EUROPEAN
UNION
AGENCY
FOR RAILWAYS

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Light Impact Assessment

4th Railway Package

Revision of CCS TSI

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Contents

1. Context and problem definition

1.1. Problem and problem drivers

One of the main objectives of the 4th Railway Package (RP) is to increase the efficiency of the authorisation process of vehicles and to ensure transparency and non-discrimination of applicants in this process.

There are <u>two newly introduced elements</u> in the Interoperability Directive 2016/797 (ID) impacting the existing TSIs:

a) What changes of a subsystem require a new authorisation?

Art. 4.3(h) of the ID requires the indication of the provisions applicable to the existing subsystems and vehicles, in particular in the event of upgrading and renewal and, in such cases, the modification work which requires an application for a new authorisation

b) After vehicle authorisation, how does the RU check the compatibility of the vehicle with a given route?

Art. 4.3(i) of the ID requires the indication of:

- the parameters of the vehicles and fixed subsystems to be checked by the railway undertaking and

- the procedures to be applied to check those parameters after the delivery of the vehicle authorisation for placing on the market and before the first use of the vehicle, in order to ensure compatibility between vehicles and the routes on which they are to be operated.

The CCS TSI currently in force does not contain the above mentioned elements and therefore needs to be revised in order to ensure compliance to the 4th RP requirements.

The existing vehicle related TSIs (LOC&PAS, WAG) face the same problem and changes were necessary to resolve the problem. These changes were already assessed by the following light impact assessment:

006REC1025 Impact Assessment LOC&PA

This attached LIA is applicable for the introduced changes in CCS TSI as well. Editorial changes like clarifications or improvements are not subject to an impact assessment.

The following LIA will focus on revision elements related to train detection systems which were done in addition to the revision in the context of the 4th RP.

Problem/need to be addressed:

The railway sector has already partly specified their target train detection system concerning track circuits in terms of interference current limits for the vehicle (influencing unit/train) and evaluation method/parameters – however the current interface document (index 77) as part of the CCS TSI does only specify such target system for axle counter systems.

<table>
<tr><td></td><td>Conformity assessment of axle counters has to take place for each project at subsystem level although almost all parameters in the interface document related to axle counters can be assessed once at product level.</td></tr>
<tr><td>1.2. Main assumptions</td><td>CCS TSI in general:

All remaining introduced changes, which are not directly in the context of the 4th RP or train detection, are either clarifications (e.g. changes in chapter 4.2.2 related to infill, re-introduction of chapter 7.4.1.1) or improvements.

Train Detection:

1. The sector already specified important elements for a target train detection system related to track circuits in the current EN 50238-2 and EN 50617-1.

2. The feasibility to assess the requirements of the interface document related to axle counters already at product level was confirmed by 3 European manufacturers. The assessment at subsystem level for each project (although it is the same product) is not necessary.</td></tr>
<tr><td>1.3. Stakeholders affected</td><td>
<table>
<tr><th>Category of stakeholder</th><th>Importance of the problem (*)</th></tr>
<tr><td>National Safety Authorities</td><td>2
NSAs are slightly impacted by the problem as they are involved in the authorization of trackside train detection systems and vehicles.</td></tr>
<tr><td>ERA</td><td>1
Not directly impacted by the problem. ERA is not involved in the authorization of trackside train detection systems however it is involved in the authorization of vehicles</td></tr>
<tr><td>RUs
(and vehicle suppliers)</td><td>4
As long as there is no target system for track circuits defined, there is the danger that IMs install new track circuit products which are not compatible with existing vehicles/trains. In addition, costly EMC related national technical rules related to the vehicle will remain because no migration to a defined target system is possible.
As long as the vehicle related TSIs do not mandate the application of the frequency management for axle counters and track circuits, there is no direct impact for RUs.</td></tr>
<tr><td>IMs</td><td>3</td></tr>
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		IMs using axle counters for train detection, are mainly negatively impacted as they have to provide the full evidence required by a NoBo for the conformity assessment of the installed axle counter in each project at subsystem level although the axle counter product does not change or was already positively assessed in another project. In general, the IM is less impacted by the missing definition of a target system for track circuits. Currently, he can install his preferred train detection systems. In future, once the target system is defined, he can install them as well under the assumption, that the target system will take into account all preferred track circuits.
	Suppliers for train detection systems	3 Suppliers of train detection systems have no planning certainty for upgrades or new developments of track circuits as long as there are no reserved/protected frequency bands. Suppliers of axle counters need demonstrate conformity to the interface document for each project although one single demonstration at product level would be sufficient.
	*) 1=low; 5=high	
1.4. Evidence and magnitude of the problem	The evidence of the problem was confirmed by the railway sector via the speakers of their representative organisations (EIM, CER, UNIFE and NB Rail) in the ERA TDC working party meetings (#37-#45). In addition three suppliers of axle counters confirmed the problem of the missing possibility for a conformity assessment against the requirements of the interface document (index 77) before the product is placed on the market. The European Market volume (cumulated over the next 10 years) of track circuits is expected to be in the range of 400 m. EUR (trend decreasing) and for axle counter systems about 300 m. EUR (trend increasing).	
1.5. Baseline scenario	The interface document will be kept unchanged. The version 3.0 will be still valid.	
1.6. Subsidiarity and proportionality	The activities related to the TSI CCS revision are mandated to the Agency in the Delegated Act 2017/1474 of the European Commission.	

2. Objectives

2.1. Strategic and specific objectives	**Strategic objective(s) of the Agency** with which this initiative is coherent. ☐ Europe becoming the world leader in railway safety ☐ Promoting rail transport to enhance its market share ☐ Improving the efficiency and coherence of the railway legal framework ☐ Optimizing the Agency's capabilities ☐ Transparency, monitoring and evaluation ☒ Improve economic efficiency and societal benefits in railways ☐ Fostering the Agency's reputation in the world The **specific objective** is to ensure the compliance of the rolling stock related TSIs with the provisions of the 4th RP and thus contribute to the objectives of the 4th RP (as quoted in the 4th RP IA), especially: • *Facilitate the authorisation of train detection systems (Specific Objective 1);* • *Facilitate the authorisation of vehicles (Specific Objective 2).*
2.2. Link with Railway Indicators	Specific indicators can be developed to measure the costs and time for authorisation of vehicles and train detection systems.

3. Options

3.1. List of options	Baseline Option 1 – Revision of the CCS TSI
3.2. Description of options	**Baseline** - corresponds to the Baseline of the 4th RP IA › No revision of the current vehicle related TSIs **Option 1** – revision of the CCS TSI/ interface document › Introduction of a frequency management for track circuits (closure of an Open Point / harmonization of EMC related requirements for track circuits) › Introduction of the IC axle counter
3.3. Uncertainties/risks	1. Currently the LOC&PAS TSI does not mandate compliance with the EMC related vehicle parameters (interference current limits and fields) – however this is planned in the next revision of the LOC&PAS TSI. For this reason the introduced changes related to interference current limits do not impact the design of the vehicle as long as the LOC&PAS TSI is not revised related to this aspect. It is upon the railway sector to decide when this will happen. 2. The existing open point related to interference current limits to ensure compatibility with track circuits could not be completely closed. Some technical parameters (related to vehicle and substation impedance, test method for the vehicle to demonstrate compliance, out band interference current limits) remain an open point. For this reason, the technical impact at vehicle and ENE side can only be evaluated once all aspects are harmonized (e.g. the impact of a minimum substation impedance for the subsystem ENE). 3. As long as the migration to a target train detection system is not finalised, vehicles cannot profit from more immune/robust train detection systems which are taken into account in the frequency management. New vehicles have to be compatible with existing sensitive train detection systems and with the frequency management. This could lead to an increase of vehicle production costs. To lower the impact during migration, it is necessary to identify most critical train detection systems along main railway routes (freight corridors) and to prioritize the migration of these systems. EU funding could a suitable tool to support such migration. 4. Three suppliers took part in a feasibility study related to the certification of their existing axle counter products as interoperability constituent meeting the requirements of the interface document. **No** risks or issues were reported by them.

4. Impacts of the options

4.1. Impacts of the options (qualitative analysis)

Baseline was not included in the analysis as the impacts of the options are compared against the baseline

Category of stakeholder		*Option 1*
NSAs	Positive impacts	In future less complex assessment of an application with regards to the compatibility of a vehicle with the national network – depending on the progress of the migration towards a TSI compliant train detection system (due to closure of OP related to interference current limits) Less complex assessment of an application for an authorisation of an axle counter system. (due to IC axle counter certification)
	Negative impacts	N/A
RUs	Positive impacts	Reduced costs for vehicles (production costs, operational costs and authorisation costs) once the IMs have finalised the migration towards a target train detection system. Easier assessment of existing (non TSI conforming) vehicles if they meet the requirements of the frequency management if they are compatible with the target system. (due to closure of OP related to interference current limits)
	Negative Impacts	Slight increase of costs of new vehicles during migration phase towards target detection system (if TSI LOC&PAS mandate compatibility with frequency management)
Vehicle Manufactures	Positive impacts	See RUs.
	Negative Impacts	
IMs	Positive impacts	Reduced costs for authorisation of axle counters in each signalling project. (due to IC axle counter certification) Less compatibility issues with existing and new vehicles as the frequency management is transparent. (due to closure of OP related to interference current limits)
	Negative Impacts	Certification costs at axle counter product level (IC certification) are estimated to be 0,5% of total product costs. However these costs are much lower than the existing cumulated authorisation costs at project level where new axle counters are installed trackside in the framework of a signaling project. (due to IC axle counter certification)

			IMs have to respect the frequency management when installing new train detection systems. This reduces somehow the flexibility in the procurement process of train detection systems. However it has to be noted that the frequency management takes into account the preferred train detection systems from all European IMs. (due to closure of OP related to interference current limits)
	Manufacturer of Train Detection System	Positive impacts	Less authorisation costs at each signaling project. (due to IC axle counter certification) Certainty for future developments of train detection systems concerning the protected frequencies and maximum interference currents/fields levels at vehicle side. (due to closure of OP related to interference current limits)
		Negative impacts	See IM – IC certification costs of 0,5% of product costs (over 10 years in total 1.5 m. EUR)
	Agency	Positive impacts	N/A
		Negative impacts	N/A
	Overall assessment *(input for section 5.1)*	Positive impacts	In the long term: significant less vehicle related costs (production, operation, authorisation) In the short term: Facilitation of authorisation of axle counters leading to less authorisation costs in each signaling project Transparency of protected frequencies and limit values for interference currents and fields for all involved actors (e.g. producers of vehicles and train detection systems) All conditions are met to allow the start of a migration towards a target train detection system
		Negative impacts	Slightly increased vehicle costs (for newly developed vehicles) during migration towards target train detection system

4.2. Impacts of the options (quantitative analysis)

Category of stakeholder		*Option 1*
RUs, Suppliers	Benefits (euro)	N/A
	Costs (euro)	N/A
NSAs	Benefits	N/A
	Costs (euro)	N/A
Agency	Benefits (euro)	N/A
	Costs (euro)	N/A

	Overall	Benefits (euro)	N/A
		Costs (euro)	

CBA	Option 1
NPV	N/A
B/C ratio	N/A

5. Comparison of options and preferred option

5.1.	**Effectiveness criterion (options' response to specific objectives)**	The proposed option **meets all specific objectives**.
5.2.	**Efficiency (NPV and B/C ratio) criterion**	N/A
5.3.	**Summary of the comparison**	N/A as there is only one option.
5.4.	**Preferred option(s)**	The proposed option is recommended in terms of both effectiveness and efficiency.
5.5.	**Further work required**	The risks mentioned under section of 3.3 have to be closely monitored once the revised CCS TSIs is in force.

6. Monitoring and evaluation

6.1.	**Monitoring indicators**	Costs related to vehicle authorisation, costs related to authorisation of train detection systems
6.2.	**Future evaluations**	N/A