

**ACCOMPANYING REPORT ERA-REC-111-2015-ACR TO THE RECOMMENDATION
OF THE EUROPEAN RAILWAY AGENCY**

ON

‘CONDITIONS FOR APPLICATION OF ARTICLE 23(1) OF INTEROPERABILITY DIRECTIVE’

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1. Introduction

1.1 Background to the assignment

According to Article 23(1) of the Interoperability Directive [1]:

“Vehicles in complete conformity with TSIs covering all aspects of the relevant subsystems without specific cases and without open points strictly related to technical compatibility between vehicle and network, shall not be subject to any additional authorisation for placing in service as long as they run on TSI conform networks in the other Member States or under the conditions specified in the corresponding TSIs”.

The TSI WAG [7] in force already specify the conditions for application of such provision (clause 7.1.2 “Mutual recognition of the first authorisation of placing in service “).

Additionally, OTIF refers to this provision in the UTP applicable to freight wagons for admission in international traffic.

It has been agreed that, under the administrative arrangements signed between the Commission, OTIF and the Agency, a similar provision should be developed in the TSI LOC&PAS and the corresponding UTP, applicable at least for passenger coaches to be used in international traffic.

The Agency has therefore launched this project, for the main purpose of complementing the TSI LOC&PAS [4] with a clause defining the conditions for the application of Article 23(1) of Directive 2008/57/EC; these conditions relate to TSI-conform vehicles which are not impacted by specific cases or open points, and their technical compatibility with existing networks for which the compliance to TSIs has not been verified.

The scope of work corresponds to the scope of the TSI LOC&PAS [4] (rolling stock subsystem, including compatibility with train detection systems).

The CCS target subsystem and the CCS national class B systems are out of the scope of work.

Additional limitations on the scope of this project are detailed further.

The remit of the project is to deliver the following amendments to the TSI LOC&PAS [4]:

- For all the units in the scope of the TSI LOC&PAS [4]: the proposed TSI clause specifies the conditions under which an EC verification procedure and EC declaration of verification of a unit is not required to be complemented (under Annex V, section 3 of the Interoperability Directive) for having its “area of use” extended to additional national network(s).
- For particular types of units (those not equipped with an on-board CCS subsystem, ERTMS and/or class B, or with a CCS subsystem non-active; e.g. passenger coaches): the proposed TSI clause also specifies the conditions under which there is no need for any additional authorisation (as envisaged in Article 23(1) of Directive 2008/57/EC).



Additionally, on the basis of the information collected on interfaces between rolling stock and fixed installations, this report includes some elements for future guidelines for checking the technical compatibility of rolling stock with specific routes. This information will be taken into account by other working groups (e.g. registers, interfaces with TSI OPE, etc.).

1.2 Summary

This report presents:

- Criteria for the constitution of the working party and its composition;
- Working method including the project plan, stages of work, main activities developed by the working party and project team, impact assessment and time plan;
- Analysis of available input data related to the interfaces of vehicles (RST part) with fixed installations (including train detection systems), open points and specific cases.
- Explanation on the proposed amendment (the insertion of a new clause specifying the conditions for application of article 23(1) of the interoperability directive) in the TSI LOC&PAS [4].



2. Referenced documents and abbreviations

2.1 Referenced documents

Ref.	Document Reference ^(*)	Official Journal	Reference
[1]	Directive 2008/57/EC Interoperability of the rail system Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008 on the interoperability of the rail system within the Community	OJ, L 191, 18 July 2008, p.1	Directive 2008/57/EC or Interoperability Directive
[2]	Corrigendum to Regulation (EC) No 881/2004 of the European Parliament and of the Council of 29 April 2004 establishing a European railway agency (Agency Regulation) (Official Journal of the European Union L 164 of 30 April 2004)	OJ L 220, 21 June 2004, p.3	Regulation No 881/2004 or Agency Regulation
[3]	COMMISSION RECOMMENDATION of 5 December 2014 on matters related to the placing in service and use of structural subsystems and vehicles under Directives 2008/57/EC and 2004/49/EC of the European Parliament and of the Council.	OJ L 355, 12.12.2014, p. 59–77	DV 29bis
[4]	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	OJ L 356, 12.12.2014, p. 228–393	TSI LOC&PAS
[5]	COMMISSION REGULATION (EU) No 1299/2014 of 18 November 2014 on the technical specifications for interoperability relating to the 'infrastructure' subsystem of the rail system in the European Union	OJ L 356, 12.12.2014, p. 1–109	TSI INF
[6]	COMMISSION REGULATION (EU) No 1301/2014 of 18 November 2014 on the technical specifications for interoperability relating to the 'energy' subsystem of the rail system in the Union	OJ L 356, 12.12.2014, p. 179–227	TSI ENE



Ref.	Document Reference(*)	Official Journal	Reference
[7]	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	OJ L 104, 12.4.2013, p. 1–56	TSI WAG
[8]	COMMISSION REGULATION (EU) No 1300/2014 of 18 November 2014 on the technical specifications for interoperability relating to accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility	OJ L 356, 12.12.2014, p. 110–178	TSI PRM
[9]	2012/88/EU: Commission Decision of 25 January 2012 on the technical specification for interoperability relating to the control-command and signalling subsystems of the trans-European rail system	OJ L 51, 23 February 2012, p.1	TSI CCS
[10]	ERA/ERTMS/033281 version 2.0 of 12.05.2014 (to be replaced by version 3.0). The Interface between control-command signaling trackside and other subsystems	NA	ERA/ERTMS/033281
[11]	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	OJ L 345, 15.12.2012, p. 1–76	TSI OPE
[12]	COMMISSION REGULATION (EU) No 1303/2014 of 18 November 2014 concerning the technical specification for interoperability relating to 'safety in railway tunnels' of the rail system of the European Union	OJ L 356, 12.12.2014, p. 394–420	TSI SRT
[13]	COMMISSION IMPLEMENTING DECISION 2014/880/EU [12] of 26 November 2014 on the common specifications of the register of railway infrastructure and repealing Implementing Decision 2011/633/EU	OJ L 356, 12.12.2014, p. 489–519	



Ref.	Document Reference^(*)	Official Journal	Reference
[14]	COMMISSION IMPLEMENTING DECISION 2011/665/EU of 4 October 2011 on the European register of authorised types of railway vehicles	OJ L 264, 8.10.2011, p. 32–54	
[15]	ERA/TD/2013-02/INT version 2.0 of 15.12.2014. Specifications to perform the assessment of conformity of friction elements for wheel tread brakes		ERA TD 2013-02

(*) and subsequent amendments, if any.



2.2 Abbreviations

ABBREVIATION / TERM	FULL TEXT / DEFINITION
ALE	The autonomous Train Drivers' Unions of Europe
BE	Belgium
CCS	Control-Command and Signalling subsystem
CER	The Community of European Railway and Infrastructure Companies
CT	Channel Tunnel
CZ	Czech Republic
DC	Direct Current
DE	Germany
DG MOVE	Directorate General for Mobility and Transport of EC
DK	Denmark
EC	European Commission
EIM	European Rail Infrastructure Managers
EMC	Electromagnetic Compatibility
EN	European Standard
ENE	Energy subsystem
EPTTOLA	The European Passenger Train and Traction Operating Lessors' Association
ES	Spain
ERA / The Agency	The European Railway Agency
ERATV	European register of authorised types of railway vehicles referred to in COMMISSION IMPLEMENTING DECISION 2011/665/EU [14] of 4 October 2011 on the European register of authorised types of railway vehicles
ERFA	European Rail Freight Association
ERTMS	European Rail Traffic Management System
ETCS	European Train Control System
ETF	European Transport Workers' Federation



ABBREVIATION / TERM	FULL TEXT / DEFINITION
EUREMCO	European Railway Electromagnetic Compatibility project
FCCS	Fire Containment and Control Systems
FR	France
GB	Great Britain
HR	Croatia
ID	Interoperability Directive [1]
IC	Interoperability Constituent
IM	Infrastructure Manager
INF	Infrastructure subsystem
IT	Italy
LOC & PAS	Locomotives and Passenger Rolling Stock
LU	Luxemburg
MS	EU and EFTA Member State
NA	Not Applicable
NL	Netherlands
NO	Norway
NSA	National Safety Authority
OPE	Operation and Traffic Management subsystem of the rail system in the European Union
OTIF	Intergovernmental Organisation for International Carriage by Rail
P	Permanent
PRM	Accessibility of the Union's rail system for Persons with Disabilities and Persons with Reduced Mobility
RB	Representative bodies from the railway sector referred to in Article 3 paragraph 2 of Regulation (EC) 881/2004 [2]
RINF	Register of Railway Infrastructure referred to in COMMISSION IMPLEMENTING DECISION 2014/880/EU [13] of 26 November 2014 on the common specifications of the register of railway infrastructure and repealing Implementing Decision 2011/633/EU



ABBREVIATION / TERM	FULL TEXT / DEFINITION
RISC	Rail Interoperability and Safety Committee
RST	Rolling Stock
RU	Railway Undertaking
Stakeholders	For the purpose of the report, stakeholders are all the bodies impacted by the study
SE	Sweden
SL	Slovenia
SRT	Safety in Railway Tunnels of the rail system of the European Union
T	Temporary
TDS	Train Detection Systems
ToR	Terms of Reference
TSI	Technical Specification for Interoperability
UIP	International Union of Wagon Keepers
UIRR	International Union for Road-Rail Combined Transport
UITP	International Association of Public Transport
UK	United Kingdom
UNIFE	Union of European Railway Industries
UTP	Union des Transports Publics et ferroviaires
UTP (OTIF)	Uniform Technical Prescription
V	Volt
WAG	Freight Wagons rolling stock
WP	Working Party



3. Working party

3.1 TSI LOC&PAS - Working Party “Unique authorisation”

The working party for complementing (by amendment) the TSI LOC&PAS [4] on conditions for application of Article 23(1) of Interoperability Directive [1] (unique authorisation) was set-up based on the provisions quoted on the Agency Regulation [2], Articles 3 and 12(b).

The call for experts to compose the working party was issued on 14/02/2014, requesting representatives from Representative Bodies with specific experience in technical compatibility between vehicles and infrastructure at operating level, of representatives from NSAs and of representatives of OTIF (if these organisations wish to participate). The latter organisation is entitled to participate in the working party as observer.

Working party composition (including previous members) and organisations representatives (participating in WP meetings):

Representative body	Members	Deputies
ALE	STRASSL, Peter	
CER	MANCINI, Giampaolo	BÜHL, Reinhard
CER	METRAL , Serge	
CER	KIEFFER, Eberhard	
EIM	LI, Martin	THÁLEN, Marika
EIM	VAN OOST, Sabin	
EIM	POUSADA, Jesus	
EIM	VAN LONDERSELE, Kristof	
EPTTOLA	-	
ERFA	-	
ETF	LILLEGRAND, Jens Petter	CALFE, Dave
ETF	WAMBST, Sebastien	HOUILLIEZ, Damien
NB-RAIL	PARMENTIER, Francis	
UIP	-	
UIRR	-	
UITP	-	



UNIFE	DUMAS, Bernard	MORIN, Dominique
UNIFE	LIESKE, Juergen	BODSON, Jean-Marie
UNIFE	GIERA, Sebastian	STEINKOHL, Jan
UNIFE	FLEISCHMANN, Ralph	CATALDO, Franco
NSA	Members	Deputies
NSA Austria	SCHABL, Gerald	
NSA Belgium	OPSOMER, Luc	VAN DEN BRANDE, Koen
NSA Denmark	MORTENSEN, Lars	TIVED, Alexander
NSA Denmark	HACKE, Christian	
NSA Spain	JIMÉNEZ, Beatriz Hernández	LA ROTTA, José Genaro Batanero GONZÁLEZ, Tamara Rodríguez
NSA Finland	SAVOLAINEN, Veikko	
NSA France	VIGNOT, Sebastien	GODART, Anthony VANHOOVE, Xavier
NSA Germany	SPIEGEL, Andreas	KOSCHMIDER, Margarethe (changed to OTIF)
NSA Italy	POGGI, Marco	CIOCIA, Generoso
NSA Italy	FORTE, Gianluca	
NSA Luxembourg	SCHOLTES, René	MANGEN, Claude
NSA Norway	JOHANSEN, Kjell	STORDAHL, Liz Anette
NSA Norway		HAGBØ, Geir
NSA Poland	GŁADYSZ, Edyta	
NSA Romania	BLAGA, Lucian	LUCACI, Viorel UDREA, Constantin BADESCU, Gabriel CIOFALCA, Marian BECHI, Claudiu
NSA Sweden	SOLLANDER, Stefan	
NSA UK	HOOPER, Paul	VANMARI, Shreya
OTIF	Observers	Deputies (observers)
OTIF	LEERMAKERS, Bas	POPOVIC, Milan KOSCHMIDER, Margarethe



Project Officers from ERA involved in the working party are listed below:

ERA Unit / Function	Name	Comment
Interoperability – Project Officer	MESTRE, Pedro	Chairman
Interoperability - Project officer	LAVOGIEZ, Hubert	
Interoperability - Project officer	COÏTO GONZALES, Esteban	
Interoperability - Project officer	MARTOS, Oscar	
Interoperability – Project officer	GRECO, Maurizio	
Interoperability – Project officer	MENDEZ, Iñigo	
Interoperability – Project officer	LIS, Stanislaw	
Interoperability – Project officer	BALLESTER ALIAGA, Ignacio	
Interoperability – Project officer	DAYEZ, Remy	
Cross Acceptance – Project officer	MIHM, Peter	
Economic Evaluation - Project Officer	GODWARD, Ernest	

Calendar of meetings:

The calendar of meetings is the following:

N°	Date	N°	Date	N	Date
1	08 / 04 / 2014	5	12 / 02 / 2015	9	12 / 11 / 2015
2	04 / 06 / 2014	6	16 / 04 / 2015		
3	04 / 09 / 2014	7	24 / 06 / 2015		
4	20 / 11 / 2014	8	23 / 09 / 2015		



4. Working method

4.1 Project plan

The project plan was presented in the beginning of the project; related activities are part of the work program of the Agency (work program 2014 and 2015).

The major milestones defined in the project plan are:

Timescale	Main Task (Milestone)	Outputs
February 2015	Delivery of Report on input data available.	Report on input data available.
April 2015	Delivery of intermediate report on scope that can be covered.	Intermediate report on scope that can be covered (e.g. type of vehicle, description of interfaces with fixed installations), including impact assessment.
October 2015	Delivery of draft amendment of TSI LOC&PAS [4].	Draft amendment of TSI LOC&PAS [4]. To be used for external consultation if needed.
November 2015	Delivery of recommendation to Commission and accompanying report.	Recommendation to Commission for amendment of TSI LOC&PAS [4], with the provisions of the conditions for application of Article 23(1) of ID [1], and accompanying report;
December 2015	Delivery of application guide to the TSI LOC&PAS [4].	Revision of the Application Guide of the TSI LOC&PAS [4], taking into account the produced amendment of TSI LOC&PAS [4].

4.2 Stages of work

Taking into account the milestones planned, the project was organized in three main stages, in order to potentiate the effectiveness of the resources, identify the risks at an initial stage to better mitigate them and avoid iterations as far as possible.

First stage of work:

- Analysis of the available data:
 - specific cases included in the TSI LOC&PAS [4] for the purpose of compatibility with existing networks,
 - interface parameters included in the register of infrastructure (RINF) and in the European Register of Authorised Types of Vehicles (ERATV),
 - notified national technical rules related to the technical compatibility between vehicles and network,
 - provisions of DV29 bis [3] related to the placing in service;
- Agreement with the WP on the format of the data collection;



Second stage of work:

- Gather and select the input data, including the analysis of specific cases and open points.
- Analysis of national inputs/ rules, meaning specificities indicated as relevant for the compatibility with the EU networks.
- Produce an intermediate report on scope that can be covered (present report).

Final stage of work:

- Prepare preliminary draft of amendment of TSI LOC&PAS [4];
- Analyse comments received from the WP (including members of the social committee: CER, EIM and ETF) and prepare the final draft of the amendment to the TSI LOC&PAS [4] to be submitted as a Recommendation to the Commission;
- Prepare a draft for a revised application guide to the TSI LOC&PAS [4], covering new provisions;
- Prepare a report on inputs to be used by another project for drafting a guideline for RUs to check the technical compatibility of rolling stock with specific routes.

4.3 Main activities:

4.3.1 Analysis of Open Points

The objective of this analysis was to find how the open points can be mitigated (for vehicles in the scope of the project) in order not to be an obstacle for application of Article 23(1) of ID [1].

4.3.2 Analysis of Specific Cases

The objective of this analysis was to identify the specific cases that can be mitigated (for vehicles in the scope of the project), in order not to be an obstacle for application of Article 23(1) of ID [1], and those that have to be kept (meaning that the process of unique authorisation will not be applicable to the concerned MS).

4.3.3 Analysis of conditions for compatibility on existing networks

The purpose of this analysis was to review the relevant parameters that define the interfaces between the infrastructure and vehicles (RST part), and to identify those to be taken into account to define limits and conditions of use of vehicles.

For the identification of the relevant interface parameters, the 'rolling stock — locomotives and passenger rolling stock' subsystem (in TSI LOC&PAS [4]) was crosschecked with the:

- 'infrastructure' subsystem (TSI INF [5]), including the accessibility for persons with disabilities and persons with reduced mobility (TSI PRM [8]),
- 'energy' subsystem (TSI ENE [6]),
- Train detection systems (ERA/ERTMS/033281 [10], referred to in TSIs CCS [9] and LOC&PAS [4]).



This identification is structured according to the interfaces mentioned in these TSIs (in their respective section 4.3 – *Functional and technical specification of the interfaces*), including for TSI CCS [9] the interface document ERA/ERTMS/033281 [10] for compatibility with train detection systems.

The call for inputs was launched in the working party, and with the cooperation of ERA's project officers in charge of INF, ENE and CCS, taking also into account the information gathered in registers (RINF and ERATV).

The working party was also requested to provide input on any additional interface parameters (not identified following the process above), as far as they could represent relevance for existing networks.

4.3.4 Compatibility with the given route

On the basis of the information collected on interfaces between rolling stock and fixed installations, this report includes some elements for future guidelines for checking the technical compatibility of rolling stock with specific routes. This information will be taken into account by other working groups (e.g. registers, interfaces with TSI OPE [11], etc.).

When the request for inputs was addressed to WP members, it was asked also to identify any parameter relevant for specific routes.

4.4 Impact assessment

From the early assessment it was estimated that the benefits would outweigh the costs associated with simplification of authorisation and step for moving towards a Unique Authorisation approach within the TSI.

The expected Benefits are foreseen to affect:

- Applicants and/ or other stakeholders: through a decrease of re-authorisation time and cost per vehicle category, and
- IMs/NSAs: through having lower development/ follow-up costs within Member States related to national technical rules as the definition of limits and conditions of use of vehicles (RST part) will take some of them into account.

The expected costs per stakeholder were foreseen to be:

- ERA: Working Party costs (<< 1 MEUR; evaluated to 400 Keuros), and
- RUs: Potential risk of increase of costs in respect to route compatibility checks, however mitigated by the implementation of registers (RINF and ERATV), and by the description of the corresponding procedures.

This early assessment is valid for vehicles (RST part) intended to be operated in most of the EU MSs therefore it has been agreed in the beginning of the project that its scope will be limited to the widely used track gauge 1435mm.



4.5 Reporting on work carried out

The global time plan for revision of the TSIs is given in the project plan, and it is being accomplished.

First stage of work: until September 2014.

The meetings N°1, 2 and 3 were focused on:

- Kick-off of the project, explanation on the intentions and agreement of the procedure;
- Receive the inputs from the members to identify the nature of the interface parameters.
- Fill in the produced tables of interfaces.
- Identification and analysis of the impact of open points and specific cases.

Second stage of work: from September 2014 to April 2015.

The following subjects were analysed:

- Interface with INF;
- Interface with ENE;
- Interface with TDS
- Interfaces other aspects (PRM, information RINF, information ERATV, part of condition of use - technical file, specificities of national lines)

The meetings N° 4, 5 and 6 were focused on the drafting of the intermediate report and in the selection of the relevant input data.

Third stage of work: from May 2015 to December 2015.

The meetings N°7, 8 and 9 were focused on the production of the following deliverables:

- Draft amendment of TSI LOC&PAS [4];
- Draft ERA recommendation for the amendment of TSI LOC&PAS [4] to Commission;
- Draft revision of the Application Guide of the TSI LOC&PAS [4], taking into account the amendment;
- Draft a final report including some elements to be used by another project for drafting a guideline for RUs to check the technical compatibility of rolling stock with specific routes.



5. Analysis of Input data

5.1 Tables of interface parameters

The chosen way to receive the inputs was by mean of tables to be filled in by each MS (with consultation of the IM), taking into account the quantity and variety of information. In each table the identified interface parameters are related to the clauses of relevant TSIs; references are made to the related specific cases and open points, information in RINF and ERATV, and if the parameter should be taken as part of area/condition of use (i.e. if the related information is required to be provided in the technical file).

The expected inputs are found in the columns:

- “Applicable in a Generic Network” – if the related parameter represents a specificity relevant for the existing network of a MS (i.e. parameters currently used for authorisation in that MS);
- “Applicable in a Specific Route (given line)” – if the related parameter represents a specificity relevant for a specific line in that MS.
- Additionally we requested to provide the limit values of the parameters in case of specificity.

Three tables were produced, as the division of the study by three main topics: INF, ENE and Train Detection Systems.

Instead of the full versions of the tables, synthetized ones are included in this report as annexes (chapter 7.1).

At the final stage of the project a last column was added: “CONCLUSIONS regarding AREA OF USE - LIMITS AND CONDITIONS OF USE”. In this column, it can be found conclusions, regarding the limits and conditions of use, to be used as inputs for the future drafting of a guideline for RUs to check the technical compatibility of rolling stock with specific routes.

5.1.1 Interfaces with INF

The selected interface parameters were extracted from the section 4.3 of TSI INF [5]. As the TSI PRM [8] had only 2 related parameters with INF, these ones were included in this table. Additional parameters were considered relevant by the members and added in the table: “Line Categories (classification according to EN 15528 or other)”, “axle-bearing condition monitoring” and “Environmental conditions”.

5.1.2 Interfaces with ENE

The selected interface parameters were extracted from the clause 4.3 of TSI ENE [6].

The parameter “Insulated horns for pantographs” was added, as considered relevant by BE.



5.1.3 Interfaces with TDS

The selected interface parameters were extracted from the technical interface document ERA/ERTMS/033281 [10]. Specific cases mentioned in the TSI CCS [9] were also considered.

In this interface document, it is indicated that some checks are done at the level of the train (and not the unit).

Discussion around compatibility with train detection systems occurred often, and based on the referred interface document, part of this compatibility check may occur after the authorisation, once it depends also of the operational scenario in which the unit is intended to be used. On that basis, the following note was included in the clause:

“Note: Regarding compatibility with train detection systems, additional checks may be needed when justified, considering the specification referenced in Appendix J-2, index 1, clauses 3.1.10 and 3.2.2, information provided in the RINF for specific routes and the integration of the unit in the train composition. In case additional checks have been performed, these shall be identified for consideration in the ‘limits and conditions of use’ of the unit.”

This note defines the limits of the verification made before the authorisation of the unit, regarding compatibility with train detection systems.

In case of additional checks are needed, their results may lead to operational restrictions.

One example reported by FR relates to shunting capabilities (as mentioned in clause 3.1.10, of the interface document).

5.1.4 Link with RINF and ERATV

During the drafting of the interface tables the information part of the registers (RINF and ERATV) was considered.

In the last column of the interface tables, “CONCLUSIONS regarding AREA OF USE - LIMITS AND CONDITIONS OF USE”, it is included how the information of the mentioned registers is relevant for the compatibility check on the related interface.

It is expected that this contributes to meet one of the objectives identified for the RINF, which is to allow the compatibility check between the vehicle and the infrastructure, considering the limits and conditions of use of the vehicle (for its RST part in the scope of this project).

5.1.5 Summary regarding inputs from interface tables.

Detailed inputs are received from BE, LU, IT, ES, DK, SE, NO, FR, DE and are included in the chapter 7.1.

Conclusions taken, regarding the limits and conditions of use, are included in chapter 7.1, in the tables, on the column “CONCLUSIONS regarding AREA OF USE - LIMITS AND CONDITIONS OF USE”.



Additionally, when specificities have been identified due to existing networks, they can be classified in the following groups:

- they relate to parameters that have to be taken into account at operating level: e.g. loads exerted by vehicles / load capability of the line (use of a specific classification), braking stopping distance, aerodynamic effects, speed of crosswind, climatic conditions. This is necessary considering the 'optimum level of technical harmonization' defined in the TSI LOC&PAS (which is not a complete harmonisation). It has to be noted that the same situation is also met today at national level.
- they relate to 'optional' devices not specified in the TSI: e.g. eddy current track brake (open point), flange lubrication, sanding.
The effective use of such devices can be regulated at operating level, provided that they can be switched off.
- only few of them relate to existing networks that are not TSI compliant: e.g. limits of voltage and frequency, use of regenerative brake; specific cases already cover most of these cases.

In general, the specificities reported are also present on existing national networks therefore they are already dealt with in the context of authorisation at national level; a common approach can be applied for authorisation at the level of the EU railway network. Indeed, the main challenge is to move from a national approach to an EU wide approach (objective of the Single European Railway Area).

5.2 Open points in TSI LOC&PAS [4]

5.2.1 Analysis

Due to the remaining open points for other track gauges, the scope is limited to vehicles (RST part) for 1435 mm track gauge, considering also that vehicles (RST part) for other track gauges are operated in few MSs (limited impact; see section 4.4).

For other track gauges bilateral agreements are still recommended to simplify authorisation processes.

The relevant open points lead to the following analysis:

- Compatibility with train detection systems, EMC for track circuits

The results of the research project EUREMCO, and the definition by the working party in charge of TSI CCS [9], of the frequency bands, and associated maximum level, to be avoided, have been taken into account in the revision of ERA/ERTMS/033281 [10].

Additional requirements are added to mitigate the remaining open points. To allow the compatibility check: electromagnetic fields, vehicle impedance between pantograph and wheel and harmonics on traction current, characteristics of the unit, shall be part of the technical documentation; the operation of the units may be restricted accordingly.



It is also noted that, regarding compatibility with train detection systems additional checks may be required after authorisation, at train level.

- Braking system independent of adhesion conditions (Eddy current track brake and/or magnetic track brake)

According to the TSI LOC&PAS [4] this kind of equipment is not mandatory; its use today is not common on the EU network.

Units equipped with such brake systems may have their use restricted (based on the information in RINF).

Eddy current track brake:

According to the inputs on the working party, many MSs networks do not allow this system, and considering their impact on EMC, even when non active, it was decided to exclude units equipped with Eddy current track brake from the scope of application of the new clause.

Magnetic track brake:

Due to the inputs on the working party, it was decided to include units equipped with such system, as long as they are fitted with a system allowing the possibility of preventing the use of such equipment.

Taking into account that the use of magnetic track brake may be restricted, the braking performance shall be calculated without considering the use of these brake systems. This shall be part of the technical documentation.

- Limit value and conformity assessment in order to limit risks induced by the projection of ballast.

It is now agreed among experts that this risk is usually encountered for speed > 250 km/h. It is proposed to limit the scope of the project to RST of maximum speed <= 250 km/h.

- Passive safety - Application of scenarios 1 and 2 to locomotives with centre couplers and traction effort higher than 300 kN.

This open point is only relevant for particular locomotives (locomotives with centre couplers and traction effort higher than 300 kN); it is expected to close this open point in the revised TSI LOC&PAS.

In case the open point remains open, these locomotives will be excluded from the scope of application of the new clause.

- Variable gauge wheelsets.

Due to the limitation of scope to 1435 mm track gauge, variable gauge wheelsets are covered for the track gauge position of 1435 mm; the second track gauge position is not covered; it is expected to close this open point in the revised TSI LOC&PAS.

In case the open point remains open, units equipped with these type of wheelsets will be excluded from the scope of application of the new clause.



- On-board energy measurement system – communication: specification related to interface protocols and transferred data format.

This open point is only relevant for vehicles equipped with pantograph intended to be operated on networks equipped with energy data collecting system (see article 3(4) of TSI LOC&PAS [4]). This open point refers to the format of the data and the communication protocol, and it is foreseen to be closed before the end of 2016.

It does not represent a restriction for the application of the new clause but has to be taken into account in the definition of limits and conditions of use. (the communication protocol of on-board energy measurement has to be agreed for operation on networks equipped with the on-ground energy data collecting system)

- Fire Containment and Control Systems - Conformity assessment of FCCS other than full partitions.

RST equipped with FCCS system are out of the scope of application of the new clause; the unit if of category B fire safety, is equipped with fire barriers of full cross section partitions.

5.2.2 Additional conditions as result of the impact of the open points:

Due to the open points, the following conditions need to be considered, to assure that an EC verification procedure and EC declaration of verification of a unit is not required to be complemented (under Annex V, section 3 of the Interoperability Directive) for having its “area of use” extended to additional national network(s):

- The unit is designed for operation on the 1435 mm track gauge; in case of variable gauge wheelset, the second track gauge position is not covered.
- Units equipped with Eddy current track brake are excluded from the scope of application of the new clause. Units equipped with magnetic track brake are not excluded from the scope of application of the new clause, as long as they are fitted with a system allowing the possibility of preventing the use of such equipment. The braking performance shall be calculated without considering the use of these brake systems, and shall be part of the technical documentation.
- The unit is declared as compatible with train detection systems based on track circuits, on axle counters (including mechanical wheel detectors) and on loop equipment on the basis of the TSI and on the basis of the following requirements:
 - The metal free space around wheels fulfils the conditions of the figure 3 of the specification referenced in ERA/ERTMS/033821, clause 3.1.3.5.
 - The use of sanding equipment may be subject to limitations, in case the sand characteristics, referenced in ERA/ERTMS/033821, clause 3.1.4.2, are not suitable.
 - The unit, if equipped with flange lubrication, shall be fitted with a system allowing the possibility of preventing the use of such equipment, according to the specification referenced in ERA/ERTMS/033821, clause 3.1.5.



- For the case where the unit is equipped with composite brake blocks, these brake blocks shall be assessed for their suitability for train detection systems based on track circuits, in accordance with the procedure specified in ERA TD 2013-02 [15] (.ERA TD 2013-02/INT - FRICTION ELEMENTS FOR WHEEL TREAD BRAKES FOR FREIGHT WAGONS, to be added in Appendix J-2. Even if this TD was developed for freight wagons, it is adequate to be used under this condition).
- Electromagnetic fields measured according to the specification referenced in ERA/ERTMS/033821, clause 3.2.1, shall be part of the technical documentation.
- For units equipped with a pantograph, the vehicle impedance between pantograph and wheel, as described in the specification referenced in ERA/ERTMS/033821, clause 3.2.2.1 shall be evaluated and recorded in the technical documentation.
- Harmonics in traction current measured according to the specification referenced in ERA/ERTMS/033821, clause 3.2.2, shall be part of the technical file.
- The maximum speed of the unit is lower than 250km/h.
Note: it has been decided not to include the speed 250 km/h because from this speed, an on-board axle bearing condition monitoring system is required (clause 4.2.3.3.2); there is no open point, but the use of such on-board system is limited to HS trains today.
- The unit, if of category B fire safety, is equipped with fire barriers of full cross section partitions.

5.3 Specific cases in TSI LOC&PAS [4]

5.3.1 Analysis

The relevant specific cases for track gauge 1435mm lead to the following analysis:

- Specific cases that do not preserve the compliance to sections 4, 5 and 6 of the TSI
The following specific cases do not preserve the compliance with the core requirements of the TSI LOC&PAS [4], and by that, they shall not be applied:
 - Specific cases required by UK (GB) and specifying a non-mandatory alternative;
 - Rolling stock requirements for compatibility with trackside equipment (4.2.3.3.2.2) for SE – (application limited to non-upgraded lines);
 - Aerodynamic effects (4.2.6.2) for UK (GB);
 - Power supply – general (4.2.8.2) for UK (GB);
 - Contact strip material (4.2.8.2.9.4.2) for FR – (not specified as mandatory);
 - Specific cases defined in TSI PRM (excepted specific case for Austria and Germany for all rolling Stock intended to stop, in normal operation, at platforms below 550 mm height).

Depending on the exact impact of the specific case, the unit may be declared as not intended to operate in the related member state network, or part of the network.



- Pantograph head geometry (4.2.8.2.9.2)

For the objective of a unique EC verification procedure and consequent authorisation for the whole EU network, only units equipped of pantographs defined in clause 4.2.8.2.9.2 (1600 and 1950 mm) should be dealt with. By this, the unit if equipped with other pantograph(s), is excluded from the scope of application of the new TSI clause.

The corresponding specific cases concerning HR, FR, IT, SL, SE and UK – GB shall not be applied within the scope of unique EC verification procedure.

- Aerodynamic effects (4.2.6.2), Head pressure pulse (4.2.6.2.2) for UK – GB

This specific case concerns units with a maximum operating speed higher than 160 km/h and lower than 250 km/h.

It does not represent a restriction for the application of the new clause.

Possible operation restrictions can be applied.

- Specific cases that represent additional requirements, complementary to requirements of sections 4, 5 and 6 of the TSI.

The following specific cases represent additional “requirements” for units intended to operate in the related networks:

- Aerodynamic effects (4.2.6.2), Maximum pressure variations in tunnels (4.2.6.2.3) for IT.
- Operation within range of voltages and frequencies (4.2.8.2.2) for FR.
- Use of regenerative brakes (4.2.8.2.3) for BE, CZ and SE; The permission for regenerative braking is limited by the acceptance stated on RINF, so the existing specific cases do not represent a scope limitation, on the application of the new clause, but a matter of limits and conditions of use.
- Height of interaction with contact wires (RST level) (4.2.8.2.9.1.1) for UK – GB.
- Pantograph contact force and dynamic behaviour (4.2.8.2.9.6) for FR, SE, UK – GB and CT; for FR there are also addition conditions, regarding the environmental conditions, for the conformity assessment procedure.
- Fire safety and evacuation (4.2.10) for IT; there are additional specifications for units intended to be operated in the existing Italian tunnels regarding:
 - Fire detection systems (clauses 4.2.10.3.2 and 6.2.3.23);
 - Fire containment and control systems for passenger rolling stock (clause 4.2.10.3.4).
- Running capability (4.2.10.4.4) and fire containment and control system (4.2.10.3.4) for CT.
- Step position for vehicle access and egress (point 4.2.2.11): Specific case defined in TSI PRM [in clause 7.3.2.6, for Austria and Germany for all rolling Stock intended to stop, in normal operation, at platforms below 550 mm height).



From economic point of view the additional conditions, result of these specific cases, cannot be part of the optimum level of technical harmonisation and therefore should not be part of a TSI clause applicable to all. By this, if the unit is identified by the Applicant, as intended to operate in the concerned networks (sometimes the specific case is only applicable to specific lines in the network), the related specific case applies.

5.3.2 Additional conditions as result of the impact of the specific cases

Due to the specific cases, the following vehicles conditions need to be considered, to assure that an EC verification procedure and EC declaration of verification of a unit is not required to be complemented (under Annex V, section 3 of the Interoperability Directive) for having its “area of use” extended to additional national network(s):

- The unit if equipped with pantograph(s) is equipped with pantograph head(s) compliant to types 1600 mm or 1950 mm.
- The specific cases that do not preserve the compliance to sections 4, 5 and 6 of the TSI and to the additional conditions, result on the impact of the open points, shall not be applied;
- The specific cases that represent additional requirements, complementary to requirements of sections 4, 5 and 6 of the TSI and to the additional conditions, result on the impact of the open points, shall be applied, in case the unit is intended to operate in the related MS network.

5.4 Comments and view of Representative Bodies, NSAs and OTIF:

The ERA recommendation to the Commission is of technical nature, regarding technical checks in case of additional authorisation, and has no direct impact to the public, therefore the consultation of associations representing users would not have any added value. By this, it was decided to limit the external consultation to social partners.

The Representative Bodies involved in the social consultation (CER, ETF, EIM) are members of the working party and they were invited to provide comments also as Social Partners.

CER and EIM provided only comments of technical nature, which were taken into account for the final draft, and ETF confirmed having no comments to the proposed final text of the “Proposal for a TSI clause specifying the conditions for application of Article 23(1) of Interoperability Directive”.

CER presented their view regarding the opportunities brought by the project, for a more efficient transition taking into account the development of the Infrastructure Register and the procedures foreseen in the 4th Railway Package ; **CER presentation – “Chances of Unique Authorisation”:**



CER_150916_TSI_UA_draft_EN.pdf

After the WP meeting N°9, where the final draft was discussed, clarifications were provided following the requests from NSA DK, NSA NO and NSA FR (concerns regarding shunting capabilities, as presented in section 5.1.3 of this report). Agreement was confirmed by some members, and no negative comments were received at this final stage.



6. Conclusion from ERA

6.1 Input data available

The contributions from most of the members of the working party did not meet our expectations, in the initial phase. The main reason is that the members have to consult the IMs for collecting relevant data. After some meetings, with additional explanation of the purpose of the project and with dialogues and bilateral meetings, during the second and final stages of work, the inputs were more in line with the expectations that were set out in the original project plan.

The above-mentioned difficulty is related to the risk identified in the project plan, e.g. *“Difficulties in gathering relevant conditions for operation on existing networks (e.g. lack of knowledge of existing networks)”*. This risk was mitigated as explained.

Also a better structuration of the requested data helped, meaning a better split between the relevant data for a network and the relevant data for specific lines of that network.

6.2 Summary of the proposed approach

The authorisation for placing in service of railway vehicles is based on the EC declaration of verification signed by the Applicant.

For the objective of having a unique authorisation valid in EU, it is necessary to ensure that the EC declaration of verification, with its corresponding limits and conditions of use (included in the technical documentation), has taken into account the constraints of the EU networks and has defined the corresponding intended “area of use” of the unit.

ERA suggests additional conditions, in 2 parts: the first one covering the EC verification, the 2nd one covering the authorisation.

The part related to EC verification is applicable to all units in the scope of the TSI LOC&PAS.

This EC verification covers all functions and associated requirements of the rolling stock subsystem specified in the TSI LOC&PAS, including specific cases and open points; on-board equipment needed for other functions part of the CCS subsystem or specified in the TSI PRM are also taken into account (for example for the verification of the weighed mass in clause 4.2.2.10, of the gauging in clause 4.2.3.1), but only for their impact on parameters covered under the RST subsystem.

The part related to authorisation can only apply to particular types of units; the intermediate report mentions passenger coaches and ‘similar’ rolling stock still to be identified, e.g. those composing a vehicle alone (due to the fact that other vehicles need also a conformity assessment against the TSI CCS or national rules for CCS class B system).



It was suggested by the WP to define these vehicles by using definitions given in the section 2 of the TSI LOC&PAS, ERA analysed these definitions, and came to the conclusion that a definition based on the real technical constraint would be the most relevant; the suggested definition is the following:

“The vehicle shall correspond to a unit (as defined in this TSI) composed of a rolling stock subsystem only; the vehicle shall not be equipped with an on-board CCS subsystem (ERTMS or class B) “.

The case where on-board CCS subsystem is non-active may also be covered (e.g. CCS class A or CCS class B switched off, once not suitable on a given network).

In other words, a unit without functions in the scope of the on-board CCS subsystem (ERTMS or class B) is equivalent to the RST subsystem from a functional point of view; this means also that in practice the authorisation of the RST subsystem, based on its EC verification, is sufficient.

Passenger coaches are covered by this definition, but also rack of coaches, OTMs transported hauled by a locomotive.

In general, vehicles with a driving cab would be excluded because they are fitted with an active on-board CCS system.

This scope is aligned with the need expressed by OTIF for admission in international traffic; OTIF plans to adopt the same amendment in the corresponding UTP.

It has also to be noted that the new proposed clause has no direct impact on checks to be performed after authorisation for train composition and train-route compatibility, including aspects of compatibility with train detection systems.

6.3 Further activities

This report includes relevant information, collected and analyzed during the project, regarding interfaces between rolling stock and fixed installations.

Conclusions were also taken regarding the Area of use - limits and conditions of use, on the basis of the inputs collected, and consequent analysis of the interfaces of RST with fixed installations, and also the link with the registers (ERATV and RINF).

This information should be used as main input, for the future drafting of a guideline for RUs to check the technical compatibility of rolling stock with specific routes.

During the transition phase, from existing networks to TSI compliant networks, specific routes will be TSI compliant while others will still present deviations; the RINF and the TSI OPE were developed with consideration of this situation, and it is now necessary to clarify the procedure to be applied for compatibility with a specific route. If specificities of some existing routes continue to be expressed as mandatory requirements at authorisation level this would represent a barrier to the expected evolution; CER provided a general view of this in a presentation (included in the chapter 5.4.1 – *Chances of Unique Authorisation*) done on the 8th meeting of the WP.



Therefore, it is proposed to launch a new project for drafting the mentioned Guideline, explaining also how to use the available tools (Registers and information in the technical documentation).

6.4 Conclusion

The main targets of this project are achieved; the present state of the TSIs, and the definition of the registers (RINF, ERATV) to be used for compatibility checks have already taken into account most of the constraints for operation on the existing networks.

This represents a step towards a single European railway area, which is the objective of the EU legislation that has been developed and implemented for around 15 years.



7. Annexes

7.1 Tables of interfaces

N°	Title	Ref / Rev	Date
1	Interface table with INF	 Selection_Inputs_INF_27_08_2015.xlsx	27/08/2015
2	Interface table with ENE	 Selection_Inputs_ENE_21_09_2015.xlsx	21/09/2015
3	Interface table with TDS	 Selection_Inputs_TDS_13_11_2015.xlsx	13/11/2015