



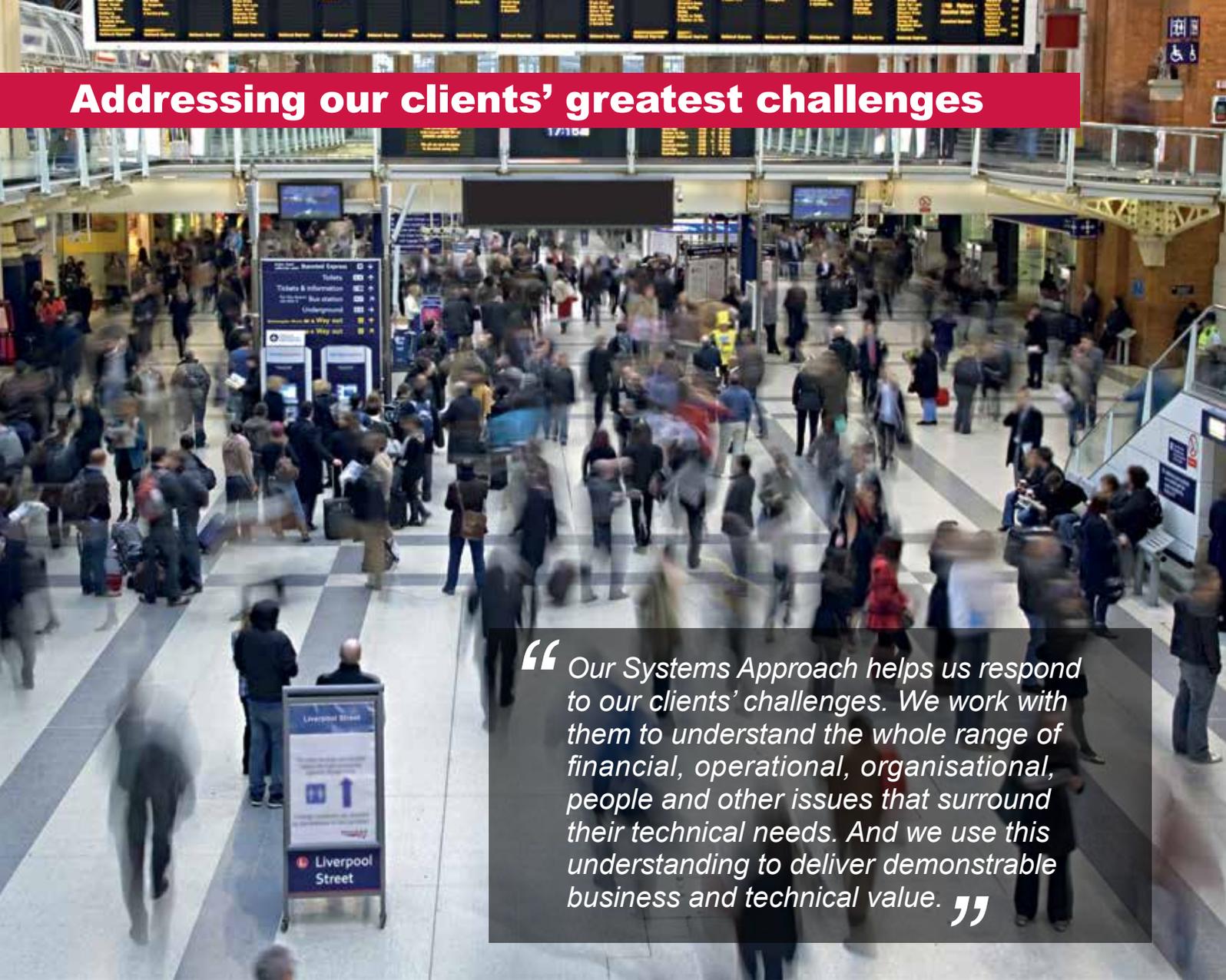
Rail services

Independent systems and engineering
technology advice that delivers real value



SYSTEMS AND ENGINEERING TECHNOLOGY

Addressing our clients' greatest challenges



“ Our Systems Approach helps us respond to our clients' challenges. We work with them to understand the whole range of financial, operational, organisational, people and other issues that surround their technical needs. And we use this understanding to deliver demonstrable business and technical value. ”

At Frazer-Nash, our consultants apply their expertise and know-how to develop, enhance and protect our clients' critical assets, systems and processes.

We understand the challenges our clients face, and we provide tailored solutions that deliver real value – whilst giving them a technical and commercial edge.

Our expertise and know-how has ensured the safety of ageing equipment and systems, enabled our clients to manage complex engineering change programmes, helped reduce risks, maximised efficiency and performance, and helped reduce costs. Our flexibility enables us to respond to the requirements of both large- and small-scale projects.

At the heart of our business is our Systems Approach – a proven methodology that's helping our clients make the right investment decisions within their increasingly competitive market.

Our people

Our people are recognised internationally for their professionalism and range of capabilities. They can help you achieve your goals, as they excel in solving complex problems – the ones that require the right combination of intellect, experience and innovation.

We often combine our people's rail expertise with knowledge, experience and best practice gained from other industry sectors. We do this as our experience comes not from a single engineering perspective, but from detailed knowledge of a broad range of disciplines and their application across different markets.

Our commitment to innovation was recognised in both the 2012 Railway Industry Association/Rail Safety and Standards Board Innovation Competition, and the 2014 Rail Business Award for Innovation.

In addition, we have a significant successful track record in providing robust safety cases and assessments for government clients.

Our core capabilities

Rolling stock

We support train manufacturers, operators, owners and equipment suppliers in the delivery of a wide range of rail vehicle projects – from engineering solutions to next generation trains, to corrosion management for rolling stock.

Resolving problems

Our solutions can resolve rolling stock engineering problems. For example, improving energy efficiency via the integration of novel energy storage systems, or upgrading and technically refreshing vehicles.

Optimising performance and reliability

Our approach helps manufacturers, owners and equipment suppliers to optimise the performance of vehicles, extend the life of ageing stock, and reduce maintenance and overhaul costs. Where new stock is required, we create winning technical proposals for the provision of vehicles and equipment.

Ensuring safety

Safety is a priority for us – and we develop and implement systems and processes that ensure the safety of both new and existing equipment.

Rail infrastructure

Supporting complex change programmes

Enabling infrastructure managers to add value to their assets, we help extend the life of ageing infrastructure, and develop safety cases for the introduction of new equipment, technology, vehicles and systems.

Independently assessing risk and safety aspects

We assist with the implementation of new equipment and electrical isolation arrangements, and can independently assess risk and safety aspects of infrastructure changes. When needed, we can act as an assessment body under European common safety method regulations.

Successfully delivering timely, robust safety cases

We have provided safety cases and assessments for a wide range of clients. For example, we have delivered safety support to Network Rail projects improving the electrification of the rail network in Great Britain: including electrification upgrades, and the introduction of new supervisory control and data acquisition (SCADA) equipment and integrated protection and control equipment.

Train operation

Enabling the reduction of whole-life costs, and performance improvement

We can help train operators to reduce whole-life cost, and to facilitate rolling stock and component life extensions. Through model generation and review, and the development of bespoke software, we provide simulations that draw on real-life data and scenarios to generate optimal solutions.

Applying our whole-system expertise

Our expertise enables train operators and depot managers to address whole-system issues, combining the complexities of operations, resources and timetables to optimise and plan the maintenance of trains through depot infrastructure.

Optimising franchise bids

We support train operators with franchise bids – including developing rolling stock strategies – and to optimise their performance on existing franchises. Offering advice and assistance in submissions for technical innovation funding, we encourage and enable businesses in the rail industry to innovate.



Security and resilience

Improving safety, security, and systems' resilience

Within the transport sector, we use advanced engineering analysis to improve safety, security, efficiency and performance. And we provide independent advice to minimise risks and reduce costs and liabilities.

Integrating strategies against cyber risks into system design

Working closely with our clients, we develop methodologies and build in resilience processes that enable transport systems to operate safely, securely, efficiently and effectively. Our expertise extends to cyber security risks, and we can develop strategies for the integration of cyber risks into the rail safety case system.

Rail government organisations

We've supported government bodies, including the Department for Transport, on the delivery of a number of rail franchising projects, as well as a variety of technical programmes.

Minimising franchising risks

We can develop requirements for franchise competitions, including comparator reviews, research analysis, financial modelling, and bid evaluation.

Utilising our cross industry expertise

For new equipment and systems, we've helped define requirements and safety cases to safely and effectively deploy these into the network. We work both nationally and internationally, and have supported the Rail Safety and Standards Board (RSSB) in the UK, and Australia's Rail Industry Safety and Standards Board (RISSB).

Adding value to the rail industry

Rail Safety and Standards Board (RSSB)

Our work on whole-system reliability for RSSB, looking at rolling stock, infrastructure and operations, was referenced by the McNulty Report in the UK.

Network Rail/Digital Railway

Frazer-Nash delivers wide ranging safety support to Network Rail's electrification programme. For example, we have developed a safety strategy to support the introduction of Integrated Protection and Control (IPC). This safety strategy outlines the activities that need to be undertaken in order to deliver generic safety cases for the IEC 61850-based IPC and rationalised arrangements.

Future Railway

We supported the radical train competition, run by the rail industry's Enabling Innovation Team (EIT/Future Railway), with technical evaluation and process support. Frazer-Nash assisted in shortlisting the entries, through a process which evaluated delivery challenge, cost, export potential, technology maturity and contribution to raising the profile of innovation in UK rail.

Depot operators

We were commissioned to review the proposed layout of a rail depot, to determine whether the design was sufficiently resilient to receiving disrupted trains coming in, and yet to still deliver trains back out onto the network without impacting upon the operator's ability to meet their scheduled time plan.

Bombardier

Frazer-Nash helped develop Bombardier's award-winning Train Zero – the testing facility which will be used for the new fleet of Crossrail trains. This state-of-the-art facility will help make the next generation of rolling stock safer, more reliable and improve performance, providing rail passengers with a significantly improved service.

Our areas of expertise

- Structural design and analysis (crashworthiness)
- Mechanical, programmable, electronic and electrical systems design and analysis
- Vehicle aerodynamics, fire and smoke analysis
- Systems engineering (requirements, compliance)
- Safety engineering including hazard identification and safety case development
- Cyber security and safety
- Reliability, availability and maintainability
- Environmental engineering
- Concept design and innovation
- Engineering project management
- Maintenance planning and optimisation
- Whole-life costing
- Technical and safety auditing (ISA and CSM assessment body)
- Risk management
- Bespoke software development
- Franchise bidding, technical and economic appraisal and modelling
- Accident, fire, incident and near miss investigations
- Design assurance including governance and auditing
- ERTMS, ETCS, train control and signalling
- Common safety method on risk evaluation and assessment (CSM-REA)
- Electrification control to IEC 61850
- Simulation and modelling
- New train specification
- Life cycle management
- Method development and research

“*Frazer-Nash is RISQS approved in more than 100 categories and is currently supporting the delivery of a variety of rail infrastructure projects, including the implementation of the Digital Railway, European Rail Traffic Management System (ERTMS), traffic management and the electrification of the rail network.*”



To find out more about our work
and how we can add value to your
business, email rail@fnc.co.uk
or visit our website:

www.fnc.co.uk/rail