

ERTMS National Integration Facility Project Engineering and Safety Case



CASE STUDY



Overview of deliverables

Vertex was requested to assist Network Rail in the provision of a Safety Case and Hazard assessment for the demonstration site for ERTMS equipment (both trackside and train borne) known as the ERTMS National Integration Facility (ENIF). The project was required to deliver its outputs and gain safety approval within challenging timescales in order to meet a commitment for the rapid commencement of ERTMS testing, prior to roll-out of ERTMS for large-scale in service applications.

Deliverables included:

- Project Safety Engineering, including production of Safety Plan and Strategy;
- Verification that the requirements for the demonstration site were being met by the proposed design/operations;
- Verification of the regulatory framework in which the site was proposed to operate;
- Hazard Identification and Analysis, via a modified Common Safety Method (CSM) process;
- Specification of Safety Requirements and their export and acceptance by other stakeholders within the system as a whole;
- Production of a Safety Case for operations at the demonstration site, covering operations of the system as a whole and its integration into the operational railway network;
- Liaison with Network Rail System Review Panel in order to gain acceptance;
- Critical Review and DRACAS/FRACAS processes; and
- Stakeholder management of multiple internal and external stakeholders, including NR Project Team, rolling stock owners, rolling stock operators and infrastructure owners/operators.

Technical competencies applied in the delivery of the contract:

- Systems Engineering of the project- ensuring alignment and cooperation between all disciplines;
- Requirements analysis of the system as a whole, including impacts analysis on other stakeholders;
- Verification of the Regulatory context of operation, including tailoring outputs to ensure compliance;
- Hazard and Risk Assessment in line with best-practice CSM requirements;
- Identification of system level safety requirements, including technical requirements (e.g. permissible failure rates) and softer requirements (e.g. briefing, maintenance documentation, etc.);
- Liaison with 3rd party safety cases, notably rolling stock (for on-board ETCS components), including formal transfer of safety requirements and validation of control measures from 3rd parties, and
- Technical Assessment of proposed solution configuration in the form of a Safety Case, with due cognisance of 3rd party Safety Cases to form a whole-system document.

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Value added initiatives

As part of the works, Vertex identified additional requirements that follow-on projects would require from the ENIF facility. Where possible, Vertex aligned both technical solution and documentation to ensure their compatibility with the stated requirements of these subsequent projects. This approach minimises knock-on costs to future projects involving the ENIF infrastructure.

Programme dates

Programme dates were February- July 2013. Vertex supplied the required deliverables (principally a NR SRP approved Safety Case) within the timescale specified by Network Rail in order to allow ERTMS/ETCS demonstrations to commence in August 2013.

Resources utilised

Vertex utilised members of its Rail Systems Engineering team for this project, including persons with appropriate professional qualifications (e.g. membership of the IRSE, IET etc.). Combined rail engineering experience of the project team (3 persons) exceeded 30 years.