

Position Paper

**ERTMS (European Rail Traffic Management System) in Spain:
Experience and Future**

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I. INTRODUCTION

This document summarizes the most relevant issues presented and discussed during the seminar “ERTMS IN SPAIN: EXPERIENCE AND FUTURE” jointly organized by the Spanish Railways Technological Platform and the Foro ICAITREN, held in Madrid on October 25th 2017 at the Spanish Railways Foundation headquarters.

The celebration of the seminar was motivated by the current situation of ERTMS in Spain and its future deployment, with the aim of analyzing in depth the high costs and long implementation periods needed to place ERTMS in service. These two aspects are in contradiction with the view expressed by some that ERTMS has been successfully deployed in Spain.

In line with the National Research Agency directives (under the Ministry of Science, Innovation and Universities), the Spanish Railways Technological Platform (PTFE) aims to create tools that contribute towards the scientific and technological development of the Spanish rail sector thus enhancing its competitiveness, internationalization and sustainability. For these reasons, the PTFE recognised the need for this event in which ERTMS experts applied their experience and expertise to the discussion about the future prospects of the system.

It is within this context that the current *“Position Paper: Experience and Future of ERTMS (European Rail Traffic Management System) in Spain “*, has been produced, written by members of the Seminar Organizing Committee, including contributions from Adif and Renfe.

II. STARTING POINT

The motivation behind running the seminar was to discuss the current situation of ERTMS in Spain, which has become increasingly complex compared to the situation 3 or 4 years ago. Indeed, the process of putting ERTMS into operation on lines and trains has become notably lengthy, leading to a critical situation whereby many lines and trains have not been placed in service yet. The data shown by Adif and Renfe confirm this situation:

- a. Renfe presented a table in which only 43% of the possible train/track combinations are authorized, the rest of them still pending.
- b. Adif showed how the number of new kilometres contracted are growing faster than the kilometers put in service. If currently there are 2,362 km in service (1760 L1 +602 L2) in the near future 3,466 km should enter in service (975 L1+2491 L2)

III. ANALYSIS OF ELEMENTS AND PROPOSALS

1. ERTMS is a complex system in which interoperability or problems of compatibility between versions continue to be detected, although to an ever-lessening degree. The detection and analysis of these issues requires a group of experts with an in-depth knowledge of the system, including all key stakeholders who play a role in the process, i.e. AESF (State Agency for Rail Safety), ADIF, RENFE, CEDEX, INECO and all the suppliers. However, it should be emphasized that once the interoperability and compatibility issues in the testing phase have been solved, ERTMS works with a high level of technical reliability and delivers a higher level of safety than all the existing signaling systems. Furthermore, the obligation, within the European framework, to progressively deploy ERTMS is an unavoidable fact and is therefore the **only possible future option**.

2. Creation of a working group to clarify the service implementation process.

It has been proposed to create a working group composed of all the relevant sector bodies, with the specific aim of defining and clarifying the whole service implementation process for both new systems and the updating of existing ones. This process has already been defined by the Ministerial order (Orden FOM/167/2015), elaborated in "Recomendación 1/2015" from the AESF. During the meeting held on May 31st 2018, the AESF informed that there is already a working group with ADIF for the specific application of this norm to those railway lines soon to enter into service. This procedure should have the following features:

- a. Service implementation process to be as simple as possible, including, if needed, the definition of Operational Scenarios.
- b. Service implementation process to be as transparent as possible.
- c. Service implementation process to clearly define the responsibilities of each body involved.
- d. Clarification of the Network Compatibility concept (required by RENFE on the meeting held on May 31st 2018).
- e. Process to be fully coherent with the European normative.
- f. Coordination of all involved actors, entities and departments throughout the entire process.

3. Speeding up the Track Tests.

To achieve the acceleration of tests on the track, two specific actions are proposed:

- a. Simplification of the ADIF Testing Procedures is one of the most strongly emphasized points. ADIF testing procedures should be as clear and precise as possible and published rapidly.
- b. Testing group's reinforcement. Both ADIF and the operators should strengthen the human and materials (Rolling stock) testing resources to minimize testing time in the field.

4. Increase laboratory testing.

One of the key factors to speed up the service implementation process is to increase the number of lab tests.

The most relevant aspects of this subject are summarized as follows:

- a. Lab test acceptance. To achieve this, the laboratory has to be accredited by ENAC for the execution of lab based operational testing to replace on track testing.
- b. As much as they can, the suppliers should leave the EVCs and RBCs in the laboratory. This aspect is vital to assure the utility of the lab throughout the whole life of the ERTMS line: new versions of the ERTMS specifications, new trains to be authorized over this line, etc.
- c. Clear definition of the data and geographic format of the lines, as well as their maintenance. This aspect is essential to ensure a unified database of the whole network available in the lab.

5. Suppliers.

The most relevant issues to be improved by all the ERTMS suppliers should be the following:

- a. Product quality: products without bugs. Agility and promptness to solve errors in both generic and specific products.
- b. Supplier's commitment to guarantee real interoperability among their products. To achieve this, they should commit to having a common place to test on-board and track-side equipment. CEDEX Rail Interoperability Lab could be this common place where the existing lines and RBCs are tested with the existing EVCs.
- c. Supplier's commitment to export specific use conditions as little as possible. This aspect should also be evaluated by the Independent Safety Assessors (ISAs).
- d. Supplier's commitment to solve the pending issues on current lines and/or trains, before starting new ERTMS installations on lines and/or trains.

6. Standardisation of lines.

All the involved agents should attempt to develop standard solutions in all their ERTMS implementations. These solutions should seek to be applicable to all kinds of operations on the same network, i.e. try to avoid implementations "ad hoc" for any specific project, that moreover are not transferable to other projects on the same network.

7. Spanish National plan for ERTMS deployment on the whole network.

A clear conclusion of the seminar in relation to the improvement of rail safety is the need for a Strategic Plan for ERTMS deployment on the whole network. To this end, it was proposed to modify the ERTMS National Deployment Plan already submitted by the Ministry of Public Works to the European Commission in the following way:

- a. Creation of a working group or R&D project. This group or project would be responsible for analysing the suitability of ERTMS to each line typology, especially low traffic lines, with the aim of reducing the cost of ERTMS deployment on the conventional network to an acceptable level.
- b. The modification of the ERTMS National Deployment Plan should take into account the conclusions of the aforementioned study in order to propose the installation of low cost ERTMS on the conventional network.

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