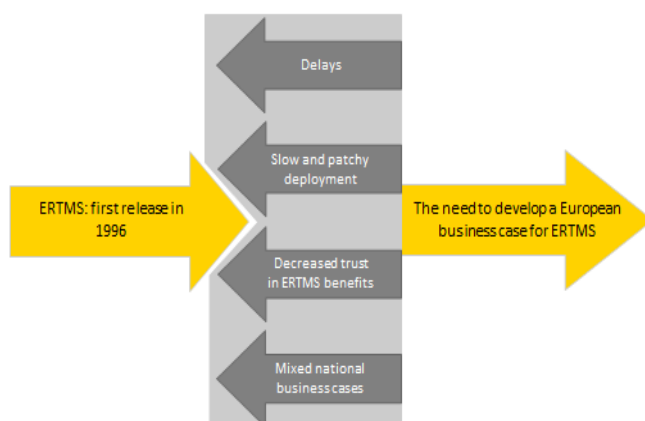


ERTMS deployment and Business Case on 9CNC

Overview of ERTMS Deployment

The idea of one common railway signaling system between countries was born in the 80's. The diversity of systems that each country had rolled out became a barrier to the competitiveness of the rail sector against other modes, especially road. European Rail Traffic Management System (ERTMS) aims to facilitate the transit of people and goods across the European countries. Then the system started to be technically shaped in the 90's. In 2009, the adoption of the European ERTMS Deployment Plan sets a new milestone for ERTMS. For the first time, the deployment of ERTMS on a number of listed lines becomes mandatory, with deadlines ranging from 2015 to 2020 depending on the lines' section.

In February 2014, the European Commission analyzed the real situation of the deployment of ERTMS. Despite the EC effort and commitment to support ERTMS, many difficulties have been unfortunately identified to achieve the deployment of ERTMS based on the EDP. ERTMS, which has been developed in Europe, is now being deployed at a faster pace outside the EU, where it has established itself as a worldwide standard.



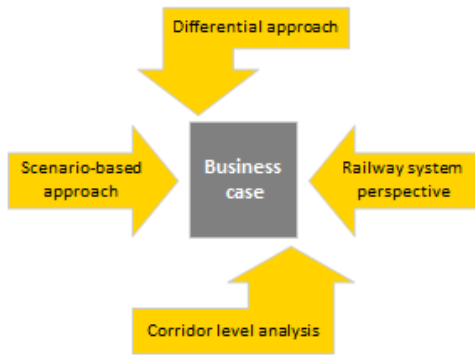
To address this issue, a new realistic deployment plan for ERTMS is currently being designed by the European coordinator for ERTMS. INECO and EY have been appointed to support the coordinator on this task, by developing a business case for ERTMS on the 9 CNC.

Business Case Methodology

The developed business case is based on four main concepts:

Differential approach: The business case is a comparison between a situation without ERTMS and a situation with ERTMS.

Railway system perspective: While costs and benefits are linked to cost functions of different types of stakeholders, the objective is not to assess the monetary transfers between stakeholders inside the railway system but to assess the benefits to the system as a whole.



Corridor level analysis: The business cases are built on a corridor basis. Two corridors have already been assessed: Rhine – Alpine (RALP) and North Sea – Mediterranean (NSM).

Scenario-based approach: Due to the uncertainty of ERTMS in the long run, three scenarios have been developed.

Besides these concepts, the business case has been developed in a perspective of robustness and comprehensiveness.

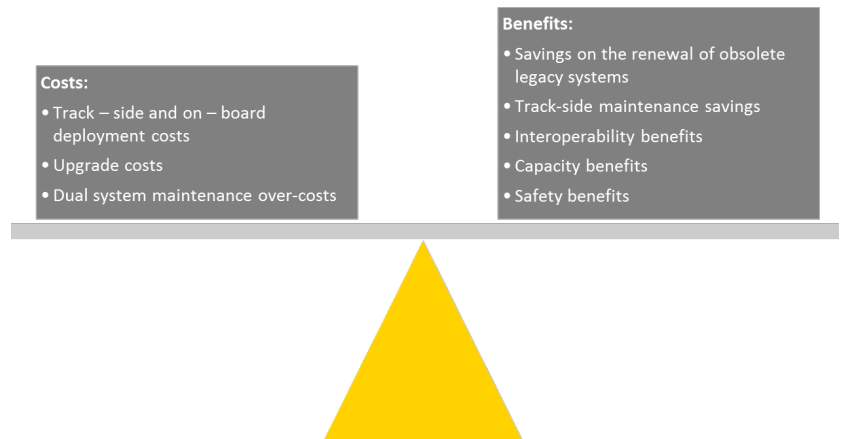
The robustness objective has been reached through an exchange-driven methodology: After a first phase of data collection based on existing studies and a second phase where collected data and methods have been fine-tuned with interviews with stakeholders, a business case calculation methodology has been developed by EY. The results and assumptions have been exposed to stakeholders and European institutions in order to cross-check and improve their accuracy and reliability. This feedback loop is still active and the business case is in a continuous improvement.

The comprehensiveness objective has been reached through a detailed assessment of potential costs and benefits of ERTMS. Costs include deployment, upgrade costs and dual system maintenance over-costs. Savings include track-side maintenance, increase of capacity and safety, and avoided renewal costs. An assessment has also been made of the improved interoperability of EU railway system, which is the original purpose of ERTMS.

The Business Case

The Business Case is being developed with data sourced, among others, from interviews, stakeholders and experts in the field. It takes into account all costs and benefits related to ERTMS, and sum them over a 35 years period (2015-2050), in order to calculate an Internal Rate of Return, a break-even year and a Net Present Value (discounted at 8%).

The three scenarios developed for the business case analysis are described below:



Scenario 1, Conservative scenario: This scenario is the base case. It uses assumptions that are coming from interviews with stakeholders, provided that the current difficulties (actual interoperability of ERTMS and stability of the specifications) are solved.

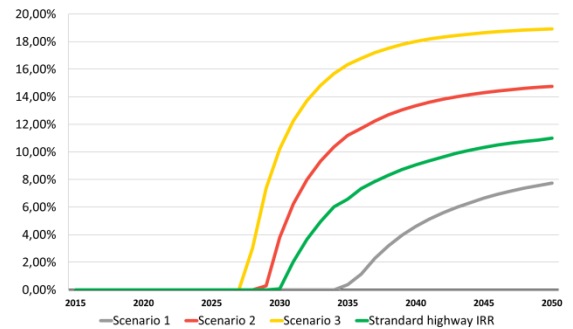
Scenario 2, Ambitious scenario: This scenario uses assumptions that can be achievable provided that all stakeholders take advantage of the new system to optimize their operations. This scenario can be seen as a target to reach (and is reachable).

Scenario 3, fully interoperable L2 network scenario: This scenario is testing the impact of a full track-side Level 2 deployment on the ambitious scenario. This full L2 would provide higher capacity and interoperability benefits.

All those scenarios are developed with a **dual on-board strategy**, which has a better economic outcome at corridor level than the dual track-side strategy, considering the assumptions used in the business case.

Based on the first results, the Rhine Alpine (RALP) and North Sea Mediterranean (NSM) corridors show that there is a business case for ERTMS. On RALP, IRR for the project is between 8,2% and 19,3%, and break-even point is between 2028 and 2035. On NSM, IRR is between 7,4% and 13,1%, and break-even point is between 2032 and 2037. ERTMS can be as attractive as a standard highway project, as showed in the adjacent figure. But all this can only be achieved if there is **coordination between stakeholders for the deployment.**

Rhine Alpine corridor IRR compared with a standard highway project



Contact details



For further information on ERTMS, please visit our website: ec.europa.eu/transport/modes/rail/ertms



Get in contact with our Deployment Management team via [MOVE-ERTMS-DEPLOYMENT\(at\)ec\(dot\)europa\(dot\)eu](mailto:MOVE-ERTMS-DEPLOYMENT(at)ec(dot)europa(dot)eu).

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