ERTMS NATIONAL IMPLEMENTATION PLAN

(22 June 2017)

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1 CONTEXT

In accordance with point 7.4.4 of the Annex to Commission Regulation (EU) 2016/919 of 27 May 2016, on the development of national plans for the implementation of the technical specification for interoperability relating to the control-command and signalling subsystems of the rail system (CCS TSI), the rail sector must respond to the recommendations in said point, considering the coherence of the entire rail system of the European Union.

2 STRATEGY

Two documents that aim to harmonise the national rail sector form an integral part of the CCS TSI national implementation plan:

– The European Rail Traffic Management System (ERTMS) Migration Strategy, completed in late 2015 and defined in agreement with all members of the sector, was produced in order to define an integrated national strategy for migrating from the current systems to the ERTMS and covers the following aspects:

- study of the various possible ERTMS migration strategies;
- identification of the advantages and disadvantages of each strategy given the various types of project and the estimated costs and timescales;
- most appropriate adaptation of the rolling stock to each of the situations identified;
- development of a specific transmission module (STM);
- alignment of the projects with current legislation and aspects identified as important.

– The current Network Statement 2017 (*Diretório de Rede 2017*), dated 10 December 2015 and published on the Infraestruturas de Portugal, S.A. (IP) website at:

https://www.infraestruturasdeportugal.pt/rede/ferroviaria/diretorio-da-rede

The Network Statement is produced in accordance with current Portuguese legislation on rail transport and infrastructure management activities. The versions published for 2017 and 2018 aim to provide railway undertakings and other applicants with the essential information that they need to access and use the national rail infrastructure managed by IP.

3 IMPLEMENTATION PLANS

3.1 PLANNING

In accordance with the recommendations of the European Rail Traffic Management System (ERTMS) Migration Strategy (appended), the Instituto de Mobilidade e dos Transportes, I.P. (Institute for Mobility and Transport), the Autoridade da Mobilidade e dos Transportes (Mobility and Transport Authority), the infrastructure manager (IP), the Associação Portuguesa de Normalização e Certificação Ferroviária – APNCF (Portuguese Association for Rail Standardisation and Certification) and all national rail operators must now take a series of steps. With regard to this proposed plan, these include:

- checking the conformity of rolling stock with the infrastructure of the national rail network;
- monitoring the planning of national rail projects, with particular emphasis on those impacting on the CCS TSI;
- developing a specific transmission module (STM).

Developing and implementing the external EBICAB 700 STM will allow the new on-board ERTMS/European Train Control System (ETCS) equipment to use the transmission system of the national Class B CCS system (EBICAB 700) so that it can operate interchangeably with infrastructure

equipped with either the ETCS or the EBICAB 700 system. This will ensure a national system that is fully interoperable, without any adverse effect on national intraoperability during the ERTMS/ETCS subsystem migration period.

The on-board equipment will enable the national implementation of ETCS Level 2 and will ensure the compatibility of the rolling stock with the infrastructure (document ERA/ERTMS/033281 Interfaces between Control-Command and Signalling Trackside and Other Subsystems). The system version to be supplied must correspond to the ERTMS/ETCS Requirements Specification Version 3, consisting of the ETCS Baseline 3 Release 2 version and the Global System for Mobile Communications-Railway (GSM-R) Baseline 1 version.

3.2 SHORT TERM

3.2.1 With regard to Signalling, ETCS and ATP

In the next three to five years, the following changes are planned to Annexes 3.3.3.1, 3.3.3.2 and 3.3.3.4 to the current Network Statement 2017:

Section	Forecast entry into service	Annex 3.3.3.1 – Operating Rules	Annex 3.3.3.2 – Traffic Command and Control	Annex 3.3.3.4 – Train Protection Systems
NORTH-SOUTH CORRIDOR				
Northern Line				
Vale de Santarém-Entroncamento	2nd Quarter of 2020	No changes	Central Command Centre	Maintain existing EBICAB 700 functionality
Ovar (Válega)-Gaia	4th Quarter of 2019	No changes	Northern Command Centre	Maintain existing EBICAB 700 functionality
Pampilhosa-Souselas	1st Quarter of 2020	No changes	No changes	Maintain existing EBICAB 700 functionality
Minho Line				
Nine-Carreço Terminus	4th Quarter of 2019	Electric Manual Block Signalling (*Regime de Cantonamento Interpostos* – RCI)	Northern Command Centre	Temporarily emulate EBICAB 700
Carreço Terminus-Caminha	4th Quarter of 2019	Automatic Block Signalling with Advanced Signals (*Regime de Cantonamento Automático com Sinais Avançados* – RCASA)	Northern Command Centre	Temporarily emulate EBICAB 700
Caminha-Valença	4th Quarter of 2019	RCI	Northern Command Centre	Temporarily emulate EBICAB 700
NORTHERN INTERNATIONAL CORRIDOR				
Beira Baixa Line				

Covilhã-Guarda Beira Alta Line (LBA) - Beira Baixa Line (LBB) Link	2nd Quarter of 2019	RCASA	Central Command Centre	Temporarily emulate EBICAB 700
Beira Alta Line				
Guarda-Vilar Formoso	4th Quarter of 2020	No changes	No changes	Maintenance of the national Automatic Train Protection (ATP) system EBICAB 700 (with duplication of ETCS Level 2 during the work on the Pampilhosa-Vilar Formoso section)
Pampilhosa-Guarda	4th Quarter of 2020	No changes	No changes	Plan to install ETCS Level 2 and maintain the national ATP system EBICAB 700 for a transitional period to be agreed
SOUTHERN INTERNATIONAL CORRIDOR				
Évora Line and Eastern Line				
Évora-Elvas-Caia	2nd Quarter of 2020	RCI, RCASA	Central Command Centre	ETCS Level 2
Sines Line				
Sines-Ermidas do Sado	1st Quarter of 2021	RCI	Southern Command Centre	Maintain EBICAB 700 functionality
COMPLEMENTARY CORRIDORS				
Western Line				
Louriçal-Figueira da Foz, Louriçal Branch and Alfarelos Branch	4th Quarter of 2020	RCI	Central Command Centre	Temporarily emulate EBICAB 700
Mira Sintra Meleças-Caldas da Rainha	3rd Quarter of 2021	Pure Automatic Block Signalling (*Regime de Cantonamento Automático Puro* – RCAP)	Central Command Centre	Temporarily emulate EBICAB 700
Douro Line				
Caíde-Régua	1st Quarter of 2021	RCI	Northern Command Centre	Temporarily emulate EBICAB 700

3.2.2 With regard to Telecommunications

The mobile operating network is currently based on the track-to-train radio (TTR) system throughout the national rail network. This system is now being discontinued by the supplier and will gradually be replaced by GSM-R.

It is planned to keep the TTR system for the next few years so that the operating support radio system can be replaced without any interruption in service.

GSM-R is scheduled to enter into service in 2017 on the Cascais and Algarve lines.

On the Cascais line, both radio systems – analogue system currently in use and GSM-R – will be maintained for a short period of time only, as IP will not be able to keep operating the analogue system beyond 2018 due to its obsolescence.

On the Algarve line, the Tunes-Lagos and Faro-Vila Real de Santo António sections do not currently have any operating radio service. GSM-R is scheduled to enter into service in 2017, with only the Tunes-Faro section being covered by both radio systems.

3.2.2.1 Decommissioning of the analogue radio system (TTR and Cascais)

It is planned to decommission the analogue radio system as follows:

LINE SECTION	DECOMMISSIONING
Cascais Line	2nd half of 2018
Entroncamento-Castelo Branco	2020
Other lines *	2021/22

* Depending on the need for repair materials

3.2.2.2 Entry into service of GSM-R

IP's investment plan provides for the entry into service of GSM-R as follows:

LINE SECTION	ENTRY INTO SERVICE
Cascais Line	2nd half of 2017
Algarve Line	3rd quarter of 2017
Castelo Branco-Covilhã	2nd half of 2018
Vendas Novas-Évora	2nd half of 2018
Entroncamento-Castelo Branco	2nd half of 2019
Covilhã-Guarda	2nd half of 2019
Nine-Valença	2020

Évora-Caia	3rd quarter of 2020
Beira Alta Line	3rd quarter of 2020
Caíde-Régua	2021
Northern Line	2021/2022
Meleças-Caldas da Rainha	2022
Sintra and Cintura Lines	2022/23
São Bento-Campanhã-Ermesinde	2022/23
Link to Braga and Guimarães	2022/23

As a result, the national rail network sections that currently do not have the TTR system (e.g. part of the Algarve line and part of the Beira Baixa line) and the Cascais line will, in the very near future, only have the radio system based on GSM-R technology.

On the other line sections, the TTR system will remain in service while GSM-R is brought into service, but, from 2020, will gradually be decommissioned due to the difficulty and costs of maintaining the service.

3.3 MEDIUM TERM

The ETCS will gradually be installed on other sections of the network, with priority for the Core Network sections in accordance with Commission Implementing Regulation (EU) 2017/6 of 5 January 2017 on the European Rail Traffic Management System European deployment plan and in accordance with the CCS TSI and the Safety Directive.

Within the Trans-European Transport Network (TEN-T), the Core Network, which must be developed by 2030, comprises the nodes and links of the Comprehensive Network that are strategically most important for achieving the TEN-T development objectives. In this respect, nine corridors have been defined, including the Atlantic Corridor, which is the only one that covers the national territory, as shown in Figure 1.

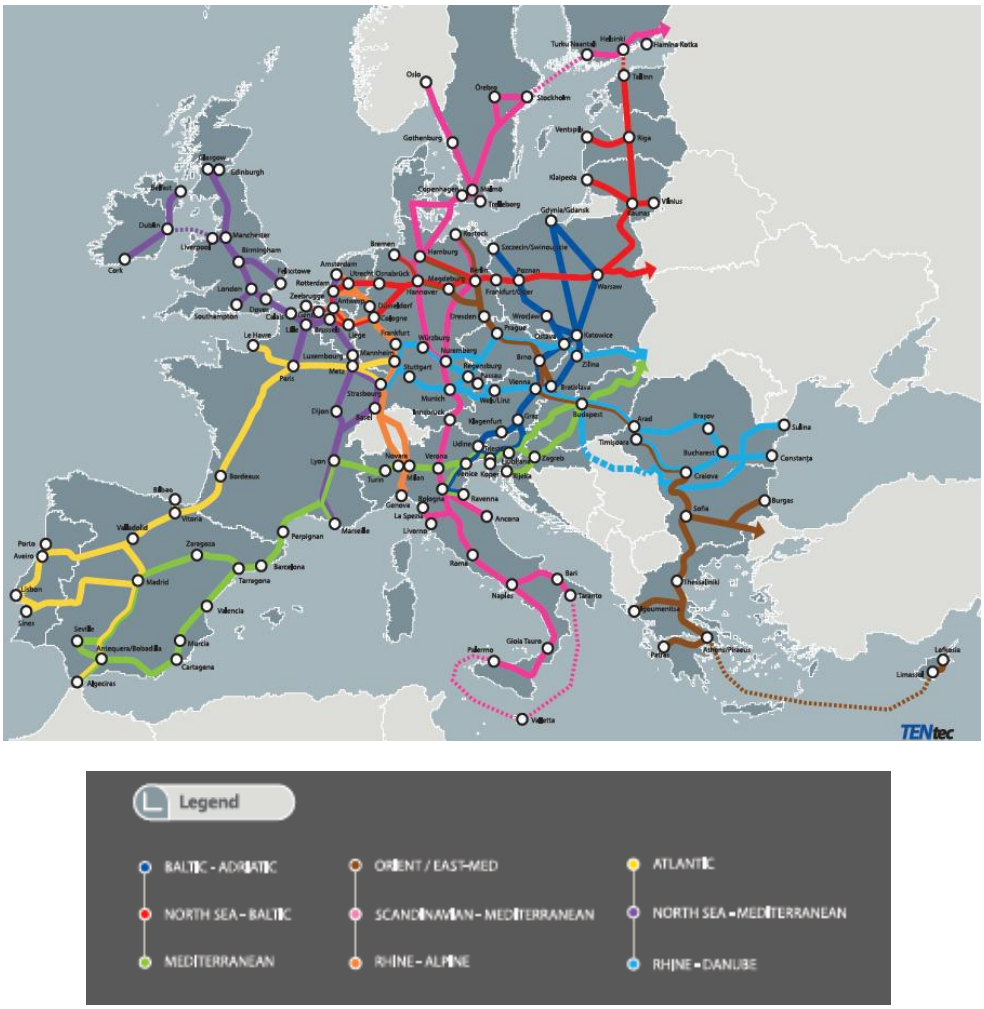

***Figure 1: TEN-T Core Network Corridors*. Source: TENtec**

3.4 LONG TERM

It is intended that the entire national rail network will be equipped with the ETCS. This objective will contribute towards achieving the Comprehensive Network objectives.

The Comprehensive Network, to be completed by the end of 2050, consists of all the existing and planned transport infrastructure of the Trans-European Transport Network, and also measures designed to promote efficient and sustainable use of this infrastructure in social and environmental terms. It comprises all the existing and planned TEN-T transport infrastructure: rail, inland waterways, roads, maritime transport and motorways of the sea, air transport and multimodal transport.

4 RAIL OPERATORS

The strategy adopted by all national rail operators is in line with the ERTMS National Implementation Plan.

4.1 CP - COMBOIOS DE PORTUGAL, E.P.E.

The rail operator CP - Comboios de Portugal, E.P.E. has the following plans for implementing the ERTMS/ETCS/STM and GSM-R.

4.1.1 Installation of ETCS/STM on CP Rolling Stock

Rolling Stock SERIES	Mandatory LINE	TYPE of service	No of Vehicles	No of Radios	DATE of entry into service
LE 5600	Évoras-Elvas; B. Alta Line (ETCS L2)	IC	19	19	2020/21
UTE 2240	B. Alta Line (ETCS L2)	Regional; IC	15	30	2020/22
UTE 2240	Electrified Lines	Regional	40	80	2023/26
CPA 4000	Northern Line	Alfa	10	20	2025/30
UQE 3500	Northern Line	Urban	12	24	2025/30
UME 3400	Northern Line	Urban	34	72	2025/30

4.1.2 Installation of GSM-R on CP Rolling Stock

Rolling Stock SERIES	Mandatory LINE	TYPE of service	No of Vehicles	No of Radios	DATE of entry into service
UME 3150/3250	Cascais Line	Urban	31	62	2017/2018
UDD 450	Algarve Line	Regional	19	38	2017/2018
UTE 2240	B. Baixa Line	Regional; IC	15	30	2018/19
LE 5600	Évora Line	IC	19	19	2018/19
UTE 2240	Minho Line (Nine-Valencia)	Regional	40	80	2020/21
CPA 4000	Northern Line	Alfa	10	20	2021
UME 3400	Northern Line; Minho Line (S.Bento-Ermesinde)	Urban	34	72	2022/23
UQE 2300/2400	Sintra Line; Cintura Line; Northern Line	Urban	56	112	2022/23
UQE 3500	Sintra Line; Cintura Line; Northern Line	Urban	12	24	2022

4.2 TAKARGO - TRANSPORTE DE MERCADORIAS, S.A.

The rail operator Takargo - Transporte de Mercadorias, S.A. (TK) has the following plans for implementing the ERTMS/ETCS/STM and GSM-R.

4.2.1 Installation of ETCS/STM on Takargo Rolling Stock

LINE SECTION		IP IMPLEMENTATION	TK Rolling Stock IMPLEMENTATION
Atlantic Corridor	Badajoz-Cáceres	2020	6001 (year 2020)

	---	---	6002/6003/6004 (2021)
	---	---	6005/6006/6007 (2022)
	Badajoz-Poceirão	Beyond 2023	Implemented on all TK Locomotives
	Poceirão-Sines		
	Poceirão-Pinhal Novo		
	Poceirão-Lisbon		
	Lisbon-Pinhal Novo		
	Lisbon-Aveiro		
	Lisbon-Coimbra		
	Pampilhosa-Coimbra		
	Pampilhosa-Medina del Campo		
	Aveiro-Medina del Campo		
	Leixões-Contumil		
	Contumil-Aveiro		
	Leixões-Aveiro		
Rest of Core Network		31.12.2030	Implemented on all TK Locomotives
Rest of Comprehensive Network		31.12.2050	Implemented on all TK Locomotives

4.2.2 Installation of GSM-R on Takargo Rolling Stock

LINE SECTION	IP IMPLEMENTATION	TK Rolling Stock IMPLEMENTATION
Algarve Line	3rd quarter of 2017	6001 (year 2017)
Castelo Branco-Covilhã	2nd half of 2018	6002/6003/6004 (2nd half of 2018)
Vendas Novas-Évora	2nd half of 2018	
Entroncamento-Castelo Branco	2nd half of 2019 (*)	6005/6006/6007 (2nd half of 2019)
Covilhã-Guarda	2nd half of 2019	
Nine-Valença	2020	Implemented on all TK Locomotives
Évora-Caia	3rd quarter of 2020	
Beira Alta Line	3rd quarter of 2020	

Caíde-Régua	2021	
Northern Line	2021/2022	
Meleças-Caldas da Rainha	2022	
Sintra and Cintura Lines	2022	
Southern Line, Alentejo and Vendas Novas	2022/23	
São Bento-Campanhã-Ermesinde	2022	
Link to Braga and Guimarães	2022/23	
Rest of Network	2023	

* Analogue radio system to be decommissioned in 2020