Progress with **railway interoperability** in the **European Union**

2015

Biennial Report

EUROPEAN UNION AGENCY FOR RAILWAYS

* Following the entry into force of the technical pillar of the 4th EU Railway Package, the European Union Agency for Railways replaces and succeeds the European Railway Agency. The change of name requires also a new corporate design. The "Agency" refers as from now to the European Union Agency for Railways. However depending on the context, some parts of this brochure still refer to the former European Railway Agency.

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Foreword

Every 2 years the Agency delivers a report on progress with interoperability in the European Union in order to provide an overview of the developments in this area. In this fourth biennial report, for the first time, where possible, the statistical data and the results of our analysis are presented in maps to provide the reader with an easier overview.

In 2013 and 2014, the technical specifications for interoperability (TSIs) were further improved and their scope extended to the entire European Union railway system. The new scope-extended TSIs are applicable since 1 January 2015. The availability of a full set of EU-wide interoperability specifications for the railway target system in Europe makes many pre-existing national rules redundant. For this reason, in addition to the further improvement and completion of TSIs, the efforts were also focussed on the classification and analysis of these national rules, since the progressive removal of unnecessary technical barriers is paramount for the establishment of the Single European Railway Area.

Comprehensive and in-depth work was also carried out to define possible improvements of the train drivers directive in order to promote job mobility for train drivers and increase railway competitiveness too in the EU labour market.

The last 3 years were also dominated by discussions and preparations regarding the 4th Railway Package and the future role of the Agency.

Taking into account the complexity of the railway system and its multiple aspects (technological, legal, social, economic, political), defining 'interoperability' in rigorous and quantitative terms remains challenging. For this reason, we concentrated our efforts on establishing meaningful indicators aimed at giving an objective picture of railway interoperability today and of its evolution in time. These efforts are far from coming to an end and in the next years we will continue our commitment to improve the accuracy and completeness of this picture.

1. Introduction
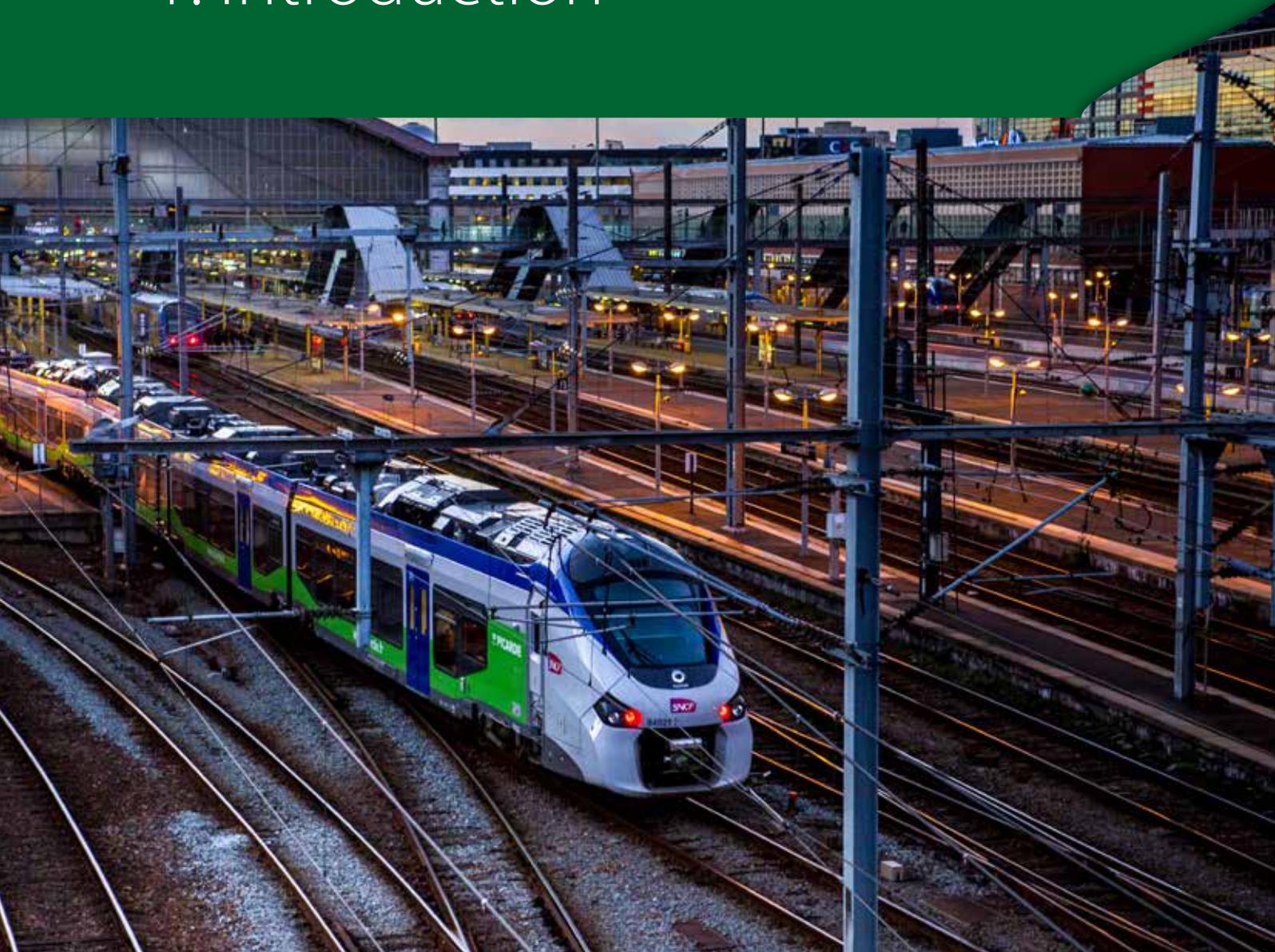
1.1. About this report

The Agency publishes the report on progress with interoperability every 2 years. Through objective indicators, it provides a picture of the status of implementation of interoperability across the European Union. The legal basis for this report is provided by Article 14(2) of the Agency regulation 881/2004/EC ([1]) as amended by Regulation (EC) No 1335/2008/EC ([2]):

'The [European Railway] Agency shall monitor progress with the interoperability of the railway systems. Every 2 years it shall present and publish a report on progress with interoperability. The first such report shall be published during the Agency's second year of activity'. This report provides an overview of the railway interoperability-related indicators in the European Union.

It covers the EU Member States, Switzerland and Norway, with the following considerations:

- Today, Malta and Cyprus have no railway system on their national territory, therefore they have not been included in this report;

- This report includes Norway which is not a member of the European Union, but is a member of the European Economic Area and the European Free Trade Association (EFTA);

- Switzerland is not a member of the EU. However, in Switzerland the TSIs are considered to be accepted standards and rules of diligence (implementation provisions to the railways ordinance). Wherever data is available for this country, it is included in maps and tables.

Most of the data have been updated in November 2015; where available, more recent data have been provided.

This fourth report aims at comparing all the previous data (including other Agency documents and reports) and at providing updates for the periods 2013 and 2014. Together with the previous reports available on the website of the Agency, a full overview since 2006 on the progress with interoperability in the EU is now available.

1.2. Data availability

At the time of compiling this report, the registers set out in the interoperability directive ([3]) (see Paragraph 3.4) were not fully available or sufficiently populated. For this reason, we made use of other methods to collect relevant data. Therefore, as for previous reports, the Agency asked the national safety authorities (NSAs) responsible for railways to provide the needed information through the compilation of relevant questionnaires. The questionnaires were addressed to the national safety authorities, representing:

- 27 states (i.e. the EU Member States, except Cyprus and Malta, plus Norway); and

- the Channel Tunnel Intergovernmental Commission.

([1]) OJ L 164 of of 29 April 2004.
([2]) OJ L 354 of 16 December 2008.
([3]) Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008 on the interoperability of the rail system within the Community (Recast) OJ L 191, 18.7.2008, pp. 1-45; last amended by Commission Directive 2014/106/EU of 5 December 2014 (OJ L 355, 12.12.2014, pp. 42-49).

The Agency received 25 answers (there were 22 in 2013). Table 1 below summarises replies and reference values, taking into account the following considerations:

- The reference years for data are 2013 and 2014. For UK no data were available, hence data from previous years have been used.

- Some of the maps and figures are based on 2015 data, which is also indicated.

- The population figures in Table 1 below are based on Eurostat data. In the case of France, only the continental population is counted (France métropolitaine, including Corsica), because this is where the French railway system is located.

The track length in Table 1 below shows the responses from Member States, except for Austria (data *source*: DG Move/UIC 2013), Belgium (data *source*: Bureau fédéral du Plan/ Federaal Planbureau), Germany, Poland, and Spain (data *source*: Eurostat).

■ **Table 1** — Reference data overview

	Population (in thousand)/ 01/01/2013	Length of rail tracks in kilometres 2014	Passengers (in thousands) 2013	Goods transported (1 000t)/2013
Austria	8 451	6 956	271 888	95 449
Belgium	11 161	3 578	228 753	55 876
Bulgaria	7 284	5 011	26 059	13 539
Croatia	4 262	2 858	24 216	10 661
Czech Republic	10 516	11 554	174 189	83 957
Denmark	5 602	3 128	206 160	7 956
Estonia	1 320	2 146	4 199	43 682
Finland	5 426	8 485	69 318	36 433
France	63 652	53 455	1 164 822	88 989
Germany	82 020	41 328	2 612 764	373 738
Greece	11 003	2 746	13 195	1 980
Hungary	9 908	8 319	148 379	49 085
Ireland	4 591	2 165	37 130	589
Italy	59 685	38 933	854 756	87 960
Latvia	2 023	2 214	19 730	55 831
Lithuania	2 971	2 188,50	4 346	48 028
Luxembourg	537	621	20 549	5 098
Netherlands	16 779	7 030	368 034	38 927
Norway	5 051	4 465	31 429	31 429
Poland	38 062	36 939	262 382	232 596
Portugal	10 487	3 244	126 079	9 291
Romania	20 020	19 936	57 393	50 348
Slovakia	5 410	6 872	45 946	48 401
Slovenia	20 588	1 541	15 995	17 156
Spain	46 727	19 285	563 602	24 949
Sweden	9 555	14 511	200 706	67 047
United Kingdom	63 905	31 324	1 599 484	117 769
TOTAL	**526 996**	**340 883**	**9 151 503**	**1 696 764**
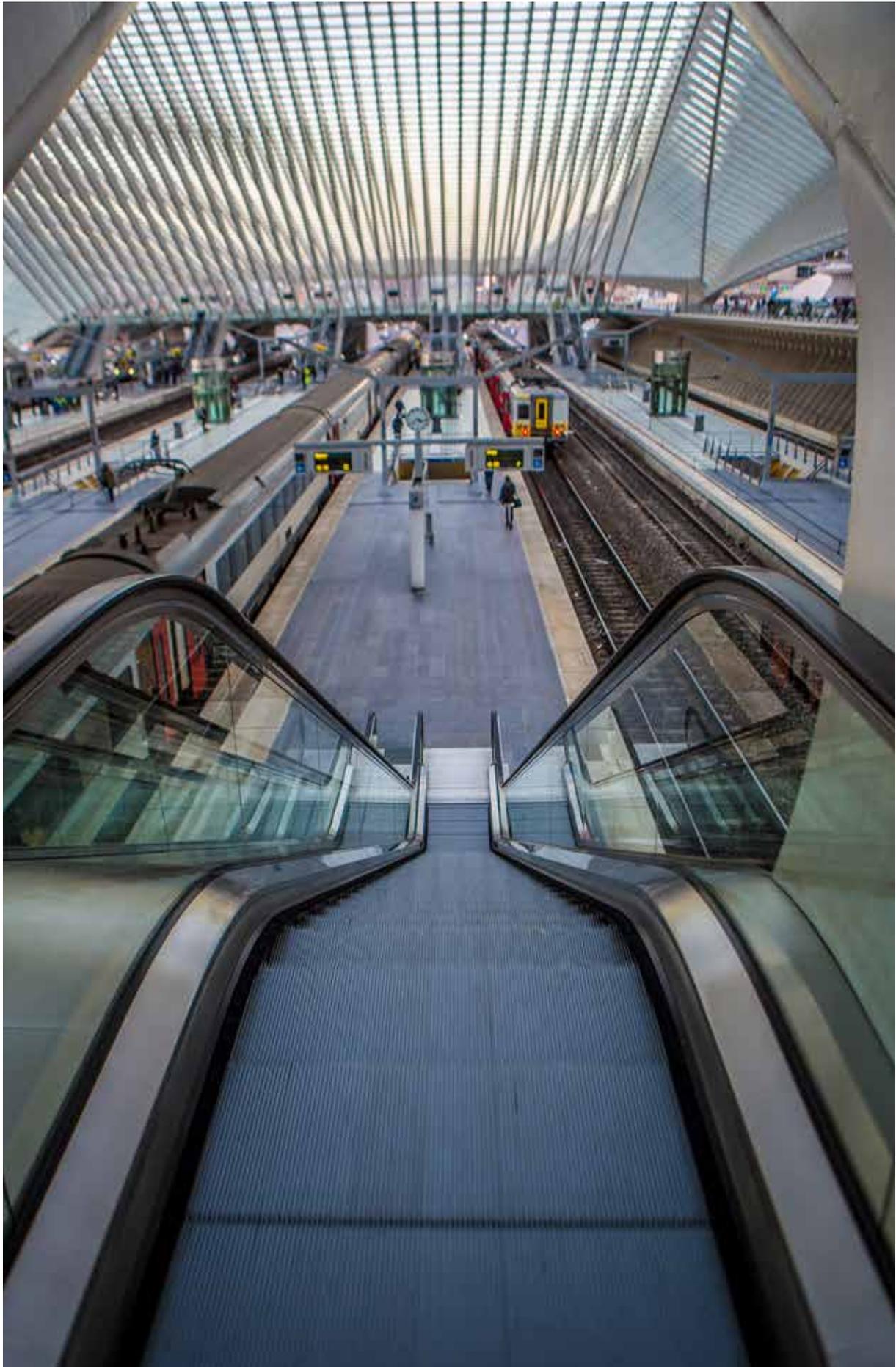
2. Interoperability framework

2.1. Interoperability directive and new approach

The interoperability directive lays down the conditions to achieve interoperability within the European Union's rail system. The amendments of the directive during the reporting period are explained in Paragraph 3.1.

The interoperability directive follows the principles of the New Approach/Global Approach ([1]) for the marketing of products in the EU, e.g. by defining in its Annex III all railway-related essential requirements (ERs). Accordingly, the applicant (e.g. the manufacturer, railway undertaking (RU), infrastructure manager (IM)) has the legal obligation to ensure that its products, under the relevant limits and conditions of use, comply with all applicable legislation and thus also with the essential requirements of the interoperability directive. The applicant formally complies with its responsibility by signing the EC declaration of verification for the railway subsystems concerned. The technical file accompanies the subsystem during its life cycle and contains, among other information, statements regarding its limits and conditions of use.

More information about the New Approach is to be found in the 'Blue Guide' on the implementation of EU product rules ([2]).

2.2. Technical specifications for interoperability

Under the interoperability directive, only new, renewed and upgraded vehicle and network projects are within the scope of structural TSIs. Vehicles outside the scope of TSIs are dealt with in paragraph 2.4.

TSIs harmonise by law all aspects which are needed for interoperability. These are notably the aspects for the technical compatibility between network (both TSI compliant and non TSI compliant) and vehicle and safe integration between:

- elements composing a subsystem;

- subsystems that constitute a vehicle project;

- vehicle and network regardless of the level of TSI compliance of the network;

- vehicle and operative regime/maintenance scheme partly covered by the limits and conditions of use in the technical file.

Furthermore, additional aspects might be specified in TSIs to define an optimal level of technical harmonisation throughout Europe, thus removing technical barriers (e.g. different national safety requirements for noise emitted by freight wagons).

Where the necessary harmonisation of a particular aspect, as defined above, is not yet possible, the relevant TSI sets out an open point (OP), which may temporarily be covered by national rules until the necessary harmonisation is achieved.

Where a Member State temporarily or permanently needs to deviate from TSI requirements, the relevant TSI includes a specific case (SC) with the description of the alternative applicable specifications or a reference to the relevant national rules.

([1]) http://www.newapproach.org/Directives/DirectiveList.asp
([2]) Version 1.1 of 15/07/2015 available for download (http://ec.europa.eu/DocsRoom/documents/12661).

Under the interoperability directive, in the framework of the process of the authorisation for placing into service of railway subsystems, all applicable TSI requirements are assessed by the notified body (NoBo) and, if required by the TSI, by the CSM assessment body (AsBo). The most recent development concerning NoBos is set out in paragraph 3.5. Requirements set out in applicable national rules are assessed by the designated bodies (DeBo), see paragraph 2.3.

Paragraph 3.2 summarises for each TSI the changes within the reporting period, the temporary and permanent specific cases per Member State and the number of remaining open points.

2.3. Remaining applicable national technical rules

The full potential of interoperability will be achieved when:

- all interoperability-relevant technical aspects are harmonised in TSIs;

- all national technical rules covering aspects harmonised in the TSIs are withdrawn; and

- all physical assets (e.g. vehicles, fixed installations) and procedures (e.g. operating rules) comply with the target systems defined by the TSIs.

In accordance with Article 17(3) of the interoperability directive, interoperability-relevant national technical rules are therefore only needed and allowed when they refer to:

- **open points (OPs);**

- **specific cases (SCs);**

- **legacy systems,** such as Class B CCS systems;

- **derogations,** if Articles 9 and 20 of the interoperability directive apply.

Concerning the network only, however, non-interoperability-related national technical rules (related to aspects not covered by TSIs because technical harmonisation is not necessary) might remain applicable, e.g. for environmental aspects, fire protection, construction law or sanitary aspects.

Within the authorisation process, all NTRs are assessed by the DeBo.

The current number of national technical rules notified by the EU Member States (plus Norway and Switzerland) is shown in Figure 1.

At the time of writing this report, an analysis of these rules is still in progress to determine to which extent these rules are needed and allowed. In fact, in order to reduce the number of national technical rules to the minimum, the European Commission and the Agency invite and support Member States to analyse all NTRs, withdraw those which are superfluous and make sure that the remaining ones are notified in accordance with Article 17(3) of the interoperability directive.

Figure 1 — Remaining national rules per Member State

Below average
Average
Above average
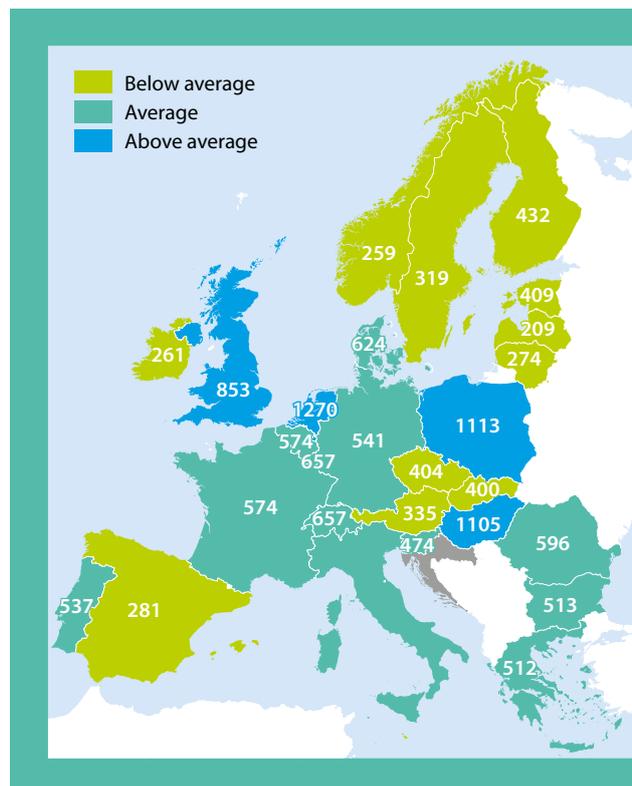
In parallel, the Agency is gradually closing the last open points in TSIs, and the Member States should progressively remove their temporary specific cases and provide the Agency with the specifications of their permanent specific cases for inclusion in the TSIs.

Furthermore the EC, Member States and IMs should progressively replace all class B CCS systems with the ERTMS target system.

2.4. Vehicles outside the scope of TSIs

Vehicles outside the scope of TSIs, but covered by the interoperability directive, as transposed by Member States, are:

- vehicles not intended to be within the scope of TSIs, such as vehicles for metric track gauge or tram-trains, for which no benefit is expected from a harmonisation through the interoperability directive; and

- vehicles authorised before TSI times (pre-TSI vehicles) which might need an additional authorisation, e.g. to be used in other Member States.

Article 17(3) of the interoperability directive requires Member States to notify the national rules covering those vehicles.

A part of the pre-TSI vehicles, however, were already assessed by harmonised interoperability-relevant technical rules, namely most of the wagons, in accordance with RIV and most of the coaches in accordance with RIC. All other vehicles were assessed against a specific set of NTRs (most of the time not notified). In all cases the exact set of NTRs applied within previous authorisations need to be individually analysed to determine the extent of an additional authorisation. In order to facilitate the process of an additional authorisation, it should be considered to refer to parts of TSIs instead of national technical rules.

2.5. Authorisation for placing in service

The applicant has to submit to the NSA the signed EC declaration of verification and the technical file which includes all supporting documents needed for the authorisation for placing in service. These are the documents:

• describing the subsystem;

• resulting from the verifications carried out by assessment bodies;

• relating to the limits and conditions of use;

• relating to maintenance.

The role of the NSA should be to grant the authorisation for placing in service based on a check of the completeness, relevance and consistency of the documentation submitted for authorisation without carrying out further technical checks.

2.6. Train drivers directive

Another element of the European interoperability framework is the train drivers directive ([1]) which aims at:

• creating a more flexible labour market for train drivers;

• introducing common standards of driver and train crew competence across Europe;

• facilitating cross-border rail services;

• increasing public confidence in the rail system through the statutory licensing of train drivers.

Paragraph 3.6 sets out the progress within the reporting period.

([1]) Directive 2007/59/EC of the European Parliament and of the Council of 23 October 2007 on the certification of train drivers operating locomotives and trains on the railway system in the Community (OJ L 315, 3.12.2007, pp. 51-78) last amended by Commission Directive 2014/82/EU of 24 June 2014 (OJ L 184, 25.6.2014, pp. 11-15).

3. Progress

3.1. Interoperability directive

During the reporting period, the interoperability directive was amended three times:

* Commission Directive 2013/9/EU of 11 March 2013 amending Annex III. It is adding the essential requirement 'accessibility' to facilitate access to persons with disabilities and persons with reduced mobility on an equal basis with others by way of the prevention or removal of barriers, and by way of other appropriate measures.

* Commission Directive 2014/38/EU of 10 March 2014 amending Annex III. It sets out that the design and operation of the rail system must not lead to an inadmissible level of noise generated by it neither in areas close to railway infrastructure nor in the driver's cab.

* Commission Directive 2014/106/EU of 5 December 2014 amending Annex V and Annex VI. It is dealing with the verification of subsystems by notified and designated bodies and ties in with the updated common safety methods for risk assessment (CSM RA).

3.2. Technical specifications interoperability (TSIs)

The following text provides an overview of the developments of the TSIs in 2013 and 2014. Each section contains the legal reference to the TSI, describes changes in the reporting period and lists the existing open points. For the specific cases, there are maps for all structural TSIs. Table 3 and Table 4 below provide an overview of the developments of the TSIs. For recent updates, please refer to the website (^{1}) of the Agency.

3.2.1. LOC&PAS TSI

Figure 2 — Remaining specific cases in the LOC&PAS TSI

- No Permanent or Temporary Specific Cases
- Permanent Specific Cases
- Temporary Specific Cases
- Permanent and Temporary Specific Cases
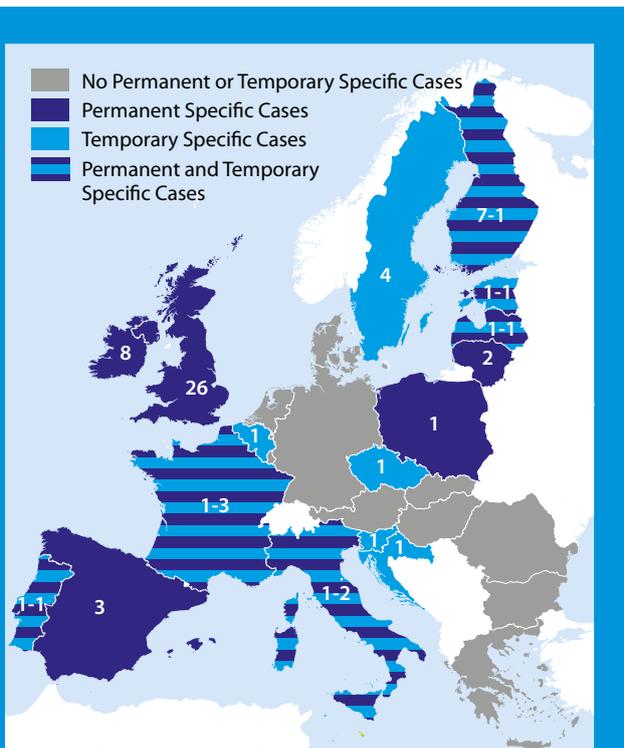
On 18 November 2014 the first merged TSI relating to the 'rolling stock — locomotives and passenger rolling stock' subsystem of the rail system in the European Union was published in the *Official Journal of the European Union* as Commission Regulation (EU) No 1302/2014 (^{2}). It is the first merged rolling stock TSI and it entered into force on 1 January 2015.

This revised TSI was the result of the merging of the two TSIs on locomotives and passenger rolling stock for high speed and for conventional rail. Therefore, both high speed rolling stock circulating on conventional lines and conventional rolling stock circulating on high speed lines are covered by this TSI. This TSI also applies to the entire EU railway system, including the 1 520 mm track gauge network.

There are still nine open points regarding the compatibility with train detection systems, the running dynamic behaviour for 1 520 mm track gauge system, braking system independent of adhesion conditions, aerodynamic effects for 1 520 mm, 1 524 mm and 1 668 mm track gauge systems, aerodynamic effect on ballasted track for rolling stock of design speed ≥ 190 km/h, passive safety, variable gauge wheelsets, on-board energy measurement system and fire containment and

control systems. The Agency intends to close some of the open points above during the ongoing revision process.

In addition to the specific cases indicates on the map below, there are 'Environmental conditions' in the LOC&PAS TSI which, when not fulfilled, may limit the access to a national network in certain months of the years/specific locations ([1]).

3.2.2. WAG TSI

The wagon TSI is applicable since 1 January 2014 as Commission Regulation (EU) No 321/2013 ([2]).

The revised wagon TSI (Commission Regulation (EU) No 321/2013) was published in the *Official Journal of the European Union* on 12 April 2013 and entered into force 1 day later. It is however applicable since 1 January 2014. The former wagon TSI (Commission Decision 2006/861/EC) was repealed with effect from 1 January 2014.

The first amendment to the revised wagon TSI (Commission Regulation (EU) No 1236/2013 ([3])) was published in the *Official Journal of the European Union* on 3 December 2013 and entered into force 1 day later. It is however applicable from the same date as the revised wagon TSI — 1 January 2014. This amendment clarifies unclear provisions and updates references. At the same time, it amends service brake and parking brake details as well as wheel slide protection parameters.

There are three remaining open points in the revised wagon TSI: the first one relates to on-board monitoring of axle bearing condition, the second one relates to test conditions for on-track tests and the third one relates to variable gauge wheelsets. The Agency intends to close these three open points in the ongoing revision process. An open point on composite brake blocks has been already closed in 2015.

■ **Figure 3** — Remaining specific cases in the WAG TSI
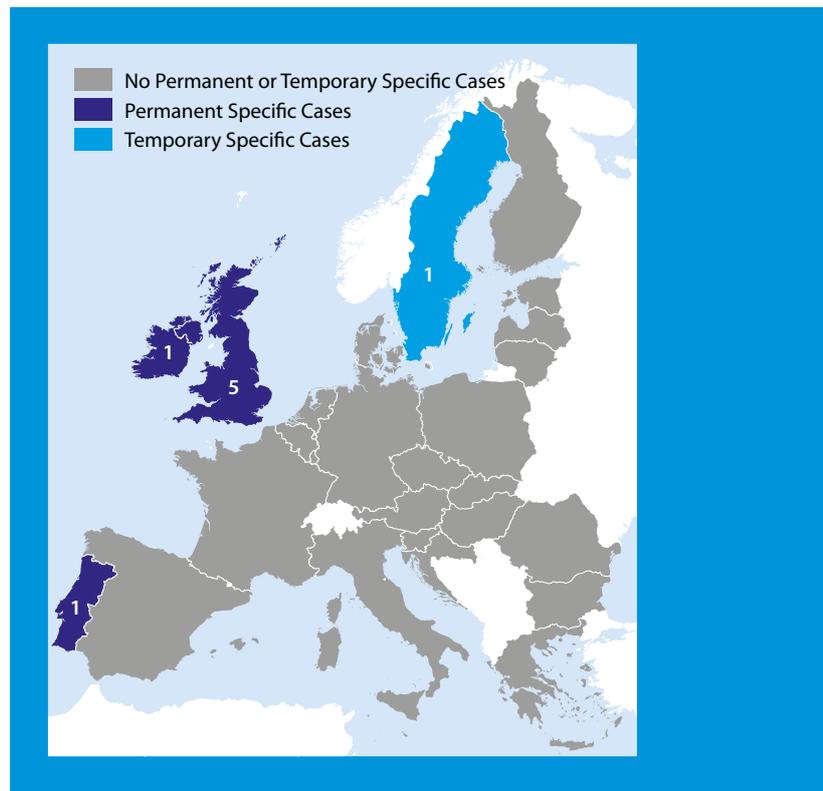
3.2.3. CCS TSI

Commission Decision 2012/88/EU ([4]) has been amended by Commission Decision 2012/696/EU ([5]), applicable since 1 January 2013.

The amendment applicable since 1 January 2013 (Commission Decision 2012/696/EU) was published in the *Official Journal of the European Union* on 10 November 2012.

This amendment updates the specifications referenced in Annex A, providing mandatory requirements for the respect of the basic parameters of the on-board and track-side control-command and signalling (CCS) subsystems.

([1]) Countries with such environmental conditions are: DE, EE, EL, ES, FR, AT, PT, FI, SE.
([2]) OJ L 104, 12.4.2013, pp. 1-56.
([3]) OJ L 322, 3.12.2013, pp. 23-28.
([4]) OJ L 51, 23.2.2012, pp. 1-65.
([5]) OJ L 311, 10.11.2012, pp. 3-13.

Figure 4 — Remaining specific cases in the CCS TSI

No permanent or temporary specific cases
Permanent specific cases
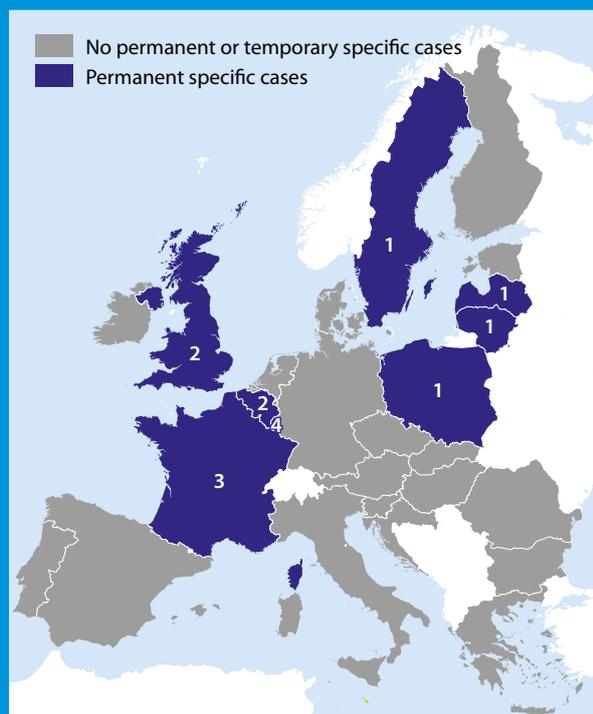
The main features of the revised CCS TSI are as follows:

- Two sets of specifications for the implementation of ETCS are permitted. Applicants may therefore apply in full either the set of specifications already set out in Commission Decision 2012/88/EU ([1]) or a new set (called baseline 3 as far as ETCS is concerned). This ensures the protection of investments already made, while introducing additional functionalities, as requested by the sector and defined in the memorandum of understanding signed in July 2008 by the European Commission and sector associations.

- The new set of specifications also closes the open point related to braking aspects.

- Other open points are not affected. There are presently 11 open points left. The Agency is working to close them, especially the one related to reliability/availability and the ones related to compatibility of train detection systems.

- The specific cases for CCS TSI (the same set out in Commission Decision 2012/88/EU) are the following.

- Belgium, France, Latvia, Lithuania, Luxembourg, Poland, the United Kingdom: compatibility of train detection systems, requiring additional verifications for vehicles.

- The United Kingdom also has specific cases for the ETCS and GSM-R DMI related to use of imperial measurement units and special format for train running numbers.

- Sweden: specific case permitting the use of 2-watt GSM-R mobiles (instead of standard 8 watt). This does not prevent however the use of standard mobiles.

3.2.4. NOI TSI

Commission Regulation (EU) No 1304/2014 ([2]) of 26 November 2014 on the technical specification for interoperability relating to the subsystem 'rolling stock — noise' entered into force on 1 January 2015.

The revised TSI NOI is the result of merging the TSI NOI:2011 and the requirements for noise set out in the HS RST TSI:2008. The revised TSI NOI applies to the entire European Union's rail system. Its technical scope is the same as the revised LOC&PAS and WAG TSIs. The revised TSI serves interoperability and defines broadly reduced and well-balanced limit values in order to contribute to the confinement of noise emission close to the infrastructure and in the driver's cabin while maintaining the competitiveness of the European railways.

([1]) OJ L 51, 23.2.2012, pp. 1-65.
([2]) OJ L 356, 12.12.2014, pp. 421-437.

Further achievements are:

- Combination of the noise-related specifications for high- and conventional speed rolling stock in one document.

- Alignment with the scopes of the WAG TSI 2013 (for wagons) and the draft LOC&PAS TSI 2014 (for locomotives, DMUs, EMUs and coaches).

- Inclusion of locomotives, EMUs, DMUs and coaches for the European 1 520 mm network.

- Inclusion of limit values for the intermittent and impulsive stationary noise.

- Inclusion of pass-by limit values continuously defined over the maximum speed respectively the axles per length of the rolling stock.

- Reference to the EN3095:2013.

This TSI does not contain any open points.

All specific cases set out in NOI TSI allow for higher noise limit values than those defined in the core TSI. Therefore, none of these specific cases limit interoperability.

There is also one general specific case for Estonia, Latvia, Lithuania and Finland, which is neither included in the map nor limiting interoperability.

3.2.5. INF TSI

Commission Regulation (EU) 1299/2014 (INF TSI) ([1]) has been applicable since 1 January 2015.

The Commission Regulation 1299/2014 on 'Infrastructure' subsystem is the result of a merge between the conventional (2011) and high speed (2008) infrastructure TSIs (CR INF and HS INF TSI) and it is applicable to the entire European Union railway network.

It provides requirements for the different track gauge systems: 1 435 mm, which is regarded as the European standard nominal track gauge, 1 520 mm, shared among Estonia, Latvia, Lithuania, Poland and Slovakia,1 668 mm, which is shared between Spain and Portugal; 1 600 mm, shared between Ireland and the United Kingdom and 1 524 mm, shared among Estonia, Finland and Sweden.

At present, there are still nine open points that affect the INF TSI.

Figure 6 below shows the number of specific cases, distributed by country, which are relevant for the INF TSI.

Figure 5 — Remaining specific cases in the NOI TSI

Figure 6 — Remaining specific cases in the INF TSI

Figure 7 — Remaining specific cases in the ENE TSI

Figure 7 — Remaining specific cases in the ENE TSI

Legend:
- No permanent or temporary specific cases
- Permanent specific cases
- Temporary specific cases
- Permanent and temporary specific cases

Figure 8 — Remaining specific cases in the PRM TSI

Legend:
- No permanent or temporary specific cases
- Permanent specific cases

3.2.6. ENE TSI

The first merged ENE TSI (Regulation (EU) No 1301/2014 (¹)) entered into force on 1 January 2015.

The requirements set out in the TSI include only those elements which are important from the interoperability point of view, for the compatibility of the energy subsystem, as defined in the interoperability directive, with a TSI-compliant rail vehicle.

The open point related to interface protocols between the energy measurement system (EMS) and the data collecting system (DCS) and transferred data format is expected to be closed at the end of 2016 or beginning of 2017.

3.2.7. PRM TSI

Commission Regulation (EU) No 1300/2014 (²) of 18 November 2014 is a transversal TSI applicable to the infrastructure and rolling stock subsystems.

It applies to all the public areas of stations dedicated to the transport of passengers that are controlled by the railway undertaking, infrastructure manager or station manager. The major revision for this subsystem consisted of the removal of most of the detailed railway specific requirements, replaced by functional requirements that can be fulfilled by international or even national standards.

Regarding rolling stock, it applies to all rolling stock that is within the scope of the LOC&PAS TSI and that is intended to carry passengers.

There are no open points in the PRM TSI. Most of the remaining specific cases are relative to the platform–train interface and come from the wide variety of platform heights existing in Europe.

The TSI PRM requires Member States to develop a national implementation plan with a view to identifying and progressively eliminating existing barriers to accessibility.

3.2.8. SRT TSI

Commission Regulation (EU) No 1303/2014 (³) of 18 November 2014 is a transversal TSI covering several subsystems: infrastructure, energy and rolling stock for structural subsystems.

Regarding the fixed installations, the revised SRT TSI sets out more specific rules for safe areas and introduces the concept of firefighting points in order to cover the case of very long tunnels of more than 20 km. For the subsystems energy and infrastructure, the SRT TSI contains neither open points nor specific cases.

Regarding rolling stock, the SRT TSI applies to all rolling stock that is in the scope of the LOC&PAS TSI. All requirements applicable to rolling stock have been transferred to the LOC&PAS TSI, including an open point relative to the assessment of active firefighting systems and two specific cases applicable to vehicles intended to be operated in the Channel Tunnel and on the Italian network.

3.2.9. OPE TSI

The TSI operation and traffic management describes 'the procedures and related equipment enabling a coherent operation of the various structural subsystems, during both normal and degraded operation, including in particular train composition and train driving, traffic planning and management'.

The first merged OPE TSI entered into force in 2014 by Commission Decision 2012/757 ([1]).

Figure 9 — Remaining specific cases in the SRT TSI

No permanent or temporary specific cases
Temporary specific cases

In case of the Channel Tunnel,
a temporary specific case applies.

The main change of the OPE TSI was the merger of the high speed and the conventional OPE TSI into one TSI and the extension of scope to the complete operational network.

In 2013 and 2014, the rear-end signal for freight wagons remained an open point. The following are temporary specific cases of the OPE TSI:

- Trains which are operated solely on the 1 520 mm gauge network of Estonia, Latvia and Lithuania may use another specified train rear-end signal.
- Ireland and the United Kingdom are using alphanumeric train running numbers in the existing systems.

3.2.10. TAP TSI

The telematics applications for passenger service (TAP TSI regulation ([2])) describe within the pre-, during and after journey phases the passenger data exchange provisions for the railway undertakings, infrastructure managers and ticket vendors concerning timetable information, tariff information, availability and booking (e.g. for seats or berths), ticketing and journey information (such as delays, re-routing, etc.).

The TAP TSI contains six open points, but does not contain any specific cases.

Currently the TAP TSI is in the implementation phase: in 2013, the European rail sector (railways, infrastructure managers and ticket vendors) has submitted a master plan setting out the milestones and deadlines for the implementation of the above TAP functions and

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([1]) OJ L 345, 15.12.2012, pp. 1-76.
([2]) Commission Regulation (EU) No 1273/2013 of 6 December 2013 amending Regulation (EU) No 454/2011 on the technical specification for interoperability relating to the subsystem 'telematics applications for passenger services' of the trans-European rail system (OJ L 328, 7.12.2013, pp. 72-78)

processes. In 2016, the European Union Agency for Railways will start a TAP TSI implementation cooperation group which will assess the above implementation progress. This work will result in two TAP implementation reports per year to be sent by the Agency to the European Commission and the TAP TSI Steering Committee.

3.2.11. TAF TSI

The purpose of the telematics applications for freight service (TAF TSI regulation ([1])) is to ensure the efficient interchange of information by setting up the relevant technical framework. It covers the applications for freight services and the management of connections with other modes of transport. This means that that the TAF TSI, in addition to the pure operation of trains, also addresses the transport services of an RU.

The TAF TSI also has an impact on the conditions of use of rail transport by users. In this respect the term users means not only infrastructure managers or railway undertakings but also all other service providers such as wagon companies, intermodal operators and even customers.

The TAF TSI neither contains open points nor specific cases.

This technical specification for interoperability concerns the element 'applications for freight services' of the subsystem 'telematics applications' included in the functional area of the list in Annex II to the interoperability directive.

Commission Regulation 280/2013/EU ([2]) amended the TAF TSI in revising its Annex A, regarding the list of accompanying documents (Index No 5 and Appendices A to F).

Currently the TAF TSI is in the implementation phase: in January 2013, the European rail sector players (railways, infrastructure managers, wagon keepers, service providers, intermodal operators and even customers) have submitted a master plan quoting the milestones and deadlines for the implementation of the above TAF TSI functions and processes. The European Union Agency for Railways has started in 2014 a TAF TSI implementation cooperation group in which the above implementation progress is assessed, delivering two reports per year to the European Commission and the TAF TSI Steering Committee. The Agency has submitted up till now two TAF TSI implementation status reports to the European Commission and the TAF TSI Steering Committee.

■ **Table 2** — Status of implementation of TAF TSI functions (by 31.08.2015)

	Primary location codes function	Company codes function	Common interface function	Rolling stock reference database function	Train running information function (IM)	Train running information function (RU)	Wagon and intermodal unit operational database function (RU)
2nd Status Report	93 %	61 %	56 %	17.28 %	59.07 %	24.2 %	11.28 %

The above results are drawn from the 2nd TAF TSI Status Implementation Report delivered by the Agency on 27 November 2015 to the European Commission. Moreover, the results are based on a survey performed for a population of 187 company contacts registered in an IT tool hosted by the Joint Sector Group (JSG) and the European Union Agency for Railways. Out of 187 registered companies, 81 companies provided responses about the evolution of the implementation of the abovementioned functions.

([1]) Commission Regulation (EU) No 1305/2014 of 11 December 2014 on the technical specification for interoperability relating to the telematics applications for freight subsystem of the rail system in the European Union and repealing Regulation (EC) No 62/2006 (OJ L 356, 12.12.2014, pp. 438-488)
([2]) OJ L 84, 23.3.2013, pp. 17-18.

The following key findings per TAF TSI function can be highlighted:

- The majority of IMs has completed filling of the Common reference files for locations on their network.

- Company codes are already widely used within the sector, both by IMs and RUs. Nevertheless, some difficulties in getting the company codes may be drawn from the results of the survey performed for this particular function, in particular the identification of which entity is in charge of the allocation of these codes.

- The majority of RUs are still developing the common interface, while a number of IMs have already finished the implementation of the common interface functionality.

- The Rolling Stock Reference Database has been already launched, however mainly UIP members have delivered data concerning the implementation of this function. Regarding the data delivered, these wagon keepers companies have already completed the implementation of this function. In particular the implementation status report shows that the deployment of the Rolling Stock Reference Database (RSRD) by the first half of 2015 is on average for the overall European rail sector delayed compared to the target implementation date declared in the TAF TSI Implementation Master Plan, the year 2015.

- The level of realisation of train running information is progressing in accordance with the implementation schedule quoted in the TAF TSI Implementation Master Plan by 2017.

- The level of implementation of the Wagon and Intermodal Unit Operational Database is still very low based on the realisation milestones reflected on the TAF TSI Implementation Master Plan, where half of railway undertakings respondents committed to deploy this function by 2016 and the whole implementation to be performed by 2018.

These outcomes are summarised on the progress implementation maps available on the Agency's website ([1]).

([1]) http://www.era.europa.eu/tools/TAFTSI/Pages/Home.aspx

Table 3 — Structural TSIs and their amendments, by year (updated July 2015)

Year	HS TSI INF	CR TSI INF	HS TSI ENE	CR TSI ENE	TSI SRT	TSI PRM	HS TSI RST	CR TSI LOC&PAS	CR TSI WAG	TSI NOI	HS TSI CCS	CR TSI CCS	Year
		INF		ENE					RST		CS / CCS		
1999											Decision 1999/569 on basic parameters EiF: 29/07/1999		1999
2000													2000
2001											Decision 2001/260 on basic parameters		2001
2002	Decision 2002/732 (1st HS INF TS) EiF: 30/11/2002		Decision 2002/733 (1st HS ENE TSI) EiF: 30/11/2002				Decision 2002/735 (1st HS RST TSI) EiF: 30/11/2002				Decision 2002/731 (1st HS CCS TSI)		2002
2003													2003
2004									Decision 2004/446 (on basic parameters)	Decision 2004/446 (on basic parameters) (CR only)	Decision 2004/447 (amendment Annex A)	Decision 2004/447 (on basic parameters)	2004
2005													2005
2006										Decision 2006/66 (1st NOI TSI) (CR only) DoA: 8/8/2006	Decision 2006/860 (2nd HS CCS TSI) DoA: 7/11/2006	Decision 2006/679 (1st CR CCS TSI) DoA: 28/9/2006	2006
2007											Decision 2007/153 (amendment Ann. A) DoA: 6/3/2007	Decision 2007/153 (amendment Ann. A) DoA: 7/3/2007	2007
2008	Decision 2008/217 (2nd HS INF TS) EiF: 21/12/2007 DoA: 1/7/2008		Decision 2008/284 (2nd HS ENE TSI) EiF: 6/3/2008 DoA: 1/10/2008		Decision 2008/163 (1st SRT TSI) EiF: 21/12/2007 DoA: 1/7/2008	Decision 2008/164 (1st PRM TSI) EiF: 27/12/2007 DoA: 1/7/2008	Decision 2008/232 (2nd HS RST TSI) EiF: 21/2/2008 DoA: 1/9/2008		Decision 2006/861 (1st CR WAG TSI) DoA 31/01/2008		Decision 2008/386 (amendment Ann. A) DoA: 1/6/2008	Decision 2008/386 (amendment Ann. A) DoA: 1/6/2008	2008
2009									Decision 2009/107 (amendment) DoA 01/07/2009			Decision 2009/561 (amendment ch.7) DoA: 1/9/2009	2009
2010											Decision 2010/79 (amendment Ann. A) DoA: 1/4/2010	Decision 2010/79 (amendment Ann. A) DoA: 1/4/2010	2010
2011		Decision 2011/275 (1st CR INF TSI) DoA: 1/6/2011		Decision 2011/274 (1st CR ENE TSI) DoA: 1/6/2011	Decision 2011/291 (amendment) DoA: 1/6/2011			Decision 2011/291 (1st LOC&PAS TSI) DoA: 1/6/2011		Decision 2011/229 (2nd NOI TSI)			2011

Year	INF		ENE		TSI SRT	TSI PRM	RST			TSI NOI	CCS		Year
	HS TSI INF	CR TSI INF	HS TSI ENE	CR TSI ENE			HS TSI RST	CR TSI LOC&PAS	CR TSI WAG		HS TSI CCS	CR TSI CCS	
2012	Decision 2012/462 (Amendment of Decision 2002/732 etc.) DoA: 24/1/2013		Decision 2012/462 (Amendment of Decision 2002/733 etc.) DoA: 24/1/2013				Decision 2012/462 (Amendment of Decision 2002/735 etc.) DoA: 24/1/2013			Decision 2012/462 (Amendment of Decision 2006/66 etc.) DoA: 24/1/2013	Decision 2012/696 (amendment annexes A and G) DoA: 23/7/2012	Decision 2012/463 amendment DoA: 24/1/2013	2012
2013	Decision 2012/464/EU: amending Decisions 2006/861/EC, 2008/163/EC, 2008/164/EC, 2008/217/EC, 2008/232/EC, 2008/284/EC, 2011/229/EU, 2011/274/EU, 2011/275/EU, 2011/291/EU etc. DoA: 24/1/2013								Regulation 321/2013 (2nd WAG TSI) EiF: 13/4/2013 DoA: 1/1/2014		Decisions 2012/462 and 2012/463 (amendment) DoA: 24/1/2013	Decision 2012/88 (1st merged CCS TSI) DoA: 1/1/2013	2013
2014									Regulation 1236/2013 amendment EiF: 4/12/2013 DoA: 1/1/2014				2014
2015	Regulation 1299/2014 (1st merged INF TSI) EiF/DoA: 1/1/2015		Regulation 1301/2014 (1st merged ENE TSI) EiF/DoA: 1/1/2015		Regulation 1303/2014 (2nd SRT TSI) EiF/DoA: 1/1/2015	Regulation 1300/2014 (2nd PRM TSI) EiF/DoA: 1/1/2015	Regulation 1302/2014 (1st merged RST TSI) EiF/DoA: 1/1/2015		Regulation 2015/924 amendment DoA: 01/07/2015	Regulation 1304/2014 (3rd NOI TSI) EiF/DoA: 1/1/2015	Decision (EU) 2015/14 (amendment) DoA: 1/7/2015		2015

DoA: date of application, **EiF:** entry in force

Table 4 — Functional TSIs and their amendments, by year (updated June 2015)

Year	TSI OPE		TA	
	HS TSI OPE	CR TSI OPE	CR TSI TAF	TSI TAP
2002				
2003	Decision 2002/734 (1st HS OPE TSI) DoA: 12/3/2003			
2004			Decision 2004/446 on basic parameters	
2005				
2006			Regulation 62/2006 (1st TAF TSI) EiF: 19/1/2006	
2007		Decision 2006/920 (1st CR OPE TSI) DoA: 18/05/2007		
2008	Decision 2008/231 (2nd HS OPE TSI) DoA: 1/9/2008			
2009		Decision 2009/107 (amendment) DoA: 1/7/2009		
2010	Decision 2010/640 (amendment) DoA: 25/10/2010 and 1/1/2014 (**)	Decision 2010/640 (amendment) DoA: 25/10/2010 and 1/1/2014 (**)		
2011		Decision 2011/314 (2nd CR OPE TSI) DoA: 1/1/2012 (***)		Regulation 454/2011 (1st TAP TSI) EiF: 13/5/2011
2012	Decision 2012/464 amending Decisions 2008/231/EC and 2011/314/EU etc.		Regulation 328/2012 (amendment) EiF: 08/5/2012	Regulation 665/2012 (amendment) EiF: 22/7/2012
2013			Regulation 280/2013 (amendment) EiF: 24/3/2013	Regulation 1273/2013 (amendment) EiF: 8/12/2013
2014	Decision 2012/757 OPE:2012 (1st merged OPE TSI) DoA: 1/1/2014 Decision 2013/710 OPE:2012:A1:2013 (amendment appendix A) DoA: 1/1/2014			
2015	Regulation 2015/995 amending Decision 2012/757/EU EiF/DoA: 20/07/2015		Regulation 1305/2014 (2nd TAF TSI) EiF/DoA: 1/1/2015	

DoA: date of application, **EiF:** entry in force
(**) DoA 1/1/2014 is only for point 6 of Annex I and point 5 of Annex II
(***) Appendices P and Pa have different dates of application, i.e. Appendix P applies from 1/1/2012 until 31/12/2013; Appendix Pa applies from 1/1/2014.

3.3. Authorisation for placing in service

3.3.1. Vehicles

As described above in paragraph 1.2, not all national safety authorities provided data for 2013 and 2014 in order to elaborate this report. In previous years, this was also the case, which required the Agency to extrapolate the available data to cover all of the Member States. The extrapolation has been based on financial information supplied by the manufacturers association UNIFE, information from the public media regarding railway vehicle orders, company press releases, etc.

The trends shown in Figure 10 below indicate the impact of the recession starting with the financial crisis in 2008. The more recent fall in the number of vehicles being authorised is thought to be related to incomplete data and the longer-term impacts regarding investments in new rolling stock.

Figure 10 — Total number of authorised new vehicles
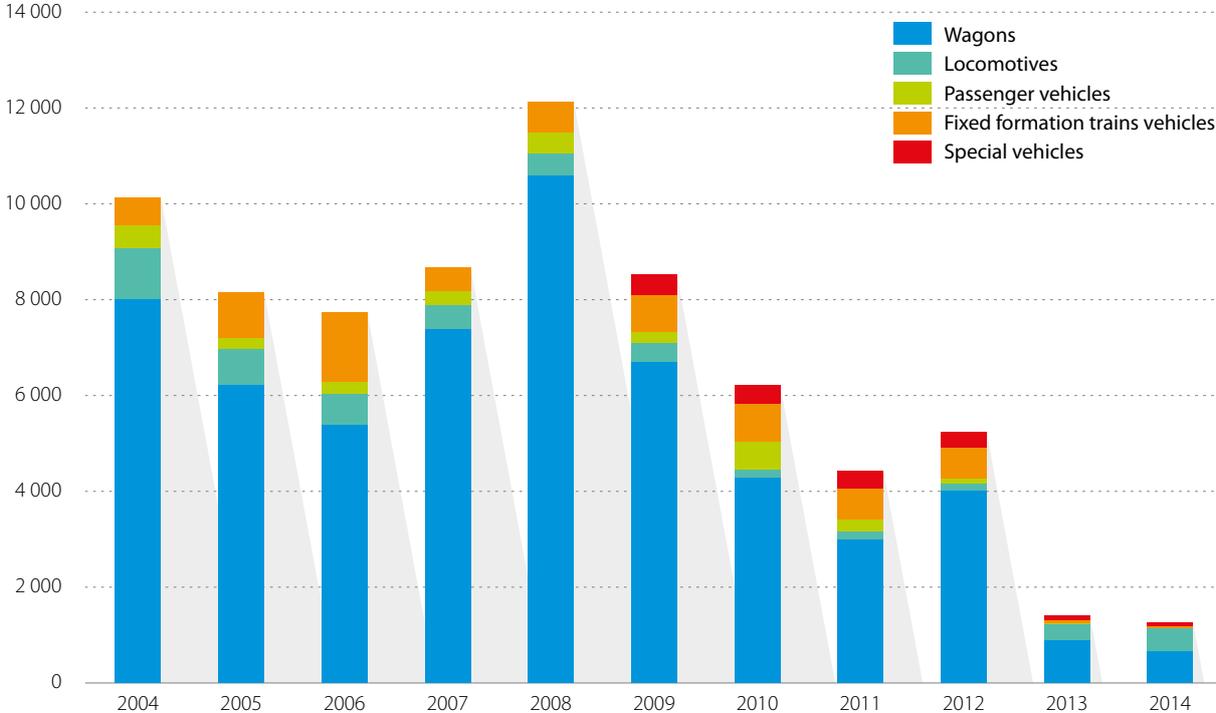
The 2013/2014 data of Belgium, Norway, Poland and the United Kingdom is missing in this table.

If railway freight wagons are excluded, then we see a more stable long-term development regarding authorisations of new rolling stock. This is shown in Figure 11 below. It is worth noting the steady increase from 2012 to 2014 regarding the number of authorisations given for new locomotives. This shows that there is an increasing demand for traction on the European market.

Figure 11 — Total number of authorised new vehicles without wagons
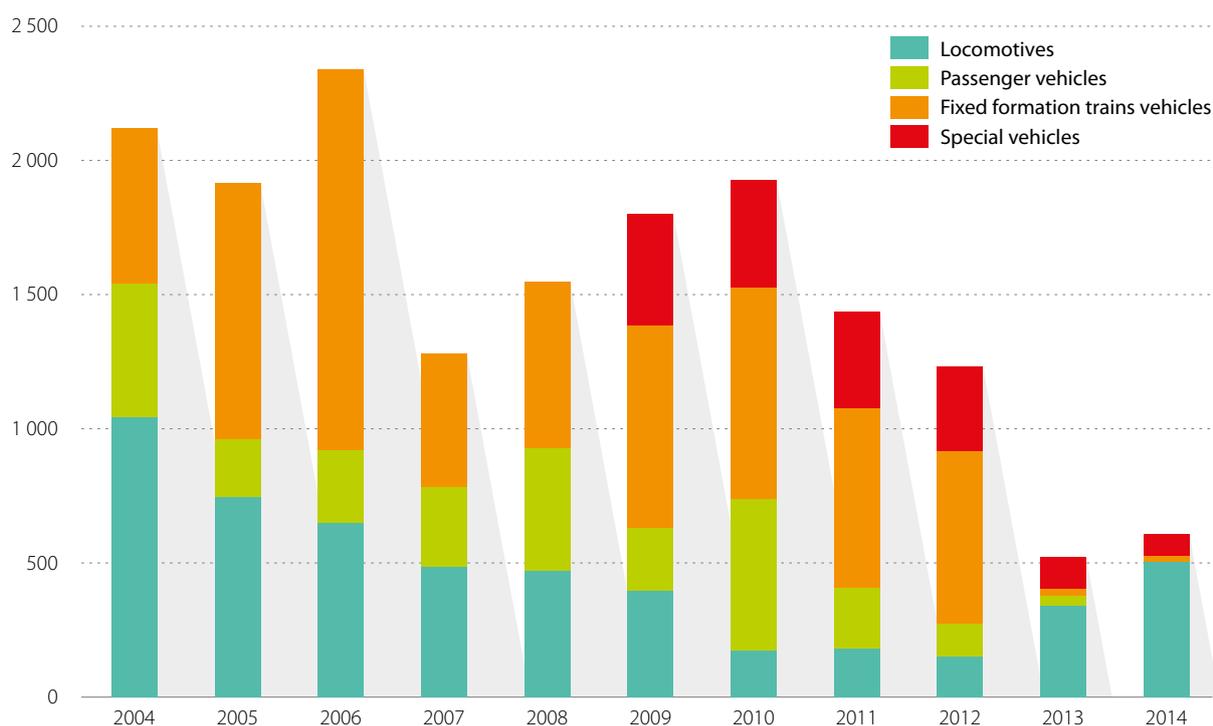
Legend:
- Locomotives
- Passenger vehicles
- Fixed formation trains vehicles
- Special vehicles

The 2013 / 2014 data of Belgium, Norway, Poland and the United Kingdom is missing in this table.

3.3.2. Fixed installations

In tables below, the Agency has listed the new and upgraded lines (Table 5), new and upgraded railway stations (Table 7) and new and upgraded tunnels (Table 9) opened in 2013 and 2014. This information is based on the data provided by the NSAs in the questionnaire, unless indicated otherwise.

For the first time, the Agency has also asked about closed railway lines (Table 6), closed railway stations (Table 8) and closed tunnels (Table 10) in the reporting period, because otherwise it could wrongly appear that the European railway network is growing constantly. It must be noted that the term 'closed installations' only covers the installations which have been completely put out of service, and not those which were only downgraded.

Table 5 — New and upgraded railway lines 2013 and 2014

Railway Line	Member State	Length (km)	Year	Remark
Alba Iulia, Vintu de Jos	Romania	8 km	2014	
Albacete, Alicante	Spain	164.2 km	2013	New station at Villena and refitting of station Alacant/Alicante;
Arbostella, Arechi	Italy	1.1 km	2013	
Copsa Mica, Medias	Romania	3.4 km	2014	Partially rehabilitated
Copsa Mica, Micasasa	Romania	5.9 km	2014	Partially rehabilitated
D. DIR NAP. AFR., D.DIR PM CAS.(pass N\S)	Italy	4.3 km	2013	
Danes, Dumbraveni	Romania	7.5 km	2014	Partially rehabilitated
Dumbraveni, Atel	Romania	4.6 km	2014	Partially rehabilitated
Elmas Airport, Cagliari S.Gilla	Italy	4.8 km	2013	
Figueras, Perpiñan	Spain	19.8 km	2013	Spanish section of the international line
Fornovo, PP Osteriazza	Italy	2.7 km	2014	
HM Podu Mures	Romania	1 km	2014	
Ikonio Port, Thriasio Pedio	Greece	17 km	2013	
Integration Puerto Real Phase I	Spain	2.24 km	2013	By tunnel
Integration Puerto Real Phase II	Spain	2.24 km	2014	
Isola Delle Femmine, Capaci	Italy	3 km	2014	Variant
Las cabezas-Lebrija, Jerez Airport	Spain	35.87 km	2013	Phase 1/3
Las cabezas-Lebrija, El Cuervo, Jerez Airport	Spain	35.87 km	2014	Phase 2/3
Marzaglia, Rubiera	Italy	4.5 km	2014	
Mercatello, Arbostella	Italy	1.2 km	2013	
Modena, PM Freto	Italy	3.6 km	2014	
Napoli Afragola, D. Dir Napoli Afragola	Italy	1.5 km	2013	
Nové mesto nad Váhom, Zlatovce (double track sections)	Slovakia	17.5 km	2013	
Pastena, Mercatello	Italy	0.8 km	2013	
PC Citerna Taro, Solignano	Italy	5.2 km	2014	
PM Freto, Marzaglia	Italy	5.2 km	2014	
PP Osteriazza, PC Citerna Taro	Italy	6 km	2014	
Ramal Puerto De Alicante	Spain	1.4 km	2014	
Reguerón, Alacant	Spain	4.2 km	2013	Variante Pk 36+943 Al 41+104 De La Línea 336
Reguerón, Alacant	Spain	3.2 km	2014	Variant Pk 58+349 Al 61+502 of line 336
Salerno, Torrione	Italy	1.7 km	2013	
Tábor, Chotoviny	Czech Republic	4 km	2014	
Torrione, Pastena	Italy	1 km	2013	
Trenčianska Teplá, Beluša	Slovakia	20.41 km	2014	Upgrading of railway line Nové Mesto nad Váhom – Púchov for the line speed up to 160 km/hour.
Utrera-Las cabezas, Marismillas (station Las Cabezas de San Juan	Spain	35.87 km	2014	Phase 3/3
Variant Valladolid, Tres Hermanos	Spain	1.4 km	2014	Line 100 Hendaya-Madrid
Variante Arcade, Pontevedra	Spain	9.2 km	2013	Double track
Variante Pontevedra, Faxil	Spain	12.6 km	2014	

The data of Belgium, Germany, Norway, Poland and the United Kingdom is missing in this table.

Table 6 — Closed railway lines 2013 and 2014

Railway Line	Member State	Length (km)	Year	Remark
Alba Iulia	Romania	1.4 km	2013	line 1 direction
Alba Iulia, Vintu de Jos	Romania	9.9 km	2014	running line ll
Alentejo Line/Poceirão, Beja section	Portugal		2013	
Algarve Line/Provimi Branch	Portugal		2014	
Amindaio, Kozanh	Greece	27 km	2014	
Banu Mărăcine, Jiu Craiova	Romania	7.3 km	2013	
Barabant, Alba Iulia	Romania	3.6 km	2013	running line ll
Blaj, Craciunel	Romania	5.3 km	2014	running line ll
Blandiana, Sibot	Romania	9.8 km	2014	running line l
Breznička, Katarínska Huta	Slovakia	9.8 km	2014	
Busigny, Boué	France	20 km	2013	
C.Libertatii, Blaj	Romania	2.6 km	2014	running line ll
Citerna Taro, Selva Del Bocchetto	Italy	2.5 km	2014	
Copsa Mica, Micasasa running	Romania	8.4 km	2014	line ll
Coslariu	Romania	1.4 km	2014	direct line
Coteau, Pouilly-sous-Charlieu	France	15 km	2013	
Craciunel, Podu Mures	Romania	12.6 km	2014	running line l
Crouzilles, La-Celle-Saint-Avant	France	14 km	2013	
Descartes, Tournon-St-Martin	France	42 km	2014	
Desnes, Laons-le-Saunier	France	14 km	2014	
Dumbraveni, Atel	Romania	5.3 km	2014	running line ll
Fornovo, Citerna Taro	Italy	8.9 km	2014	
Gérard, Fougères	France	29 km	2013	
Isola delle Femmine, Capaci	Italy	3 km	2014	
Karlovac, Petrinja	Croatia	91 km	2014	
Krivaja, Gaj	Croatia	1.1 km	2014	
Leyr, Nomeny	France	10 km	2013	
Medias, Atel	Romania	8.4 km	2013	running line l
Micasasa, Valea Lunga I	Romania	7.7 km	2013	
Mirkovci, Vrapčana	Croatia	4.9 km	2014	
Pisa Bin. Aerop., Dev. Tagl. Pisac.Le	Italy	0.7 km	2014	
Pisa Centrale, Pisa Bin. Aerop.	Italy	2 km	2014	
Pont-Chrétien, St Marcel	France	1 km	2014	
Rubiera, Modena	Italy	12.7 km	2014	
Segré, Châteaubriant	France	41 km	2013	
Selva del Bocchetto, Solignano	Italy	2.5 km	2014	
Serqueux, Arques-la-Bataille	France	41 km	2014	
Sibot, Aurel Vlaicu	Romania	4.6 km	2014	running line ll
Sighisoara, Danes	Romania	9 km	2014	running line ll
Tourcoing, Halluin	France	11 km	2013	
Valea Lunga, C.Libertatii	Romania	9.7 km	2014	running line ll
Vennecy, Boiscommun-Nibelle	France	30 km	2014	
Vinkovci, AB Jarmina	Croatia	5.3 km	2014	A and B were parts of the Vinkovci shunting yard, which is closed.
Vinkovci, CD Jarmina	Croatia	5.1 km	2014	C and D were parts of the Vinkovci shunting yard, which is closed
Vintu de Jos, Blandiana	Romania	4.3 km	2014	running line l
Vukovar, Vukovar Stari	Croatia	5.7 km	2014	
Yate, Thornbury branch line	United Kingdom	12 km	2013	Source: Wikipedia
Zgb.-Borongaj, Zgb-Ist.kol.	Croatia	3.7 km	2014	
Breznička, Katarínska Huta	Slovakia	9.8 km	2014	

The data of Belgium, Norway and Poland is missing in this table.

Name of the Railway Station	Member State	Year	Remark
Estación Villanueva de Córdoba	Spain		
Estación San Isidro, Albatera,Catral	Spain		

The data of Belgium, Germany, Norway, Poland and the United Kingdom is missing in this table.

■ **Table 8** — Closed railway stations in 2013 and 2014

Name of the Railway Station	Member State	Year	Remark
Donchevo	Bulgaria	2013	
Svezhen	Bulgaria	2013	
O Apeadeiro da Aroeira	Portugal	2014	
Boutari	Romania	2013	
Adinca	Romania	2013	
Racasdia	Romania	2013	
Paulis Lunca	Romania	2013	
Giurgiu Sud	Romania	2013	
Homoriciu	Romania	2013	
Ceamurlia de Jos	Romania	2013	
Siutghiol	Romania	2014	
Afumati	Romania	2014	
Dumbrava	Romania	2014	
Scaieni	Romania	2014	

The data of Belgium, Germany, Norway, Poland and the United Kingdom is missing in this table.

■ **Table 9** — List of new and upgraded railway tunnels 2013 and 2014

Tunnel	Member State	Length (m)	Remark
Alicante underground station	Spain	770 m	
BBI Airport Tunnel East	Germany	407 m	
BBI Airport Tunnel West	Germany	2 246 m	SRT TSI-conform
Bebenroth-Tunnel	Germany	1 030 m	SRT TSI conform
Combiplan Nijverdal	Netherlands	500 m	
Eppsteiner-Tunnel	Germany	340 m	
Hoffnungsthaler-Tunnel	Germany	1 087 m	
Kaiser-Wilhelm-Tunnel (new)	Germany	4 242 m	SRT TSI-conform
Katzenbergtunnel	Germany	9 385 m	East and West tube; SRT TSI-conform
Marienthaler-Tunnel	Germany	1 050 m	
Mettlacher Tunnel	Germany	1 092 m	
Puerto Real Túnel	Spain	1 800 m	Double track
Rehberg Tunnel	Germany	1 632 m	
City tunnel Leipzig	Germany	2 955 m	SRT TSI-conform
Schlüchterner-Tunnel	Germany	3 576 m	SRT TSI-conform
Staufenplatz Tunnel	Germany	2 031 m	
Sterbfritz-Tunnel	Germany	1 092 m	
Túnel Aguilas	Spain	1 231 m	890 m mechanically bored tunnel and 2 cut-and-cover tunnels (216 m and 125 m)
Túnel Barracadas	Spain	825 m	Artificial tunnels north and south (292 m and 533 m)
Túnel serreta Larga	Spain	301 m	175 m mechanically bored tunnel and 2 cut-and-cover tunnels (45 m and 81 m)
Turecký vrch	Slovakia	1 755 m	New "single tube" double track railway tunnel; first railway tunnel in Slovakia built in accordance with requirements of SRT TSI.

The data of Belgium, Norway, Poland and the United Kingdom is missing in this table.

Table 10 — List of closed Railway Tunnels 2013 and 2014

Tunnel	Member State	Length (m)	Remark
Galleria Fornovo, Km. 23+446	Italy	212 m	
Galleria Vizzana, Km. 32+861	Italy	240 m	
Galleria Bocchetto, Km. 33+608	Italy	97 m	
Galleria Solignano, Km. 34+989	Italy	1 572 m	

The data of Belgium, Germany, Norway, Poland and the United Kingdom is missing in this table.

3.3.3. ERTMS trackside

The data reported by the Member States regarding ETCS deployment in the EU shows, that in 2013 an additional 383 line kilometres were put into service and in 2014, 465 line kilometres. However, the data of Belgium, Germany, Norway, Poland and the United Kingdom are missing and other data seems to be contradictory or incomplete compared to the biennial report on the Progress with Railway Interoperability in the European Union 2013. In 2013, it was reported in Paragraph 6.1, that at that time 'around 5 190 km of line were in production (in testing or at an advanced stage of construction)'. The Agency also checked other available sources of information for data regarding ETCS deployment, i.e. data from the European Commission, from INEA and from Eurostat. This exercise confirmed the contradictory data and an exercise is in progress to update and validate the ERTMS trackside data into the geographical and technical information system for the trans-European transport network (TENtec) referred to in Article 49 of Regulation (EU) No 1315/2013 ([1]).

ETCS is widely used outside the European Union, such as in Brazil, China, India, New Zealand, Mexico, Saudi Arabia, Switzerland and Turkey ([2]).

3.4. Interoperability registers

This paragraph provides basic information regarding the interoperability registers of the Agency and their development in the reporting period. For more details, for access to the registers, the legislative documents, application guides and for most recent developments please check the Agency's website ([3]).

3.4.1. RINF

Article 35 of the interoperability directive requests that the Agency ensures that a register of infrastructure (RINF) is published. The main purpose of the RINF is to provide transparency on the characteristics of the European Union railway network and allowing in the future to execute preliminary compatibility checks.

During 2014 the Agency has been developing and adapting the specifications of the RINF common user interface (RINF CUI) to facilitate the collection and preparation of data at a national level. These specifications were adopted by Commission Implementing Decision 2014/880/EU ([4]) of 26 November 2014 on the common specifications of the register of railway infrastructure and repealing Implementing Decision 2011/633/EU ([5]). A guide on their application was published by the Agency on 16 December 2014.

([1]) OJ L 348, 20.12.2013, p. 1–128
([2]) http://www.ertms.net/?page_id=58
([3]) http://www.era.europa.eu
([4]) OJ L 356, 12.12.2014, p. 489–519
([5]) OJ L 256, 1.10.2011, p. 1–25

The RINF CUI is a web-based application hosted and maintained by the Agency. Successive versions were made available for test throughout the year. They have allowed entities designated at national level to set up a register of infrastructure, to get used of the IT application and to contribute to its development by much constructive feedback.

Main elements are in place to start in 2015 the implementation of Commission Decision 2014/880/EU ([1]).

3.4.2. ECVVR

The European Centralised Virtual Vehicle Register (ECVVR) is based on Article 33 of the the interoperability directive and Commission Decision 2007/756/EC ([2]). It consists of the national vehicle registers (NVR) in the Member States and the Virtual Vehicle Register (VVR), a search engine hosted by the Agency.

The purpose of the ECVVR is to provide administrative information (e.g. authorisation data, keeper, owner, entity in charge of maintenance (ECM)) on vehicles placed into service on the European Union railway network.

In the reporting period, the Agency supported Member States whose NVRs were not yet connected.

ECVVR was introduced into service in 2010; access to the ECVVR is restricted.

3.4.3. ERATV

The European Register of Authorised Types of Vehicles (ERATV) is based on Article 34 of the interoperability directive and Commission Decision 2011/665/EU ([3]). It records the type authorisations issued by the Member States.

ERATV provides for each authorised type of vehicle the main technical characteristics, the conformity with the TSIs and the data concerning the type authorisation.

During the reporting period, the Agency supported the NSAs in the population of ERATV.

ERATV has been in operation since January 2013; the data in ERATV is publicly available.

([1]) OJ L 305, 23.11.2007, pp. 30-51.
([2]) OJ L 264, 8.10.2011, pp. 32-54.
([3]) OJ L 305, 23.11.2007, pp. 30-51.

3.4.4. VKMR

The Vehicle Keeper Marking Register is defined in Appendix 6 part 1 of the Decision 2007/756/EC ([1]).

This register provides the unique VKM and the company name of keepers (EU/OTIF).

Since May 2014 a joint OTIF/EU VKM Register is hosted by the Agency and provides the VKM details in four languages (English, French, German and Russian).

VKMR has been published on the Agency's website since January 2010; the data in the VKMR is publicly available.

3.4.5. Eradis

The European Railway Agency Database of Interoperability and Safety (Eradis) is used for the collection and publishing of the following documents concerning safety and interoperability according to Regulation (EC) No 881/2004:

- EC declarations of verification of subsystems;

- EC declarations of conformity of interoperability constituents;

- Service quality reports issued yearly by railway undertakings, according to Article 28 of the passenger's rights regulation ([2]);

- EC declarations of suitability for use of interoperability constituents;

- Authorisations for placing in service of infrastructure and fixed installations.
During the reporting period, the Agency supported Member States in the population of Eradis.

Eradis is accessible since 2007; the data in Eradis is publicly available.

([1]) OJ L 305, 23.11.2007, p. 30–51.
([2]) Regulation (EC) No 1371/2007 of the European Parliament and of the Council of 23 October 2007 on rail passengers' rights and obligations (OJ L 315, 3.12.2007, p. 14–41).

3.5. Notified bodies

3.5.1. The European concept of conformity assessment

A manufacturer can only place a product on the EU market when it meets all the applicable requirements. The conformity of a product is assessed before it is placed on the market. The manufacturer needs to demonstrate that all legislative requirements are met. The conformity assessment includes testing, inspection and certification. The procedure for each product is specified in the applicable product legislation, i.e. the interoperability directive in the case of railways.

The objectives of the conformity assessment procedure are to demonstrate that a product being placed on the market complies with all legislative requirements. The procedure is aimed at ensuring the confidence of consumers, public authorities and manufacturers regarding the conformity of products.

Within the framework of the interoperability directive, notified bodies are the bodies responsible for:

1. assessing the conformity of the interoperability constituents;

2. assessing the suitability for use of the interoperability constituents;

3. verifying railway subsystems.

The legal minimum requirements for being a notified body are defined in Annex VIII of the interoperability directive. Additional requirements, set by European standards or specific accreditation schemes, are currently available and can be referred to as best practice.

For the notification process, Member States can identify suitable conformity assessment bodies through accreditation or recognition.

Accreditation means an attestation provided by the national accreditation body (NAB) that a conformity assessment body meets all the requirements to carry out a specific conformity assessment activity. Those requirements are set by EU legislation, harmonised standards and in addition — where applicable — by relevant sectorial schemes [1].

When a Member State decides not to use accreditation, it shall provide the EC and the other EU Member States with all the documentary evidence necessary for the verification of the competence of the conformity assessment bodies it selects for the implementation of the Community harmonisation legislation in question. This process is known as recognition [2].

Finally, as previously anticipated, notification is the act of the EU Member States' competent authorities informing the European Commission and the other EU Member States that a conformity assessment body (CAB) meets all requirements and has been designated to carry out conformity assessment according to the directive. With the notification, Member States declare that CABs fulfil all the requirements relating to notified bodies as set out in the interoperability directive [3].

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[1] Art 2(10) of Regulation (EC) 765/2008, OJ L 218, 13.8.2008, p. 30–47.
[2] Art 5(2) of Regulation (EC) 765/2008.
[3] NOTE: the EC Blue Guide Version 1.1 – 15/07/2015 provides an interesting and exhaustive reading about the above topics. The Blue Guide is available at this link: http://ec.europa.eu/DocsRoom/documents/12661 (Version 1.1 of 15/07/2015)

Figure 12 — Number of NoBos in March 2015 (and development since 2008)

Notified Bodies
1
2
3+
Change from 2008 (-)

1 (+1)
1 (+1)
2 (+1)
0 (0)
2 (+1)
0 (0)
0(0)
12 (+2)
1 (+1)
5 (0)
1 (0)
1 (0)
1 (0)
4 (0)
2 (0)
1 (+1)
2 (0)
4 (+2)
2 (+1)
1 (0)
6 (+6)
0 (0)
1 (+1)
1 (0)
5 (0)
0 (0)
0 (0)

Map subject to amendments. Number of Notified Bodies may be higher due to non-notification by MS. Figures are purely quantitative and may not reflect the legal impact of the legislation on the railway system.

Source: Notified Bodies: NANDO
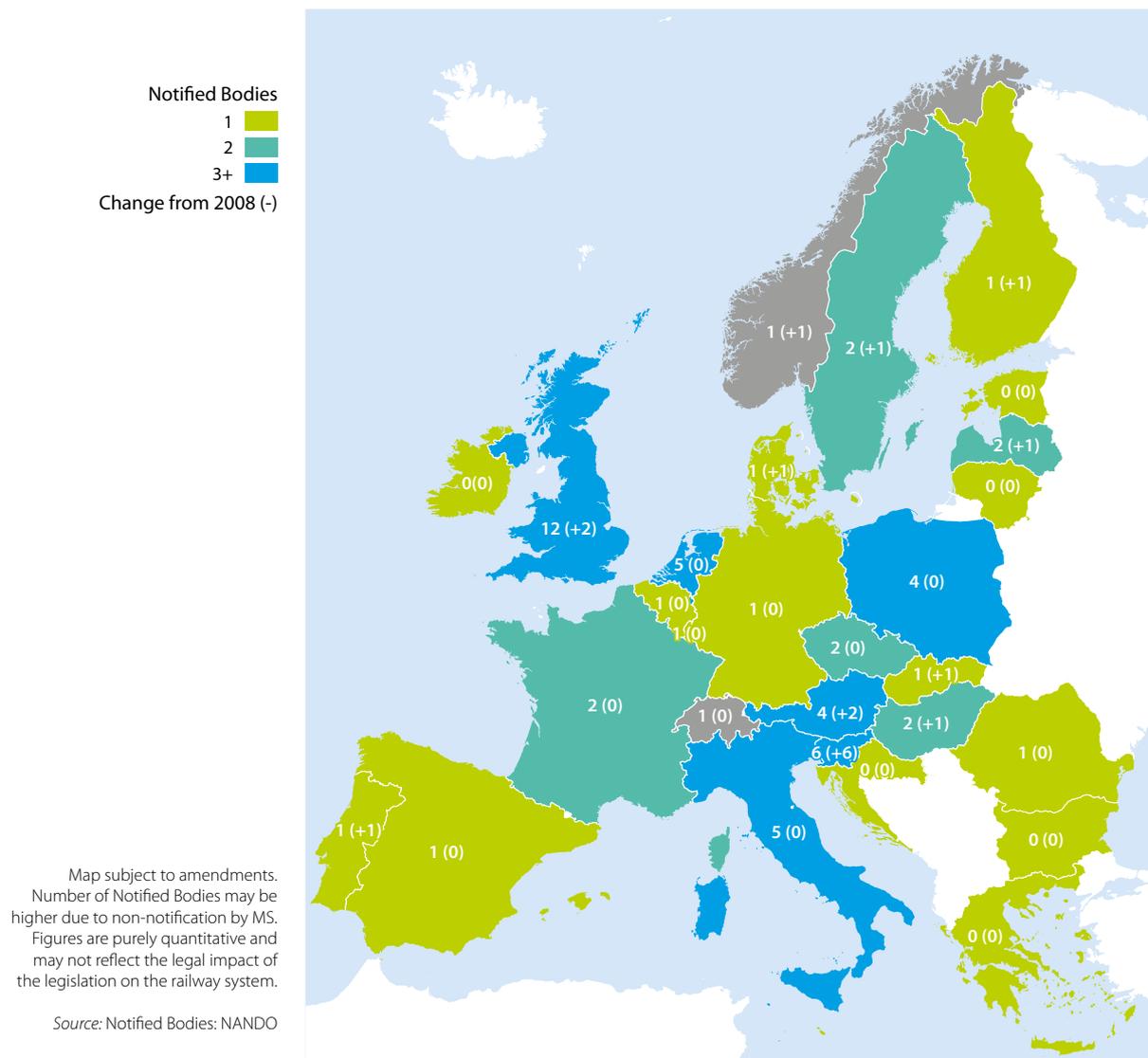
3.5.2. Quality of work

According to the information collected in May 2014 from the NANDO [1] database, there were 58 notified bodies in Europe: 40 notified bodies have been assessed by the NAB (around 70 % of the total) and 18 notified bodies have been assessed by other entities appointed by the Member States (around 30 % of the total).

It is clear that the entities assessed by NABs have been later notified following accreditation where the others have been notified by recognition.

The competence of the bodies seeking notification have been assessed by the NABs and entities appointed by the Member States according to several different documents.

In case of entities assessed by the NABs, the requirements have been assessed against the international harmonised standards of the EN ISO/IEC17000 series.

The following table summarises the international harmonised standards used for the assessment of the conformity assessment bodies.

_____

[1] http://ec.europa.eu/growth/tools-databases/nando/index.cfm.

Table 11 — International standards used for the assessment of conformity assessment bodies

EN ISO/IEC	How often was the standard applied
17020	28
17021	23
17024	2
17025	6
17065	35
45001 ([1])	5

Most of the notified bodies have been assessed against more than one international harmonised standard. In fact, a NoBo can accumulate several accreditations against different international standards, but not all of them could be useful for the purpose of notification under the interoperability directive.

In fact, the NoBo can perform several activities for which other accreditation is needed; in this case, in the notification document all of their accreditation is noted, however for the scope and purpose of the interoperability directive only one applies.

Out of the total of 40 accredited notified bodies in EU at May 2014, the following list summarises the situation concerning the use of European standards for accreditation of notified bodies under the interoperability directive:

- 20 notified bodies have been accredited against two or more international standards:
  - 14 NoBos against two standards, and
  - 5 NoBos against three standards;
- 12 notified bodies have been accredited against only the EN ISO/IEC 17020 standard;
- 1 notified body has been accredited against only the EN ISO/IEC 17025;
- 6 notified bodies have been accredited against only the EN ISO/IEC 17065;
- 2 notified bodies has been accredited against only the EN ISO/IEC 45001.

([1]) The 45001 has been replaced by the 17025.

3.6. Train drivers

The train drivers directive was amended in 2014. This amendment relates to the general professional knowledge and medical and licence requirements. It amends Annex II and Annex VI and it replaces Annex IV to Directive 2007/59/EC after a first return of experiences. This amendment is removing the possibility for drivers to be able to continue driving after losing their binocular vision after starting to work. It is also introducing the Common European Framework of Reference for Languages (CEFR) as standard for language tests where drivers have to communicate in a foreign language and it is setting out more detailed requirements for general professional knowledge.

The map below shows the percentage of train drivers holding a European licence according to the train drivers directive in 2013.

Figure 13 — Percentage of train drivers holding a European license

Legend:
- 0 % — 25 %
- 25.01 % — 50 %
- 50.01 % — 75 %
- 75.01 % — 00 %

100 % Target: Oct. 2018

76.22 %
61.5 %
1.2 %
0 %
14.91 %
25.62 %
0 %
1.43 %
38.23 %
28.54 %
72.2 %
0.96 %
3.07 %
16.78 %
29.57 %
1.75 %
42.66 %
0 %
4.05 %
0 %
6.15 %
0 %
0 %
0 %

Total number of European
train drivers with EC licenses: 20 063
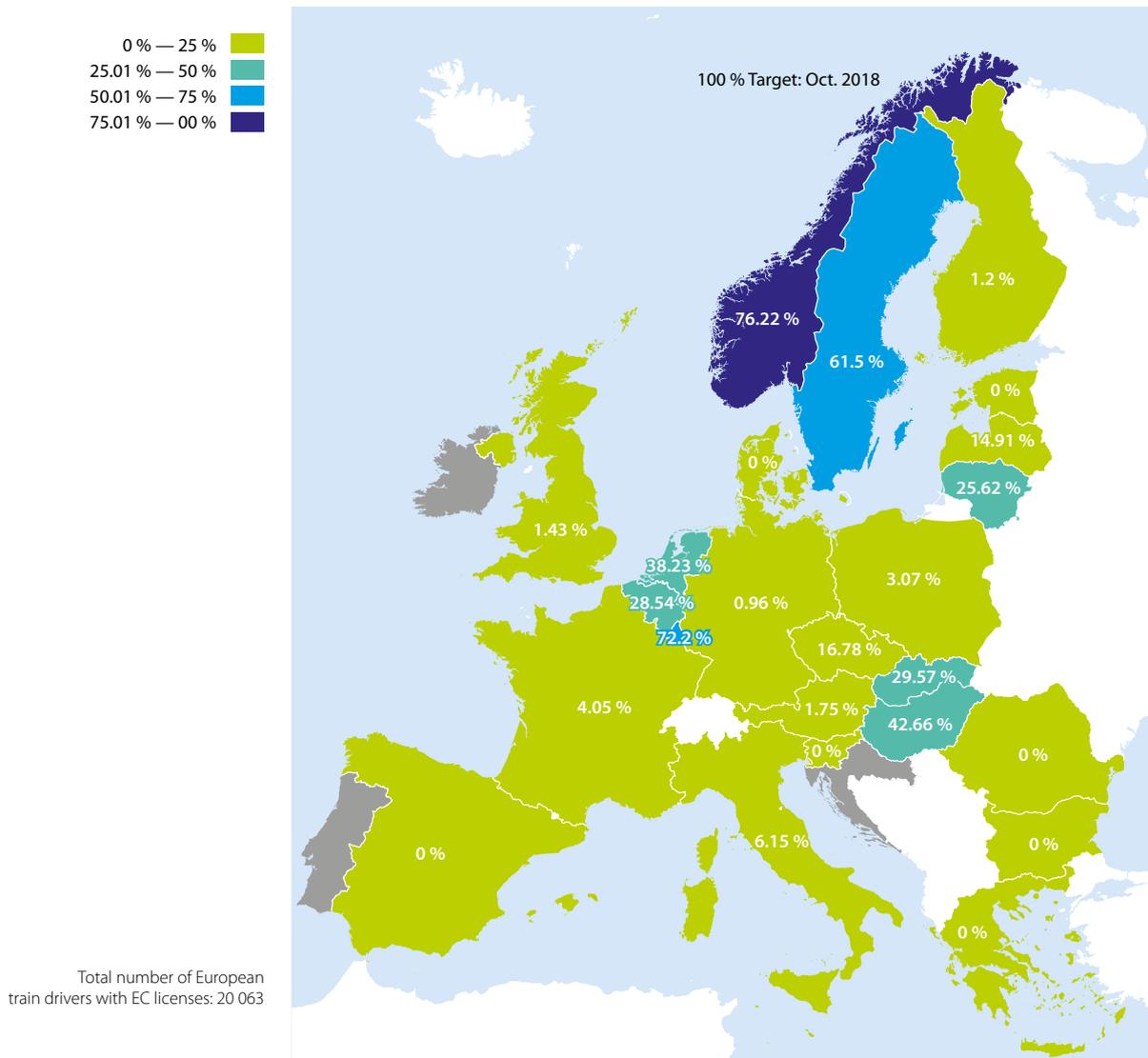
3.7. Interface with non-EU states

3.7.1. OTIF

The European Union is a Member of the Intergovernmental Organisation for International Carriage by Rail (OTIF). In this capacity, the European Union Agency for Railways is supporting the European Commission to represent all the 26 EU Member States which still have a rail system at OTIF-Meetings.

The Agency assists the European Commission in its cooperation with OTIF to establish and maintain equivalence between the EU and OTIF legislation concerning railway interoperability and safety to the extent necessary for international rail traffic.

To streamline this process OTIF, the European Commission and the Agency signed Administrative Arrangements in Brussels on 24 October 2013. These Arrangements would allow the three parties to better plan their activities of common interest and to prioritise the tasks using their resources efficiently. All three partners have agreed to cooperate intensively, including the regulation related to the transport of dangerous goods and in establishing a compatible legal framework for the approval and international use of rolling stock.

The purpose of this cooperation is to facilitate the rail transport services and recognition of authorisations for placing in service and admission to operation between the EU Member States and non-EU OTIF contracting states.

3.7.2. OSJD

In 1956, the Organisation for Cooperation of Railways (OSJD) was founded to create and improve the coordination of international rail transport. Concerning especially the transports between Europe and Asia, it has helped developing cooperation between railway companies and with other international organisations. The members of this organisation have created and further develop an international transport law.

Having 28 members, OSJD covers the biggest non-EU part of the Eurasian railway network (China, Kazakhstan, Russia, and Ukraine). Nine OSJD members are also members of the EU.

The Agency's collaboration with the OSJD had been established in 2007 to analyse the relationship between the 1 435 mm and the 1 520/1 524 mm railway systems as far as technical and operational aspects are concerned, together with a strategic evaluation on the possibility of future convergence between the two systems (keeping apart the gauge differences).

Today's collaboration activities are focused on:

(a) comparative analysis of TSI requirements to those existing in the 1 520 mm railway area; and

(b) exchange of experience to coordinate measures for preservation and improvement of technical and operational compatibility on the CIS–EU border.

Perspectives of the EU Agency for Railways–OSJD collaboration envisage that relevant provisions of all the TSIs will be compared to existing 1 520 mm requirements.

The outcomes of the joint the EU Agency for Railways–OSJD work contribute to TSI revision process as set out by the Agency work programme and mandates on TSI scope extension given to the Agency by the European Commission.
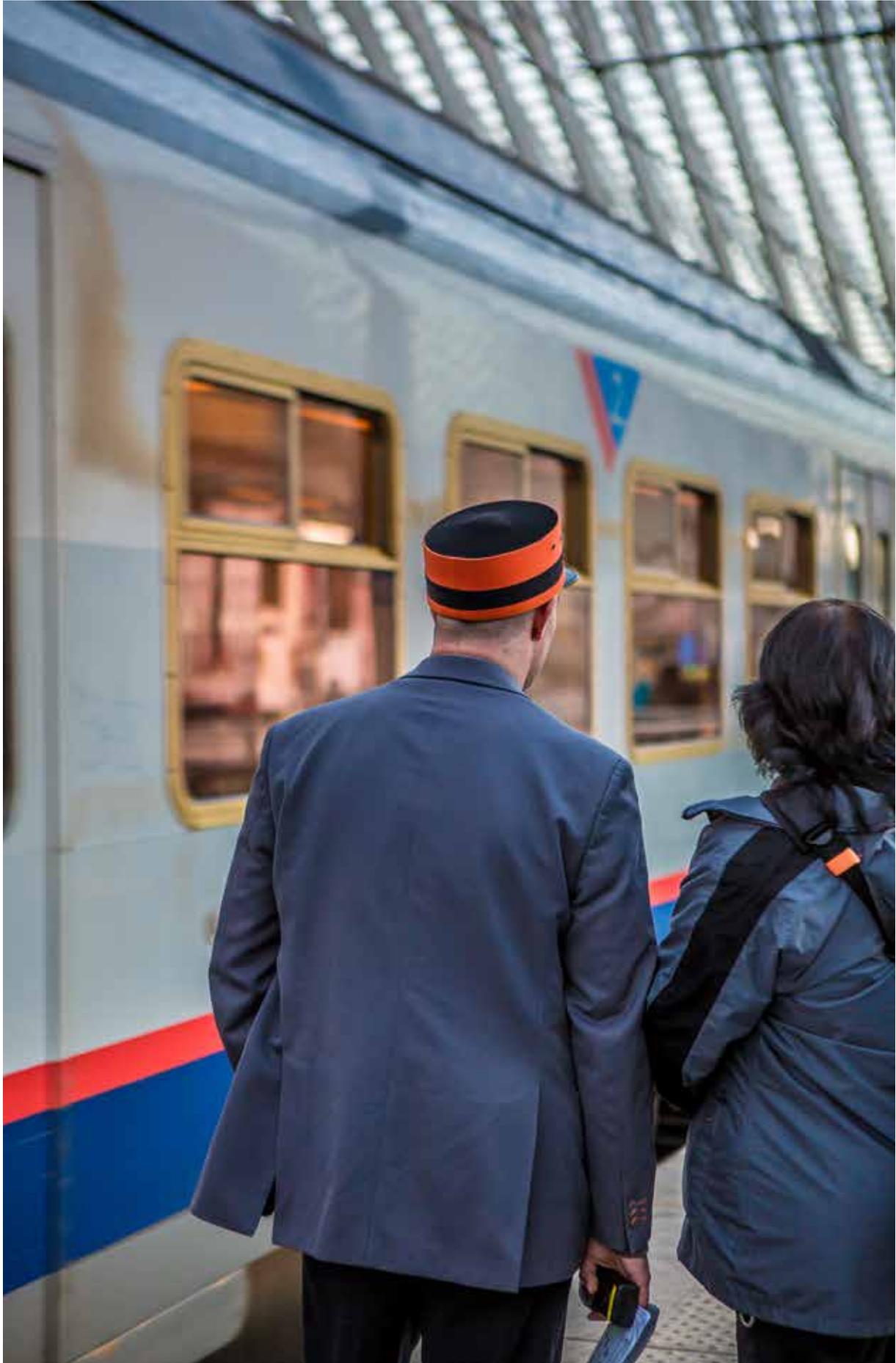
4. Conclusion and outlook

4.1. Conclusions

Since the publication of the 2013 report on progress with railway interoperability in the EU, a number of amendments and revisions of acts within the framework of the interoperability directive took place. Several revisions of the interoperability directive, a revision of the train drivers directive and the amendments of the TSIs were published during the reporting period 2013 and 2014.

As part of its role in facilitating the improved performance of the framework for vehicle authorisation, the Agency supports stakeholders in their implementation of the common authorisation and certification processes, on TSIs and on the use of registers. In 2014 the Agency provided training on a framework for vehicle authorisation for stakeholders, facilitated parallel and simultaneous authorisations with Member States and facilitated the updating of national rules, including publishing all known rules, and updating information already published on the authorisation of vehicles.

The Agency also clarified the purpose of the various registers by providing application guides and workshops.

4.2. The 4th Railway Package

Under the technical pillar of the 4th Railway Package, the Agency would become a 'one-stop shop' for authorisation of all railway vehicles to be used on cross-border services. However, for domestic services (i.e. for vehicles to be used only within one Member State), operators and manufacturers may choose to apply to get vehicle authorisation from either the Agency or the relevant national safety authority. Additionally, the Agency is intended to check, during tendering phases, the ERTMS trackside projects in order to verify their compliance with the TSIs.

Subject to the entry into force of the technical pillar of the 4th Railway Package in 2016, and after an adequate preparation period including shadow running, the Agency will take its new role and responsibilities from 2019.

4.3. Interoperability and Security

The changing profile of security risks has prompted a debate on the interface between safety and security, and on the impact that any regulation concerning security might have on interoperability or safety, in turn leading to consequences in the authorisation of trains and CCS systems.

Both safety and security relate to the protection of people and assets. Security is mainly concerned with hazards due to malicious intent/harmful behaviour. From an the EU Agency for Railways perspective, it is on the one hand necessary to assure coherence on the policy/regulation level, in relation to both safety and security (e.g. SMS of a RU should address ALL hazards and risks), and, on the other hand, it is necessary to meet the objectives of the interoperability directive (open market, international operation, interoperability). This should be achieved through a common approach to the protection of passengers who might suffer harm as a consequence of hazards arising from intended (malicious) acts as well as from unintended events.

Mitigation of risks caused by security events can be in principle considered in the the EU Agency for Railways scope under the railway safety and interoperability directives, when the undesirable consequences of security hazards are 'safety relevant' (according to the definitions in safety and interoperability directives). In a top-down risk analysis, starting with hazard identification, all events (random equipment failures, systematic equipment failures, organisational errors, operational errors, intentional attacks, …) contributing to causing a safety-relevant consequence must be considered.

Prevention of malicious attacks is under Member State responsibility (e.g. Homeland/Interior Ministry, police, secret services, …), however, it should not lead to additional national rules on top of the TSIs and CSMs, affecting interoperability and in turn authorisation. In fact, it is not in line with the vision of a Single European Railway Area to have a layer of mutually recognised sets of national rules: if there is a need for rules, these should be common, transparent, non-discriminatory European rules.

Table 12 — Table of abbreviations

Abbreviation	Explanation
AsBo	assessment body
CAB	conformity assessment body
CCM	change control management
CCS	control, command and signalling
CEFR	Common European Framework of Reference for Languages
CIS	Commonwealth of Independent States
CR	conventional rail
CSM	common safety methods
CUI	common user interface (of RINF)
DCS	data collecting system
DeBo	designated body
DG Move	Directorate-General for Mobility and Transport of the European Commission
DI	degree of implementation
DMU	diesel multiple unit
DoA	date of application
DV 29 bis	Commission Recommendation 2014/897/EU
EA	European cooperation for Accreditation
EC	European Commission
ECM	entity in charge of maintenance
ECVVR	European Centralised Virtual Vehicle Register
EFTA	European Economic Area and the European Free Trade Association
EiF	entry in force
EMS	energy measurement system
EMU	electric multiple unit
EN	European standard
ER	essential requirement
ERA	European Railway Agency, from 15th June 2016: The European Union Agency for Railways
Eradis	European Railway Agency Database of Interoperability and Safety
ERATV	European Register of Authorised Types of Vehicles
ERTMS	European Rail Traffic Management System
ETA	estimated time of arrival
ETCS	European Train Control System
ETI	estimated time of interchange
EU	European Union
GIS	geographical Information system
GSM-R	Global System for Mobile communications — Railways

Abbreviation	Explanation
HS	high speed >>>
IEC	International Electrotechnical Commission
IM	infrastructure manager
INEA	Innovation and Networks Executive Agency
INF	infrastructure
IOD	interoperability directive (Directive 2008/57/EC)
ISO	International Organisation for Standardisation
JSG	Joint Sector Group
MS	Member State (of the European Union)
NAB	national accreditation body
NoBo	notified body
NSA	national (railway) safety authority
NTR	national technical rules
OJ	Official Journal of the European Union
QMS	quality management system
OP	open point
OSJD	Organisation for Cooperation of Railways
OTIF	Intergovernmental Organisation for International Carriage by Rail
RDD	reference document database
RIC	Regolamento Internazionale delle Carrozze/International Coach Regulations
RINF	Register of Infrastructure
RIV	La Réglementation Internationale des Wagons/International Wagon Regulations
RSRD	Rolling Stock Reference Database
RST	rolling stock
RU	railway undertaking
SC	specific case
SMS	safety management system
SRT	safety in railway tunnels
TAF	telematics applications for freight service
TAP	telematics applications for passenger service
TEN-T	Trans-European networks — transport
TRAN	Committee on Transport and Tourism of the European Parliament
TSI	technical specification for interoperability
UIC	International Union of Railways
UIP	International Union of Wagons Keepers
UNIFE	Union des Industries Ferroviaires Européennes/Association of the European Rail Industry
UTP	uniform technical provisions (of OTIF)
VKMR	Vehicle Keeper Marking Register
WIMO	Wagon and Intermodal Unit Operational

Please note, that some of the abbreviations above are used with an 's' at the end for plural, e.g. 'ERs' for 'essential require-ments'.

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