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## Guide for the application of the TSI OPE

*In accordance with Article 19(3) of Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016*

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## 1. Scope of this guide

### 1.1. Content of the guide

Guidance on the application of the technical specification for interoperability relating to the operation and traffic management subsystem of the rail system in the European Union by railway undertakings and infrastructure managers.

### 1.2. Reference documents

<i>DOCUMENT REFERENCE</i>	<i>OFFICIAL JOURNAL</i>
[1] Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016 on the European Union Agency for Railways and repealing Regulation (EC) No 881/2004	L 138, 26.5.2016, p. 1-43
[2] 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	L 138, 26.5.2016, p. 44-101
[3] Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety	L 138, 26.5.2016, p. 102-149
[4] Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area	L 343, 14.12.2012, p. 32-77
[5] Directive 2007/59/EC of the European Parliament and of the Council on the certification of train drivers operating locomotives and trains on the railway system in the Community	L 315 03.12.2007 p.51
[6] Regulation (EU) 2016/995 of the European Parliament and council of 8 June 2015 on the technical specification for interoperability relating to the operation and traffic management of the rail system in the European Union	L 165, 30.06.2015 p. 1-69
[7] Regulation (EC) 402/2013 on the adoption of a common safety method on risk evaluation and assessment as referred to in Article 6(3)(a) of Directive 2004/49/EC of the European Parliament and of the Council	L 121 03.05.2013 p. 8-25
[8] Decision 2007/756/EC adopting a common specification of the national vehicle register provided for under Articles 14(4) and (5) of Directives 96/48/EC and 2001/16/EC	L305 23.11.2007 p.30-51
[9] Regulation (EU) 2018/762 on the common safety method on Safety Management System	L 129 25.05.2018 p.26-48

<i>DOCUMENT REFERENCE</i>	<i>OFFICIAL JOURNAL</i>
[10] Regulation (EU) 2012/1078 on the common safety method on monitoring	L320 17.11.2012 p.8-13
[11] Regulation (EU) 2016/919 on the technical specification for interoperability relating to the 'control-command and signalling' subsystems of the rail system in the European Union	L 158, 15.06.2016, p. 1-79
[12] Regulation (EU) 2016/773 on the technical specification for interoperability relating to the operation and traffic management subsystem of the rail system within the European Union and repealing Decision 2012/757/EU	L139 27.05.19 p. 5-88

### 1.3. Definitions and abbreviations

*Table 1: Definitions*

<i>TERM</i>	<i>DEFINITION/ SOURCE</i>
Infrastructure Manager	See point (2) of Article 3 of Directive 2012/34/EU of the European Parliament and of the Council establishing a single European railway area
Railway Undertaking	See point (1) of Article 3 of Directive 2012/34/EU and ...any other public or private undertaking, the activity of which is to provide transport of goods and/or passengers by rail on the basis that the undertaking is to ensure traction; this also includes undertakings which provide traction only (Article 2 (45) of Directive (EU) 2016/797)
Register of Infrastructure (RINF)	The Register of Infrastructure referred to in Article 49 of Directive (EU) 2016/797 indicates the main features of fixed installations, covered by the subsystems: infrastructure, energy and parts of control-command and signalling. It publishes performance and technical characteristics mainly related to interfaces with rolling stock and operation.
Acts issued by the Agency	According to Article 4(a) of Regulation (EU) 2016/796, the Agency is entitled to address recommendations to the Commission, concerning issues related to safety, interoperability, transport of dangerous goods by rail, maintenance of vehicles, staff qualification and public registers. Furthermore, Article 4(c) of the same Regulation allows the Agency to issue also technical opinions at the request of national regulatory body/bodies concerning safety and/or interoperability-related matters. Technical opinions may also be produced at the request of the Commission in relation to draft or existing national rules, when any alleged deficiency is raised on an safety and/or interoperability-related act and any project implying modifications in the Interoperability Union rail system and involving EU funds.

Table 2: Abbreviations

<i>ABBREVIATION</i>	<i>FULL TEXT</i>
COR	Common Operational Rule
CSM	Common safety method
EC	European Commission
EI	European Instructions
EOA	End of Authority (ERTMS)
ERA	European Union Agency for Railways also called “the Agency”
ERTMS	European Rail Traffic Management System
ETCS	European Train Control System
EU	European Union
EVN	European Vehicle Number
FOP	Fundamental Operational Principle
FS	Full supervision (ERTMS mode)
GSM-R	Global System for Mobile communications- Railway
IM	Infrastructure Manager
INF	Infrastructure
DMI	Driver–Machine Interface
MS	EU or EEA Member State
NIB	National Investigation Body
NSA	National Safety Authority
NR	National Rules
OJ	Official Journal of the European Union
OPE	Operations
OS	On-sight
PRM	Persons with reduced mobility
RINF	Register of Infrastructure
RS	Rolling Stock
RSD	Rail Safety Directive
RU	Railway Undertaking
SMS	Safety management system
SR	Staff responsible
TSI	Technical Specification for Interoperability

<i>ABBREVIATION</i>	<i>FULL TEXT</i>
WAG	Wagon
WG	Working Group
WP	Working Party

## 2. Guidance on the application of the TSI OPE

### 2.1. Introduction

2.1.1 The purpose of this document is to provide guidance on certain concepts and procedures referred to in Directive (EU) 2016/797 on the interoperability of the rail system within the European Union and the related technical specifications for interoperability (TSI) for Operation and Traffic Management (OPE) subsystem. The Guide also provides links to the requirements for the Safety Management System (SMS) contained in Directive (EU) 2016/798 on operational safety. Although the TSI OPE is about delivering interoperability, operational safety is also a key element. The TSI OPE is different to structural TSIs in that it is not verified under the conformity assessment process but is part of the SMS operational process of the railway undertakings and infrastructure managers.

2.1.2 This application guide has been developed with the contribution of the Working Party specifically set up for the revision of the TSI OPE.

This application guide gives an overview of the OPE-subsystem and indicates where to locate in the TSI the principles of the application of the TSI OPE. It gives additional information and explanation on specific requirements contained within the TSI OPE **and explains how these requirements are linked to** the Common Safety Method for Safety Management System Requirements, which Railway Undertakings and Infrastructure Managers must comply with. This Guide and CSM on SMS requirements set requirements on procedures for operations, which are consistent with the requirements in the TSI OPE. To provide further clarification, TSI OPE contains fundamental operational principles (FOPs), which set high-level requirements for ensuring safe operation. These principles should be used as a basis for reviewing and developing operational requirements in the SMS.

2.1.3 This guide is presented so that the reader can understand how the TSI OPE links to the operational elements to be covered in the SMS. Importantly, it provides guidance on how to develop those elements into operational procedures and rules, to ensure the safe operation of the train from start to finish of the journey. The first part of the document provides the background to the TSI OPE and the development of Fundamental Operational Principles and how they link to the SMS criteria. This will be important when developing the operational element of the SMS and the move away from national rules mandated at Member State level to risk based company rules. The second part is the Annexes that deal with practical guidance on the TSI OPE. In particular, Annex 1 sets out the FOPs and the relevant guidance in relation to certain parts of the TSI OPE and the related SMS criteria, enabling the RU and IM to develop their approach on this basis.

2.1.4 All applicable legislation must be taken into account by operators. This document is a guide and is therefore not legally binding. However, it clarifies certain concepts and procedures as stated above and will therefore support the common understanding and application of the TSI OPE.

*This application guide covers both EU Regulations 2015/995 and 2019/773 because much of the guidance is applicable to both, particularly in relation to the SMS and operations.*

*However, readers should look at the key transitional dates in EU Regulation 2019/773 to determine when parts of it apply.*

## 2.2. Scope of the TSI OPE

2.2.1 The scope of the Interoperability Directive [1] covers the entire rail system of the European Union. This TSI covers the whole of the European rail network within the scope of the Interoperability Directive (Article 1 (3) sets out the scope). However, Member States are permitted to exclude those parts of the rail network from the scope of TSI OPE where the Interoperability Directive itself does not apply. The parameters in which this is possible are set out in Article 1(4) of the Interoperability Directive. Those operators which use both the network included by the Directive and those that are excluded, are encouraged to use the TSI OPE in order to facilitate consistency and to avoid different systems within companies operating on lines within and those out of the scope of TSI OPE. It is also necessary to note that the same logic applies to an RUs or IMs Safety Management System which itself is the means of compliance with the TSI OPE.

2.2.2 Requirements in the TSI OPE that refer to structural subsystems (section 2.2.3) and are listed in the interfaces (section 4.3) are assessed under the relevant structural TSIs. Those requirements only apply to technical subsystems that are new or have been upgraded or renewed according to Article 7 of Interoperability Directive.

2.2.3 None of the provisions of the TSI OPE can be used as a justification for a national rule (except for the cases listed under Appendix I).



### 3. Responsibilities in the field of operations and traffic management

#### 3.1 Infrastructure Manager and Railway Undertaking

3.1.1 According to Article 4.1 (d) of the Safety Directive, “*the responsibility for the safe operation of the railway system and the control of risks associated with it is laid upon the IMs and RUs*”, each for its part of the system and not upon the National Safety Authorities. IMs and RUs are required to identify the risks, implement necessary risk control measures, apply Union rules (such as TSI OPE), national rules and standards and establish safety management systems. CSM on SMS requirements sets out the main requirements in relation to how the RU and IM should develop their SMS, including operational requirements. Regulation (EU) 2018/763 sets out the practical arrangements for obtaining a single safety certificate.

3.1.2 To develop their SMS, the IM and RU should take an overview of the rail system and identify the interfaces between IM and RU as well as between different functions, job profiles and people within their organisations. All processes and procedures should be organised and defined, taking care of these interfaces between different functions, be it within their company or in connection with partners (driver – on-board staff, driver – signaller). The development and implementation of these tasks results (under the application of the SMS) in the operational rules and procedures. In particular, for some TSI OPE Common Operational Rules (CORs) and requirements that are related to the operation of his infrastructure, the IM may need to develop further instructions that have to be applied by all RUs. This is in line with the description of TSI OPE CORs in figure 2 on page 12 and the figure on requirements for the driver rule book page 20.

3.1.3 However, it should be understood that, although several interfaces exist and need to be covered by a common approach, the IM and RU are separate organisations in the EU railway safety framework, each one responsible for its own field of business. The SMS provides a tool for the RU and IM to adapt the SMS requirements to their individual operational needs.

#### 3.2 National Safety Authority and European Union Agency for Railways

3.2.1 According to Article 10 (5) to Article 10 (7) of Safety Directive, one of the tasks of ERA is to issue single safety certificates to railway undertakings having an area of operation in one or more Member States. According to Article 10 (8), the NSA shall issue a single safety certificate, where the area of operation is limited to one Member State and when the applicant requests it. Article 12, states that the IM shall obtain a safety authorisation from the NSA in the Member State where the rail infrastructure is located. Article 11 of the Safety Directive requires co-operation between the NSAs and ERA. This means for the TSI OPE that the safety certification body (ERA or NSAs) should assess if the TSI OPE is taken into account in the IM’s and RU’s SMS. Furthermore, it means if the TSI OPE requires a certain procedure to be put in place, the IM or RU are free to choose the most appropriate way for its own organisation using the requirements for risk assessment in the SMS.

3.2.2 The assessment requirement of the SMS is followed by the NSAs supervising that the IM or RU-internal rules, processes and procedures are applied as described in the SMS alongside the appropriate safety culture to deliver the required safety outcomes. This is set out in 2015 TSI OPE (Regulations (EU) 2015/995)

and in 2019 TSI OPE (Regulations (EU) 2019/773) paragraph 6.2.1. For more information on SMS-assessment, please see CSM on SMS requirements.

## 4. OPE subsystem

### 4.1. TSI OPE and connection to other relevant rules and regulation

4.1.1 The TSI OPE does not provide a complete description of Railway Operations. It should therefore not be read or applied in isolation. It should be used in connection with all other relevant legislative documents setting out requirements on the business of operating railways. For example, although TSI OPE stipulates operational requirements, it does not cover all the elements necessary to ensure the complete safe operation of the railways, which is a requirement of the safety management system as set out in Articles 4 and 9 of the Safety Directive. The TSI OPE sets out the high-level requirements that should be used to develop safe operational procedures as part of the SMS. Where NRs are permitted, they can also be used to provide more detailed information on the operational requirements. In such circumstances, the NR and how it is applied should be referenced in the SMS.

4.1.2 The relevant legislative documents include:

- Safety Directive (EU) 2016/798;
- Interoperability Directive (EU) 2016/797;
- Single European Railway Area Directive 2012/34/EC;
- Train Drivers Directive 2007/59/EC;
- Other Technical Specifications for Interoperability (TSIs);
- Regulation (EU) 2012/1078 on a Common Safety Method for Monitoring;
- Regulation (EU) 2018/762 on a Common Safety Method for Safety Management Systems Requirements; and
- Regulation (EU) 402/2013 on a Common Safety Method for risk evaluation and assessment.

4.1.3 The purpose of the TSI OPE is to provide a link to all the operational preparations required which will ensure the continued safe operation of passenger and freight trains from start to finish, in line with the RU and IMs responsibilities under their SMS.

4.1.4 The operation of the railway comprises several parts:

#### **A general part:**

- 1) An organisation/company should be established.  
The organisation shall develop a management system that includes a Safety Management System. The SMS covers several elements related to the TSI OPE including a risk assessment process and a competence management system.
- 2) Suitable resources, including human capital, should be organised (purchased, leased).
- 3) Following the systematic approach described in the SMS, all risks should be controlled. In order to do this, the relevant rules and procedures for each level of operation should be identified and developed; specific and detailed rules and procedures should be put in place. This includes also the interfaces to (sub-) contractors. For more details, see the Safety Directive [2].
- 4) For all the steps listed, the relevant approvals (licence, Safety Certificate, authorisations for placing in service of the different structural subsystems and placing on the market of the vehicles) should be

obtained from the national safety authorities of the Member States or the European Union Agency for Railways.

**A part specific for each train:**

1) Train path allocation:

The request for a path as well as the allocation has to be done under the rules applying the “*Directive establishing a single European railway area*” 2012/34/EC and under respect of (EU) 454/2011 (TSI TAP) and (EU) 1305/2014 (TSI TAF).

2) Train operation

Train operation can start when the train path was confirmed by the RU towards the IM according to (EU) 454/2011 and (EU) 1305/2014. The train operation includes the preparation of the train and the train running. The operation of the train is in the scope of the TSI OPE. The TSI OPE defines the interfaces between IM and RU to ensure that both operate the train on a common understanding of their different responsibilities.

4.1.5 All necessary preparations should be done before the train can start to run. Some of these are linked to last minute train preparation before departure (like checks and tests before departure, see TSI OPE point 4.2.3.3.1). Other elements require more time and organisation. For example, the IMs and RUs have to ensure that all the staff operating trains (train driver and other train crew members for the RU; signaller, and all other relevant staff of the IM even if not mentioned in the TSI OPE like dispatchers, level crossing operators) know what to do, how to do it and when to do it. This includes the steps already mentioned, setting up the rules and ensuring that the staff are competent for the tasks.

4.1.6 However, TSI OPE does not cover all interfaces between IM and RU. TSI OPE focuses on the interfaces relevant for interoperability as defined in the Interoperability Directive (the safe and uninterrupted movement of trains) and defines the responsibilities at the interfaces. Some interfaces between IM and RU are not considered relevant for interoperability (for example shunting) and therefore are not covered by the TSI OPE; nevertheless, these interfaces might be relevant for safety.

4.1.7 Although some interfaces are not covered by the TSI OPE, it is a requirement under the CSM on Safety Management System Requirements that IMs and RUs should identify the interfaces and the risks associated with them. If need be, the IM and RU should set up procedures for the exchange of information (or perhaps even materials) in order to fulfil their obligations. For more details on the SMS requirements and guidance, see [https://www.era.europa.eu/sites/default/files/activities/docs/guide\\_sms\\_requirements\\_en.pdf](https://www.era.europa.eu/sites/default/files/activities/docs/guide_sms_requirements_en.pdf)

4.1.8 Besides the scope of TSI OPE, it is recommended that IMs and RUs when taking forward other functions (i.e. IM operating maintenance trains) apply the requirements set out in the TSI OPE to ensure internal consistent application of these parts of the processes.

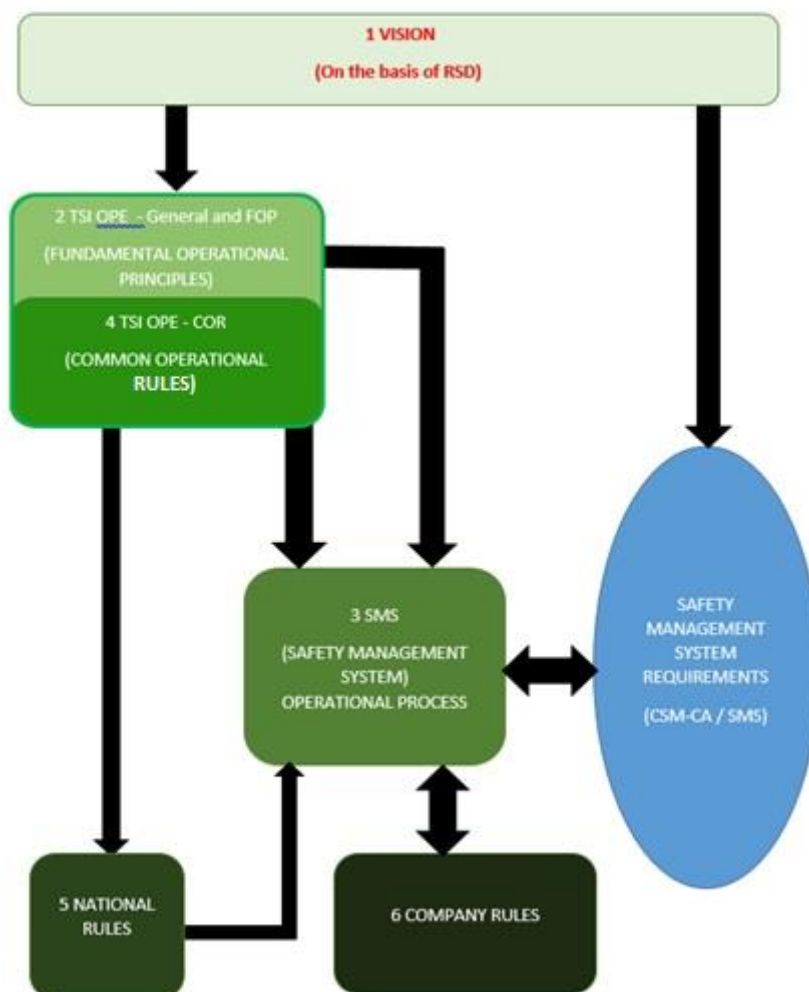
4.1.9 In addition to the railway-specific requirements stipulated in the documents mentioned above, the Council Directive 2008/114/EC on the identification and designation of European critical infrastructures and the assessment of the need to improve their protection should be taken into account by Member States and subsequently by the IMs.

## 4.2. TSI OPE Fundamental operational principles and the SMS

4.2.1 A key part of the application guide is the explanation of the Fundamental Operational Principles and how they relate to the Safety Management System of the RU and IM. The Fundamental Operational Principles are a set of principles that describe the main high-level requirements for train operation and in particular the interfaces between the RU and IM and what is needed in order to deliver and maintain safe operation. The FOPs sets out ‘what’ operational elements of the SMS need to be developed but not the ‘how’ which should be based on the individual requirements for the RU and IM taking into account their risk assessment based on their operational needs. See figures 1 and 2.

**Figure 1**

In relation to the TSI OPE, there are very clear links between the operational processes in the SMS. In fact the development of the SMS operational processes should build on the requirements in the TSI OPE and be informed by the National Rules (where relevant). The starting point is the Fundamental operational principles that set out the framework for which needs to be considered under the SMS requirements (EU Regulation 2018/762) and Annex 1 of this Application Guide sets out more information. The output from this is usually specific risk based company processes and/or rules.



**Figure 2**

This table explains the process levels in both the TSI OPE and SMS that support operational procedures.

The TSI OPE process levels	
1 - Vision	<p>The overarching principle is clearly set out in the Safety Directive where it is stated in Article 4 (1) that “railway safety is generally maintained and, where reasonably practicable, continuously improved”. In addition, the Railway Safety Culture Model also provides a source of reference for ensuring that the vision of both RUs and IMs should be to provide a safe railway. This should also feature in the development of SMS operational procedures (see below).</p> <p>(see <a href="https://www.era.europa.eu/activities/safety-culture_en">https://www.era.europa.eu/activities/safety-culture_en</a>)</p> <p>These should be the basis for developing safe railway operations.</p>
2 - FOP	<p>The fundamental operational principles in Appendix B give the overarching principles for a safe railway system. These need to be considered when developing procedures for the operational planning control part of the SMS. These are mandatory they are the initial starting point for operational rules/manuals etc. inside the SMS.</p>
3 – SMS operational procedures	<p>The operational procedures relate to the development of further information on the Fundamental Operational Principles, the specific requirements in the TSI OPE (main body) and how they link to the criteria for the SMS. This should set out what is needed for safe operation and puts into context the findings from the risk assessment and what needs to be done to ensure that all the risks are managed. These should also take into account the Railway Safety Culture Model.</p>
4 – TSI OPE COR	<p>Appendix B also sets out common operational rules. These are more detailed harmonised rules referring to specific situations and what needs to be done. These may require further instructions that can be set out in IM/RU company rules.</p>
5 - NRs	<p>Where NRs are permitted in Appendix I, they can also be used to provide more detailed operational information. In such circumstances, the NR and how it is applied should be referenced in the SMS.</p>
6 – IM/RU Company rules	<p>IM and RUs will need to develop their own specific company rules within their SMS in order to scope in detail with the specific needs of those companies. These will often set out in more specific detail how the operational processes or CORs will be delivered by key staff.</p>

### 4.3 Assessment of compliance with the OPE TSI and the development of the SMS

4.3.1 The subsystem operation and traffic management is a functional subsystem. The assessment principles are laid down in chapter 6.2 of TSI OPE. The TSI OPE defines requirements on processes and procedures to be established by IMs respectively RUs under their SMS.

4.3.2 There are interfaces with structural TSIs and the technical requirements and this is set out in Chapter 4.3 of the TSI OPE. This means that these technical requirements are not to be assessed against the TSI OPE. They are to be assessed by the Notified Bodies during the process for the authorisation for placing into service of structural subsystems as described in the relevant structural TSIs. Vehicles which are on the market but do not fulfil the requirements in 4.2.2.1.2 can continue to be used if the risk is managed through the SMS. When such vehicles are replaced or upgraded, the application of the Interoperability Directive (EU) 2016/797 needs to be considered.

4.3.3 Compliance with the TSI OPE cannot be assessed in the same way as that of a structural subsystem. The EC verification procedure is not applicable. The procedures and processes required by the TSI OPE should become part of operational processes, procedures and rules [whether permitted National Rules (see information under each Fundamental Operational Principle) or company rules]. They also become a part of the IM's / RU's SMS. Compliance with the TSI OPE should be demonstrated when the safety certification body (NSA or ERA for the single safety certificate) assesses the SMS before granting the *safety authorisation/single safety certificate* and when the NSA performs supervision and inspections. The safety certification body should also check that the operational rules used by the RU/IM do not contradict the requirements in the TSI OPE. In addition, Regulation (EU) 1078/2012 requires that RUs and IMs set out processes and procedures to effectively monitor the effectiveness of the SMS and the delivery of it through their operational activities (i.e. for the RU the operation of the train and for the IM the control of the infrastructure).

4.3.4 The SMS requirements specifically address the elements necessary for Operational planning and control (requirement 5.1) for both the RU and IM. The requirement is as follows:

**[Regulation (EU) 2018/762 Annex 1 5.1.1].** *When planning, developing, implementing and reviewing its operational processes, the organisation shall ensure that during operation:*

- *risk acceptance criteria and safety measures are applied (see 3.1.1. Risk assessment);*
- *plan(s) to achieve the safety objectives are delivered (see 3.2. Safety objectives and planning);*
- *information is collected to measure the correct application and effectiveness of the operational arrangements (see 6.1. Monitoring).*

**[Regulation EU) 2018/762 Annex 1 5.1.2].** *The organisation shall ensure that its operational arrangements conform to the safety-related requirements of applicable Technical Specifications for Interoperability and relevant national rules and any other relevant requirements (see 1.1. Organisation, context and scope of the safety management system).*

4.3.5 This means that the TSI OPE requirements for staff, trains and their operation should be used as a key input into the development and assessment of the SMS. The FOPs and the common operating rules

(CORs) are a key element of delivering the requirements for operational planning and control. Assessment of compliance by the safety certification body will need to consider how the FOPs and CORs are a specific input into the development of the operational part of the RUs and IMs SMS particularly in the identification of processes and company rules and how National Rules (where applicable) are taken into account in the SMS. The assessment will need to cover the requirements for operational competence (Staff requirements) in TSI OPE. These should be reviewed against the requirements in the SMS of the RU and IM under the Operational planning and control (Regulation *EU* 2018/762 Annex 1 5.1.4, 5.1.5 and 5.1.6 of the CSM of SMS). The assessment will also need to cover the specifications relating to train operation (FOPS 1 to 6) and the SMS requirements for operational arrangements and control of risks (Regulation *EU* 2018/762 Annex 1 5.1.2 and 5.1.3). This is set out in further detail in Annex 1 of this Guide.

## 4.4 Fundamental Operational Principles and Common Operational Rules

4.4.1 Appendix B of the TSI OPE sets out the Fundamental Operational Principles (FOP) and Common Operational Rules (COR) which should be used following the scope of TSI OPE and in the prescribed situations. They are valid for both ETCS and class B systems. This means that these FOP and COR are applicable regardless of the CCS system used.

4.4.2. There are six FOPs in TSI OPE:

Fundamental Operational Principle N°1:

**“The method of authorising a train movement must maintain a safe interval between trains”.**

Fundamental Operational Principle N°2:

**“A train must only operate over a portion of line if the train composition is compatible with the infrastructure”.**

Fundamental Operational Principle N°3:

**“Before a train begins or continues its journey, it must be ensured that passengers, staff and goods are carried safely”.**

Fundamental Operational Principle N°4:

**“Before a train is allowed to start or continue its movement, it must have an authority to move and all necessary information to define the conditions of that authority”.**

Fundamental Operational Principle N°5:

**“A train must be prevented from proceeding onto a portion of line if it is known or suspected that it would not be safe for the train to pass until measures have been taken to allow the train to continue safely”.**



#### Fundamental Operational Principle N°6:

**“A train must not continue to operate after it has been found to be unsafe in any respect, until measures have been taken to allow the train to continue safely”.**

4.4.3 Because the FOPs are high level and set the target of what should be achieved in order to ensure safe operation, there can be no derogation from them. It is up to the RU and IM to decide how this principle should be achieved using their procedures in their respective SMS's (based on the results from risk assessment for the operation, National Rules (where permitted)), the COR and company rules.

4.4.4 In relation to a specific requirement in the TSI OPE including a COR, a RU/IM can deviate from the requirements using the CSM on risk evaluation and assessment. They will need to analyse the hazards and quantify the risks and make a decision based on the results. If a result of the analysis determines that the requirement cannot be applied because it could result in a serious safety risk to the operation, the RU/IM needs to demonstrate this analysis and the alternative approach using the CSM on risk evaluation and assessment. The NSA may also need to be contacted particularly if it is a substantial change to the safety certificate/authorisation. If the CSM on risk evaluation and assessment is applied, this decision to use a different rule should be verified (see CSM on risk evaluation and assessment Regulation (EU) 402/2013) and consideration given as to whether there is a need to review the TSI or add new/updated CORs. In such cases the Agency should be contacted for further information.

4.4.5 For all the rules developed, the Agency, in order to have the same basis to carry on the works, assumes that:

- All members of railway staff apply the rules correctly.
- All other technical equipment works correctly.
- The train radio is installed.
- The Signalling system is the national one.

4.4.6 Any detailed instructions given by the signaller to the driver on how to deal specifically with the event will be complimentary to the COR and part of the work instructions in the SMS.

## 4.5 National Rules

4.5.1 National Rules (NRs) under the RSD are permitted according to those listed in TSI OPE Appendix I (see implementation dates in EU Regulation 2019/773). During the transitional period of EU Regulation 2019/773, Member States should plan how Appendix I will be implemented including the cleaning up and removal of those national rules no longer permitted. The Agency can be contacted for further advice.

4.5.2 If a topic is not included as a National Rule it should be reviewed by the RU to see if it is still relevant and useful in their train operation, taking into account results from their risk assessment. If the topic is considered relevant, then a company process or rule should be established. Relevant information and key requirements from NRs should be used as a basis to check that the SMS sufficiently covers those aspects.

4.5.3 In relation to who can issue NRs – the following is taken from the National Rules Task Force Report in 2012:

*"Only Member States have competence to establish NSR" and "Only binding safety rules established at Member State level are NSR"; "In all cases the Member States shall ensure that the NSA and third parties which issue certain NSR are given the task to issue such NSR by law (i.e. the task to issue NSR is officially given by law); otherwise their rules cannot be considered as NSR.*

*From the legal point of view, NSRs are 'binding' when two conditions are fulfilled:*

- The issuing body was delegated with necessary legislative powers to establish the particular rule.*
- In case of indirect rules a Member State may: either authorize a third party (e.g. an IM or RU) to issue safety rules within the specified scope , or recognise established rules of third parties as NSR (e.g. standards, UIC leaflets or OSJD rules) by providing references to such rules in national legislation".*

4.5.4 The NSAs are responsible, through the certification process and subsequent supervision, to check that RUs SMS procedures cover all the necessary aspects particularly in providing further detail to the TSI OPE and the related company rules.

4.5.5 TSI OPE introduces the task for the Agency to develop European Acceptable means of compliance (AMOCs) to replace certain topics that have been national rules in the past. This will mean that RUs can deviate from an AMOC if they prove that what they do is as good as or better than the requirements in the AMOC.

4.5.6 The Agency will be developing a series of European AMOCs based on best practice from the railway sector. More information will be available on the Agency website in due course.

## Annex 1 – Operational guidance

Please note that the information given in Annex 1 on operational guidance is not an exhaustive list and is subject to the RUs and IMs operational context and risk assessment in their SMS.

It is given as an indication only.

To help with compliance, references are also included pointing out to the relevant paragraphs in the TSI OPE.

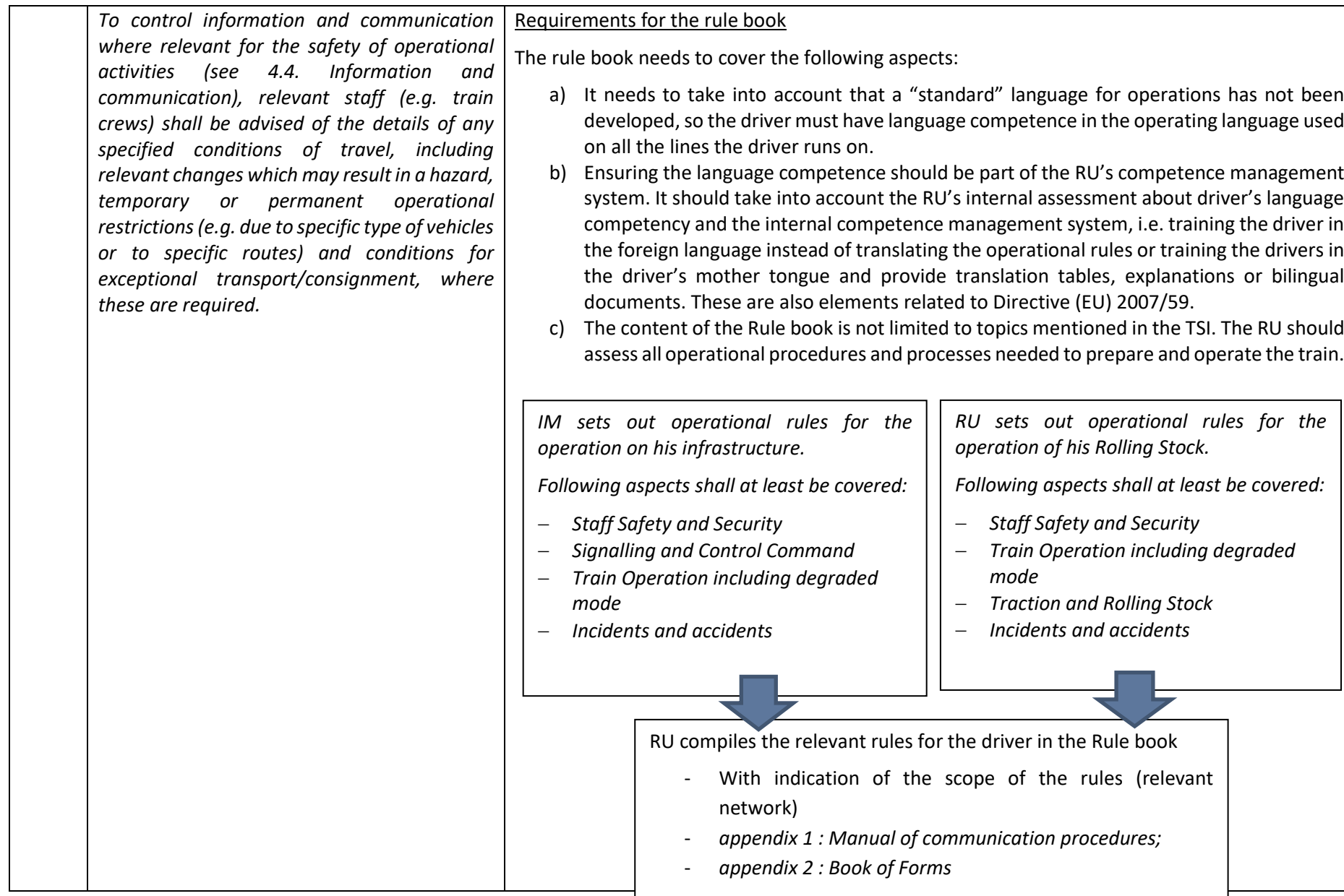
### 1.1 Specifications relating to staff

1.1.1 This guidance relates to the obligation that staff are selected and trained so that they are competent in their job and fit to carry out any safety critical tasks. They should also have all the necessary information to allow them to carry out their tasks in a safe way. The TSI OPE sets high level specifications in relation to staff performing safety critical tasks involving a direct interface between the RU and IM. However, it does not describe in detail the working conditions and professional requirements of all staff performing safety critical tasks. These should be taken into account by the IMs and RUs in their SMS, specifically the requirements for a competence management system. The Regulation (EU) 2018/762 Annex 1 criteria (5.1.4, 5.1.5 and 5.1.6) specifically requires to consider aspects that are part of the requirements in the TSI OPE and should therefore be considered as an input to the development and assessment of the SMS.

1.1.2 There should be an operational process that covers how the SMS deals with the specifications relating to staff. This should be based on information from the risk assessment and set out how the competence, documentation and working conditions of identified safety critical staff will ensure the safe operation of the train. It should also link to the generic criteria in CSM criteria 4.2 on competence.

	<b>Regulation (EU) 2018/762 Annex 1</b>	<b>TSI OPE reference and associated guidance</b>
1.1.3	<p><b>CSM 5.1.4</b></p> <p><i>To control the allocation of responsibilities where relevant for the safety of operational activities, the organisation shall identify responsibilities for coordinating and managing the safe running of trains and movements of vehicles and define how relevant tasks affecting the safe delivery of all services are allocated to competent staff within the organisation (see 2.3. Organisational roles, responsibilities and authorities) and to other external qualified parties when appropriate (see 5.3. Contractors, partners and suppliers).</i></p>	<p><b>TSI OPE - 4.2.1.– Specifications relating to staff</b></p> <p>In relation to the use of two drivers in the cab, under Appendix I there will be no allowances for this type of rule at national level:</p> <ul style="list-style-type: none"> <li>○ If companies decide to require it that is their choice: <ul style="list-style-type: none"> <li>▪ But if an RU operating in a MS which regularly uses one driver using the risk assessment and controls in their SMS, they should not be required to have two drivers</li> </ul> </li> <li>○ An additional trainee driver (assistant or apprentice) can continue to be allowed but not as a NR – this should be part of the procedures in the SMS.</li> </ul> <p><b>TSI OPE 4.7 – Health and safety conditions</b> is linked specifically to the CSM requirement 4.2.1 on competence and medical fitness.</p> <p>It should also cover:</p> <ul style="list-style-type: none"> <li>• Responsibility for the staff: <ul style="list-style-type: none"> <li>○ When assessing the risk, the organisation should take into account the need to determine, provide and sustain a safe working environment which conforms to applicable legislation in particular Council Directive 89/391/EC;</li> <li>○ Medical and psychological requirements.</li> </ul> </li> <li>• Specifications relating to staff (Appendices F and G of TSI OPE) – the SMS should consider the roles and responsibilities of staff and their competence is assured.</li> <li>• Health and safety conditions - Hearing requirements: <ul style="list-style-type: none"> <li>○ The following values concerning the hearing requirements are given as guidelines in relation to the requirement in 4.7.3.3: <ul style="list-style-type: none"> <li>▪ The hearing deficiency should not be higher than 40 dB at 500 and 1000 Hz;</li> <li>▪ The hearing deficiency should not be higher than 45 dB at 2000 Hz for the ear with the worst air conduction of sound.</li> </ul> </li> </ul> </li> </ul>

1.1.4	<p><b>CSM 5.1.5</b></p> <p><i>To control information and communication where relevant for the safety of operational activities (see 4.4. Information and communication), relevant staff (e.g. train crews) shall be advised of the details of any specified conditions of travel, including relevant changes which may result in a hazard, temporary or permanent operational restrictions (e.g. due to specific type of vehicles or to specific routes) and conditions for exceptional transport/consignment, where these are required.</i></p>	<p><b>TSI OPE - 4.2.1.2 – Documentation for drivers</b></p> <p>The specific elements to cover include:</p> <ul style="list-style-type: none"> <li>• Documentation for drivers (rule book and route book (4.2.1.2))</li> <li>• Documentation for RU staff other than drivers (4.2.1.3)</li> <li>• Documentation for IM staff authoring train movements (4.2.1.4)</li> <li>• Safety related communications (4.2.1.5)</li> <li>• Appendix C – safety related communications methodology <ul style="list-style-type: none"> <li>○ European and National instructions</li> </ul> </li> </ul> <p>One of the key members of staff who need specific information on train operation is the driver. They need a set of different documents; each of them with its own purpose and scope.</p> <p>The <b>Rule book</b> includes all necessary operational rules and procedures that the driver has to know and to apply.</p> <p>To ensure that the driver can apply the rules correctly, the driver should also be informed about the route characteristics. The route characteristics are set out in the Route book.</p> <p>When a RU operates on a different infrastructure where new or other rules apply, they will need to consider applying the CSM on risk evaluation and assessment (Regulation (EC) 402/2013) to the operational changes. This will include any changes required to the rule book and route book and the potential effect it will have on the driver undertaking the different operation. The results of the risk assessment will then need to be applied, including considering how the format of the rule book and route book will need to be adapted and/or changed to ensure that the driver can operate safely on the new route.</p> <p>In addition to the documents mentioned above, the driver should be equipped with the book of forms, including templates for all European instructions, national instructions and other documents needed to fill in during the train journey. How this ‘book of forms’ is devised depends on the methods and modes of communication used i.e. electronic, verbal or written.</p>
1.1.5	<p><b>CSM 5.1.5</b></p>	<p><b>TSI OPE - 4.2.1.2.1 – Driver’s Rule Book</b></p>



1.1.6	<p><b>CSM 5.1.5</b></p> <p><i>To control information and communication where relevant for the safety of operational activities (see 4.4. Information and communication), relevant staff (e.g. train crews) shall be advised of the details of any specified conditions of travel, including relevant changes which may result in a hazard, temporary or permanent operational restrictions (e.g. due to specific type of vehicles or to specific routes) and conditions for exceptional transport/consignment, where these are required.</i></p>	<p>The requirement that the rules are presented in a clear format is mandated to ensure that drivers are presented with the different rules for the various networks in a consistent manner. This is particularly important, as the driver should be able to easily find the rules relating to the similar situations the driver may encounter on the different infrastructures on which the driver is running.</p> <p>As a general principle, RUs and IMs should ensure that key operational information (including the drivers rule book) is:</p> <ul style="list-style-type: none"> <li>• complete,</li> <li>• appropriately updated,</li> <li>• controlled,</li> <li>• consistent and easy to understand (incl. the language used),</li> <li>• staff are aware of its existence before it needs to be applied,</li> <li>• easily accessible to staff and where required copies are formally given to them.</li> </ul> <p>A method to format and generate controlled document is to provide appropriate fields at least for:</p> <ul style="list-style-type: none"> <li>• unique identification number,</li> <li>• date,</li> <li>• responsible person for preparation,</li> <li>• responsible person for authorising the release (of the original document and of the following revisions),</li> <li>• list of revisions.</li> </ul>
1.1.7	<p><b>CSM 5.1.5</b></p> <p><i>To control information and communication where relevant for the safety of operational activities (see 4.4. Information and communication), relevant staff (e.g. train crews) shall be advised of the details of any specified conditions of travel, including relevant changes which may result in a hazard,</i></p>	<p><b>TSI OPE 4.2.1.2.2 - Requirements for the route book</b></p> <p>The route book needs to take into account the following aspects:</p> <p><b>TSI OPE 4.2.1.2.2.1 - Preparation of the Route book</b></p> <p>a) The following aspects need to be covered:</p> <ul style="list-style-type: none"> <li>• <i>information on the means of communications to be used: track to train radio, signal post phones, ... a hierarchy of the contact media is required, especially for the case of degraded situations.</i></li> </ul>

<p><i>temporary or permanent operational restrictions (e.g. due to specific type of vehicles or to specific routes) and conditions for exceptional transport/consignment, where these are required.</i></p>	<p>These are necessary to enable the driver to contact the signaller in the way required/intended by the IM for normal operation as well as degraded mode.</p> <ul style="list-style-type: none"> <li>• When establishing this information, the signaller always has the lead responsibility in the conversation. The signaller should ensure that, depending on the driver's information about train identity (running number) and position, the driver is connected to the relevant signaller. This might involve referring the call to another signaller.</li> </ul> <p>b) It needs to take into that a “standard” language for operations has not been mandated, so the driver should have the competency for all operating languages used on the lines that they run on.</p> <p>c) Ensuring the language competency should be part of the RU's SMS and competence management system. – see also the explanations on the Rule book.</p> <p>The railway undertaking is responsible for the complete and correct compilation of the Route book, for example, arranging for any necessary translation and/or providing explanatory notes.</p> <p>A list of elements that the IM has to deliver to the RU for the compilation of the Route book is listed in Appendix D2 of TSI OPE. However, the RU is not required to put ALL information provided by the IM as part of Appendix D2; only that information that is RELEVANT for the driving-task (TSI OPE 4.2.1.2.2) e.g. a RU operating with diesel locomotives only does not have to include information about catenary in the route book</p> <p><b><i>TSI OPE 4.2.1.2.2.2 – Modifications to information contained within the Route Book</i></b></p> <p>When the IM becomes aware of necessary modifications to the information in the Route book, it has to decide if:</p> <ol style="list-style-type: none"> <li>1. these modifications should be introduced in due time in the Route book; or</li> <li>2. it is only a temporary amendment for the RU; or</li> <li>3. the IM has to inform the driver in real time.</li> </ol> <p>The IM should inform the RU of any modifications as soon as practicable and the way would depend on the agreed timescale for such modifications between IM and RU.</p>
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		<p>As the route characteristics may change due to planned works, the driver has to be informed by his RU – based on the information delivered by the IM responsible for the line. This could be considered in fact as an update of the Route book. The requirements are set out in the TSI-section “<i>Modifications to Information contained within the Route book</i>”.</p> <p><b>TSI OPE 4.2.1.2.2.3 - Informing the driver in real time</b></p> <p>If a change occurs in the route characteristics (i.e. due to works or to technical failures or incidents) and the information process for the modifications to the Route book cannot be used, the IM (signaller) has to inform the driver directly. The requirements are set out in the TSI as “<i>informing the driver in real time</i>”. Such information should be understood as “<i>on time update of the Route book information</i>”. It does not replace the operational procedures (e.g. in degraded mode) such as those in the European instructions or national instructions.</p>
1.1.8	<p><b>CSM 5.1.5</b></p> <p><i>To control information and communication where relevant for the safety of operational activities (see 4.4. Information and communication), relevant staff (e.g. train crews) shall be advised of the details of any specified conditions of travel, including relevant changes which may result in a hazard, temporary or permanent operational restrictions (e.g. due to specific type of vehicles or to specific routes) and conditions for exceptional transport/consignment, where these are required.</i></p>	<p><b>TSI OPE 4.2.1.2.3 - Timetables</b></p> <p>5.1.23 The minimum requirements on timetable information for the drivers are set out in this clause.</p> <p>It is important to highlight that the timetable may be combined with other information. One example is the indication of orders and permissions that are used instead of signals on a line without CCS-system as defined in TSI CCS (neither ETCS nor national Class-B-systems). The document:</p> <ul style="list-style-type: none"> <li>○ is then to be understood as a combination of timetable, route book information and operational orders.</li> <li>○ Should be established in such a way that it meets the requirements of the different types of documents. It is for example advisable to take the standard timetable format as a basis and to combine it with the operational orders and permissions in a specific column so that it is always in the same place on the documentation.</li> </ul>
1.1.9	<p><b>CSM 5.1.5</b></p> <p><i>To control information and communication where relevant for the safety of operational activities (see 4.4. Information and</i></p>	<p><b>TSI OPE Appendix C – Book of forms</b></p> <p>In the context of the requirements of a given situation and the methods of communication chosen, the IM should decide whether the use of a form is appropriate. Book of forms relate primarily to the written form and if this is used:</p>

	<p><i>communication), relevant staff (e.g. train crews) shall be advised of the details of any specified conditions of travel, including relevant changes which may result in a hazard, temporary or permanent operational restrictions (e.g. due to specific type of vehicles or to specific routes) and conditions for exceptional transport/consignment, where these are required.</i></p>	<ul style="list-style-type: none"> <li>○ Copies of each form should be included in the Book of Forms and it is suggested that dividers should be used to separate the sections. The RU may include explanatory text relevant to each form and the situations covered in the drivers' Book of Forms.</li> <li>○ The RU may add translations of the forms and associated information contained in the Book of Forms, if the RU thinks that would help the drivers both during training and in real-time situations. This depends on the RUs internal driver competence management system. The RU might decide to train the driver in the foreign language instead of translating all the necessary operational rules. Alternatively, the RU might decide to train the driver in his/her mother tongue and provide translation, explanations or bilingual documents.</li> </ul> <p>If the RU uses electronic media then they should decide the best medium to store this information so that it is available, easily accessible and useable for the driver.</p>
1.1.10	<p><b>CSM 5.1.5</b></p> <p><i>To control information and communication where relevant for the safety of operational activities (see 4.4. Information and communication), relevant staff (e.g. train crews) shall be advised of the details of any specified conditions of travel, including relevant changes which may result in a hazard, temporary or permanent operational restrictions (e.g. due to specific type of vehicles or to specific routes) and conditions for exceptional transport/consignment, where these are required.</i></p>	<p><b><i>The following TSI OPE chapters are also covered by this criteria and should be taken into account when developing the relevant SMS procedures</i></b></p> <p><b><i>TSI OPE 4.2.1.2.4 – Rolling stock</i></b></p> <p><b><i>TSI OPE 4.2.1.3 – Documentation for railway undertaking staff other than drivers</i></b></p> <p><b><i>TSI OPE 4.2.1.4 – Documentation for infrastructure managers staff authorising train movement</i></b></p>

1.1.11	<p><b>CSM 5.1.5</b></p> <p><i>To control information and communication where relevant for the safety of operational activities (see 4.4. Information and communication), relevant staff (e.g. train crews) shall be advised of the details of any specified conditions of travel, including relevant changes which may result in a hazard, temporary or permanent operational restrictions (e.g. due to specific type of vehicles or to specific routes) and conditions for exceptional transport/consignment, where these are required.</i></p>	<p><b>TSI OPE 4.2.1.5 - Safety-related communications between train crew</b></p> <p><b><i>The requirements in TSI OPE Appendix C and European Instructions should also be considered as part of this criteria.</i></b></p>
1.1.12	<p><b>CSM 5.1.6.</b></p> <p><i>To control competence where relevant for the safety of operational activities (see 4.2. Competence), the organisation shall ensure, in accordance with applicable legislation (see 1. Context of the organisation), for staff undertaking safety-related tasks:</i></p> <p><i>(a) compliance with their training and work instructions, and corrective actions are taken where required;</i></p> <p><i>(b) specific training in case of anticipated changes affecting the running of operations or their task assignment;</i></p> <p><i>(c) adoption of adequate measures following accidents and incidents.</i></p>	<p><b>TSI OPE 4.2.1.1 - General requirements and Appendices F Minimum elements relevant to professional qualification for the tasks associated with accompanying trains and G Minimum elements relevant to professional qualification of the task of preparing trains</b></p> <p>The specific elements to cover include:</p> <ul style="list-style-type: none"> <li>a) Professional competences for drivers (see Directive 2007/59/EC): <ul style="list-style-type: none"> <li>○ Language competence (see Directive 2007/59/EC which sets out language levels);</li> <li>○ Rules knowledge;</li> <li>○ Route / Infrastructure knowledge.</li> </ul> </li> <li>b) Appendix F – minimum elements relevant to professional qualification for tasks associated with accompanying trains <ul style="list-style-type: none"> <li>○ Knowledge on passenger safety (point 2.5 of Appendix F) In 2.5 (b) of Appendix F, the verb identify is used. In this context, it means the capability to describe the identification and memorisation of context, to perform tasks and to solve problems in a defined frame.</li> <li>○ In 2.5 (c) of Appendix F, it is required that the training on passenger safety covers some behavioural (technical and non-technical) skills. Some elements that should be taken into account for the training of each single behavioural skill are described below.</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>○ Situational awareness should take into account the following: <ul style="list-style-type: none"> <li>▪ Attention to details;</li> <li>▪ Overall awareness;</li> <li>▪ Maintain concentration;</li> <li>▪ Retain information;</li> <li>▪ Anticipation of risk.</li> </ul> </li> <li>○ Conscientiousness should take into account the following: <ul style="list-style-type: none"> <li>● Systematic and thorough approach;</li> <li>● Checking.</li> </ul> </li> <li>○ Communication should take into account the following: <ul style="list-style-type: none"> <li>▪ Listening (to people not stimuli);</li> <li>▪ Clarity;</li> <li>▪ Assertiveness;</li> <li>▪ Sharing information.</li> </ul> </li> <li>○ Decision-making and action should take into account the following: <ul style="list-style-type: none"> <li>▪ Effective decisions;</li> <li>▪ Timely decisions</li> <li>▪ Diagnosing and solving problems</li> <li>▪ Being calm under pressure</li> </ul> </li> </ul> <p>In case there is no accompanying staff on-board the train performing safety-critical tasks, the train driver should be able to perform the tasks related to 2.5 of Appendix F in accordance with the train driver's certificate.</p> <p>c) Appendix G – minimum elements relevant to professional qualification for the task of preparing the train</p> <p>IMs and RUs should consider their own staff as well as subcontracted staff when drafting operational rules and applying the Safety Management System. Additional legislation like Council Directive 2005/47/EC on working conditions of mobile workers engaged in interoperable cross-border services in the railway sector of 18 July 2005 have to be taken into account.</p>
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<p>1.1.13</p>	<p><b>CSM 5.1.6</b>  <i>To control competence where relevant for the safety of operational activities (see 4.2. Competence), the organisation shall ensure, in accordance with applicable legislation (see 1. Context of the organisation), for staff undertaking safety-related tasks:</i>  <i>(a) compliance with their training and work instructions, and corrective actions are taken where required;</i>  <i>(b) specific training in case of anticipated changes affecting the running of operations or their task assignment;</i>  <i>(c) adoption of adequate measures following accidents and incidents.</i></p>	<p><b>TSI OPE 2.2.1 – Staff and trains (mutual recognition)</b></p> <p>The TSI OPE refers to mutual recognition between Member States for requirements on professional qualifications as well as on health and safety conditions. This means that the staff fulfilling the requirements in one Member State should be accepted to operate also in the other Member State as long as staff is covered by the competence management system of the respective railway undertaking.</p> <p><u>Mutual recognition</u></p> <p>The scope specified in point 2.2.1 can be summarised in the tables below:</p> <p><b>Staff involved with the working of trains that will cross-state borders and proceed beyond the frontier location</b></p> <table border="1" data-bbox="846 708 1736 1220"> <thead> <tr> <th>Task</th> <th>Professional Qualifications</th> <th>Health and Safety conditions</th> </tr> </thead> <tbody> <tr> <td>Accompanying a Train</td> <td>4.6</td> <td>4.7</td> </tr> <tr> <td>Authorising Train movements</td> <td>Mutual recognition</td> <td>Mutual recognition</td> </tr> <tr> <td>Train Preparation</td> <td>4.6</td> <td>Mutual recognition</td> </tr> <tr> <td>Train Despatch</td> <td>Mutual recognition</td> <td>Mutual recognition</td> </tr> </tbody> </table>	Task	Professional Qualifications	Health and Safety conditions	Accompanying a Train	4.6	4.7	Authorising Train movements	Mutual recognition	Mutual recognition	Train Preparation	4.6	Mutual recognition	Train Despatch	Mutual recognition	Mutual recognition
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Train Despatch	Mutual recognition	Mutual recognition															
<p>1.1.14</p>	<p><i>To control competence where relevant for the safety of operational activities (see 4.2. Competence), the organisation shall ensure, in accordance with applicable legislation (see 1. Context of the organisation), for staff undertaking safety-related tasks:</i></p> <p><i>(a) compliance with their training and work instructions, and corrective actions are taken where required;</i></p> <p><i>(b) specific training in case of anticipated changes affecting the running of operations or their task assignment;</i></p> <p><i>(c) adoption of adequate measures following accidents and incidents.</i></p>	<p>A distinction is made in the TSI OPE between auxiliary staff and fully trained members of the train crew (either train driver or other train crew member performing safety-critical tasks). The auxiliary staff, if any, referred to in 4.6.4 are not part of the train crew and, as such, are not in the scope of chapters 4.6 and 4.7 of the TSI OPE. However, they should be trained to respond to the instructions of the fully trained member of the train crew which means that they can take part in some safety-critical tasks as, for instance, helping in the evacuation procedure under the control of the fully trained member of the train crew.</p>															

1.1.15	<p><b>National Rules (NRs)</b></p> <p>These areas can be considered for NRs:</p> <p>Professional competences</p> <ul style="list-style-type: none"><li>- Staff with safety critical tasks other than train drivers</li><li>- Additional information for staff undertaking the safety critical tasks associated with accompanying a train other than train driver</li><li>- Additional information for staff undertaking the safety critical tasks associated with the last preparation of a train before it is scheduled to cross a border and work beyond any location(s) designated as the “frontier” in the network statement of an infrastructure manager and included in his safety authorisation</li></ul> <p>Health and safety conditions</p> <ul style="list-style-type: none"><li>- Staff with safety critical tasks other than train drivers</li><li>- Additional information for staff undertaking the safety critical tasks associated with accompanying a train other than train driver</li><li>- Alcohol limits</li></ul> <p>Timetable – additional information</p> <p>Safety-related communications terminology</p>
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**1.2 Specifications relating to on train operation – Fundamental Operational Principles (FOP)**

	CSM reference and legal text	FOP	TSI OPE reference and associated guidance
1.2.1	<p><b>CSM 5.1.2 (RUs)</b></p> <p><i>The organisation shall ensure that its operational arrangements conform to the safety-related requirements of applicable Technical Specifications for Interoperability and relevant national rules and any other relevant requirements (see 1.1. Organisation, context and scope of the safety management system).</i></p>	<b>1</b>	<p><b>TSI OPE - Appendix B</b></p> <p><i>“The method of authorising a train movement must maintain a safe interval between trains”.</i></p> <p>The aim of this principle is to address the risk of collision between trains, by establishing an interval, around each train. This is <u>normally</u> achieved and maintained by train control and signalling systems, based on one train in one block section at a time; it applies to train movements on single, double or multiple-track lines. As an example of ‘safe interval’, the distance between two trains running on the same track and in the same direction should be longer than the stopping distance of the train behind.</p> <p><u>SMS operational process</u></p> <p>There should be an operational process for the movement of trains that takes into account normal, degraded and emergency conditions. This should be based on information from the risk assessment and set out how the train control systems are operated in such a way to ensure the safe movement of the trains.</p> <p>The Operational process to be included within the scope of this principle are:</p> <ul style="list-style-type: none"> <li>• Train control and signalling systems rules (both Class A and Class B systems) and how they are applied.</li> </ul> <p><u>Company rules</u></p> <p>These are examples of the types of company rules that should be covered under FOP No 1:</p>
	<p><b>CSM 5.1.3 (RU)s</b></p> <p><i>To control risks where relevant for the safety of operational activities (see 3.1.1. Risk assessment), at least the following shall be taken into account:</i></p> <p><i>(f) authorisations for movements of vehicles.</i></p>		



<p><b>CSM 5.1.2 (IMs)</b></p> <p><i>The organisation shall ensure that its operational arrangements conform to the safety-related requirements of applicable Technical Specifications for Interoperability and relevant national rules and any other relevant requirements (see 1.1. Organisation, context and scope of the safety management system).</i></p>	<ul style="list-style-type: none"> <li>• Movement authority requirements and documented information to staff, including the procedures for communicating the change in movement authority and arrangements where the system is defective or disconnected. TSI OPE Appendix B – Common operational Rule 12 Anomalies in Lineside signalling should be taken into account.</li> <li>• For Class A systems, this should include the use of <b>Appendix A</b> and any necessary procedures.</li> <li>• IM company rules should cover the design and installation of line signals and markers and take into account where they are placed.</li> <li>• The following TSI OPE Appendix B Common Operational Rules (COR) should have further detail incorporated into a company rule: <ul style="list-style-type: none"> <li>○ COR 9 – Running on sight</li> <li>○ TSI OPE Appendix A and Appendix B - COR 16 – End of authority passed without permission. For Appendix B further detail may be needed to be incorporated into a Company rule.</li> </ul> </li> </ul> <p><b>TSI OPE – 4.2.2.8 Requirements for lineside signals and marker sighting</b></p>
<p><b>CSM 5.1.3 (IMs)</b></p> <p><i>To control risks where relevant for the safety of operational activities (see 3.1.1. Risk assessment), at least the following shall be taken into account:</i></p> <p><i>(a) identification of the safe boundaries of transport for traffic planning and control based on the design characteristics of the infrastructure;</i></p> <p><i>(b) traffic planning, including timetable and train path allocation;</i></p>	<p>One of the important questions when designing and installing line side signals and markers is the exact placing of the signals. Lineside markers, signs and information boards should:</p> <ul style="list-style-type: none"> <li>• Be suitably sited so that train headlights allow the driver to read the information,</li> <li>• have suitable intensity of lighting, where required to illuminate the information,</li> <li>• for where retro-reflectivity is used, the reflective properties of the material used should be in compliance with appropriate specifications and the signs are fabricated so that train headlights easily allow the driver to read the information.</li> </ul> <p>This applies to lineside signals that need to be observed by the driver. It does not need to take into account speeds operated under cab signalling conditions; this reflection is covered in the TSI by “whenever applicable”.</p>

		<p><b><i>TSI OPE Appendix B – COR 9 – Running on sight</i></b></p> <p>In the case of ETCS, this rule is not restricted to running in OS mode; it also applies when the driver has to run on sight for other reasons, e.g. running in SR mode, running in FS with <u>European Instruction 6</u> (written order) requiring running on sight, etc.</p>
1.2.2	<p><b><u>National rules (NRs)</u></b></p> <p>These areas can be considered for NRs for FOP No 1.</p> <ul style="list-style-type: none"> <li>• Signalling rules (rules related to the operational use of national signalling systems (not ERTMS).</li> <li>• Shunting rules</li> <li>• <i>Running at caution</i></li> </ul> <p><i>In those Member States that operate permissive driving, this is understood as a train driver being allowed to override a stop aspect on his/her own decision and under specific circumstances and be able to run on sight on the network where this is permitted.</i></p>	

	CSM reference and legal text	FOP	TSI OPE reference and associated guidance
1.2.3	<p><b>CSM 5.1.2 (RUs)</b></p> <p><i>The organisation shall ensure that its operational arrangements conform to the safety-related requirements of applicable Technical Specifications for Interoperability and relevant national rules and any other relevant requirements (see 1.1. Organisation, context and scope of the safety management system).</i></p>	<b>2</b>	<p><b>TSI OPE - Appendix B</b></p> <p><i>“A train must only operate over a portion of line if the train composition is compatible with the infrastructure”.</i></p> <p>This principle is concerned with confirming the compatibility of a train with the infrastructure of the route over which it is planned to operate, before its movement is authorised. Compatibility between a train and infrastructure is affected primarily by the dimensions of a vehicle and any load placed on it; the clearances between the train and the infrastructure or trains on adjacent tracks (gauging); the minimum required braking capacity of the train; the weight and length of a train and the capacity and capability of the infrastructure.</p> <p><u>SMS operational process</u></p> <p>There should be an operational process for the preparation and compatibility of the train taking into account all operational requirements. This should be based on information from the risk assessment and set out how the safe operation of the train is maintained. The frequency and scope of the checks should be determined by the risk assessment and the operational requirements/characteristics (weight/length of the train and compatibility with the routes over which it will travel). It also needs to take into account specific requirements on dangerous goods and how these risks are managed particularly in relation to train composition. (see also: <a href="https://www.era.europa.eu/activities/transport-dangerous-goods/inland-tdg_en">https://www.era.europa.eu/activities/transport-dangerous-goods/inland-tdg_en</a>)</p> <p>The Operational process to be included within the scope of this principle are:</p>
	<p><b>CSM 5.1.3 (RUs)</b></p> <p><i>To control risks where relevant for the safety of operational activities (see 3.1.1. Risk assessment), at least the following shall be taken into account:</i></p> <p><i>(a) planning of existing or new train routes and new train services, including the introduction of new types of vehicles, the need to lease vehicles and/or to hire staff from external parties and the exchange of information on the maintenance for</i></p>		

<p><i>operational purposes with entities in charge of maintenance;</i> <i>(f) authorisations for movements of vehicles.</i></p>	<ul style="list-style-type: none"> <li>• Route compatibility requirements see <b>TSI OPE 4.2.2.5, Appendix D1 TSI</b> and Annex 3 of this guide);</li> <li>• Train composition – must be planned well in advance to check that conformity is in line with the path ordered or to request another path suitable for the train (including procedures for exceptional loads) and procedures to ensure that the RU is fully aware of the train composition for the whole run and that there are no deviations unless agreed). The composition of the train should also take into account the transport of dangerous goods (see below);</li> <li>• Train preparation – including who is responsible, the documentation required and how the train is formed and ensuring that the train is complete, coupling and uncoupling of vehicles. The preparation of the train should also take into account the transport of dangerous goods (see below);</li> <li>• Description of the infrastructure – Permanent information through the Register of Infrastructure, Appendices D1 and D2, requirements for the Route Book and how this is developed based on the information from the IM.</li> <li>• Train identification;</li> <li>• The responsibilities/duties of crew and the mechanism for providing information to train drivers and other members of the operating community;</li> <li>• Exceptional transport for when the load is outside the normal parameters for the train path. For these cases, it is necessary to distinguish between the one-off and the regular exceptional transport. The conditions defined for the exceptional transport can be fulfilled with a different validity period or requirements depending on the nature of the exceptional transport. The conditions can be valid once or e.g. for one year. However, the RU needs to ensure that for regular exceptional transport, they continue to meet the requirements of the train path.</li> <li>• Dangerous goods – including classification, acceptance, identification and labelling. Separation/distance requirements between the loads/containers and maximum content of them. (see also: <a href="https://www.era.europa.eu/activities/transport-dangerous-goods/inland-tdg_en">https://www.era.europa.eu/activities/transport-dangerous-goods/inland-tdg_en</a>)</li> </ul> <p><u>Company rules</u></p> <p>These are examples of the types of company rules that should be covered under FOP No 2:</p> <ul style="list-style-type: none"> <li>• Train composition;</li> </ul>
<p><b>CSM 5.1.2 (IMs)</b></p> <p><i>The organisation shall ensure that its operational arrangements conform to the safety-related requirements of applicable Technical Specifications for Interoperability and relevant national rules and any other relevant requirements (see 1.1. Organisation, context and scope of the safety management system).</i></p>	
<p><b>CSM 5.1.2 (IMs)</b></p> <p><i>To control risks where relevant for the safety of operational activities (see 3.1.1. Risk assessment), at least the following shall be taken into account:</i> <i>(a) identification of the safe boundaries of transport for traffic planning and control based on the design</i></p>	

<p><i>characteristics of the infrastructure;</i> <i>(b) traffic planning, including timetable and train path allocation;</i> <i>(d) setting of conditions for running exceptional transport or consignments.</i></p>	<ul style="list-style-type: none"> <li>• Exceptional loads;</li> <li>• Dangerous goods;</li> <li>• IM/RU's Rules on information necessary to the driver and others who may be involved in train preparation and/or composition (see also rule and route book).</li> <li>• UIC Leaflets 419, 421, 700, 471-3.</li> </ul> <p><b><i>TSI OPE- 4.2.2.5.2 and 4.2.2.7 Train composition and preparation</i></b></p> <p>The RU is required to ensure that the train is in running order before and throughout the operation. The RU should ensure that all vehicles as well as the combination of vehicles in a train or a train set fulfil all requirements regarding safety and the route on which the train is operated. This includes not only the vehicles themselves, including their equipment, but also any freight load and the securing of it on or in a vehicle.</p> <p>Some of the measures are carried out by the RU itself, for others the RU subcontracts it to other players like keepers, Entities in Charge of Maintenance (maintenance of the freight vehicles) or even the IM (e.g. maintenance of vehicles, train departure procedures). However, even by subcontracting some of the tasks to other players the RU has the responsibility according to Article 4 (3) of the Safety Directive to manage the risks of their operation. They should therefore cooperate with subcontractors or those undertaking tasks that could affect the safety of the train and ensure that everyone is aware of their individual responsibilities and discharge them effectively. This should be part of their procedures in their SMS.</p> <p>In relation to TSI OPE 4.2.2.5.2 and 4.2.2.7 – Ensuring that the train is in running order - the following aspects need to be considered:</p> <p style="padding-left: 40px;">The train composition should be planned in advance in order to check the conformity with the path ordered or to request another path suitable for the train. Therefore, the RU should indicate general characteristics that influence the choice of routes as well as other constraints (like gauge, vehicle's speed limits etc.).</p>
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			<p>The actual train composition should always be so that the train may run on the routes planned. This includes aspects like train length, axle load, accepted braking systems, braking performance, CCS-equipment on board and others (see (a) to (g) below). If the characteristics differ from those indicated to the IM, the RU has to inform the IM about this. If necessary, a new path must be requested or amended according to the processes defined in the IM's network statement (commercial aspects are not subject of TSI OPE and therefore not covered) This procedure should cover:</p> <ul style="list-style-type: none"> <li>(a) the weight, axle load and axle distribution must be compatible with the load carrying capacity of the infrastructure;</li> <li>(b) the weight of the train must be within the maximum permissible for the section of route, the strength of the couplings, the traction power and other relevant characteristics of the train;</li> <li>(c) the maximum speed of the train: <ul style="list-style-type: none"> <li>– the maximum speed at which the train can run must take into account any restrictions on the route(s) concerned, braking performance, axle load and vehicle type;</li> </ul> </li> <li>(d) the clearance gauge;</li> <li>(e) reference profiles for which each vehicle was authorised in the train (inclusive of any load) must be within the maximum permissible for the section of route;</li> <li>(f) train detection system(s)</li> <li>(g) energy related elements: <ul style="list-style-type: none"> <li>- maximum train current,</li> <li>- maximum current at standstill per pantograph,</li> <li>- mean contact force,</li> <li>- arrangement of pantographs,</li> <li>- running through phase and system separation sections; and</li> </ul> </li> <li>(h) any other changes of parameters, which were considered for the train path allocation.</li> </ul>
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		<p>For each train, the RU should ensure that they know the train composition during the whole train run. This is necessary to cope with all possible risks that may arise during the train run. The IM should be informed about specific details of the train.</p> <p>The RU should also ensure that operational procedures/company rules are in place and used by staff to ensure that all safety related equipment is fully functional and that the train is safe to operate throughout its journey.</p> <p>Concerning the cryptographic keys, neither the signaller nor the driver can do anything if the proper cryptographic keys are not already installed in the On-board (except of course running without ETCS, which is a degraded situation). If the keys are not the correct ones, there will be an operational issue: a train that is not compatible with the route (i.e. cannot run in ETCS Level 2 in it although it is equipped with ETCS L2 on-board and has passed all other compatibility checks) could enter that route. The RU must check that the cryptographic keys are the correct ones via a procedure described in its SMS.</p> <p>ETCS National Values (NVs) are a similar concern. The driver has no way of confirming whether the applicable ETCS NVs are loaded into the On-board Subsystem. If they are not, then a safety issue can occur as the On-board subsystem will rely on the set of values already stored which may be less restrictive than the applicable ones (the already stored values may be either those of another network or the default ones, specified in the CCS TSI). The SMS of both the RU and IM should detail solutions at the operational level to ensure a safe train run until the On-board subsystem acquires the correct NVs (in selected trackside locations depending on the engineering).</p> <ul style="list-style-type: none"> <li>• <i>The RU may, for instance, require that a locomotive without a confirmed set of NVs always go over a specific location in the station (e.g. a particular service line) where it can pick up the applicable NVs before starting a journey.</i></li> </ul> <p>It is important to note that it is the RU's responsibility to ascertain whether the correct NVs are loaded in the on-board system. It is not the driver's responsibility. The RU should include in its SMS suitable provisions to prevent this situation from occurring in the first place.</p>
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		<p>TSI OPE 4.2.3.4.3 sets out high-level requirements on dangerous goods. In addition, Directives 2012/34/EC on establishing a single European railway area and 2008/68/EC on the inland transport of dangerous goods are also relevant. However, it is key that adequate risk assessments are undertaken to ensure that hazards are identified and controlled. Reliance on a National Rule which is not risk based and does not take into account the operational requirements is not sufficient. (see also <a href="https://www.era.europa.eu/activities/transport-dangerous-goods/inland-tdg_en">https://www.era.europa.eu/activities/transport-dangerous-goods/inland-tdg_en</a>)</p> <p><b><i>TSI OPE - 4.2.3.2 Train identification</i></b></p> <p>The TSI OPE requires that each train should have a unique identification. The standard means for this is the train running number.</p> <p>Due to existing CCS-systems and other IT-systems, the total number of train running numbers is limited; the numbers should be re-used on the European network.</p> <p>To ensure that trains can be correctly identified, each train running number should be unique per network. In this case, it means not only rail network, but also the IT-networks of e.g. GSM-R and ETCS. If the IT-systems have another geographical extent than the rail network, the different extents should be compared. The largest extent should be considered when assigning the train numbers. If, for example, two IMs decide to establish one common GSM-R network, then the IMs would have to ensure that a train running number is not repeated on the network of the other IM because they operate on the same GSM-R network.</p> <p>The train running number is allocated by the IM allocating the train path. In doing so, the IM should cooperate with other IMs to ensure that the number is not re-used unnecessarily. Furthermore, the IM should ensure that all affected parties (RU and other IMs) are informed about the allocated train number and possible changes.</p>
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			Changes of the train running number should be avoided as much as possible. If a change is necessary, the IM should inform the RU and other IMs about the change. If modification of the train running number in on-board systems is not possible in motion, then the change of a train running number should take place while the train is at standstill because the data entries would need to be done by the driver, and clear addressing by signaller and others should be possible during the train run.
1.2.4	<u>National rules (NRs)</u> These areas can be considered for NRs for FOP No 2: <ul style="list-style-type: none"><li>• Exceptional transport (there is a definition in TSI OPE which explains what this means).</li></ul>		

	CSM reference and legal text	FOP	TSI OPE reference and associated guidance
1.2.5	<p><b>CSM 5.1.2 (RUs)</b></p> <p><i>The organisation shall ensure that its operational arrangements conform to the safety-related requirements of applicable Technical Specifications for Interoperability and relevant national rules and any other relevant requirements (see 1.1. Organisation, context and scope of the safety management system).</i></p>	<b>3</b>	<p><b>TSI OPE - Appendix B</b></p> <p><i>“Before a train begins or continues its journey, it must be ensured that passengers, staff and goods are carried safely”.</i></p> <p>This principle concerns the train and its readiness for movement. It includes, as examples: the braking capacity of the train, the speed that the train is permitted to travel, the formation and coupling of the train, identification, loading and securing of freight, the provision of adequate information to train preparation and operational staff. The aim is to prevent collisions, derailments due to a number of risks.</p>
	<p><b>CSM 5.1.3 (RUs)</b></p> <p><i>To control risks where relevant for the safety of operational activities (see 3.1.1. Risk assessment), at least the following shall be taken into account:</i></p> <p><i>(c) preparation of trains or vehicles before movement, including pre-departure checks and train composition;</i></p> <p><i>(d) running trains or movement of vehicles in the different operating conditions (normal, degraded and emergency).</i></p>		<p><u>SMS operational process</u></p> <p>There should be an operational process that ensures that the train is ready for the movement. This should be based on information from the risk assessment and set out how the safety of the train is ensured before it commences its operation and secondly, that it will continue to be safe throughout the journey. It should include information for people involved in train or station operations and infrastructure work.</p> <p>The Operational processes to be included within the scope of this principle are:</p> <ul style="list-style-type: none"> <li>• Before a train starts or continues a journey, the process should cover: <ul style="list-style-type: none"> <li>○ what could constitute a hazard to train movements and the procedures necessary to control these;</li> <li>○ the requirements and procedures for reporting hazards to train movements,</li> <li>○ the actions the people involved should take to stop trains approaching the affected location;</li> <li>○ a means for indicating that the train is complete;</li> </ul> </li> </ul>

<p><b>CSM 5.1.2 (IMs)</b></p> <p><i>The organisation shall ensure that its operational arrangements conform to the safety-related requirements of applicable Technical Specifications for Interoperability and relevant national rules and any other relevant requirements (see 1.1. Organisation, context and scope of the safety management system).</i></p>	<ul style="list-style-type: none"> <li>○ sufficient traction power for anticipated gradients;</li> <li>○ any restrictions to be imposed on train movements;</li> <li>○ examination of the line to obtain more information about a reported hazard.</li> </ul> <ul style="list-style-type: none"> <li>● Departure of a train;</li> <li>● Exceptional weather conditions and the different types of weather planned for or exceptional rail-head conditions;</li> <li>● Safety of the load – weight distribution/axle loading/load securing/kinematic envelop/load covering;</li> <li>● Braking performance based on the requirements provided by RINF and the IM (see Annex 4 which also gives an example of a braking sheet);</li> <li>● Train specifications – train visibility, front and rear end indication, train audibility;</li> <li>● Risk management in the use of sanding (i.e. when and how, what specific measures are needed to control any risks)</li> <li>● Relevant instructions to staff ensuring the safe movement of the train from the start to finish of the journey.</li> </ul>
<p><b>CSM 5.1.2 (IMs)</b></p> <p><i>To control risks where relevant for the safety of operational activities (see 3.1.1. Risk assessment), at least the following shall be taken into account:</i></p> <p><i>(c) real-time traffic management in normal mode and in degraded modes with the application of traffic restrictions of use and the management of traffic disruptions.</i></p>	<p><u>Company rules</u></p> <p>These are examples of the types of company rules that should be covered under FOP No 3:</p> <ul style="list-style-type: none"> <li>● IM/RU’s rules as these are specific to the rolling stock being prepared – tests and checks before departure; <ul style="list-style-type: none"> <li>○ loading and unloading of wagons including visual inspections (UIC Leaflet – safety of loading and European Standard EN 16860);</li> <li>○ procedures for coupling and uncoupling of trains;</li> <li>○ visual checks of trains, including wagons and containers/bogies/axels for defects/damage/signs of overheating and the procedures for reporting them;</li> <li>○ braking rules – tests/ tables/sheets – see Annex 4;</li> <li>○ check of the braking system (track brakes, hand brakes, emergency brakes) to ensure secured are working effectively and also for defects/damage;</li> <li>○ check of buffers and couplers for damage and that they are secured;</li> <li>○ tests of on-board safety devices and safety related equipment, including audible warning devices;</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>○ communication systems;</li> <li>○ check of doors, lamps, horns etc.</li> <li>○ train documentation;</li> <li>○ platform gap procedures;</li> <li>○ maximum permissible speeds for the train and path – these should not exceed the limits set for safe operation (this set by the characteristics of the train and the constraints of the infrastructure);</li> <li>○ Appendix B for the general rules in relation to safe departure and operation of the train with detailed instructions within IM/RU's rules;</li> <li>○ exceptional weather conditions, the different types and what to do in the event of a problem with the train;</li> <li>○ safe boarding and leaving the train.</li> </ul> <p><b>The frequency and scope of the various checks to be carried out should be determined taking into account the risks of the safety of the train operation from start to finish of its journey. This should not be determined without a sufficient assessment of the operational risks by the RU. For example, some checks may only be needed before a train commences its journey other times it may be required to have additional checks during the journey if the operational risk context requires it. This should be a decision for the RU.</b></p> <p>Trains that operate with partnered RUs across borders may wish to consider the UIC ATTI trusted handover procedure (see <a href="https://uic.org/atti">https://uic.org/atti</a> for further information)</p> <p><b>This FOP should also cover requirements in relation TSI OPE 4.2.1.1 - Train visibility; TSI OPE - Train audibility; TSI OPE 4.2.2.3 – Train departure; TSI OPE 4.2.2.4 – Safety of passengers and load; TSI OPE 4.2.2.6 – Train braking</b></p> <p><b><i>TSI OPE – 4.2.2.1.3.2 – Rear end; Freight trains in international traffic</i></b></p> <p>The question of whether plates are accepted in international traffic remains an issue in some Member States, due to the outcome from risk assessments making it difficult in certain circumstances for unified acceptance. Those Member States have agreed to look to see whether long-term solutions, taking into account the results of risk assessment, can be implemented to ensure that this problem is removed in the future. TSI OPE provides dates for acceptance of plates in Member States.</p>
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		<p>However, in the interim, it is important that Member States offer a transparent and non-discriminatory approach to ensure effective and efficient cross border operation. With this in mind, the IM should provide a prompt response to individual requests from RUs to access the network with clear information on the risk analysis. If the request is refused or an RU had problems with gaining access to a network or part of a network, the NSA concerned should be contacted for further assistance.</p> <p><b>TSI OPE - 4.2.2.4.1 Safety of load</b></p> <p>The Railway Undertaking should make sure that vehicles are safely and securely loaded and remain so throughout the journey.</p> <p>The RU should cover the following aspects:</p> <p><b>Weight distribution</b></p> <p>Vehicles should be loaded so as to evenly distribute the weight of the load over all the axles. Where, due to the size or shape of a particular load, this is not possible the RU should apply special conditions of travel to the load for the entire journey. Vehicles should be loaded so that the maximum permissible load, marked on a table affixed to the wagon, is not exceeded.</p> <p><b>Axle loading and mass per linear meter</b></p> <p>The Railway Undertaking should ensure that vehicles are not loaded beyond their axle load limit <i>and mass per linear meter</i>. They should also ensure that vehicles are not loaded beyond the axle load limit <i>and mass per linear meter</i> of any part of the planned route (unless the IM(s) concerned have authorised the movement).</p> <p><b>Load securing</b></p> <p>RUs should ensure that loads and any unused load securing equipment on or in vehicles are secured in a safe manner to prevent unnecessary movement during the journey.</p> <p><b>Kinematic envelope</b></p> <p>The kinematic gauge of each vehicle (inclusive of any load) in the train should be within the maximum permissible for the section of route.</p>
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		<p><b>Load covering</b></p> <p>RUs should ensure that any materials used to provide a cover for a load on a vehicle are safely attached either to the vehicle or to the load. These coverings should be made of materials that are suitable to cover the load in question taking in to account the forces that are liable to be experienced during the journey.</p> <p><b>Dangerous goods</b></p> <p>The legislation on dangerous goods should be applied (see FOP 2). There are also particular checks that need to be applied which should be based on information from the risk assessment and the development of suitable procedures to ensure the safety of the train before, during and at the end of the operation and what to do if there are defective wagons/containers during operation. This includes for mixed freight, checking that any loading on open flat bed wagons conveying metal products are safely secured.</p> <p>See also: <a href="https://www.era.europa.eu/activities/transport-dangerous-goods/inland-tdg_en">https://www.era.europa.eu/activities/transport-dangerous-goods/inland-tdg_en</a></p> <p><b><i>TSI OPE Appendix B – Common Operational Rule (COR) 1 - Sanding</i></b></p> <p>The application of sand is an effective way of improving the adhesion of wheels to the rail, to aid braking and starting away especially in conditions of low/poor rail adhesion.</p> <p>A build-up of sand on the railhead may cause a number of problems especially in connection with the activation of track circuits and the effective operation of points and level crossings.</p> <p>This should be taken into account in the IM’s operational rules and the Driver’s rule book.</p> <p>There is an interface with TSI CCS.</p> <p>The operational risk assessment should also consider when it is necessary for the train driver to report the location where the sanding device has been used in order to identify the areas where sand could have been accumulated.</p>
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		<p><b>TSI OPE Appendix B – COR 2 - Departure of the train</b></p> <p>In the case of ETCS, the analysis below shows that all cases of departure after an exceptional stop are covered by an operational rule.</p> <p>a) Circumstances that can lead to an exceptional stop:</p> <ul style="list-style-type: none"><li>• brakes are triggered automatically:</li><li>• Trip,</li><li>• Service Brake,</li><li>• Emergency Brake,</li><li>• brakes are triggered manually:<ul style="list-style-type: none"><li>○ by the driver,</li><li>○ by anyone on the train,</li></ul></li><li>• End of Authority (EOA),</li><li>• by rule: e.g. ETCS stop marker,</li><li>• Operational instruction.</li></ul> <p>b) There is no need for a rule because all situations above are already covered by other rules:</p> <ul style="list-style-type: none"><li>• train trip: rule “Responding to a trip”,</li><li>• awakening: rule “Putting the on-board system into service”,</li><li>• emergency stop: rule “Responding to a trip”, or rule “Taking measures in event of an emergency”,</li><li>• revocation of MA: rule “Revoking an authorisation for train movement”,</li><li>• time out: rule “Responding to a trip”, or rule “Authorising the passing of an EOA”.</li></ul> <p>In the rule it is stated that:</p>
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			<p>“At the initial station or after a scheduled stop the driver is allowed to depart when the following conditions are fulfilled:</p> <ul style="list-style-type: none"> <li>• After the driver has received an authorisation for train movement; and</li> <li>• After train service conditions are fulfilled; and</li> <li>• When it is time to depart, except when allowed to start before the scheduled time.”</li> </ul> <p>It should be clear that the first bullet point is in the perimeter of the IM while the second and third bullet points are in the perimeter of the RU.</p> <p>The authorisation for train movement can be given through different means such as signalling system, radio communication, instructions, rules, pre-established documentation, etc.</p> <p>In addition, it is recommended that a single ETCS operational train category should be assigned to a train at the start of the journey, which should be maintained, to its final destination.</p> <p>Explanations:</p> <ul style="list-style-type: none"> <li>• the Kappa correction factor is not used;</li> <li>• if this recommendation is fulfilled there is no need for a change of the brake position during the journey.</li> </ul>
1.2.6	<p><u>National rules (NRs)</u></p> <p>These areas can be considered for NRs for FOP No 3:</p> <ul style="list-style-type: none"> <li>• Train visibility front end (existing vehicles);</li> <li>• Train visibility rear end (existing vehicles);</li> <li>• Sanding – automatic sanding device.</li> </ul>		



	CSM reference and legal text	FOP	TSI OPE reference and associated guidance
1.2.7	<p><b>CSM 5.1.2 (RUs)</b></p> <p><i>The organisation shall ensure that its operational arrangements conform to the safety-related requirements of applicable Technical Specifications for Interoperability and relevant national rules and any other relevant requirements (see 1.1. Organisation, context and scope of the safety management system).</i></p>	<b>4</b>	<p><b>TSI OPE - Appendix B</b></p> <p><i>“Before a train is allowed to start or continue its movement, it must have an authority to move and all necessary information to define the conditions of that authority”.</i></p> <p>The safety benefits of a system for maintaining space intervals between trains are compromised if a train proceeds without an authority for its movement. This principle concerns ensuring the driver has an authority to move provided either by the signalling system or by other authorised methods.</p> <p><u>SMS operational process</u></p> <p>There should be an operational process that ensures that the train is ready for the movement. This should be based on information from the risk assessment and set out the information needed to ensure that the train can operate safely and in accordance with the operating conditions and signalling and other authorised methods. It should also cover preparedness for ensuring there are operational procedures and company rules in place for degraded operation and failure of equipment.</p> <p><u>Company rules</u></p> <p>Operating rules, supported by maintenance and train preparation instructions for each type or class of vehicle, should cover:</p> <ul style="list-style-type: none"> <li>• This should cover the rules set out in Appendices A and B. In particular in relation to the requirements to be met, in respect of on-train equipment, before trains or vehicles are permitted to enter service. This should cover both normal and degraded operation which links to Appendices A and B. Further detail is given below:</li> </ul>
	<p><b>CSM 5.1.3 (RUs)</b></p> <p><i>To control risks where relevant for the safety of operational activities (see 3.1.1. Risk assessment), at least the following shall be taken into account:</i></p> <p><i>(d) running trains or movement of vehicles in the different operating conditions (normal, degraded and emergency);</i></p> <p><i>(f) authorisations for movements of vehicles.</i></p>		

<p><b>CSM 5.1.2 (IMs)</b></p> <p><i>The organisation shall ensure that its operational arrangements conform to the safety-related requirements of applicable Technical Specifications for Interoperability and relevant national rules and any other relevant requirements (see 1.1. Organisation, context and scope of the safety management system).</i></p>	
<p><b>CSM 5.1.3 (IMs)</b></p> <p><i>To control risks where relevant for the safety of operational activities (see 3.1.1. Risk assessment), at least the following shall be taken into account:</i></p> <p><i>(c) real-time traffic management in normal mode and in degraded modes with the application of traffic restrictions of use and the management of traffic disruptions;</i></p>	<ul style="list-style-type: none"> <li>– define the circumstances in which trains or vehicles may be permitted to enter service with defects or isolations which could affect their safe movement, and the additional safeguards which should be applied to mitigate increased risks which arise as a consequence;</li> <li>– when a train or vehicle which has become defective has to be moved on the mainline railway, instructions for its movement should specify: <ul style="list-style-type: none"> <li>• the maximum speed for the movement;</li> <li>• the point at which the train is to be taken out of service or other controls applied, such as detraining passengers, remarshalling or turning the train;</li> <li>• any additional safeguards to be applied to the movement.</li> </ul> </li> <li>– instructions to train drivers about the movement of a defective train and the interaction with signallers;</li> <li>– instructions to train drivers on what to do in the event of unforeseen or unscheduled stops;</li> <li>– permissible Speeds – covered by IM/RU’s operational rules and Operational instructions for coupling vehicles or multiple units, including the correct connection of brake and other control systems;</li> <li>– operating rules and the operating instructions for on-track machines and on-track plant should prescribe the safety checks to be carried out prior to movement;</li> <li>– updating the information when the formation of a freight train is changed or the status of vehicles is changed (for example, loaded to empty);</li> <li>– equipment mounted on on-track machines, or engineering plant which is to be removed from a possession by freight train, should be stowed so as to prevent collision with trains on adjacent lines or infrastructure elements;</li> <li>– information should be provided to train crew about stopping points at station platforms and instructions for the operation of door controls at platforms not long enough to accommodate the complete train;</li> <li>– operating rules should provide instructions to be applied when a train overruns a station platform at which it is scheduled to stop;</li> <li>– operating rules for data recording both on the train and supervision of the data outside the train;</li> <li>– train ready message;</li> <li>– operating rules for train reporting including position and handover which ensures the efficient and effective operation;</li> </ul>

		<ul style="list-style-type: none"> <li>– operating rules should prescribe the requirements for train dispatch and arrival at stations.</li> </ul> <ul style="list-style-type: none"> <li>• The following Appendix B <b><i>Common Operational Rule (COR)s are relevant and further detail should be incorporated into company rules:</i></b> <ul style="list-style-type: none"> <li>• COR 3 - No authorisation for train movement at the expected time;</li> <li>• COR 4 – Complete failure of front end light;</li> <li>• COR 5 – Complete failure of audible warning device of a train;</li> <li>• COR 6 – Failure of the audible warning device of a train;</li> <li>• COR 7 – Failure of level crossing;</li> <li>• COR 8 – Failure of voice radio communication;</li> <li>• COR 10 – Assistance to a failed train;</li> <li>• COR 11 Authorisation to pass a signal showing a stop aspect.</li> <li>• COR 15 – Failure of on-board equipment;</li> <li>• COR 16 – End of authority passed without permission; and</li> <li>• COR 17 – Failure of trackside equipment.</li> </ul> </li> </ul> <p><b><i>This FOP should also cover TSI OPE 4.2.2.7 – Ensuring the train is in running order; TSI OPE 4.2.2.9 – Driver Vigilance; TSI OPE 4.2.3.2 – Identification of Trains; TSI OPE 4.2.3.3 – Train departure; TSI OPE 4.2.3.4 Traffic management including train reporting); TSI OPE 4.2.3.6 - Degraded operation</i></b></p> <p><b><i>TSI OPE - 4.2.3.3.2 Train ready message</i></b></p> <p>TSI OPE requires that the RU informs the IM when a train is ready to access the network and to start its train run. This requirement includes the possibility that IM and RU agree beforehand that a train is ready at the moment of departure when the RU does not indicate the contrary. It should be understood that such agreement needs to be concluded between IM and RU to ensure efficient use of the infrastructure.</p> <p>Three different steps should be differentiated:</p>
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		<p>a) Train path allocation: The operator of the train needs to obtain a train path. The request for a path as well as the allocation has to be done under the rules applying the “Directive on allocation of paths and the levying of charges” 2012/34/EC.</p> <p>b) Train operation: Train operation starts when the train path has been allocated and includes the preparation and operation. Once this has started, the operator becomes the RU. The operation of the train is in the scope of the TSI OPE. The TSI OPE defines the interfaces between IM and RU to ensure that both operate the train on a common understanding of their different responsibilities.</p> <p>c) Train run: The train run starts with the train ready message (according to point 4.2.3.3.2) at the point of origin (first point of the path contract) and ends with the arrival at the termination point (last point in the path contract).</p> <p><b><i>TSI OPE - 4.2.3.4.2 Train reporting</i></b></p> <p>The train reporting includes several requirements on train position reporting and hand over time.</p> <p>These requirements set out the kind of information that is necessary for efficient and effective train operation in order to allow smooth train runs in the interest of all RUs’ customers – passengers and freight customers.</p> <p>The amount of reporting points and the means of reporting should be adapted to the operational needs for efficient operation on each line and its traffic.</p> <p>A freight corridor at the limit of its capacity probably requires other reporting protocols than a line with three freight trains per day (although the freight RU’s customer might still have very high requirements on the reporting – depending on the business case for those transports).</p>
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		<p>One way of communication may be the Telematic applications that are necessary following the TSIs TAF and TAP; but the TSI OPE does not require Telematic applications. In the interest of smooth operation, it may be necessary to consider also other ways of communication like telephone or other means.</p> <p><b>TSI OPE - 4.2.3.5 Data recording</b></p> <p>The information recorded should be at least accessible to the NIBs. However, at national level, some other “authorised bodies” might be given the right to access these data.</p> <p>The precise geographic location should precise a distance in km/ml from a recognisable location.</p> <p><b>TSI OPE 4.2.3.5.1 Data recording</b></p> <p><b>Recording of supervision data outside the train</b></p> <p>The TSI OPE requires first of all that certain data is recorded. This should be seen in connection with the principle that TSI OPE requires what shall be done and not the technical method of how to do it. On existing lines, the recording may take place by hand-written documentation. The assessment of risks associated with the procedures and the possible need for technical equipment (for existing lines) is a task of the IM.</p> <p>The recording of safety related communications between train driver and signaller should not be understood as a technical requirement to split between safety and non-safety related communication.</p> <p><b>TSI OPE - 4.2.3.5.2 Data recording</b></p> <p><b>Recording of supervision data on-board the train</b></p> <p>Various types of data are to be recorded on-board the train which includes “<i>detection by on-board alarm systems related to the safe operation of the train, if fitted</i>”. An example of on-board alarm</p>
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		<p>systems also covers hot axle box detectors. These on-board alarm systems exclude passenger alarms, which are not specific to the control of operational safety but could be related to passenger safety in the event of an incident.</p> <p>RUs should make use of the recorded data within their monitoring while respecting legislation on data protection.</p> <p><b>In relation to TSI OPE 4.2.3.4.4 - Operational quality; TSI OPE 4.2.3.5 Data recording</b> – this also links to how the RU and IM monitor the safety performance of their operation. Therefore, these requirements also link to CSM criteria 6.1 on Monitoring</p> <p><b><i>TSI OPE Appendix B - COR4 - Complete failure of the front-end lights</i></b></p> <p>In both situations, when the visibility is good or when the visibility is poor/darkness, the driver shall proceed to the nearest location at the maximum permitted speed where the front end light can be repaired/replaced or the affected vehicle replaced. The maximum permitted speed should not be understood as the maximum permitted speed in general but as the maximum speed that should be adopted in the situation of a complete failure of the front-end lights. This speed, range of speeds or other method of addressing the risk might be given either by the signaller or by a national rule.</p> <p><b><i>TSI Appendix B – COR17 Failure of on-board equipment</i></b></p> <p>Instructions that help to determine the safe behaviour of the train driver is not only the instructions of the signaller but also all the other rules developed by its employer and that the train driver should follow anyway.</p>
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**1.2.8** National rules (NRs)

These areas can be considered for NRs for FOP No 4:

- Safe operation of test trains
- Operation during works.
- Recording of supervision data outside the train – additional information required.

	CSM reference and legal text	FOP	TSI OPE reference and associated guidance
1.2.9	<p><b>CSM 5.1.2 (RUs)</b></p> <p><i>The organisation shall ensure that its operational arrangements conform to the safety-related requirements of applicable Technical Specifications for Interoperability and relevant national rules and any other relevant requirements (see 1.1. Organisation, context and scope of the safety management system).</i></p>	<b>5</b>	<p><b>TSI OPE - Appendix B</b></p> <p><i>“A train must be prevented from proceeding onto a portion of line if it is known or suspected that it would not be safe for the train to proceed until measures have been taken to allow the train to continue safely”.</i></p> <p>This principle addresses the risks of collision and derailment when the line is obstructed or becomes unsafe. This includes failure of level crossings, obstructions on the line or problems with the infrastructure. This does not include the interface between members of the public using the level crossing. The starting point of this principle is that a section of line is known or suspected to be unsafe for trains to pass over it. Therefore, controls to ensure the safety of the infrastructure for train movements will need to have been introduced to overcome or prevent a risk. The aim is to prevent the threat to train movements presented by an obstruction or unsafe condition occurring.</p> <p><u>SMS Operational processes</u></p> <p>5.2.35 There should be an operational process that ensures that the train is prevented from operation if it is unsafe to do so. This should be based on information from the risk assessment and set out the information needed to prevent the movement of the train or set out requirements that will ensure that the train can operate safely and in accordance with the operating conditions and signalling and other authorised methods.</p>
	<p><b>CSM 5.1.3 (RUs)</b></p> <p><i>To control risks where relevant for the safety of operational activities (see 3.1.1. Risk assessment), at least the following shall be taken into account:</i></p> <p><i>d) running trains or movement of vehicles in the different operating conditions (normal, degraded and emergency);</i></p>		



<p><b>CSM 5.1.2 (IMs)</b></p> <p><i>The organisation shall ensure that its operational arrangements conform to the safety-related requirements of applicable Technical Specifications for Interoperability and relevant national rules and any other relevant requirements (see 1.1. Organisation, context and scope of the safety management system).</i></p>	
<p><b>CSM 5.1.3 (IMs)</b></p> <p><i>To control risks where relevant for the safety of operational activities (see 3.1.1. Risk assessment), at least the following shall be taken into account:</i></p> <p><i>(c) real-time traffic management in normal mode and in degraded modes with the application of traffic restrictions of use and the management of traffic disruptions;</i></p>	<p><u>Company rules</u></p> <p>5.2.36 The Operational process to be included within the scope of FOP No 5 are:</p> <ul style="list-style-type: none"> <li>• Operating rules should include descriptions of the operation on the different types of level crossing;</li> <li>• Operating rules are required, to mitigate the risks for the operation of the train from obstructions of the line or animals/people on the track during normal operation, for level crossings (see definition of obstacle);</li> <li>• Operating rules for managing infrastructure work (including speeds in degraded mode and particular operating conditions), infrastructure failures (including catenary and no traction current), weather conditions;</li> <li>• Operating rules for dealing with fires and other incidents, including specific rules for dangerous goods incidents (see also <a href="https://www.era.europa.eu/activities/transport-dangerous-goods/inland-tdg_en">https://www.era.europa.eu/activities/transport-dangerous-goods/inland-tdg_en</a>);</li> <li>• TSI OPE Appendices A and B Common Operational Rules (CORs) and failures further detail incorporated into a Company rule: <ul style="list-style-type: none"> <li>• COR 4 – Complete failure of front end lights</li> <li>• COR 5 – Complete failure of rear end signal</li> <li>• COR 7 – Failure of level crossing;</li> <li>• COR 12 - Anomalies in line side signalling;</li> <li>• COR 13 - Emergency call; and</li> <li>• COR 14 - Immediate actions to prevent danger to a train.</li> </ul> </li> <li>• Speeds in degraded mode – when and how they should be applied on both Class A (Appendix A) and Class B (Appendix B) lines. Including: <ul style="list-style-type: none"> <li>– Passing a signal at a stop aspect with permission;</li> <li>– Running on sight;</li> <li>– Infrastructure failures;</li> <li>– Exceptional weather conditions;</li> <li>– Running without route knowledge;</li> <li>– Failure of braking system or other vehicle defect (not covered by Appendix B);</li> <li>– Obstacles on the line (see definition of obstacle).</li> </ul> </li> </ul>

			<p><b><i>TSI OPE Appendix B – COR 13 - Emergency call</i></b></p> <p>The operational rule referring to the emergency call takes as assumptions the following:</p> <ul style="list-style-type: none"><li>• the operational situations in which a person shall trigger the emergency call are covered by company rules and the risk assessment,</li><li>• the COR rule starts from the moment an emergency call is displayed,</li><li>• the first action of all the drivers after taking note of an emergency call is to do everything in order to reduce potential consequences,</li><li>• in such a situation all concerned drivers are listening to the communications, for non GSMR emergency calls, the drivers avoid speaking unless they have to give new relevant elements,</li><li>• the signaller communicates with drivers to provide additional instructions or information,</li><li>• after receiving an emergency call the actions performed by the signaller shall be part of the company rules,</li><li>• only the signaller is allowed to revoke an emergency call,</li><li>• only the signaller can decide when to resume normal operation,</li><li>• no special rule is needed for non-stopping areas and safe areas.</li></ul> <p><b><i>TSI OPE Appendix B – COR 14 - Immediate actions to prevent danger to trains</i></b></p> <p>It should be explained which immediate actions are expected from the driver when a signal is put at danger, in case of ETCS level 1 (cab signalling), level 2 with overlay, and that cab signalling does not exonerate the driver from observing the line for safety purposes as far as practicable.</p>
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1.2.10	<p><u>National rules (NRs)</u></p> <p>These areas can be considered for NRs for FOP No 5:</p> <ul style="list-style-type: none"><li>• Class B systems: Specific level crossing requirements and instructions, speeds in degraded mode;</li><li>• Specific requirements on who to notify and involve in relation to an emergency (including the role of local authorities and emergency services).</li></ul>
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	CSM reference and legal text	FOP	TSI OPE reference and associated guidance
1.2.11	<p><b>CSM 5.1.2 (RUs)</b> <i>The organisation shall ensure that its operational arrangements conform to the safety-related requirements of applicable Technical Specifications for Interoperability and relevant national rules and any other relevant requirements (see 1.1. Organisation, context and scope of the safety management system).</i></p>	<b>6</b>	<p><b>TSI OPE - Appendix B</b></p> <p><i>“A train must not continue to operate after it has been found to be unsafe in any respect, until measures have been taken to allow the train to continue safely”.</i></p> <p>This principle addresses the risks, which might occur on a train and prevent it from continuing normally. The types of event are a defect arising in an on-train system or component which affects the safe operation of the train or could, if remedial action is not taken, affect the safety of other trains; a fire on the train; an uncontrolled release of a hazardous substance from a freight vehicle and a displaced or insecure load on a freight vehicle.</p>
	<p><b>CSM 5.1.3 (RUs)</b> <i>To control risks where relevant for the safety of operational activities (see 3.1.1. Risk assessment), at least the following shall be taken into account:</i> <i>(d) running trains or movement of vehicles in the different operating conditions (normal, degraded and emergency);</i></p>		<p><u>SMS Operational processes</u></p> <p>5.2.42 There should be an operational process that ensures that the train is prevented from operation if it is unsafe to do so. This should be based on information from the risk assessment and set out the information needed to prevent the movement of the train or set out requirements that will ensure that the train can operate safely and in accordance with the operating conditions and signalling and other authorised methods.</p> <p><u>Company rules</u></p> <p>5.2.43 These are examples of the types of company rules that should be covered under FOP No 6:</p>

<p><b>CSM 5.1.2 (IMs)</b></p> <p><i>The organisation shall ensure that its operational arrangements conform to the safety-related requirements of applicable Technical Specifications for Interoperability and relevant national rules and any other relevant requirements (see 1.1. Organisation, context and scope of the safety management system).</i></p>	
<p><b>CSM 5.1.3 (IMs)</b></p> <p><i>To control risks where relevant for the safety of operational activities (see 3.1.1. Risk assessment), at least the following shall be taken into account:</i></p> <p><i>(c) real-time traffic management in normal mode and in degraded modes with the application of traffic restrictions of use and the management of traffic disruptions;</i></p>	<ul style="list-style-type: none"> <li>• Operating rules should define the procedures for prompt reporting of: <ul style="list-style-type: none"> <li>– defects in on-train systems or components which affect the safe operation of the train or could affect the safety of other trains;</li> <li>– fires on trains;</li> <li>– dangerous goods incidents;</li> <li>– displaced loads.</li> </ul> </li> <li>• TSI OPE Appendix B Common Operational Rules and failures further detail incorporated into a Company rule. <ul style="list-style-type: none"> <li>– COR 4 – Complete failure of front-end lights;</li> <li>– COR 5 – Complete failure of rear end signal;</li> <li>– COR 6 - Failure of audible warning device;</li> <li>– COR – Failure of voice radio communication;</li> <li>– COR 13 – Emergency call;</li> <li>– COR 14 Immediate action to prevent danger to trains;</li> <li>– COR 15 - Failure of On board equipment; and</li> <li>– COR 17 - Failure of track side equipment and catenary</li> </ul> </li> <li>• Operating rules covering evacuation where the RU/IM has control of the evacuation procedure.</li> <li>• Operating rules governing the response of train crew to fires on trains (in addition to the requirements to report the event immediately and to prevent other trains approaching) should cover: <ul style="list-style-type: none"> <li>– preferred types of location to stop a train which is on fire;</li> <li>– fires on trains carrying dangerous goods;</li> <li>– fires on trains carrying passengers;</li> <li>– actions to prevent the spread of fire;</li> <li>– assessment and reporting of the condition of the train after the fire is extinguished, in advance of decisions about its onward movement.</li> </ul> </li> <li>• Actions to be taken in response to a report of a dangerous goods incident should be prescribed by operating rules, supported by instructions specific to the goods involved, provided by the consignor or the railway undertaking.</li> <li>• Compliance with international and European requirements on dangerous goods. (see also <a href="https://www.era.europa.eu/activities/transport-dangerous-goods/inland-tdg_en">https://www.era.europa.eu/activities/transport-dangerous-goods/inland-tdg_en</a>)</li> </ul>

			<p>The RU should always ensure that, when they take specific actions, these do not contradict with those taken by the IM. This is why it is important to establish good co-operation procedures in their respective SMSs that deal with such events.</p> <p><b><i>This FOP should also cover TSI OPE 4.2.3.7 – Managing an emergency situation and TSI OPE 4.2.3.8 – Aid to train crew in the event of an incident or of a major rolling stock malfunction. In addition, this has links to the requirements in CSM Criteria 5.5 on Emergency Management.</i></b></p>
1.2.12	<p><u>National rules (NRs)</u></p> <p><u>None</u></p>		

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## Annex 2 - Safety related communications methodology (TSI OPE Appendix C)

### 2.1 Oral communication

#### Differences between repeat and read back

In point 2.3 of Appendix C on the communication content, some standard terminology is specified. There are some differences between the repetition of a message and reading back a message.

#### Read back

Signaller	Driver	Comment
'message text' over		
	received: 'message text' over	= "read back"
correct		

#### Driver does not read back the message correctly, signaller repeats it

Signaller	Driver	Comment
'message text' over		
	received: "wrong message text" over	= "read back"
error, I say again 'message text' over		= "repeat"
	received: 'message text' over	= "read back"
correct		

Driver did not understand the message and asked the signaller to repeat the message

Signaller	Driver	Comment
'message text' over →		
	Say again (speak slowly) ← over	= "I have not understood your message, please say again"
error (I say again) 'message text' over →		= "repeat"
	received: ← 'message text' over	= "read back"
correct →		

When the term “say again” is used to have the message repeated in the event of poor reception or misunderstanding, it is considered good practice to add “speak slowly” or “speak louder” depending on the situation.

Use of International Phonetic Alphabet and pronunciation of numbers

In point 3 of Appendix C on communication rules, the pronunciation of the numbers and the use of the phonetic alphabet is required. The following is an example of the use of the International Phonetic Alphabet, decimal points and numbers:

Signal Number KX 835 = Signal Kilo X-Ray eight three five

Points A B = points alpha bravo

The IM may add further letters, along with a phonetic pronunciation for each letter added, if required by the alphabet of the IM’s operating language(s).

The expression should be given in local time, in plain language. It would be also acceptable, whenever necessary, for the time to be spelled out digit by digit.

Use of 112

In some Member States, the train driver must use the number 112 in case of emergency.



## 2.2 Operational instructions

Written orders are now defined in TSI OPE (Appendix C2) as operational Instructions. They are either European Instructions or National instructions where permitted.

Appendix C enables the infrastructure manager to draw up the messages and books of forms. These elements should be addressed to the RU at the same time as the rules and regulations are made available. These are then used by the IM and the RU to draw up the documents for their staff (Books of Forms), instructions for signallers and Appendix 1 to the Driver's Rule Book 'Manual of communication procedures'.

The extent to which forms are used and their structure may vary. For some risks, the use of forms will be appropriate, whilst for others it will not be appropriate.

**In principle** when it is necessary for an operational instruction to be written down by the train driver, the train must be at standstill. However, the RU and IM may jointly undertake a risk assessment, which could, as a result, define the conditions under which it is safe to deviate from this principle. The results of this risk assessment should set out the controls necessary (i.e. procedures) in the SMS of the IM and RU, which will ensure safe operation.

The location in an harmonised operational instruction can be expressed in different ways:

Start	End
Location (operational point)	Location (operational point)
Track/signal/level crossing	Track/signal/level crossing
Km or miles	Km or miles

*Examples of additional terms which may be required to support the Communication requirements in Appendix C*

**Messages sent either by the signaller and/or the driver**

Need to stop all trains:

The need to stop all trains must be transmitted by means of an acoustic signal; if this is not available the following phrase must be used:

Emergency, stop all trains

Need to stop a particular train:

Emergency stop train ..... (on line/track)  
 (name)

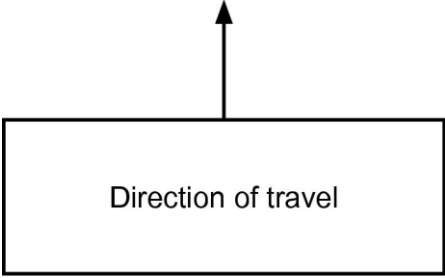
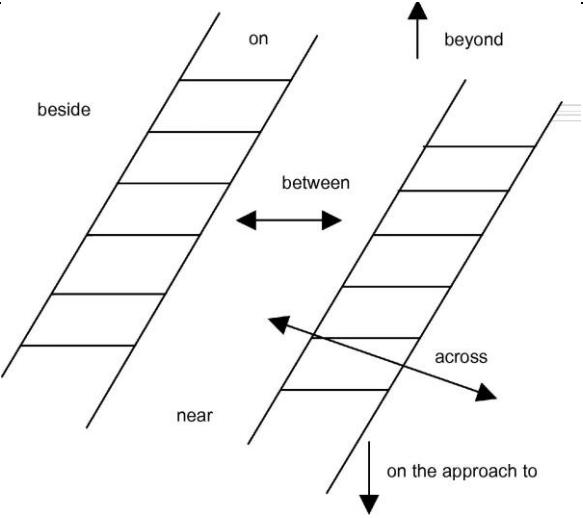
Information on location or area is, if necessary, specified in the message.

In addition, this message is to be quickly complemented, if possible, by the reason, and the train's identification.

Obstruction on or near the track
Or Fire on the train or near the track
Or ..... (other reason)
on line .....at ..... (name)                      (km)
Driver of train ..... (number)

### 2.3 Guideline structure for messages

These messages may be structured along the following lines:

Stage in the communication flow	Message element
Reason for passing the information	†for information †for action
Observation	†There is I saw †I had †I hit
Position — along the line  — in respect to my train	†at .....(station name) †.....(characteristic point) †at mile post/kilometre point .....(number)  †power car ..... (number) †trailer car ..... (number)
Nature — object — person	..... ( see glossary)
State — static — moving	†standing on †lying on †fallen on †walking †running †towards
Location with respect to the tracks  	

## European instructions

When an European instruction must be filled-in, the mandatory information should be first filled-in as, for instance, field A which corresponds to the train number or field E related to the unique identification. In general, in the proposed format of the European instruction, you can find the mandatory and optional information and the tick boxes as follows:

Tick Box

Mandatory

Optional

Depending on the instruction given by the signaller, the train driver will fill-in the European instruction. If the predefined information of the European instructions is not sufficient and additional information is needed, the field additional instruction x90 shall be ticked and additional instruction in the field x91 should be added as free text.

## Annex 3 - Elements for the vehicle and train compatibility over the route intended for operation and the route book

Appendix D is composed of two parts, the first part relates to the vehicle and train compatibility checks with the route(s) intended for operation. The second consists of the elements the IM has to provide to the RU for the compilation of the route book.

### 3.1 Vehicle and train Route compatibility checks

#### 3.1.1 Vehicle Route Compatibility Check and Vehicle Authorisation

##### 4.2.2.5.1 Route compatibility

*A) The railway undertaking is responsible for ensuring that all vehicles composing its train are compatible with the intended route(s).*

*(...)*

*The route compatibility process shall not duplicate processes performed as part of the vehicle authorisation under Commission Implementing Regulation (EU) 2018/545 to ensure technical compatibility between the vehicle and the network(s). Parameters of Appendix D1 already verified and checked during vehicle authorisation or other similar processes shall not be reassessed in the framework of route compatibility check.*

*For vehicle authorised under Directive (EU) 2016/797, the relevant vehicle data related to the parameters listed in Appendix D1, already checked during the authorisation process, being part of:*

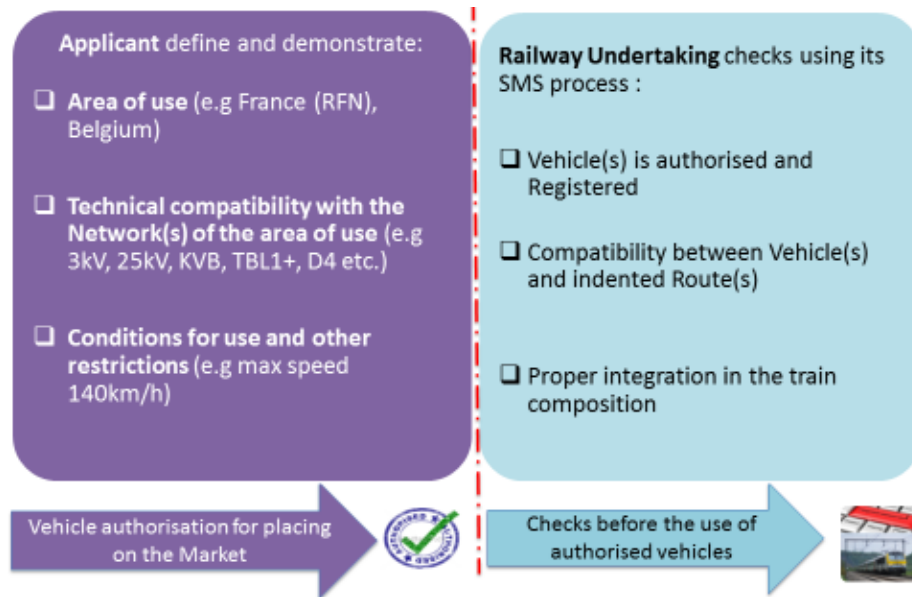
- the file referred to in Article 21 (3) of Directive (EU) 2016/797 and*
- the vehicle authorisation as referred to in Article 21 (10) of Directive (EU) 2016/797,*

*shall be provided by the applicant referred to in Article 2 (22) of Directive (EU) 2016/797 or the keeper to the railway undertaking upon request, when such information is not available in ERATV or other registers for rail vehicles.*

*For vehicles authorised before Directive (EU) 2016/797, the relevant vehicle data related to the parameters listed in Appendix D1 shall be provided to the railway undertaking by the holder of the vehicle authorisation documentation or the keeper upon request, when such information is not available in ERATV or other registers for rail vehicles.*

*(...)*

The route compatibility check is not part of vehicle authorisation for placing on the market of vehicle or vehicle type. There should be no duplication of the checks/demonstrations already carried out by the applicant for vehicle authorization, as part of the technical compatibility between the vehicle and network(s).



Note. There is no need to perform route compatibility checks for vehicle/trains already operating in specific routes if the route(s) or the vehicle/trains are not changed.

### 3.1.2 Route compatibility check and Safety Management System

#### 4.2.2.5.1 Route compatibility

A) The railway undertaking is responsible for ensuring that all vehicles composing its train are compatible with the intended route(s).

The railway undertaking shall have a process in its SMS to ensure that all vehicles it uses are authorised, registered and compatible with the intended route(s) including the requirements to be followed by its staff.

(...)

Route compatibility checks should be performed by the Railway Undertaking before the use of vehicle(s) using its process covered by its SMS. This is covered under requirement 5.1 Operational planning and control. See Guidance on Safety certification and supervision for further information. [https://www.era.europa.eu/sites/default/files/activities/docs/guide\\_sms\\_requirements\\_en.pdf](https://www.era.europa.eu/sites/default/files/activities/docs/guide_sms_requirements_en.pdf)

CSM on SMS requirements has specific criteria on operational control and planning which requires RUs to consider the need to control the risks from all their particular operational requirements. In particular, Annex 1, 5.1.3 requires RUs to control the risks and have procedures in place to cover the introduction of new types of vehicles and their compatibility with the route.

This means that RUs must have evidence in their SMS that they have a procedure and records that show that the vehicle is compatible with the route it is intended to operate. This will include information provided by the IM and RINF. If the RU identifies problems in obtaining this information there should be a joint resolution available between the RU and IM to resolve this.

The RU, as part of compliance with EU Regulation 1078/2012, will need to monitor and review the effectiveness of the route compatibility process set out in their SMS procedures; including checking the performance measures and revising/amending the process to ensure all risks are effectively managed.

A Railway Undertaking may decide to delegate the task of route compatibility check to the Infrastructure Manager or another contractor. When this is done, the Railway Undertaking should set out the contractual arrangements with the contracting part and this must be covered by its safety management system. It is important to note that Railway Undertaking cannot delegate the responsibility particularly in relation to the control of risks.

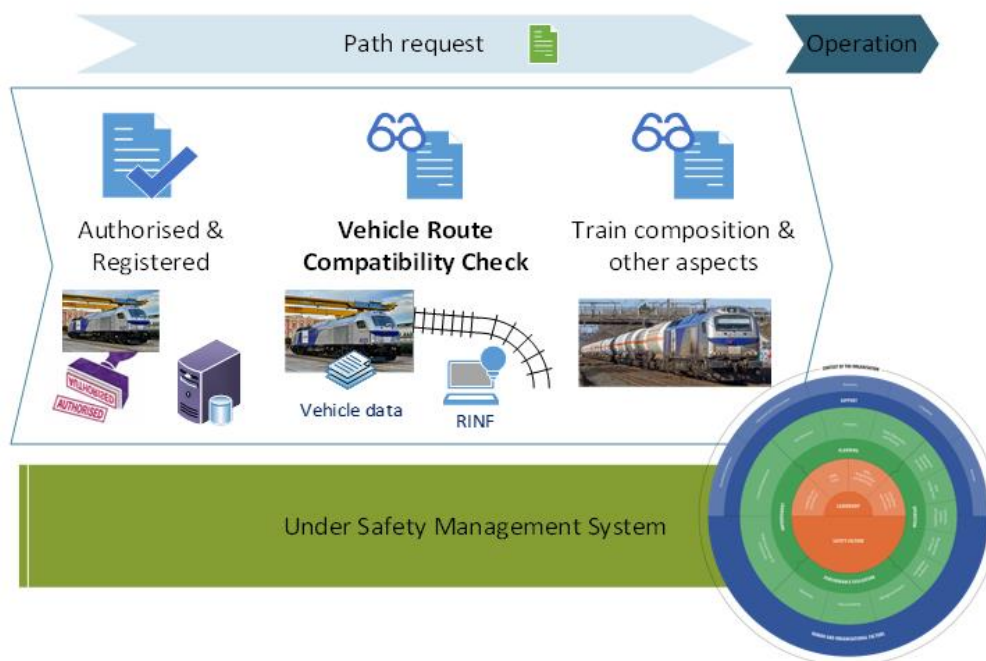
**3.1.3 Route compatibility check process**

**4.2.2.5.1 Route compatibility**  
 A) *The railway undertaking is responsible for ensuring that all vehicles composing its train are compatible with the intended route(s).*  
 (...)

*The processes for route compatibility in the SMS of the railway undertaking shall include the following checks, which may be performed in parallel at any appropriate time or in any appropriate sequence:*

- *each vehicle is authorised and registered;*
- *each vehicle in the train is compatible with the route;*
- *the composition of the train is compatible with the route and the path;*
- *the preparation of the train ensuring that the train is correctly formed and complete.*

The picture below provides the overview of checks before the use of vehicles performed by railway undertaking:



**3.1.3.1 Vehicle authorised and Registered**

Railway Undertaking verifies that the vehicle is authorised and registered

**3.1.3.2 Vehicle and Train route compatibility checks**

Railway Undertaking performs the route compatibility checks by comparing the characteristics of vehicle/train with the intended route(s), using the procedures defined in the appendix D1.

The items to be checked by the Railway Undertaking for the purpose of route compatibility check are described in the appendix D1 of this TSI; this includes a limited and clearly identified set of parameters and procedures, which are relevant for ensuring the compatibility of vehicles/train with specific route(s).

Route compatibility is checked by evaluating vehicle data against the information from the RINF or any relevant information provided by the IM free of charge and within a reasonable period of time, where such a register does not exist or is incomplete.

**Notes.**

- If a route compatibility check item is harmonised in a network (e.g. track gauge) , there is no need of checking route compatibility, as it is already fully covered at vehicle authorization stage.
- Most of the items to be checked consist of a simple cross check.
- Some of the items to be checked need dedicated competences (e.g. compatibility with bridges).
- Some particularities of a network may require tests, but this should be seen as an exception.
- It is not a new authorization process.

**3.1.3.3 Train composition**

The RU is responsible for ensuring that the composed train with vehicle(s) compatible with the intended route. The check is performed for each time the composition of a train is new. The RU checks additional elements for the compatibility between a composed train and the route(s) such as length, load carrying capacity, braking etc.

**3.1.3.4 Other aspects to be checked****4.2.2.5.1 Route compatibility**

(...)

*C) Additional elements for route compatibility shall be checked when relevant:*

- *transport of dangerous good as referred into point 4.2.3.4.3,*
- *quieter route as referred in Noise TSI,*
- *exceptional transport as referred in Appendix I*
- *access conditions to underground stations for diesel and other thermal traction systems as referred in clause 4.2.8.3 of LOC&PAS TSI.*

The RU checks also other aspects such as transport of dangerous goods and exceptional load. (see also [https://www.era.europa.eu/activities/transport-dangerous-goods/inland-tdg\\_en](https://www.era.europa.eu/activities/transport-dangerous-goods/inland-tdg_en)).

Fundamental Operational Principle No2 on page 33, (***“A train must only operate over a portion of line if the train composition is compatible with the infrastructure”***) sets out more guidance on the aspects that need to be covered in relation to ensuring that the train composition is compatible with the intended route.



### 3.1.4 Railway Undertaking and Infrastructure Manager Interfaces

#### 4.2.2.5.1 Route compatibility

*B) The infrastructure manager shall provide the information for route compatibility as defined in Appendix D1 through RINF.*

*Appendix D1 sets out all the parameters that shall be used in the process of the railway undertaking before the first use of a vehicle or train configuration in order to ensure all vehicles composing a train are compatible with the route(s) the train is planned to operate on including, where appropriate, deviation routes and routes to workshops. Modifications of the route and changes of infrastructure characteristics have to be taken into account. When a parameter of Appendix D1 is harmonised at network(s) level of an area of use, conformity with that parameter may be presumed for any vehicle authorised for that area of use. National rules or additional national requirements for network access in respect of route compatibility are in principle considered incompatible with Appendix D1. The infrastructure manager shall not require additional technical checks for the purpose of route compatibility beyond the list laid down in Appendix D1.*

*As required by Article 23 (1)(b) of Directive (EU) 2016/797, until RINF provides all necessary information in respect of the relevant parameters, the infrastructure manager shall provide this information through other means free of charge as soon as possible and in electronic format to railway undertakings, authorized applicants for path requests and, where applicable, for the applicant referred to in Article 2 (22) of Directive (EU) 2016/797.*

*The first submission of route compatibility information by the infrastructure manager through other mean than RINF shall be delivered at the request of the railway undertaking as soon as reasonably possible and in any event within 15 days unless the infrastructure manager and the railway undertaking agrees a longer deadline. The infrastructure manager shall ensure that the information provided to the railway undertaking(s) is complete and accurate.*

*The infrastructure manager shall inform the railway undertaking of the changes on characteristics of the route through RINF whenever such information becomes available or through other means until RINF allows for such functionality.*

*For emergency situations or real time information, the infrastructure manager shall ensure immediate information is given to the railway undertaking through appropriate means of communication..*

The RU and IM should cooperate on the route compatibility check on:

- Information and provision of route data.
- In case tests are needed, Infrastructure Manager should support the Railway Undertaking and make every effort to ensure that any tests take place within three months of receipt of the applicant's request.
- Discussion on specific parameters (e.g. bridge compatibility) and in case of operation restrictions.
- Take into account the results of the check, for example, possible operational conditions following checks are discussed with RU (e.g speed limitation).
- In case of structural changes of the Network (upgrading, renewal, new line or new station etc.), usually planned on long term, the route compatibility check may need to be performed again depending on the changes and their consequences. The infrastructure manager using its safety management system must inform the Railway Undertaking of the changes on characteristics of the allocated path change, as soon as these changes occur.

### 3.2 Route book

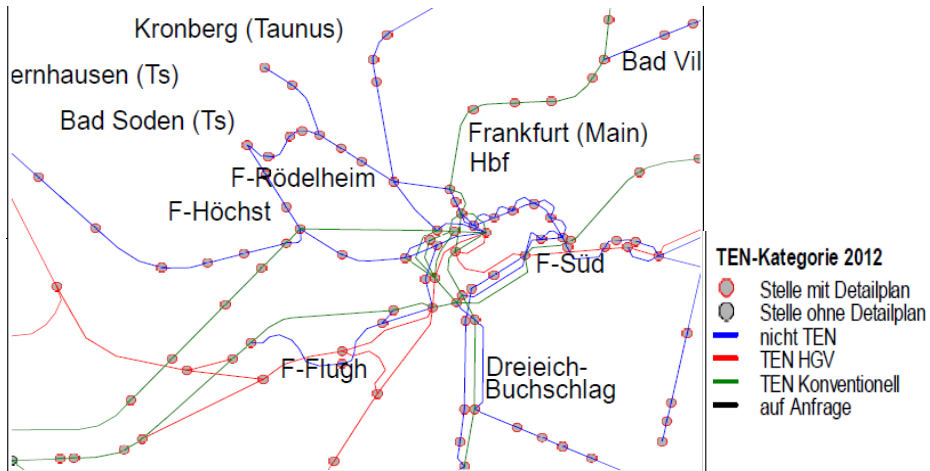
This part lists the elements necessary for the compilation of the route book and should be read in relation with point 4.2.1.2.2.1 Preparation of the route book of TSI OPE. The route book is an operational document developed by the RU based on information from the IM and delivered by the RU to the train driver. As many information to be delivered by the IM to the RU for the compilation of the route book are identical to the information to be delivered by the IM to the RU to ensure that the train is compatible with the route intended for operation, Appendix D is used as unique document where this information is listed. However, the process for the compilation of the route and the one for ensuring the compatibility of the train with the route are two different processes, which are not linked to each other. When the route book is delivered to the train driver, the train compatibility with the route intended for operation has already been performed. However, there might be some changes to the infrastructure that might affect the operational running conditions and that must be communicated by the IM to the RU or directly to the train driver in real time.

For the route book, maps and line diagrams should be given by the IM to the RU. Some examples of maps and diagrams are given in this application guide:

#### Example in the UK

LOR	Seq.	Line of Route Description	ELR	Route	Last Updated
LN836	008	Doncaster, Marshgate Jn. to Neville Hill East Jn.	DOL2 HUL4	London North Eastern	28/08/2012
Location		Mileage M Ch	Running lines & speed restrictions		Signalling & Remarks
LEEDS	185 64 *				TCB RAB NRN York SB AC: York ECR 031 A=A Line B=B Line C=C Line D=D Line E=E Line F=F Line PP: Permissive Working - platforms 1 to 7 & platforms 10, 13, 14, & 17 - full use for class 1, 2, 3 (EC S), 5, 9 & 0 trains. PP is authorised in Platforms 8, 9, 11, 12, 15 and 16 TL=Through Line 15mph PSRs on Platform 11, Through Line, and Platform 12 in Up direction continue to 185m 66ch, including over S & C
	185 66 *				
	185 68 *				
	185 70 *				
	20 50				
	20 48 *				
	20 47 *				
	20 46 *				
	20 42 *				
	20 39 *				
20 36 *					
Leeds East Jn.	20 26				

Example in Germany



## Annex 4 - Braking Performance and maximum speed allowed

### 4.1 Principles

Braking performance is a subject that concerns both the IM and RU. Point 4.2.2.6 of the TSI OPE clarifies the interface between IM and RU:

- Allocation of responsibilities,
- Communication related to braking performance.

In any case, the IM and RU have to work together and exchange information to ensure a safe operation of trains. IM and RU must ensure that the risks occurring at the interface between IM and RU are analysed and covered by operational rules and procedures in accordance to Article 9 of the Safety Directive [2].

### 4.2 Responsibilities of the IM and RU

The IM should ensure that the correct and complete information concerning the line characteristics are given to the RU in a clear and usable format (e.g. RINF, Data file). The IM has to indicate to the RU the conditions of use of brake systems affecting the infrastructure (route related information). The IM should also provide route characteristics that the RU must take into account for establishing the necessary braking performance and corresponding maximum speed. This should cover e.g. steep gradients and signalling distances. The IM should also make available the measure potentially applicable for constraints that the RU has to respect if a train does not reach the necessary braking performance (either general measures or line related, as appropriate).

The RU establishes procedures for the train composition and for determining the braking capability of the trains and corresponding maximum speed to ensure that the trains run safely on the intended route. This should include normal and degraded mode operation. The procedures must take into account constraints like the availability and reliability of the brakes. The procedures must also take into account train running characteristics like longitudinal forces (and associated risks of coupler breakage). These general procedures established by a RU may be the same for all networks the RU is running on as the train characteristics and behaviour does not change by passing a border (exception: considerable changes in climatic conditions for instance). However, the necessary braking performance may vary from route to route (e.g. due to different gradients, or to different signalling distances).

With information provided under point 4.2.2.6.2 (1) of TSI OPE, the RU may perform stopping distance calculations or may determine the necessary braking performance of the train by applying the code of practice such as the requirements for the necessary braking performance already in use on the intended route. The mentioned calculation or code of practice also takes into account the maximum speed allowed during operation.

In order to facilitate the procedure, next to the line characteristics defined in point 4.2.2.6.2 (1), the IM may provide the expected rolling stock minimum braking performance taken into account for the line at design stage and ensuring the compatibility of the rolling stock with the line at its maximum operating speed. This minimum braking performance requirement is expressed in deceleration profile and equivalent response time on level track or brake weight percentage depending on the maximum speed and composition of train as referred to in point 4.2.2.6.2 (2). By using this information, the RUs may calculate the required braking performance for larger parts of the network and calculations of the required stopping distance for each individual line may be avoided. When the IM provides the expected RST minimum braking performance, the RU has to express the braking performance using the same unit, and each party is responsible for this interface parameter expressed in that unit.

For the train braking performance based on brake weight percentage, the most common formula for conventional rail is intended to provide a simple way to evaluate the braking performance of a train composed of various vehicles and is the following:

$$\frac{\text{(Sum of brake weight including locos x100)}}{\text{(Sum of total weight of the train including locos)}} = \text{Brake weight percentage}$$

Notes:

(1) The sum of brake weight is performed over the brake weight of active brakes only. The brake weight of each vehicle is determined when the vehicle is placed in service.

The sum of total weight is the actual or estimated (higher) weight

(2) This formula is considered as a code of practice; most of the existing braking tables are based on brake weight percentage, and can therefore also be considered as codes of practice.

However, any change in these braking tables should be assessed by the IM and by the RU (in case of change due to rolling stock characteristics) using the CSM on risk assessment to maintain the safety level in case of evolution of braking tables.

The procedures the railway undertaking should set up and implement are related to e.g.:

- the composition of trains and;
- the determination of the actual braking performance.

These procedures shall be managed by the RU within its safety management system using the CSM on risk assessment.

### 4.3. Procedures

#### 4.3.1 Preparation

- The IM details the information necessary for the calculation of the necessary braking performance for all routes. The IM makes this information for necessary braking performance available to the RUs. The IM also indicates information like the conditions of use for brake systems that can impact the infrastructure like eddy-current, magnetic or regenerative brake. This results from point TSI OPE 4.2.2.6.2 (1).
- The IM may also deliver the existing requirements on expected rolling stock minimum braking performance, if they are available, to the RUs. If the IM decides to do so, this information should be made available to all RUs who intend to operate trains on the specified route of its network. This results from point TSI OPE 4.2.2.6.2 (2).
- The RU establishes procedures for determining the braking capability of the train at corresponding maximum speed and for train composition taking into account the line characteristics provided by the IM (included the maximum line speed related to the infrastructure). This results from point (3) of 4.2.2.6.2.

Note: The actual braking performance resulting from the checking of the actual train (train composition, brake availability, train length, train weight, brake settings...) will be used as an input

value for any operation rule to be subsequently applied to the train. This means that the result of the calculation should be used as such (e.g., brake weight % to be used as calculated; ranges in a table may be derived as written without further deduction). The decision about the brake setting to use (e.g. P or G or combination of brake systems) for a train is then up to the RU, taking into account the relevant train characteristics such as length, type of couplers, etc. However, the necessary braking performance must at least be achieved.

#### 4.3.2 Train prepared to run

The RU calculates the actual braking performance for the individual train prepared to run and verifies that this actual braking performance matches or exceeds the necessary braking performance determined for the associated train path.

The RU must not take into account any brake system that is not allowed to be used on the given route.

#### 4.3.3 Braking performance insufficient during operation

If during operation the actual braking performance does not meet the necessary braking performance determined at planning stage, the train may have to run at a lower speed than authorised for the train path. In this situation, the RU should inform the IM immediately and take appropriate measures (like reduction of speed) and the IM may take appropriate measures to reduce the overall impact on the traffic on its network.

The rules may be designed as one set of rules valid for the whole network or as route-specific rules.

In some cases, train operation will not be possible (according to the rules for reduced braking performance), either because of safety reasons (e.g. impossibility to halt a train on steep gradients) or for traffic management reasons (traffic disruption due to the resulting speed limit). In these cases, a possibility is a request for an ad hoc path in accordance with the actual braking performance achieved by the individual train.

### 4.4. Establishing operational rules

#### 4.4.1 Safety Management System

It is vital to ensure that the SMS has sufficient arrangements in place to deliver effective operational planning and control of all risks. This means that all operational procedures and company rules are managed through the IM's and RU's Safety Management System. Whether a braking rule is appropriate or continues to be appropriate is a key requirement of the risk assessment process as set out in the RU/IM SMS. The results of the risk assessment will determine what control measures are needed in order to ensure that the risk is managed. The RU/IM will need to regularly ensure that the braking rules remain effective in controlling the risk and updating them as and when required. For any operational changes, the CSM on risk assessment should be considered. Further information on this is set out in the CSM Guidelines.

#### 4.4.2 Application of existing rules

Experience shows that railways have operated in a safe manner for a long time with the existing braking performance rules.

If an RU operates in or across one or more Member States, the RU may decide to take over existing rules from another entity (example: in different MSs, the IMs have managed these rules before).

If the RU applies existing rules, they need to consider the application of the CSM on risk assessment in relation to an operational change.

The braking sheet will be a key part of the procedure. There is no harmonised EU format but below is an example of a braking sheet that is used for cross border operations.

Bereamingstaat - Remmingsbulletin/Bremzettell/Bulletin de freinage		BE	LU	FR	CH	DE	NL
SO/EVU/EF	1	Samenstellingsindex/Zusammenstellungsindex/Indexe de composition					
	2	Remregime/Bremstellung/Régime de freinage <input type="checkbox"/> P <input type="checkbox"/> G <input type="checkbox"/> LL					
3	Treinumnummer/Zugnummer/N° du train	4	Op / Am / Du	5	Van / Von / De	6	Naar / Nach / Vers
7	Springstof/Sprengstoff/Explosif <input type="checkbox"/> Ja-Oui <input type="checkbox"/> Neen-Nein-Non	Andere gevaarlijke goederen / Andere gefährliche Güter / Autres marchandises dangereuses <input type="checkbox"/> Ja-Oui <input type="checkbox"/> Neen-Nein-Non					
8	Buitengewoon vervoer / Außergewöhnliche Sendungen / Transport exceptionnel	Beperkingen voor buitengewo(o)n(e) vervoer(en) / Geschwindigkeitsbegrenzung für außergewöhnliche Sendung(en) / Restrictions pour transport(s) exceptionnel(s)			<input type="checkbox"/> Ja-Oui <b>CH-Ordre écrit</b> <input type="checkbox"/> Neen-Nein-Non		
	<input type="checkbox"/> Ja-Oui <input type="checkbox"/> Neen-Nein-Non	<input type="checkbox"/> Ja-Oui <b>BE-E285</b> <input type="checkbox"/> Neen-Nein-Non	<input type="checkbox"/> Ja-Oui <b>LU-ATE CFL</b> <input type="checkbox"/> Neen-Nein-Non	<input type="checkbox"/> Ja-Oui <b>FR-Ordre écrit</b> <input type="checkbox"/> Neen-Nein-Non			
9	Vervoer dat de snelheid op de aangeduide netwerken beperkt / Im Wagenzug sind Fahrzeuge, deren zulässige Geschwindigkeit niedriger ist als die Zuges auf dem Netz in / Transport qui limite la vitesse sur les réseaux indiqués	Vmax BE: Km/h	Vmax LU: km/h	Vmax DE: Km/h			
		Vmax FR: Km/h	Vmax CH: Km/h	Vmax NL: Km/h			
10	Niet voldaan aan de (be)remmingsvoorschriften: op de aangeduide netwerken, de snelheid niet overschrijden van / Bremsregeln nicht erfüllt: Geschwindigkeit nicht überschreiten im von / Règles de freinage non satisfaites : ne pas dépasser sur les réseaux indiqués la vitesse de:				in/in/en BE	in/in/au LU	in/in/en FR
11	D-Lasten/Charges D <input type="checkbox"/> Ja-Oui <input type="checkbox"/> Neen-Nein-Non	12	Aantal remmen / Anzahl Bremsen / Nombre de freins		D	K-L-LL	
13	Beschadigd voertuig als laatste wagen-aan staart /Schadfahrzeug als Schlussläufer / Véhicule avarié en queue <input type="checkbox"/> Ja-Oui <input type="checkbox"/> Neen-Nein-Non						
14	Samenstelling / Zusammenstellung / Composition		14.1	Van/Naar - Von/Nach - De/A	14.2	Van/Naar - Von/Nach - De/A	
15	Type trekkende locomotief (sleeplocomotief) Baureihe der arbeitenden Lokomotive(n) Série de(s) locomotive(s) de remorque		a.1	b.1	a.2	b.2	
	Aantal Anzahl Nombre	16.1	Trekkende loccen - Sleeplocs / Arbeitende Loks / Locs de remorque				
16.2		Opzendlocen - Gesleepte locs / Nicht arbeitende Loks - Locs remorquées					
16.3		Wagens - Wagen- Wagons					
16.4		TOTAAL - TOTAL					
Assen Achsen Essieux	17.1	Trekkende loccen - Sleeplocs / Arbeitende Loks / Locs de remorque					
	17.2	Opzendlocen - Gesleepte locs / Nicht arbeitende Loks - Locs remorquées					
	17.3	Wagens - Wagen- Wagons					
	17.4	TOTAAL - TOTAL					

Lengte Länge Longueur	18.1	Trekende loccen - Sleeplocs / Arbeidende Loks / Locs de remorque				
	18.2	Opzendloccen - Gesleepte locs / Nicht arbeitende Loks - Locs remorquées				
	18.3	Wagens - Wagen- Wagons				
	18.4	TOTAAL – TOTAL				
Gewicht Masse	19.1	Trekende loccen - Sleeplocs / Arbeidende Loks / Locs de remorque				
	19.2	Opzendloccen - Gesleepte locs / Nicht arbeitende Loks - Locs remorquées				
	19.3	Wagens – Wagen - Wagons				
	19.4	TOTAAL – TOTAL (B)				
Aanwezig - Bereikt remgewicht Vorhandenes Bremsgewicht Masse freinée réalisée	20.1	Trekende loccen - Sleeplocs / Arbeidende Loks / Locs de remorque				
	20.2	Opzendloccen - Gesleepte locs / Nicht arbeitende Loks - Locs remorquées				
	20.3	Wagens - Wagen- Wagons				
	20.4	TOTAAL TOTAL (A)	20.41 20.42 (A x 100)/B	T %		
21	Nodig remgewicht - Erforderliches Bremsgewicht - Masse freinée nécessaire		21.1 21.2	T %		
	DE	Fehlende Bremsleistung %				
23	Masse freinée d'arrêt nécessaire					
	FR	Masse freinée de dérive nécessaire Masse freinée dérive réalisée 2ème moitié				
24	N° van de uiterste (eerste/laatste) wagens / Nr. des ersten/letzten Wagens / N° des wagons d'extrémité (premier/dernier)		...../.....			
<b>INCIDENTEN ONDERWEG - STÖRUNGEN WÄHREND DER FAHRT - INCIDENTS EN COURS DE ROUTE</b>						
25	Afgesloten rem : wagennummer en positie in de trein / Ausgeschaltete Bremse : Nr des Wagens und Stellung im Zug / Frein isolé : n° du wagon et classement dans le train					
26	Opmerkingen / Bemerkungen / Observations					
27	FR	Lors d'un transport de matières radioactives, s'éloigner de plus de 30 m en cas d'événement intéressant le chargement				
28	Handtekeningen / Unterschriften / Signatures		Version du 15/06/2015			

#### 4.4.3 Establish new / amend existing rules

If the RU decides to establish new rules or amend the existing ones, then they should consider the application of the CSM on risk assessment in relation to an operational change [7]. The technical parameters listed in EN 14198:2004 and EN 14531 as well as UIC-leaflet 544-1 should be taken into account for the risk assessment.

Technical development should not be hindered. If technical devices improve the braking performance on train level, the RU shall be allowed to take this improvement into account. In addition, such a decision shall be covered by a risk assessment.

#### 4.4.4 Elements specific to ETCS

First of all, it must be understood that driving in cab signalling with ETCS (or with any other CCS system without lateral signalling) implies that the braking performance of the train does not determine the maximum allowed speed resulting from a fixed braking distance. On the contrary, it determines the location where the driver is invited by ETCS to start braking according to the current train speed. For a speed equal to the maximum speed the train can operate on the line, this location is called the perturbation location.

Unlike lateral signalling, the braking performance of the train and the maximum distance over which the driver will be invited by ETCS to brake (i.e. the perturbation distance) should only be checked before it can be operated on a given line to determine whether:

- there would be a negative impact on the headway or



- for a ETCS level 1 application without semi-continuous infill transmission (by radio or by loop), the driver would be invited to brake before the train reaches the spot (balise) transmission location where the ETCS trackside can renew (extend) the Movement Authority of the train.

If it is necessary to predetermine the perturbation distance calculated by the ETCS on-board equipment of the train, the IM should provide to the RU, in addition the information referred to in the clause 4.2.2.6.2 alinea (1), the ETCS braking curves trackside related parameters (the so called National Values for braking curves) which allow the RU establishing the resulting perturbation distance depending on the characteristics of the train.

## **Annex 5 – European Vehicle Number (Appendix H)**

Each vehicle should have a European Vehicle Number. The details on the EVN are set out in Commission Decision 2007/756/EC.

How the EVN and related markings (TEN or Authorisation plate) are painted on the vehicle, is set out in Appendix H of the TSI OPE.

### ***Inscription of the number and linked alphabetical marking on the bodywork***

This part states the basic requirements concerning the marking on vehicles. It must be seen in connection with the requirements of the relevant TSIs for Rolling Stock concerning markings on the vehicles.

### ***Alphabetical marking of the interoperability capability***

Vehicles that have an authorization valid for an area of use covering all Member States should be marked with a “TEN”. This means, that the relevant TSIs for Rolling Stock (including for example TSIs as Noise, People with reduced mobility (PRM)) have been fulfilled and the vehicle is cross-authorized.

If a wagon to be authorised is to be marked as a TEN wagon and the applicant so requests, the assessments of the Agency acting as authorising entity will cover the additional conditions that a TEN wagon shall meet (WAG TSI §7.1.2). The marking GE is an additional marking to the TEN marking in case the Annex C (which is voluntary) of the TSI WAG is applied by the Applicant.

Vehicles that have an authorisation valid for an area of use which does not cover all Member States may not carry the marking “TEN”. They should carry an authorisation plate with the letter marking of the Member States where the vehicles are placed on the market. The Member States’ abbreviations shall be used according to part 4.

The marking PPV or PPW is not given by Member States of the European Union.

## Annex 6 – ERTMS operational principles and rules (Appendix A)

### 6.1 General

This Annex clarifies the operational context for the application of certain principles and rules contained in Appendix A to the TSI OPE. All references below refer to Appendix A contents unless otherwise specified.

Concerning the scoping definition “GSM-R voice radio operational rules are applicable on lines equipped with GSM-R independently of the control command system in use” under §3.2, it should be clarified that any rule involving a voice communication over GSM-R between signaller and driver can be considered to also refer to public GSM, if the option to use public GSM as an alternative to GSM-R is applicable in the network concerned.

Operational text messages are covered by the rules to the extent that they provide to the driver essential information relevant to the rule. For instance, the text message providing the reason for a trip is not presented in the relevant rule (§6.41) as it does not directly dictate to the driver the actions required after the trip. The rule itself covers all available options for the driver after a trip; it is then up to the driver to select the applicable option depending on the situation, the tripping cause etc.

All references to non-harmonised rules listed under Annex C do not depend on the technical functions of ERTMS, which are harmonised; instead they are linked to the national systems (operational rules, interlocking...), implementation choices and company procedures (e.g. shunting...) which are not harmonised and therefore out of scope of the harmonised operational rules for ERTMS. This list should help:

- to check the existence of the relevant non-harmonised rules in the rulebook,
- to take care about the interface between the harmonised rules and the non-harmonised rules.

### 6.2 ETCS

As mentioned in §3.2, the rules on ETCS are fully applicable to On-board units (OBUs) meeting either of the two Baseline 3 (B3) sets of specifications under CCS TSI (Commission Regulation 2016/919). OBUs fitted with the previous B3 version (SRS 3.3.0) are generally also covered. The rules are applicable to both operated system versions (X=1 and X=2), however some cases will never occur in operated system version X=1 (e.g. rule 6.15 on running in LS or rule 6.44 on managing a non-protected level crossing).

The rules are also largely applicable to OBUs following the older Baseline 2 specification (known as 2.3.0d), provided that the DMI used fulfils the specification ERA\_ERTMS\_015560, to the extent relevant to 2.3.0d functionalities. Still, due to the lack of DMI harmonization among 2.3.0d On-board Units, whether any particular rule in Appendix A is applicable to a 2.3.0d OBU is implementation specific and has to be checked on a case-by-case basis. If, following this verification, some of the indications displayed on the DMI are not compliant with the indications contained in the harmonised operational rules; the driver’s rulebook has to be adapted accordingly by the concerned RU.

It is also clarified that some OBU features which were only applicable in 2.3.0d or even older versions of the specifications (but not in any B3 implementation) are no longer covered in Appendix A. In such cases, older versions of Appendix A may have to be consulted.

Concerning the principles around the use of the ETCS Stop Marker and ETCS Location Marker (§5.1.10 and §5.1.11), it is clarified that on the approach to a Stop marker, the driver needs a specific authorisation to pass (otherwise, he has to stop). On the approach to a Location marker, the driver needs a specific order to stop (otherwise he can pass). By “specific” is meant a dedicated authorisation / order (respectively) which is issued for a particular train in a particular instance. Such authorisation / order may have any form and may be transmitted over any medium as long as it meets the modalities listed in Appendix C.

In the context of Appendix A, the ETCS Stop Marker and the ETCS Location Marker are assimilated to lineside signals.

The second case under 6.18 (“...to proceed without exceeding the release speed when the trackside signal shows a proceed aspect”) also applies when using a (non-harmonised) fixed lineside board defined to mean “always proceed”. This case concerns Level 1 implementations under permissive driving, where a OS Movement Authority will be issued at the end of a block section if a FS MA cannot be provided, due to lack of track vacancy ahead. If the trackside is properly configured to always issue such a OS MA, then the train will never be tripped when passing this EoA so a simple (reflective) marker board indicating the equivalent of a proceed aspect can meet this need, i.e. without having to provide any live information. If the route ahead is clear, then of course the train will get a FS MA; the marker board allowing the train to proceed will have given a valid information in that case as well.

Rule 6.43 deals with the case where a train enters a section fitted with an ETCS trackside system version that is incompatible with the train’s on-board system version. This situation should normally never occur if the Route Compatibility Check has been properly carried out.

It is assumed that the ETCS On-board Unit is loaded with the appropriate National Values and cryptographic keys. The procedure to ensure this will be managed under the RU’s SMS and may possibly rely on information to be provided by the infrastructure manager (e.g. on the trackside locations where the National Values may be picked up by the On-board subsystem; and that the proper cryptographic keys are loaded in the train and in all RBCs in the route).

### 6.3 GSM-R

It is clarified that the network name appearing in rule 7.3.2 is indicative and in actual implementations it will be replaced by the specific GSM-R network name.

Following the introduction of rules 7.13 and 7.14 on public roaming and considering that the support of public GSM frequencies remains an option for GSM-R cab radios, the following clarifications are provided:

#### A. BASIC SCENARIO FOR PRIMARY COMMUNICATIONS:

- 1 CCS TSI compliant situation: GSM-R as primary communication system. This means:
  - 1.1 CCS TSI compliant (GSM-R) network coverage on all lines
  - 1.2 All trains fitted with CCS TSI compliant (GSM-R) cab radios
  - 1.3 The IM has to offer GSM-R roaming services to any foreign GSM-R SIM card fitted in rolling stock intended to operate in that MS network to allow the use of that GSM-R network
- 2 Non CCS TSI compliant situation: Public GSM networks used as primary communication. This means:
  - 2.1 Need for a formal derogation when support of this solution is an access criterion in the concerned parts of the rail network
  - 2.2 A notified national rule to ensure that cab radios which are fitted in rolling stock intended to operate in that part of the network, are able to roam to public networks (support of the public frequency bands as indicated in EIRENE)
  - 2.3 The IM has to ensure that public roaming services are offered to any (domestic and foreign) GSM-R SIM cards fitted in rolling stock intended to operate in that part of the network
  - 2.4 In all cases, the train/route compatibility has to be verified on a case per case basis, considering the above conditions.
    - Are roaming services available for the concerned SIM card

- Is the cab radio supporting the public frequency band

#### B. FALLBACK SCENARIO, IN CASE OF UNAVAILABILITY OF PRIMARY SOLUTION:

1 Fallback is not defined in the CCS TSI. This means:

1.1 When support of fallback is not an access criterion, no derogation and no national rule needed

1.2 When support of a fallback solution is an access criterion, there is a need for at least a notified national rule.

2 Fallback options may be:

2.1 Using public networks

- Using the cab radio in public roaming mode
- Using handheld devices (either GSM-R handheld in roaming mode or public mobile devices)

2.2 Using other communication means

- Specific radio systems (e.g. TETRA)
- Lineside communication systems

3 In all cases, relevant provisions need to be in place in the SMS of IMs and RUs, ensuring the conditions of use as well as all necessary operational interfaces (calling numbers, public GSM coverage considerations e.g. in tunnels, etc.), including e.g. a notified national rule to ensure that the signaller is informed about the fallback communication means a driver is using.

Concerning Group Call ID 555, this was only made mandatory in EIRENE SRS 15.4.0. This means that cab radios applying earlier versions of the specifications normally have not implemented this feature. In case an IM considers that GID 555 has to be used in an area and this is not supported by some of the vehicles running in that area (due the configuration of the SIM), this has to be previously solved by the IM (by making sure that properly configured SIM cards are retrofitted in all cab radios, which were commissioned before EIRENE SRS 15.4.0 entered into force) and/or an alternative operational solution has to be provided to the driver.

## 6.4 Harmonised ERTMS Marker Boards

The exact dimensions and other physical properties of the harmonised ERTMS marker boards (MBs) are specified in EN 16494.

Harmonised ERTMS MBs should be deployed as follows:

- They shall be mandatory in new ERTMS-only lines
- They shall be mandatory on renewed ETCS-only lines – definition of renewal according to TSI INF
- They shall be optional on all other lines – their use is however encouraged

It is understood that not all harmonised ERTMS MBs have to be used, if not required by the network's operational concept.

It will be acceptable that for an (undefined) migration period, both harmonised and non-harmonised MBs can co-exist in a network (no migration plan is mandated).

The implementation of the harmonised ERTMS marker boards are subject to the principles laid down in the following separate document: "Harmonised ERTMS Marker Boards" (see website).

It should be noted that document "Harmonised ERTMS Marker Boards" is to be perceived as a guide towards the target system, where ETCS would be the only ATP available on the lines concerned (i.e. no Class B).