# Railway Application Safety Cases

VERTEX systems engineering

THE BRITISH ASSESSMENT BUREAU ISO9001

RISQS RAILWAY INDUSTRY SUPPLIER QUALIFICATION SCHEME

# CASE STUDY

## Overview of Deliverables

Since 2003 Vertex has provided safety engineering support and Application Safety Cases (ASC) to both owners and operators of fixed infrastructure and rolling stock. Our output has been provided in accordance with industry best practise and both generic and rail related standards such as the current EU Common Safety Method 352/2009, EN50126 and Technical Specifications for Interoperability.

Vertex has supported both minor changes and major projects such as the London 2012 Olympics where Vertex managed the safety assurance for the Network Rail infrastructure changes and protection of Network Rail assets during the construction of the Olympic locations.

Our product management service to equipment suppliers, infrastructure and rolling stock owners and operators is often used in support of the Application Safety Case so as to provide a single solution and point of contact for such complex works.

Vertex provide the complete solution from the development of the safety case to critical review and project hand back, aligned as necessary with processes such as CDM and Network Rail GRIP 8. Functions such as Whole Life Cost modelling, HAZID/HAZOP, FMEA/FMECA, trial management, DRACAS/FRACAS, Verification/Validation, rail system and project engineering are also employed to provide a completely packaged ASC solution to the customer. Vertex capability also enables it to undertake ASC under challenging timescales, this was the case for a number of the examples detailed.

## Change & Disciplines ASC:

The following details the subject areas that Vertex provides Application Safety Cases:

- SIL0 to SIL4 applications
- Infrastructure (Command & Control, signalling, telecoms)
- Energy (E&P, Overhead Line, 3rd /4th rail traction)
- Possession
- Plant
- Asset monitoring systems

- Track
- Operations
- Maintenance
- Locomotives and Passenger Rolling Stock
- Stations
- Human Factors

## Example ASC delivered

- 2003 to 2008 : West Coast Route Modification
- 2005 : Rugby and Nuneaton interim operational process
- 2004 to 2008 : Jubilee and Northern Line Upgrade programme
- 2007 : Bournemouth - change to operational procedures to support degraded working
- 2008 : Portsmouth resignalling
- 2009 – 2012 : London 2012, North and East London Line, Gospel Oak, Latchmere Curve, Lee Valley On Network, Angel Lane
- 2008 to 2010 : Enhanced Vehicle Management & Possessions process for Network Rail
- 2009 : Axminster resignalling
- 2010 : Durham Coast signalling upgraded
- 2012: DLR, Olympics resilience
- 2011 : Salisbury & Exeter resignalling
- 2011 : Use of On Track Machines outside of possession
- 2011 : Intelligent Infrastructure
- 2012 : Stansted Airport
- 2012 to 2014 : GNGE Upgrade
- 2012 to 2013: Southern Platform extensions – provision of SDO
- 2010 to date : Level crossing changes - MCB-OD and SPAD prediction
- 2013 to date : ETCS testing facility – ENIF
- 2013 to date : Network Rail Crossrail North East and West changes
- 2013 : High Speed 1 to Network Rail connection
- 2013 : OLE Live Line – part of Network Rails safety initiative
- 2013 to date : Rail Infrastructure aLignment Acquisition – ASC for trial on rolling stock and infrastructure
- 2013 to date : London Overground Capacity Improvements

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