Project

Migration of the existing train control system in Germany to ETCS

Germany's train control system is undergoing extensive renovation and conversion. The country's aging switch towers need to be replaced and European Union interoperability specifications need to be met for conformity with the new European Train Control System (ETCS).

Working together in a consortium of firms from Germany and Switzerland, EBP developed a comprehensive migration strategy to ensure Germany's compliance with the common ETCS, i.e. the signaling and control component of the European Rail Traffic Management System (ERTMS). The strategy takes account of federal budget restrictions, railway freight specifications and passenger train requirements.

Cost-benefit analysis for railway network and trains

The migration strategy outlines various approaches to retrofitting the relevant parts of the German railway network for compliance with ETCS specifications. It also includes an estimate of the associated costs and benefits. As a member of the project team, EBP ascertained the benefits and deployed a cost-benefit analysis to evaluate the various migration approaches. With the help of methods outlined in the German Transportation Development Plan 2030, we identified the following benefits of the ETCS for the railway network and its trains:

— Change in railway and train operating costs
— Change in infrastructure operation and maintenance costs
— Change in passenger travel times
— Change in freight transportation times

Client

German Federal Ministry of Transport and Digital Infrastructure

Facts

Period	2017 - 2018
Project Country	Germany

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— Change in reliability parameters
— Change in railway safety
— Change in railway emissions volume
— Benefits for competing transportation networks (e.g. roads)

Challenges associated with European Union compliance

According to Commission Regulation (EU) 2016/919, the member states of the European Union Commission are required to align their system-migration strategies to those of their neighbors and submit their plans for meeting all ERTMS-related specifications to the EU Commission. These requirements have introduced complex technical, economic and legal challenges, especially for those member states with large railway networks and existing advanced systems. In order to avoid redundant tracks, the national implementation plan for Germany was drafted in parallel to the drafting of its migration strategy so as to ensure extensive harmonization.

Ensuring a sensible, cost-effective and resource-optimized migration

The smart development and roll out of the national implementation plan is indispensable for a successful migration to the ETCS (i.e. the ERTMS) in Germany. The retrofitting of Germany's control and safety equipment will be costly. Railway operators, infrastructure operators and manufacturers will need a long-term basis for planning and investment. The aim for both the migration strategy and the national implementation plan is therefore to introduce the ERTMS in a manner that is logical from a transport perspective, as well as cost effective and resource-optimized.