existing baseline.
- the analysis of the compatibility between trackside and on-board within the existing baseline (i.e. GSM-R B1), in the light of the problem description of all the error CRs that were logged in the ERA database at the date of 26 January 2020, that were open (neither packaged in the existing baseline nor in the state “rejected” or “superseded”). For the error CRs whose consequences of the described problem do not allow the system to provide a normal service, trackside mitigation measures are defined for the existing baseline.

2. Legal Background

2.1. According to Articles 10 and 28 of 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) and Article 10 of the Commission Regulation (EU) No 2016/919, the Commission has the possibility to request the opinion of the Agency on errors in the ERTMS specifications that do not allow the system to provide normal service covered by the article 10 of the CCS TSI regulation 2020/387.

[1] 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 (OJ L 158, 15.6.2016, p. 1).

3. Analysis

3.1. The Agency and the Sector, relying on the work of the experts in the Agency working groups, have reviewed 73 ETCS CRs and 8 Radio CRs in the database classified as errors, and assessed them in term of impact on the compatibility and stability of the existing specifications.

3.2. For ETCS error CRs:

- For 30 of those CR, the analysis demonstrated that these errors do not prevent the system from providing a normal service in any of the baselines in force.
- For the other 43 CRs the analysis identified issues potentially preventing the normal service, depending on the actual use of the related functionality and on the combination of the on-board and trackside implementation.
- Mitigation measures can be found in the Annex 1. They include restriction on the use of the functions or their combinations, or operational procedures, that can be implemented in the short term as temporary measures to avoid the identified problems from occuring, without requesting an immediate correction to the concerned products or systems.

3.3. For Radio error CRs:

- For 1 of those CR, the analysis demonstrated that these errors do not prevent the system from providing a normal service in any of the baselines in force.
- For the other 7 CRs the analysis identified issues potentially preventing the normal service, depending on the actual use of the related functionality and on the combination of the on-board and trackside implementation.
- Mitigation measures can be found in the Annex 2. They include restriction on the use of the functions or their combinations, or operational procedures, that can be implemented in the short term as temporary measures to avoid the identified problems from occuring, without requesting an immediate correction to the concerned products or systems.

3.4. The Agency will make available, by publication on its website, for each of the error CR identified as potentially preventing normal service, the analysis of compatibility with the Baselines in force, the solutions and the mitigation measures identified.

3.5. The Agency will actively cooperate with the NSAs and the Manufacturers, to avoid unnecessary re-authorization of the vehicles and of trackside subsystems due to those software releases.

3.6. The Agency will actively cooperate with NSAs to ensure that vehicles with on-board systems compliant with the CR solutions are not subject to National Rules developed to address those CRs.

3.7. The Agency will plan and carry out, with the help of the Sector, the compatibility analysis and definition of corrections and mitigations measures for all additional error CR logged in the database; the results will be published in accordance to Article 10 of the CCS TSI Regulation. The Agency will also make available for information the consolidated text of the specifications corrected with the solutions agreed for the CRs.

3.8. The Impact assessment for the previous Opinion 2017-2 (see Annex 5) on Article 10 error corrections still applies for this Opinion. Although more CRs classified as errors (compared to the previous Opinion) have been analysed, it does not influence the outcome of the impact assessment performed for the previous opinion. As this Opinion does not strictly mandate any implementation requirements, no negative impacts for the European railway sector can be associated with this Opinion. The positive impact is that the impacted stakeholders have access to the necessary information in order to decide themselves to implement the proposed mitigation measures or corrections depending on their own individual business impact analysis.

4. The opinion

4.1. Based on the above, the scope of the Opinion of the Agency is therefore the lists of the ERTMS/ETCS and ERTMS/RADIO Change requests which are included in Annex 1 up to Annex 4.

4.2. The analysis of the impact and compatibility for each CR related to ERTMS/ETCS and ERTMS/RADIO are included in Annex 1 and Annex 2, together with the identified correction and the identified mitigation measures. For each of the relevant ETCS CR, the Agency has collected the information on the current implementation status from Manufacturers and from Railways via dedicated questionnaires. The overall evaluation of the identified errors on the existing products and systems is summarized in Annex 1 based on the responses received. For each of the relevant GSM-R CR, the Agency has made an assessment based on the information available on the current implementation status from manufacturers and from Railways via statements from the representative groups present in the working group. The GSM-R system follows 3GPP/ETSI standards for GSM and GSM-R plus an additional set of specifications conforming the GSM-R B1; in many cases where there are errors in GSM-R B1 specifications, the solutions implemented have followed the 3GPP/ETSI specifications, which ensures their correct behaviour and their backwards and forwards compatibility.

4.3. Manufacturers should characterize their product and system implementations, trackside and on-board, with respect to the situation identified in each CR description, and make this information available to their customers and to the NoBos responsible for the corresponding CE certifications. The information on the on-board systems should be made available to the infrastructure managers of the networks where those vehicles are in operation. The CR solutions annexed to this opinion should be used as complementary information to the TSI set of specifications #3 (ETCS Baseline 3 Release 2, GSM-R Baseline 1) in the certification and verification process. Compliance to each CR solution should be assessed and explicitly reported by the NoBo but the non compliance to those solutions should not lead to a negative assessment of the NoBo for the purpose of the CE certification.

4.4. Infrastructure managers should analyse their trackside implementations and make sure that the ETCS and radio system compatibility checks (ESC/RSC) correctly characterise their trackside implementation with respect to the situation identified in each CR description, based on the information made available by manufacturers for on-board and trackside systems, considering the behaviour of the on-board systems installed on the vehicles operating on the lines.

4.5. Infrastructure managers should determine, in cooperation with the concerned RUs, if the temporary recommended mitigation measures are applicable, suitable, or necessary, depending on the implemented functions, engineering/operational rules, safety analysis. Infrastructure managers can decide whether to consider the ETCS Baseline 2 on-board systems in the decision process for the temporary mitigation measures.

4.6. The software updates of existing ETCS Baseline 3 or GSM-R Baseline 1 products and systems necessary to comply with the consolidated release will be managed according to the principles defined in the ERTMS MoU signed in 2016, as well as the configuration changes in ETCS Baseline 3 or GSM-R Baseline 1 products that may be necessary. In case of modifications, the rules set out in chapter 7.2.1a of the CCS TSI and the Article 15 of the Commission Implementing Regulation (EU) 2018/545 establishing practical arrangements for vehicle authorisations[2] shall be applied in order to check if re-authorisation is required and as such avoid unnecessary re-authorisations.

4.7. Based on the above, the Agency does not consider these errors require immediate revision of the CCS TSI. Such revision of the ERTMS specifications to include all error corrections should be available in the next CCS TSI revision planned for 2022 and will be addressed by the Agency through a Recommendation to the Commission to update the Annex A of the CCS TSI.

4.8. This opinion supersedes and replaces the opinion ERA/OPI/2017-2.

Valenciennes, 05/05/2020

Josef DOPPELBAUER
Executive Director

[2] 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 (OJ L 90, 6.4.2018, p. 66).

ANNEX 1 – ERTMS/ETCS BCA Report

See separate document <Annex1_ETCS_BCA Report art10 v120_revmarks.docx>

ANNEX 2 – ERTMS/Radio BCA Report

See separate document <Annex2_GSM-R_BCA Report art10_v03.docx>

ANNEX 3 – ERTMS/ETCS Error CRs solutions

See separate document <Annex3_ETCS Art10SP CRs_solutions_300420_revmarks.docx>

ANNEX 4 – ERTMS/Radio Error CRs solutions

See separate document <Annex4_ GSM-R_Art10 SP_CRs_solutions.docx>

ANNEX 5 – Impact Assessment Opinion 2017-02

See separate document <Annex5_Impact Assessment_ERA-OPI-2017-2.pdf>