Progress with Railway Interoperability in the European Union

2013
Biennial Report

European Railway Agency

Contents

Foreword

Having taken over the role of Head of the Interoperability Unit of the European Railway Agency back in September 2012, I have the honour and the pleasure of introducing the reader to this third biennial report on the progress of railway interoperability in the European Union.

Rail is a fascinating mode of transport, praised for its outstanding safety levels and its environmental friendliness. Railway is also a world of passion, which makes it unlike any other mode of transport in the heart of many citizens. I believe that all stakeholders in the railway world, as well as all those who take an interest in it, will find in this report an objective analysis of several indicators giving a picture of recent developments in interoperability.

Thanks to the efforts made by all actors in the sector who take part in the activities of the Agency and, before its creation those of no less motivated organisations, we are at the dawn of interoperability on the EU railway network. The tools for managing the railway system as a shared system like roads and aviation have reached the final phase of the development process. They include a harmonised set of regulatory documents upon which all components of the railway system will be authorised for placing in service only once for the entire European Union network.

The Agency plays a prominent role in drafting and revising these technical specifications for interoperability (TSI) with the active and appreciated contribution of sector organisations and national safety authorities. The introduction of TSIs applicable on the entire European railway network is a major milestone in this process.

In parallel, the implementation of the registers is progressing, giving access to a wide range of information related to Interoperability from the Agency website.

The development and implementation of the European Rail Traffic Management System is one of the measures to create a Trans-European Railway Network and to ensure interoperability. The EU institutions provide support for its deployment not only by establishing the harmonised technical solutions and specifications but also by co-financing ERTMS projects through the TEN-T programme and the Connecting Europe Facility. As a result, despite the economic crisis the length of the lines equipped with European Train Control System shows a constant trend of increase. The introduction of the Global System for Mobile Communications Railway introduction is also progressing; 45% of the planned network had it in operation in June 2013

Looking forward, the applicability of specific national rules will reduce drastically over the coming years. As a matter of fact, these national rules are recognised as the major hurdle for the development of interoperability. This will be reflected accurately in the indicators of this report.

In the meantime, the huge task undertaken by the national safety authorities supported by the Agency, in identifying and classifying their applicable national rules for mutual recognition, continues to bridge the gap until all parts of the rail system achieve full conformity with European regulation. Any interested party may consult on the Agency website the repository of all rules applicable for each parameter.

Over the coming years, the Agency will continue to improve the Report on progress of railway interoperability in the European Union by including more relevant data (as soon as they become available) and refining criteria from a general perspective. In this respect, any researchers' analysis, contributions or suggestions from interested parties would be welcomed.

We will all endeavour to further remove technical barriers to the safe and uninterrupted movement of trains on the network of the European Union and beyond by actively working together with 'external' international organisations with the aim of harmonising rules.

In this way, ERA is pursuing its main objective: making the railway system work better for society.

Denis BIASIN
Head of Interoperability Unit

1. Introduction

1.1. About this report

This publication provides an overview of the railway interoperability-related indicators in the European Union. It covers the 28 EU Member States[1], with the following considerations:

– Malta and Cyprus have no railways, so they have not been included in this report; and

– Croatia has been part of the EU since 1 July 2013: at that date the project was already at an advanced stage of development, so it was not possible to include figures from Croatia.

This report also includes Norway and the railway safety authority of the Channel Tunnel (IGC - Intergovernmental Commission)[2].

Most of the data are as of December 2012; more recent data have been provided where available.

The Agency publishes the report on progress with interoperability every two years. Through objective indicators, it shows how far interoperability has been implemented across the European Union. The legal basis for this report is provided by Article 14(2) of the Agency Regulation [3]:

The Agency shall monitor progress with the interoperability of the railway systems. Every two 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.

For the time being, the availability of interoperability-related data in the Agency is rather limited because databases and registers are not fully populated yet. Therefore, the Agency collects data from other sources, primarily via the national safety authorities (NSAs).

This third report aims to compare the previous data (including other ERA documents and reports). It provides updates for the period 2011–12 and, where available, the status for 2013.

This report is structured in nine main chapters, listed below.

REGULATORY FRAMEWORK

This chapter provides an overview of the development of the legislation and institutional set-up and activities that have taken place under the framework of the Interoperability Directive.

ADMINISTRATIVE AND INSTITUTIONAL INDICATORS

This chapter examines the NSAs and, in particular, the number of staff involved directly with interoperability-related activities as well as the problems with staff recruitment. It also analyses the trends of the number of notified bodies competent for the different subsystems and their number per Member State.

INTEROPERABILITY CONSTITUENTS

The indicators in this chapter aim to provide a picture of the market of interoperability constituents. Given the limitations of data sources, the analysis is based on the Notified Bodies database of the certificates issued by the notified bodies for the interoperability constituents for rolling stock, fixed installations, and control–command and signalling.

FIXED INSTALLATION

This chapter provides measurements of the length of the track (high-speed and conventional line) in service in each Member State according to the TSI in the time frame under assessment. This chapter deals with tunnels and stations too.

ERTMS track-side

This chapter is subdivided into sections on the European Train Control System (ETCS) and on GSMR deployment. The ETCS section provides information about the lines equipped; the GSMR section details the percentage of the network covered by radio communication. Annex D lists the European lines equipped with ETCS.

VEHICLES

This chapter provides the number of vehicles in service per Member State in the time frame under assessment. It also includes information on the trends from 2004 onwards, including data from the 2011 Report on Railway Vehicle Authorisation.

OPERATIONAL ASPECTS

This chapter includes sections related to international paths per railway undertaking (RU), train drivers and telematics application for freight and passengers.

REGISTERS

This chapter provides information on the implementation of four registers and presents an analysis of the data available. These registers are the European Centralised Virtual Vehicle Register, European Register of Authorised Types of Vehicles, ERA Database of Interoperability and Safety, and Vehicle Keeper Marking Register.

---

[1] The list of the EU Member States can be found here: http://europa.eu/about-eu/countries/.
[2] http://www.channeltunneligc.co.uk/.
[3] Regulation 881/2004/EC as amended by Regulation 1335/2008/EC.

1.2. Data availability

In general, data collection is the most difficult challenge. For the time being, the registers defined in the Interoperability Directive (see Chapter 11) are not fully available; another tool to collect data was needed. In line with the 2009 and 2011 reports, ERA asked the NSAs for the data for the 2013 report.

The questionnaire was addressed to 28 safety authorities, representing:

- 27 Member States (28 EU Member States, minus Malta and Cyprus, plus Norway) and

- the Channel Tunnel Intergovernmental Commission.

ERA received 22 answers[4], representing 79 % of those requested.

According to the data in Eurostat, the answers received cover a population of 466 million people out of a total population of 510 million (91 %) [5].

Taking into account the data provided by Common Safety Indicators (2013) [6], the following considerations apply:

- if the network is measured by length of multiple tracks counted multiple times (Safety Indicator R03), the answers received cover a railway system of 304 000 km of line out of 340 000 km of European Union network (89 %);

- if the network is measured by multiple tracks counted once (Safety Indicator R08) – length of lines – the answers cover a network of 197 000 km out of 222 000 km of the whole European Union network (89 %);

- concerning the passengers per kilometre (Safety Indicator R02), the answers received cover 361 000 passengers per kilometre out of 406 000 passengers per kilometre for the whole European Union (89 %);

- concerning the freight market, the answers received for tons per kilometre (Safety Indicator R07) cover 348 000 tons per kilometre out of 402 000 tons per kilometre for the whole European Union (87 %).

All these figures are shown in the Table 1.

Table 1. EU representativeness of this report

	Feedbacks	Population (millions)	Tracks (000 km)	Lines (000 km)	Passengers (000 per km)	Freight (000 tons per km)
Received	22	466	304	197	361	348
Total	**28**	**510**	**340**	**222**	**406**	**402**
Percentage	79	91	89	89	89	87

[4] From the NSAs of the following 22 Member States: Belgium, Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Latvia, Lithuania, Luxembourg, Hungary, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, United Kingdom.

[5] Taken from Eurostat May 2013; information updated March 2013.

[6] To perform the comparisons, some indicators have been taken from the ERA Safety report 2012, and subsequently updated in January 2013. The ERA Safety report 2012 is available here: http://www.era.europa.eu/Document-Register/Pages/Railway-Safety-Performance-in-the-European-Union-2012.aspx.
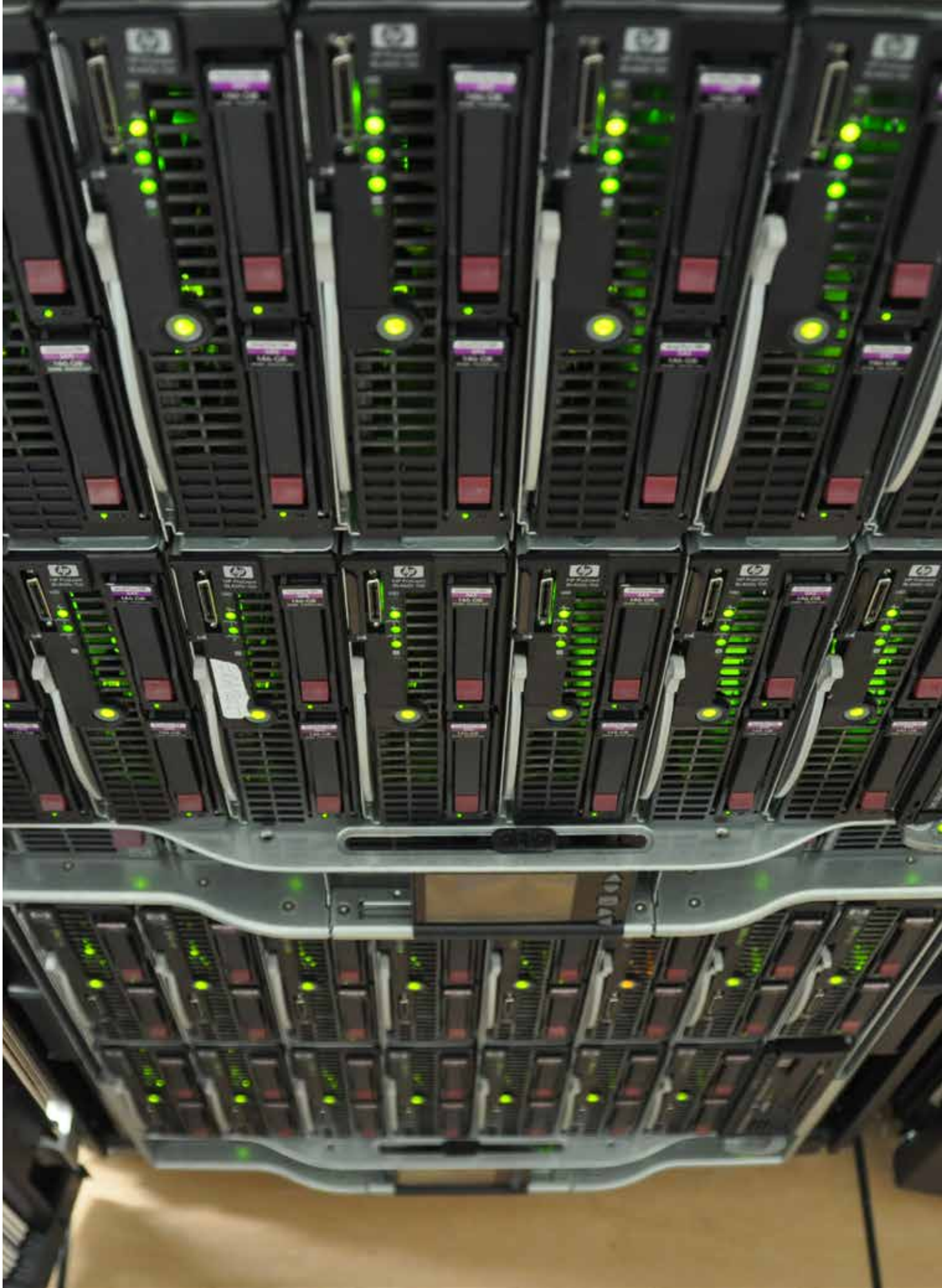
2.Regulatory framework

2.1. Legal framework

2.1.1. Interoperability Directive

Since the publication of the 2011 report on progress with railway interoperability, work on several acts in respect of the legal framework put in place by the Interoperability Directive took place.

Amendment to Annex III to Directive 2008/57/EC

In 2013, Annex III to the Interoperability Directive was amended by Commission Directive 2013/9/EU to include a new essential requirement: 'accessibility'. The purpose of the amendment is to ensure that persons with disabilities and persons with reduced mobility have access on an equal basis with others. The measures to be taken in this regard include the identification and elimination of obstacles and barriers to accessibility to train services.

Ongoing work complementing Commission Recommendation 2011/217/EU

Commission Recommendation 2011/217/EU (commonly known as DV29) was an important step for building up a common understanding of authorisation for placing in service. The document was widely debated and its content was agreed in general terms by all the stakeholders. Its adoption in March 2011 has been largely celebrated by both the industry and governmental authorities. As a result of this positive experience, strong demand followed for further clarification of specific provisions of the Interoperability and Safety Directives and the way they should be implemented in the Member States.

To respond to this demand, ERA has been working on the following main items:

- purpose of authorisation for placing in service,

- purpose and content of the technical file,

- use of Common Safety Methods on risk assessment in the framework of authorisation for placing in service,

- cases where national rules may or need to be applied in accordance with Article 17(3) of the Interoperability Directive,

- modifications to structural subsystems and vehicles that require a new authorisation for placing in service in accordance with Article 20 of the Interoperability Directive,

- general principles of operation of structural subsystems and vehicles after authorisation for placing in service.

ERA analysed these aspects from both legal and practical perspectives and held meetings and workshops with the stakeholders.

Following this preparatory work carried out by ERA, the European Commission intended to update Commission Recommendation 2011/217/EU. The draft version of this update is referred to as DV29bis.

2.1.2. Registers

In 2011, the specifications for two new registers were adopted: Register of Infrastructure (RINF) and European Register of Authorised Types of Railway Vehicles (ERATV). RINF is still under development. More information on the development of ERATV is given in section 9.2.

2.1.3. TSI development and revision

Since the publication of the 2011 report on progress with railway interoperability the work on amendment or revision of all TSIs took place. By the end of October 2013, this work was complete for some TSIs and relevant legislative acts were published; for others, the work is ongoing. This section provides an overview of the TSIs' development.

TSI Energy

The work on merging the high-speed (HS) and conventional railway (CR) TSIs Energy (ENE), with the extension of the scope to cover all European Union network including 1 520 mm track gauge countries, commenced in 2011. The ERA recommendation regarding the new TSI was issued to the Commission in December 2012. To merge CR and HS TSIs, CR TSI Energy was taken as the state of the art, while speed limits were extended to combine parameters for both CR and HS lines in a single document.

The revised TSI Energy takes into account the values for the 1 520 mm track gauge networks for the basic parameters. The revised TSI Energy will also apply to the nominal track gauges of 1 524 mm, 1 600 mm and 1 668 mm. The other major modifications concern implementation strategies for an overhead contact line (OCL) design and an on-ground part of traction current measurement system. The most questioned aspect at the beginning was the migration strategy for OCL geometry. The objective was to create a path to extend in the following years an electrified network capable of accommodating both 1 600 mm and 1 950 mm pantographs and to avoid, inside the Union, distinctive borders between zones using different pantographs. These could hinder the development of interoperability. To support the idea, in

March 2012 ERA launched a questionnaire addressed to NSAs and infrastructure managers with questions related to the accommodation of both pantographs on current OCL designs. The outcomes of this questionnaire, discussion at the ad-hoc survey group and the results of OCL study performed by the independent consultant confirmed the benefits of this approach.

The on-ground part of traction current measurement system is strictly related to the application of the on-board energy meters and charging train operators for the exact traction energy consumption. The issue goes beyond the railway market; it affects the energy market too, particularly if the third party access rule is to be implemented. For this reason, cooperation between these two markets is underlined.

The draft of the revised TSI Energy is planned to be voted on in the Railways Interoperability and Safety Committee (RISC) in January 2014.

TSI Infrastructure

The work on merging HS and CR TSIs Infrastructure (INF) started at the end of 2010. The geographical scope of the TSI has been extended to the whole Union network and the revised TSI INF will apply to the following nominal track gauges: 1 435 mm, 1 520 mm, 1 524 mm, 1 600 mm and 1 668 mm. All possible implications of merging the HS and CR TSIs Infrastructure have been thoroughly investigated and addressed. The heterogeneity of the existing rail systems was analysed in depth and the lessons learned from the implementation of the HS and CR TSIs Infrastructure by the different actors (infrastructure managers, NSAs, industries, notified bodies, etc.) were taken into consideration.

After the Agency sent the Recommendation for adoption of the merged TSI INF to the European Commission in December 2012, some further improvements of the draft INF TSI have been made. These included the inputs from the representatives of the 1 520 mm INF Subgroup and definition of all necessary specific cases.

The draft of the revised TSI Infrastructure is planned to be voted on in RISC in January 2014.

Procedure for demonstrating the level of TSI compliance of existing fixed installations

The existing lines in many cases allow the operation of the TSI-conform vehicles, and they also often meet the requirements of the TSIs Energy and Infrastructure. However, application of the full conformity assessment procedures to these lines would result in significant additional administrative costs, and in many cases would not be possible at all, as the

notified bodies could not be involved in the design stage and throughout the entire manufacturing period, as required by the Interoperability Directive.

Therefore, Commission Recommendation 2011/622 established a new procedure for demonstrating the level of compliance of existing fixed installations with the basic parameters of TSIs Energy and Infrastructure without the involvement of the notified bodies. It may be used, on a voluntary basis, in two cases. The first case is for existing infrastructure (fixed installations) placed in service before the entry into force of Directive 2008/57/EC. The second case is for lines placed in service after the entry into force of Directive 2008/57/EC without being subject to the EC verification procedure; these may be off-TEN-T railway lines or railway lines placed in service before entry in force of CR TSIs Infrastructure and Energy.

TSI Telematic Applications for Freight

Regulation 328/2012 introduced two main amendments to CR TSI Telematic Applications for Freight (TAF). The first aimed to better reflect the ongoing implementation of functional and technical specifications provided in the TSI by the railway undertakings, infrastructure managers and wagon keepers. The second amendment introduced change control management to improve the management of the technical annexes and to establish consistency with TSI Telematic Applications for Passengers. Regulation 280/2013 subsequently amended Annex A to the CR TSI Telematic Applications for Freight, as a result of change control management which keeps the technical appendices up to date.

The second revision of CR TSI TAF is planned to be voted on in RISC in January 2014. It has been made to extend the scope of the TSI to the whole European Unionrail network. In addition, the functions were reviewed and those which proved to be challenging and infeasible for EU-wide implementation were removed. The revised TSI also provides a better framework for the rules related to freight customers.

TSI Telematic Applications for Passengers

Both amendments to Annex III of TSI Telematic Applications for Passengers (TAP) – Regulation 665/2012 and the one that received positive opinion in RISC in June 2013 – are results of the change control management that keeps the existing technical documents referenced in the TSI up to date and of the introduction of new technical documents.

Table 2. Transversal and merged TSIs and their amendments, by year (November 2013)

| Year | TSI OPE | | TSI CCS | | TSI PRM | TSI SRT | TA |
	HS TSI OPE	CR TSI OPE	HS TSI CCS	CR TSI CCS	TSI PRM	TSI SRT	TSI TAP
1999			Decision 1999/569 on basic parameters				
2001			Decision 2001/260 on basic parameters				
2002	Decision 2002/734		Decision 2002/731 EIF of 1st TSI version				
2003							
2004			amendment Annex A Decision 2004/447	Decision 2004/447 on basic parameters			
2005							
2006		Decision 2006/920	Decision 2006/860 1st revision	Decision 2006/679 EIF of 1st TSI version amendment Annex A			
2007		EIF of 1st TSI version	amendment Annex A Decision 2007/153	Decision 2007/153 amendment Annex A			
2008	Decision 2008/231 1st revision (EIF)		Decision 2008/386 amendment Annex A	Decision 2008/386 amendment Annex A	Decision 2008/164 EIF of 1st TSI version	Decision 2008/163 EIF of 1st TSI version	
2009		Decision 2009/107 amendment		Decision 2009/561 amendment Chapter 7			
2010	Decision 2010/640 amendment	Decision 2010/640 amendment	Decision 2010/79 amendment Annex A	Decision 2010/79 amendment Annex A			
2011		Decision 2011/314 1st revision				Amended by Decision 2011/291	Regulation 454/2011 EIF of 1st TSI version
2012 (*)	Decision 2012/757 2nd revision (EIF 01/01/2014) CR and HS merged		Decision 2012/463 amendment; Decision 2012/88 EIF of 2nd revision, CR and HS merged	Decision 2012/463 amendment			Regulation 665/2012 amendment
2013			Decision 2012/696 amendment Annexes A and G			Amendment positive RISC opinion in October	Amendment positive RISC opinion in June
2014	Amendment RISC vote in June 2014				1st revision—RISC vote in January 2014		

(*) Decision 2012/464 amended Decisions 2006/861/EC, 2008/163/EC, 2008/164/EC, 2008/217/EC, 2008/231/EC, 2008/232/EC, 2008/284/EC, 2011/229/EU, 2011/274/EU, 2011/275/EU, 2011/291/EU and 2011/314/EU.

Table 3. CR and HS TSIs and their amendments, by year (November 2013)

Year	INF		ENE		RST				TA
	HS TSI INF	CR TSI INF	HS TSI ENE	CR TSI ENE	HS TSI RST	CR TSI LOC&PAS	CR TSI WAG	CR TSI NOI	CR TSI
2002	Decision 2002/732 EIF of 1st TSI version		Decision 2002/733 EIF of 1st TSI version		Decision 2002/735 EIF of 1st TSI version				
2003									
2004							Decision 2004/446 on basic parameters	Decision 2004/446 on basic parameters	Decision 2004/on basic parameters
2005									
2006							Decision 2006/861 EIF of 1st TSI version	Decision 2006/66 EIF of 1st TSI version	Regulation 62/ EIF of 1st TSI
2007									
2008	Decision 2008/217 1st revision (EIF)		Decision 2008/284 1st revision (EIF)		Decision 2008/232 1st revision (EIF)				
2009							Decision 2009/107 amendment		
2010									
2011		Decision 2011/275 EIF of 1st TSI version		Decision 2011/274 EIF of 1st TSI version		Decision 2011/291 EIF of 1st TSI version		Decision 2011/229 1st revision	
2012 (*)									Regulation 328/ amendment
2013					Merge of HS RST and CR LOC&PAS RISC opinion in October 2013		Regulation 321/2013 1st TSI revision EIF of 1st TSI revision; Amendment to Reg 321/2013 positive RISC opinion in June		Regulation 280/ amendment
2014	INF TSI merging CR and HS RISC opinion in January 2014		ENE TSI merging CR and HS RISC opinion in January 2014					Amendment RISC opinion	1st TSI revision RISC opinion

(*) Decision 2012/464 amended Decisions 2006/861/EC, 2008/163/EC, 2008/164/EC, 2008/217/EC, 2008/231/EC, 2008/232/EC, 2008/284/EC, 2011/229/EU, 2011/274/EU, 2011/275/ EU, 2011/291/EU and 2011/314/EU.

TSI Freight Wagons

The first revision of CR TSI Freight Wagons (WAG) (Regulation 321/2013) entered into force on 13 April 2013 and applies from 1 January 2014. In the period from 13 April 2012 to 1 January 2014, this TSI could be applied on a voluntary basis. The revised CR TSI Freight Wagons (TSI WAG) is limited to aspects needed to achieve interoperability. It sets out functional requirements instead of technical solutions. Amongst its achievements is the substantial reduction of open points – from 19 to 4 – and of specific cases – from 37 to 5. The remaining open points and specific cases do not affect interoperability. The TSI also extended the geographical scope to the entire European Union rail system. It provides more flexibility for the players and lowers the burden for TSI compliance; thus it cuts costs for the sector.

The revised TSI establishes three levels of compliance. The first is the core TSI, which is mandatory and is intended to be used for the first authorisation of placing in service in one Member State. It defines all parameters related to technical compatibility with the network. It also sets out requirements linked to the safe integration and, in particular, the initial operation and maintenance documents. The TSI has four open points for which notified national technical rules will apply.

The second level of compliance is established in clause 7.1.2 and its application is optional. Compliance with the core TSI is a precondition for the application of clause 7.1.2. This clause sets out the technical conditions to provide specific solutions for open points and to prevent the application of notified national technical rules for specific cases. Compliance with the core TSI and clause 7.1.2 will result in one single authorisation for wagons valid in all Member States (according to Article 23(1) of the Interoperability Directive). Therefore, it provides the full benefits of interoperability.

The third level of compliance is established in Appendix C and its application is optional. Compliance with the core TSI and clause 7.1.2 is a precondition for its use. This appendix contains technical solutions and conditions coming from the former International Union of Railways (UIC)/International Wagon Regulations (RIV) world. If used, Appendix C will be assessed by a notified body within the EC verification procedure. How the Appendix C wagons can be operated remains the responsibility of the railway undertakings. Appendix C is intended to be transferred into a standard, the General Contract for Use of Wagons (GCU) or other appropriate documents.

A first set of amendments to TSI Freight Wagons 2013 (Regulation (EU) 321/2013) was recommended by the Agency and received the favourable opinion of the RISC meeting in June 2013. The amendment consists of, for example, updates of references and clarifications on the treatment of interoperability constituents. It is intended that these rules apply mandatorily together with the TSI Freight Wagons 2013 from 1 January 2014.

CR TSI Noise

The revision of CR TSI Noise (NOI) started in May 2011. The revised TSI serves interoperability by setting common Europe-wide requirements for one single vehicle authorisation valid throughout the EU. It also defines broadly reduced and well-balanced limit values to contribute to the reduction of noise emission close to the infrastructure and in the driver's cabin while maintaining the competitiveness of the European railways.

Further achievements are:
- combining the noise-related specifications for highand conventional-speed rolling stock in one document,

- alignment with the scopes of the 2013 CR TSI Freight wagons (for wagons) and the draft 2014 TSI Rolling Stock – Locomotives and Passenger Carriages, which merges HS TSI Rolling Stock and CR TSI Locomotives and Passenger Carriages (for locomotives, diesel multiple units (DMUs), electric multiple units (EMUs) and coaches),

- including locomotives, EMUs, DMUs and coaches for the European 1 520 mm track gauge rail network,

- including limit values for intermittent and impulsive stationary noise,

- including pass-by limit values continuously defined over the maximum speed,

- reference to the relevant European standards.

In September 2013, the Agency submitted its recommendation on the revised TSI Noise to the Commission. The revised TSI NOI is expected to be voted in RISC in the second quarter of 2014.

TSI Operation and Traffic Management

CR and HS TSIs Operation and Traffic Management (OPE) were revised in two steps. The first step was enacted in Decision 2012/757 and involved the merging of the CR and HS TSIs and the extension of the geographical scope to the entire European Union rail system. The scope extension excludes professional qualifications and health and safety conditions at work; these provisions apply only to staff undertaking the safety-critical tasks accompanying a train crossing an international border.

The second step concerned the revision of Appendices B, C, D and T to TSI Operation and the closure of the open point related to train rear-end signals. At the time of writing this report, the revision was still ongoing, so some amendments are still possible.

- Appendix B on common operational rules: first harmonised operational rules have been drafted. This is an important step for creating a single European railway area. A total of 14 harmonised rules will be available. They concern mainly degraded and emergency operation, e.g. failure of level crossing, emergency call, complete failure of front-end lights, complete failure of rear-end signal, etc.

- Appendix C on safety-related communications methodology: a number of inconsistencies and duplications were cleaned up. The structure of the appendix was simplified and thus made more user-friendly.

- Appendix D on the elements the infrastructure manager has to deliver to the railway undertaking for the route book and for the train's compatibility with the route intended for operation: this has been updated to take account of Register of Infrastructure.

- Appendix T on braking performance: this will be deleted because it has been integrated into the core text of the TSI with an alignment of this legal provision to the principles of the Safety Directive.

- Train rear-end signal: a good compromise solution has been found to close this open point without unbearable constraints.

- On-board recorder: related changes concern providing access to national investigation bodies. The data list was also modified.

TSI Control–Command and Signalling

Since 2011, three legislative changes to the CR and HS TSIs Control–Command and Signalling (CCS) have been made.

CR and HS TSIs CCS were amended by Decision 2012/463, which is explained in more detail at the end of this section, in the paragraphs on 'omnibus' amendments to TSIs.

Decision 2012/88 merged HS and CR TSIs CCS and kept the

geographical scope to the trans-European rail network. This decision also includes a better definition of interoperability constituents for GSM-R, clarifications in Chapter 6 on conformity assessment and some editorial improvements. The former content of Appendix A1 has been moved to a separate specification referenced in Annex A, where some open points related to compatibility between train detection systems and vehicles are also solved. New versions of some ERTMS specifications have also been introduced.

As a consequence, the list of open points in Annex G to the TSI has been updated.

Decision 2012/696 included amendments to Annexes A and G to the TSI CCS.

TSI Safety in Railway Tunnels

Work on the revision of the TSI Safety in Railway Tunnels (SRT) started in May 2011 with a mandate to extend the TSI's scope to the whole European Union railway network, to close the open points and to remove errors. The scope of the revised TSI SRT has also been extended to tunnels longer than 0.1 km with no upper limit. In the case of very long tunnels (longer than 20 km), appropriate preferable stopping points where a swift evacuation is possible have been defined and called 'fire fighting points'. Therefore, category B rolling stock should be allowed to circulate in such very long tunnels.

For infrastructure, the definitions have been refined, to clarify the concept of 'safe area' and differentiate it from the 'fire fighting point'. The definition of consecutive tunnels has also been clarified. The parameters related to the tunnel's structural resistance have been clarified according to the risk scope covered by the TSI: resistance of the lining allowing evacuation of the tunnel; resistance of the structure allowing evacuation of the neighbourhood only when needed.

For rolling stock, parameters have been transferred to the TSI Locomotives and Passenger Carriages. The recent European standards related to the fire behaviour of material and running capacity of rolling stock have been referenced in the TSI. The scope extension to very long tunnels and to the off-TEN led to the definition of two specific cases, for the Italian network and for the Channel Tunnel. A request for standard has been submitted to standardisation bodies for the definition of an assessment method for active fire containment systems (water mist systems) that tend to replace classical fire barriers.

Operational rules have been clarified to ensure that TSI-compliant rolling stock (freight trains and passenger trains) is allowed to circulate without restriction.

In October 2013, the draft of the revised TSI SRT received a positive opinion from RISC, and it is expected to be adopted by mid-2014.

TSI Persons with Reduced Mobility

The work on the revision of the TSI Persons with Reduced Mobility (PRM) started in May 2011 with a mandate to extend the TSI to the whole EU railway network, to close the open points and to remove errors. Another issue to be considered is the return of experience and update of the implementation strategy for a quicker migration to the target system. The revision of the TSI took place in a broader context than interoperability only. The United Nations Convention of the Rights of Persons with Disabilities (UNCRPD), Regulation 1371/2007 on Rail Passenger Rights and Obligations and the European Disability Strategy 2010–2020 form a new legal background that needed to be considered.

The different strategies for the revision of the basic parameters of the TSI PRM involved:

- station parameters for which technical details shall remain within the TSI PRM have been revised according to the comments received;

- other station parameters, for which the technical means to meet a functional requirement exist in some national legislation or international standards, have been functionally specified in the TSI PRM;

- track-related platform parameters have been transferred to the TSI Infrastructure;

- all rolling stock parameters remained within the TSI PRM and have been revised according to the comments received.

The assessment method for stations has been revised to simplify the assessment procedure. A typical approved design can be applied to any new, renewed or upgraded station without further checks.

The implementation of the TSI PRM has been reviewed for an improved migration. In particular, a two-step approach is specified in Chapter 7 of the draft TSI, mandating the inventory of obstacles in the existing subsystems and the elaboration of national plans for a progressive elimination of these obstacles. The revised draft TSI PRM is expected to be voted on in RISC in January 2014.

CR TSI Locomotives and Passenger Carriages and HS TSI Rolling Stock

As recommended by the Agency in the report of the complementary study on the 'merging–splitting of TSIs' [7], a unique TSI has been drafted, covering HS TSI Rolling Stock (RST) and CR TSI Locomotives and Passenger Carriages (LOC&PAS). The TSI also extended the geographical scope to the whole EU railway network. The requirements applicable to rolling stock are expressed according to a maximum speed criterion rather than according to a type of network or category of line.

The performance aspects (coupling, braking, traction) currently specified in the HS TSI RST are proposed to be kept for trainsets of speeds equal to or more than 250 km/h. According to the railway sector organisations, they contribute to the harmonisation of high-speed rolling stock.

Regarding functions essential to safety, the TSI specifies 'severity level' associated with 'risk scenario' when deterministic requirements cannot be set up. In these cases, conformity assessment is based on 'risk acceptance criteria for technical systems'.

The analysis performed on the scope extension has not identified any new TSI requirements. The scope extension did not have significant impact on the number and content of specific cases.

In addition to rolling stock designed to be operated on the EU 1 435 mm track gauge system, the following rolling stock types have been covered in the TSI with specific cases for particular requirements:

- rolling stock for the 1 524 mm track gauge,

- rolling stock for the 1 600 mm track gauge,

- rolling stock for the 1 668 mm track gauge.

Rolling stock for the 1 520 mm track gauge system is also covered in the TSI, with some aspects declared as open points. Rolling stock designed to be operated on the 1 000 mm track gauge is excluded from the scope of the TSI.

In October 2013, the draft of the revised TSI Rolling Stock received a positive opinion by RISC and is expected to be adopted by mid-2014.

'Omnibus' amendments to TSIs

Decisions 2012/462, 2012/463 and 2012/464 (so-called omnibus amendments[8]) eliminated the lists of parameters to be recorded in the rolling stock and infrastructure registers in most of the TSIs in force. The reason for this modification was the new specifications on the register of infrastructure and on the European register of authorised types of vehicles.

These decisions also introduced some amendments based on technical opinions established by the Agency and updated references to some standards. There were no changes in the basic parameters.

In addition, Decision 2012/462 repealed TSI Maintenance (Decision 2002/730/EC), as the provisions related to maintenance have been introduced in the TSIs corresponding to different structural subsystems.

---

[7] The report on merging of HS and CR TSIs and splitting of the 'transversal' TSIs is available on the ERA website: http://www.era.europa.eu/Document-Register/Pages/Report-of-studies-Spliting-and-merging-of-HS-and-CR-TSIs-Splitting-of-the-Transversal-TSIs.aspx

[8] The term 'omnibus' is commonly used, even though not formally defined, to refer to amendments to several TSIs.

2.1.4. Open points

Open points are technical aspects corresponding to the essential requirements which are not covered in a TSI but for which a harmonised solution was either not available or not agreed during the drafting of the TSI. They are identified in an annex to the TSI concerned. Since open points are addressed by the application of national technical rules, they usually lead to the emergence of various solutions. These in turn present a regulatory barrier and may also lead to technical barriers to interoperability. Therefore, efforts are made to close them in the revision of the TSIs.

The closing of open points is a good indicator of progress with harmonising the various national requirements, but this should not be considered in isolation. In a comprehensive evaluation, it is important also to take into account their content, the economic considerations and regional specifics.

Figure 1. Number of open points for HS and CR TSIs (year of entry into force of the TSI) as of 01/11/2013
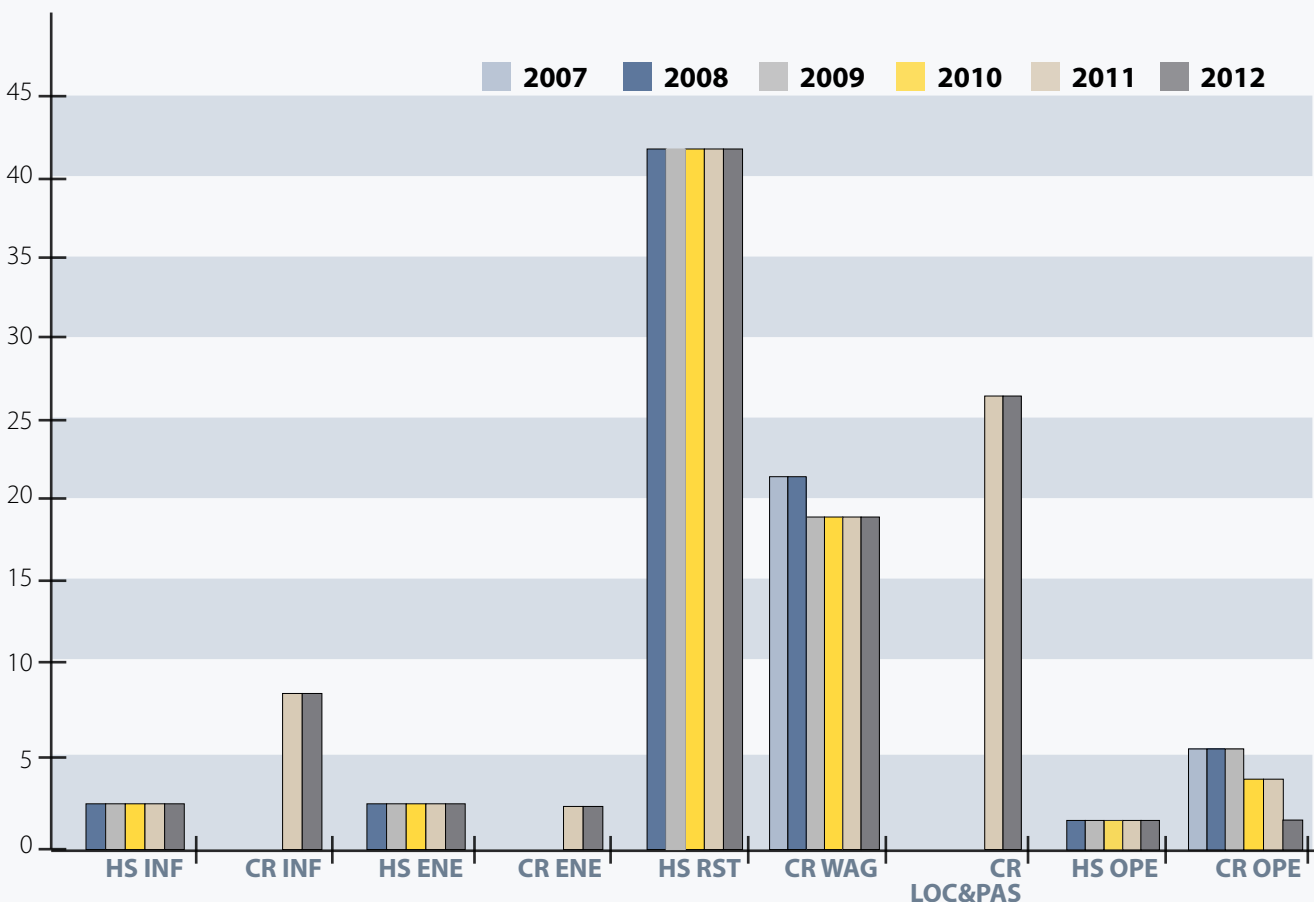
Source: European Railway Agency, 2013.

The previous report on interoperability progress discussed four TSIs – Infrastructure, Energy, Locomotives and Passenger Carriages and Telematic Applications for Passengers – which were at draft stage at the time. All of them entered into force in 2011 (see Figure 1). CR TSI Infrastructure has eight open points, of which three are specific cases for the 1 520/1 524 mm track gauge system applicable for the Baltic states. CR TSI ENE has three open points, which are also specific cases for 1 520 mm track for the Baltic states. During the period 2007–2012, the TSIs concerning fixed installations were not revised. Therefore, the number of open points of the CR and HS TSIs for Energy and Infrastructure has not changed.

CR TSI LOC&PAS grouped the open points into three categories, depending on their relationship to technical compatibility with the network:

• Two general open points apply to a whole network. The first is related to specific requirements for CR RST to operate safely on the HS network, the second to specific cases for Estonia, Latvia, Lithunia, Poland and Slovakia for the 1 520 mm system.

- Six open points relate to technical compatibility between the vehicle and the network.

- Nineteen open points do not relate to technical compatibility between the vehicle and the network.

The TSI Telematic Applications for Passengers in force has six open points (see Figure 2). Some of them will be reviewed and, whenever feasible, closed in the revision.

In 2012, a revised TSI Control–Command and Signalling entered into force. It merged TSIs CR and HS and significantly reduced the open points of these two TSIs, from 36 and 37 respectively to 14 in total. The amendment to the merged TSI Control–Command and Signalling did not change the number of open points.

The revised versions of two other TSIs were published in the period 2012–2013 but will apply from 2014. The first one is the TSI Operation, which merged CR and HS TSIs and kept the number of open points to two. The second one is CR TSI Freight wagons, which brought the number of open points down from 19 to 4.

Since the publication of the previous report, no amendments have entered in force for four TSIs. Consequently, in 2013 there were no changes in the number of open points specified in these TSIs:

- PRM – 25 open points, of which 20 for infrastructure and 5 for rolling stock,

- SRT – one open point for conformity assessment procedure for maintenance,

- HS INF – two open points,

- HS ENE – three open points.

Figure 2. Number of open points for transversal TSIs (year of entry into force of the TSI), as of 01/11/2013
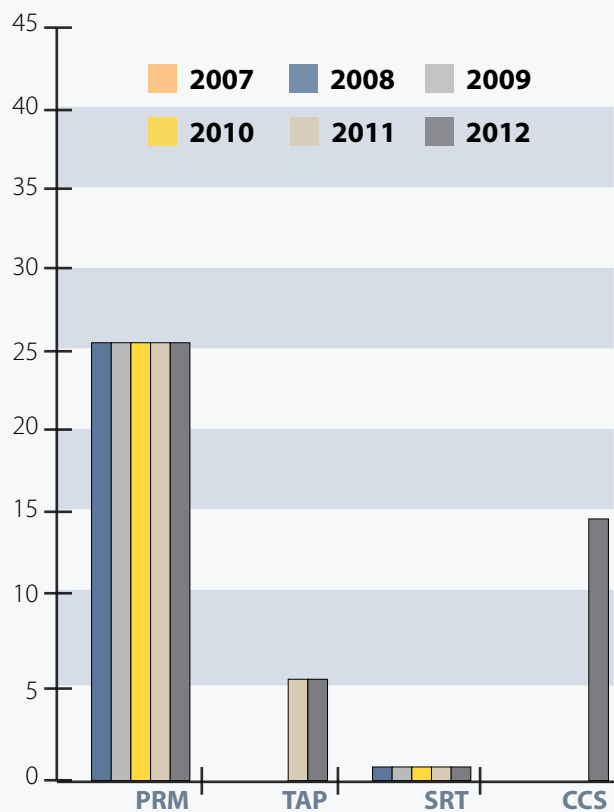
Source: European Railway Agency, 2013.

2.1.5. Equivalence of rules between Member States

A key change brought in by the recast Interoperability Directive in 2007 was the principle of mutual recognition under the concept of Cross Acceptance. This can be understood as a 'bridge' between the current regime, whereby national technical rules still apply for certain aspects of vehicle design, and the future harmonised and interoperable target European Railway System defined by TSIs.

A key element of Cross Acceptance is the publication, comparison and evaluation of equivalence of national technical rules (NTRs). In this context, it is to be understood that NTRs represent the rules published by a Member State which describe the requirements for authorisation of railway vehicles, in particular those relating to the technical compatibility of a railway vehicle with the respective national railway network's legacy systems. The work on comparison and evaluation of equivalence of NTRs between different Member States is a three-stage process:

- First, a common checklist of parameters to be checked for vehicle authorisation is elaborated. This was completed by the Agency and published in 2009 as Commission Decision 2009/965/EC.

- Then, for each of the parameters, the national rules for each Member State are listed in the respective national reference document.

- Finally, the national rules are classified as A, B or C:

    ° An 'A' classification is given by an NSA to another Member State's rule when it is recognised by the first NSA as equivalent to its own rule.

    ° A 'B' classification means that the rules have not yet been compared.

    ° A 'C' classification means that the rules are not equivalent.

The objective of this process is to provide a legal base for Member State authorities to avoid duplicate or unnecessary checks by ensuring that, for additional authorisations in a second or subsequent Member State, only the parameters specifically related to compatibility with the second or subsequent network are checked, and that, for first authorisations, NSAs may take account of verification work carried out in other Member States.

On 1 April 2011, Commission Decision 2011/155/EU on the publication and management of the reference document came into force, giving legal force to national reference documents and the classifications of rules.

To facilitate the comparison and evaluation of equivalence of NTRs, from 2009 onwards the Agency motivated and supported NSAs in the organisation of geographic interest groups (GIGs). The involvement of NSAs in classification has increased from two GIGs representing nine NSAs in 2010, through three GIGs and 13 NSAs in the first quarter of 2011, to six GIGs and 22 NSAs by the end of 2013. In addition, different MS started bilateral discussions and agreements regarding Cross Acceptance of one another's rules.

In 2010, as a result of excellent work by the NSAs, the Agency published a series of 16 national reference documents listing the national rules for each parameter and, where available, the equivalence of other Member States' rules. By the end of 2012, the Agency, supported by the NSAs of the European Rail Area (European Union plus Switzerland and Norway), managed to publish on its website a first set of 27 signed national reference documents for all Member States of the European Rail Area as PDF documents.

In 2011, to facilitate the publication of the information contained in the national reference documents and make it easier for public users and applicants for the authorisation of railway vehicles to access National Technical Rules, the European Railway Agency started to develop the Reference Document Database.

The transfer of the information from the published PDF into the database, including updates to information and, as far as accessible, the publication of the text of the rule (if not copyright protected), is currently in progress.

In order to document and control the development between the GIGs, the Agency has collated the classifications carried out against the parameters carried out by the 22 NSAs involved in GIGs. While the total number of rules compared and classified has significantly increased (up to 16 000 evaluated by 2013) the relative proportion of rules classified as 'A' has slightly increased between 2011 and 2013 (see Table 4).

Table 4. Classified national rules by 2013

Classified national rules	2013		2011	
Total number	16381	100%	7883	100%
A	11204	68%	4979	63%
B	2618	16%	1254	16%
C	2559	16%	1650	21%

2013

A 68%
B 16%
C 16%

2011

A 63%
B 16%
C 21%
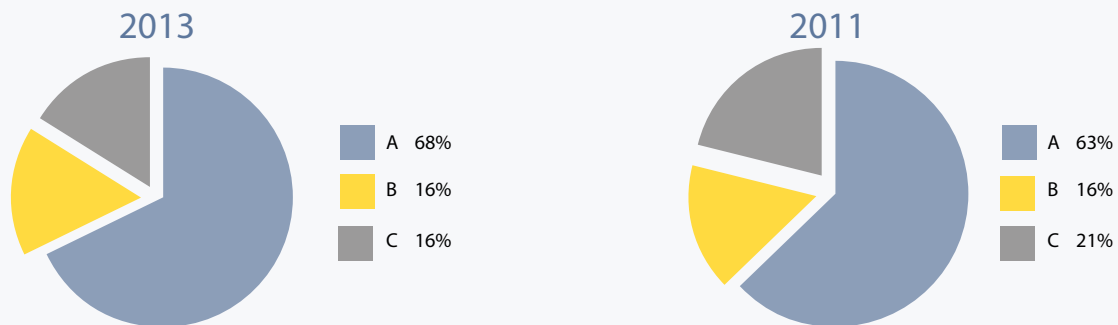
Source: European Railway Agency, 2013.

Although it would appear that the benefits of Cross Acceptance arise only when rules are classified, the process of working to a checklist and establishing the need for the rules for each parameter has proved to be very beneficial in encouraging Member States to identify and 'clean up' their rules.

'Cleaning up' is necessary to ensure that, at shared interfaces, the rules describing requirements, dimensions, values and checking methods are made public and apply equally to all applicants.

In particular, the NSA's decision on whether or not a vehicle meets the requirements must be based upon verification of conformity with the requirements laid down in the rules, rather than on the judgement of an expert.

Most of the Member States consider that compliance with national technical rules can be proven by means of national and, in more and more cases, also European standards. However, care needs to be taken because issuing a new version of a standard might bring some problems. More specifically, the classifications agreed by the Member States using that standard as a national rule may be compromised and there will be a need to re-evaluate the new rule.

Evaluating the impact of changes in standards on the classification of rules might in future generate an additional workload for the NSAs and the Agency.

To support further the work carried out by NSA on Cross Acceptance of NTRs, the Agency has also undertaken various studies to understand the physics that underpin the existing diverse approaches to some of the vehicle/network interfaces. These include vehicle dynamics, requirements for on-track testing, electro-magnetic compatibility (EMC) and relationships between parameters defining the characteristics of a vehicle and infrastructure. The objective is to bring a more harmonised approach to the different national rules for legacy interfaces not covered by TSIs.

2.1.6. European railway standards

The standards are essential for achieving technical harmonisation of the European Union railway system. They complement the TSIs in two ways. They may be mandatory when quoted in the TSI. Some standards and other relevant specifications not quoted in the TSI may be used voluntarily. This section examines mandatory and voluntary standards and other technical documents to be used for fulfilment the requirements of the structural TSIs.

Mandatory standards

When a specific standard or a part of a standard is directly quoted in the TSI, this standard or part of a standard becomes mandatory. To facilitate the users of the TSIs since 2011 the TSIs have included a specific appendix with all mandatory standards referred to in the TSIs.

The TSIs in force (as shown in Annex A) quote about 200 standards (or parts of standards) which must be used mandatorily for fulfilling TSIs requirements. As shown in Figure 3, TSIs related to rolling stock (HS TSI Rolling Stock, CR TSI Locomotives and Passenger Carriages, CR TSI Freight Wagons) have the highest number of mandatory standards: more than 35 each. The other TSIs quote between 4 and 15 standards.

Figure 3. Number of mandatory standards quoted in TSIs
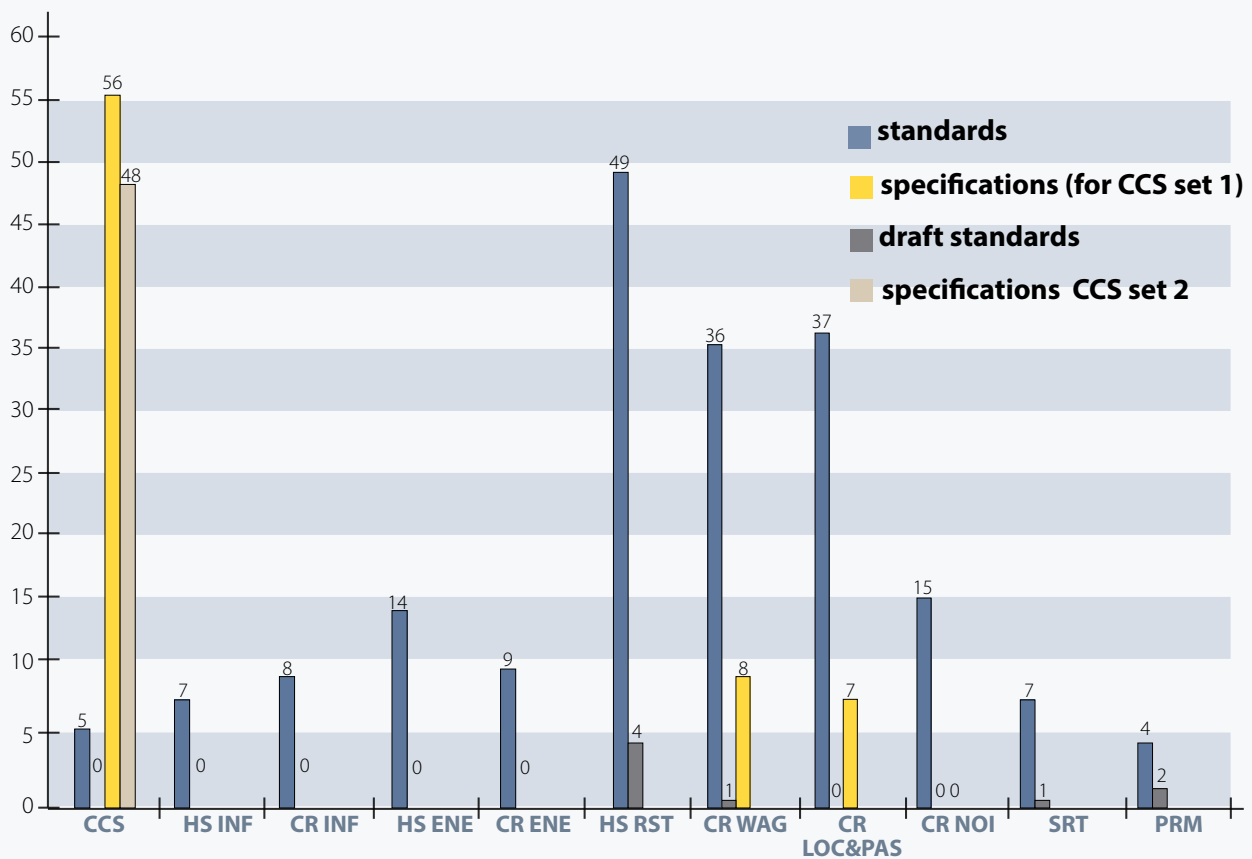
Source: European Railway Agency, 2013.

In the TSIs, direct references may also be made to other relevant technical specifications such as European Committee for Standardisation (CEN) or European Committee for Electrotechnical Standardisation (CENELEC) technical specifications and ERA technical documents. Again, TSIs related to rolling stock – CR TSI Freight wagons and CR TSI Locomotives and Passenger Carriages – make use of, respectively, eight and seven mandatory specifications.

In addition to mandatory standards, Annex A to TSI Control–Command and Signalling contains a list of mandatory specifications and these are updated regularly. In 2013, this list (Decision 2012/696) contained two sets of mandatory specifications: set #1 for ETCS for ETCS baseline 2/GSM-R baseline 0 and set #2 for ETCS baseline 3/GSM-R baseline 0. Only one of the two sets must be applied. Set #1 contains 56 specifications and set #2 contains 48. The two sets have 18 common specifications and a total number of 86 mandatory specifications.

Voluntary standards

Some standards or other relevant technical specifications may be used voluntarily to fulfil the TSI requirements. Such

standards are not quoted as direct references in the TSIs, but they complement the TSIs. To facilitate the users, a list of voluntary standards is provided in the application guide of each TSI; the TSI application guides are published on the ERA website [9].

One way of fulfilling certain TSI requirements is to comply with harmonised European standards. The references of these voluntary harmonised standards are published in the Official Journal of the European Union [10]. Another way is for the manufacturer to use its own solution, but it has to prove that this solution meets the TSI requirements. The advantage of using harmonised standards is that they give presumption of conformity of the interoperability constituent (IC) and the subsystem with the applicable TSI(s).

Figure 4. Number of voluntary standards quoted in TSIs
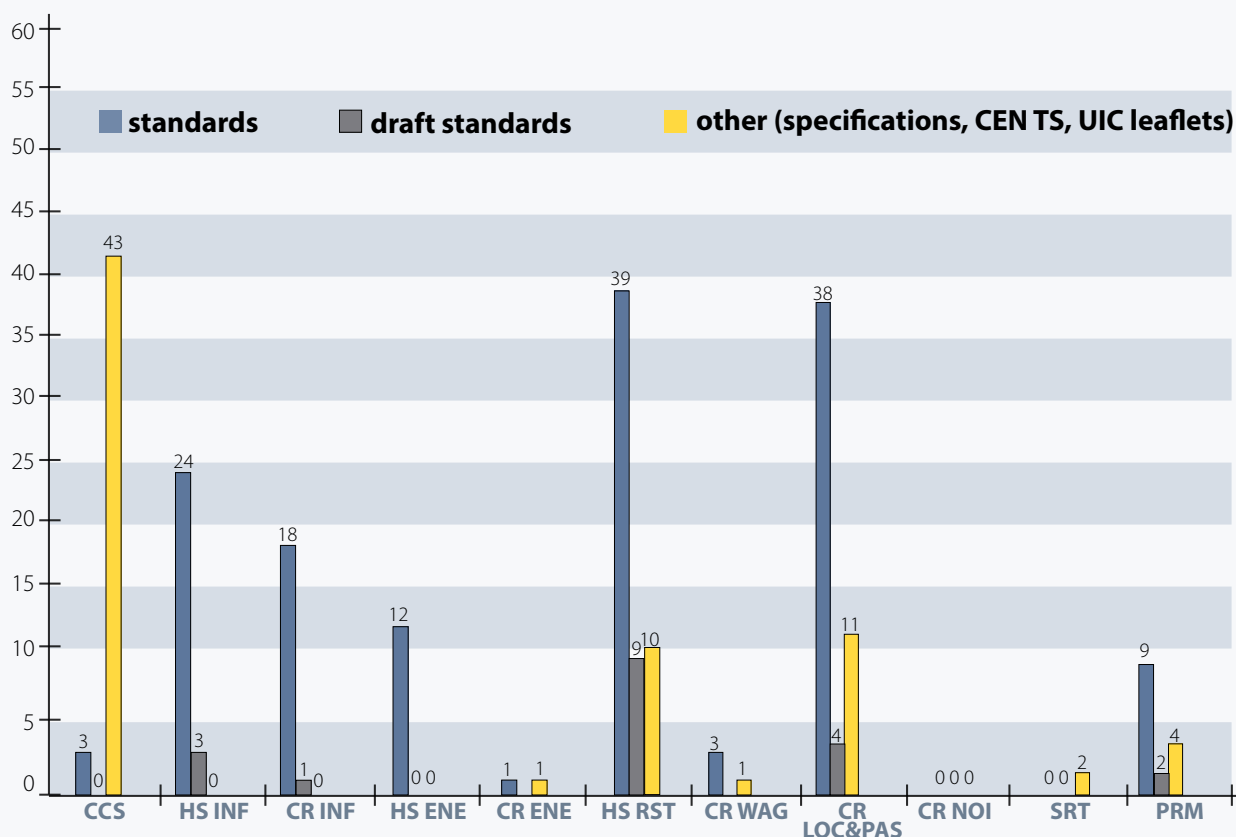
Source: European Railway Agency, 2013.

Besides standards, other relevant technical specifications such as technical specifications, UIC leaflets, international and sector organisation documents and the Agency's technical documents may be used to fulfil the TSI requirements. As can be seen in Figure 4, there is a relatively large number of voluntary standards and specifications. Their total number is more than 140 and most of them are applicable to HS TSI Rolling Stock and CR TSI Locomotives and Passenger carriages. HS and CR TSIs Infrastructure also have a relatively high number of voluntary standards.

The informative technical specifications listed in the application guide for TSI Control–Command and Signalling are used for a different purpose from the purpose of the voluntary technical specifications and harmonised standards used in the other TSIs. In TSI Control–Command and Signalling they are only informative, either because they represent the current state of work for the preparation of a mandatory specification or because they give additional information, justifying mandatory requirements and providing guidance for their application. In 2013, there were 43 of these informative technical specifications.

2.2. Institutional framework

In the period following the publication of the second biennial report, there were some new developments with the institutions, bodies and organisations dealing with interoperability. They concern mainly the NSA Network as well as initiatives undertaken by the European Commission (DG MOVE).

2.2.1. Railways Interoperability and Safety Committee (RISC)

The Railways Interoperability and Safety Committee (formerly 'Article 21 Committee') is a committee composed of representatives of the Member States. Amongst other things, the RISC discusses and gives opinions on all draft TSIs and other legislative acts related to interoperability prior to the formal adoption procedure within the Commission. Apart from the new comitology procedure and the accession of Croatia to the EU and to RISC, no significant changes have taken place since 2011.

2.2.2. NSA Network

The NSA Network is composed of the representatives of the national safety authorities (NSAs). It is a platform for discussion of all ongoing Agency activities where NSAs may express their views and exchange experiences.

Three important initiatives were taken to further harmonise authorisation procedures and share knowledge between the NSAs.

Peer reviews of authorisation placing in service

During the period June 2010 to December 2011, peer reviews of the authorisations for placing in service of six NSAs were conducted. The NSAs of France, Italy, Austria, Poland, Sweden and the United Kingdom reviewed one another's authorisation process and exchanged best practices. The Agency facilitated the meetings by providing translations of the main documents, templates for the reports and addressing organisational issues. The peer reviews were conducted in teams of three NSAs, one being reviewed and two reviewers. They covered mainly cases of freight wagon authorisations.

Cross audit of NSAs

Following the peer review exercise on authorisation of placing into service (2010–2011) and on safety certificates/safety authorisations (2007–2009), the Agency has developed the NSA Cross-Audit Programme in cooperation with the NSA Network.

The objectives are:

– evaluating delivery by NSAs of their duties and responsibilities set out in Directives 2004/49/EC and 2008/57/EC,

– exchanging knowledge and good practice on NSA processes to facilitate the harmonisation of decision-making criteria as laid down by Article 17.4 of Directive 2004/49/EC,

– identifying issues faced by the NSAs when applying the requirements of the EU legislation, and possible solutions to keep meeting the requirements of Directive 2004/49/EC.

The NSA Network is leading the development and implementation of the programme. An Audit Committee has been established (by six NSA Network representatives) to supervise the programme. The Agency takes on the role of the NSA Cross-Audit Programme Manager, supporting the Audit Committee in the development, establishment and continuous improvement of the NSA Cross-Audit Programme, facilitating its implementation.

The Agency and the Audit Committee have developed various documents for the management of the programme: a manual with the audit procedures, protocols, guidance to the protocols and a training programme for the cross-auditors.

A pilot phase was scheduled for 2011–2013, when six volunteer NSAs were audited. These NSAs were Estonia, Ireland, Hungary, the Netherlands, Finland and the United Kingdom. After the pilot audit phase, the Agency reviewed the programme and the programme documents, ready for the first five-year audit cycle, in which all the NSAs will be audited once. The five-year audit cycle will take place in 2013–2018.

Joint Network Secretariat

The Joint Network Secretariat exists to support the Agency to identify issues and organise the exchange of opinions and solutions, within and between the NSA Network and Network of Representative Bodies (see section 2.2.3). Two members of each network as well as the head of the Agency Safety Unit form the Secretariat. The Commission acts as an observer and the Agency provides the secretary for the group. The project is currently in a two-year pilot phase, with a decision on its future planned for September 2014. Nevertheless, a review of the terms of reference will take place toward the end of 2013 in order to incorporate a new procedure to allow stakeholders to respond quickly to accidents and incidents.

To date, the Joint Network Secretariat has received a total of five issues for consideration. One was rejected on the grounds that it concerned matters outside the agreed scope of the project. Successes for the secretariat include:

– publication of an agreed position on the role of the NSA, infrastructure manager and railway undertaking in cooperating and agreeing operating procedures, including emergency;

– prioritisation of industry concerns regarding inconsistent NSA decision-making, including a summary of ongoing and proposed work to address the issue; and

– discussion of an idea to create a matrix of detailed roles and tasks for actors in the rail supply chain and how this work might interact with individual safety management systems.

2.2.3. Representative Bodies

The Representative Bodies represent the railway stakeholders and are actively involved in the process of TSI drafting and revision. There was no change in the list of officially recognised representative bodies: ALE, CER, EIM, EPTTOLA, ERFA, ETF, UIP, UITP, UIRR and UNIFE [11].

In 2010, a Network of Representative Bodies (NRB) was established with the participation of the representative bodies and the Agency. The NRB provides a tool of dialogue, consultation and exchange of information between the Agency and the Representative Bodies representing the railway sector to improve collaboration, coordination and communication.

2.2.4. European Standardisation Organisations

The Agency maintains regular contact and cooperates with the European Standardisation Organisations to ensure consistency between the TSI drafting process and standards development.

2.2.5. NB Rail

The Agency cooperates with NB Rail, which acts as a coordination group for the notified bodies and discusses any matter related to conformity assessment and verification procedures as well as the application of TSIs.

The Agency participates in the NB Rail subgroups Strategy, Rolling Stock, Energy, Infrastructure and CCS, and in the plenary meetings where common decisions are taken. The Agency takes part in the NB Rail meetings as an observer. Following the amendment of the Agency Regulation 1335/2008, an ad-hoc group on assessment of ERTMS projects was established in 2009. This ad-hoc group is chaired and managed by the Agency and its aim is to increase the collaboration with the notified bodies.

Since 2011, the Agency has also acted as Technical Secretariat of NB Rail.

---

[11] ALE, Autonomous Train Drivers' Unions of Europe; CER, Community of European Railway and Infrastructure Companies;
EIM, European Rail Infrastructure Managers;
EPTTOLA, European Passenger Train and Traction Operating Lessors' Association;
ERFA, European Rail Freight Association;
ETF, European Transport Workers' Federation;
UIP, International Union of Private Wagons;
UITP, International Association of Public Transport;
UIRR, International Union of Combined Road–Rail Transport Companies;
UNIFE, Association of European Railway Industries.

2.2.6. Task force on vehicle authorisation

In addition to the developments listed above, in mid-2011 DG MOVE convened a task force on railway vehicles authorisation. The initiative was undertaken as a follow-up of the discussions with the railway industry stakeholders concerning the difficulties in authorisation for placing in service of railway vehicles.

The task force held five meetings between September 2011 and June 2012. It was composed of 35 participants representing Member States, National Safety Authorities, notified bodies, manufacturers, operators and their associations, ERA and DG MOVE.

Having analysed examples brought up by the stakeholders, the task force identified the main causes of difficulties, grouping them into four categories:

A. implementation of EU law (overlapping of EU law/processes with national legislation/frameworks; diverging/incorrect interpretation of the directives; potential conflicts with other EU law; continuous change of the legal framework; requests with insufficient legal basis by NSAs; delayed or no transposition of the directives into national law; different timing of TSI/directive implementation/application in each Member State; relationship between CSM on risk assessment and TSI to be clarified);

B. roles and responsibilities (the key roles and responsibilities are interpreted in different ways and/or not respected, in particular concerning infrastructure managers, designated bodies, notified bodies, CSM RA, NSA); repetitive organisational changes in Member States due, inter alia, to the railway reform process in the EU;

C. rules (missing, unclear, inappropriate or non-transparent technical rules; TSIs to be completed – open points, off-TEN; non-equivalence of national rules; ERTMS-specific issues);

D. processes (long, expensive and uncertain vehicle authorisation process; unnecessary repetition of tests and verifications for vehicles with part of the design of existing types; non-transparent and non-harmonised track tests; appeal processes not often used; discontinuity introduced by organisational changes and transition phases; use of several languages).

For each of these categories, the task force recommended actions to be taken to simplify the authorisation for placing in service of vehicles and reduce the associated costs.

Although the conclusions of the task force do not formally commit the institutions represented therein, the proposed solutions are being taken into account in the current developments. In particular, they have been considered in the ERA work programme. The report of the task force is available on the ERA website [12].

---

[12] http://www.era.europa.eu/Document-Register/Pages/Report_TF_Railway_Vehicles_Auth.aspx

3. Administrative and institutional indicators

3.1. National safety authorities

This section of the report focuses on trends in the number of NSA employees directly involved with interoperability and the problems NSAs have in recruiting staff.

3.1.1. Number of staff involved in interoperability

The analysis of the NSA staff involved in interoperability is based on the replies of 22 NSAs [13] to the ERA questionnaire. The Agency made an effort to clarify the tasks related to interoperability activities and requested some additional information about the background of the staff. However, the replies still could not ensure comparability, since the NSAs are structured differently. In some cases, different criteria for counting the number of the staff were applied. To make the data comparable, we need to take into account not only part-time employees but also the possibility that staff work part of the time on other than interoperability-related activities. Several NSAs did not provide data related to the percentage of time the NSA staff are involved with interoperability-related activities, since they have difficulties in calculating it. Consequently, the Agency opted for a qualitative analysis rather than a quantitative one that would have a poor level of comparability.

Main background and educational profile of the NSA staff

Half of 18 NSAs that replied recruited a significant number of staff from the infrastructure manager (Belgium, Bulgaria, Italy, Lithuania, Luxembourg, Romania and Finland) and the railway undertakings (Belgium, Bulgaria, Czech Republic, France and Portugal). Those NSAs that indicated other backgrounds recruited a majority or a large number of their employees from university academic staff (10 NSAs), manufacturers (Czech Republic, Luxembourg, France) and inspectors from other executive organisations (UK).

In almost all NSAs, the greatest number of NSA staff are engineers. In some NSAs, there are people with multiple profiles, who have degrees in engineering and economy or law. Amongst the staff with profiles different from engineers are employees with degrees in economics, statistics, law, transport logistics, geography, political science, public administration and the environment. The split of the educational background of the staff depends very much on whether the organisation is acting only as an NSA or has other tasks related to railways and possibly other transport modes.

Total number of NSA staff

The NSAs have different sizes, which may be attributed to the different needs and sizes of the railways (see Table 5 and Table 6). Another reason is that a number of them have other functions related to the railways and other transport modes.

Table 5. Total number of NSA staff

Total number of NSA staff	Member States
Fewer than 10	EL, PT
11–20	IE, LU, SK
21–40	BE, BG, DK, LV, LT, SI
41–100	EE, ES, FR, HU, IT
More than 100	CZ, DE, PL, RO, FI, UK

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

The numbers of NSA staff dealing with railways also vary across the Member States for the same reasons as discussed above. The NSAs of Germany, the United Kingdom and Romania (see Table 6) have more than 100 employees involved in railways, but their responsibilities are not limited to interoperability and safety. The NSAs of Greece and Portugal are on the opposite side of the spectrum, with fewer than 10 people. The remaining 17 NSAs that provided information employ between 10 and 100 staff.

[13] The NSAs that replied to the part of ERA questionnaire related to NSA staff are BE, BG, CA, DK, DE, EE, EL, ES, FR, IE, IT, LV, LT. LU, PL, RO, SI, SK, FI and the UK. Not all NSAs provided complete replies.

Table 6. Number of NSA staff involved with railways

Number of NSA staff involved with railways	Member States
Less than 10	EL, PT
11–20	IE, LU, SK, EE
21–40	BE, BG, DK, LV, LT, SI, PL, FI
41–100	CZ, ES, FR, HU, IT
More than 100	DE, RO, UK

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

Number of NSA staff involved in interoperability-related activities

To provide an estimate of the NSA staff involved in interoperability-related activities, the Agency attempted to collect data about the equivalent full time employees[14] falling into this category. The Agency requested data about the number of staff dedicated to the NSA tasks required by the Safety Directive [15] and the approximate percentage of time they allocate to these tasks. A number of NSAs had difficulties in providing the numbers in this format or defining the percentage of time the staff spent on interoperability tasks. The review of the data also showed that not all NSAs applied the same criteria when calculating the respective number of staff and time allocated to different tasks. Therefore, the data presented in Table 26 in Annex C should be considered not as comparable and comprehensive but rather as an indication of how many people in the NSAs are dealing with interoperability.

If we compare the four interoperability tasks required by the Safety Directive, we will find that 14 NSAs allocated either most or a major part of their resources to authorisations. Ireland, Italy, France and Romania have significant number of staff supervising interoperability constituents. Poland and Slovakia allocated respectively 12 and 5 people to vehicle registration and other registers. Greece, France and Poland have significant percentages of their staff involved in drafting legislation.

As noted, the number of equivalent full time staff involved in interoperability related activities cannot be compared, since the estimates were not structured around the same criteria in the NSAs. Nevertheless, six of the NSAs indicated five or fewer equivalent fulltime staff dealing with interoperability. The NSAs require a certain number of staff to function efficiently. In view of the complexity and workload of the interoperability-related activities, the countries with fewer than five people in charge with interoperability issues may face some challenges.

3.1.2. Staff recruitment

All of the 21 respondents to this question experience difficulties in recruiting staff (see Table 27 in Annex C). The most troublesome area appears to be the limited number of rail experts on the labour market (17 NSAs). One of the reasons for this problem is that the number of graduates from universities with technical specialisation in railways does not match the demand in the labour market.

The second biggest problem is the less attractive NSA salaries compared with similar positions in companies. Another area of concern for the NSAs is the strong competition for qualified staff from the rail industry. Several NSAs have imposed recruitment bans because of the recession.

Other problems identified by the NSAs include:

– limited budget resources of the NSAs,

– national requirements for civil servants that restrict choice,

– long recruitment process,

– headquarters location.

---

[14] Equivalent Full-time employees equal the number of employees on full-time schedules or the number of employees on part-time schedules converted to a full-time basis. For example, 1 expert working full time and two experts working part time (½ full time) equal two equivalent full time experts.

[15] Art. 16(2) of Directive 2004/49/EC.

3.2. Notified bodies

This section provides information about the standards used for assessment of the bodies to be notified, the number of notified bodies by subsystem and by Member State and the level of competition between them.

3.2.1. Notification of conformity assessment bodies

Three important developments have occurred since 2011. First, the notified bodies have been re-notified according to the recast Interoperability Directive 2008/57/EC, which repealed the CR and HS Interoperability Directives (96/48 and 2001/16). The deadline for its transposition was 19 July 2010. However, a number of Member States did not finalise their national procedures for its transposition by the deadline. Consequently, they were not in a position to re-notify the notified bodies established in their territories by 19 July 2010 and have done so later.

Second, the European Commission established a new, more comprehensive format for the notification of the conformity assessment bodies under Directive 2008/57/EC. By 2010, the Member States notified to the Commission the bodies which are to carry out conformity assessment and verification procedures, indicating the Directive and subsystems of their competence. The re-notifications from 2010 onwards contain, in addition, indications of the TSIs the notified body will be competent for by subsystem. Such an approach allows more transparency of the assessment process by the Member States for the bodies to be notified. It may also help users make informed decisions for selecting a certain notified body.

Third, some of the standards series EN 45000 used for the assessment of the bodies to be notified under Directive 2008/57/EC have been superseded by the EN ISO/IEC standards series 17000. The recast Interoperability Directive does not require a common accreditation scheme to be applied to notified bodies. The notification of conformity assessment bodies and their withdrawal are the responsibility of the notifying Member State. It is up to the Member States to decide the methods and standards of assessment of the competence, impartiality and integrity of the bodies to be notified.

The Member States have the possibility to choose between two options to assess and ensure conformity with the applicable requirements of the conformity assessment bodies to be notified under Directive 2008/57/EC: accreditation and recognition. In both cases, the Member States must take into account the minimum criteria set in Annex VIII to Directive 2008/57/EC. In the first option, the competence of the body to be notified will be checked by the national accreditation body. In the second option, the Member States appoint a body, usually the ministry of transport or the national safety authority, that will check the competence of the body to be notified.

In the EU and Norway, 38 notified bodies have been accredited and 16 recognised [16] by the competent national authorities. Seven Member States – Bulgaria, Germany, Italy, Hungary, Portugal, Slovenia and Norway – preferred recognition to accreditation schemes. The Netherlands opted to use both possibilities; two notified bodies have been recognised and three accredited. Thirteen Member States opted for accreditation of their notified bodies: Belgium, the Czech Republic, Denmark, Spain, France, Latvia, Luxembourg, Austria, Poland, Romania, Slovakia, Sweden and the United Kingdom.

The competent authorities and accreditation bodies used the following standards for the assessment of the bodies to be notified:

– **EN ISO/IEC 17020** setting general criteria for the operation of various types of bodies performing inspection. The first edition of ISO/IEC 17020 from 1998 was identical to EN 45004. Later the text of ISO/IEC 17020:1998 was approved by CEN and CENELEC as EN ISO/IEC 17020:2004 without any modifications. It superseded EN 45004.

The second edition of ISO/IEC 17020 was published in March 2012. It applies to inspection bodies of type A, B or C, as defined in the standard, and it applies to any stage of inspection. This updated version includes some changes that inspection bodies will need to implement within their management system in order to maintain their accreditation in the future.

The International Laboratory Accreditation Cooperation (ILAC) agreed a three-year transition period for the implementation of ISO/IEC 17020:2012 from the date of publication of the English-language version of the standard. The standard was published on 1 March 2012; therefore, the three-year transition period will conclude on 1 March 2015. After that date, all accreditations based on the first version of the standard will no longer be valid.

[16] Information from NANDO database as of 1 July 2013.

– **EN ISO/IEC 17021** setting the principles and requirements for the competence, consistency and impartiality of the audit and certification of management systems of all types. The first edition of EN ISO/IEC 17021:2006 superseded EN 45012:1998. The second edition, EN ISO/IEC 17021:2011, cancelled and replaced the first edition (ISO/IEC 17021:2006), which had been revised to expand the scope.

– **EN ISO/IEC 17025** setting the general requirements for the competence of testing and calibration laboratories. This standard superseded EN 45001. The second edition of the standard was published in 2005 and replaced the 1999 edition. The changes and updates are not substantial and relate mainly to how laboratory management ensures effective communication and how the effectiveness of the management system is continually improved. The terminology has also been changed to harmonise it with the terminology of ISO 9000 standard.

– **EN ISO/IEC 17065** setting the requirements for bodies certifying products, processes and services. The standard was published on 15 September 2012 and superseded EN 45011:1998. EN ISO/IEC 17065 includes the obligatory requirements of the ISO/PAS 17001 to 17005 concerning impartiality, confidentiality, complaints and appeal, disclosure of information and use of management systems.

The International Accreditation Forum (IAF) agreed that the transition period for EN ISO/IEC 17065 will be three years. This means that accreditation of product certification bodies according to EN 45011 will not be valid after 15 September 2015 unless they are successfully transferred to the new standard.

3.2.2. Number of notified bodies

The total number of notified bodies as of 1 July 2013 was 54, an increase of 10 % for a period of three years and a half. Their number was 49 on 1 January 2010. Eleven notified bodies either were not re-notified or their notification under Directive 2008/57/EC expired or was withdrawn during this period. Another 16 new notified bodies started their activity. Of the 54 notified bodies, 9 are competent for CR subsystems only, 1 for HS subsystems only and the remaining 44 for both CR and HS subsystems.

Figure 5. Number of notified bodies under Directive 2008/57/EC, by subsystem, 01/07/2013
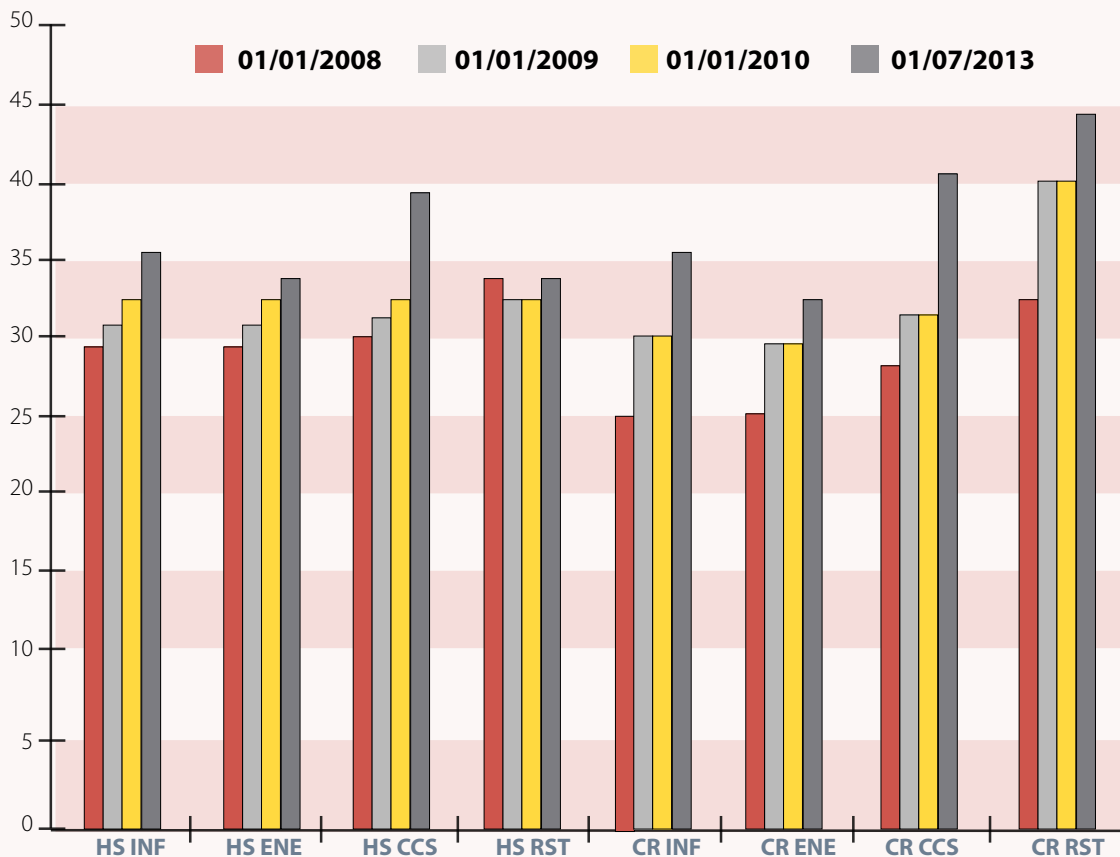
Source: NANDO.

For all of the subsystems – both CR and HS Infrastructure, Energy and CCS as well as CR and HS Rolling Stock – there is a trend of increase of the number of notified bodies in comparison with the situation on 1 January 2010 (see Figure 5).

All of the 44 notified bodies for CR Rolling Stock are competent to assess conformity with TSI Freight Wagons. Half of them are also competent for TSI Locomotives and Passenger Rolling Stock.

3.2.3. Level of competition between notified bodies

Not all Member States have notified bodies. As of 1 July 2013, in 19 Member States and Norway there is at least one notified body (see Figure 6). The Member States which have no notified bodies under Directive 2008/57/EC are Estonia, Greece, Ireland, Lithuania and Finland. Finland had a notified body in the past

but it suspended its activities in 2007 on account of its services' negative operating results.

With 12 notified bodies, the United Kingdom takes the lead in the EU in terms of established notified bodies. Since 2010, in the United Kingdom two notified bodies were not re-notified under Directive 2008/57/EC while three new ones started operation. Poland ranks second, with six notified bodies. Italy and the Netherlands come next, with five notified bodies each.

Austria marked increase of one new notified body, thus reaching a total number of four, while Slovenia decreased its number to three. Nine of the remaining 13 Member States and Norway have only one notified body and four have two notified bodies. The fact that more than half of the Member States implementing Directive 2008/57/EC have fewer than three notified bodies is suggestive of the limited competition between the notified bodies on national scale across the European Union.

Figure 6. Number of notified bodies under Directive 2008/57/EC by Member State
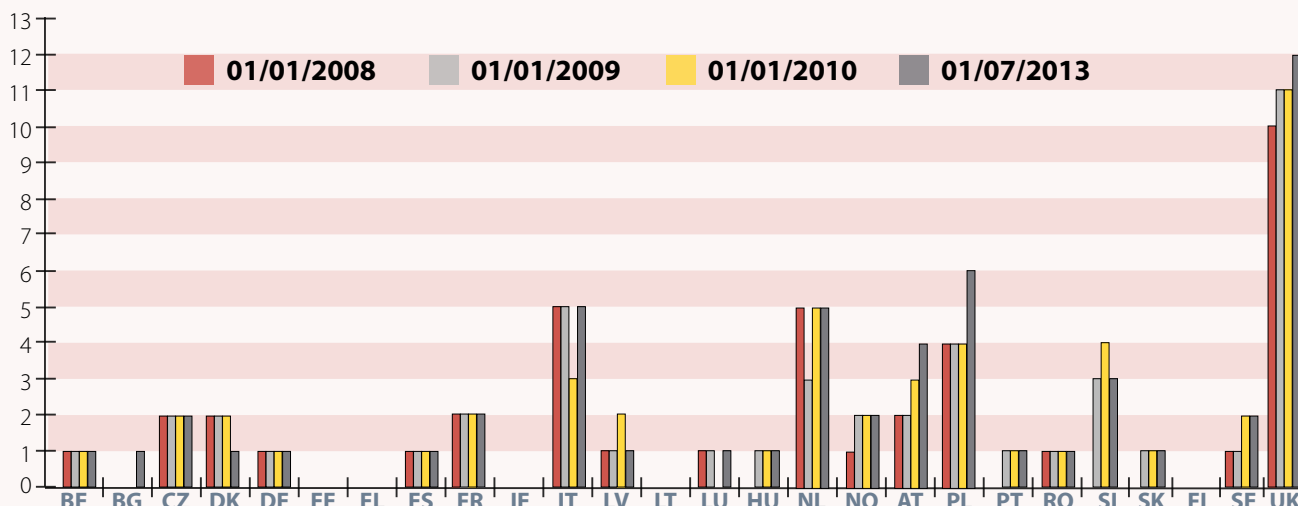
Source: NANDO.

As noted in the previous report, the potential for competition is rather on a regional than on a European scale. There is competition between the notified bodies operating in countries speaking the same language, such as France and Belgium, Germany and Austria. Again, for language reasons, Slovenian notified bodies may get easier access to the market for conformity assessment of subsystems and interoperability constituents in Croatia.

Apart from the language barrier, the notified body of a given

Member State is often the designated body for the verification of conformity with applicable national rules. It can offer to an applicant a complete package of verifications including verification of conformity with the TSIs and with the national rules, thus having a competitive advantage over the notified bodies from other Member States.

4. Interoperability constituents

For the time being, the number of EC Certificates issued by notified bodies appears to be the most appropriate indicator to assess the market for interoperability constituents (ICs). However, it is not an accurate indicator for several reasons. First, for some ICs – assessed under modules (C)A and (C)C – no certification by a notified body is required.

Second, the TSIs always allow manufacturers the option of using an assessment procedure based on a quality management system. In such cases, the notified body issues quality management system approval, which in turn guarantees the conformity of the ICs. The notified body does not issue separate certificates for the ICs produced after the quality management system has been approved. For such cases, the information presented below will, therefore, reflect only the number of quality management approval certificates and not the number of ICs.

Third, some of the certificates may cover more than one IC (serial products); however, the data below reflect the number of certificates and not the number of ICs covered by them.

For the above reasons, it may be concluded that the number of certificates does not equal the number of ICs certified to be placed on the market. Consequently, the number of EC certificates issued by the notified bodies does not exactly quantify the ICs on the market.

The EC declarations issued by the manufacturer may provide a better quantification of the marketed ICs. However, by end of October 2013 only 34 EC declarations for ICs had been registered in the European Railway Agency Database of Interoperability and Safety (ERADIS). Since ERADIS data are insufficient, the analysis below is structured around the data for EC certificates for ICs from the NB Rail database.

Sections 4.1, 4.2, 4.3 and 4.4 on EC certificates are based on the data from the NB Rail database. These data could not be considered complete, since only 20 out of 54 notified bodies notified by Member States provided up-to-date data on the certificates issued, requested and withdrawn [17]. Nevertheless, the NB Rail database may be used to give an indicative quantification of the certification process.

---

[17] Twenty notified bodies provided data from 2013. Data from the NB Rail database provided before 2013 were not taken into account for the analysis provided in this chapter.

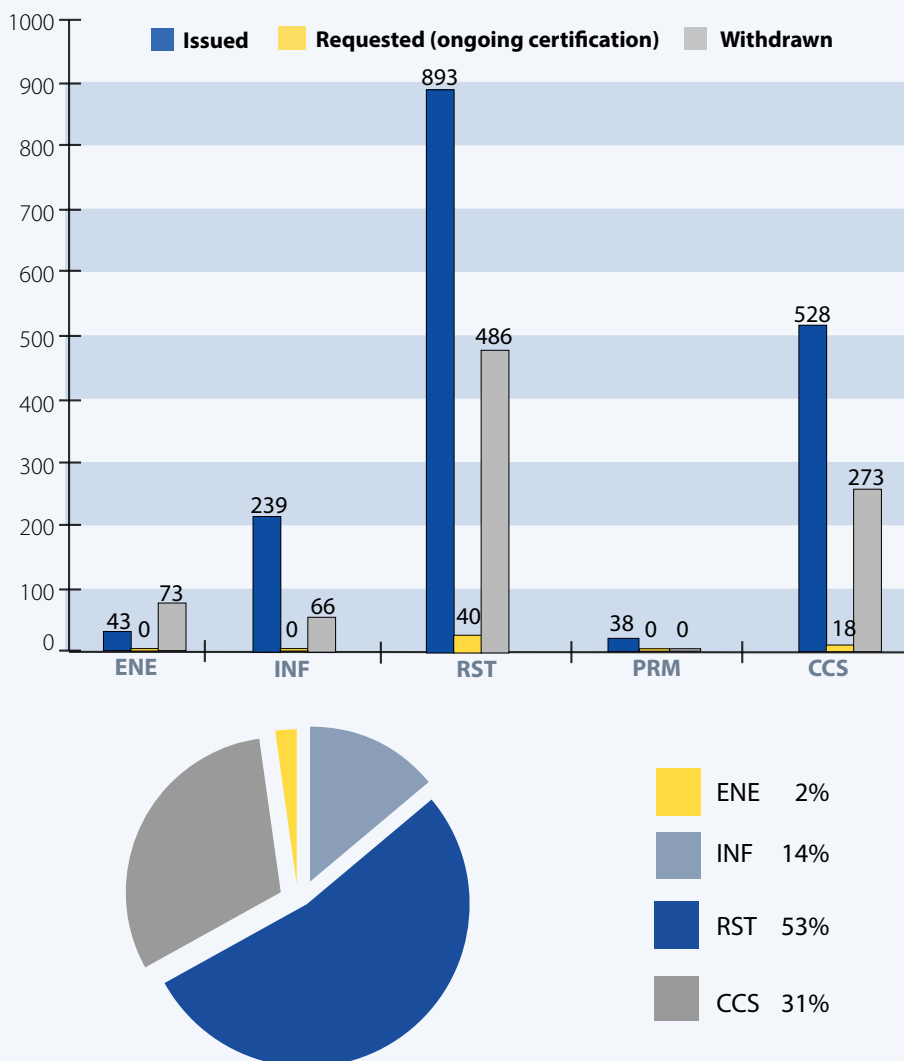# 4.1. Rolling stock interoperability constituents

Figure 7 shows the number of EC certificates for ICs, which are sorted into three groups. The first group concerns EC certificates for ICs issued and renewed by the end of October 2013 which are still valid. The second group relates to the number of requests for IC conformity assessment for which certification is ongoing; this group excludes requests for which EC certificates have been issued or withdrawn. The third group relates to EC certificates for ICs which expired or were withdrawn or cancelled.

The data for IC certification highlight a trend of increase of the EC certificates for RST interoperability constituents. These include the ICs defined in three TSIs: HS TSI Rolling Stock and CR TSIs Freight Wagons and Locomotives and Passenger Carriages. By the end of October 2013, about 900 certificates for RST ICs were still valid and the certification of another 40 RST ICs was still ongoing. Approximately 500 certificates expired or were withdrawn. This number is significant not only

because RST TSIs have more ICs than TSIs for fixed installations but also because some of the certificates, issued soon after the entry into force of the first version of TSI WAG, expired. The relative share of certificates issued/renewed and requested for RST ICs is more than 50 % of the market of IC certification.

Since this report covers data from fewer notified bodies than the previous report, the evolution of the relative shares of the ICs for the different subsystems could not be made in a comparable manner. This information is partly covered in Figure 8, which shows the trends of development of IC certification of rolling stock, fixed installations and command control and signalling in the period 2010–2012. For the rolling stock ICs, the number of certificates that were issued by the 20 notified bodies almost doubled in 2012 compared with 2010. This signals a steady trend of increase, which was already present in 2011, when the previous biennial report on interoperability progress was drafted.

Figure 7. Number of EC certificates for ICs issued, requested and withdrawn by end October 2013, by subsystem/TSI; and relative share of IC certificates issued and requested, by subsystem

Source: NB Rail database, data for 20 notified bodies, 31/10/2013.

4.2. Command control signalling interoperability constituents

The other big market is the market of CCS interoperability constituents such as Eurobalise, ERTMS/ETCS on board, odometry and GSM-R on board. They represent about 30 % of the market for IC certification (see Figure 7). It is important to note that the figure for CCS certificates shows both on-board and track-side ICs. In 2012, the network of the notified bodies notified under Directive 2008/57/EC – NB Rail – recommended indicating whether IC are for track-side or on-board CCS, following the split of CCS subsystems in Annex II to Directive 2008/57/EC. Some of the notified bodies analysed here, but not all of them, started to keep track of their CCS certificates following the recommendation. Therefore, this report provides the number of both on-board and track-side ICs. At the end of October 2013, about 530 EC certificates for CCS ICs were still valid (issued and renewed) while 270 had been withdrawn, cancelled or expired. Eighteen projects for the certification of CCS ICs are ongoing.

The EC certificates for CCS ICs issued by the 20 notified bodies analysed shows a trend of decrease for the period 2010–2012 (see Figure 8). In 2011, their number dropped by 33 % from 2010. In 2012, the number of certifications of CCS ICs slightly increased.

Figure 8. Number of EC Certificates for ICs issued by year and by subsystem/TSI
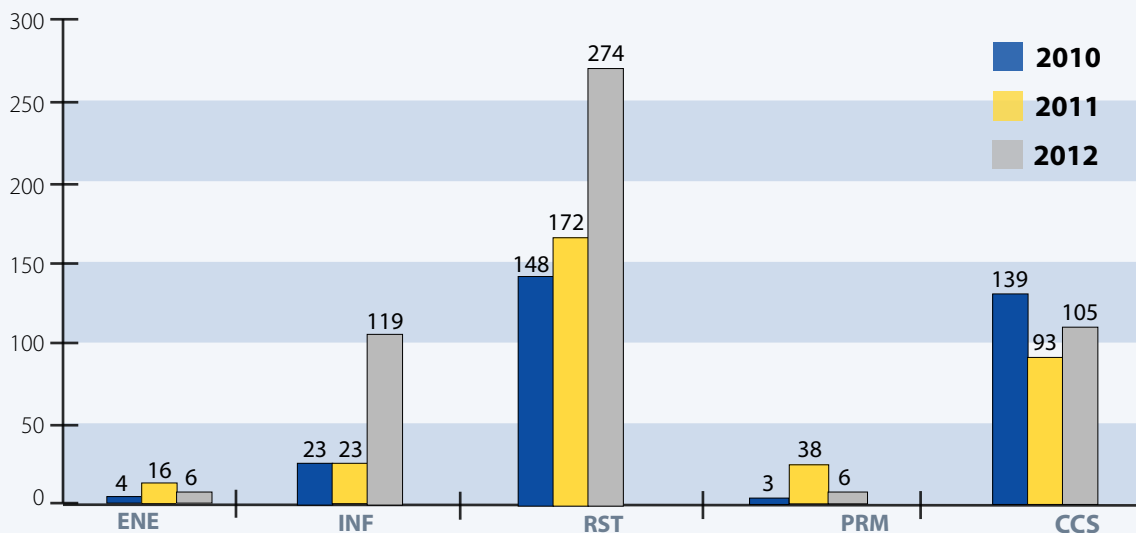
Source: NB Rail database, data for 20 Notified Bodies, 31/10/2013.

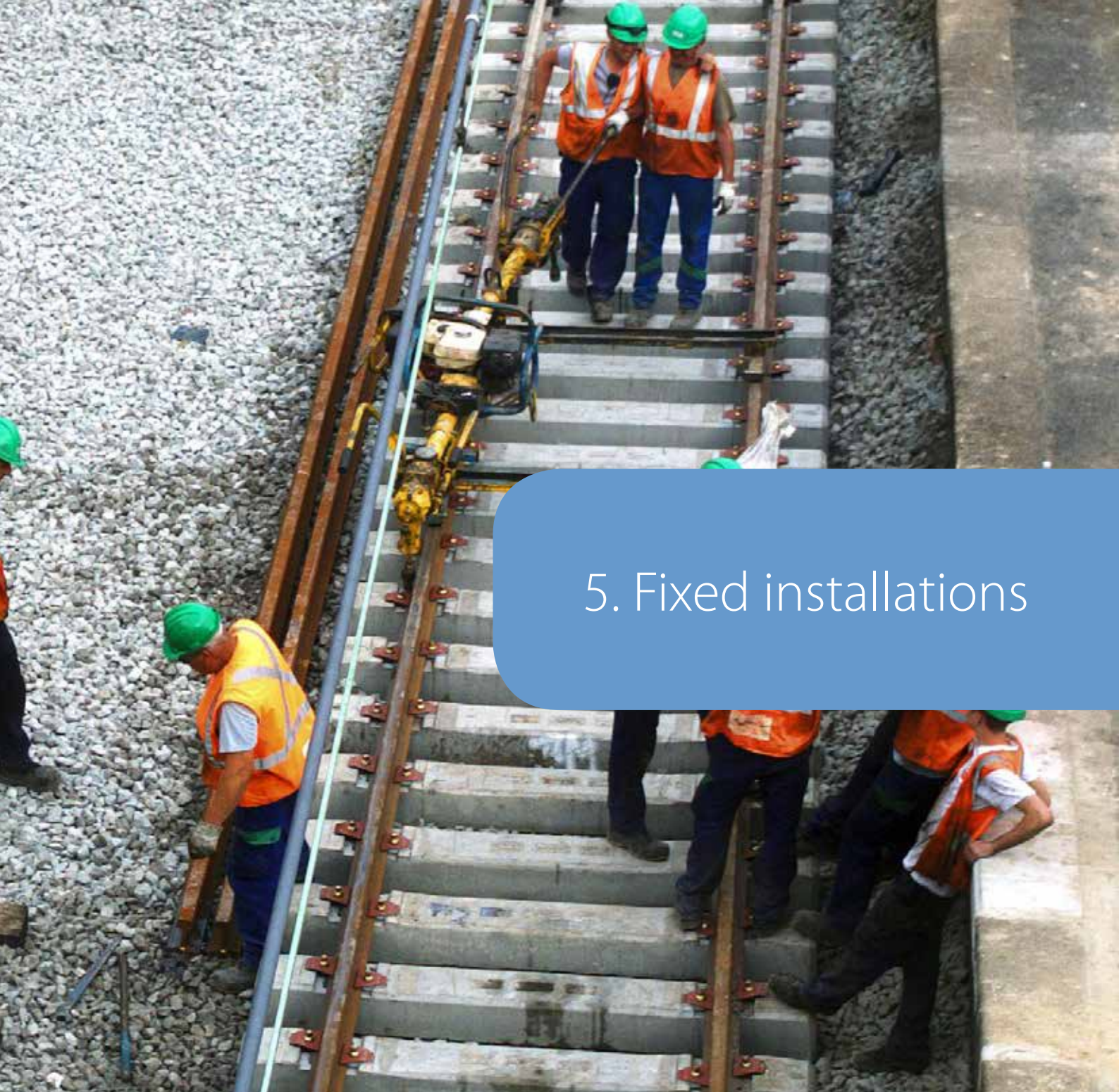## 4.3. Fixed installations interoperability constituents

This section covers the ICs for CR and HS TSIs Energy and CR and HS TSIs Infrastructure. CR and HS TSIs Energy have only one interoperability constituent: overhead contact line (OCL). At the end of October 2013, the number of OCLs with valid certificates (issued and renewed) was more than 40 while the number of those with withdrawn or expired certificates was more than 70 (see Figure 7). A reason for the significant number of withdrawn and expired certificates is that the first version of HS TSI Energy entered into force in 2003. Some of the certificates issued soon after it became applicable have expired. At first glance, Energy IC has the smallest relative share of the market for IC certification, at 2 %. However, when we take into account that the 2 % relates to only one IC – OCL – whereas, for example, relative share of 14 % if for the four Infrastructure ICs are with (average 3.5 % per IC), it no longer appears so small. In the three years 2010–2012, the 20 notified bodies issued 26 EC certificates for OCL in total; most of them were produced in 2011 (see Figure 8).

CR TSI Infrastructure has three ICs subject to conformity assessment: rail, rail fastening systems, and track sleepers and bearers. HS TSI Infrastructure has in addition another IC: switches and crossings. At the end of October 2013, the number of INF ICs with valid certificates (issued and renewed) was about 240 while the number of those with withdrawn or expired certificates was close to 70 (see Figure 7). Similarly to HS TSI Energy, the first version of HS TSI Infrastructure entered in force in 2003. Consequently, some of the certificates issued in the first years of its application have already expired. In 2012, the number of certified IC increased dramatically, by a factor of five, compared with 2010.

4.4. Persons with reduced mobility

Although it is not a separate subsystem, the NB Rail database provides information about EC certificates issued for the ICs defined in TSI Persons with Reduced Mobility. These include passenger information equipment, passenger alarm devices, boarding aids, toilets, etc. By the end of October 2013, the number of EC certificates issued for PRM ICs by the 20 notified bodies amounted to 38 (see Figure 7). Of these certificates, 60 % were issued in 2011 (see Figure 8).

5. Fixed installations

The length of the fixed installation has been considered as the main parameter for measuring the progress of interoperability in this version of the biennial report. 'Fixed installations' are subsystems infrastructure, energy and the train detection part of the Control–Command and Signalling subsystem of the railway line, including tunnels and stations. Considerations about the number of certifications for subsystems (energy, infrastructure and track-side control–command and signalling concerning train detection) are given in this chapter. The ETCS and GSM-R parts of the track-side control–command and signalling subsystem is considered in detail in Chapter 6. The information and data provided in this report are based on information provided by the NSAs as defined in section 1.2,

'Data availability'. This chapter also provides information on the percentage of the network and traffic covered by this report. The ratio between the TSI-compliant network length and the total network length will be determined with precision once the RINF (register of infrastructure) is in operation. The RINF (see Chapter 9) will provide a great help in measuring real progress towards interoperability, as all the characteristics of the fixed installation will be included and actualised on a regular basis. This report considers only lines for which an authorisation for placing in service has been delivered by the NSA (either new lines or upgrades/renewals).

5.1. Authorisation placing in service of high-speed lines

Regarding the authorisation of newly built high-speed lines, the table below shows the total length the authorised lines, split into:

- fully and partially TSI compliant and

- single, double and multiple track.

Table 7. HS network: lines authorised 2011–2012 (km)

TOTAL EU high speed network - LINES authorised place into service [km]: 2011 - 2012							
Full compliance to TSIs: ENE, INF, CCS "train detection", SRT				Partial compliance to TSI (derogation)			
single track	double track	triple track	quadruple track	single track	double track	triple track	quadruple track
13	234	0	0	0	22	0	0

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

All newly built TSI-compliant single-track lines are located in Germany (13 km). The double-track lines are located in France (140 km of the Dijon to Belfort section of the Rhine–Rhône line), Germany (76 km) and Belgium (18 km on the Schaarbeek–Mechelen line, L25N).

Of the 22 km of partially TSI-compliant line, 20 km are located in Italy (quadrupling of Torino Porta Susa–Stura 'Historical Line' for 4 km and HS Bologna rail link for 17 km) and 2 km in France (Chavanne Tunnel, 115 km of the Rhine–Rhône line).

Concerning the authorisation of upgraded or renewed lines, Table 8 shows the total length of the authorised lines, split into:

- fully and partially TSI compliant and

- single and double track.

Table 8. HS network: lines authorised after upgrade/renewal, 2011–2012 (km)

TOTAL EU High Speed network - LINES authorised place into service after UPGRADE/RENEWAL [km]: 2011 - 2012			
Full in compliance to TSIs: ENE, INF, CCS "train detection"		Partially in compliance to TSI (derogation)	
single track	double track	single track	double track
6	62	0	1

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

All single-track lines authorised after upgrade or renewal are located in Germany, as well as 41 km of the TSI-compliant double-track lines. The remaining 20 km of TSI-compliant double-track lines are located in Belgium on the Brussels–Liège line (line L36N). The single kilometre of double-track partially TSI-compliant line is located in Germany.

Table 9 shows the number of authorisations for placing in service of high-speed lines per concerned subsystem. Two authorisations for the energy subsystem were granted by Italy (1) and Belgium (1), four for the infrastructure subsystem were granted by Belgium (1), Germany (2) and Italy (1) and two for CCS were granted by Belgium (1) and Italy (1).

Concerning the authorisation granted per subsystem after upgrade/renewal, the energy one was granted in Belgium and the 51 for infrastructure were granted in Belgium (1) and Germany (50). The single CCS authorisation was granted in Belgium.

Table 9. HS network: subsystems authorised, 2011 and 2012

TOTAL EU High Speed network - SUBSYSTEMS authorised place into service in 2011 and 2012					
First authorisation			after upgrade/renewal		
ENE	INF	CCS "Train detection"	ENE	INF	CCS "Train detection"
2	4	2	1	51	1

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

The three authorisations granted by Italy concern the HS Bologna rail link.

5.2. Authorisation placing in service of conventional lines

Regarding the authorisation of newly built conventional lines, Table 10 shows the total length the authorised lines, split into:

- fully and partially TSI compliant and

- single, double and multiple track.

Table 10. CR network: lines first authorised 2011–2012 (km)

TOTAL EU Conventional Rail network - LINES authorised place into service [km]: 2011 - 2012							
Full compliance to TSIs: ENE, INF, CCS "train detection", SRT				Partial compliance to TSI (derogation)			
single track	double track	triple track	quadruple track	single track	double track	triple track	quadruple track
1	5	0	0	2	0	0	0

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

The single kilometre of single-track TSI-compliant line was built in Finland, and the 5 km of double-track line in Belgium at the Zaventem–Brussels Airport (line L36C). The 2 km of single-track partially TSI-compliant line was built in Belgium on the L202A line.

Concerning the authorisations granted after upgrade or renewal, Table 11 shows the main figures.

Table 11. CR network: lines authorised after upgrade/renewal, 2011–2012 (km)

TOTAL EU Conventional Rail network - LINES authorised place into service after UPGRADE/ RENEWAL [km]: 2011 - 2012			
Full in compliance to TSIs: ENE, INF, CCS "train detection"		Partially in compliance to TSI (derogation)	
single track	double track	single track	double track
19	13	262	365

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

Concerning the authorisation granted in full conformity with TSI, the 19 km of single track are located in Italy (the Bovino–Cervaro section of the Caserta–Foggia line), and the 13 km of double tracks are divided between Italy (5 km of the Torino Porta Susa–Stura 'Linea Storica') and Slovakia (8 km).

There are different situations for the authorisation granted after upgrade and renewal for fixed installations that partially comply with TSI. The 262 km of single-track line are divided between Portugal (137 km: 66 km between Bombel and Évora stations on the Alentejo, Vendas Novas and Évora lines; 71 km between Castelo Branco and Covilhã stations on the Beira–Baixa line), Hungary (53 km) and Slovenia (72 km, including the following stretches longer than 8 km: upgrade of Ptuj–Moškanjci and Moškanjci–Ormož, the Pragersko–Ormož sections of the Pragersko–Ormož line for a total of 27 km; upgrade of the Ormož–Pavlovci and Pavlovci–Ivanjkovci sections of the Ormož–Hodoš–State border line for a total of 8.6 km; upgrade of the link to Hodoš station on the Ormož–Hodoš–State border line for 8.8 km; Ljubljana–Sežana–State border and upgrade of level crossing of Notranje - Gorice for a total of 12.7 km).

The 365 km of double-track lines are 287 km in the Czech Republic and 78 km in Hungary.

Table 12 shows the number of authorisations for placing in service of conventional lines per concerned subsystem. The eight authorisations for energy subsystems were granted in Belgium (1), Finland (1), Hungary (2), Italy (1) and Portugal (3). The five authorisations for infrastructure subsystems were granted in Belgium (2), Italy (1) and Lithuania (2). The 50 authorisations for CCS subsystems were granted by Belgium (2), Hungary (6), Italy (1), Lithuania (8), Portugal (3) and Latvia (30).

Concerning the authorisations granted per subsystem after upgrade/renewal, the 12 energy authorisations were granted in Finland (7), Hungary (2) and Slovenia (3). The 168 infrastructure authorisations were granted in Germany (107), Denmark (6), Finland (19), Hungary (16), Lithuania (3), Latvia (8), Portugal (2) and Slovenia (7). The 133 CCS authorisations were granted in Belgium (1), the Czech Republic (8), Finland (17), Hungary (2), Latvia (84) and Slovenia (21).

Table 12. CR network: subsystems authorised, 2011 and 2012

TOTAL EU Conventional Rail network - SUBSYSTEMS authorised place into service in 2011 and 2012					
First authorisation			after upgrade/renewal		
ENE	INF	CCS "Train detection"	ENE	INF	CCS "Train detection"
8	5	50	12	168	133

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

5.3. Tunnels

Table 13 shows the tunnels (new or upgraded/renewed) placed in service in the period 2011–2012 according to the TSI Safety in Railways Tunnels (SRT TSI).

Table 13. Tunnels placed in service, 2011–2012

Tunnels place in service in conform to SRT TSI in the years 2011 and 2012		
MS	Name of tunnel (as part of FIRST or UPGRADE/RENEWAL)	Length [km]
BE	Diabolo (Brussels Airport)	5
DE	Tunnel BER	3
DE	Buschtunnel	1
DE	Katzenberg-tunnel	10
FR	Saverne[18]	5
IT	Passante AV Bologna	11
IT	Quadruplicamento Torino Porta Susa - Stura	4
Total [km]		**39**

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

[18] The Saverne tunnel (SRT TSI compliant) is partially still under construction and it will be fully operational in 2016.

5.4. Stations

The following table shows the railway stations (new, upgraded/renewed, complete or part of the station [19] placed in service in the period 2011–2012 according to the TSI Persons with Reduced Mobility (PRM TSI).

Table 14. Stations placed in service, 2011–2012

Railway station place in service in compliance to PRM TSI in the years 2011 and 2012		
	Name of station	Number of platforms
BE	Brussels Airport	3
DE	Flughafen BER	2
DE	Himmelpforten	2
DE	Twistringen	2
DE	Kreiensen	4
DE	Banteln	1
DE	Salzderhelden	2
DE	Elze	3
DE	Freden	2
DE	Kirchweyhe	1
DE	Northeim	4
DE	Osnabrück Altstadt	1
DE	Leschede	2
DE	Osterholz-Scharmbeck	1
DE	Papenburg	2
DE	Bf Oppenheim	2
DE	Bf Bensheim	2
DE	Hp Koblenz-Stadtmitte	1
DE	Vieselbach	2
DE	Essen Hbf	5
EE	Koidula	2
FR	Belfort Montbeliard	1
FR	Besançon Franche-Comté TGV	3
SI	Dobova	2
SI	Hodoš	2
SK	Košeca	2
Total number of stations		**26**

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

[19] Upgrade/renewal of station (or part of it) usually takes place in several steps over a long period of time.
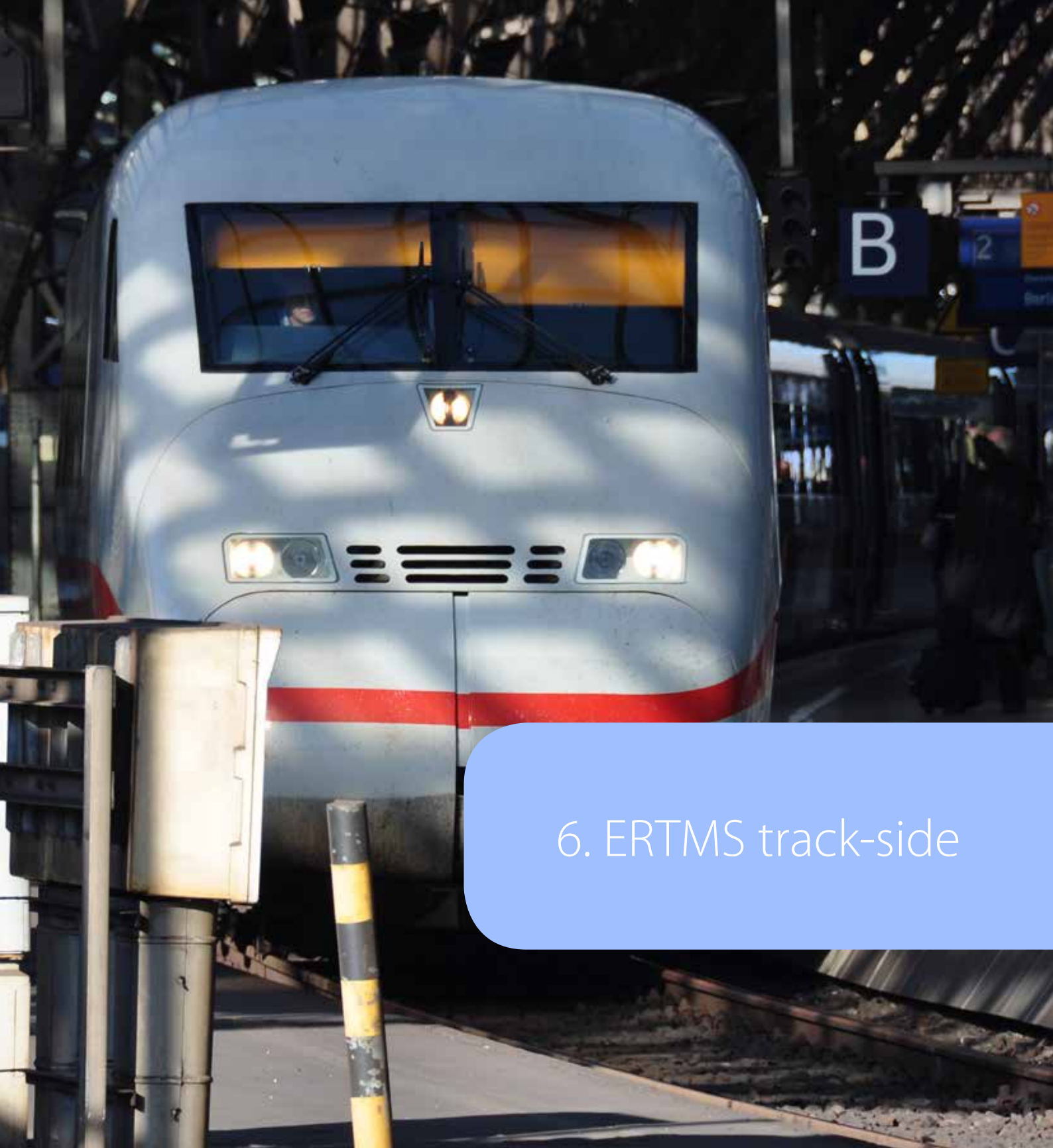
6. ERTMS track-side

In this chapter, the deployment of ETCS and GSM-R in the EU is described for track side. Information about on-board ERTMS deployment plan is not considered here.

The information and data provided in this report are based on information provided by the NSAs as defined in section 1.2, 'Data availability', and other sources. That section also provides information on the percentage of the network and traffic covered by this report.

6.1. ETCS deployment

Figure 9 shows the comparative evolution of ETCS track-side deployment in the EU Member States from 2008 to 2013.

The last column for each Member State details the number of kilometres in service plus the number of kilometres under construction.

Figure 9. ETCS deployment in EU
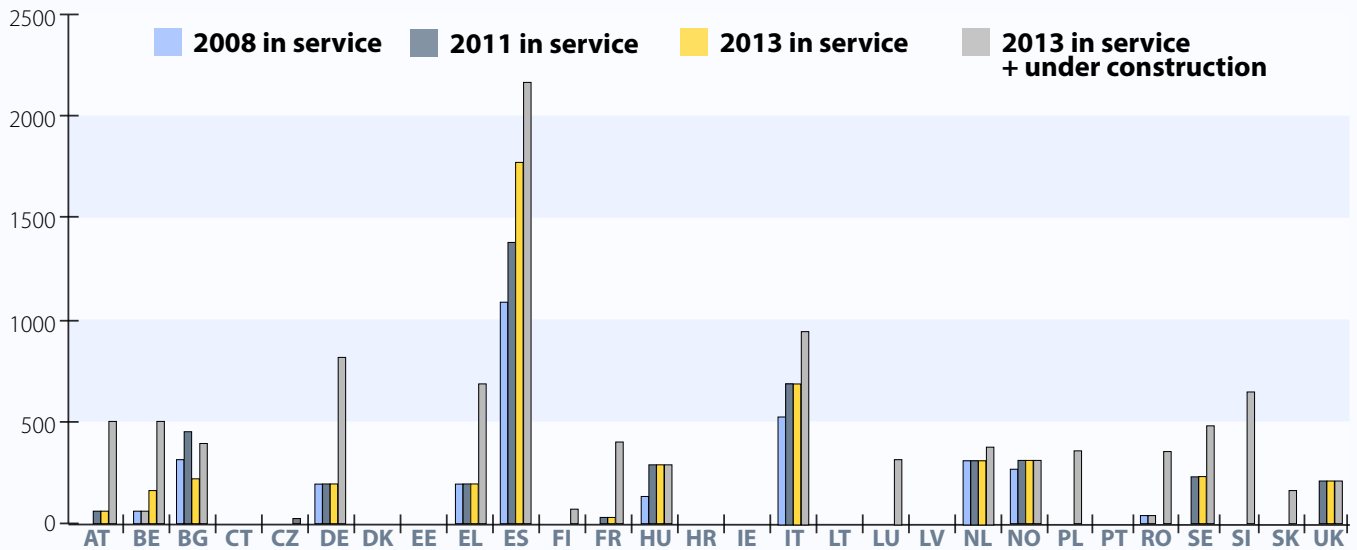
Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

The details of the figures are provided in Annex D together with the geographical indications (names) of the lines and (where available) the level of ERTMS used.

Currently, ETCS deployment is not homogeneous across the EU and different countries are at different stages of deployment.

By October 2013, more than 4 600 km of ETCS equivalent double-track lines [20] were in service.

At the same time, around 5 190 km of line were in production (in testing or at an advanced stage of construction).

6.2. GSM-R deployment

To provide details about the deployment of GSM-R in Europe, data have been taken from the International Union of Railways (UIC) [21].

According to data provided by the UIC to the EC [22], GSM-R deployment in Europe is as follows:

Of the 154 300 km of track planned to be equipped with GSM-R in Europe:

- 85 300 km of track are equipped with GSM-R (55.30 % of the planned network),

- 70 200 km of track have GSM-R in operation (45.50 % of the planned network).

It can be highlighted that the deployment of GSM-R is much wider than the deployment of ETCS. GSM-R is used for both voice and ETCS data transmission, and it can be installed independently of ETCS signalling.

In the Member States where ETCS Level 2 is in service, GSM-R deployment is at least the same as ETCS Level 2 deployment (see, for example, the case of Italy, where around 700 km of ETCS Level 2 are in service). In addition, there are several Member States where there is no ETCS Level 2 in service, or it is present only in very limited areas, but an extensive GSM-R network is deployed (see, for example, the case of Germany, the biggest GSM-R network in service in the EU at over 27 000 km).

[20] The lengths of lines in ETCS are usually counted in 'equivalent double track'. By this terminology, we mean the distance between two points A and B multiplied by the number of tracks and divided by 2. Thus, equivalent double track = (distance x number of tracks)/2.

[21] The data provided in the answers to the questionnaires by the NSAs were not complete; therefore, they could not be used to present the overall picture of the deployment of GSM-R.

[22] Information provided in the framework of the communication of the development of GSM-R in the world.

7. Vehicles

This chapter focuses on total EU data relating to authorisation for placing into service of vehicles. This report provides information on the first and additional authorisations as described by the Interoperability Directive[23]. The authorisations based on conformity to type (also known as 'subsequent authorisations' [24] in this context are treated among 'first authorisation' or 'additional authorisation' cases as applicable.

Information concerning the processes for all authorisation cases can be found in the 'Application Guide – Part 1 of the Reference Document' [25].

The chapter deals with the different categories of vehicles as follows:

- LOCOMOTIVE: a traction vehicle (or combination of several vehicles) that is not intended to carry a payload and has the ability to uncouple in normal operation from a train and to operate independently,

- FIXED FORMATION: a train formation that can be reconfigured only within a workshop environment,

- PASSENGERS CARRIAGE: non-traction vehicle in a fixed or variable formation capable of carrying passengers,

- SPECIAL VEHICLES: mobile railway infrastructure construction and maintenance equipment (or on-track machines),

- WAGONS.

Definitions of these categories can be found in TSI LOC&PAS [26] and TSI Wagon [27].

Two subchapters deal with the fees requested by public authorities for authorisation for placing into service of vehicles and the timeline for authorisation process.

The information and data provided in this chapter on vehicles are based on:

- ERA Report on Railway Vehicle Authorisation part 1 – current situation (14 April 2011),

- NSAs' feedbacks as defined in section 1.2, 'Data availability', and

- published national legal frameworks.

Annex E, 'Details on vehicles', provides detail per category of vehicles of first and additional authorisation.

---

[23] Dir. 2008/57/EC: first authorisation: Art. 22 and 24; additional authorisation: Art. 23 and 25.
[24] Dir. 2008/57/EC: authorisation for types of vehicles Art. 26(3).
[25] The document is available at: http://www.era.europa.eu/Core-Activities/Cross-Acceptance/Pages/Reference-Document.aspx.
[26] Commission Decision 2011/291/EU of 26 April 2011.
[27] Commission Decision 2006/861/EC of 28 July 2006.

7.1. Authorisations for placing in service of vehicles

7.1.1. First authorisation of vehicles and type of vehicles

The information and data provided in this report are based on information provided by the NSAs as defined in section 1.2, 'Data availability'. In this chapter, the term 'first' refers to authorisation of a vehicle in an EU Member State. It includes both vehicles of new types and vehicles conforming to an authorised type.

In Table 15 the above data are shown for the numbers of vehicles authorised in the period 2009 –2012 by category and showing the degree of TSI conformity.

Table 15 . Vehicles first authorised per category

Vehicles	First authorisation			
	2009	**2010**	**2011**	**2012**
Locomotives	400	273	218	220
Fixed formation	809	595	624	530
Passenger coach	357	415	649	300
Special vehicles	322	316	283	247
Wagons	5 648	4 000	3 301	4 857
Total	**7 536**	**5 599**	**5 075**	**6 154**

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

The above data are represented in Figure 10.

Figure 10. Trends in first APS for vehicles
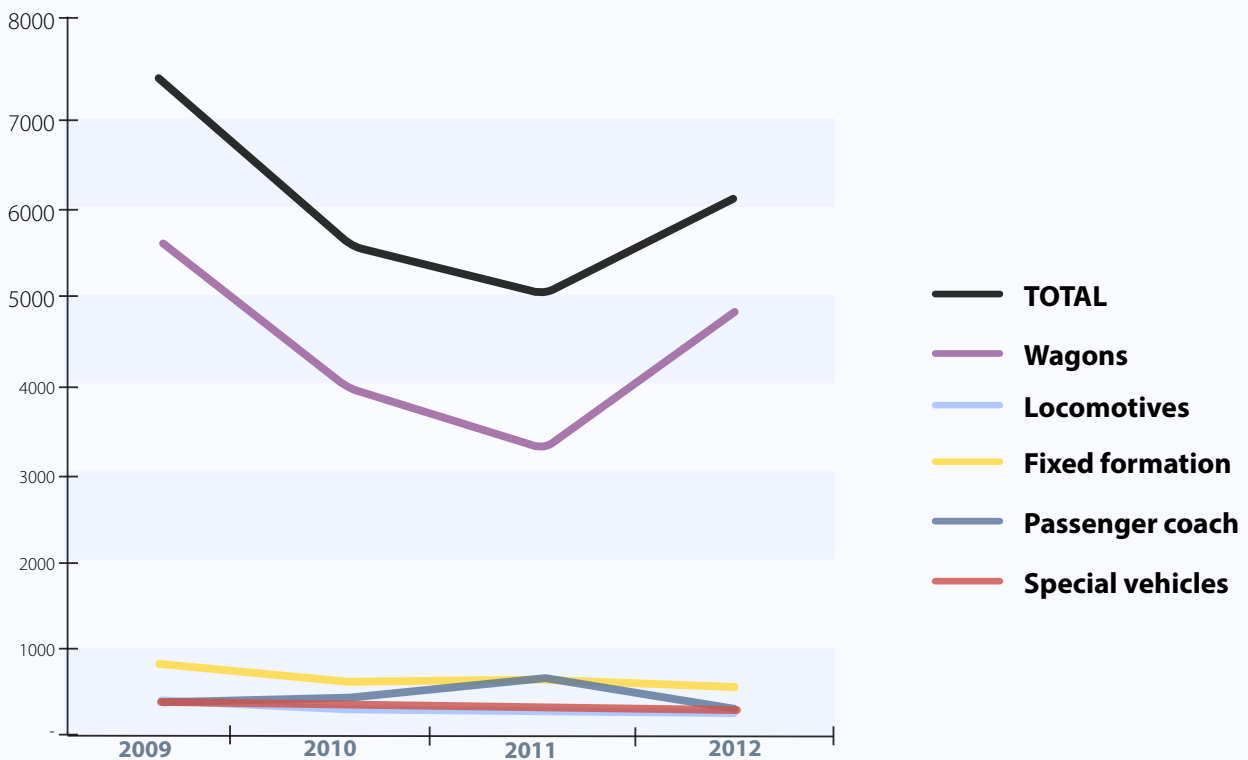
Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

For better visibility of the trends of categories other than wagons, Figure 11 shows the data excluding wagons.

Figure 11. Trends in first APS of vehicles, without wagons
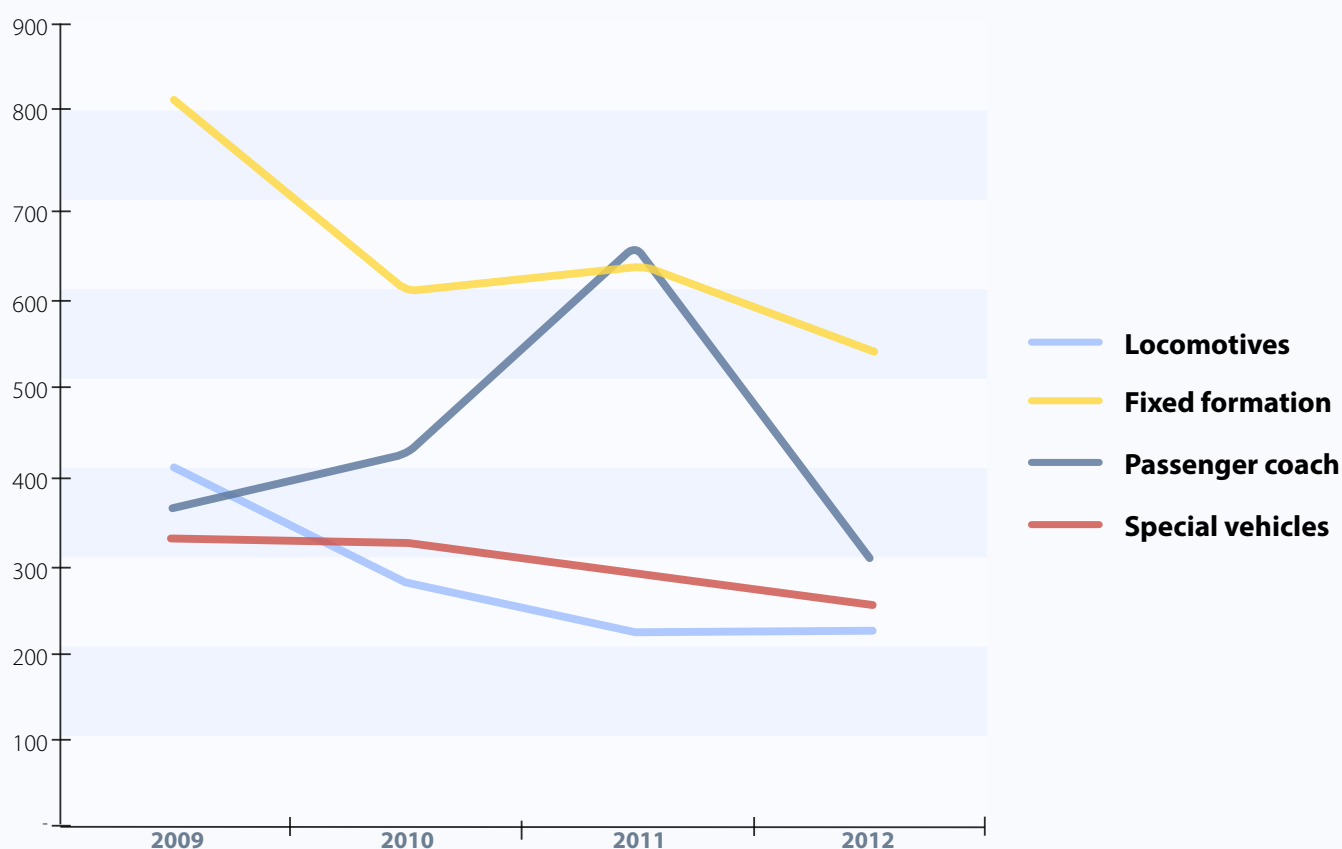
Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

Table 16 shows compliance with TSI.

Table 16 . Vehicles first authorised per TSI compliance

Vehicles	First authorisation			
	2009	**2010**	**2011**	**2012**
Total	7 536	5 599	5 075	6 154
TSI compliant	4 967	3 809	2 977	4 014
Partially TSI compliant	909	593	1 103	798
Total TSI	**5 876**	**4 402**	**4 080**	**4 812**
Not TSI compliant	1 660	1 197	996	1 342
TSI compliant (%)	66.0	68.0	58.7	65.2
Partially TSI compliant (%)	12.1	10.6	21.7	13.0
Total TSI (%)	**78.1**	**78.6**	**80.4**	**782**
Not TSI compliant (%)	22.0	21.4	19.6	21.8

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

In this report, the concepts of TSI, partially TSI and non-TSI compliant are as follows:

- A vehicle is full TSI compliant if it complies with all the requirements in all the relevant TSI(s).

- A vehicle is partially TSI compliant if it complies with some requirements of the relevant TSI or if it complies with only some of the relevant TSIs.

- A vehicle is non-TSI compliant if its compliance with requirements of any relevant TSI has not been checked.

In the period 2009–2012 it should be noted that:

- The most numerous TSI-compliant vehicles correspond to the wagon category.

- Most non-wagon vehicles authorised are not TSI compliant. This is because they were designed and manufactured before the entry into force of the relevant TSIs.

- In 2012, for the first time in Europe, a new private railway undertaking received authorisation for a high-speed train.

Table 17 provides information by type of vehicle first authorised.

Table 17. Vehicle type first authorised per category

Type	First authorisation			
	2009	**2010**	**2011**	**2012**
Locomotives	13	14	18	20
Fixed formation	23	20	25	27
Passenger coach	9	6	14	13
Special vehicles	41	43	31	70
Wagons	25	19	19	43
Total	**111**	**102**	**107**	**173**

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

The data indicate a different trend from the number of vehicles authorised. The largest number of types authorised are in the 'special vehicles' category, because the number of vehicles per type is extremely limited.

Table 18 shows how many vehicles of each type were authorised per year.

Table 18. Ratio between vehicles and type of vehicles in first authorisation

Vehicles/type	First authorisation			
	2009	**2010**	**2011**	**2012**
Locomotives	31	20	12	11
Fixed formation	35	30	25	20
Passenger coach	40	69	46	23
Special vehicles	8	7	9	4
Wagons	226	211	174	113

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

The information can also be shown as in Figure 12.

Figure 12. Vehicles per type first authorised
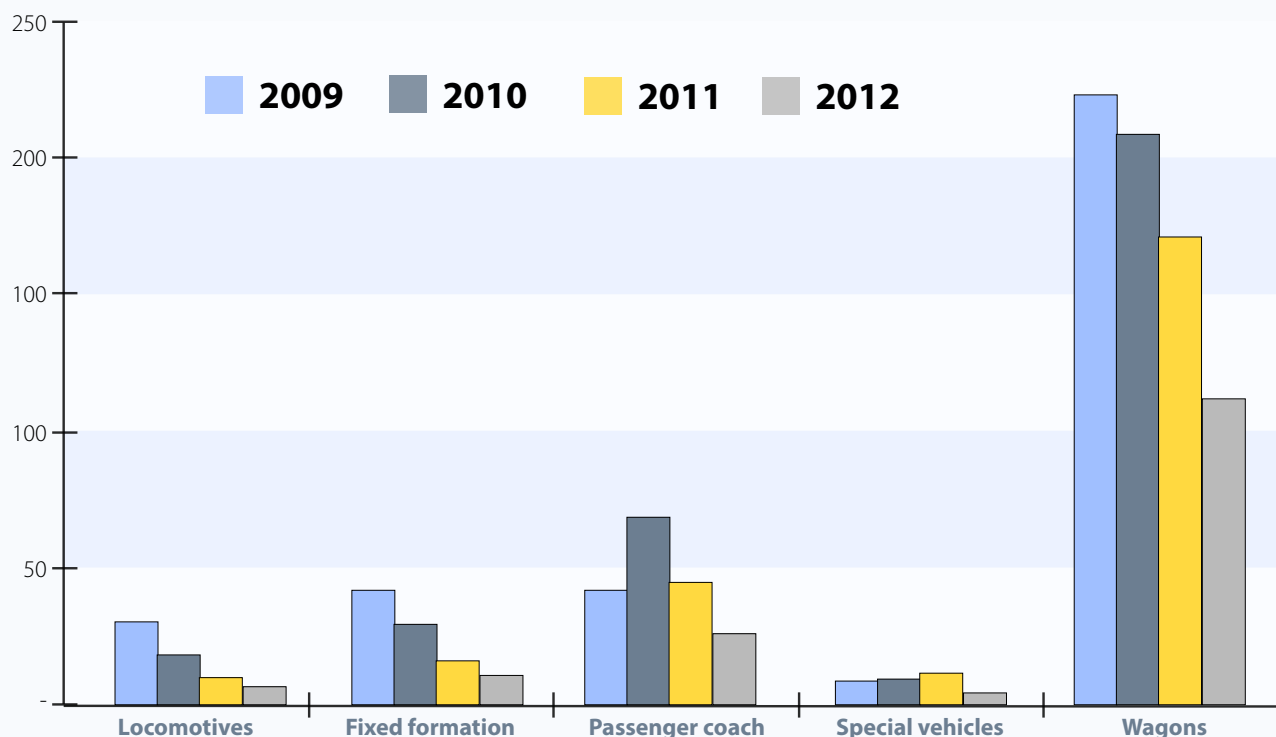
Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

7.1.2. Additional authorisation of vehicles and type of vehicles

Table 19 shows the vehicles that were granted an additional authorisation for placing in service (i.e. authorised in an additional Member State) in the period 2009–2012.

Table 19. Vehicles additionally authorised per category

Vehicles	Additional authorisation			
	2009	2010	2011	2012
Locomotives	348	256	1 074	552
Fixed formation	46	128	105	228
Passenger coaches	58	129	25	115
Special vehicles	100	40	128	89
Wagons	1 502	1 080	2 419	2 118
Total	**2 054**	**1 633**	**3 751**	**3 102**

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

Graphically, this can be represented by Figure 13.

Figure 13. Trends in additional APS of vehicles
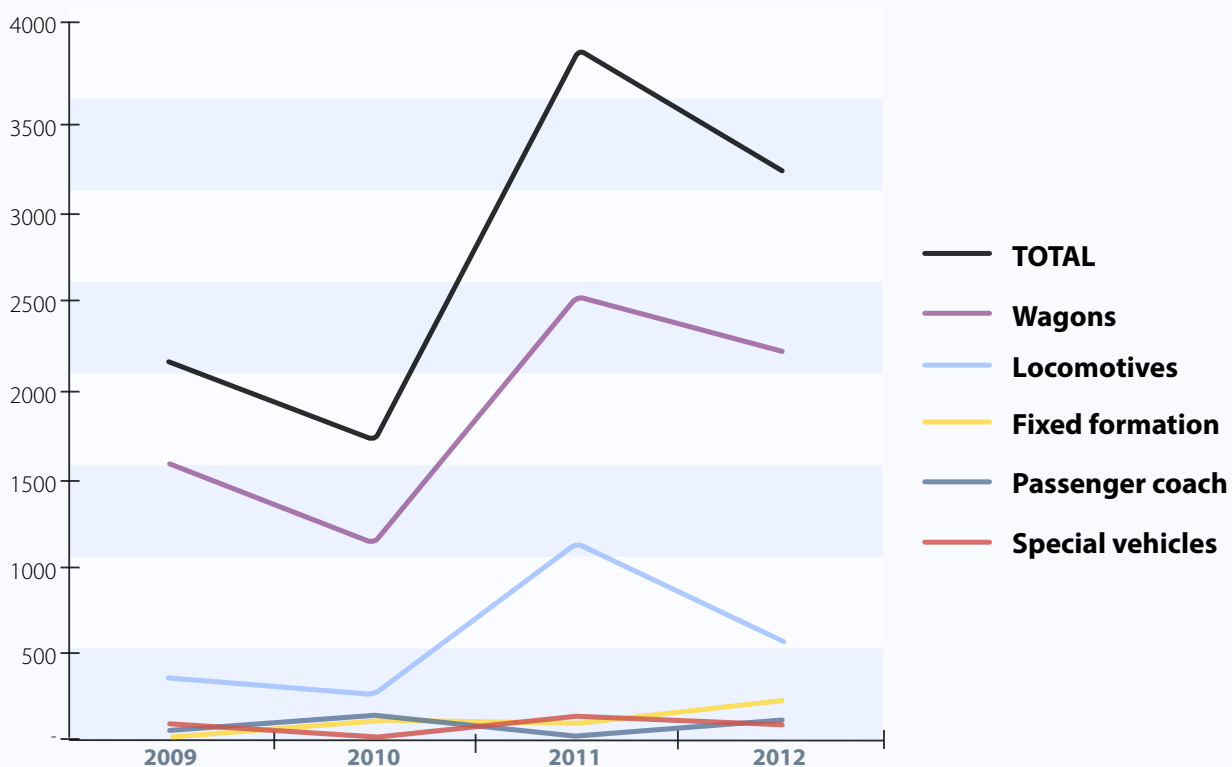
Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

For better visibility of the trends in other kinds of vehicles than wagons, wagons are excluded in Figure 14.

Figure 14. Trend of additional APS of vehicles, without wagons
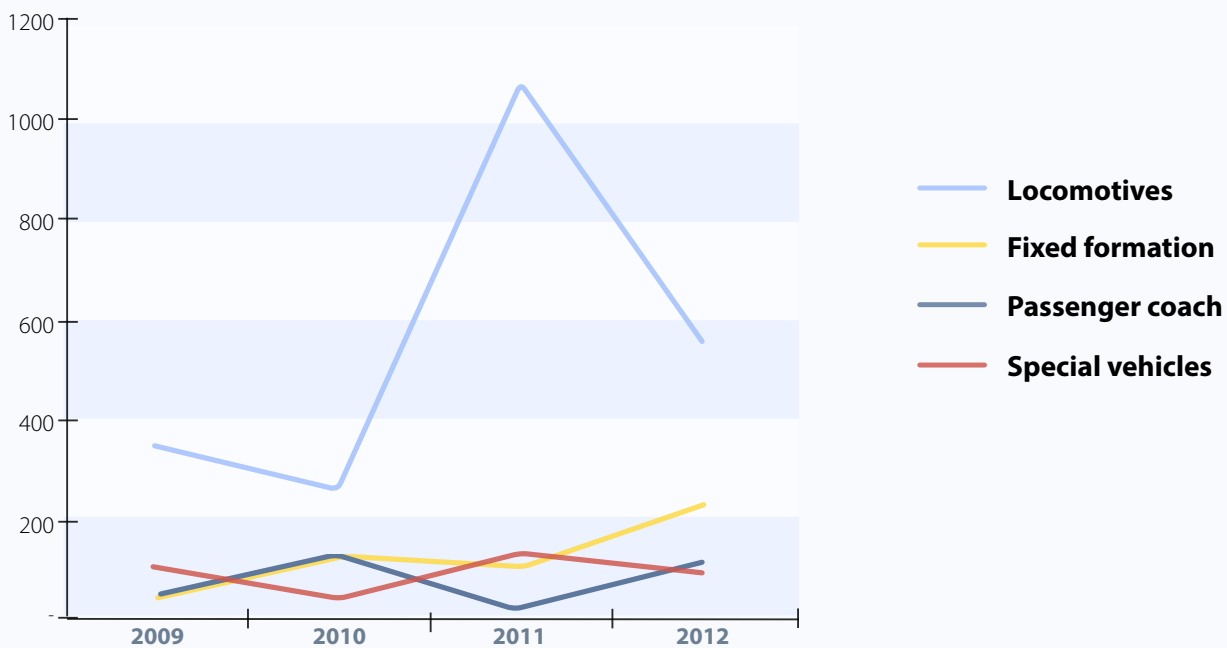
Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

Over the whole period, two trends were observed:

- the numbers of locomotives, fixed formation and passenger coaches increased and

- the number of special vehicles decreased.

Although the numbers of vehicles receiving first authorisation fell over the period 2009–2012, the numbers receiving additional authorisation increased.

The analysis of the vehicle type authorisations, shown in Table 20, shows that these increased from 23 types of vehicles authorised in 2009 to 94 in 2012. This contrasts with the Report on Railway Vehicle Authorisation of 2011, covering the period 2004 to mid-2009. Again, the differences may be explained by the development of a more mature railway market in railway authorisation, but also the number of vehicles per type was increasing. This was an issue that had been highlighted in the 2011 Report on Vehicle Authorisation. There were concerns related to the complexity of the definition of type, which could lead to the concept of a new type for each first authorisation. Better understanding of the type concept may help to address this issue. Further analysis in subsequent reports will address this concern.

Table 20 gives the numbers of types of vehicle that were granted an additional authorisation (i.e. authorised in an additional Member State).

Table 20. Vehicle type additionally authorised

Type	Additional authorisation			
	2009	**2010**	**2011**	**2012**
Locomotives	9	17	16	28
Fixed formation	2	14	1	17
Passenger coach	2	-	2	2
Special vehicles	5	5	16	22
Wagons	5	10	24	25
Total	23	46	59	94

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

Table 21 shows how many vehicles of each type were authorised per year.

Table 21. Ratio between vehicles and type of vehicles in additional authorisation

Vehicles/type	Additional authorisation			
	2009	**2010**	**2011**	**2012**
Locomotives	39	15	67	20
Fixed formation	23	9	105	13
Passenger coach	29	N.A.	13	58
Special vehicles	20	8	8	4
Wagons	300	108	101	85
Total	23	46	59	94

Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

Graphically, the same information is shown in Figure 15.

Figure 15. Vehicles per type additionally authorised
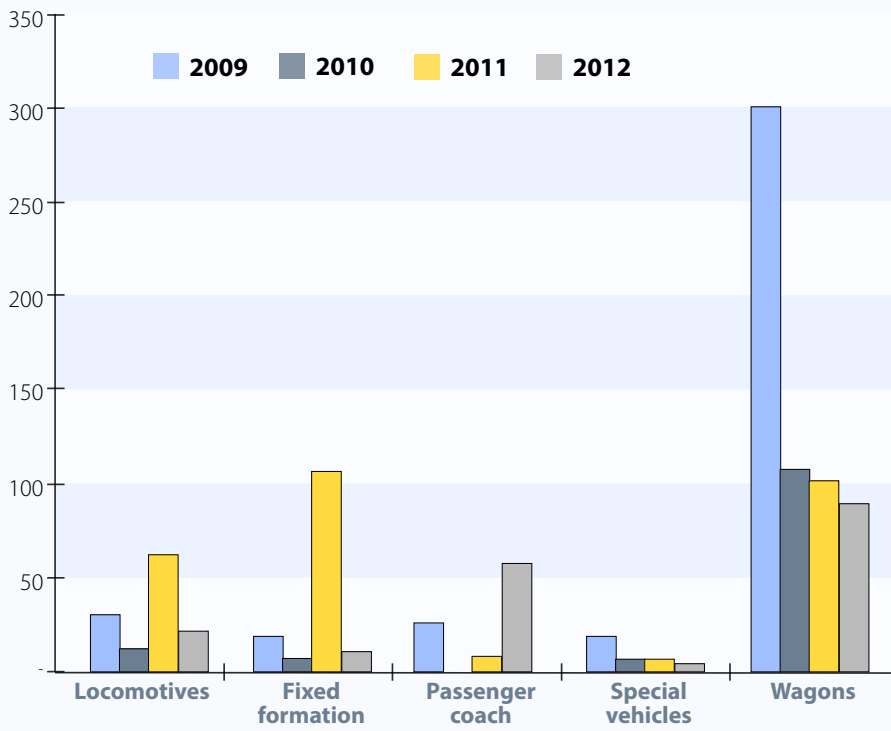
Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

7.1.3. Upgrades and renewals

Article 20 of the Interoperability Directive sets out the conditions for placing in service existing subsystems after renewal or upgrading. Therefore, in case any subsystem has any modification that is considered to be an upgrade or renewal, the Member State shall evaluate whether a new authorisation is needed or not. The same reasoning is applicable to subsystems making part of a vehicle. Even if, in the context of the Interoperability Directive 2008/57/EC, the concepts of upgrade and renewal are distinct, in the context of this report they are treated together. The number of authorisations granted after the upgrade/renewal of the subsystem composing the vehicle is represented in Figure 16. To better interpret the Figure 16, some context should be provided. As mentioned above, not all modifications to

existing subsystems trigger a new authorisation, so there could be in the EU more existing vehicles that have been modified but did not need a new authorisation granted by the NSA. In addition, there are no clear thresholds for requirements that trigger (or not) a new authorisation. Pending an EU approach to this topic, each NSA evaluates the modifications according to its own national practice. Moreover, surprisingly, according to the data collected via the questionnaire to NSAs, there are no authorisations granted after upgrade or renewal after a modification of the CCS on-board subsystem. This information contradicts other sources of information, which indicate there are vehicles equipped with this on-board system after upgrade/renewal and that such authorisations are difficult, expensive and uncertain.

Figure 16. Trends in authorisation after upgrade/renewal
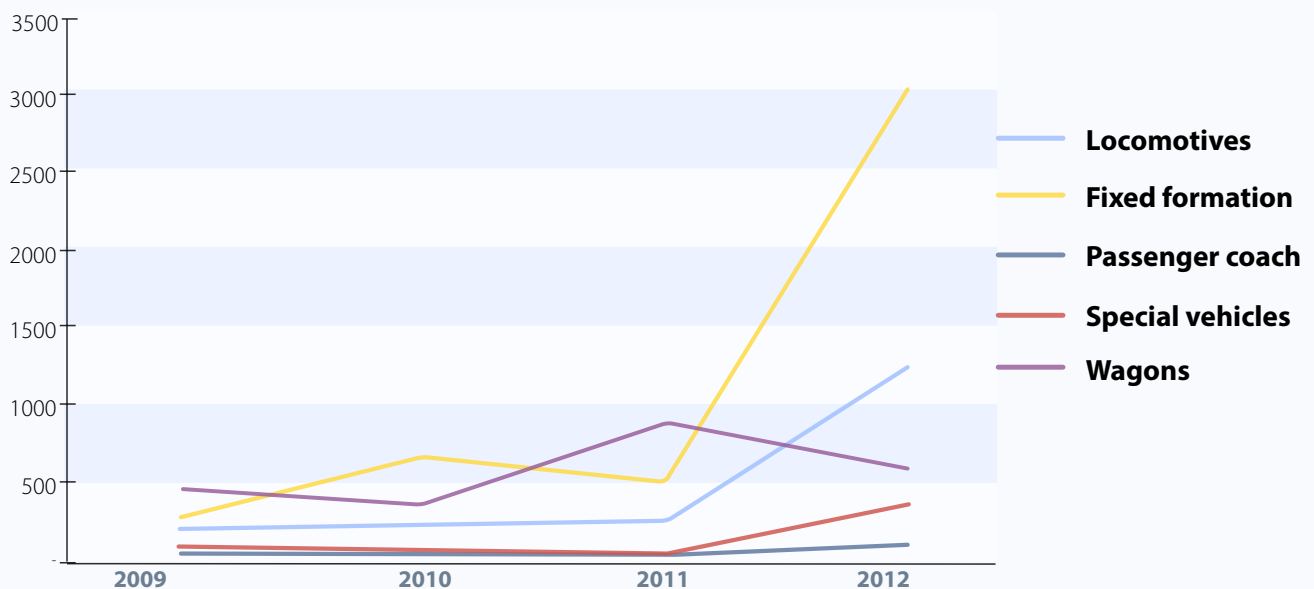
Source: 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

7.1.4. Trend in authorisations for placing in service of railway vehicles: 2004–2012

On 15 April 2011, the Agency published its Report on Railway Vehicle Authorisation [28]. The report includes data on numbers of vehicles and vehicle types authorised for placing into service in the European Railway Area (EU-25 plus Norway and Switzerland) over the period 2004 to mid-2009 [29]. It should be noted that the Member States transposed the Directive 2008/57/EC after 2009.

The Report on Railway Vehicle Authorisation was based on information collected from several sources, among them Member States/national safety authorities, manufacturers and railway undertakings (especially for the part concerning the

cost drivers for the authorisation of vehicles).

The present report provides a general overview of the evolution of the vehicle authorisations for placing into service from 2004 to 2012.

It is possible, for new vehicles, to show the 'Estimates of the number of new vehicles authorised to be placed in service in EU 25 + NO' since 2009 and to follow on from those that had been given in the Report on Vehicle Authorisation in 2011 (on page 18).

---

[28] http://www.era.europa.eu/Document-Register/Documents/Final%20report%20on%20vehicle%20authorisation%20(part%201).pdf.
[29] The 2009 figure was estimated for the whole year based upon information provided for the first half of the year.

It should be noted that, in the Report on Railway Vehicle Authorisation, the term 'new' refers to first and subsequent authorisations (that is the authorisation of a vehicle of a new type and authorisation of a vehicle conforming to an authorised type, respectively) whereas, in this report, the term 'first' is used with the same meaning.

The values for the whole EU in the Report on Railway Vehicle Authorisation are based on 'normalised' data received (see section 3.2 of the report).

The same approach has been adopted for this report in order to compare the two periods of data, i.e. 2004 to mid-2009 for the Report on Railway Vehicle Authorisation and 2009 to 2012

for this report.

The 2011 Report on Railway Vehicle Authorisation did not include the category 'special vehicles', whereas our current data collection exercise does.

Annex F shows the comparison of authorised number of vehicles from 2004 to 2012 for all vehicle types (N.B. special vehicles are included only from 2009).

It will be observed that wagon authorisation is the driver for the trends of all vehicles.

Figure 17. Estimates of new vehicles authorised 2004–2012
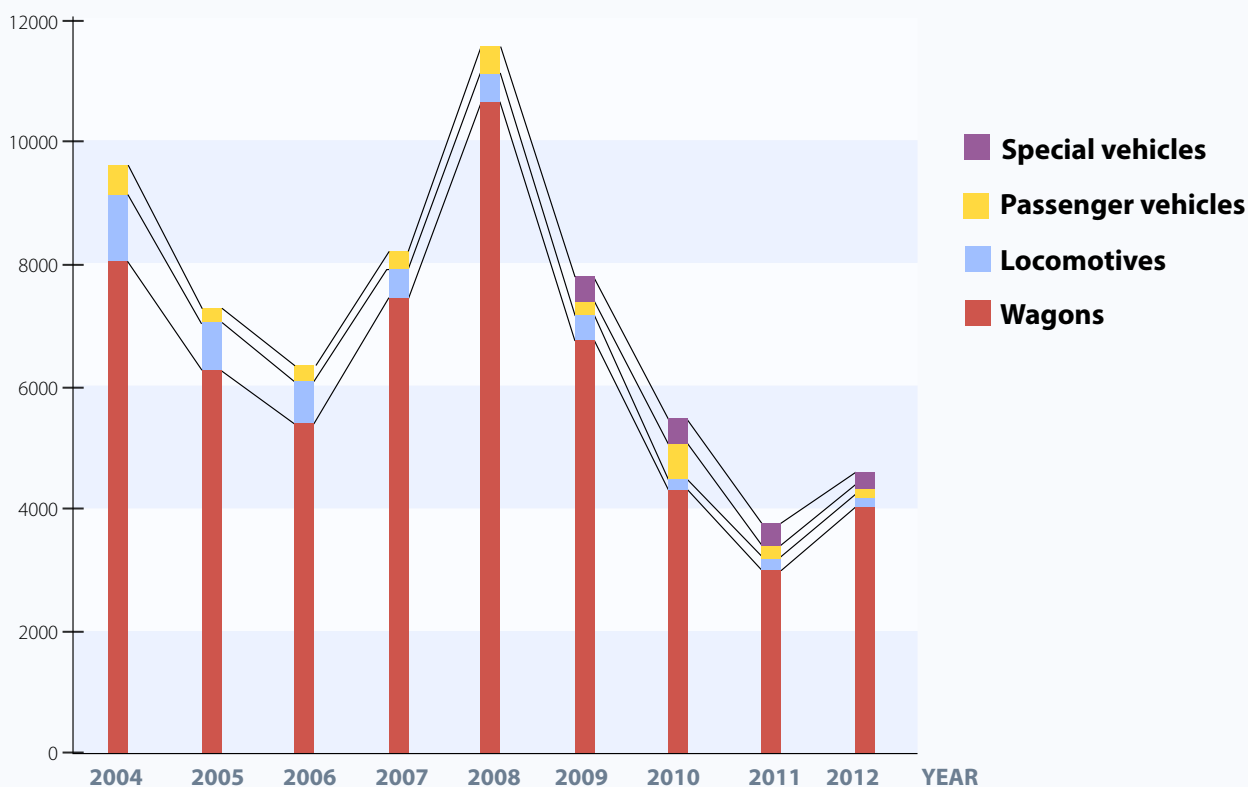
Sources: 2011 ERA Report on Vehicle Authorisation and 2013 European Railway Agency questionnaire to NSAs (22 NSAs responded).

The external drivers for these data have been the cyclical nature of orders (typically driven by the age of vehicle fleets), the traffic volumes being handled by the railways and the state of the European economy. The data very clearly reflect the impact of the economic crisis which hit after 2008. Traffic levels were badly hit for about 2.5 years, starting to recover

from 2010 onwards. However, that recovery has not been steady, with separate fiscal crises in a number of Member States affecting the recovery. Vehicles authorised fell from the high in 2008 until 2011 and regained their upward trend only in 2012, as economic recovery continued.

7.2. Administrative issues on authorisation

7.2.1. Fees for authorisation for placing into service

In the framework of the fees paid to obtain the authorisation for placing in service of the vehicle, we should count the fees of all the different actors involved, such as notified bodies, NSAs and assessment bodies. Among them, we could provide only official information concerning the fees applied by the NSAs. Obtaining and categorising the fees coming from other sources is almost impossible because of the fees profile and the differences amongst contracts. During 2011 and 2012, ERA collected information for the reference document [30], part 2, 'National Legal Framework – NLF'. The document is available on the ERA website [31]. Amongst the different questions, there was a section on fees the NSAs requested for performing a plausibility check and granting (or refusing) the APS for railway vehicles.

In the collected NLFs, different kind of fees have been identified as follows:

1. fees needed to obtain a dedicated guideline to facilitate the APS;

2. fees for the acknowledgement of receipt of application;

3. fees needed to obtain the authorisation, after the overall process;

4. fees needed to obtain the refusal, after the overall process;

5. fees needed to launch an appeal procedure to the NSA (Article 21.7 of 2008/57/EC);

6. fees needed to launch an appeal procedure to the 'appeal body' (Article 21.7 of 2008/57/EC);

7. fees in case of NSA acting as assessment body (designated body or assessment body (CSM));

8. fees in case of NSA issuing certificates (designated body or assessment body (CSM)).

Up to June 2013, 21 NLFs out of 27 (78 %) had been published on the ERA website [32]. The NLFs for Germany, France, Italy, the Netherlands, Poland and the United Kingdom had been collected but not yet published. That for Croatia is under development.

The data obtained are explained as follows:

1. no fees requested for obtaining the national guideline to facilitate the APS;

2. no fees requested upon receipt of application, with the exception of Slovenia, where EUR 4.54 is requested;

3. most of the NSAs require fees for authorisation, with the exception of Estonia, Ireland, Greece, Latvia, Luxembourg and Norway.

   Seven Member States have a fixed rate: around EUR 1 000. Interesting variations can be noticed concerning the category of vehicle to be authorised, as, for example, in Spain, where the different categories are listed with related fees needed. The rest of the NSAs apply an hourly rate, around EUR 120 per hour.

4. In most of the Member States, there is no additional fee if authorisation is refused; in some Member States, the fees are the same when authorisation is granted. In the second case, these fees are justified by involvement of staff in the authorisation process, independently of the result obtained afterwards (Belgium, Germany, France, Austria, Finland, Slovenia, Slovakia, Sweden).

5. Most of the fees for launching an appeal to the NSA are the same as for granting the authorisation; this is because the same activities are performed by the NSA on re-examining the files. In Sweden there is no additional fee.

6. The fees for the appeal to the 'appeal body' (designated under Article 17(3) of Directive 2004/49/EC) are free of charge for most of the country. This amount does not include the administrative taxes to launch the procedure, EUR 50 on average. There are two exceptions: Denmark and Austria, in which the fixed-rate fees are respectively EUR 537 and EUR 220.

7.&8. Only three NSAs perform the roles of Designated Bodies and Assessment Body (CSM), with the following fees:

   – NSA Finland has an hourly rate of EUR 140, and

   – NSA Sweden has an hourly rate of EUR 150.

---

[30] Reference to Article 1(2) of 2011/155/EC.
[31] http://www.era.europa.eu/Core-Activities/Cross-Acceptance/Pages/Reference-Document.aspx
[32] http://www.era.europa.eu/Core-Activities/Cross-Acceptance/Pages/Part-2-and-Part-3-of-the-Reference-Document.aspx#Part3

7.2.2. Average time for authorisation procedure

The process leading to an authorisation for placing into service of a vehicle is composed of several stages, as follows:

1. identifying the rules, applicable requirements, conditions of use and assessments;
2. pre-engagement,
3. assessment,
4. corrections of non-conformities for national rules,
5. establishing certificates and declarations of verification,
6. compiling the authorisation file and submitting the application,
7. processing the application for authorisation,
8. final documentation and authorisation.

The information on the timeline for authorisation that could be provided starts at stage 6.

Actually, in stage 6 the authorisation file is compiled covering all the activities related to the collection of the supporting documentation that is required for the application. The official application for authorisation is submitted when the authorisation file is complete as per the agreed scope. In stage 7, amongst several activities performed in the process, the appeal to the NSA decision is described and in stage 8 the vehicle type authorised is registered. Therefore, the timeline for the previous stages of the authorisation process such as pre-engagement, assessment, on-track tests, discussion in several meetings between the players involved (applicant, NSA, assessment bodies…) is hard to describe given the complexity of the projects. Most of these activities are the time-consuming drivers.

According to the information provided in the NLFs, the stage of issuing authorisation mainly follows the timeline as laid down by the Interoperability Directive.

In this context, in most cases the authorisation is granted within:

- 4 months for a new authorisation case after upgrading/renewal (Article 20.1 of Directive 2008/57/EC),

- 2 months for additional authorisation case of TSI-compliant vehicles (Article 23.7 of Directive 2008/57/EC);

- 4 months for additional authorisation case of non-TSI-compliant vehicles (Article 25.5 of Directive 2008/57/EC).

In some cases national law, that transpose the European Directive, permits an authorisation framework that allows granting authorisation in a shorter period (e.g. Belgium and the Czech Republic).

These administrative times for the granting of authorisations for placing in service vehicles are, therefore, not the problem. It is on the time-consuming previous phases that most of the efforts should be concentrated
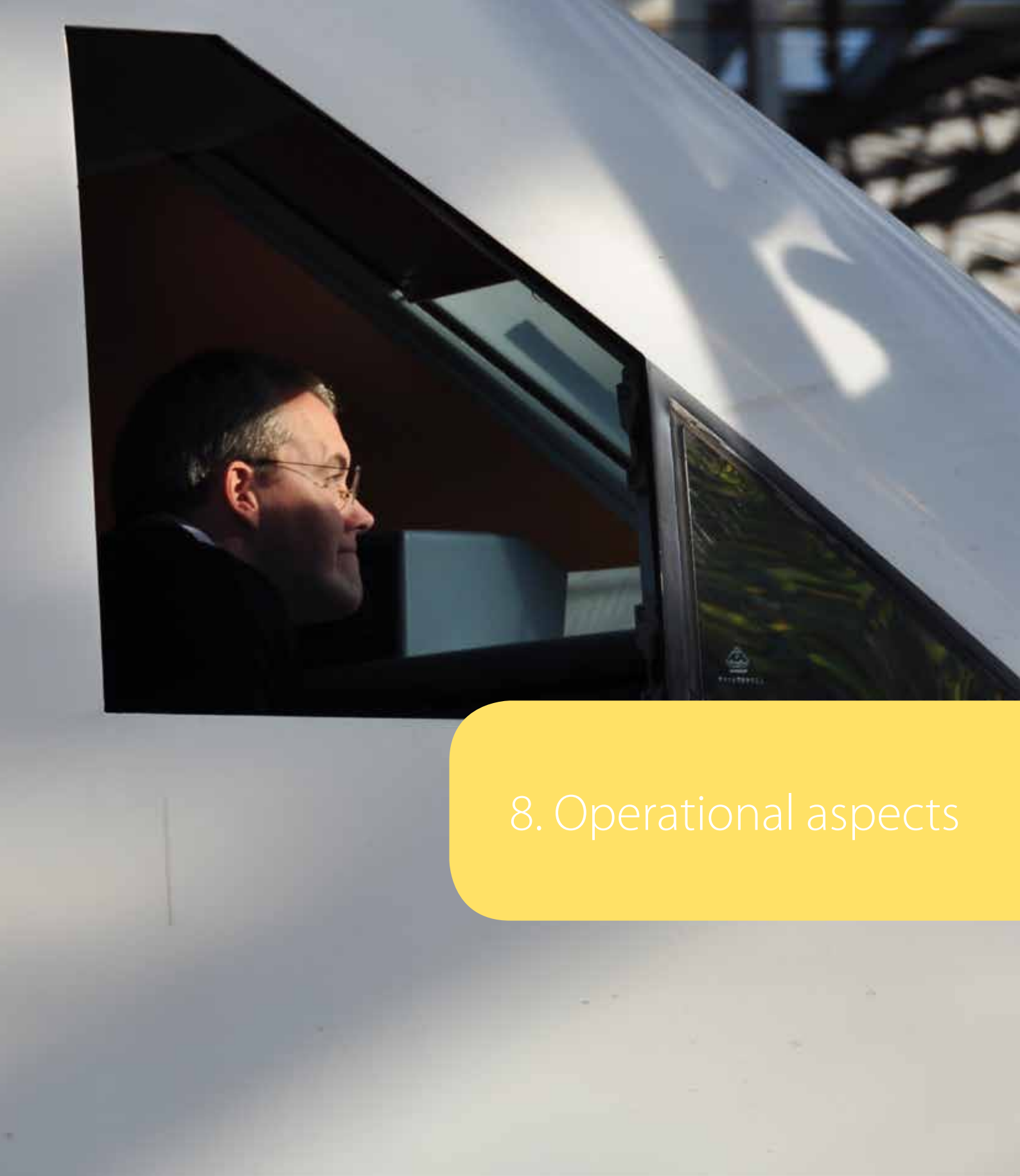
8. Operational aspects

This chapter is intended to give information on aspects that, as mentioned in the foreword, 'in some respects underpin the "physical" interoperability of vehicles and tracks'. This chapter will provide an overview of processes and activities aimed at serving the final customers, providing them with an EU-wide standard of quality in rail services.

8.1. Train drivers

Article 4, 'Certification of drivers', of Directive 2007/59/EC 'on the certification of train drivers operating locomotives and trains on the railway system in the Community', states that all train drivers shall have the necessary fitness and qualifications to drive trains. The following documents shall be held by a driver:

– a licence demonstrating that the driver satisfies minimum conditions as regards medical requirements, basic education and general professional skills and

– one or more certificates indicating the infrastructures on which the holder is authorised to drive and indicating the rolling stock which the holder is authorised to drive.

A licence shall be valid throughout the whole territory of the European Union, whereas the certificate shall be valid only on those infrastructures and rolling stock identified on it (Article 7, same directive).

The train drivers' licences are issued by the NSA, whereas the certificates are issued by the railway undertaking and infrastructure managers (IMs) as set up in their safety management systems.

The same directive states that the NSA shall keep a register of all the licences provided and the RUs and IMs shall keep a register of their certificates granted.

The information provided in this report is subject to the limitations described in section 1.2, 'Data availability'.

Most of the NSAs provided rounded figures; therefore, the sum of all the EU train drivers is also rounded. The total number of train drivers in the EU is 180 000; of them, by 31 March 2013, 13 000 had been certified according to Directive 2007/59/EC.

The following comments apply:

– In Bulgaria, the licences were issued according to the national legislation before the transposition of Directive 2007/59/EC. As of the autumn of 2013 all new licenses will be issued in compliance with Directive 2007/59/EC.

– In Hungary and Italy, because of technical problems, the connection between the database of licences and certificates has not been finalised.

Unfortunately, collecting data for certificates was not as easy as for licences. In fact, only 11 000 certificates have been noted (figure rounded).

In fact, Article 22(2b) of Directive 2007/59/EC obliges RUs and IMs to cooperate with the competent authority (mainly the NSAs) for the exchange of information related to the certificates. However, no binding connection between NLR (National Licences Register) and CCR (Complementary Certificate Register) is required.

ERA has provided the Commission with a report on the development of implementation of this new certification scheme and on experiences of the sector (Article 33 of Directive 2007/59/EC).

The first EU train driver licence was issued in June 2011 by the French NSA.

Annex G, 'Train Drivers per Member State', provides the details per Member State of train drivers; these figures are aligned with the equivalent in the train drivers report.

Annex H shows a specimen of the EU driving licence as defined in the Commission Regulation EU 36/2010.

8.2. Service quality report

According to Article 28 of Regulation 1371/2007 on rail passengers' rights and obligations, 'Railway undertakings shall define service quality standards … [covering] at least the issues listed in Annex III to the Regulation.'

The same article states that railway undertakings shall publish yearly a report on their own quality performance. The reports shall be uploaded, by 31 May of the following year, to the ERA website, in the ERADIS [33].

At the time of drafting this biennial report (end of October 2013), 64 service quality reports (15 of them also available in English) had been published in ERADIS, out of 100 European railway undertakings notified by national enforcement bodies (NEBs) provided for by Article 30 of the same regulation.

In 2011, the Commission developed guidelines on 'Rail Service Quality Standards and Reports Publication Procedure and Contents' – published on the ERA website [34] – to facilitate publication by RUs and monitoring by NEBs of service quality reports. This guideline recommends using English as well as the official national language(s), when possible, at least for the executive summary of the report.

However, several non-compliances occurred: some RUs did not provide any report; others were published only on their own or only on ERA's website. Some RUs did not define any quality standards, and some reports did not cover all the issues required by Annex III of the Regulation. Nonetheless, the situation has been improving considerably since 2010.

---

[33] http://eradis.era.europa.eu/interop_docs/ruSQPreports/search_results.aspx.
[34] http://www.era.europa.eu/Document-Register/Documents/Minimum%20content%20of%20rail%20service%20quality%20reports.%20Guidelines.pdf.

9. Registers

This chapter of the report provides general information for four interoperability-related registers which are in operation. These are the European Centralised Virtual Vehicle Register (ECVVR), European Register of Authorised Types of Vehicles (ERATV), European Railway Agency Database of Interoperability and Safety (ERADIS) and Vehicle Keeper Marking Register (VKMR). It also examines the data contained in the registers with a focus on the period 2010 to 2012 wherever possible. Information about the Reference Document Database is provided in section 2.1.5.

The register of infrastructure (RINF) is currently under development. It will be put in operation and progressively populated with data over the coming years.

9.1. European Centralised Virtual Vehicle Register

9.1.1. General information

The national vehicle registers (NVRs) are a tool for the Member States to register the vehicles authorised to be placed in service. The NVR of a Member State must contain all vehicles authorised in that Member State and be accessible for consultation by authorised representatives from competent authorities and stakeholders. The vehicle-related data to be entered in the register are defined in a common specification drafted by the Agency and adopted by Commission Decision 2007/756/EC. Following this Decision, the Agency developed the computer-based European Centralised Virtual Vehicle Register (ECVVR). The ECVVR consists of the NVRs of the Member States and the Virtual Vehicle Register (VVR), which is a search engine connecting all the NVRs. The VVR allows users to search all NVRs through a single portal.

The original NVR Decision provided a transitional period for the registration of existing vehicles which ended on 9 November 2009 for vehicles used for international traffic and a year later (i.e. 9 November 2010) for vehicles used for domestic traffic.

In 2011, the original NVR Decision was amended by Commission Decision 2011/107/EU. This amendment concerns two main items. First, by 31 December 2011 the Member States must have adapted their national vehicle registers to include information on authorisations for placing in service granted in other Member States. Second, by the same date the ECM business number must have been identified in the NVRs for the vehicles registered.

All NVRs should have been connected to the VVR, so that the ECVVR is established, by 31 December 2011.

As of September 2013, 15 EU Member States and Norway, Serbia and Switzerland [35] have their NVRs connected to the VVR release following the two amendments of the specification discussed above. These EU Member States are Belgium, the Czech Republic, Denmark, Estonia, France, Italy, Lithuania, Luxembourg, the Netherlands, Austria, Poland, Portugal, Romania, Slovenia and Slovakia. Two other Member States – Spain and Sweden – were connected to the previous release of the VVR but have not connected to the latest one.

The analysis of the data from ECVVR provided below covers the 15 EU Member States connected to VVR plus Norway and Switzerland. The NVR of Serbia is also connected to VVR, but at the end of October 2013 there were no registered vehicles.
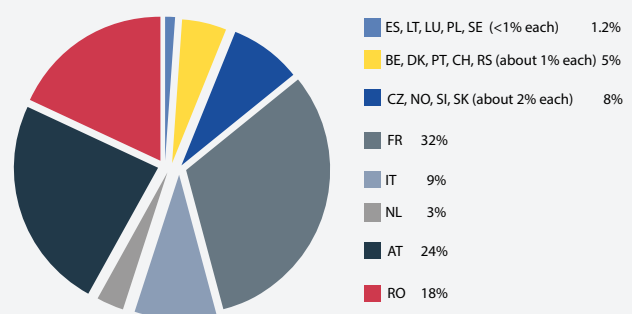
9.1.2. ECVVR users

One of the purposes of the ECVVR is to allow users to retrieve information related to registered vehicles. For example, when a railway undertaking needs to communicate data for the maintenance of a particular wagon, it can find out which company is the entity in charge of maintenance (ECM) via ECVVR. Users can check the validity of the registration of a specific railway vehicle and retrieve information about the keeper or the ECM associated with it. It is also possible to retrieve a list of railway vehicles fulfilling some given criteria, e.g. vehicles with withdrawn registrations or vehicles associated with a given keeper.

The total number of ECVVR users in October 2013 was slightly more than 800. The users include keepers, owners, entities in charge of maintenance, railway undertakings, infrastructure managers and others. Many of the users fall under more than one category, i.e. one user may be both owner and keeper or it may be owner, keeper and RU, and so on.

If we look at the distribution of ECVVR users by Member States, we will find that most users registered in three Member States – France, Austria and Romania – account for 74 % of the users (see Figure 18). Italy and the Netherlands have respectively 9 % and 3 % of the users. The Czech Republic, Norway, Slovenia and Slovakia each have about 2 % of the users. The remaining ten countries – Belgium, Denmark, Estonia, Lithuania, Luxembourg, Poland, Portugal, Sweden, Switzerland and Serbia – have 1 % or less each.

Figure 18. Breakdown of the ECVVR users by Member State, 11/10/2013

ES, LT, LU, PL, SE (<1% each)	1.2%
BE, DK, PT, CH, RS (about 1% each)	5%
CZ, NO, SI, SK (about 2% each)	8%
FR	32%
IT	9%
NL	3%
AT	24%
RO	18%

Source: ECVVR.

---

[35] The connection of the NVRs of Serbia and Switzerland to VVR is in accordance with the agreement between the Agency and the Intergovernmental Organisation for International Carriage by Rail (OTIF).

9.1.3. Vehicles registered in NVRs

As already mentioned, the data examined below cover 14 EU Member States – Belgium, the Czech Republic, Denmark, France, Italy, Lithuania, Luxembourg, the Netherlands, Austria, Poland, Portugal, Romania, Slovenia and Slovakia – plus Norway and Switzerland. Estonia is also connected to VVR but the data available cover only the total number of registered vehicles. In November 2013, the total number of registered vehicles for the 17 countries was about 656 000, of which approximately 620 000 were registered in the EU (see Table 22). A quarter of the vehicles were registered in France, followed by Poland with 20 %, the Czech Republic with 10 % and Italy with about 9 % of vehicles. The NVRs whose total number of vehicles falls within the range from 25 000 to 40 000 are those of Belgium, Estonia, Lithuania, the Netherlands, Austria, Romania Slovakia and Switzerland. The remaining countries have fewer than 6 000 registered vehicles each.

Table 22 also provides information regarding the number of vehicles with withdrawn registrations: about 114 000 vehicles. This includes not only cases where the vehicle will no longer be used but also cases where registration is suspended temporarily. Vehicles whose registration is transferred to a different number or which will be used outside the EU are also covered under the 'withdrawn' category.

Some 80 % or approximately 490 000 of all registered vehicles in the EU had valid registrations, whereas the registrations of 20 % of the vehicles were withdrawn. According to the data in the NVRs, only 3 %, or about 13 000, of the vehicles with valid registration in the 14 EU Member States have an EC declaration of verification. This means that only 3 % of the vehicles were assessed for compliance with the relevant TSIs. One of the reasons for the low number is that the TSIs are not applicable for existing vehicles until their upgrade or renewal. Now, if we examine the percentage of the vehicles assessed for compliance with the TSIs in the last 3 years, we will observe some progress. In 2012, about 17 % of the vehicles authorised in the European Union had an EC declaration, which is more than twice the respective percentage in 2010. In absolute terms, the number of the vehicles assessed for compliance with the TSIs (approximately 2 000 vehicles) in 2012 is almost the same compared to 2011 but decreased by 43 % from 2010 (see Figure 20).

Table 22. Number of vehicles registered in NVRs by Member State, last quarter of 2013

Member State	Total number of registered vehicles	of which				with EC declaration	in %	Valid registrations					
		valid registration	withdrawn registration	authorised in more than 1 Member State	in %			with ECM	in %	with keeper	in %	with owner	in %
BE	40 689	19 825	20 864	no data		827	4%	19 062	100% (96%)*	19 535	100% (99%)*	5 868	30%
CZ	64 635	53 139	11 496	31 707	60%	2 177	4%	53 139	100%	53 139	100%	53 139	100%
DK	2 059	1 991	68	176	9%	0	0%	1 991	100%	1 991	100%	1 991	100%
EE**	22 116	no data	no data	no data									
FR	158 601	119 794	38 807	31 857	27%	3 273	3%	119 794	100%	119 794	100%	119 794	100%
IT	57 648	49 557	8 091	31 384	63%	108	0%	49 557	100%	49 557	100%	49 557	100%
LT	16 412	16 397	15	0	0%	0	0%	0	0%	16 332	100%	16 332	100%
LU	5 139	4 246	893	3 722	88%	50	1%	4 246	100%	4 246	100%	4 246	100%
NL	19 717	19 145	572	1 748	9%	2 207	12%	19 145	100%	19 145	100%	19 145	100%
AT	43 569	35 307	8 262	3 502	10%	1 936	5%	35 307	100%	35 307	100%	10 018	28%
PL	126 691	110 185	16 506	64 291	58%	1 229	1%	110 185	100%	110 185	100%	110 185	100%
PT	5 703	5 335	368	992	19%	421	8%	5 335	100%	5 335	100%	5 335	100%
RO	19 123	19 123	0	48	0%	0	0%	19 123	100%	19 123	100%	19 123	100%
SI	4 869	3 656	1 213	2 839	78%	64	2%	3 656	100%	3 656	100%	3 656	100%
SK	33 848	32 022	1 826	23 528	73%	515	2%	32 022	100%	32 022	100%	32 022	100%
NO	2 923	2 729	194	1 494	55%	0	0%	2 729	100%	2 729	100%	2 729	100%
CH	32 871	27 973	4 898	737	3%	36	0%	18 557	66%	27 973	100%	1 380	5%
Total EU	620 819	489 722	108 981	195 794	40%	12 807	3%	472 562	96%	489 367	100%	450 411	92%
Total EU +NO+CH	656 613	520 424	114 073	198 025	38%	12 843	2%	493 848	95%	520 069	100%	454 520	87%

Some figures (%) are rounded figures.
*BE - In Belgium, 100% of the vehicles that were first authorised in Belgium have an ECM and a keeper assigned to them. Of all vehicles with valid registration in BE NVR, 4% have no ECM and 1% no keeper assigned. These vehicles were first authorised and registered in other Member State such as France, Germany, Luxembourg and Austria and are registered in the Belgium NVR with partial set of data according to §3.2.5 (1) of Annex of Decision 2007/756/EC.
*EE - since there is no data for the valid registrations it is not possible to calculate the vehicles with valid registrations and with ECM/keeper/owner

To help the Member States include information on authorisations for placing in service granted in other Member States in their NVRs, the Agency recommended that the NSAs provide a file (based on a standard multilingual template) with data on the additional authorisations it has issued. The Agency published these files in a dedicated area of its website[36] so that they are easily available to all the parties concerned. As of October 2013, eight NSAs had provided the files, eight others stated there were no additional authorisations and the remaining ten – Germany, Ireland, France, Luxembourg, Latvia, Hungary, Norway, Finland, Sweden and the UK – had not provided the data. Taking this into account, the data in ECVVR show that about 130 000 vehicles[37], or 38 % of the vehicles with valid registration, were authorised in more than one Member State (see Table 22).

According to the data registered in the NVRs, some 96% of the vehicles with valid registration in the European Union have an Entity in Charge of Maintenance (ECM) assigned to them. In the majority of the Member States, this figure is 100 % or close to 100 %. The data in the NVR of Estonia are rather limited and there are no data for many items. Initially, the National Safety Authority of Lithuania did not collect information about the ECM assigned to the vehicle but they recognised the problem in the recent update of their NVR and envisage steps to collect the data. In Belgium, 100% of the vehicles that were first authorised in Belgium have an ECM and a keeper assigned to them. Of all vehicles with valid registration in Belgium NVR, 4% have no ECM and 1% no keeper assigned. These vehicles were first authorised and registered in other Member State such as France, Germany, Luxembourg and Austria and are registered in the Belgium NVR with partial set of data[38].

In most Member States, with the exception of Belgium, Estonia and Austria, 100 % of the vehicles with valid registrations have a keeper and owner assigned to them. The EU averages are 99,9 % and 92 % respectively.

Figure 19. Numbers of vehicles registered in NVRs, by Member State and by year

Source: ECVVR.
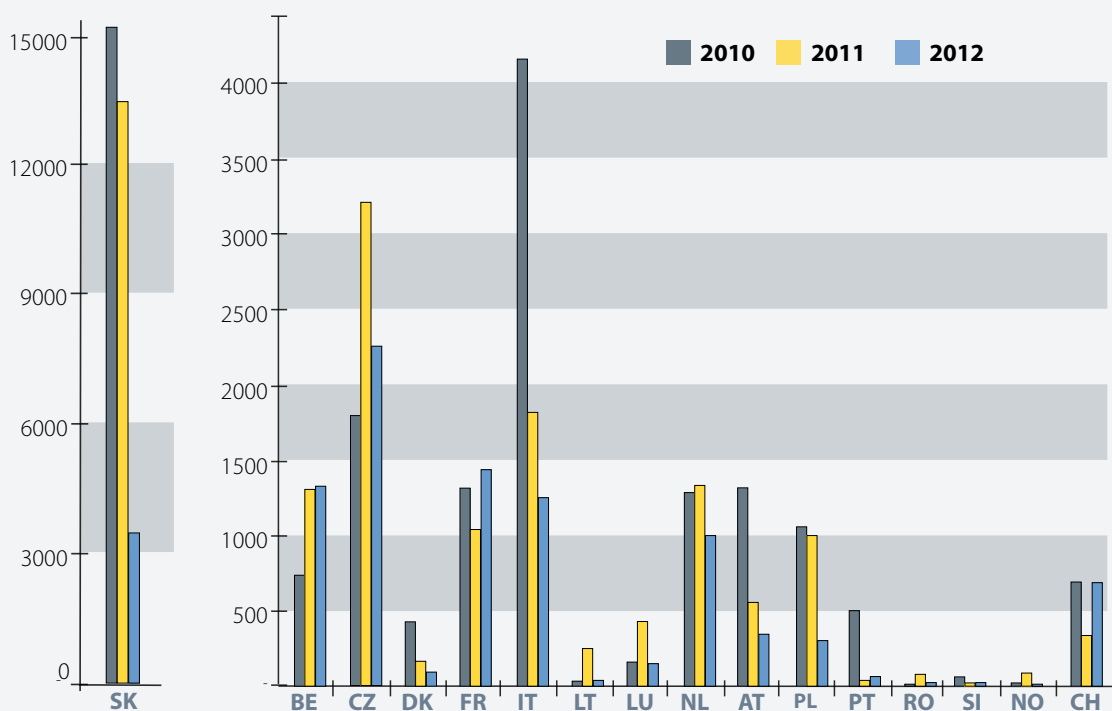
[36] http://www.era.europa.eu/Core-Activities/Interoperability/Pages/ECVVR.aspx providing a link to ERA's extranet, which has restricted access.
[37] This figure includes IV, RIC vehicles where indicated
[38] In accordance with §3.2.5 (1) of Annex of Decision 2007/756/EC

There is a trend of decrease in the number of vehicles authorised in the last three years in the 14 countries analysed (see Figure 19). The number of vehicles authorised in 2012 was about 11 500, which is less than half the number in 2011. One of the reasons which explain this development is that a significant number of existing vehicles were indicated as authorised in 2010 and 2011, when deadlines for NVR registration of existing vehicles for international and national traffic expired. For example, in Slovakia more than 90 % of the vehicles whose year of authorisation is marked as 2010 and 2011 in the NVR were manufactured before 2008 and 2009 respectively. Consequently, we may conclude that the numbers of vehicles indicated as authorised in the period 2010–2012 in NVRs include not only new and additional authorisations. This helps explain the possible

difference between the data concerning the Member State authorisations in this section of the report and the data presented in Chapter 7 and Annex E. Another reason for possible differences is that the data in Table 22 cover 14 EU Member States whereas the data in Chapter 7 and Annex E cover 21 EU Member States.

In 2012, most authorisations were issued in Slovakia – more than 3 000. The Czech Republic came next, with 2 270. Three other Member States issued more than 1 000 authorisations in 2012: Belgium, France and Italy (see Figure 20). The review of the data shows that, in addition to authorisation of new vehicles, the vehicle registrations in the period 2010–2012 include a significant number of existing vehicles manufactured before 2009.

Figure 20. Number of vehicles registered in NVRs, by year
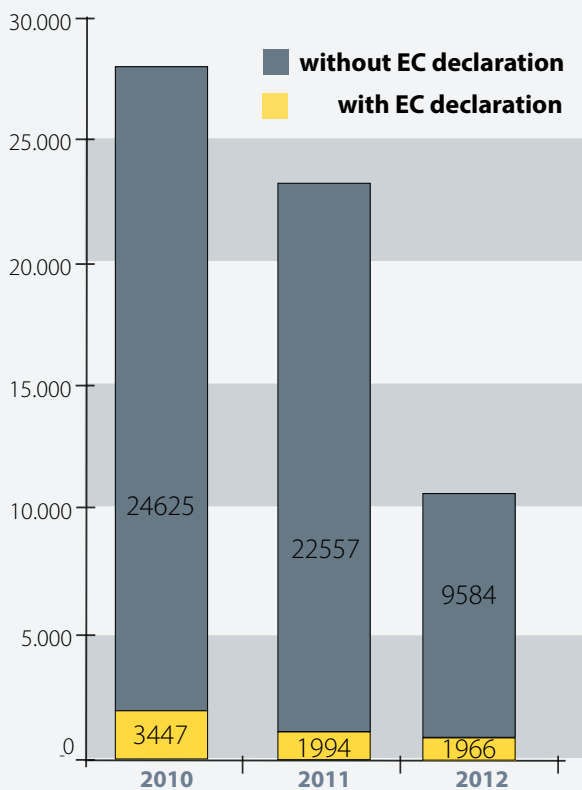
Source: ECVVR, 14 EU Member States.

9.2. European Register of Authorised Types of Vehicles

European Register of Authorised Types of Vehicles (ERATV) is a tool for the Member States to register all types of vehicles authorised for placing in service on the EU rail network. This register is open to the public. It contains, for each authorised type, technical characteristics and conformity with TSIs as well as type authorisation data. It may be used by National Safety Authorities, national investigation bodies, railway undertakings and infrastructure managers to retrieve the main technical characteristics of any new vehicle authorised to be placed in service. It also allows the NSAs to simplify the authorisation for placing in service of vehicles which conform to an authorised type. That will be of benefit to the applicants.

Railway undertakings, vehicle owners or keepers and leasing companies may refer to ERATV to obtain information about the vehicle types authorised to be placed in service in each Member State. In such a way, the applicants requesting authorisation for placing in service of vehicle of a type that has already been authorised in certain Member States may be reasonably reassured of a positive outcome.

ERATV has been in operation since the beginning of 2013. At the end of October 2013, five Member States – the Czech Republic, France, Italy, Latvia and Luxembourg – had registered a total of 49 authorised vehicle types, of which two had the status 'expired' (see Table 23). Status 'expired' means the authorisation is not valid because it had a temporary validity. Of the authorised vehicles types, 65 % were registered in France and more than 20 % in Latvia. Italy, the Czech Republic and Luxembourg each have five or fewer registered authorised types of vehicles.

Table 23. Number of vehicle types registered in ERATV by Member State and by status, 31/10/2013

Member State	Number of authorised vehicle types	
	Active	Expired
CZ	2	0
FR	29	0
IT	5	2
LV	10	0
LU	1	0
Total	**47**	**2**

Source: ERATV.

Table 24 shows the number of registered authorised types of vehicles by the category of the vehicle. Of the 47 authorised vehicle types, 20 are of freight wagons, 15 of passenger trainsets and 12 of locomotives. Two types of passenger coaches were registered, but their authorisation had expired by the end of 2012.

Table 24. Number of vehicle types registered in ERATV by vehicle category and by status, 31/10/2013

Vehicle category	Number of authorised vehicle types	
	Active	Expired
Locomotives	12	0
Passenger trainsets	15	0
Passenger coaches	0	2
Freight wagons	20	0
Total	**47**	**2**

Source: ERATV.

9.3. European Railway Agency Database of Interoperability and Safety

The European Railway Agency Database of Interoperability and Safety (ERADIS) is used to collect and publish documents concerning safety and interoperability. According to Regulation 881/2004, the Agency has to make publicly available the following interoperability documents:

- the EC declarations of verification of subsystems and

- the EC declarations of conformity of interoperability constituents.

In order to increase transparency in the field of railway interoperability, the Agency considered it appropriate to collect and make publicly available also the interoperability documents such as:

- the EC declarations of suitability for use of interoperability constituents and

- the authorisations for placing in service of infrastructure and fixed installations.

Unfortunately, the data on these items collected in ERADIS by mid-2013 are rather limited and, therefore, no conclusions could be drawn. For the four years that the database (interoperability part) was in use, NSAs, notified bodies and manufacturers from only two Member States – the Czech Republic and the United Kingdom – had registered their EC declarations for subsystems, a total of 34. The NSAs of these two Member States are the only ones that registered their authorisations for fixed installations, a total of 30.

The situation is similar for the declarations of conformity for the interoperability constituents: NSAs, notified bodies and manufacturers in only four Member States – Austria, Belgium, Sweden and the United Kingdom – had registered a total of 34 declarations. The EC declarations of conformity are the indicator which may provide the best estimate for the number of interoperability constituents on the market. In view of the lack of these data, the notified bodies' databases of the EC certificates they have issued remain the only source to understand the developments in the market of interoperability constituents which are discussed in Chapter 4.

There are no EC declarations of suitability for use registered in ERADIS.
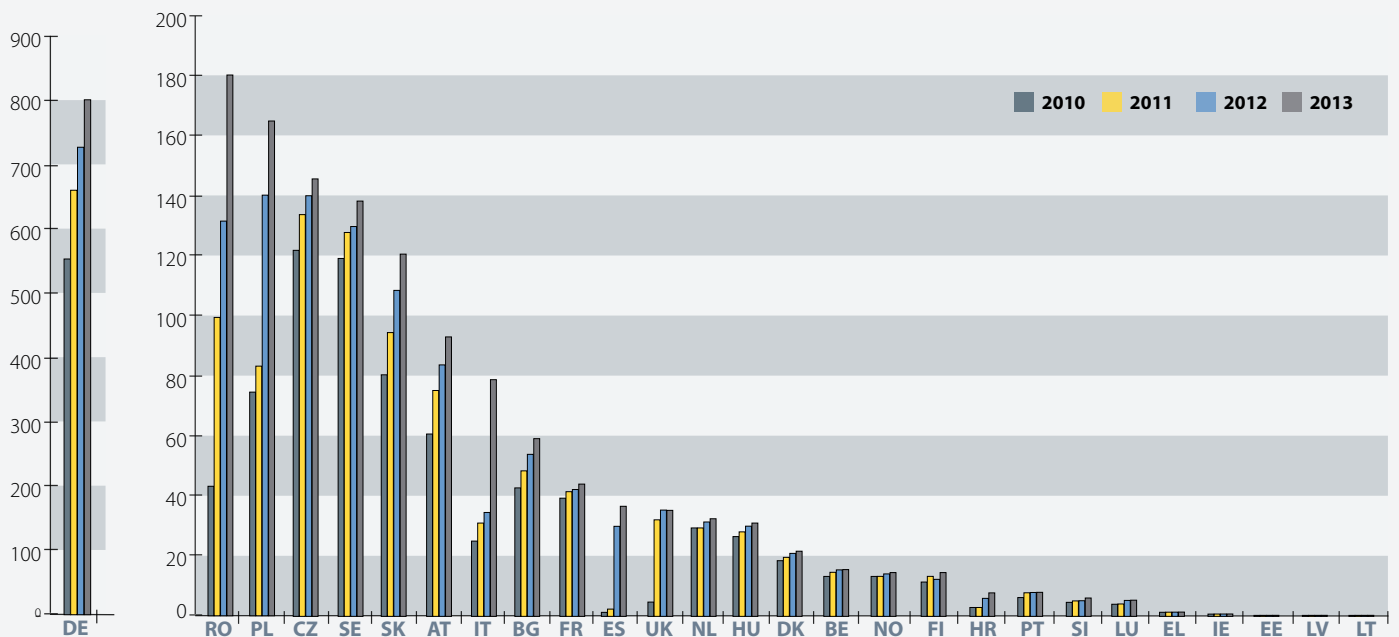
9.4. Vehicle Keeper Marking Register

The Vehicle Keeper Marking Register (VKMR) is managed by the Agency and the Intergovernmental Organisation for International Carriage by Rail (OTIF) in cooperation. The Agency processes the VKM entries for the companies with place of business in EU Member States, while OTIF processes those with place of business in non-EU OTIF Contracting States and OSJD countries. The two organisations exchange information on the new entries and the amendments, and publish identical lists on their websites every first Wednesday of the month.

The requirements for setting up and administration of a joint register of railway vehicle keepers and their VKMs were first set in Annex P to TSI Operation (Decision 2006/920/EC). It defined the VKM as an alphanumeric code, consisting of two to five letters. A VKM is inscribed on each rail vehicle, near the vehicle number. The VKM denominates the Vehicle Keeper as registered in the NVR. The latest revision of TSI Operation(Commission Decision 2012/757/EU) transferred VKMR requirements in the National Vehicle Register Decision 2007/756/EC as of 1 January 2014.

The first formal list of VKMs was published in January 2010. It was the result of several years of work and 26 preliminary VKM lists. The VKMR provides information to users about the vehicle keepers and VKM codes in 62 countries. The VKM codes have been differentiated according to their status, which may be:

- 'in use', meaning that the VKM is being used,

- 'revoked', meaning that at the request of the vehicle keeper the VKM code has been revoked and in such a case it will be kept in VKMR for 10 years from the date of its revocation, or

- 'blocked', meaning that the VKM is temporarily not in use and may be requested for use from the company which has a right to use it; this status is possible only for VKMs included in the first list.

Figure 21. Number of vehicle keeper markings in use, by year (January list) and by Member State
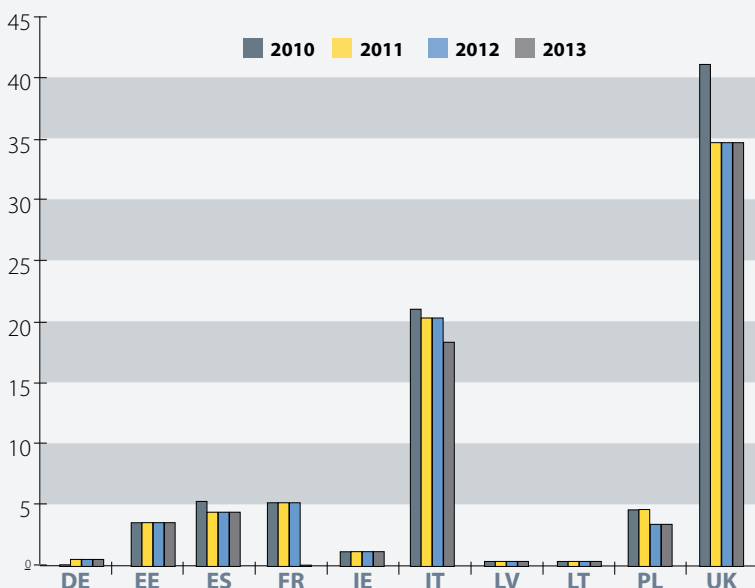

Source: VKMR.

Vehicle keeper markings in use

Figure 21 shows the evolution of the vehicle keeper markings in use since 2010. Most Member States have an upward trend in the number of keepers, but in several Member States – Belgium, Greece, Ireland, Luxembourg, Portugal and the UK – the number of VKMs did not change in 2013. The Baltic states had not registered any VKM by 2013. The total number of VKMs in the EU increased by 20 % in 2011, 15 % in 2012 and 13 % in 2013. Such a development suggests that market opening provides incentives for new keepers to start railway businesses. The purpose of the new entrant may be either to rent its fleet or to insource rail transport organisation for its production activities.

Germany has the highest number of VKMs: about 800, which is 38 % of the total number of VKMs in use. It is followed by Romania, Poland, the Czech Republic, Sweden and Slovakia, all of which have between 100 and 200 VKMs. The rest of the Member States have fewer than 100 VKMs each.

## Figure 22. Number of blocked vehicle keeper markings, by year (January list) and by Member State

Source: VKMR.

Blocked vehicle keeper markings

Ten Member States have VKMs which are blocked: Germany, Estonia, Spain, France, Ireland, Italy, Latvia, Lithuania, Poland and the United Kingdom (see Figure 22). As expected, their number has decreased throughout the analysed period, from 89 in 2010 to 71 in 2013. Half of the blocked VKMs are British and another quarter are Italian. In 2012, France brought its blocked VKMs down to zero. The remaining seven Member States have fewer than five blocked VKMs each.

Figure 23. Number of revoked vehicle keeper markings, by year (January list) and by Member State
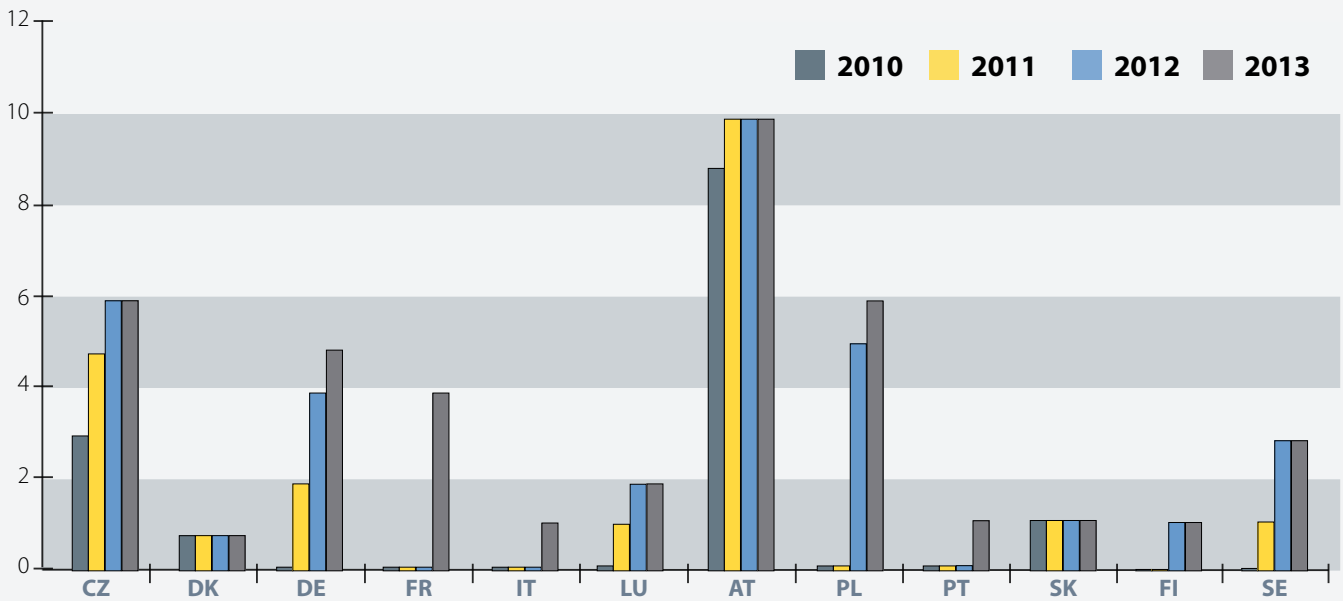
Source: VKMR.

Revoked vehicle keeper markings

Twelve Member States have VKMs which are revoked: the Czech Republic, Denmark, Germany, France, Italy, Luxembourg, Austria, Poland, Portugal, Slovakia, Finland and Sweden (see Figure 23). There are about 10 revocations each year in the EU. At the beginning of 2013, the total number of revocations declared in the VKM register was 41, a quarter of which were in Austria.
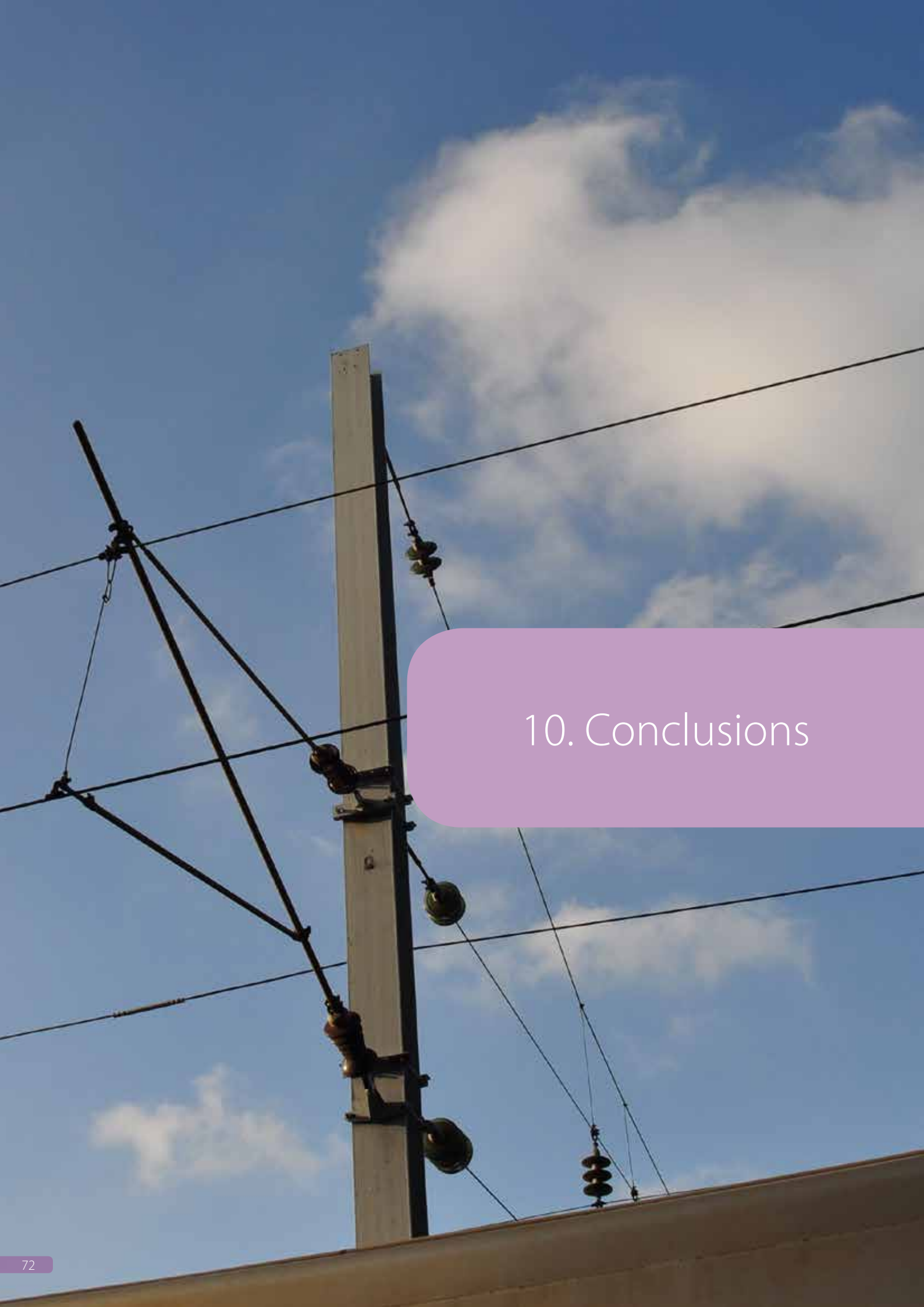
10. Conclusions

Since the publication of the 2011 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. It is important to note the extension of geographical scope of the TSIs and the merging of CR and HS TSIs related to rolling stock, infrastructure, energy and control–command and signalling subsystems. The revisions of the TSIs also reduced the number of open points.

By the end of 2012, the Agency had published on its website a first set of 27 national reference documents for EU Member States plus Norway and Switzerland. The work on evaluation of equivalence of NTRs between different Member States also marked significant progress. About 16 000 rules were compared and classified by 2013; about 70 % of these are 'A' rules, i.e. the NSA recognised another Member State's rule as equivalent to its own rule.

All EU Member States with railway network have established National Safety Authority; most of them, however, experience difficulties with staff recruitment. The greatest problem is the limited number of rail experts, followed by less attractive salaries of NSAs than those of similar positions in companies. Other problems include limited NSA budgets and recruitment bans.

Most Member States have notified bodies carrying out conformity assessment and verification procedures. Following the date of application of the recast Interoperability Directive, the bodies notified under HS and CR interoperability directives had to be re-notified. In July 2013, their number reached 54, of which 16 were new bodies notified in the last three and a half years.

Railway interoperability also showed progress in the market for certification of interoperability constituents. The NB Rail data suggest an upward trend in the number of certificates for rolling stock and infrastructure interoperability constituents for the period 2010–2012. For control–command and signalling track side and on board, the interoperability constituent certification fluctuated throughout the period.

Concerning authorisations for placing in service of lines and vehicles, the data provided show an increase in use of the procedures described in the Interoperability Directive. Authorisations of both lines and vehicles have shown a general negative trend in the last two years, mainly due to the international financial and economic crises.

The data population of the interoperability-related registers also advanced. Nevertheless, the stage of development of the registers varies. While Vehicle Keeper Marking Register had been populated with data since its first issue, this was not the case for the other registers.

In the last quarter of 2013, the European Centralised Virtual Vehicle Register contained data for the vehicles in the 15 Member States connected. In November 2013, the total number of registered vehicles for the 17 countries connected to ECVVR was about 656 000, of which approximately 620 000 were registered in the EU. The data in ECVVR show that about 130 000 vehicles, or 38 % of the vehicles with valid registration, were authorised in more than one Member State. About 96% of the vehicles with valid registration in the European Union have an Entity in Charge of Maintenance (ECM) assigned to them and almost 100% a keeper.

European Register of Authorised Types of Vehicles has been in operation since the beginning of 2013. For the first 10 months, a total of 49 authorised types of vehicles were registered by five Member States, of which 20 were for freight wagons, 15 for passenger trainsets and 12 for locomotives. The interoperability-related data collected in ERADIS during the four years of its functioning are rather limited and could not be used for analysis.

11. Annex A: EU interoperability legislation

Table 25. Annex A - EU interoperability legislation

	Legislative Act	Published	Amendments
Directive 2008/57/EC	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)	18/07/2008 OJ L 191, pp 1-45	Directive 2009/131/EC Directive 2011/18/EU Directive 2013/9/EU
Directive 2009/131/EC	Commission Directive 2009/131/EC of 16 October 2009 amending Annex VII to Directive 2008/57/EC of the European Parliament and of the Council on the interoperability of the rail system within the Community	17/10/2009 OJ L 273, pp. 12–13	
Directive 2011/18/EU	Commission Directive 2011/18/EU of 1 March 2011 amending Annexes II, V and VI to Directive 2008/57/EC of the European Parliament and of the Council on the interoperability of the rail system within the Community	02/03/2011 OJ L 57, pp. 21–28	
Directive 2013/9/EU	Commission Directive 2013/9/EU of 11 March 2013 amending Annex III to Directive 2008/57/EC of the European Parliament and of the Council on the interoperability of the rail system within the Community	12/03/2013 OJ L 68, p. 55–56	
Decision 2009/965/EC	Commission Decision 2009/965/EC of 30 November 2009 on the reference document referred to in Article 27(4) of Directive 2008/57/EC of the European Parliament and of the Council on the interoperability of the rail system within the Community	22/12/2009 OJ L 341, pp. 1–13	
Decision 2011/155/EU	Commission Decision 2011/155/EU of 9 March 2011 on the publication and management of the reference document referred to in Article 27(4) of Directive 2008/57/EC of the European Parliament and of the Council on the interoperability of the rail system within the Community	10/03/2011 OJ L 6, p. 22–25	
Recommendation 2011/217/EU	Commission Recommendation 2011/217/EU of 29 March 2011 on the authorisation for the placing in service of structural subsystems and vehicles under Directive 2008/57/EC of the European Parliament and of the Council	08/04/2011 OJ L 95, pp. 1–29	
Decision 2010/713/EU	Commission Decision 2010/713/EU of 9 November 2010 on modules for the procedures for assessment of conformity, suitability for use and EC verification to be used in the technical specifications for interoperability adopted under Directive 2008/57/EC of the European Parliament and of the Council	04/12/2010 OJ L 319, pp. 1–52	
Recommendation 2011/622/EU	Commission Recommendation 2011/622/EU of 20 September 2011 on the procedure demonstrating the level of compliance of existing railway lines with the basic parameters of the technical specifications for interoperability	21/09/2011 OJ L 243, pp. 23-31	
Regulation (EU) No 201/2011	Commission Regulation (EU) No 201/2011 of 1 March 2011 on the model of declaration of conformity to an authorised type of railway vehicle	02/03/2011 OJ L 57, pp. 8–9	
Regulation 881/2004/EC	Regulation (EC) No 881/2004 of the European Parliament and of the Council of 29 April 2004 establishing a European railway agency (Agency Regulation)	30/04/2004 OJ L 164, pp 1-43	Corrigenda, OJ L 220, 21/06/2004, pp 3-15 Regulation 1335/2008/EC
Regulation 1335/2008/EC	Regulation (EC) No 1335/2008 of the European Parliament and of the Council of 16 December 2008 amending Regulation (EC) No 881/2004 establishing a European Railway Agency (Agency Regulation)	31/12/2008 OJ L 354, pp 51-59	

TSI	Adopted by	Published	Entry into Force/ Application	Amendments
CCS	Commission **Decision 2012/88/EU** of 25 January 2012 on the technical specification for interoperability relating to the **control-command and signalling subsystems** of the trans-European rail system	23/02/2012 OJ L 51, pp 1–65	25/07/2012	Decision 2012/696/EU
CCS amendment	Commission **Decision 2012/696/EU** of 6 November 2012 amending Decision 2012/88/EU on the technical specifications for interoperability relating to the **control-command and signalling** subsystems of the trans-European rail system (notified under document	10/11/2012 OJ L 311, pp 3–13	01/01/2014	
CCS CR	Commission **Decision 2006/679/EC** of 28 March 2006 concerning the technical specification for interoperability relating to the **control-command and signalling** subsystem of the trans-European conventional rail system	16/10/2006 OJ L 284, pp 1–176	Applies only in relation to maintenance of projects authorised in accordance with the TSI annexed to this Decision	Decision 2006/860 Decision 2007/153 Decision 2008/386/EC Decision 2009/561/EC Decision 2010/79/EC Decision 2012/463/EU **Repealed by Decision 2012/88/EU**
CCS CR amendment	Commission **Decision 2009/561/EC** of 22 July 2009 amending Decision 2006/679/EC as regards the implementation of the technical specification for interoperability relating to the **control-command and signalling subsystem** of the trans-European conventional rail system	25/07/2009 OJ L 194, p 60	01/09/2009	
CCS HS revised	Commission Decision 2006/860/EC of 7 November 2006 concerning a technical specification for interoperability relating to the **control-command and signalling** subsystem of the trans-European **high speed** rail system and **modifying** Annex A to Decision 2006/679/EC concerning the technical specification for interoperability relating to the control-command and signalling subsystem of the trans-European **conventional rail** system	07/12/2006 OJ L 342, pp 1–165	Applies only in relation to maintenance of projects authorised in accordance with the TSI annexed to this Decision	Decision 2007/153/EC Decision 2008/386/EC Decision 2010/79/EC Decision 2012/463/EU **Repealed by Decision 2012/88/EU**
CCS Annex A CR and HS	Commission **Decision 2007/153/EC** of 6 March 2007 **modifying** Annex A to Decision 2006/679/EC concerning the technical specification for interoperability relating to the **control-command and signalling** subsystem of the trans-European conventional rail system and Annex A to Decision 2006/860/EC concerning the technical specification for interoperability relating to the control-command and signalling subsystem of the trans-European high speed rail system	07/03/2007 OJ L 67, p. 13–17	07/12/2006	

TSI	Adopted by	Published	Entry into Force/ Application	Amendments
CCS Annex A CR and HS	Commission **Decision 2008/386/EC** of 23 April 2008 modifying Annex A to Decision 2006/679/EC concerning the technical specification for interoperability relating to the **_control-command and signalling_** subsystem of the trans-European conventional rail system and Annex A to Decision 2006/860/EC concerning the technical specification for interoperability relating to the control-command and signalling subsystem of the trans-European high-speed rail system	24/05/2008 OJ L 136, p. 11-17	01/06/2008	
CCS Annex A CR and HS	Commission **Decision 2010/79/EC** of 19 October 2009 **_amending Decisions 2006/679/EC and 2006/860/EC_** as regards technical specifications for interoperability relating to subsystems of the trans-European conventional and high-speed rail systems	10/02/2010 OJ 37, p. 74-81	01/04/2010	
CCS CR and HS amendment	Commission **Decision 2012/463/EU** of 23 July 2012 **_amending Decisions 2006/679/EC_** and 2006/860/EC concerning technical specifications for interoperability	14/08/2012 OJ L 217, pp 11–19	24/01/2013	
ENE HS-	Commission **Decision 2008/284/CE** of 6 March 2008 concerning a technical specification for interoperability relating to the **_'energy'_** sub-system of the trans-European high-speed rail system	14/04/2008 OJ L104, pp 1–79	01/10/2008	Decision 2012/464/EU
ENE CR	Commission **Decision 2011/274/EU** of 26 April 2011 concerning a technical specification for interoperability relating to the **_'energy'_** subsystem of the trans-European conventional rail system	14/05/2011 OJ L 126, p 1	01/06/2011	Decision 2012/464/EU
INF HS	Commission **Decision 2008/217/EC** of 20 December 2007 concerning a technical specification for interoperability relating to the **_'infrastructure'_** sub-system of the trans-European high-speed rail system	19/03/2008 OJ L 77, pp 1-105	01/07/2008	Decision 2012/464/EU
INF CR	Commission **Decision 2011/275/EU** of 26 April 2011 concerning a technical specification for interoperability relating to the **_'infrastructure'_** subsystem of the trans-European conventional rail system	14/05/2011 OJ L 126, p 53	01/06/2011	Decision 2012/464/EU
LOC&PAS CR	Commission **Decision 2011/291/EU** of 26 April 2011 concerning a technical specification for interoperability relating to the rolling stock subsystem — **_'Locomotives and passenger rolling stock'_** of the trans-European conventional rail system	26/05/2011 OJ L 139, p 1	01/06/2011	Decision 2012/464/EU Decision 2012/88/EU

TSI	Adopted by	Published	Entry into Force/Application	Amendments
NOI CR	Commission **Decision 2011/229/EU** of 4 April 2011 concerning the technical specifications of interoperability relating to the subsystem 'rolling stock – _**noise**_' of the trans-European conventional rail system	13/04/2011 OJ L 99, p 1	04/04/2011	Decision 2012/464/EU
OPE	Commission **Decision 2012/757/EU** of 14 November 2012 concerning the technical specification for interoperability relating to the _**operation and traffic management**_ subsystem of the rail system in the European Union and amending Decision 2007/756/EC	15/12/2012 OJ L 345, pp 1–76	01/01/2014	
OPE HS	Commission **Decision 2008/231/CE** of 1 February 2008 concerning the technical specification of interoperability relating to the _**operation**_ subsystem of the trans-European high-speed rail system adopted referred to in Article 6(1) of Council Directive 96/48/EC and repealing Commission Decision 2002/734/EC of 30 May 2002	26/03/2008 OJ L 84, pp 1-131	01/09/2008	Decision 2010/640 Decision 2012/464/EU Repealed by Decision 2012/757/EU with effect from 01/01/2014
OPE HS amendment	Commission **Decision 2010/640/EU** of 21 October 2010 **amending** Decisions 2006/920/EC and 2008/231/EC concerning the technical specifications of interoperability relating to the subsystem _**'Traffic Operation and Management'**_ of the trans-European conventional and high-speed rail systems	26.10.2010 L 280/29	25/10/2010	
OPE CR	Commission **Decision 2011/314/EU** of 12.5.2011 concerning the technical specification for interoperability relating to the _**'operation and traffic management'**_ subsystem of the trans-European conventional rail system, C(2011) 3099 final	31/05/2011 OJ L 144, pp 1–112	01/01/2012	Decision 2012/464/EU Repealed by Decision 2012/757/EU with effect from 01/01/2014
PRM	Commission **Decision 2008/164/EC** of 21 December 2007 concerning the technical specification of interoperability relating to _**"persons with reduced mobility"**_ in the trans-European conventional and high speed rail system	07/03/2008 OJ L 64, pp 72-207	01/07/2008	Decision 2012/464/EU
RST HS	Commission **Decision 2008/232/CE** of 21 February 2008 concerning a technical specification for interoperability relating to the _**'rolling stock'**_ sub-system of the trans-European high-speed rail system	26/03/2008 OJ L 84, pp 132-392	01/09/2008	Decision 2012/464/EU
SRT	Commission **Decision 2008/163/EC** of 20 December 2007 concerning the technical specification of interoperability relating to _**"safety in railway tunnels"**_ in the trans-European conventional and high speed rail system	07/03/2008 OJ L 64, pp 1-72	01/07/2008	Decision 2011/291/EU Decision 2012/464/EU
TAF CR	Commission **Regulation 62/2006/EC** of 23 December 2005 concerning the technical specification for interoperability relating to the _**telematic applications for freight**_ subsystem of the trans-European conventional rail system	18/01/2006 OJ L 13, pp 1-72	19/01/2006	Regulation 328/2012/EU Regulation 280/2013/EU

TSI	Adopted by	Published	Entry into Force/Application	Amendments
TAF CR amendment	Commission **Regulation (EU) 328/2012** of 17 April 2012 amending Regulation (EC) No 62/2006 concerning the technical specification for interoperability relating to the telematic applications for freight subsystem of the trans-European conventional rail system	18/04/2012 OJ L 106, pp 14–19	08/05/2012	
TAF CR amendment	Commission **Regulation (EU) 280/2013** of 22 March 2013 amending Regulation (EC) No 62/2006 concerning the technical specification for interoperability relating to the ***telematic applications for freight*** subsystem of the trans-European conventional rail system	23/03/2013 OJ L 84, p. 17–18	24/03/2013	
TAP	Commission **Regulation (EU) 454/2011** of 5 May 2011 on the technical specification for interoperability relating to the subsystem ***'telematics applications for passenger services'*** of the trans-European rail system	12/05/2011 OJ L 123, p 11	13/05/2011	Regulation 665/2012
TAP amendment	Commission Regulation (EU) 665/2012 of 20 July 2012 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	21/07/2012 OJ L 194, pp 1–2	22/07/2012	
WAG	Commission **Regulation (EU) 321/2013** of 13 March 2013 concerning the technical specification for interoperability relating to the subsystem 'rolling stock — ***freight wagons'*** of the rail system in the European Union and repealing Decision 2006/861/EC	12/04/2013 OJ L 104, pp 1–56	01/01/2014	
WAG CR	Commission **Decision 2006/861/EC** of 28 July 2006 concerning the technical specification of interoperability relating to the subsystem ***rolling stock — freight wagons*** of the trans-European conventional rail system	08/12/2006 OJ L 344, pp 1-467	29/01/2007	Decision 2009/107 Decision 2012/464/EU **Repealed by Regulation** 321/2013 with effect from 01/01/2014
WAG CR amendment	Commission **Decision 2009/107/EC** of 23 January 2009 amending Decisions 2006/861/EC and **2006/920/EC** concerning technical specifications of interoperability relating to subsystems of the trans-European conventional rail system	14/02/2009 OJ L 45, p 1	01/07/2009	
Many TSIs amendment	Commission **Decision 2012/464/EU** of 23 July 2012 ***amending Decisions 2006/861/EC, 2008/163/EC, 2008/164/EC, 2008/217/EC, 2008/231/EC, 2008/232/EC, 2008/284/EC, 2011/229/EU, 2011/274/EU, 2011/275/EU, 2011/291/EU*** and 2011/314/EU concerning technical specifications for interoperability	14/08/2012 OJ L 217, pp 20–45	24/01/2013	

Registers

Legislative act	Adopted by	Published	Entry into Force	Amendments
NVR	Commission Decision 2007/756/EC of 9 November 2007 (notified under C(2007)5357) adopting a common specification of the national vehicle register provided for under articles 14(4) and (5) of Directives 96/48/EC and 2001/16/EC	23/11/2007 OJ L 305, pp 30-51		Decision 2011/107/EU Decision 2012/757/EU
NVR	Commission Decision 2011/107/EU of 10 February 2011 amending Decision 2007/756/EC adopting a common specification of the national vehicle register	17/02/2011 OJ L 43, pp 33–54		
RINF	Commission Implementing Decision 2011/633/EU of 15 September 2011 on the common specifications of the register of railway infrastructure	01/10/2011 OJ L 256, pp 1–25	16/03/2012	
ERATV	Commission Implementing Decision 2011/665/EU of 4 October 2011 on the European register of authorised types of railway vehicles	08/10/2011 OJ L 264, pp 32–54	15/04/2012	

12. Annex B:
List of acronyms

Acronym	Definition
ALE	Autonomous Train Drivers' Unions of Europe
APS	Authorisation place in service
CCR	Complementary Certificate Register
CCS	Control-command and signalling
CEN	European Committee for Standardization
CENELEC	European Committee for Electrotechnical Standardisation
CER	Community of European Railway and Infrastructure Companies
CR	Conventional rail
CSM	Common safety methods
DG MOVE	Directorate-General Mobility and Transport
ECM	Entity in charge of maintenance
ECVVR	European Centralised Virtual Vehicle Register
EIF	Entry in force
EIM	European Rail Infrastructure Managers
EMC	Electro-magnetic compatibility
ENE	Energy
EPTTOLA	European Passenger Train and Traction Operating Lessors' Association
ERA	European Railway Agency
ERADIS	European Railway Agency Database of Interoperability and Safety
ERATV	European Register of Authorised Types of Vehicles
ERFA	European Rail Freight Association
ERTMS	European Rail Traffic Management System
ETCS	European Train Control System
ETF	European Transport Workers' Federation
EU	European Union
GCU	General Contract for Use of Wagons
GIGs	Geographic interest groups
GSM-R	Global System for Mobile Communications Railway
HS	High speed
IAF	International Accreditation Forum
IC	Interoperability constituent
IEC	International Electrotechnical Commission
IGC	Intergovernmental Commission
ILAC	International Laboratory Accreditation Cooperation
INF	Infrastructure
ISO	International Standardisation organisation
LGV	Ligne Grand Vitesse

Acronym	Definition
LOC&PAS	Locomotive and Passenger Carriages
MAI	Maintenance
MS	Member State(s)
NANDO	New Approach Notified and Designated Organisations Information System
NB Rail	Coordination group of notified bodies for railway products and systems
NLR	National Licences Register
NNTR	Notified national technical rules
NOI	Noise
NRB	Network of Representative Bodies
NSA	National Safety Authority
NVR	National Vehicle Register
OCL	Overhead contact line
OPE	Operation
OSJD	Organisation for Co-Operation between Railways
OTIF	Intergovernmental Organisation for International Carriage by Rail
PRM	Persons with Reduced Mobility
QMS	Quality Management System
RINF	Register of Infrastructure
RISC	Railways Interoperability and Safety Committee
RIV	International Wagon Regulations
RST	Rolling stock
SNCB	Société nationale des chemins de fer belges
SRT	Safety in railway tunnels
TA	Telematic applications
TAF	Telematic applications for freight
TAP	Telematic applications for passengers
TEN	Trans-European transport network
TGV	Train Grand Vitesse
TSI(s)	Technical specification(s) for interoperability
UIC	International Union of Railways
UIP	International Union of Private Wagons
UIRR	International Union of Combined Road–Rail Transport Companies
UITP	International Association of Public Transport
UNCRPD	United Nations Convention of the Rights of Persons with Disabilities
UNIFE	Association of European Railway Industries
VKM	Vehicle Keeper Marking
VKMR	Vehicle Keeper Marking Register
VVR	Virtual Vehicle Register
WAG	Freight wagons

13. Annex C. NSA Staff Number and Recruitment Problems

Table 26. Number of NSA staff involved in interoperability related activities

Member State	Authorisation for placing in service		Supervising ICs		Supervising vehicle and infrastructure registers		Development of legislation		Other		Equivalent full time staff involved in interoperability activities
	Number of staff	% of time on the task	Number of staff	% of time on the task	Number of staff	% of time on the task	Number of staff	% of time on the task	Number of staff	% of time on the task	
BE	8	20	0,1	1	0,2	1	1	5	5	12,5	1,95
BG								33			
CZ	30	30	2	2	3	3	0	0	0		9
DK	4	100	0	100	0	30	3	60	0		5
DE	160										
EE	4		12		4		9		0		9
EL	2		1		1		5		0		
ES											18
FR	24	100	32	100	2	100	19	100	0	0	77
IE	3	50	0	0	2	20	2	50	4	10	3
IT	29		22	22	1,5		15		15,5		32
LV	5	40	1	20	1	10	3	30	2	70	4,6
LT	6	26	5	22	3	13	2	9	13	57	10
LU	1,6	100	0	0	0,9	100	2,23	100	1	100	5,7
HU	36		14		2		3		5		60
NL											
NO											
AT											
PL	12	100	12	100	12	100	18	100	0	100	54
PT	3	25	0	0	3	25	3	25	3	25	3
RO	4	50	97	50	5	40	5	40	3	33	55
SI	5	100	5	100	2	100	3	100	0	0	15
SK	5	100	0		5		0		0		5
FI	6	100	1	100	3	100	5	100		100	15
SE											
UK	2		0,5		2		1		0,5		

Table 27. Type of problems experiences by the NSAs in staff recruitment in 2012 and 2013

Member State	Recruitment problems				
	Does the NSA have any problems with staff recruitment?	If yes, please specify which:			
		Competition from railway industry	**Less attractive NSA salaries compared to comparable positions in other companies**	**Limited number of rail experts on the labour market**	**Other**
BE	yes	yes	yes	yes	
BG	yes	yes	yes	no	no
CZ	yes	yes	yes	yes	
DK	yes	yes	yes	yes	
DE					
EE	yes	no	yes	yes	
EL	yes	no	no	no	Recruitment ban (recession)
ES	yes	no	no	yes	Budgetary limitations
FR	yes	yes	no	yes	Headquarter location
IE	yes	no	no	no	Recruitment ban
IT	yes			yes	regulatory restrictions in staff recruitment
LV	yes	yes	yes	yes	Civil service law restricts recruitments to LV citizens fluent in LV
LT	yes	yes	yes	yes	
LU	yes	yes	no	yes	limited budget and long recruitment process
HU	yes	yes	yes	yes	
NL					
NO					
AT					
PL	yes	yes	yes	yes	
PT	yes	yes	yes	yes	Recruitment ban
RO	yes	no	yes	yes	
SI	yes	yes	yes	yes	
SK	yes	no	yes	yes	
FI	yes	no	yes	yes	
SE					
UK	yes			yes	
Total replies	21	19	20	20	9
yes	21	12	15	17	8
no	0	7	5	3	1

Source: 2013 European Railway Agency questionnaire to NSAs (21 NSAs responded)

14. Annex D: ETCS equipped lines

To make comparisons, each line has an "equivalent double track" length defined as the length of the line x number of tracks; everything divided by 2.

Table 28. Annex D: ETCS equipped lines

MS	Member State	Line	Status	Level of ERTMS (L1, L2)	Equivalent length of the line [km] (*)
BE	Belgium	Antwerpen-Luchtbal – Ned. Grens (L4)	In service	L1, L2	40
BE	Belgium	Angleur – Walhorn – Fre (L3)	In service	L1, L2	40
BE	Belgium	Schaerbeek - Leuven (L36-36N)	In service	L1	54
BE	Belgium	Brussels Airport tunnel (L36C-36C/1-36C/2)	In service	L1	7
BE	Belgium	Schaerbeek - Mechelen (L25N)	In service	L1	18
BE	Belgium	Corridor C (L165 - L53)	In service	L1	32
BE	Belgium	Corridor C	Under Construction	L1	288
BG	Bulgaria	Plovdiv - Svilengrad	Under Construction	L1	143
BG	Bulgaria	Stara Zagora-Burgas	In service	L1	190
BG	Bulgaria	Plovdiv - Septemvri	Under Construction	L1	54
CZ	Czech Republic	Poricany-Kolin	Testing	L2	22
DE	Germany	Juteborg-Halle/Leipzig	In service	L2	40
DE	Germany	Berlin-Juteborg	In service	L2	124
DE	Germany	Belgium Border (L3)-Aachen	Under Construction	L2	15
DE	Germany	Saarbrucken-Mannheim	Under construction	L2	130
DE	Germany	Nurenberg-Inglostadt -Munchen	Under construction	L2	160
DE	Germany	Nurenberg–Erfurt–Halle/Leipzig	Under construction	L2	318
DE	Germany	Rostock - Berlin	Under construction	L2	175
DE	Germany	Berlin-Frankfurt/O	Testing	L1FS, L1LS, L2	
DK	Denmark	0	0	0	0
EE	Estoina	0	0	0	0
EL	Greece	Corinthe-CCA (Communi-cation Center in Acharnes)	In service	L1	110
EL	Greece	CCA - Athens Airport	In service	L1	40
EL	Greece	Athens - Thessaloniki - Bulgarian Border	Under Construction	L1	541
ES	Spain	Madrid-Lerida (HS)	In Service L1 and L2	L1, L2	468
ES	Spain	Lerida-Tarragona (HS)	In Service (L1) / Testing (L2)	L1, L2	95
ES	Spain	Tarragona-Barcelona (HS)	In Service (L1) / Testing (L2)	L1, L2	88
ES	Spain	Figueres-French Border (Perpignan) (HS)	In Service (L1) / Testing (L2)	L1, L2	20
ES	Spain	Madrid-Valladolid (HS)	In Service (L1) / Testing (L2)	L1, L2	181
ES	Spain	Madrid commuter lines (line C4) (CR)	In Service (L1) / Testing (L2)	L1, L2	67
ES	Spain	La Sagra-Toledo (HS)	In Service (L1) / Testing (L2)	L1, L2	21

ES	Spain	Cordoba-Malaga (HS)	In Service (L1) / Testing (L2)	L1, L2	155
ES	Spain	Zaragoza-Huesca (CR)	Testing (L1)	L1	80
ES	Spain	Madrid -Valencia/Albacete (HS)	In Service (L1) / Testing (L2)	L1, L2	464
ES	Spain	Getafe-Vallecas (Atocha Bypass) (HS)	In Service (L1) / Testing (L2)	L1, L2	6
ES	Spain	Barcelona-Figueras (HS)	In Service (L1) / Testing (L2)	L1, L2	131
ES	Spain	Morrot-Nudo de Mollet (CR)	Testing (L1)	L1	45
ES	Spain	Girona-Figueras (CR)	Testing (L1)	L1	41
ES	Spain	Orense-Santiago (HS)	In Service (L1) / Testing (L2)	L1, L2	90
ES	Spain	Albacete-Alicante (HS)	Under Construction	L2	160
FI	Finland	Kerava- Lahti	Under Construction	L1	50
FR	France	Paris-Meuse-Lorraine (LGV Est)	Testing	L2	300
FR	France	Luxembourg Border-Baudrecourt	Under Construction	L1	80
FR	France	Spanish Border (Figueras)-Perpignan	In service	L1	25
HU	Hungary	Bajánsenye(border)-Boba	In service	L1	102
HU	Hungary	Hegyeshalom(border)-Hegyeshalom-Komárom-Budapest	In service	L1	178
IE	Ireland	0	0	0	0
IT	Italy	Torino-Novara	In service	L2	91
IT	Italy	Austrian Border (Brenner)-Bolzano-Trento - Verona - Bologna	Under Construction	L2	236
IT	Italy	Bologna - Firenze	In service	L2	78
IT	Italy	Roma - Napoli	In service	L2	204
IT	Italy	Milano - Bologna	In service	L2	219
IT	Italy	Novara - Milano	In service	L2	34
IT	Italy	Torino-Novara	In service	L2	85
LT	Lithuania	0	0	0	0
LU	Luxembourg	Luxembourg network	Testing	L1	258
LU	Luxembourg	Luxembourg network	Under Construction	L1	17
LV	Latvia	0	0	0	0
PL	Poland	Grodzisk Mazowiecki - Zawiercie	Under Construction	L1	224
PL	Poland	Legnica - Wegliniec - Bielwa Dolna	Under Construction	L1	86
PT	Portugal	0	0	0	0
RO	Romania	Bucharest-Campina	testing	L1	50
RO	Romania	Campina - Predeal	Under Construction	L1	48
RO	Romania	Fetesti - Constanta	Under Construction	L1	77
RO	Romania	Bucharest - Fetesti	Under Construction	L1	136
SI	Slovenia	Sezana border-Hodos border	Under Construction	L1	635
SK	Slovakia	Bratislava - Leopoldov	Under Construction	L1	64
SK	Slovakia	Leopoldov - Puchov	Under Construction	L1	94
UK	United Kingdom	Cambrian Line	In Service	L2	218

Table 29. ETCS equipped lines – information from 2011

MS	Member State	Line	Status	Level of ERTMS (L1, L2)	Equivalent length of the line [km] (*)
AT	Austria	Wien – Nickelsdorf	In service	L1	67
AT	Austria	Wien – Linz	Under Construction	L1	190
AT	Austria	Attnang P. – Salzburg	Under Construction	L1	71
AT	Austria	Wels – Passau	Under Construction	L1	83
AT	Austria	Kufstein-Brenner	Under Construction	L2	25
AT	Austria	Vienna-Saint Polten	Under Construction	L2	60
NO	Norway				285
SE	Sweden	Umea - Kramfors (Bothnia Line)	In service	L2	190
SE	Sweden	Kramfors-Sundsvall (Ådal line)	Under construction / Testing (Stavreviken-Hällenyland)	L2	130
SE	Sweden	Boden-Haparanda (Haparanda Line)	Under Construction	L2	160
NL	The Netherlands	Betuwe line (Totterdam-German Border)	In Service	L2	160
NL	The Netherlands	HSL South	In Service	L1, L2	125
NL	The Netherlands	Lelystad-Zwole	Under Construction	L2	50
NL	The Netherlands	Amsterdam-Utrecht	Testing	L2	30
CT	Channel Tunnel				110

15. Annex E: Details on vehicles

15.1. Locomotive

Table 30. Annex E: Total EU locomotives first authorised

	Total LOCOMOTIVE first authorised			
	2009	2010	2011	2012
TOTAL	400	273	218	220
TSI	-	-	3%	-
PART TSI	35%	67%	64%	60%
NON TSI	65%	33%	33%	40%

Table 31. Annex E: Total EU locomotives additionally authorised

	Total LOCOMOTIVE first authorised			
	2009	2010	2011	2012
TOTAL	400	273	218	220
TSI	-	-	3%	-
PART TSI	35%	67%	64%	60%
NON TSI	65%	33%	33%	40%

15.2. Fixed formation

Table 32. Annex E:Total EU fixed formation first authorised

	total FIXED FORMATION first authorised			
	2009	2010	2011	2012
TOTAL	809	595	624	530
TSI	-	-	-	2%
PART TSI	73%	40%	65%	77%
NON TSI	27%	60%	35%	22%

Table 33. Annex E:Total EU fixed formation additionally authorised

	total FIXED FORMATION additional authorised			
	2009	2010	2011	2012
TOTAL	46	128	105	228
TSI	-	-	-	-
PART TSI	93%	23%	10%	35%
NON TSI	7%	77%	90%	65%

15.3. Passengers coaches

Table 34. Annex E:Total EU passengers coaches first authorised

	total PASSENGERS first authorised			
	2009	2010	2011	2012
TOTAL	357	415	649	300
TSI	-	-	-	-
PART TSI	50%	40%	85%	82%
NON TSI	50%	60%	15%	18%

Table 35. Annex E:Total EU passegners coaches additionally authorised

	total PASSENGERS additional authorised			
	2009	2010	2011	2012
TOTAL	58	129	25	115
TSI	-	-	-	-
PART TSI	2%	-	-	-
NON TSI	98%	100%	100%	100%

15.4. Wagons

An interesting point to note regarding the authorisation of wagons is the numbers of the wagon that comply with the clause 7.6.4 of Wagon TSI 2006[39]; this kind of vehicle is generically known as "go everywhere". Additionally, the percentage of the non-TSI compliant vehicle is also decreasing rapidly.

Table 36. Annex E:Total EU wagon first authorised

	Total WAGON first authorised			
	2009	2010	2011	2012
TOTAL	5648	4000	3301	4857
TSI	17%	21%	39%	14%
Clause 7.6.4	71%	74%	51%	68%
TOTAL TSI	88%	95%	90%	82%
Non-TSI	12%	5%	10%	18%

[39] The clause 7.6.4 of the Commission Decision 2006/861/EC is provided by its amendment of the 23 January 2009.

Table 37. Annex E:Total EU wagon additionally authorised

	Total WAGON additional authorised			
	2009	2010	2011	2012
TOTAL	1502	1080	2419	2118
TSI	40%	6%	1%	1%
NON TSI	60%	94%	99%	99%

15.5. Special vehicles

Table 38. Annex E:Total EU special vehicles first authorised

	Total SPECIAL first authorised			
	2009	2010	2011	2012
TOTAL	322	316	283	247
TSI	-	-	-	-
PART TSI	-	1%	4%	5%
NON TSI	100%	99%	96%	95%

Table 39. Annex E:Total EU special vehicles additionally authorised

	Total SPECIAL additional authorised			
	2009	2010	2011	2012
TOTAL	100	39	128	89
TSI	-	-	-	-
PART TSI	5%	-	-	1%
NON TSI	95%	100%	100%	99%

16. Annex F: vehicle trends 2004 – 2012

Diagrams below highlight the individual data components.

WAGONS

Figure 24. Annex F: Estimated number of authorised wagons
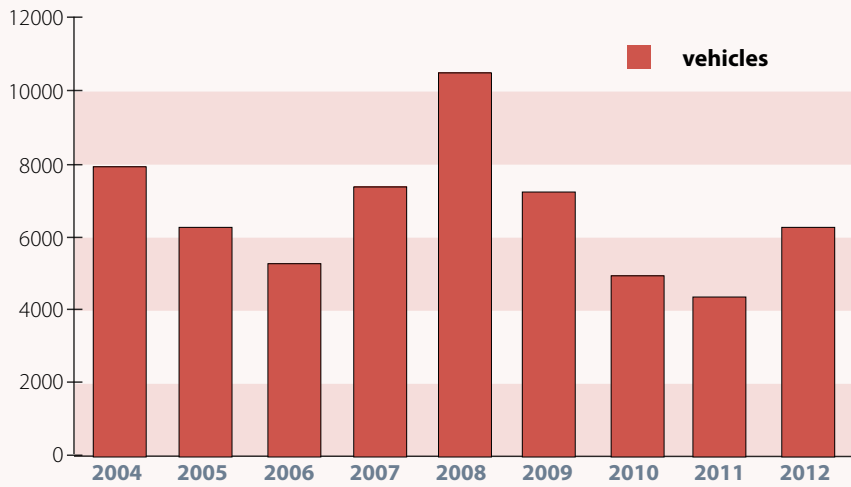
LOCOMOTIVES

Figure 25. Annex F: Estimated number of authorised locomotives
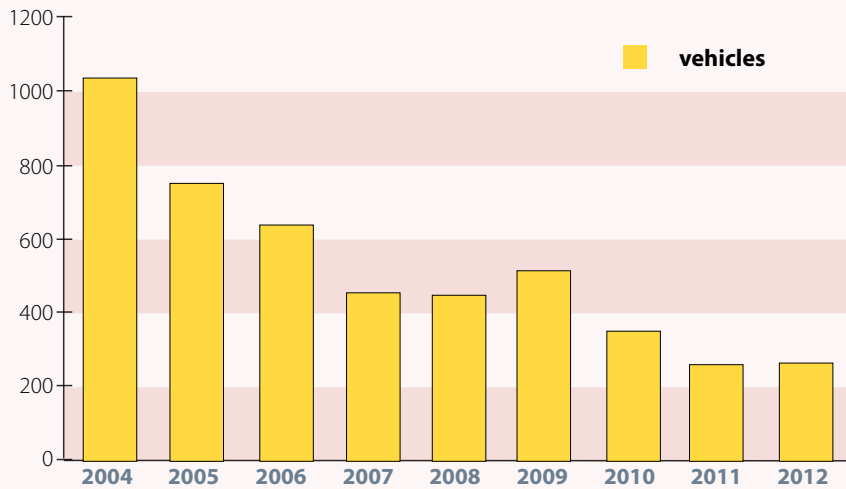
PASSENGERS COACHES

Figure 26. Annex F: Estimated number of passengers carriages
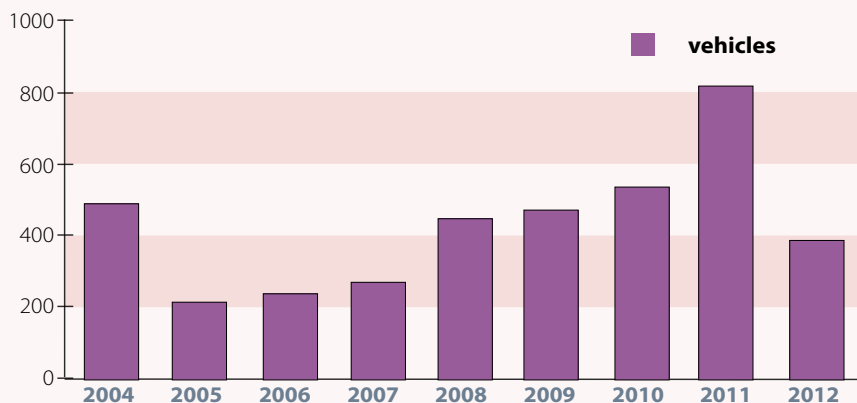
FIXED FORMATION TRAINS

Figure 27. Annex F: Estimated number of fixed formations
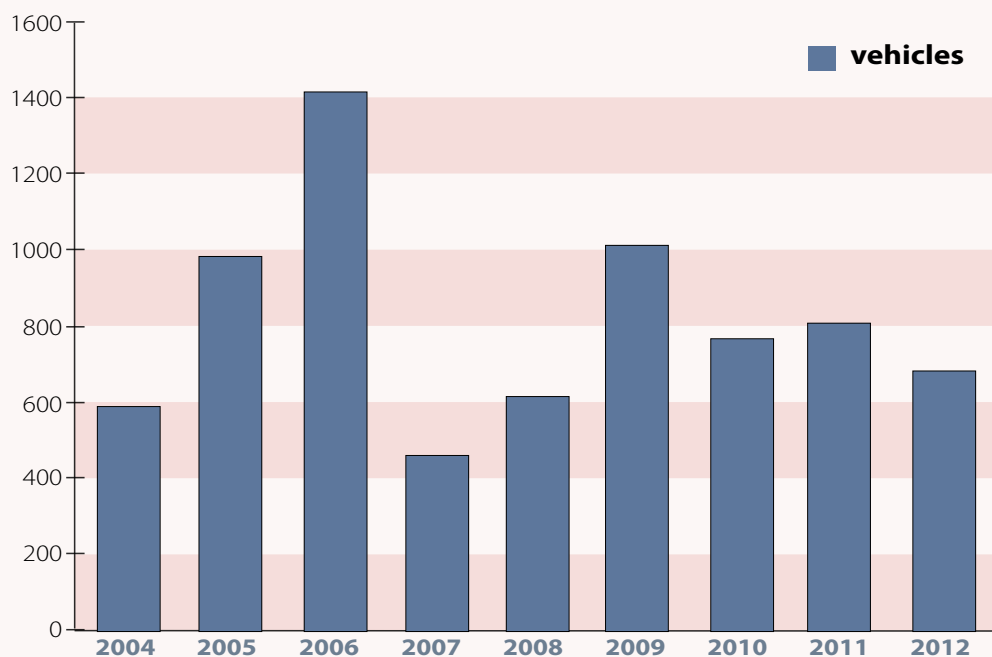
SPECIAL VEHICLES

Figure 28. Annex F: Estimated number of special vehicles
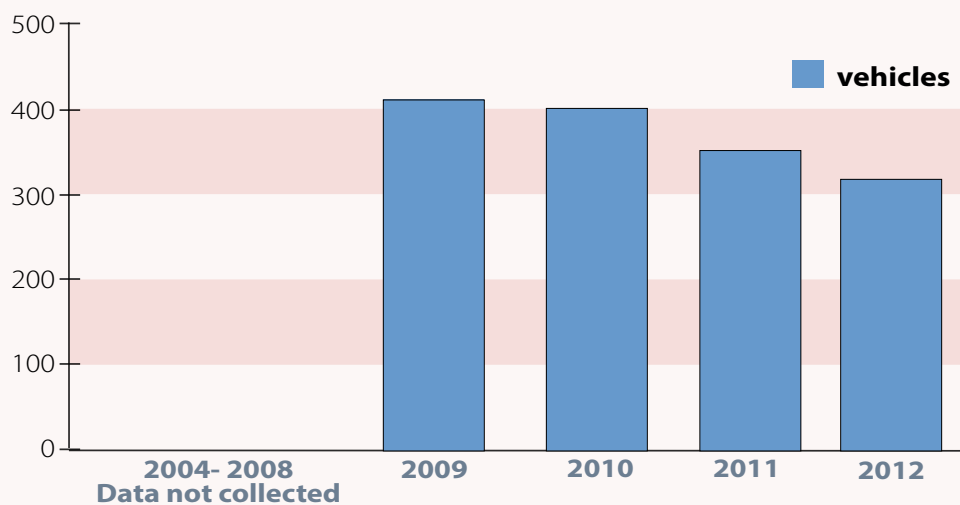
17. Annex G: Train drivers per Member State

Table 40. Annex G: train drivers per Member State

Member State	Number of drivers licensed	Number of new licenses issued
AT		
BE	6 500	1 855
BG	1 470	-
CT		
CZ	22 082	3 706
DE	33 000	317
DK	3 000	-
EE	569	-
EL		
ES	7 000	-
FI		
FR	15 000	607
HU	8 000	3 413
IE		
IT	15 000	922
LT	800	205
LU	482	348
LV	1 516	226
NL	6 000	2 294
NO	1 800	1 372
PL	17 500	537
PT	1 097	
RO	8 571	-
SE	5 000	3 075
SI	1 109	-
SK	3 000	887
UK	14 340	205

18. Annex H: Specimen of EU train driver licence

Figure 29. Annex H: Train driving licence - front

TRAIN DRIVING LICENCE
LU
1. Abcdefgh
2. Ilmnopqrstuvz
3. 25/08/1968 Luxembourg
4a 00/00/0000   4b 00/00/0000
4c AMCDEF LU
4d 123456789
5. 00 00 0000 0000
7. *Abcdefgh Ilmnopqrstunz*

Grand-Duché de Luxembourg

Figure 30. Annex H: Train driving licence - back

8. L-0000   9a.1 Abcdefghilmop
              9a.2 Abcdefghilmopqrst
              9b. Abcd

1. Surname(s) – 2. Name(s) – 3. Date and place of birth – 4a. Date of issue [yyyy/mm/dd] –
4b. Expiry date [yyyy/mm/dd] – 4c. Issuing authority – 4d. Number assigned to the holder by the employer –
5. Licence number – 6. Photograph of the holder – 7. Signature of the holder – 8. Postal address (optional) –
9a.1 Native language(s) – 9a.2 National relevant information – 9b Medical restrictions

СВИДЕТЕЛСТВО ЗА УПРАВЛЕНИЕ НА ЛОКОМОТИВ · LICENCE STROJVEDOUCÍHO · LOKOMOTIVFØRERLICENS · VERGUNNING MACHINIST ·
VERGUNNING VAN TREINBESTUURDER · TRAIN DRIVING LICENCE · VEDURIJUHILUBA · KULJETTAJAN LUPAKIRJA · LICENCE DE CONDUCTEUR DE
TRAIN · EISENBAHNFAHRZEUG-FÜHRERSCHEIN · FA-HRERLAUBNIS FÜR TRIEBFAHRZEUGFÜHRER · ADEIA MHXANODHIGOY · VASÚTI JÁRMŰVEZETŐI
IGAZOLVÁNY · CEADÚNAS TIOMÁNA TRAENACH · PATENTE DEL MACCHINISTA · VILCIENA VADĪTĀJA APLIECĪBA · TRAUKINIO MAŠINISTO PAŽYMĖJIAS ·
LIĊENZJA TA' SEWWIEQ TAL-FERROVIJI · FØRERBEVIS · LICENCJA MASZYNISTY · CARTA DE MAQUINISTA · PERMIS DE MECANIC DE LOCOMOTIVĂ ·
PREUKAZ RUŠŇOVODIČA · DOVOLJENJE ZA TROJEVODJO · TITULO DE CONDUCCIÓN DE VEHÍCULOS FERROVIARIOS/MAQUINISTA · FÖRARBEVIS

European Union Model

19. Annex I :
List of tables

20. Annex J: List of figures

21. Annex K: Database available in electronic format

The following set of data collected for the drafting of this Biennial Report 2013 is available in ERA website: **http://www.era.europa.eu/Core-Activities/Interoperability/Pages/INT-report.aspx**

- **Overview**
  - population
  - km of tracks
  - km of lines
  - Passengers per km
  - tons per km
- **Fixed installation**
  - high speed
  - conventional rail
- **Vehicles authorisations**
  - Locomotives
  - Fixed formation
  - Passengers coaches
  - Special vehicles
  - Wagons

European Railway Agency

Making the railway system work better for society.

era.europa.eu