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Catalogue of examples

Examples for the practical arrangements for the vehicle authorisation process

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1. Introduction

1.1. Background

The “Guidelines for the practical arrangements for the vehicle authorisation process” [4] provide the additional information supporting the implementation of the vehicle authorisation process. To facilitate the understanding of certain concepts and technical or procedural aspects laid down in the “Commission Implementing Regulation 2018/545 on practical arrangements for the railway vehicle authorisation and railway vehicle type authorisation process” [3], it is necessary to develop some practical examples, which are provided in this catalogue of examples.

This catalogue of examples is a stand-alone document which complements the “Guidelines for the practical arrangements for the vehicle authorisation process” and has to be read in the light of these guidelines and of provisions required by the “Commission Implementing Regulation on practical arrangements for the railway vehicle authorisation and railway vehicle type authorisation process 2018/545”. It will be further consolidated in the future, considering the experience gained regarding the implementation of railway the vehicle authorisation and railway vehicle type authorisation process.

The examples provided in this catalogue have been developed by the Agency and were subject to a consultation of the interested parties during the development of the “Guidelines for the practical arrangements for the vehicle authorisation process”.

1.2. Scope

The scope of the “Catalogue of examples - Examples for the practical arrangements for the vehicle authorisation process” is the same as Commission Implementing Regulation 2018/545 on practical arrangements for the railway vehicle authorisation and railway vehicle type authorisation process” and the “Guidelines for the practical arrangements for the vehicle authorisation process” as laid down in Article 21 and 24 of Directive (EU) 2016/797[2].

1.3. Objectives

This document is intended to provide examples that can be used to illustrate the practical application of “Commission Implementing Regulation 2018/545 on practical arrangements for the railway vehicle authorisation and railway vehicle type authorisation process” and the “Guidelines for the practical arrangements for the vehicle authorisation process”. It forms part of the whole guiding documentation supporting applicants and authorising entities in the achievement of their respective tasks as far as the railway vehicle authorisation and railway vehicle type authorisation process is concerned.

The examples contained in this document aim to support a consistent implementation of the railway vehicle authorisation and railway vehicle type authorisation. However, the examples provided are only for informative purposes, it cannot be considered as exhaustive lists of cases and cannot not be used as such without a detailed assessment of the specificities and particularities of each particular authorisation project by the applicant and the authorising entity.

2. References, definitions and abbreviations

2.1. Reference Documents

Table 1 : Table of Reference Documents

[Ref.]	Title	Reference	Version / date
[1]	DIRECTIVE (EU) 2016/797 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 May 2016 on the interoperability of the rail system within the European Union (recast)	(EU) 2016/797	11-05-2016
[2]	COMMISSION IMPLEMENTING REGULATION on the common safety method for risk evaluation and assessment and repealing Regulation (EC) No 352/2009	(EU) 402/2013	30-04-2013
[3]	COMMISSION IMPLEMENTING REGULATION (EU) 2018/545 of 4 April 2018 on establishing practical arrangements for the railway vehicle authorisation and railway vehicle type authorisation process pursuant to Directive (EU) 2016/797 of the European Parliament and of the Council	(EU) 2018/545	04-04-2018
[4]	Guidelines for the practical arrangements for the vehicle authorisation process 1.0	ERA-PRG-005/02_361	1.0

2.2. Definitions and Abbreviations

The general terms and abbreviations used in the present document can be found in a standard dictionary.

Specific terms and abbreviations either defined below or can be found in the “Guidelines for the practical arrangements for the vehicle authorisation process”.

Table 2: Table of Abbreviations

Term	Definition
CSM	Common Safety Methods
CCS	Control-command and signalling
EC	European Commission
EMU	Electric multiple unit
ERATV	European Register of Authorised Types of Vehicles
EU	European Union
NSA	National Safety Authority
OCL	Overhead contact line
RA	Risk Assessment
TSI	Technical Specification for Interoperability

3. Management of the document

It is envisaged to regularly review and when necessary update and/or amend the “Catalogue of examples - Examples for the practical arrangements for the vehicle authorisation process” according to the experience gained in the implementation of the vehicle authorisation process according to the “Commission Implementing Regulation 2018/545 on practical arrangements for the railway vehicle authorisation and railway vehicle type authorisation process”.

It is proposed to perform a review of the document two times per year depending on the amount and importance of the change requests received. A lesser regularity could be considered if no further need appeared necessary.

Users, being any stakeholders or national safety authorities, can propose new example or introduce requests for changes to the ‘catalogue of examples using the ‘Comment sheet’ provided in Annex I of this document, and sending it to VAFeedback@era.europa.eu .

The change requests will be reviewed by the Agency taking into account to the needs identified in the course of the implementation of the vehicle authorisation process.

The Agency will assess the change requests and propose when relevant a draft updated version of the “Catalogue of examples - Examples for the practical arrangements for the vehicle authorisation process” to the NSA Network and the Network of Representative Bodies for a two months consultation.

After this consultation, the Agency reviews the comments received and publish a revised version of the “Catalogue of examples - Examples for the practical arrangements for the vehicle authorisation process” on its website.

The Agency can also propose a revision on its own initiative. In such case, the Agency will follow the same process and also send relevant a draft updated version of the “Catalogue of examples for the practical arrangements for the vehicle authorisation process” to the NSA Network and the Network of Representative Bodies

The Agency should, when possible, coordinate the review and the consultation with the stakeholders for the “Guidelines for the practical arrangements for the vehicle authorisation process” and the “Catalogue of examples - Examples for the practical arrangements for the vehicle authorisation process”.

4. Examples for the practical arrangements for the vehicle authorisation process

The heading for each example gives reference to the relevant chapter or annex of “Working Paper Draft 0.6 Guidelines for the practical arrangements for the vehicle authorisation process” [7].

4.1. Chapter 3.2.2.16 Vehicle type variant

1. A diesel locomotive authorised for the whole network in a Member State. The manufacturer develops a bi-mode variant using a smaller diesel engine and adding electric traction equipment for operation on the 25kV system. Otherwise the locomotive is the same. The LOC & PAS TSI specifies that the addition of electric traction equipment and addition of operation on 25kV electric lines is a change to the basic design characteristics. In accordance with the Article 21(12)(a), a new vehicle authorisation for placing on the market is required and the bi-mode locomotives are a variant of the original diesel type.

4.2. Chapter 3.2.2.17 Vehicle type version

1. An electric locomotive for mixed traffic duties is modified to be more suitable for dedicated freight service use. The traction software is modified in order to improve traction effort at lower speed. This limits the maximum speed of the modified locomotive. The basic design characteristic “maximum speed” from the clause 4.2.3.4 of the TSI Loc&Pas is impacted but the TSI does not require a new authorisation for the change envisaged (decrease of the maximum speed compared to the original design), assuming that this change does not impact other parameters (e.g.: electromagnetic compatibility or current collection.). . A new vehicle type version is required. . The modified locomotive is a version of the existing mixed traffic locomotive

4.3. Chapter 3.3.1 Requirements capture

4.3.1. The aspects that need to be covered by requirements capture

1. An example of aspects that need to be covered by requirements capture could be (but is not limited to) reliability and availability. Some elements of a vehicle’s design have to meet reliability targets defined in TSIs and/or national rules, predominantly from the point of view of managing the safety risks arising from failures. Other elements are not subject to strict technical requirements, and the process of requirements capture should cover the methods that the applicant will use to ensure that the vehicle does indeed meet the essential requirement reliability and availability.

4.4. Chapter 3.3.2.1 Identification of the relevant authorisation

4.4.1. Renewed vehicle type authorisation (case (b))

Example of when a renewed vehicle type authorisation is applicable:

1. The TSIs will specify in the future when a renewed vehicle type authorisation can be issued. An example of what a TSI may specify could be when there is the implementation of a change of TSI specification for on-board CCS software in order to be compatible with a changed ground-based CCS characteristic. If the existing design conforms to the new TSI specification without any change then the vehicle type authorisation can be renewed.

4.5. Chapter 3.3.2.2 Changes to an already authorised vehicle type

4.5.1. Category (a) - Changes that do not introduce a deviation from the technical files accompanying the EC declarations for verification for the subsystems.

1. Renewal of a failed fuse with another of the same specification. This constitutes substitution in the framework of maintenance and does not affect the validity of the EC declarations of verification and the accompanying technical files. It is unlikely that a change at this level will need to be recorded in the technical documentation for the vehicle.

4.5.2. Category (b) - Changes that introduce a deviation from the technical files accompanying the EC declarations for verification for the subsystems which may require new checks and therefore require verification according to the applicable conformity assessment modules but do not have any impact on the basic design characteristics of the vehicle type.

In all cases of category (b) changes, the technical file needs to be updated and the relevant information made available upon request of the authorising entity and/or the concerned NSAs for the area of use

1. Replacement of a passenger door pneumatic actuator with an electric actuator. While not changing the door mechanism, the different force characteristics of the alternative actuator has the potential to affect the maximum force on an obstacle obstructing the doors' closure. The verification confirms that the system remains compliant with the applicable TSI requirements.
2. Addition of a sliding bridging plate at the door threshold, for which passive provision had been made in the original door system design so that only small changes are required to integrate the bridging plate into the door system. New assessments allow to ensure that the modification remain compliant with the existing applicable TSI requirements. The door system is not a basic design characteristic. The overall safety level of the vehicle concerned is unlikely to be adversely affected by this modification and therefore a new authorisation is not required by Article 21(12) of Directive EU 2016/797.

4.5.3. Category (c) - A change in the basic design characteristics of the vehicle type that does not require a new authorisation according to the criteria set out in Article 21(12) of Directive (EU) 2016/797.

In all cases of category (c) changes, new checks are required to verify that the system remains compliant with the applicable TSI requirements. The technical file needs to be updated and the relevant information made available upon request of the authorising entity and/or the concerned NSAs for the area of use. The new version of the vehicle type has to be registered in ERATV.

1. Altered seat layout to increase space for standing passengers. Compliance with the TSI requirements is maintained – verification of this is required – but it is possible that the basic design characteristics have changed: the design mass under normal and exceptional payloads may differ from the original design to an extent that changes the line category with which the vehicle is compatible. As there are no changes that go outside the range of acceptable TSI parameters and the overall safety level of the vehicle concerned is unlikely to be adversely affected a new authorisation is not required by Article 21(12) of Directive EU 2016/797.

4.5.4. *Category (d) - A change of the vehicle type that requires a new authorisation according to the criteria set out in Article 21(12) of Directive (EU) 2016/797.*

In all cases of category (d) changes, a new authorisation is required.

1. Addition of a sliding bridging plate at the door threshold which is controlled separately from the door system. Only small changes are required to integrate the bridging plate into the door system. Compliance with the existing applicable TSI requirements is maintained. This does not relate to a basic design characteristic but the separate control of the bridging plate may potentially affect the overall safety level of the vehicle concerned.
2. Altered seat layout as described in 4.6.3 above, but including replacement of full width tables with partial width tables to increase the standing space where seats have been removed. Although the design of tables is not covered by TSI parameters, it is known from accident investigation reports that in some circumstances partial width tables can result in higher levels of risk to passengers and therefore there is the potential for the change to adversely affect the overall safety level of the vehicle concerned.
3. Change of inner coupling. Inner couplings of a passenger articulated trainset are replaced by a new inner coupling system providing better longitudinal strength performance. The inner coupling is not a basic design characteristic and its modification does not modify the condition of use of the vehicle but as the change may adversely affect the overall safety level of the vehicle a new vehicle authorisation for placing on the market is required.

4.6. Chapter 3.3.5 Temporary authorisation to use the vehicle for tests on the network

4.6.1. *(c) Assessment of the risks*

1. An example of the management of hazards through a combination of measures is where the brake performance at the vehicle's maximum speed requires testing to demonstrate compliance with the relevant rule. Therefore, at this stage when the on-track test campaign begins, not all hazards can be demonstrated as being controlled through compliance with rules. In order to manage the risks arising from this testing the proposer performs a risk evaluation and is likely to make reference to the following:
 - › Design rules that give assurance that the braking architecture itself is compliant to the relevant design requirements provided in the rule;
 - › A reference system that shows how the established brake system design has been shown to be fit for purpose in similar applications;
 - › Results of static braking tests; and/or
 - › A risk estimation of the influence of elements such as an increase in speed or mass or a change of friction material.

However, the management of residual risks is likely to give rise to safety measures for the brake testing such as confirming the brake performance at a series of increasing speeds, or operational measures such as enhanced arrangements to ensure separation of trains and revised working methods for level crossings in the area where testing is taking place.

4.7. Chapter 3.7.10 The assessment of the application by the NSAs for the area of use

4.7.1. *Return of experience*

1. An existing fleet of vehicles constructed by a manufacturer has experienced technical difficulties with wheel slide protection on a braking system that has been provided by a supplier. This return of experience would direct the assessor to consider the elements of the application relating to the manufacturer's integration of the supplier's wheel slide protection into a new vehicle. It would also be appropriate to explore how the manufacturer manages the integration of systems into vehicles.

4.8. Chapter 3.7.11 Categorisation of issues

4.8.1. 'Type 1' issue:

1. The authorising entity identifies that the cross-references between the different documents composing the application file are incorrect and make the assessment of the file difficult. The applicant corrects the application file by providing documents where the mistakes have been corrected.

4.8.2. 'Type 2' issue:

1. A typographical carry-over from the technical file for another contract, but that has no technical implications. The applicant is notified, and the choice of whether to make a correction to the text is left to the applicant.

4.8.3. 'Type 3' issue:

1. An applicant applies for a new authorisation of EMU, already authorised to run in a single unit formation, to run in 2 and 3 multiple unit formation. The authorising entity identifies that the application file provided for a new authorisation of these EMUs to run with a 3 unit formation does not contain evidence regarding the compatibility of the pantographs arrangement and spacing of the 3 unit configuration with an OCL design distance configuration requested in the intended area of use. The applicant proposes a restriction on the use of the EMU in 3-unit formation until the evaluation is carried out.

4.8.4. 'Type 4' issue:

1. The fatigue analysis of a wheelset is found by the authorising entity to be only partially achieved through Notified Body's report and therefore not enough to demonstrate the compliance of the wheelset with the relevant requirements. The authorising entity lodges a 'type 4' issue and the authorisation cannot be issued if the applicant does not complete the fatigue analysis before the end of the timeframe for assessment.

4.9. Chapter 3.7.12 Justified doubt

1. A NSA for the area of use identifies that return of experience calls into question the algorithms incorporated into the software of the wheel slide protection equipment fitted to a fleet of trains that is operating in passenger service. Under certain conditions the system does not improve retardation in areas of poor adhesion, and this was not identified at the time of authorisation. Two serious incidents have been associated with this shortcoming. The same wheel slide protection equipment is fitted to the rolling stock that is the subject of an application for authorisation. The NSA for the area of use lodges a type 4 issue for this justified doubt and justifies it using the evidence from the return of experience.

4.10. Annex I Content of the application

4.10.1. Point 18.2 - Mapping table indicating where the information needed for the aspects to be assessed according to Annex II and III can be found

Table 3: Example of mapping table

ID	Assessment aspect <i>(according to Annex II and III of Commission Implementing Regulation 2018/545)</i>	Documentary evidence <i>(title of the document (name/ version/ date) or link to the uploaded document)</i>	Reference and description <i>(reference and description)</i>
1	Annex II point 1 and Annex III point 1- Application consistent with the pre-engagement baseline (where applicable)	Application form version 1.0	Point 9
2	Annex II point 2 - Authorisation case selected by the applicant is adequate	Application form version 1.0 Annex 1 Description of the changes	Point 2 N/A (whole document)
3	Annex II point 3 - Rules and requirements identified by the applicant are correct	Application form version 1.0 Annex 2 Requirements capture	Point 13 Chapter 3 Evidence
4	Annex II point 4 and Annex III point 4 - Selected conformity assessment bodies (notified body(ies), designated body(ies), assessment body (CSM RA)) have the proper accreditation or recognition as applicable	Annex 3 Conformity Assessment bodies	Chapters 3, 4 and 5

Annex I Comment sheet

Document Review – Comment Sheet

Document commented: Catalogue of examples 1.0 (ERA-PRG-005/02-374)

<i>Requestor:</i>	The Agency
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	<i>Reviewer 1</i>	<i>Reviewer 2</i>	<i>Reviewer 3</i>	<i>Reviewer 4</i>	<i>Reviewer 5</i>
<i>Date:</i>					
<i>Name:</i>					
<i>Organisation:</i>					
<i>Email:</i>					

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1.0		

<i>Type of Comment</i>		<i>Reply by requestor</i>	
<i>G</i>	General	<i>R</i>	Rejected
<i>M</i>	Mistake	<i>A</i>	Accepted
<i>U</i>	Understanding	<i>D</i>	Discussion necessary
<i>P</i>	Proposal	<i>NWC</i>	Noted without need to change

Review Comments <if necessary add extra lines in the table>

<i>N°</i>	<i>Reference (e.g.Art, §)</i>	<i>Type</i>	<i>Reviewer</i>	<i>Reviewer's Comments, Questions, Proposals</i>	<i>Reply</i>	<i>Proposal for the correction or justification for the rejection</i>
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