

 **Rail Supply Group**

Fast Track to the Future

A strategy for productivity and growth in the UK rail supply chain



February 2016



Contents

Forewords	5 - 7
Executive Summary	9 - 10
Vision	11
 Strategic Context	13 - 22
 Creating Market Conditions for Growth	23 - 34
 Accelerating Uptake of Innovation	35 - 50
 Investing in People and Skills	51 - 66
 Growing Exports and Inward Investment	67 - 74
Implementation Plan	75 - 79
Acknowledgements	80



Foreword

Connectivity and productivity go hand in hand. That is why, as the Secretary of State for Transport; and the Secretary of State for Business, Innovation and Skills, we welcome the Rail Supply Group's Sector Strategy.

Britain's railway is benefiting from the largest investment programme since the Victorian era spanning both the existing network and new High Speed routes. Our investment will help to bind together the economies of Scotland, Wales and England; fuel the growth of the Northern Powerhouse and Midlands Engine; and maintain London's position as a leading global city and financial centre.

Delivering this world-class railway requires a strong and efficient supply chain which is why this strategy from the Rail Supply Group is so important. It sets out the industry's plans for improving productivity, for encouraging and capitalising on innovation and for promoting collaboration right across the supply chain.

The Rail Supply Group has rightly recognised the importance of investing in people, including through apprenticeships, so we have the highly skilled, customer-focussed workforce needed to deliver our rail investment plans. An ongoing challenge is encouraging more young people and women to choose rail as a career of first choice. Rail offers a fantastic variety of roles and is rapidly adopting high-tech, digital technologies but is rarely seen as a career of choice. All of us, whether in government or industry, have a role to play in changing perceptions of this thriving and dynamic industry.

The global rail market is growing rapidly with the total market forecast to be £128 billion a year over the period 2017 to 2019. This presents a huge opportunity for UK-based companies to export more goods and services. So we fully support the Rail Supply Group's ambitions to increase the trading capability of the UK supply chain and double export volumes by 2025.

We look forward to working with the Rail Supply Group and playing our part in delivering this important strategy.



Rt Hon Patrick McLoughlin MP
Secretary of State for Transport
Co-Chair of the Rail Supply Group



Rt Hon Sajid Javid MP
Secretary of State for Business,
Innovation and Skills
Co-Chair of the Rail Supply Group

Rail Supply Group Council



We extend our thanks to the following for their contribution to the establishment of RSG and the production of this strategy.



Foreword from the Industry Chair of the Rail Supply Group

I am pleased to introduce this strategy on behalf of the Rail Supply Group. RSG is a Council representing diverse stakeholders embracing the best of our international companies, SMEs and clients as we work in partnership with government. This broad base of support gives us a good view of the industry's concerns and priorities. More than anything else these companies are ambitious and understand our need to grow.

We want to be a part of rail's success in a way possibly unimaginable only a decade ago. Our first powerful statement of this vision last year prompted serious engagement right across the industry and set us on the path to this, the rail supply sector's first ever comprehensive strategy.

This sector has plenty of ambition - we share the Government's goal of making the UK a global railway leader. The RSG must now provide a strong, single leadership voice for rail supply businesses to make that ambition a reality, and we are working in partnership with the Rail Delivery Group to champion the entire rail industry. A successful railway must deliver for its passenger and freight customers, benefiting the UK economy.

We are proud of our achievements to date. Working together we have established two schemes, Open Doors and Rail Mentoring, which support SMEs in gaining access to international companies and provide mentoring opportunities. We have also collaborated with UKTI to attract interest from around the world and we look forward to working further with the Government on our export priorities to make the most of UK strengths in engineering services and to grow manufacturing capability.

We know we must do more to improve the way we work if we are to transform our industry. Business needs diversity - it allows us to challenge ourselves and see where we come up short. Women are still greatly underrepresented amongst rail suppliers and we are committed to addressing this.

I welcome the endorsement and support of both Secretaries of State for our strategy and for the challenges they have set us. We need that support and those challenges to drive this exciting agenda. Delivering the initiatives set out in this strategy will require the whole sector to work together and to collaborate effectively to turn our shared ambition into reality. We are looking ahead to the next ten years and beyond and we will maintain our momentum to continue the advances this strategy represents.

I am also pleased to introduce as part of this strategy the RSG's Productivity Pledge - we as a sector are pledging to deliver:

- A strategic approach to **procurement and planning**;
- A clear plan to drive world-class **UK technologies**;
- A coherent **skills plan** to attract the best talent and increase productivity;
- A comprehensive package of support for **SMEs**;
- A fresh, co-ordinated approach to increase **exports and inward investment**.

This strategy sets out our sector's long-term commitment to increase our manufacturing and innovation capability to enhance productivity, skills and employment to support UK economic growth. I look forward to making our ambitions a reality in the coming months and years.



Terence Watson
President, Alstom UK
Industry Chair of the Rail Supply Group



“The UK rail supply chain is key to our economy beyond the critical contribution it makes directly to Britain’s railway. We are therefore pleased to be working with RSG both to help its work in support of the UK rail supply chain and to improve supply chain input to RDG work on the future of our railway.”



Paul Plummer, Chief Executive of the Rail Delivery Group and the Association of Train Operating Companies (ATOC)

Executive Summary

The UK rail supply sector is determined to develop its capability as a global leader in the next decade, serving a competitive railway with unprecedented levels of domestic and global investment. This strategy sets out how we will get there.

Over the last two decades, the UK railway has continued its strong growth and delivered significant benefits to the UK economy. The number of passenger journeys across the mainline, underground and light rail networks has more than doubled over the past 20 years to around 3.2 billion a year, while the volume of freight moved by rail has increased by 70%. In delivering this, the UK railway increases the productive potential of the economy by £11.3 billion, reduces CO₂ emissions and is the safest railway network in Europe.

Efficient and effective rail transportation for both passengers and freight is an essential requirement for a productive, world-leading economy in the twenty first century.¹ Modern rail systems – whether high speed, conventional, freight, metro or light rail – are essential to unlock economic growth and new jobs, as well as connecting communities and enabling them to develop and grow. Our towns and cities in Scotland, Wales, Northern Ireland and across England require more trains with greater capacity, reliability and efficiency to support and enable economic growth along with the wider social and environmental benefits that modern rail systems bring.

This value to the UK economy is reflected in the **greatest investment in over a century** with a total commitment of £88 billion in the domestic rail infrastructure pipeline.²

The Government's commitment to HS2, a project whose ambitious scope and demanding requirements have the potential to catalyse a step change in the UK rail industry, is further evidence of the UK's commitment to the future of rail as a driving force for sustainable growth.

RSG welcomes this investment and recognises the vital role the UK rail supply sector has to play in maximising the economic return of the railway to the UK economy. The railway of the future, built on ambitious public projects such as HS2 and Crossrail, can only reach its potential if it is supported by an innovative and responsive supply chain. We have a once-in-a-lifetime opportunity to rejuvenate that supply chain to be more competitive, productive and sustainable, and we need to work in partnership with government to do this effectively. Through collaboration between business, government and in unison with our partner organisation the Rail Delivery Group (RDG), RSG can fully realise this value.

¹ Fixing the foundations: creating a more prosperous nation, HM Treasury, July 2015

² National Infrastructure Pipeline 2015, HM Treasury, July 2015

This is our plan to enable the long-term growth of the UK rail supply sector over the next decade. It is a **plan to grow manufacturing capacity and productivity to exceed the needs of our customers³ and clients⁴, and to capitalise on export opportunities**. We have focused on four critical areas that the sector must address strategically:

Creating the market conditions for growth to give greater stability and confidence through improved planning and procurement. We need greater and more reliable visibility of planned investments from government and customers, which will allow suppliers to increase their own investment in long-term production infrastructure and training, and to nurture the UK supply chain.

Accelerating the uptake of innovation by providing greater confidence to invest in order to develop new products and services. We will work with customers to develop an environment in which innovation can flourish and prioritise five key areas of technology where the UK has the potential to be a world leader: Advanced Control; Energy Management; High Value Rolling Stock Systems; Whole Life Asset Optimisation and Through Life Management; and, Customer Experience. Supporting suppliers of all sizes to innovate will unleash the potential of the sector to transform rail technology and innovation in the UK.

Investing in people and skills to generate more opportunities for our UK companies and strengthen the economy. We will raise the profile of the industry to help attract 20,000 new apprentices, working with the sector's dedicated unions to ensure they develop in a productive environment. Acting together, the rail supply sector will develop training incentives and quality training facilities that will foster an outstanding workforce to meet the demands of an ambitious and evolving railway.

More than doubling exports and increasing inward investment to unlock new opportunities at home and overseas and grow UK manufacturing. We will provide a single voice for the rail supply sector with whom government can establish priorities, and deliver a strategy that will strengthen import substitution and increase UK capability to bid for progressively larger international projects.

This is the rail supply sector's ambitious target: to become ever more efficient, while delivering real benefits for passengers, freight movers, clients and the UK economy.

By working closely with government we can achieve this goal. Nation-changing projects such as HS2, Transport Scotland funding for Scotland's railway as well as further essential investment and support for London, our Northern Powerhouse and Midlands Engine for Growth are helping to reinvigorate the rail supply chain. In response rail suppliers are opening manufacturing centres across the UK and the supply chain is working together to fund joint ventures such as the National Training Academy for Rail (NTAR) for its mutual gain.

The time for action is now. The prize is huge. The world rail market is forecast to grow at 2.7% pa over the coming few years, with the total potential market forecast to be £128 billion per year from 2017⁵.

We must seize these opportunities to create confidence in the market, stimulate innovation and rejuvenate our workforce if we are to maintain competitive costs and a viable balance of imports and exports. Most importantly, we must embrace the opportunity to develop a vital pillar of a sustainable manufacturing base to support balanced growth in UK plc in the long-term.

³ Throughout this document the term 'customer' means: Transport for London, Network Rail, HS2, train and freight operators

⁴ Throughout this document the term 'client' means: Central, devolved or regional government

⁵ Rail World Market Study - forecast 2014 to 2019, UNIFE, 2014 (based on €176 billion)

1. Vision



- 1.1. Our goals are clear and we remain committed to the vision set out in Fast Track for Growth in 2015.⁶ By 2025, the rail supply industry will:
 - More than double **export** volumes and values;
 - Attract the very best UK talent to create a sustainable **skills** base and to develop new **technologies**;
 - Harness the energy, drive and innovation of **SMEs** to meet the needs of the global railway market;
 - Be a global leader in **High Speed Rail**;
 - Have an entrepreneurial supply chain that constantly **innovates** to meet customer needs.
- 1.2. The UK railway has seen unprecedented growth over the last two decades. It currently provides more than 3 billion passenger journeys⁷ and moves 22 billion tonne kilometres of freight per year: relieving congestion on our roads; improving people's opportunities to work; and, unlocking new areas for economic development.⁸
- 1.3 RSG shares a vision of a railway that builds on this growth to cultivate a sector which leads the way in rail technology, rail services and rail skills. It is a vision of an industry that is passenger focused and technology driven; that maximises the utilisation of its assets and constantly improves its capabilities, while enabling fast and efficient movement of freight.
- 1.4 This progressive new railway requires a strong UK-based rail supply chain that spans a vast range of manufacturing and services and is capable of supporting the UK Government's plan to improve productivity. We must and do aspire to be consistently world-class across the whole supply chain, enabling the industry to develop itself with new skills, innovation and technology.
- 1.5. In short, we will have radically transformed the supply industry making the **UK a global leader in rail**.

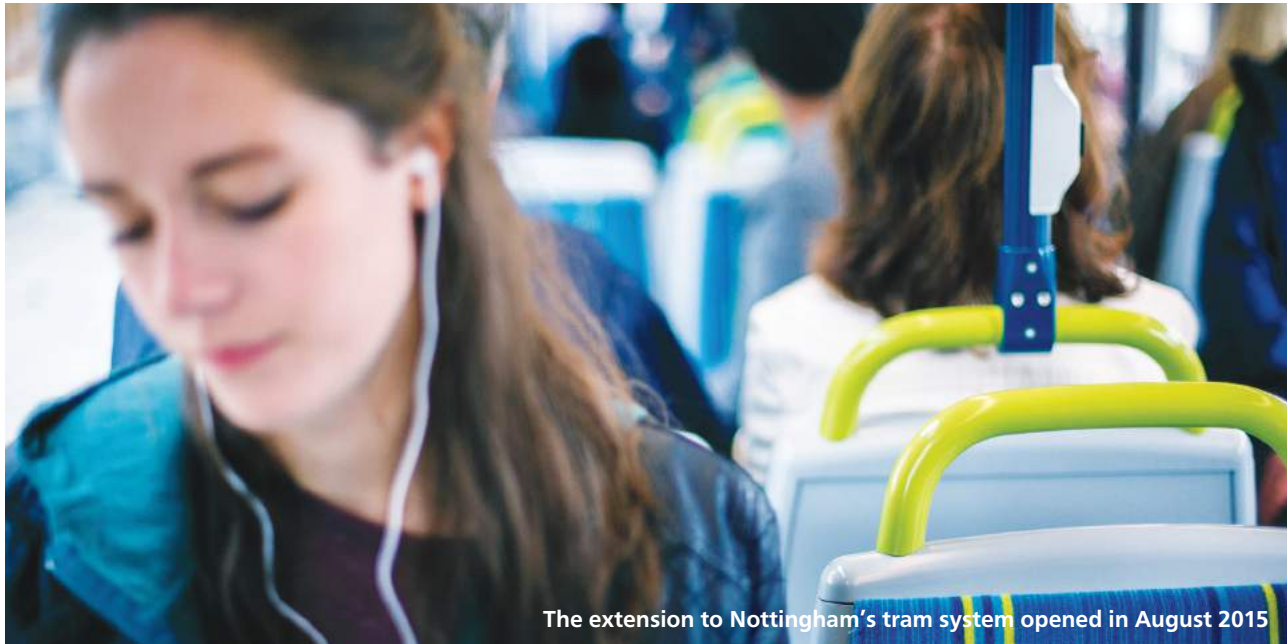
⁶ Fast Track for Growth, Rail Supply Group, January 2015

⁷ 3.2 billion passenger journeys were made in total across the national rail network (1.7 billion), the light rail network (0.24 billion) and London Underground (1.3 billion)

⁸ Passenger Rail Usage 2014-15 Quarter 4 Statistical Release, Office of Rail and Road, June 2015; Facts and Figures, Transport for London, July 2015; Light rail and tram statistics: England 2014/15, Department for Transport, June 2015

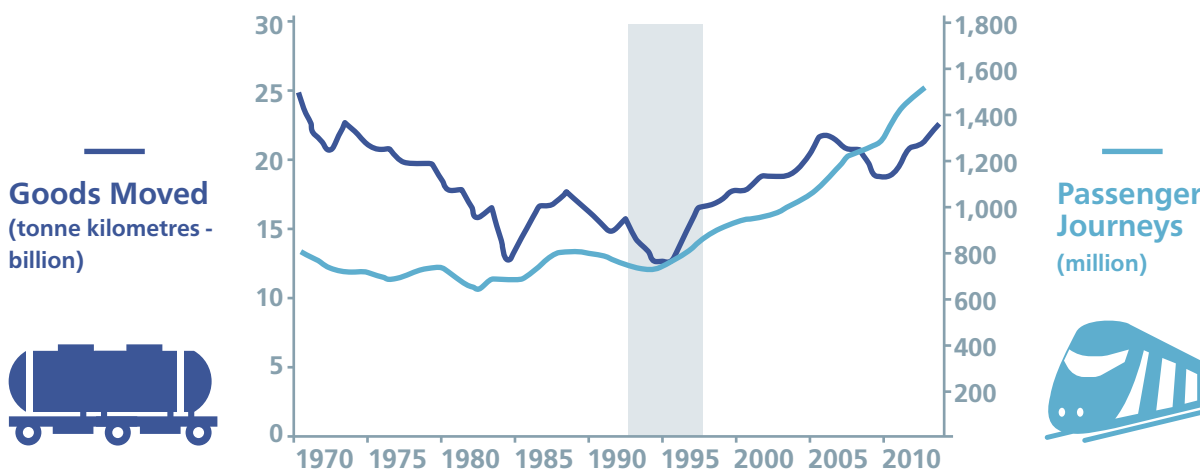


2. Strategic Context



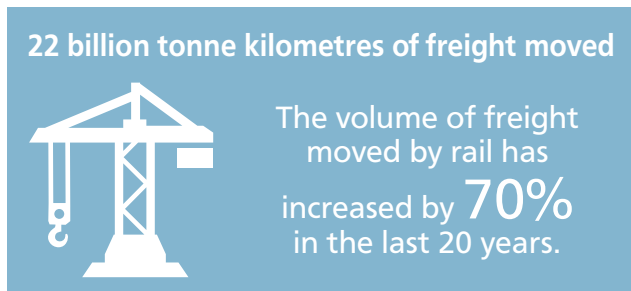
2.1. The UK rail sector has had great success over the last two decades. There has been a huge growth in passenger journeys and rail freight and the Government and private investors have embraced this with massive investment to develop the railway.

Mainline passenger rail journeys and rail freight in Great Britain



Note: The shaded area indicates the period of industry transition as a result of the change in the industry model.
Source: RDG, data from ORR.

2.2. There is strong evidence of rail's growing popularity and importance to the UK economy:



#1 UK Rail is the **safest railway network in Europe** to travel on and ranks in the **top three European countries for workforce safety**, although the sector recognises that there is still a significant opportunity to improve.



The mainline passenger network generates

£9.5 billion a year,

which is now enough to cover its day-to-day operating costs, attracting the attention of other EU countries.

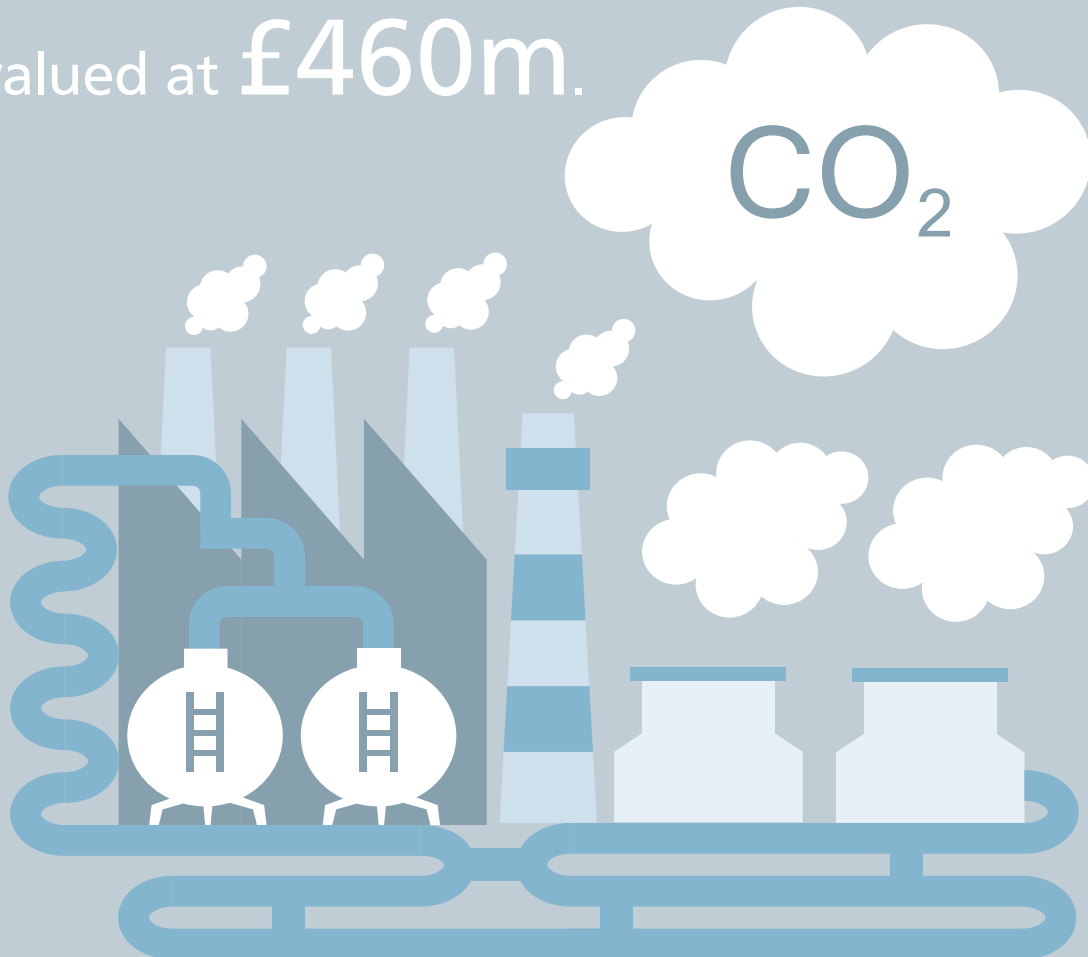
The mainline network is estimated to provide **passenger and freight user benefits** of up to

£14.3 billion a year and enhance the productive potential of the economy by up to

£11.3 billion a year.



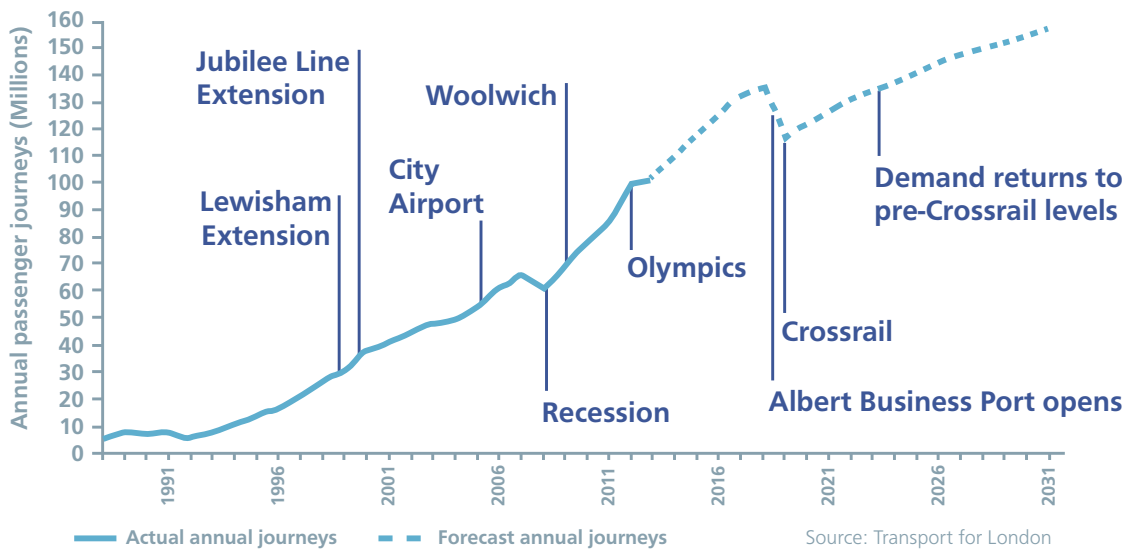
Rail reduces CO₂ emissions by up to **7.7m tonnes** a year, valued at **£460m**.



In FY2014/15 **carbon emissions per rail passenger kilometre** fell by over 21% compared to FY2005/06.

- 2.3. A modern railway with improved connectivity is essential to unlocking economic growth in industries that depend on transport interconnectivity, from tourism to advanced manufacturing. To become engines of sustained growth, providing long-term stability for our workforce and building strong community cohesion, our great towns and cities need a railway that connects more people and goods to more places, with reduced end-to-end journey times. London and the South East need more rail capacity to sustain the region’s already strong growth. With future numbers of passengers and freight only expected to increase, an inability to meet demand will restrict economic growth.
- 2.4. Similarly, rail links within cities are vital to power urban growth, such as the Docklands Light Railway and Manchester’s Metrolink, which have transformed the Canary Wharf and Salford Quay areas of their respective cities. Light rail usage continues to rise with a record 240 million passenger journeys in England alone in 2015, while more than 1.25 billion journeys are made on the London Underground a year.

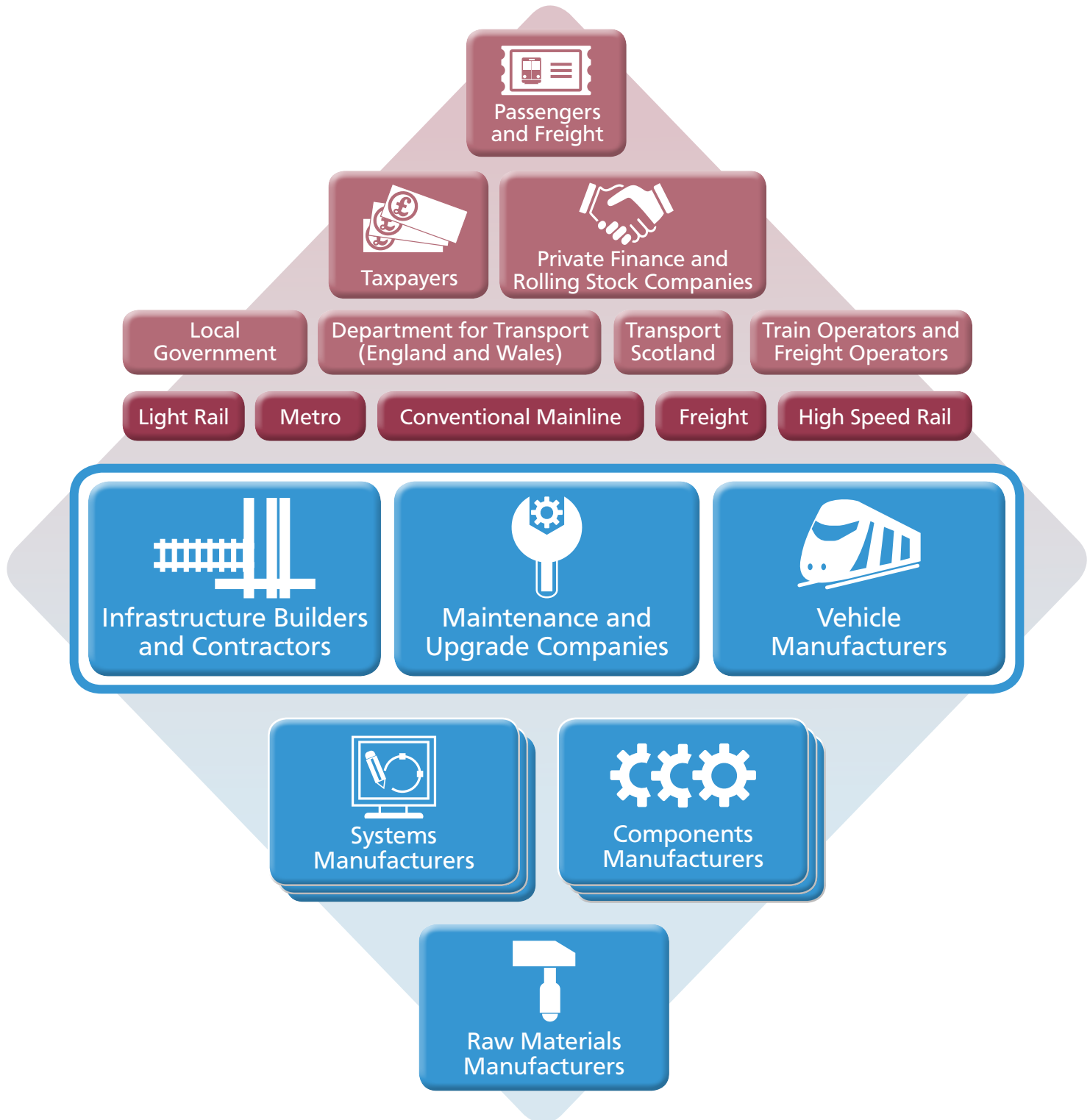
Light rail: growth on Docklands Light Railway



- 2.5. The Government has recognised the value and importance of rail transport and is investing over £38 billion to continue the mainline railway’s success story. Overall, a total commitment of £88 billion in the rail infrastructure pipeline, including major projects such as HS2 and on London Underground, constitutes the greatest investment in the sector in over a century.⁹ This ambitious investment programme will deliver a set of key objectives:
- Increase rail capacity, particularly into major cities;
 - Reduce journey times;
 - Strengthen connectivity;
 - Improve reliability, safety and the passenger experience.

⁹ National Infrastructure Pipeline 2015, HM Treasury, July 2015

The shape of the UK railway



Universities and Research Centres

The UK is home to some of the best universities and research centres in the world which support innovation for clients, customers and suppliers at every level.



Professional and Support Services

Experts with world-class capabilities in many areas of consultancy and professional support services, perform vital work across the whole supply chain.

Challenges

- 2.6. The challenges for the rail supply chain in taking this new investment forward must be seen against the backdrop of a rapidly changing global landscape. The rail sector must work collaboratively with government and a range of other industries to embrace these global megatrends.



Productivity puzzle

Productivity reflects our ability to produce more output by better combining inputs. G7 annual productivity growth has more than **halved** since 2007, from **1.9% to 0.9%** following the financial crisis in 2008.



Pressure on global emissions

Rising CO₂ levels put increasing pressure on us all to reduce emissions. The UK has committed to reducing carbon emissions by **80%** on 1990 levels by 2050.



Economic growth in developing markets

UK industry can benefit from a resurgent global economy, with particularly good growth in the Global South. The Asia-Pacific rail market will be worth more than **£37 billion** a year during 2017 to 2019.



Ageing population

An ageing population will affect priorities across society and the economy, including transport. This means more emphasis on security, reliability and tailored access to transport. **24%** of UK citizens will be 65 and over by 2050, up from 17% in 2011.



Urbanisation

With more people living in cities in the UK and internationally, there is an ever greater need for efficient transport solutions.

66% of the world's population will live in urban areas by 2050, up from 54% in 2014.



Accelerating improvements in technology

Disruptive technologies in rail and other transport sectors have the potential to transform or threaten the rail sector.

70% of Londoners regularly use smart phone travel applications.

- 2.7. There are significant opportunities for the UK rail supply chain at home and abroad in the coming decade, but a number of challenges will need to be overcome in order to deliver consistent success:



Market conditions

- Limited collaboration between customers, tier 1/2 suppliers and SMEs
- 'Single voice' leadership in the industry could be stronger
- Uncertainty: limited forward visibility of demand
- Peaks and troughs in demand and a lack of collaborative procurement strategies
- Barriers associated with company standards, understanding of needs, and product approval



Innovation

- Limited investment in UK rail R&D
- Time consuming product approval process
- Risk aversion in bringing innovations to market
- High barriers to entry
- Insufficient UK simulation, validation and testing capacity



People and skills

- Growing skills gap and growing demands
- Ageing workforce and changing skills requirements
- Difficulties in attracting talent and poor gender diversity
- Limited training resources and shortage of trainers and lecturers
- Uncoordinated range of skills initiatives fragmenting effort
- Lack of a joined-up approach across sub-sectors



Growing exports and inward investment

- High value consultancy not being leveraged for the benefit of UK supply companies
- Investment decisions by large suppliers may not be made in the UK
- Lack of UK-based turnkey supply offerings to overseas customers
- Poor quality industry data

- 2.8. Failure to address these challenges would mean significant setbacks to productivity targets, further dependence on overseas suppliers and an increase in imported skills and technology.

The role of the supply chain

2.9. A stronger UK rail supply chain will be needed to meet these challenges. However, we start from a promising baseline:

Workforce

- Our supply chain directly employs at least 124,000 people throughout the country and generates £3.8 billion of gross value added (GVA) a year.¹⁰
- This workforce generates an estimated annual turnover of £7 billion¹¹ nationwide.
- We have world-class capabilities in areas such as: civil engineering design; modelling vehicle dynamics and aerodynamics; and Building Information Modelling (BIM).

Regional impact

- Every year Transport for London's (TfL) capital investment in rail is £1.8 billion excluding Crossrail. The entire TfL and Crossrail supply chain supported 60,000 jobs based outside London in FY2014/15, with 60% of spend with firms outside the capital. In the Midlands this has sustained at least 18,000 jobs over the last three years, and in the North of England, at least 7,500. This has supported the creation of over 5,500 apprenticeships over the past five years.¹²
- 18% of Network Rail spend went to suppliers based in the North of England in FY2012/13, and 19% to the Midlands.¹³
- We have strong, regional clusters. The East Midlands is reportedly home to one of the largest rail clusters in the world and Derby has the highest concentration of rail employment in Europe,¹⁴ while strong development in the Northern Powerhouse is supported by representative bodies and regional groups, such as the North West Rail Industry Leaders Group and Transport for the North.

Future projects and investment in the supply chain

- Projects such as Crossrail, Thameslink, the Intercity Express Programme and New Tube for London will generate more than £40 billion of work,¹⁵ creating thousands more jobs. Building Crossrail 2 alone would support 60,000 full time jobs across the UK.
- Constructing HS2 is expected to create 24,600 jobs and support over 100,000 jobs in total (70% of which will be outside London) and include at least 2,000 apprenticeships.
- These ambitious projects, and those associated with delivering the Digital Railway, will generate exportable capability that will be in demand for decades.

¹⁰ What is the contribution of rail to the UK economy?, RDG, September 2015

¹¹ Route mapping capability for GB and international rail markets, Future Railway, October 2013

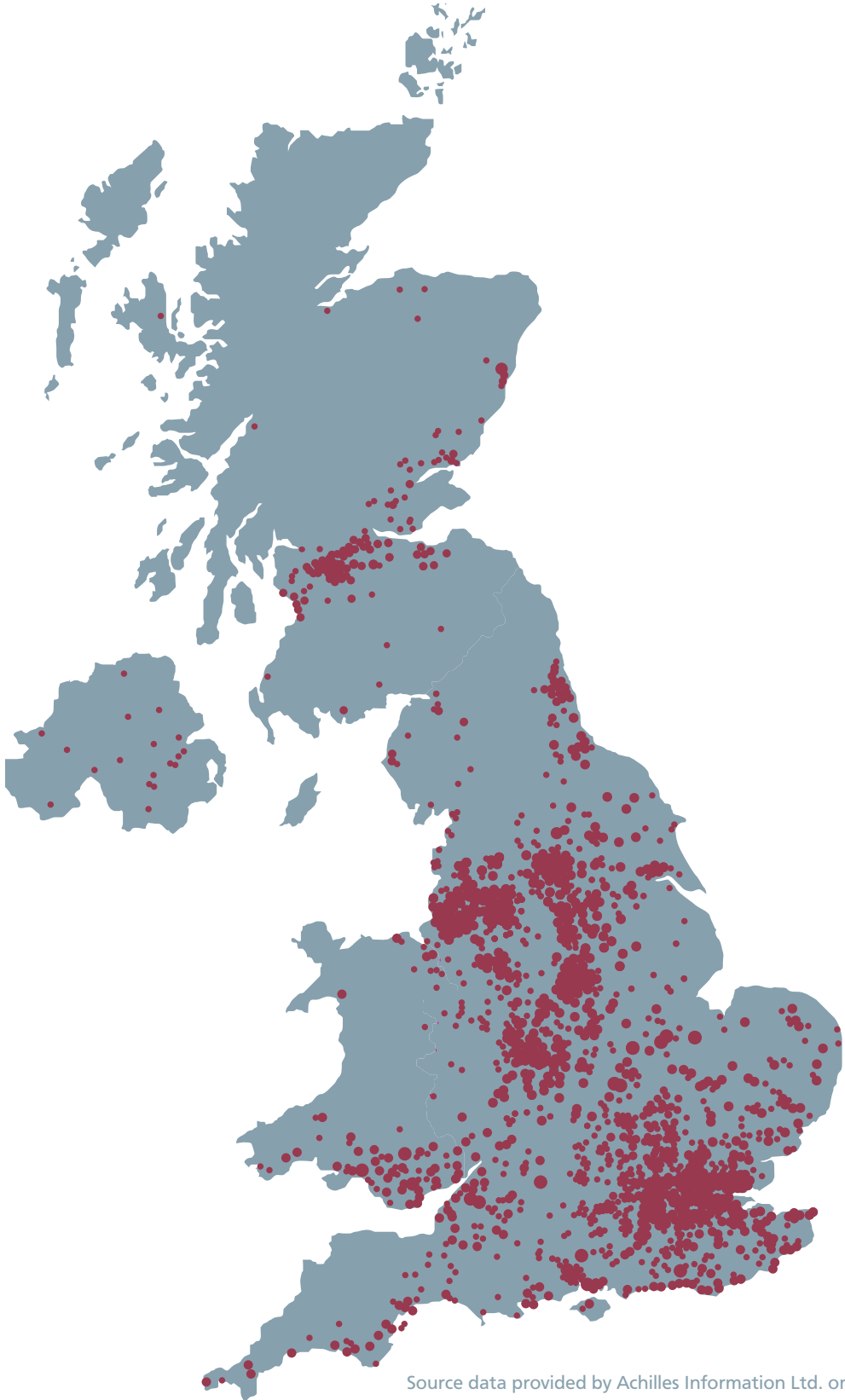
¹² Powering productivity and jobs, Transport for London, 2015; Business Plan 2014, Transport for London, December 2014

¹³ The Economic Benefits of Rail Investment, Network Rail, July 2013

¹⁴ Planes, Trains and Automobiles Research, URS, December 2009

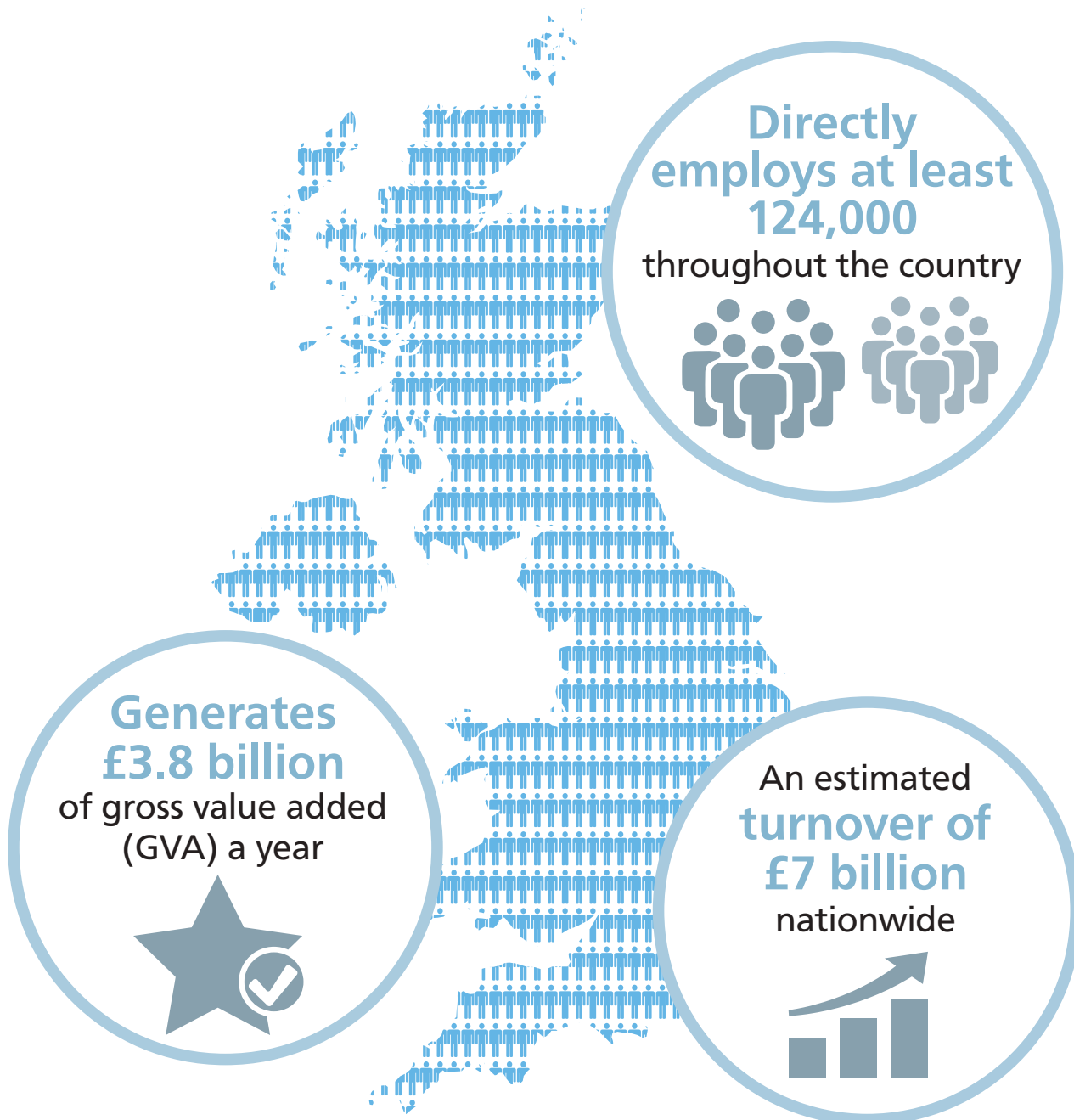
¹⁵ The agreed funding envelope for the entire Crossrail programme is £14.8 billion; the budget of the Thameslink programme is £3.6 billion; rolling stock for the Intercity Express Programme cost £5.7 billion; New Tube for London has allocated £16.4 billion for its completion by FY2035/36

Geographical spread of the 4,000+ UK suppliers qualified through the RISQS scheme to supply the rail sector



This map shows only suppliers who are qualified under the Rail Industry Supplier Qualification Scheme (RISQS). While this represents a significant proportion of suppliers, it does not show all suppliers. Other supplier assurance schemes are used.

Our supply chain:



- 2.10. The UK rail supply chain is now in a unique position with over 20 years' experience in a competitive market. It is already recognised as world leading in some areas of rail supply and is considered a strong investment opportunity.
- 2.11. But there is further to go. The UK rail sector has the potential to support the step change in productivity that the country needs. We need to create the conditions in the market that encourage suppliers to invest in people and innovation. This will develop our capability, enabling exports and attracting inward investment. This is the underlying rationale for our approach in this strategy.

3. Creating Market Conditions For Growth



Rail suppliers need a strategic approach to procurement and planning that creates greater market confidence to provide a sustained boost to UK capability



- 3.1. RSG will collaborate with government and our customers to help the supply chain thrive by creating market conditions that:
- Give suppliers **confidence to invest** in the people and innovation to succeed;
 - Improve **collaboration** throughout the supply chain, as well as with government, to enable resources to be optimised to meet the needs of suppliers and customers;
 - Drive **performance** by improving the quality and efficiency of production.

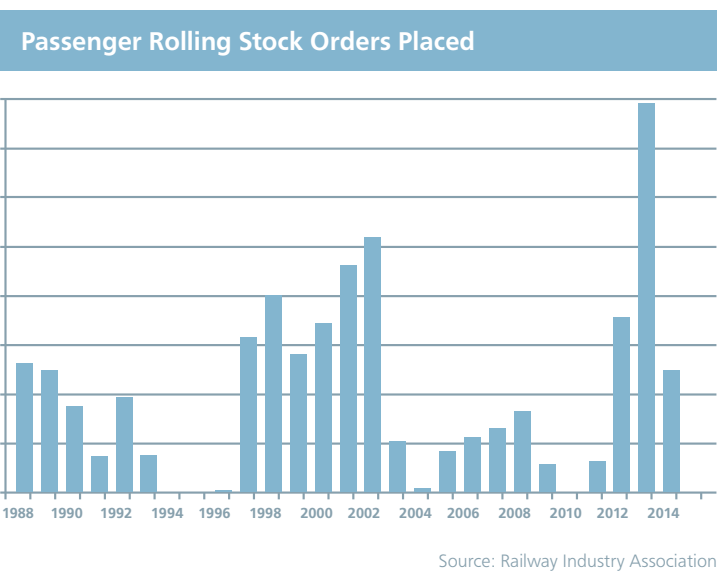
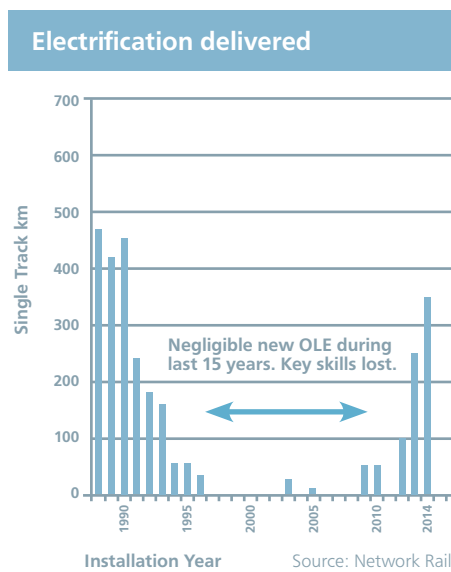
The Challenges

- 3.2. While every market experiences fluctuating demand and barriers to entry, the experience in the rail supply sector can be extreme. A limited number of large projects, commissioned for a fixed term by a few large customers restrains investment in supply chain capability. Alleviating this situation would bring significant benefits to productivity and would support a sustainable onshore manufacturing base in the UK.
- 3.3. Customers and suppliers would see long-term benefits from greater certainty of demand. Volatile and unpredictable demand profiles in rail, characterised by particularly low troughs (see below), affects the stability of the core workforce, consistency of manufacture, and efficiency of production. This results in unnecessary costs to customers and government. For example, TfL has stated that stop-start funding adds approximately 15% to their costs¹⁶, while the Railway Industry Association has estimated 20% in the case of UK mainline rolling stock¹⁷.

Public Procurement

- **13%** of OECD countries' GDP is spent on public procurement.
- Rising to **19%** for EU countries.
- More than **€400 billion** is spent on public procurement annually in the EU.

The challenge of feast and famine



- 3.4. Where projects are available, it is essential that firms of all sizes have access to affordable finance in order to remain competitive - British firms are too often unable to obtain competitive finance, resulting in lost orders and missed opportunities for growth. Complexities in the sector, such as the interdependencies between rolling stock and fixed infrastructure, make it difficult for lenders to understand risk and hence lend cheaply, stifling investment. As shown by the experience of other industrial strategies, increased engagement and knowledge sharing with the financial sector can increase the availability and competition in financial products available to firms, reducing the cost of lending and supporting investment.

¹⁶ Powering productivity and jobs, Transport for London, 2015

¹⁷ Cost Impacts of Demand Volatility, Railway Industry Association submission to Rail Value for Money review, September 2011

- 3.5. The rail supply sector must encourage the adoption of principles and behaviours that enhance transparency and continuous improvement. This is core to boosting productivity and achieving sustainable solutions across our sector. Sector-wide supply chain excellence initiatives have benefited a number of other UK industrial sectors, including automotive and aerospace. The rail supply sector will benefit hugely from a similar approach.



- 3.6. Engagement with SMEs specifically will provide valuable dividends. SMEs can drive innovation, often having greater agility than larger firms, but they need timely payment to compensate for smaller balance sheets. Late payments can be a 'life or death' issue for small suppliers, to the significant detriment of the supply chain. The Government's Small Business Commissioner will provide welcome advocacy for these key businesses but there is much that the rail supply sector must do itself to support our SMEs. Trust and confidence have to be at the heart of supply chain relationships, along with a need to share risk and rewards in appropriate measure.

Realising the Ambition

- 3.7. Competition drives supply chain companies to improve their own productivity and growth prospects. However, for the sector as a whole to maximise productivity a coordinated effort is required to catalyse improvements in how the supply chain collaborates with both customers and government.
- 3.8. There are huge opportunities for government and industry to work together to create stability and growth. Government is the main customer for much of the UK passenger railway. It sets the strategic direction, provides funding and delivers significant procurement initiatives in key projects and franchises.
- 3.9. It is vital that rail business across the UK is enabled to excel in a modern, interconnected supply chain. Successes in the Northern Powerhouse and Midlands Engine for Growth will continue to be encouraged and supported through the national application of RSG's influence and initiatives and through continued close working with regional forums and groups.

Case Study

Leading regional development: the North West Rail Industry Leaders Group

Established by the Chambers of Commerce in Greater Manchester and the Liverpool City Region, the North West Rail Industry Leaders Group brings together businesses in the North West to develop and support the rail industry in the Northern Powerhouse. Engaging SMEs is a particular focus, but input from any individual or organisation with an interest in the rail industry and engineering is welcomed in order to make the group as relevant as possible. Like its neighbour in the East Midlands, the Rail Forum East Midlands, the Leaders Group has identified three key issues that will be the focus of its activity: skills, promotion and integration. With members including leading suppliers, operators, and research bodies, the group seeks to increase collaboration, integration and investment.



“ Our group is a unique mix of diverse organisations, each of which is vital to the rail industry in the Northern Powerhouse. By speaking with one voice we can secure better outcomes for a joined up supply chain in the region. ”

Mike Hulme, Chair, North West Rail Industry Leaders Group

- 3.10. There are a number of initiatives benefiting the supply chain to facilitate collaboration and improve access to the market for SMEs, new entrants and innovators. The rail supply sector will continue to encourage such support, to stimulate competition and productivity.

Case Studies

Facilitating collaboration and improving access to the market

Rail Sector Mentoring Scheme

Tring based iLecsys Rail is one of the early beneficiaries of the Rail Sector Mentoring Scheme. Although a successful and growing business they recognised a real benefit to being collaborative so they could create a virtual Tier 2 supply chain offering for their Fibre-Reinforced Plastic (FRP) product range. With scheme organisers the Rail Alliance, iLecsys, as system designer and integrator, have formed an alliance with Siemens and the Giffen Group as the Network Rail Principal Contractor Licence holder (Tier 2), working with a number of other OEMs including Construction Composites who manufactured an innovative new FRP location cabinet.



“ The mentoring scheme has enabled us to really optimise our efforts and has been pivotal to our success. ”

Peter Dickson, Engineering Director, iLecsys Rail

Open Doors

In May 2015 RSG launched Open Doors to develop vertical links within the supply chain. Our research found that for 88% of SMEs communicating, information and the procurement process were the major issues making it difficult to gain access to Tier 1 companies. Open Doors aims to resolve this by helping SMEs engage with the right people in the organisations of potential future customers. A range of Tier 1 companies have indicated their commitment by assigning responsibility for SME engagement to individuals within their organisations. The scheme has been received positively, and has already provided excellent contacts and opportunities for SMEs.



“ The Open Doors scheme has quickly provided me with a useful contact at Angel Trains who has already been in direct contact with me about how we can engage with them and be considered on their rolling stock projects. I am confident that the scheme will provide the same level of successful contacts at additional ROSCOs and TOCs that we are targeting which are key to driving our business forward in the UK rail sector. ”

Simon Andrews, Sales Manager, E-Leather

Case Studies

Value Improvement Programme

Since inception in 2002, over 100 workshops have been delivered as part of the Railway Industry Association’s Value Improvement Programme (VIP). Each workshop is based on an agreed industry Code of Practice and seeks to improve performance and efficiency through embedding collaborative behaviour in the supply chain.



Having been awarded a national contract for the installation of 104 footbridges at existing level crossings Kier, with its customer Network Rail and its suppliers, chose VIP as a means of improving collaboration to reduce costs through efficient delivery and process improvement with innovative and repeatable solutions. The outcomes were not only a potential 20% saving in overall cost, but reduced installation time improving productivity.



Having successfully delivered phase 1, the team are now considering composite construction, further cost savings, more installations, and reduced delivery time.

“ It’s my belief that VIP is the catalyst by which innovation in rail can become a reality. ”

Richard Turner, Rail Business Development Director, Kier

Supporting collaboration through common standards: BS11000

With some 49 top-tier rail companies from Amey through to Volker Rail already accredited, and many more pursuing accreditation to BS11000 (the world’s first national standard for collaborative business relationships) the rail supply chain is demonstrating its commitment to coordination across the sector. Many organisations, including Crossrail and other large customers, run successful programmes to implement BS11000 in their business and there is a significant level of participation in the Rail Alliance Awareness and Foundation Course across the rail supply chain.

BS11000 provides a framework in which all partners can work so that their efforts are bounded by a climate of mutual trust and an appreciation of the interdependency required to deliver the additional value that true collaboration brings.



“ Collaborative working standards offer a pragmatic and effective platform on which to grow and develop business relationships going forward. We see it as an essential business tool to achieving best practice in collaborative working. ”

Abi Broadley, Business Development Director, Aquarius Railroad Technologies

Initiatives

RSG calls for the creation of a mechanism where government, the Rail Delivery Group (RDG), industry customers and suppliers can provide the supply chain with reliable visibility of planned investments and customers with advice on phasing programmes. This would reduce the impact of the peaks and troughs in demand and align better with industry capability. The approach will be defined by the end of 2016 setting out what is required to achieve this over and above what is currently done.

- 3.11. The UK rail industry has benefited from a commercial environment and RSG wants to use this platform to help government and industry customers deliver the investment programme more efficiently. Key to this is a long-term strategic plan for the whole rail sector that the private industry can deliver against.
- 3.12. We welcome the establishment of the National Infrastructure Commission and the longer-term planning that is now happening within the sector. The National Infrastructure Plan; the Department for Transport's (DfT) publication of the franchise timetable; RDG led improvements to the Long-Term Planning Process; and, RDG's Long-Term Passenger Rolling Stock Strategy all provide a solid foundation for addressing the issues we have identified. RSG will work with key partners including the DfT's Construction and Infrastructure Group, the Department for Business Innovation and Skills, Welsh and Scottish Governments, the Office of Rail and Road and RDG to build on this to develop a long-term productivity plan that will:
 - Set out future demand so suppliers can understand future opportunities and invest accordingly in people, innovation, facilities and equipment;
 - Give customers greater assurance that their investment plans will be delivered on time and to budget;
 - Provide a reliable forecast over the next 10 to 15 years and set out aspirations for beyond that;
 - Encourage suppliers to work with customers, including train operators, to support investment in infrastructure, trains and stations across the whole of the UK market to make best use of supplier capability and balance sheets;
 - Minimise peaks and troughs, ensuring:
 - The supply chain has the capacity to meet demand;
 - Skills shortages are minimised and their impacts mitigated;
 - Subsequent projects can learn best practice from earlier ones;
 - Capital costs of plant are minimised;
 - Utilisation of test facilities is optimised.

Case Study

Network Rail - Working with stakeholders to invest in the future

Network Rail has transformed the way it contracts for freight and haulage to increase price competition and encourage supply chain activity.

Historically, the provision of locomotive haulage to Network Rail's large infrastructure logistics fleet was on a non-committed basis and provided by a single supplier. The delivery of materials by rail to sites is critical to successful delivery and, with an increasing spend on infrastructure, Network Rail was facing critical resource shortfalls and a lack of price competition.

Today, the industry is supported by five contracted hauliers following the introduction of new committed volume contracts where Network Rail offered guaranteed commitments for a five year period with an annual adjustment mechanism. This enabled suppliers to invest in around 50 new locomotives and over 300 additional drivers. These improvements have delivered a new and robust haulage supply chain capable of delivering higher volumes with a higher certainty of on-time completion.



RSG will work with government, RDG and industry customers to develop an improved approach to procurement. This will be defined by mid-2016 and implemented by mid-2017.

- 3.13. The approach will maximise value to the UK economy and deliver better overall value for taxpayers and farepayers. Our aim is to ensure that UK firms of all sizes win more contracts across the whole supply chain and, as a result, they are enabled to build on a sustainable manufacturing presence, providing a sustainable base for their long-term workforce and enhancing community cohesion, while improving their capabilities to increase exports.
- 3.14. Our approach will build on recent changes in EU Public Procurement rules and will:
- Ensure customers have better knowledge of the capacity and capability of UK suppliers to inform their procurement plans;
 - Provide suppliers with greater visibility of planned investments and contract requirements (for example through improved pre-procurement engagement);
 - Smooth demand for the supply chain as it follows the plan above, enabling greater coordination of customer pipelines;
 - Enable greater SME participation in future procurement exercises, which supports the Government's objective for SME share of central government procurement to increase to one third by value;
 - Evaluate costs and benefits over the whole life of the asset or service being procured;
 - Take account of broader economic, environmental and social aspects and promote sustainable development in the UK and overseas;
 - Use outcome-based specifications to encourage innovation by focusing on what is to be achieved rather than how it is to be achieved and challenging the status quo;
 - Promote investment in skills;
 - Support a healthier, more productive workforce.
- 3.15. This approach will improve productivity in the supply chain because:
- Level demand avoids bunching of invitations to tender which creates better planning, higher quality bids and fewer 'no bids' due to lack of bidding and delivery capacity. It also helps to open the market to smaller organisations that might not have the resources to bid for multiple competitions concurrently;
 - Earlier engagement with the supply chain promotes effective working relationships, provides confidence, and creates awareness of aims and objectives to promote strategic alignment and encourage new UK entrants into the market;
 - Pricing is more favourable as suppliers have greater confidence in their prospective pipelines and can invest in the development of their workforce rather than buying from the short-term labour market, as well as having an additional incentive to invest in innovation;
 - Key industry facilities for testing and trialling will be working within capacity and operating within level production principles, which the Japanese call 'heijunka'. This minimises the risk of mothballing and recommissioning and their associated costs;
 - Availability to deliver within the UK supply chain minimises the risk of substitution by imports.

- 3.16. Building on the new EU Procurement Rules, the Crown Commercial Service (CCS) is developing a balanced scorecard which allows straightforward criteria, such as cost, to be balanced against more complex criteria such as social and environmental considerations. This will enable priorities such as the creation of apprenticeships and engagement with SMEs to be built into procurement decisions.
- 3.17. In August 2015, the CCS published a procurement policy note¹⁸ setting out how contracts with a full life value of £10 million and above should be used to support skills and apprenticeships. DfT and public sector bodies (HS2, Network Rail and TfL) will reflect this requirement in all relevant future procurements.

RSG will develop options for a Rail Supplier Excellence Scheme to facilitate continuous improvement by the end of 2016 with the goal of implementation by the end of 2017.

- 3.18. Continuous and sustained improvement in supply chain delivery is core to increasing productivity in the rail supply chain; higher quality delivery leads to greater reliability for operators and passengers and less downtime of assets and rework. There are examples of good practice already, where businesses learn from their own experience and from best practice in the rest of the industry, but there is an opportunity to do this consistently across the supply chain.
- 3.19. A Rail Supplier Excellence Scheme will develop and communicate a common understanding and shared language around:
- Continuous and sustained supply chain improvement and partnership arrangements;
 - Shared and transparent supply chain key performance indicators;
 - Recognition and wider adoption of currently isolated industry schemes and initiatives that collectively can contribute to supply chain excellence;
 - Adoption of challenging industry-wide targets for supply chain excellence.
- 3.20. RSG will work with the supply chain and RDG to develop the case for the scheme by the end of 2016 and will launch a pilot by the end of 2017.



¹⁸ Procurement Policy Note – Supporting Apprenticeships and Skills Through Public Procurement, Action Note 14/15, HMG, August 2015

RSG will champion best practice in collaboration by identifying the most appropriate existing code of practice and developing it (if required) for adoption across the industry by the end of 2017.

- 3.21. RSG will champion implementation of a code of practice across the industry that sets out best practice for relationships between Tier 1s, customers and SMEs. It will build on existing good practice such as BS11000, the UK's national standard for business collaboration, while being scalable to meet the needs of a wide range of businesses. It will set out the activities and behaviours required to promote confidence in each party, minimising risk and costs.

Case Study

Collaboration in action in the supply chain: the Southampton tunnel

A technically complex gauge clearance project on the Southampton Tunnel demonstrates the value of innovative approaches and collaborative working between the customer (Network Rail) and its supply chain.

Through an early consultation process, the principal contractor Carillion, working with its subcontractor TSO, identified that the project would benefit from an approach used in the construction of the Channel Tunnel which involved pre-fabricating track panels off-site and placing them in the tunnel. Once this proposal was adopted, Carillion staff joined the Network Rail design and development team to take the work forward. Throughout the process, there was further close co-operation between an extended project team including Network Rail; the train and freight operating companies; local operators; and the design and contractor teams. As a result, the closure period for works on the tunnel was reduced to just ten days, rather than taking several weeks over two Christmas periods as was originally envisaged. The project was ultimately completed a year ahead of schedule, and with £4.5m of savings on the customer's overall project cost of c. £20m. The resulting improvement to freight services should allow for the removal of up to 50,000 lorries a year from our roads. The gauge clearance project resulted in a 6% increase in market share for the port.



RSG will work with the Small Business Commissioner to develop a solution to the problem of slow payments to small businesses to increase their confidence in making investments by mid 2017.

3.22. Network Rail and TfL have set good examples with their fair payment charters. RSG will build on these and work with the Small Business Commissioner, customers and Tier 1 companies to set out and implement principles that ensure SMEs are paid in a timely fashion.



RSG will seek ways to improve the availability and cost of finance including developing options for establishing a Rail Supply Chain Finance Forum by the end of 2016.

3.23. We will develop the appropriate model for a forum using existing finance forums such as the Automotive Joint Industry Forum and Aerospace Finance Forum. These have been successful in improving bank understanding of the sector, thereby improving their understanding of risk and reducing the cost of finance.

4. Accelerating Uptake of Innovation



A clear plan to drive UK manufacturing and technologies that are world-class, or have potential to be world-class



4.1. RSG will support the rail supply sector to:

- **Develop a successful, innovative supply chain** capable of making the UK a world leader in rail, boosting productivity and developing our export strength;
- Support customers to **integrate innovation** in their businesses and procurement;
- Drive **investment in key UK technologies** ensuring that they are world-class.

The Challenge

4.2. The future growth of our railway depends on our ability to embrace and develop new technologies across the sector. The introduction of new technologies as part of the Digital Railway such as the European Train Control System (ETCS) and Traffic Management (TM) provide opportunity to improve the capacity of our railway by up to 40% whilst also reducing its costs significantly. Making the best use of such leading-edge technology is essential to optimise UK transport for the benefit of UK passengers, freight movers and the economy. RSG recognises the need for the railway to respond as a whole to lead the way in transport innovation.

A culture of innovation

- 4.3. The UK rail supply chain faces several challenges in realising its full potential. In particular short-term investment cycles, which are derived from a disaggregated industry structure and regulatory planning processes, can restrict long-term investment in innovation.
- 4.4. This is exacerbated by the risk-averse nature of the industry and the lack of incentives to introduce innovation into projects. This is the result of a range of factors, including costs and benefits sitting under different legal entities, approaches based on short-term delivery rather than meeting ambitious outcomes, and a culture that is understandably focused on standards and safety.
- 4.5. As a result customers tend to prefer proven technology when identifying solutions to business challenges rather than driving a radical improvement in a process, service, product or business model by applying innovation. However, the challenge of meeting the demands of major infrastructure projects can provide an essential spur to innovation. For example, HS2 is expected to drive innovation because of the stretching time and cost demands that it makes of its suppliers.

Collaboration is key

- 4.6. Collaboration between customers, their suppliers and SMEs can significantly improve results, with suppliers involved earlier and more closely, resulting in real gains for both. For example, TfL's Innovative Contractor Engagement approach for the Bank Station Capacity Upgrade secured 45% more value from the project¹⁹ by ensuring appropriate incentives and rewards through the contracting framework.
- 4.7. Creating a culture of collaboration enables sustained good performance, for example through sharing information, clarity over standards and understanding of needs with space to feedback on tender activities and specifications.

The 'valley of death' or accelerating the route to market

- 4.8. Translating innovative capability into commercial solutions remains a slow and complicated process but is critical to increasing productivity and accelerating the uptake of innovation and products into the market. The challenges to commercialisation include:
 - The funding gap (often referred to as the 'valley of death') when the investment required to transform an innovation from concept to commercial viability is difficult to secure because of the risk involved;
 - Product approval procedures, which can be slow and daunting to SMEs and innovators, need to be efficient, independent, transparent and drive cost savings for customers. They must also allow the sector to keep pace with passenger expectations, technological change and the need for suppliers to achieve a return on investment;
 - Establishing clear guidelines and systems for cooperation and sharing costs and benefits where innovative products offer benefits to combinations of Network Rail, Train Operating Companies, Rolling Stock Companies and others;
 - The need for sufficient capacity and capability in testing facilities to prove new equipment. There have been commendable efforts by the sector and customers to make facilities available²⁰, but the industry requires additional capacity to drive innovation for robust export growth.²¹

¹⁹ Powering productivity and jobs, Transport for London, 2015

²⁰ Database of testing facilities compiled by the Technical Strategy Leadership Group at www.futurerailway.org

²¹ Development of recommendations and strategic outline business cases for enhanced UK rail testing and trialling facilities, report prepared by TRL on behalf of RSSB, 2015

- 4.9. Finally, ‘innovation ecosystem’ is the term used to describe the large and diverse array of participants and resources that contribute to and are necessary for ongoing innovation in a modern economy. Sustaining an innovation ecosystem means evolving, adapting, re-imagining and reinventing to create and utilise new ideas and information. This means developing innovation capabilities both at a company level and at a system level.

A strong academic base for innovation

RRUKA
RAIL RESEARCH
UK ASSOCIATION

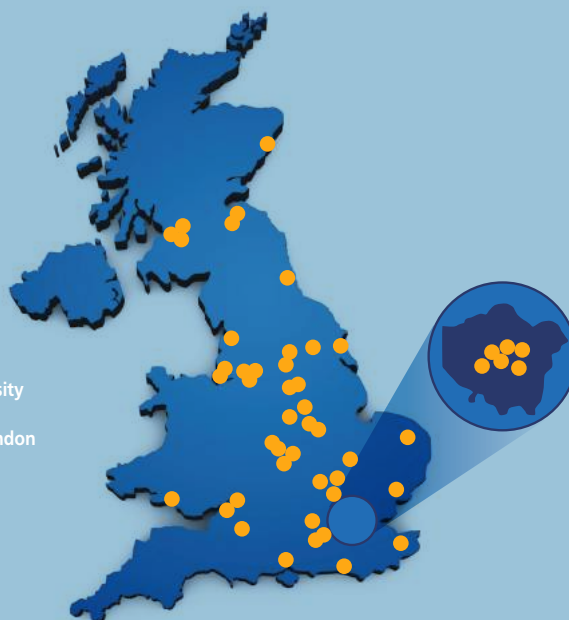
“ Tapping into the huge potential of the UK’s world-class academic research will bring benefit to the railways, to universities, to the customers of the railways and to the UK economy as a whole. ”

Rail Research UK Association’s response to the Rail Technical Strategy, 2013

RRUKA is a partnership between the railway and UK research institutions who undertake relevant R&D. Funded by RSSB and Network Rail, RRUKA was established in 2010 and builds on a recent resurgence in university-based railway research to bring together those who can use and fund research, with those who do the research.

The sector benefits from partnerships with 49 world-class research institutions throughout the UK

University of Aberdeen
Aston University
University of Bath
University of Birmingham
Brunel University
University of Cambridge
City University London
Coventry University
Cranfield University
De Montfort University
University of Derby
University of East Anglia
University of Edinburgh
University of Essex
University of Glasgow
Glasgow Caledonian University
University of Greenwich
Goldsmiths University of London
Heriot-Watt University
University of Hertfordshire
University of Huddersfield
University of Hull
Imperial College London
University of Kent
Lancaster University



University of Leeds
University of Liverpool
Liverpool John Moores University
Loughborough University
University of Manchester
Manchester Metropolitan University
Newcastle University
University of Nottingham
The Open University
Queen Mary University of London
University of Reading
University of Salford
University of Sheffield
Sheffield Hallam University
University of Strathclyde
University of Southampton
University of Surrey
University of Sussex
Swansea University
TRL
University College London
University of Warwick
University of the West of England
University of York

Case Study

HackTrain - accelerating new technology to improve the passenger experience



HackTrain is a movement driving forward innovation in the railway industry by bringing together top innovators in the Digital Economy that are interested in solving some of the biggest challenges the industry faces. The 'Hackathons' are 48-hour events that see software developers and designers collaborate for the purpose of building new technologies. Participants travel across the UK on trains building new cutting-edge software solutions. One recent event involving 40 innovators from around the world focused on customer experience problems around communication during delays, designing onboard entertainment services and developing tools to help improve operational efficiency. The 3-month 'Accelerator' programme then enables startups to work with existing rail industry suppliers as potential routes into the market. By drawing on experts from the Digital Economy, the rail industry seeks to harness their skills to deliver better services for passengers and enhance internal operations.

Realising the Ambition

- 4.10. Work is already underway to grasp the opportunity of innovation and address the challenges. The Rail Technical Strategy, published in 2012²² presents a direction for technological developments over the coming decades. It enables consistent decision-making and alignment across the sector with the vision of doubling capacity, halving carbon emissions, improving customer experience and reducing costs. It has significantly influenced similar activities across Europe, such as the Rail Technical Strategy Europe²³ and Shift²Rail, an EU-wide supply chain initiative to maintain global technological leadership.
- 4.11. In support of the Rail Technical Strategy, the Government is funding the FutureRailway programme to take technology out of the laboratory and test it in real world situations. This helps to build confidence in new approaches and support commercialisation. Innovate UK and the Transport Systems Catapult also have mechanisms for translating ideas into demonstrable, de-risked, system-level innovation projects.

Case Study

Innovation in Franchising: Residual Value Mechanism

The DfT is trialling a three-year pilot of an innovation fund for in-franchise schemes. The fund will be used to support the research and development of innovations aligned to the Rail Technical Strategy where there are demonstrable benefits to the wider railway and society, or which would not normally be commercially viable within the franchise term.

The residual value mechanism encourages long-term investment in the franchises, by compensating Train Operators for the value of an investment that will last into the next franchise.



“ More and more people want to travel by rail. That’s great news but it’s also a real challenge. So we need new ideas, new ways of thinking which is why all new DfT franchises require train operators to embed innovation. ”

Peter Wilkinson, Managing Director of Passenger Services,
Department for Transport

²² Rail Technical Strategy, RSSB on behalf of the Technical Strategy Leadership Group, December 2012

²³ Rail Technical Strategy Europe, developed and published by UIC on behalf of the member companies of the UIC European Regional Assembly, January 2014

Case Study

'Internet of Things' system for train and track monitoring is world-leading technology

Perpetuum's wireless self-powered condition monitoring systems exemplify home grown ingenuity delivering efficiencies in the UK rail industry and abroad. Developed with support from Innovate UK, the system is now offering customers and passengers benefits in terms of improved safety, improved reliability and reduced operating costs worldwide.



The heart of the system is a novel energy harvester that was originally developed by the University of Southampton, who then established Perpetuum to commercialise the technology with the help of grants from Innovate UK and the European Commission R&D programmes. The self-contained system is fitted within 20 minutes and uses energy harvested from bogie vibrations to power sensors and wireless transmitters to provide information on train and track condition over the internet. First fitted to 600 vehicles operating in South East England, the system is now being used in North America, Scandinavia and the Pacific area.



“ Support from Innovate UK, EU grants and funds from our Venture Capital investors has enabled Perpetuum to develop and commercialise this world leading technology to provide a truly innovative solution to reduce operating and maintenance costs for trains and track as well as enhancing safety. ”

Roy Freeland, President, Perpetuum

- 4.12. Building on the Rail Technical Strategy and the work of the Rail Research UK Association we have investigated the capabilities within the supply chain and the pipeline of investment opportunities within the UK and abroad (including HS2 and Digital Railway) to identify five key technology areas where the UK has the potential to be a world leader over the next 5 to 20 years.²⁴ These technology areas demonstrate where the sector expects innovation to have the greatest potential, both in the UK and abroad. RSG, in collaboration with RSSB, will further develop a road map against each of these key technology areas.
- 4.13. The benefits of strong innovation in these technologies are huge and have already been seen in rail supply. For instance, the UK is a leader in Building Information Modelling (BIM), which improves collaboration by allowing customers and suppliers to work from a single dataset in real time enabling efficiency savings and developing a consistent approach to industry standards. At a European level, digital train control and traffic management systems are beginning to transform the way railways operate, improving network capacity. RSG is committed to supporting UK firms to embrace and develop these exciting new technologies.

Case Study

Innovative Technology on Projects: Building Information Modelling at Crossrail



Building Information Modelling (BIM) is the process of generating, building and managing data through the life of a project by using model-based technologies linked to a federated database of project asset information. The successful use of BIM on the Crossrail project is allowing teams to effectively manage one million design files across 25 main design contracts, 30 advanced works contracts and over 60 logistics and main works construction contracts, all of which have an extraordinary number of interlinked interfaces. This is the largest BIM environment ever created for a European transport infrastructure project.

Crossrail hosts and manages the building information model enabling better control and coordination of information across project phases. Engineering design is carried out more effectively and efficiently through the use of 3D modelling to assist engineers in visualising complex interfaces. 4D modelling (linking 3D models to the construction schedule) is used extensively to plan and verify construction sequencing between the large numbers of stakeholders on the project. This allows issues to be identified and resolved early and before resources and materials are deployed to site.

Serving as a prime example of the importance of innovation in rail supply for the whole economy, Crossrail's success in using BIM can help to drive productivity in the wider construction industry.

²⁴ These areas have the strong foundation of existing capability coupled with growing demand at home and overseas. They can service a wide range of rail sectors, including light rail, freight, metro, mainline and high speed. A full breakdown of these priority areas and the basis of their identification can be found in 'Route mapping capability for GB and international rail markets', FutureRailway, October 2013

RSG's five key technology areas

RSG has identified five priority areas for technology innovation to continue the success of the railway. These are areas where the UK is already strong and there is potential to build further strength, as well as areas where we have good potential to develop world-class strengths in rail over the next 10-30 years, taking into account strengths in other sectors and in R&D.



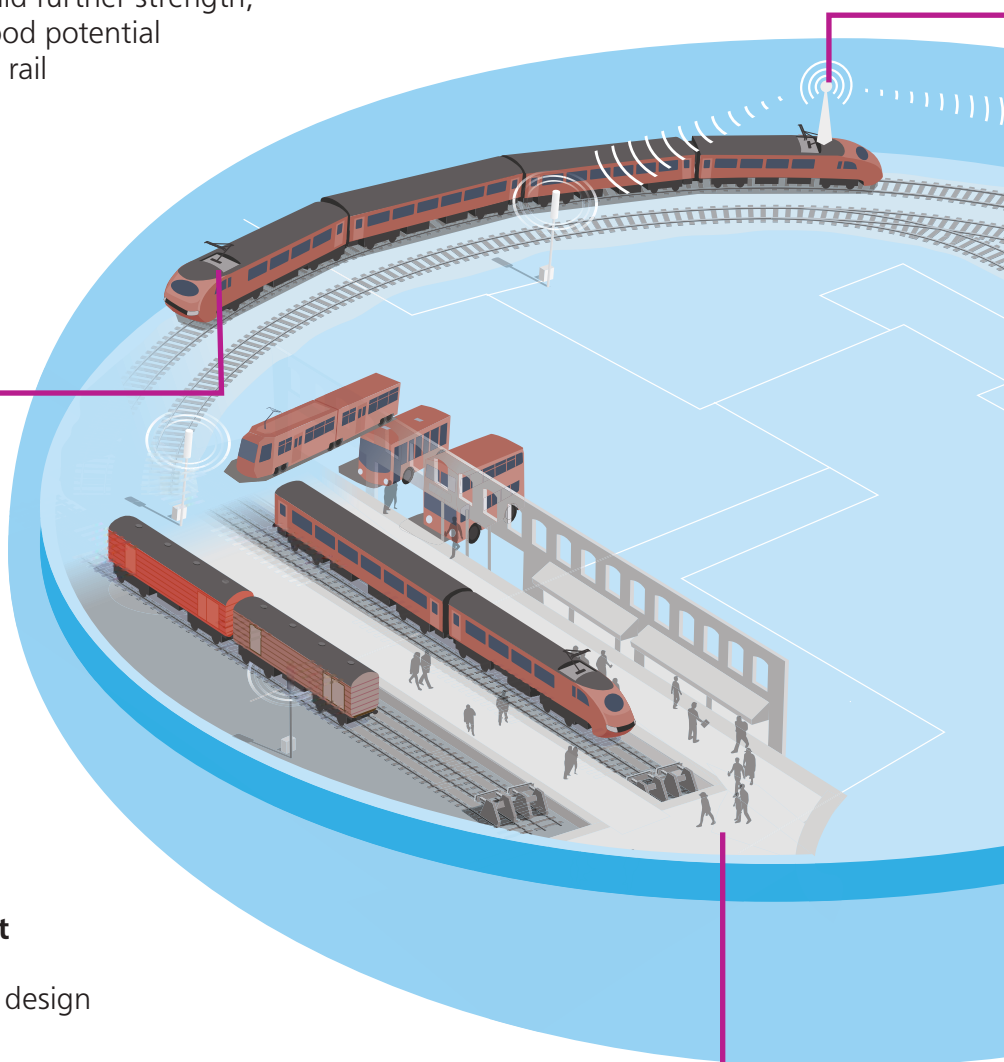
Energy management

- **Energy storage**
e.g. flywheel systems
- **Energy systems management**
e.g. end-to-end energy systems analysis, energy optimisation in design and integration/SMART grid



Customer experience

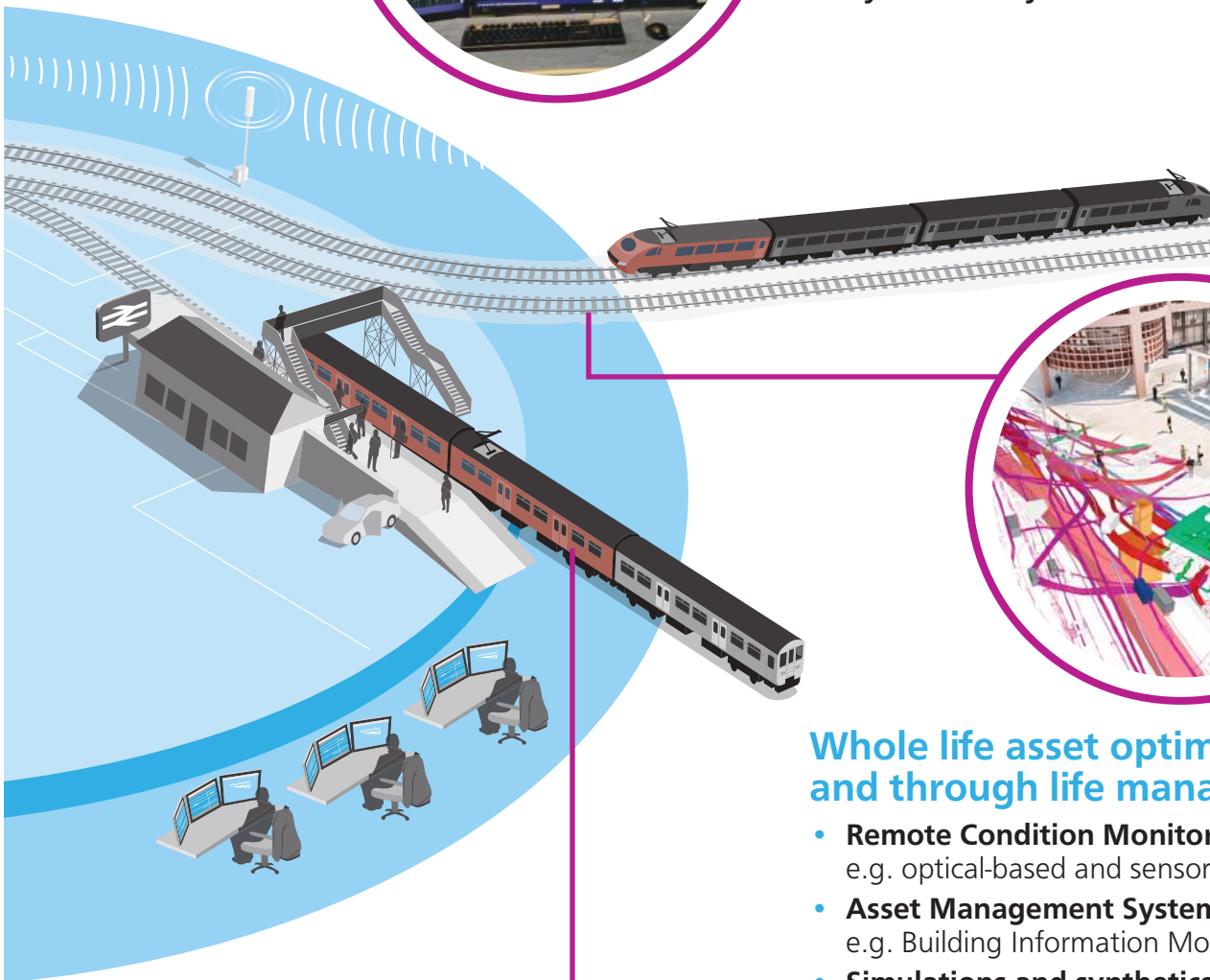
- **Data management**
e.g. exploiting intermodal customer data
- **Data analytics**
- **Design and exploitation of payment systems**
e.g. contactless or mobile payments





Advanced control

- **Control systems**
e.g. modern signalling solutions such as the European Train Control System (ETCS)
- **Positioning**
e.g. satellite-based applications
- **Cyber security**



Whole life asset optimisation and through life management

- **Remote Condition Monitoring**
e.g. optical-based and sensor-based sources
- **Asset Management Systems**
e.g. Building Information Modelling
- **Simulations and synthetics**
e.g. systems dynamics modelling, Geographic Information Systems
- **Retrofit in operating environments**
e.g. vehicle and infrastructure upgrades



High value rolling stock systems

- **Industrial/ergonomic design and human factors**
e.g. seating/space utilisation
- **Lightweighting**
e.g. bogies, vehicle bodyshell
- **Propulsion systems**
e.g. hybrid propulsion systems, alternative/novel propulsion systems



Initiatives

RSG will partner in developing an Innovation Leadership Steering Group to enable innovation in the market and will work with government to promote far greater levels of innovation in the franchising process and major projects, to enhance the competitive position of the UK supply chain.

- 4.14. If we are to double exports, increase productivity and attract private sector investment, focusing on technology alone is not enough. The environment in which businesses operate within the rail sector can be either a key blocker or enabler of their ability to accelerate the uptake of innovation.
- 4.15. RSG will join with the Technical Strategy Leadership Group (TSLG), RDG and RSSB to coordinate a programme of activities which enable and accelerate the uptake of innovation across the railway and its supply chain. This group will define the innovation support landscape, address specific and targeted barriers, develop pragmatic evidence-based advice and solutions and implement, where appropriate, the outcomes of this strategy.
- 4.16. Through this leadership group, and its continued work as a single voice for the supply chain, RSG will promote innovation in franchising and major projects. For example, the RSG supports the Residual Value Mechanism, which compensates operating companies for investment where the benefits accrue after the end of their franchise.
- 4.17. Recognising the vital role customers play in encouraging innovation through the supply chain, we will continue to recognise and encourage the work done by leading customers in integrating innovation into policy, planning, procurement and project management. We will welcome further links between peer programme innovation networks and large programme bodies, such as HS2, and encourage stronger collaboration across adjacent industries.

RSG will work with the Innovation Leadership Steering Group to champion a code of practice for embedding innovation in the railway by the end of 2017.

- 4.18. Through consultation with buyers and suppliers within and outside the rail sector, in the UK and internationally, we will build on best practice to develop principles for embedding innovation throughout businesses from policy and planning to procurement and throughout project life cycles. This is about ensuring that incentives are in place to embrace innovation and, just as importantly, that the processes being used to integrate such innovation into the railway can keep pace with the rate of change of present and future technology.

- 4.19. The guidance will establish a common standard for:
- Scoping and communicating ambitious, outcome-based business challenges to suppliers;
 - Promoting clear messages to the market to encourage investment in advance of tendering;
 - Assessing innovation including clear award criteria;
 - Setting sufficient timelines to develop innovative solutions;
 - Addressing risk-averse behaviour in project management.
- 4.20. RSG will further support best practice in innovation by championing the delivery of a series of interventions to realise the opportunities presented by BIM, Whole Life Cost, Off-Site Manufacture and Lean Construction for HS2 and other large infrastructure projects. Starting with a programme of 'inspiring best practice' workshops, these will facilitate knowledge exchange, harness the collective ingenuity of the industry, and enhance the capability of the supply chain. This will form part of an ongoing endeavour to accelerate the uptake of modern methods of delivery to ensure that high standards are achieved consistently across the supply chain.

RSG will work with the Innovation Leadership Steering Group to establish a framework for collaboration in innovation between large and small suppliers by the end of 2017.

- 4.21. There is already good practice supporting the development of innovation partnerships including RSG's Open Doors programme and the Railway Industry Association's Unlocking Innovation Scheme. RSSB's web portal helps new entrants into the rail sector navigate the landscape of the different innovation funding schemes, grants and industry structure.

Case Study

Identifying organisations to collaborate with: Bridgelight and the Unlocking Innovation Scheme

Bridgelight is a start-up that has developed a software platform to help SMEs find their way around the rail industry so they can understand the landscape, know who to approach and how to get innovations accepted. The platform automatically maps sector capabilities and expertise, and then presents relevant matches to the user. While recognising that their platform could be a major benefit to the UK rail industry, Bridgelight didn't themselves know who to approach within the industry.

Made possible with funding from the FutureRailway programme, the Railway Industry Association's Unlocking Innovation Scheme (UIS) has been both an incubator and a springboard for Bridgelight. UIS provided the means to link with key industry organisations and showcase the capability and benefits, enabling the platform to be developed based on feedback from the rail industry, market tested and validated with a scalable business model that has gained more than 250 registered users. Bridgelight is now at the stage where it is generating revenue from a number of commercial proof-of-concepts across the sector.



“UIS has enabled us to accelerate our development, reducing our time to market by half from our original estimate.”

James McGilvray, Chief Executive Officer, Bridgelight

Case Study

Tier 1s and SMEs in partnership for groundbreaking innovation



In order to respond to the growing demands for capacity on the UK rail network greater availability of rolling stock is required, necessitating new methods for optimising maintenance tasks. Alstom Transport has developed a 'train health scanner' that can provide real time health reports of key components across the entire trainset. Such accuracy and granularity in measurements has never been achieved before and this analytical capability will deliver a unique understanding of the asset's future behaviour.

The Train Scanner is an innovative solution utilising the experience from other industries to deliver a step change in rolling stock Life Cycle Cost management for better train safety, availability and reliability. Using data analysis tools explored successfully in the aviation industry, the scanner allows maintenance planning and decision making to become proactive and pre-emptive. Engineers at Alstom's Longsight depot in Manchester worked alongside local SMEs and Universities to deliver this cutting edge technology.

- 4.22. RSG will build on this and on the Rail Innovation Charter developed by the Transport Knowledge Transfer Network and the Railway Industry Association to develop a framework for partnerships between large and small suppliers to generate a win/win environment with increased transparency where information and risk is shared.
- 4.23. As well as promoting the importance of early communication, the framework will:
- Enable alignment of complex business challenges where several solutions are available without jeopardising confidentiality and competition during tendering;
 - Address the management of Intellectual Property Rights (IPR) during negotiations to safeguard ideas developed during tendering, making full use of the January 2014 public procurement directives as well as the new unitary European Patent;
 - Build on mechanisms such as the Innovation in Franchising Fund to ensure that innovation is recognised as an integral part of the tender process;
 - Encourage the use of standardised documentation, such as template contracts, to reduce cost and improve transparency and collaboration in negotiations.

RSG will prioritise innovation in its five key technology areas across the UK by developing a network of new Centres of Excellence in collaboration with government, universities and business growth incubators.

- 4.24. Realising the importance of applied research and the ability to transfer skills and products from other industries, RSG will support the sector to build on its strong links with universities to develop a network of Centres of Excellence that support the five key technologies and exports.
- 4.25. The Centres of Excellence Network will be situated in proximity to universities and rail supply sector clusters to exploit our existing resources across the UK in public sector, private sector and academia. Building on this, clustering can enhance the positive effects of agglomeration and increase productivity.
- 4.26. In delivering the Centres, RSG will take account of current private investment and consider partnering with universities to identify priorities based on the five key technologies and economic impact assessment. The Centres will build on existing facilities to drive product development across the UK.
- 4.27. These facilities will go some way in developing a commercial model that supports a faster development cycle, allowing products and services to enter the market more quickly and providing opportunities for wider exploitation throughout the rail industry and beyond, focusing on, amongst others, new entrants.
- 4.28. RSG will finalise the business case for the Centre of Excellence network by the end of 2016 and will work towards establishing Centres by the end of 2020.

RSG will develop options to transform UK testing facilities by the end of 2017.

- 4.29. In accelerating the route into the market the final stage of commercialisation is also critical. RSG recognises that the sector requires sufficient testing capability focused on innovation as well as the testing of existing products.
- 4.30. RSG will develop plans to update existing facilities or develop new test sites for research, development, testing and trialling whole systems, to address current and future gaps in demand. Facilities owned by or available to the rail industry should be open to innovators, researchers and developers. Where facilities do not exist, the case to develop new facilities should be explored so that innovative projects have the necessary environment to progress rapidly. We will consider how best to exploit research clusters and engage and support existing testing facilities in the UK.

Case Studies

Unlocking the potential of UK testing facilities

RSSB's Rail Testing Voucher Scheme (RTVS) has been in operation at Quinton Rail Technology Centre, Long Marston since 2013, offering UK companies the opportunity to conduct tests, trials and demonstrations of products, with some 80% of the activity being geared towards railway infrastructure.

TOPCON, a provider of precise measuring and mapping solutions for challenging rail environments are one of 113 companies that the RTVS scheme has assisted to undertake 245 company-test days. These sessions allow companies to thoroughly and safely test equipment, mainly across Technology Readiness Levels 5 to 9, i.e. those closest to market, but also to showcase products.



“The biggest benefit to us was being able to test and demonstrate our equipment safely in a real track scenario without the need for Personal Track Safety certificates; this way we were able to invite customers and dealers trackside, in a safe environment, giving us so much more scope and opportunity.”

Simon Crowhen, Chief Executive Officer, TOPCON

Driving collaboration in innovation: Knowledge Transfer Partnerships

The Knowledge Transfer Partnership (KTP) programme is an Innovate UK initiative linking businesses with a university and a graduate to work on a specific project which typically receives 50%-66% Innovate UK funding.



LPA Connection Systems, manufacturers of inter-connection systems and electrical control boxes for railway rolling stock, entered into a KTP with the University of Essex in 2013 to develop their Ethernet Backbone project, which provides future-proofed Ethernet systems for trains. LPA worked with a KTP graduate for two years to develop their technology, with a view to employing him full time at the end of the project.

As a result of the KTP, LPA has been able to offer the world's first 10GbE bandwidth Ethernet train backbone over copper, providing bandwidth greater than current demand, avoiding costly upgrades to customers' installations as demand increases in the future. LPA launched the innovative technology 12 months after the start of the KTP following successful demonstrations at rail industry trade shows and they received £1.0M of orders and £0.9M sales during the period of the KTP, with sales expected to continue growing in the near future with increasing demand for on board Wi-Fi.



“Harnessing expertise in the University of Essex, the KTP enabled LPA to move into a new technology area and develop a highly successful product that has sold and continues to sell worldwide, plus the technological know-how has been embedded within the company.”

Greg Howell, Managing Director, LPA Connection Systems

RSG will work with key stakeholders to streamline product approval processes in line with customer and supplier needs. We will engage with stakeholders to agree a plan for this and commence implementation by the end of 2016.

- 4.31. Recognising the importance of minimising the cost and time of the entire product approval process, RSG will form a working group to consolidate recent work, such as Network Rail's system for enabling approval to be provided as a commercial service, and other innovations.
- 4.32. The working group will engage the whole of the supply chain to produce a new industry standard for streamlined product approval, which will provide a smooth and efficient route to market for UK innovators while maintaining safety standards and transparency.

RSG will use and promote self-assessment tools to drive continuous improvement in innovation throughout the sector, setting a cross-industry baseline to monitor improvement by the end of 2016.

- 4.33. The scale of the sector's ambition demands that innovation be deeply rooted at all levels of the supply chain to support innovation capacity at a system level. Businesses must be enabled to adopt a strategic approach to development within the sector, but also across transport and manufacturing sectors and their supply chains.
- 4.34. While an innovation may appear to be an isolated random event in which an organisation 'gets lucky' when developing a product or service, the chance of the lucky event can be greatly determined by the maturity of the organisation's innovation capability. A sector innovation maturity model highlights the journey that the sector needs to take.
- 4.35. Recognising the importance of building innovation capability within individual businesses, RSG will promote the use of the 'Innovation Capability Maturity Model', a free self-assessment tool developed by RSSB that organisations can use to develop their capability to realise value from innovations in ways that are appropriate to their position in the value chain. Since its launch in 2014, around 30 companies are now using this tool, including over 50% of the UK passenger train operating community.
- 4.36. Use of the tool will be supported by a rail innovation master class which will be developed in 2016. The master class will train and develop managers, providing them with the tools and techniques required to develop ideas from inception to implementation with the aim of improving innovative thinking and abilities within organisations.

5. Investing in People and Skills



A coherent skills plan delivering enhanced productivity, reduced skills shortages and supporting the implementation of new technologies



- 5.1. The UK rail sector benefits from a rich but limited pool of talent and an international reputation for excellence, demonstrated by our export of skills and experience around the world. RSG recognises the fundamental value and importance of our people and their skills, so we will:
- Build on our strengths to **develop an attractive sector** that is responsive to the employment needs of a diverse workforce;
 - **Develop the skills** needed for sustainable growth, to meet growing demand and match unprecedented investment in the railway;
 - Put in place **measures to assure the quality** of skills, maintaining our international reputation for excellence;
 - **Invest in our people** to enable successful operation of the railway, delivery of infrastructure projects and the effective introduction and management of new technologies.

The Challenge

- 5.2. We have identified three critical challenges that need to be addressed:
- There will be a significant depletion of the available UK workforce over the next ten years, which will require us to attract and retain the very best talent;
 - There is a growing need to upskill to meet new and changing technologies and processes while enhancing productivity;
 - The supply chain must meet unprecedented demand, requiring strong leadership across the sector.

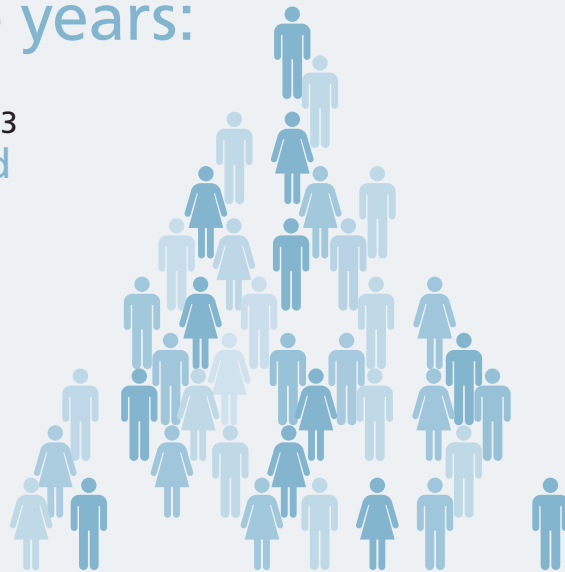
Skills gaps and shortages

Over the coming five years:

Over **3,000** new rail engineering level 3 graduates (A level equivalent) are **required** just to maintain current skills levels.

At least **7000 more** level 4 advanced technicians (undergraduate equivalent) will be **required** across the sector.

HS2 will require **600** advanced rail engineering technicians (level 4-6+) each year from **2019 onwards**.



The cost of inaction²⁵

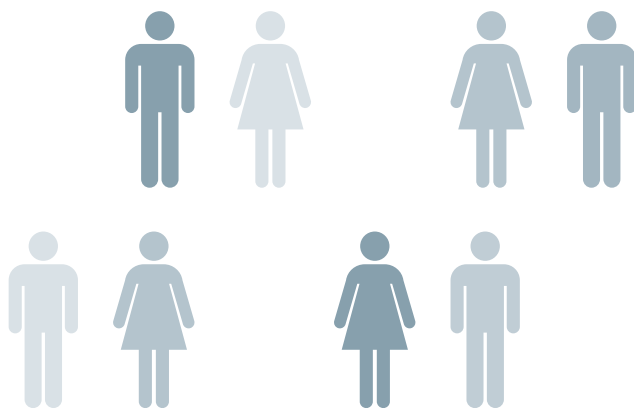
The current cost of skills shortages and gaps to rail industry employers is

£206m per year
 (£110m to the direct rail industry and £96m to the supply chain), which could increase to **£316m per year by 2024** without intervention from industry and government.



The current cost of skills shortages and gaps to the Government is

£358m per year
 (which does not include the cost of constrained economic growth and increased expenditure linked to mitigating skills shortages).



A **10% reduction in skills gaps** and shortages in the industry could **reduce costs** to the business base by **£60m** and Government by **£67m**.

²⁵ Data from: The Cost of Not Addressing Skills Issues in the Rail Sector, Atkins, October 2015

Attracting the very best talent to deal with depletion in the workforce

- 5.3. The rail workforce is highly skewed towards those near retirement. 40% of those involved with rail vehicles in particular are over the age of 50, and 22% over the age of 55. The National Infrastructure Plan for Skills highlights the challenge of delivering a long-term investment programme with a large proportion of people with critical skills approaching retirement age.
- 5.4. The industry is struggling to recruit sufficient numbers into critical roles, such as systems engineers, signal designers, project managers, commercial managers and trainers. The sector particularly fails to attract women into engineering-related roles; gender diversity figures are unacceptable, with women numbering a mere 4% of railway engineers compared to 6% of the current UK engineering workforce and 12% across Science, Technology, Engineering and Mathematics (STEM) related sectors.
- 5.5. This is part of a broader challenge across engineering sectors. It is prevalent in every aspect of the skills pipeline; from attracting students to enrol in STEM subjects at school, to encouraging engineering graduates and apprenticeships to come into the sector, to creating potential future industry leaders and front-line supervisors. Engineering UK estimates that the UK will need 100,000 engineering graduates every year until 2020 in order to maintain the current employment levels in all industries.²⁶
- 5.6. Rising demand has resulted in significant competition for talent within and between engineering-based supply chains with other sectors such as highways, energy, construction, advanced manufacturing and telecommunications all requiring engineering technicians, operators and other skilled staff. Wage inflation is already being felt across the railway as companies compete for the most in-demand resources with increases in salaries of between 5% and 20%, with reported instances of individuals moving employer for as much as a 50% salary increase.²⁷



²⁶ Engineering UK report, State of Engineering, 2014

²⁷ The skills deficit, Atkins, January 2015

Upskilling to meet the demands of new and changing technologies and processes while enhancing productivity

- 5.7. The programmes of the future railway, such as HS2, Crossrail 2 and Digital Railway, will require new and additional skills which need to be identified and developed. Investment in cross-disciplinary functions beyond engineering and operations, such as leadership, innovation, project management and commercial skills is also required, as well as improving the ability of workers to move across sub-sectors and projects without the need for bespoke retraining.
- 5.8. Resources to meet the challenge of attracting and upskilling people are limited. Existing training programmes are characterised by:
- Poor connectivity and coordination of existing training facilities;
 - Limited training capacity of sufficient quality, most of which has been inaccessible to the supply chain. Network Rail's investment of £55 million across eight training centres in the UK to upskill the rail industry is a highly welcome announcement;
 - Significant shortage of trainers and lecturers with appropriate teaching competence/ qualifications or sufficient depth of rail knowledge;
 - Limited provision of and access to quality development programmes that deliver what employers need. There are very few rail development programmes at advanced technician (HNC or HND) level available to the supply chain and limited programmes at degree level and above; a search of the UCAS website for rail-related undergraduate degrees returns only two results.

106 accredited training companies, **8** specialist training centres at Network Rail and **3** at London Underground, **3** Further Education colleges delivering rail specific training, **2** universities offering courses at undergraduate level or equivalent, **1** National Training Academy for Rail.

Few rail specific higher education programmes with only **2** undergraduate level courses, and **3** universities offering courses at postgraduate level – producing around **50** Masters level graduates each year.

When it opens in 2017, the **National College for High Speed Rail** will train **1,000 graduates** per year to undergraduate level or equivalent, providing a **twenty fold increase** in training capacity at undergraduate level for the UK rail industry.

Demand for external rail engineering and infrastructure training (including that provided by specialist training centres) to meet the challenge of **more apprentices** and **increased workforce** upskilling for an advanced rail market is estimated to be as high as **1.0 million** training days a year.

Current and planned training facilities will provide **sufficient capacity** to meet demand – the **challenge is to attract sufficient talent**.

Case Study

Meeting the skills demands of the future



Network Rail has embarked on a development programme on behalf of the industry to build eight new national training centres across the country ranging from Larbert in Scotland, Bristol in the West to Paddock Wood in the East. Each of these centres takes the lead on a specific area of training such as third rail, overhead line equipment and operational training. By April 2016 the £55m investment programme will be complete generating 270,000 training days a year for 260 different railway companies. Over 300 courses including safety-critical training will be available to the industry. In addition, Network Rail now recruits over 50 engineering graduates and 200 apprentices each year.

“ 143 Bridgeway Consulting staff that attended Network Rail training during 2015 all provided positive feedback. In the true essence of rail industry collaboration, Network Rail have also allowed the Bridgeway team to utilise their training facilities on a number of occasions for practical training for staff working on high-profile rail projects such as Thameslink and Crossrail. ”



Steve Diksa, Corporate Development and Sustainability Director,
Bridgeway Consulting

The need for strong leadership across the sector to meet its challenges, including meeting rising demand

- 5.9. The sector is currently benefiting from a significant programme of investment in rail and wider transport infrastructure. Skills shortages will constrain delivery if we do not address them now. Uncertainty over future demand, as well as fluctuations in demand, could discourage investment in employment and development from SMEs to Tier 1 companies without strong leadership and coordination.²⁸
- 5.10. The effects of the skills gap on projects and infrastructure can be huge. Even a modest degree of delay or cancellation to major projects caused by skills shortages or gaps (say 20% of gross capital cost is deferred) would result in around £1.1 billion worth of GVA being lost to the UK economy (equivalent to approximately 23,000 permanent jobs, assuming £50,000 GVA per job).²⁹
- 5.11. Our sector has no agreed sector-wide skills strategy. We therefore welcome the DfT's Transport Infrastructure Skills Strategy and will build on this to develop a skills plan for the rail supply sector which complements and strengthens their proposals. Our plan will take account of interdependencies between rail skills and wider transport and infrastructure sectors, interfacing with other sectors' strategies to ensure visibility and avoid duplication.
- 5.12. The range of bodies involved in the skills agenda in the sector is wide, with the potential for duplication and lack of a consistent message. Effective coordination and collaboration of skills bodies and training opportunities is essential to secure efficiency and productivity gains.
- 5.13. The rail supply sector is located across the UK with locations following rail routes and particular concentrations in the Midlands, North and South East. The opportunity to work collectively to address our people and skills challenges on a national and regional basis has not yet been fully embraced. Additionally, the opportunity to engage with the representative unions nationally and regionally on the skills and people development agenda has been under-recognised. The skills plan must target regions with high demand/high skills shortages, working with devolved administrations and regional partners, including Local Enterprise Partnerships (LEP), local authorities, unions, universities and colleges, to ensure that companies receive people and innovation support.
- 5.14. RSG is developing an evidence base to determine how the rail supply chain can improve its productivity, competitiveness and capability. Driven by the data, RSG is adopting a local, regional and national focus to issues such as recruitment, skills, SMEs and economic development which are best addressed 'locally', and reserving a UK-wide focus for the questions that work best at scale, including test facilities, industry perceptions, and certain aspects of contracting and export. RSG will seek further dialogue with devolved administrations to align skills solutions and ensure that the recommendations and work plans are appropriate.

²⁸ See chapter 3

²⁹ The Cost of Not Addressing Skills Issues in the Rail Sector, Atkins, October 2015

Case Study

Supporting regional skills growth: Rail Forum East Midlands

The Rail Forum East Midlands represents over 150 organisations across the region. Responding to the Chancellor's 'Midlands - Engine for Growth' initiative and the opportunity for greater regional devolution the forum has identified a number of priorities for action which align with and support this strategy.



People and skills is one such priority, and the forum is developing a co-ordinated regional approach to engagement with young people, building on existing activities and working with the newly opened Derby University Technical College. The forum is also developing a pilot apprenticeship offering which will make it easier for more SMEs to recruit and train apprentices. Working with large employers, the forum identifies suitable surplus candidates and matches them with SMEs through recruitment and selection support. Support is also available to identify the best training programmes and partners to meet their skills needs using the new Apprenticeship Standards.



“ The rolling stock consultancy, ESG Rail is looking forward to working with the Rail Forum East Midlands on the skills agenda. Such support will help us to remain competitive and attractive as an employer, allowing us to be innovative and to meet the demands of tomorrow’s railways. ”

Martin Horsman, Managing Director, ESG

Realising the Ambition

- 5.15. UK rail companies feature in the Times Top 100 Graduate Employers and the Sunday Telegraph's Top 50 Apprenticeship employers. These businesses, along with the rest of the supply chain, appreciate the extent of the skills challenges and organisations across the sector have worked individually and collaboratively to put key measures in place to address them. These actions of the railway to grow a rounded skills base in its supply chain, and its commitment to do so in future, show its dedication to securing a successful long-term manufacturing base in the UK.
- 5.16. The railway has engaged in a number of activities to build the profile of the sector and STEM. For example, 'Routes into Rail' is a cross-industry group set up in February 2014 to promote the message that a career in the growing rail industry is exciting, challenging and rewarding. In addition, many rail sector organisations have Schools Ambassador programmes, or sponsor University Technical Colleges (UTC), which offer work experience and apprenticeship/graduate programmes.³⁰ The sector also understands the opportunity to recruit people with a broad range of talents from outside the industry, for example working to provide skilled members of the armed services with a route into rail.
- 5.17. The sector has also taken much needed steps to improve its diversity. Groups such as Women in Rail, Women in Science and Engineering and Young Rail Professionals and the 100 Years of Women in Rail programme are committed to improving diversity and attracting new recruits.³¹ In recognition of the vital role of ethnic diversity for a cohesive workforce, Business in the Community (BITC) has also made great strides in increasing representation amongst rail workers. It is important that sector businesses engage with these programmes and offer increased opportunities for underrepresented groups, as evidence shows that candidates who successfully complete pre-entry programmes are more likely to complete apprenticeships, and often in a shorter time.

Case Study

Unions and employers in partnership to improve lifelong learning

Under the Union Learning Programme, Unite and ScotRail organised an apprenticeship programme to facilitate progression paths through the engineering skills grades. Prior to the commencement of the apprenticeship, candidates undertook an Open College Network accredited 'Brush Up Your Skills Course' arranged and delivered by Unite. This course gave them the confidence and skills to undertake the National Certificate studies and the skills to compile the portfolio for the SVQ Levels 2 and 3, despite being away from the learning environment for many years.



“ This union/employer partnership demonstrates the importance of investing in people and developing a skilled workforce. We believe it is an example that other organisations would be advised to follow. ”

Pat Egan, Regional Learning Organiser, Unite

³⁰ Infrastructure Resourcing - An Overview of Current Client Initiatives, NSARE, September 2014

³¹ Industry survey, Women in Rail, December 2015

- 5.18. In addition to these continued moves to increase uptake amongst young people, the sector has taken steps to increase training support within the industry. Union learning initiatives have transformed skills development throughout workforces. The Union Learning Programme, run by Unite, offers an opportunity for businesses to engage more effectively with their workforce to increase the uptake and benefits of training programmes while increasing trust and delivering cost savings. In order to address the need for sufficient quality training facilities focused on traction and rolling stock, the National Training Academy for Rail (NTAR) was opened in October 2015. This will be complemented by the National College for High Speed Rail, to be launched in September 2017, as a key institution for rail skills training in the industry. The National College will have the capacity for 2,200 starters a year to address higher technical skills gaps. It will benefit from multiple start times across the year, flexible working (full time/part time), and a combination of classroom and virtual learning.

Case Study

NTAR: National Training Academy for Rail

NTAR is a joint project between the National Skills Academy for Rail (NSAR), the Department for Business, Innovation and Skills (BIS) and the Department for Transport (DfT), with industry partner Siemens.



The academy will play a leading role in the new railway skills development programmes being driven by NSAR – working with the market to make sure that industry priorities are met.

NTAR will specialise in vital traction and rolling stock training: offering unrivalled facilities and courses, with the Northampton centre acting as a hub to support and deliver services to customers across the country.

NTAR has been established to support all organisations across the industry: Train Operating Companies, Freight Operating Companies, Original Equipment Manufacturers, Rolling Stock Operating Companies, Network Rail and the wider supply chain.

The courses and services are designed to address the development needs of a wide range of customers including: young people setting out in their careers; existing teams of maintainers and technicians; rolling stock and rail systems engineers; career changers joining the industry; and, supervisory and management teams.



“ For 53 Railway Engineering Design Technician Apprentices, including four from CH2M, attending the new apprenticeship study week, the range of exceptional learning opportunities, facilitated by NTAR’s excellent facilities and service, provided an understanding as to how the rail system operates with hands-on experience as well as developing their team working skills. ”

Karen Hoad, from CH2M and Chair of the Employer Working Group

- 5.19. The rail supply sector has been a continuous supporter of apprenticeships and graduate development programmes. Larger company apprenticeship programmes are often significantly oversubscribed, although this is not seen throughout the supply chain. The percentage of applications from females does however continue to be disappointingly low.

Case Study

Dealing with oversubscription in rail apprenticeships

Network Rail recruits around 200 rail engineering apprentices each year to their award-winning apprenticeship programme.

Network Rail is a household name and the apprenticeship programme has been running for some years. As a result it is not unusual for 4000 applications to be received for the 200 apprenticeships on offer. Through a rigorous assessment process Network Rail not only identify the apprentices they wish to offer jobs to but also create a reserve list of the 50+ next best applicants. If the reserve applicants agree, Network Rail then connect them with participating supply chain organisations, delivering a positive outcome for the applicant and supply chain organisation whilst only incurring recruitment and assessment costs once.



“ Network Rail sent us the details of a number of excellent candidates. By collaborating with Network Rail to fill a long-term apprenticeship vacancy at short notice, VolkerRail saved valuable time and costs associated with re-advertising the role and are delighted to welcome a new candidate to our program. I would have little hesitation in recommending this method to other members of the Rail Supply Group. ”

Nigel Roberts, Learning and Development Business Partner,
VolkerWessels UK

- 5.20. The Apprenticeship Levy, announced in July 2015, will have a significant impact on future apprenticeships delivery. It is essential that rail employers maximise the potential of levy funding to grow apprenticeships and we will provide a service to both large and small companies to assist them with this. In addition, railway employers, supported by the National Skills Academy for Rail (NSAR), are now working with BIS and DfT to encourage the growth in quality apprenticeships. The industry has made three suggestions to improve the levy's effectiveness and help employers double the number of apprenticeships:
- Allow a larger proportion of the significant costs of high economic value apprenticeships to be claimed back through the levy;
 - Confer eligibility on significant upskilling/reskilling programmes, as confirmed by a sector assurance panel;
 - Work with rail employers to make best use of levy funding, ensuring it benefits the entire supply chain including SMEs. Rail has a more diffuse supply chain than other sectors so allowing this only up and down supply chains will be of limited utility.

Case Study

Trailblazers Apprenticeship Standards

Rail industry employers are involved in developing a range of new apprenticeship standards from specific rail-related occupations such as rail engineering, rail engineering design and transport services to pan-industry occupations that are equally important within the rail sector such as commercial management and software engineering.

Rail employers are taking the opportunity to ensure that the new standards support their vision of future-proofed programmes which will enable apprentice occupational versatility and adaptability for employers, whilst enhancing transferability and recognition for the apprentice.

The Rail Engineering Employers group includes large and small organisations from across the supply chain. For the first time there will be a Rail Engineering Apprenticeship at advanced technician level and all technician and advanced technician apprentices will be 'EngTech' ready on completion of their apprenticeship, a key step forward to professionalising the rail workforce of the future.



“ Carillion is pleased to be a member of the Rail Engineering Apprenticeship Trailblazer Employers group. It is imperative that sector employers work together to agree the apprenticeship competencies and standards to ensure that future apprentices demonstrate the skills and behaviours required as part of a world leading rail industry. ”

Kerrie Jones, Workforce Development Manager, Carillion

- 5.21. NSAR is working with the sector to develop clear career paths supported by quality development programmes and appropriate qualifications. NSAR's role is to understand the collective needs of the industry and then, working with employers and a wide range of stakeholders, identify and implement solutions. NSAR supports the sector in collecting skills intelligence in order to understand the skills challenges, developing quality development standards, for example new apprenticeship standards and training assurance programmes, and promoting sector views to government and other stakeholders. Originally focussed on rail engineering, NSAR is now working with the rail operators to ensure a pan-industry understanding of the rail sector's skills challenges and delivery of appropriate solutions.

5.22. To meet the ambitious skills targets set out below, we need to ensure SMEs are better supported. Evidence shows that without support, SMEs are less likely to develop their people and take on apprentices. Through its delivery of the initiatives that follow, RSG will seize the opportunity to ensure this support is available. RSG welcomes the review carried out by Terry Morgan into transport infrastructure skills. We will commit to implementing relevant recommendations that can support the UK rail supply chain.

Case Study

National College for High Speed Rail (NCHSR) supported by HS2 Ltd



The NCHSR's mission is to train the next generation of engineers for a career in rail, and to upskill the existing workforce with skills for now and the future.

The vision is to deliver a step change in vocational learning for the rail sector and attract a wider pool of talent into science, engineering and technology to place the rail industry at the cutting edge of innovation.

The NCHSR will be delivered on a 'hub and spoke' model, forming links with other educational institutions and employer training facilities, creating a network for rail skills across the country.

Learners coming from the college will have undertaken study sponsored by employers, and have had a third of their learning time in the work place, developing both technical and employability skills. This means they will be in a position to enter the workforce with the skills and competencies needed to be effective in their role from day one.



“ The National College for High Speed Rail is a key part of the growth strategy, not just for rail but for the UK. We will use the very best of teaching, technology and equipment, working with suppliers and other stakeholders, to deliver world-class skills for High Speed Rail. ”

John Evans, Chief Executive Officer, NCHSR

Initiatives

RSG will act as a single voice for the supply chain on skills, driving the production of a Rail Skills Plan by March 2016 with a regional and SME focus.

- 5.23. We must have a coherent skills plan to ensure the development of a sustainable skills base, delivering enhanced productivity, reducing skills shortages and supporting the implementation of new technologies. The plan will have a clear and resourced delivery schedule. It will include an employer-led mechanism to facilitate effective collaboration with governments, academia and training providers across the UK.
- 5.24. RSG will work collaboratively to support the supply chain (in particular the large number of SMEs that make up the rail supply chain) and wider industry, nationally and locally, in the development and delivery of the plan to ensure skills synergies are optimised across and beyond the rail industry. It will use its position as a unifying voice to promote the interests of all regions of the UK in skills development.

RSG will work with key stakeholders to attract and retain new recruits by raising the profile of the industry and improving its appeal to a diverse workforce.

- 5.25. We will increase our promotional activity into schools, colleges and other settings to ensure young people have accurate information about the job opportunities and career benefits of the rail industry. We will build on the examples set by the HS2, Crossrail and TfL Ambassador Programmes, and create a joined-up industry approach working across the sector and with education stakeholders, including the Department for Education. This will support the development and delivery of a unified message to promote the rail sector as a great place to work for all.
- 5.26. We will improve the flexibility and structure of career progression in the rail industry to generate wider appeal, creating pathways and roles that appeal to a diverse workforce. We will work with and support Women in Rail, Women in Transport, Young Rail Professionals and other diversity focused groups within the sector.

RSG will work with key stakeholders to create a talent pool from which supply chain companies can recruit high calibre applicants, through:

- 5.27. A new 'no wrong door' service which will allow candidates to apply into the sector as well as to specific companies, will channel capable but initially unsuccessful candidates toward interested companies.

- 5.28. We will help to match quality assured individuals who have been assessed or have completed pre-entry programmes with SMEs. Signposting to direct unsuccessful apprenticeship applicants to alternative apprenticeship opportunities within the supply chain. This will be set up and operational in 2016.
- 5.29. We will commission a specific pre-entry course, aimed at educational institutions and brokers that offers an online introduction to core rail skills. We will make it a condition that the course is offered to representative samples of young people, and we will incentivise completion by offering access to the above matching capability, a kind of UCAS for transport apprentices, so candidates can be matched with local apprenticeship opportunities. At the same time, this will de-risk employing apprentices. Work has already been done by sector employers to define the core competences that this course will deliver.
- 5.30. We will establish a new SME support service that will help SMEs recruit apprentices, manage their training, procure training, assist with funding and even initially employ the apprentices.

RSG will commit to support the achievement of the rail industry target of 20,000 new apprentices by 2020.

- 5.31. We will focus particularly on those skill shortage areas most important for productivity and the National Infrastructure Plan. These include rolling stock engineers, planners, signalling engineers, overhead line technicians and project managers/commercial managers. We will work to resolve the shortage of trainers and significantly increase the quality of training within the sector. We will also research whether a more defined suite of professional development master class modules should be developed and offered to sector managers. These would specifically drive the implementation of emerging innovation and new developments in safety.

RSG will develop a network of enhanced quality training facilities and trainers to be launched in 2016.

- 5.32. This will ensure the coordination of supply and demand across a virtual network where quality training capacity and opportunities together with funding opportunities are visible, accessible to all (including SMEs) and can be brokered.
- 5.33. We will target five regions of high demand/high skills shortages to ensure the smaller companies in the sector receive people and innovation support. We will work closely with regional and local partners and make sure that regions which have a tradition of rail engineering and a demonstrated ongoing demand are prioritised, making initial career conversations easier. The newly refreshed East Midlands Forum will be our first pilot area, and we expect to include West Midlands, the Northern Powerhouse and London/South East. Dialogue is already underway with some of these areas and also with the devolved administrations. We will pilot this new approach starting in 2016.

RSG will work with clients and customers to develop procurement approaches that drive demand for training through the supply chain by mandating and incentivising training.

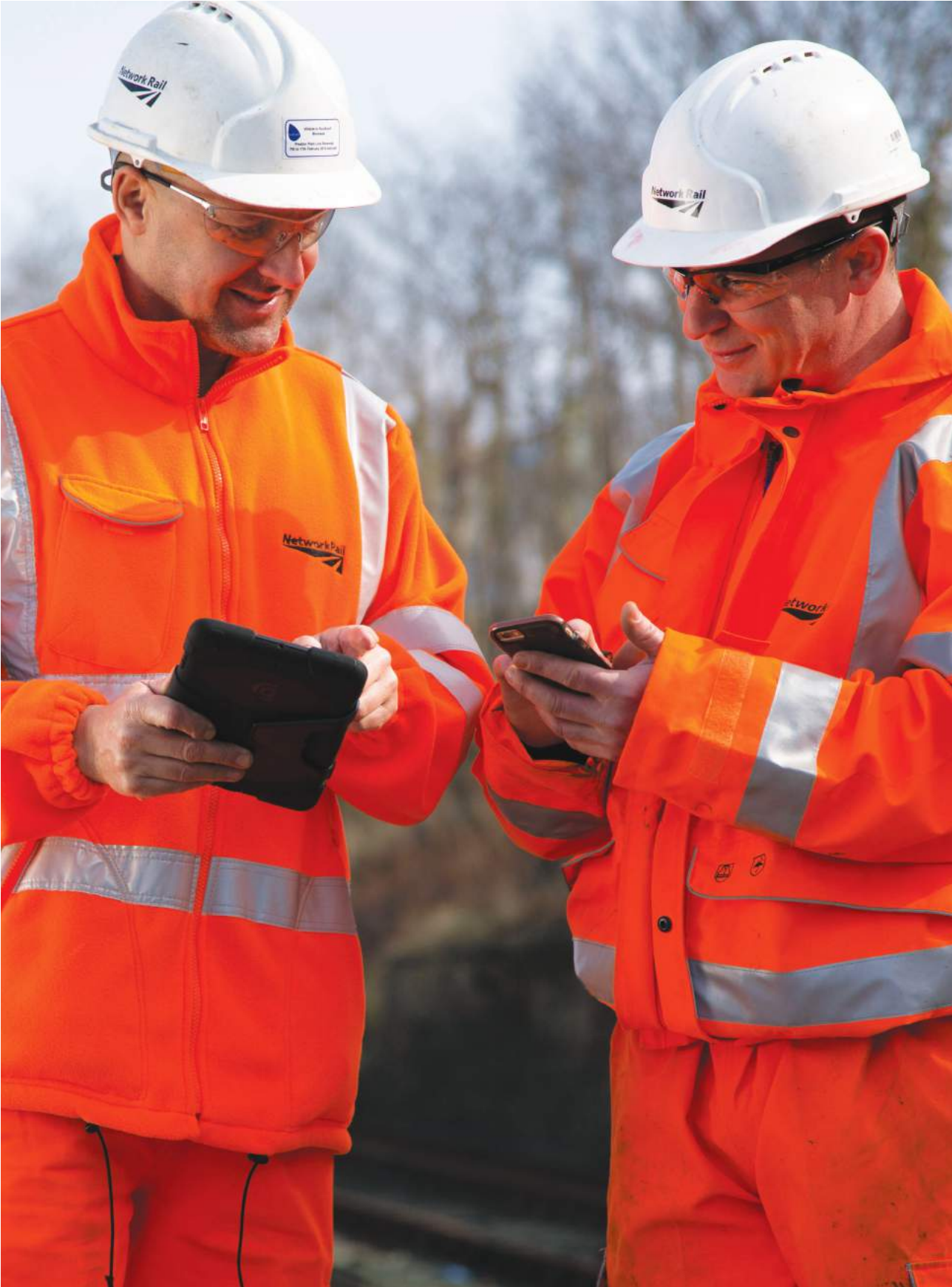
- 5.34. We will work to ensure large contracts (franchises, infrastructure and service contracts) will require evidence of 5% of staff in training at pre-qualification, as well as mandating a stretching but deliverable ratio of apprentices through contract delivery. We will support our supply chains, in particular SMEs, in the delivery of this through the sharing of training capacity, provision of placements and apprentice and graduate rotation.
- 5.35. Asset owners, infrastructure and supply chain leads will be incentivised to engage with their supply chains to stimulate the lower tiers to train, and point their partners to this new support service.

RSG will establish a sector assessment and assurance panel by the end of 2016.

- 5.36. This will ensure consistency and quality in the delivery of training. The panel will review the implementation of all the training activity and advise on wider competency and assessment questions. It will develop and implement new training standards (including apprenticeships) both for new entrants and the substantial upskilling challenge we face. These will be more flexible and better assessed than previously, improving both productivity and safety for all sizes of organisations.

RSG will set up a Skills Intelligence Unit by June 2016.

- 5.37. This will ensure that existing intelligence is maintained and that new intelligence regarding additional and changing skills requirements is captured and understood (including demand and supply forecasts and impacts arising from changing technology and processes), in order to identify and implement solutions to skills challenges.
- 5.38. RSG recognises that increasing diversity in the rail supply workforce is a priority for the sector if it is to reach its full potential. The Skills Intelligence Unit will be crucial in monitoring and driving the move to a more balanced workforce by identifying solutions to low engagement by under-represented groups.



6. Growing Exports and Inward Investment



A fresh, co-ordinated approach to increase exports and inward investment



South Africa's Gautrain: supplied by Bombardier Transportation in Derby

- 6.1. Our goal is to develop UK capability so that export volumes will more than double by 2025.
- 6.2. Underpinned by the initiatives set out in previous chapters on market conditions, innovation and people, our strategy is to:
 - **Strengthen import substitution;**
 - **Increase the capability and promotion** of the UK supply chain to bid for and win progressively larger major international projects;
 - Use this to **grow exports** of products and services.
- 6.3. The benefits are not only in terms of growth and productivity but also stability as exports allow the UK supply chain to insulate itself from fluctuations in domestic demand.
- 6.4. This strategy will enable us to take greater advantage of the global rail market which is forecast to grow at 2.7% annually over the coming few years, with the total market size forecast to be £128 billion per year during the period 2017 to 2019.³²
- 6.5. Significant further growth is expected in rail over the coming decades. Some recent estimates suggest that global passenger and freight usage will more than double between 2015 and 2050.³³

³² Rail World Market Study - forecast 2014 to 2019, UNIFE, 2014. Note whilst these figures are probably the most authoritative source on global rail market values, they only cover rolling stock and rail systems products and services. They do not include: rail related civils construction works, train operation related spend and a significant amount of professional services activity (including some where the UK has particular strength and are considered world leaders). The total rail market value is therefore significantly larger than these figures suggest.

³³ International Transport Forum, A Vision for Railways in 2050, May 2010

The global rail market is growing strongly



Mainline rail is the largest application segment...



2007-2009



£99bn pa

2011-2013



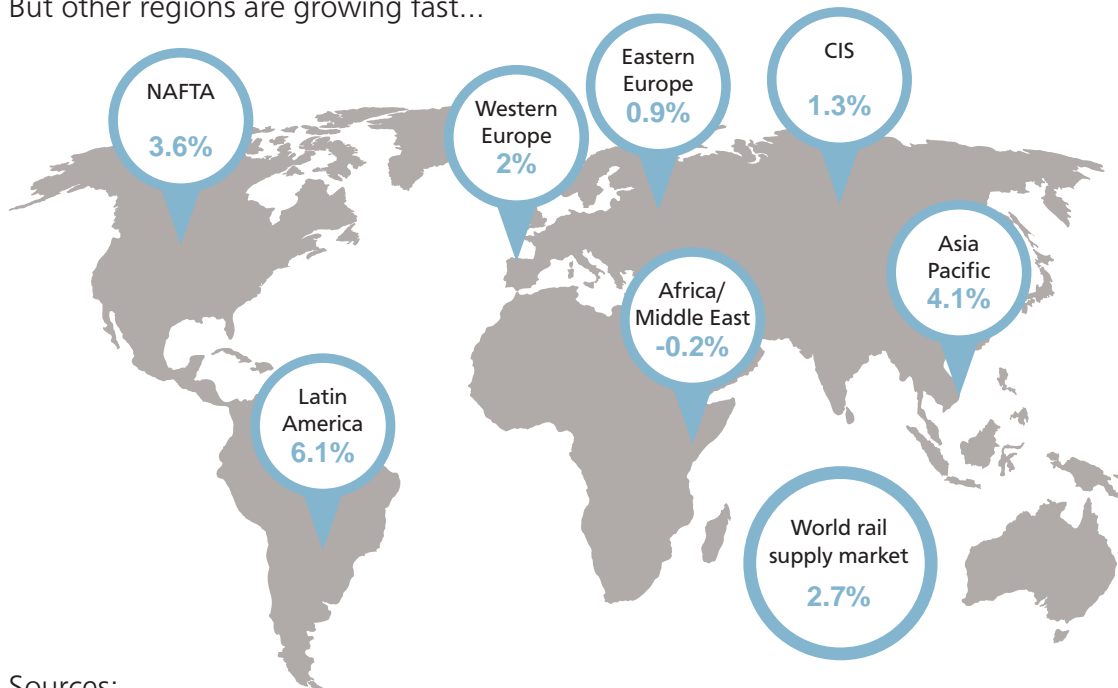
£109bn pa

2017-2019 Forecast



£128bn pa

Western Europe and Asia Pacific represent the largest regions of the global rail supply market. But other regions are growing fast...



Sources:

Route mapping capability for GB and international rail markets, FutureRailway, October 2013

World Rail Market Study Forecast 2017-2019, UNIFE, 2014

The Challenge

- 6.6. As the birthplace of the railways, the UK has a rich heritage of exporting railway technology. This has gradually declined as industrialised nations have built their own supply chains and recent analysis by RSG suggests UK exports are now approximately £400 million a year.³⁴ However, the UK has many strengths to provide a platform for export growth:
- We are world leaders in professional services such as engineering, project management and financial advice - with a reputation for offering impartial advice;
 - We have similar credentials in other areas such as: development of digital control systems; managing an ageing network while at the same time delivering major infrastructure upgrades; and a strong record of delivering new projects such as High Speed 1, DLR and Crossrail;
 - We have a strong home market which forms a solid platform for setting up foreign ventures and provides initial references for UK products in export markets;
 - With the oldest rail systems in the world, we are well-placed to share the knowledge and experience that we have accrued with the rest of the world;
 - We have a large number of innovative SMEs offering world-class technology;
 - We have world-class universities that are setting up campuses abroad, as well as skills academies and private companies providing overseas training;
 - We have a valuable international diplomatic presence as an effective platform on which to promote our exports around the world.
- 6.7. To capitalise on these strengths, we need an exports and inward investment strategy that accelerates the pace of change by addressing several challenges:
- UK contractors need more financial strength to enable them to carry the risk required for them to bid for international turnkey projects - despite the current success in delivering Crossrail, the biggest civil engineering project in Europe;
 - The UK does not have a strong exports record in recent years in a number of key capabilities such as the provision of rolling stock;
 - There are many UK-based SMEs with world-class technology that do not have the resources to compete internationally.
- 6.8. Finally, the global rail market is characterised by an international network of suppliers and a growing demand for industry best practice irrespective of the country of origin. Most leading global suppliers are active in the UK as manufacturers, component suppliers, operators or advisors. This provides both an opportunity and a challenge for the development of a durable, world-leading UK-based rail supply chain.

³⁴ There is a large amount of uncertainty around this estimate as it partially excludes a number of capabilities such as: architecture and design, operations and certain professional services.

Realising the Ambition

- 6.9. There is already much good work going on to promote exports and inward investment. At government level, BIS, UKTI and DfT are all involved and working closely with the rail supply sector towards cross-government support for exports. We are committed to closer working with the Welsh and Scottish Governments to increase opportunities for suppliers across the UK.
- 6.10. UKTI supports rail exports through UK regional and London-based teams, and through Trade Officers based in UK embassies and consulates around the world. It employs specialists from the rail industry and works with the Railway Industry Association and Rail Alliance as its Trade Challenge Partners. There is an ongoing programme of export focused events including trade missions and client inward visits to meet with UK companies, in addition to dedicated individual company support available through services such as OMIS (Overseas Market Information Service). Rail is recognised as an important sector for export and a high proportion of UKTI's flagship High Value Opportunity Programme (HVO) is focused on international rail projects or includes elements of rail. For FY2014/15 UKTI supported in excess of £1.1 billion rail-related business wins for UK companies through the HVO programme alone.
- 6.11. In September 2015, the Prime Minister opened the Newton Aycliffe Rail Vehicle Manufacturing facility in County Durham which will drive Hitachi Rail's future growth in Europe supported by their European Rail Research Centre headquartered in London. The facility will create more than 700 jobs and demonstrates Hitachi's commitment to making the North East a manufacturing centre of excellence once again, helping to build the Northern Powerhouse. The UK is increasingly being seen as an attractive place to do business as well as to provide a platform into the rest of Europe and other markets.

Case Study

Seizing opportunities in growing exports markets

When the Australian freight train operator Aurizon Network embarked on a project to produce a comprehensive Network Asset Management System (NAMS), they required a reliable solution capable of overcoming labour intensive and risky manual surveys.

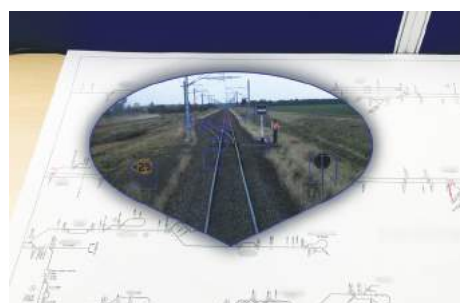
They chose to work with UK-based Omnicom Engineering after seeing a demonstration of their OmniSurveyor3D® at AusRAIL PLUS 2013. As well as providing accurate geospatial and linear asset data, the OmniSurveyor3D end user software has a comprehensive set of tools that allows customers to extract additional benefits from the data.

As an established supplier in a respected rail supply market, Omnicom were able to make full use of their platform at AusRAIL to demonstrate their product's advantages of cost and ease of use, as well as its successful record when used on the UK rail network.



“ Omnicom is very proud to be associated with this project and to be exporting its technology that has been developed and used extensively in the UK to overseas markets. ”

Stirling Kimkeran, Chief Executive Officer, Omnicom Engineering



Initiatives

RSG will create a new sector-wide Exports and Inward Investment Advisory structure by mid 2016 to provide a single industry voice with whom government can establish priorities.

6.12. Maximising the growth potential of the UK rail sector requires a coordinated approach between government and industry. A wide variety of resources must be harnessed, including education and training, R&D, positioning in overseas markets and supply chain development. Suppliers need to be able to engage with government with a single, coherent voice in order to position the UK effectively and competitively in the global market. RSG will be the industry partner with whom government can establish a winning strategy for UK suppliers.

Working in collaboration with government, RSG will develop a new strategy for exports and inward investment based, in part, on learning from other countries by the end of 2016.

6.13. Other countries, most notably France and Germany, are recognised for their export success built on strong indigenous tier one manufacturers and ambitious national railways.

6.14. RSG will develop a strategy that will be underpinned by learning from approaches taken in other countries. It will include the initiatives outlined in this chapter and further initiatives arising from research currently underway, as well as harnessing existing strengths such as:

- Our world-class universities training foreign students either in the UK or in their own campuses abroad;
- Making full use of the 'GREAT' brand.

RSG will initially explore the potential for increasing UK capability to bid for medium-sized international projects and then subsequently larger ones. A process will be developed by the end of 2018 with the aim of starting implementation by the end of 2019.

- 6.15. Major international projects hold the key to growing exports but currently UK companies are not achieving market share for reasons as outlined above. A potential approach to increase UK involvement could be based on the following:
- Identifying UK capabilities that are already available to support delivery of large international projects beyond civil engineering;
 - Informed by government thinking and UKTI's High Value Opportunity programme, identifying modest-sized projects as targets for a UK bid where there can be significant UK content;
 - Developing a process to prioritise such projects and gain buy-in from UK suppliers;
 - Establishing a lead company or creating a Special Purpose Vehicle where companies in the project would have 'shares', supported by government through UK Export Finance;
 - Success in smaller projects will build confidence for increasing the project size.

RSG will help construct sustainable supply chains to overseas markets by facilitating collaboration between Tier 1 suppliers and SMEs. We will define an approach to this by the end of 2016 along with options for delivery.

- 6.16. Initiatives set out in other chapters aim to develop collaboration within the supply chain to build capability for UK markets which can then be used as a foundation for competing more effectively in export markets.
- 6.17. There are a number of barriers to engaging in overseas markets and these barriers are felt particularly keenly among smaller suppliers where resources are more limited:
- Legal and regulatory, including different technical specifications;
 - Language and cultural, as well as difficulty in identifying contacts;
 - Currency risk and commercial risks generally such as insurance, local laws and arbitration;
 - Transparency of procurement processes.
- 6.18. UKTI already offers support through embassies and consulates, but some countries go further with more specific marketing and mentoring. The approach could include:
- Reviewing the support currently available to SMEs and larger UK suppliers seeking to export, and their experience in using that support, to identify opportunities for improvement;
 - Marketing UK capabilities, building on the world-class profile created by many UK consultancies and internationally recognised brands such as: 'GREAT', Network Rail and London Underground. Such marketing will need to be underpinned by a database capturing the capabilities of UK companies and their appetite for exporting;
 - Working with UK Export Finance (who currently receive very few applications from rail companies) to understand, promote and develop the financial support available using rail centric resources;
 - Facilitating collaboration between SMEs and Tier 1s with an international footprint so they can provide a route into foreign markets;
 - How to better involve staff from local embassies and consulates.

6.19. RSG will utilise Open Doors to facilitate collaboration between Tier 1 suppliers and SMEs, and develop a range of marketing services to support overseas expansion.

RSG will support engagement in the development of standards so that products made for the UK railway can be sold into the largest possible overseas markets. A plan will be defined by the end of 2017 with the aim of commencing implementation by the end of 2018.

6.20. Standards open up markets and are a key enabler of productivity as they:

- Promote good (and safe) practices;
- Help to keep costs down;
- Reduce risk (safety and business);
- Capture, consolidate and transfer knowledge;
- Facilitate the development of competence.

6.21. An increased focus on a single European railway and interoperability between Member States has made exporting common products, technologies and skills into continental Europe significantly easier. Technical Specifications for Interoperability (TSIs) and Euronorms play a significant role in that harmonisation, and further afield, international standards from ISO and IEC perform a similar function in a much larger market.

6.22. It is therefore vital that UK suppliers contribute to the development of European and international standards; not only to ensure that the result is appropriate for the UK railway, but also to ensure that existing UK manufactured products don't require extensive rework and testing for export.

6.23. The British Standards Institution (BSI) already provides support to UK-based professionals representing the UK on European and international standards committees but there may be opportunities to do more.

6.24. RSG will work with government, industry customers, suppliers and BSI to develop the support available to UK representatives on standards committees.

RSG will work with government to investigate how UK suppliers could benefit from work arising from international development funding by the end of 2017.

6.25. The Government has previously operated schemes to help UK companies carry out feasibility studies (Overseas Project Fund) and then provide help at the contract bidding stage with a grant from the aid budget (Aid and Trade Provision) supported by export credit financing for the UK goods and services element.

- 6.26. It is understood that other countries utilise similar if not identical approaches. Current work will investigate this and consider whether, in discussion with government, this should form part of the exports strategy as a means of sustaining UK presence in emerging markets or accelerating UK entry.

RSG will work with government to create and enhance partnerships between overseas investors/companies and UK suppliers to encourage inward investment into the UK rail industry. A plan will be defined and implemented by the end of 2016.

- 6.27. There are already a significant number of foreign owned businesses within the UK and our strong domestic market is attracting further significant attention from overseas.

- 6.28. RSG will support BIS, UKTI and LEPs to increase the value of inward investment to the UK, by increasing rail-related manufacturing or R&D spend through a strategy that:

- Takes a measured approach that is not detrimental to domestic suppliers, by filling in the gaps in domestic capability;
- Favours export-ready Foreign Direct Investment (FDI) as opposed to FDI focused solely on serving the UK domestic market;
- Creates more value to the UK from existing FDI;
- Increases UK content in the FDI supply chains, initially through import substitution and then increasing exports in the mid to longer term;
- Works with overseas businesses that are interested in supplying into the UK to go down the FDI route and base R&D here in the UK where it does not overlap with, and can have a positive impact on, overall domestic capability;
- Ensures a coordinated approach across national government and regionally.

RSG will transform and improve the quality of data on exports to establish a baseline against which performance can be measured to underpin policy and action. A plan will be defined and implemented by the end of 2017.

- 6.29. A serious obstacle to ensuring performance excellence has been a lack of robust industry data to maintain intelligence and from which to develop recommendations. Some progress has been made here, with RSG for example commissioning the first exports study. Work to baseline the supply chain industry is critical if we are to monitor improvements.

- 6.30. RSG will work with government statisticians to collect data on rail exports and baseline the current position, drawing on currently available data from BIS, HMRC and the Railway Industry Association. A key first step in this process will be to establish the size and nature of the current UK rail supply chain; identifying any critical gaps in the evidence base and how to deal with these.

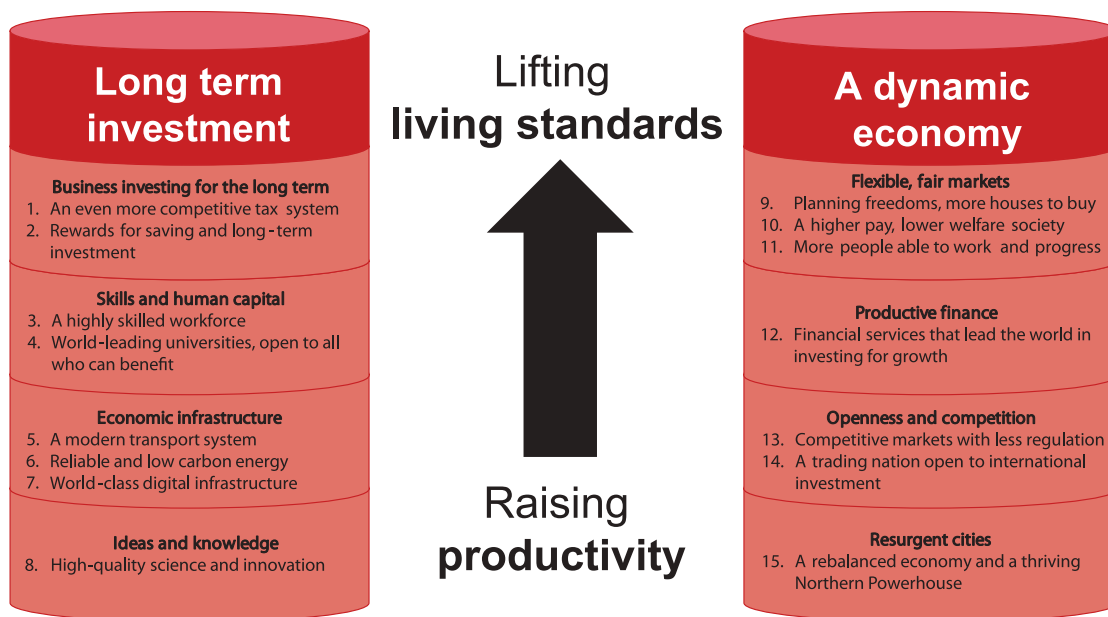
7. Implementation Plan

Our productivity pledge

7.1. This is a strategy that has productivity at its heart. The five principal proposals in our Productivity Pledge will directly contribute to raising the productivity of the UK rail supply chain and the wider UK economy, by supporting an improved, more efficient transport system and supply chain. We as a sector are pledging to deliver:

- A strategic approach to procurement and planning;
- A clear plan to drive world-class UK technologies;
- A coherent skills plan to attract the best talent and increase productivity;
- A comprehensive package of support for SMEs;
- A fresh, co-ordinated approach to increase exports and inward investment.

7.2. We believe that these proposals will support the Government’s framework for raising productivity. As set out by HM Treasury last year, productivity has eight building blocks:



Source: Fixing the foundations: creating a more prosperous nation, HM Treasury, July 2015

7.3. We are committing to deliver our Productivity Pledge through the initiatives set out in this strategy which address each of these building blocks in the following ways:

	Productivity: Building Blocks	Sector Strategy: Initiatives
1	Business investment	Sector Strategy will help to support greater investment
2	Skills and human capital	Skills plan
3	Economic infrastructure	Sector Strategy will help to deliver a more efficient rail network
4	Ideas and Knowledge	Technology/innovation initiatives
5	Flexible and fair markets	Skills and SME initiatives
6	Productive finance	Finance forum will improve suppliers' access to finance
7	Openness and Competition	SME and export initiatives
8	Resurgent cities	Sector Strategy will help support cities across the UK

Clear link between the RSG's Rail Sector initiatives and productivity

- 7.4. Taken together these initiatives constitute our plan to grow manufacturing capacity and productivity to exceed the needs of our customers and clients, and to capitalise on export opportunities. We have focused on four critical areas that the sector must address strategically:
- **Creating the market conditions for growth** to give greater stability and confidence through improved planning and procurement;
 - **Accelerating the uptake of innovation** by providing greater confidence to invest in order to develop new products and services;
 - **Investing in people and skills** in order to directly address future skills shortages and to increase productivity;
 - **Growing exports and inward investment** to unlock new opportunities at home and overseas and grow UK manufacturing.
- 7.5. This will have real impact. Industry's evidence to the 2011 Transport Select Committee stated that discontinuity in production alone added roughly 20% to the general cost of rolling stock, so the wider reaching initiatives set out in this strategy could, when taken together, deliver greater improvements to productivity. Through the collaboration with government proposed in this strategy we will maximise those gains.
- 7.6. We recognise that this is a significant package of work and we will work with RDG, customers and clients to lead the programme of work on behalf of suppliers and ensure that resources are used most effectively, avoiding duplication with the work of other groups in the railway and other sectors, applying the following principles:
- We will not reinvent the wheel or create new work streams where others already exist with the same objectives and scope;
 - We will use the best of what is available, only developing further if it does not suit our needs;
 - We will make use of available forums to bring the supply chain together, including for example, the ATOC Supply Chain Forum;
 - We will actively support and contribute to the delivery of industry strategies such as 'Leading health and safety on Britain's railway'³⁵ and the Rail Technical Strategy;³⁶
 - We will present constructive challenge where justified;
 - We will work on behalf of the UK rail supply industry as a whole rather than any single supplier.

This strategy is a live document and RSG will refresh it every three years, with annual progress reports.

- 7.7. Delivery of this ambitious action plan will require the support of the whole sector. It will require collaboration within the rail supply sector and across the railway as a whole, and outside the railway with other sectors. We must seize these opportunities to create confidence in the market, stimulate innovation and rejuvenate our workforce if we are to maintain competitive costs and a viable balance of imports and exports. Most importantly we must embrace the opportunity to develop a vital pillar of a sustainable manufacturing base to support balanced growth in UK plc in the long-term and enhance value for our end users - whether in improved passenger experience or enabling more efficient movement of freight.

³⁵ Leading health and safety on Britain's railway - A strategy for working together, RSSB, 2016

³⁶ Rail Technical Strategy, RSSB on behalf of the Technical Strategy Leadership Group, December 2012

	<i>Initiative</i>	Para	2016				
			Q1	Q2	Q3	Q4	
Creating Market Conditions for Growth	Creating confidence through joined-up and visible planning	3.11					
	Maximising value to the economy, taxpayers and fare payers from procurement	3.13					
	Incentivising continuous improvement through a Rail Supplier Excellence Scheme	3.18					
	Championing collaboration with a code of practice on activities and behaviours	3.21					
	Developing a solution to reduce slow payments to SMEs	3.22					
	Improving the availability and cost of finance	3.23					
Accelerating Uptake of Innovation	Enabling innovation in the market through an Innovation Leadership Steering Group	4.14					
	Embedding innovation by championing a code of practice	4.18					
	Supporting collaboration between suppliers by establishing a framework	4.21					
	Leading innovation in five technology areas through centres of excellence	4.24					
	Developing options to transform UK test facilities	4.29					
	Streamlining product approval processes in line with customer and supplier needs	4.31					
	Driving continuous improvement through self-assessment	4.33					
Investing in people and skills	Driving production of a coherent skills plan	5.23					
	Attracting and retaining people by raising the profile of the industry	5.25					
	Creating a talent pool from which to recruit high-calibre applicants	5.27					
	Supporting the creation of 20,000 new apprenticeships	5.31					
	Coordinating quality training by developing a network of facilities and trainers	5.32					
	Driving demand for training through new approaches in procurement	5.34					
	Ensuring consistent training by establishing a sector assessment and assurance panel	5.36					
	Maintaining and capturing intelligence by establishing a new Skills Intelligence Unit	5.37					
Growing Exports and Inward Investment	Creating a single voice through an Exports and Inward Investment Advisory structure	6.12					
	Developing a new strategy with government for exports and inward investment	6.13					
	Increasing UK capability to bid for international projects	6.15					
	Constructing sustainable supply chains by facilitating collaboration	6.16					
	Maximising the market by ensuring UK expert input into international standards	6.20					
	Identifying opportunities with government from international development funding	6.25					
	Creating and enhancing partnerships between overseas investors and UK suppliers	6.27					
	Facilitating excellence by transforming the quality of industry exports data	6.29					

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