



Case Study

Transpennine Route Upgrade ETCS Study

As part of the Transpennine Route Upgrade (TRU) programme Frazer-Nash was contracted by Hitachi Information Control Systems Europe (HICSE) to support the modelling of the Transpennine route, to determine if the implementation of ETCS Level 2 would enable sufficient improvement in headway to reduce the number of civil engineering modifications proposed on the route.

OUR ROLE

- ▶ **To ensure that the ETCS implementation would achieve the maximum capacity possible.**

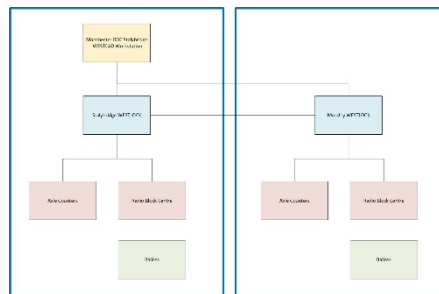
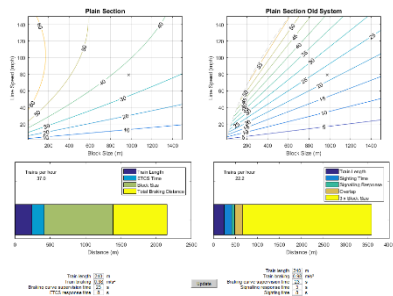
To achieve this we developed a mathematical model that determined the optimal block sections for ETCS Level 2, based on key factors including the track layout, line speed and operational characteristics of the rolling stock used on the route.

- ▶ **To develop a high-level migration strategy for how the proposed ETCS Level 2 solution should be managed.**

This required us to attend workshops with other stakeholders to determine the best strategy for developing the complete ETCS upgrade programme, including modifications to interlockings and control systems as well as the implementation of ETCS and the required civil engineering modifications.

THE BENEFITS OF ADOPTING THIS APPROACH

- ▶ Our mathematical model ensured that the most optimum ETCS design was proposed, which enabled maximum throughput of trains. We have gone on to develop this model into a reusable software tool to assist with the optimisation for ETCS designs.
- ▶ We proposed a number of potential migration options, which were qualitatively assessed on both risk and implementation timescales in order to clearly inform the client of the potential strategies available. This ensured that the upgrade took into account the complete railway system as a whole, so that all factors including civil engineering, interlocking upgrades, control upgrades and design optimisation were incorporated into a complete solution.



Client

Hitachi Information Control Systems Europe

Business need

When Hitachi Information Control Systems Europe (HICSE) was contracted by Network Rail to model the potential implementation of ETCS Level 2 on the Transpennine Route, it looked to both optimise its solution and to ensure strong capability in systems engineering to develop the migration strategy for the route upgrade.

Why Frazer-Nash

Our rail engineers are renowned for bringing clarity to projects and operational situations where challenges are faced. Frazer-Nash takes a whole systems approach and applies the best practice from other industries to the rail sector. We support a wide range of customers in the rail industry including rolling stock and infrastructure companies, train operating companies, original equipment manufacturers and research and regulatory bodies.

Date project completed
June 2018