Accompanying Report N. ERA-REC-117-2016/ACR to the RECOMMENDATION of the European Railway Agency

on

amendments for closure of the remaining open points, improvement of implementation rules and technical update of WAG TSI

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Contents

1. Introduction

This Accompanying Report is an annex to Recommendation N. ERA-REC-117-2016/REC of the European Railway Agency on amendments for closure of the remaining open points, improvement of implementation rules and technical update of WAG TSI.

1.1. Background to the assignment

The European Railway Agency has performed a limited revision of WAG TSI according to its Work Programme 2015 - Activity 02.01 'Harmonized EU rules for vehicles (including all structural TSIs)'. The main reason for this revision is the need to review and update the TSIs in order to take account of developments in technology and social requirements.

By WAG TSI it is meant Regulation (EU) No 321/2013 as amended by Regulation (EU) No 1236/2013 and Regulation (EU) 2015/924.

The following legal texts represent the legal basis for this activity:

- Regulation (EC) No 881/2004 of the European Parliament and of the Council of 29 April 2004 establishing a European Railway Agency, hereafter referred to as the 'Agency Regulation', in particular Articles 2 and 12 thereof,
- 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, hereafter referred to as the 'Interoperability Directive', in particular Article 6 thereof.

This limited revision is an amendment to WAG TSI and has been drafted taking into account Article 12 of the Agency Regulation stating that 'The Agency shall […] propose to the Commission the amendments to the TSIs which it considers necessary'.

1.2. Contents of this report

Publication of this Accompanying Report is foreseen in the Project Plan of the TSI WAG Limited revision 2015 project (document ID: ERA-REC-117\PPL) in chapter 5 'Project Time Plan'. ERA is responsible for the publication with a timescale set on the end of 2015.

The Accompanying Report is one of the deliverables of the project to the European Commission, the other deliverable being a Recommendation on the revision of WAG TSI. To facilitate the reading of this Accompanying Report a structure similar to the already issued Progress Report is used.

As far as the content of this Accompanying Report is concerned, it details the composition of the project's WP and focuses on the technical topics dealt with during the meetings. It also lists the conclusions reached when discussing these technical topics.

2. Workgroups

2.1. Composition of the working party

According to Article 3.1 of the Agency Regulation 'For drawing up the recommendations [...] the Agency shall establish a limited number of working parties. These working parties shall take as a basis, on the one hand, the expertise built up by professionals from the railway sector [...] and, on the other hand, the expertise of the competent national authorities. The Agency shall ensure that its working parties are competent and representative and that they include adequate representation of those sectors of the industry and of those users which will be affected by measures which might be proposed by the Commission on the basis of the recommendation addressed to it by the Agency. The work of the working parties shall be transparent.'

The invitation to participate to the working party TSI WAG Limited revision 2015 was sent to the 10 representative bodies and to the 26 national safety authorities. During the execution of the project 2 new organisations obtained the status of a representative body and were subsequently invited by ERA to participate to the project. OTIF was also invited to participate on the basis of Administrative Arrangements signed between OTIF, DG MOVE and ERA.

ERA organised 6 WP meetings so far, to which participants came from 7 representative bodies, 11 national safety authorities and OTIF.

The project also contained a WP subgroup, which focused on the inclusion of the 1 520 mm railway system into the scope of WAG TSI. The invitation to participate to this WP subgroup was sent to the 10 representative bodies and to the 26 national safety authorities too with an emphasis put on the participation of experts dealing with the 1 520 mm railway system.

Two representative bodies and four national safety authorities participated to the 3 WP subgroup 1 520 mm railway system meetings held.

2.2. WP meetings participation

Table 1 : WP meetings participants

Organisation	*Kick-off meeting 28/10/2014*	*Meeting N°2 18/02/2015*	*Meeting N°3 10/06/2015*	*Meeting N°4 22/10/2015*	*Meeting N°5 10/12/2015*	*Meeting N°6 17/02/2016 18/02/2016*
CER	Y	Y	Y	Y	Y	Y
EC	Y					
EIM				Y		
ERFA	Y		Y			
NB-Rail AISBL						Y
NSA AT			Y	Y	Y	Y
NSA BE	Y	Y	Y	Y	Y	Y
NSA DE	Y	Y				Y
NSA ES	Y	Y	Y	Y	Y	Y
NSA FI			Y	Y	Y	Y

Organisation	*Kick-off meeting 28/10/2014*	*Meeting N°2 18/02/2015*	*Meeting N°3 10/06/2015*	*Meeting N°4 22/10/2015*	*Meeting N°5 10/12/2015*	*Meeting N°6 17/02/2016 18/02/2016*
NSA FR	Y	Y	Y	Y	Y	Y
NSA IT	Y			Y	Y	
NSA LU	Y	Y	Y	Y	Y	Y
NSA RO	Y	Y	Y	Y	Y	Y
NSA SE	Y	Y	Y	Y	Y	Y
NSA UK	Y	Y	Y	Y	Y	Y
OTIF				Y		
UIP	Y	Y	Y	Y	Y	Y
UIRR				Y	Y	
UNIFE	Y	Y	Y	Y		

2.3. WP subgroup 1 520 mm railway system meetings participation

Table 2 : WP subgroup 1 520 mm railway system meetings participants

Organisation	*Kick-off meeting 12/02/2015*	*Meeting N°2 02/06/2015*	*Meeting N°3 15/10/2015*
CER	Y	Y	Y
EC	Y		Y
EIM			Y
NSA EE	Y	Y	Y
NSA FI	Y		Y
NSA LT		Y	
NSA LV	Y	Y	Y

3. Working methods

In order to organise and manage the functioning of the workgroups, the rules stated in the ERA document RUL_PRM_002 'Working methods for workgroups providing input for Agency activities' were followed since the approval of the document in February 2015.

Extranet workspace of the project was established at https://extranet.era.europa.eu/Interop/TSI-WAG/SitePages/Home.aspx. This workspace gathers all documents of the project and is accessible to WP members and their deputies as well as to representative bodies' contact persons and all experts involved in other working parties organised by the Agency.

3.1. Work stages

The planning of this TSI WAG limited revision followed these work stages:

- Kick-off meeting to explain the objectives of the limited revision.
- Second to sixth WP meeting to develop and draft the amendments.
- Progress Report of 22nd September 2015 presented by ERA at RISC 74 meeting on 27th October 2015 to explain the main developments to the European Commission and Member States' representatives.
- Recommendation to the European Commission sent in April 2016.
- Seventh and eighth WP meeting to amend the Application Guide will be held in the first half of 2016.

4. Main aspects covered

4.1. Closure of remaining open points

WAG TSI contains 3 open points. The open point relating to the composite brake blocks in Appendix G was closed by the publication of Regulation (EU) 2015/924 on 17th June 2015.

The open points are listed in the following table:

Table 3 : WAG TSI open points

Element of the Rolling Stock sub-system	*Point*	*Technical aspect not covered by this TSI*	*Link to other subsystems to cover the open point*
Axle bearing condition monitoring	4.2.3.4	Option on board equipment	Equipment not mandatory.
Test conditions for on-track tests as set out in the EN 14363 are not always fully achievable	6.2.2.3 (4.2.3.5.2)	track geometric quality and combinations of speed, curvature, cant deficiency (point 5.4.2 of EN 14363).	
Variable gauge wheelsets	4.2.3.6.6	Assessment concerning the following requirement: The changeover mechanism of the variable gauge wheelset shall ensure the safe locking in the correct intended axial position of the wheel and any brake equipment attached.	

All the open points were closed as follows:

4.1.1. Axle bearing condition monitoring

ERA's proposal on how to close this open point is similar to clauses of LOC&PAS TSI dealing with the same issue - it specifies functional requirements on on-board monitoring of axle bearings. The two possibilities on how to monitor the axle bearing condition remain unchanged:

- line side detection equipment, or
- on-board equipment.

Although EN 15437-2 is available for interface and design requirements of on-board systems for temperature monitoring of axle boxes, this standard was not proposed by ERA for closing this open point. The reason is that the standard was mainly developed for high-speed trains and only at the end freight wagons were included following a top-down approach. Moreover, at the time the standard was drafted, there were no or very few technical solutions for freight wagons. In any case, ERA does not refer to the standard in LOC&PAS TSI; therefore, there is no justification for a reference in WAG TSI.

4.1.2. Test conditions for on-track tests as set out in EN 14363 are not always fully achievable

ERA's proposal for closing this open point is based on CEN advice following the issue of FprEN 14363:2014 (the final version of the standard will be EN 14363:2016 and will be published in 3Q2016).

The revised EN 14363 does not contain detailed test procedures and limit values for track gauges other than 1 435 mm. Therefore, requirements in WAG TSI covering these track gauges have been conserved. However, NSA ES considered that the existing requirements for the 1 668 mm track gauge were a mistake, although the same requirements are present in LOC&PAS TSI.

NSA ES considered that there is no experience in Spain with the application of these requirements to freight wagons as such wagons are approved following the simplified procedure set out in EN 16235:2013. ERA concluded that the TSI cannot be amended *ex-ante* and will be happy to reopen this discussion when a real authorisation case justifies it.

4.1.3. Variable gauge wheelsets

Variable gauge wheelsets were included in WAG TSI (point 4.2.3.6.6) in order to achieve a general acceptance of freight wagons equipped with such devices in all Member States. The requirement was limited to the safe locking of the wheels in the intended axial position after a changeover has been performed; its assessment remained an open point.

ERA issued a Request for Standard on this subject in 2009. Subsequently, an EN draft standard 'Railway applications - Systems and procedures for change of track gauge' was made available by CEN in January 2015. This draft standard includes both requirements and conformity assessment procedure. The conformity assessment procedure has the following elements:

- Risk analysis
- Fixed validation plan, which is composed of:
  - Design analysis
  - Laboratory tests, consisting of a bench test with 10^7 cycles under a predefined set of forces
  - Track tests, consisting of performing 500 passages on a changeover facility
  - In-service tests, consisting of additional on-track test of 250 000 km; the last 150 000 km of which may involve commercial operation

The fixed validation plan is a design and conformity assessment handbook that can't be part of a legislative harmonisation (i.e. TSI) because its real application to a project can only be defined on the basis of a deep knowledge of the technical solution envisaged by the applicant or the manufacturer (who takes responsibility for it). ERA sees the need for an applicant to have a freedom to define the verification procedure that fits best to his system.

Moreover, the draft EN standard does not provide a simplified verification procedure adaptable to the novelty/complexity of the variable gauge system (including its operative conditions) and therefore it can't be mandated by WAG TSI (once the EN standard is published).

ERA concluded that WAG TSI could be complemented with some requirements on the variable gauge wheelsets consistent with those already specified in the draft standard, and, additionally, WAG TSI should specify an acceptable level for the risk to be controlled, to be demonstrated by a safety analysis.

After a bilateral meeting with NSA ES, it was agreed to extend the requirements of the TSI (originally limited to the variable gauge wheelset locking system) to the complete system in order to cover interfaces with the changeover facilities. From there a new name - automatic variable gauge system. WAG TSI will set out requirements for the automatic variable gauge system, which is identified as an interoperability constituent, because the same system can be used on different freight wagons, and its validation may include in-service tests including the module CV. Compatibility with the changeover facility is one of the parameters defining the area of use of the interoperability constituent. Requirements and their corresponding assessment procedures are proposed both at interoperability constituent and subsystem level. The assessment procedure is a validation plan to be developed by the applicant by means of a safety analysis, taking into account the novelty of the proposed system and including:

- the existing systems taken as reference,
- the analysis of failure modes of the components constituting the system and their criticality, and
- the definition of design and testing measures at relevant component and subsystem level.

In accordance with Regulation (EU) No 402/2013, the risk analysis performed in order to determine the validation plan must be based either on an existing reference system or existing codes of practice; the validation plan described in the draft EN standard could be included in the Application Guide as a 'code of practice'. The compatibility of the freight wagon with the intended changeover facility shall be demonstrated by functional tests in real operating conditions. This is aligned with the draft standard and with existing standards covering similar systems, such as EN 13749, which sets out requirements for the validation of the bogie frame and EN 15827, which sets out requirements for the validation of the complete bogie. In both standards, the validation plan (design review, laboratory tests and on-track tests) is explained, but its exact content has to be covered (and justified) by the applicant taking into account the conditions, limits and area of use of its product. Simplified assessment processes are foreseen in both standards for products similar to an existing one.

The interoperability constituent automatic variable gauge system is part of the interoperability constituent wheelset. The assessment of the interoperability constituent automatic variable gauge system is carried out at interoperability constituent automatic variable gauge system level, at interoperability constituent wheelset level and at subsystem level.

NSA ES considered that the draft standard and its validation plan should be referred to in WAG TSI and that the open point should be kept open until the standard is available.

4.2. Extension of scope to the 1 520 mm railway system

As part of the WAG TSI revision process, ERA intended to include the 1 520 mm railway system within the scope of WAG TSI. The 1 520 mm railway system has already been included in the scope of other relevant TSIs - LOC&PAS TSI and INF TSI.

There were two main reasons for the inclusion of the 1 520 mm railway system in the WAG TSI scope:

- The part of the 1 520 mm railway system operated in the European Union is an European Union's railway system and as such must be covered by TSIs according to Article 5(1) of the Interoperability Directive
- Scope of the TSIs should be progressively extended to the whole rail system according to Article 1(4) of the Interoperability Directive

The objective of the scope extension was to define common requirements for all freight wagons authorised in any Member State for the 1 520 mm network. Freight wagons authorised in the framework of international agreements with third countries used for internal and/or external EU traffic within the geographical scope of these agreements would not require to be reauthorised in accordance with WAG TSI.

This topic was covered by a WP subgroup. Three meetings of this WP subgroup were held, which focused on the justification for the intended scope extension and the actual amendments to WAG TSI.

The extension of scope of WAG TSI to the 1 520 mm railway system is not included in the Recommendation. However, the work already performed could be the basis for future developments.

4.3. Guidance on modifications to an existing freight wagon

As part of the implementation of WAG TSI, ERA proposed guidance on modifications to an existing freight wagon. This guidance is also to be used in case of renewal or upgrade of a freight wagon. The existing freight wagon may either not be covered by an EC certificate of verification or be covered by an EC certificate of verification.

In case of an existing non-TSI compliant freight wagon (not covered by an EC certificate of verification), the following rules should apply:

- A new assessment against the requirements of WAG TSI may only be needed for the basic parameters which may be affected by the modification(s).
- If it is not economically feasible to fulfil the TSI requirement, the modification could be accepted if it is evident that a basic parameter is improved in the direction of the TSI defined performance.
- The replacement of a whole element within a rake of permanently connected elements does not require a conformity assessment against WAG TSI, as long as the element is identical to the one it replaces.
- Guidance to the Member States for those modifications that are deemed to be upgrades will be given in the Application Guide.

For existing TSI-compliant freight wagons (covered by an EC certificate of verification) the same provisions as for type or design modification to an existing type of a freight wagon should be applicable.

4.4. Definition of rules related to EC type/design examination certificates

4.4.1. Validity of certificates

ERA proposed rules for establishing the period of validity of EC type and design examination certificates. For this purpose, the following phases should apply:

- Phase A starts once a notified body responsible for EC verification is appointed by the applicant and ends when the EC type or design examination certificate is issued, and
- Phase B period defines the period of validity of the EC type or design examination certificate once it is issued by a notified body.

At the subsystem level, the TSI assessment basis is proposed to be fixed for 4 years; this period corresponds to the maximum time needed to design and produce a new freight wagon type.

For phase B, EC type or design examination certificate is proposed to be valid for 10 years; this period corresponds to the period of production of a freight wagon type without design modifications.

At the interoperability constituent level, the validity of EC type or design examination certificate or EC certificate of suitability for use is proposed to be 10 years.

The reason for these clarifications is to provide common rules giving visibility and legal certainty to the applicants when they undertake new developments (in particular from an economic point of view).

4.4.2. Modifications to a type of a freight wagon

ERA also proposed rules regarding the revision of EC type or design examination certificate in case of modifications (modifications to a type of a freight wagon). The approach is based on Decision 2010/713/EU, Recommendation 2014/897/EU and the recent amendments to the Annexes V and VI of the Interoperability Directive (by Directive 2014/106/EU).

Apart from the proposed general rules, the working party analysed the requirements of WAG TSI and tried to define the different scenarios and subsequent actions for every requirement impacted by a modification. Due to practical difficulties of this approach, the working party agreed not to provide too specific provisions in the TSI. This detailed approach will be considered for the Application Guide.

4.5. Guidance on interoperability constituents impacted by a specific case

The relevant sections of WAG TSI were revised in order to provide guidance on interoperability constituents impacted by a specific case.

Specific cases imply the application of notified national technical rules for the conformity assessment of a component instead of a TSI. On the other hand, the concept of an interoperability constituent implies an EU wide use of the component - in principle not compatible with specific national requirements. The body responsible for conformity assessment is also unclear in case of application of the TSI and national rules to the same component.

Following a request from UK, ERA issued a technical opinion on 17th April 2015 regarding this issue (ERA/OPI/2015-2). Main points are:

- When a component defined as an interoperability constituent in the core TSI is subject to a specific case, it may not anymore correspond to the concept of interoperability constituent, so an EC type or design examination certificate should not be required and the verification has to be done at subsystem level.
- However, in case the specific case is an additional requirement that allows to keep compliance to the core TSI (chapters 4 and 5) and its specification is fully included in section 7.3 of the TSI and does not refer to a national rule, the notified body can perform the conformity assessment and issue an EC type or design examination certificate, with the area of use of the component giving the necessary information (e. g. for use also on the railway network where the specific case applies).
- The same rationale may be applied for interoperability constituents subject to an open point.

ERA proposed to amend point 6.1.2 of WAG TSI to contain legislative provisions in line with the above mentioned analysis; the specification of specific cases in section 7.3 was also improved/clarified.

4.6. Review of standards referred to in the TSI

4.6.1. List of updated standards

The aim was to check every standard referred to in WAG TSI for new versions. If there was a new version of a standard, this new version was reviewed in order to decide whether it could replace the old version of the standard.

The new versions of the following standards (and one technical specification) were reviewed in order to consider the pertinence of replacing the versions currently referred to in WAG TSI:

- EN 1363-1:1999 - new version is EN 1363-1:2012
- EN 14363:2005 - new version is EN 14363:2016
- EN 14531-1:2005 - new version is EN 14531-1:2015
- EN 15085-1:2007 - new version is EN 15085-1:2007+A1:2013
- EN 15273-2:2009 - new version is EN 15273-2:2013
- EN 15528:2008 - new version is EN 15528:2015
- TS 45545-7:2009 - new version is EN 45545-7:2013
- EN 50125-1:1999 - new version is EN 50125-1:2014
- EN 50153:2002 - new version is EN 50153:2014

- EN 50343:2003 - new version is EN 50343:2014
- EN 50355:2003 - new version is EN 50355:2013

The outcome of this exercise was that from the enumerated new versions of standards all of them should replace the respective old versions.

4.6.2. Standards not published on time

The following standards are currently being drafted or are under revision and their amended or new versions are not yet approved or published:

- prEN 12082
- prEN 13103-1
- EN 13260:2009+A1:2010/prA2
- prEN 13262 rev
- EN 1363-1:2012/prA1
- EN 15273-2:2013/FprA1
- FprEN 15551
- FprEN 15566
- prEN 15595

These amended or new standards will be taken into account during the next WAG TSI revision cycle.

4.7. Review of UIC leaflets and ERA technical documents

All UIC leaflets referred to in WAG TSI were checked in order to consider their substitution by EN standards or ERA technical documents. In addition, ERA technical documents were also checked in order to consider their substitution by EN standards.

The following substitutions were proposed:

- ERA technical document ERA/TD/2012-04/INT 'Attachment devices for rear-end signals, clearance for draw hooks, space for shunting staff operation, footsteps and handrails' should be replaced by EN 16116-2:2013,
- ERA technical document ERA/TD/2012-05/INT 'Specifications on slack adjusters' should be replaced by EN 16241:2014 (with the exception of clause 6.3.6), and
- ERA technical document ERA/TD/2013/01/INT 'Specific procedures for running dynamics' should be replaced within the reworded clauses on running dynamic behaviour in connection with the closure of the open point on running dynamic behaviour.

4.8. Other issues dealt with in the revision process

4.8.1. Review of technical scope

The application of WAG TSI to special transport vehicles (e.g. Schnabel freight wagons) is contentious.

The proposed way forward is to exclude special transport vehicles in loaded configuration from the scope of WAG TSI. The justification for this exclusion is that the load of these vehicles determines some of the basic parameters, e.g. strength of vehicle structure; therefore, these basic parameters cannot be assessed at the authorisation phase.

On the other hand special transport vehicles in unloaded configuration may remain within the scope of WAG TSI on a voluntary basis in order to allow them to be authorised and operated in all Member States in empty configuration.

Such solution would keep the possibility for special transport vehicles in empty mode to benefit from WAG TSI (in particular point 7.1.2 on mutual recognition of the first authorisation for placing in service).

Similar approach is adopted in case of mobile railway infrastructure construction and maintenance equipment in transport configuration only and when hauled.

4.8.2. Clarification on strength of unit

The point 4.2.2.2 of WAG TSI needed clarification for units consisting of separate rail bogies connected to compatible road vehicles given their bi-modal specification. After some discussion, the following text was agreed: '*In case of a rake of a rail compatible system composed of separate rail bogies connected to compatible road vehicles, the load cases may differ from those mentioned above, due to their bi-modal specification; in such a case, the load cases considered shall be described by the applicant based on a consistent set of specifications with consideration of the specific conditions of use related to train composition, shunting and operation.*'

4.8.3. Consideration of experience of application of the TSI and feedback from incidents/accidents

Two topics were discussed under this point of the WAG TSI revision process:

- Feedback from freight train derailment in Bressanone
- Fire safety requirements
- Portable tail lamps

1) Feedback from freight train derailment in Bressanone

NSA IT proposed to review point 6.1.2.2 'Wheelset' of WAG TSI based on the analysis made after the Bressanone train derailment (derailment of a freight train caused by displacement of three wheels of two wheelsets from their wheel seats). NSA IT proposed to include additional wheelset assembly requirements to the WAG TSI point in question. NSA IT also requested CEN to amend EN 13260 'Railway applications - Wheelsets and bogies - Wheelsets - Product requirements'.

After some discussion, an additional requirement on the verification procedure ensuring that no defects may detrimentally affect safety is proposed to be included in WAG TSI: '*This procedure shall contain the determination of the interference values and, in case of press-fitted wheelsets, the corresponding press-fitting diagram.*'

2) Fire safety requirements

Under this point coating of axles and other fire safety requirements were discussed.

Regarding coating, WP members explained that coating of axles not only prevents corrosion but also functions as a safety indicator of a possible overheating in coated wheels. Furthermore, notches in highly loaded components are the main reasons for cracks and therefore failure of the components during operation (axles of wheelsets are highly loaded components of freight wagons). Notches can be caused by both mechanical damage (e.g. by hits) or corrosion. Therefore, it is highly recommended to avoid any notches at wheelsets. One reasonable way is to protect the axle with a high performance painting. Modern and innovative painting systems have layers of up to 800 µm to ensure safety against mechanical damages (e.g. stones hitting the axle, other mechanical impact to the axle) as well as to ensure a reliable protection against any corrosion over the whole lifetime of the axle.

CER claimed that most types of coating don't comply with the fire requirements set out in the WAG TSI; It is therefore proposed to exclude wheelsets (both coated and uncoated) from fire safety requirements. This proposal is backed by the fact, that there is no evidence of a fire of a freight wagon starting from a wheelset. The Working Party (including NSAs) supported this proposal.

Regarding other fire safety requirements, ERA included a verification procedure for rubber parts of bogies by reference to EN 45545-2:2013+A1:2015 and ISO 5660-1:2015 as an alternative to the current verification procedure. This new verification procedure is less stringent than the current requirement set out in the TSI and its inclusion is a first step in a further clarification of fire safety strategy of WAG TSI. The justification for the need of reconsidering the fire safety strategy is that it remains unclear whether the current material requirements of the TSI are achievable or reasonably practicable.

3) Portable tail lamps

NSA ES explained that the Spanish sector was unable to find on the European market portable tail lamps with a luminous area diameter equal to or higher than 170 mm as required in Appendix E. After a thorough debate within the WP and given that the lamp technology has greatly improved with LED solutions, it was decided to delete the minimum diameter requirement from Appendix E.

4.8.4. Review of conditions in point 7.1.2

The conditions (a) - (f) of point 7.1.2 define an agreed common way on how to cover open points and specific cases in WAG TSI. The remaining conditions (g) - (k) of point 7.1.2 were intended to mitigate concerns of Member States about the maturity of the railway sector.

The conditions (a) - (c) are proposed to be withdrawn as a consequence of the closure of the corresponding open points. Furthermore, conditions (g) and (k) are reworded and a new condition is added dealing with the marking of parking brake force in kilonewtons.

4.8.5. Possible integration of RID technical requirements falling in the scope of WAG TSI

The idea in the revision scope was to discuss a possible move of some RID technical requirements to WAG TSI. These requirements concern the tanks themselves (e.g. passive safety strength of the tank) or a grey area between the structure of the freight wagon and the tank (e.g. crash buffers or protection against overriding of buffers).

A working group was established by the European Commission and OTIF in 2015 in order to analyse the relationship between RID and TSIs. The outcome of this working group is a precondition to a possible transfer of requirements from RID to WAG TSI.

ERA concluded that there wasn't enough time to take the results of this working group into account during this WAG TSI revision.

4.8.6. Mistake correction and integration of amendments, ERA technical opinions/advices and RfUs

The following mistakes and amendments were identified in WAG TSI and are proposed to be corrected:

- Point 4.2.2.2: The reference to EN 15877-1:2012 should read 'point 4.5.14' instead of 'point 4.5.13'.
- Point 6.1.2.5 and Appendix D: The reference to ERA technical document ERA/TD/2013-02/INT should read 'version 3.0 of 27.11.2015' instead of 'version 2.0 of XX.XX.2014'. The new version of this ERA technical document updates the reference to EN 16452:2014.

RFU-RST-033 was taken into account (as described in point 4.8.3(2)) of this Accompanying Report.

There are no ERA technical opinions/advices relating to WAG TSI at the moment.

4.8.7. Other amendments

Other minor proposed amendments include:

- Amendment of the reference to CCS TSI,
- Inclusion of a marking of parking brake force in kilonewtones in point 7.1.2,
- Inclusion of a definition of a wheelset,
- Inclusion of alternative assessment procedure for axle boxes/bearings, and
- Amendments of Appendix C.

5. Follow-up

5.1.1. Review of the Application Guide

The Application Guide will be reviewed during WP meetings Nos. 7 and 8 taking into account all the modifications done during the revision process.

Other issues that will be dealt with in the Application Guide:

- Integration of the experience of application of WAG TSI, particularly from the notified bodies
- Clarification regarding marking
- Review of the point regarding wheel slide protection
- Clarification on automatic variable gauge systems
- Clarification on axle boxes/bearings
- Clarification on the application of common safety method for risk evaluation and assessment within the reference case for safety requirements of the brake system
- Review of the reference documents mentioned in the Application Guide
- Alignment of the Application Guide with Recommendation 2014/897/EU

6. Impact assessment

The objective of this limited revision is to complement WAG TSI, which was already globally evaluated during the full revision. The proposed amendments complement the existing WAG TSI and are covered by that impact assessment. The closure of open points, through this limited revision, will also be positive, in that it allows Member States the opportunity to remove any national technical rules covering the open points. Where national technical rules exist, they will be replaced by the single requirement contained in WAG TSI.

As far as the introduction of new points on modifications is concerned, Article 5(2) of the Interoperability Directive states that subsystems shall permanently keep compliance with the TSIs while they are in use. The new points reflect this principle.

7. Conclusions and next steps

7.1. Open points

All remaining open points in WAG TSI are proposed to be closed within this revision cycle.

The open point on axle bearing condition monitoring should be closed by defining functional requirements on on-board monitoring of axle bearings.

The open point on running dynamic behaviour should be closed in accordance with the CEN proposal and the forthcoming publication of EN 14363:2016.

The open point on variable gauge wheelsets should be closed by defining functional requirements on variable gauge wheelsets plus a risk analysis.

As a consequence of the closure of the open points, conditions (a) - (c) of point 7.1.2 (mutual recognition of the first authorisation for placing in service) should be deleted.

7.2. Scope extension

Based on internal considerations and taking into account that the European Commission plans to issue new mandates following the adoption of the 4th Railway Package, it has been decided to put the extension of scope of WAG TSI to the 1 520 mm railway system on hold.

As soon as new mandates for revising the TSIs will be issued by the European Commission, it is likely that the work already performed will be the basis for continuing this development.

7.3. Other issues dealt with in the revision process

The recommendation to the European Commission includes provisions for:

- Rules to be applied in case of modifications to an existing freight wagon and a type of a freight wagon
- Validity of certificates
- Interoperability constituents impacted by a specific case
- Revision of EN standards and ERA technical documents
- Review of the technical scope
- Strength of unit
- Conformity assessment of a wheelset
- Coating of wheelsets

7.4. Next steps

Two important points will be discussed during the next WAG TSI revision cycle:

- Guidance on technical compatibility with a given route
- Alignment of WAG and LOC&PAS TSIs' structure and, where possible, contents
- Redefinition of the fire safety requirements on materials

8. Annex 1: Definitions and abbreviations

8.1. Definitions

Table 4 : Table of definitions

Definition	*Description*
Module CV	Type validation by in-service experience (suitability for use)

8.2. Abbreviations

Table 5 : Table of abbreviations

Abbreviation	*Description*
AT	Austria
BE	Belgium
CCS TSI	Technical specification for interoperability relating to the control-command and signalling subsystems
CEN	European Committee for Standardization
CER	Community of European Railway and Infrastructure Companies
DE	Germany
DG MOVE	Directorate General for Mobility and Transport of the European Commission
EC	European Commission / European Community
EE	Estonia
EIM	European Rail Infrastructure Managers
EN	European Standard
ERA	European Railway Agency
ERFA	European Rail Freight Association
ES	Spain
EU	European Union
FI	Finland
FR	France
INF TSI	Technical specifications for interoperability relating to the 'infrastructure' subsystem of the rail system in the European Union
IT	Italy
OTIF	Intergovernmental Organisation for International Carriage by Rail

LOC&PAS TSI	Technical specification for interoperability relating to the 'rolling stock — locomotives and passenger rolling stock' subsystem of the rail system in the European Union
LV	Latvia
LT	Lithuania
LU	Luxembourg
NB-Rail AISBL	Notified Bodies Association
NSA	National Safety Authority
PPL	Project Plan
PRM	Project and Programme Management
REC	Recommendation
RfU	Recommendation for Use
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
RO	Romania
RST	Rolling Stock
SE	Sweden
TS	Technical Specification
TSI	Technical specification for interoperability
UIC	International Union of Railways
UIP	International Union of Wagon Keepers
UIRR	International Union for Road-Rail Combined Transport
UK	United Kingdom
UNIFE	European Rail Industry Association
WAG TSI	Technical specification for interoperability relating to the 'rolling stock — freight wagons' subsystem of the rail system in the European Union
WP	Working Party / Work Programme

9. Annex 2: Reference documents

Table 6 : Table of reference documents

N°	*Title*	*Reference*	*Version*
[1]	European Railway Agency Work Programme 2015	ERA WP 2015	
[2]	Administrative Arrangements between the Intergovernmental Organisation for International Carriage by Rail (OTIF), the Directorate General for Mobility and Transport of the European Commission (DG MOVE), and the European Railway Agency (ERA)		24/10/2013

10. Annex 3: Reference legislation

Table 7 : Table of reference legislation

N°	*Title*	*Reference*	*Version*
[1]	Regulation of the European Parliament and of the Council establishing a European railway agency	881/2004	
[2]	Directive of the European Parliament and of the Council on the interoperability of the rail system within the Community	2008/57/EC	
[3]	Commission Regulation 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	321/2013	
[4]	Commission Regulation concerning the technical specification for interoperability relating to the subsystem 'rolling stock — freight wagons' of the rail system in the European Union and amending Regulation (EU) No 321/2013	1236/2013	
[5]	Commission Regulation amending Regulation (EU) No 321/2013 concerning the technical specification for interoperability relating to the subsystem 'rolling stock — freight wagons' of the rail system in the European Union	2015/924	
[6]	Commission Implementing Regulation (EU) No 402/2013 on the common safety method for risk evaluation and assessment and repealing Regulation (EC) No 352/2009	402/2013	
[7]	Commission Regulation 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	1302/2014	
[8]	Commission Regulation on the technical specifications for interoperability relating to the 'infrastructure' subsystem of the rail system in the European Union	1299/2014	
[9]	Commission Decision 2010/713/EU 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	2010/713/EU	
[10]	Commission Recommendation on matters related to the placing in service and use of structural	2014/897/EU	

N°	*Title*	*Reference*	*Version*
	subsystems and vehicles under Directives 2008/57/EC and 2004/49/EC of the European Parliament and of the Council		
[11]	Commission Directive 2014/106/EU amending Annexes V and VI to Directive 2008/57/EC of the European Parliament and of the Council on the interoperability of the rail system within the Community	2014/106/EU	