Dan id-dokument ġie magħmul bil-ħsieb li jintuża bħala għodda ta' dokumentazzjoni u l-istituzzjonijiet ma jassumu l-ebda responsabbiltà għall-kontenut tiegħu

►B

DEĊIŻJONI TAL-KUMMISSJONI

ta' 1 ta' Frar 2008

dwar l-ispeċifikazzjoni teknika għall-interoperabbiltà fir-rigward tas-sub-sistema tat-tħaddim tas-sistema ferrovjarja tranżEwropea ta' veloċità għolja adottata, imsemmija fl-Artiklu 6(1) tad-Direttiva tal-Kunsill 96/48/KE u li tirrevoka d-Deċiżjoni tal-Kummissjoni Nru 2002/734/KE tat-30 ta' Mejju 2002

(notifikata taħt id-dokument numru C(2008) 356)

(Test b'rilevanza għaż-ŻEE)

(2008/231/KE)

(ĠU L 84, 26.3.2008, p. 1)

Emendata minn:

		Ġurnal Uffiċjali		
		Nru	Paġna	Data
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▼B

DEĊIŻJONI TAL-KUMMISSJONI

ta' 1 ta' Frar 2008

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(notifikata taħt id-dokument numru C(2008) 356)

(Test b'rilevanza għaż-ŻEE)

(2008/231/KE)

IL-KUMMISSJONI TAL-KOMUNITAJIET EWROPEJ,

Wara li kkunsidrat it-Trattat li jistabbilixxi l-Komunità Ewropea,

Wara li kkunsidrat id-Direttiva tal-Kunsill 96/48/KE tat-23 ta' Lulju 1996 dwar l-interoperabbiltà tas-sistema ferrovjarja trans-Ewropea ta' veloċità għolja ([1]), u b'mod partikolari l-Artikoli 6(1) u 6(2) tagħha,

Billi:

(1) F'konformità ma' l-Artikolu 6(2) tad-Direttiva 96/48/KE kif modifikata mid-Direttiva 2004/50/KE ([2]), l-emendi għall-ispeċifikazzjonijiet tekniċi għall-interoperabbiltà (STI) jitfasslu mill-Aġenzija Ferrovjarja Ewropea (ERA) b'mandat tal-Kummissjoni.

(2) L-STI annessa ma' din id-Deċiżjoni tfasslet mill-Korp Konġunt Rappreżentattiv b'mandat li ngħata fl-2001, f'konformità ma' l-Artikolu 6(1) tad-Direttiva 96/48/KE qabel id-dħul fis-seħħ tad-Direttiva 2004/50/KE. L-Assoċjazzjoni Ewropea għall-Interoperabbiltà Ferrovjarja (AEIF) inħatret bħala l-korp konġunt rappreżentattiv.

(3) Ma' l-abbozz ta' STI ġie ppreżentat rapport li kien jinkludi analiżi dwar l-ispejjeż u l-benefiċċji kif previst fl-Artikolu 6(5) tad-Direttiva 96/48/KE.

(4) L-abbozz ta' STI kien eżaminat, fid-dawl ta' dan ir-rapport, mill-Kumitat stabbilit bid-Direttiva 96/48/KE dwar l-interoperabbiltà tas-sistema ferrovjarja trans-Ewropea ta' veloċità għolja.

(5) Fil-verżjoni attwali tagħha, l-STI ma tittrattax għal kollox ir-rekwiżiti essenzjali kollha. F'konformità ma' l-Artikolu 17 tad-Direttiva 96/48/KE kif modifikata bid-Direttiva 2004/50/KE, l-aspetti tekniċi li mhumiex koperti huma identifikati bħala "Punti Mhux Konklużi" fl-Anness U għal din l-STI.

(6) Skond l-Artikolu 17 tad-Direttiva 96/48/KE kif modifikata bid-Direttiva 2004/50/KE, l-Istati Membri individwali għandhom jgħarrfu lill-Istati Membri l-oħra u lill-Kummissjoni bir-regoli

([1]) ĠU L 235, 17.9.1996, p. 6.
([2]) ĠU L 164, 30.4.2004, p. 114

▼B

tekniċi nazzjonali rilevanti użati għall-implimentazzjoni ta' rekwiżiti essenzjali relatati ma' dawn il-"punti mhux konklużi", kif ukoll bil-korpi li jaħtru għat-twettiq tal-proċedura ta' valutazzjoni tal-konformità jew adegwatezza għall-użu, kif ukoll bil-proċedura li tintuża għall-verifika ta' l-interoperabbiltà tas-subsistemi fit-tifsira ta' l-Artikolu 16(2) tad-Direttiva 96/48/KE. Għal dan il-għan ta' l-aħħar, l-Istati Membri għandhom, kemm jista' jkun, japplikaw il-prinċipji u l-kriterji pprovduti bid-Direttiva 96/48/KE u jutilizzaw il-korpi notifikati skond l-Artikolu 20 tad-Direttiva 96/48/KE. Il-Kumissjoni għandha tanalizza l-informazzjoni mogħtija mill-Istati Membri, fis-sura ta' regoli nazzjonali, proċeduri, korpi responsabbli għall-proċeduri ta' implimentazzjoni, u t-tul ta' dawn il-proċeduri u, fejn dan ikun f'loku, tiddiskuti mal-Kumitat dwar il-ħtieġa għall-adozzjoni ta' kwalunkwe miżura.

(7) L-STI kkonċernata ma għandhiex tirrikjedi l-użu ta' teknoloġiji jew soluzzjonijiet tekniċi speċifiċi għajr fejn dan ikun strettament meħtieġ għall-interoperabbiltà tas-sistema ferrovjarja trans-Ewropea ta' veloċità għolja.

(8) L-STI tissejjes fuq l-aħjar għarfien espert disponibbli fi żmien it-tfassil ta' l-abbozz rilevanti. Żviluppi teknoloġiċi jew rekwiżiti operattivi, ta' sikurezza jew soċjali jistgħu jikkawżaw il-ħtieġa li din l-STI tiġi emendata jew supplimentata. Meta applikabbli, għandha tinbeda proċedura ta' reviżjoni jew tiġdid skond Artikolu 6(3) tad-Direttiva 96/48/KE.

(9) Sew biex tiġi inkoraġġita l-innovazzjoni, kif ukoll biex titqies l-esperjenza miksuba, l-STI annessa għandha tkun suġġetta għal reviżjoni kull tant żmien.

(10) Fejn ikunu proposti soluzzjonijiet innovattivi, il-manifattur jew l-entità kontraenti għandu/ha jiddikjara/tiddikjara d-devjazzjoni mis-sezzjoni rilevanti ta' l-STI. L-Aġenzija Ferrovjarja Ewropea ser tiffinalizza l-ispeċifikazzjonijiet adegwati funzjonali u ta' "interface" tas-soluzzjoni, u tiżviluppa l-metodi ta' valutazzjoni.

(11) L-implimentazzjoni ta' l-STI annessa u l-konformità mat-taqsimiet korrispondenti ta' l-STI għandhom jiġu determinati f'konformità ma' pjan ta' implimentazzjoni li ser jitfassal minn kull Stat Membru għal-linji li jkun responsabbli minnhom. Il-Kummissjoni għandha tanalizza l-informazzjoni mogħtija mill-Istati Membri u, fejn xieraq, tiddiskuti mal-Kumitat dwar il-ħtieġa għall-adozzjoni ta' kwalunkwe miżura oħra.

(12) It-traffiku ferrovjarju jopera skond ftehimiet eżistenti ta' natura nazzjonali, bilaterali, multinazzjonali jew internazzjonali. Huwa importanti li dawk il-ftehimiet ma jtellfux il-progress kurrenti u futur lejn l-interoperabbiltà. Għal dan il-għan, jeħtieġ li l-Kummissjoni teżamina dawk il-ftehimiet biex tiddetermina jekk l-STI ippreżentata f'din id-Deċiżjoni jeħtiġilhiex tkun riveduta skond dan.

(13) Id-dispożizzjonijiet ta' din id-Deċiżjoni huma konformi ma' l-opinjoni tal-Kumitat stabbilit bl-Artikolu 21 tad-Direttiva tal-Kunsill 96/48/KE,

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ADOTTAT DIN ID-DEĊIŻJONI:

Artikolu 1

Bdan, il-Kummissjoni qiegħda tadotta verżjoni riveduta ta' Speċifikazzjoni Teknika għall-Interoperabbiltà ("STI") għas-subsistema operazzjoni u "ġestjoni tat-traffiku" tas-sistema ferrovjarja trans-Ewropea ta' veloċità għolja msemmija fl-Artikolu 6(1) tad-Direttiva 96/48/KE.

L-STI għandha tkun kif jidher fl-Anness għal din id-Deċiżjoni.

L-STI għandha tkun applikabbli għas-subsistema "operazzjoni u ġestjoni tat-traffiku" kif definita fl-Anness II għad-Direttiva 96/48/KE.

▼M1

Artikolu 1a

Il-ġestjoni tal-kodiċijiet tekniċi

1. L-Aġenzija Ewropea tal-Ferroviji (ERA) għandha tippubblika fuq is-sit web tagħha l-listi ta' kodiċijiet tekniċi msemmija fl-Annessi p. 9, p. 10, p. 11, p. 12 u p. 13.

2. L-ERA għandha żżomm aġġornati l-listi tal-kodiċijiet imsemmija fil-paragrafu 1 u għandha tinforma lill-Kummissjoni bl-evoluzzjoni tagħhom. Il-Kummissjoni għandha tinforma lill-Istati Membri bl-evoluzzjoni ta' dawn il-kodiċijiet tekniċi permezz tal-Kumitat stabbilit skont l-Artikolu 29 tad-Direttiva 2008/57/KE.

Artikolu 1b

Sal-31 ta' Diċembru 2013, jekk vettura tinbigħ jew tinkera għal perjodu kontinwu li jaqbeż is-sitt (6) xhur u jekk il-karatteristiċi tekniċi kollha li bihom il-vettura ġiet awtorizzata titqiegħed f'servizz jibqgħu l-istess, in-Numru Ewropew tal-Vettura (NEV) tagħha jista' jitbiddel permezz ta' reġistrazzjoni ġdida tal-vettura u l-irtirar tal-ewwel reġistrazzjoni.

Jekk din ir-reġistrazzjoni l-ġdida tikkonċerna Stat Membru li huwa differenti minn dak tal-ewwel reġistrazzjoni, l-entità ta' reġistrazzjoni li għandha l-kompetenza għar-reġistrazzjoni l-ġdida tista' teħtieġ kopja tad-dokumentazzjoni relatata mar-reġistrazzjoni preċedenti.

Bidla fin-NEV ta' din ix-xorta hija mingħajr preġudizzju għall-applikazzjoni tal-Artikoli 21 sa 26 tad-Direttiva 2008/57/KE sa fejn għandhom x'jaqsmu l-proċeduri ta' awtorizzazzjoni.

L-ispejjeż amministrattivi li jsiru sabiex jitbiddel in-NEV għandhom jiġu koperti mill-applikant li jitlob il-bidla tan-NEV.

▼B

Artikolu 2

1. Fir-rigward ta' dawk il-kwistjonijiet li jkunu kklassifikati bħala "Punti Mhux Konklużi" fl-Anness U għall-STI, il-kundizzjonijiet li għandhom ikunu sodisfatti għall-verifika ta' l-interoperabbiltà skond l-Artikolu 16(2) tad-Direttiva 96/48/KE għandhom ikunu dawk ir-regoli tekniċi applikabbli li jintużaw fl-Istat Membru li jawtorizza t-tqegħid fis-servizz tas-subsistema koperta b'din id-Deċiżjoni.

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2. Kull Stat Membru għandu jinnotifika lill-Istati Membri l-oħra u lill-Kummissjoni fi żmien sitt xhur min-notifika ta' din id-Deċiżjoni:

(a) il-lista ta' regoli tekniċi applikabbli msemmija fil-paragrafu 1;

(b) il-valutazzjoni tal-konformità u l-proċeduri ta' eżami li għandhom jiġu applikati rigward l-applikazzjoni ta' dawn ir-regoli;

(c) il-korpi li jaħtar biex iwettqu dawk il-proċeduri ta' valutazzjoni tal-konformità u ta' eżami.

Artikolu 3

L-Istati Membri għandhom jinnotifikaw lill-Kummissjoni, fi żmien sitt xhur mid-dħul fis-seħħ ta' l-STI annessa, it-tipi ta' ftehimiet li ġejjin:

(a) ftehimiet nazzjonali, bilaterali jew multilaterali bejn l-Istati Membri u Impriża/i Ferrovjarja/i jew Ġestjonarja/i ta' l-Infrastruttura, maqbula fuq bażi permanenti jew temporanja u meħteġa minħabba n-natura speċifika ħafna jew lokali tas-servizz ferrovjarju maħsub;

(b) ftehimiet bilaterali jew multilaterali bejn Impriża/i Ferrovjarja/i jew Ġestjonarja/i ta' l-Infrastruttura jew Stati Membri li jrendu livelli sinfikanti ta' interoperabbiltà lokali jew reġjonali;

(c) ftehimiet internazzjonali bejn wieħed jew aktar mill-Istati Membri u talanqas pajjiż terz wieħed, jew bejn Impriża/i Ferrovjarja/i jew Ġestjonarja/i ta' l-Infrastruttura ta' l-Istati Membri u talanqas Impriża Ferrovjarja jew Ġestjonarja ta' l-Infrastruttura waħda ta' pajjiż terz, li jrendu livelli sinfikanti ta' interoperabbiltà lokali jew reġjonali.

Artikolu 4

L-Istati Membri għandhom jistabbilixxu pjan nazzjonali ta implimentazzjoni ta' l-STI b'konformità mal-kriterji speċifikati fil-Kapitolu 7 ta' l-Anness.

Huma għandhom jippreżentaw dan il-pjan ta' implementazzjoni lill-Istati Membri l-oħra u lill-Kummissjoni mhux aktar tard minn sena wara d-data li din id-Deċiżjoni ssir applikabbli fiha.

Artikolu 5

Mid-data li fiha ssir applikabbli din id-Deċiżjoni, id-Deċiżjoni tal-Kummissjoni 2002/734/KE ([1]) ma għandhiex tibqa' applikabbli.

Artikolu 6

Din id-Deċiżjoni għandha tapplika mill-1 ta' Settembru 2008.

Artikolu 7

Din id-Deċiżjoni hija indirizzata lill-Istati Membri.

([1]) ĠU L 245, 12.9.2002, p. 370

▼B

ANNEX

DIRECTIVE 96/48/EC — INTEROPERABILITY OF THE TRANS-EUROPEAN HIGH SPEED RAIL SYSTEM

TECHNICAL SPECIFICATION FOR INTEROPERABILITY

'Operations and traffic management' Sub-System

1. **INTRODUCTION**

1.1. **Technical scope**

1.2. **Geographical scope**

1.3. **Content of this TSI**

2. **DEFINITION OF SUBSYSTEM/SCOPE**

2.1. **Subsystem**

2.2. **Scope**

2.2.1. Staff and trains

2.2.2. Operating principles

2.2.3. Applicability to existing vehicles and infrastructure

2.3. **Link between this TSI and Directive 2004/49/EC**

3. **ESSENTIAL REQUIREMENTS**

3.1. **Compliance with the essential requirements**

3.2. **Essential requirements — overview**

3.3. **Specific aspects in relation to these requirements**

3.3.1. Safety

3.3.2. Reliability and availability

3.3.3. Health

3.3.4. Environmental protection

3.3.5. Technical compatibility

3.4. **Aspects relating specifically to the Traffic Operation and Management subsystem**

3.4.1. Safety

3.4.2. Reliability and availability

3.4.3. Technical compatibility

4. **CHARACTERISTICS OF THE SUB-SYSTEM**

4.1. **Introduction**

4.2. **Functional and technical specifications of the sub-system**

4.2.1. Specifications relating to staff

4.2.1.1. General requirements

4.2.1.2. Documentation for drivers

4.2.1.2.1. Rule Book

4.2.1.2.2. Description of the line and the relevant lineside equipment associated with the lines worked over

4.2.1.2.2.1. Preparation of the Route Book

4.2.1.2.2.2. Modified elements

4.2.1.2.2.3. Informing the driver in real time

4.2.1.2.3. Timetables

4.2.1.2.4. Rolling stock

▼B

4.2.1.3.	Documentation for Railway Undertaking staff other than drivers
4.2.1.4.	Documentation for Infrastructure Manager's staff authorising train movements
4.2.1.5.	Safety-related communications between traincrew, other Railway Undertaking staff and staff authorising train movements
4.2.2.	Specifications relating to trains
4.2.2.1.	Train visibility
4.2.2.1.1.	General requirement
4.2.2.1.2.	Front end
4.2.2.2.	Train audibility
4.2.2.2.1.	General requirement
4.2.2.2.2.	Control
4.2.2.3.	Vehicle identification
4.2.2.4.	Requirements for Passenger vehicles
4.2.2.5.	Train composition
4.2.2.6.	Train braking
4.2.2.6.1.	Minimum requirements of the braking system
4.2.2.6.2.	Brake performance
4.2.2.7.	Ensuring that the train is in running order
4.2.2.7.1.	General requirement
4.2.2.7.2.	Data required
4.2.3.	Specifications relating to train operations
4.2.3.1.	Train planning
4.2.3.2.	Identification of trains
4.2.3.3.	Train departure
4.2.3.3.1.	Checks and tests before departure
4.2.3.3.2.	Informing the Infrastructure Manager of the train's operational status
4.2.3.4.	Traffic management
4.2.3.4.1.	General requirements
4.2.3.4.2.	Train reporting
4.2.3.4.2.1.	Data required for train position reporting
4.2.3.4.2.2.	Predicted hand over time
4.2.3.4.3.	Dangerous goods
4.2.3.4.4.	Operational quality
4.2.3.5.	Data recording
4.2.3.5.1.	Recording of supervision data outside the train
4.2.3.5.2.	Recording of supervision data on-board the train
4.2.3.6.	Degraded operation
4.2.3.6.1.	Advice to other users
4.2.3.6.2.	Advice to train drivers
4.2.3.6.3.	Contingency arrangements
4.2.3.7.	Managing an emergency situation
4.2.3.8.	Aid to traincrew in the event of an incident or of a major rolling stock malfunction

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4.3.	**Functional and technical specifications of the interfaces**
4.3.1.	Interfaces with the Infrastructure TSI
4.3.1.1.	Signal Sighting
4.3.1.2.	Passenger Vehicles
4.3.1.3.	Professional Competences
4.3.2.	Interfaces with the Control/Command and Signalling TSI
4.3.2.1.	Recording of supervision data
4.3.2.2.	Driver vigilance
4.3.2.3.	ERTMS/ETCS and ERTMS/GSM-R operating rules
4.3.2.4.	Signal and lineside marker sighting
4.3.2.5.	Train braking
4.3.2.6.	Use of sanding. Minimum elements relevant to professional competences for the task of driving a train
4.3.2.7.	Data recording and hot axle box detection
4.3.3.	Interfaces with the Rolling Stock TSI
4.3.3.1.	Braking
4.3.3.2.	Requirements for passenger vehicles
4.3.3.3.	Train visibility
4.3.3.3.1.	On the leading vehicle of a train facing in the direction of travel
4.3.3.3.2.	On the rear end
4.3.3.4.	Train audibility
4.3.3.5.	Signal sighting
4.3.3.6.	Driver vigilance
4.3.3.7.	Train composition and annex B
4.3.3.8.	Rolling Stock parameters which influence ground-based train monitoring systems and rolling stock dynamic behaviour
4.3.3.9.	Sanding
4.3.3.10.	Train composition, annexes H and J
4.3.3.11.	Contingency arrangements and Managing an emergency situation
4.3.3.12.	Data recording
4.3.3.13.	Aerodynamic effects on ballast
4.3.3.14.	Environmental conditions
4.3.3.15.	Crosswinds
4.3.3.16.	Maximum pressure variations in tunnels
4.3.3.17.	Exterior noise
4.3.3.18.	Fire safety
4.3.3.19.	Lifting/rescue procedures
4.3.3.20.	Monitoring and diagnostic concepts
4.3.3.21.	Particular specification for long tunnels
4.3.3.22.	Traction performance requirements
4.3.3.23.	Traction adhesion requirements

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4.3.3.24.	Functional and technical specification related to power supply
4.3.4.	Interfaces with the HS Energy TSI
4.3.5.	Interfaces with the Safety in Rail Tunnels TSI
4.3.6.	Interfaces with the Persons with Reduced Mobility TSI
4.4.	**Operating rules**
4.5.	**Maintenance rules**
4.6.	**Professional competences**
4.6.1.	Professional competence
4.6.1.1.	Professional knowledge
4.6.1.2.	Ability to put this knowledge into practice
4.6.2.	Linguistic competence
4.6.2.1.	Principles
4.6.2.2.	Level of knowledge
4.6.3.	Initial and ongoing assessment of staff
4.6.3.1.	Basic elements
4.6.3.2.	Analysis of training needs
4.6.3.2.1.	Development of the analysis of training needs
4.6.3.2.2.	Updating the analysis of training needs
4.6.3.2.3.	Specific elements for traincrew and auxiliary staff
4.6.3.2.3.1.	Route knowledge
4.6.3.2.3.2.	Knowledge of rolling stock
4.6.3.2.3.3.	Auxiliary Staff
4.7.	**Health and Safety Conditions**
4.7.1.	Introduction
4.7.2.	Recommended criteria for approval of occupational doctors and medical organisations
4.7.3.	Criteria for approval of psychologists involved in psychological assessment and psychological assessment requirements
4.7.3.1.	Certification of psychologists
4.7.3.2.	Content and interpretation of psychological assessment
4.7.3.3.	Selection of assessment tools
4.7.4.	Medical examinations and psychological assessments
4.7.4.1.	Before appointment
4.7.4.1.1.	Minimum content of the medical examination
4.7.4.1.2.	Psychological assessment
4.7.4.2.	After appointment
4.7.4.2.1.	Periodicity of periodic medical examinations
4.7.4.2.2.	Minimum content of the periodic medical examination

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4.7.4.2.3.	Additional medical examinations and/or psychological assessments
4.7.5.	Medical requirements
4.7.5.1.	General requirements
4.7.5.2.	Vision requirements
4.7.5.3.	Hearing requirements
4.7.5.4.	Pregnancy
4.7.6.	Specific requirements regarding the task of driving a train
4.7.6.1.	Periodicity of periodic medical examinations
4.7.6.2.	Additional content of medical examination
4.7.6.3.	Additional vision requirements
4.7.6.4.	Additional hearing and speaking requirements
4.7.6.5.	Anthropometrics
4.7.6.6.	Trauma Counselling
4.8.	**Infrastructure and Rolling stock registers**
4.8.1.	Infrastructure
4.8.2.	Rolling stock
5.	**INTEROPERABILITY CONSTITUENTS**
5.1.	**Definition**
5.2.	**List of constituents**
5.3.	**Constituents' performances and specifications**
6.	**ASSESSMENT OF CONFORMITY AND/OR SUITABILITY FOR USE OF THE CONSTITUENTS AND VERIFICATION OF THE SUBSYSTEM**
6.1.	**Interoperability constituents**
6.2.	**Traffic Operation and Management Subsystem**
6.2.1.	Principles
6.2.2.	Rules and procedures documentation
6.2.3.	Assessment procedure
6.2.3.1.	Decision by Competent Authority
6.2.3.2.	If an assessment is required
6.2.4.	System performance
7.	**IMPLEMENTATION**
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ANNEX A: ERTMS/ETCS AND ERTMS/GSM-R OPERATING RULES

ANNEX B: OTHER RULES ENABLING A COHERENT OPERATION OF NEW STRUCTURAL SUBSYSTEMS

A. GENERAL

B. STAFF SAFETY AND SECURITY

C. OPERATIONAL INTERFACE WITH SIGNALLING AND COMMAND AND CONTROL EQUIPMENT

D. TRAIN MOVEMENTS

E. ANOMALIES, INCIDENTS AND ACCIDENTS

ANNEX C: SAFETY RELATED COMMUNICATIONS METHODOLOGY

ANNEX D: INFORMATION TO WHICH THE RAILWAY UNDERTAKING MUST HAVE ACCESS IN CONNECTION WITH THE ROUTE(S) OVER WHICH HE INTENDS TO OPERATE

ANNEX E: LANGUAGE AND COMMUNICATION LEVEL

ANNEX F: INFORMATIVE AND NOT MANDATORY TRAFFIC OPERATION AND MANAGEMENT SUBSYSTEM ASSESSMENT GUIDELINES

ANNEX G: INFORMATIVE AND NOT MANDATORY LIST OF ELEMENTS TO BE VERIFIED FOR EACH BASIC PARAMETER

ANNEX H: MINIMUM ELEMENTS RELEVANT TO PROFESSIONAL COMPETENCE FOR THE TASK OF DRIVING A TRAIN

ANNEX I: NOT USED

ANNEX J: MINIMUM ELEMENTS RELEVANT TO PROFESSIONAL COMPETENCE FOR THE TASKS ASSOCIATED WITH ‘ACCOMPANYING TRAINS’

ANNEX K: NOT USED

ANNEX L: MINIMUM ELEMENTS RELEVANT TO PROFESSIONAL COMPETENCE FOR THE TASK OF PREPARING TRAINS

ANNEX M: NOT USED

ANNEX N: INFORMATIVE AND NOT MANDATORY IMPLEMENTATION GUIDELINES

ANNEX O: NOT USED

ANNEX P: VEHICLE IDENTIFICATION

ANNEX Q: NOT USED

ANNEX R: TRAIN IDENTIFICATION

ANNEX S: NOT USED

ANNEX T: BRAKE PERFORMANCE

ANNEX U: LIST OF OPEN POINTS

ANNEX V: PREPARATION AND UPDATING RULES DOCUMENTATION FOR DRIVERS

GLOSSARY

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1. **INTRODUCTION**

1.1. **Technical scope**

This TSI concerns the Traffic Operation and Management subsystem which is one of the subsystems listed in Annex II (1) to Directive 96/48/EC as modified by Directive 2004/50/EC and its maintenance.

This TSI is applicable to the following classes of trains, regardless of whether the trains consist of fixed formation trainsets (indivisible in service), or individual vehicles. It applies equally to passenger and/or non-passenger carrying vehicles:

— class 1: Trains having a maximum speed of at least 250 km/h,

— class 2: Trains having a maximum speed of at least 190 km/h, but less than 250 km/h.

According to Annex I of the Directive, the specifications are defined for each of the following categories of line:

— category I: specially built high-speed lines equipped for speeds generally equal to or greater than 250 km/h,

— category II: specially upgraded high-speed lines equipped for speeds of the order of 200 km/h,

— category III: specially upgraded high-speed lines which have special features as a result of topographical, relief or town-planning constraints, on which the speed must be adapted to each case.]

1.2. **Geographical scope**

The geographical scope of this TSI is the trans-European high speed rail system as described in Annex I to Directive 96/48/EC as modified by Directive 2004/50/EC.

1.3. **Content of this TSI**

In accordance with Article 5(3) and Annex I (1) (b) of Directive 96/48/EC, as modified by Directive 2004/50/EC. In accordance with Article 5(3) of and with Annex I (1)(b) to Directive 96/48/EC, as modified by Directive 2004/50/EC, this TSI:

(a) indicates its intended scope (chapter 2);

(b) lays down essential requirements for the subsystem (chapter 3) and its interfaces vis-à-vis other subsystems (chapter 4);

(c) establishes the functional and technical specifications to be met by the target subsystem and its interfaces vis-à-vis other subsystems (chapter 4);

(d) determines the interoperability constituents and interfaces which must be covered by European specifications, including European standards, which are necessary to achieve interoperability within the trans-European high speed rail system (chapter 5);

(e) states, in each case under consideration, which procedures are to be used in order to assess the conformity or the suitability for use of the interoperability constituents, on the one hand, or the EC verification of the subsystems, on the other hand (chapter 6);

(f) indicates the strategy for implementing the TSI (chapter 7);

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(g) indicates, for the staff concerned, the professional competences and health and safety conditions at work required for the operation and maintenance of the subsystem, as well as for the implementation of the TSI.

Moreover, in accordance with Article 5(5), provision may be made for specific cases for each TSI; these are indicated in Chapter 7.

Lastly, this TSI also comprises, in Chapter 4, the operating and maintenance rules specific to the scope indicated in clauses 1.1 and 1.2 above.

2. DEFINITION OF SUBSYSTEM/SCOPE

2.1. Subsystem

The Traffic Operation and Management subsystem is one of the subsystems constituting the trans-European high speed rail system as listed in annex II to Directive 96/48/EC.

2.2. Scope

In conjunction with Annex I of directive 96/48/EC (as modified in Annex I of directive 2004/50/EC), the scope of this TSI applies to the Traffic Operation and Management subsystem of Infrastructure Managers and Railway Undertakings related to the operation of trains on the high speed rail TEN lines.

The specifications laid down in this TSI on Traffic Operation and Management may be used as a reference document for the operation of other trains running on the high speed rail TEN lines even though they are not covered by the scope of this TSI.

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2.2.1. Il-persunal u l-ferroviji

Is-Sezzjonijiet 4.6 u 4.7 għandhom japplikaw għal dak il-persunal li jwettaq il-kompiti kritiċi tas-sikurezza li jakkumpanja ferrovija, meta dan jinvolvi l-qsim ta' fruntiera(i) bejn l-Istati u xogħol lil hinn minn kwalunkwe żona indikata bħala l-"fruntiera" fid-Dikjarazzjoni tan-Netwerk ta' Amministratur Infrastrutturali u inkluża fl-awtorizzazzjoni tas-sikurezza tiegħu.

Is-Sezzjoni "4.6.2. Il-Kompetenza Lingwistika" għandha tapplika wkoll għas-sewwieqa tal-ferroviji kif ġie stipulat fil-punt 8 tal-Anness VI għad-Direttiva 2007/59/KE.

Membru tal-persunal mhux se jiġi kkunsidrat bħala li qed jaqsam fruntiera jekk l-attività tinvolvi biss xogħol sa kwalunkwe żona ta' "fruntiera" kif ġie deskritt fl-ewwel paragrafu ta' din is-Sezzjoni.

Għal dak il-persunal li jwettaq il-kompiti kritiċi tas-sikurezza li jibgħat il-ferroviji (dispaċċ) u li jawtorizza l-movimenti tal-ferroviji, bejn l-Istati Membri għandu japplika r-rikonoxximent reċiproku tal-kwalifiki professjonali kif ukoll tal-kundizzjonijiet tas-saħħa u tas-sikurezza.

Għal dak il-persunal li jwettaq il-kompiti kritiċi tas-sikurezza assoċjati mal-aħħar preparazzjoni ta' ferrovija qabel ma tkun skedata li taqsam fruntiera(i) u li jaħdem lil hinn minn kwalunke żona ta' fruntiera' kif ġie deskritt fl-ewwel paragrafu ta' din is-Sezzjoni, rigward ir-rikonoxximent reċiproku bejn l-Istati Membri tal-kundizzjonijiet tas-saħħa u tas-sikurezza għandha tapplika s-Subsezzjoni 4.6. Ferrovija m'għandhiex tiġi kkunsidrata bħala servizz transkonfinali, jekk il-vetturi kollha tal-ferrovija li qed jaqsmu l-fruntiera tal-Istat jaqsmuha biss saż-żona(i) tal-"fruntiera" kif ġie deskritt fl-ewwel paragrafu ta' din is-Sezzjoni.

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Dan jista' jinġabar fil-qosor fit-tabelli li ġejjin:

Il-persunal involut fit-tħaddim tal-ferroviji li se jaqsmu l-fruntieri tal-Istat u jipproċedu lil hinn miż-żona tal-fruntiera

Kompitu	Kwalifiki Professjonali	Rekwiżiti Mediċi
Jakkumpanja ferrovija	4.6	4.7
Jawtorizza l-Movimenti ta' Ferrovija	Rikonoxximent reċiproku	Rikonoxximent reċiproku
Preparazzjoni tal-Ferrovija	4.6	Rikonoxximent reċiproku
Dispaċċ tal-Ferrovija	Rikonoxximent reċiproku	Rikonoxximent reċiproku

Il-persunal li jħaddem ferroviji li ma jaqsmux il-fruntieri tal-Istat jew jaqsmuhom biss saż-żoni tal-fruntiera

Kompitu	Kwalifiki Professjonali	Rekwiżiti Mediċi
Jakkumpanja ferrovija	Rikonoxximent reċiproku	Rikonoxximent reċiproku
Jawtorizza l-Movimenti ta' Ferrovija	Rikonoxximent reċiproku	Rikonoxximent reċiproku
Preparazzjoni tal-Ferrovija	Rikonoxximent reċiproku	Rikonoxximent reċiproku
Dispaċċ tal-Ferrovija	Rikonoxximent reċiproku	Rikonoxximent reċiproku

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2.2.2. Operating principles

The general objective of the present version of this TSI, which is the second one after the entry into force of Directive 96/48/EC but the first taking into account the modifications brought by Directive 2004/50/EC, is to enable a coherent operation of the structural subsystems intended to be used on the high speed network. In particular rules and procedures that are linked directly to the operation of a new train control and signalling system must be identical where identical situations exist.

Initially, this TSI has only covered those elements (as set out in Chapter 4) of the high speed rail 'Traffic Operation and Management' subsystem, where principally there are operational interfaces between Railway Undertakings and Infrastructure Managers or where there is a particular benefit to interoperability. In doing this, due consideration was given to the requirements of Directive 2004/49/EC (the Railway Safety Directive),

Subsequently, detailed operating rules for the European Train Control System (ETCS) and the Global System for Mobile communication — Railways (GSM-R) are specified in Annex A to this TSI.

2.2.3. Applicability to existing vehicles and infrastructure

While the majority of the requirements contained in this TSI relate to processes and procedures, a number also relate to physical elements, trains and vehicles which are important for operation.

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The design criteria for these elements are described in the TSIs covering other subsystems such as rolling stock. In the context of the OPE TSI it is their operational function that is considered.

In such cases, it is recognised that modifying existing rolling stock/ infrastructure facilities to meet the full requirements of this TSI may not be cost effective. The requirements concerned need therefore, only be applied to new elements or when the element is upgraded or renewed and requires new authorisation for placing into service within the meaning of Directive 96/48/EC Article 14.3.

2.3. **Link between this TSI and Directive 2004/49/EC**

Although this TSI is being developed under Interoperability Directive 96/48/EC (as amended by Directive 2004/50/EC), it addresses requirements closely related to the operational procedures and processes required from an Infrastructure Manager or Railway Undertaking when applying for a safety authorisation/certificate under the Safety Directive (2004/49/EC).

3. **ESSENTIAL REQUIREMENTS**

3.1. **Compliance with the essential requirements**

In accordance with Article 4(1) of Directive 96/48/EC, the trans-European high speed rail system, its subsystems and their interoperability constituents must meet the essential requirements set out in general terms in Annex III to the Directive.

3.2. **Essential requirements — overview**

The essential requirements cover:

— safety,

— reliability and availability,

— health,

— environmental protection,

— technical compatibility.

According to Directive 96/48/EC, the essential requirements may be generally applicable to the whole trans-European high speed rail system or be specific to each subsystem and its constituents.

3.3. **Specific aspects in relation to these requirements**

The relevance of the general requirements to the Traffic Operation and Management subsystem is determined in the following clauses.

3.3.1. Safety

In accordance with Annex III of Directive 96/48/EC, the safety-related essential requirements that apply to the Traffic Operation and Management subsystem are the following:

Essential requirement 1.1.1 of Annex III to Directive 96/48/EC:

‘The design, construction or assembly, maintenance and monitoring of safety-critical components and, more particularly, of the components involved in train movements must be such as to guarantee safety at the level corresponding to the aims laid down for the network, including those for specific degraded situations.’

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As far as the Traffic Operation and Management subsystem is concerned, this essential requirement is addressed by the specification of Subsection 'train visibility' (sub sections 4.2.2.1 and 4.3) and 'train audibility' in sub sections 4.2.2.2 and 4.3.

Essential requirement 1.1.2 of Annex III to Directive 96/48/EC:

'The parameters involved in the wheel/rail contact must meet the stability requirements needed in order to guarantee safe movement at the maximum authorised speed.'

This essential requirement is not relevant to the Traffic Operation and Management subsystem.

Essential requirement 1.1.3 of Annex III to Directive 96/48/EC:

'The components used must withstand any normal or exceptional stresses that have been specified during their period in service. The safety repercussions of any accidental failures must be limited by appropriate means.'

As far as the Traffic Operation and Management subsystem is concerned, this essential requirement is addressed by the specification of Subsection 'train visibility' (sub sections 4.2.2.1 and 4.3).

Essential requirement 1.1.4 of Annex III to Directive 96/48/EC:

'The design of fixed installations and rolling stock and the choice of the materials used must be aimed at limiting the generation, propagation and effects of fire and smoke in the event of a fire.'

This essential requirement is not relevant to the Traffic Operation and Management subsystem.

Essential requirement 1.1.5 of Annex III to Directive 96/48/EC:

'Any devices intended to be handled by users must be so designed as not to impair the safe operation of the devices or the health and safety of users if used foreseeably in a manner not in accordance with the posted instructions.'

This essential requirement is not relevant to the Traffic Operation and Management subsystem.

3.3.2. Reliability and availability

Essential requirement 1.2 of Annex III to Directive 96/48/EC:

'The monitoring and maintenance of fixed or movable components that are involved in train movements must be organised, carried out and quantified in such a manner as to maintain their operation under the intended conditions.'

This essential requirement is not relevant to the Traffic Operation and Management subsystem.

3.3.3. Health

Essential requirement 1.3.1 of Annex III to Directive 96/48/EC:

'Materials likely, by virtue of the way they are used, to constitute a health hazard to those having access to them must not be used in trains and railway infrastructure.'

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This essential requirement is not relevant to the Traffic Operation and Management subsystem.

Essential requirement 1.3.2 of Annex III to Directive 96/48/EC:

'Those materials must be selected, deployed and used in such a way as to restrict the emission of harmful and dangerous fumes or gases, particularly in the event of fire.'

This essential requirement is not relevant to the Traffic Operation and Management subsystem.

3.3.4. Environmental protection

Essential requirement 1.4.1 of Annex III to Directive 96/48/EC:

'The repercussions on the environment of the establishment and operation of the trans-European high speed rail system must be assessed and taken into account at the design stage of the system in accordance with the Community provisions in force.'

This essential requirement is not relevant to the Traffic Operation and Management subsystem.

Essential requirement 1.4.2 of Annex III to Directive 96/48/EC:

'The materials used in the trains and infrastructures must prevent the emission of fumes or gases which are harmful and dangerous to the environment, particularly in the event of fire.'

This essential requirement is not relevant to the Traffic Operation and Management subsystem.

Essential requirement 1.4.3 of Annex III to Directive 96/48/EC:

'The rolling stock and energy-supply systems must be designed and manufactured in such a way as to be electromagnetically compatible with the installations, equipment and public or private networks with which they might interfere.'

This essential requirement is not relevant to the Traffic Operation and Management subsystem.

3.3.5. Technical compatibility

Essential requirement 1.5 of Annex III to Directive 96/48/EC:

'The technical characteristics of the infrastructure and fixed installations must be compatible with each other and with those of the trains to be used on the trans-European high speed rail system.'

'If compliance with these characteristics proves difficult on certain sections of the network, temporary solutions, which ensure compatibility in the future, may be implemented.'

This essential requirement is not relevant to the Traffic Operation and Management subsystem.

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3.4. **Aspects relating specifically to the Traffic Operation and Management subsystem**

3.4.1. Safety

Essential requirement 2.7.1 of Annex III to Directive 96/48/EC:

'Alignment of the network operating rules and the competences of drivers and on-board staff must be such as to ensure safe international operation.

The operations and maintenance intervals, the training and qualifications of maintenance staff and the quality assurance system set up in the maintenance centres of the operators concerned must be such as to ensure a high level of safety.'

The essential requirement is addressed by the following Subsections of this specification:

— Vehicle identification (Subsection 4.2.2.3)

— Train braking (Subsection 4.2.2.6)

— Train composition (Subsection 4.2.2.5)

— Requirements for passenger vehicles (Subsection 4.2.2.4)

— Ensuring that the train is in running order (Subsection 4.2.2.7)

— Train visibility (Subsections 4.2.2.1 and 4.3)

— Train audibility (Subsections 4.2.2.2 and 4.3)

— Train departure (Subsection 4.2.3.3)

— Traffic management (Subsection 4.2.3.4)

— Signal sighting and vigilance device (Subsection 4.3)

— Safety related communication (Subsections 4.2.1.5 and 4.6)

— Documentation for drivers (Subsection 4.2.1.2)

— Documentation for Railway Undertaking staff other than drivers (Subsection 4.2.1.3)

— Documentation for Infrastructure Manager's staff authorising train movements (Subsection 4.2.1.4)

— Degraded operation (Subsection 4.2.3.6)

— Managing an emergency situation (Subsection 4.2.3.7)

— ERTMS operating rules (Subsection 4.4)

— Professional competences (Subsections 2.2.1 and 4.6)

— Health and safety conditions (Subsections 2.2.1 and 4.7)

3.4.2. Reliability and availability

Essential requirement 2.7.2 of Annex III to Directive 96/48/EC:

'The operation and maintenance periods, the training and qualifications of the maintenance staff and the quality assurance system set up by the operators concerned in the maintenance centres must be such as to ensure a high level of system reliability and availability.'

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The essential requirement is ensured by the following Subsections of this specification:

— Train composition (Subsection 4.2.2.5)

— Ensuring that the train is in running order (Subsection 4.2.2.7)

— Traffic Management (Subsection 4.2.3.4)

— Safety Related communication (Subsection 4.2.1.5)

— Degraded operation (Subsection 4.2.3.6)

— Managing an emergency situation (Subsection 4.2.3.7)

— Professional competences (Subsection 4.6)

— Health and safety conditions (Subsection 4.7)

3.4.3. Technical compatibility

Essential requirement 2.7.3 of Annex III to Directive 96/48/EC:

'The alignment of the operating rules of the networks and the qualifications of drivers, on-board staff and managers in charge of traffic must be such as to ensure operating efficiency on the trans-European high speed rail system.'

The essential requirement is addressed by the following Subsections of this specification:

— Vehicle identification (Subsection 4.2.2.3)

— Train Braking (Subsection 4.2.2.6)

— Train composition (Subsection 4.2.2.5)

— Requirements for passenger vehicles (Subsection 4.2.2.4)

— Safety Related communication (Subsection 4.2.1.5)

— Degraded operation (Subsection 4.2.3.6)

— Managing an emergency situation (Subsection 4.2.3.7)

4. CHARACTERISTICS OF THE SUB-SYSTEM

4.1. Introduction

The trans-European high speed rail system (TEN), to which Directive 96/48/EC applies and of which the Traffic Operation and Management subsystem is a part, is an integrated system whose consistency must be verified. This consistency must be checked in particular with regard to the specifications of the subsystem, its interfaces vis-à-vis the system with which it is integrated, as well as the operating rules.

Taking into account all the relevant essential requirements, the Traffic Operation and Management subsystem, as described in Subsection 2.2, covers only the elements specified in the following section.

In conformity with Directive 2001/14/EC, it is the overall responsibility of the Infrastructure Manager to provide all the appropriate requirements which must be met by trains permitted to run on his network, taking into account the geographic particularities of individual lines and the functional or technical specifications set out below.

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4.2. **Functional and technical specifications of the sub-system**

The functional and technical specifications of the Traffic Operation and Management subsystem comprise of the following:

— specifications relating to staff

— specifications relating to trains

— specifications relating to train operations

4.2.1. Specifications relating to staff

4.2.1.1. General requirements

This section deals with the staff who contributes to the operation of the subsystem by performing safety critical tasks involving a direct interface between Railway Undertakings and Infrastructure Managers.

— Railway Undertaking staff:

  — undertaking the task of driving trains and forming part of the 'traincrew' (referred to throughout this document as 'driver')

  — undertaking tasks on-board (other than driving) and forming part of the 'traincrew'

  — undertaking the task of preparing trains

— Infrastructure Manager's staff undertaking the task of authorising the movement of trains

The areas covered are:

— Documentation

— Communication

and, in the scope specified in section 2.2 of this TSI:

— Competences (see Subsection 4.6 and Annexes H, J and L)

— Health and Safety conditions (see Subsection 4.7)

4.2.1.2. Documentation for drivers

The Railway Undertaking operating the train must supply the driver in due time with all the necessary information required to carry out his duties.

This information must take into account the necessary elements for operation in normal, degraded and emergency situations for the routes to be worked over and the rolling stock used on those routes.

4.2.1.2.1. Rule Book

All the necessary procedures for the driver must be included in a document or a computer medium called the 'Driver's Rule Book'.

The 'Driver's Rule Book' must state the requirements for all the routes worked and the rolling stock used on those routes according to the situations of normal operation, degraded operation and in emergency situations which the driver may encounter.

The 'Driver's Rule Book' must cover two distinct aspects:

— one which describes the set of common rules and procedures valid across the TEN (taking into account the contents of Annexes A, B and C)

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— another which sets out any necessary rules and procedures specific to each Infrastructure Manager

It must include procedures covering, as a minimum, the following aspects:

— Staff Safety and Security

— Signalling and Control Command

— Train Operation including degraded mode

— Traction and Rolling Stock

— Incidents and accidents

The Railway Undertaking is responsible for compiling this document.

The Railway Undertaking must present the Driver's Rule Book in the same format for the entire infrastructure over which their drivers will work.

It shall have two appendices:

— appendix 1: Manual of communication procedures;

— appendix 2: Book of Forms

The Railway Undertaking must write the driver's rule book in either the language of one of the Member States or the 'operating' language of one of the Infrastructure Managers to which the rules will apply. This will not apply for messages and forms which must remain in the 'operating' language of Infrastructure Manager(s).

The process for preparing and updating the Driver's Rule Book shall include the following steps:

— the Infrastructure Manager (or the organisation responsible for the preparation of the operating rules) must provide the Railway Undertaking with the appropriate information in the Infrastructure Manager's 'operating' language,

— the Railway Undertaking must draw up the initial or updated document;

— if the language chosen by the Railway Undertaking for the Driver's Rule Book is not the language in which the appropriate information was originally supplied, it is the responsibility of the Railway Undertaking to arrange for any necessary translation.

In conformity with Annex III paragraph 2 of Directive 2004/49/EC, the Infrastructure Manager's Safety Management System must contain a validation process to ensure that the content of the documentation provided to the Railway Undertaking(s) is complete and accurate.

In conformity with Annex III paragraph 2 of Directive 2004/49/EC, the Railway Undertaking's Safety Management System must contain a validation process to ensure the content of the Rule Book is complete and accurate.

Annex V outlines this process in flowchart format and provides an overview to the process.

4.2.1.2.2. Description of the line and the relevant lineside equipment associated with the lines worked over

Drivers must be provided with a description of the lines and the associated lineside equipment for the lines over which they will operate and relevant to the driving task. Such information must be set out in a single document called the 'Route Book' (which can either be a traditional document or computer based).

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The following is a list of information which must as a minimum, be provided:

— the general operating characteristics

— indication of rising and falling gradients

— detailed line diagram

4.2.1.2.2.1. Preparation of the Route Book

The Route Book must be prepared in either a language of one of the Member States chosen by the Railway Undertaking or the 'operating' language used by the Infrastructure Manager.

The following information must be included (this list is not exhaustive):

— the general operating characteristics:

  — type of signalling and corresponding running regime (double track, reversible working, left or right hand running, etc.)

  — type of power supply

  — type of ground-train radio equipment.

— indication of rising and falling gradients:

  — gradient values and their precise location

— detailed line diagram:

  — names of stations on the line and key locations and their location;

  — tunnels — including, location, name, length, specific information such as the existence of walkways and points of safe egress as well as the location of safe places where evacuation of passengers can take place

  — essential locations such as neutral sections

  — permissible speed limits for each track, including, if necessary, differential speeds relating to certain types of train

  — the name of the organisation responsible for traffic management control and the name(s) of the traffic management control areas;

  — the names and areas of control of traffic management centres such as signal boxes;

  — identification of the radio channels to be used;

The format of the Route Book must be prepared in the same manner for all the infrastructures worked over by the trains of an individual Railway Undertaking.

The Railway Undertaking is responsible for the preparation of the Route Book using the information supplied by the Infrastructure Manager(s).

In conformity with Annex III paragraph 2 of Directive 2004/49/EC, the Infrastructure Manager's Safety Management System must contain a validation process to ensure that the content of the documentation provided to the Railway Undertaking(s) is complete and accurate.

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In conformity with Annex III paragraph 2 of Directive 2004/49/EC, the Railway Undertaking's Safety Management System must contain a validation process to ensure the content of the Route Book is complete and accurate.

4.2.1.2.2.2. Modified elements

The Infrastructure Manager must advise any elements modified either permanently or temporarily to the Railway Undertaking. Changes must be made known in time for the RU to process their impact, update documents and instruct staff. They must be grouped by the Railway Undertaking into a dedicated document or computer medium whose format must be the same for all the infrastructures worked over by the trains of an individual Railway Undertaking.

In conformity with Annex III paragraph 2 of Directive 2004/49/EC, the Infrastructure Manager's Safety Management System must contain a validation process to ensure that the content of the documentation provided to the Railway Undertaking(s) is complete and accurate.

In conformity with Annex III paragraph 2 of Directive 2004/49/EC, the Railway Undertaking's Safety Management System must contain a validation process to ensure the content of the document of modified elements is complete and accurate.

4.2.1.2.2.3. Informing the driver in real time

The procedure for advising drivers in real time about all modifications to safety arrangements on the route must be defined by the Infrastructure Managers concerned (the process must be unique where ERTMS/ETCS is in use).

4.2.1.2.3. Timetables

The provision of train schedule information facilitates the punctual running of trains and assists in service performance.

The Railway Undertaking must provide drivers with the information necessary for the normal running of the train and as a minimum include:

— the train identification;

— the train running days (if necessary);

— the stopping points and the activities associated with them

— other timing points;

— the arrival/departure/passing times at each of those points.

Such train running information, which must be based on information supplied by the Infrastructure Manager, may be provided either electronically or in a paper format.

Presentation to the driver must be consistent across all the lines over which the Railway Undertaking operates.

4.2.1.2.4. Rolling stock

The Railway Undertaking must provide the driver with all information relevant to the working of the rolling stock during degraded situations (such as trains requiring assistance). Such documentation must also focus on the specific interface with the Infrastructure Manager's staff in these cases.

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4.2.1.3. Documentation for Railway Undertaking staff other than drivers

The Railway Undertaking must provide all members of his staff (whether on train or otherwise) who undertake safety critical tasks involving a direct interface with the staff, equipment or systems of the Infrastructure Manager with the rules, procedures, rolling stock and route specific information it deems appropriate to such tasks. Such information shall be applicable in both normal and degraded operation.

For staff on-board trains, the structure, format, content and process for preparation and updating of such information must be based on the specification set out in Subsection 4.2.1.2 of this TSI.

4.2.1.4. Documentation for Infrastructure Manager's staff authorising train movements

All the information necessary to ensure safety-related communication between staff authorising the movement of trains and train crews must be set out in:

— documents describing the Communications Protocol (annex C);

— the document entitled Book of Forms.

The Infrastructure Manager must draw up these documents in his 'operating' language.

4.2.1.5. Safety-related communications between traincrew, other Railway Undertaking staff and staff authorising train movements

The language used for safety-related communication between traincrew, other Railway Undertaking staff (as defined in Annex L) and the staff authorising train movements shall be the 'operating' language (see glossary) used by the Infrastructure Manager on the route concerned.

The principles for safety-related communication between traincrew and staff responsible for authorising the movement of trains are to be found in Annex C.

In conformity with Directive 2001/14/EC, the Infrastructure Manager is responsible for publishing the 'operating language' used by his personnel in daily operational use.

Where however, local practice requires that a second language is also provided for, it is the responsibility of the Infrastructure Manager to determine the geographic boundaries for its use.

4.2.2. Specifications relating to trains

4.2.2.1. Train visibility

4.2.2.1.1. General requirement

The Railway Undertaking must ensure that trains are fitted with means of indicating the front and rear of the train.

4.2.2.1.2. Front end

The Railway Undertaking must ensure that an approaching train is clearly visible and recognisable as such, by the presence and layout of its lit white front-end lights. This is to enable it to be distinguished as an approaching train from nearby road vehicles or other moving objects.

▼M1

L-ispeċifikazzjoni dettaljata tista' tinstab fis-Subsezzjoni 4.3.3.3.1.

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4.2.2.2. Train audibility

4.2.2.2.1. General requirement

The Railway Undertaking must ensure that trains are fitted with an audible warning device to indicate the approach of a train.

4.2.2.2.2. Control

The ability to sound the audible warning device must be possible from all driving positions.

4.2.2.3. Vehicle identification

Each vehicle must have a number to uniquely identify it from any other rail vehicle. This number must be prominently displayed at least on each longitudinal side of the vehicle.

It must also be possible to identify operational restrictions applicable to the vehicle.

Further requirements are specified in Annex P.

4.2.2.4. Requirements for Passenger vehicles

— Compatibility between passenger vehicles and platforms at scheduled passenger stops must be sufficient in order to ensure safe access and egress.

— Passengers must not be able to open body-side doors intended for their use until the train is at a standstill and the doors have been released by a member of the train crew.

— Door release must be separate for each side of the train. The integrity of door closure and blocking on passenger trains must be permanently indicated.

— Activation of the door release must prevent traction power from being applied. (For the purposes of this requirement, 'door release' means the doors have been enabled by the traincrew for opening by passengers.)

— All vehicles carrying passengers must be equipped with exits that facilitate emergency egress.

— Vehicles intended for passenger use must have either a passenger activated alarm or emergency brake fitted. In the event of this being triggered, the driver must be immediately alerted but be able to retain control of the train.

4.2.2.5. Train composition

The Railway Undertaking must define the rules and procedures to be followed by his staff so as to ensure that the train is in compliance with the allocated path.

Train Composition requirements must take into account the following elements:

— the vehicles

  — all vehicles in the train must be in compliance with all the requirements applicable on the routes over which the train will run;

  — all vehicles on the train must be fit to run at the maximum speed at which the train is scheduled to run;

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— all vehicles on the train must be currently within their specified maintenance interval and will remain so for the duration (in terms of both time and distance) of the journey being undertaken;

— the train

— the combination of vehicles forming a train must comply with the technical constraints of the route concerned and be within the maximum length permissible for forwarding and receiving terminals;

— the Railway Undertaking is responsible for ensuring that the train is technically fit for the journey to be undertaken and remains so throughout the journey;

— the weight and axle load

— 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. Axle load limitations must be respected;

— the maximum speed of the train

— 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;

— the kinematic envelope

— the kinematic gauge of each vehicle (inclusive of any load) in the train must be within the maximum permissible for the section of route.

Additional constraints may be required or imposed due to the type of braking regime or traction type on a particular train.

Train composition must be described in a harmonised train composition document (see Annex U)

4.2.2.6. Train braking

4.2.2.6.1. Minimum requirements of the braking system

All vehicles in a train must be connected to the continuous automatic braking system as defined in the RST TSI.

The first and last vehicles (including any traction units) in any train must have the automatic brake operative.

In the case of a train becoming accidentally divided into two parts, both sets of detached vehicles must come automatically to a stand as a result of a maximum application of the brake.

4.2.2.6.2. Brake performance

The Infrastructure Manager must decide whether to:

— provide Railway Undertakings with the information necessary for calculating the required braking performance for the route(s) concerned, including information on the braking systems which can be accepted, and on the conditions of their use, or

— alternatively provide the actual performance required.

The Railway Undertaking is responsible for ensuring that the train has sufficient braking performance by providing braking rules for its staff to follow.

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The information required by the Railway Undertaking to calculate the braking performance enabling their trains to stop and remain stopped must take into account the geography of all the routes involved, the allocated pathway and the development of ERTMS/ETCS.

Further requirements are specified in Annex T.

4.2.2.7. Ensuring that the train is in running order

4.2.2.7.1. General requirement

The Railway Undertaking must define the process to ensure that all safety-related on-train equipment is in a fully functional state and that the train is safe to run.

The Railway Undertaking must inform the Infrastructure Manager of any modification to the characteristics of the train affecting its performance or any modification that might affect the ability to accommodate the train in its allocated path.

The Infrastructure Manager and the Railway Undertaking must define and keep up to date conditions and procedures for train running in degraded mode.

4.2.2.7.2. Data required

The data required for safe and efficient operation and the process by which this data must be forwarded must comprise:

— the train identification

— the identity of the Railway Undertaking responsible for the train

— the actual length of the train

— if a train carries passengers or animals when it is not scheduled to do so

— any operational restrictions with an indication of the vehicle(s) concerned (gauge, speed restrictions, etc.)

— information the Infrastructure Manager requires for transport of dangerous goods.

The Railway Undertaking must define a process in order to ensure that this data is made available to the Infrastructure Manager(s) prior to the departure of the train.

The Railway Undertaking must define a process for advising the Infrastructure Manager(s) if a train will not occupy its allocated path or is cancelled.

4.2.3. Specifications relating to train operations

4.2.3.1. Train planning

The Infrastructure Manager must advise what data is required when a train path is requested. Further aspects of this element are set out in Directive 2001/14/EC.

4.2.3.2. Identification of trains

An unambiguous identification for all trains must exist.

These requirements are specified in Annex R.

4.2.3.3. Train departure

4.2.3.3.1. Checks and tests before departure

The Railway Undertaking must, in accordance with the requirements set out in the third paragraph of clause 4.1 of this TSI and all applicable rules, define the checks and tests (especially in relation to brakes) that must be undertaken before departure.

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4.2.3.3.2. Informing the Infrastructure Manager of the train's operational status

The Railway Undertaking must inform the Infrastructure Manager of any anomaly affecting the train or its operation having possible repercussions on the train's running prior to departure and during the journey.

4.2.3.4. Traffic management

4.2.3.4.1. General requirements

Traffic management must ensure the safe, efficient and punctual operation of the railway, including effective recovery from service disruption.

The Infrastructure Manager must determine procedures and means for:

— the real time management of trains,

— operational measures to maintain the highest possible performance of the infrastructure in case of delays or incidents, whether actual or anticipated, and

— the provision of information to Railway Undertakings in such cases.

Any additional processes required by the Railway Undertaking and which affect the interface with the Infrastructure Manager(s) can be introduced after being agreed with the Infrastructure Manager.

4.2.3.4.2. Train reporting

4.2.3.4.2.1. Data required for train position reporting

The Infrastructure Manager must:

— provide a means of real time recording of the times at which trains depart from, arrive at or pass appropriate pre-defined reporting points on their networks and the delta-time value;

— provide the specific data required in relation to train position reporting. Such information must include:

  — Train identification

  — Identity of reporting point

  — Line on which the train is running

  — Scheduled time at reporting point

  — Actual time at reporting point (and whether depart, arrive or pass — separate arrival and departure times must be provided in respect of intermediate reporting points at which the train calls)

  — Number of minutes early or late at the reporting point

  — Initial explanation of any single delay exceeding 10 minutes or as otherwise required by the performance monitoring regime

  — Indication that a report for a train is overdue and the number of minutes by which it is overdue

  — Former train identification(s), if any

  — Train cancelled for a whole or a part of its journey.

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4.2.3.4.2.2. Predicted hand over time

The Infrastructure Manager must have a process, which enables an indication of the estimated number of minutes of deviation from the scheduled time a train is scheduled to be handed over from one Infrastructure Manager to another.

This must include information on service disruption (description and location of problem).

4.2.3.4.3. Dangerous goods

The Railway Undertaking must define the procedures to supervise the transport of dangerous goods.

These procedures must include:

— existing European standards as specified in EC directive 96/49 for identifying dangerous goods on board a train

— advice to the driver of the presence and position of dangerous goods on the train

— information the Infrastructure Manager requires for transport of dangerous goods

— **determination of, in conjunction with the Infrastructure Manager, lines of communication and planning of specific measures in case of emergency situations involving the goods.**

4.2.3.4.4. Operational quality

Infrastructure Managers and Railway Undertakings shall have processes in place to monitor the efficient operation of the all the services concerned.

Monitoring processes shall be designed to analyse data and detect underlying trends, both in terms of human error and system error. The results of this analysis shall be used to generate improvement actions, designed to eliminate or mitigate against events which could compromise the efficient operation of the trans-European high speed rail system.

Where such improvement actions would have network-wide benefits, involving other Infrastructure Managers and Railway Undertakings, then, subject to commercial confidentiality, they shall be communicated accordingly.

Events that have significantly disrupted operations shall be analysed as soon as possible by the Infrastructure Manager. Where appropriate, and in particular where one of their staff is concerned, the Infrastructure Manager shall invite those Railway Undertakings involved in the event concerned to participate in the analysis. Where the result of such analysis leads to network improvement recommendations designed to eliminate or mitigate against causes of accidents/incidents, these shall be communicated to all relevant Infrastructure Managers and Railway Undertakings concerned.

These processes shall be documented and subject to internal audit.

4.2.3.5. Data recording

Data pertaining to the running of a train must be recorded and retained for the purposes of:

— Supporting systematic safety monitoring as a means of preventing incidents and accidents.

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— Identifying driver, train and infrastructure performance in the period leading up to and (if appropriate) immediately after an incident or accident, to enable the identification of causes related to train driving or train equipment, and supporting the case for new or changed measures to prevent recurrence.

— Recording information relating to the performance and where appropriate, the working time of both the locomotive/traction unit and the person driving.

It must be possible to match recorded data to:

— the date and time of the recording

— the precise geographic location of the event being recorded (distance in kilometres from a recognisable location)

— the train identification

— the identity of the driver

Requirements with regard to storage, periodic evaluation of and access to this data are specified in relevant national laws of the Member State:

— in which the Railway Undertaking is licensed (with regard to on-board recorded data), or

— of the Member State in which the infrastructure is located (with regard to data recorded outside the train).

4.2.3.5.1. Recording of supervision data outside the train

As a minimum, the Infrastructure Manager must record the following data:

— the failure of lineside equipment associated with the movement of trains (signalling, points etc.);

— the detection of an overheating axle bearing;

— communication between the train driver and Infrastructure Manager's staff authorising train movements.

4.2.3.5.2. Recording of supervision data on-board the train

As a minimum, the Railway Undertaking must record the following data:

— the passing of signals at danger or 'end of movement authority' without authority

— application of the emergency brake

— speed at which the train is running

— any isolation or overriding of the on-board train control (signalling) systems

— operation of the audible warning device (horn)

— operation of door controls (release, closure)

— detection by on-board hot axle box detectors, if fitted

— identity of the cab for which data is being recorded to be checked

— data in order to record working time of drivers.

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4.2.3.6. Degraded operation

4.2.3.6.1. Advice to other users

Infrastructure Managers in conjunction with Railway Undertakings must define a process to immediately inform each other of any situation that impedes the safety, performance and/or the availability of the rail network or rolling stock.

4.2.3.6.2. Advice to train drivers

In any case of degraded operation associated with the Infrastructure Manager's area of responsibility, the Infrastructure Manager must give formal instructions to drivers on what measures to take in order to safely overcome the degradation.

4.2.3.6.3. Contingency arrangements

The Infrastructure Manager in conjunction with all the Railway Undertakings operating over his infrastructure, and neighbouring Infrastructure Managers as appropriate, must define, publish and make available appropriate contingency measures and assign responsibilities based on the requirement to reduce any negative impact as a result of degraded operation.

The planning requirements and the response to such events must be proportional to the nature and potential severity of the degradation.

These measures, which must as a minimum include plans for recovering the network to 'normal' status, may also address:

— rolling stock failures (for example, those which could result in substantial traffic disruption, the procedures for rescuing failed trains);

— infrastructure failures (for example, when there has been a failure of the electric power or the conditions under which trains may be diverted from the booked route);

— extreme weather conditions.

The Infrastructure Manager must establish and keep updated contact information for key Infrastructure Manager and Railway Undertaking staff who may be contacted in the event of service disruption leading to degraded operation. This information must include contact details both during and outside office hours.

The Railway Undertaking must submit this information to the Infrastructure Manager and advise the Infrastructure Manager of any changes to these contact details.

The Infrastructure Manager must advise all the Railway Undertakings of any changes to his details.

4.2.3.7. Managing an emergency situation

The Infrastructure Manager shall, in consultation with:

— all Railway Undertakings operating over his infrastructure, or

— where appropriate, representative bodies of railway undertakings operating over his infrastructure, and

— neighbouring Infrastructure Managers, as appropriate, as well as

— local authorities and

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— representative bodies at either local or national level as appropriate, of the emergency services including fire fighting and rescue

and in conformity with Directive 2004/49/EC, define, publish and make available appropriate measures to manage emergency situations and restore the line to normal operation.

Such measures shall typically cover:

— collisions,

— fires on train,

— evacuation of trains,

— accidents in tunnels,

— incidents involving dangerous goods,

— derailments.

The Railway Undertaking shall provide the Infrastructure Manager with any specific information in respect to these circumstances, especially in respect to the recovery or re-railing of their trains. (See also clause 4.2.7.5 in the Conventional Rail Freight Wagon TSI).

Additionally, the Railway Undertaking shall have processes to inform passengers about onboard emergency and safety procedures.

4.2.3.8. Aid to traincrew in the event of an incident or of a major rolling stock malfunction

The Railway Undertaking shall define appropriate procedures to assist the train crew in degraded situations in order to avoid or decrease delays caused by technical or other failures of the rolling stock (e.g. lines of communication, measures to be taken in case of evacuation of a train).

4.3. **Functional and technical specifications of the interfaces**

In light of the essential requirements in Chapter 3, the functional and technical specifications of the interfaces are as follows:

4.3.1. Interfaces with the Infrastructure TSI

4.3.1.1. Signal Sighting

The driver must be able to observe signals, and signals must be observable by the driver from his normal driving position. The same applies for line side signs if they are safety related.

Lineside signs and information boards must be designed in such a consistent way to facilitate this. Issues that must be taken into account include:

— suitably sited so that train headlights allow the driver to read the information

— suitability and intensity of lighting, where required to illuminate the information

— where retro-reflectivity is employed, the reflective properties of the material used are in compliance with appropriate specifications and that they are fabricated so as to allow train headlights to allow the driver to read the information

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4.3.1.2. Passenger Vehicles

The compatibility between passenger vehicles and platforms of scheduled passenger stops in order to ensure safe access and egress must be assured.

The minimum distance between platform surfaces and live electrical parts of vehicles must be respected.

4.3.1.3. Professional Competences

There is an interface with subsection 2.2.1 of this TSI and subsection 4.6 of the HS INS TSI.

4.3.2. Interfaces with the Control/Command and Signalling TSI

4.3.2.1. Recording of supervision data

The Traffic Operation and Management subsystem determines the operational requirements for the recording of supervision data (see Subsection 4.2.3.5 of this TSI) with which the Control/Command subsystem (see section 4.2.15 of the HS CCS TSI) must comply.

4.3.2.2. Driver vigilance

Where the infrastructure supports the facility, this device shall be capable of automatically reporting an activation to the controlling signalling centre. There is an interface between this operational requirement and Subsection 4.2.2 in the HS CCS TSI associated with ERTMS.

4.3.2.3. ERTMS/ETCS and ERTMS/GSM-R operating rules

Annex A of this TSI has an interface with the ERTMS/ETCS FRS and SRS, the ERTMS/GSM-R FRS and SRS detailed in annex A of the HS CCS TSI.

There is also an interface between Subsection 4.4 of this TSI and Annex A of the HS CCS TSI in respect to the informative guideline documents for the rules, principles and implementation of ERTMS.

There is also an interface with the ETCS Driver/Machine Interface (DMI) specifications (section 4.2.13 of the HS CCS TSI) and the EIRENE DMI specifications (section 4.2.14 of the HS CCS TSI).

There is an interface between annex A of this TSI and subsection 4.2.2 of the HS CCS TSI in respect to isolation of the On-Board ETCS functionality.

4.3.2.4. Signal and lineside marker sighting

The driver must be able to observe signals and lineside markers, and they must be observable by the driver from his normal driving position. The same applies for other types of lineside signs if they are safety related.

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Lineside markers, signs and information boards shall be designed in such a consistent way to facilitate this. Issues that must be taken into account include:

— that they are suitably sited so that train headlights allow the driver to read the information,

— suitability and intensity of lighting, where required to illuminate the information,

— where retro-reflectivity is employed, the reflective properties of the material used are in compliance with appropriate specifications and the signs are fabricated so that train headlights easily allow the driver to read the information.

There is an interface with subsection 4.2.16 of the HS CCS TSI in respect to driver's external field of view. There will also be a new item in a future version of Annex A of the HS CCS TSI in respect to lineside markers on ETCS-fitted lines.

4.3.2.5. Train braking

An interface exists between subsection 4.2.2.6.2 of this TSI and subsection 4.3.1.5 (Guaranteed train braking performance and characteristics) of the HS CCS TSI.

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4.3.2.6. L-użu tar-ramel fuq il-binarji. L-elementi minimi rilevanti għall-kwalikifi professjonali għall-kompitu li tinsaq ferrovija

Teżisti *interface* bejn l-Anness B (Sezzjoni C1) ta' din l-STI fuq in-naħa l-waħda, u s-Subsezzjoni 4.2.11 (kompatibbiltà mas-Sistemi ta' Skoperta tal-Ferroviji fuq in-naħa tal-binarji) u s-Sezzjoni 4.1 tal-Appendiċi 1 tal-Anness A (kif inhi kkwotata fis-Subsezzjoni 4.3.1.10) tal-STI CCS CR fuq in-naħa l-oħra, rigward l-użu tar-ramel fuq il-binarji.

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4.3.2.7. Data recording and hot axle box detection

An interface exists between subsection 4.2.3.5 of this TSI on one hand, and subsection 4.2.2 (On-board ETCS functionality), indexes 5, 7 and 55 in annex A, and subsection 4.2.10 (HABD (Hot Axle Box Detector)) of the HS CCS TSI on the other hand. There will be a future interface with annex B of the OPE TSI, when the HS CCS open point is resolved.

4.3.3. Interfaces with the Rolling Stock TSI

4.3.3.1. Braking

Interfaces exists between Subsection 4.2.2.5.1, 4.2.2.6.1 and 4.2.2.6.2 of this OPE TSI, and subsection 4.2.4.1 and 4.2.4.3 of the HS RST TSI.

An interface also exists between subsection 4.2.4.5 (Eddy Current brakes) of the HS RST TSI and subsection 4.2.2.6.2 of this OPE TSI.

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An interface also exists between subsection 4.2.4.6 (protection of an immobilised train) of the HS RST TSI and subsection 4.2.2.6.2 of this OPE TSI.

An interface also exists between subsection 4.2.4.7 (brake performance on steep gradients) of the HS RST TSI and subsections 4.2.2.6.2 and 4.2.1.2.2.3 of this OPE TSI.

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4.3.3.2. Ir-rekwiżiti għall-vetturi għall-passiġġieri

Jeżistu *interface*s bejn is-Subsezzjoni 4.2.2.4 ta' din l-STI OPE u s-subsezzjonijiet 4.2.2.4 (bibien), 4.2.5.3 (allarmi), 4.3.5.17 (allarm għall-passiġġieri) u 4.2.7.1 (ħruġ ta' emerġenza) tal-STI RST HS.

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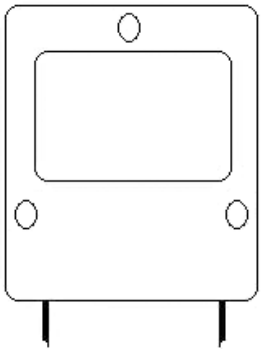
4.3.3.3. Train visibility

The Traffic Operation and Management subsystem determines that the basic requirements for train visibility, which the Rolling Stock subsystem must define, are shown in the following clauses.

4.3.3.3.1. On the leading vehicle of a train facing in the direction of travel

The forward facing front-end of the leading vehicle of a train must be fitted with three lights, in the shape of an isosceles triangle, as shown below. These lights shall always be lit when the train is being driven from that end.



The front lights must optimise train detectability (e.g. to track workers and those using public crossings), provide sufficient visibility for the train driver (illumination of the line ahead, lineside information markers/boards, etc) by night and during low light conditions and shall not dazzle the drivers of oncoming trains.

The spacing, the height above rails, the diameter, the intensity of the lights, the dimensions and shape of the emitted beam in both day and night time operation must be standardised.

An interface exists with subsection 4.2.7.4.1 of the HS RST TSI and Subsection 4.2.2.1.2 of this TSI.

4.3.3.3.2. On the rear end

An interface exists between subsection 4.2.2.1.3 of this TSI and subsection 4.2.7.4.1 of the HS RST TSI.

4.3.3.4. Train audibility

The Traffic Operation and Management subsystem determines that the basic requirements for train audibility with which the Rolling Stock subsystem must comply is that a train must be able to provide an audible warning of its presence.

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The sounds emitted by this warning device, the frequency and intensity of these sounds and the method of activation by the driver shall be standardised.

An interface with subsection 4.2.7.4.2 of the HS RST TSI and Subsection 4.2.2.2 of this TSI.

4.3.3.5. Signal sighting

The driver must be able to observe signals, and signals must be observable by the driver. The same applies for line side signs if they are safety related.

Driving cabs shall be designed in such a consistent way that the driver is able to easily see the information displayed to him from his usual driving position.

An interface exists between subsection 4.3.2.4 of this TSI and subsection 4.2.2.7 of the HS RST TSI.

4.3.3.6. Driver vigilance

A means of monitoring the reactions of the driver, intervening to bring the train to a stand if the driver does not react within a time to be specified.

An interface exists between subsections 4.3.3.2 and 4.3.3.7 of this TSI and subsection 4.2.7.9 of the HS RST TSI in respect to driver vigilance.

4.3.3.7. Train composition and annex B

There is an interface between:

— subsections 4.2.2.5, 4.2.3.6.3 and 4.2.3.7 of this TSI on one hand,

— and subsections 4.2.2.2.b (End couplers and coupling arrangements to rescue trains) of the HS RST TSI and its annex K, also subsection 4.2.3.5 (maximum train length) on the other hand,

in respect of:

— the maximum permissible weight of the train on the maximum gradient of the line concerned

— the maximum train length, and

— acceleration in case of banking.

4.3.3.8. Rolling Stock parameters which influence ground-based train monitoring systems and rolling stock dynamic behaviour

Interfaces exists between subsections 4.2.3.3.2 and 4.2.3.4 of the HS RST TSI and subsection 4.2.3.6 of this OPE TSI.

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4.3.3.9. L-użu tar-ramel fuq il-binarji

Teżisti *interface* bejn l-Anness B (Sezzjoni C1) ta' din l-STI fuq in-naħa l-waħda, u s-Subsezzjoni 4.2.3.10 tal-STI RST HS fuq in-naħa l-oħra, rigward l-użu tar-ramel fuq il-binarji.

4.3.3.10. Il-kompożizzjoni tal-ferrovija, Anness J

Hemm *interface* bejn is-Subsezzjoni 4.2.2.5 u l-Anness J għal din l-STI u s-Subsezzjonijiet 4.2.1.2 (id-disinn tal-ferrovija) u 4.2.7.10 (Il-kunċett tal-monitoraġġ u dak dijanjostiku) tal-STI RST HS rigward l-għarfien tal-ekwipaġġ tal-ferroviji tal-funzjonalità tal-vetturi ferrovjarji.

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4.3.3.11. Contingency arrangements and Managing an emergency situation

There is an interface between subsection 4.2.3.6.3 and 4.2.3.7 of this TSI and subsection 4.2.2.2 (end couplers and coupling arrangements to rescue trains) and Annex K of the HS RST TSI.

There is also an interface between subsections 4.2.3.6 and 4.2.3.7 of this TSI and subsection 4.2.7.1 (Emergency measures) and 4.2.7.2 (Fire safety) of the HS RST TSI.

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4.3.3.12. Ir-reġistrazzjoni tad-dejta

Hemm *interface* bejn is-Subsezzjoni 4.2.3.5.2 (Ir-reġistrazzjoni tad-dejta ta' sorveljanza abbord il-ferrovija) ta' din l-STI u s-Subsezzjoni 4.2.7.10 tal-STI RST HS (Il-kunċett tal-monitoraġġ u dak dijanjostiku).

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4.3.3.13. Aerodynamic effects on ballast

An interface exists between subsection 4.2.3.11 of the HS RST TSI and subsection 4.2.1.2.2.3 of this TSI.

4.3.3.14. Environmental conditions

An interface exists between subsection 4.2.6.1 of the HS RST TSI and subsections 4.2.2.5 and 4.2.3.3.2 of this TSI.

4.3.3.15. Crosswinds

An interface exists between subsection 4.2.6.3 of the HS RST TSI and subsections 4.2.1.2.2.3 and 4.2.3.6 of this TSI.

4.3.3.16. Maximum pressure variations in tunnels

An interface exists between subsection 4.2.6.4 of the HS RST TSI and subsections 4.2.1.2.2.3 and 4.2.3.6 of this TSI.

4.3.3.17. Exterior noise

An interface exists between subsection 4.2.6.5 of the HS RST TSI and subsection 4.2.3.7 of this TSI.

4.3.3.18. Fire safety

An interface exists between subsection 4.2.7.2 of the HS RST TSI and subsection 4.2.3.7 of this TSI.

4.3.3.19. Lifting/rescue procedures

An interface exists between subsection 4.2.7.5 of the HS RST TSI and subsection 4.2.3.7 of this TSI.

4.3.3.20. Monitoring and diagnostic concepts

An interface exists between subsection 4.2.7.11 of the HS RST TSI and subsection 4.2.3.5.2 and Annexes H and J of this TSI.

4.3.3.21. Particular specification for long tunnels

An interface exists between subsection 4.2.7.12 of the HS RST TSI and subsections 4.2.1.2.2.1, 4.2.3.7 and 4.6.3.2.3.3 of this TSI.

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4.3.3.22. Traction performance requirements

An interface exists between subsection 4.2.8.1 of the HS RST TSI and subsections 4.2.2.5 and 4.2.3.3.2 of this TSI.

4.3.3.23. Traction adhesion requirements

An interface exists between subsection 4.2.8.2 of the HS RST TSI and subsections 4.2.3.3.2, 4.2.3.6 and 4.2.1.2.2 of this TSI.

4.3.3.24. Functional and technical specification related to power supply

An interface exists between subsection 4.2.8.3 of the HS RST TSI and subsections 4.2.3.6 and 4.2.1.2.2 of this TSI.

4.3.4. Interfaces with the HS Energy TSI

There is an interface with subsection 2.2.1 of this TSI and subsection 4.6 of the HS ENE TSI.

4.3.5. Interfaces with the Safety in Rail Tunnels TSI

A number of requirements in the SRT TSI rely on elements within the OPE TSI as a complement. These are detailed in subsection 4.3.4 of the SRT TSI.

A specific interface exists between subsection 4.2.5.1.3.2 of the SRT TSI and subsection 4.6.3.2.3.3 of this TSI.

4.3.6. Interfaces with the Persons with Reduced Mobility TSI

A number of requirements in the PRM TSI rely on elements within the OPE TSI. These are detailed in subsections 4.1.4 and 4.2.4 of the PRM TSI.

4.4. **Operating rules**

The rules and procedures enabling coherent operation of new and different structural subsystems intended to be used in the TEN, and in particular those that are linked directly to the operation of a new train control and signalling system, shall be identical where identical situations exist.

To this end, operating rules for the European Train Control System (ETCS) and the Global System for Mobile communication — Railways (GSM-R) have been written. These are specified in Annex A.

AnnexA (ETCS and GSM-R rules and principles) is complemented by the two following informative documents:

— Presentation Report of ETCS/GSM-R Rules and Principles (EEIG Ref.: 05E374)

— Recommendations for the Implementation of ERTMS (EEIG Ref.: 05E375)

Other operating rules, which are able to be standardised across the TEN, are specified in Annex B.

As these rules are designed to be applied across the entire TEN, it is important that there is complete consistency. The only organisation able to make modifications to these rules shall be the ERA, which is responsible for the timely upkeep of Annexes A, B and C to this TSI.

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4.5. **Maintenance rules**

Not applicable

4.6. **Professional competences**

In accordance with Subsection 2.2.1 of this TSI, this section deals with professional and linguistic competence and the assessment process required for staff to attain this competence.

4.6.1. Professional competence

Staff (including contractors) of Railway Undertakings and Infrastructure Managers must have attained appropriate professional competence to undertake all necessary safety-related duties in normal, degraded and emergency situations. Such competence comprises professional knowledge and the ability to put this knowledge into practice.

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L-elementi minimi rilevanti għall-kwalifika professjonali għall-kompiti individwali jistgħu jinstabu fl-Annessi J u L.

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4.6.1.1. Professional knowledge

Taking these annexes into account and dependant on the duties of the individual staff member concerned, the knowledge required will comprise the following:

— general railway operation with particular emphasis on safety-critical activity:

  — principles of operation of their organisation's safety management system;

  — the roles and responsibilities of the key players involved in interoperable operations;

  — appreciation of hazards, especially in relation to the risks involving railway operation and electric traction supply

— appropriate knowledge of safety-related tasks in respect to procedures and interfaces for:

  — lines and lineside equipment;

  — rolling stock;

  — the environment.

4.6.1.2. Ability to put this knowledge into practice

The ability to apply this knowledge in routine, degraded and emergency situations will require staff to be fully acquainted with:

— the method and principles for applying these rules and procedures

— the process for the use of lineside equipment and rolling stock, as well as any specific safety-related equipment

— the principles of the safety management system to avoid the introduction of any undue risk to people and process

as well as a general ability to adapt to the different circumstances an individual may encounter.

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In conformity with Annex III clause 2 of Directive 2004/49/EC, Railway Undertakings and Infrastructure Managers are required to establish a competence management system to ensure that the individual competence of their staff involved is assessed and maintained. Additionally, training shall be provided, as necessary, to ensure that knowledge and skills are kept current, especially in relation to weaknesses or deficiencies in system or individual performance.

4.6.2. Linguistic competence

4.6.2.1. Principles

Infrastructure Managers and Railway Undertakings are required to ensure that their relevant personnel are competent in the use of the communication protocols and principles set out in this TSI.

Where the 'operating' language used by the Infrastructure Manager differs from that habitually used by the Railway Undertaking's personnel, such linguistic and communications training must form a critical part of the Railway Undertaking's overall competence management system.

Railway Undertaking staff whose duties require them to communicate with staff of the Infrastructure Manager in connection with safety critical matters, whether in routine, degraded or emergency situations, shall have a sufficient level of knowledge in the 'operating' language of the Infrastructure Manager.

4.6.2.2. Level of knowledge

The level of knowledge in the Infrastructure Manager's language must be sufficient for safety purposes:

— As a minimum this must comprise of the driver being able to:

  — send and understand all the messages specified in annex C to the present TSI;

  — effectively communicate in routine, degraded and emergency situations;

  — complete the forms associated with the use of the 'Book of Forms'.

— Other members of the train crew whose duties require them to communicate with the Infrastructure Manager on safety critical matters, must as a minimum, be able to send and understand information describing the train and its operational status.

Guidance on the appropriate levels of competence is defined in Annex E. The level of knowledge for drivers shall be at least level 3. The level of knowledge for staff accompanying trains shall be at least level 2.

4.6.3. Initial and ongoing assessment of staff

4.6.3.1. Basic elements

In conformity with Annex III clause 2 of Directive 2004/49/EC, Railway Undertakings and Infrastructure Managers are required to define the assessment process for their staff. It is recommended that account be taken of each of the following:

A. Selection of personnel

  — evaluation of individual experience and competence

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— evaluation of individual competence in the use of any required foreign language(s) or the aptitude to learn them

B. Initial professional training

— analysis of training needs;

— training resources

— training of the trainers

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C. Il-valutazzjoni inizjali

— il-kundizzjonijiet bażiċi;

— il-programm ta' valutazzjoni, inkluża wirja prattika;

— il-kwalifika ta' dawk li jagħtu t-taħriġ;

— l-għotja ta' ċertifikazzjoni ta' kompetenza.

D. Iż-żamma tal-kompetenza

— il-prinċipji għaż-żamma tal-kompetenza;

— il-metodi li għandhom jiġu segwiti;

— il-formalizzazzjoni tal-proċess taż-żamma tal-kompetenza;

— il-proċess ta' valutazzjoni.

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E. Refresher training

— principles for ongoing training (including language)

4.6.3.2. Analysis of training needs

4.6.3.2.1. Development of the analysis of training needs

Railway Undertakings and Infrastructure Managers must undertake an analysis of training needs for their relevant staff.

This analysis must set out both scope and complexity and take into account the risks associated with the operation of trains on the TEN, especially in relation to human capabilities and limitations (human factors) which may come about as a result of:

— differences in operating practices between Infrastructure Managers and the risks associated with changing between these;

— the differences between tasks, operating procedures and communication protocols;

— any difference in the 'operating' language used by the Infrastructure Manager's personnel;

— local operating instructions which may include special procedures or particular equipment to be applied in certain cases, for example a specific tunnel.

Guidance on the elements that should be considered can be found in the annexes referred to in Subsection 4.6.1 above. As appropriate, elements of the training for staff must be put in place which take these into account.

It is possible that due to the type of operation envisaged by a Railway Undertaking or the nature of the network being run by an Infrastructure Manager, some of the elements in these annexes will not be appropriate. The analysis of training needs shall document those not deemed appropriate and the reasons why.

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4.6.3.2.2. Updating the analysis of training needs

Railway Undertakings and Infrastructure Managers shall define a process for reviewing and updating their individual training needs, taking into account issues such as previous audits, system feedback and known changes to rules and procedures, infrastructure and technology.

4.6.3.2.3. Specific elements for traincrew and auxiliary staff

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4.6.3.2.3.1. L-għarfien tar-rotot

L-Impriża Ferrovjarja trid tiddefinixxi l-proċess li permezz tiegħu l-ekwipaġġ tal-ferrovija jikseb u jżomm aġġornat l-għarfien li jkollu tar-rotot li jaħdem matulhom. Dan il-proċess irid ikun:

— ibbażat fuq l-informazzjoni dwar ir-rotot ipprovduta mill-Amministratur Infrastrutturali u

— skont il-proċess deskritt fis-Subsezzjoni 4.2.1 ta' din l-STI.

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4.6.3.2.3.2. Knowledge of rolling stock

The Railway Undertaking shall define the process for the acquisition and retention of traction and rolling stock knowledge by its train crew.

4.6.3.2.3.3. Auxiliary Staff

The RU shall make sure that the auxiliary staff (e.g catering, cleaning) not forming part of the 'traincrew' is, in addition to their basic training, trained to respond to the instructions of the fully trained members of the 'traincrew'.

4.7. **Health and Safety Conditions**

4.7.1. Introduction

Staff specified in Subsection 4.2.1 as staff performing safety critical tasks in accordance with Subsection 2.2 of this TSI must have appropriate fitness to ensure that overall operational and safety standards are met.

In conformity with Directive 2004/49/EC, Railway Undertakings and Infrastructure Managers shall set up and document the process they put in place to meet the medical, psychological and health requirements for their staff within their Safety Management System.

Medical examinations as specified in Subsection 4.7.4 and any associated decisions on the individual fitness of staff must be conducted by a recognised occupational doctor.

Staff must not perform safety critical work whilst vigilance is impaired by substances such as alcohol, drugs or psychotropic medication. Therefore, Railway Undertakings and Infrastructure Managers shall have procedures in place to control the risk that staff attend for work under the influence of such substances, or consume such substances at work.

National rules of the Member State where a train service is operated apply with regard to defined limits of the above mentioned substances.

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4.7.2. Recommended criteria for approval of occupational doctors and medical organisations

Railway Undertakings and Infrastructure Managers should select occupational doctors and organisations involved in medical examinations in accordance with the national rules and practices of the country in which the Railway Undertaking or Infrastructure Manager is licensed or registered.

Occupational doctors performing medical examinations as specified in Subsection 4.7.4 should have the following:

— Expertise in occupational medicine;

— Knowledge of the hazards of the work concerned and of the railway environment;

— An understanding of how measures intended to eliminate or reduce the risks from those hazards could be affected by lack of medical fitness.

The occupational doctor complying with these criteria may seek external medical or paramedical assistance to support his or her medical consultation and assessment, e. g. ophthalmologists.

4.7.3. Criteria for approval of psychologists involved in psychological assessment and psychological assessment requirements

4.7.3.1. Certification of psychologists

It is recommended that the psychologist should hold the relevant university qualification and be certified and recognised as competent according to national rules and practices of the country in which the Railway Undertaking or Infrastructure Manager is licensed or registered.

4.7.3.2. Content and interpretation of psychological assessment

The content and the procedure for interpretation of the psychological assessment shall be determined by a person certified according to section 4.7.3.1, taking account of the railway work and environment.

4.7.3.3. Selection of assessment tools

The assessment shall only include assessment tools that are based on psychological-scientific principles.

4.7.4. Medical examinations and psychological assessments

4.7.4.1. Before appointment

4.7.4.1.1. Minimum content of the medical examination

Medical examinations shall cover:

— General medical examination;

— Examinations of sensory functions (vision, hearing, colour perception);

— Urine or blood analysis for the detection of diabetes mellitus and other conditions as indicated by the clinical examination;

— Screening for drugs of abuse.

4.7.4.1.2. Psychological assessment

The aim of the psychological assessment is to support the Railway Undertaking in the appointment and management of staff who have the cognitive, psychomotor, behavioural and personality capabilities to perform their roles safely.

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In determining the content of the psychological assessment the psychologist shall, as a minimum, take the following criteria into account relevant to the requirements of each safety function:

— Cognitive:

  — Attention and concentration

  — Memory

  — Perceptive capability

  — Reasoning

  — Communication

— Psychomotor:

  — Speed of reaction

  — Gestured co-ordination

— Behavioural and personality:

  — Emotional self control

  — Behavioural reliability

  — Autonomy

  — Conscientiousness

If the psychologist omits any of the above, the respective decision must be justified and documented.

4.7.4.2. After appointment

4.7.4.2.1. Periodicity of periodic medical examinations

At least one systematic medical examination shall be performed:

— Every 5 years for staff aged up to 40;

— Every 3 years for staff aged between 41 and 62;

— Every year for staff aged over 62.

Increased periodicity of examination shall be set by the occupational doctor if the state of health of the member of the staff requires so.

4.7.4.2.2. Minimum content of the periodic medical examination

If the worker complies with the criteria required at the examination, which is carried out before practising an occupation, the periodic specialised examinations must include as a minimum:

— General medical examination;

— Examination of sensory functions (vision, hearing, colour perception);

— Urine or blood analysis for the detection of diabetes mellitus and other conditions as indicated by the clinical examination;

— Screening for drugs of abuse where clinically indicated.

4.7.4.2.3. Additional medical examinations and/or psychological assessments

Besides the periodic medical examination, an additional specific medical examination and/or psychological assessment shall be performed where there is reasonable ground for doubting the medical or psychological fitness of a member of staff or reasonable

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suspicion of use of drugs of abuse or abuse or inappropriate use of alcohol. This would be the case especially after an incident or accident caused by human error on the part of the individual.

The employer must request a medical examination after any sickness absence exceeding 30 days. In suitable cases such an examination can be limited to an assessment by the occupational doctor based on available medical information indicating that the employee's fitness for work has not been affected.

Railway Undertakings and Infrastructure Managers must put systems in place to ensure that such additional examinations and assessments are undertaken as appropriate.

4.7.5. Medical requirements

4.7.5.1. General requirements

Staff shall not suffer from medical conditions or take medical treatment likely to cause:

— Sudden loss of consciousness;

— Impairment of awareness or concentration;

— Sudden incapacity;

— Impairment of balance or co-ordination;

— Significant limitation of mobility.

The following vision and hearing requirements must be met:

4.7.5.2. Vision requirements

— Aided or unaided distance visual acuity: 0.8 (right eye + left eye — measured separately); Minimum of 0.3 for the worse eye.

— Maximum corrective lenses: hypermetropia +5/myopia –8. The recognised occupational doctor (as defined in Subsection 4.7.2) may allow values outside this range in exceptional cases and after having sought the opinion of an eye specialist.

— Intermediate and near vision: sufficient whether aided or unaided.

— Contact lenses are allowed.

— Normal colour vision: using a recognised test, such as the Ishihara, completed by another recognised test if required.

— Vision field: normal (absence of any abnormality affecting the task to be performed)

— Vision for both eyes: present

— Binocular vision: present

— Contrast sensitivity: good

— Absence of progressive eye disease

— Lens implants, keratotomies and keratectomies are allowed only on condition that they are checked on a yearly basis or according to a periodicity set by the occupational doctor.

4.7.5.3. Hearing requirements

Sufficient hearing confirmed with tone audiogram, that is:

— Hearing good enough to keep a phone conversation going and be able to hear alert tones and radio messages;

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— The following values given for information should be taken as guidelines;

— The hearing deficiency must not be higher than 40 dB at 500 and 1 000 Hz;

— The hearing deficiency must not be higher than 45 dB at 2 000 Hz for the ear with the worst air conduction of sound.

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4.8. **Infrastructure and Rolling stock registers**

In accordance with Article 22a(1) of Directive 96/48/EC, 'the Member States shall ensure that registers of infrastructure and of rolling stock are published and updated annually. Those registers shall indicate the main feature of each subsystem or part subsystem involved and their correlation with the features laid down by the applicable TSIs. To that end, each TSI shall indicate precisely which information must be included in the registers of infrastructure and of rolling stock.'

Due to the annual update and publication of these registers they are not suitable for the particular requirements of the 'Traffic Operations and Management' subsystem. Therefore this TSI specifies nothing in respect of these registers.

However, there is an operational requirement for certain infrastructure related data items to be made available to a Railway Undertaking and conversely for certain rolling stock related items to be made available to an Infrastructure Manager. In both cases the data concerned shall be complete and accurate.

4.8.1. Infrastructure

The requirements for the high speed rail infrastructure related data items with regard to the Traffic Operation and Management subsystem, and which must be made available to railway undertakings, are specified in Annex D. The Infrastructure Manager is responsible for the correctness of the data.

4.8.2. Rolling stock

The following rolling stock related data items shall be available to infrastructure managers. The keeper (vehicle owner) is responsible for the correctness of the data:

— whether the vehicle is constructed from materials which can be hazardous in case of accidents or fire (e.g. asbestos)

— length over buffers.

5. **INTEROPERABILITY CONSTITUENTS**

5.1. **Definition**

According to Article 2(d) of Directive 96/48/EC:

Interoperability constituents are 'any elementary component, group of components, subassembly or complete assembly of equipment incorporated or intended to be incorporated into a subsystem upon which the interoperability of the trans-European high speed rail system depends directly or indirectly. The concept of a constituent covers both tangible objects and intangible objects such as software'.

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An interoperability constituent is:

— a product which can be placed on the market before integration and use in the subsystem; in this respect, it shall be possible to verify its conformity independently of the subsystem into which it will be incorporated,

— or an intangible object such as software or a process, organisation, procedure, etc. which has a function in the subsystem and the conformity of which shall be verified to ensure that the essential requirements are met.

5.2. **List of constituents**

The interoperability constituents are covered by the relevant provisions of Directive 96/48/EC. In respect to the Traffic Operation and Management Subsystem, there are, at present, no interoperability constituents.

5.3. **Constituents' performances and specifications**

Not applicable

6. **ASSESSMENT OF CONFORMITY AND/OR SUITABILITY FOR USE OF THE CONSTITUENTS AND VERIFICATION OF THE SUBSYSTEM**

6.1. **Interoperability constituents**

As this TSI does not yet specify any interoperability constituents no assessment arrangements are discussed.

If however interoperability constituents are subsequently defined and therefore able to be assessed by a Notified Body, the relevant assessment procedure(s) may then be added to a revised version.

6.2. **Traffic Operation and Management Subsystem**

6.2.1. Principles

The Traffic Operation and Management subsystem is a structural subsystem according to annex II to Directive 96/48/EC.

However, the individual elements are closely aligned with the operational procedures and processes required from an Infrastructure Manager or Railway Undertaking for the granting of a safety authorisation/certificate under the terms of the Directive 2004/49/EC. The Railway Undertaking or Infrastructure Manager shall demonstrate compliance with the requirements of this TSI. They can do this as part of the Safety Management System as described in Directive 2004/49/EC. It should be noted that at present none of the elements contained within this TSI require separate assessment by a Notified Body.

The relevant Competent Authority shall carry out an assessment of any new or amended operational procedures and processes, prior to implementation, before granting a new or revised safety authorisation/certificate. This assessment shall be a part of the process for granting the safety certificate/authorisation. Where the scope of this SMS will impact on another Member State(s), co-ordination with that Member State in respect to assessment should be ensured.

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Subject to satisfactory completion of the assessment process described below, the Competent Authority shall authorise the Infrastructure Manager or Railway Undertaking to implement the relevant elements of its Traffic Operation and Management System in conjunction with the granting of the Safety Authorisation or Safety Certificate required by Articles 10 and 11 of Directive 2004/49/EC.

Wherever an Infrastructure Manager or Railway Undertaking introduces new/upgraded/renewed operational process(es) (or materially changes existing ones) covered by the requirements of this TSI, then they shall draw up a commitment indicating that such process(es) is(are) in compliance with the Traffic Operation and Management TSI (or a part of it in the transitional period — see Chapter 7).

The assessment process of new or amended operational procedures and processes as described in this chapter is equivalent to the authorisation of placing in service delivered by the Member State in accordance with Article 14(1) of Directive 96/48/EC.

6.2.2. Rules and procedures documentation

In respect to the assessment of the documentation described in Subsection 4.2.1 of this TSI, assurance that the process for preparing the content of the documentation provided by both Infrastructure Manager and Railway Undertaking is complete and accurate is the responsibility of the Competent Authority.

6.2.3. Assessment procedure

6.2.3.1. Decision by Competent Authority

In conjunction with Annex G, Infrastructure Managers and Railway Undertakings shall submit a description of any proposed new or amended operational process(es).

In respect to those items shown as being under Part A of the Safety Certificate/Authorisation as defined by Directive 2004/49/EC, these shall be presented to the Competent Authority of the Member State in which the company is established.

In respect to items shown as being under Part B of the Safety Certificate/Authorisation as defined by Directive 2004/49/EC, these shall be presented to the Competent Authority of each Member State concerned.

This shall be provided in sufficient detail to allow the Competent Authority(ies) to make a judgement as to whether a formal assessment will be required.

6.2.3.2. If an assessment is required

Where the Competent Authority(ies) decide(s) that such an assessment is required, then this shall be carried out as part of the assessment leading to granting/renewal of the safety certificate/authorisation in conformity with Directive 2004/49/EC.

The assessment procedures shall be in compliance with the Common Safety Method to be established for assessment and certification/authorisation of Safety Management Systems required by Articles 10 and 11 of Directive 2004/49/EC.

Some informative and not mandatory guidelines as to how this assessment could be conducted are contained in Annex F.

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6.2.4. System performance

Article 14 paragraph 2 of Directive 96/48/EC requires Member States to check at regular intervals that interoperability subsystems are being operated and maintained in accordance with the essential requirements. In respect to the Traffic Operation and Management subsystem, such checks will be conducted in conformity with Directive 2004/49/EC.

7. IMPLEMENTATION

7.1. Principles

Implementation of this TSI and conformity with the relevant sections of this TSI must be determined in accordance with an implementation plan that shall be drawn up by each Member State for the High Speed lines for which they are responsible.

This plan must take into account:

— The specific human factors issues associated with operating any given line;

— The individual operating and safety elements of each line involved; and

— Whether implementation of the element(s) under consideration is to be:

  — only for certain High Speed lines,

  — applicable on all High Speed lines,

  — applicable to all trains, as described in Chapter 1.1 of this TSI, running on High Speed lines

— the relationship with implementation of other subsystems (CCS, RST, INS, ENE, …);

At this time any specific exceptions that may be applicable should be taken into account and documented as part of the plan.

The implementation plan shall take into account the various levels of potential for implementation from whenever:

— a Railway Undertaking or Infrastructure Manager commences operations, or

— a renewal or upgrade to the existing operational systems of a Railway Undertaking or Infrastructure Manager is introduced, or

— new or upgraded infrastructure, energy, rolling stock or command control & signalling subsystems, requiring a corresponding set of operating procedures, are put into service.

Where upgrades to existing operational systems affect both Infrastructure Manager(s) and Railway Undertaking(s), the Member State is responsible for ensuring that such projects are assessed and placed into service coincidentally.

It is commonly understood that the full implementation of all elements of this TSI cannot be complete until the hardware (infrastructure, control and command, etc.) that is to be operated has been harmonised. The guidelines set out in this chapter shall therefore only be seen as an interim phase supporting migration to the target system.

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In conformity with Articles 10 and 11 of Directive 2004/49/EC, the certification/authorisation is required to be renewed every 5 years. Once this revised TSI has been put into force and as part of the review process leading to this certification/authorisation renewal, Railway Undertakings and Infrastructure Managers must be able to demonstrate that they have taken the contents of this TSI into account and provide justification for any elements of it with which they do not yet comply.

Whilst full compliance with the target system described in this TSI is clearly the ultimate position, migration may be done in stages through the development of national or international, bilateral or multilateral agreements. Such agreements, which may be drawn up by and between a combination of IM-IM, IM — RU, RU — RU, shall always involve input from the Safety Authorities concerned.

Where existing agreements contain requirements related to traffic operation and management, then Member States shall notify the Commission, within 6 months after the entry into force of this TSI, of the following agreements:

(a) national, bilateral or multilateral agreements between Member States and Railway Undertakings or Infrastructure Managers, agreed on either a permanent or a temporary basis and required due to the very specific or local nature of the intended train service;

(b) bilateral or multilateral agreements between Railway Undertakings, Infrastructure Managers or Member States which deliver significant levels of local or regional interoperability;

(c) international agreements between one or more Member States and at least one third country, or between Railway Undertakings or Infrastructure Managers of Member States and at least one Railway Undertaking or Infrastructure Manager of a third country, which deliver significant levels of local or regional interoperability.

The compatibility of these agreements with EU legislation, including their non-discriminatory character and, in particular, this TSI, will be assessed and the Commission will take the necessary measures such as the revision of this TSI to include possible specific cases or transitional measures.

The RIC agreements and the COTIF instruments shall not be notified, because they are known.

Renewal of such agreements shall be possible, but only in the interests of continued through working arrangements and only when no other suitable alternatives exist. Any modification of existing agreements or any future agreement shall take into account EU legislation and, in particular, this TSI. Member States shall notify the Commission of such modifications or new agreements. The same procedure as shown above shall then apply.

7.2. **Implementation guidelines**

The table shown in Annex N, which is informative and not mandatory, has been prepared as a guide to what the Member State could identify as the trigger for implementation of each of the elements in Chapter 4.

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There are three distinct elements to implementation:

— Confirmation that any existing systems and processes comply with the requirements of this TSI

— Adaptation of any existing systems and processes to comply with the requirements of this TSI

— New systems and processes arising from implementation of other sub-systems

  — New/upgraded high speed lines (INS/ENE)

  — New or upgraded ETCS signalling installations, GSM-R radio installations, Hot Axle Box Detectors, … (CCS)

  — New rolling stock (RST)

7.3. **Specific cases**

7.3.1. Introduction

The following special provisions are permitted in the specific cases below.

These specific cases belong to two categories:

— the provisions apply either permanently (case ‘P’), or temporarily (case ‘T’).

— In temporary cases, it is recommended that the Member States concerned should conform with the relevant subsystem either by 2010 (case ‘T1’), an objective set out in Decision No 1692/96/EC of the European Parliament and of the Council of 23 July 1996 on Community guidelines for the development of the trans-European transport network, or by 2020 (case ‘T2’).

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7.3.2 Lista ta’ każijiet speċifiċi

Tħalliet vojta apposta

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ANNEX A

ERTMS/ETCS and ERTMS/GSM-R operating rules

This Annex contains the rules for ERTMS/ETCS and ERTMS/GSM-R as they appear in version 1 (document published on the European Railway Agency Internet site www.era.europa.eu).

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ANNEX B

Other rules enabling a coherent operation of new structural subsystems

(see also section 4.4)

This Annex will evolve over a period of time and will be subject to regular review and update.

Typical content of this Annex will be rules and procedures which are to be applied in an identical way across the entire TEN and the high speed network in particular and which are not today covered in Chapter 4 of this TSI. It is also likely that some elements of Chapter 4 and associated annexes will also be integrated into this Annex.

A. **GENERAL**

A1. **Train Staffing**

Reserved

B. **STAFF SAFETY AND SECURITY**

Reserved

C. **OPERATIONAL INTERFACE WITH SIGNALLING AND COMMAND AND CONTROL EQUIPMENT**

C1. **Sanding**

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 inclement weather.

A build-up of sand on the railhead can however, cause a number of problems, especially in connection with the activation of track circuits and the effective operation of points and crossings.

The driver must always be able to apply sand but this must be avoided wherever possible:

— in the area of points and crossings

— during braking at speeds less than 20 km/h.

These restrictions are nevertheless not applicable if there is a risk of SPAD, or other serious incident and the application of sand would assist adhesion.

— when at a standstill. The exception to this is when starting away and when required to test the sanding equipment on the traction unit. (Testing should normally be undertaken in areas specifically designated in the Infrastructure Register).

C2. **Activation of Hot Axle Box Detectors**

Reserved

D. **TRAIN MOVEMENTS**

D1. **Normal conditions**

D2. **Degraded conditions**

Reserved

E. **ANOMALIES, INCIDENTS AND ACCIDENTS**

Reserved

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ANNEX C

Safety related communications methodology

Introduction

The purpose of this document is to set out the rules for safety-related ground-to-mobile and mobile-to-ground communications applicable to information transmitted or exchanged for safety critical situations on the interoperable network and in particular to:

— define the nature and structure of the safety-related messages;

— define the methodology for voice transmission of those messages.

This annex is to serve as the basis:

— to enable the Infrastructure Manager to draw up the messages and Books of Forms. These elements shall be addressed to the Railway Undertaking at the same time as the rules and regulations are made available;

— for the Infrastructure Manager and the Railway Undertaking to draw up the documents for their staff (Books of Forms), instructions for staff authorising train movements 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 the context of a given risk, the Infrastructure Manager shall, acting in compliance with Article 9(3) of 2004/49/EC, decide whether the use of a form is appropriate. A form should only be used if the value of its safety and performance benefits exceeds that of any safety and performance disbenefits.

The Infrastructure Managers must structure his communications protocol in a formalised way and in line with the following 3 categories:

— urgent (emergency) verbal messages;

— written orders;

— additional performance messages;

To support the disciplined approach to transmission of these messages a Communications Methodology has been developed.

1. **Communications methodology**

1.1. *Elements and principles of the methodology*

1.1.1. Standard terminology to be used in the procedures

1.1.1.1. Speech transmission procedure

Term transferring the opportunity to speak to the opposite party:

over

1.1.1.2. Message receiving procedure

— upon receiving a direct message

Term confirming that the sent message has been received:

received

Term used to have the message repeated in the event of poor reception or misunderstanding

say again (+ speak slowly)

— upon reception of a message that has been read-back

▼B

Terms used to ascertain whether a read-back message exactly matches the sent message:

correct

or not:

error (+ I say again)

1.1.1.3. Communications breaking procedure

— if the message has ended:

out

— if break is temporary and does not break the connection

Term used to keep the other party waiting:

wait

— if break is temporary but the connection is broken

Term used to tell the other party that the communication is going to be broken but will be resumed later on:

I call again

1.1.1.4. Cancelling a written order

Term used to cancel the written order procedure underway:

cancel procedure .....

If the message is then to subsequently be resumed, the procedure shall be repeated from the start.

1.1.2. Principles to be applied in the event of error or misunderstanding

To permit the correction of possible errors during communication, the following rules shall be applied:

1.1.2.1. Errors

— **error during transmission**

When a transmission error is discovered by the sender himself, the sender must request cancellation by sending the following procedure message:

error (+ prepare new form …)

or:

error + I say again

and then send the initial message again.

— **error during read-back**

When the sender discovers an error whilst the message is being read back to him, the sender shall send the following procedure messages:

error + I say again

and send the initial message again.

1.1.2.2. Misunderstanding

If one of the parties misunderstands a message he must ask the other party to repeat the message by using the following text:

say again (+ speak slowly)

▼B

1.1.3. Word, number, time, distance, speed and date spelling code

To aid in understanding and expressing messages in different situations, each term must be pronounced slowly and correctly by spelling out any words or names and figures likely to be misunderstood. Examples would be the identifying codes for signals or points.

The following spelling rules shall apply:

1.1.3.1. Spelling out of words and letter groups

The International Phonetic Alphabet shall be used.

A	*Alpha*	*G*	*Golf*	*L*	*Lima*	*Q*	*Quebec*	*V*	*Victor*
B	*Bravo*	*H*	*Hotel*	*M*	*Mike*	*R*	*Romeo*	*W*	*Whisky*
C	*Charlie*	*I*	*India*	*N*	*November*	*S*	*Sierra*	*X*	*X-ray*
D	*Delta*	*J*	*Juliet*	*O*	*Oscar*	*T*	*Tango*	*Y*	*Yankee*
E	*Echo*	*K*	*Kilo*	*P*	*Papa*	*U*	*Uniform*	*Z*	*Zulu*
F	*Foxtrot*								

Example:

Points A B = points alpha-bravo.

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

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

The Railway Undertaking may add further indications about pronunciation, as it deems necessary.

1.1.3.2. Expression of numbers

Numbers shall be spoken digit by digit.

0	*Zero*	*3*	*Three*	*6*	*Six*	*9*	*Nine*
1	*One*	*4*	*Four*	*7*	*Seven*		
2	*Two*	*5*	*Five*	*8*	*Eight*		

Example: train 2183 = train two-one-eight-three.

Decimals shall be expressed by the word 'point'.

Example: 12,50 = one-two-point-five-zero

1.1.3.3. Expression of time

The time shall be given in local time, in plain language.

Example: 10:52 hours = ten fifty-two.

Whilst this is the principle, it would also be acceptable, whenever necessary, for the time to be spelled out digit by digit (one zero five two hours).

1.1.3.4. Expression of distances and speeds

Distances shall be expressed in kilometres and speeds in kilometres per hour.

Miles may be used if that unit is used on the infrastructure concerned.

1.1.3.5. Expression of dates

Dates shall be expressed in the usual manner.

Example: 10 December

▼B

1.2. *Communications structure*

The voice transmission of safety-related messages shall in principle comprise 2 phases as follows:

— identification and request for instructions;

— transmission of the message itself and termination of the transmission.

The first phase may be cut back or entirely skipped for top priority safety messages.

1.2.1. Rules for identification and requests for instruction

To enable the parties to identify one another, define the operational situation and transmit procedural instructions, the following rules shall apply:

1.2.1.1. Identification

It is very important that before each communication, other than very urgent top priority safety messages, the persons who are going to communicate identify themselves. Not only is this a polite thing to do it, more importantly, provides a confidence that the person authorising train movements is in communication with the driver of the correct train and the driver knows he is speaking with the correct signalling or control centre. This is especially critical when communication is taking place in areas where communications boundaries overlap.

This principle shall apply even after an interruption during transmission.

The following messages shall be used for this purpose by the different parties.

— by the staff authorising train movements:

train..... .....
(number)
this is .... Signals
(name)

— by the driver:

.... Signals
(name)
this is train.....
(number)

It should be noted that the identification may be followed by an additional information message giving the staff authoring train movements enough details of the situation to determine precisely the procedure that the driver may subsequently be required to follow.

1.2.1.2. Request for instructions

Every application of a procedure supported by a written order must be preceded by a request for instructions.

The following terms shall be used to request instructions:

prepare procedure ….....

1.2.2. Rules for transmission of written orders and verbal messages

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1.2.2.1. Top priority safety messages

Due to their urgent and imperative nature, these messages:

— may be sent or received while running;

— may skip the identification part;

— shall be repeated;

— shall, as soon as possible, be followed by further information.

1.2.2.2. Written Orders

In order to reliably send or receive (at a standstill) the procedural messages contained in the Book or Forms, the following rules shall be followed:

1.2.2.2.1. Message sending

The form may be completed prior to transmitting the message so that the full text of the message can be sent in one single transmission.

1.2.2.2.2. Message receiving

The receiver of the message must fill in the form contained in the Book of Forms based upon the information given by the sender.

1.2.2.2.3. Read-back

All the messages in the Book of Forms shall be read back.

1.2.2.2.4. Acknowledgement of correct read-back

Every read-back message shall be followed by an acknowledgement of conformity or non-conformity given by the sender of the message.

correct

or

error + I say again

followed by a repeat sending of the initial message

1.2.2.2.5. Acknowledgement

Every message received shall be acknowledged positively or negatively as follows:

received

or

negative, say again (+ speak slowly)

1.2.2.2.6. Traceability and verification

A unique identification or authorisation number shall accompany all messages initiated from the ground:

— if the message concerns an action for which the driver requires a specific authorisation (e.g. passing a signal at danger, ...):

Genehmigung .....   ***(number)***

▼B

— in all other cases (e.g. proceeding with caution, ...):

message .....   ***(number)***

1.2.2.2.7. Reporting Back

Every message comprising a request to 'report back' shall be followed by a 'report'.

1.2.2.3. Additional messages

Additional messages:

— shall be preceded by the identification procedure;

— shall be short and precise (limited wherever possible to information to be communicated and where it applies);

— shall be read back and followed by an acknowledgement of correct read-back, or not

— may be followed by a request for instructions or a request for further information.

1.2.2.4. Information messages with a variable non-predetermined content

Information messages with a variable content shall be:

— preceded by the identification procedure;

— prepared before sending;

— read back and followed by an acknowledgement of correct read-back, or not.

2. **Procedural Messages**

2.1. *Nature of the messages*

Procedural messages are used to send operational instructions associated with appropriate situations represented in the Driver's Rule Book.

They comprise the text of the message itself, corresponding to a situation, and a number identifying the message.

If the message requires the recipient to report back, the text of the report is also given.

These messages use predetermined wording prescribed by the Infrastructure Manager in his 'operating language' and they are presented in the form of pre-prepared forms in either paper format or in computer medium.

2.2. *Forms*

Forms are a formalised medium for communicating procedural messages. These messages are generally those associated with degraded working conditions. Typical examples would be the authority for a driver to pass a signal or an 'end of movement authority', the requirement to run at reduced speed in a particular area, or to examine the line. There may well be other circumstances that will require the used of such messages.

Their purpose is to:

— provide a common working document used in real-time by the staff authorising train movements and by the drivers;

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— provide the driver (especially when working in an unfamiliar or rare environment) with a reminder of the procedure he will required to follow

— enable traceability of communications.

In order to identify the forms, a unique code word or number relating to the procedure should be developed. This could be based on the potential frequency that a form would be used. If, of all the forms being developed, the likelihood is that the one most often used is the one for passing a signal or EOA at danger, then this one could be numbered 001 and so on.

2.3. *Book of Forms*

Having identified all the forms to be used, the whole set must be collected into a document or a computer medium called the Book of Forms.

It is a joint document that will be used by the driver and the staff authorising the movement of trains when they communicate with each other. It is important therefore that the book used by the driver and the one used by the staff authorising the movement of trains are constructed and numbered in the same manner.

The Infrastructure Manager is responsible for drawing up the Book of Forms and the forms themselves in his 'operating language'.

The Railway Undertaking may add translations of the forms and associated information contained in the Book of Forms, if he thinks that would help his drivers both during training and in real-time situations.

The language to be used when transmitting the messages shall always be the 'operating language' of the Infrastructure Manager.

The Book of Forms shall comprise two parts.

— The first part contains the following items:

  — a reminder about the utilisation of the Book of Forms;

  — an index of ground-originated Procedure Forms;

  — an index of driver-originated Procedure Forms, where appropriate;

  — the list of situations cross-referencing to which procedure form is to be used;

  — a glossary giving the situations to which each procedure form applies;

  — the code for spelling out messages (phonetic alphabet etc.).

The second part contains the Procedure Forms themselves.

Several examples 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 Railway Undertaking may include explanatory text relevant to each form and the situations covered, in the drivers' Book of Forms.

3. **Additional messages**

Additional messages are information messages used either:

— by the driver to inform the staff authorising train movements or

— by the staff authorising train movements to advise the driver

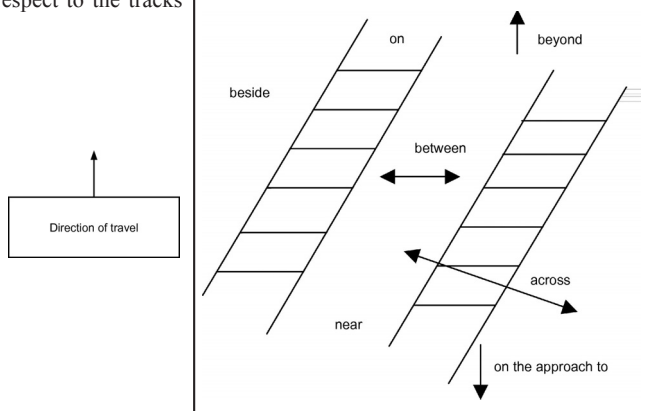
▼B

of situations of a rare nature and for which therefore a pre-determined form is considered unnecessary, or related to train running or to the technical condition of the train or the infrastructure.

To make it easier to describe the situations and construct the information messages, message guidelines, a glossary of railway terminology, a descriptive diagram of the rolling stock being employed and a descriptive statement of the infrastructure equipment (track, traction supply, etc.) might be beneficial.

3.1. *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	☐ at ..... (*station name*) ☐ ..... *(characteristic point)* ☐ at mile post/kilometre point..... *(number)*
— in respect to my train	☐ power car ..... (*number*) ☐ trailer car ..... (*number*)
Nature — object — person	..... *(see glossary)*
State — static	☐ standing on ☐ lying on ☐ fallen on
— moving	☐ walking ☐ running ☐ towards
Location with respect to the tracks	

These messages may be followed by a request for instructions.

The elements of the messages are provided in both the language chosen by the Railway Undertaking and in the operating language(s) of the Infrastructure Managers concerned.

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3.2. *Glossary of Railway Terminology*

The Railway Undertaking shall produce a glossary of railway terminology for each network over which his trains operate. It shall supply the terms in regular use in the language chosen by the Railway Undertaking and in the 'operating' language of the Infrastructure Manager(s) whose infrastructure is worked over.

The glossary shall be composed of two parts:

— a listing of terms by subject matter;

— a listing of the terms in alphabetical order.

3.3. *Descriptive diagram of the rolling stock*

If the Railway Undertaking feels it would benefit his operation a descriptive diagram of the rolling stock used shall be prepared. It should list the names of the various components that may be the subject of communications with the different Infrastructure Managers concerned. It should include the common names for the standard terms in the language chosen by the Railway Undertaking and in the 'operating' language of the Infrastructure Manager(s) whose infrastructure is worked over.

3.4. *Descriptive statement of the characteristics of the infrastructure equipment (track, traction supply, etc.)*

If the Railway Undertaking feels it would benefit his operation a descriptive statement of the characteristics of the infrastructure equipment (track, traction supply, etc.) on the route worked over shall be prepared. This shall show the names of the various components that may be the subject of communications with the Infrastructure Manager(s) concerned. It should include the common names for the standard terms in the language chosen by the Railway Undertaking and in the 'operating' language of the Infrastructure Manager(s) whose infrastructure is worked over.

4. **Type and structure of verbal messages**

4.1. *Emergency messages*

Emergency messages are intended to give urgent operational instructions that are directly linked with the safety of the railway.

To avoid any risk of misunderstanding, messages must always be repeated once.

Classified according to need, the main messages which can be sent are indicated hereafter.

The Infrastructure Manager may, in addition, define other emergency messages according to the needs of his operation.

Emergency messages may be followed by a Written Order (see Subsection 2).

The type of text that goes to form Emergency messages must be included in Appendix 1 'Manual of communications procedures' to the Driver's Rule Book and in the documentation issued to staff authorising train movements.

4.2. *Messages sent either by the ground 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

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

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

Obstruction
Or Fire
Or .....
(other reason)
on line ..... **at** ..... **(km)**
(name)
Driver of train .....
(number)

— Need to stop a particular train:

Train ..... **(on line/track)**
(number) (name/number)
Emergency stop

In this circumstance the name or number of the line or track on which the train is running may be used to complement this message.

4.3. *Messages issued by the driver*

— Need to cut the traction power supply:

Emergency current isolation

This message is to be quickly complemented, if possible, by the reason, the location of the emergency and the train's identification:

At .....
(km)
on ..... **line/track**
(name/number)
between ..... **and** .....
(station) (station)
Reason .....
Driver of train .....
(number)

In this circumstance the name or number of the line or track on which the train is running may be used to complement this message.

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ANNEX D

Information to which the Railway Undertaking must have access in connection with the route(s) over which he intends to operate

PART 1. GENERIC INFORMATION REGARDING THE INFRASTRUCTURE MANAGER

1.1. Name (s)/Identity of Infrastructure Manager(s)

1.2. Country (or Countries)

1.3. Brief description

1.4. List of general operational rules and regulations (and how to obtain them)

PART 2. MAPS AND DIAGRAMS

2.1. **Geographic map**

2.1.1. Routes

2.1.2. Principal locations (stations, yards, junctions, freight terminals)

2.2. **Line diagram**

Information to be included on diagrams, supplemented as necessary by text. Where a separate station/yard/depot diagram is provided then information on line diagram may be simplified

2.2.1. Indication of distance

2.2.2. Identification of running lines, loops, sidings and catch/trap points

2.2.3. Connections between running lines

2.2.4. Principal locations (stations, yards, junctions, freight terminals)

2.2.5. Location and meanings of all fixed signals

2.3. **Station/Yard/Depot diagrams (N.B. applies only to locations available to interoperable traffic)**

Information to be identified on location specific diagrams, supplemented as necessary by text

2.3.1. Name of location

2.3.2. Location identity code

2.3.3. Type of location (passenger terminal, freight terminal, yard, depot)

2.3.4. Location and meanings of all fixed signals

2.3.5. Identification and plan of tracks, including catch/trap points

2.3.6. Identification of platforms

2.3.7. Length of platforms

2.3.8. Height of platforms

2.3.9. Identification of sidings

2.3.10. Length of sidings

2.3.11. Availability of shore electric supply

2.3.12. Distance between the edge of the platform and the centre of the track, parallel to the running surface

2.3.13. (For passenger stations) Availability of access for disabled persons

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PART 3. SPECIFIC LINE SEGMENT INFORMATION

3.1. **General Characteristics**

3.1.1. Country

3.1.2. Line segment identification code: national code

3.1.3. Line segment extremity 1

3.1.4. Line segment extremity 2

3.1.5. Times of opening for traffic (times, days, special arrangements for holidays)

3.1.6. Lineside indications of distance (frequency, appearance and positioning)

3.1.7. Type of traffic (mixed, passenger, freight, …)

3.1.8. Maximum permissible speed(s)

3.1.9. Any other information which is necessary for safety reasons

3.1.10. Specific local operational requirements (including any special staff competences)

3.1.11. Special restrictions for dangerous goods

3.1.12. Special loading restrictions

3.1.13. Model of temporary works notice (and way to obtain it)

3.1.14. Indication that Line segment is congested (art. 22 of 2001/14/EC)

3.2. **Specific Technical Characteristics**

3.2.1. EC verification for Infrastructure TSI

3.2.2. Date of putting into service as an interoperable line

3.2.3. List of possible specific cases

3.2.4. List of possible specific derogations

3.2.5. Track gauge

3.2.6. Structure gauge

3.2.7. Maximum axle load

3.2.8. Maximum load per linear metre

3.2.9. Transversal track forces

3.2.10. Longitudinal track forces

3.2.11. Minimum radius of curvature

3.2.12. Gradient percentage

3.2.13. Gradient location

3.2.14. For brake system that does not use wheel-rail adhesion, accepted braking effort

3.2.15. Bridges

3.2.16. Viaducts

3.2.17. Tunnels

3.2.18. Comments

3.3. **Energy subsystem**

3.3.1. EC verification for Energy TSI

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3.3.2. Date of putting into service as an interoperable line

3.3.3. List of possible specific cases

3.3.4. List of possible specific derogations

3.3.5. Type of power supply system (e.g. none, overhead, 3rd rail)

3.3.6. Power supply system frequency (e.g. AC, DC)

3.3.7. Minimum voltage

3.3.8. Maximum voltage

3.3.9. Restriction related to power consumption of specific electric traction unit(s)

3.3.10. Restriction related to the position of Multiple Traction unit(s)s to comply with contact line separation (position of pantograph)

3.3.11. How to obtain electrical isolation

3.3.12. Contact wire height

3.3.13. Permissible contact wire gradient in relation to the track and the variation of the gradient

3.3.14. Type of pantographs approved

3.3.15. Minimum static force

3.3.16. Maximum static force

3.3.17. Location of neutral sections

3.3.18. Information on operation

3.3.19. Lowering of pantographs

3.3.20. Conditions applying with regard to regenerative braking

3.3.21. Maximum allowable train current

3.4. **Control-Command and Signalling subsystem**

3.4.1. EC verification for CCS TSI

3.4.2. Date of putting into service as an interoperable line

3.4.3. List of possible specific cases

3.4.4. List of possible specific derogations

ERTMS/ETCS

3.4.5. Level of application

3.4.6. Optional functions installed lineside

3.4.7. Optional functions required on board

3.4.8. Software version number

3.4.9. Placing-in-service date of this version

ERTMS/GSM-R RADIO

3.4.10. Optional functions as specified in FRS

3.4.11. Version number

3.4.12. Placing-in-service date of this version

FOR ERTM/ETCS LEVEL 1 WITH INFILL FUNCTION

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3.4.13. Technical implementation required for rolling stock

CLASS B TRAIN PROTECTION, CONTROL AND WARNING SYSTEM(S)

3.4.14. National rules for operating class B systems (+ way to obtain them)

LINE SYSTEM

3.4.15. Responsible Member State

3.4.16. System name

3.4.17. Software Version number

3.4.18. Placing-in-service date of this version

3.4.19. End of period of validity

3.4.20. Need for more than one system active simultaneously

3.4.21. On-board system

CLASS B RADIO SYSTEM

3.4.22. Responsible Member State

3.4.23. System name

3.4.24. Version number

3.4.25. Placing-in-service date of this version

3.4.26. End of period of validity

3.4.27. Special conditions to switch over between different class B train protection, control and warning systems

3.4.28. Special technical conditions required to switch over between ERTMS/ETCS and Class B Systems

3.4.29. Special conditions to switch over between different radio systems

TECHNICAL DEGRADED MODES OF:

3.4.30. ERTM/ETCS

3.4.31. Class B train protection, control and warning system

3.4.32. ERTM/GSM-R

3.4.33. Class B radio system

3.4.34. Line side signalling

SPEED RESTRICTIONS RELATED TO BRAKING PERFORMANCE

3.4.35. ERTM/ETCS

3.4.36. Class B train protection, control and warning systems

NATIONAL RULES FOR FUNCTIONING CLASS B SYSTEM

3.4.37. National rules linked to braking performance

3.4.38. Other national rules, e.g.: data corresponding with UIC leaflet 512 (8th edition of 1.1.79 and 2 Amendments)

EMC SUSCEPTIBILITY OF INFRASTRUCTURE-SIDE CONTROL-COMMAND AND SIGNALLING

3.4.39. Requirement to be specified according to European Standards

3.4.40. Permissibility to use Eddy-current brake

3.4.41. Permissibility to use magnetic brake

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3.4.42. Requirements for technical solutions concerning implemented derogations

3.5. **Traffic Operation and Management Subsystem**

3.5.1. EC verification for OPE TSI

3.5.2. Date of putting into service as an interoperable line

3.5.3. List of possible specific cases

3.5.4. List of possible specific derogations

3.5.5. Language used for safety critical communications with infrastructure manager staff

3.5.6. Special climatic conditions and associated arrangements

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ANNEX E

Language and communication level

Oral competence in a language can be subdivided into five levels:

Level	Description
5	— can adapt the way he/she speaks to any interlocutor — can put forward an opinion — can negotiate — can persuade — can give advice
4	— can cope with totally unforeseen situations — can make assumptions — can express an argued opinion
3	— can cope with practical situations involving an unforeseen element — can describe — can keep a simple conversation going
2	— can cope with simple practical situations — can ask questions — can answer questions
1	— can talk using memorised sentences

This annex is a provisional position. A more detailed piece of work is being prepared and will be available for a future revision of this TSI and which will match the proposals in the CR OPE TSI.

There are also plans to incorporate a tool to be used when assessing the level of competence of an individual. This will be made available in a future version of this TSI.

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ANNEX F

Informative and not mandatory Traffic Operation and Management Subsystem assessment guidelines

(The use of the expression 'Member State' when taken in the context of this module means the Member State or other body appointed by them, undertaking the assessment.)

1. This annex sets out guidelines to facilitate assessments by Member States to confirm that the operational process(es) proposed:

   — complies with this TSI and demonstrates that the essential requirements ([1]) of Directive 96/48/EC (and any amendments included in Directive 2004/50/EC) have been met,

   — complies with the other regulations as appropriate, including Directive 2004/49/EC,

   and may be placed into service.

2. The Infrastructure Manager or Railway Undertaking concerned must supply the Member State with appropriate documentation (as described in clause 3 below) describing the new or amended operations process(es).

   The documentation supplied about the conception and development of the new or amended operational process(es) must be sufficiently detailed so as to enable the Member State to understand the rationale behind the proposal. Additionally, where subsystems are being upgraded or renewed, the submission must also include feedback of operational experience.

   The documentation may be supplied in either paper or computer medium format (or a combination of both). The Member State may request further copies if needed for carrying out the assessment.

3. Details of assessment

3.1. The documentation describing the operational process(es) concerned should contain at least the following elements:

   — a general description of the Infrastructure Manager's or Railway Undertaking's operations organisation (overview of the management/supervision and functionality), together with a detail of the conditions and the framework within which the operations process(es) to be assessed shall be used and operated;

   — details of all relevant operational processes required to be carried out (typically procedures, instructions, computer programs, etc.);

   — a description of how the operations process(es) concerned shall be implemented, used and controlled, including an analysis of any specific equipment to be used;

   — details of the people who will be affected by the operational process(es), the training and/or briefing that will take place and any assessment of risk to personal exposure to which the people might be subjected;

   — a procedure for how subsequent amendments and updates to the operations process(es) will be managed (NOTE: this does not included any future major changes or new process(es) — in this case, a new submission under these guidelines would be applicable);

   — diagram showing how necessary feedback information (and all other information relating to the operation) flows into, out of and around the Infrastructure Manager's or Railway Undertaking's operations organisation to support the relevant operation processes;

([1]) The essential requirements are reflected in the technical parameters, interfaces and performance requirements set out in Chapter 4 of the TSI.

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— descriptions, explanations and all the records necessary for understanding the conception and development of the new or amended operations process(es) concerned (NOTE: for Safety Critical processes, this should include an assessment of the risks associated with implementing the new/amended process(es));

— demonstration of compliance between of the operation process(es) concerned with the requirements of the TSI;

The following elements should also be supplied, where relevant:

— a list of the specifications or European standards, against which the relevant operation processes of the subsystem have been validated and the evidence of this conformity;

— evidence of conformity with other regulations deriving from the treaty (including certificates);

— specific conditions or restrictions of relevant operation processes

3.2. The Member State shall:

— identify the relevant provisions of the TSI, with which operations process(es) concerned must comply;

— check that the documentation supplied is complete and in accordance with clause 3.1;

— examine the documentation supplied and evaluate whether:

— the operations process(es) concerned comply with the relevant requirements of the TSI;

— the conception and development of the new or revised operations process(es) (including any assessment of risks) are robust and have been managed in a controlled manner;

— the arrangements for implementation and subsequent use/control of the operations process(es) will ensure continued compliance with the relevant TSI requirements;

— document (in an assessment report, see Clause 4 below) its findings with regards to compliance of the operations process(es) with the TSI provisions.

4. The assessment report shall include at least the following information:

— details of the Infrastructure Manager/Railway Undertaking concerned,

— description of operations process(es) that have been assessed, including details of any specific procedures, instructions, computer programs concerned;

— description of those elements relating to the control and use of the operations process(es) concerned, including monitoring, feedback and adjustment,

— any subsidiary inspection and audit reports drawn up in connection with the assessment

— confirmation that the operations process(es) concerned and their conditions of implementation will ensure compliance with the appropriate requirements stated in the relevant sections of the TSI, including any reservations remaining at the conclusion of the assessment.

— A statement of any conditions and limits (including any appropriate restrictions to address any reservations) for implementing the relevant operations process(es),

— name and address of the Member State involved in the assessment and date of the completion of the report.

If the Infrastructure Manager/Railway Undertaking is denied authorisation/certification to implement the relevant operation processes on the basis of the assessment report, the Member State must provide detailed reasons for such denial in accordance with Directive 2004/49/EC.

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ANNEX G

Informative and not mandatory List of elements to be verified for each basic parameter

This Annex is at an early stage of development and requires further work; it is included as a working draft.

In association with the certification and authorisation processes described in Articles 10 and 11 of Directive 2004/49/EC, this annex outlines the following supporting information:

— **A** — an item that is of an organisational or principals nature and should be included in the Safety Management System

— **B** — an item that is a detailed procedure or operational process in support of the organisational principals in the SMS and which is only applicable within the Member State

Parameters to be assessed	Elements to be verified for each parameter	TSI reference	Applicable to		A/B
			RU	IM	
Documentation for Drivers	Process for compilation of Driver's Rule Book (including language translation [where appropriate] and validation process)	4.2.1.2.1	X		A
	Process for IM to provide RU with appropriate information	4.2.1.2.1		X	A
	Content of Driver's Rule Book includes minimum requirements of this TSI and specific procedures required by IM	4.2.1.2.1	X		B
	Process for compilation of Driver's Route Book (and validation process)	4.2.1.2.2.1	X		A
	Content of Driver's Route Book includes minimum requirements of this TSI	4.2.1.2.2.1	X		B
	Process for IM to advise RU of changes to operational rules/information	4.2.1.2.2.2		X	A
	Process for grouping changes into a dedicated document	4.2.1.2.2.2	X		A
	Process for advising drivers in real time of changes	4.2.1.2.2.3		X	A
	Process for providing drivers with train schedule information	4.2.1.2.3	X		A
	Process for providing drivers with rolling stock information	4.2.1.2.4	X		A
	Process for compilation of location-specific rules and procedures (including validation process) *ground staff*	4.2.1.3	X		B
Documentation for IM's staff authorising train movements	Process for safety-related communication between IM and RU staff	4.2.1.4		X	A
Safety-related communication between RU and IM staff	Process for ensuring that staff apply the operational communication methodology as specified in annex C of this TSI	4.2.1.5, 4.6.1.3.1	X		A
				X	A
Train Visibility	Process for ensuring front end illumination of trains complies with the requirements of this TSI	4.2.2.1.2, 4.3.3.4.1	X		A
Train Audibility	Process for ensuring audibility of trains complies with the requirements of this TSI	4.2.2.2, 4.3.3.5	X		A

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Parameters to be assessed	Elements to be verified for each parameter	TSI reference	Applicable to		A/B
			RU	IM	
Vehicle Identification	Process to demonstrate compliance with Annex P of this TSI	4.2.2.3	X		A
Requirements for passenger vehicles	Process to demonstrate compliance with the requirements of this TSI	4.2.2.4	X		A
Train composition	Process for compilation of Train Composition Rules (including validation process)	4.2.2.5	X		A
	Content of Train Composition Rules includes minimum requirements specified in this TSI	4.2.2.5	X		B
Braking requirements	Process for ensuring provision of route related information required for brake performance calculations or provision of the actual performance required	4.2.2.6.2		X	A
	Process for calculation or provision of brake performance required (‘Braking Rules’)	4.2.2.6.2, 4.3.2.1	X		B
Responsibility to ensure that the train is in running order	Definition of the safety-related on-train equipment required to ensure train safe to run	4.2.2.7.1	X		B
	Process for ensuring that any modification to the characteristics of the train affecting its performance are identified, and that this information is provided to IM	4.2.2.7.1	X		A
	Process to ensure that train running information is made available to IM prior to departure	4.2.2.7.2	X		A
Train Planning	Process of ensuring RU provides required data to IM when requesting a train path	4.2.3.1		X	A
Identification of Trains	Process for assigning unique and unambiguous train identification numbers	4.2.3.2		X	A
Departure Procedures	Definition of pre-departure checks and tests	4.2.3.3.1	X		B
	Process for reporting factors that could affect train running	4.2.3.3.2	X		A
Traffic Management	Provision of means of recording real time information, including minimum data required by this TSI	4.2.3.4.1		X	B
	Definition of procedures for control and supervision of traffic operation	4.2.3.4.2.1		X	B
	Process of ensuring management of changes in line conditions and train characteristics	4.2.3.4.2		X	B
	Process for indication of estimated time a train is to be handed over from IM to IM	4.2.3.4.2.2		X	B
Dangerous Goods	Process of ensuring supervision of dangerous goods, including minimum requirements of this TSI	4.2.3.4.3	X		A
Operational Quality	Process to monitor efficient operation of all concerned services and communicate trends to all relevant IMs and RUs	4.2.3.4.4	X		B
				X	B
Data Recording	List of data to be recorded outside the train includes minimum list of items required by this TSI	4.2.3.5.1		X	A
	List of data to be recorded inside the train includes minimum list of items required by this TSI	4.2.3.5.2, 4.3.2.3	X		A

▼B

Parameters to be assessed	Elements to be verified for each parameter	TSI reference	Applicable to		A/B
			RU	IM	
Degraded Operation	Process for informing other users of disturbances likely to cause disruption of services	4.2.3.6.2		X	A
			X		A
	Definition of instructions to be given from IM to train drivers in times of service disruption	4.2.3.6.3		X	B
	Definitions of appropriate measures to address service disruption scenarios identified, including minimum requirements listed in this TSI	4.2.3.6.4		X	B
Managing an Emergency Situation	Process to define and publish contingency measures to manage emergency services	4.2.3.7		X	A
	Process for provision of emergency and safety instructions for passengers	4.2.3.7	X		A
Aid to traincrew in the event of major incident	Process to assist traincrew in degraded situations in order to avoid delays	4.2.3.8	X		A
Professional and Linguistic Competence	Process for assessing professional knowledge according to minimum requirements of this TSI	4.6.1.1	X		A
				X	A
	Definition of competence management system to ensure staff's ability to put knowledge into practice according to minimum requirements of this TSI	4.6.1.2	X		A
				X	A
	Process for assessing linguistic ability to meet minimum requirements of this TSI	4.6.2	X		A
				X	A
	Definition of the assessment process for train crew, including: Basic competences, procedures and languages Route knowledge Rolling stock knowledge Special competence (e.g. long tunnels)	4.6.3.1, 4.6.3.2.3	X		A
				X	A
	Definition of a training and competence needs analysis for staff with safety-critical duties, to take into account minimum requirements of this TSI	4.6.3.2	X		A
				X	A
Health and Safety Conditions	Process for ensuring medical fitness of staff, including controls of affects of drugs and alcohol on operational performance	4.7.1	X		A
				X	A
	Determination of criteria for: Approval of occupational doctors and medical organisations Approval of psychologists Medical and psychological examination	4.7.2, 4.7.3, 4.7.4	X		A
				X	A
	Determination of medical requirements, including — General health — Vision — Hearing ►M1 ——————— ◄	4.7.5	X		A
				X	A
▼M1	———————				

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ANNEX I

Not used

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ANNEX J

Minimum elements relevant to professional competence for the tasks associated with 'accompanying trains'

1. **GENERAL REQUIREMENTS**

— This Annex, which must be read in conjunction with Subsections 4.6 and 4.7 of this TSI and the requirements of the SRT TSI, is a list of the elements that are deemed to be relevant to the task of accompanying a train on the high speed lines of the TEN.

It should be noted that whilst this document is as complete as it can be in terms of a generally applicable list, there will be additional items, of a local/national nature, that will also need to be considered.

— The expression 'professional competence', when taken within the context of this TSI, refers to those elements that are important to ensuring that operational staff are trained and able to understand and discharge the elements of the task.

— Rules and procedures apply to the task being performed and to the person carrying out the task. These tasks may be carried out by any authorised competent person irrespective of any name, job title or grade used in rules or procedures or by the individual company.

— Any authorised competent person must carry out all rules and procedures related to the task being performed.

2. **PROFESSIONAL KNOWLEDGE**

Any authorisation requires a successfully passed initial examination and provisions for ongoing assessment and training as described in Subsection 4.6.

2.1. **General professional knowledge**

— General principles of safety management within the railway system, relevant to the task, including interfaces with other subsystems

— General conditions relevant to the safety of passengers and/or cargo (incuding the carriage of dangerous goods) and persons on or about the railway track

— Conditions of health and safety at work

— General principles of security of the railway system

— Personal safety including when leaving the train on the running line

— First aid where staff is required to administer first aid as part of their duties

2.2. **Knowledge of operational procedures and safety systems applied to the infrastructure to be used**

— Operational procedures and safety rules

— Control command and signalling system

— Communications protocol and formalised messaging procedure including use of communication equipment

2.3. **Knowledge of rolling stock**

— Passenger vehicle interior equipment:

— Repairing minor defects within the passenger areas of rolling stock, as required by the Railway Undertaking

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2.4. **Knowledge of the route**

— Operational arrangements (such as the method of train despatch) at individual locations (signalling, station equipment etc.)

— Stations at which passengers may alight or join

— Local operating and emergency arrangements specific to the line(s) of route

3. **ABILITY TO PUT THE KNOWLEDGE INTO PRACTISE**

— Checks before departure, including brake tests and correct closure of the doors.

— Departure processes

— Communication with passengers especially in relation to circumstances involving passenger safety.

— Degraded operations

— Assess the potential of a defect within the passenger areas and react according to rules and procedures

— Protection and warning measures as required by the rules and regulations or in assistance to the driver

— Train evacuation and passenger safety especially if they are required to be on or near the line.

— Communicate with the Infrastructure Manager's staff when assisting the driver or during an evacuation incident.

— Report any unusual occurrences concerning the operation of the train, the condition of the rolling stock and the safety of passengers. If required these reports must be made in writing, in the language chosen by the Railway Undertaking.

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ANNEX K

Not used

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ANNEX L

Minimum elements relevant to professional competence for the task of preparing trains

1. **GENERAL REQUIREMENTS**

— This Annex, which must be read in conjunction with Subsection 4.6, is a list of the elements that are deemed to be relevant to the task of preparing a train on the that will operate in the high speed lines of the TEN.

It should be noted that whilst this document is as complete as it can be in terms of a generally applicable list, there will be additional items, of a local/national nature, that will also need to be considered.

— The expression 'professional competence', when taken within the context of this TSI, refers to those elements that are important to ensuring that operational staff are trained and able to understand and discharge the elements of the task.

— Rules and procedures apply to the task being performed and to the person carrying out the task. These tasks may be carried out by any authorised competent person irrespective of any name, job title or grade used in rules or procedures or by the individual company.

— Any authorised competent person must carry out all rules and procedures related to the task being performed.

2. **PROFESSIONAL KNOWLEDGE**

Any authorisation requires a successfully passed initial examination and provisions for ongoing assessment and training as described in Subsection 4.6.

2.1. **General professional knowledge**

— General principles of safety management within the railway system, relevant to the task, including interfaces with other subsystems

— General conditions relevant to the safety of passengers and/or cargo including the carriage of dangerous goods and exceptional loads

— Conditions of health and safety at work

— General principles of security of the railway system

— Personal safety when on or in the vicinity of rail lines

— Communications protocol and formalised messaging procedure including use of communication equipment

2.2. **Knowledge of operational procedures and safety systems applied to the infrastructure to be used**

— Working of trains in normal, degraded and emergency conditions

— Operational procedures at individual locations (signalling, station/depot/yard equipment) and safety rules

— Local operating arrangements

2.3. **Knowledge of train equipment**

— Purpose and use of wagon and vehicle equipment

— Identification of and arranging for technical inspections.

3. **ABILITY TO PUT THE KNOWLEDGE INTO PRACTISE**

— Application of train composition rules, train braking rules, train loading rules etc. to ensure the train is in running order

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— Understanding of marking and labels on vehicles

— Process for determining and making train data available

— Communication with train crew

— Communication with staff responsible for controlling the movement of trains

— Degraded operations especially as it affects the preparation of trains

— Protection and warning measures as required by the rules and regulations or local arrangements at the location in question

— Actions to be taken in respect to incidents involving the carriage of dangerous goods (where relevant)

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ANNEX M

Not used

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ANNEX N

Informative and not mandatory Implementation Guidelines

The table below is informative and lists clauses from Chapter 4 and identifies a likely trigger for each of them.

Chapter 4 section	Work required by IM/RU to comply with requirements	Typical Trigger
4.2.1.2.1 Rule Book	RU — Production/revision of a document or a computer medium containing necessary operational procedures for working over IM's network	Change to network operational instructions
4.2.1.2.2.1 Preparation of the Route Book	RU — Production/revision of a document or a computer medium containing a description of the lines over which they will operate	Change to network infrastructure (e.g. junction re-modelling, re-signalling) resulting in amended route information
4.2.1.2.2.2 Modified Elements	RU — Definition/revision of procedure(s) whereby a document or computer medium is provided to drivers to inform them of any [route] elements modified	Change to RU's operational safety management system, resulting in amended roles and responsibilities
4.2.1.2.2.3 Informing the driver in real time	IM — Definition/revision of procedure(s) for advising drivers in real time about all modifications to [route] safety arrangements	Change to IM's or RU's organisational structure, resulting in amended roles and responsibilities
4.2.1.2.3 Timetables	RU — Definition/revision of procedure(s) for providing drivers with timetable information, in paper or electronic format	Change to RU's operational safety management system, resulting in amended roles and responsibilities
		Implementation of new (electronic) traffic management system
4.2.1.2.4 Rolling Stock	RU — Production/revision of a document or a computer medium containing necessary operational procedures associated with working of rolling stock during degraded situations.	Change to RU's operational safety management system, resulting in amended roles and responsibilities
		Implementation of new/modified rolling stock
4.2.1.3 Documentation for RU staff other than drivers	RU — Production/revision of a document or a computer medium containing necessary operational procedures for staff other than drivers working on or over IM's network	Change to RU's operational safety management system, resulting in amended roles and responsibilities
		Change to network infrastructure resulting in amended route information or introduction of new/modified rolling stock
4.2.1.4 Documentation for IM staff authorising train movements	IM — Production/revision of a document or a computer medium containing network operational procedures, including communications protocol and the 'Book of Forms'	Change to network operational arrangements as a result of an identified improvement action (e.g. inquiry recommendation)
		Change to network infrastructure resulting in amended operational arrangements
4.2.1.5 Safety-related communication between RU and IM staff	IM/RU — Document/computer mediums referred to in 4.2.1.2.1, 4.2.1.3 & 4.2.1.4 to include operational communication methodology as specified in annex C of the TSI	In conjunction with 4.2.1.2.1, 4.2.1.3 & 4.2.1.4

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Chapter 4 section	Work required by IM/RU to comply with requirements	Typical Trigger
4.2.2.1.2 Train Visibility (Front End)	RU — Definition/revision of procedure(s) for drivers and/or other operational staff to ensure correct front end illumination	Change to RU's operational safety management system, resulting in amended roles and responsibilities
		Implementation of new/modified rolling stock
4.2.2.4 Requirements for passenger vehicles	RU — Definition/revision of procedure(s) to ensure that passenger vehicles are in compliance with the requirements of this TSI	Implementation of new/modified passenger vehicles
		Change to network operational rules affecting passenger vehicles
4.2.2.5 Train composition	RU — Definition/revision of procedure(s) to ensure that the trains is in compliance with the allocated path	Change to RU's operational safety management system, resulting in amended roles and responsibilities
		Change to network operational rules affecting train composition
		New/altered infrastructure, signalling or implementation of new (electronic) traffic management system
4.2.2.6.1 Minimum requirements of the braking system	RU — Definition/revision of procedure(s) for operational staff to ensure that vehicles in train comply with braking requirements	Change to RU's operational safety management system, resulting in amended roles and responsibilities
4.2.2.6.2 Brake performance	IM — Definition/revision of procedure(s) for supplying RU's with braking performance information	Change to IM's operational safety management system, resulting in amended roles and responsibilities
	RU — Production/revision of a document or a computer medium containing braking rules for its staff to follow, taking into account geography of route(s), allocated pathway and development of ERTMS/ETCS	Change to RU's operational safety management system, resulting in amended roles and responsibilities
		Change to network operational rules affecting braking rules
		New/altered infrastructure, signalling or implementation of new (electronic) traffic management system
		Implementation of new/modified rolling stock
4.2.2.7.1 Ensuring that the train is in running order (General Requirements)	RU — Definition/revision of procedure(s) for operational staff to ensure that vehicles are in running order, including advising IM of changes that may affect running performance and running in degraded mode.	Change to RU's operational safety management system, resulting in amended roles and responsibilities
4.2.2.7.2 Data required	RU — Definition/revision of procedure(s) to ensure that train running information is made available to IM prior to departure	Change to RU's operational safety management system, resulting in amended roles and responsibilities
		Implementation of new (electronic) traffic management system

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Chapter 4 section	Work required by IM/RU to comply with requirements	Typical Trigger
4.2.3.2 Identification of Trains	IM — Definition/revision of procedure(s) for assigning unique and unambiguous train identification numbers	Change to IM's or RU's train planning system, resulting in amended roles and responsibilities
		Implementation of new (electronic) traffic management system
4.2.3.3.1 Checks & tests before departure	RU — Definition/revision of checks and tests that must be undertaken before departure	Change to RU's operational safety management system, resulting in amended roles and responsibilities
4.2.3.3.2 Informing IM of train's operational status	RU- Definition/revision of procedure(s) for reporting rolling stock-related factors that could affect train running	Change to IM's or RU's operational safety management system, resulting in amended roles and responsibilities
		Implementation of new (electronic) traffic management system
4.2.3.4.1 Traffic Management General Requirements	IM — Definition/revision of procedure(s) for control and supervision of traffic operation, including interface with any additional processes required by RU's	Change to IM's or RU's operational safety management system, resulting in amended roles and responsibilities
		Implementation of new (electronic) traffic management system
4.2.3.4.2 Train Reporting	IM — Definition/revision of procedure(s) for train position reporting, including real time recording of arrivals/departures and predicted hand over times to other IM's.	Change to IM's traffic management system, resulting in amended roles and responsibilities
		Implementation of new (electronic) traffic management system
4.2.3.4.3 Dangerous Goods	RU — Definition/revision of procedure(s) for supervising the transport of dangerous goods, including provision of information required by IM.	Change to IM's or RU's operational safety management system, resulting in amended roles and responsibilities
4.2.3.4.4 Operational Quality	IM/RU — Documented procedures, describing internal processes for monitoring and review of operational performance and identifying improvement actions to improve network efficiency.	Change to IM's or RU's traffic management system, resulting in amended roles and responsibilities
		Implementation of new (electronic) traffic management system, including performance monitoring
4.2.3.5.1 Recording of Supervision data outside the train	IM — Definition/revision of procedure(s) for recording the required data, and storage and access arrangements	Change to IM's operational safety management system, resulting in amended roles and responsibilities
		Change to network infrastructure resulting in new/amended monitoring equipment
4.2.3.5.2 Recording of Supervision data on-board the train	RU — Definition/revision of procedure(s) for recording the required data, and storage and access arrangements	Change to RU's operational safety management system, resulting in amended roles and responsibilities
		Implementation of new/modified rolling stock (locomotives, multiple units)
4.2.3.6.1 Degraded Operation — Advice to other users	IM/RU — Definition/revision of procedure(s) for informing each other of situations likely to impede safety, performance or availability of network	Change to IM's or RU's traffic management system, resulting in amended roles and responsibilities
		Implementation of new (electronic) traffic management system

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Chapter 4 section	Work required by IM/RU to comply with requirements	Typical Trigger
4.2.3.6.2 Advice to train drivers	IM — Definition/revision of instructions to drivers to deal with degraded situation	Change to IM's or RU's traffic management system, resulting in amended roles and responsibilities
4.2.3.6.3 Contingency arrangements	IM — Definition/revision of procedure(s) for dealing with degraded operation, including rolling stock and infrastructure failures (contingency arrangements)	Change to IM's or RU's traffic management system, resulting in amended roles and responsibilities
		Change to network infrastructure or introduction of new/modified rolling stock
4.2.3.7 Managing an Emergency Situation	IM/RU — Definition/revision of procedure(s) detailing contingency measures for dealing with emergency situations	Change to RU's operational safety management system, resulting in amended roles and responsibilities
4.2.3.8 Aid to traincrew for rolling stock incident/malfunction	RU — Definition/revision of procedure(s) for traincrew to deal with technical or other failure of rolling stock	Change to RU's traffic management system, resulting in amended roles and responsibilities
		Introduction of new/modified rolling stock
4.4 Operating Rules	IM/RU — Definition of rules and procedures to be used with ETCS and GSM-R and/or HABD	Introduction of ETCS signalling system and/or GSM-R radio system and/or HABD
4.6.1.1 Professional Knowledge	IM/RU — Definition of Process for assessing professional knowledge	Change to IM/RU's operational safety management system, resulting in amended roles and responsibilities
4.6.1.2 Ability to put this knowledge into practice	IM/RU — Definition/revision of competence management system to ensure staff's ability to put knowledge into practice	Change to IM/RU's operational safety management system, resulting in amended roles and responsibilities
4.6.2.2 Linguistic level of knowledge	IM/RU — Definition/revision of procedure(s) for assessing linguistic ability	Change to IM/RU's operational safety management system, resulting in amended roles and responsibilities
4.6.3.1 Assessment of Staff — Basic Elements	IM/RU — Definition/revision of assessment process(es) staff including: — Experience/competences — Language — Competence retention	Change to IM/RU's operational safety management system, resulting in amended roles and responsibilities
4.6.3.2 Analysis of Training Needs	IM/RU — Definition/revision of the process for undertaking and updating analysis of training needs for staff	Change to IM/RU's operational safety management system, resulting in amended roles and responsibilities
4.6.3.2.3 Specific elements for traincrew	RU — Definition/revision of the process for train crew acquisition and retention of: — Route knowledge — Rolling stock knowledge	Change to RU's operational safety management system, resulting in amended roles and responsibilities
4.7.1 Health and Safety Conditions Introduction	IM/RU — Definition/revision of procedure(s) for ensuring medical fitness of staff, including controls of affects of drugs and alcohol on operational performance	Change to RU's operational safety management system, resulting in amended roles and responsibilities

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Chapter 4 section	Work required by IM/RU to comply with requirements	Typical Trigger
4.7.2-4.7.4 Criteria for approval of occupational doctors, medical organisations, psychologists & examinations	IM/RU — Determination/revision of criteria for: — Approval of occupational doctors and medical organisations — Approval of psychologists — Medical and psychological examination	Change to RU's operational safety management system, resulting in amended roles and responsibilities
		Change to national rules and practices for approval of medical practitioners and recognition of organisations
4.7.5 Medical requirements	IM/RU — Determination/revision of medical requirements, including — General health — Vision — Hearing — Pregnancy	Change to RU's operational safety management system, resulting in amended roles and responsibilities

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ANNEX O

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ANNEX P

Vehicle identification

General remarks:

1. This annex describes the number and linked marking applied in a visible manner on the vehicle to identify it uniquely in operation. It does not describe other numbers or markings eventually engraved or fixed in a permanent manner on the chassis or the main components of the vehicle during its construction.

2. The conformity of the number and linked marking with the indications described in this annex is not mandatory for:

   — vehicles that are only used on networks to which this TSI does not apply;

   — heritage vehicles, in a historical guise;

   — vehicles that are not normally used or transported i on the networks to which this TSI applies.

   Nevertheless, these vehicles must receive a temporary number permitting their operation.

3. This annex is subject to changes due to the future evolution of RIC and future development and implementation of the TAP TSI.

Standard number and linked abbreviations

Each railway vehicle receives a number consisting of 12 figures (called standard number) with the following structure:

<table>
<tr><th>Types of rolling stock</th><th>Type of vehicle and indication of the interoperability [2 figures]</th><th>Country in which the vehicle is registered [2 figures]</th><th>Technical characteristics [4 figures]</th><th>Serial number [3 figures]</th><th>Self-checking digit [1 figure]</th></tr>
<tr><td>Wagons</td><td>00 to 09
10 to 19
20 to 29
30 to 39
40 to 49
80 to 89
[details in annex P.6]</td><td rowspan="4">01 to 99
[details in annex P.4]</td><td>0000 to 9999
[details in annex P.9]</td><td>001 to 999</td><td rowspan="4">0 to 9
[details in annex P.3]</td></tr>
<tr><td>Hauled passenger vehicles</td><td>50 to 59
60 to 69
70 to 79
[details in annex P.7]</td><td>0000 to 9999
[details in annex P.10]</td><td>001 to 999</td></tr>
<tr><td>Tractive rolling stock</td><td rowspan="2">90 to 99
[details in annex P.8]</td><td colspan="2">0000001 to 8999999
[the meaning of these figures is defined by the Member States, eventually by bilateral or multi-lateral agreement]</td></tr>
<tr><td>Special vehicles</td><td>9000 to 9999
[details in annex P.11]</td><td>001 to 999</td></tr>
</table>

In a given country, the 7 digits of technical characteristics and serial number are sufficient to identify uniquely a vehicle inside each group of wagons, hauled passenger vehicles, tractive rolling stock ([1]) and special vehicles ([2]).

([1]) For tractive rolling stock, the number has to be unique in a given country with 6 digits.
([2]) For special vehicles, the number has to be unique in a given country with the first digit and the 5 last digits of the technical characteristics and serial number.

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Alphabetical markings complete the number:

(a) markings linked to the interoperability ability (*details in annex P.5*);

(b) abbreviation of the country in which the vehicle is registered (*details in annex P.4*);

(c) keeper's [1] abbreviation (*details in annex P.1*);

(d) abbreviation of the technical characteristics (*details in annex P.13 for the hauled passenger vehicles, annex P.12 for the wagons, annex P.14 for the special vehicles*).

Technical characteristics, codes and abbreviations are managed by one or more bodies (hereafter designed as 'central body') to be proposed by ERA (European Railway Agency) as a result of activity N° 15 of its work programme 2005.

Allocation of number

The rules for the management of the numbers will be proposed by the ERA as part of the activity N° 15 of its work programme 2005.

[1] A vehicle keeper is the person, who being the owner or having the right to dispose of it, exploits a vehicle economically in a permanent manner as a means of transport and is registered as such in the Rolling Stock Register.

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ANNEX P.1

Keeper's abbreviation marking

Definition of the Vehicle Keeper Marking (VKM)

A Vehicle Keeper Marking (VKM) is an alphanumeric code, consisting of 2 to 5 letters ([1]). A VKM is inscribed on each rail vehicle, near the vehicle number. The VKM denominates the Vehicle Keeper as registered in the Rolling Stock Register.

A VKM is unique in all countries covered by this TSI and all countries that enter into an agreement that involves the application of the system of vehicle numbering and vehicle keeper marking as described in this TSI.

Format of the Vehicle Keeper Marking

The VKM is representation of the full name or abbreviation of the vehicle keeper, if possible in a recognisable manner. All 26 letters of the Latina alphabet may be used. The letters in the VKM are written in capitals. Letters that do not stand for first letters of words in the keeper's name may be written in lower case. For checking uniqueness, the written name will be ignored.

Letters may contain diacritical signs ([2]). Diacritical signs used by these letters are ignored for checking uniqueness.

For vehicles of keepers that reside in a country that does not use the Latin alphabet, a translation of the VKM in its own alphabet may be applied behind the VKM separated from it by a slash-sign ('/'). This translated VKM is disregarded for data-processing purposes.

Exemptions for using a Vehicle Keeper Marking

Member States may decide to apply the following exemptions.

A VKM is not required for the vehicles whose numbering system does not follow the present annex (*cf.* general remark, point 2). Nevertheless, adequate information about the identity of the vehicle keeper has to be provided to the organisations involved in their operation over networks to which this TSI applies.

When the full name and address information is inscribed on the vehicle, a VKM is not required for:

— vehicles of keepers with such a limited vehicle fleet that this does not warrant the use of a VKM;

— specialised vehicles for infrastructure maintenance.

A VKM is not required for locomotives, multiple units and passenger vehicles used in national traffic only, when:

— they carry their keeper's logo and that logo contains the same and well recognisable letters as the VKM;

— they carry a well recognisable logo that has been accepted by the competent national authority as an adequate equivalent for the VKM.

When a company logo is applied in addition to the application of a VKM, only the VKM is valid and the logo is disregarded.

Provisions about allocation of Vehicle Keeper Markings

A vehicle keeper can be issued more than one VKM, in case:

— the vehicle keeper has a formal name in more than one language;

— a vehicle keeper has good cause to distinguish between separate vehicle fleets within his organisation.

([1]) For NMBS/SNCB, the use of an encircled single letter B can be continued.

([2]) Diacritical marks are 'accent-signs', such as in À, Ç, Ö, Č, Ž, Å etc. Special letters such as Ø and Æ will be represented by a single letter; in tests for uniqueness Ø is treated as O and Æ as A.

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A single VKM can be issued for a group of companies:

— that belong to single corporate structure that has appointed and mandated one organisation within this structure to handle all issues on behalf of all others;

— that has mandated a separate, single legal entity for handling all issues on their behalf, in which event the legal entity is the keeper.

Register of Vehicle Keeper Markings and procedure for allocation

The register of VKM is public and updated on a real time basis.

An application for a VKM is filed with the applicant's competent national authority and forwarded to the central body. A VKM can be used only after publication by the central body.

The holder of a VKM must inform the competent national authority when he ends the use of a VKM, and the competent national authority will forward the information to the central body. A VKM will then be revoked once the keeper has proved that the marking has been changed on all vehicles concerned. It will not be reissued for 10 years, unless it is reissued to the original holder or at his request to another holder.

A VKM can be transferred to another holder, which is the legal successor to the original holder. A VKM stays valid when the holder changes his name to a name that does not bear resemblance to the VKM.

The first list of VKM will be drafted using existing railway company abbreviations.

The VKM will be applied to all new build wagons after entry into force of the relevant TSIs. Existing wagons will have until end 2014 to comply with VKM marking.

▼B

ANNEX P.2

Inscription of the number and linked alphabetical marking on the bodywork

General arrangements for external markings

The capital letters and figures making up the marking inscriptions shall be at least 80 mm in height, in a sans serif font type of correspondence quality. A smaller height may only be used where there is no option but to place the marking on the sole bars.

The marking is put not higher than 2 metres above rail level.

Wagons

The marking shall be inscribed on the wagon bodywork in the following manner:

23	TEN	31	TEN	33	TEN	43		(In this case without VKM, full name and address information is inscribed on the vehicle)
80	D-RFC	80	D-DB	84	NL-ACTS	87	F	
7369 553-4		0691 235-2		4796 100-8		4273 361-3		
Zcs		Tanoos		Slpss		Laeks		

For wagons whose bodywork does not offer a large enough area for this type of arrangement, particularly in the case of flat wagons, the marking shall be arranged as follows:

01	87	3320 644-7
TEN	F-SNCF	Ks

When one or more index letters of national significance are inscribed on a wagon, this national marking must be shown after the international letter marking and separated from it by a hyphen.

Coaches and hauled passenger stock

The number shall be applied to each sidewall of the vehicle in the following manner:

F-SNCF 61 87 $\frac{20–72021}{B^{10}tu}$ – 7

The marking of the country in which the vehicle is registered and of the technical characteristics are printed directly in front of, behind or under the twelve digits of the vehicle number.

In case of coaches with driver's cabin, the number is also written inside the cabin.

Locomotives, power cars and special vehicles

The standard 12-digit number must be marked on each sidewall of the tractive stock used in international service in the following manner:

91 88 0001323-0

The standard 12-digit number is also written inside each cabin of the tractive rolling stock.

The keeper can add, in letters of larger size than the standard number, an own number marking (consisting generally of digits of the serial number supplemented by alphabetical coding) useful in operations. The place where the own number is marked is left to the choice of the keeper.

Examples	SP 42037	ES 64 F4-099	88-1323	473011	
	92 51 0042037-9	94 80 0189 999-6	91 88 0001323-0	92 87 473011-0	94 79 2 642 185-5

▼B

These rules may be altered in bilateral agreements for vehicles existing when the TSI comes into force and assigned to a specific service and where there is no risk of confusion between different stocks operating on the rail networks concerned. The exemption is valid for a period decided upon by the competent national authorities.

The national authority can prescribe that the alphabetic country code and the VKM be recorded additional to the 12 digit vehicle number.

▼B

ANNEX P.3

Rules for the determination of the check-digit (digit 12)

The check-digit is determined in the following manner:

— the digits in the even positions of the basic number (counting from the right) are taken at their own decimal value;

— the digits in the odd positions of the basic number (counting from the right) are multiplied by 2;

— the sum formed by the digits in even position and by all the digits which constitute the partial products obtained from the odd positions is then established;

— the units digit of this sum is retained;

— the complement required to bring the units digit to 10 forms the check-digit; should this units digit be nought, then the check-digit will also be nought.

Examples:

1 — Let the basic number be

	3	3	8	4	4	7	9	6	1	0	0
Multiplication factor	2	1	2	1	2	1	2	1	2	1	2
	6	3	16	4	8	7	18	6	2	0	0

Sum: 6 + 3 + 1 + 6 + 4 + 8 + 7 + 1 + 8 + 6 + 2 + 0 + 0 = 52

The units digit of this sum is 2.

The check-digit number will therefore be 8 and the basic number thus becomes the registration number 33 84 4796 100-8.

2 — Let the basic number be

	3	1	5	1	3	3	2	0	1	9	8
Multiplication factor	2	1	2	1	2	1	2	1	2	1	2
	6	1	10	1	6	3	4	0	2	9	16

Sum: 6 + 1 + 1 + 0 + 1 + 6 + 3 + 4 + 0 + 2 + 9 + 1 + 6 = 40

The units digit of this sum is 0.

The check-digit number will therefore be 0 and the basic number thus becomes the registration number 31 51 3320 198-0.

▼B

ANNEX P.4

Coding of the countries in which the vehicles are registered (digits 3-4 and abbreviation)

'Information relating to third countries given for information purposes only.'

Countries	Alphabetical country code (3)	Numerical country code	Companies concerned by the square brackets in annexes P.6 and P.7 (4)
Albania	AL	41	HSh
Algeria	DZ	92	SNTF
Armenia	AM (1)	58	ARM
Austria	A	81	ÖBB
Azerbaijan	AZ	57	AZ
Belarus	BY	21	BC
Belgium	B	88	SNCB/NMBS
Bosnia-Herzegovina	BIH	44	ŽRS
		50	ŽFBH
Bulgaria	BG	52	BDZ, SRIC
China	RC	33	KZD
Croatia	HR	78	HŽ
Cuba	CU (1)	40	FC
Cyprus	CY		
Czech Republic	CZ	54	ČD
Denmark	DK	86	DSB, BS
Egypt	ET	90	ENR
Estonia	EST	26	EVR
Finland	FIN	10	VR, RHK
France	F	87	SNCF, RFF
Georgia	GE	28	GR
Germany	D	80	DB, AAE (2)
Greece	GR	73	CH
Hungary	H	55	MÁV, GySEV/ ROeEE (2)
Iran	IR	96	RAI
Iraq	IRQ (1)	99	IRR
Ireland	IRL	60	CIE
Israel	IL	95	IR
Italy	I	83	FS, FNME (2)
Japan	J	42	EJRC
Kazakhstan	KZ	27	KZH
Kyrgyzstan	KS	59	KRG
Latvia	LV	25	LDZ
Lebanon	RL	98	CEL
Liechtenstein	LIE (1)		

▼B

Countries	Alphabetical country code (3)	Numerical country code	Companies concerned by the square brackets in annexes P.6 and P.7 (4)
Lithuania	LT	24	LG
Luxembourg	L	82	CFL
Macedonia (Former Yugoslav Republic of)	MK	65	CFARYM (MŽ)
Malta	M		
Moldova	MD (1)	23	CFM
Monaco	MC		
Mongolia	MGL	31	MTZ
Morocco	MA	93	ONCFM
Netherlands	NL	84	NS
North Korea	PRK (1)	30	ZC
Norway	N	76	NSB, JBV
Poland	PL	51	PKP
Portugal	P	94	CP, REFER
Romania	RO	53	CFR
Russia	RUS	20	RZD
Serbia-Montenegro	SCG	72	JŽ
Slovakia	SK	56	ŽSSK, ŽSR
Slovenia	SLO	79	SŽ
South Korea	ROK	61	KNR
Spain	E	71	RENFE
Sweden	S	74	GC, BV
Switzerland	CH	85	SBB/CFF/FFS, BLS (2)
Syria	SYR	97	CFS
Tajikistan	TJ	66	TZD
Tunisia	TN	91	SNCFT
Turkey	TR	75	TCDD
Turkmenistan	TM	67	TRK
Ukraine	UA	22	UZ
United Kingdom	GB	70	BR
Uzbekistan	UZ	29	UTI
Vietnam	VN (1)	32	DSVN

(1) Codes to be confirmed.
(2) Until the evolutions indicated in point 3 of the general remarks come into force, these companies can use the codes 43 (GySEV/ROeEE), 63 (BLS), 64 (FNME), 68 (AAE). The period of updating will then be defined together with the concerned Member States.
(3) According to the alphabetical coding system described in Appendix 4 to the 1949 convention and Article 45(4) of the 1968 convention on road traffic.
(4) Companies who, at the time of coming into force, were members of UIC or OSJD and used the described country code as company code.

▼B

ANNEX P.5

Alphabetical marking of the interoperability capability

TEN:	Vehicle, which complies with Rolling Stock TSI
RIV:	Wagon, which complies with the RIV regulations at the date of their abolishment
PPW:	Wagon, which complies with PPW agreement (inside OJSD States)
RIC:	Coach which complies/complied with RIC regulations

The alphabetical marking of the interoperability capability concerning special vehicles is described in annex P.14.

▼B

ANNEX P.6

Interoperability codes used for wagons (digits 1-2)

	2nd digit / 1st digit		0	1	2	3	4	5	6	7	8	9	2nd digit / 1st digit	
		Gauge	fixed or variable	fixed	variable	fixed	variable	fixed	variable	fixed	variable	fixed or variable	Gauge	
TSI (a) and/or COTIF (b) and/or PPW	0	with axles	Spare	TSI and/or COTIF wagons (b) *[of which keeper is a railway undertaking listed in annex P.4*		Not to be used pending further decision						PPW wagons (variable gauge)	with axles	0
	1	with bogies	Wagons used by industry										with bogies	1
	2	with axles	Spare	TSI and/or COTIF wagon (b) [*of which keeper is a railway undertaking listed in annex P.4*] PPW wagons		TSI and/or COTIF wagons (b) PPW wagons				Others TSI and/ or COTIF wagons (b) PPW wagons		PPW wagons (fixed gauge)	with axles	2
	3	with bogies											with bogies	3
Non TSI and non COTIF (b) and non PPW	4	with axles (c)	Service wagons	Others wagons *[of which keeper is a railway undertaking listed in annex P.4]*		Others wagons				Others wagons		Wagons with special numbering for technical characteristics	with axles (d)	4
	8	with bogies (c)											with bogies (d)	8
		Traffic	Domestic traffic or international traffic by special agreement	International traffic by special agreement	Domestic traffic	International traffic by special agreement	Domestic traffic	International traffic by special agreement	Domestic traffic	International traffic by special agreement	Domestic traffic	Domestic traffic or international traffic by special agreement	Traffic	
	1st digit / 2nd digit		0	1	2	3	4	5	6	7	8	9	1st digit / 2nd digit	

(a) Compliance at least with Rolling Stock TSI.
(b) Including vehicles, which according to existing regulations carry these digits at the time of coming into force of these new regulations.
(c) Fixed or variable gauge.
(d) Excepted for wagons in category I (temperature-controlled wagons).

▼B

ANNEX P.7

International traffic ability codes used for hauled passenger vehicles (digits 1-2)

Warning:

The conditions between square brackets are transitional and will be deleted with the evolutions of RIC (see general remarks, point 3).

<table>
<tr><td></td><td>Domestic traffic</td><td colspan="4">TSI (a) and/or RIC/COTIF (b) and/or PPW</td><td>Domestic traffic or international traffic by special agreement</td><td>TSI (a) and/or RIC/ COTIF (b)</td><td colspan="3">PPW</td></tr>
<tr><td>2nd digit
1st digit</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr>
<tr><td>5</td><td>Vehicles for domestic traffic
[of which keeper is a RIC railways undertaking listed in annex P.4]</td><td>Fixed-gauge non air-conditioned vehicles (including car-carrying wagons)
[of which keeper is a RIC railways undertaking listed in annex P.4]</td><td>Gauge-adjustable (1435/1520) non air-conditioned vehicles
[of which keeper is a RIC railways undertaking listed in annex P.4]</td><td>Reserved</td><td>Gauge-adjustable (1435/1672) non air-conditioned vehicles
[of which keeper is a RIC railways undertaking listed in annex P.4]</td><td>Vehicles with special numbering for technical characteristics</td><td>Fixed-gauge vehicles</td><td rowspan="2">Fixed-gauge vehicles</td><td rowspan="2">Gauge-adjustable (1435/1520) vehicles with change of bogies</td><td rowspan="2">Gauge-adjustable (1435/1520) vehicles with gauge-adjustable axles</td></tr>
<tr><td>6</td><td>Service vehicles not run in revenue-earning service</td><td>Fixed-gauge air-conditioned vehicles
[of which keeper is a RIC railways undertaking listed in annex P.4]</td><td>Gauge-adjustable (1435/1520) air-conditioned vehicles
[of which keeper is a RIC railways undertaking listed in annex P.4]</td><td>Service vehicles not run in revenue-earning service
[of which keeper is a RIC railways undertaking listed in annex P.4]</td><td>Gauge-adjustable (1435/1672) air-conditioned vehicles
[of which keeper is a RIC railways undertaking listed in annex P.4]</td><td>Car-carrying wagons</td><td>Gauge-adjustable vehicles</td></tr>
</table>

▼B

	Domestic traffic	TSI [a] and/or RIC/COTIF [b] and/or PPW				Domestic traffic or international traffic by special agreement	TSI [a] and/or RIC/COTIF [b]	PPW		
2nd digit 1st digit	0	1	2	3	4	5	6	7	8	9
7	Air-conditioned and pressure-tight vehicles *[of which keeper is a RIC railways undertaking listed in annex P.4]*	Reserved	Reserved	Pressure-tight fixed-gauge air-conditioned vehicles *[of which keeper is a RIC railways undertaking listed in annex P.4]*	Reserved	Other vehicles	Reserved	Reserved	Reserved	Reserved

[a] Compliance at least with future TSI on hauled passenger vehicles.
[b] Compliance with RIC or COTIF according to the regulation in force.

▼B

ANNEX P.8

Types of tractive stock (digits 1-2)

The first digit is '9'.

The second digit is defined by each Member State. It can for example fit with the self-checking digit if this digit is also calculated with the serial number.

If the second digit describes the type of tractive stock, following coding is mandatory:

Code	General vehicle type
0	Miscellaneous
1	Electric locomotive
2	Diesel locomotive
3	Electric multiple-unit set (high speed) [power car or trailer]
4	Electric multiple-unit set (except high speed) [power car or trailer]
5	Diesel multiple-unit set [power car or trailer]
6	Specialised trailer
7	Electric shunting engine
8	Diesel shunting engine
9	Maintenance vehicle

▼B

ANNEX P.9

Standard numerical marking of wagons (digits 5 to 7)

This annex indicates in tables the numerical marking in 4 figures associated to the main technical characteristics of the wagon.

This Annex is distributed on a separate medium (electronic file).

▼B

ANNEX P.10

Codes for the technical characteristics of the hauled passenger stock (digits 5-6)

	6th digit 5th digit	0	1	2	3	4
Reserved	0	Reserved	Reserved	Reserved	Reserved	Reserved
Vehicles with 1st class seats	1	10 side-corridor compartments or equivalent open-saloon space with centre aisle	≥ 11 side-corridor compartments or equivalent open-saloon space with centre aisle	Reserved	Reserved	Two or three axles
Vehicles with 2nd class seats	2	10 side-corridor compartments or equivalent open-saloon space with centre aisle	11 side-corridor compartments or equivalent open-saloon space with centre aisle	≥ 12 side-corridor compartments or equivalent open-saloon space with centre aisle	Three axles	Two axles
Vehicles with 1st or 1st/2nd class seats	3	10 side-corridor compartments or equivalent open-saloon space with centre aisle	11 side-corridor compartments or equivalent open-saloon space with centre aisle	≥ 12 side-corridor compartments or equivalent open-saloon space with centre aisle	Reserved	Two or three axles
1st or 1st/2nd class couchette cars	4	10 1st/2nd class compartments	Reserved	Reserved	Reserved	≤ 9 1st/2nd class compartments
2nd class couchette cars	5	10 compartments	11 compartments	≥ 12 compartments	Reserved	Reserved
Reserved	6	Reserved	Reserved	Reserved	Reserved	Reserved
Sleeping cars	7	10 compartments	11 compartments	12 compartments	Reserved	Reserved
Vehicles of special design and vans	8	Driving trailer with seats, all classes, with or without luggage compartment, with driving cab for reversible working	Vehicles with 1st or 1st/2nd class seats with luggage or mail compartment	Vehicles with 2nd class seats with luggage or mail compartment	Reserved	Vehicles with seats, all classes with specially-fitted areas, e.g. children's play area
	9	Mail vans	Luggage vans with mail compartment	Luggage vans	Luggage vans and two or three-axle 2nd class vehicles with seats, with luggage or mail compartment	Side-corridor luggage vans, with or without compartment under customs seal

Note: Fractions of a compartment are not considered. The equivalent accommodation in open saloon cars with centre aisle is obtained by dividing the number of available seats by 6, 8 or 10 depending on the construction of the vehicle.

▼B

Codes for the technical characteristics of the hauled passenger stock (digits 5-6)

	6th digit 5th digit	5	6	7	8	9
Reserved	0	Reserved	Reserved	Reserved	Reserved	Reserved
Vehicles with 1st class seats	1	Reserved	Double-deck coaches	≥ 7 side-corridor compartments or equivalent open-saloon space with centre aisle	8 side-corridor compartments or equivalent open-saloon space with centre aisle	9 side-corridor compartments or equivalent open-saloon space with centre aisle
Vehicles with 2nd class seats	2	Only for OSJD, double-deck coaches	Double-deck coaches	Reserved	≥ 8 side-corridor compartments or equivalent open-saloon space with centre aisle	9 side-corridor compartments or equivalent open-saloon space with centre aisle
Vehicles with 1st or 1st/2nd class seats	3	Reserved	Double-deck coaches	Reserved	≥ 8 side-corridor compartments or equivalent open-saloon space with centre aisle	9 side-corridor compartments or equivalent open-saloon space with centre aisle
1st or 1st/2nd class couchette cars	4	Reserved	Reserved	Reserved	Reserved	≤ 9 1st class compartments
2nd class couchette cars	5	Reserved	Reserved	Reserved	Reserved	≤ 9 compartments
Reserved	6	Reserved	Reserved	Reserved	Reserved	Reserved
Sleeping cars	7	> 12 compartments	Reserved	Reserved	Reserved	Reserved
Vehicles of special design and vans	8	Coaches with seats and couchette cars, all classes, with bar or buffet area	Double-deck driving coach with seats, all classes, with or without luggage compartment, with driving cab for reversible working	Dining cars or coaches with bar or buffet area, with luggage compartment	Dining cars	Other special coaches (conference, disco, bar, cinema, video, ambulance coaches)
	9	Two or three-axle luggage vans with mail compartment	Reserved	Two or three-axle car-carrying wagons	Car-carrying wagons	Service vehicles

Note: Fractions of a compartment are not considered. The equivalent accommodation in open saloon cars with centre aisle is obtained by dividing the number of available seats by 6, 8 or 10 depending on the construction of the vehicle.

▼B

Codes for the general characteristics of hauled passenger stock (digits 7-8)

Energy supply / Maximum speed	8th digit / 7th digit	0	1	2	3	4	5	6	7	8	9
< 120 km/h	0	All voltages (*)	Reserved	3 000 V~ + 3 000 V =	1 000 V~ (*)	Reserved	1 500 V~	Other voltages than 1 000 V, 1 500 V, 3 000 V	1 500 V~ + 1 500 V =	3 000 V =	Reserved
	1	All voltages (*) + Steam (1)	1 000 V~ + Steam (1)	1 000 V~ + Steam (1)	1 000 V~ + Steam (1)	1 000 V~ + Steam (1)	1 000 V~ + Steam (1)	Reserved	1 500 V~ + 1 500 V = + Steam (1)	3 000 V = + Steam (1)	3 000 V = + Steam (1)
	2	Steam (1)	Steam (1)	3 000 V~ + 3 000 V = + Steam (1)	Steam (1)	3 000 V~ + 3 000 V = + Steam (1)	Steam (1)	3 000 V~ + 3 000 V = 1 500 V~ + Steam (1)	1 500 V~ + Steam (1)	1 500 V~ + Steam (1)	A (1)
121 to 140 km/h	3	All voltages	Reserved	1 000 V~ + 3 000 V =	1 000 V~ (*) (1)	1 000 V~ (*) (1)	1 000 V~	1 000 V~ + 1 500 V~ + 1 500 V =	1 500 V~ + 1 500 V =	3 000 V =	3 000 V =
	4	All voltages (*) + Steam (1)	All voltages + Steam (1)	All voltages + Steam (1)	1 000 V~ (*) (1) + Steam (1)	1 500 V~ + 1 500 V =	1 000 V~ + Steam (1)	3 000 V~ + 3 000 V =	1 500 V~ + 1 500 V = + Steam (1)	3 000 V = + Steam (1)	Reserved
	5	All voltages (*) + Steam (1)	All voltages + Steam (1)	All voltages + Steam (1)	1 000 V~ + Steam (1)	Reserved	1 500 V~ + Steam (1)	Other voltages than 1 000 V, 1 500 V, 3 000 V	1 500 V~ + 1 500 V = + Steam (1)	Reserved	Reserved
	6	Steam (1)	Reserved	3 000 V~ + 3 000 V =	Reserved	3 000 V~ + 3 000 V =	Reserved	Steam (1)	Reserved	Reserved	A (1)

▼B

Energy supply / Maximum speed	8th digit / 7th digit	0	1	2	3	4	5	6	7	8	9
141 to 160 km/h	7	All voltages (*)	All voltages	1 500 V~ (1) + 3 000 V = (1) All voltages (2)	1 000 V~ (*)	1 500 V~ + 1 500 V =	1 000 V~	1 500 V~	1 500 V~ + 1 500 V =	3 000 V =	3 000 V =
	8	All voltages (*) + Steam (1)	All voltages + Steam (1)	3 000 V~ + 3 000 V =	Reserved	All voltages (*) + Steam (1)	1 000 V~ + Steam (1)	3 000 V~ + 3 000 V =	Other voltages than 1 000 V, 1 500 V, 3 000 V	All voltages (*) + Steam (1)	A (1) G (2)
> 160 km/h	9	All voltages (*) (2)	All voltages	All voltages + Steam (1)	1 000 V~ + 1 500 V~	1 000 V~	1 000 V~	Reserved	1 500 V~ + 1 500 V =	3 000 V =	A (1) G (2)

(1) Only for domestic traffic vehicles
(2) Only for vehicles able to international traffic
All voltages Single phase alternating current 1 000 V 51 to 15 Hz, single phase alternating current 1 500 V 50 Hz, direct current 1 500 V, direct current 3 000 V. Can also include single phase alternating current 3 000 V 50 Hz
(*) For certain vehicles with 1 000 V single phase alternating current, only one frequency, either 16 2/3 or 50 Hz, is permitted
A Autonomous heating, without train bus electricity supply line
G Vehicles with train bus electricity supply line for all voltages, but requiring a generator van to supply air-conditioning
Steam Steam heating only. If voltages are written, the code is also available for vehicles without steam heating.

▼B

ANNEX P.11

Codes for the technical characteristics of the special vehicles (digit 6 to 8)

Authorised speed for special vehicles (digit 6)

Classification			Self-propelled travelling speed		
			≥ 100 km/h	< 100 km/h	0 km/h
Can be put into a train	V ≥ 100 km/h	Self-propelled	1	2	
		Non self-propelled			3
	V < 100 km/h and/or restrictions (a)	Self-propelled		4	
		Non self-propelled			5
Cannot be put into a train		Self-propelled		6	
		Non self-propelled			7
Self-propelled rail/road vehicle than can be put into a train (b)				8	
Self-propelled rail/road vehicle than cannot be put into a train (b)				9	
Non self-propelled rail/road vehicle (b)					0

(a) By restriction is meant a special position in a train (e.g. at the rear), an obligatory protection wagon, etc.
(b) Special conditions concerning inclusion in a train must be complied with.

Type and sub-type of special vehicle (digits 7-8)

7th digit	8th digit	Vehicles/machines
1 Infrastructure and superstructure	1	Track laying and renewal train
	2	Switches and crossing laying equipment
	3	Track rehabilitation train
	4	Ballast cleaning machine
	5	Earthworks machine
	6	
	7	
	8	
	9	Rail-mounted crane (excl. rerailing)
	0	Other or general

7th digit	8th digit	Vehicles/machines
2 Track	1	High capacity plain track tamping machine
	2	Other plain track tamping machines
	3	Tamping machine with stabilisation
	4	Tamping machine for switches and crossings
	5	Ballast plough
	6	Stabilisation machine
	7	Grinding and welding machine
	8	Multi-purpose machine
	9	Track inspection car
	0	Other

▼B

7th digit	8th digit	Vehicles/machines
3 Overhead line	1	Multi-purpose machine
	2	Rolling and unrolling machine
	3	Mast installation machine
	4	Drum carrier machine
	5	Overhead line tensioning machine
	6	Machine with elevating work platform and machine with scaffold
	7	Cleaning train
	8	Greasing train
	9	Overhead line inspection car
	0	Other
4 Structures	1	Deck laying machine
	2	Bridge inspection platform
	3	Tunnel inspection platform
	4	Gas purification machine
	5	Ventilation machine
	6	Machine with elevating work platform or with scaffold
	7	Tunnel lighting machine
	8	
	9	
	0	Other
5 Loading, unloading and various transport	1	Rail loading/unloading and transport machine
	2	Loading/unloading and transport machine for ballast, gravel, etc.
	3	
	4	
	5	Sleeper loading/unloading and transport machine
	6	
	7	
	8	Loading/unloading and transport machine for switchgear, etc.
	9	Loading/unloading and transport machine for other materials
	0	Other

7th digit	8th digit	Vehicles/machines
6 Measuring	1	Earthworks recording car
	2	Track recording car
	3	Overhead line recording car
	4	Gauge recording car
	5	Signalling recording car
	6	Telecommunications recording car
	7	
	8	
	9	
	0	Other
7 Emergency	1	Emergency crane
	2	Emergency haulage car
	3	Emergency tunnel train
	4	Emergency car
	5	Fire car
	6	Sanitary vehicle
	7	Equipment car
	8	
	9	
	0	Other
8 Traction, transport, energy, etc.	1	Tractive units
	2	
	3	Transport car (excl. 59)
	4	Power car
	5	Track car/powered car
	6	
	7	Concreting train
	8	
	9	
	0	Other

▼B

7th digit	8th digit	Vehicles/machines
9 Environment	1	Self-propelled snow plough
	2	Hauled snow plough
	3	Snow broom
	4	De-icing machine
	5	Weed-killing machine
	6	Rail cleaning machine
	7	
	8	
	9	
	0	Other

7th digit	8th digit	Vehicles/machines
0 Rail/road	1	Category 1 rail/road machine
	2	
	3	Category 2 rail/road machine
	4	
	5	Category 3 rail/road machine
	6	
	7	Category 4 rail/road machine
	8	
	9	
	0	Other

▼B

ANNEX P.12

Letter marking for wagons excluding articulated and multiple wagons

DEFINITION OF THE CATEGORY AND INDEX LETTERS

1. **Important notes**

In the attached tables:

— the information given in meters refers to the inside length of the wagons (lu);

— the information given in tonnes (tu) corresponds to the highest load limit shown in the loading table for the wagon in question, this limit being determined in accordance with the procedures laid down.

2. **Index letters with an international value common to all categories**

q pipe for electric heating which can be supplied by all accepted currents

qq pipe and installation for electric heating which can be supplied by all accepted currents

s wagons authorised to run under 's' conditions (see annex B of Rolling Stock TSI)

ss wagons authorised to run under 'ss' conditions (see annex B of Rolling Stock TSI)

3. **Index letters with an national value**

t, u, v, w, x, y, z

The value of these letters is defined by each Member State.

CATEGORY LETTER: E — OPEN HIGH-SIDED WAGON

Reference wagon		of ordinary type, with side and end tipping, with flat floor with 2 axles: lu ≥ 7,70 m; 25 t ≤ tu ≤ 30 t with 4 axles: lu ≥ 12 m; 50 t ≤ tu ≤ 60 t with 6 axles or more: lu ≥ 12 m; 60 t ≤ tu ≤ 75 t
Index letters	a	with 4 axles
	aa	with 6 axles or more
	c	with floor traps [a]
	k	with 2 axles: tu < 20 t with 4 axles: tu < 40 t with 6 axles or more: tu < 50 t
	kk	with 2 axles: 20 t ≤ tu < 25 t with 4 axles: 40 t ≤ tu < 50 t with 6 axles or more: 50 t ≤ tu < 60 t
	l	without side tipping
	ll	without floor traps [b]
	m	with 2 axles: lu < 7,70 m with 4 axles or more: lu < 12 m
	mm	with 4 axles or more: lu >12 m [b]
	n	with 2 axles: tu > 30 t with 4 axles: tu > 60 t with 6 axles or more: tu > 75 t
	o	without end tipping
	p	with station for brakeman [b]

[a] This concept only applies to open high-sided wagons with a flat floor, and provided with a device enabling them to be used, either as ordinary wagons with a flat bottom, or for gravity unloading of certain goods by suitable positioning of the traps.

[b] Only applicable to wagons with gauge of 1 520 mm.

▼B

CATEGORY LETTER: F — OPEN HIGH-SIDED WAGON

Reference wagon		Of special type with 2 axles: 25 t ≤ tu ≤ 30 t with 3 axles: 25 t ≤ tu ≤ 40 t with 4 axles: 50 t ≤ tu ≤ 60 t with 6 axles or more: 60 t ≤ tu ≤ 75 t
Index letters	a	with 4 axles
	aa	with 6 axles or more
	b	high capacity with axles (volume > 45 m^3)
	c	with controlled gravity unloading, on both sides, alternately, at the top ([a])
	cc	with controlled gravity unloading, on both sides, alternately, at the bottom ([a])
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	k	with 2 or 3 axles: tu < 20 t with 4 axles: tu < 40 t with 6 axles or more: tu < 50 t
	kk	with 2 or 3 axles: 20 t ≤ tu < 25 t with 4 axles: 40 t ≤ tu < 50 t with 6 axles or more: 50 t ≤ tu < 60 t
	l	with bulk gravity unloading, on both sides, simultaneously, at the top ([a])
	ll	with bulk gravity unloading, on both sides, simultaneously, at the bottom ([a])
	n	with 2 axles: tu > 30 t with 3 axles or more: tu >40 t with 4 axles: tu > 60 t with 6 axles or more: tu > 75 t
	o	with axial bulk gravity unloading, at the top ([a])
	oo	with axial bulk gravity unloading, at the bottom ([a])
	p	with axial controlled gravity unloading, at the top ([a])
	pp	with axial controlled gravity unloading, at the bottom ([a])
	ppp	with station for brakeman ([b])

([a]) Wagons with gravity unloading in category F are open wagons, which do not have a flat floor and have no tipping facility either at the end or the side.

([b]) Only applicable to wagons with gauge of 1520 mm.

The method of unloading these wagons is defined by a combination of the following characteristics:

Arrangement of the unloading apertures:

— axial: Apertures situated above the centre of the track

— bilateral: Apertures on either side of the track, outside the rails
(For these wagons, unloading is:
— simultaneous, if complete emptying of the wagon requires the apertures to be open on both sides,
— alternate, if complete emptying of the wagon can take place by opening the apertures on one side only)

— top: The lower edge of the discharge through (without taking into account mobile devices which may extend this through) is situated at least 0,700 m above the rail, and allows for the use of a conveyor belt to take away the goods

— bottom: The position of the lower edge of the discharge through does not allow for the use of a conveyor belt to take away the goods

Rate of unloading:

— bulk: Once the apertures are open for unloading, they cannot be closed again until the wagon is empty

— controlled: At any time during unloading, the flow of the goods can be regulated or even stopped

▼B

CATEGORY LETTER: G — COVERED WAGON

Reference wagon		Of ordinary type with at least 8 ventilation apertures with 2 axles: 9 m ≤ lu < 12 m; 25 t ≤ tu ≤ 30 t with 4 axles: 15 m ≤ lu < 18 m; 50 t ≤ tu ≤ 60 t with 6 axles or more: 15 m ≤ lu < 18 m; 60 t ≤ tu ≤ 75 t
Index letters	a	with 4 axles
	aa	with 6 axles or more
	b	high capacity: — with 2 axles: lu ≥12 m and payload capacity ≥ 70 m^3 — with 4 axles or more: lu ≥ 18 m
	bb	with 4 axles: lu > 18 m ([a])
	g	for grain
	h	for fruits and vegetables ([b])
	k	with 2 axles: tu < 20 t with 4 axles: tu < 40t with 6 axles or more: tu < 50 t
	kk	with 2 axles: 20 t ≤ tu < 25 t with 4 axles: 40 t ≤ tu < 50 t with 6 axles or more: 50 t ≤ tu < 60 t
	l	with less than 8 ventilation apertures
	ll	with enlarged doors apertures ([a])
	m	with 2 axles: lu < 9 m with 4 axles or more: lu < 15 m
	n	with 2 axles: tu > 30 t with 4 axles: tu > 60 t with 6 axles or more: tu > 75 t
	o	with 2 axles: lu < 12 m and payload capacity ≥ 70 m^3
	p	with station for brakeman ([a])

([a]) Only applicable to wagons with gauge of 1 520 mm.
([b]) The concept ‘for fruits and vegetables’ applies only to wagons provided with additional ventilation apertures at the floor level.

▼B

CATEGORY LETTER: H — COVERED WAGON

Reference wagon		of special type with 2 axles: 9 m ≤ lu ≤ 12 m; 25 t ≤ tu ≤ 28 t with 4 axles: 15 m ≤ lu < 18 m; 50 t ≤ tu ≤ 60 t with 6 axles or more: 15 m ≤ lu < 18 m; 60 t ≤ tu ≤ 75 t
Index letters	a	with 4 axles
	aa	with 6 axles or more
	b	with 2 axles: 12 m ≤ lu ≤ 14 m and payload capacity ≥ 70 m^3 ([a]) with 4 axles or more: 18 m ≤ lu < 22 m
	bb	with 2 axles: lu ≥ 14m with 4 axles or more: lu ≥ 22 m
	c	with end doors
	cc	with end doors and fitted internally for the transport of motor cars
	d	with floor traps
	dd	with tipping body ([b])
	e	with 2 floors
	ee	with 3 floors or more
	f	suitable for traffic with Great Britain ([a])
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively) ([a])
	g	for grain
	gg	for cement ([b])
	h	for fruits and vegetables ([c])
	hh	for mineral fertilizer ([b])
	i	with opening or shunt walls
	ii	with very robust opening or shunt walls ([d])
	k	with 2 axles: tu < 20 t with 4 axles: tu < 40 t with 6 axles or more: tu < 50 t
	kk	with 2 axles: 20 t ≤ tu < 25 t with 4 axles: 40 t ≤ tu < 50 t with 6 axles or more: 50 t ≤ tu < 60 t
	l	with movable partitions ([e])
	ll	with lockable movable partitions ([e])
	m	with 2 axles: lu < 9 m with 4 axles or more: lu < 15 m
	mm	with 4 axles or more: lu > 18 m ([b])
	n	with 2 axles: tu > 28 t with 4 axles: tu < 60 t with 6 axles or more: tu > 75 t
	o	with 2 axles: lu 12 m < 14 m et volume utile ≥ 70 m^3
	p	with station for brakeman ([b])

([a]) 2-axle wagons bearing the index letters ‘f’, ‘fff’ can have a payload capacity less than 70 m^3.
([b]) Only applicable to wagons with gauge of 1 520 mm.
([c]) The concept ‘for fruits and vegetables’ applies only to wagons provided with additional ventilation apertures at the floor level.
([d]) Only applicable to wagons with gauge of 1 435 mm.
([e]) Movable partitions may be dismounted temporarily.

▼B

CATEGORY LETTER: I — TEMPERATURE-CONTROLLED WAGON

Reference wagon		refrigerator wagon with class IN thermal insulation, with motor-driven ventilation, with gratings and ice bunker ≥ 3,5 m^3 with 2 axles: 19 m^2≤ floor area < 22 m^2; 15 t ≤ tu ≤ 25 t with 4 axles: floor area ≥ 39 m^2; 30 t ≤ tu ≤ 40 t
Index letters	a	with 4 axles
	b	with 2 axles and large floor area: 22 m^2 ≤ floor area ≤ 27 m^2
	bb	with 2 axles and very large floor area: floor area > 27 m^2
	c	with meat hooks
	d	for fish
	e	with electric ventilation
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	g	with mechanical refrigeration (a) (b)
	gg	refrigerator with liquefied gas (a)
	h	with class IR thermal insulation
	i	mechanically refrigerated by the machinery of an accompanying technical wagon (a) (b) (c)
	ii	accompanying technical wagon (a) (c)
	k	with 2 axles: tu > 15 t with 4 axles: tu < 30 t
	l	insulated without ice bunkers (a) (d)
	m	with 2 axles: floor area < 19 m^2 with 4 axles: floor area < 39 m^2
	mm	with 4 axles: floor area ≥ 39m^2 (e)
	n	with 2 axles: tu > 25 t with 4 axles; tu > 40 t
	o	with ice bunkers of capacity less than 3,5 m^3 (d)
	p	without gratings

(a) The index letter 'l' shall not be marked on wagons bearing the index letters 'g', 'gg', 'i' or 'ii'.

(b) Wagons bearing both the index letters 'g' and 'i' can be used individually or in a mechanically refrigerated raft.

(c) The concept of 'accompanying technical wagon' applies at the same time to factory wagons, workshop wagons (both with or without sleeping accommodation) and dormitory wagons.

(d) The index letter 'o' shall not be marked on wagons bearing the index letter 'l'.

(e) Only applicable to wagons with gauge of 1 520 mm.

Note: The floor area of covered refrigerator wagons is always determined taking into account the use of ice bunkers.

▼B

CATEGORY LETTER: K — 2-AXLE FLAT WAGON

Reference wagon		Of ordinary type with drop sides and short stanchions lu ≥ 12 m; 25 t ≤ tu ≤ 30 t
Index letters	b	with long stanchions
	g	fitted for the transport of containers ([a])
	i	with removable cover and non-removable ends ([b])
	j	with shock-absorbing device
	k	tu < 20 t
	kk	20 t ≤ tu < 25 t
	l	without stanchions
	m	9 m ≤ lu < 12 m
	mm	lu < 9 m
	n	tu > 30 t
	o	with non-removable sides
	p	without sides ([b])
	pp	with removable sides

([a]) Index letter ‘g’ may be used together with category letter K exclusively for ordinary wagons which have only been additionally fitted out for the transport of containers. Wagons fitted out solely for the transport of containers must be classified in category L.

([b]) The index letter ‘p’ shall not be marked on wagons bearing index letter ‘i’.

▼B

CATEGORY LETTER: L — 2-AXLE FLAT WAGON

Reference wagon		of special type lu ≥ 12 m; 25 t ≤ tu ≤ 30 t
Index letters	b	with special fittings for securing purposes for medium-sized containers (pa) ([a])
	c	with swivelling bolster ([a])
	d	fitted out for the transport of motor cars, without deck ([a])
	e	with decks for the transport of motor cars ([a])
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	g	fitted for the transport of containers (except pa) ([a]) ([b])
	h	fitted out for the transport of steel coils, eye to side ([a]) ([c])
	hh	fitted out for the transport of steel coils, eye to sky ([a]) ([c])
	i	with removable cover and non-removable ends ([a])
	ii	with very robust removable metallic cover ([d]) and non-removable ends ([a])
	j	with shock-absorbing device
	k	tu < 20 t
	kk	20 t ≤ tu < 25 t
	l	without stanchions ([a])
	m	9 m ≤ lu < 12 m
	mm	lu < 9 m
	n	tu > 30 t
	p	without sides ([a])

([a]) The inscription of the index letters ‘l’ or ‘p’ is optional for wagons bearing the index letters ‘b’, ‘c’, ‘d’, ‘e’, ‘g’, ‘h’, ‘hh’, ‘i’ or ‘ii’. But numerical codes must always correspond to letter markings on wagons.

([b]) Wagons used solely for the transport of containers (except pa).

([c]) Wagons used solely for the transport of steel coils.

([d]) Only applicable to wagons with gauge of 1 435 mm.

▼B

CATEGORY LETTER: O — MIXED FLAT AND OPEN HIGH-SIDED WAGON

Reference wagon		of ordinary type with 2 or 3 axles, with drop sides or ends and stanchions with 2 axles: lu ≥ 12 m; 25 t ≤ tu ≤ 30 t with 3 axles: lu ≥ 12 m; 25 t ≤ tu ≤ 40 t
Index letters	a	with 3 axles
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	k	tu < 20 t
	kk	20 t ≤ tu < 25 t
	l	without stanchions
	m	9 m ≤ lu < 12 m
	mm	lu < 9 m
	n	with 2 axles: tu > 30 t with 3 axles: tu > 40 t

▼B

CATEGORY LETTER: R — FLAT BOGIES WAGON

Reference wagon		of ordinary type with drop ends and stanchions 18 m ≤ lu < 22 m; 50 t ≤ tu ≤ 60 t
Index letters	b	lu ≥ 22 m
	e	with drop sides
	g	fitted for the transport of containers ([a])
	h	fitted out for the transport of steel coils, eye to side ([b])
	hh	fitted out for the transport of steel coils, eye to sky ([b])
	i	with removable cover and non-removable ends ([c])
	j	with shock-absorbing device
	k	tu < 40 t
	kk	40 t ≤ tu < 50 t
	l	without stanchions
	m	15 m ≤ lu < 18 m
	mm	lu < 15 m
	n	tu > 60 t
	o	with non-removable ends less than 2 m in height
	oo	with non-removable ends, 2 m or more in height ([c])
	p	without drop ends ([c])
	pp	with removable sides

([a]) The use of the index letter ‘g’ associated with the category letter R is only possible in the case of ordinary wagons which have only been additionally fitted out for the transport of containers. Wagons fitted out solely for the transport of containers must be classified in category S.

([b]) The use of the index letter ‘h’ or ‘hh’ together with the category letter R is only possible in the case of ordinary wagons which have only been additionally fitted out for the transport of containers. Wagons fitted out solely for the transport of containers must be classified in category S.

([c]) The index letters ‘oo’ and/or ‘p’ shall not be marked on wagons bearing index letter ‘i’.

▼B

CATEGORY LETTER: S — FLAT BOGIES WAGON

Reference wagon		of special type with 4 axles: lu ≥ 18 m; 50 t ≤ tu ≤ 60 t with 6 axles or more: lu ≥ 22 m; 60 t ≤ tu ≤ 75 t
Index letters	a	with 6 axles (2 bogies of 3 axles)
	aa	with 8 axles or more
	aaa	with 4 axles (2 bogies of 2 axles) (a)
	b	with special fittings for securing purposes for medium-sized containers (pa) (b)
	c	with swivelling bolster (b)
	d	fitted out for the transport of motor cars, without deck (b) (c)
	e	with decks for the transport of motor cars (b)
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	g	fitted for the transport of containers, total loading length ≤ 60′ (except pa) (b) (c) (d)
	gg	fitted for the transport of containers, total loading length > 60′ (except pa) (b) (c) (d)
	h	fitted out for the transport of steel coils, eye to side (b) (e)
	hh	fitted out for the transport of steel coils, eye to sky (b) (e)
	i	with removable cover and non-removable ends (b)
	ii	with very robust removable metallic cover (f) and non-removable ends (b)
	j	with shock-absorbing device
	k	with 4 axles: tu < 40 t with 6 axles or more: tu < 50 t
	kk	with 4 axles: 40 t ≤ tu < 50 t with 6 axles or more: 50 t ≤ tu < 60 t
	l	without stanchions (b)
	m	with 4 axles: 15 m ≤ lu < 18 m; with 6 axles or more: 18 m ≤ lu < 22 m
	mm	with 4 axles: lu < 15 m with 6 axles or more: lu < 18 m
	mmm	with 4 axles: lu ≥ 22 m (a)
	n	with 4 axles: tu > 60 t with 6 axles or more: tu > 75 t
	p	without sides (b)

(a) Only applicable to wagons with gauge of 1 520 mm.
(b) The inscription of the index letters ‘l’ or ‘p’ is optional for wagons bearing the index letters ‘b’, ‘c’, ‘d’, ‘e’, ‘g’, ‘gg’, ‘h’, ‘hh’, ‘i’ or ‘ii’. But numerical codes must always correspond to letter markings on wagons.
(c) Wagons which in addition to the transport of containers and swap bodies are used to transport vehicles shall be marked with the index letters ‘g’ or ‘gg’ and the letter ‘d’.
(d) Wagons used solely for the transport of containers or for transport of swap bodies for grab handling and spreader gripping.
(e) Wagons used solely for the transport of steel coils.
(f) Only applicable to wagons with gauge of 1 435 mm.

▼B

CATEGORY LETTER: T — WAGON WITH OPENING ROOF

Reference wagon		with 2 axles: 9 m ≤ lu < 12 m; 25 t ≤ tu ≤ 30 t with 4 axles: 15 m ≤ lu < 18 m; 50 t ≤ tu ≤ 60 t with 6 axles or more: 15 m ≤ lu < 18 m; 60 t ≤ tu ≤ 75 t
Index letters	a	with 4 axles
	aa	with 6 axles or more
	b	high capacity: with 2 axles: lu ≥ 12 m with 4 axles or more: lu ≥ 18 m [a] [b]
	c	with end doors
	d	with controlled gravity unloading, on both sides, alternately, at the top [a] [b] [c]
	dd	with controlled gravity unloading, on both sides, alternately, at the bottom [a] [b] [c]
	e	with unobstructed height of the doors > 1,90 m [a] [b] [c]
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	g	for grain
	h	fitted out for the transport of steel coils, eye to side
	hh	fitted out for the transport of steel coils, eye to sky
	i	with opening walls [a]
	j	with shock-absorbing device
	k	with 2 axles: tu < 20 t with 4 axles: tu < 40 t with 6 axles or more: tu < 50 t
	kk	with 2 axles: 20 t ≤ tu < 25 t with 4 axles: 40 t ≤ tu < 50 t with 6 axles or more: 50 t ≤ tu < 60 t
	l	with bulk gravity unloading, on both sides, simultaneously, at the top [a] [b] [c]
	ll	with bulk gravity unloading, on both sides, simultaneously, at the bottom [a] [b] [c]
	m	with 2 axles: lu < 9 m with 4 axles or more: lu < 15 m [b]
	n	with 2 axles: tu > 30 t with 4 axles: tu > 60 t with 6 axles or more: tu > 75 t
	o	with axial bulk gravity unloading, at the top [a] [b] [c]

▼B

Reference wagon		with 2 axles: 9 m ≤ lu < 12 m; 25 t ≤ tu ≤ 30 t with 4 axles: 15 m ≤ lu < 18 m; 50 t ≤ tu ≤ 60 t with 6 axles or more: 15 m ≤ lu < 18 m; 60 t ≤ tu ≤ 75 t
	oo	with axial bulk gravity unloading, at the bottom [a] [b] [c]
	p	with axial controlled gravity unloading, at the top [a] [b] [c]
	pp	with axial controlled gravity unloading, at the bottom [a] [b] [c]

[a] Index letter ‘e’:
- — is optional on wagons bearing the index letter ‘b’ (but numerical codes must always correspond to letter markings on wagons),
- — shall not be marked on wagons bearing the index letters ‘d’, ‘dd’, ‘i’, ‘l’, ‘ll’, ‘o’, ‘oo’, ‘p’ ou ‘pp’.

[b] Index letter ‘b’ and ‘m’ shall not be marked on wagons bearing the index letters ‘d’, ‘dd’, ‘l’, ‘ll’, ‘o’, ‘oo’, ‘p’ or ‘pp’.

[c] Wagons with gravity unloading in category T are wagons fitted with an opening roof giving access to a loading hatch over the complete length of the body; these wagons do not have a flat floor and are not designed for end or side tipping.

The method of unloading these wagons is defined by a combination of the following characteristics:

Arrangement of the unloading apertures:

- — axial: Apertures situated above the centre of the track
- — bilateral: Apertures on either side of the track, outside the rails
  (For these wagons, unloading is:
  - — simultaneous, if complete emptying of the wagon requires the apertures to be open on both sides,
  - — alternate, if complete emptying of the wagon can take place by opening the apertures on one side only)
- — top: The lower edge of the discharge through (without taking into account mobile devices which may extend this through) is situated at least 0,700 m above the rail, and allows for the use of a conveyor belt to take away the goods
- — bottom: The position of the lower edge of the discharge through does not allow for the use of a conveyor belt to take away the goods

Rate of unloading:

- — bulk: Once the apertures are open for unloading, they cannot be closed again until the wagon is empty
- — controlled: At any time during unloading, the flow of the goods can be regulated or even stopped

▼B

CATEGORY LETTER: U — SPECIAL WAGONS

Reference wagon		other than those in categories F, H, L, S ou Z with 2 axles: 25 t ≤ tu ≤ 30 t with 3 axles: 25 t ≤ tu ≤ 40 t with 4 axles: 50 t ≤ tu ≤ 60t with 6 axles or more: 60 t ≤ tu ≤ 75 t
Index letters	a	with 4 axles
	aa	with 6 axles or more
	c	with unloading under pressure
	d	with controlled gravity unloading, on both sides, alternately, at the top ([a])
	dd	with controlled gravity unloading, on both sides, alternately, at the bottom ([a])
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	g	for grain
	i	fitted out for he transport objects which should exceed the gauge if they were loaded on ordinary wagons ([b]) ([c])
	k	with 2 or 3 axles: tu < 20 t with 4 axles: tu < 40 t with 6 axles or more: tu < 50 t
	kk	with 2 or 3 axles: 20 t ≤ tu < 25 t with 4 axles: 40 t ≤ tu < 50 t with 6 axles or more: 50 t ≤ tu < 60 t
	l	with bulk gravity unloading, on both sides, simultaneously, at the top ([a])
	ll	with bulk gravity unloading, on both sides, simultaneously, at the bottom ([a])
	n	with 2 axles: tu > 30 t with 3 axles: tu > 40 t with 4 axles: tu > 60 t with 6 axles or more: tu > 75 t ([c])
	o	with axial bulk gravity unloading, at the top ([a])
	oo	with axial bulk gravity unloading, at the bottom ([a])

▼B

Reference wagon		other than those in categories F, H, L, S ou Z with 2 axles: 25 t ≤ tu ≤ 30 t with 3 axles: 25 t ≤ tu ≤ 40 t with 4 axles: 50 t ≤ tu ≤ 60t with 6 axles or more: 60 t ≤ tu ≤ 75 t
	p	with axial bulk gravity unloading, at the top ([a])
	pp	with axial bulk gravity unloading, at the bottom ([a])

([a]) Wagons with gravity unloading in category U are closed wagons which can only be loaded through one or more loading apertures situated in at the top part of the body, and whose total opening dimensions are less than the length of the body; these wagons do not have a flat floor and are not designed for end or side tipping.

([b]) In particular:
— well wagons
— wagons with a central recess
— wagons with an ordinary sloping diagonal permanent control desk

([c]) Index letter ‘n’ shall not be marked on wagons bearing the index letter ‘i’.

The method of unloading these wagons is defined by a combination of the following characteristics:

Arrangement of the unloading apertures:

— axial: Apertures situated above the centre of the track
— bilateral: Apertures on either side of the track, outside the rails
(For these wagons, unloading is:
— simultaneous, if complete emptying of the wagon requires the apertures to be open on both sides,
— alternate, if complete emptying of the wagon can take place by opening the apertures on one side only)
— top: The lower edge of the discharge through (without taking into account mobile devices which may extend this through) is situated at least 0,700 m above the rail, and allows for the use of a conveyor belt to take away the goods
— bottom: The position of the lower edge of the discharge through does not allow for the use of a conveyor belt to take away the goods

Rate of unloading:

— bulk: Once the apertures are open for unloading, they cannot be closed again until the wagon is empty
— controlled: At any time during unloading, the flow of the goods can be regulated or even stopped

▼B

CATEGORY LETTER: Z — TANK WAGON

Reference wagon		with metal shell, for the transport of liquids or gases with 2 axles: 25 t ≤ lu ≤ 30 t with 3 axles: 25 t ≤ tu ≤ 40 t with 4 axles: 50 t ≤ tu ≤ 60 t with 6 axles or more: 60 t ≤ tu ≤ 75 t
Index letters	a	with 4 axles
	aa	with 6 axles or more
	b	for oil products [a]
	c	with unloading under pressure [b]
	d	for food and chemical products [a]
	e	fitted with heating devices
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	g	for the transport of gases under pressure, liquefied or dissolved under pressure [b]
	i	tank of non-metallic material
	j	with shock-absorbing device
	k	with 2 or 3 axles: tu < 20 t with 4 axles: tu < 40 t with 6 axles or more: tu < 50 t
	kk	with 2 or 3 axles: 20 t ≤ tu < 25 t with 4 axles: 40 t ≤ tu < 50 t with 6 axles or more: 50 t ≤ tu < 60 t
	n	with 2 axles: tu > 30 t with 3 axles: tu > 40 t with 4 axles tu > 60 t with 6 axles or more: tu > 75 t
	p	with station for brakeman [a]

[a] Only applicable to wagons with gauge of 1 520 mm.
[b] The index letter ‘c’ shall not be marked on wagons bearing the index letter ‘g’.

▼B

LETTER MARKING FOR WAGONS FOR ARTICULATED AND MULTIPLE WAGONS

DEFINITION OF THE CATEGORY AND INDEX LETTERS

1. **Important notes**

In the attached tables, the information given in meters refers to the inside length of the wagons (lu).

2. **Index letters with an international value common to all categories**

q pipe for electric heating which can be supplied by all accepted currents

qq pipe and installation for electric heating which can be supplied by all accepted currents

s wagons authorised to run under 's' conditions (see annex B of rolling stock STI)

ss wagons authorised to run under 'ss' conditions (see annex B of rolling stock STI)

3. **Index letters with a national value**

t, u, v, w, x, y, z

The value of these letters is defined by each Member State.

CATEGORY LETTER: F — OPEN HIGH-SIDED WAGON

Reference wagon		Articulated or multiple wagon with axles, with 2 units 22 m ≤ lu < 27 m
Index letters	a	with bogies
	c	with controlled gravity unloading, on both sides, alternately, at the top ([a])
	cc	with controlled gravity unloading, on both sides, alternately, at the bottom ([a])
	e	with 3 units
	ee	with 4 units or more
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	l	with bulk gravity unloading, on both sides, simultaneously, at the top ([a])
	ll	with bulk gravity unloading, on both sides, simultaneously, at the bottom ([a])
	m	with 2 units: lu ≥ 27 m
	mm	with 2 units: lu < 22 m
	o	with axial bulk gravity unloading, at the top ([a])

▼B

Reference wagon		Articulated or multiple wagon with axles, with 2 units 22 m ≤ lu < 27 m
	oo	with axial bulk gravity unloading, at the bottom ([a])
	p	with axial controlled gravity unloading, at the top ([a])
	pp	with axial controlled gravity unloading, at the bottom ([a])
	r	articulated wagon
	rr	multiple wagon

([a]) Wagons with gravity unloading in category F are open wagons, which do not have a flat floor and are not designed for end or side tipping.

The method of unloading these wagons is defined by a combination of the following characteristics:

Arrangement of the unloading apertures:

— axial: Apertures situated above the centre of the track

— bilateral: Apertures on either side of the track, outside the rails
(For these wagons, unloading is:
— simultaneous, if complete emptying of the wagon requires the apertures to be open on both sides,
— alternate, if complete emptying of the wagon can take place by opening the apertures on one side only)

— top: The lower edge of the discharge through (without taking into account mobile devices which may extend this through) is situated at least 0,700 m above the rail, and allows for the use of a conveyor belt to take away the goods

— bottom: The position of the lower edge of the discharge through does not allow for the use of a conveyor belt to take away the goods

Rate of unloading:

— bulk: Once the apertures are open for unloading, they cannot be closed again until the wagon is empty

— controlled: At any time during unloading, the flow of the goods can be regulated or even stopped

▼B

CATEGORY LETTER: H — COVERED WAGON

Reference wagon		articulated or multiple wagon with axles, with 2 units 22 m ≤ lu < 27 m
Index letters	a	with bogies
	c	with end doors
	cc	with end doors and fitted internally for the transport of motor cars
	d	with floor traps
	e	with 3 units
	ee	with 4 units or more
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	g	for grain
	h	for fruits and vegetables ([a])
	i	with opening or shunt walls
	ii	with very robust opening or shunt walls ([b])
	l	with movable partitions ([c])
	ll	with lockable movable partitions ([c])
	m	with 2 units: lu ≥ 27 m
	mm	with 2 units: lu < 22 m
	r	articulated wagon
	rr	multiple wagon

([a]) The concept ‘for fruits and vegetables’ applies only to wagons provided with additional ventilation apertures at the floor level.
([b]) Only applicable to wagons with gauge of 1 435 mm.
([c]) Movable partitions may be dismounted temporarily.

▼B

CATEGORY LETTER: I — TEMPERATURE CONTROLLED WAGON

Reference wagon		refrigerator wagon with class IN thermal insulation, with motor-driven ventilation, with gratings and ice bunker ≥ 3,5 m^3 articulated or multiple wagon with axles, with 2 units 22 m ≤ lu < 27 m
Index letters	a	with bogies
	c	with meat hooks
	d	for fish
	e	with electric ventilation
	ee	with 4 units or more
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	g	with mechanical refrigeration ([a])
	gg	refrigerator with liquefied gas ([a])
	h	with class IR thermal insulation
	i	mechanically refrigerated by the machinery of an accompanying technical wagon ([a]) ([b])
	ii	accompanying technical wagon ([a]) ([b])
	l	insulated without ice bunkers ([a]) ([c])
	m	with 2 units: lu ≥ 27 m
	mm	with 2 units: lu < 22 m
	o	with ice bunkers of capacity less than 3,5 m^3 ([c])
	oo	with 3 units
	p	without gratings
	r	articulated wagon
	rr	multiple wagon

([a]) The index letter ‘l’ shall not be marked on wagons bearing the index letters ‘g’, ‘gg’, ‘i’ or ‘ii’.

([b]) The concept of ‘accompanying technical wagon’ applies at the same time to factory wagons, workshop wagons (both with or without sleeping accommodation) and dormitory wagons.

([c]) The index letter ‘o’ shall not be marked on wagons bearing the index letter ‘l’.

▼B

CATEGORY LETTER: L — FLAT WAGON WITH SEPARATE AXLES

Reference wagon		articulated or multiple wagon with 2 units 22 m ≤ lu < 27 m
Index letters	a	articulated wagon
	aa	multiple wagon
	b	with special fittings for securing purposes for medium-sized containers (pa) ([a])
	c	with swivelling bolster ([a])
	d	fitted out for the transport of motor cars, without deck ([a])
	e	with decks for the transport of motor cars ([a])
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	g	fitted for the transport of containers ([a]) ([b])
	h	fitted out for the transport of steel coils, eye to side ([a]) ([c])
	hh	fitted out for the transport of steel coils, eye to sky ([a]) ([c])
	i	with removable cover and non-removable ends ([a])
	ii	with very robust removable metallic cover ([d]) and non-removable ends ([a])
	j	with shock-absorbing device
	l	without stanchions ([a])
	m	with 2 units: 18 m ≤ lu < 22 m
	mm	with 2 units: lu < 18 m
	o	with 3 units
	oo	with 4 units or more
	p	without sides ([a])
	r	with 2 units: lu ≥ 27 m

([a]) The inscription of the index letters ‘l’ or ‘p’ is optional for wagons bearing the index letters ‘b’, ‘c’, ‘d’, ‘e’, ‘g’, ‘h’, ‘hh’, ‘i’ or ‘ii’. But numerical codes must always correspond to letter markings on wagons.
([b]) Wagons used solely for the transport of containers (except pa).
([c]) Wagons used solely for the transport of steel coils.
([d]) Only applicable to wagons with gauge of 1 435 mm.

▼B

CATEGORY LETTER: S — FLAT BOGIE WAGON

Reference wagon		articulated or multiple wagon with 2 units 22 m ≤ lu < 27 m
Index letters	b	with special fittings for securing purposes for medium-sized containers (pa) (a)
	c	with swivelling bolster (a)
	d	fitted out for the transport of motor cars, without deck (a) (b)
	e	with decks for the transport of motor cars (a)
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	g	fitted for the transport of containers, total loading length ≤ 60′ (except pa) (a) (b) (c)
	gg	fitted for the transport of containers, total loading length > 60′ (except pa) (a) (b) (c)
	h	fitted out for the transport of steel coils, eye to side (a) (d)
	hh	fitted out for the transport of steel coils, eye to sky (a) (d)
	i	with removable cover and non-removable ends (a)
	ii	with very robust removable metallic cover (e) and non-removable ends (a)
	j	with shock-absorbing device
	l	without stanchions (a)
	m	with 2 units: lu ≥ 27 m
	mm	with 2 units: lu < 22 m
	o	with 3 units
	oo	with 4 units or more
	p	without sides (a)
	r	articulated wagon
	rr	multiple wagon

(a) The inscription of the index letters ‘l’ or ‘p’ is optional for wagons bearing the index letters ‘b’, ‘c’, ‘d’, ‘e’, ‘g’, ‘gg’, ‘h’, ‘hh’, ‘i’ or ‘ii’. But numerical codes must always correspond to letter markings on wagons.

(b) Wagons which in addition to the transport of containers and swap bodies are used to transport vehicles shall be marked with the index letters ‘g’ or ‘gg’ and the letter ‘d’.

(c) Wagons used solely for the transport of containers or for transport of swap bodies for grab handling and spreader gripping.

(d) Wagons used solely for the transport of steel coils.

(e) Only applicable to wagons with gauge of 1 435 mm.

▼B

CATEGORY LETTER: T — WAGON WITH OPENING ROOF

Reference wagon		articulated or multiple wagon with axles, with 2 units 22 m ≤ lu < 27 m
Index letters	a	with bogies
	b	with unobstructed height of doors > 1,90 m [a]
	c	with end doors
	d	with controlled gravity unloading, on both sides, alternately, at the top [a] [b]
	dd	with controlled gravity unloading, on both sides, alternately, at the bottom [a] [b]
	e	with 3 units
	ee	with 4 units or more
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	g	for grain
	h	fitted out for the transport of steel coils, eye to side
	hh	fitted out for the transport of steel coils, eye to sky
	i	with opening walls [a]
	j	with shock-absorbing device
	l	with bulk gravity unloading, on both sides, simultaneously, at the top [a] [b]
	ll	with bulk gravity unloading, on both sides, simultaneously, at the bottom [a] [b]
	m	with 2 units: lu ≥ 27 m
	mm	with 2 units: lu < 22 m
	o	with axial bulk gravity unloading, at the top [a] [b]
	oo	with axial bulk gravity unloading, at the bottom [a] [b]
	p	with axial controlled gravity unloading, at the top [a] [b]
	pp	with axial controlled gravity unloading, at the bottom [a] [b]

▼B

Reference wagon		articulated or multiple wagon with axles, with 2 units 22 m ≤ lu < 27 m
	r	articulated wagon
	rr	multiple wagon

([a]) Index letter ‘b’ shall not be marked on wagons bearing the index letters ‘d’, ‘dd’, ‘i’, ‘l’, ‘ll’, ‘o’, ‘oo’, ‘p’ or ‘pp’.

([b]) Wagons with gravity unloading in category T are wagons fitted with an opening roof giving access to a loading hatch over the complete length of the body; these wagons do not have a flat floor and are not designed for end or side tipping.

The method of unloading these wagons is defined by a combination of the following characteristics:

Arrangement of the unloading apertures:

— axial: Apertures situated above the centre of the track

— bilateral: Apertures on either side of the track, outside the rails
(For these wagons, unloading is:
— simultaneous, if complete emptying of the wagon requires the apertures to be open on both sides,
— alternate, if complete emptying of the wagon can take place by opening the apertures on one side only)

— top: The lower edge of the discharge through (without taking into account mobile devices which may extend this through) is situated at least 0,700 m above the rail, and allows for the use of a conveyor belt to take away the goods

— bottom: The position of the lower edge of the discharge through does not allow for the use of a conveyor belt to take away the goods

Rate of unloading:

— bulk: Once the apertures are open for unloading, they cannot be closed again until the wagon is empty

— controlled: At any time during unloading, the flow of the goods can be regulated or even stopped

▼B

CATEGORY LETTER: U — SPECIAL WAGONS

Reference wagon		articulated or multiple wagon, with axles, with 2 units 22 m ≤ lu < 27 m
Index letters	a	with bogies
	e	with 3 units
	ee	with 4 units or more
	c	with unloading under pressure
	d	with controlled gravity unloading, on both sides, alternately, at the top [a]
	dd	with controlled gravity unloading, on both sides, alternately, at the bottom [a]
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	g	for grain
	i	fitted out for he transport objects which should exceed the gauge if they were loaded on ordinary wagons [b]
	l	with bulk gravity unloading, on both sides, simultaneously, at the top [a]
	ll	with bulk gravity unloading, on both sides, simultaneously, at the bottom [a]
	m	with 2 units: lu ≥ 27 m
	mm	with 2 units: lu < 22 m
	o	with axial bulk gravity unloading, at the top [a]
	oo	with axial bulk gravity unloading, at the bottom [a] [b]
	p	with axial controlled gravity unloading, at the top [a]
	pp	with axial controlled gravity unloading, at the bottom [a]

▼B

Reference wagon		articulated or multiple wagon, with axles, with 2 units 22 m ≤ lu < 27 m
	r	articulated wagon
	rr	multiple wagon

([a]) Wagons with gravity unloading in category U are closed wagons which can only be loaded through one or more loading apertures situated in at the top part of the body, and whose total opening dimensions are less than the length of the body; these wagons do not have a flat floor and are not designed for end or side tipping.

([b]) In particular:
— well wagons
— wagons with a central recess
— wagons with an ordinary sloping diagonal permanent control desk

The method of unloading these wagons is defined by a combination of the following characteristics:

Arrangement of the unloading apertures:

— axial: Apertures situated above the centre of the track

— bilateral: Apertures on either side of the track, outside the rails.
(For these wagons, unloading is:
— simultaneous, if complete emptying of the wagon requires the apertures to be open on both sides,
— alternate, if complete emptying of the wagon can take place by opening the apertures on one side only)

— top: The lower edge of the discharge through (without taking into account mobile devices which may extend this through) is situated at least 0,700 m above the rail, and allows for the use of a conveyor belt to take away the goods

— bottom: The position of the lower edge of the discharge through does not allow for the use of a conveyor belt to take away the goods

Rate of unloading:

— bulk: Once the apertures are open for unloading, they cannot be closed again until the wagon is empty

— controlled: At any time during unloading, the flow of the goods can be regulated or even stopped

▼B

CATEGORY LETTER: Z — TANK WAGON

Reference wagon		with metal shell, for the transport of liquids or gases articulated or multiple wagon with axles, with 2 units 22 m ≤ lu < 27 m
Index letters	a	with bogies
	c	with unloading under pressure ([a])
	e	fitted with heating devices
	f	suitable for traffic with Great Britain
	ff	suitable for traffic with Great Britain (by tunnel exclusively)
	fff	suitable for traffic with Great Britain (by train-ferry exclusively)
	g	for the transport of gases under pressure, liquefied or dissolved under pressure ([a])
	i	tank of non-metallic material
	j	with shock-absorbing device
	m	with 2 units: lu ≥ 27 m
	mm	with 2 units: lu < 22 m
	o	with 3 units
	oo	with 4 units or more
	r	articulated wagon
	rr	multiple wagon

([a]) The index letter ‘c’ shall not be marked on wagons bearing the index letter ‘g’.

▼B

ANNEX P.13

Letter marking for hauled passenger stock

Serial letters with an international value:

A	1st class coach with seats
B	2nd class coach with seats
AB	1st/2nd class coach with seats
WL	Sleeping-car with serial letter A, B or AB depending on the type of accommodation offered. The serial letters for sleeping-car with 'special' compartments are supplemented with index-letter 'S'
WR	Dining-car
R	Coach with dining-car, buffet or bar compartment (serial-letter used in addition)
D	Van
DD	Open, 2-tier car-carrier van
Post	Mail van
AS SR WG	Bar coach with dancing facilities
WSP	Pullman coach
Le	Open 2-axle 2-tier car-carrier wagon
Leq	Open 2-axle 2-tier car-carrier wagon fitted with train supply cable
Laeq	Open 3-axle 2-tier car-carrier wagon fitted with train supply cable

Index letters with an international value:

b h	Coach fitted out to carry disabled passengers
c	Compartments convertible into couchette accomodation
d v	Vehicle fitted to receive bicycles
ee z	Vehicle fitted with central power supply
f	Vehicle fitted with driver's cab (driving trailer)
p t	Centre-aisle coach with seats
m	Vehicle over 24,5 m in length
s	Centre-aisle in vans and coaches with luggage compartment

The number of compartments is shown in the form of an index (for example: Bc9)

Serial letters and index letters with a national value

The others serial letters and index letters have a national value, defined by each Member State.

▼M1

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▼B

ANNEX Q

Not used

▼B

ANNEX R

Train identification

An EN is being developed in this area. Once it has been introduced, its suitability as a means by which compliance with the requirements of this TSI can be assured, will be assessed by the ERA and the EC.

Until this EN has been developed, this Annex contains the CWA prepared in this regard.

It should be noted that this CWA does not remove the applicability of UIC leaflets 419-1 and 419-2.

Please refer to the attached document — CWA on train numbering

▼B

ANNEX S

Not Used

▼B

ANNEX T

Brake performance

A detailed specification is being defined which will set out the formula for the calculation of brake performance. This specification shall be valid across the TEN and shall take into account how best such a formula can be established to permit the working of brakes to be harmonised safely and in a cost-effective manner. An expert, multi-disciplined drafting group is taking this forward. It will also work in conjunction with the requirements of the CR OPE TSI as well.

Until the detailed specifications can be developed and introduced, this is an Open Point and it is recommended that Railway Undertakings and Infrastructure Managers liaise to jointly establish bilateral or multilateral agreements to facilitate the unhindered passage of trains from one Infrastructure Manager's operating area to another.

See also Annex U.

▼B

ANNEX U

List of open points

CLAUSE 4.2.2.5

Train composition document

ANNEX T (see Subsection 4.2.2.6.2 of this TSI)

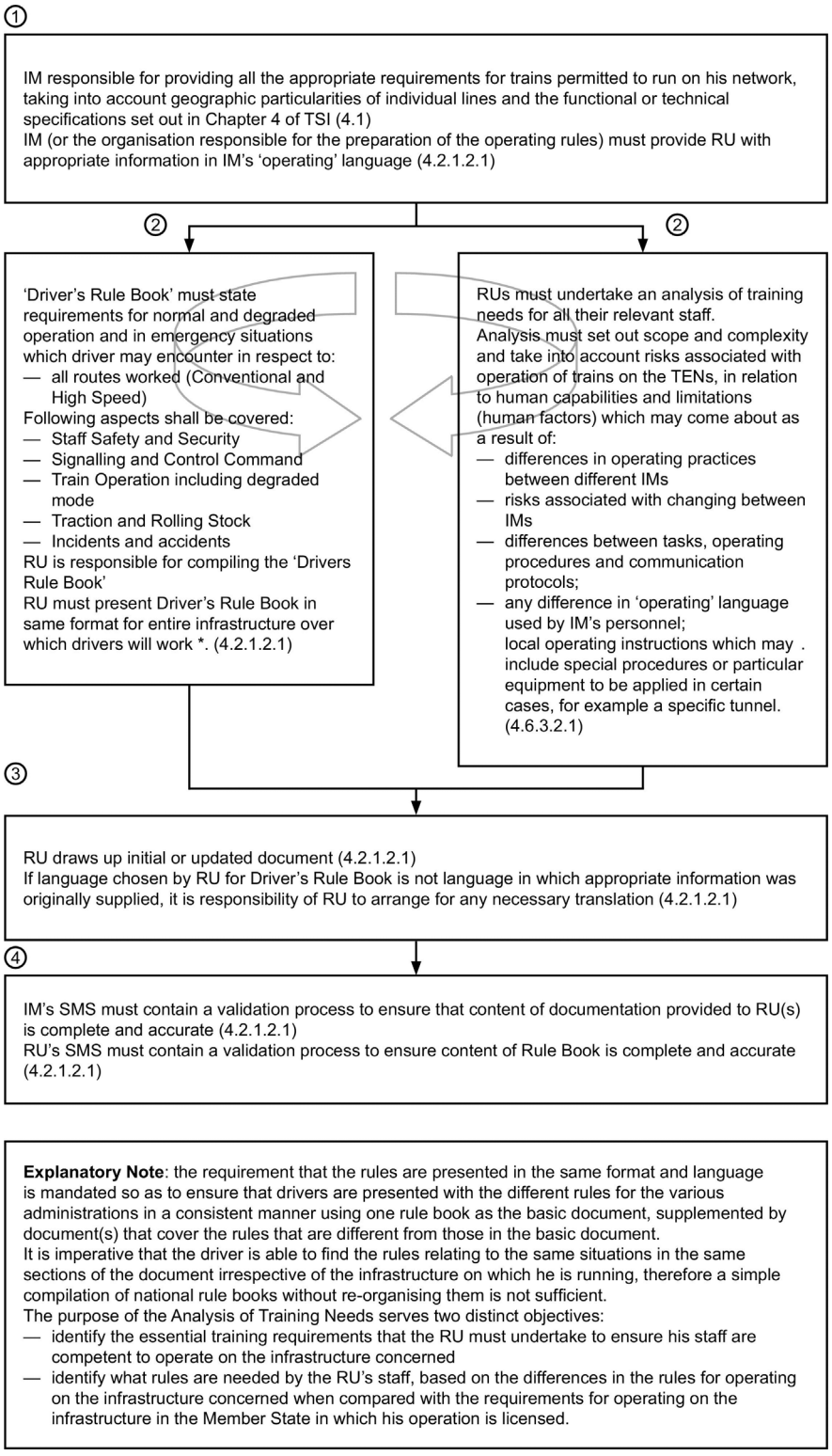
Brake Performance

▼B

ANNEX V

Preparation and updating rules documentation for drivers

In conjunction with Subsections 4.2 and 4.6 of this TSI, the diagram below is a pictorial representation of the process outlined in this TSI for the preparation and updating of rules documentation required by this TSI



▼B

GLOSSARY

Term	Definition
Accident	As defined in Article 3 of Directive 2004/49/EC.
Authorising the movement of trains	The operation of equipment in signalling centres, electric traction current supply control rooms and traffic control centres that permits train movement. This does not include those staff employed by Railway Undertakings who are responsible for management of resources such as train crew or rolling stock.
Dangerous goods	As defined by Article 2 of Directive 96/49
Degraded operation	Operation resulting from an unplanned event that prevents the normal delivery of train services.
Despatch	See Train despatch
Driver	A person competent and authorised to drive trains.
Exceptional loads	A load carried on a rail vehicle, for example a container, swap body or other traffic where the rail vehicle size and/or axle loading requires special authority for the movement and/or the application of special conditions of travel for all or part of the journey.
Health and Safety Conditions	In the context of Chapter 4.7 of this TSI, this refers only to the medical and psychological fitness requirements necessary to operate the relevant elements of the subsystem.
Hot axle box	An axle box and bearing that has exceeded its maximum designed operating temperature.
Incident	As defined in Article 3 of Directive 2004/49/EC.
Book of Forms	A book of forms that describes the sequence of action to be taken by the Infrastructure Manager's staff and the Railway Undertaking's staff when moving trains in degraded situations. Each separate activity requires a separate form. The Book of Forms is prepared in the languages of both the Infrastructure Manager and the Railway Undertaking and the relevant Infrastructure Managers and Railway Undertakings staff holds copies.
Member State	When used in connection with this TSI it refers to the Member State which issues the safety authorisation/certificate as set out in Articles 10 and 11 of Directive 2004/49/EC.
Operating Language	The language or languages used in daily operation by an Infrastructure Manager and published in his Network Statement, for the communication of operational or safety related messages between the staff of the Infrastructure Manager and Railway Undertakings.
Passenger	Person (other than an employee with specific duties on the train) travelling by train or on railway property before or after a train journey.
Performance monitoring	The systematic observation and recording of the performance of the train service and the infrastructure for the purpose of bringing about improvements in the performance of both.
Real time	The ability to exchange or process information on specified events (such as arrival at a station, passing a station or departure from a station) on the trains journey as they occur.
Reporting point	A point on the trains schedule where reporting of the arrival, departure or passing time is required.

▼B

Term	Definition
Route	The particular section or sections of line
Route knowledge	The knowledge of the section(s) of line over which on board staff operate, based on information provided by the Infrastructure Manager, to enable them to operate the train safely. Essential elements of this knowledge must be learned in detail and remembered by the staff concerned. Other elements may be held in documentation, which those staff can rapidly access based on an assessment of the route by the Railway Undertaking or by the requirements of the National Safety Authority.
Safety critical work	Work performed by staff when they control or affect the movement of a vehicle, which could affect the health, and safety of persons.
SPAD	A Signal Passed At Danger without authority — that is, a signal showing a stop aspect which is passed without the authority of the person responsible for authorising train movements.
Staff	Employees working for a Railway Undertaking or an Infrastructure Manager, or their contractors, undertaking tasks as specified in this TSI.
Stopping point	A location identified in the schedule of a train where the train is planned to stop, usually to carry out a specific activity such as allowing passengers to join and leave the train.
Timetable	Document or system that gives details of a train(s) schedule over a particular route.
Timing point	A location identified in the schedule of a train where a specific time is identified. This time may be an arrival time, departure time or in the case of a train not scheduled to stop at that location the passing time.
Traction unit	A powered vehicle able to move itself and other vehicles to which it may be coupled.
Train	A train is defined as (a) traction unit(s) with or without coupled railway vehicles, or a self-propelled set of vehicles, with train data available operating between two or more defined points on the TENs.
Train despatch	The indication to the person driving the train that all station or depot activities are completed and that, as far as the staff responsible are concerned, movement authority has been granted for the train.
Train crew	Members of the on-board staff of a train, who are certified as competent and appointed by a Railway Undertaking to carry out specific, designated safety related tasks on the train, for example the driver or the guard.
Train identification	The means to unambiguously identify a particular train.
Train preparation	Ensuring that a train is in a fit condition to enter service, that the train equipment is correctly deployed and the formation of the train matches the train's designated pathway. Train preparation also includes technical inspections carried out prior to the train entering service.
Vehicle	Any single item of rolling stock, for example a locomotive, carriage or wagon.
Vehicle identification	A number applied to a vehicle to uniquely identify it from any other vehicles

▼B

LIST OF ABBREVIATIONS TO BE INCLUDED IN THE TSI:

Abbreviation	Explanation
ac	Alternating current
CCS	Command Control Signalling
cen	European Committee for Standardisation (*Comite Européen de Normalisation*)
COTIF	Convention Concerning International Carriage by Rail
cr	Conventional Rail
Db	Decibels
dc	Direct Current
dmi	Driver Machine Interface
EC	European Community
ECG	Electro Cardiogram
eirene	European Integrated Railway Radio Enhanced Network
en	Euro-norm
ENE	Energy
era	European Railway Agency
ertms	European Rail Traffic Management System
ETCS	European Train Control System
EU	European Union
FRS	Functional Requirement Specification
GSM-R	Global System for Mobile Communications — Rail
habd	Hot Axle Box Detector
Hz	Hertz
IM	Infrastructure Manager
INS	Infrastructure
OPE	Traffic Operation and Management
osjd	Organisation for Co-operation of Railways
PPW	Russian abbreviation for Prawila Polzowaniia Wagonami w mejdunarodnom soobqenii = Rules for use of railway vehicles in international traffic
RIC	Regulations governing the reciprocal use of carriages and brake vans in international traffic (*Règlement pour l'emploi réciproque des Voitures et des Fourgons en Trafic international*)
riv	Regulations governing the reciprocal use of wagons in international traffic. (*Règlement pour l'emploi réciproque des Wagons en Trafic international*)
RST	Rolling Stock
RU	Railway Undertaking
SMS	Safety Management System
spad	Signal Passed at Danger
SRS	System Requirement Specification
TAP	Telematic Applications — Passenger

▼B

Abbreviation	Explanation
ten	Trans-European Network
TSI	Technical Specification for Interoperability
uic	International Union of Railways (*Union Internationale des Chemins de fer*)
UV	Ultra violet
VKM	Vehicle Keeper Marking