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SENIOR MANAGEMENT POSTS INSIDE

Rail Professional

THE BUSINESS MAGAZINE FOR RAIL

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The new faces of rail

Interserve's Guy Bruce on the changing roles of support personnel

Brexit or domestic?

Paul Plummer on rail's priorities



Protect and serve

Surveillance trends in rail



Rail safety post-Brexit

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editor's note

"Welcome to this September issue, put together over the summer break which I hope you enjoyed.

What's happened to Claire Perry? Certain of no place in May's government she sounded like she was ready to sing like a canary about rail when she resigned. Is a book in the pipeline?

While I'm happy that Bombardier's UK workers have certainty. Isn't Abellio winning the franchise sending a message that the outcomes are a bit predictable, at a time when the DfT is trying to drum up enthusiasm from a wider range of bidders?

This issue has several excellent pieces on the implications of leaving the European Union and the majority take the view we have no reason to cry into our soup.

But there are already changes in the pattern of demand for rail and underlying growth is slowing – cheap petrol, terrorism, overcrowding *etc*. are giving people pause for thought.

Chris Page's perhaps more pessimistic piece on page 67 looks at the further impacts on the industry of a post-Brexit scenario of reduced economic and population growth. To counteract them he believes the UK must be seen to be open for business and that means continuing to invest in the infrastructure projects it needs.

On a more positive note, RDG's Paul Plummer maintains that, while in future we may not have a chair at the EC table we will still be in the room.

Plummer suggests a new prime minister and change in ministerial representation is a more immediate concern for the industry than the drawn-out affair of Brexit, and, as he wisely points out, 'the sector has to be equally prepared for a government with rail down the agenda, as one with nationalisation pressing on their 'to-do' list.'

That got me thinking about Peter Wilkinson. He doesn't ask for it to be off the record in saying the franchise model needs to be re-thought through, but this government will find it 'very difficult to slaughter its own pig', he believes. One thing that must be cheering him up though is the departure of George Osborne, a man Wilkinson disliked with a passion.

I've just come across a wonderful article written by Richard Browning earlier this year for the thisismoney.co.uk website which humorously conveys the ludicrous and irrational complexity of the current franchising and fares system and its impact on passengers. Written before the vote, Browning starts the piece by speculating that if anti-Europe Chris Grayling's Brexit campaign is anything like his efforts to get Epsom, the main station in his constituency into London's Oyster card network, Britain will be in the euro by Christmas.

Good luck Chris and welcome aboard.

Lorna Slade Editor"



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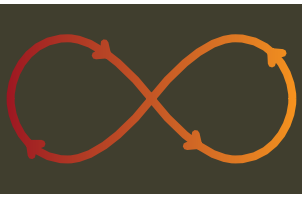
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> There is real momentum gathering behind the smart cities agenda, where information and communications technology will be intrinsically woven into the fabric of our cities. Interview - page 78



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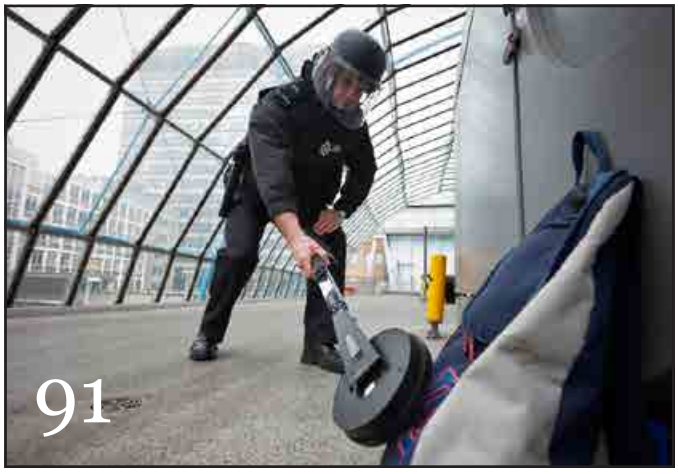
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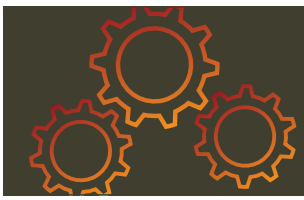
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Excellence In All We Do

News in brief...

High confidence at Railtex 2017

Nearly 160 companies have already reserved a stand at Railtex 2017, the UK's bi-annual exhibition of railway technology, products and services, to be held at the NEC Birmingham 9-11 May. Exhibition manager Kirsten Whitehouse said: 'This strong early demand confirms the supply industry's confidence in the market. Every sector is represented, with around 10 per cent of exhibitors new to Railtex: one-sixth are foreign, so clearly they still see good business opportunities following Brexit; that should help UK firms targeting export markets, and Railtex has a good track record in attracting overseas visitors.'

Go for HS3 says IPPR

Chancellor Philip Hammond should take advantage of record low borrowing costs and fund HS3 says the Institute for Public Policy Research. Director Tom Kibasi pointed out the government plans to spend £280 per person on infrastructure projects in the north over the next five years, versus £1,870 in London. 'The time it takes to travel between our great regional cities is a national disgrace,' he said, 'this is not what happens in Germany, Japan or France, with their fantastic rail links, or the US with its highly developed regional air travel.'

Power of information

A delegation from India's Ministry of Railways visited Network Rail's Electrification Training Centre in Swindon to investigate how techniques used on the Great Western project could be implemented in their railway and metro programmes. 'We were very keen to see how the rail systems work in England and how modifications to electrification were being made', said Manuj Singhal, chief electrical engineer (planning) at Delhi Metro Rail Corp.

An unfashionable plan

A planned £1 billion Crossrail 2 station in King's Road Chelsea could pay for itself within 20 years through a surge in stamp duty revenues of up to £55 million a year, according to a study by economic consultancy Quod. The station is opposed by many residents, but the study, commissioned by a group of more than 50 local bodies which support the proposal, also projected

Night tube finally rolled out

The first Night Tubes have finally rolled out to London Underground platforms – almost three years after the plan was first announced.

Trains are running on the Victoria and Central lines on Fridays and Saturdays from 12:30am to 5:30am and the service will be expanded to the Jubilee, Northern and Piccadilly lines this autumn.

London Underground expects 50,000 people to use the Night Tube each weekend, rising to 200,000 once all five lines are open.

Night Tube services are expected to add £6.4 billion to the London economy by 2030, creating 500,000 jobs according to TfL.

Mayor Sadiq Khan was among those to board the first Victoria line service which departed from Brixton, south London, at 00:34 BST on Saturday 20th of August. He said: 'You can feel the buzz, you can feel the vibe. People are really excited. What's important is we got the detail right.'

The plan for the Night Tube was announced in November 2013 and intended to begin in September 2015, but unions staged a series of strikes during July and August last year before an agreement was finally reached in March this year.



Before the launch, Khan, who had recorded welcome messages to be played over the public address system at Oxford Circus, took the chance to have a dig at Boris Johnson, who had locked horns with the unions over the Night Tube, saying he had 'given up' on the project. Said Khan: 'It's not me making a cheap point, but the previous mayor did announce the Night Tube start date on one occasion and that wasn't met, on a second occasion, that wasn't met, on a third occasion, that wasn't met, and then he gave up.'

'My point is TfL staff work incredibly hard. It can't be beyond the wit of a full-time mayor and TfL to make this work properly. Boris Johnson deserves credit for talking about the Night Tube, but it was important to get the details right.' Khan added that just two of the five lines were opened initially because 'We don't want a big bang with errors and mistakes. There may be teething problems but the key thing is to learn from that before we unveil the other lines.'

Transport for London said there was a 'huge demand' as passenger numbers on weekends had soared by 70 per cent since 2000. Around half a million passengers currently use the Tube after 10:00pm on Fridays and Saturdays combined.

LU's new managing director, Mark Wild, who launched night services in Melbourne, Australia, earlier this year, said: 'We expect a nice mix of people who enjoy the fantastic night life of the city, but it's also a lot about giving people mobility.'

Relationship between satisfaction and trust even stronger says customer service leader

Results from the Institute of Customer Services' 2016 UK Customer Satisfaction Index show the transport sector has increased by 1.5 points, slightly above the UK average rise of 1.2.

Two rail companies, East Midlands Trains and South West Trains made the list of the 20 most improved organisations with scores of 77.4 over 71.6 in 2015 and 70.1 over 64.9 respectively.

However the transport sector in general, with a UKCSI of 74.4 out of 100 remains three points below the overall UKCSI.

Other results show that compared to two years ago there has been an increase in the proportion of transport sector customers – from 20 to 27 per cent – who prioritise excellent service, even if it means paying more.

Compared to July 2015, the transport sector has improved in almost all measures, particularly for written communications (in writing/email) and ease of getting through over the phone. For 'over the phone' experiences, the sector performs broadly in line with the UK average.

However, on most measures, transport performs below the UK average and scores especially low compared for product/service reliability and helpfulness and competence of staff for 'in person' experiences. This is particularly important, said the ICS, because more than 40 per cent of customers' interactions with organisations are in person.

CEO of the ICS, Jo Causon, said: 'As we come to terms with the uncertain economic and political consequences of the EU referendum, this UKCSI reminds us that a consistent focus on customer service is a crucial ingredient for sustainable performance, especially in challenging times.

'Compared to two years ago, a growing segment of customers prioritise excellent service, even if that means them paying more. Moreover, the relationship between superior satisfaction and the highest levels of trust appears to have become even stronger.'

Continued Causon: 'The highest performing organisations recognise the importance of gaining a deep understanding of their customer's evolving needs and preferences.

'These organisations show especially strong and consistent performance in areas that are highly valued by customers including employee's skills, attitudes and behaviours, the ability to get things right first time and, where necessary, solve problems quickly and efficiently.'

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News in brief...

that extra visitors to the area would spend £100 million in shops and £80 million in bars, cafes and restaurants.

No confusion about profits

TfL has received £227 million from passengers making 'incomplete' journeys between 2011-15 according to the Telegraph. Last year there were 15.1m journeys where the full fare was charged because touch-in touch-out data was not assessed for various reasons, and after refunds, TfL made £58.7m. TfL said the fees: 'protect all users of public transport from the cost of fare evasion'. A spokesman for consumer rights group Resolver told the newspaper TfL is 'profiting from consumer confusion'.

Laws of delays

Physics PhD student Benjamin Kaube has launched a smartphone app to help delayed commuters after becoming 'infuriated at the way much of the rail industry makes it difficult to obtain refunds.' The app — TrainTrick.com — uses a mobile's GPS data to work out a passenger's journey details. Once a photograph of the ticket is uploaded, the app submits a refund request to the relevant Toc if a journey is delayed by 30 minutes+. The money is refunded via PayPal after a 10 per cent admin fee is deducted.

Pika-choo-choo

TransPennine Express is urging people to stay safe while playing smartphone game Pokémon Go after reports of players capturing virtual Pokémon characters on-board trains and at stations. The Toc is advising players to concentrate on their surroundings, especially when boarding trains or walking along platforms. The game allows users to catch a wide-variety of Pokémon using GPS and the creatures can be found at a variety of locations.

Reliability for hire

Virgin Trains will be hiring a Class 90 locomotive from DB Cargo starting this month for an indefinite period. The loco will be based out of Bounds Green depot to provide cover for the Class 91 fleet and will be limited to the Kings Cross – Newark Northgate diagrams. Peter Cooling, head of fleet delivery for Virgin Trains on the

ACoRP set to expand after new funding

The Association of Community Rail Partnerships (ACoRP) is to expand thanks to new funding from the Department for Transport and Arriva Rail North.

The new structure will mean that ACoRP will be able to provide greater support to its members, community rail partnerships and station friends groups across the country, with the aim of helping the whole community rail sector develop, and encouraging greater use of regional and rural trains.

The body will be headed by a new chief executive and is recruiting expertise in communications and marketing, tourism and heritage as well as expanding its operations team.

After a handover period, long-serving general manager Neil Buxton will leave the organisation and retire at the end of 2016.

Said Buxton: 'ACoRP has grown considerably in stature and influence in the last decade and I'm proud to have contributed to that. However, to stay ahead of the game, the organisation needs younger, fresher minds to deal with the new challenges being presented to the community rail sector. Having been closely involved with the reorganisation since its inception, I firmly believe this is the way to go and I'm excited by the opportunities it will offer to improve our service delivery to both our membership and the wider rail industry.'



Neil Buxton with former parliamentary under secretary of state for transport Norman Baker

ACoRP chair, Peter Roberts MBE confirmed a series of new posts will be advertised over the coming weeks with the aim of having all jobs filled by January 2017. He said: 'We are grateful to both DfT and ARN for making these new developments possible. We are especially grateful to Neil Buxton for his long service and his leadership during a challenging period for both ACoRP and the rail industry in general. He will retire at the end of the year with our very best wishes for a long and happy retirement.'

ACoRP will continue to be based at The Old Water Tower at Huddersfield station.

South West Trains finalist in customer service awards

The Toc has been shortlisted in the 2016 European Contact Centre and Customer Service Awards for the launch of its new 24/7 video contact centre.

The centre, launched this year, is linked through to 91 video ticket machines at stations across its network. It is believed to be first of its kind in the country and is already proving popular with customers says the Toc.

South West Trains has invested £50 million in customer service improvements including the centre; 100 new customer ambassadors at stations; 1400 extra car parking spaces and a new website and smartphone app.

The Toc was ranked one of the best in London and the South East in the Spring National Rail Passenger Survey, with overall satisfaction at 82 per cent, placing it four per cent higher than the average for operators in the region.

The awards, to be held on Monday 21 November, will see South West Trains will go up against companies such as Legal and General, BT consumer and Genesys and Panasonic in the Innovation in Customer Service category.

Alstom Rail Grand Challenge winner announced

The winner of Alstom's SME Rail Grand Challenge is UK innovation specialist 42 Technology from St Ives, Cornwall, which has netted £50,000 to develop its idea into a commercial product.

The competition aims to generate and develop new innovations in rail transport while forging closer links between Alstom and UK businesses. 42 Technology will have the opportunity to work with Alstom to see its concept realised on the railway network. The Transport Systems Catapult, which managed the competition, will support the process to ensure the best possible chance of the innovation reaching the market.

Five companies were shortlisted for the final prize including Vivacity Labs, OpenCapacity, Dependable Real Time Systems (DRTS) and Tinsley Bridge Group. Standards were so high that Alstom will now pursue further development with all five SME's.

Alstom marketing and strategy director Alex Burrows said: 'The level of entries we have had in for the Rail Grand Challenge has been outstanding and a real testament to the innovation and skill of rail SME's in the UK.

Richard Jones, rail director at the TSC, which is now in talks with Alstom Rail about running a further iteration of the Rail Grand Challenge, said: 'All the entrants did themselves proud. Getting this type of commercial funding and support for UK businesses and connection to the supply chain for a global company like Alstom is what the Catapult network is about.'



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News in brief...

east coast said: 'With the added workload we just wanted some extra insurance which the Class 90 will provide to help maintain service reliability.'

Life's a beach

Margate has become the seaside town of first resort with new figures showing a 50 per cent leap in train passengers heading there. In the past three years, the number of off-peak passengers travelling to the town on Southeastern trains has risen by 100,000 to 329,865. The town has undergone a notable revival with the world-famous Turner Contemporary and Dreamland opening there, and was listed as one of the top 10 world destinations by travel bible Rough Guide in 2011.

Line of sight

Specsavers Corporate Eyecare has won a contract to provide eyecare at ScotRail. More than 4,700 employees will be provided with Spectacles eVouchers, giving access to an eye examination and glasses from Specsavers' range. Nadya Kuhl, occupational health manager at ScotRail, said: 'As we operate across Scotland, we need an eyecare provider that does the same.'

New and improved

ScotRail has introduced the first two refurbished examples of seven additional Class 320 trains, which will run on cross-Glasgow services via Glasgow Central Low Level. The Toc leased the units – owned by Eversholt Rail and previously operated by London Midland – as part of its £475 million train improvement programme. The work is being carried out at Wabtec Rail's Doncaster facility.

Check a train

A new online tool, MyTrainJourney, gives passengers the ability to see the punctuality and reliability record of every train in Britain on a smartphone, tablet or computer, in any period up to the past year. The tool was commissioned by the National Task Force and developed by the RDG and Glow New Media. The data that powers it is being made available to software developers as part of the rail industry's move to enable companies to build new apps and other smart technology.

NETWORK RAIL NEWS...

Costing more

Higher renewals costs and enhancements underperformance have been key factors to Network Rail's work costing £1.7 billion more than expected so far in CP5, according to the ORR, and will leave the company in a worse financial position at the start of the next control period. ORR's Annual Efficiency and Finance Assessment of Network Rail 2015-16 report showed renewals expenditure was £680 million higher than the PR13 determination for the control period to date, and £97 million higher than in 2014-15.

Romford not ROCing yet

Network Rail is to delay fully integrating traffic management functionality at its Romford Rail Operating Centre as there are a still a number of risks that need to be mitigated before full commissioning. It was expected that Thales's ARAMIS traffic management system would be fully integrated at the ROC by November.

A Network Rail spokesman told *Rail Professional*: 'We've been working hard to get the system in place to deliver a November start date, however a detailed review has shown we need more time to allow us to iron out the final software bugs, complete the training of staff, carry out trial operations on the simulator and enable the development of our staff's capability and confidence in using the new system. 'We are continuing to assess the programme and aim to agree a new commissioning date as soon as possible. We're absolutely committed to delivering this ground-breaking signalling and traffic management technology on Anglia route, which will deliver both a better way of working for our staff and help increase capacity and improve reliability for train and freight services.'

To certify, or not

The Rail Accident Investigation Branch has recommended Network Rail reviews its requirements for certifying signalling operators after an operator allowed a train to pass a signal at danger.

The accident occurred at 7:22am on 7th November 2015, when the first five bogies of the Northern Rail service from York to Harrogate derailed.

The RAIB investigation found that at the time of the incident, the Knottingley mobile operations manager (MOM) was operating the Knaresborough signal box, which he was authorised to do, as a substitute for the normal signaller, who was off work with a workplace injury.

The MOM authorised the train to bypass the signal at danger, believing it was safe to do so. This led to the train derailing after it travelled over incorrectly set points.

A Network Rail spokesperson told *Rail Professional*: 'We take safety incidents such as the one at Knaresborough extremely seriously and have worked alongside the RAIB to produce the comprehensive report into what happened on that day. We work hard to prevent incidents like this happening and have already started to implement the recommendations made by the RAIB report to try and stop similar incidents from occurring again in the future.'

In-skilling?

Network Rail may take the audit and assessment of rail skills training back in-house because of concerns that providers are not following safety standards.

The company currently delegates responsibility for assessing and accrediting skills providers on all its Sentinel-related training and assessment programmes to the National Skills Academy for Rail (NSAR).

NSAR recently suspended UK Rail Skills Training (UKRS) after discovering that it failed to demonstrate strong procedural processes, managed fatigue and working hours ineffectively, and had incomplete Safe System of Work Packs and training pack verification which was significantly below standard. UKRS is now seeking an injunction from the Competition Appeal Tribunal against the decision.

A Network Rail spokesman told *Rail Professional*: 'At this stage, we cannot confirm anything. As proceedings are still active, it would be inappropriate for us to comment or speculate. Once an outcome has been reached, we will be able to share a statement.'

Dover to Folkestone railway to reopen this autumn

A £39.8 million project to rebuild the line between Folkestone and Dover will be completed this autumn, Network Rail has confirmed.

Work to repair and rebuild the railway has been taking place since December 2015, when the line had to be closed after it became severely damaged.

Engineers are working to build a new 235 metre-long viaduct, supported by 134 concrete columns. Network Rail's area director, Paul Rutter said: 'As soon as we have a firm date for reopening the railway line, we will let passengers know.' MP for Dover and Deal Charlie Elphicke said: 'The works are clearly ahead of schedule. Many congratulations to Network Rail and Costain on the incredible job they have done so far.'

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News in brief...

Tools for life

Homeless people in Liverpool will benefit from a donation by the team working on the redevelopment of Moorfields station. Merseyrail, main contractor Galliford Try and subcontractors Firesafe, Austin-Lenika, Newy & Eyre, Design Plan and PPS Rail provided 56 rucksacks as well as flasks, socks, hats, mats, wet bags, cutlery etc. to the Whitechapel Centre which provides services for people who sleep rough. Simon Olorenshaw, Merseyrail interim customer service director, said: 'We hope it will help them to make more empowered life choices.'

Freight record

Le Shuttle Freight has transported its millionth truck for the year, almost one month ahead of the same milestone in 2015. Jo Willacy, commercial director for Eurotunnel said: 'In choosing to make the crossing with the Channel Tunnel, hauliers and truck drivers benefit from an enlarged, secure and comfortable environment. It is through this service that we have retained our position as the industry leader.'

A matter of trust

Which?'s consumer insight tracker has shown trust in the rail sector has dropped to 26 per cent, down seven percentage points on July 2015, and distrust is up seven points to 30 per cent. *Which?* is calling on the government to make the ORR implement a system that ensures passengers who experience persistent, short delays or overcrowding can claim; to introduce automatic compensation, and employ a statutory ombudsman to resolve complaints.

Play it again Nick

Northern has installed a new piano at Leeds station after the original was vandalised. Use of the piano – donated by Besbrode Pianos after it spotted Northern's appeal for a replacement on social media – is available to passengers who fancy their talents. Professional pianist Stuart Garden was on hand to introduce the piano but it didn't take long for a Nick Mitchell from Bramley to take up the seat, playing Vanessa Carlton's A Thousand Miles and various Coldplay hits.

GTR staff receive training from Paralympian

Govia Thameslink Railway has become the UK's first Toc to put its front line staff through Team Insight training, to teach them how best to assist blind or visually impaired passengers.

Team Insight was founded by GB goalball Paralympian Georgina Bullen, who led staff from Thameslink and Great Northern through exercises designed to impart awareness of visual impairment, after which they were awarded an accredited certificate, approved by RNIB.

Stuart Cheshire, Thameslink passenger service director said: 'Every member of our group was able to appreciate how vulnerable people can feel if they have no sight.'

Georgina Bullen said: 'It is extremely encouraging to see GTR taking this action to ensure safety and comfort for all passengers. Everyone was genuinely interested to find out the difficulties partially sighted people face and the training has hopefully given them the confidence to put both themselves and the traveller at ease when assisting them.'



Stuart Cheshire holds aloft the Olympic Torch during Team Insight training session

London's first transport commissioner dies

Bob Kiley, the capital's first ever transport commissioner has died at his home in New England aged 80, as a result of complications of Alzheimer's disease said his family.

American Kiley was recruited by former mayor Ken Livingstone and spent six years as Britain's highest paid civil servant, earning £2 million.

The former CIA agent headed Transport for London during the introduction of the congestion charge and fought the part-privatisation of the Tube.

London's current transport commissioner, Mike Brown, told the *Standard* newspaper: 'Bob Kiley was instrumental in securing the investment to modernise London Underground and transform the bus network. He led the way with the congestion charge which, alongside massively improved public transport, encouraged people out of cars and onto more sustainable forms of getting around.



Bob Kiley with Ken Livinstone

'Bob helped shape modern London, ensuring that it remained a world-leading city.'

Kiley, who was paid an unprecedented base salary of around £275,000, battled prime minister Tony Blair over the Labour party's plans to transfer signals, stations and tracks to three privately owned companies, while leaving the publicly run London Underground in charge of operating the trains.

He described Blair's plan as 'fatally flawed' and Livingstone later said he was vindicated in his opposition to the public-private partnership.

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News in brief...

Worrying decline in STEM

The average annual increase in the number of students taking A-Levels in STEM subjects over the past four years 'barely scratches the surface' of the UK's shortage of engineers, according to AECOM. The company is calling for urgent action to increase the number of students studying STEM subjects at A-Level, as the qualifications are vital not just for engineering degrees but for many apprenticeship courses.

Fewer is not more

Transport for West Midlands is not happy with one of the DfT's suggestions in its consultation to passengers on how the new WCML franchise in 2018 could operate. An option to have fewer trains stopping at Wolverhampton, Coventry, Birmingham International, Sandwell and Dudley will damage the economy says TfWM, 'and it would become almost impossible to commute between some of the region's key cities.' TfWM's proposals to alleviate the current capacity issue include longer car trains, opening up more first class seating at times and address the 'significant difference' between peak and off-peak fares. A spokesman for the DfT said: 'No decisions have been made and the responses to the consultation will inform next steps.'

HS2 route improvements

The DfT has updated the safeguarding directions (which serve to both protect the land required for HS2 and trigger statutory compensation arrangements for affected homeowners) to local planning authorities situated along the phase 1 route of HS2 as a result of changes agreed at a recent House of Commons Select Committee meeting. The improvements to the route mean fewer properties will be affected said the DfT. Changes include a 1.6-mile extension to the deep-bored tunnel under the Chilterns, which will preserve almost 30 acres of woodland and reduce the scale and duration of local construction activity. The committee also agreed a range of other and smaller route modifications.

Don't stand so close to me

In January of this year, in premature anticipation of the launch of London's 24-hour tube, global hotel chain Millennium Hotels and Resorts undertook a survey to understand how the city feels about its underground service.

The top five 'annoying aspects' of the London Underground are:
1. overcrowding (37 per cent)
2. the cost of travel (26 per cent)
3. hot temperatures (9 per cent)
4. delays, such as red lights & signalling failures (8 per cent)
5. other commuters (6 per cent)

These five irritations account for 86 per cent of all responses.

The top five 'tube habits' that annoy travellers are:
1. people who don't move all the way down the carriage (32 per cent)
2. people who play loud music through their headphones (16 per cent)
3. people who eat food (15 per cent)
4. people who litter (12 per cent)
5. people who stand on the wrong side of the escalator (8 per cent)

The five most important pieces of tube etiquette are:
1. letting passengers off the train before getting on (58 per cent)
2. giving up your seat for others (18 per cent)
3. moving down inside the carriage (12 per cent)
4. standing only on the right-hand side of the escalator (5 per cent)
5. avoiding eye-contact with fellow passengers (2 per cent)

The six situations most likely to prompt passengers to intervene are:
1. a passenger being rude to another passenger (24 per cent)
2. a passenger coughing or sneezing openly near them (19 per cent)
3. a passenger who has not taken off their backpack on a very busy tube (13 per cent)
4. a passenger using bad or offensive language (10 per cent)
5. a passenger playing loud music through headphones/A passenger eating takeaway food near me (both 3 per cent)

Night Tube essential

Millennium Hotels and Resorts also asked respondents how they felt about the prospect of the forthcoming 24-hour Tube service. The 14 per cent who felt that it is 'not necessary' or a 'waste of resources' were outnumbered 4.5 times by the 63 per cent who consider it either 'essential' or 'very useful.'

Adarsh Rangaswamy, director of digital marketing said: 'We weren't surprised to see that a significant majority of people were in favour of the new service, and were interested to see opinions around the recent strikes. London can be a stressful place to get around so for the sake of our guests' experiences we have a vested interest in these travel developments.'





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Letter to the editor...

Dear Madam,

I am writing with regard to the article The Road Less Travelled by Chris MacRae of the FTA in your July/August edition.

Chris starts the article with consideration of the environmental benefits of rail freight. He comments: 'But issues exist around the actual extent of rail's advantages when factors such as empty running and the impact of starting and stopping freight trains. . . are taken into account.' On average, a tonne kilometre of freight moved by rail emits 64 per cent less CO2e than a tonne kilometre of freight moved by road. This figure comes from DEFRA's GHG conversion factors (2015). Rail freight emissions are calculated by the Office of Rail and Road (ORR) by simply dividing the total volume of fuel used by freight train operators by the tonne kilometres moved. The figure therefore fully takes into account empty running and starting and stopping. The conversion factors for road freight are derived in a similar way and so road and rail emissions are directly comparable.

Trucks are becoming more efficient, but freight trains are getting longer. Uniquely, rail has the opportunity to offer electric haulage using electricity sourced from low or zero carbon suppliers, further strengthening the environmental advantage.

Chris also mentions a cost of 45 litres of fuel to stop and restart a freight train. This sounds a lot. But if that train is carrying 1,000 Tonnes of freight, its 0.045 litres per Tonne, that's less than eight teaspoons.

He completes the article with a series of eminently sensible suggestions as to how rail freight can become more competitive. It is disappointing that, even in an article promoting rail freight efficiency, a 'mode neutral' organisation such as the FTA feels it necessary to question rail freight's environmental benefits – benefits which are accepted as a firm basis for government policy.

Yours sincerely,
Ian Brooker
Director, Logistics
WSP | Parsons Brinckerhoff

Campaign tells British public how their money is building a better railway

Rail companies are to launch a campaign to highlight the railway's ever more crucial role to the economy and helping Britain to grow.

The mass communications campaign aims to raise public awareness of how money from taxpayers and passengers is improving journeys and will be launched this autumn by the Rail Delivery Group.

Paul Plummer, RDG chief executive, said: 'We know we need to do much more to engage with the public to explain better how their money is building a better railway. We also need to communicate more effectively how some of this improvement work, although ultimately worthwhile, will unfortunately in the short-term have a knock-on effect on services.

'Our goal is to sustain support from the public and private sectors for continued investment so that we can build the bigger and better railway that our growing number of passengers and the country need and want.'

Creative agency M&C Saatchi has worked with the RDG to develop the campaign which will used owned, earned and paid-for media, including a television advert in the spring.

Passenger trains transport urgent bio samples to labs in London



The number of time critical biological samples carried on passenger trains has increased by 100 per cent in the past year.

Companies around the country running clinical trials where samples need to be tested daily in London laboratories have found the speed and reliability of Bio FastTrack services especially useful, according to the Nottingham-based drug development company, a partnership between InterCity RailFreight and WEGO Carbon Neutral Couriers.

Jeff Screeton, ICRF managing director explained: 'For instance, if there is a problem with the sample and a second needs to be taken, we can still get it tested on the same day and that person's clinical trial is not invalidated – or, in other cases, treatment is not delayed.'

An increasing number of pathology and medical groups have come to appreciate the advantages of rail according to Screeton: 'Passenger services are so regular and so fast and the cost is much lower – up to 25 per cent cheaper than traditional same day couriers, and less than half the cost of bespoke couriers.'

The service was launched in conjunction with East Midlands Trains in 2014 to carry time-critical bio samples for one of the world's largest pathology groups. Passenger trains leave Nottingham and Sheffield every 30 minutes and arrive in London much sooner than the road transport service alternative. Packages are also loaded in Leicester, Derby and East Midlands Parkway where the train stops for only 90 seconds.

'It has taken a lot of work to build the relationships with all the partners, but it is proving so successful that we have now used passenger trains to carry a wide range of products including everything from urgent documents and auto parts to time critical perishable products,' said Screeton.

Report it to stop it campaign encouraging greater reporting of unwanted sexual behaviour

More people are coming forward to report unwanted sexual behaviour on the transport network, Transport for London (TfL) has confirmed, following a joint campaign with the police to crack down on the perpetrators.

TfL, the Metropolitan Police Service (MPS) and British Transport Police (BTP) launched the high profile *Report it to stop it* campaign in April 2014, encouraging people to report any behaviour that made them feel uncomfortable. The *Report it to stop it* campaign film has now been watched by almost eight million viewers.

The number of reports rose by 31 per cent to 1,716 in 2015/16 compared to the previous year, resulting in more than 500 arrests.

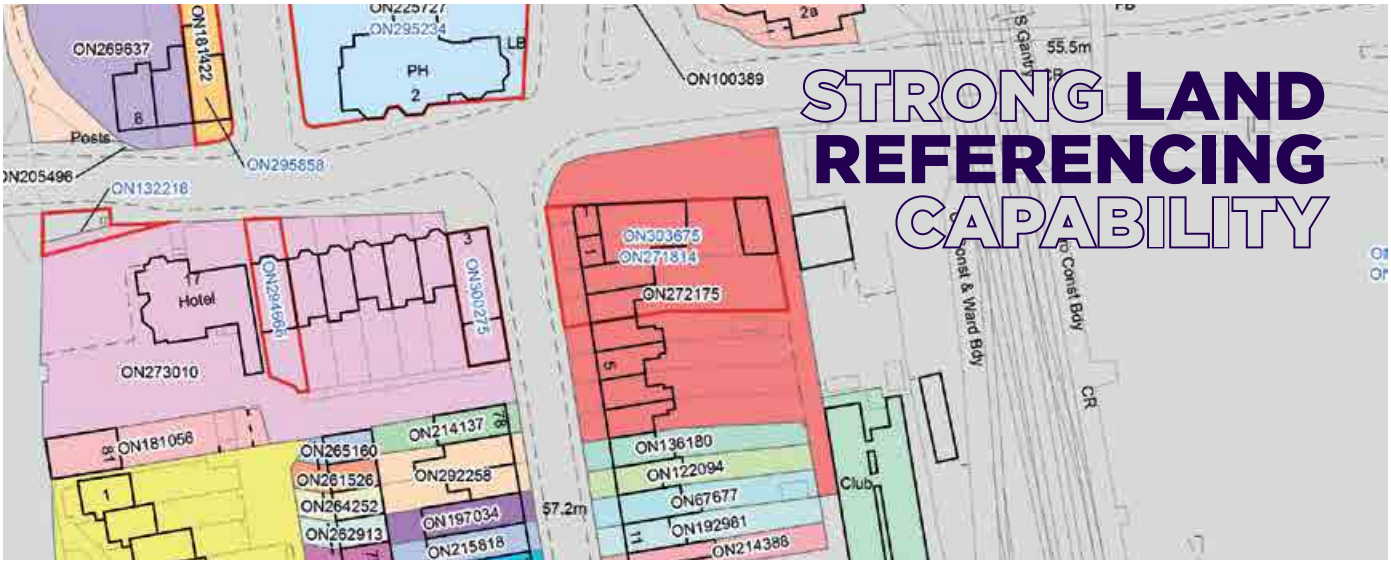
To encourage even more reporting, police officers went out across the transport network last month for a day of engagement with the public, handing out leaflets and giving advice on how to report unwanted sexual behaviour.

Chief superintendent Martin Fry, divisional commander for British Transport Police, said: 'Through the work of *Project Guardian* and, more recently *Report it to stop it* we have been encouraging everyone who uses the network to report any incidents. With the campaign in place we fully expected to record a rise in sexual offences. We know that offences were being under-reported and have worked hard during the past two years to give victims and witnesses the confidence to come forward.'

Around 100 extra police officers will be patrolling stations and trains on the Night Tube after London's mayor Sadiq Khan made a further £3.4 million available to invest in the policing of the long-awaited service.

Said Khan: 'Passengers on the Night Tube must be able to travel with the same confidence they are used to during the day.'

Officers will be supported by BTP rapid-response vehicles spread across London and by more than 12,000 CCTV cameras across the network.



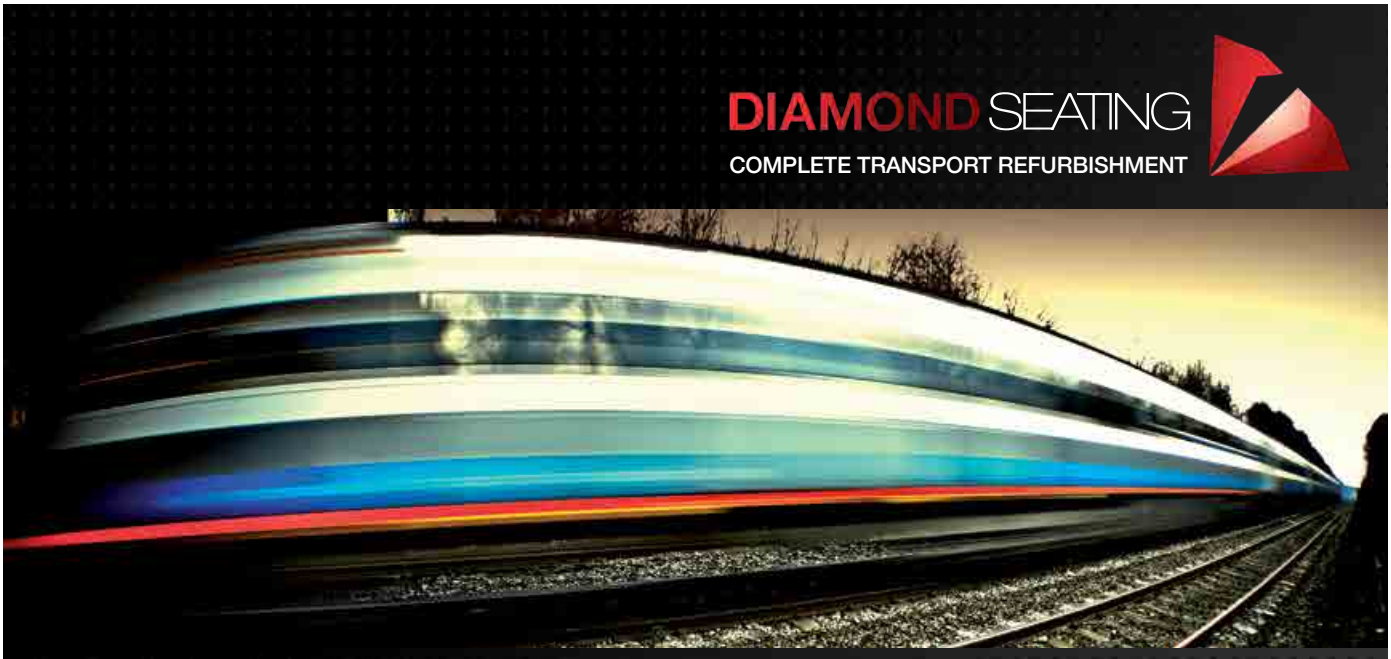
Carter Jonas is expanding its land referencing capability at just the right time as HS2 starts to tie down the majority of the industry's capacity at the expense of other nationally important infrastructure projects. In the last 6 months the growing team has successfully delivered services to 6 projects covering 80 track miles and a city centre station, referencing over 2,600 land interests.

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In the passenger seat | David Sidebottom



Southern commuters continue to suffer

The Toc's passengers faced a summer meltdown as disruption came to a head. **David Sidebottom** looks at the methodology *Transport Focus* used to help alleviate the situation

Eventually a temporary emergency timetable took some of the pressure off and performance stabilised. However, this was at the cost of losing 341 services each day.

We wanted to monitor the impact of the new timetable in real time. We were also keen to show the human side of the problem; the effects in 'real life' of shorter delays.

Passengers want and need, above all else, a reliable timetable. We build our lives around these services and pay handsomely to use them. We heard of people missing appointments, being late for picking up children from childcare and even someone who quit their job because they couldn't reliably get in to the office.

Already passengers using social media provide a constant stream of timely feedback that could be put to good use. To capture this data in a useful way, we asked passengers of Southern and the wider Thameslink network to use our travel diary app.

This picture of passenger feedback shows the range of different emotions reported in just one day.

We have previously used the diary app to give rich feedback of the true scale of disruption linked to London Bridge. It's a great way to capture the practical impact of even smaller delays on people. But figures can only tell so much of the story.

That time, we ran the tracker for four months. We captured comments on just under 13,000 journeys made by around 360 passengers.

We already knew that being on time and the ability to get a seat were key commuter concerns. But what the tracker demonstrated was the volatility of passengers' reactions. When things work well they are happy or relaxed, but they are quickly annoyed by even small delays.

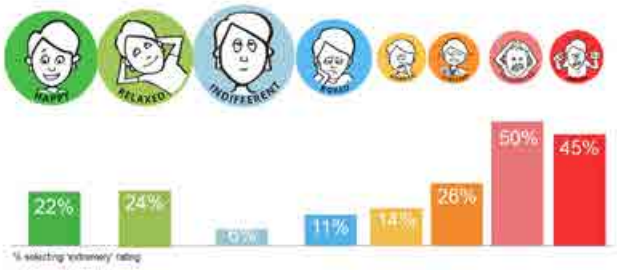
'Train delays and cancellations due to power supply issue caused my journey to be delayed by around 30 minutes. Slow progress once train got going and very little customer information from the train staff. Appalling service as I've come to expect as it happens all too often.'

'Stopped between stations - driver had no idea why.'

'Train was late and had to run for connection.'

'Train was delayed about ten minutes. It's been a long week.'

'The train came on time and arrived at its destination on time. I got a seat.'



We also asked passengers how strongly they felt emotions, on a scale of one to five. The two most negative emotions (frustrated and angry) were felt most strongly, even if they aren't the most common emotion.

We used the experiences shared, alongside social media chatter and performance figures, to suggest ways that the operator could win back some passenger trust.

For example, we held workshops on how to deliver better information with the train operators and Network Rail, picking out where passengers felt things had gone well or badly to emphasise the importance of good information.

In the run up to the engineering blockades and closure of London Bridge over the Christmas period, both Southeastern and GTR worked closely with Network Rail to ensure that passengers across the network knew journeys would be disrupted.

In addition to extensive social media messaging there were significant efforts to ensure that posters at stations, customer information screens and announcements raised awareness of the works and their impact. Importantly, some joined-up communications meant that broadcast media coverage was also used to ensure that even non-regular travellers would have heard about the disruption.

The relatively small number of negative comments on Twitter, coupled with praise for front line staff working at some of the affected stations would suggest that the communication campaign and implementation of the blockade were a success.

You can find out more about the methodology we used for the app on our website (http://bit.ly/traveldiary-method).

Meanwhile we are continuing to develop ways to provide 'always-on' tracking of satisfaction levels, to sit alongside the biannual National Rail Passenger Survey. We hope to run a pilot later in the year – watch this space.

David Sidebottom is passenger director of Transport Focus



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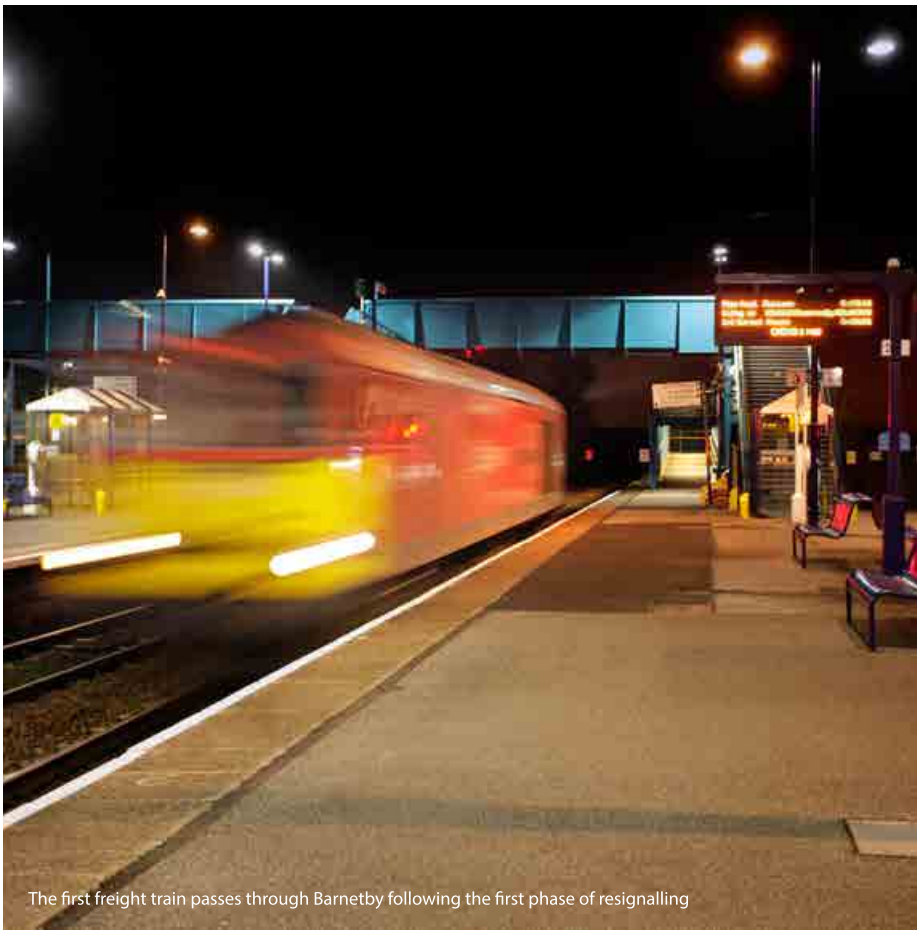


We are the champions

Chris MacRae looks at the implications for freight in the ORR's periodic review of Network Rail

ORR has started the process of consultation for periodic review 2018 (PR18) of Network Rail that will form the basis of the fiscal settlement for Network Rail in the next five year regulatory control period (CP6) 2019 – 2023. This feeds into the advice to DfT and Scottish ministers on their respective statements of funds available for the separate High Level Output Specifications for England & Wales and for Scotland.

> '...it is important to reiterate that unlike passenger rail, which, while privately delivered is to a state franchise specification, freight is (apart from some modal shift grant) a private sector activity. Rail freight runs in response to customer demand, passenger in response to a state/funder specification of service'



The first freight train passes through Barnetby following the first phase of resignalling

FTA has responded to this consultation and the following summarises both our response and the key issues for rail freight brought up in this consultation.

This review takes place in a changed context following the reclassification of Network Rail's ownership from private to public sector and thereby increased government involvement. Also a context post the Hendy Review of current control period enhancements delivery and the Bowe Review of delivery of future enhancements, as well as the context of political devolution of funding (including to English regional bodies) and the route level devolution of Network Rail and the prospect of deeper alliancing as in the ScotRail Alliance model between Abellio ScotRail and Network Rail Scotland.

Therefore it is particularly important

from a freight perspective that the new Network Rail Freight and National [GB] Operators team is developed alongside the system operator role of Network Rail, coming out of the Shaw Review of the future shape and financing of Network Rail.

The priorities that ORR expresses in the review consultation are correct (a network that is more efficient, better used, expanded effectively, safer, available, reliable) and of themselves difficult for anyone to contest. However, from a freight perspective what is particularly important is that enhancement schemes are delivered in a co-ordinated manner that delivers end-to-end journey time, capability, and capacity improvements over end-to-end corridors for the particular freight flows concerned.

Also, that the needs of freight as a cross (Network Rail) route boundary operation are catered for at a practical level regarding timetabling, disruptive engineering network access, diversionary routing capability and capacity. In this regard the development of the system operator role is key.

It is also important that those responsible for passenger train franchising (particularly in a context of devolution of funding) recognise the timetabling and pathing needs of freight operators to offer service times and frequencies that are of use to their customers.

A private sector activity

Further, it is important to reiterate that unlike passenger rail, which, while privately delivered is to a state franchise specification, freight is (apart from some modal shift grant) a private sector activity. Rail freight runs in response to customer demand, passenger in response to a state/funder specification of service. Demand for freight can and does change, dramatically so at the moment with the premature ending of coal traffic. This means that the axis of freight operation around container traffic and aggregates is likely to move geographically southwards and on to the more congested parts of the network.

This brings us on to a further set of related points: cost, access, velocity. For rail freight to win more market share (and even to retain existing business) in the markets seen as potential for growth (deep sea and domestic retail intermodal) costs to the end user must come down, access for new traffic to the network must become easier, and end-to-end journey times must improve. Road freight is constantly improving its price (and environmental) efficiency. Rail must do likewise. It is therefore vital that efficiencies that affect price inputs such as network enhancements and OMR (operations, maintenance and renewals) and rail freight operating company efficiency see their way to the end customer (the shipper) as cost price reductions. Cost increases, such as happened with freight track access charges in the last periodic review, must not be repeated as they seriously damaged customer confidence in rail freight. It must never be assumed that a particular traffic is 'captive' to rail: if costs or service levels shift against rail then customers will seek innovative means of using other transport modes that offer cost savings.

A statutory freight 'champion'

An additional suggestion from FTA regarding improved regulation of Network Rail may be the concept of a statutory freight 'champion'. Such a concept exists in ORR's newer role as monitor of Highways England where there is a road user representation.

For further information on the Freight Transport Association's rail freight policy work contact: Chris MacRae, head of policy – rail freight

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A lot to offer

The most immediate focus for the railways is on the domestic fallout from the referendum. A new prime minister and a change in ministerial representation are more pressing than the more drawn-out affair of EU negotiations, says **Paul Plummer**

Everything changes, but nothing will change. The initial shock of the European Union referendum result made it clear that the hackneyed phrase 'Keep calm and carry on' has never been more apt, especially with regards to the effect of the relationship between the EU and Britain's railway.

Over the last fifteen years there has been a significant amount of rail legislation from the EU. The First Railway Package in 2001 sought to open up the market to greater competition while the recently concluded Fourth Railway Package built on this policy. In between there have been directives and regulations on topics such as train driver licensing, passenger rights and interoperability.

> '... assuming the majority of EU legislation will have to be implemented as a quid pro quo for access to the single market... It will still be crucial for the industry to influence the shape of this legislation, but one thing is certain: we will no longer have a seat at the table in the same way we have enjoyed. However we are prepared to move from more direct influence to working with its established network of advocates and allies. We still have a lot to offer as an example of a mature, liberalised market: a model the European Commission is so keen to replicate elsewhere'



Crucially, the development of these has always had a strong British influence, both around the Council negotiating table via the Department for Transport, and through direct engagement by Network Rail, Rail Delivery Group and the passenger and freight operators. Indeed, there are UK fingerprints on the Fourth Railway Package where the industry has sought to minimise risks on current operations and strategy, and maximise the opportunities offered by the package, particularly for passenger and freight operators accessing overseas markets.

None of this legislation is going to disappear overnight as a result of the referendum. Much of the existing acquis has been adopted via transposition into

> As for the proposals currently on the table; as it is unclear how long it will take to exit, we have to work on the assumption that the Accessibility Directive, revised Passenger Rights Regulation and train Driver Licensing Directive for example will all be part of our jurisprudence. As such, the RDG will continue its programme of MEP and Commission engagement

domestic law and would not be a priority to unpick. Some EU regulations, such as in the area of passenger rights, afford lower standards than already applied in domestic arrangements. As for the proposals currently on the table; as it is unclear how long it will take to exit, we have to work on the assumption that the Accessibility Directive, revised Passenger Rights Regulation and train Driver Licensing Directive for example will all be part of our jurisprudence. As such, the RDG will continue its programme of MEP and Commission engagement.

Future legislation

In terms of future legislation, it is unclear exactly what our requirements to implement will be. As such, it is best to be prudent, assuming the majority of EU legislation will have to be implemented as a quid pro quo for access to the single market. Should it be decided subsequently that the UK adopts a model with a lighter requirement for legislative compliance this could be accommodated. It will still be crucial for the industry to influence the shape of this legislation, but one thing is certain: we will no longer have a seat at the table in the same way we have enjoyed. However, we are prepared to move from more direct influence to working with its established network of advocates and allies. We still have a lot to offer as an example of a mature, liberalised market: a model the European Commission is so keen to replicate elsewhere.

Britain is still a strong railway in Europe on account of our performance. The UK has been unusual in the rate of growth it has experienced in both passenger and freight markets, with comparative passenger satisfaction second only to Finland. Independent European Commission research shows that the UK has delivered this at an efficiency frontier of 0 per cent and this is all underpinned by operating the second safest network in Europe, behind Ireland. The hard work of the whole industry in achieving and maintaining this record will prepare us well for the future.

Even in this context, the industry also has a lot to learn from colleagues in other Member States and the wider European Free Trade Area. The RDG will continue to build and strengthen its bilateral collaborative relationships which will become increasingly important. We are pleased to have already had conversations with colleagues to reaffirm this commitment.

In among this slow strategic shift, the most immediate focus for the railways is on the domestic fallout from the referendum. A new prime minister and a change in ministerial representation are more pressing than the more drawn-out affair of EU negotiations. The sector has to be equally prepared for a government with rail low down the agenda as one with nationalisation pressing on their 'to-do' list.

The RDG has strengthened its role in Brussels and engaged constructively with the European Commission, Parliament and other stakeholders over the past year or so. This will not change. Our rail industry has laid a strong track for whatever the long-term future looks like.

Paul Plummer is chief executive, Rail Delivery Group

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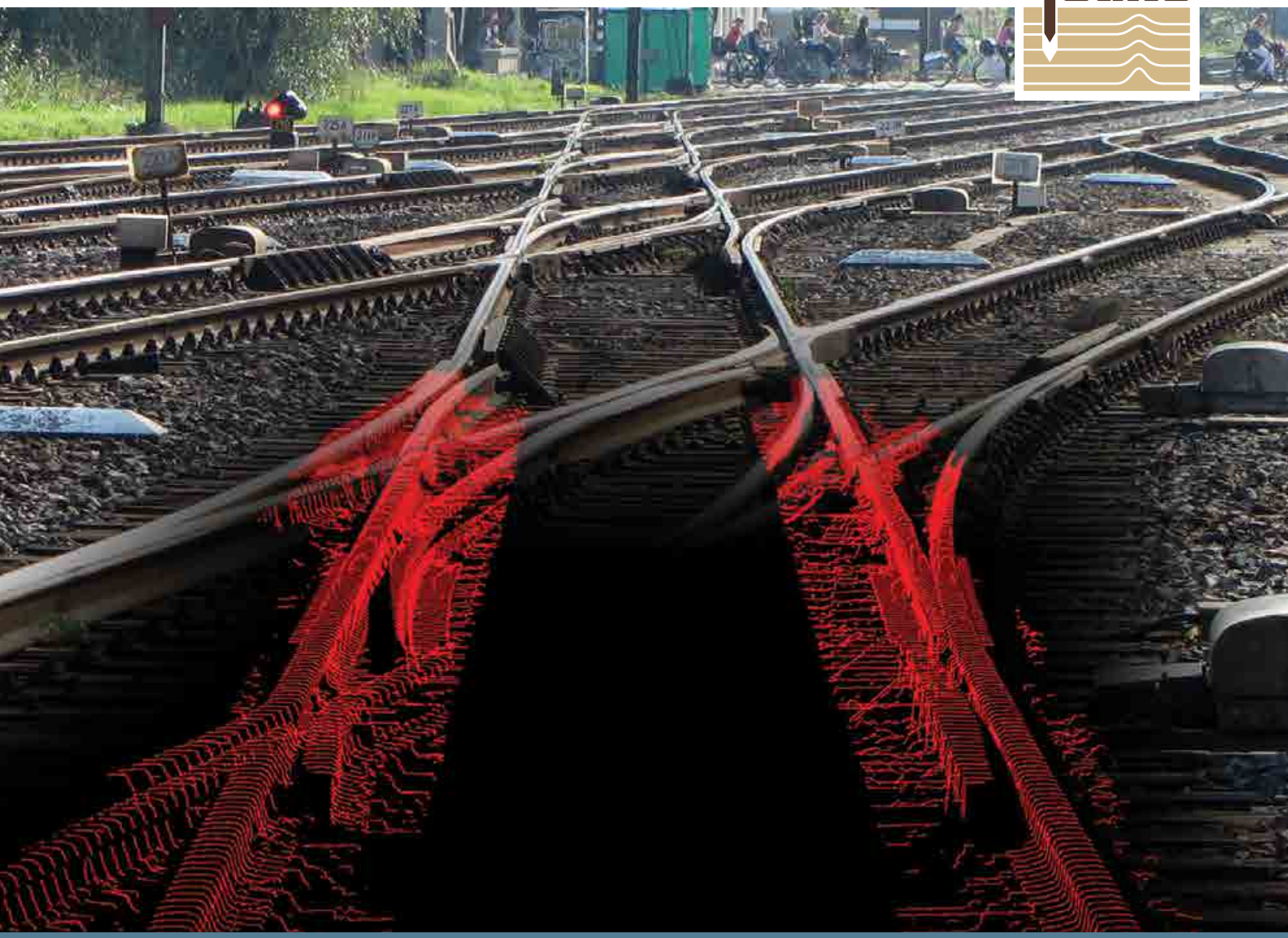
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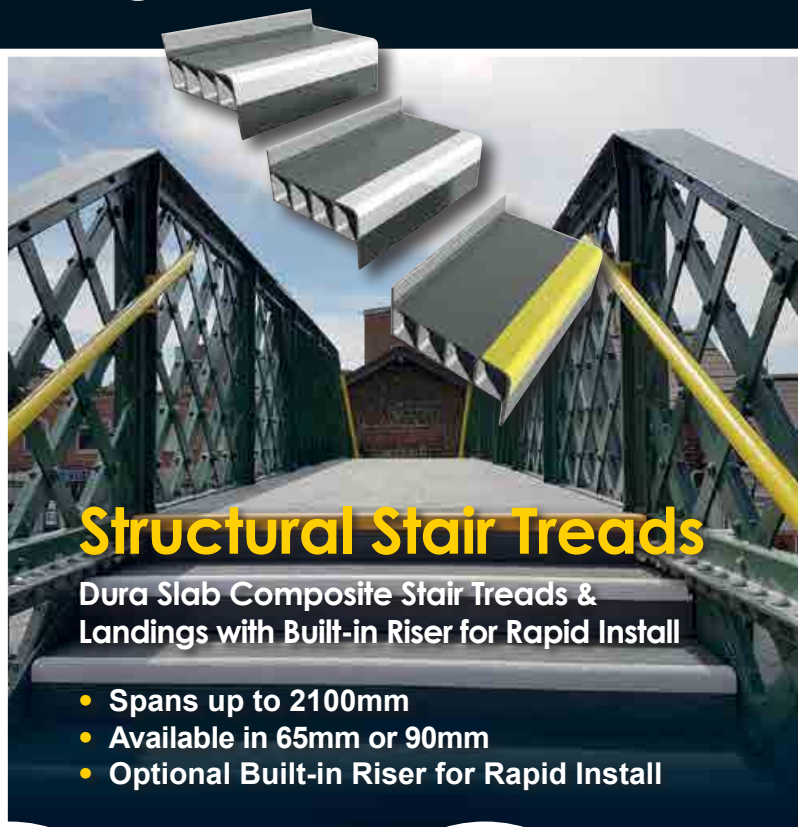
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Laying down the law | Martin Fleetwood



Mind the [gender pay] gap

The obligation for businesses with 250 or more employees to publish an annual report on its gender pay gap is expected to come into force on 1 October 2016. **Martin Fleetwood** looks at the implications for rail

The rail industry of the past was heavily male dominated, but more recently has taken action to encourage more female workers. The obligation to provide data on the pay divide within its workforce therefore provides both an opportunity and a threat to the industry. With a diverse workforce from construction to customer service and the UK government proposing to publish national diversity league tables, it becomes ever more important that large employers such as the rail industry take heed of these changes and prepare to meet this new obligation. Showing a narrowing (or elimination) of a gender pay gap can be part of a drive to encourage more women into the transport workforce at all levels.

A draft form of The Equality Act 2010 (Gender Pay Gap Information) Regulations 2016 (the Regulations) was published by the government earlier this year, along with a consultation document. The results of the consultation and the final form of the Regulations have not yet been published, although the consultation shows the Regulations having an intended implementation date of 1 October 2016.

> Showing a narrowing (or elimination) of a gender pay gap can be part of a drive to encourage more women into the transport workforce at all levels

Some sources suggest the final form will be issued just before the intended implementation date of 1 October 2016; while others believe that publication and the subsequent implementation date may be slipping to April 2017.

What is clear is that the publication of gender pay data will be required from every large employer whose employees work in Great Britain or has employees whose employment contracts are governed by UK law. Businesses should therefore consider whether gathering data now would be useful for internal analysis as well as ensuring monitoring systems are correctly in place to gather the data for when the Regulations come into force.



Data will be needed to show:

- both mean and median gender pay gaps
- gender bonus gaps (and the proportion of male and female employees receiving a bonus)
- the number of men and women in each quartile of a business's pay distribution.

There is, however, a lack of clarity on some key parts of the Regulations, such as whether group companies can publish separate reports, what makes up the total of 'pay' for reporting purposes, how to identify and calculate the relevant bonus payments and how to set out the quartile information.

Once the Regulations are in force, the organisation has to publish the data on its own website, in an easily accessible position for members of the public to access, as well as submitting the data to the government's own database. Employers are free to add any commentary on their website to explain the presence of any pay gap and any actions they are planning to reduce that gap.

> Although the Regulations state that employers must publish the gender pay gap information it is not currently proposed to apply a civil penalty for non-publication. It is expected that public and media pressure will encourage publication, along similar lines to the information required under the Modern Slavery Act. However, it would be possible to introduce a penalty at a later date if insufficient publications are made

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Preparing for the Regulations

Despite uncertainty as to how gender pay gap reporting will look, there are steps which employers can take now to prepare for the implementation of the Regulations, including:

- carry out a pay audit to identify what your likely gender pay gap will be and reasons for this
- start to plan a strategy to address your gender pay gap
- consider whether your figures are likely to be noteworthy (the ONS collates figures for different sectors)
- consider your communication strategy, both internally and externally, for when you publish your gender pay gap figure.

Expected timetable

1st May 16 – start date for collecting information on potential bonuses
1st October 2016 – Regulations expected to come into force
1st May 2017 – first date for organisations to begin carrying out calculations to determine gender pay gap results
30th April 2018 – last date for an organisation to publish its first gender pay gap analysis on its website and uploading onto the government's reporting site.

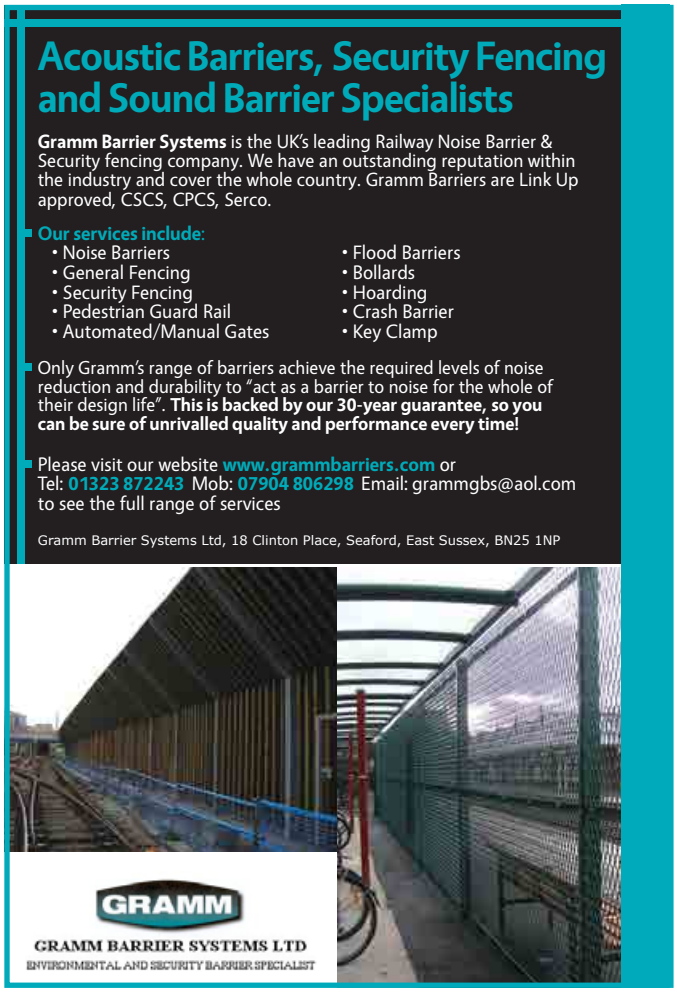
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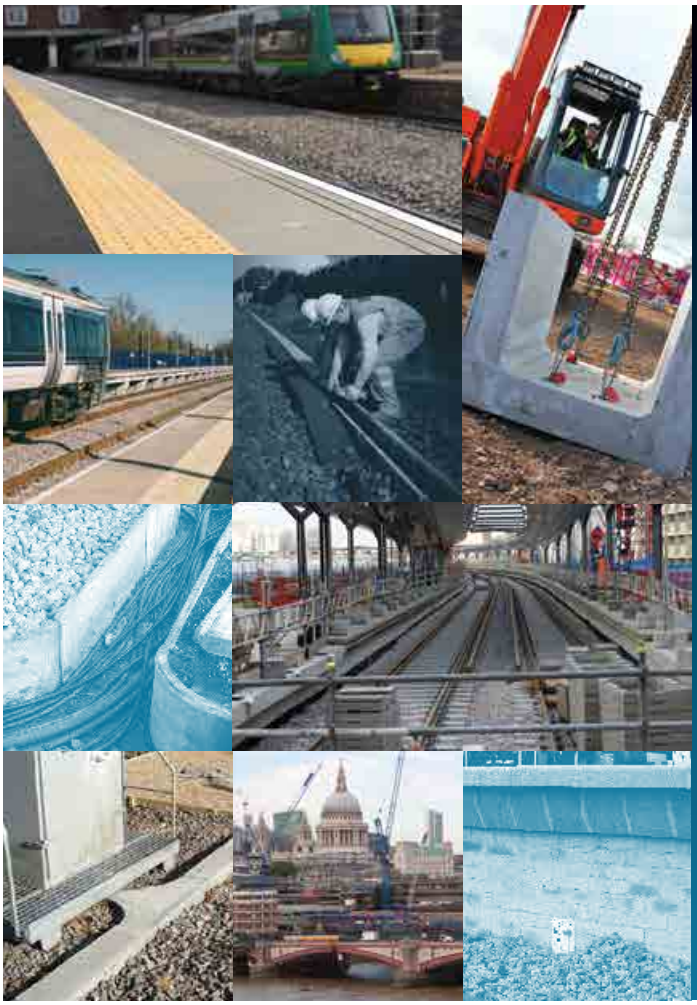
On 11 July 2016, the Mayor of London, Sadiq Khan, published City Hall's first gender pay audit. The audit revealed a gender pay gap of 4.6 per cent, with less than one third of staff earning more than £100,000 in May 2016 being female, despite women making up more than half of all City Hall employees. In response to the result, the Mayor has launched an action plan for full pay equality across the Greater London Authority including Transport for London.

Martin Fleetwood is corporate partner at Shoosmiths
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Laying down the law | Kate Hindmarsh



The National Living Wage – more changes to come

The increasing rates of the National Living Wage are going to have more of an impact on a wider range of businesses in the next few years, including the rail companies, says **Kate Hindmarsh**

On the 1st April 2016 the National Living Wage came into effect. Its coming into force was very well publicised and provoked much debate over whether the new minimum rate of pay was sustainable for businesses.

What has not been as well publicised about the National Living Wage is that this is only an introductory level with further increases on the horizon. Businesses therefore need to be thinking now about what they can do to cope with the increased rates of the National Living Wage.

Background

The National Living Wage is essentially an evolution of the National Minimum Wage. The National Minimum Wage has always allowed different minimum levels of pay

Top Tips for Employers

- start thinking now about how you are going to finance the extra costs. It is better to start thinking now about how you are going to fund these increased costs rather than being rushed into a decision before the next increase
- ensure you maintain the differentials in pay between your staff members. Businesses that fail to do this may find themselves struggling to recruit and retain more skilled employees
- the National Living Wage only applies to those employees aged 25 and over so you may be tempted to employ younger workers so they can be paid less. Doing this is an act of age discrimination if it is done solely so you can pay this employee less. The consequences of a discrimination claim can be quite severe so this should be avoided if possible
- do not round up the salary of your staff on the National Living Wage unless you are increasing the wage of those paid under this level. Some employers are paying their staff who work 37 hours per week and are on the National Living Wage a salary of £14,000, rounding up the £13,852.80 minimum they should be paid on the National Living Wage. Unless you have a similar increase for those employees who are not eligible for the National Living Wage this again is an act of age discrimination
- remember the National Living Wage is essentially a new earning band of the National Minimum Wage and so all the rules which applied to the National Minimum Wage will also apply to the National Living Wage. One common question with the National Living Wage is whether employers are allowed to count any premium they offer for employees working overtime into the calculation of what the employee is paid for the purpose of meeting the National Living Wage minimum. The answer is no: exactly as it was under the National Minimum Wage.

> ‘The increasing rates of the National Living Wage are going to have more of an impact on a wider range of businesses in the next few years, including rail companies. It is not only the cost of increasing the wages of the lowest paid, but also ensuring that pay differentials at all levels of the business are maintained. This will have the biggest impact’

> What most of these discussions failed to appreciate was that this was only the starting point for the National Living Wage with planned increases up to 2020 and a target of over £9 per hour by that date

based on the age of the employee. Before the National Living Wage there were four separate bands of pay: those for apprentices; those for employees aged 16 and 17; those for employees aged 18 to 20 and those employees aged 21 and over. Now with the National Living Wage there are five bands, with a new band covering those employees aged 21 to 24 and those aged 25 and over.

The increase introduced at the top band, those aged 25 and over, by the National Living Wage was an increase from £6.70 an hour to £7.20 an hour. This is the largest single increase to the National Minimum Wage since its introduction in 1999 and is an increase of 7.46 per cent, which is the largest percentage increase since 2004.

Looking to the future

In the build up to the 1st April 2016 there was extensive media coverage regarding the affordability of the National Living Wage for smaller businesses. It appeared that it was being viewed as a one off increase which some businesses needed to deal with, whereas those in sectors with traditionally higher pay would not have such cause for concern, to a certain extent.

What most of these discussions failed to appreciate was that this was only the starting point for the National Living Wage with planned increases up to 2020 and a target of over £9 per hour by that date. Taking the conservatives' estimate that the National Living Wage will be £9 per hour by 2020, this will mean the rate will have to increase by 45p each year until 2020.

To put these figures in perspective consider the annual salary of someone who works 37 hours per week. Under the old National Minimum Wage rate this employee would earn £12,890.80 a year, under the current National Living Wage rate this employee would earn £13,852.80 a year and by 2020 this employee may be earning £17,316 a year.

Other costs to consider

The increased salary costs of those employees on the National Living Wage are not the only increased salary costs businesses will have to consider. Businesses will also have to look at the differentials between staff members in order to retain and recruit talent.

A study produced by KPMG on the impact on the living wage (which is a voluntary pay amount and is not to be confused with the National Living Wage) found that pay differentials was one of the biggest issues faced by employers. They looked at cleaners who were paid the living wage and found it caused a real problem with the cleaners' supervisors who ended up being paid the same as the cleaners they were supervising despite the extra responsibility in their role.

More of an impact

The increasing rates of the National Living Wage are going to have more of an impact on a wider range of businesses in the next few years, including rail companies. It is not only the cost of increasing the wages of the lowest paid, but also ensuring that pay differentials at all levels of the business are maintained. This will have the biggest impact.

Kate Hindmarsh is a partner and head of the employment law division at Langleys Solicitors LLP







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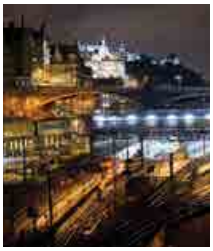
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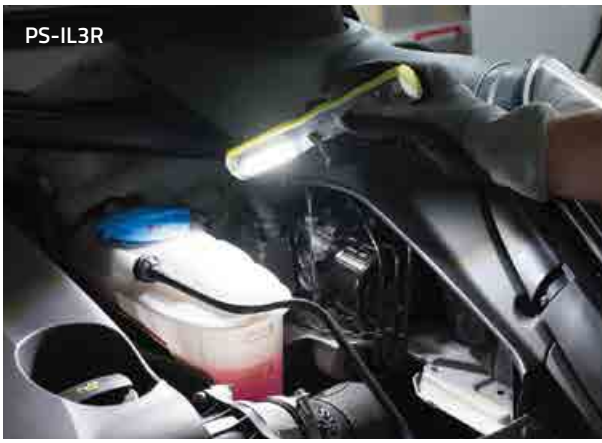
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Brexit : a EUlogy

Now that withdrawal from the EU is a reality, **Tammy Samuel** and **Darren Fodey** look at what this means for the UK rail industry

In the last edition of *Rail Professional*, commentators considered the implications for rail if the United Kingdom voted 'out' in the European Union referendum. At that time, many people did not seriously contemplate that it may happen. However, the British public has spoken and withdrawal from EU is now looming. What does this mean for the UK railway industry?



All change?

For the UK to withdraw from the EU, Parliament will need to invoke Article 50 of the Treaty on European Union, pass new legislation to repeal the European Communities Act 1972 and put in place transitional arrangements, making clear which 'European' requirements will continue to apply. This is likely to be a long and complex process. Until it happens, the law and regulation remains the same – and the government has made clear that it will continue to comply with all EU requirements in the meantime. For example, shortly after the referendum took place, the DfT introduced new regulations to implement the 'recast' First Railway Package.

This means that, for now, it is business as usual.

EU rail packages

EU legislation has had a significant impact on the UK railway – but readers should remember that the European model in fact reflects (and builds on) the structures which the UK pioneered upon privatisation. The UK and Sweden were the most liberalised rail markets in Europe prior to the 'railway packages' of European legislation and have led the way in influencing the EU model. In essence, the UK model is one which the EU has exported throughout Europe. While theoretically possible (and it will depend upon the government of the day) we do not foresee the existing structure changing as a result of the referendum, particularly as there are good competition, economic and commercial reasons for retaining it. That said, other aspects of railway operations have their origins in European law (such as safety, licensing, access to facilities and TSI's). There are moves within the EU to further strengthen the position through the Fourth Railway Package – including harmonisation of standards and further separation between infrastructure management and train operations. Whether this – and future EU railway legislation – will be implemented in whole or in part is uncertain. In the short-term, it seems likely that these will be adopted.

What is Brexit likely to mean in practice for the UK railway industry?

Train operations and franchising

Compared with the pre-Brexit position, the UK is likely to be seen as a different place to invest (particularly with its credit rating being downgraded) – and on home ground, government finances are likely to be challenged, with the economy predicted to be hit hard and the prospect of recession looming. This could mean that fewer passengers will travel – which will have an impact on forthcoming franchise competitions. It will also be of concern to incumbent franchisees, particularly on premium-paying franchises.

Existing franchisees should review both their franchise agreement and their underlying sub-contracts to assess the impact of Brexit on their business (particularly if the franchise is operating on a low margin).

Do protections in the franchise agreement help or mitigate the impact of any drop in revenue (for example revenue share/support or GDP reset mechanisms)? Will Brexit amount to a 'Change' to the franchise (which could result in payments being reassessed) and will a qualifying change in law arise? From a sub-contracting perspective, could there be gaps where the sub-contracts do not neatly fit with the franchise (and where protection could arise in one, but not the other)?

Recent franchises have seen 'quality' becoming a key part of the evaluation criteria – with quality and innovation again returning to the heart of rail. With pressures on public finances (as in the last recession) price may become the dominant factor again, with less ambitious bids as a result. That said, investment in transportation

helped the country get through the last recession, and so the government may adopt a similar approach to deal with the consequences of Brexit. Only time will tell. In any event, franchise bidders will want to understand what, if any, protections may be available from the government as the implications of Brexit become clearer.

What does Brexit mean for franchise competitions – both in the UK and the EU? EU-owned bidders will want to participate in UK franchise competitions and, likewise, UK-based transport companies will be concerned whether they will be able to bid to operate in EU markets, particularly as they open to more competition. It seems unlikely that the UK will close its doors to EU based companies in franchise competitions – particularly as the Department for Transport has been seeking to expand the bidding market for a number of years. Similarly, experienced rail operators from the UK are unlikely to be excluded from competitions in the EU.

Rolling stock

Sterling has become the worst performing currency in international markets in 2016 as a consequence of Brexit, with significant falls in its value. This may mean that the rolling stock products of international manufacturers operating in euros become more expensive relative to domestic UK manufacturers. It also remains to be seen whether additional tariffs or quotas will be introduced between the EU and the UK as trade deals are renegotiated, which could make new rolling stock more expensive still.

Due to an expected liquidity squeeze arising in a potential Brexit recession and uncertainty in the financial markets, traditional forms of rail financing based on debt may become more difficult or expensive and the prospect of new rolling stock could become more remote. There may be pressure on extending the life of existing rolling stock, particularly if good deals are offered on enhanced vehicles.

However, alternative financing solutions based on equity or bond based financing could be an alternative if they offer appropriate pricing – which means that new rolling stock may not be off the table altogether. We have seen an increase in the availability of such alternative financing solutions in recent years and although not many have reached financial close, Brexit could facilitate that change.

Infrastructure

Will Crossrail, Crossrail 2, HS2 and other rail projects still go ahead? Crossrail is at an advanced stage of development and investment and is unlikely to be affected by Brexit; however, the same may not be the case for Crossrail 2, which is at a much earlier stage. Given the cross-party support which HS2 has, the work which has been done to date and the need for any government to be seen to be investing in infrastructure, there also seems to be a compelling case for HS2 to continue as planned. We may see a slowdown of such projects to allow for funding over a longer period, particularly if it is being publicly financed.

Ultimately, in order for the UK to function outside of Europe, an efficient transport network and additional capacity will still be required, which continues to provide a compelling case for many of the projects under development.

Uncertainty is uncomfortable for business and until there is clarity on the terms of the UK's exit from the EU, the full effects of Brexit will not be known. However, the legal and regulatory framework in the railway sector remains the same for the moment and substantial changes in the immediate future do not seem likely.

Tammy Samuel is rail partner and Darren Fodey senior associate at Stephenson Harwood LLP





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Let's do it again!

Chris Leech MBE, originator of this year's Station-to-Station Queen's Celebration initiative spoke to *Rail Professional* about his ambition to make it an annual national celebration of railways in the community

Over the weekend of 10th – 12th June more than 100 stations nationwide hosted events to celebrate the Queen's 90th birthday. Arguably the largest cross-industry initiative in living memory and raising tens of thousands of pounds for rail's charities, it has laid the foundations for an annual event that acts as an opportunity to promote the industry as a force for good within a modern and vibrant society, according to Leech.

With an eye on the future, the learning, distilled from all the supporting Toc's and participants, and encapsulated in Leech's Evaluation Report of this year's celebrations, is that with a longer lead-up time and early seed funding, even more could have been achieved.



'While we have proved the Station-to-Station event clearly works, we need, in order to repeat the feat in future years, proper funding,' stated Leech. 'My team is currently working on building the business case for this, as we must start now to ensure there is sufficient lead time for a 2017 event.'

Leech and his team met with the Department for Transport recently and, he says, have secured its full backing and support to scope an industry celebration event to be held at multiple locations across the network over a chosen week.

The week will allow businesses across the UK rail sector to demonstrate the positive impact they have on society and how they engage their workforce, supply chains, partners and customers to improve the way they work and deliver a sustainable future for all.

The next step for Leech is to meet with the RDG to seek its top level support and request seed funding. 'Once that has been secured we can get to work on the 2017 event and seek commercial sponsorship both from across the rail industry and external companies,' he explained.

Leech is emphatic about the benefits

The benefits of a yearly event are detailed in Leech's Evaluation Report as enabling the industry to:

a. Showcase and celebrate the UK's railways as a force for good within society:

- emphasise the importance of railways and de-mystify what they do
- enable the railways to engage with the wider communities they serve
- reaffirm the social licence of the railways in the UK.

b. Create and leverage new, innovative partnerships with key stakeholders:

- utilise existing stations' assets to better effect, with the core purpose of stimulating socio-economic growth within the communities they serve
- enable the industry to share its vision, values and CSR credentials
- promote, in partnership with Young Rail Professionals, the broad spectrum of career opportunities within the rail sector.

STATION TO STATION
QUEEN'S CELEBRATION

of a national event and put the following questions to the industry:

1. do you genuinely want to change the public perceptions of railways in the UK?
2. do you want to engage with the next generation to promote the career options in rail in order to address the skills shortage now and in the future?
3. do you want to play a full and proactive part in galvanising the communities the railways serve in order to encourage social cohesion and drive socio-economic growth across the UK?
4. do you feel the rail industry needs to influence and educate voters and elected representatives locally and centrally in order to secure the necessary funding for future rail infrastructure projects?

'If the answer is 'Yes' to the questions posed', said Leech, 'then we believe we have a unique opportunity to harness the goodwill and collaboration created by Station-to-Station to address these and many other points.'

He continued: 'Through collaborative actions we have challenged the detractors and sceptics and, in doing so, have created a platform on which we have showcased the rail industry as a genuine force for good in society. In addition, we have demonstrated that our stations are not merely gateways but destinations – social hubs for community activities which enrich and define the purpose of stations – from the rural to the mainline.

'In short, we have created a programme, which, with the DfT's continuing support, could also deliver a powerful legacy, evolving to meet the immediate as well as long-term challenges facing the UK rail industry – including some of the negative media and the public perceptions.'

Pleased to form a joint-venture

For the event to achieve its potential and be financially sustainable however, there will need to be a greater, more certain and earlier commitment to budget/investment and a longer planning lead-time, Leech reiterated, and to that end he and his team are looking to form a joint venture to take on a planning and delivery role in future years.

The earlier the better stressed Leech. 'It would leverage the learning, contacts and process developed this year and ensure that events in the future continue to provide a balanced reflection of the values and objectives of both corporate and community organisations throughout the UK rail industry.

'Most importantly, I want to say a big thank you to all involved in making this year's celebration the outstanding success it was,' concluded Leech.

Contact Chris Leech MBE at chris.leech@novacroft.com







Testimonials from supporters of Station-to-Station

'I am delighted that at last the rail industry is finally putting its head above the parapet and demonstrating the social and economic impacts the industry brings to society. What a great way to celebrate this momentous occasion while promoting the vast array of apprenticeships and careers on offer'
Nick Hewer TV presenter

'Over the past 120 years the rail industry has played its part in sculpting the way we live in the UK. Through the passion and innovation railway stations will now once again play their part in galvanising communities and bringing sustainable social and economic growth. Therefore I cannot think of a more fitting tribute to HM The Queen's 90th Birthday celebrations'
Pete Waterman, record producer

'As someone who spends half her life on trains, I'm delighted to see the enthusiasm with which the rail industry has embraced HM The Queen's 90th birthday celebrations. Stations should be all about community, so to see all these stations come together in so many imaginative ways is quite thrilling. As many in the industry will know, I'm keen to raise awareness of all the opportunities that exist for young people in rail and here's hoping that one of the legacies of these celebrations will be that more recognise and seize the opportunity for an exciting and varied career. TeenTech and myself are very much looking forward to working with all the partners on this project'
Maggie Philbin, TV presenter

'Over the past 90 years the rail industry has played a vital role within the UK, galvanising our communities and strengthening our economy and therefore it was and always will be an essential pillar within our society. I am therefore delighted to hear that the railways across the UK, are collaborating together to help celebrate the historic occasion of HM The Queen's 90th Birthday'
Dame Lorna Muirhead DBE Her Majesty's Lord-Lieutenant of Merseyside









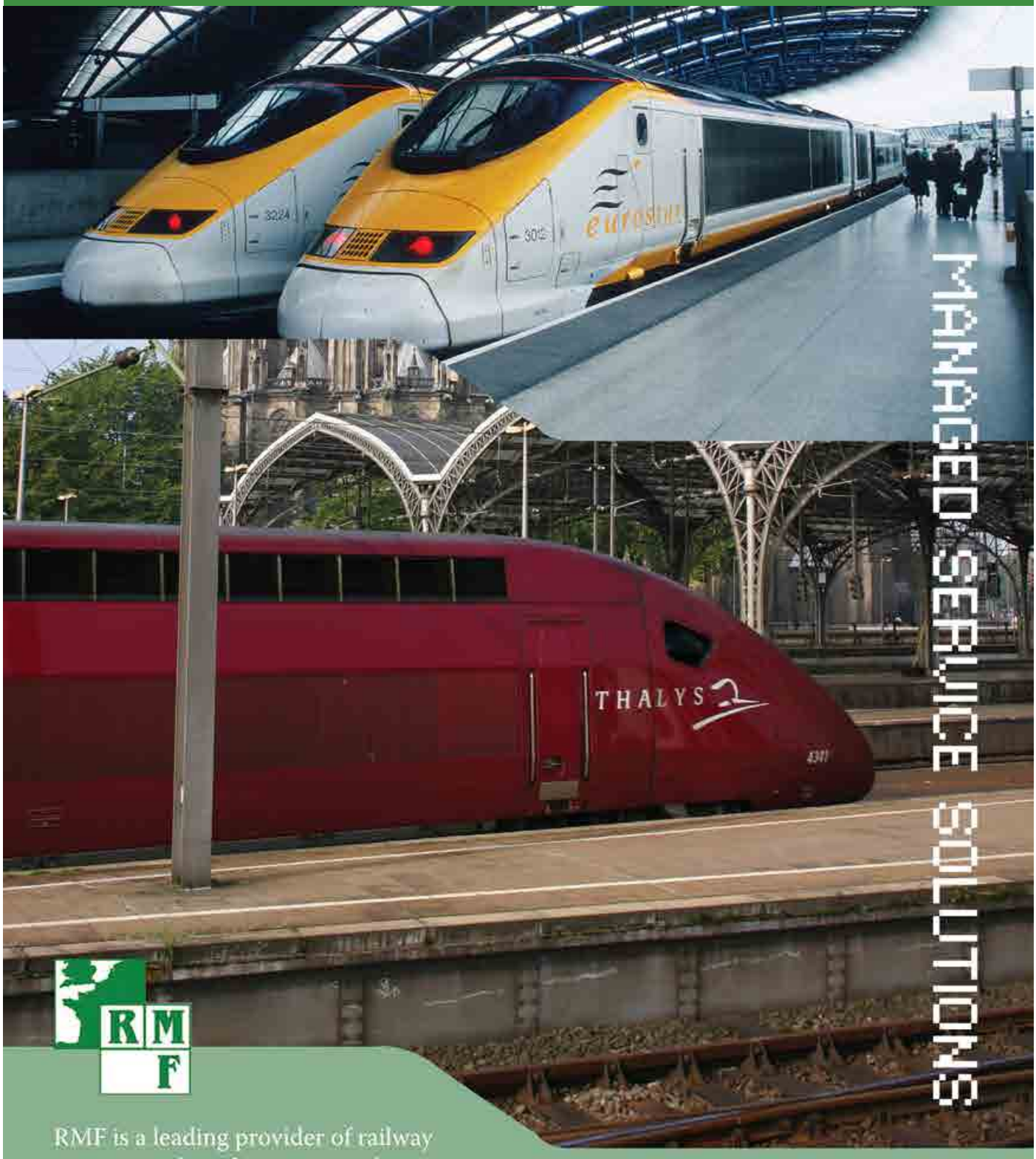


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Railway funding and financing: the system works – keep it



ORR chair, **Stephen Glaister**, argues that the solid arrangements for funding and financing maintenance and growth of Britain's railways need to be maintained whatever choppy waters lie ahead for Britain's finances

In this piece I want to focus on the funding and financing of railways in Great Britain (shorthand, GB Rail) and where we might be headed with it all.

Funding and financing are two concepts often confused, but distinctly different: the simplistic explanation is to think of financing as 'borrowing and lending' and funding as 'giving'.

GB Rail has seen an important change in this area in recent times: the reclassification of Network Rail to the public sector in 2013, an accounting move which took effect the following year. This recognised the reality that Network Rail had previously funded its activities – approaching some £40 billion worth between 2014 and 2019 alone – in part by systematically increasing its debt but that, sooner or later, most of that debt will only ever be repaid out of taxation.

So what had previously been presented as financing debt ('borrowing and lending') was in reality taxpayer funding ('giving'). Network Rail's reclassification also reinforced the perception that the railway is run, in some detail, by the Department for Transport, Transport Scotland and the Treasury. The latter's involvement is, not least, because there is a great deal of public money at stake – some £100 billion, if all the projects in plan or underway over the next twenty years are accounted for.

Control Periods – a tried and trusted system

Rail funding periods generally (though not always) run in five year cycles known as 'control periods'. We are currently in Control Period 5 which began in 2014 and runs to 2019.

ORR is responsible for determining in consultation the funding we consider is necessary during each five year period for GB Rail to operate effectively, maintain its network efficiently, carry out the renewals necessary and enhance the network progressively to meet growing demand.

That demand, incidentally, is rising at a significant rate as people have greater and greater expectations of mobility. There are twice as many people using the railway today than twenty years ago and forecasts continue to show at least similar rates of growth.

The 'control period' system, which is common to the regulated utilities, has worked well for the railways. During any control period, Network Rail – as system operator – knows what it is expected to deliver and it is assured that, if efficient, it should have sufficient funds to do the job. This mitigates the problem of funding volatility and political uncertainty in a system which might otherwise run only from year-to-year; an issue well-recognised in government as an impediment to economic and efficient procurement in an infrastructure industry where lead and committal times are especially long.

It follows also that the system should impose a discipline on government ministers to prevent them from intervening at irregular moments to specify new, unplanned activities which may (or may not) fit with agreed plans, and for which there may (or may not) be corresponding funding available.

One of the issues that the 2005 Railways Act was created to deal with was the absence of normal commercial disciplines following the demise of the privately owned Railtrack in 2002, as well as to furnish the industry with a degree of stability.

The Act requires that both the secretary of state for transport and Scottish minister set out to the ORR a high level output specification (HLOS) of what s/he wants to be achieved by rail activities during the railway control period and of the public funds (the Statement of Funds Available or 'SoFA') that are or are likely to be available to secure delivery of those activities.

In turn, it is the ORR's role to assure what we believe the efficient cost of those activities should be. We do this in consultation with the industry – a two-year exercise we have just begun (called periodic review 2018 or 'PR18') for the control period beginning in 2019.

It is important that the HLOS and SoFA disciplines are adhered to. Departure from this contributed to the difficulties that emerged in 2015 over funding of major works, and precipitated the various reviews



into the industry (Nicola Shaw's report, and the Bowe Review to name two, plus an internal review of the ORR's functions by the Department for Transport which nevertheless led to a clear endorsement from the industry for our purpose and activity).

So HLOS and SoFA is a good system, and unless and until the legislation is changed it should remain a pillar of relative stability for the rail industry.

Devolving power – but what about the funding?

Whatever the longer-term outcome of the current turmoil in UK politics, I assume it likely the new government will wish to continue devolving powers – and specifically, transport responsibilities – to sub-national transport bodies like Transport for the North; the 39 Local Enterprise Partnerships (LEP's); and combined authorities such as that of the West Midlands.

This raises a number of issues in relation to funding because, for sure, whatever devolution there is to the local tax bases, these authorities will not have sufficient funding to meet all their aspirations for road and rail operations, or for infrastructure investments.

So they will have to consider how much they are willing to afford, and how they make the choices that have often been dictated in the past by central government in Whitehall.

Any devolution taking place must also do so against a backdrop of continuing technological innovation. This comes at a price, and digital investment in rail is but one illustration of the funding and financing conundrum.

In the long run, digital will undoubtedly reduce operating costs and generate additional revenues from users. But all this will require up-front investment.

It may be the case that some digital investments are self-funding: over time they will pay for themselves. If not, however, and assuming they are judged worthwhile investments, the gap will have to be funded (that is, paid for) by some form of taxation or external financial contribution.

Borrow now, pay later

Either way, investments have to be financed, which will mean some way of borrowing money to pay for the initial investment, to be repaid later.

This may be government borrowing, borrowing on the markets, or an equipment supplier may itself raise capital and service the equity and debt out of annual charges levied under a long-term service contract.

The latter is the essence of Private Finance Initiative and Public Private Partnership (PFI/PPP) arrangements, but in the past there has been confusion here that has led to disappointment or bad decisions.

Private investors (often representing pension funds or sovereign wealth funds) will finance deals, but only for a return. It is wrong to think that the private investor would 'step in' to fund public investments that the taxpayer cannot afford. Why should any private investor want to do that?

This means that if an investment is not commercially viable the taxpayer will have to fund some of it later, if not sooner.

It should not, for example, have come as a surprise that the UK health service would have a substantial burden on its annual budgets from contractual commitments made years ago to procure new hospital facilities under the PFI.

Don't get me wrong, there is merit in PFI/PPP deals – but only if appropriately applied. And there is considerable experience of both appropriate and inappropriate application in the railway context.

At the point where the PPP's for London Underground were signed there were pre-existing, long-term PFI agreements in place for the Northern Line trains, the ticketing system, the electrical power supply and the radio communications system.

None of these ran smoothly and all except the communications PFI were terminated prematurely. The London Underground PPP contracts themselves then failed and were terminated about one quarter of the way through their terms.

These agreements are typically for 20 to 30 years-long, so that the investors can recover their capital out of annual service charges set at a manageable level. So for these deals to be successful for both parties, I believe there are two fundamental requirements:

- the procuring body must be able to write down, in a commercial contract, a specification of what it expects to be delivered and to what standard, over the term of the agreement; and
- the contract must be capable of being enforced, in practice, and it must actually be positively managed and enforced.

The first requirement can be problematic because the demographic, economic and political environments can change rapidly and unpredictably.

In the case of large public services and long-term contracts, the second requirement can also become problematic if it is difficult to ensure that there is a credible threat that another party would be available to take over provision of service, should the contract be terminated for inadequate performance.

Without this threat it can then become difficult to defend against sub-standard level of service and demands for extra funds.

Complications for the future

All the above are live considerations as Network Rail seeks to generate an extra £1.8 billion, mostly through the sale of property assets, where continued Network Rail ownership is not essential to running the railway.

This extra funding requirement is to meet its remaining commitments within the remainder of Control Period 5 and help fund Network Rail's Railway Upgrade Plan.

And as noted in the ORR's 'PR18' consultation document, funding Control Period 6 is then likely to be demanding.

There is already a backlog of renewals expenditure, estimated at £2.5 billion, which will be deferred from Control Period 5. There is also a further £9.5 billion of currently planned enhancements (that is, new parts to underpin growth of the railway) for Control Period 6.

Further, some rental income from commercial property will not be available if it has been sold as described above to help pay for CP5.

And if the High Level Output Specification and Statement of Funds Available is to be put in place for railways in relation to Control Period 6, this commitment will be required around mid 2017 for the five year expenditure programme which would comprise CP6, starting in 2019.

It's not all about the railways either – a similar commitment will be sought from the UK government, at a similar time, to the funding for the strategic road network under the second, five year Road Investment Strategy (RIS2) due to begin in 2020.

Before the UK Referendum result on leaving EU membership, it was thought that the Treasury was likely to operate a particularly tight policy on public spending around the end of the decade, because this was the date at which the deficit was targeted for elimination. While this requirement has now changed following the Referendum result, there is still a lack of clarity.

Needless to say, the earlier this is resolved, the better and any extension of uncertainty into 2017 will frustrate the essential long-term financial planning of the railway.

Innovative financial engineering

So we may be in for some choppy water ahead. There seems little doubt that funding the remainder of CP5, and then CP6, is going to be difficult and the prizes may go to those more able to provide innovative financial engineering.

For sure, we will need realism and clarity about the distinction between financing and funding, and to avoid the mistakes made in the past with PFI/PPP contracts. But the current arrangements have proven their worth in the past and will do so again for the future.

ORR has a direct interest in how the remainder of CP5, and then CP6, are funded. Our duties are very clear in relation to long term stewardship of GB Rail, and ensuring fair access by train operators to reliably functioning railway assets.

As the independent regulator, ORR can help provide a stable platform for funding and financing of the railway for its long term future, as well as an environment for successful technical innovation.

We stand ready to do what we can to promote a stable system of governance and the long-term view in these more uncertain times.

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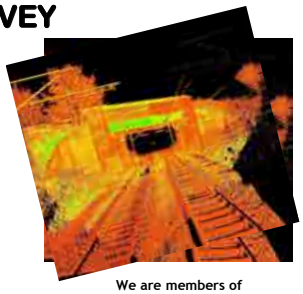
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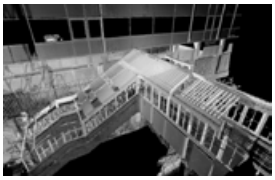
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A crystal ball on Brexit

The rail industry faces some challenges over the short-term but there are some potential opportunities. It will be interesting to see if we take advantage of them, says **Charles Johnson-Ferguson**

I'll be honest; I have no idea how the Brexit process will untangle over the next few years. There are so many unknowns around the UK exit strategy, how the EU and Commission will respond; the impact of other world events and, not least, the impact of personalities in the Brexit process.

That said, the rail industry does not have the luxury of being able to pause and wait and see. People need to get to work, the infrastructure needs to be maintained and decision makers must solve long-term issues on the network, such as growing passenger demand and continuing capacity constraints. Because of this, rail is slightly more stable than many other UK industries. Therefore, I will make some cautious predictions (bearing in mind I did not predict Brexit!).

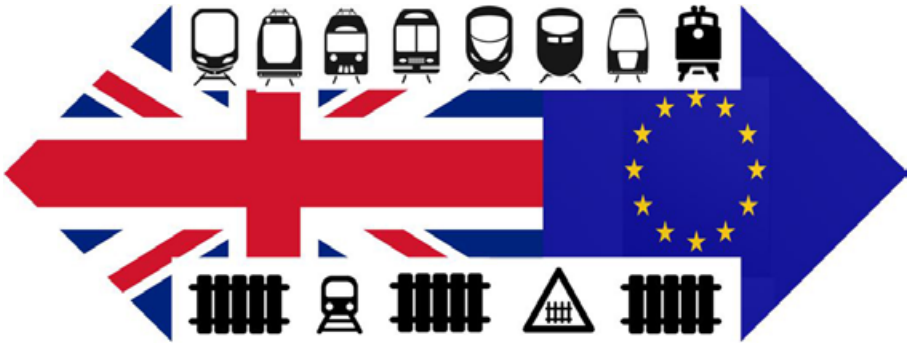
Short-term implications

Operating franchises

The most pressing issue for franchising is in understanding the potential impacts of lower economic growth – PwC's economists forecast a fall in GDP of 1 per cent in 2017(1). This will clearly impact franchises such as East Anglia, which was bid before the referendum. Appointing a preferred bidder has been delayed, as DfT considers how to finalise the procurement.

Operators are looking at existing franchises and trying to understand Brexit impacts and how to manage demand volatility. In addition, overseas operators will be reassessing any new UK investment. Will this impact competition? Probably not; the UK has a strong franchise pipeline, a mature market and there are limited opportunities elsewhere.

That said, the operating market will wait to see how DfT responds to Brexit and any consequential changes to the franchise documentation and programme before committing itself.



Network Rail

Network Rail is UK based and funded predominantly in sterling, so direct effects are likely to be minimal. It has to deliver CP5, develop CP6 and deliver a range of asset sales. So, in the short-term, it's business as usual. That said Network Rail spends around £7 billion each year on works services and bought-in goods. The sharp drop in sterling, plus uncertainty over future tariff regimes, will increase the cost of imported supplies. Analysis on re-balancing its supply chain to incorporate fewer imports has no doubt already begun.

The political landscape

The new secretary ofstate for transport, Chris Grayling, has come out in support of HS2. However, at this stage, we know little of what new minsters in post really think and how they will approach rail sector investment. This will unfold over time. In the short-term, I don't envisage any significant decisions while ministers are still getting to grips with their new portfolios and the new chancellor settles in. Where projects are reliant on EU funding, sponsors will be thinking about the impact on funding plans.

Medium-term implications

Skills and investment

The rail industry is suffering from skills shortages and supply chain constraints. The challenge for government will be creating a new immigration system that supports its political objectives, but does not negatively impact industries reliant on a mobile international workforce. Any new system will take time to develop and implement. If restrictions are placed on EU citizens working in the UK and visas are required, this would likely place more pressure on an already stretched immigration system. Skilled EU citizens would still be able to work on UK projects, but the time it could take to process the necessary paperwork is likely to increase cost and delivery time for projects, impacting right through the supply chain.

Infrastructure investment

Investment in infrastructure is more important in any economic downturn. It is vital for government to show Britain is very much still open for business. Since the referendum there have been numerous calls from politicians and industry to maintain or enhance infrastructure investment.

Photo courtesy of Railfuture

The lack of balance between London and the regions is regarded as one of the key factors in the Leave vote, so ongoing regional investment is obviously needed to rebalance Britain. Again, the outcome is highly dependent on politics and who takes on sponsorship of the devolved agenda. Already there are signs that the Northern Powerhouse concept is being downplayed and may be replaced by a broader industrial strategy to improve productivity gaps between London and other regions.

Two things are certain:

- rail will continue to compete for funding against other critically important infrastructure, such as energy and health. Rail will need new appraisal models to show how it is delivering broader benefits to the UK
- there is not enough funding for projects around the UK. To maximise chances of getting infrastructure built, devolved authorities will need to think about how they can contribute to infrastructure costs.

The supply chain

Larger industry players will be considering whether they leave the UK, or stay and invest. They will be concerned about uncertainty of whether the UK maintains a free trade agreement with Europe or new tariff regimes are imposed, the impact on access to skills and whether any new UK industrial policy might require businesses to be located in the UK to bid for contracts. This uncertainty could provide significant opportunities for UK-based SME's to take a larger market share as the industry seeks to source more goods locally. These are big decisions for any Board, and difficult because the issues are mainly political and so out of their control.

Longer-term implications

We are already seeing large companies with London headquarters consider moving their operations to the EU. If some form of financial passporting is not agreed with the EU, this could result in many workers leaving the UK, thus affecting population growth in London and the South East. This means fewer commuters, lower incomes and less demand. And less money in London means less money for the rest of the country. How the UK responds to Brexit will be key. Lower economic growth and falling London and regional employment could stunt the case for investment. On the other hand, if the UK weaves itself successfully through Brexit negotiations and growth continues strongly the case for investment will remain.

Are there any positive impacts from Brexit?

While there has been more media focus on the negative impacts of Brexit, there could also be some positives, such as:

- UK exports are now better value. The UK rail industry exports approximately £400 million per annum in an estimated £128 billion market(2). This could provide a real opportunity to boost exports
- the UK may no longer be bound by EU procurement rules, allowing government to award rail services and train contracts to UK-based companies, thus stimulating the economy and supporting the ongoing revival of the UK rail industry (noting this could also have adverse impacts on competition)
- there may now be an opportunity to change regulatory restrictions, such as Directive 91/440, requiring separation between bodies responsible for managing infrastructure and operating transport services. The UK could then think about re-introducing some form of vertically integrated railway.

So the rail industry faces some challenges over the short-term and next few years, but there are some potential opportunities. It will be interesting to see if we take advantage of them.

Charles Johnson-Ferguson is partner, head of rail advisory at PwC

1 Economic prospects after Brexit UK Economic Outlook July 2016: PwC

2 RSG Fast Track to the Future Department for Transport A strategy for productivity and growth in the UK rail supply chain P69





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Shared learning across international borders



Much good work is being done to improve working conditions for rail staff across the world, says **Keith Morey**

As technology advances and the rail industry evolve, new and innovative ways emerge to provide a practical solution to, and have a positive impact on, occupational safety and health problems in the sector.

Sometimes it's not the complex, calculated answer that solves a problem. Simple changes can also have a big impact and give a much better solution.

Each year, we in the IOSH Railway Group aim to raise the profile of workplace safety and health and promote the lessons learned throughout the sector, via our annual international award.

By doing so, we have managed to unearth achievements which ordinarily may have otherwise gone unnoticed outside of the companies involved.



Keith Morey with two representatives of RVR at last year's awards

Reducing injuries

Take the work being done at Rift Valley Railways (RVR), operators of the 2,500km rail network connecting Kenya and Uganda.

The company recently concluded a project to change employees' behaviour after finding a high number of injuries in its workshops were as a result of slips, trips and falling objects caused by poor housekeeping methods.


RVR's wheel shop

A '5S' methodology was introduced to enhance employees' safety and cleanliness around five key themes: sorting, setting in order, shining, standardising and sustaining. Management also trained 29 workshop staff as workplace safety representatives to act as a go-between for employees to raise any wellbeing issues with management, and oversee the implementation of safety and health programmes at shop-floor level.

As a result of taking these steps the number of reported injuries on duty across the company's 25 workshops in Nairobi has reduced by 90 per cent in three years.

We chose RVR as the winner of last year's IOSH Railway Group International Award as their work highlighted the way that a relatively simple idea, promoted through training and good communication throughout the company, had positively changed workers' behaviour.

RVR said that winning the award has 'impacted very positively' on the company's image within the Eastern Africa region, and also on staff morale in general.

The award win has also made it easier for RVR's administration to further engage with workers in safety and health initiatives. More than 120 employees have also volunteered to be trained and appointed as safety representatives since RVR won the award.

GS Engineering & Construction in Singapore, meanwhile, was highly commended in the 2015 awards for its focus to make scissor lift machinery safer for workers constructing new railway tunnels.

The company was inspired to act by past work-related injuries or deaths in Singapore related to the operation of scissor lifts.

Through hazard analysis, it noticed that if the scissor lift operator was unaware of the ceiling height and continued to extend

the height of the scissor lift, there was a risk that they may suffer a serious injury or be killed if any part of the body became stuck in-between the scissor lift guard rails and the ceiling.

GS Engineering & Construction therefore developed a height limit switch system and created a piece of technology that automatically stops a scissor lift from extending if sensors come into contact with a tunnel ceiling or another overhead obstruction.

Judges felt that the company's idea had the potential to not only be used widely in the rail sector, but to also be used in other sectors such as construction.

Sharing ideas

The award this year has taken inspiration from the strategic objectives of the UK's Rail Safety and Standards Board (RSSB).

I've previously written in *Rail Professional* about the launch of the RSSB's strategy earlier this year, and how its call to work together to ensure the safety of the railway system accords with what we as a group also believe.

For me, we should take it a step further. We should not only work together to managed risks on the railways, but we should also be better at sharing our successes.

The collective knowledge that exists within the industry is an invaluable asset, and is something that we can all use to learn from each other.



Welding activities at RVR's wagon rehabilitaion section shop

Why couldn't something that works in the UK not also be a success elsewhere in the world, and vice versa?

We are currently judging this year's entries with the help of representatives from IOSH, the Office of Rail and Road and the RSSB. The winners will have the opportunity to attend and present at the IOSH Rail Industry Conference in November.

We feel strongly that it is time to come together and explore shared learning from across borders, as there are always ways we can make our industry even safer.

The IOSH Rail Industry Conference 2016 is due to take place at the Nottingham Belfry Hotel, Nottingham, on 23 November. To register your interest, please email bookings@iosh.co.uk, or call +44 (0)116 257 3197.

Keith Morey is chair of the Institution of Occupational Safety and Health's (IOSH) Railway Group

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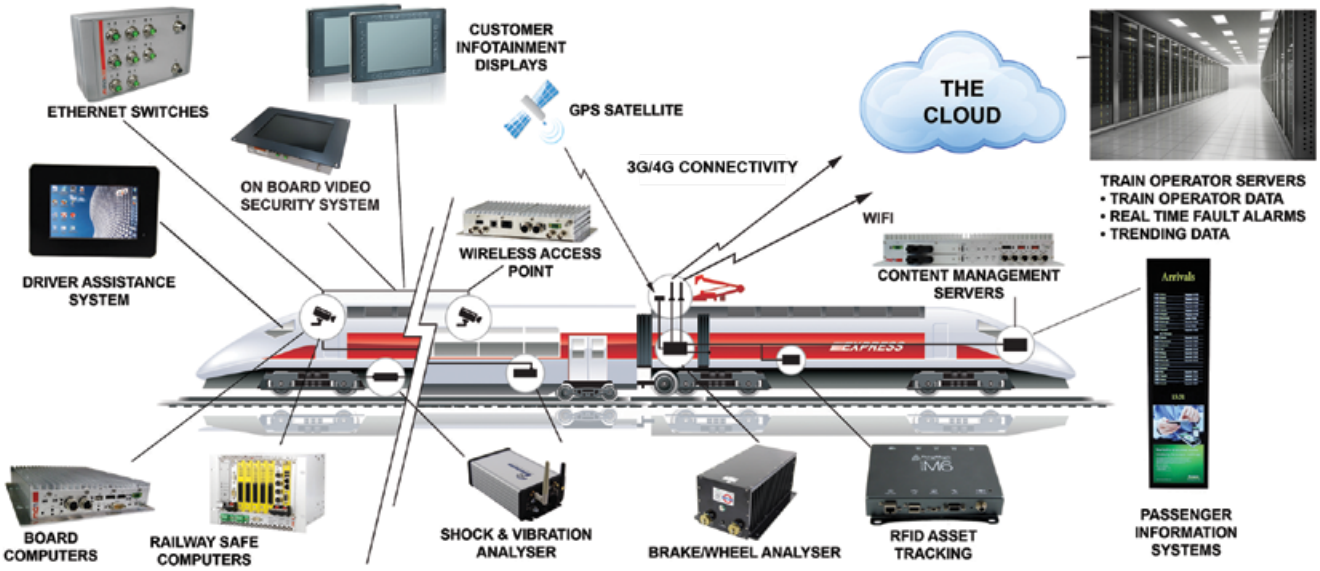
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Valuing network resilience

When the great British weather knocks out sections of the rail network it can take months to reinstate services, causing considerable damage to the local economy. Identifying the size of this impact makes it easier to fund preventative measures, says **Andrew Meaney**

The people of Dover must be a hardy bunch. Both last summer (where the French side of the Channel was disrupted by striking ferry workers and migrant activity), and this summer (where extra French security checks were introduced at the Port of Dover without sufficient extra French border staff to get people through the port unimpeded), the roads in and around town have been severely congested.

What's more, the fast rail service to the town from London has stopped short (in Folkestone) as Network Rail reinstates the tracks washed away in winter storms. Passengers are having to complete the journey by bus, or travel to Dover via Ramsgate. Reinstating the line (including building a new viaduct) was due to be completed by December this year, but Network Rail has announced[1] that the work, which is costing £39.8 million, will be completed ahead of schedule this autumn.

> … in any analysis of the effect of the disruption. It's also the impact on the local (relatively deprived) economy – the job offers that haven't been taken up, investments that haven't been made – during the period of disruption



Economists like me like to quantify impacts to help people take better decisions. In this case, it's not just the cost involved, or the extended journey times for people living in Dover or visiting the town that need to be captured in any analysis of the effect of the disruption, it's also the impact on the local (relatively deprived) economy – the job offers that haven't been taken up, investments that haven't been made – during the period of disruption.

And, of course, it's not just Dover that has felt the impact of this kind of disruption in recent times. The Conwy Valley line was closed for over a month after flooding damaged the infrastructure last December, and, perhaps more famously, the main Exeter to Plymouth line was cut when it was washed away at Dawlish in early February 2014, reopening two months later. At the time, local representatives were quoted as saying that the resulting closure was costing the local economy between £1 million and £20 million per day[2].

To provide a sense of scale, Oxera's work for the Rail Delivery Group on the impact of GB rail on the UK economy[3] found that a 10

per cent reduction in passenger and freight volumes on the network would be associated with an annual cost to the economy (that is, over and above the cost of reinstating services, or the impact on users) of over £1 billion.

However, these impacts on the local economy that happen when the network is put out of action aren't captured in current decision-making as they are not required to be included by the Department for Transport's appraisal guidance. This omission makes it difficult to take well-informed decisions – whether in relation to deciding to fund alternative routes that are less susceptible to this type of damage, or to ensure Network Rail has sufficient funding to invest in mitigation schemes.

Tallying the costs and benefits in relation to resilience is by no means straightforward. In addition to identifying the impacts on users and the local economy while the network is out of action, and the costs of repair, analysts have to make assumptions about where and how often an impact will occur. And you also have to decide how quickly people will change their behaviour – taking a longer rail route, using a car instead – to provide their own mitigation. While at the national level, the impact of any disruption event may be reduced if economic activity is relocated to another area for the duration (of course, this doesn't mitigate the impact at the local level).

Nevertheless, capturing a sense of scale of these impacts, albeit imperfectly and with transparent assumptions, would help those making decisions about resilience to make better decisions.

Andrew Meaney is partner and head of Oxera's Transport team

1. *Network Rail (2016), 'Dover to Folkestone railway will reopen this autumn', press release, 21 July.*
2. *See www.bbc.co.uk/news/uk-england-26062712, accessed on 04 August 2016.*
3. *Oxera (2015), 'What is the contribution of rail to the UK economy?', September.*

DIARY DATES

Events, seminars and exhibitions September - October 2016

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12/10/2016
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LTA-UITP Singapore International Transport Congress & Exhibition
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Singapore
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Far from out of business

Uncertainty is inevitable while we redefine the terms of our relationship with Europe, but now is not the time for panic, says **Darren Reed**. The vital signs for UK rail are positive

Whatever one's politics, transport infrastructure stimulates economic growth, creates jobs and attracts international companies so it is essential that the government continues to make the big spending decisions. The case to invest in rail infrastructure is particularly compelling and has strengthened as passenger demand has grown steadily since the mid-90's, with more people travelling by rail now than any time since the 1920's. It is unlikely that Brexit will derail this inexorable growth so we certainly cannot put on ice plans to build much-needed capacity on our rail network. With major rail infrastructure projects like HS2 and Crossrail promising to create tens of thousands of jobs, an overly cautious approach could even be seen as a self-fulfilling prophecy.

Thankfully, this view seems to be shared by the government as the new transport secretary gave his public backing of HS2. Undoubtedly, the benefits of investing in rail capacity reaches across the UK's diverse transport network, from trams to bus, and the supply chain our businesses rely on. For example, passengers switching services on the West Coast Main Line (WCML) to HS2 at Old Oak Common will effectively free capacity for more freight and regional passenger services on the busiest mixed use railway in Europe. Investing in HS2 will remove lorries from our congested road network and make a meaningful dent on carbon emissions; Greengauge 21 estimates that rail freight produces 77 per cent less CO2 per tonne-km than road freight.

The practical implications of Brexit on the UK rail industry are unlikely to be significant as we are already working to the European technical standards that were created to harmonise train control across the continent and enable seamless travel across borders. These are largely adopted



on a global scale anyway; you can find technical specifications for interoperability and European standards being applied voluntarily by new railway systems in China, Israel, South Africa and the US, for example and it would be a mistake to re-invent a set of processes to replace those that industry has already adopted, such as the common safety method for risk evaluation and assessment that now applies to all rail projects. Individual legislation (such as RIR 2011) implementing EU directives, would clearly need to change, but it seems likely the essential content would remain the same or similar.

Smart move

A smart move for the UK rail industry would be to continue adopting the European Agency for Rail (ERA)'s technical specification for interoperability (TSI) on a voluntary basis to ensure UK rail systems remain interoperable with those in European Member States, and to take advantage of the cost benefits of procuring against common standards from a wide supplier base. Crucially, TSI's are applicable to the European Train Control System (ETCS) that forms the backbone of the Digital Railway – a project that could improve capacity by up to 40 per cent. Breaking off and developing a bespoke communications-based train control system to rival ETCS would serve no other purpose than to isolate the UK from a competitive supplier market.

It remains to be seen how much influence

> ‘…consultancies with a truly global footprint will see the weakened pound has strengthened their offer in the global export market. Couple this new-found price competitiveness with a national rail industry characterised by strong and leading expertise in high speed rail, metro and the digital railway, and our ‘shop window’ looks even more attractive on the international stage’

the UK will retain in shaping technical standards via European Union Agency for Railways working groups; but keeping a place at the CEN/CENELEC/ETSI* table, where voluntary standards to facilitate trade between countries are prepared, seems a given as it already involves non-EU members. Indeed, the reassuring message from the British Standards Institution, a full member of CENELEC, is one of business as usual.

Turning away from the UK, consultancies with a truly global footprint like WSP | Parsons Brinckerhoff will see that the weakened pound has strengthened their offer in the global export market. Couple this new-found price competitiveness with a national rail industry characterised by strong and leading expertise in high speed rail, metro and the digital railway, and our ‘shop window’ looks even more attractive on the international stage.

In regards to procurement rules (the Official Journal of the European Union or OJEU), Brexit may mean a change in the way the public procurement of goods and services are regulated The procurement landscape could look very different two years from now but it is also possible that OJEU could simply be replaced with a British version rooted in the same best practice that we currently adhere to. Either way we will be hoping for a commitment to fairness and openness of competition we enjoy currently.

While there is no crystal ball the vital-signs for the UK rail industry are positive. Along with strong demand for rail from passengers and businesses alike, major international train manufacturers continue to invest in the UK rail industry supply chain – in and of itself a useful barometer for industry health.

What we do know is that retrenchment would dent business confidence at a time when the country needs to take every opportunity to establish its new position on the world stage. For now, the government’s clear intent to commit to infrastructure investment sends a sign to the rest of the world that we may be out of Europe, but we are far from out of business.

Darren Reed is head of rail at WSP | Parsons Brinckerhoff

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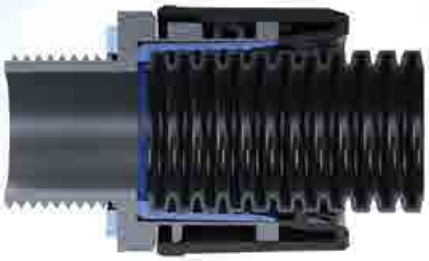
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What does Brexit mean?

There are risks and opportunities for Britain's railways and rail users. What was membership of the EU really worth, asks **Chris Page**

Passenger demand

The 21st century has been a golden period for rail in Britain. Passenger numbers have grown each year, giving governments confidence to invest in rail to enable economic growth – but this virtuous circle is threatened.

Global companies have been attracted to invest in Britain as a way into Europe, contributing greatly to UK economic growth. Britain outside the EU is a less attractive investment prospect, so they may plan future expansion in other European countries instead, affecting UK jobs.

The drop in house builders' share prices and closure of property funds reflect a market belief that lower investment and immigration will reduce economic and population growth.

If jobs and population do not grow as predicted, then nor will travel demand or passenger revenue, thus reducing the value of franchises. The Greater Anglia franchise announcement has been delayed, not to choose the winner but to renegotiate the value of the franchise, whose services are heavily used by City commuters.



Chris Grayling Urged not to backtrack on previous committments

Existing franchises like Northern and TPE, awarded on the basis of a strong growth profile with commitments for new trains, may run into financial difficulty. Greater emphasis on cost reduction would impact customer service. For franchise bids less growth means lower risk appetite, fewer bidders and less investment, hence a lower premium to (or greater subsidy from) the taxpayer.

Fares

The sterling exchange rate has dropped, so imported goods will cost more. If the UK cannot negotiate equivalent trade deals with the EU and other countries, imports may attract a tariff, further increasing prices. Therefore annual fare increases linked to RPI may rise.

The previous chancellor indicated that taxes will have to rise. Unlike many European countries VAT is not charged on fares; could this change?

Investment

The UK's downgraded credit rating may make it difficult for it to borrow. Although lower interest rates are expected, a growing deficit and higher inflation would force up interest rates.

Higher prices for imported rolling stock or components and higher finance charges would change the cost balance between buying new and refurbishing existing trains, so future franchises may have fewer new train commitments.

Higher inflation would also increase Network Rail's project costs.

Higher interest rates and challenging borrowing conditions would make it harder for the government to fund infrastructure projects of all kinds. Reduced passenger demand might encourage the new cabinet to phase or cancel rail projects such as HS2, Crossrail 2, or Northern Powerhouse Rail. The National Audit Office has asked HS2 to delay phase one opening, while the Heathrow/Gatwick runway decision has been postponed.

EU funding

EU funding already committed for rail projects will be secure. Similar UK funding is possible, but there may be a gap while a mechanism is defined. The criteria and schemes may be different as the EU has concentrated on social need, *e.g.* in South Wales, whereas the UK has focused on delivering economic growth.

Industry skills

The recent rapid increase in rail investment has increased costs, due to the limited pool of rail experience and skills, leading to the rail development programme reset in 2015. Immigration controls might make it harder for NR to address this shortfall by recruiting skilled foreign engineers, delaying new projects.

Train operators employ many workers from outside the UK. While they may not be forced to leave, some may choose to, and may be difficult to replace, impacting customer service levels.

Passenger Experience

The EU has had little direct impact on passenger experience. The EU legislated for people of restricted mobility, but the UK chose the tight 2020 deadline.

The December timetable change, harmonised with most EU countries for easier cross-border travel, is one of the few visible changes.

The EU introduced Rail Passenger Rights in 2009. These are generally covered by the Railway Conditions of Carriage, which apply to all British operators, but need overhaul to reflect recent consumer legislation.

Britain leads Europe with Delay Repay, but the varying terms between operators must be addressed.

Scotland might leave the UK to stay within the EU, perhaps ending through fares between most UK and Scottish stations, with border controls affecting cross-border services. Belfast – Dublin services may be similarly affected.

Freight
Rail freight is totally dependent on the economy. Intermodal and construction traffic in particular may be affected by household and business uncertainty. Tighter NR funding might affect capacity improvement schemes for freight. However access charges, which the EU controls, could be reduced, and relaxed emissions standards might prolong coal traffic to power stations.

Regulation
British rail privatisation went beyond the EU aim of seamless cross-border travel and requirement for separate accounting of infrastructure and services. The EU has been playing catch-up, with the latest liberalisation moves in the Fourth Railway Package. It may become easier to renationalise parts of Britain's railway that are not already nationalised. However, no government has yet been willing to take back issues like Southern's door operation dispute.

EU regulations allow open access operators but ORR frequently denies applications to protect franchise premiums. The government may prevent future applications, denying new journey opportunities but allowing better allocation of scarce track capacity.

Procurement
Public sector procurement in the EU must be open to any supplier in the single market and tendered in the Official Journal of the EU. Following the Class 700 order the government has included the benefits of UK production in the bid scoring system – hence the deal for the Hitachi assembly plant at Newton Aycliffe. Given the limited number of suppliers the government is still likely to encourage foreign bids, but may favour UK employment more overtly.

The EU 15 year limit on passenger franchises has no effect, as the DfT avoids franchises over 12 years where long-term revenue cannot be predicted.

Standards
Britain did not foresee the impact of EU emissions standards for non-road vehicles on the availability of new diesel locomotives. These could be relaxed despite the UK commitment to international climate change limits.

Relaxing EU environmental standards protecting wildlife could make infrastructure projects simpler and cheaper.

Long-standing European cross-border train services needed carriage design standards. This interoperability has broadened to include signalling. Britain took a lead role in developing and adopting the Technical Standards for Interoperability (TSI) but will no longer have input.

Network Rail has implemented GSM-R driver-to-signaller communications across the network and is likely to continue rolling out the EU's traffic management (ERTMS) and train control (ETCS) systems under its Digital Railway initiative.

A lower exchange rate may make British rail industry suppliers more competitive abroad, but only if British railways continue to follow EU standards and the UK negotiates favourable trade deals.

Summary
While operators and suppliers will have concerns, the railway's end customers should see little immediate change. In the medium-term increasing cost pressures may cause rising fares, increased overcrowding and reduced customer service. These are only the known unknowns; unintended consequences may appear during the rush to the exit.

Transport is key to economic growth, so the recognition by new chancellor Philip Hammond in July that investment in our future must continue is welcome. Railfuture has written to new transport secretary Chris Grayling urging him not to backtrack on previous commitments. The UK must be seen to be open for business and building the infrastructure it needs, giving priority to the projects which will stimulate economic growth.

Chris Page is the chair of Railfuture

For more detail on the possible effects of Brexit on the railways go to www.railfuture.org.uk/Brexit and follow the links to the related articles.



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Women in rail | Adeline Ginn



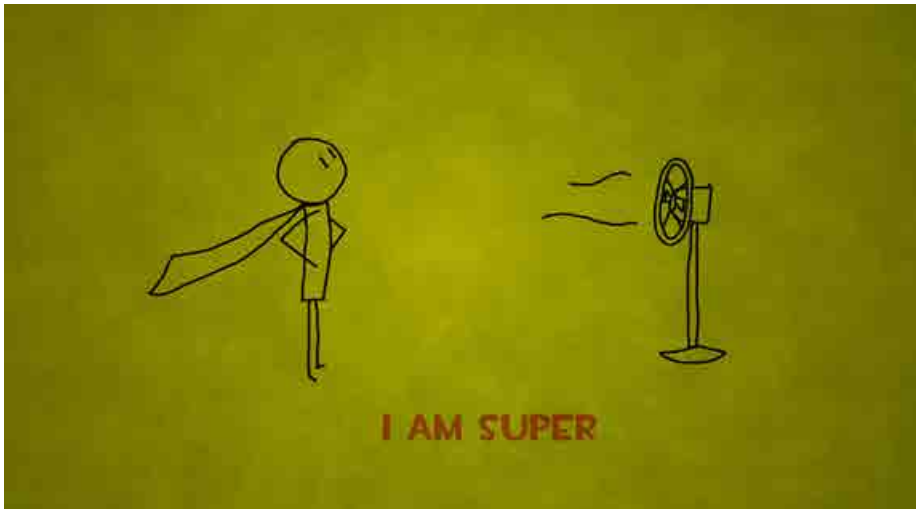
Admired and inspired

Adeline Ginn looks at how women, and men, can boost their levels of self-confidence, and why it matters in the workplace

Few clichés are as factually correct as the idea that women are less confident than men, and it is not just an issue for workplaces with a skewed gender ratio such as rail. The BBC's head of newsgathering, for example, said in June that despite having women in six of its 15 top reporting posts, the broadcaster still finds that some 'very capable' women lack the confidence to apply for the top jobs.

Business is about taking risks, and clearly, taking risks can be daunting. At some point though, we all have to cross our fingers and take a leap to get to where we want to be. According to WISE, that is trickier for one half of the population than the other. Females have a greater level of fear of failure than their male counterparts when it comes to seizing business opportunities. Often, this is due to women questioning their ability to identify, assess and act on an opportunity.

> A recent study of 16,000 people, two-thirds men, one-third women – as well as their managers, subordinates and peers – found that women actually rated better than men on 12 out of 16 competencies. These included 'takes initiative', 'drives for results' and 'stretches for results', all traditional measures of effective leadership



Most women who are in business today began their careers with smaller responsibilities and progressed upwards when their confidence levels matched their capabilities. But why is it, that in an age with role models such as Karen Brady and Angela Merkel, a lot of women are not backing themselves to spearhead many of the important decision-making positions?

Understanding from men

It is not just the problem of women being too sceptical of what they can achieve, it is also that men are not made aware that this issue may be holding back their female talent. A WomenCorporateDirectors Foundation survey has shown that while 52 per cent of women think lacking confidence holds them back – only 18 per cent of men consider that this could even be a problem for their female staff. This is worth mentioning, as men who have aspiring women in their teams can only offer sufficient guidance and support if they understand that this is an issue that many women face.

A recent study of 16,000 people, two-thirds men, one-third women – as well as their managers, subordinates and peers – found that women actually rated better than men on 12 out of 16 competencies. These included 'takes initiative', 'drives for results' and 'stretches for results', all traditional measures of effective leadership.

However, for both women and men, self-confidence is critical for business success. If you do not believe in yourself, how can you convince someone else to put their faith in you? Decisions need confidence behind them in order to be executed effectively, efficiently and professionally.

How to boost confidence

The question is, how can women boost their own confidence, and what can companies do to help? Here are some practical steps that anyone can implement to make headway.

Get out of your comfort zone

It is much easier to remain within the boundaries of where you feel comfortable than it is to face the fear of venturing beyond them. But by limiting yourself to what you already know, you will miss out on professional opportunities, life experiences, and personal growth. This could start with asking a question in a meeting; something that is for its own sake, rather than for a particular result. Begin to set yourself challenges – volunteer for that pitch, approach your boss about that new process, do it once a week, or once a month, and watch yourself grow.

Stop saying sorry

Studies have shown that the way women and men address colleagues when in a position of power differs. Men in a professional environment naturally adopt an authoritative language, whereas women tend not to portray the same confidence. To change this, a few subtle changes are all that is needed. Firstly, using words such as 'I think' and 'I feel' are seen as weak words, they instantly reduce authority. Ellen Petry Leanse, a former executive at Google and Apple recently wrote that the use of 'permission' words such as 'just' covey a subtle message of subordination, she thinks striking these from a phrase almost always clarifies and strengthens the message.

Boost body language

In a similar way, body language has been proven to impact how authoritative a woman is perceived to be in the workplace or in a boardroom. Deborah Gruenfield from Stanford University believes that women struggle with an inner conflict: likability versus competency. Gurenfield believes that women can overcome this through their body language. There are a number of traits leaders and people in high status jobs have in common. One is the ability to own any given space, they take up room and spreading themselves out. Simple adjustments such as reaching your hand out further when you go for the handshake, standing taller or sitting forward with your arms on the table in a meeting can make all the difference when making first impressions and conveying confidence in a professional setting.

Don't micromanage

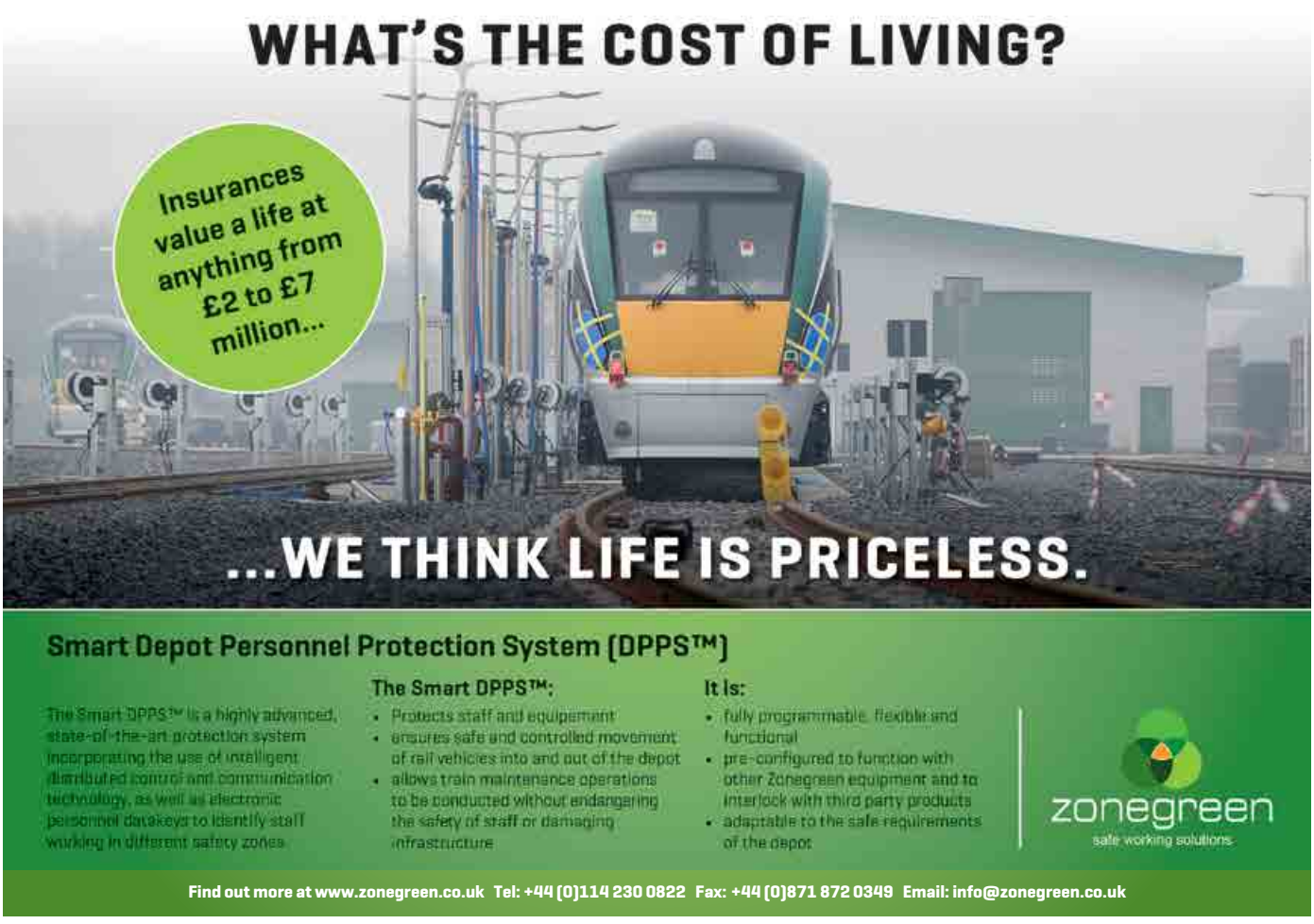
Micromanaging dents a team's morale by establishing a tone of mistrust—and it limits employees' ability to grow. With minimal accountability and maximum interference, people are unlikely to trust their own decisions. To avoid this, it is essential for businesses to have an effective appraisal system in place, which allows both employees and managers to reflect on their behaviour. Micromanagers should be encouraged to think about why they micromanage, the benefits of not micromanaging, and to step back.

Focus on your talents

As an employee you must take a look at yourself and identify your own strengths and areas for improvement. Come to terms with them and develop them because these are what make you yourself and, ultimately, you are your best asset. For businesses, there should be a specific focus on encouraging and investing in people's individual talents, utilising them to their fullest.

It is also important to remember that while lack of confidence is a more widely felt problem for women, it does affect men too. Not everybody's confidence will look the same: businesses should also acknowledge that the 'softer skills' such as negotiation, coaching and nurturing, are crucial to business success and should be viewed as fundamental leadership skills. The more we do that the more likely we will see a wider range of personalities – and women – in managerial positions, and people will feel more confident in possessing such abilities.

Adeline Ginn is general counsel at Angel Trains and Founder of Women in Rail





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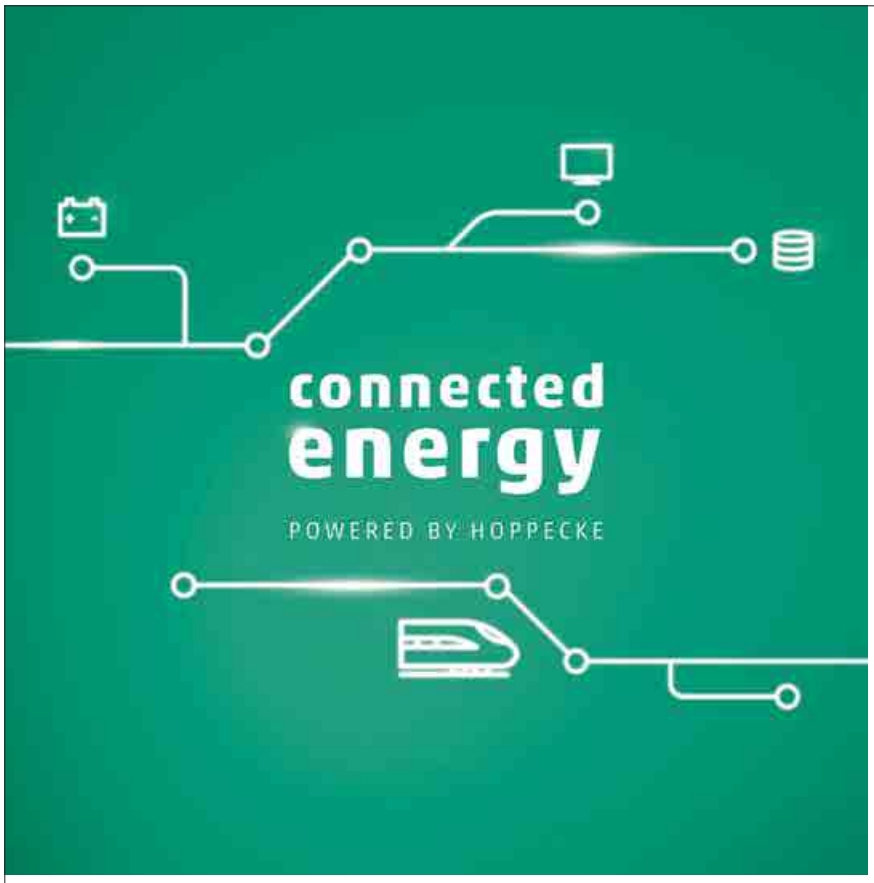


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True value

Lucy Prior and **Eli Rees-King** look at rail industry networking events with a difference

Providing Rail Alliance members with the opportunity to network isn't the only objective when running high quality networking events, and while networking remains a central element – the industry critical theme relevant to the audience, calibre of the speakers, as well as the location and style of venue are all key ingredients that underpin the value and success of these events.

The Rail Alliance runs a lively and informative series of networking events for its members across the country covering a multitude of topics, and is passionate about delivering networking events with a purpose. A networking event should be about delivering true value for everyone attending – whether a speaker or delegate. This is much more than just pure networking in its literal sense. It is about bringing

> ‘It is a central feature of the Rail Alliance networking programme that they are run across regions as it is a nationwide organisation and strives to support its members both in their own neighbourhoods as well as nationally’





people together with a common interest and objective and to engage on industry topics that not only generate meaningful discussion in the room but result in practical knowledge and solutions that can be implemented back into industry. What we really want to see is practical discussion and networking converted into real business benefit.

It is a central feature of the Rail Alliance networking programme that they are run across regions as it is a nationwide organisation and strives to support its members both in their own neighbourhoods as well as nationally. July's networking event was based on the theme of Product Approvals and Acceptance and held at the prestigious Greater Manchester Chambers of Commerce; a venue not only chosen for its grandeur and facilities but also because of the pivotal role it plays in the region's vibrant rail sector, being one of the founder members of the North West Rail Industry Leaders Group. The North West is an area that is home to many a Rail Alliance member and it is keen to support the NWRILG (North West Rail Industry Leaders Group), with which they share numerous mutual members.

The event was designed to provide first-hand information from industry experts on what can be a very confusing looking at product approval and acceptance from infrastructure requirements, plant (on track plant) and also from a train manufacturer perspective. With representatives speaking from Network Rail, the RSSB (Rail Safety & Standards Board), RISQS' (Railway Industry Supplier Qualification Scheme), Atkins and Alstom Transportation and the University of Huddersfield, the session was a lively and interactive one that sparked debate, raised, and answered, questions and generated a raft of vital networking between attending companies.

To illustrate the reputation of Rail Alliance networking events, the majority of delegates were of senior decision making positions and ranged from local companies to the Welsh government, Achilles and the Network Certification Body. Three of the speakers hailed from companies active within the NWRILG (North West Rail Industry Leaders Group www.nwrilg.net) (the others being national bodies or schemes). Alstom demonstrated its dedication to the region with a presentation that included project case studies from the Longsight TMD and a look at the upcoming Widnes facility that will drive skills and productivity for generations to come.

Lucy Prior is membership development manager & international trade director at the Rail Alliance. Eli Rees-King is marketing communications director

For more information on membership and networking visit: www.railalliance.co.uk

Rail Alliance Events Calendar
As well as our popular networking sessions, the Rail Alliance is also running a range of workshops and training courses and supporting a variety of collaborative events, a summary of which is detailed below.

Rail Alliance Networking Events
13th September 2016: First Time Approvals
October: Opportunities in Infrastructure
November: Education in the Supply Chain in Rolling Stock
December: Members Only Christmas Networking Lunch

RSG Best Practice Workshops
15th September 2016: Whole Life Cost/ Whole Life Value
13th October: BIM
16th November: Lean
14th December: Off site

Trade Fairs & Exhibitions
20th – 23rd September 2016: InnoTrans
6th October: Rail Vehicle Enhancements
2nd – 3rd November: Advanced Engineering
1st February 2017 – 'Light after Dark' Railway Lighting & Security Exhibition
9th – 11th May – Railtex
June: Rail Live

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> The industry needs to find a way to release the pressure valve; something that enables operators to maintain system uptime and capacity and improve the passenger experience until new infrastructure comes online. This is where we come in



Rail Professional spoke to Guy Bruce, Interserve's managing director for infrastructure and industrial, about the company's growing role in the rail sector, the evolution of the station environment and what to watch out for in the changing economic climate

Guy Bruce

Interserve's name seems to be popping up all over the place at the moment. I guess the big question is why rail, and why now? We've actually been working in this sector for a number of years now. But as is often the way with Interserve, we've largely flown under the radar.

That said, our transport operation has certainly grown in the past two years. I suppose the spark was our acquisition of Initial Facilities from Rentokil in early 2014. Initial had contracts with Network Rail and London Underground, among others, and we have built on this platform since the acquisition. Our portfolio now includes Network Rail, London Underground, MTR Crossrail and the Docklands Light Railway, not to mention a number of regional operators and significant international operations in mainland Europe, especially Spain.

Here in the UK, we're responsible for maintaining, protecting and cleaning a sizeable proportion of the country's stations and rolling stock – around 180 stations and 3,000 train carriages at last count. At any given time our teams could be carrying out maintenance work at a large depot, guarding valuable assets along a stretch of railway line, cleaning the tracks in the tunnels of the London Underground, or checking tickets along the DLR. We employ 4,000 people just in transport and have experienced significant growth over the past two years, with plans to double again over the same period going forward.

It's no secret that transport is a key growth market for us. We've made a strategic entry into the sector supported by significant investements to support further growth, both in terms of the services we offer and our geographical reach. The sector faces an extremely challenging period in the next five to ten years, with broad socio-economic factors putting increasing pressure on the network. We believe supply chain partners like Interserve will be pivotal in helping the industry navigate its way through these challenges – especially in bringing over innovation and best practice from other sectors.

So what are the big challenges facing the sector? At the moment the industry is facing a transport trilemma; three fundamental challenges that, on the surface at least, seem irreconcilable.



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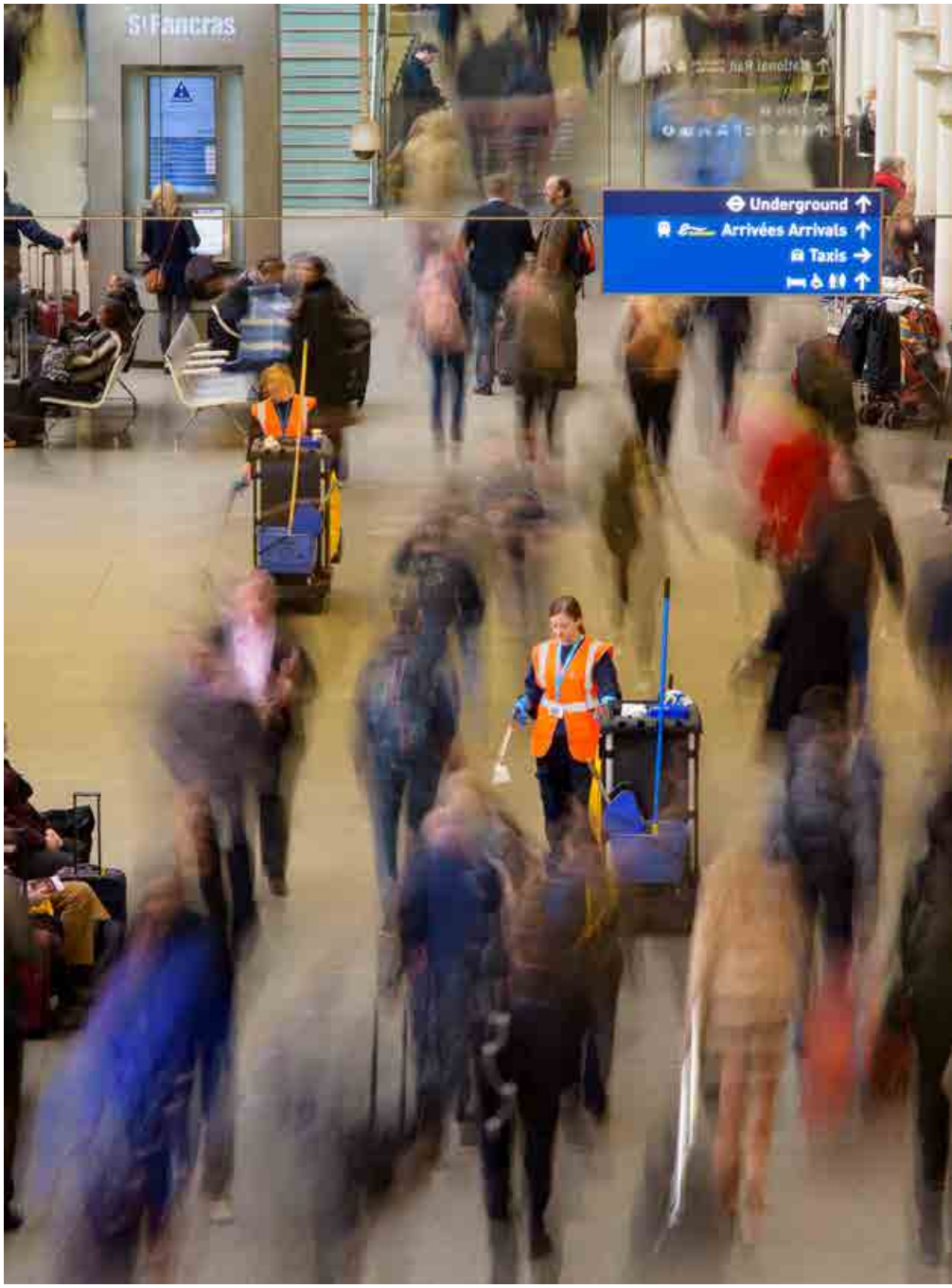




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> Transport operators and station owners are outsourcing the management of their environments more and more. The challenge is to ensure that their supply chain understands and buys into the experience they are trying to create and delivers services accordingly



The first is sheer numbers. In London we're anticipating 10 million inhabitants by 2030. Waterloo station alone has seen passenger numbers jump by 15 per cent in just five years, so it's clear what effect a further four million population increase will have on passenger volumes over the course of the next decade.

The second is expectations. Passengers want and expect more from public transport than ever before, from the digitisation of the journey planning and purchasing process to improved amenities at the stations they travel from and to. They want a positive overall experience, based on more than just the functional. This has to be a given, and it means more investment and greater creativity from providers.

Which brings us to the final aspect of the trilemma: budgets. The major strategic infrastructure projects currently in the pipeline won't be completed in time to solve the capacity problems that are building now. For operators, this investment also won't have a direct, tangible impact on their own budgets, which are either fixed or more likely reduced.

The industry needs to find a way to release the pressure valve; something that enables operators to maintain system uptime and capacity and improve the passenger experience until new infrastructure comes online. This is where we come in. We believe we can play a bigger part in the day-to-day management of the transport environment; running the support functions that are vital to the overall experience but which are ultimately not core services, and doing so in a lean and cost-effective way.

You talk about passengers and their 'experience' of rail travel. How have passengers' expectations changed?

Consumer expectations used to be focused on the functional: what activity do I need to undertake (shopping, eating, catching a train, *etc.*) and how and where can I do it? Today's consumers are far more attuned to the experiential. It's not just a question of what, where and how much. They want a positive overall experience that transcends individual activities or services, and meeting this expectation requires a different way of thinking.

When it comes to rail passengers, we're seeing this most acutely in the stations themselves. They no longer differentiate between the transport, retail, dining and leisure environments within large hub stations – they're all part of a single, multi-functional destination and viewed as one overall experience. With stations increasingly becoming the focal point for retail and leisure investment, this convergence of the transport experience is only going to accelerate.

The industry has already gone through a period of remarkable change to respond to this phenomenon. Ten years ago transport companies weren't even thinking about the customer experience. Now it's the driving force behind how they design and deliver their services.

The focus on the experience is why Interserve and companies like it are going to be so important to this sector in the coming years. How well or poorly we maintain the train and station environment has a direct and significant impact not just on the passenger's experience of that environment; it colours all other aspects of their journey. Transport operators and station owners

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> More and more we are acting as the face of our customers on a day-to-day basis. This is a fantastic opportunity, as we are having greater influence on passengers' overall experience of public transport. But it's also a challenge in that we need to make sure our people are prepared and trained for this customer-facing role



are outsourcing the management of their environments more and more. The challenge is to ensure that their supply chain understands and buys into the experience they are trying to create and delivers services accordingly.

What are the big changes you're seeing in your own operations?

The biggest change by far is how public facing our work has become. Historically, the public and indeed many of our customers wanted support personnel like guards, maintenance operatives and cleaners to keep a low profile. There have always been thousands of people working hard to keep our transport network moving, but doing so largely in the shadows and away from the public gaze. We were the silent army of UK transport. Things are very different now. The planning, purchasing and management of journeys has moved from ticket halls to self-service machines or smartphones, while the customer service function is now largely delivered online or via social networks. But just because services have been digitalised doesn't mean passengers don't still want to see a friendly, helpful member of staff when they have a query or concern – and our operatives are being used to plug this gap.

It's always been the case that any person wearing uniform or high-visibility clothing is an immediate lightning rod for a customer query, so cleaners, guards and maintenance operatives are often stopped by passengers who are lost or confused. Our customers have recognised that they have a huge, untapped human resource which, with the right training, can act as an important touchpoint for passengers, provide a much-needed boost to customer services teams and act as eyes and ears for security forces too.

More and more we are acting as the face of our customers on a day-to-day basis. This is a fantastic opportunity, as we are having greater influence on passengers' overall experience of public transport. But it's also a challenge in that we need to make sure our people are prepared and trained for this customer-facing role. It demands different sets of skills and a real attention to detail.



We've put a great deal of time and resources into training our teams in the art of customer service. We're also looking at cross-skilling staff to carry out multiple roles for customers – for example, training cleaning operatives to carry out basic maintenance work to help response rates and asset uptimes. It's a significant investment for the business, but we believe this investment will pay dividends as bolstering customer support becomes increasingly important to our customers and the travelling public's journey experience.

Clearly we are in a period of economic change. Do you see the industry being affected?

While inward investment may be affected as the nature and exact timing of our EU departure is determined, I think we're on firmer ground with the major capital projects that are being driven by government.

Theresa May has already made a number of statements about the importance of stimulating growth outside London and balancing the nation's wealth, and the flagship infrastructure projects – HS2, HS3 and more broadly the Northern Powerhouse – are vital to that.

The more pressing challenge is around skills. The demographic of the transport industry workforce – especially in the South East, and particularly in the capital – is extremely diverse, with a significant proportion originating outside of the UK. We obviously need more clarity on this front as soon as possible, but at the moment it is business as usual.

The skills challenge is now a new one. A shortage has been building for some time and we have a perfect storm of an ageing workforce and a lack of fresh talent coming into the industry. Unless we find a solution this could hamper our ability to push through key infrastructure projects, large and small.

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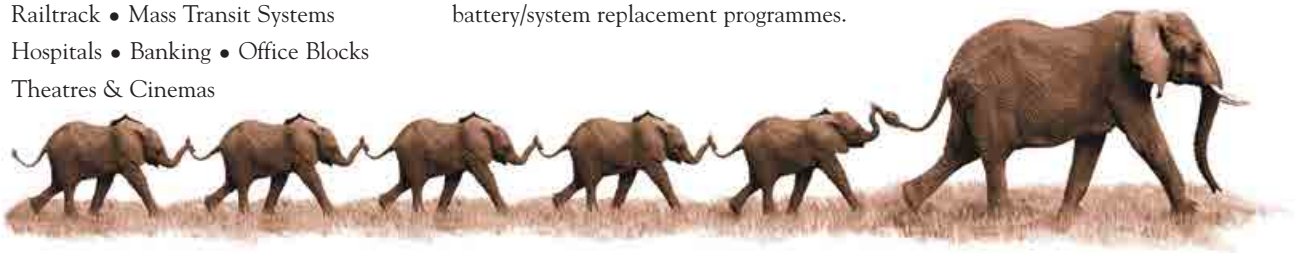
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in the consultation process around the government's apprenticeship levy, which is due to launch in April 2017. Although there are still details to be finalised, we believe the levy and the new funding structure that comes with it provide a real opportunity for businesses to bolster their apprenticeship programmes and attract fresh blood. The transport sector should be ready to take full advantage of this opportunity come next year.

With the terror threat level at severe, security is obviously one of the industry's key concerns. Is this high on your agenda and that of your customers?

It's certainly a big concern at the moment – not just in transport but in every sector we work in. From retail destinations to corporate offices to government buildings, the number one priority is always the safety of both the public and members of staff. In transport we face a challenging contradiction when it comes to security. On one hand, the focus for the managers of larger hub stations is often on increasing dwell time; encouraging people to spend more time in retail environments and therefore more money. But from a security perspective, the goal is to get passengers moving through the station as quickly as possible to make it easier for security personnel to identify suspicious individuals or activity.

Design can provide at least part of the answer. From the very first stages of a station build or refurbishment project, you need to ensure wayfinding and signage is such that fast-moving commuters are kept as distinct as possible from retail and leisure areas. In some of the European stations we manage, they have gone as far as building separate ramps to redirect passengers away from retail areas – minimising crowding and making sure that security teams' line of sight is not blocked.

A quicker solution, and one which can be deployed without a wholesale reconfiguration of the station environment, is to simply put more eyes on the ground to support security teams. Working with operators, we are now training our cleaning and maintenance operatives to spot and report potential security threats, including identifying those who may be carrying out so-called 'hostile reconnaissance' ahead of a terror attack.

We have been working with the police and the National Counter Terrorism Security Office (NaCTSO) to develop terror-related training programmes for non-security personnel, and are now able to provide this training to our employees and those of our customers. With a UK terror attack being a case of 'when rather than if' according to security forces, and given that transport hubs are considered to be a high-risk target, we would urge others to give this sort of training serious consideration.

What are the next big developments for the industry?

Transport has historically been slow to embrace emerging technologies. There are pockets of excellence – Transport for London's open-sourcing of all of its transport data being an excellent case in point – but broadly speaking we are lagging behind other sectors.

Now is the time to change that. There is real momentum gathering behind the smart cities agenda, where information and communications technology will be intrinsically woven into the fabric of our cities. Rail stations and other key transport hubs are natural focal points, and if we embrace the new technologies that are now emerging into the mainstream, we will see even more investment and development pouring into our industry as time goes on.

There's no getting around the fact that there are big challenges on the horizon, but there are also real opportunities for those who know where to look. We feel we're in a fantastic position now to help our customers exploit these opportunities and are truly excited by the journey that lies ahead.

"A quicker solution, and one which can be deployed without a wholesale reconfiguration of the station environment, is to simply put more eyes on the ground to support security teams. Working with operators, we are now training our cleaning and maintenance operatives to spot and report potential security threats, including identifying those who may be carrying out so-called 'hostile reconnaissance' ahead of a terror attack"



A realistic view

Nigel Keohane reviews *Travel Fast or Smart? A Manifesto for an Intelligent Transport Policy* by David Metz

It is unusual for transport to receive such a wide-ranging and ambitious analysis as it does in David Metz's *Travel Fast or Smart?* The book sweeps across decades and even centuries of travel patterns; and it covers all modes from air, to rail, to car, to bike. It provides recommendations on some of the most politically-pressing debates such as airport expansion and High Speed 2; and it addresses concerns such as the environment and congestion.

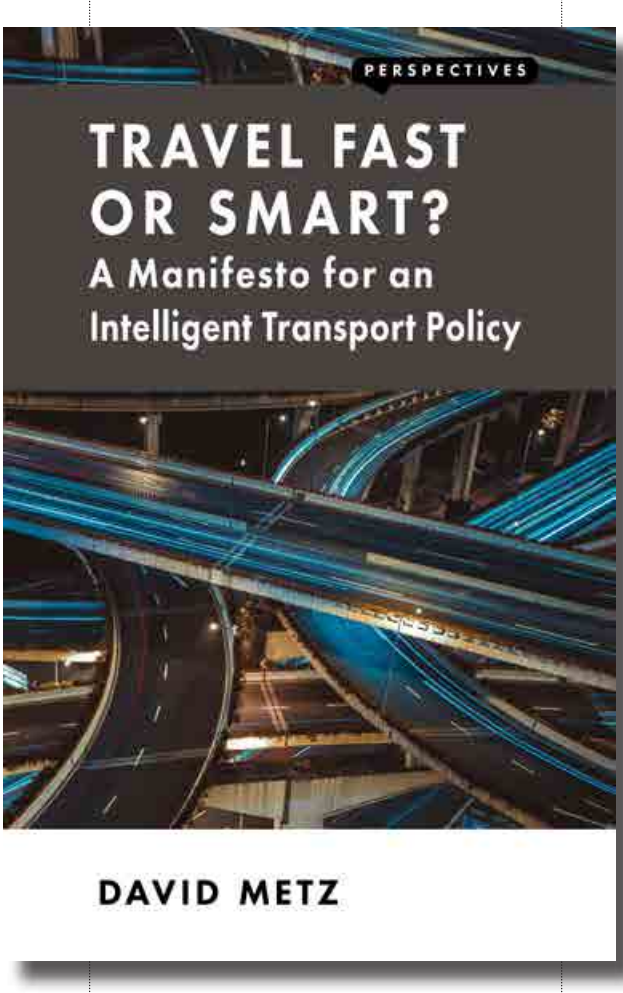
Perhaps most ambitiously it draws on a sociological and cultural view of human geographic development that underpins how the future of transport should be viewed. Few people use transport purely for pleasure – most move to get to work, to access services, to see friends or family or for leisure purposes. Appreciating how we may be conformed as a society must inform what enabling function we expect transport to play in the future.

It is also provocative and fun to read. It mixes major theses with well-thought through vignettes of analysis. Take the case for additional airport capacity. Metz questions the conventional wisdom that more capacity is needed, citing evidence of demand saturation in some market segments, the competitiveness of the UK airport market and the prospect that business travel could substitute for leisure travel. He even argues that additional capacity may not be as directly to the UK's economic benefit as often assumed because the UK has a significant balance of trade deficit in tourism. UK tourists spend £30 billion abroad, while foreign tourists in the UK spend £20 billion. Expanding airport capacity could reduce this deficit but it could just as easily increase it.

To his credit, these arguments are digested into only some 135 pages.

Journeys historically static

At the heart of the book is the argument that 'Instead of focusing piecemeal on getting from place to place ever faster, we need to think about how and where we want the economy to develop, and about how new digital technologies can help achieve this development.' Metz's starting supposition is that per capita growth in transport has peaked and now plateaued. The average number of trips embarked on each year and the average time spent travelling have been remarkably static in the last fifty years. Indeed, the habit of spending an hour travelling per day is a phenomenon that can be traced even further back into the nineteenth century and beyond. Future growth in traffic and travel will be driven by population growth.



This habit of travelling for an hour a day has also combined with a failure of society to discover new methods of transportation that are significantly more rapid than existing ones (in part because safety and environmental regulation limit the scope for accelerating the pace of movement). Significant growth in miles travelled in the 1970's and 80's has been followed by a peak and then a dip.

Despite these trends, policymakers continue to focus on faster travel times and time savings are a principal element of current transport planning. A new lane on a road should lead theoretically (all other things being equal and all other markets being perfect) to quicker speeds and time savings for drivers which in turn could be converted into additional working time or for leisure. Metz argues this is the wrong approach. The first problem is that time savings often don't materialise, because other local users exploit the additional capacity and make longer journeys. Transport improvements lead not to people working more or taking more leisure time but to people travelling greater distances to access a wider choice of services or jobs. This may be a good thing but it doesn't address factors like congestion. Second, the traditional focus on aggregate time savings tells us little about the distribution of benefits. As Metz astutely notes, this is particularly important in schemes such as HS2 where at least part of the rationale for action is to promote the economies of northern cities and their hinterlands.

A focus on economic development

Instead, the book argues in favour of focusing on 'the part people and places play in economic development'. New transport connections can open up economic opportunities by changing the usage of land, whether for businesses or housing. Rather than focusing on grand projects and the marginal time saving to travellers, the government would be better focusing on the economic development that occurs as land is made more accessible. Metz also argues that

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it should lead to a greater focus on smaller public transport schemes in and around urban areas rather than large inter-city schemes. In the same way, he argues that investment in digital technologies would allow us to make much better use of existing space. Instead of adding capacity to major roads, the government would be better to provide predictive travel time information to users – alleviating concerns about uncertainty and unreliability of journey time, while prompting flexible users to avoid peak times when journeys are longest.

There are clearly challenges to this approach. One advantage of the current approach is that policymakers leave as many choices to individuals as possible within (admittedly sometimes imperfect) markets. Some may object at a philosophical level to spatial planning. More important is how any government authority can make good decisions on where to intervene. Metz supports his argument by citing the London Dockland example where farsighted politicians and administrators spied opportunities to open up new economic and housing districts. But, this merely implies that governments can sometimes or on occasion get it right.

Equally, such an approach may become less effective in a world where new forms of communication technology enable people to avoid travel altogether and engage remotely with others, or, as is increasingly the case, where different forms of travel provide very varying opportunities for working while travelling.

However, there is also much in favour of Metz's general thesis. It is founded on how people actually behave rather than on how we'd theoretically expect them to. It recognises the current inefficiencies in land use and failures in the housing market and it puts forward transport as a fundamental answer in addressing these problems. And, it is based on a realistic view of how our economy, society and urban geography may evolve.

Indeed, with Theresa May's government seemingly more receptive to industrial intervention and central planning (see for instance the new title of the business department), Metz's solutions may be pushing at a more open door than in the past.

Nigel Keohane is research director at the Social Market Foundation

Travel Fast or Smart? A Manifesto for an Intelligent Transport Policy is published by London Publishing Partnership, 2016

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The **British Transport Police** look forward to continuing to working with the industry to keep the railway a safe place to travel and work

Every day, more than 8.6 million passenger journeys are made on the UK's rail network and it is the role of British Transport Police to ensure the safety of each passenger and member of staff.

Between 2013 and 2019, the industry is anticipating passenger journeys will increase by 22 per cent and freight kilometres by 28 per cent. Stations are no longer places where people just go to catch a train, but are becoming major retail and entertainment complexes, to which policing must adapt. Summer 2016 also saw the opening of London's Night Tube, which marks the beginning of 24-hour railway policing in the capital.

The changing face of the network means we, as a Force, must constantly adapt and so we are making sure we're making the best use of modern technology and have introduced targeted, evidence-based policing, moving from just enforcing crime to making sure we're pre-empting and preventing it as well.

Recent terrorist attacks across the world are a stark reminder to all of us – police, the public and rail staff – of the need to continue to remain alert but not alarmed. The threat level from international terrorism in the UK remains at severe and we've all watched with horror the coverage of attacks in France, Germany and other countries on the continent. We have not only significantly increased funding to counter terrorism in recent years, but also ensure that we continually respond to emerging terrorism threats, by changing our tactics and testing our capability and readiness. Testing and exercising is a vital way to ensure our plans are fit for purpose – and so we took part in three major incident tests alongside partners from the industry last year.

All vital players

We are all vital players when it comes to countering terrorism, including rail staff and businesses. Throughout last year, our specialist advisors ran 161 *Project Griffin* counter-terrorism awareness events for more than 2,300 delegates from a range of industry partners and businesses across the country. These sessions aimed to raise awareness of terrorism, build effective working relationships and empower people to report suspicious activity.

We ask that staff continue to be vigilant and always report any suspicious behaviour, which includes people asking detailed or unusual questions about infrastructure, using recording equipment or not displaying the appropriate security passes in access controlled areas. Be aware of unattended items and any behaviour which strikes you as not quite right. Always trust your instincts and remember that no piece of information is considered too small or insignificant.



You will also continue to see our Project Servator patrols, which launched in 2015, across the network. These are highly visible deployments of uniformed and plain clothed officers and other resources, including police dogs and armed officers, across the network. They can turn up at any point and are designed to deter, detect and disrupt criminal activity at key stations. Together we can continue to keep the travelling public safe.

One thing we're also committed to tackling is the number of staff assaults – which last year, stood at 3,814 recorded crimes. A significant proportion of these were verbal, rather than physical. It is of the utmost importance that staff know where to go to contact us, that we work together to make sure offenders are brought to justice and that we have adequate resources patrolling stations to prevent assaults from taking place.

The importance of rail staff and officers working together cannot be underestimated. Last year alone, the work of officers and rail staff led to an incredible 1,269 life-saving interventions – reducing the devastating impact that fatalities have on the lives of individuals and their families, as well as the effect on train drivers and the rail industry as a whole.

Rise of hate crime

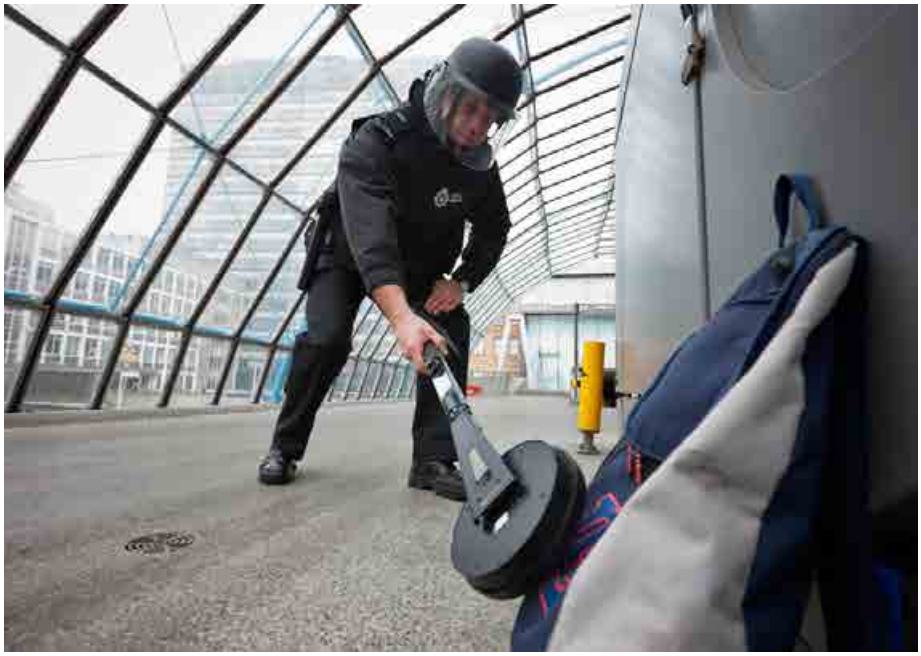
July also saw the start of a nationwide hate crime campaign. There has been significant media coverage following the decision to leave the EU about a rise in the level of hate crime across the country. While we're happy to note that hate crime is still very low on the railways, we're also aware that this is a significantly under-reported offence. As such, we want to ensure that passengers and staff feel confident enough to report incidents of hate crime to us, safe in the knowledge that we'll take their report seriously and do something about it.

The #WeStandTogether campaign sees us working alongside London Mayor Sadiq Khan, the Metropolitan Police and other

agencies to send a message that hate crime is something we will not tolerate. You may have seen the promotional material for the campaign at stations across the UK and we want to thank all the staff who have been helping us to promote this important message.

We're often asked by passengers and staff what they should do if they see an incident of hate crime taking place and how is best for them to report it. Our advice is always to phone 999 in an emergency but otherwise, call us on 0800 40 50 40. Alternatively, and perhaps the best course of action, you can text 61016 – this text will then be picked up by our control room and if needed, officers can be deployed immediately.

Our text 61016 service was launched in March 2013 and is proving an invaluable way for us to keep passengers and rail staff safe. Since then, we have received more than 45,000 texts from rail passengers and rail staff. Our officers have responded to more than 7,400 incidents and recorded nearly 4,000 crimes – all as a result of a simple text message. With that in mind, we hope that innovations like this will mean people will have more confidence to report offences to us. In 2015/16 we recorded 2,000 more crimes on the railway than the previous year – which marks a 2.3 per cent increase and the first time crime had risen since 2006/07.



We're confident this means that more people are reporting crime to us, though every single offence is one too many, and so we will continue to adapt and change to face these fresh challenges.

We want to take this opportunity to thank our many partners across the rail industry for working alongside us to keep the railways safe and secure. It is because of your vigilance, commitment and assistance that we are able to police the network as effectively as we can. We look forward to another year ahead working together to keep the railway a safe place to travel and work.



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Digitising transport securely

As cyber criminals get smarter, transport organisations can't afford to complacent when it comes to cyber security, says **Russell Goodenough**

Today's digital age is having a huge effect on industry and commerce. It's allowing new businesses to esttablish and also offers opportunities for more traditional organisations to flourish. This is particularly true for the rail transport sector nationwide.

At London's Paddington station for example, various digital services are deployed across multiple rail operators and retailers. At the station, it is clear to see how rail has evolved over the past 150 years and also what the future may look like highlighting how both the old and new have combined. The buildings and infrastructure around the station provide the traditional aspect, but the approaches taken by the different rail operators including stock systems, ticketing and electronic gates deliver the digital service – each providing a unique and not necessarily joined up experience for passengers.

Pace of digital adoption accelerating

Digital transformation removes barriers, allowing quick ticket purchasing, reduced queue times and more, which not only meets existing needs but may provide opportunities for new business, and potentially new business models which in some respects are no different to other integrated digital business models.

Given transport's importance to the economy it has significant regulation and safety aspects to consider, and protection against cyber security is a key requirement. So how do we secure the rail system of the future and ensure passenger trust in the transport industry?

There are many examples that highlight the challenges facing the transport industry. One instance is a digital railway controlled through the cloud, which could put the entire network at risk if a router or firewall within the network was hacked.

Another is as we look to move away from old style paper tickets towards various types of future-based electronic ticketing. This will required an effective identify, authentication and access model, allowing passengers, staff, systems and suppliers to interact within a digitised rail system with little security risk.

How can rail companies ensure they are protected?

The key to success is an integrated security approach, blending the physical and logical, which looks at building security into its IT infrastructure rather than trying to 'bolt it on'. It has to start with a clear understanding of the risks and threats to the organisational objectives, and then applying rigour to implement the relevant protective measures.

Protection is never fool-proof so effective monitoring, alerting and proven incident response planning and execution is critical. Managing alarms, sensors and CCTV should go hand-in-hand with online security and should remain a top security priority alongside the digital solutions.

It's never been more important for rail companies to build security in right from the beginning. As cyber criminals get smarter, transport organisations can't afford to complacent when it comes to cyber security.

Russell Goodenough is client managing director for Transport in UK & Ireland at Fujitsu



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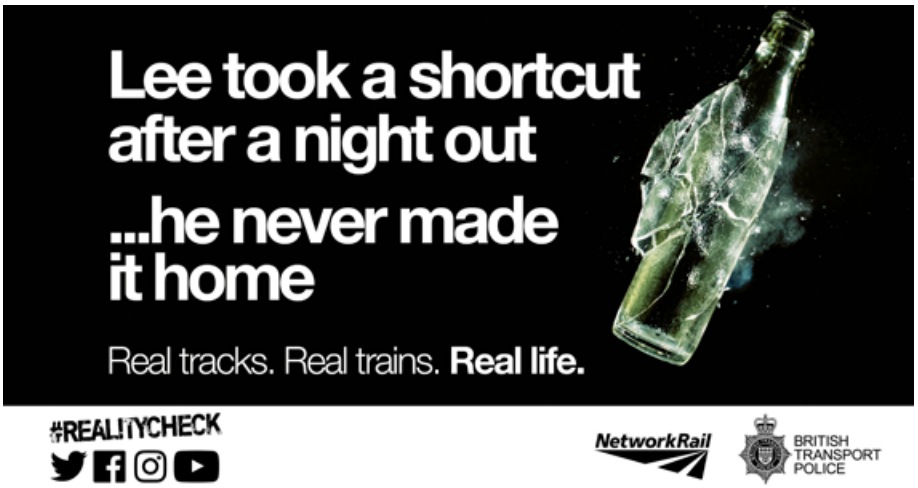
Summer of safety

'This is the summer of safety' proclaimed Network Rail and the British Transport Police as the rail safety message was promoted during the school summer holidays

Most of the time safety campaigns are built around individual marketing campaigns with the aim of addressing one issue or user group at a time. This summer the approach has been adapted, with a sustained campaign run over the summer (from July through to October) under the 'Summer of Safety' banner. Statistics show that children are twice as likely to trespass on the railway during the summer months, rather than winter. The advent of lighter, warmer evenings and school holidays are thought to be contributory factors to this increase in trespass and near-miss incidents.

Most anti-trespass messages are pushed directly to young people, with a lot of work carried out by Network Rail community safety managers in schools, clubs and local events in teaching young people about the rail safety message. To supplement this work, this summer's safety campaign has targeted parents, urging them to remind their children of the dangers the railway poses.

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Real stories

Real life stories add colour and can often bring home a safety message in a way that a simple message from an organisation cannot. This campaign featured two real life stories.

Tom Crosby often misspent his time as

> After the incident my life completely changed. I went downhill and last year I reached rock bottom. I decided to contact Network Rail to try and do something positive

a youth train surfing with his friends. One day 14-year-old Tom slipped while on top of a moving freight train. Instinct prompted him to grab the first thing to hand to steady himself – which in this case was the overhead line, resulting a 250,000v electrical shock.

Tom was thrown clear of the track and burnt from head to toe. He was left with nerve damage and visible scars from the numerous skin grafts that he received. He now works with Network Rail warning children of the dangers of playing on the railway tracks.

'After the incident my life completely changed. I went downhill and last year I reached rock bottom. I decided to contact Network Rail to try and do something positive. They have helped me to tell my story to children and adults across the country to warn people not to trespass on the tracks. If I were to tell my 14-year-old-self something, I'd say the rail tracks aren't a playground, it's somewhere that can kill you and that's something no one's family should have to go through.'

Like Tom Crosby, Siobhan Hubbard is working with Network Rail to warn young people and their parents of the dangers posed by the railway. Siobhan's son also received a 250,000v electric shock after trespassing on the railway. Siobhan tells how he went from being a sociable 16-year-old who had just finished his GCSE's, to a young man who doesn't like to go out during the day. When he does venture out, he always wears hoodies and a bandana to cover his scars. He is continuing to receive treatment for his burns, still undergoing surgery and skin grafts, some two years of his accident.

Real life

The BTP created a video compilation to accompany the campaign. Featuring CCTV footage of young people messing around on the railway track, many in near-miss situations, the video ended with a hard-hitting clip that shows a young man who thinks he has pulled himself to safety in the four-foot but is seen to fall under the train. The young man is question was not killed but was left paralysed as a result of this incident. The video is captioned: Real tracks. Real trains. Real life. #REALITYCHECK and has been shared extensively on social media.

The summer is over

Local and current examples of trespass incidents and deliberate misuse on level crossings are continuing to be released to the media as they occur to help ram home the railway safety message.

A further strand to the Summer of Safety campaign, looking at distraction around level crossings, especially among young people will run in September.

Network Rail and its partners will continue teaching young people about the dangers of the railway and trying to keep them safe throughout September and beyond.

Details on the summer of safety campaign can be found at: http://www.networkrail.co.uk/news/2016/jul/warning-parents-railway-trespass-doubles-over-summer/

Siobhan Hubbard's blog, telling her story can be found here: http://www.networkrail.co.uk/news/2016/jul/railway-safety-trespass-blog

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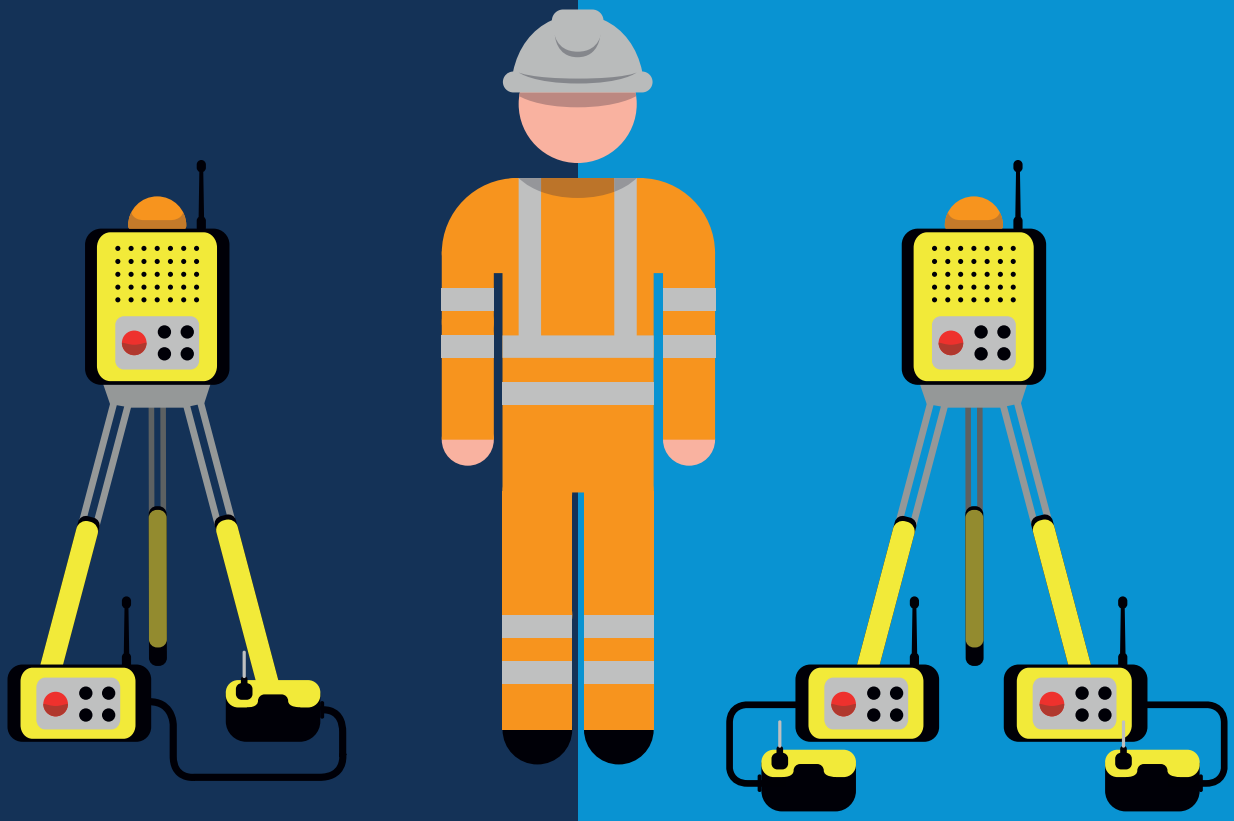
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Waking up to fatigue

Chris Langer looks at rethinking our approach to managing fatigue

We can all suffer from fatigue in our busy working lives, with shift workers more likely to suffer the consequences of a disrupted body clock. But how quickly do we notice our performance at work dipping below an acceptable level?

The effects of fatigue on judgment are similar to those experienced under the influence of alcohol. Lower standards of performance become acceptable. We are far more likely to end up being incompetent on the job, but are less conscious of the fact when fatigued.

There are other effects too that should concern us whenever safety critical tasks are to be carried out. For example, attention wanes, as does our ability to maintain situational awareness. Logical reasoning is impaired. Attitude and mood deteriorate – we get grumpy. Tasks become more difficult to perform in a timely and accurate way. And we run the risk of involuntary lapses into sleep. Many of us will have experienced just that on a long drive home late at night, or in the early hours of the morning.

> To stop ourselves being swallowed up by the black hole of exhaustion at the bottom of the funnel, there is something we can do. We need to take pre-emptive action by looking after ourselves more compassionately



Marie Åsberg suggests we can nourish ourselves by choosing energising activities

Last month, a 38-year-old railway worker was jailed for four and a half years. He had killed three colleagues after falling asleep on the M4 while driving back from a weekend job for Network Rail contractor Carillion. He had ploughed into a lorry stopped on the hard shoulder. At CIRAS, we continue to take reports on the risk of falling asleep at the wheel.

The ORR's 2015-16 annual assessment of railway health and safety has just highlighted fatigue management as one of 12 priority areas requiring attention.

The exhaustion funnel

Not getting a good night's sleep leaves us feeling fatigued the next day. If we suffer like this on a regular basis, we can end up driving ourselves down the exhaustion funnel as illustrated by Marie Åsberg, an expert on burnout from the Karolinska Institute in Stockholm. We can end up being irritable, or having unexplained physical symptoms, before sinking further into a feeling of joylessness or hopelessness.

To stop ourselves being swallowed up by the black hole of exhaustion at the bottom of the funnel, there is something



Marie Åsberg's Exhaustion Funnel (2011)

we can do: we need to take pre-emptive action by looking after ourselves more compassionately.

Åsberg suggests that we can nourish ourselves by choosing energising activities we know will make a difference to our psychological wellbeing. Simply making a list of 'nourishing activities' in one column versus 'depleting ones' in another can help here. Then, if we feel ourselves slowly slipping down the path to exhaustion, we can engage in the more nourishing activities.

What constitutes a nourishing activity will depend on the individual concerned: it could be listening to music, reading a book, or simply chatting to a friend. At the same time, we can seek to eliminate some of the more depleting activities. Again, this will vary from individual to individual. Examples could include watching TV passively for four hours on the trot, or checking your smartphone 500 times a day.

It is worth pointing out that activities like these may only be depleting if we overindulge them: everything in moderation. You may find half an hour in front of your favourite soap the perfect tonic, but sit in front of the TV all night and it is a very different story. You may well feel drained the next day at work, especially if your sleep has suffered.

Working with our members to share good practice on fatigue issues

Reports on fatigue often meet with an inadequate response when made internally. CIRAS continues to take confidential reports on work-related fatigue, pursuing organisational responses that address the underlying issues. Sometimes, a far more proactive approach is required. CIRAS can assist by sharing good practice from our members to help tackle a common issue like fatigue.

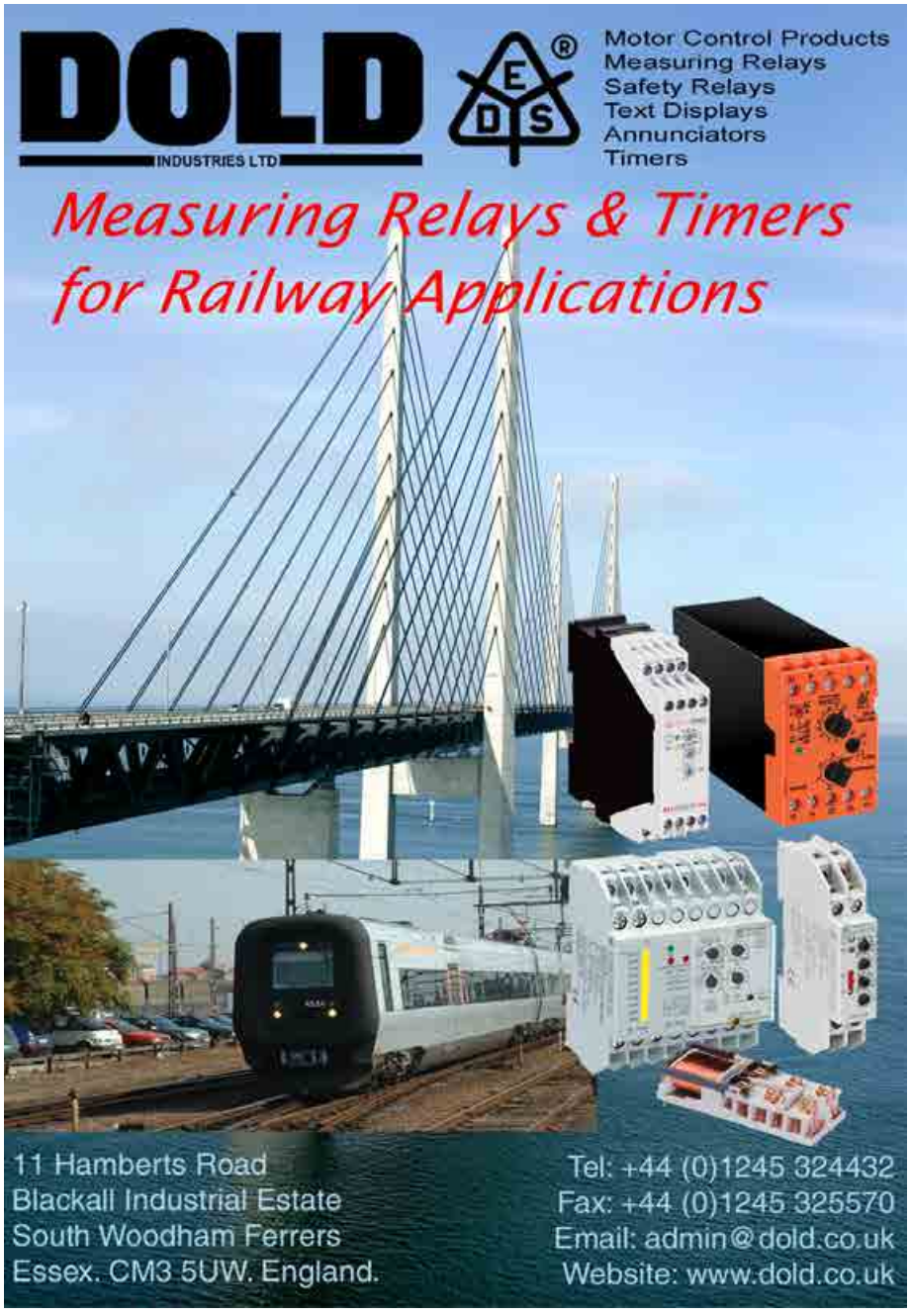
Managing fatigue must really be part of a broader strategy for worker health and well-being. Criticism that educating employees on the potential impact of lifestyle factors on fatigue may be perceived as unwarranted interference from the employer is becoming easier to overcome. The discussions with our members' employees have stimulated new thinking; perhaps behaviour change too.

Interest in worker health and wellbeing will only increase. New strategies, embedded in a more holistic approach, are required to transcend the traditional boundary drawn between the workplace and home. Proactive fatigue management is an excellent place to start.

Chris Langer is scheme intelligence manager at CIRAS

> Criticism that educating employees on the potential impact of lifestyle factors on fatigue may be perceived as unwarranted interference from the employer is becoming easier to overcome

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A new chapter

What could 'Brexit' mean for rail safety and the fourth railway package, asks **Greig Duncan**

There is no doubt that the United Kingdom's decision to exit the European Union (EU) has led to an increase in uncertainty as to what's around the corner. With EU standards seeking to regiment the manner in which countries work together for stronger competition and wider access to the workforce's skill sets, the period from now until the activation of the well-documented Article 50 will have a number of twists and turns.

Despite this market ambiguity, the fourth railway package could still represent a strong method of the EU countries operating together for mutual benefit, in terms of safety, efficiency and interoperability. Maintaining a robust and controlled approach to safety on Europe's railways and the task of interoperability has represented a significant test to the National Safety Agencies (NSA's) and the various legislation parties within the European Commission in recent years.

> '...with any of the current EU standards committees existing outside the EU constitutional framework and containing members that are not members of the EU, there is no reason why the UK will not continue to sit at this top table in driving change'



While safety standards on the whole are statistically improving across Europe's rail sector, (there has been an annual reduction of just under 10 per cent), the majority of recent high-scale tragedies and fatal safety incidents such as the head-on collision between the towns of Corato and Andria in Puglia in Southern Italy; Bad Aibling in Germany, the Santiago de Compostela derailment in Spain and Dalfsen in the Netherlands, could probably have been avoided.

According to the European Council, 'The fourth railway package aims to remove the remaining barriers to the creation of a single European rail area. The end result should be higher levels of safety, interoperability and reliability in the European rail network.' Traditionally, some critics have falsely viewed the rail industry as being averse to change: dated and incapable of performing efficiently due to its switch to privatisation (this happened in a number of countries and not just the UK). This argument has also been disproved by technology-driven new high-speed major rail projects such as HS2. One potential hurdle associated with the decision to exit the EU could be related to the supply chain and contracts – these may now see higher costs as a result of less competition and a marked reduction in the bi-directional movement of skills between the UK and on the continent.

The commission's regulation (EC) 653/2007 of 13 June 2007 advises on the use of a common European format for safety certificates and application documents in accordance with Article 10 of Directive 2004/49/EC of the European Parliament and of the Council and on the validity of safety certificates delivered under Directive 2001/14/EC.

Taking the lead from other safety-driven industries such as aviation and oil and gas to roll out and adhere to EU-wide standards

and directives has proven to yield positive results. While these industries do not have a fault-free record in terms of safety, these shared standards have helped to promote a collective understanding and responsibility for safety, quality and risk reduction.

ORR re-writing the rules

There is a minor possibility that with the United Kingdom's exit, the Office of Rail Regulation could seek to rewrite the regulatory frameworks to be a tailored fit for the needs of the country. Certain business areas, such as freight and rolling stock companies may seek to strategically alter standards in this area – whereby the majority of freight issues and standards relate to more domestic movement of goods. However, with any of the current EU standards committees existing outside the EU constitutional framework and containing members that are not members of the EU, there is no reason why the UK will not continue to sit at this top table in driving change.

The EU referendum will perhaps have an influence on the underlying challenges here, but it is not envisaged that safety standards will shift monumentally – the International Air Transport Association has already underlined that safety standards will continue as 'business as usual'.

Centralised method of logging safety incidents

There are a number of benefits to introducing a centralised method of logging safety incidents, close-calls and non-conformances – the main advantages are that common safety indicators, methods and targets can be enhanced – meaning that risk is reduced when crossing borders. The main challenge in introducing single safety certificates is multiple languages, different cultural approaches to safety and multi-country differences in terminology (Common Safety Indicators were harmonised in 2010). The bottom line is that, once these hurdles are overcome, the rail industry will be more streamlined, efficient and, vitally, it will be a safer place for passengers, employees and the supply chain.

Transparency in incident reporting will no doubt help EU member states become more intelligent in terms of smarter analysis of trends in data around incidents and close calls. A combined shared service would allow data to be analysed almost instantly – which in turn allows the identification of trends in locations, and controls can be put in place to potentially stop incidents occurring. The potential is there for a marked improvement from the existing (often unreliable and inaccurate) manual processes involving spreadsheets and paperwork.

The UK rail industry has recently taken the steps to roll out their new SMIS+ safety information management and close-call system throughout the industry – this is arguably a true sign of safety leadership. This approach could conceivably be followed by train operators, national safety authorities and regulators across Europe. With a number of changes on the horizon, it could be a perfect time for key national operators to position themselves to deliver a competitive advantage and leadership in this area – prior to the official introduction of fresh ways of working.

Once any initial teething problems have been tackled regarding Brexit, the rail industry is perfectly positioned to challenge other sectors as being leaders in safety – whether as an independently operating country or whether the remaining EU countries wish to continue with their positive progress on the fourth railway package.

It must be emphasised that any changes will not occur overnight, giving companies and regulators time to access and make well-informed judgements on future decisions. This definitely does not have to represent the beginning of the end.

Greig Duncan is rail marketing executive at Ideagen



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The power of integrated surveillance



David Aindow looks at the current and emerging surveillance trends benefitting the rail industry

The number of rail journeys taken in Britain has doubled in the last 20 years – Waterloo station alone experiences almost 100 million passenger entries and exits each year. The need for operational efficiency and, unfortunately, security has never been greater.

Protecting transport infrastructure against deliberate and malicious attack has become an unavoidable international reality. Paired with an ever-present requirement to keep passengers, products and transport assets safe, this leaves Network Rail, train operating companies and freight operating companies with a challenging balancing act.

How exactly do you improve passenger or commercial customer experience through enhancing efficiency, while also being ever-stringent about enforcing and monitoring safety and security protocols? Security and speed are not natural companions, particularly in such a heavily regulated industry in terms of security.

There is no single answer to this dilemma but wider adoption of smart technology will inevitably have a significant role, with integrated surveillance set to be a pivotal piece of the puzzle. Why? Because it has the power to unify data and help rail professionals identify and react to events that matter.

The evolution of surveillance

Until relatively recently the role of surveillance within the rail industry, both in terms of on-vehicle solutions and infrastructure systems, has been confined to the realms of video recording and reviewing; almost entirely for security and evidentiary purposes.

It is a function that has served the sector well, however, the evolution of surveillance means it is now poised to support the sector even more effectively.

Significantly enhanced integration capabilities and the development of open protocol command and control software now facilitates visual data – from analogue or IP cameras – to be contextually paired with a vast array of information from appropriate third-party systems. This is regardless of whether that information is visual, audible or data in nature.

Importantly, this enables previously disparate and therefore individually managed systems, such as access control, fire and smoke detection, ANPR, watch list alerts, communication systems, and of course surveillance cameras, to be monitored and managed within a single operational environment. At any moment in time, an operator in a security control room (on or offsite) has a complete and holistic view of a specific site, a network and – through emerging connectivity developments – of the vehicles travelling within it.

Unifying data in this way naturally has the obvious and immediate benefit of efficiency; monitoring and managing a single system is far less time intensive than via a large number of systems separately. But the benefits of data integration go way beyond this, specifically when we start to examine more closely the data mining capabilities of modern surveillance command and control software.

Discerning the meaningful from the meaningless

A single station, let alone an entire network, generates huge volumes of data. Having the ability to collate all that information is great. After all, the more information that control teams have about the sites they manage, and what is happening across and around them, the better equipped they are to identify potential issues and respond appropriately.

But this can only happen if they can immediately see the relevant information. With so much data available there is inevitably a huge amount of 'background noise' that needs to be filtered in order to see what matters. And this is where the true potential of intelligently integrated surveillance lies – in its ability to identify and present the information that really matters.

This is achieved through powerful data mining capabilities to cross-reference data and events – from whichever system they originate – and understanding what they mean in isolation and together. Essentially, data is given context.

A 'failure to close' security door alert, a notification of platform loitering (from software which identifies persons who remain in shot for longer periods of time), a staff pass being used when the electronic work rota suggests they should be on annual leave. Though each item individually may warrant further investigation, none of these on their own would suggest a particularly imminent/significant threat. Should they occur together or in close proximity, however, the scenario changes and suddenly isolated events take on more significant meaning.

Intelligently integrated surveillance facilitates this level of understanding.

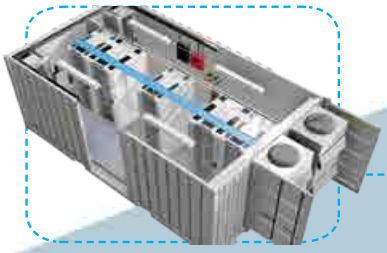
Supporting rapid and consistent response

Of course, being aware of and understanding a potential threat is worth very little if not followed by appropriate action. This is where the combined efficacy of systems integration

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Intelligently integrated surveillance offers the transport sector improved situational awareness

and workflows driven by surveillance command and control software can make a huge difference.

Response scenario

To demonstrate this, imagine the previous scenario again where multiple, isolated events are occurring. The command and control software detects the potential significance of event correlation and triggers a threat response workflow in the control room.

HD footage from the cameras located nearest to the anomalies detected (door, loitering/left item, card swipe) is automatically prioritised and the control room operator is asked to verify – as an example whether the door is being wedged open. The operator sees it has and confirms this is correct. This prompts the system to send an SMS message to the nearest security team containing exact incident location details (via integrated GIS mapping) asking them to investigate and report status.

At the same time the workflow also triggers a 'shared incident management' protocol to another member of the control room team, instigating further investigation of the left item. This ensures that both responses are simultaneous, with no time lost during the incident.

The system also pulls data from the authorised personnel database to allow the control room team to quickly verify the staff member photograph on record with the person captured on camera using the access card. If each event is found to be harmless, the incident is closed with all actions, and footage and data collected as part of the investigation audit is logged and securely stored. Should any investigation find further suspicious activity, the workflows continue with a mix of automated action and guided response.

Any workflow rules can be created in line with a station or network's standard operating procedures (SOP's), for example triggering pre-recorded evacuation announcements, maintenance crew instructions, or immediate calls for emergency services assistance.

This approach ensures potential and actual security threats can be dealt with quickly and consistently which, as well as keeping everyone safe, limits unnecessary disruption to operations and possible journey delays *etc*. Indeed, 'threats' detected may not be security related at all but instead, purely operational. Excessive queues or head-count analytics exceeding pre-set limits may alert operators to trigger a staff deployment workflow to populate more ticket desks.

The scope of this technology, because it is based on open architecture software principles, also means the rail environment itself is less insular – with situational awareness extending to 'the world beyond'. Integrations with government threat levels, police alerts and social media (for example to detect keywords trending in close proximity to a station or in relation to a Toc brand name or on-vehicle event), ensure that operators really do have an incredibly data-rich picture of events.

On-vehicle surveillance and connectivity

The reference to 'on-vehicle' surveillance is important here, CCTV on trains is nothing new. On-vehicle cameras have played a vital role in protecting both passengers and train staff for many years, often providing key evidence in cases of threatening or disruptive behavior *etc*. They are also crucial to operations.

Pantograph cameras, for example, monitor the overhead line throughout a train's journey, providing vital evidence in the event of a failure. With access to the footage, operators can quickly discern if the issue is with the pantograph itself or with the network infrastructure.

Similarly, external cameras that 'look' down the sides of trains are commonplace, particularly on DOO (driver operated only) vehicles. These provide visual evidence of loitering, door failures, or trapped items and through command and control software, alert personnel to imminent or actual safety threats.

At present there are few instances of true data sharing between trains and stations/network hubs – surveillance is key to both but monitoring and control rarely 'crosses the divide' between static operations and moving assets. Surveillance integration and technology is evolving, however, and set to change that, particularly as on-vehicle networking/Wi-Fi improves.

The connectivity potential between train and station is effectively 'just' another integration. Therefore there is no reason why on arrival/approach to any destination, data from on-vehicle surveillance cannot automatically feed in to the station's solution for risk/threat (whether operational or security based) analysis.

Station security teams, for example, could be alerted to potentially disruptive groups or persons of interest; maintenance teams can be automatically advised of issues in order to prep response and limit delays. Indeed, any issue that might cause significant delay to the train's arrival or subsequent departure can be detected by the stations' command and control platform, prompting workflows that include passenger communications such as a standardised text notification with updated journey details, thereby improving customer service levels.

As yet, this scenario is a little way off but the technology is available now to make this level of connectivity and communication a reality.

> The command and control software detects the potential significance of event correlation and triggers a threat response workflow in the control room

What the future holds

Data integration presents a huge opportunity for the rail industry. For operators looking to address risk mitigation and improve operational efficiency, while also ensuring that incident detection, response and reporting procedures comply with specific SOP's, there are few avenues that offer more promise.

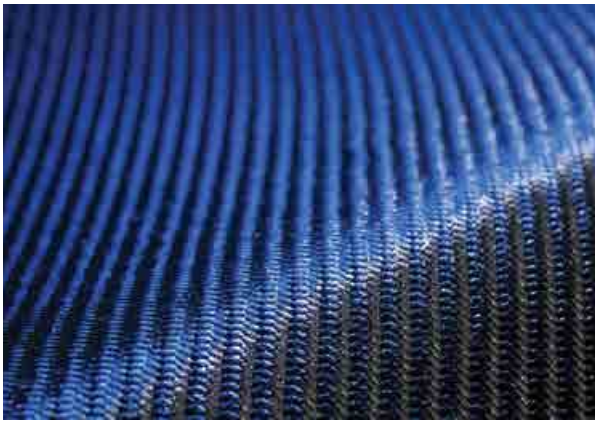
With inter-agency integration on the horizon, enabling multi-agency threat detection and collaborative response working (*i.e* transport infrastructure, emergency services, local authority *etc*.), the potential for practical delivery of the Smart City ethos is well within grasp.

But perhaps the most exciting thing for rail professionals is that so much is possible here and now, particularly as adopting an integrated approach to surveillance requires no grand 'rip out and replace' gesture. Legacy technology such as analogue cameras can be seamlessly integrated with newer IP technology.

Stringent security enforcement, improved passenger safety and enhanced customer service really do not have to be mutually exclusive any longer.

David Aindow is product and technology director at Synectics

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New and improved

Rail Professional takes a look at some new station and refurbishment projects around the UK

Cambridge's new station taking shape

New pictures reveal how the main building at Cambridge North is taking shape in the run-up to its opening next May.

The £50 million station is predicted to handle 3,000 passenger journeys a day and will alleviate pressure on Cambridge station, where people currently leave the train to travel by other means to the science and business parks.

Two lift shafts are now in place at the site and work has taken place to build the track, points, structures to carry the overhead line cabling and power supply. Once completed, the station, which is part of Network Rail's Railway Upgrade Plan, will have three platforms, parking for 450 vehicles and 1,000 cycles, and solar panels will provide up to 10 per cent of its power.

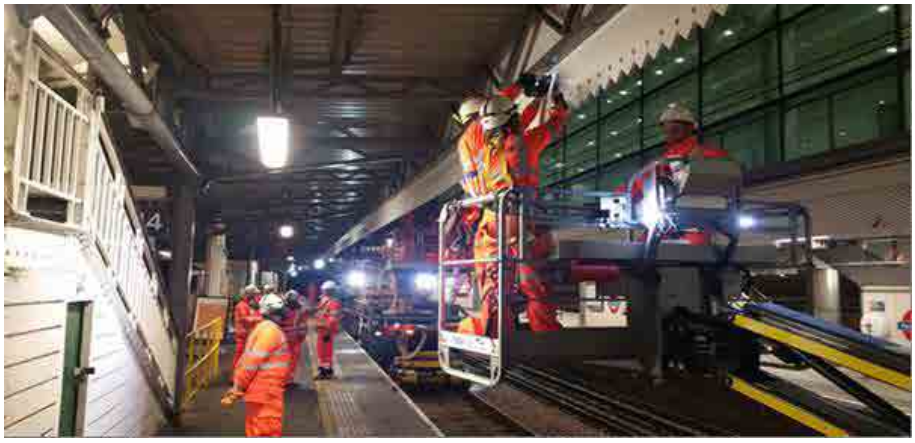
Lucy Frazer QC MP for South East Cambridgeshire said the station will 'vastly improve transport links in the area and be a great economic opportunity for local businesses.'

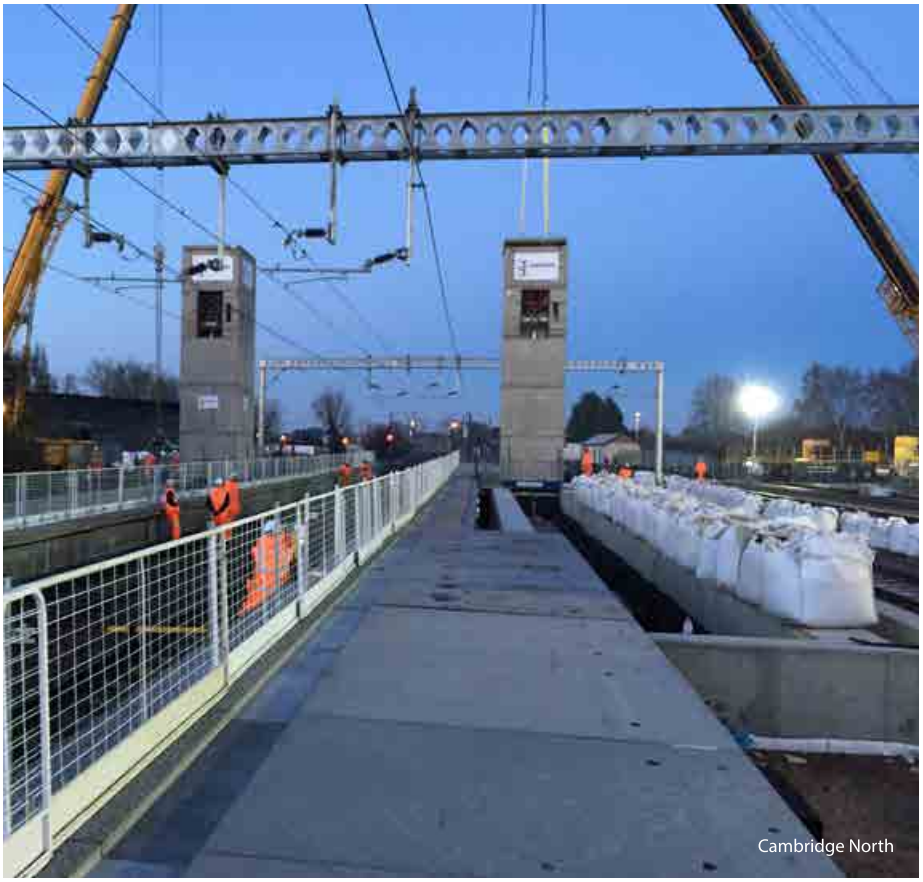
Bigger and better service after Paddington improvements

Work at Paddington station has been completed by Network Rail to extend and electrify Platform 14 as part of the Intercity Express Programme.

The new platform is the first to be electrified at London Paddington for 20 years and allows for the introduction of new Bombardier Class 387 Electrostars onto the network, as well as new electric trains between Hayes & Harlington and Paddington.

Matthew Steele, Crossrail programme director at Network Rail said: 'The work has been extremely complex because of the historical nature of the station and the need for collaboration between Network Rail, Transport for London and Great Western Railway.





Cambridge North

What lies beneath: Thameslink Programme opens first section of new concourse at London Bridge

Passengers from South London and Sussex are enjoying the first two-thirds of London Bridge's massive new concourse.

Under construction by Network Rail and contractor Costain for the past four years, the concourse will be the largest in Britain when the station is completed in January 2018. Building work will now move away from the Southern and future Thameslink





platforms towards the north of the station, where trains to Cannon Street run.

Thameslink Programme director Simon Blanchflower said: 'Passengers have been using our new platforms for some time, with the work on the new concourse hidden behind hoardings until now. With the opening, they are seeing the massive scale of the work we have been doing as part of our Railway Upgrade Plan.

Platforms completed at new Liverpool Street station

A major milestone in the construction of the new Elizabeth line station at Liverpool Street has been reached with the completion of the two new platforms more than 30 metres below ground.

The two 240 metre long platforms were pre-fabricated in more than 500 pieces at a factory near Sheffield, then transported to London, lowered down the station's main shaft and then pieced together.



Platform section lowered down the main shaft

The new platforms took around four months to install and are around twice the length of many existing LU platforms to accommodate the new 200 metre long Elizabeth line trains.

The Crossrail project is approaching 75 per cent complete and is now focused on fitting out the stations and tunnels with the equipment and systems needed to operate the railway.

New and improved Sheffield Cycle Hub

The expanded hub was officially opened by Darren Ward, head of drivers for East Midlands Trains; Philip Darnton, chair of the Cycle Rail Working Group and executive director of the Bicycle Association, and Conrad Haigh, head of integrated Transport at the Rail Delivery Group (RDG).

The hub was funded and delivered by East Midlands Trains and ATOC, supporting RDG, in partnership with the Department for Transport, and significantly improves the cycle facilities at the station which were used by more than nine million customers in 2014/15.

The second level of the hub provides more than 150 extra cycle spaces, taking the total number across the station to around 600. The improved facilities also include a customer lift and cycle ramp to help customers push their bike up to the new mezzanine level.



Tower Hill step-free

LU's Tower Hill station is the latest on the Tube network to become step-free following the installation of two new lifts between the ticket halls and all three platforms.

Step-free routes have also been created between Tower Hill and both Tower Gateway DLR and National Rail services at Fenchurch Street station.

This step free access scheme was part-funded through an agreement between Transport for London and the hotel group citizenM, which also constructed some of the lift infrastructure as part of its development adjacent to the station.

The work means the Zone 1 station is the 68th on the Tube to become step-free. Around 40 more Underground and Overground stations will become step-free over the next decade as part of a £326 million investment, which includes funding from the mayor and London Underground.

Redevelopment of Custom House to prepare for Elizabeth line services

Work to redevelop the station will start in January 2017 and include taking down the existing station canopies and the installation of a new mezzanine deck above the DLR platforms, as well as two additional staircases.

Due to be completed in November 2017, the work will increase capacity at the station by 50 per cent ahead of Elizabeth line services serving the station in December 2018. Given the scale of the project, which will include the installation of around 400 tonnes of steel and the use of 300,000 litres of concrete, the station will need to be closed while the work takes place.

Stephenson's bridge restored to former glory

Rail engineers are undertaking the painstaking restoration of Stephenson's historic bridge in Salford.

The Grade I-listed bridge, built in 1830, is a vital part of Manchester's history but was neglected and obscured for decades by other structures that were built nearby.

Now, as part of Network Rail's Railway Upgrade Plan, the bridge will be restored to its former glory as part of the Ordsall Chord project.



Network Rail has removed the old Princes Bridge – the footbridge which obscured the view of and access to Stephenson's bridge – and can now gain access to carry out the restoration work. Work will also continue to remove a large steel girder to provide a full view of the bridge.

Terry Strickland, area director for Network Rail, said: 'We are really seeing things change on site. A new footbridge will cross the River Irwell and will allow members of the public to view Stephenson's Bridge closely for the first time in over 150 years. From there, they will be able to fully appreciate the detail of George Stephenson's work and have a taste of how the bridge looked when it was first built.'

Tunnel vision for underground visitors as Network Rail outlines repair

Local politicians visited Liverpool Central station last month to take a look at the tunnels beneath the city, revealing the seldom-seen passages used by trains every day.

The visit illustrated why essential track renewal work, due to start in January 2017 for six months, is essential in order to maintain the safety and reliability of Merseyrail services.

The tunnels range in age between 45 and 150 years old and vary in size and depth. Some sections under the River Mersey were once used for steam trains, in contrast with others which are much smaller and built 40 years ago to create the famous Liverpool loop.

It is these 1970's tunnels on the Wirral line that will be subject to essential renewal work next year.

This work is part of Network Rail's and the Liverpool City Region's £340 million investment in the rail network.

The repairs will involve a six-mile round trip for maintenance vehicles, as well as the pumping 140 lorry-loads of concrete 40 metres underground.



Visitors observing machinery used to carry out maintenance in the tunnel at Liverpool Central station

Queen Street tunnel works completed early for passengers

Transport minister Humza Yousaf saw the early completion of the £60 million project to refurbish and upgrade the kilometre-long Glasgow Queen Street tunnel.

Since the high level station closed on March 20, nearly 3,000 engineers have worked more than half-a-million hours to complete the project nearly three days ahead of schedule.

Works involved renewing 1,800m of concrete slab track and installing more than 4,000m of new rails through the structure.



ScotRail Alliance MD Phil Verster, left, Transport Minister Humza Yousaf, and EGIP Programme's Dr Rodger Querns

Station platforms and track layouts within Queen Street have also been extended and altered, and both the tunnel and station have been prepared for the electrification of the main Glasgow-Edinburgh line next year.

Said Yousaf: 'This has been an unprecedented project, both in engineering terms and in the scale of the operation required to keep people moving and services diverted via the underground platforms during the works. I would like to congratulate the ScotRail-Network Rail Alliance on a successful job, and the hundreds of men and women who have worked day and night to deliver the hugely ambitious project.'

The return of trains to Queen Street high level paves the way for the continued enhancement of the line which will be electrified in 2017 with a new fleet of 70 Hitachi Class 385 electric trains rolled out on a number of routes, including Edinburgh-Glasgow, from autumn 2017.

Over the next three years works will continue within Glasgow Queen Street as engineers extend the station out towards George Square and create a new concourse and passenger facilities.

The Scottish government's investment in the redeveloped Glasgow Queen Street station, due to be completed in 2019, will see the station transformed into a modern facility with increased concourse space, improved accessibility and remodelled passenger facilities.













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Stations of the future

Ambitious refurbishment projects are turning basic, functional train stations into awe-inspiring mixed-use destinations. But with the focus firmly on the aesthetic, few are considering the time and resource required to maintain these visual masterpieces. Some perspective is needed to stop lifetime costs from escalating, says **Kevin Murgatroyd**

Rail stations are evolving at a truly astonishing rate. In the past decade we have seen digitisation completely revolutionise the way in which passengers use stations and plan their journeys. This has led to extensive changes in the way stations are designed and configured, with ticket halls and information desks replaced by self-service terminals and smartphone apps.

We've also seen rail stations become a hub not just for transport but for retail and leisure. From high-end shopping, to fine dining experiences, to health and fitness centres, stations no longer exist just to get people to their destinations – they are a destination in their own right. As the 'smart city' concept becomes reality, with transport and infrastructure at its heart, this evolution will only continue and accelerate.

As the way we use stations has evolved, so has our approach to designing them. The stations built or refurbished (predominantly the latter) in the past decade have been increasingly ambitious in their design, featuring an array of ultra-modern flourishes from soaring glass atriums to gleaming mezzanine shopping levels – and passengers have responded incredibly positively. The renovation of Birmingham's Grand Central Station, for example, received universal acclaim for the scale and ambition of its design and the positive impact it has had on the central Birmingham retail sector.

There's no doubt that improving the aesthetics of the rail environment will be beneficial to the industry. What needs to be acknowledged, however, is that these extravagant designs can present real challenges to those who manage rail stations on an ongoing basis. Once the ribbon has been cut and a gleaming new station settles into day-to-day life, the features that have the most visual impact can often be the hardest and most costly to maintain. The question for developers and station managers is not just about how to design the station of the future – it's about how to manage it cost-effectively as well.

The light fantastic

Look at a selection of the most recently refurbished rail stations and you'll see that light is the order of the day when it comes to design. Almost all of them have high-ceilinged atriums and large vaulted glass windows, designed to let in as much light as possible. The goal? To create bright, open, inviting spaces that encourage people to stay and enjoy the environment, rather than rush through as quickly as possible to reach their destination.

You see this approach used all the time in retail destinations and shopping centres around the world. The focus is always on increasing 'dwell time' – as spending more time in a retail environment almost always leads to more spending. As retail and leisure becomes an increasingly prominent part of the rail station offering, this is fast becoming the mantra in the world of transport too. So there is a clear rationale for the modern designs we're seeing – but are station owners and managers aware of the costs they may incur as a result?

Some of the stations we manage have atrium windows that are 40ft high. Trying to maintain these in a way that not only causes the least possible disruption to passengers but also incurs the least cost to our customer is extremely challenging. However, these maintenance cost implications are rarely considered during early design stages.

At two major London stations that Interserve manages, the volume of passengers using the station throughout the year is so great that there is only one day that we can clean the glass atriums – Christmas Day. We start planning in October each year; securing the required permits and isolations, and developing intricate plans around how to deliver multiple works simultaneously.



On the big day, we need to deploy a huge maintenance team simply to get the job done in a limited window. Some of our teams will assess and clean the high level glazing and other hard-to-access areas, such as lift shafts, via raised platforms – but there are areas where even these do not reach. In these cases we need to deploy a team of specialist abseilers, who lower themselves in from the roof.

Designing for life

This is an extreme example, but it illustrates what support services providers like Interserve need to do in order to maintain the more extravagant features of our nation's rail stations. The scheduling and planning aspect of these projects is part of our job and is provided on any account we deliver. But to deploy specialist abseiling teams comes at a cost that needs to be passed on to the



customer – something that is sometimes not thought about when the design plans are being put together. It's important that station owners and managers acknowledge and understand whole-life management from the very start of the design process, balancing aesthetic qualities with practical considerations.

If you are going to build high-level glass atriums, you need to consider whether those who will be cleaning and maintaining the glass panels will have suitable access routes – for example via the roof or using vertical lift machinery. If not, then the company providing cleaning and maintenance services needs to be aware of this from the word go so that alternative solutions can be sought at the best value.

There are other 'soft costs' to consider too. If the station's roof can only be accessed via restricted areas, you will need to provide all support services personnel with security clearance. That means additional documentation and security passes – all of which comes at a cost and should be factored in from the start of the project.

Changing passenger flows

The other aspect that needs to be considered when refurbishing stations is how changes to design will influence passenger flow and what impact this will have on day-to-day management.

For example, the addition of mezzanine levels at Waterloo and Euston stations – both of which are predominantly used for dining and retail establishments – has influenced how passengers move around each station. We now see a mini-rush at lunchtime, mainly comprised of business people from the local area coming for food and to shop. The peaks and troughs in customer numbers have altered significantly compared to before the creation of the mezzanine levels, and our management of the facility has had to change accordingly.

Understanding the passenger and pre-empting what they want and need is crucial to successful and cost-effective long-term management. If there is a new influx of customers at lunchtime coming predominantly for shopping and dining, then support services need to be aligned with this: that could be deploying additional customer service personnel or signage in retail and dining areas to provide information about shops and restaurants, or changing cleaning routines to ensure that the restaurant area is spotless before lunch and given an intense clean afterwards.

These are simple changes, but they have a big impact on the customer experience of a station, and will ultimately contribute to increased footfall and greater revenue for retailers and station owners alike.

Best of both worlds

The evolution we are seeing in the rail environment, where stations are developing into destinations in their own right, is a wonderful thing. Our cities and our people are becoming ever-more interconnected – and for our transport hubs to flourish in this world they need to embrace diversity of purpose and place and become more than just somewhere people go to catch a train.

Set against this context, there is nothing wrong with ambitious, futuristic designs, which are transforming how passengers view rail stations and raising the profile of the industry on the national and international stage. However, station owners and managers considering a refurbishment must not lose sight of the fact that for every vaulted glass window there are hidden costs to consider. They need to make sure practical aspects are considered from the start. If they do this, they can have the best of both worlds; creating a visually stunning environment that wows customers while limiting the impact on their bottom line.

Kevin Murgatroyd is Interserve transport director



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No barrier to a new role

Installation of ticket barriers for revenue collection is important, yet it is only one aspect of a far broader opportunity to rethink the appeal, and even purpose, of stations, says **Samantha Smith**

Many Toc's are currently looking to install or upgrade station ticket barriers, whether simple PVals (platform validators) at little-used stations; replacement of earlier generation ticket gates at mid-size stations, or entirely new gatelines. Much of the impetus behind these changes has been revenue collection, with some Toc's able to reclaim thousands of pounds a week in otherwise lost ticket sales. This is certainly valuable – but it is only one aspect of a far broader opportunity not only to reclaim but to potentially increase revenue.

Travelling by rail rather than alternative modes of transport is very much a 'lifestyle choice'. As such customer perception of a quality experience is crucial. An important but sometimes rather overlooked aspect of this experience is the condition, functionality and appeal of station buildings themselves, which have not necessarily kept pace with increasing ticket prices. Given short franchise lengths, it is understandable that station improvements have not always been a top priority for Toc's. Yet not only are franchises starting to become long enough to make investment in station buildings worthwhile, the expectations of customers in the 'experience economy' will increasingly demand it. Commonplace for years in aviation, the rail industry is only just beginning to cotton on to the importance of customer experience and the customer journey – which for rail passengers quite literally begins the moment they enter the station.



Leeds station

A positive overall experience

It is worth remembering that when installing a new barrier line (a positive from a revenue perspective) we are actually introducing a negative for the busy customer: we are interrupting their journey and slowing them down. Rail customers want speed and efficiency (minimal queueing and congestion) but they also want, more generally, an attractive environment and a positive overall experience. Alongside revenue collection, barrier work provides the opportunity to enhance stations in multiple ways: in layout terms, reducing congestion and improving passenger flow, but also in terms of improving appearance and rethinking the overall station experience to ensure that space is distributed properly between functions.

Advances in barrier and ticketing technologies inherently begin to alter the way that stations are used and experienced, having impacts on the layout, feel and even function of station buildings. As we start to move towards paperless and smart ticketing (plans in the pipeline include the new body Transport for the North's plans for Smart North, and the Rail Delivery Group's vision for paperless ticketing), we will see a reduction in the number of face-to-face ticket sales and an increase in tickets purchased either instantly by credit card or in advance online and validated via smartphone, which means in turn that customer service counters will continue to decline, alongside long queues and bulky TVM's.

This may seem too far in the future to concern us, yet we could easily see stations

Images: Daniel Hopkinson/AHR

with far reduced numbers of service positions within the timeframe of a new franchise. In fact we already see a similar phenomenon in the layouts of high street banks, where reduced numbers of cashier booths and more emphasis on concierge-like customer service assistants has radically altered both ambience and layout. When considering the installation of new barriers, especially on a longer franchise, it makes sense to look ahead and consider future, as much as current, requirements – and also to ask whether the station itself is living up to its potential, as an asset, to attract new customers.

Installing new barrier technologies then becomes an opportunity to rethink stations as a whole, eliminating two historical barriers to rail use at once – slow ticketing and issues with station quality – and to consider now what a station might need to be a decade or twenty years hence. With fewer counters, TVM's, and queues, how can we maximise the space that is currently dedicated to ticket purchasing to enhance the experience and attract new customers? With major stations already providing a highly convenient retail environment (eliminating separate shopping trips for commuters) and in some cases a compelling leisure offer, expectations will continue to rise, even at smaller stations: what might a younger demographic expect a station's purpose to be? How could we add value for existing customers? What further experience might we offer to encourage commuters to swap car for rail?

Dilapidated stations no longer an option

Even at a modest scale, and looking more to the present than the future, it is still worth considering barrier work and overall station enhancement in tandem since the one often impacts the other. At Crewe, for example, the existing space was heavily utilised by a ticket office, travel centre and small retail offer. For the client, Virgin Trains, AHR reduced the size of the ticket office and added, alongside barriers, more TVM's and more retail, as well as a new coffee shop and seating area, redistributing the relative weighting of station functions. At Stoke-on-Trent, a grade II* listed station, also for Virgin, installation of barriers became a far broader opportunity to enhance the station's historic character and therefore appeal, while at Coventry what began as a straightforward installation for West Coast of gates and TVM's became an opportunity to improve customer interaction and passenger flow. And though the new South entrance to Leeds Station was at one level a simple response to passenger congestion at the pre-existing ticket barrier, and without a retail scheme, it nonetheless presented an opportunity to radically enhance the station's presence as part of a newly redeveloped canal-side leisure destination.

Flow, capacity, layout, ticketing and the enhancement of the asset as a whole are interconnected. We also find that rail



Stoke station

stations are beginning to integrate more into the fabric of the local community and to become destinations in their own right. This of course can be at a grand scale where rail is embedded within a total retail and leisure experience. But it can also be at a very small and even *ad hoc* level, as with the increasing prevalence of small independent artisan stalls at local and rural stations. What's clear is that as ticketing increasingly goes paperless, and as 'total customer experience' becomes a standard consumer demand, stations will need to re-envision their roles – and unattractive or dilapidated stations will no longer be an option.

Reclaiming 'lost' revenue is important - but attracting new revenue is crucial too. The installation or upgrade of barriers provides opportunities to improve flow, relieve congestion and generally improve the entire station experience for passengers and staff alike. And as new technologies make the task of ticket-purchasing increasingly simple or instantaneous – even undertaken away from stations altogether – the 'purpose' of stations will continue to change. Just as major stations are developing more and more into destinations in their own right – with ticket purchasing an increasingly minimal part of their role, so even more modest stations will find their role less dependent on ticket sales and more on their appeal as both environment and experience.

Samantha Smith is director and transportation sector lead at AHR Building Consultancy

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Data adventures

Mark Holt looks at how data engineering and science skills can bring innovation to the rail industry

The UK rail system is one of the oldest in the world. An icon of the industrial revolution, the first public railway in Britain opened in 1825. Nearly two centuries later, and we have much to be proud of in British rail with a network encompassing 15,760km of track, 2552 stations and more than 1.6 billion annual passenger journeys[1].

As our society enters a new era defined by rapid innovation, we have seen data and technology play a pivotal role in shaping customer experience in the travel industry, particularly in air travel and taxi services. This new paradigm hasn't as yet been so apparent in the rail sector, where every day 80 per cent of rail customers still line up at train stations to buy paper tickets – the exact same way they did 30 years ago.

Through large-scale infrastructure investments, including HS2 and EGIP, and an increasing consumer appetite for innovations such as mobile ticketing, now available on 39 per cent of UK rail routes, there is a palpable sense that technology can pioneer a transformation in the rail customer experience.

Specifically, the ability to harness and utilise data has opened up a world of opportunity for the rail industry, and must be fully embraced.



The role of data engineering and science

Data science is the process where knowledge or insight is developed from either structured or unstructured data sources. In the Internet age, companies and organisations are exposed to a vast range of rich data sources such as customer transactions and feedback, email data and online search activity. With advances in technology this data, often referred to as Big Data, can be transformed into valuable insights and predictive analytics that can improve decision-making, efficiency and performance at all levels.

We have seen data science being intelligently applied across a range of industries including digital advertising (think of those re-targeted ads you saw after you left an eCommerce site and opened your social media feed), airlines (route planning and customer loyalty programmes), and delivery logistics (ever wondered how that Amazon package arrived so quickly?). As we enter the world of artificial intelligence (AI), the pace of transformation across emerging areas such as self-driving cars and robotics will improve our lives in ways we can barely comprehend from our current vantage point.

While the technology to embrace data, including cloud-based storage solutions and analytics platforms like Amazon Redshift, is widely accessible to businesses and organisations, the key to extracting data lies in having dedicated personnel with the right skill set. Demand for data engineering and science skills in the UK is massive. So much so that it's been repeatedly predicted that we are facing a long-term, European-wide shortage of skills in this area[2].

Data skills in the rail industry

From a rail sector perspective, we are awash with data. Passenger numbers have doubled since the 1990's, bringing a renaissance to UK rail[3]. The data arising from these journeys – everything from train departure and arrival times, platform information, pricing information – holds the key to maintaining rail's popularity and supporting the boom. At present, much of this data

is in unstructured form, *i.e.* it is not being organised and made ready for creating actionable insights. The potential for improving every facet and phase of the rail experience is being squandered as a result.

With the right skills and collaboration across the industry and a clear focus on the customer, we can transform all aspects of the rail industry including infrastructure, delivery, service quality and end-user experience. Indeed, data can be the basis for a revolution in how passengers interact with our railways, offering more seamless travel experiences at all stages of the customer journey.

At Trainline our mission is to provide customers with Smarter Journeys and data is a huge part of this vision. We're still in the early days of these data adventures but already we're seeing great innovation happening as a result. An exciting example of this is Trainline's new BusyBot tool. BusyBot uses the Trainline app to crowdsource information about how busy trains are, and therefore direct travellers to where they are most likely to find a seat. This absolutely encapsulates smart travel – customers might not be able to sit down initially when taking a rush hour train from London Bridge to Brighton, but selecting a carriage at the back of the train makes it more likely that they'll get a seat from Gatwick Airport onwards.

Another way we've been making our data work hard for us is through mining the 15 years' worth of data we have to determine which customers are likely buy add-on products (such as travel insurance and/or cancellation protection). This allows us to provide a streamlined experience for customers who don't want these products and an enhanced experience for those who do.

Finally, we've been looking at customer confidence, trying to figure out who is more likely to appreciate additional reassurance just before traveling. If we can send them an 'everything is okay with your booking' email when they need it, then we're able to reduce the stress of the whole travel experience.

To achieve our goals in this space, Trainline is investing in a Big Data platform for which we have a specialised data engineering and science team performing large scale, complex data analysis. This means the focus is firmly on data-powered customer experience innovation to create smarter journeys. Furthermore, working with all UK train operators, we are enhancing our customer experience through live service information and mobile ticketing, which we are aiming to have available on 50 per cent of UK rail routes by the end of the year.

Key is to make the rail industry an attractive proposition for emerging tech talent. I have been impressed by the work of HackTrain, sponsored by Trainline, in encouraging young developers to solve problems relating to various aspects of the industry – in this case through a weekend hackathon aboard three trains and then incubating and accelerating the ideas produced. We have already seen some of the ideas from that weekend progress to tangible businesses, and a renewed enthusiasm for embracing innovation in rail among those who participated. As an industry it is imperative that we support and nurture data skills – only then will we see the true potential of this new revolution in rail travel.

Mark Holt is chief technology officer at Trainline

1. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/487497/rail-trends-factsheet-2015.pdf
2. http://www.information-age.com/it-management/skills-training-and-leadership/123461489/missing-piece-big-data-puzzle
3. https://www.theguardian.com/uk-news/2015/sep/14/train-journey-numbers-double-since-privatisation-railways-uk-report




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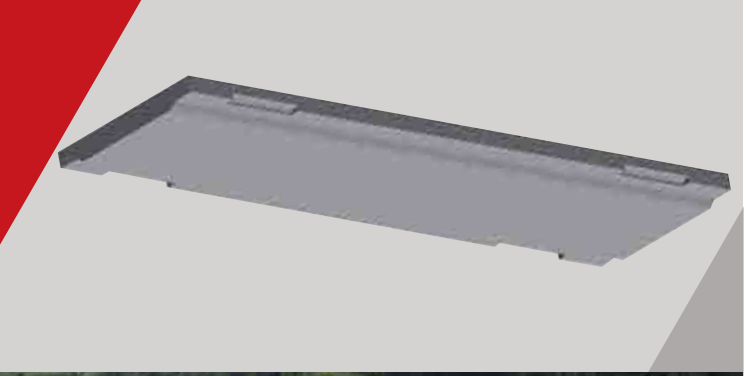


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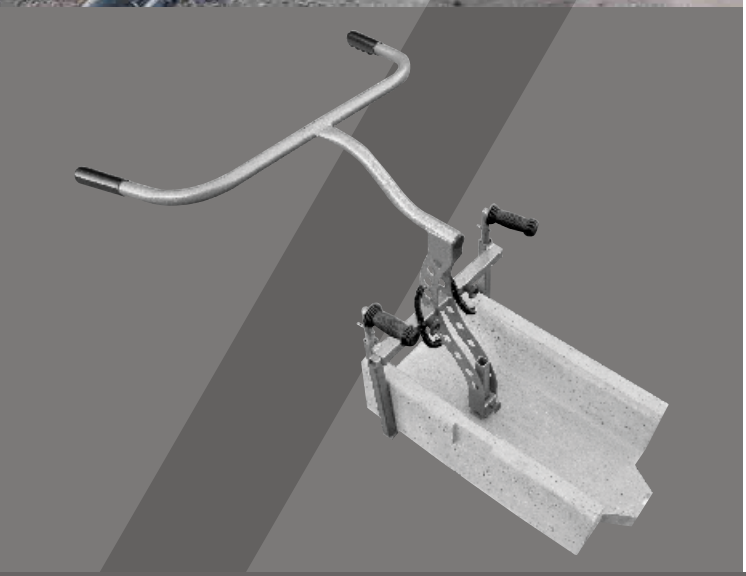
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Rail Live 2016: a showcase for the best in the rail sector

Rail Live is billed as the UK's largest outdoor railway industry show and this year's event – held at working rail site the Quinton Rail Technology Centre in Long Marston – was the biggest yet

Organised by the Rail Alliance and heavily supported by the industry, including the Rail Supply Group (RSG) and Network Rail, it offers exhibitors the huge advantage of being able to exhibit against the backdrop of a real rail environment and actually demonstrate products and services as if they were working on a live project or job.

This is the fifth year of the show with Rail Live 2016 being the biggest yet with more than 6000 people attending the event over the two days of 21 and 22 June. The Quinton Rail Technology Centre – home to several rail companies including Vivarail, Motorail, Rail Alliance and Chrysalis Rail – hosted more than 270 exhibitors from across the rail supply chain bringing all kinds of equipment as well as promoting services and products. Innovation and best practice were a central theme to Rail Live, and the reason why so many visitors attend is that there is nowhere else quite like this show to see the railway in action.



Colin Flack, CEO at Rail Alliance explained why Rail Live appeals so much to the rail sector: 'This is not like your conventional indoor show – it is very much about what the railway actually is – practical and by definition, outdoors. What visitors are given the chance to do is to get up-close and personal not only to the equipment so that they can look at it and touch it, but they also get to see it moving and speak directly with the people who operate it as well as to the engineers who have developed the technology and manufactured the machinery. This type of dialogue is a golden opportunity to engage with individuals at a grass-roots level.'



Photography: Jack Boskett & Eli-Rees King

Seeing the railway in action

Rail Live is what it says on the tin – 'live rail demonstrations' – and is essentially a unique opportunity for exhibitors who want to use real railway infrastructure to highlight features and capability. With the added bonus of a connection to the mainline network this also means that rail vehicles can be brought onto the site and showcased as part of the exhibition – which is a real attraction to visitors who wouldn't ordinarily be able to get up close to trains such as the impressive 70m Robel MMT (Mobile Maintenance Train) or see Railcare Sweden's RailVac machine in action, or the striking Colas (Plasser & Theurer) continuous action 2-sleeper tamping machine for track – to name but a few. Many road rail vehicles (RRV) were also on track, as well as static displays on track panels placed



on individual plots offering visitors the chance to see even more kit.

For many exhibitors, the show presents fantastic possibilities to dig holes, drive in piles, drill, mill, crush, cut rails and even re-work track, alter ground formation and soil. Road-rail machines hopped on and off track going from road to rail and back again. There was not a single dull moment during the two days as there was always something to see and do.

With so many exhibitors demonstrating and showcasing the latest innovations and best practice in the rail sector it takes a good few hours to get around the whole event. This year at the show there was even a 5m high viewing bridge provided by SKR Scaffolding which acted as a dedicated walk-way from one zone to another. It was great to have an elevated view of the show and truly take in the vast amount of equipment on display, and you couldn't fail to appreciate the huge array of cranes and aerial access equipment that dominated the skyline across the entire site.

Simon Higgens, CEO at ISS, which exhibited at Rail Live said: 'Rail Live has become, for me, the single-most important railway event in the UK. Not only can I promote my own business in a railway environment, I am also able to meet potential clients, get to see new innovations and understand how the rest of the railway sector is developing. Of all the industry events that I attend, this is the one not to miss.'

Rail Live also provides a platform for specialist areas within the rail sector such as signalling and electrification. This year's signalling village saw more than 20 companies, many of which already collaborate to provide innovative signalling solutions. Network Rail SIG (Signalling Innovations Group) were instrumental in shaping the signalling village and it proved a great success with both infrastructure and technology being showcased with particular emphasis on how new technology is shaping the future – especially when it comes to safety as well as efficiency.



Reflecting the Rail Supply Group's strategic vision

Rail Live 2016 truly does strive to reflect the cornerstones of the Rail Supply Group's strategic vision: innovation, skills, export and conditions for growth – all geared to move the rail sector forwards to meet the new challenges in rail. With this in mind, this year saw the introduction of the Business Zone at Rail Live and was sponsored by Lloyds Bank as part of its business focus to support UK SME's – particularly those with a manufacturing focus in rail.

The Business Zone was designed as the ultimate point of reference for the rail industry throughout the show – for both exhibitors and visitors alike. This area provided a space for networking as well as being home to key organisations that give support and assistance to the rail sector including: Lloyds Bank, the EEF Manufacturers' Association, RSG, Finance Birmingham, National Skills Academy for Rail (NSAR), Young Rail Professionals (YRP) & Railweek, UKTI and the Long Mile Consortia (LMC) – an organisation boosting opportunity in the Middle East rail sector.

Catherine Appleby, international trade advisor at UKTI said: 'Vibrant, exciting, and jam-packed, Rail Live delivered again – full to the brim with demonstrations, this truly is the place to really 'see' exactly how UK rail works, up close and personal. It's a wonderful display of capability and expertise rarely seen in more traditional shows, a show not to be missed.'

The Rail Alliance was also on hand to explain more about the industry specific programmes it has in place to support the sector, such as RSG Best Practice workshops and the Rail Mentor programme, as well as the involvement it has as a technology partner in the RSSB's TOC16 competition designed to help match the needs of Toc's to enhance passenger experience with innovation from the supply chain.

Looking to Rail Live 2017

Rail Live has over the years evolved from an exhibition mainly focused on rail infrastructure and plant to now incorporate products and services from across the supply chain to include a whole range of products and services large and small, representing both infrastructure and rolling stock.

This outdoor exhibition is set to get even larger as it grows year-on-year with planning already underway for June next year. As the momentum builds for high speed rail we envisage seeing more of the rolling stock community coming together at the show alongside the infrastructure, civils and plant to showcase solutions and innovations that will bring a world class railway in the not very distant future.

For more information on Rail Live
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Passengers or workforce fatalities in train accidents for the ninth consecutive year

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Passengers fatalities in individual incidents, all at stations

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288

Major injuries to passengers

157

Major injuries to members of the workforce

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Next Generation Rail Conference

More than 200 delegates, representing the best and brightest young talent in the rail industry, attended the Next Generation Rail conference this summer. **Chris Lawrence** explains how the event can help plug a worrying skills gap

Britain's rail industry is going through a period of extraordinary growth, unprecedented in modern times. Passenger numbers are at record levels and the government is investing billions of pounds on major projects such as Crossrail, the Thameslink modernisation programme and HS2.

But this exciting period of expansion brings a fresh set of challenges for an industry that faces fierce competition for skilled workers. Put simply, the railway is struggling to find suitably qualified and experienced candidates to fill an increasing number of vacancies.

There is, however, one way of making sure the skills gap doesn't get wider: do everything possible to retain highly skilled employees; nurture them, develop them, make them feel wanted.

The Next Generation Rail conference, which is jointly organised by RSSB, RRUKA and the Young Rail Professionals, has a crucial role to play in motivating talented young rail professionals and helping their career development.

This year's conference, held over three days at the impressive National Training Academy for Rail in Northampton was one of the headline events of Rail Week. Promoted by the Young Rail Professionals and supported by more than 70 organisations across the industry, Rail Week celebrated the diverse and rewarding career opportunities rail can offer. The inaugural event, which ran from 27 June to 3 July, replicated a model trialled by colleagues in Australia and in the US.

Now in its fourth year, Next Generation Rail has, I'm delighted to say, become a must-attend event for young rail professionals and early-career researchers from both industry and academia.

That was reflected in the turnout at Northampton – more than 200 delegates from almost 70 organisations attended the conference, which had the theme 'Where knowledge creates solutions' and focused on innovation, creativity and research. Delegates were invited to participate in an innovation marathon – renamed 'Innovathon' – to come up with innovative concepts that have real potential to deliver a railway that keeps pace with changes in technology and meets customers' ever-changing expectations.


Delegates

A series of wonderfully energising and entertaining workshops provided insight into the tools and techniques needed to fast track ideas into pragmatic reality. The challenge for the delegates was one faced by the rail industry every day: how to improve customer experience.

The conference attracted an impressive array of speakers, including academics, transport researchers and business leaders who punctuated the Innovathon workshops with some lively and informative presentations which highlighted the importance of creativity and innovation.

Crispin Humm, head of customer experience at ATOC said the rail industry 'recognises the importance of innovation but doesn't quite know how to do it'. He told delegates: 'You are coming into the rail industry at an exciting time. Rail recognises the need to change and become more agile.'

Richard Jones, rail business director at the Transport System Catapult added: 'The railway must spot opportunities and innovate.'

New ideas can flourish

The purpose of the event was to communicate to the young audience the need to create a culture of innovation in the rail sector to help encourage an environment in which their new ideas can flourish. Maggie Brown, innovation programme migration manager at Crossrail, talked about 'Innovate 18', a scheme for Crossrail employees and contractors to develop and share ideas. 'Our aim is to create a network of innovation champions and support people with great ideas. More than 1,000 ideas have been submitted and around



The winning Personal Travel Buddy team

400 have received funding,' she said.

The climax of the conference was four wonderful presentations by delegate groups who had clearly thought long and hard about ways of making rail travel a more pleasurable experience for passengers.

All four groups were praised for the exceptional standard of their work. But the winning idea, for a virtual Personal Travel Buddy – in effect an advanced version of the holograms that are already at some mainline stations – was a hit with the judges. They were impressed by the group's view that holograms have almost limitless potential for reducing congestion at stations and making train travel a more relaxing experience. And as the group pointed out: you don't have to pay overtime to a hologram!

In line with tradition, Next Generation Rail ran two competitions to find the Best Presentation and Best Poster that more eloquently and visually showcased cutting-edge research in industry and academia.

James Pritchard, from the University of Southampton, triumphed in the Best Presentation category. His project aims to provide passengers with better information as a way of easing overcrowding on trains. Cranfield University researcher Andraz Krslin produced the winning poster, which showcased a robotic application to make the cleaning of train cab fronts quicker and safer. Both submissions were judged to have brought clarity, structure, and clear explanations of how the research will benefit the rail industry. The feedback from delegates at the end of the conference was overwhelmingly positive. Not surprising, perhaps, given that it also gave them an opportunity to develop and enhance soft skills, such as collaboration, communication, leadership, creativity and problem solving. Good interpersonal skills, as well as technical skills, are crucial for career development – and they are also required competencies for those working towards a professional accreditation.

Networking was another key element of the conference, which was encouraged not only during the group activities and rest breaks, but during the celebratory Next Generation Rail dinner, held on the second night of the conference, where senior industry representatives joined delegates acting as mentors and passing on advice about career prospects.

Kate Bellingham was guest speaker at the dinner. She talked about her experience as an engineer, presenter of the TV science programme *Tomorrow's World* and active ambassador for the STEM network.

Anyone attending the conference would have been hugely impressed, as I was, by the talent, energy and enthusiasm of all the delegates. They are a prized asset for the industry. Getting young people to see rail as a worthwhile and rewarding career and retaining their services is vital for the sustainability of the industry.

The range of skills needed in rail is vast and events like Next Generation Rail provide a forum where creative energy and innovative ideas can be harvested from an enthusiastic and diverse group of early career professionals.

Just as importantly, this conference is a valuable way of reinforcing the image of rail as a sector committed to fostering talent.

Chris Lawrence is technical director at RSSB



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Brexit: will it spell the end for HS2?

The most damaging legacy of Brexit for HS2 will be the constraints that it will place on Britain's finances, says **Quentin Macdonald**

As the dust continues to settle over the UK's biggest political decision in a generation, all of us with an interest in rail have been keenly watching to see how Brexit will affect the much-criticised HS2 project.

The momentous decision to leave the European Union has resulted in a new prime minister and sweeping changes to the cabinet. Key to HS2, are new chancellor Philip Hammond, new secretary of state for transport Chris Grayling and new secretary of state for the Department for Environment Food and Rural Affairs, Andrea Leadsom. Hammond and Grayling both support HS2 but Leadsom does not. Theresa May's recent decision to review David Cameron's previously agreed Hinkley Point deal indicates the new government is unafraid of pausing infrastructure projects that may not fit prime minister May's criteria.

Unlike Hinkley Point, where some cogent arguments for its construction exist, the case for building HS2 in a post-Brexit environment is even weaker than it was before the vote.

HS2 presents the May administration with a conundrum. Railways are back in fashion and passenger journeys have increased from 975 million in 2002/3 to 1.6 billion in 2014/15; a rise of 70 per cent in just 13 years. People like trains, they see them as 'green', avoiding parking problems, working while someone else drives and doing their bit for climate change. As such, this should be the ideal time for the government to be promoting new railways. However, people do not seem to like HS2.

The *Yorkshire Post* ran a poll of its readers on 23rd July this year. They were asked to vote 'yes' or 'no' to the question 'Should the government persist with its plans for HS2?' An overwhelming 90 per cent said 'no' and just 10 per cent said 'yes'. As a self-selecting poll it is not statistically significant, particularly as it followed hard on the heels of HS2's announcement about demolishing part of the brand new Shimmers housing development in Mexborough. The poll is however indicative of the public mood.

A reasonable question

The HS2 scheme has been in development since 2009 amid considerable controversy.



Reasonably, one must ask if the scheme which the May administration has inherited is any good. The problems began with the remit which instructed the planners what to build but crucially not how to improve rail services. The remit dictated that a high speed line should be built from London to the West Midlands and then consider what to do next. The result is the Y design which restricts high speed travel to a north-south axis and does absolutely nothing for east west travel; particularly trans-Pennine. To facilitate the Northern Powerhouse, HS3 had to be added. As a result, it is necessary to build far more new railway than an efficient design would require.

The HS2 route to Birmingham means crossing the Chiltern Area of Outstanding Natural Beauty at its widest point and also damaging no less than 63 ancient woodlands and three sites of special scientific interest. 50 kilometres of tunnel (28.6 per cent of the phase 1 route) is required to mitigate the effects of environmental damage.

Two other decisions also had a major effect on the design. Firstly, choosing a design speed of 400km/h results in a minimum radius of curvature of 7,800m, making it very difficult to fit into existing landscapes. Secondly, the use of wide-bodied trains built to UIC-C loading gauge restricts HS2 to serving just nine stations; two in London, two in Birmingham, two in Manchester and one each in East Midlands, Leeds and Crewe. To serve the rest of the major conurbations requires a second fleet of Eurostar sized trains; the so-called 'classic compatibles'. This is already the beginning of an operator's nightmare.

Huge sum for choppy waters

In the 2015 spending review, £55.7 billion was allocated for HS2 phases 1 and 2. Even after dropping the direct connections to Heathrow and HS1, the costs are still well above the agreed funding and a spending

review is ongoing. However, another £15 billion has to be added for HS3, bringing the total to more than £70 billion.

£70 billion is a huge sum of money in prosperous, economically stable times let alone in the choppy waters through which the UK economy now sails.

The Leave vote introduced significant and unidentified uncertainty into the future prospects of the UK economy. Sterling plunged to historic lows against the dollar and the euro resulting in imports becoming more expensive and thereby further inflating the cost of building HS2.

However, the most damaging legacy of Brexit for HS2 will be the constraints that it will place on Britain's finances.

HS2 will have to be financed by significant borrowing at a time when all three major rating agencies have downgraded the UK's credit rating from AAA to AA with a negative outlook. Not only will this make tapping the debt markets a more expensive practice but more significantly it will rattle the already fragile confidence of external investors.

Twinned with this will be a probable slowdown of the UK economy. With all key economic indicators pointing to a slowdown or potential recession, government revenues will come under significant pressure ensuring vast expenditure on the ill-conceived HS2 project will become politically toxic.

What is most striking about the HS2 project is that outside of the entourage of lobbyists and construction companies that benefit directly from its construction, there has been a groundswell of popular and professional criticism.

Prior to the referendum vote, a group of 40 transport academics, transport planners, railway operators and engineers including the author met to review HS2. Their conclusions were damning.

To paraphrase from their report *HS2 and the railway network: the case for a review*, the HS2 project has attracted much expert criticism of its opportunity cost, its isolation from the classic rail network, its environmental damage and its wider economic impacts.

This was followed by the National Audit Office's report on 28th June 2016 *Progress with preparations for High Speed 2*. Included are ten key findings, two of which are complimentary and eight of which are critical with the words 'risk' and 'pressure' occurring frequently. The report was summarised by Amayas Morse, head of the NAO on 28th June: 'HS2 is a large, complex and ambitious programme which is facing cost and time pressures. The unrealistic timetable set for HS2 Ltd by the Department means they are not as ready to deliver as they hoped to be at this point. The Department now needs to get the project working to a timescale that is achievable.'

The report makes a point regarding value for money which states that unless the project is improved significantly 'value for money will be at risk'. HS2's benefit/cost ratio has now slipped to 1.8, indicating poor value for money.

The Taxpayers' Alliance makes similar points in its report released on July 29th. Taxpayers' Alliance CEO Jonathan Isaby said: 'The new prime minister should now be pursuing bold and imaginative policies to boost economic growth and increase productivity – and that positive approach must include scrapping HS2, which has cost taxpayers far too much already.'

By contrast, the High Speed UK (HSUK) scheme is ready to meet the tests posed by Brexit. Not only does the HSUK scheme deliver far more benefit, cause far less environmental damage, significantly improve capacity and connectivity, it is also £21 billion cheaper.

The effect of the Brexit vote leaves any positive economic case for HS2 in tatters. It is essential that alternatives are investigated thoroughly and impartially.

Quentin Macdonald is systems engineering principal of High Speed UK

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Alstom completes upgrade of 17 Arriva North trains

The company has completed vital modernisation work on 17 Class 323 trains, which are operated by Arriva North and run on Manchester's electrified rail network.

The work, which involves upgrading the trains' power and control electronics to make them more environmentally efficient, was completed at Alstom's specialist train care centre in Longsight, Manchester. The materials and parts required to undertake the work were assembled at Alstom's Preston site.

A team of 25 engineers and managers from the North West, including two apprentices, worked on the project. Another three graduates at Alstom completed training placements at Preston while work was taking place.

Alstom completed the work for train leasing company Porterbrook. As part of the same contract, which is worth £11 million, Alstom will now upgrade the remaining 26 Class 323 trains in operation for London Midland.

Mike Hulme, MD, trains and modernisation, for Alstom in the UK, said: 'The upgraded Class 323s are a vast improvement on the original. They are now more reliable and environmentally more acceptable, making them fit for purpose for the foreseeable future.'

Jacobs awarded contract for Network Rail link to Heathrow Airport

Jacobs Engineering Group has been awarded a contract by Network Rail to continue its support for improving rail links from the Great Western main line to Heathrow Airport.

The proposed link enables passengers throughout west England and beyond to travel directly to Heathrow Airport from Reading and Slough without having to change at London Paddington. It is expected to ease congestion on roads, lower carbon dioxide emissions by the equivalent of 30 million passenger road miles per year and provide an economic boost for businesses in the region.

Jacobs' contribution to the project is expected to be executed from its offices in the U.K. over the next 27 months.

Jacobs' senior vice president buildings and infrastructure, Bob Duff, said: 'We started supporting Network Rail on its feasibility plans for this essential rail link in October 2011. We are leveraging our experience with the DCO process to support the delivery of sustainable design and compelling application.'

Visit www.jacobs.com

Murphy creates safer Crossrail tunnels

Murphy has improved site safety and efficiency on Crossrail following steps taken by the engineering and construction company to alter the tunnelling process.

Applied on the three-kilometre section under The Thames between Plumstead and Woolwich, Murphy identified that a device was needed for telehandlers to improve safety. 'Safe T Zone', which can be used across the company's entire fleet, minimises the potential for unsafe movements of underslung goods by limiting the operation of the telehandler and restricting its movement.

Safe T Zone reduces the variance in the typical movements of telehandlers when moving compared to when stationary, yet allows the system to work in two different states. It has now been successfully tested on five Murphy sites across the country.

Telehandler operator, Ian Harris, who trialled Safe T Zone for Murphy, said: 'Using the Safe T Zone is really changing our behaviour to better understand what can and can't be done safely. It's also comforting to know it's there. It helps take the risk of using a telehandler incorrectly down a level and is really simple to use.'

Visit www.murphygroup.co.uk

Alstom wins Virgin Pendolino contract

Alstom has been awarded a contract worth around £23 million to undertake repainting work on Virgin Trains' Pendolino fleet. The 56 Class 390 tilting trains, owned by Angel Trains, currently operate on the West Coast Main Line.

The project will be the very first to be completed at Alstom's new technology centre in Widnes, which is currently under development following acceptance of the latest round of planning permission. Parts of the new technology centre will be built specifically to accommodate the repainting.



The centre will open by May 2017, in time for the work on the Pendolino fleet that will be completed by December 2019. Each train takes two weeks to re-paint.

'Repainting the Pendolino fleet cements our longstanding relationship with Virgin Trains and will also be the first piece of work that will take place at our new site in Widnes once it is complete,' said Rob Whyte, managing director of regional and intercity at Alstom.

Around 80 people will be employed at Widnes for the duration of the project and will be trained at Alstom's North West Transport Training Academy, which will be built at the site.

Visit www.alstom.com/uk

Next generation of on board ticketing, rolls out with Virgin Trains

Worldline, a European specialist in payment and transactional services, has become the first supplier to roll out the next generation of fully industry accredited on board ticketing systems in partnership with Virgin Trains for the UK rail industry.

The new system is being used by Virgin on the west coast to provide a faster, lighter and easier to use Android application that can work on any Android powered device. The systems offer:

- fast timetable searches, even when offline
- ability to take payments both online and offline
- increased payment options including contactless payment cards, using a P2PE accredited payments solution
- receipt roll and orange ticket printing options
- centrally hosted back office console for configuration and management of device estate using a web browser

Lisa Coleman, UK&I CEO Worldline, said the system 'truly benefits the Virgin Trains business and its passengers'. 'At Worldline we are proud to have led UK rail industry ticketing innovation for over four decades; our new solution replaces our current solution which has served the industry for 16 years providing payment services for more than £4 billion of rail ticket revenue. We have used our experience and well-established design principles to deliver a smoother and more intuitive ticket issuing and information tool, providing a great user experience to train managers and their customers.'



Commenting on the partnership John Sullivan, CIO, at Virgin Trains said: 'We love the use of new technology when it is of benefit to both our colleagues and our customers. Using a modern tablet device rather than the old and clunky ticket machine we will be able to serve tickets faster and more reliably in our trains. We will also be using this new technology in our stations to serve customers which will improve the flow from getting from the station to the train.'

Visit: www.worldline.com

An MBA in scrap

DB Cargo UK has secured a contract with scrap metal merchants Ward Bros (Steel) to transport materials by rail from its scrap processing facility at the Port of Sunderland to the Celsa Steel UK works in Cardiff.

The contract was awarded to DB Cargo UK because of the specialist MBA rail wagons it provides – MBA wagons' length and size means they're able to carry much heavier weights than traditional wagons, making them particularly suitable for uncompacted scrap metal.

DB Cargo UK is currently operating one service a week for Ward Bros, carrying around 1,250 tonnes of material on each train. The scrap metal is processed at the CELSA Steel Works to make finished metal products, including rebars that are used to reinforce steel in the construction industry.

Sonia Hampton, account manager metals at DB Cargo UK, said that the deal brought environmental benefits, as well as practical ones. 'There is real value to customers in using rail freight to deliver their goods, for example it produces fewer emissions than road and can help to ease traffic congestion.' *Visit: www.uk.dbcargo.com*



Atkins awarded design and engineering contract for Thameslink Traffic Management Programme

Atkins has been awarded a contract to support Hitachi Information Control Systems (HICSE) and Hitachi Rail Europe with the delivery of the Tranista® Traffic Management System (TMS) for Network Rail's Thameslink programme.

The company has been appointed by HICSE to review its Tranista system to ensure that it meets Network Rail's functional and operational requirements for compatibility with the UK rail network. As such, a multi-disciplinary team from Atkins will provide a variety of detailed design and engineering services through GRIP stages 4 and 5.

Tim Gray, managing director of Hitachi Information Control Systems said: 'We're looking forward to working with Atkins on this cutting-edge digital railway project, built upon industry collaboration. Traffic Management has the potential to increase capacity as well as bring a new age for rail planning across the UK network. This new deal with Atkins will enhance Hitachi's relationship with Network Rail and other sector partners to ensure Traffic Management delivers more reliable services for fare paying customers.'

Third Annual UK Rail Industry Forum 2016

Waterfront's UK Rail Industry Forum will return on the 14th September 2016 at Dentons to provide senior representatives from across the UK rail sector with essential updates and strategic insight on the industry. Attend to consider the major challenges facing the sector, receive the latest updates on policy and gain insight into how schemes and rail improvements are progressing.

Key industry figures from the Department for Transport, ORR, Go Ahead Group, Transport for London, and other expert speakers will share vital updates on CP5 project delivery and the preparation for CP6; consider the effect of devolution on the rail industry, and discuss changing passenger perceptions and expectations of rail.
www.thewaterfront.co.uk

Atkins and CH2M on-board for Crossrail 2

Network Rail has recruited Atkins and CH2M to deliver the Stage 1 On-Networks Systems programme on the proposed Crossrail 2 project.

The project team will work together on the development of the upgrade designs for the Network Rail-owned stations, tracks and rail infrastructure on either side of the proposed tunnelled section, which will play a key role in Crossrail 2. The works will cover the mainline to Hampton Court, Epsom, Chessington South and Shepperton in the South West as well as Broxbourne Junction to Tottenham Hale in West Anglia.

The £1.5 million contract will see Atkins and CH2M build on their previous engineering and programme management experience, as part of the CAST (CH2M, Atkins, Supply Chain and Transport for London) team, working on Crossrail 2. The two companies have provided strategic transport modelling, route development, transport planning and economic appraisal of the project.
Visit www.crossrail2.co.uk

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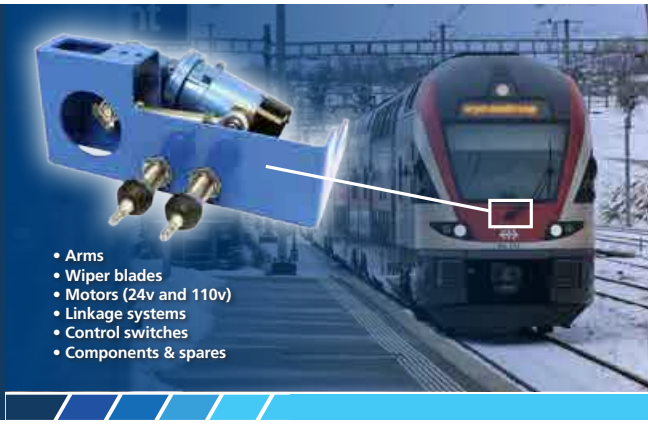


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Wayne Frewen

FM Conway secures £4 million TfL contract

FM Conway's rail division has secured a construction and civil engineering contract with Transport for London (TfL) that's expected to be worth more than £4 million.

The contract is to provide civil engineering, monitoring and evaluation and fire protection services for a number of strategically located sites across the network to support the Automatic Train Control Signalling Project for London Underground.

Despite FM Conway having delivered a number of rail projects, this latest contract is the first time it has been appointed as a tier-one contractor for a large rail operator.

Leader of the FM Conway's rail division, Wayne Frewen, said the company has a 'strong heritage' in the rail industry, having completed projects that included rail bridge maintenance works to depot construction.

'The contract with TfL is just the first step for FM Conway's rail division, and I can assure you that we will be achieving further growth and success in this sector in the months and years to come.'

Visit www.fmconway.co.uk

New solution offers protection from loud noises

An award-winning system by 3M is designed to give employers confidence that their workers are receiving the best protection from harmful noise.

The science-based technology company has launched its 3M E-A-Rfit dual-ear validation system, which has been designed to assess the attenuation rating of each worker to help employers reach compliance and be assured that the hearing protection equipment (HPE) is doing its job.

As HPE is so individual to the user that how they insert it can make a massive difference to the level of protection being offered, and it is often the case that workers are not as protected as they believe they are – which potentially exposes them to the risk of noise-induced hearing loss.

The 3M system works by measuring the effectiveness of earplugs and earmuffs from inside both of the employee's ears, to help identify which HPE suits them best.

The product, which was highly commended by the British Safety Industry Federation, uses seven different frequencies to test both ears for noise reduction from hearing protection. Results are measured directly and objectively, meaning there is no need for employees to listen or respond to test signals.

Simon Field, technical specialist at 3M, said: "There has never before been a reliable way of working out the level of protection a person is getting from their HPE, particularly as everyone is different and hearing protection is very individual to the user. And by easily establishing the PAR of every employee, an employer can tailor the solutions for their workers and offer them any education they need about the protection."

Visit www.3M.co.uk/earfitvalidation

App launched to improve rail car parks

Owners of train station car parks can improve the 'uncertainty and inconvenience' faced by some motorists when looking for a space, following the release of a free smartphone app.

ParkFinder is designed to make life easier for motorists and to provide traffic management, customer service and environmental benefits for parking authorities and other car park operators, with little or no investment or operational cost.

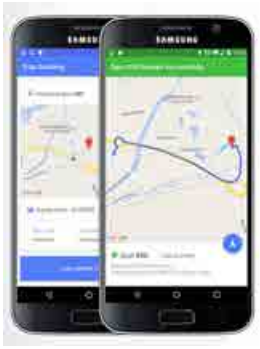


The app has been launched by Imperial Civil Enforcement Solutions (ICES) following its acquisition of the system from Apparcar, the company responsible for developing the new technology, using investment from Telefonica.

Already used in Madrid, ParkFinder uses real-time data to ensure that more spaces are occupied but does so without the high investment costs related to hardware and sensor-based parking systems.

'Motorists will be able to identify, book, find and pay for the most convenient parking space immediately. It takes all of the frustration, uncertainty and inconvenience out of parking a car and searching for a parking,' said ICES managing director, Ashley Bijster.

Visit www.imperial.co.uk





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Alstom to maintain Grand Central fleet

Alstom will provide the maintenance for Grand Central's Class 180 trains after the manufacturer signed a ten-year deal with the operator worth around £83 million.

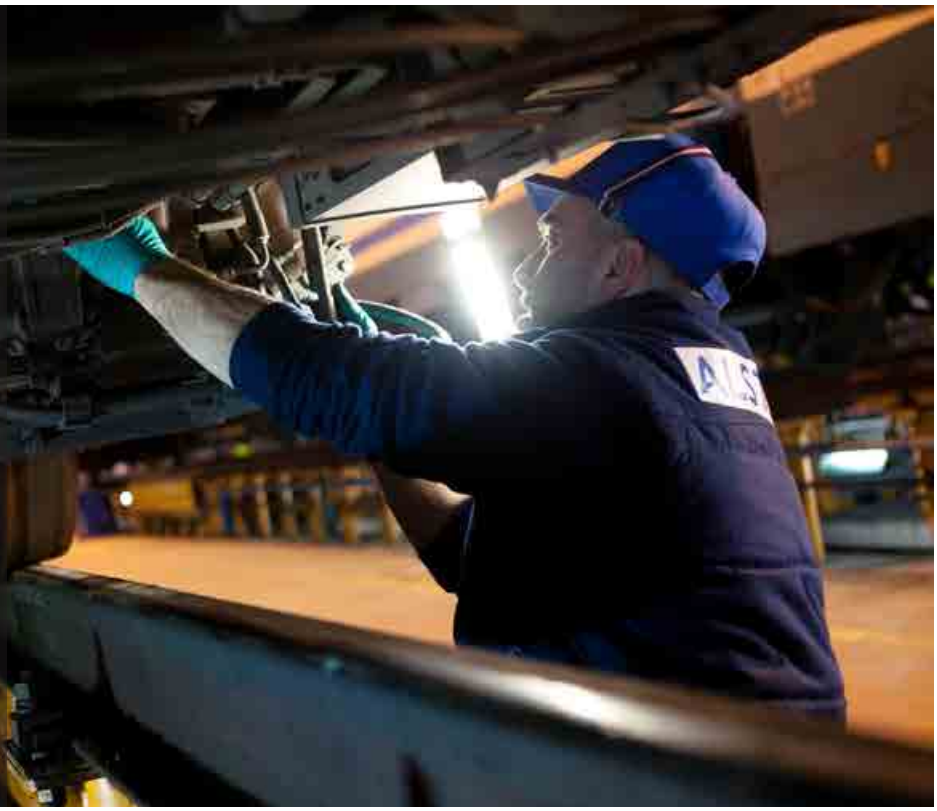
Beginning in January 2017, Alstom will provide Grand Central with the materials, parts, technical and engineering support needed to maintain its fleet of ten trains.

The support team will be based initially at Alstom's Chester Traincare Centre and will then co-locate with the Grand Central fleet operations team at its East Coast mainline maintenance location in 2018.

Grand Central Rail currently operates five Class 180 trains between London King's Cross and Yorkshire and the North East, but will expand its fleet to ten trains in 2017.

Part of Alstom's Coradia range, the Class 180 is one of the fastest diesel multiple-unit trains on the network, reaching speeds of up to 125 mph.

Visit www.grandcentralrail.com



Digitising transport

Panasonic Europe has purchased UK technology integration company Alan Dick Communications (ADComms) to aid the Japanese organisation's move into rail.

The deal, which also includes ADComms' companies IPS, AIB, and Rail Order, will facilitate Panasonic Europe's work on mainline rail, London Underground and other light metro infrastructure in the UK.

The acquisition is part of Panasonic's wider approach to provide complete services to its customers that include connectivity, hardware and software, as well its commitment to digitising transport.

The two companies have worked together before, having teamed up in 2015 to provide a trackside trespass warning system for the UK rail network, using a combination of Panasonic security cameras and analytics software to alert the operator to people leaving the platform.

Jason Pearce, managing director at ADComms, said: 'We will continue to support products that are right for our customers on the basis of safety, performance, quality and price. But, now we have the added benefit of being able to access the Panasonic R&D facilities, as well as significant financial strength, in order to help us grow the business.'

ADComms will continue to operate as a stand-alone business, with its own brand and with the current management team leading the business.

Visit www.panasonic.com/uk

Joined-up European ticketing

Trainline has strengthened its position as an independent ticket retailer in Europe after the company unveiled its latest partnership with Spanish high-speed operator, Renfe.

Renfe, the country's only long distance rail service, serves 1,903 Spanish rail stations and carries around 30 million passengers each year. The latest deal now allows its customers to visit more than 23,000 destinations in 22 European countries.

Clare Gilmartin, chief executive officer of Trainline, said the partnership with Renfe continues its expansion strategy across Europe – which now includes 37 carriers – and helps make the booking process more straightforward. 'We aim to allow people to travel anywhere in Europe in one or two clicks, whilst getting the best price and routes available.'

In March, Trainline purchased French online travel agency, Captain Train, which now also offers its services in Spanish, including web and app bookings and customer support, alongside the pre-existing English, French, German and Italian.

An end-to-end journey from Lyon to Malaga can now be booked with Captain Train, offering customers all route combinations using either the fastest or cheapest option.

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Time for *InnoTrans*



InnoTrans, the leading bi-annual international trade fair for transport technology is set to take place this year from 20th to 23rd September at the Messe Berlin ExpoCenter City, Berlin.

The exhibition will be sub-divided into five segments: Railway Technology, Railway Infrastructure, Public Transport, Interiors and Tunnel Construction.

InnoTrans will occupy all 41 halls available at the Berlin Exhibition Grounds and will be supported by the InnoTrans Convention.

A unique feature of InnoTrans is its Outdoor Display, where everything from tank wagons to high-speed trains will be displayed on 3,500 metres of track.

For the first time in 2016 a Bus Display will offer vehicle manufacturers the opportunity to demonstrate their vehicles on a static display area and the adjacent Demonstration Course.

InnoTrans is organised by Messe Berlin. Public access to the Messe Berlin outdoor display and track areas only will be allowed from 24th to 25th September.

Visit: www.innotrans.de

Middle East Transport & Logistics Expo and Conference

ME-TRANSLOG 2016 (5-7 September, 2016) will bring together local, regional and international exhibitors will showcase the latest technologies, best practices, pioneering research, advanced trends, and products and solutions.

The conference has been set up to meet the requirements of governments, businesses, industrial and commercial entities, construction, infrastructure, manufacturing and faster transport and logistics services.

Exhibitors include: Ministry of Transport and Communications, Royal Oman Police, Oman Customs Authority, Mwasalat – Oman's National Transportation Company and the National Ferry Company, Oman.

The internet of trains

Arriva UK Trains will undergo a trial with software company Enable iD to look at providing customers with more useful information while on their journey. Intended for use on Chiltern Railways' London to Birmingham trains, the technology will involve the use of real-time sensors that indicate the location of available seats, the temperature in each carriage and train running information. Information on on-board catering will also be provided, where relevant.

The sensor data will be part of the 'MyJrny' platform, a new intelligent mobility system linking transport operators with customers via the apps they use to get around. The new data-driven service is due to launch in early 2017.

This pilot project is match funded by the Rail Safety and Standards Board's (RSSB) Train Operator Challenge 15 (TOC'15) competition. If successful, Chiltern's parent company, Arriva, will potentially roll out the approach to other franchises.

Neil Webster, innovation programme director at RSSB, said: 'This partnership between Chiltern Railways and Enable iD combines the knowledge, expertise and experience from two innovative transport players and we are looking forward to seeing the results of the project as it gets going.' *Visit www.enable.com*

New Members of the *Rail Alliance* at end June

Alumasc Water Management Solutions: supplier of products that provide complete control over water originating inside and outside the building envelope
www.alumascwms.co.uk

Neopul UK: rail construction company that has developed, designed, built and maintained rail infrastructures since 1989, with projects ranging from underground metro to high speed lines
www.neopul.pt

Neterson Holdings: parent company of Tritech Group and Yeovil Precision Castings that offers aluminium, air-melt steels and vacuum superalloys investment casting
www.tritechgroup.co.uk
www.yeovil-precision.co.uk

The P.P. Group of Companies: independent profiling and processing companies providing a diverse portfolio of profiling, processing and manufacturing services across a broad range of industries
www.ppgroupltd.co.uk

Vortok International: designer and manufacturer of rail engineering technology, creating solutions to track maintenance, signalling and stressing problems
www.vortok.com

ROCH NDT Services: stability testing for pole and mast systems using artificially generated wind load stresses which can be conducted anytime and anywhere
www.rochtest.com

Technocover: dedicated to the development, manufacture, installation and maintenance of security products including access doors, covers, cabinets/kiosks and enclosures and walk-in modular buildings
www.technocover.co.uk

Markwell Marketing: marketing consultancy providing advice, help and support for companies wanting to enter or increase their profile in the rail Industry
www.markwell-marketing.co.uk

Alstom: Alstom has been involved in some of the UK's most significant rail projects. It helps design, build and maintain the UK and Ireland's large-scale rail infrastructure and has invested in, innovated and developed the world's most sophisticated engineering and new rail technology
www.alstom.com/uk

T&RS Engineering: engineering consultancy relating to maintenance and overhaul of fleets of traction and rolling stock
www.trsengioneering.co.uk

Quick Release: consultancy dedicated to product data management (PDM) optimisation to unlock value, eliminate waste and deliver lasting performance improvements
www.quickrelease.co.uk

The Go-Ahead Group: largest passenger rail provider in the UK carrying more than 30 per cent of train services and more commuters into London every weekday than any other national rail provider
www.go-ahead.com

Emergency Planning College: UK's leading centre for organisational resilience, giving assurance against adversity by delivering training in emergency and crisis management, business continuity, cyber resilience, event and public safety
www.epcresilience.com

Capula: independent technology company implementing control, automation and real-time IT solutions across multiple sectors
www.capula.co.uk

On track for the world's largest rail exhibition

Ahead of InnoTrans, **Damon Cadman**, global sales manager at Rowe Hankins, explores what visitors can expect from their stand

Rowe Hankins is a consistent exhibitor at InnoTrans, the world's largest rail industry event which is held in Berlin, Germany on September 20-23. However, this year holds special significance as it celebrates 30 years in business.

From its modest beginnings as a small distribution company, Rowe Hankins has gone through a remarkable transformation over the last three decades and gained a global reputation for quality, reliability and innovation, in making railway operations safer and more efficient.

Today, it is recognised globally as a specialist in the design and manufacture of components used within safety critical systems, and also a worldwide distributor of electro-mechanical products for railways. Although Rowe Hankins has a global reach, its headquarters are still based in Bury, north Manchester.

With thousands of exhibitors spread over 41 halls, this year's InnoTrans trade fair is set to be larger than ever and Rowe Hankins' display can be found at stand 206B in hall 2.2. This year, the team will highlight its skills in the design, development and manufacturing of safety critical rail products, including speed control, wheel flange lubrication and high-integrity circuit protection, all of which will be exhibited at the event.

A reliable solution

The trade fair gives the company the opportunity to showcase its range of speed sensors. Designed to operate in harsh rail environments, the safety critical multi-channel sensors measure speed and direction. Designed for high reliability, the sensors are a cost-effective solution for speed measurement. Rowe Hankins' engineers are experts in speed sensor technology and its applications and can provide bespoke speed sensing solutions.

For most applications the speed sensors are designed to work against a ferromagnetic steel target wheel by using Hall effect sensor technology. Sensors can also be designed for magnetic target wheels with alternating north and south poles. The speed sensor can have single, dual or multiple output channels of which specific channels can be isolated to be powered from a different power supply.

Designed with safety in mind

Visitors to the companys' stand can expect to see its Intelligent Wheel Flange Lubrication (iWFL) — an on-board dispensing system which applies precise amounts of biodegradable lubricant. Engineered for both national rail networks and urban tram services, the iWFL improves safety by greatly reducing both wheel and track wear.

Over the years there have been a significant number of train and tram derailments caused by heavily worn track. Evidence shows that lubrication of the interface between the rail's gauge corner and the wheel's flange root reduces the rolling contact fatigue in the rail. It is Rowe Hankins' belief that an intelligent use of lubrication can increase safety and reduce the chances of further fatalities.

In order to extend rail and wheel life it uses geographical location-based dispensing of flange lubrication. Its intelligent design senses the location and intensity of track curves using a combination of GPS signals and speed and distance sensors. The unit processes the data and, only where required, applies lubricant precisely at each location.

The companys' Intelligent Top of The Rail Friction Modifier (iTORFM), when used with the iWFL, improves safety by reducing friction and rail wear. It also improves fuel economy, reducing fuel consumption by 10 - 15 per cent.

Research shows that an effective flange lubrication system significantly extends wheel life and reduces rail wear, when compared with a non-lubricated network. This results in extending service and maintenance intervals, reducing down-time and costs, and most importantly, improved safety.







The eco-friendly and cost-effective system is already is use on rail networks across Europe. In the UK it is being trialled with Metrolink, Manchester's city centre transport link, and Rowe Hankins has also been approved as the preferred supplier to Crossrail, the new high frequency, high capacity railway for London and the South East.

In the 'nic' of time

The company will also be promoting its new split-core non-intrusive current monitor (NIC), which has been designed for use in rail condition monitoring (RCM) systems, allowing engineers to fix problems before failure.

Designed for trackside application to assist Network Rail's preventative maintenance programme, the split-core NIC has many benefits, including its retro-fit installation. This allows the unit to be clamped around circuits without interference to the circuit or signalling systems, removing the need for costly downtime while a RCM is installed, which means that the rail network can continue to run safely.

The signal is received from the split-core NIC via the associated data logger, the programme output then highlights that the primary current variations are outside of the normal limits, indicating a potential problem.

The aperture can be opened and closed via a jaw latch locking system. The on-board green LED indicates the unit is powered up and the red LED indicates that the primary current has reached the defined trip level. This allows installation engineers to see real-time working functions. The transducer can be clamped around a conductor of sizes up to 26mm in diameter.

The transducer uses Fluxgate Sensing Technology which is a passive sensor that is far more sensitive than conventional magnetic sensors. Its other advantage is its superior performance at extreme temperature ranges, found in rail networks, as well as ambient temperatures. This results in a far greater overall accuracy of the RCM. The sensitivity combined with the temperature improvements gives a much improved measuring resolution.

The design team behind the split-core NIC were aware of existing problems caused by rail network AC electrical noise from overhead lines, which are picked up on DC track side signalling circuits. The transducer was designed to remove these with low pass filtering techniques. This filtering is done at the source of the measuring circuit, completely removed from the output signals generated.

Customer first approach

Rowe Hankins now employs more than 50 members of staff in various roles, including production engineers, research & development, sales, admin, marketing, electromechanical service and repair, with sales outlets both in the UK and also overseas in France, China and America.

This year's InnoTrans exhibition allows it to highlight the capabilities of its service centre, located at its headquarters in the UK. The companys' engineers specialise in the maintenance, repair and overhaul of electro-mechanical equipment, providing savings of many thousands of pounds to major train companies, such as London Underground, Siemens, Bombardier and Alstom.

It is Rowe Hankins' customer first approach and its belief that anything is possible, that has kept it relevant in the rail industry for the last 30 years.

What next?

The companys' engineering team is proactively seeking new methods for making the products on the traction market safer and more efficient. Last year its work was recognised with two industry award wins; Supplier of the Year at the Light Rail Awards and an Innovation Award from *Modern Railways*.

Designs are bringing vast improvements to the rail industry, not only making safety cheaper but more efficient, reliable and attainable. Rowe Hankins have several new products that it is currently launching into the market and the whole company is genuinely excited about the future.

Damon Cadman, global sales manager at Rowe Hankins

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Email: mail info@rowehankins.com
Visit: www.rowehankins.com

Motion and control solutions for rail

Parker Hannifin, the global leader in motion and control technologies, will be exhibiting at this year's *InnoTrans* rail exhibition in Berlin...

Visitors to the Parker stand will have the opportunity to see a wide range of components and solutions from multiple technologies on offer to the rail industry and discuss their applications with the company's experts.

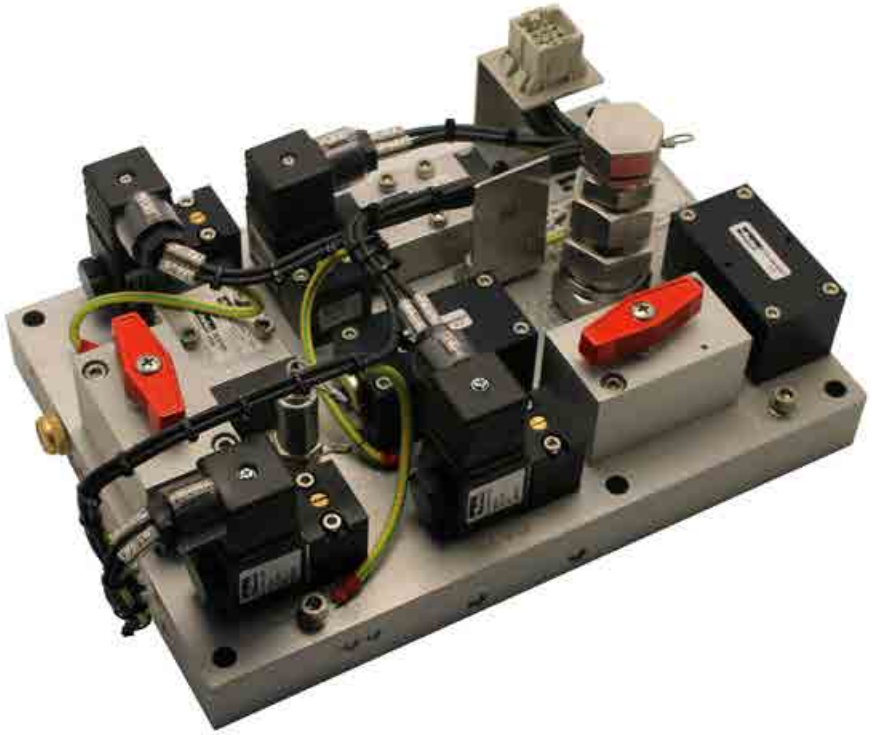
With its broad and innovative product range, Parker is able to satisfy a wide variety of customer requirements for motion and control systems and applications in the rail sector and help drive advancements in the industry.

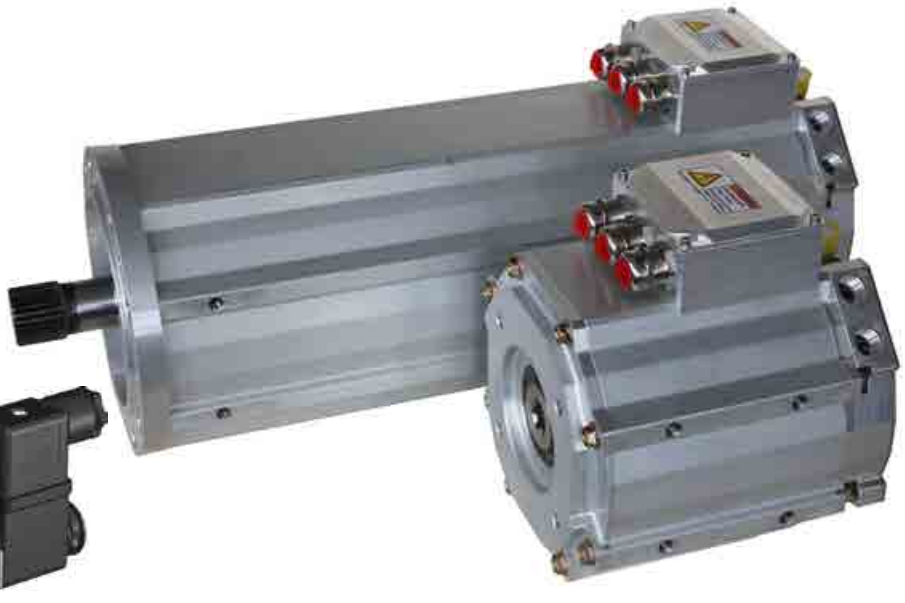
Parker's stand at InnoTrans will feature products and solutions found in all areas of the rail vehicle. These include air treatment and filtration equipment for pneumatic systems, control valves and related components designed specifically for rail applications, plus integrated control systems for applications such as pantographs, doors mechanisms and couplings.

The company's range of rugged hoses and connectors designed and approved specifically for use in rail applications will also be on display.

Examples of Parker's motors and drives used successfully in other sectors of the transportation industry, such as the on and off-road vehicle markets, with potential to be used in the rail sector will also be featured. These include technologies utilised in applications as diverse as electric racing superbikes recently seen at the Isle of Man TT Races, to bus e-steering systems and commercial vehicles ancillaries.

For further information contact Parker at rail@parker.com or visit parker.com/rail









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Birley expertise on show

Birley Manufacturing has more than 140 years of manufacturing experience and has been a specialist in train interior refurbishments for over a quarter of a century

With an annual turnover in excess of £15 million, the company is the UK's largest rail undercarriage protective skirt and egress internal sliding doors provider. The wide expertise of Birley's rail work enables it to produce everything from luggage stacks, panels, galleys and sleeper berths through to cab back walls, equipment cupboards and platform ticket offices.

The team of in-house designers can produce high quality visuals and renders of products for client discussion and the company's collective design knowledge means there are few challenges that have not already been encountered and successfully overcome. This is the first step in a system which allows Birley to design, manufacture, supply and install, having full accountability throughout any project.

On display at InnoTrans will be a full-sized mock-up of a galley. All galleys are to Rail Group standards and incorporate catering equipment such as coffee machines, water boilers, sinks, chiller, microwave combi ovens and other ancillary equipment.

In addition and also on display will be Birley's latest innovation – its Universally Accessible Toilet Module (UAT), a unit that will offer much better access to people of reduced mobility. It has been designed to provide excellent structural integrity in a two-piece modular construction, which is fully compliant with Persons of Reduced Mobility, Technical Specifications for Interoperability (PRM-TSI) requirements. By 2020 all rolling stock companies are required to provide UAT's in their train carriages and the units need to be designed for a substantial lifespan.

The company's extensive in-house knowledge of the rail industry with its stringent safety requirements, materials, operating procedures, testing and rail group standards have ensured the success of this complicated project.

Contact Birley rail manager – James Taylor
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Visit: www.birleyml.com



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A floor for all reasons

Architect **Andreas Vogler**, a finalist in the RSSB Tomorrow's *Train Design Today* competition, will install Tessera Alignment FR carpet in the mock-up of new double decker train, Aeroliner 3000, proposed as a solution to overcrowding

What was your inspiration for the project?
Britain greatly invented the railways in the 19th century, but is now trapped in its historic infrastructure. The UK railway system was grown very fast by many private companies, who made tunnels as small as possible to cut costs. It is at the cost of liberal capitalism that often a greater vision is missing. But that was 150 years ago.

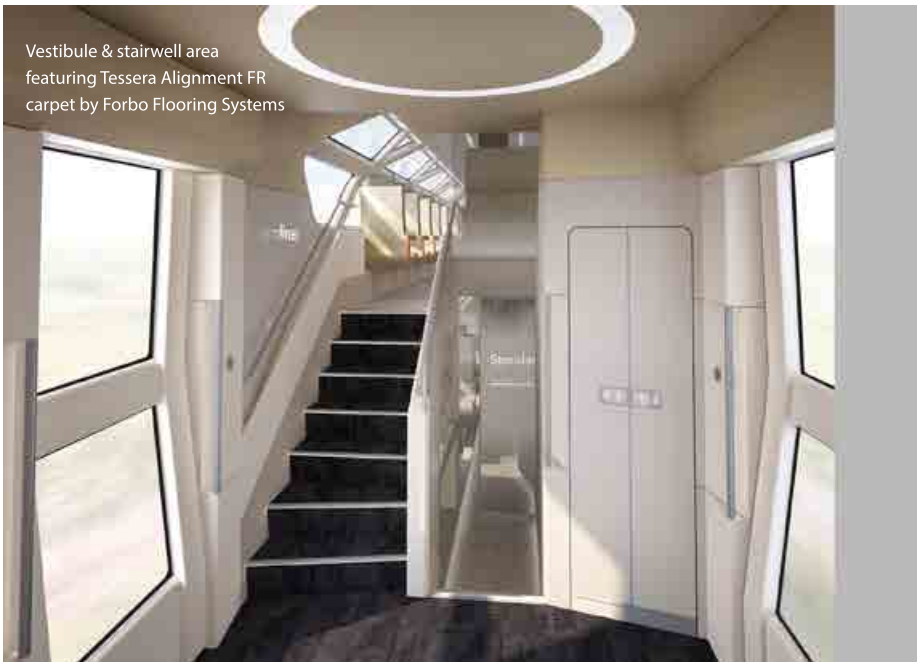
UK rail is a story of success with growing passenger numbers since the 1990's. UK train operators so far have been tackling this rapid capacity growth with seat pitches that reach their ergonomic limits and high prices at peak hours. It is the most expensive railway in Europe. However, passenger numbers keep on growing, because UK roads and skies are filling up.

In Europe, the capacity growth has been combated by double decker trains, which increase a train's capacity by up to 50 per cent without changes to the infrastructure. On the continent, the loading gauge has always been large enough to allow that, but in the UK, this is not the case.

When the RSSB launched the competition of a future train, we wanted to take up the challenge. The very tight infrastructure is a major constraint in our design. Even just 10cm more width on both sides would bring great benefits for the design. In the short-term, the train we are designing could bring a relevant seating capacity increase without affecting the infrastructure at all. In the long-term, we hope it starts a discussion on how the UK can create a rail infrastructure for the third millennium. DLR has already developed some radical but consequent ideas in this direction.



Andreas Vogler's Aeroliner 3000 design concept for Tomorrow's Train Design Today competition



Vestibule & stairwell area featuring Tessera Alignment FR carpet by Forbo Flooring Systems

What is the vision for the interior design scheme?
The main purpose full-scale demonstrator we are building to show at InnoTrans in Berlin, is to demonstrate the feasibility of the concept, carry out ergonomic studies and allow the general public as well as the UK's industry leaders to form an opinion based on hard facts and not just speculation. However, the challenge was to create an interior design which offers comfort in a small space, but which does not distract from the basics of architecture: space and light. The larger vision for the interior design is how to create an interior that can withstand the special conditions of railways – as compared to airlines for example – but bring back something of the nobility and elegance that travelling can and should have. It should feel like being in a private jet or an elegant car.

How can interior design enhance rail passenger experience?
Before the interior design comes the architecture of the coach. We were very lucky to work closely with the brilliant engineers from the German Aerospace Agency, DLR, to develop a very lightweight coach structure with generous windows within the extremely confined British loading gauge. Then, the interior design has to provide the skin for the engineering and architecture of the coach. It is everything you touch with your senses: with your hands, your eyes, your ears, even smell. This is all essential when you think about colours, materials, illumination, ventilation and heating. You have to understand your design not only from a technical and standard point of view, but from a human point of view. It is not only about durability, maintenance and cleaning, it is about supporting the passengers to experience the relaxation



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Split level carriage design to increase capacity on British railways



Standard class carriage featuring Tessera FR carpet by Forbo Flooring Systems

or excitement of travel, giving them a temporary home or office: psychological and physiological comfort and a feeling of safety and trust. All of this works directly into design decisions and the value of this design process for the interior should not be underestimated, especially in trains. Airline operators understand this much better, because there is more competition.

How can good flooring contribute to the interior of rail vehicles?
Flooring has an immediate impact on whether a space feels comfortable or not. It is the impact on acoustics, walking, illumination and hygienic impression which makes that. A good floor covering should make you feel like you could sit down on it as in your living room or an Italian Piazza. The quality of the flooring has an immediate impact on the quality of the space. The flooring supports the seats and the quality of each element should work together.

What are the main factors you consider when deciding on flooring for rail projects?
Next to durability in a technical and aesthetic sense, the impact of acoustics with, for example carpet, is very important. In a train, which constantly has some accelerating and movement going on, the flooring should prevent objects sliding around and give people walking through the train a stable hold. The flooring should be as lightweight as possible to save energy, but also be solid enough to dampen noise and vibration.

What made you choose Tessera Alignment FR?
Tessera Alignment FR is a railway certified carpet, which has the feel of a carpet that you may also find at home or in a hotel. It doesn't feel itchy and scratchy when you look at it or even touch it. This is very important. Also, the pattern is visually interesting and in the elongated proportion of a train coach, you can use it to widen the perception of the space. At the same time, it is very forgiving against staining and soiling.

Do you think there is a growing emphasis on interior design for trains?
Trains were the first form of mass transportation 150 years ago. There were trains exclusively for kings, and politicians also had special campaign trains. During the 1960's, with the competition of private cars and airplanes, trains degraded rapidly. Only high speed trains are now bringing back a little bit of former elegance. However, trains are the most environmentally friendly form of mass transportation and they bring you directly into metropolitan centres. I think that train and station operators especially should actively work against the decline of the European idea of public spaces as being safe, clean and beautiful. It starts with the cultural effort that everybody, from the passenger to the operator, is undertaking or not. If train manufacturers design interior spaces only under the aspect of maintenance and vandalism, they may look just that. If they design it under the aspect of the cultural achievement of train travel and the European idea of free public space, they may look very different. I have never seen any vandalism and graffiti on good Italian piazze. So, to answer your question: I don't know if there is, but by my recommendation is there should be a growing emphasis on interior design for trains and stations, yes.

A mock-up of Andreas Vogler's train concept will be on display at InnoTrans in Berlin, 20th - 23rd September.

Credits:
Design Team: Andreas Vogler Studio – Andreas Vogler, Matteo Mazzero, Sylwia Pawlowska, Sebastian Wolf
Engineering: German Aerospace Center, Institute of Vehicle Concepts DLR, Dr. Joachim Winter, Jens Koenig
Consulting: Design and Project Management: Robert Künzler, a|p|t Design, Munich, DE
Client: RSSB, UK
Renderings: ©Andreas Vogler Studio

Visit: www.andreasvogler.com / www.dlr.de

Companies and products involved in demonstrator construction and outfit:
Main contractor for demonstrator:
GETA mbH, Wangen, DE
Structural analysis demonstrator:
IB-Reinecke, München, DE
HPL: Abet GmbH, Herford, DE
Electrics:
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Doncaster means business

Doncaster has been a hugely successful rail town for more than a century. Google 'Sir Nigel Gresley', 'The Flying Scotsman' and 'Mallard' or look at the main exhibits at the National Railway Museum if you need convincing, says **Andrew Webb**

We are very proud of our past but we prefer to focus on the here and now and our ambitious plans for the future. Doncaster is on the up, we have a great future to look forward to and here are just a few reasons why.



Key developments

Doncaster fought off significant competition to secure the £25 million National College for High Speed Rail. It is currently under construction and will open in September 2017 to more than 1000 students per year. It will train the new workforce required to develop high speed rail and meet the needs of the wider rail sector throughout the UK The brand new £70 million Hitachi Intercity Express Programme depot is currently under construction and due to come into service by the end of 2016. The depot will be a centre of excellence for the servicing and maintenance of Hitachi's new fleet of intercity express trains – another major coup for Doncaster

Our incredible £500 million inland port facility covers six million square feet and includes a 35 acre dedicated intermodal rail freight terminal. The iPort is being developed by Verdion and has been brought to life with the opening of the three mile Great Yorkshire Way access road. Several units are already under construction for end users (http://iportuk.com/about/).

These developments add significantly to a growing rail cluster that includes international businesses such as Hitachi, Wabtec, Volker Rail, Unipart Rail, Rhomberg Sersa, Schwihag, Skanska, Amey, DB Cargo, Progress Rail, EMD, Carillion, SPL Powerlines, Freightliner, GB Rail Freight and Thales.

There is little doubt that Doncaster's fantastic connectivity is helping to drive this growth: rail connections to London in just 90 minutes over 40 times a day. Major cities such as Birmingham, Manchester, Edinburgh and Glasgow are easily accessible with direct services. Hull and the Humber port, home to the UK's largest port by tonnage is 60 minutes by rail or road, Liverpool port is just under two hours.

Aer Lingus operates transatlantic services from Doncaster Sheffield Airport (DSA) (via Dublin) to New York, Boston, Chicago and Toronto with the added bonus of utilising the US pre-clearance facility at Terminal 2. This allows passengers to clear all US immigration and customs inspections prior to departure which will be particularly attractive when the PGA golf resort opens in Doncaster.

New Flybe services from (DSA) now regularly serve European airport hubs in Paris, Amsterdam and Dusseldorf. The Doncaster rail cluster will also be taking advantage of the service to Berlin that will help transport them to Innotrans, the leading international trade fair for transport technology, held there every two years. Businesses from Doncaster and the Sheffield City Region will be well-represented at Innotrans with something of a delegation travelling to exhibit and network with organisations from across the globe. Business Doncaster with our colleagues and partners in UKTI, Sheffield City Region and Birmingham will be supporting local businesses, the National College for High Speed Rail and promoting the many inward investment opportunities in and around Doncaster.

With the government investing more than £38 billion by 2019 and significantly more to come, the rail sector is booming. The industry contributes around £7 billion per year to the UK economy and sustains over 80,000 jobs in the supply chain – Doncaster businesses will be competing to take their fair share.

If you would like to be part of the growing Doncaster rail cluster or if you're exhibiting at or visiting InnoTrans 2016 and would welcome the opportunity to find out more please contact Andrew Webb, rail sector development manager, Business Doncaster
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Email: Andrew.webb@doncaster.gov.uk



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Achieving Access for All

Stannah looks at how it delivered accessibility in a £20 million Network Rail upgrade at Leeds station's new Southern Entrance

Once again, Stannah was the chosen supplier and installer of all vertical transport systems in Leeds station's Southern Entrance (LSSE), a £20 million project linking the station with new commercial and residential leisure developments to the south of the city.

This choice was based on the strength of Stannah's escalator and lift pedigree with Network Rail's ongoing revamp of the UK's rail network – the most recent being multiple installations in Birmingham New Street station, with two previous lift installations at Leeds station itself.





Leeds Station

Opened in 1938 and rebuilt in 1967 and 2002, Leeds station is the busiest in the North of England and second busiest outside London, after Birmingham New Street and Glasgow Central. Owned and managed by Network Rail, it has a footfall close to 29 million.

Over the past ten years the area to the south has undergone significant growth and regeneration. Major new office and residential accommodation has been created such as Bridgewater Place (nicknamed The Dalek), plus new residential leisure facilities including the DoubleTree by Hilton Hotel, just five minutes from the station.

The Southern Entrance

The new developments to the south of the city created demand for a new pedestrian entrance from the southern aspect of the railway station. Now, up to 20 per cent of the rail passengers benefit from it, all of them relying on stairs and *Stannah's four escalators and two passenger lifts* to bring Access for All (AfA), whatever their level of mobility, including wheelchair users, in accordance with the requirements of the Equality Act 2010.



The iconic new structure straddles the River Aire and includes a new concourse on the extended western footbridge in the station over platforms 15, 16 and 17 and provides customer information screens, ticket vending machines and automated ticket barriers.

A new low-level concourse at river level provides stepped and step-free access links to the east and west sides of the river, including to Granary Wharf, Little Neville Street and Neville Street.

The Stannah lift products

The four escalators: provide continuous vertical transportation for ambulant people.
The two passenger lifts: travellers with bulky and/or heavy luggage, baby buggies or wheelchair-users are well provided for with two bespoke 13-person traction passenger lifts located inside the entrance.

Challenges and solutions

As with any idiosyncratic project, LSSE had its unique constraints – the timescale and a dinky footprint that had to be worked around to ensure a successful outcome:

#1 Performing to a tight timescale

A twelve week start to completion was required for the installation of the four





escalators and two passenger lifts to meet the deadline of a 3rd January 2016 opening. The work was completed by the Stannah Escalators & Moving Walkways Department and Stannah Major Projects team, with activity on-site 24/7 to ensure the deadline was met.

#2 Tailoring to a tight footprint

The new entrance was essentially an infill between two buildings – the width of the River Aire. To accommodate these space constraints, some of the lift and escalator features had to be modified to achieve the design and vision without compromising safety.

The lifts had restricted space so machine room-less traction equipment was installed to enable the largest capacity possible within the tight footprint of the new building.
The escalators are to NR specification with some additional bespoke features based on the tight constraints installed to ensure safety was at the forefront. These comprised of special software so that all the machines operate to a special design philosophy when stopped in an emergency situation, including installing an additional stop button on each machine during mid-travel. Bespoke manufacture of the machines at 35° instead of the standard NR specification of 30°, and the reduction of the speed of the machines from the standard NR .65m/s to .05m/s all result in safe, efficient travel within the constraints of an unusual and stunning building design. With no room for housing external controllers, these became an integral part of the escalators.

Summary

As a key player in a dynamic, demanding working relationship, Stannah delivered in products and performance. Its total project management capability helped to optimise the flow and transport of people throughout an increasingly hectic transport environment. The new pedestrian entrance will be a great benefit to people living and working south of the river, and will open up new travel opportunities providing a further stimulus to redevelopment and expansion of the city centre, and will support the continued regeneration of the southern quarter of the city.

Stannah escalators and moving walkways and major projects

These dedicated teams exist to provide all aspects of a project at one single point of contact. Individuals within the team are skilled in project planning and management, estimating, technical operations, logistics, product design and engineering, field managers, installation engineers, health and safety and quality control that together drive the project.

The full service

All the Stannah lift products at Leeds Station Southern Entrance are supplied with guarantees and will be maintained by the North West England & North Wales branch of Stannah Lift Services as part of a nationwide service and maintenance contract with Network Rail.

> This project presented a time challenge, particularly as the twelve weeks on site were in the run up to Christmas with footfall building around the station. Despite an unusual site with restricted space my team pulled together to ensure we delivered our promise of safe, reliable escalators in place and operating efficiently by 4th January 2016. Delivery of the escalator trusses was completed at night to minimise risk and installation went smoothly.
> David Saunders, department manager, Stannah Escalators & Moving Walkways, Stannah Lift Services



£20m new Southern Entrance
12 week installation timescale
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BIM electrification

The use of BIM for electrification projects is in its infancy. But if we can all get over the cultural changes required, there are significant benefits ahead, says SYSTRA's **Adrien Bobillot**

The Ostlänken project, part of a national high-speed rail programme to connect Sweden's three main cities, Stockholm, Gothenburg and Malmö, is one of the first to require the use of BIM (building information modelling) for all parts of the project. This whole-system approach to BIM puts Sweden ahead of the game, and offers us the chance to make advances in the way we use BIM for electrification.

BIM is also starting to demonstrate some significant potential benefits for electrification projects on existing lines. With this type of project, we can really see the vision for a digital framework coming together, with information about existing structures and services interfacing with designs for upgrades and then feeding into construction and maintenance planning.

Though BIM is often expressed in terms of the model itself - a shared 3D model which can also encompass the elements of time (4D), cost (5D) and maintenance information – a better way to think about it is as a tool which aids collaboration. BIM will bring a new way of working, although not overnight: individuals and companies need time to change and will experience varying degrees of difficulty in doing so.

The use of BIM on railway projects is currently limited to a few flagship projects and often used for discreet elements such as stations and depot buildings or complicated tunnel junctions. London's Crossrail has been one of the pioneers, motivated largely by the UK government's mandate that all projects funded by central government should be BIM-compliant from April 2016. HS2 may take the adoption and use of BIM a stage further, involving lower levels of the supply chain, rather than just the main contractors and consultants.

Major projects in other countries are also employing BIM. For example, SYSTRA engineers are using BIM for the design of the stations for the Grand Paris project which will see the extension of Paris's







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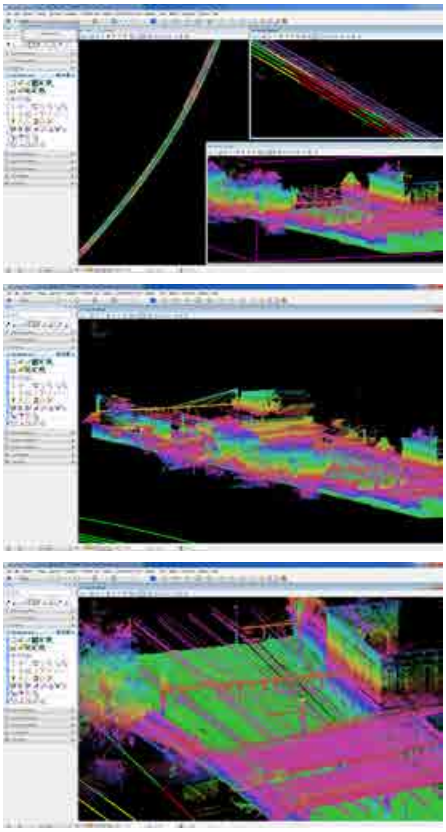
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BIM software is increasingly being used for rail projects, helping planning and design

underground network. We also employed BIM in the design of several depot buildings in France, USA, Algeria and Saudi Arabia (for instance for the Mecca Metro).

In Germany, the Federal Ministry of Transport and Digital Infrastructure has announced that it plans to use BIM for all large-scale transportation projects by 2020. A number of pilot projects will help pave the way, including the Rastatt Tunnel on the Karlsruhe-to-Basel railway line and the Filstal Bridge on the Wendlingen-to-Ulm line.

While the use of BIM for the design of stations is developing at a reasonable pace, engineers are only starting to apply it beyond the stations now. BIM software was developed initially for the construction of buildings; the linear nature of a railway line is very different, requiring adaptations to the software and systems used in a BIM model.

The Ostlänken project, where SYSTRA is working in joint venture with COWI on the section between Stavjsö and Sillekrog and various projects in France have provided an opportunity for us to work with a number of software suppliers to develop BIM for electrification. As well as providing intensive training to help our electrification team shift to this new way of working, it has been necessary to develop a library of objects to adapt the model to the requirements of the particular client and country.

BIM could also demonstrate its value on a project to replace 120km of overhead line for Paris's RER Line C, a project which



Large infrastructure projects like Crossrail are reaping the benefits from widespread use of BIM - during the design and construction phases, but importantly BIM will help future maintenance regimes too

is currently out to tender. This is a complex and costly project involving many interfaces with existing structures and infrastructure. With the client having provided a digital survey of the existing overhead line equipment, using BIM will bring many benefits. It reduces the time needed for on-site surveys; it lowers the risk of clashes and unexpected problems during the installation phase; and it can be used to construct elements virtually which is particularly important where works are complex or must be carried out during limited periods, such as night-time possessions.

BIM also helps ensure better safety in operation. For instance it offers the opportunity to virtually drive a train through the refurbished line, checking that the overhead line structures and equipment do not obstruct the driver's line of sight to signals. Similarly, we can preview the views of the platforms and stations from the train before any physical work is done.

The ultimate benefit of BIM – and the reason why BIM was developed in the first place – is that it can help manage the maintenance of assets. Information about the predicted performance and lifetime of products and elements is attached to the model and can be used for maintenance planning – and then updated to inform future decisions. However, the use of BIM needs to mature across the rail industry before this vision can be realised. The challenge we face in the rail industry is that we are in the early stages of adoption of BIM. Collaboration is at the heart of BIM, but with different companies at different stages, this can be difficult.

Many across the industry are keen to benefit from the savings and efficiencies that BIM can bring, but we are all at the beginning of the change journey. So, for example, some may require the use of BIM but are reluctant to share the input data required to make the model meaningful. As an industry we need to address this challenge.

For those who have not started on their BIM journey yet, I would urge you to make a start. BIM is coming and it will revolutionise our industry; it makes sense to be prepared for those changes.

Be brave, find people in your organisation who can confidently lead the process of change, both technically and culturally. BIM is on its way, let's embrace it together.

Visit www.systra.com

Keeping up appearances

Patience Atkinson-Gregory of **Amberol** explains why it's important to keep stations looking good

We are fortunate in the UK to have some delightful station buildings, ranging from the historic Victorian stations that were once the focal point of their community, through to exciting new facilities such as Birmingham's renovated New Street Station.

However, travelling habits have changed, which means that stations have also changed. Even smaller stations are likely to have food and drink facilities, while larger town and city centre stations often have numerous retail and refreshment units. Stations have become places where people buy products and spend time drinking, eating shopping or working- as well as waiting for trains. This means that keeping a station looking appealing is an important commercial factor.

If you don't have a lot of money to spend on refurbishment or construction, there are a couple of areas that can be tackled quite cheaply to make a real difference.

Think floral

One way of giving a station an immediate facelift is the introduction of plants and flowers. A great floral display is relatively cheap to create, but can be a really effective way of bringing colour to a station building or platform. One of the easiest and most economical ways of doing this is through the use of planters, which offer several advantages over traditional flower beds:

- they require no construction
- they come in all shapes and sizes; from tiered planters for stunning centrepieces to up the pole baskets to create cascades of colour at different levels
- you can put them almost anywhere – and move them around (although planters should be heavy enough to meet health and safety concerns). Alternatively they can be easily secured
- self-watering planters are easy to maintain as they only need watering once a week, creating optimal growth conditions. In addition, reducing watering frequency helps to address health and safety concerns around running long hose pipes along public areas.

A communal effort

Many smaller stations use volunteers from 'adopter' or 'friend' schemes to help with planting and maintenance. Community groups such as Britain in Bloom are also often involved with their local station. For example, the Friends of Norwich in Bloom installed large floral fountains at the entrance to Norwich station. The planters are sponsored by local businesses, which pays for planting and maintenance.

At Amberol we have found that local companies are often happy to contribute towards the cost of container purchase or planting in return for a plaque to mark their help. Businesses are keen to be seen to be supporting their community, while having attractive public areas such as stations which are often gateways for visitors, is important for the local economy.

A strategy for litter

Unfortunately, a by-product of food and retail outlets is litter. All stations need some form of strategy to tackle this issue. Although this means ensuring an ample supply of litter bins, there is more involved than simply placing bins around the station.

We often advise customers buying Amberol bins to start by carrying out a litter audit and identifying where problems occur. Then decide if your bins are fit for purpose: do they have the right shaped aperture? Are they vandal/wind proof i.e. do they have a hood or some form of lid? Are they the right size? Can they be easily seen? Do they offer recycling facilities? All these questions need to be addressed to keep your site clean and tidy.

So, take a look around your station and see if you can make some simple improvements to make it more attractive to travellers. You might be surprised at the difference it could make to both customers and staff.

For advice on self-watering planters or Amberol's range of litter bins
Tel: 01773 830 930
Email sales@amberol.co.uk or
Visit www.amberol.co.uk.

Patience Atkinson-Gregory is MD of horticultural manufacturer Amberol, a supplier of self-watering planters, benches and litter bins (including speaking ones) to railway stations and network, local authorities, educational organisations and businesses.



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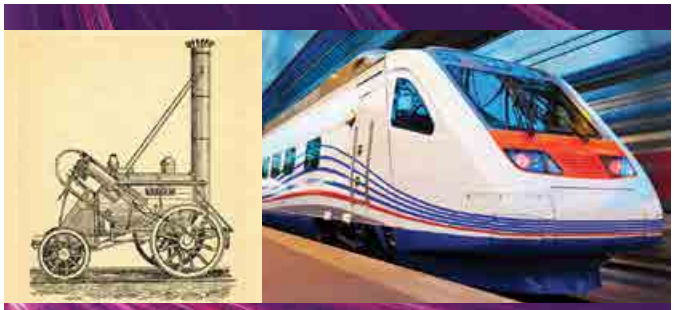


We have built equipment designed to be transported to client's sites or within our own training centre to be moved to other classrooms giving us more capacity for delivering practical training.

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Gordon Services UK Ltd is an Electro-Mechanical engineering company providing a fast, comprehensive and cost effective service for the railway industry. Established in 1993, Gordon Services is now a leading force in the overhauling of components and products from all types of rolling stock throughout the UK. The Company has comprehensive workshop facilities, which comprise both cabinet shot blasting and external pot blasting facilities, (used for cleaning heavily soiled components) and spray booth facilities with controlled heat and humidity (for the spraying of various components).

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Our fully skilled workforce consists of engineers, electricians and coded welders who are certificated to BS EN 287 level for Pressurised Vessels; and the company itself is accredited with ISO 9001/2008 Quality Assurance and ISO 14001 Environmental Policy to ensure that our procedures are maintained to a recognised standard.

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How to avoid analysis-paralysis

Business analytics has a far wider reach than just the IT team; for anyone within the rail industry using the IT systems already within your organisation more effectively could make a big difference

We've all heard the terms: business intelligence, big data, business analytics – surely it's not really relevant to anyone but the IT department?

Well, except those managers and senior executives who want to be able to understand existing performance, forecast future results and make informed business decisions, based on data already held by the organisation?

Business analytics has a far wider reach than just the IT team; for anyone within the rail industry, using the IT systems already within your organisation more effectively could be the difference between intelligent business decision making and straws in the wind. Business analytics is used by rail organisations to obtain an insight and understanding that helps with the corporate decision-making process.

The benefit of a sophisticated business analytics application is that it can be automated and optimised to explore company data held within an application, such as Oracle, to identify new patterns and relationships, explaining why specific results occur, experimenting to test previous decisions and forecasting future results. Whether it is to model passenger movements, test financial scenarios around new pricing or predict health and safety situations.

Why consider business analytics to give your organisation a competitive edge? Business analytics is made up of solutions that are used to build analysis models and simulations to create scenarios, to understand realities and predict future states. Whether it is for signalling, platforms or asset management.

Using business analytics helps any rail organisation to exploit the full value of their data assets, answering complex questions such as:

- Where is your organisation now?
- Where do you want your organisation to be?
- How big is the difference between your aspiration and actuality?
- What's next for your organisation and how will you get there?
- How will operational change impact your strategic goals?

Using effective analytics on your existing data means you gain insights that inform business decisions that can be used to automate and optimise business processes. This could be around infrastructure projects, management reporting, customer satisfaction or business efficiencies through technology.

As a leading business analytics consultancy within the rail industry, Prōject (EU) works with a number of industry leading rail organisations to develop and deploy analytics solutions that can correlate vast volumes of data, drawn from many disparate systems, in order to help individual teams deliver better results. This is through a variety of options including:

- interactive dashboards
- ad-hoc reporting
- scorecards, KPI's and decision trees
- mobile analytics
- delivered analytics
- pixel-perfect printed reports
- actionable intelligence
- pre-packaged reporting content
- custom-built business intelligence applications



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Demonstrating the value of your portfolio

One particular element of business analytics which is receiving more board attention is earned value. This is a business critical approach for any rail organisation involved with large-scale projects, programmes or portfolios of work, particularly those involved with capital projects and infrastructure.

Using business analytics to generate earned values provides the organisation with a transparency around the budget and time allocation to date, the forecast and the remaining work to be done. Organisations are increasingly working with Prōject (EU) to adopt earned value because it provides the opportunity for project sponsors to forecast whether there is any cost or schedule overruns at an early stage in a project.

The benefits of this earned value approach includes the maintenance of a master contractors list based on performance and delivery, generating a report if a negative accrual was reported and giving clear line of sight around earned value both on individual projects and the portfolio as a whole.

The financial plans also identify the planned value and supply the cost of work done, forecast of project task by future periods and proposal estimates. This vital mapping function links the Oracle Project task between the contractors, internal costs and contingency, providing an integrated joined up story.

So no matter what they say – by adopting business analysis you are giving your team and your organisation a real strategic advantage.

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Nearly 100 years of innovation and design

For nearly a century since its foundation, the **RAWLPLUG®** brand has been synonymous with innovation, reliability and safety in the development and manufacture of construction anchors and ancillary products

Rawlplug is approved by London Underground and Network Rail. Its technical personnel liaise with construction professionals on a daily basis, ensuring that the most appropriate anchoring solutions are selected and that future product developments reflect the trends within the industry.

Rawlplug's focus is on delivering the highest quality products cost-effectively. Wherever its products are purchased in the world the quality remains consistent, enabling engineers to specify with confidence.

Whether specifier, contractor, distributor or a user of Rawlplug's products, the company is available for free advice in addition to site testing, product training and technical seminars.

Rawlplug was founded in the UK 97 years ago and today is one of the best-known brands in the construction, trade and DIY industries. Its growth and development, particularly in resin technology, has been significant and the company's range now includes three methods of resin delivery: capsule, cartridge and foil sausage. Consider the range of structures that engineers and contractors have to work with and fix into: new and old, low and high strength, solid and hollow, overhead and horizontal, deep and shallow embedment, dry, dusty and damp or saturated substrates.

Rawlplug® now offers a range of approved façade and roofing insulation fixings, self-drilling screws and direct fastening systems, which complement the company's existing products. All its products are fully supported by approvals, test data, and experienced engineers who can provide site testing and solutions for all applications.

Rawlplug's 2016 Specification and Design Guide and design software is now available, covering the full range of anchoring products on offer from the company.

Latest product developments

Rawlplug® has recently launched a new high performance mechanical anchor, SafetyPlusII, which has Option 1 ETA for cracked concrete and seismic approval C1 and C2, the latest in a long line of innovative products from the oldest fixing company in the world. The company also has a new, high quality concrete screw anchor that will be launched in 2016.

With recent developments of the Rawlplug® R-KEX II Pure Epoxy cartridge system and the R-KER Vinylester cartridge system – both with ETA Option 1 for cracked concrete – and the CFS foil system, the range is comprehensive. These products can also be used overhead.

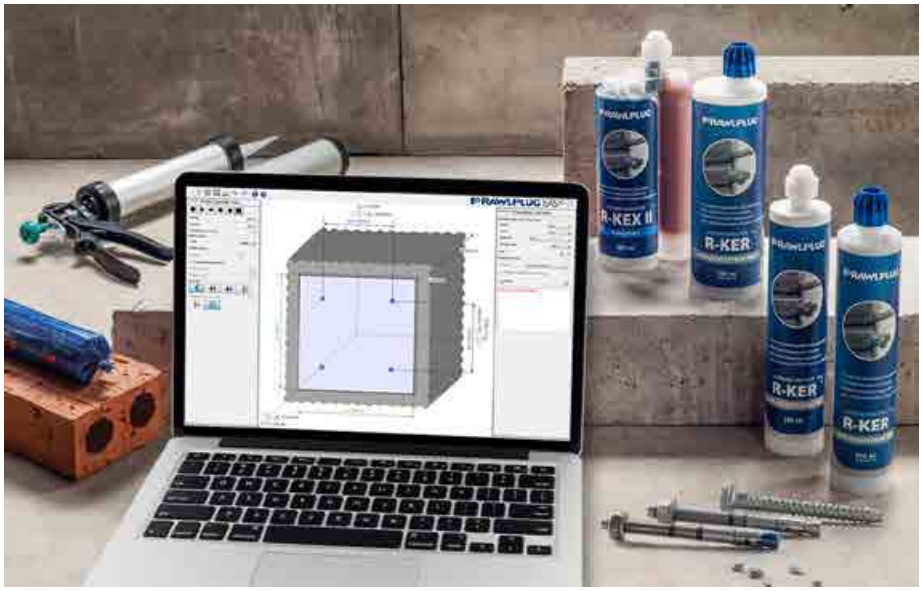
The new, environmentally friendly R-CFS is a cartridge-free system where the resin is contained in a foil sleeve. Three types of resin are available including Vinylester styrene-free and polyester styrene-free, depending on loading and structural requirements. It's an economical system due to the fact no plastic cartridge is required, so waste material is insignificant. A new improved gun is available that is easier and more comfortable to use.

Resin

Rawlplug's other recent development is a low temperature resin. The current R-KER Vinylester, styrene-free, 380ml cartridge system operates down to -5 oC, however, the company has now created R-KER-W, which can be used down to temperatures of -20 oC. With reduced curing time, R-KER-W is ideal for use as a fast-cure resin in warmer temperatures.



Bonded and mechanical anchors





R-KER and R-KER-W are high strength resins that give maximum loads in concrete when used with threaded studs or rebar. Embedments can be deeper to increase load capacities, and pumping is easy due to the resin's consistency.

Bonded anchor

Finally, there is the R-CAS Capsule system, the original bonded anchor that consists of glass capsule, resin, quartz aggregate and hardener. The capsule is placed in the hole (only for solid structures) and the stud is connected to a drilling machine and drilled through the capsule to the bottom of the hole, mixing all the components as it goes. This is a high performance system that cures quickly with absolutely no waste materials or pollution, even working well overhead.

For applications involving Rebar, the R-HAC Hammer Capsule is an easy solution. To install, simply drill the required hole, drop in a capsule and hammer the rebar in by hammer, while for multiple capsules use a hammer-action drill.

Also included in the mechanical anchor range are SafetyPlusII, R-HPT and R-XPT Throughbolts; the original Rawlbolt (now with Option 1 European Technical Approval); the general purpose Rawlok sleeve anchor and two types of Wedge Anchors.

Are You BS 8539 Compliant?

BS 8539:2012 - Code of practice for the selection and installation of post-installed anchors in concrete and masonry.

Do you comply? Did you know if you change a specification to another anchor without following the full selection process, you could be held accountable for any accident? Rawlplug can help you comply as a founder member of the Construction Fixings Association (CFA), the body that represents major fixing suppliers in the UK. All full CFA members are committed to providing technically proven products manufactured to recognised quality assurance procedures. Rawlplug helps support specifiers, contractors, installers, testers and distributors by providing FREE technical and software support. Our large team of experienced engineers and technicians; based throughout the UK, is available for site consultations, testing and giving you the correct advice and information to make your job a safe one.

Technical advisory service

Rawlplug's specification team provides a complete package of technical support, from the design stage of a project to its completion. Provided nationally, the company's service involves the recommendation of an appropriate product taking into account the structure, life expectancy, location, load applied, and other related criteria.

The company is pleased to check the design and specification of any product from lightweight fixings to heavily loaded safety-critical anchors. This ensures that the correct specification is written for any product and includes the required safety factors to ensure that the anchor works satisfactorily throughout its product life.

The company's technical advisory service, based in Glasgow, can be contacted between 9:00am to 5:00pm and provides information, technical data and samples. It can also arrange for an engineer to visit offices or sites.

Technical seminars for all specifiers, including structural, civil and mechanical engineers, are conducted during lunchtime and subjects include the correct selection of mechanical and bonded anchors, with reference made to applications and case studies. Rawlplug also provides some details on its design software and new technical data. The seminar can be conducted for any number of people, is normally carried out at the clients' premises and focuses on relevant topics.

Rawlplug's newly refurbished training centre in Glasgow enables groups of up to 12 people to be trained on the correct methods of installation and provided with technical knowledge and applications across the range of products.

Field engineers

Skilled professional technical engineers cover all of the markets that Rawlplug operates in and are available to offer fixing advice at company offices or building sites. The company's team of field engineers has many years of experience and offers a complete technical support service that includes:

- advice on anchor selection, usage and application
- on-site testing
- technical seminars
- distributor training.

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Crossing continents – in safe hands

Guarantee the performance of critical power systems across global operations with the latest advances in integrated power technology

With continued growth in global passenger rail – fuelled by long-distance and high speed cross border travel alongside investment in urban light transit and metros – the delivery of an optimised network performance while managing the total cost of ownership is a critical challenge.

Ongoing investment – particularly in technology – will enable rail to remain an attractive mass transportation choice as well as being commercially viable in terms of the movement of goods. A growing population, rapid urbanisation and sustainable development are all contributing towards an increasing demand for rail transport. The ongoing modernisation of networks, including systems interfaces with digital technology, can deliver important reductions in operating costs. In turn, traffic capacity and overall network quality can be improved – improving the long-term competitiveness of rail operators and enabling the service to evolve to meet the changing needs of its customers.


Socomec Modulys IP+


Socomec Modulys RM

Global networks, local solutions

Although rail systems operate in broadly similar environments around the world, each territory can be defined by its own set of unique characteristics that determine how the system is used. There are, however, a set of common concerns held by those responsible for maintaining national and international rail networks including the safety of passengers and operative personnel, the provision of a reliable electrical infrastructure and the maximum availability of the critical power supply.

Market leader Socomec understands that the guaranteed performance of installed systems is vital – and that the system must perform within the specific constraints of a territory, while also meeting the required specifications and standards of a particular country.

Colin Dean, Socomec's UK MD, said: 'Whether planning a new installation or retrospectively upgrading an existing facility, Socomec can develop a low voltage electrical solution to a client's precise specifications. Our highly experienced projects and engineering groups can work with the client's engineering team to optimise system performance and robustness and ensure the client's unique requirements are met through customised solutions. Furthermore, we work in partnership with our customers' engineering and commercial teams to ensure that the necessary approvals are obtained so that system installation and integration activity can be completed as planned.'

A track record in integrated power solutions

Delivering solutions for traction power, signalling, buildings and on-board rolling stock systems, Socomec provides electrical power solutions for all rail facility applications.

Rail networks, high-speed trains, regional train networks and train stations are served by Socomec in key European territories, as well as India and Russia. Urban transport networks are also protected by Socomec technology; from tramways across France to metro and underground facilities in the UK and Europe, China, the Middle East and Russia.

A key partner in high profile critical power projects to develop or regenerate railway building infrastructure, Socomec's flagship developments include Barcelona's city transport data centre, power supplies for safety lighting and fire safety systems on the regional Paris network, and power supplies for emergency lighting and communications systems for Kings Cross Station in London.

A solution for every challenge

Whether planning a new installation or upgrading an existing facility, Socomec's low voltage electrical solutions for rail specific system architectures guarantee network safety and robustness, even in the most challenging operating environments.

High performance critical power – PAD's approved

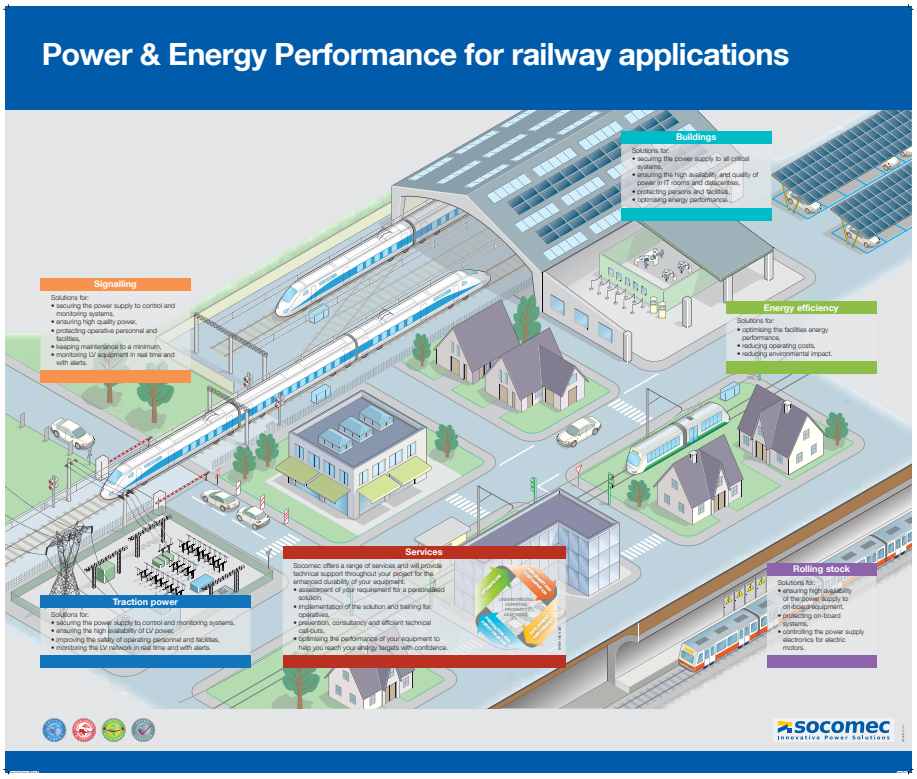
Socomec's PAD's approved IP+ Rail range provides the very latest UPS technology for the mass transportation sector. Housed in a compact, robust, steel-framed enclosure, the system has IP31 or IP52 ingress protection as well as anti-corrosion tropicalised circuit boards: this system will operate where conductive dust or dripping water may be present.

The electromagnetic disturbance immunity level is double that required by European EMC standards and has been independently tested and certified to pass EN 50121-4 and 5. Furthermore, low smoke, zero halogen cables are fitted as standard.

Rack-mounted modular UPS - for easy, fully-assured and time-saving integration

Socomec's Modulys GP is a 3-phase modular UPS system designed for 19" rack integration across multiple applications. Easy to integrate and install whilst simple to manage and maintain, it provides maximum availability and power protection in a compact design – leaving space for other rack- mounted devices.

As a completely modular system – designed with no single point of failure – Modulys RM GP delivers reliable power



whilst ensuring optimum load protection, even during power upgrades or maintenance procedure.

Advanced switching solutions – approved for use by LUL

Socomec's Sircover and AtyS Automatic and Static Transfer Switches have been engineered to enhance power availability and simplify the electrical architecture, ensuring standby and alternate power availability.

Colin Dean explained: 'We have taken switching and protection technology from across our business and adapted it to develop products which perfectly match the demanding requirements of the rail sector.'

With ongoing investment in development, the Socomec ATyS has been approved for use by LUL (London Underground Limited) as an integral part of a complete system. Certain conditions apply; please see LUL 'Product Registration Certificate 3067' for full details.

Fully certified to BS EN 60947-6-1, ATyS also meets the requirements of BS EN 9999:2008 and BS 8519:2010 when enclosed by Socomec.

Power through control

Socomec's compact Diris Digiware system delivers the most advanced energy monitoring, measuring and management solution, delivering control over energy costs whilst improving both energy quality and efficiency – vital for the unique demands of the rail sector.

A fully digital, multi-circuit plug and play measurement concept, with a common display for multi- circuit systems, Digiware is compact and quick to install, and provides the industry's most accurate and effective metering, measurement and monitoring of electrical energy quality. Infinitely scalable, it is capable of monitoring thousands of connection points.

Socomec's Diris Digiware system offers an accuracy of class 0.5 to IEC61557-12 from two per cent to 120 per cent of the current sensor primary rating.

Ongoing performance

Delivering innovation to the rail industry also requires ongoing support to ensure that the installed systems continue to operate at optimum performance levels.

Nick Golder, UK infrastructure sales manager explained: 'We understand the importance of maintaining vital equipment while also being mindful of our customer's operating costs. Our dedicated engineering teams will ensure business continuity, optimising efficiency and guaranteeing the safe performance of the network's electrical infrastructure. Our specialist engineering team and approved subcontractors have the necessary trackside training and accreditations to install and support equipment, throughout its lifecycle.'

Innovation for tomorrow's world

Sustainable development is high on the agenda for Socomec when working with key partners, particularly in order to ensure that the environmental impact of rail transport is reduced. Solutions have been developed to facilitate the implementation of energy efficiency policies, including critical installations, and even to become a producer of renewable energy.


Socomec ATYS

Socomec's range of energy storage solutions has been stringently tested and validated for high profile Smart Grid projects and positions Socomec as a genuine pioneer in this field.

To learn how your railway infrastructure can benefit from Socomec's complete range of integrated power products and services, visit the team at Inno-Trans Berlin in the French Pavilion, Hall 26 / 115 between 20th – 23rd September 2016.

Contact Nick Golder at:
Email: nick.golder@socomec.com or info.uk.@socomec.com
Tel: 01285 86 33 00
Visit: www.socomec.co.uk


Socomec Static Transfer Switch

Trolley on track

Following input and development time from **AJC Retail Solutions**, the Track Safety Alliance has approved the design and roll-out of a refreshment trolley which will allow front line people to get hot and cold drinks while they are out on track

Track workers trialled the prototype at an industry event at Grange Sidings, Stoke-on-Trent, last year and their feedback was taken into consideration to make improvements to the original design.

The safe tea trolley was approved by Network Rail on January 2016 and teams are able to purchase or lease a unit depending on their specific needs.

More welfare facilities

Besides providing hot and cold water for drinks, the trolley has storage to accommodate an optional chiller, a first aid kit if required, and an emergency eye wash station.

Adrian Fricker, safety improvement specialist, infrastructure projects, said: 'The safe tea trolley has been designed for track workers with track-side safety and anti-fatigue measures in mind. The flexible choice of drink options including an optional water chiller facility reflects the importance of trackside welfare.

'These stations do not replace any other welfare facilities. The trolleys are an enhancement of facilities available on site. They move with the team so that people can take regular breaks safely and effectively without having to return to the main welfare facilities.

'The fact that we tested the prototype trackside and we received feedback means we now have a product with modern, robust design with additional features to support trackside teams during their shift.'

Steve Featherstone, track programme director for Network Rail, said: 'We often forget when we are in warm, dry offices or signal boxes that the orange army works in all weathers to keep the railway working properly. And when you are part-way through a shift it is important to have a hot drink to reduce the risk of fatigue. Feedback from the orange army has been fantastic and it's great to have ideas like this developed by the frontline, for the frontline.'

Requesting a trolley

Safe tea trolleys are made of a 9mm polymer







material to make them light and strong, with a rail approved generator and water boiler, carry handles and storage access to accommodate a 12v water cooler or first aid kit.

The current model was improved from the first prototype to include extended carry handles, a generator drip-tray and an alternative venting to aid generator cooling and efficiency.

Tea trolleys will have to be loaded on to a van or pick-up to be delivered to sites. The safe tea trolley weighs approximately 80 kilos have handles that allow them to be lifted – by four people for a straight back lift– and placed on to a standard rail trolley which is a straight back lift the generator and water must be removed before any lift takes place. Once in the correct position, the safe tea trolley is secured in place using toggle catches designed to fit on all rail-mounted hand trolleys.

Fricker added: 'We have worked closely with AJC Retail Solutions on developing this product. The cost of each tea trolley is £5,600 +VAT and to TSA member organisations this has been reduced to £5,300 + VAT ex works.'

Next destination

The safe tea trolley is now ready for sale and can be purchased from AJC Retail Solutions. Speedy Hire, Torrent Hire and A Plant are already in negotiations with the company and have units available for long-term hire. AJC Retail Solutions manufacture bespoke mobile catering solutions including trailers, kiosks and specialist conversions and shop fitting. The Development of the safe tea trolley is a good example of a bespoke project undertaken by AJC Retail Solutions to fulfil a particular need.

The fit out and refurbishment of waiting rooms on Network Rail sites is also within our remit providing coffee and food on the go options for rail travellers. Recent and ongoing projects with Puccinos World Wide which is expanding throughout the South East has included the installation of



platform kiosks, coffee shop and waiting room refits. Design, drawing, submission of RAMS, manufacture and installation are all key aspects of our service.

Visit www.ajcretailsolutions.co.uk to see further examples of bespoke catering solutions
Email: sales@ajcretailsolutions.co.uk
Tel: 01582 727 760

A new lease of life

Cold-bonding polymeric techniques have proven advantages over welding, says **Belzona Repair**

Over the course of two centuries, railway networks throughout the UK have changed significantly from the original public railway to become what many of us use today. However, the vast majority of trains still charting their journey around the country have been in operation since the late 1960's or early 70's. Therefore, with such an extensive service life, these trains continuously require repair and maintenance in order to keep them running. In fact, some have been left to go to rack and ruin after having been stored in sidings for up to 30 or 40 years, during which time the effects of vegetation and corrosion have taken their toll.

At the beginning of 2015, Belzona was contacted by a UK-based company specialising in the restoration of dilapidated trains. Once salvaged, train refurbishment involves dismantling in order to conduct varying degrees of repair and maintenance,



Bottom of corroded diesel tank featuring pitting and holes



When left in sidings, trains are subjected to the effects of corrosion and vegetation



before repainting and returning to a like-new condition. Not only does this provide a cheaper alternative to purchasing a new train, but it also delivers a new lease of life to many of these abandoned diesel-electric freight trains.

During the refurbishment process, the company identified a recurring problem with the diesel tanks. Originally, the undersides of all diesel tanks were covered with fibreglass as a protective barrier against sparks flying up from the tracks. Critically, moisture would enter the gaps between the fibreglass and the steel tank, causing corrosion of the metal; in some instances this appeared as pitting or even holes. The company's repair method comprised of grit blasting the fibreglass away from the diesel tanks and welding steel plates over the weakened areas. However, subsequent pressure testing revealed that welding was causing further cracks or weaknesses in the steel around the various HAZ (heat-affected zones). These weaknesses were compounded further by additional weld repairs and numerous pressure tests before the company was satisfied with the final outcome. This proved to be both time consuming and expensive.

The customer required a cold-applied solution to repair these defects, ensuring that further damage from hot work did not compromise and slow the repair process. After consultation, Belzona 1121 (Super XL-Metal) was selected as an appropriate material to restore the diesel tanks to working condition. Initially, the surface was prepared in line with Belzona protocol, before metal plates were cold-bonded onto the damaged steel. With application and curing at room temperature, Belzona 1121 offered a corrosion resistant solution which was able to eliminate the threat of HAZ and significantly pass the pressure tests first time. Finally, the repair was coated with GRP (glass-fibre reinforced plastics) and painted black, along with the remainder of the tank.

Significantly, the customer was satisfied with the speed of the process in comparison to their traditional repair method. This allowed the repaired tanks to be refitted onto the trains far quicker, while also offering a long-term solution for their initial problem. Belzona 1121 has since been incorporated into their authorised specification for all diesel tank repairs and is now a company approved repair method.

Polymeric cold bonding techniques such as these have been used throughout industry, completing applications in environments from mining to oil and gas. Regardless of the type of machinery and equipment or buildings and structures, Belzona's polymeric materials have provided countless solutions, with proven results.

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Diesel tank after Belzona 1121 plate bonding



Repaired diesel tank fitted onto refurbished train

About Belzona

- Established in 1952, Belzona has pioneered innovative polymer technology that has revolutionised industrial repair and maintenance procedures
- Belzona is a leading company in the design and manufacture of polymer repair composites and industrial protective coatings for the repair, protection and improvement of machinery, equipment, buildings and structures
- At Harrogate, the full Belzona product range is manufactured to stringent quality and environmental control guidelines complying with the requirements of ISO 9001:2008 and ISO 14001:2004
- Belzona has more than 140 distributors in more than 120 countries ensuring not only the availability of Belzona materials, but also specification support, project management, application and supervision services. Distributorships and their teams are supported by Belzona Corporate offices in Europe, North America and Asia.

Street's ahead

Celebrating its 70th anniversary this year, **Street Crane** is the UK's largest crane and hoist manufacturer with a modern manufacturing plant based in Derbyshire

Street invests heavily in research and development to ensure its products include the latest technology and offer the highest levels of reliability and performance.

These attributes have attracted some of the biggest names in the rail industry, including Bombardier and Hitachi Rail. Both companies use Street's overhead crane systems and hoists extensively for productive, safe assembly and maintenance work.



Building the next generation of trains

At Hitachi Rail Europe's new factory at Newton Aycliffe, County Durham; nine Street overhead cranes form part of an £82 million investment in the facility. These cranes are being used in the manufacture of high-speed commuter trains, which will run on the East Coast Main Line from 2018 and the Great Western Main Line from 2017. Two 40-tonne overhead cranes have been supplied to offload train carriages, which are made off-site. These are fitted to high-lift bogies, which enables them to be easily moved around the factory and allow equipment to be installed underneath. Street has also supplied a further seven cranes with the capacity to lift 10 or 15 tonnes to bring materials and components to workstations.

Crane speeds have been optimised for efficient product movement and to ensure load safety and stability. Anti-collision systems have also been provided where multiple cranes are operated in the same track bay to prevent accidental collision and maximise product and operator safety. Additionally, special weather proofing and paint systems have been used for the outside cranes gives extra protection against the elements and ensuring long life.

All of the cranes are double girder design, which means they have a higher top hook position than single girder options, optimising space and operating headroom within the facility. The Street ZX hoists have been designed to significantly improve load safety and ensure that they give very high levels of reliability and durability.

Crane installations in new buildings often require close liaison with the main building contractor to ensure the products are manufactured and delivered within the required timeframe and to the correct specification. As a result, crane suppliers must be flexible and be prepared to adapt their production plans in line with main contractor building programmes. For Hitachi, this meant that the crane structures were installed before the roof cladding was added to the building and measures put in place to protect them from the weather.







The Street Crane ZX84 wire rope hoist offers safety and productivity features such as torque arm overload protection and a fully enclosed permanently lubricated hoist and travel transmissions. All crane movements are controlled from a radio remote device allowing the operator to control the crane from a safe distance providing the best visibility. A conventional pushbutton pendant control is also provided as a backup.

A long-term partner

Street has been delivering overhead cranes to Bombardier for more than 30 years. The latest of these has included supplying and installing five cranes of varying load capacities at its maintenance depot in Crewe. They are used for the safe lifting and handling of train components including wheels and bogies.

In addition to maintenance, Street's products play a vital role in building new trains at Bombardier's Derby factory. Two overhead cranes are used in the final assembly of the Electrostar overground trains, these cranes are used independently during the assembly of the trains, but are designed to operate in tandem when lifting and moving train bodies.

To ensure efficient production, the cranes have been specified to transport loads at speeds of 40 metres per minute along the workshop. Safety is enhanced with equipment including audible alarms that sound as the cranes travel along the workshop. Anti-collision devices provide a safeguard when the two cranes are operated and moved independently. For tandem crane lifts and transportation, a unified radio-based control system is used. This ensures the interlocking of overhead crane operations and synchronisation of all movements.

Effective tram maintenance

Street's expertise spans all parts of the rail sector, including the maintenance of tram depots. In Scotland, the Gogar depot, which serves the Edinburgh tram network, is using a Street 6.3 tonne overhead travelling crane to maintain a fleet of 27 trams and support the Unimog track maintenance vehicle. The 19 metre crane, with a 5.5 metre height of lift, spans three tracks within the depot and runs almost the full length of the building to give maximum flexibility in transporting materials. As the crane was installed within a limited roof height, double girder construction was specified to enable the maximum height of hook lift and ensure greater safety in transporting of loads.

Continuous improvement

Street has a track record in the rail sector that spans more than 50 years but the company doesn't rest on its laurels. To ensure it can continue to meet its clients' demands and the complex manufacture of trains, it continuously invests in research and development as well as its production facilities. In 2014, this saw the opening of a new £3 million hoist manufacturing facility and over the next 12 months, it has new products planned to further enhance its leading range of hoists.

Combined with Street's extensive experience, these developments ensure the company can provide tailored solutions for its rail clients that meet the most technically-demanding specifications, resulting in safe, efficient and flexible working in all production environments.

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Beam of light

Layher is bringing joint benefits to the rail industry from its new HD Beam and Keder XL roofing system

The new heavy duty lightweight aluminium beam from scaffolding and access specialist, Layher is bringing key gains to the rail industry. It is evidence, says the company, of its commitment to developing and supplying integrated systems that sees its all-round scaffolding, aluminium HD beam and Keder XL roofing system working in unison to optimise access and protection.

The HD beam features a depth of 1.25 metres between top and bottom chords which combine strength and versatility that mean clear advantages to the rail refurbishment sector.

'The top and bottom chords gain from a 60mm OD with the upright and diagonal chords having a 48.3mm OD,' said Sean Pike, Layher's UK managing director. 'A maximum moment of 150 kNm at 1.036 top chord restraint and shear of 53.8 kN are the direct results.'

Several beam lengths are available with each incorporating Layher's rosette system and offering optimised post spacing. Installations can also be specified with an extensive range of accessories and fittings – from apex sections, corner, T and cross beam connectors to lifting eyes and hanging standard adaptors. 'Moreover, the HD beam accepts a range of temporary roofing designs including the Keder system,' added Pike.

Major station in London

The two innovations have now combined at a major station in London where multi-discipline contractor KAEFER is undertaking work on behalf of main contractor BAM Nuttall.

'The Keder temporary roofing system is centred on aluminium rails that are fixed to the ridges, trusses and eaves of a temporary roof structure,' continued Pike. 'Translucent sheeting is then simply slid into position to create protection from the elements which also delivers in terms of appearance.' He pointed out that the latter point is particularly important in public locations and is, clearly, a key factor where station refurbishment is undertaken.

'We have designed a Keder XL system to provide a span of up to 40 metres, where required, with minimal bracing," explained Pike, who added that even arched or dome structures can be achieved.







The project that brings the Layher HD beam and Keder XL system together focuses on the Grade II listed canopy at the station and involves a total of some 250 tonnes of scaffolding. John Pollock, KAEFER operations director, said: 'Centrepiece is a working platform that has been erected across a busy pedestrian area and, because the Layher HD beams provide a span of 22 metres, the number of support towers has been minimised. This has clearly had a beneficial impact on the area underneath, including enabling us to span across an entire shop front in the area.'

Continued Pollock: 'As with all our equipment, the new beam and Keder XL roofing system come complete with our extensive support capability which is centred on close working relationships with both scaffolding and main contractors alike.'

And, concluded Pike: 'We are delighted to be working with KAEFER and BAM Nuttall at one of London's busiest stations. We believe that both designs are well-placed to become major parts of our extensive choice of scaffolding and access systems.'

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Giving the right signal

Providing signalling design, installation and testing services, **TICS Rail Signalling** aims to deliver a flexible approach that provides the level of quality and value engineering clients expect

The TICS (Testing Installation Correlation Services) brand was originally created in 1998 by the current chairman Les May, a long-term British Rail signal engineer and tester. May foresaw that the industry was going to experience an urgent need for skilled new works testing staff, as signalling schemes were authorised and implemented through new and different procurement channels.

It became clear though that it was not just works testing where skilled staff were needed but that signalling design was another area of shortage. Thus TICS established a signalling design office that complemented its existing works testing activities. Now, 18 years on, TICS (Global) has grown to some 60+ fully-employed staff, 35 engaged in signalling works testing, 15 in signalling design and a small group of signalling installers, with the remaining staff providing support in safety, project management, commercial, finance, HR,IT and admin.



In-house Installation Team

The company's head office is at Robin Hood Airport Business Park near Doncaster with a joint design and testing office in York and a further outpost in Peterborough. An installation depot in Escrick (between Selby and York) allows equipment to be stored, as well as the offsite construction and testing of trackside location cases and relocatable equipment rooms (RER's).

Projects

TICS has steadily built up its expertise and reputation by successfully delivering its contractual commitments. Its first forays into testing included the remote relay room at Brightside for the Sheffield re-signalling project and the signalling associated with the new carriage sidings at Bedford Caudwell.

Many more projects have been undertaken since those early days, some with total project management, design, install and test responsibility, these latter including:

- Ilford Depot expansion and associated signalling
- Doncaster North Chord
- Killingholme Turnback facility
- Cambridge Island platform signalling works.



Off Site Loc Build at Escrick

Core work remains signalling works testing of which recent examples include: Balcombe re-signalling, Selby Swing Bridge, Tyne Dock, Winsford, North Yorkshire, Cambridge CD/RA, Bromsgrove, Oxenholme, Low Moor, Brierfield and Huncoat Level Crossings. TICS completed a significant contract recently, directly from Network Rail, to test and commission the upgrade of 10 AOCL+B level crossings throughout the North of England.

The 10 year national Switch and Crossing Renewals Framework always involves signalling changes, and as part of this, TICS has commissioned more than 150 point ends in the last two years. TICS has a strong relationship with both Colas and AmeySersa for the associated signalling design and works testing activities.

Work is not just confined to the UK: A contract in NW Australia in connection with the double tracking of a freight railway led to 17 staff being sent there for design and testing responsibilities. Other testing work overseas has included the Oporto (Portugal) and Athens Metros.

Future Opportunities

TICS is not registered as a principal contractor but this will be explored for the future. It considers that the safety and technical procedures are already sufficient but partnering and building strong relationships with its Tier 1 customer base is intrinsic to its long-term continued success.

Quality lies within and all staff are equipped with the right technical credentials. For design, installation and testing engineers, the qualification needed is an IRSE Licence, of which all TICS engineers hold suitable categories.

As the company grows, investment in tomorrow's workforce is essential. Three years ago the company took on eight apprentices, which was a huge commitment for its size. Since completing their BTEC Level 3 Diploma in Electrical/Electronic Engineering, the apprentices are now learning the technical challenges of the signalling profession as well as working



Killingholme Turnback Facility

towards their NVQ Level 3 in Railway Engineering. In fact six of the apprentices have already achieved their IRSE Assistant Mod 5 Tester licence. Doing 'real' work as part of this training all adds to both the satisfaction and usefulness of the apprentices to the company.

Mark Cusack, TICS's managing director, believes that securing the business's participation in the new breed of 'Hyper' signalling projects and supporting the current IP signalling framework providers (Siemens, ALSTOM and Atkins) by deploying design, installation and testing resource, will allow the industry to iron out its peaks and troughs and increase productivity. Working partnerships with other Tier 1 providers where different skill sets or capacity driven demands complement each other must continue, and our various customers pay homage to that: AmeySersa, Colas (the two current S&C framework providers), Babcock Rail, Carillion, Kier and BAM are such examples.

The introduction of new technology is now outstripping the supply of engineers and technicians to both design and maintain the ensuing systems. TICS knows that it has to learn the intricacies of CBI, ETCS, CBTC, new level crossing techniques, radio transmission and other emerging technologies. Seeking European partners that have a proven track record at delivering these new systems and working jointly to complement new technology with engineering experience and expertise will allow TICS to develop its future-proofing strategy.


TICS Apprentices

Services

Providing support at the various stages of a rail signalling project, TICS typically performs GRIP 4 design of signal projects (including the selection of options and development of engineering plans), completes the feasibility studies and develops the outline design requirements. GRIP 5 detailed design is undertaken by its in-house design team in accordance with Network Rail Standards. GRIP 6-8 delivery is provided by the company's dedicated installation and new works testing divisions, providing the full 'cradle to grave' package.

TICS aims to deliver a flexible approach that provides the level engineering clients expect covering:

- project management
- signalling strategy
- signalling design
- procurement of signal equipment
- signalling installation
- testing and commissioning of signal equipment and systems
- competence assurance services for signalling tasks.

Accreditation

RISQS 5 Star (formally Link-up) accreditation has been in place for TICS since 2003, essential to establish TICS's competence and systems of operation.

ISO 9001 helps TICS ensure that its customers get consistent, good quality services. As an organisation it performs internal audits and has an independent certification body to verify that it conforms to the standard.

NSAR – TICS is proud to be a member of the National Skills Academy for Rail and has been involved with the organisation since its launch in 2010.

CHAS accredited contractor: the Contractors Health & Safety Assessment Scheme is a nationally-recognised scheme, established to assess the health & safety arrangements of suppliers and to demonstrate to buyers during the tendering process that contractors meet a benchmarked standard.

FORS – the Fleet Operator Recognition Scheme (FORS) is an accreditation scheme that aims to improve fleet activity throughout the UK and beyond.

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Safety needs more than standards

Stephen Bull explains how **Ebeni** takes a risk based approach to demonstrating safety and reliability, beyond simply applying prescriptive standards

No-one will deny that safety is important, but many engineers assume that the vast body of rail standards is sufficient to ensure that the railway is safe. Increasingly, key safety risks are at interfaces, many of which are not covered by current standards. Additionally, the current major UK rail projects (such as Crossrail, HS2 and the Digital Railway) demand innovative solutions which will outpace current standards. Standards remain important, but must be critically evaluated and supplemented with other techniques to ensure that safety risk is reduced to acceptably low levels.



Standards are reactive

Many safety standards are direct responses to catastrophic railway accidents, from continuous automatic brakes following the 1889 Armagh collision, to licensing of railway signalling disciplines following the 1988 Clapham Junction rail disaster.

Much has been done to improve railway safety throughout the industry's history.



This includes fundamental principles such as ORR's *Safe Movement of Trains* and functional standards to implement these principles.

RSSB has developed a detailed *risk model (http://www.rssb.co.uk/rail-risk-portal)* which identifies the areas of highest safety risk. There are also process-oriented standards (e.g. EN50126/8/9) and guidance (e.g. RSSB *guidance notes - http://www.rssb.co.uk/improving-industry-performance/management-of-change)* on the application of Common Safety Method for Risk Evaluation and Assessment (CSM-RA)). Targeted advice (such as *Engineering Safety in Signalling Projects* – IRSE News June 2015) is developed by professional organisations.

All this contributes to improved safety. However, injuries and deaths still occur on UK railways (ORR "*Rail Safety Statistics 2014-2015*").

The *2014 Railway Safety Performance in the European Union* report shows a significant number of fatalities in European rail accidents in recent years. There have also been significant accidents this year, e.g. Bad Aibling (Germany) in February, and Andria (Italy) in July. Although the report shows the UK railway to be the second safest in Europe, there is clearly no reason for complacency.

Risky interfaces

The railway industry understands how to make reliable products. The biggest problems occur when combining equipment, people and processes in complex systems. RAIB reports highlight misunderstandings at interfaces as contributing factor to incidents and accidents. Increasingly these interfaces are not only technical, but also between people, equipment and organisations.

In his *Ladbroke Grove Rail Inquiry*, Lord Cullen identifies several interfacing issues. He said: 'From the evidence I am satisfied that there was no malfunction of the Turbo [train], the track, the signalling, or the AWS

system... Expert examination of the braking equipment demonstrated the absence of any material deficiency. There was nothing to indicate that the wheel slide protection system was deficient in any way.'

Lord Cullen goes on to identify multiple causal factors and recommendations for improvements.

Context is also important: proven, reliable components used in a different environment may not perform as expected.

A similar argument applies to standards, which often make implicit assumptions about the environment in which they will be applied. When the environment changes, the standard may not be as effective.

Barriers to innovation

RSSB research project T934 *Enabling technical innovation* has shown that: 'the GB rail industry finds it difficult to implement new technologies and processes.' Barriers to innovation included existing standards and stringent testing and trialling requirements. This is no surprise, as innovation solves problems in new ways that standards often struggle to address.

Safety arguments

The construction of a 'safety argument' is becoming widespread practice in other safety-critical industries, particularly where innovation is widespread. A safety argument is a connected series of statements, with supporting evidence, used to persuade the reader of the correctness of the overall claim about safety. It brings together all the reasoning and evidence that a system is acceptably safe, and encourages the assessment to extend beyond identified hazards and mitigations to address all the factors that affect the safety of the system. This is especially important when integrating a complex system of systems, as in the Digital Railway.

The safety argument framework gives the flexibility to take risk based approach, focusing on the most critical safety issues.

In contrast, while the safety case structure prescribed by EN50129 encourages similar thinking, it is often applied without sufficient consideration of the overall safety argument. Consequently, key risks may be missed.

Similarly, the concept of a safety argument is absent from the Common Safety Method for Risk Evaluation and Assessment (CSM-RA - *http://orr.gov.uk/what-and-how-we-regulate/health-and-safety/regulation-and-certification/european-railway-safety-legislation/csm-for-risk-evaluation-and-assessment*) widely used as a framework for undertaking risk assessments.

Safety arguments are often presented in graphical form using Goal Structuring Notation (GSN - *http://www.goalstructuringnotation.info*). Extensive research has gone into developing argument structures which are logically consistent and easy to use. This includes splitting the argument into modules to facilitate the management of interfaces between different parts of the system.



Learning from aviation

A recent European-funded project (ASCOS) (*www.ascos-project.eu*) addressed interface challenges in civil aviation. Ebeni led the development of the project's final technical deliverable for the ASCOS Method for approval of changes to the Total Aviation System (*D1.5*). This proposed a flexible framework based on modular safety arguments to demonstrate the safety of changes to the total system, including concepts, equipment, people, and processes – not just physical components, or sub-system provided by a single contractor.

The argument modules used in the ASCOS Method are aligned to domains and organisations within the total system. 'Assurance contracts' are used to capture and manage the dependencies between domains and organisations. These address one of the critical issues in the development of safety arguments – namely that stakeholders make assumptions about interfaces with other parts of the total system. The risk comes when these assumptions are not subsequently validated.

Building on strong foundations

The ASCOS Method builds on techniques widely applied in defence and air traffic management domains for over 15 years. It provides a framework for ensuring that the total system is considered and all hazards are fully addressed (including those previously considered 'too difficult'), especially at interfaces. Existing standards are evaluated to identify any modifications needed to apply them in new contexts.

The rail industry faces many of the same issues: prescriptive standards, multiple commercial interests, pressure to innovate and increase capacity while maintaining safety. The principles of the ASCOS Method can equally be applied to the railway. HS2 and Crossrail are both projects which face these issues.

Going beyond standards

In summary, safety is a property of the total system. As such it cannot be assured by considering subsystems in isolation. The rail industry needs to build on the excellent foundations provided by standards and past work, and to take a proactive, holistic approach: retaining existing standards where they are applicable, then extending them with new techniques to ensure that the total system safety risks are adequately managed.

These are exciting times for the UK rail industry, with projects underway to deliver the high performance rail infrastructure so critically needed. Ebeni looks forward to applying safety argument techniques on these projects to ensure that the industry's excellent safety record is maintained while delivering these innovative projects.

Stephen Bull is a principal safety engineer with Ebeni, an independent consultancy specialising in the provision of safety engineering and management to safety-critical industries. He has more than 20 years' experience of engineering safety in aviation and rail.

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The depot upgrade expert

Spencer Group has a track record of success in depot upgrades spanning more than ten years, and is currently involved in works for the Intercity Express Programme

Train care depots are the unsung heroes of our rail network, allowing the swift and efficient maintenance of train cars, often while many of us are asleep. As the rolling stock of each train operating company is allocated to a specific depot, there are many locations throughout the UK requiring the services of contractors with highly specialist skills in the rail industry.

To keep rail services running as efficiently as possible, with minimal disruption to passenger services, depots are ideally kept operational throughout the construction phase of upgrade works. This is what contractors strive for – and is something Spencer Group (Spencer) has achieved on every project.

It is Spencer's capability of managing the full range of multi-disciplinary works required at the many depots throughout the UK that has led to its record of success – and reputation as a trusted pair of hands. Ardwick, Bathgate, Etches Park, Neville Hill, New Cross Gate and York are just some of the locations where Spencer has completed projects to build, upgrade or refurbish train care depots.

Etches Park Depot, Derby

This £14.5 million project involved the highly complex design and construction of the rail depot facility. The wide scope of works included the creation of a storage facility and staff quarters, a covered three-road seven-car set with two through-roads, a buffer stop and two service pit roads. One key requirement was the completion of a new wheel lathe facility prior to the construction of the main depot building. After the 60-week programme of works was completed on time and to budget, Tim Shoveller of East Midlands Trains said: 'The improvements at Etches Park will not only provide us with more capacity to maintain and care for our whole fleet more efficiently, but also reflect that we are a good employer, providing a professional place of work that our staff can be proud of.'


New Cross Gate

New Cross Gate Depot, London

Spencer was handed the £10.7 million contract in 2013 for the improvement and conversion of New Cross Gate (NXG) from a four-car to a five-car train operation for London Overground. Over a 61-week programme, the team completed: the upgrade of the maintenance facility building, which included a 20-metre extension to the heavy clean facility and modifications to the wheel lathe; the relocation of the wash plant and wheel lathe; the modification of the washer road; alterations to traction power and existing track (plus the creation of new track); civil engineering works for CCTV, signaling and telecommunications installations. Spencer took extensive measures to retain the capability of the depot while works were carried out and completed.


Etches Park Depot

Ardwick Depot, Manchester

In 2012, Siemens obtained a contract to build and maintain 20 Desiro Class 350 electric multiple units for First TransPennine Express. The project required the modification of Ardwick Depot to



Ardwick Depot

facilitate Class 350 units, and subsequent electrification works. Spencer, with its portfolio of success, was appointed as the main contractor.

The team delivered four packages of work over a 51-week period, managing to keep the depot and maintenance shed operational throughout. Spencer succeeded in creating a culture of collaboration with Siemens, with all works carried out with the highest regard for the safety and security of all who came into contact with the site.

The depot was ceremonially opened by Lucy Powell MP on 27th September 2013. The first of the Class 350/4 trains arrived at the depot on 28th November 2013.

Intercity Express Programme Depots

Hitachi Rail Europe's Intercity Express Programme depots scheme delivers upgrades to the East Coast Main Line's (ECML) Light Maintenance Depots. Once complete, the enhanced depots will be able to maintain Hitachi Trains' new fleet of Class 800 and 801 Super Express Trains that will run at speeds of up to 125mph and reduce journey times on the ECML.

Spencer is currently contracted to complete three rail depot upgrades overall as part of Network Rail's Scotland North East Multi-Asset Framework Agreement (SNE MAFA), which was awarded to the company in July 2014. Depots are situated at: Ferme Park in North London, where Spencer completed enhancement works in January 2016, working 38,500 man hours with zero incidents/accidents; Craigentinny in Edinburgh, where an extensive package of works was completed in July 2016; and Doncaster in South Yorkshire, where an upgrade has been meticulously planned and executed over three 36-hour possessions.

Reading Depot

Outside of the IEP, Spencer was awarded the contract to extend and upgrade Great Western Railway's flagship train care depot in Reading. With the decommissioning of Old Oak Common depot for the development of HS2, the majority of fleet maintenance work is being transferred to its Reading depot, including the requirement for a new wheel lathe facility.

Spencer will construct a new building to the side of the existing train care shed to house the new wheel lathe. The building, measuring 49m x 12m, will also include new office accommodation. The wheel lathe pit will be 21m x 4m.

Prior to construction, civils enabling works will be required to divert the existing vehicle roads around the proposed location. Spencer's works include all civils, structural and mechanical and electrical requirements. To the west of the site, p-way realignment works will be completed to allow access for trains into the new wheel lathe facility.

Penzance Depot

Spencer's most recent depot contract involves a series of enhancement works for Great Western Railways (GWR) at the Penzance Long Rock Depot. The group used a creative approach in the bidding process which allows the regular operators of the depot to continue unhindered by works, which are extensive. They include a new 132m x 15.6m extension to the maintenance shed and the construction of a new HV/LV substation, a new CET system (including CET control building), new track, a new access road, a drivers' landing and improvements to sidings. This project will be important for the south-west region and it represents a significant addition to Spencer's portfolio.

With a large number of projects successfully completed or ongoing at depots throughout the UK, and further projects in the tender process, Spencer Group considers itself to be the 'train depot upgrade expert'.


Craigentinny Depot

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Critical support



Mike Hewitt CTO and head of next generation networks for **ADComms** says the company ensures a vendor agnostic approach to the integration of technologies that delivers world-class solutions

In an age of big data, Internet of Things, M2M (machine to machine) we are witnessing the rapid introduction of new technologies delivering digital solutions that will improve capacity, reliability, security and the end user experience. Big data has long been extolled as the natural evolution of the connected world, enabling technological advancements based on the use of this data to deliver system improvements. CCTV systems once monitored by individuals has seen automated capability enhancements, ANPR (automatic number plate recognition) as an example, or automated systems providing information like the identification of free parking spaces within car parks to a new wave of video analytics type capabilities.

Big data is often considered to be a numerical exercise collecting numerical factors and presenting these in a useable manner, but AI and analytics is changing this. An example is machine learning as applied to voice recognition systems, where significant improvements in the volume of voice data captured and analysed by key players like Apple with SIRI and Google Cloud Speech vastly improve the quality of their solutions through continued learning to reduce false recognition events.

The demand for analytics-type systems in protecting national infrastructure and keeping the public safe is only going to increase, given the amount of data now being captured. London alone has over 500,000 cameras capturing data 24/7 — a rate that far outweighs the number of operators who can monitor all potential security events. This data has a range of uses, from law enforcement and anti-terrorism, improving public safety, through to crowd management, crowd flow and people counting, which can be used to understand and improve the experience of the public at retail centres through transportation hubs or at open outdoor events.

Intelligent video analysis can be used to process and identify many different types of event including unauthorised perimeter breach, detect abnormalities (vehicles or people on railway infrastructure), moving or stationary objects (abandoned luggage within an airport), or suspicious person's behaviours, down to facial recognition of predetermined individuals - all of which can then be alerted to an operator to take the appropriate action. As an example in the retail industry - video surveillance could be used to identify small groups of repeat offenders responsible for the higher proportion of shoplifting at stores using facial recognition and notify security personnel within 10 seconds of their arrival at the store.



Deep learning technologies which mimic the processes of the human brain to create deep neural network systems can perform feature detection from the massive amounts of unstructured, unlabelled data captured from high definition CCTV systems. Graphics procession units (GPU's) are being developed and used to take these deep learning algorithms and processes using highly parallel computing capabilities to quickly process these vast amounts of data at a centralised location, or, in some instances some processes are added to the camera for specific applications where bandwidth to the camera may be limited.

ADComms (a Panasonic company) is an organisation which is focused on the support of critical national infrastructure, including railway networks, highways, critical transport hubs including airports, core infrastructure including public space locations (museums, libraries) and critical utility locations to deploy, operate and maintain systems which deliver these VIDO-enhanced capabilities.

Across the rail infrastructure Network Rail is presented with many challenges from a range of criminal activities including cable theft, malicious damage and trespass, all of which affect the on time running of passenger and freight services causing delays, disruption and compromising safety. Add to this the numerous other malicious activities which have a cost or service impact including littering, fly tipping, property damage (fences, bridges, signs). This damage to track infrastructure or rolling stock has presented a significant challenge for many years given the size and scale of the rail infrastructure footprint - with over 21,000 miles of track, 2500 stations and over £4.5 billion being invested in rolling stock assets in the last 20 years.

Rail operators need to fight back and use tools available in this modern digital age to eliminate activities which cause damage, disruption and delays. The advancement of CCTV image quality can enable improved use of analytics to identify activities that can be deemed as malicious or potentially disruptive, and responded in a proactive manner. The latest CCTV systems feature high resolution, weatherproof, image stabilised cameras which can operate 24/7 365 days a year to monitor assets and infrastructure. This, combined with high capacity IP networks, enables centralised video storage, analytics and management by suitably trained professionals. Significant improvements in storage capacity and video compression allow enhanced storage of video footage, improving the availability of retained footage for historical analysis by authorities following any event especially where national security has been impacted.

The use of CCTV by organisations is usually limited by its scalability - a typical operator no matter how well-trained has limited eyeball capacity, therefore they can only monitor a limited number of assets and can be subject to distraction especially where multiple events take place. CCTV analytics can improve this situation by enabling the automation of the identification of suspicious or malicious activity - the use of either on-board camera analytics, edge or fog computing and centralised storage and analytics solutions can greatly improve this. The automation of the identification of abnormal activity, where events like the potential scaling of a security fence or a vandal or group approaching a static train, can be identified by the system as an abnormal event and alert the security monitoring specialist to pre-empt a potential event, using direct or automated systems to take appropriate action. Many actions can be taken remotely like activating high intensity lighting and making audio announcements warning the intruder that their action is being monitored and recorded; warning that response staff have been dispatched can present a significant deterrent.

To support these systems, improvements in the capacity of wireless network solutions and off-grid power solutions enable temporary solutions to be deployed quickly and temporary sites to be protected while undergoing maintenance or repair works. ADComms developments ensures a vendor agnostic approach to the integration of technologies that delivers world-class solutions - this includes leading network technologies to move data to the cloud (hosted or private), edge and fog computing solutions, CPNI (critical protection of national infrastructure) approved analytics solutions to video storage and video management solutions delivering scalable, reliable, resilient infrastructure that support core business needs, improving security, reliability and operations of national infrastructure.

ADComms is working with industry-leading suppliers to deploy solutions, integrating analytics for permitted event detection (trespass detection), platform behavioural event analysis, level crossing obstruction, drone detection, perimeter protection and the deployment of digital barrier solutions to protect infrastructure.

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Quick to fix

UltraCrete, part of the **Instarmac Group**, is home to a portfolio of contractor-friendly repair and maintenance products for the rail, road and transport sectors

The UltraCrete product offering is ideal for a range of applications including the installation of signals, signposts and street furniture as well as for the maintenance of kerbs, sleepers, and repairs to car parks, concourses and crossings. Their bedding, repair and refurbishment materials are independently tested and proven and offer fast setting and time saving advantages.

UltraCrete's list of repair products is extensive, with a number approved for use on the Underground and Overground. Its products have been successfully used in the highways industry for more than 35 years with many attaining the HAPAS seal of approval – an independent third party system of approval supported by the Highways Technical Advisory Committee, which is nationally recognised for first time permanent reinstatements. The scheme provides the supply chain with the confidence and peace of mind that it is using products from a trusted, reliable and expert source.

For the fast, efficient installation of heavy duty posts and for repairs to concrete sleepers, choose UltraCrete's HAPAS approved QC10 F flowable, fast set concrete. It is fibre modified for added strength and achieves 20N/mm² after just 90 minutes. It is easy to mix and literally pours from the bucket facilitating speedy application.

UltraCrete's M45 rapid strength bedding mortar is the ideal choice for bedding platform coping and kerbs. It can be open to traffic in just 45 minutes, keeping downtime to an absolute minimum.

For the reinstatement of linear drainage, and ironwork in areas exposed to extreme trafficking, use UltraCrete's HAPAS approved Envirobed HA104 ® high performance bedding mortar. It is the environmentally friendly alternative to resin based materials and can be used in wet weather and in temperatures as low as 1°C, so no delays due to poor weather



LUAS tramline, Dublin

conditions. It achieves an impressive 51N/mm² compressive strength after three hours and can be open to traffic in 60 minutes.

Eliminate vandalism to concrete repairs with UltraCrete's QC6 rapid set surfacing concrete. Ideal for the surface reinstatement of 'picture frames' or fillets and around access covers and for general repairs, this product sets in just 15 minutes making it difficult to deface, improving public image and limiting asset liability.

For planned and reactive pothole repairs to station car parks, use UltraCrete's HAPAS approved Permanent Pothole Repair, a cold lay asphalt concrete that can just be poured from the tub and compacted to provide a lasting repair. It is instantly traffickable too, so causes minimal disruption to commuters. It comes in a handy 25kg tub, so is great for sites with limited access.

UltraCrete's repair solutions are being used at stations all over the country, for example, the company's QC10 F fast set flowable concrete was used to carry out track repairs to a section of the LUAS tram line in Dublin. RSC, UltraCrete's rapid hardening cement, was used in Edinburgh's Waverley station to bed the station's platform kerbs, tactile paving and linear drainage and M45 rapid strength mortar is the product of choice for Network Rail, Milton Keynes for sleeper repairs.



Premier Rail site where UltraCrete products have been used to reinstate a level crossing

Premier Rail is using UltraCrete's refurbishment solutions to install and repair level crossing systems for key clients such as Carillion, Babcock Rail and Amey Sersa. The work is part of ongoing maintenance and includes the installation of signs, signals, track and access platforms as well as reinstating safety lines, all with products from the UltraCrete range.

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Waverley Station, Edinburgh

The solution is training

Auctus Management Group is fast becoming a major name in the provision of contingent labour and safety solutions to the rail industry

Auctus Management Group may not be a household name, but it is certainly on the radar of some of the biggest names in the rail industry. Contracts with Balfour Beatty, Amey Colas, Transport for London and Babcock, among others, has provided the company with a growing reputation for the supply of qualified contingent labour to the rail sector along with a range of safety solutions.

'The company was established in May 2012 with the assistance of Finance Birmingham, a division of Birmingham City Council,' says Richard Toy, CEO of Auctus Management Group. 'All of our directors have extensive experience of the inner-workings of the rail industry and its health and safety issues, in fact we are all qualified to either IOSH or NEBOSH level. This gives us real insight into the problems the industry faces and their potential solutions.'

Since its inception, the group has grown both organically through Auctus Workforce Solutions (AWS), Auctus Training Solutions and Auctus Apprenticeship Training Agency and via acquisition, namely the purchase of Rail Safety Solutions (RSS) outright in May 2012.

Auctus's Rail Safety Solutions division is at the forefront of using technology, in particular lookout operated warning systems (LOWS), automatic track warning systems (ATWS) and collision avoidance systems to help solve these issues all offer a reliable, cost-effective way of increasing safety.



While Auctus Management Group believes it has the solution to the rail safety problem, the fact that the industry is suffering from a labour skills-gap is more difficult to fix.

'There are real concerns within the rail industry over the lack of skilled labour which is being exacerbated by an ageing workforce,' said Toy. 'In Birmingham alone, an extra 8,300 new jobs will need to be created including nearly 1,000 construction jobs and more than 800 operational and maintenance roles as a result of HS2.'

The solution he says is training, which is where Auctus Training Solutions comes in. 'Our training suites in Aston, Birmingham provide safety critical and non-safety critical training and assessment'.



However, Toy is quick to point out that while providing training is easy, providing quality training is another thing entirely. 'The quality of training for rail is variable, some good and some bad. We have gained enormous recognition from creating a training package that exceeds the professional standards required to work on the railways.'

To ensure that Auctus Training Solutions achieves the highest professional standards, all the company's trainers and assessors have a wealth of experience in the rail industry and have been approved and accredited by NSARE. In addition, the company has received accreditation for the delivery of its training and apprenticeship programmes from the internationally recognised training authority, City & Guilds. 'This ensures that all of our training courses are designed to suit the needs of both the learner and the industry,' said Toy.

Auctus Management Group's growth over the last two years is testament to the fact that the rail industry needs good people and is open to new ideas, technologies and ways of working. 'When people get into rail they never want to leave,' said Toy. 'It's a great sector to work in, highly dynamic and well-funded, we just need to provide the career paths and then keep them safe once they are in.'

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Keep a look out for RSS

Rail Safety Solutions is one of the UK's leading providers of specialist railway services. With expert knowledge in railway infrastructure safety it provides a service that is centred on customers' individual needs

The RSS rail team consists of a diverse and highly skilled workforce, which has extensive experience in using industry-leading technologies to ensure the success of the most complex rail projects, resulting in an unrivalled reputation for quality, safety and reliability. The team's success within the rail industry has led to the company being the preferred supplier to the UK's entire tier one and two rail companies.

The aim is to provide clients with a comprehensive package that meets all of their rail safety requirements. The team can support clients in completing their projects on time and to the required specification and budget. Through effective use of their innovative solutions, businesses will be able to secure significant cost savings, while improving safety for their workforce

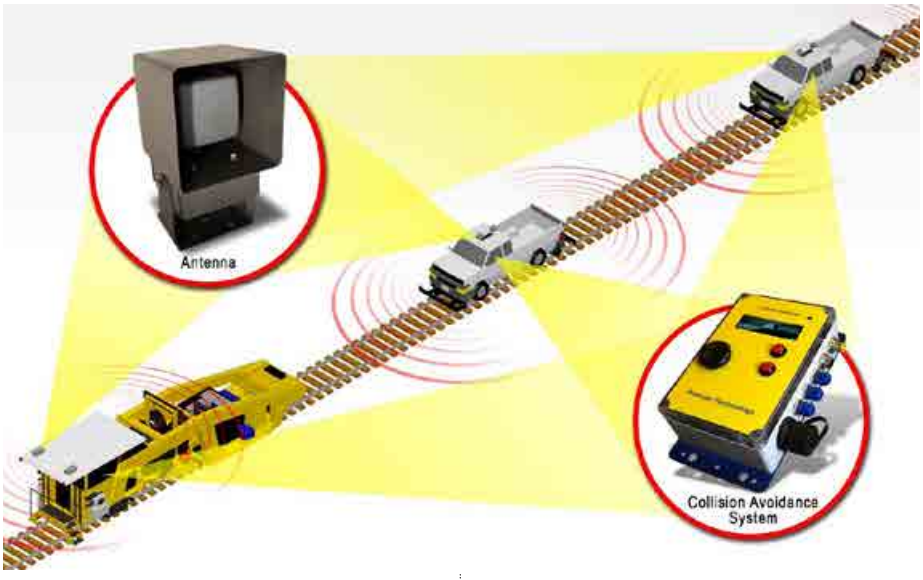
The company has more than 100 years combined experience of delivering track warning systems (TWS) and safety critical and contingent labour. The RSS brand name is synonymous with TWS, in particular lookout operated warning systems (LOWS), automatic track warning systems (ATWS) and semi-automatic track warning systems. RSS is seen as the industry leader in track warning systems, and its partnership arrangement with manufacturers and Network Rail ensures it is at the forefront of product testing on the infrastructure. Through its partnership arrangements RSS has become the UK's largest independent provider of ATWS, LOWS and SATWS services. When used in conjunction with magnetic safety barrier you can be assured of a solution to working on the railway infrastructure.

The company has recently partnered with Protran Technology, a division of Harsco Rail, to exclusively distribute the Collision Avoidance System™ within the United Kingdom which is an exciting new development that will look to revolutionise safety within the industry.

Protran Technology is renowned within the rail industry for creating market-leading technology that focuses on increasing safety and reducing the amount of accidents and incidents that happen on-track each year.

The partnership between the two companies means their customers can benefit from both the manufacturing expertise of Protran Technology as well as the technical expertise of RSS. Ultimately, the benefits of this partnership are that customers receive an increased level of versatility from a service/product that can be specifically tailored to meet the requirements of the project.

With multiple features in one system, the Collision Avoidance System™ keeps the vehicle operator's attention when approaching other vehicles and workers. The system has two modes, travel and workzone.



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With thousands of Collision Avoidance System™ in operation outside the UK, the vehicle mounted unit is equipped with a high resolution LCD daylight display and generates an audible and visual alert when distances and asset thresholds have been violated, depending on the mode of operation. Once in range, the system constantly detects distances of vehicle-to-vehicle and vehicle-to-work site limit detection to a very high resolution especially in curves, tunnels and adverse environments. This precision-built system with its ingenious, easy to use interface enables users to quickly deploy the system on site with no additional tools required. Furthermore, the system has advanced data logging functionality in order to provide operators with a complete overview of the vehicle's position, speed and geographic positioning.

Rail Safety Solutions is currently progressing the CAS through the Network Rail product acceptance process and anticipates live trials later in 2016.

By Sean Harrison, development director

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From strength to strength with Cintec

Used in buildings and structures all over the world, from the Egyptian Pyramids to the White House, **Cintec International**'s patented anchors have helped to restore and maintain some of the most well-known landmarks

Cintec's anchors are proving instrumental in the vital work of upgrading the UK's rail network. The innovative structural anchoring system has provided Network Rail, county councils and other local authorities with long-term and cost-effective structural solutions to help secure the fixings and strengthen and stabilise the bridges and viaducts needed to carry newly electrified train lines, as well as support the structures of some of the country's busiest train stations.

Cintec's anchors have been successfully used in a huge variety of structures for tensile, shear, bending and compression loadings where certainty of performance is required. The unique grout sock, working together with the cementitious grout, ensures the perfect fit when installed by Cintec trained and approved installers. Using diamond core drilled holes, which largely eliminate white finger health and safety issues, Cintec's anchors actually reduce the unit cost for installation when compared to rotary percussion methods and carry a life expectancy in excess of 120 years.

Naturally, Cintec has therefore become the obvious choice in helping to upgrade and support some of the country's busiest train lines and stations. So far its anchors have been used for work in Leeds, London, Gospel Oak and Dublin, with each job presenting its own unique challenges and opportunities to do things a bit differently.

Refurbishing Leeds station

Leeds station proved to be an interesting project, where a complete refurbishment was taking place. Engineers Mott MacDonald were working on a new entrance and ticket area, and Cintec was called in when a major strengthening issue was discovered.

The station was constructed on top of a series of viaducts which are now used as main through roads and it was discovered that the arches of the viaducts would not take the weight of the new entrance, meaning Mott MacDonald had to design a structural steel frame to support the arches. This steel framework would need to be fixed to the original brickwork, and that posed a number of problems.





CINTEC INTERNATIONAL LTD

Firstly Cintec's anchors had to be installed vertically into the brickwork, presenting an obvious challenge in having to inject grout upwards. Secondly, the high load capacity and shear load requirements needed to support the structural steelwork meant that Cintec had to use various sizes of grip bar anchors to ensure the structure would be fully secured. The Cintec 'V socked anchor' was used to allow the installers to use a combination of force and suction to inject grout vertically and ensure that the anchor was fully covered, providing the fixing strength required by the engineer.

Remodelling Waterloo, King's Cross and London Bridge stations

Cintec International's work at these major London stations is ongoing and has been vital to the remodelling and upgrading projects taking place. Working with an alliance of AECOM, Colas Rail, Mott MacDonald, Network Rail and Skanska on Waterloo, Cintec is providing anchors which will sustain very high loads for the structural steelwork needed to continue to improve London's rail transport.

In this case, it is Cintec's ability to provide a bespoke system for the problem that has enabled these projects to be so successful. The great flexibility of designs available to the engineers has enabled a large variety of structural challenges to be met utilising the company's anchors.

Electrifying Gospel Oak to Barking

In 2016 Network Rail, awarded a £60 million multidisciplinary design and build contract to J Murphy & Sons to support the electrification of the London Overground route between Gospel Oak and Barking that will allow an increase in the number of trains running on the line, a much-needed alternative route for rail freight traffic across

north London and huge environmental benefits.

The project will see track lowering of plain line and switches and the installation of slab track. In order for the work to be completed the replacement of an existing overbridge, platform reconstruction at Walthamstow station and foundation installation for electrification masts along the line will also need to take place.

The new cabling installation needed to complete the electrification requires OLE gantries to be fixed to the spandrel walls of the existing viaduct structures between Gospel Oak and Barking. The installation and location of the gantries are on both sides of the viaduct for three distinct viaduct lengths.

OLE portal structures are attached to the outer face of the viaduct, with the exact nature of the viaduct attachment determined through the use of standard brackets, the height of the attachment and the necessity of a tie across track.

Cintec was brought in to the team at the design stage, and worked closely with the lead engineers AECOM and, assisted by Intuition Engineering, developed a workable anchor solution for a standard gantry support bracket design. The loads varied considerably depending upon the type of OLE structure design, making completing an overall design very challenging, but Cintec was able to offer a bespoke solution with roughly six anchors per bracket ranging from 3.00m to 8.50m in length and consisting mainly of 30mm Cintec solid bar anchors in core drilled holes from 76mm to 102mm diameter.

Strengthening Dublin Tramways

The Dublin Tramways is a multi-million-pound project in the Phibsborough area of Dublin. Cintec was called in by the Rail Procurement Agency to look at strengthening two bridges on the North Circular Overbridge and the Cabral Overbridge to help both bridges achieve a H4a rating.

Working closely with Structural Engineers Roughan & O'Donovan, Cintec placed a series of vertical and longitudinal anchors through the bridge barrel to achieve the required loading. As part of the project the height of the parapet walls also needed to be extended, requiring the new section of wall to be built first with the vertical anchor then being installed through this new section and into the existing parapet.









The use of traditional Lime Mortar on the new section of wall to match the structures historical make up was extremely important for the heritage agency, This posed a problem in maintaining the structural integrity but also allowing the lime mortar to have its natural movement . Cintec and the RPA easily found a solution to this by placing the anchors into individual stones this allowed the H4a rating to be achieved whilst also allowing the lime mortar surrounding the stones to maintain their natural movement.

Looking to the future

Cintec is proud to have been involved in the work that has already taken place improving the UK's rail system, and plans to continue to expand into the rail upgrading programme with partnering arrangements with prime suppliers to Network Rail, in addition to advising professional design practices on practical and cost-effective structural solutions.

Ongoing product and engineering development work will enable Cintec to provide even more inventive solutions to structural problems within the rail assets to continue to improve the UK's rail infrastructure.

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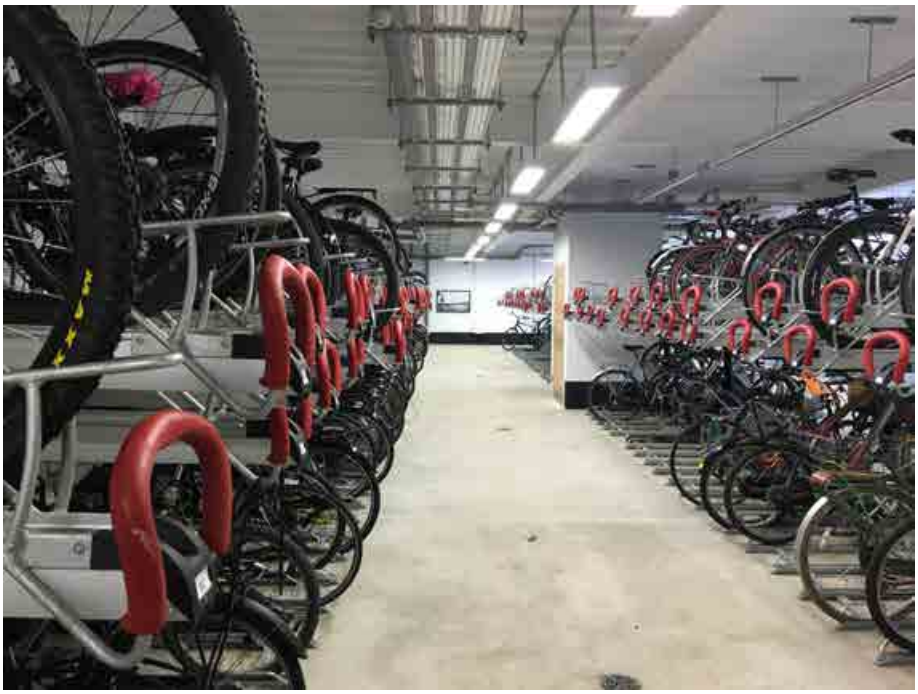
The role of technology in seamless cycle-rail integration

Cyclepods is a supplier of cycle storage solutions across the UK that has recently been acquired by CROWD Group, a Netherlands-based organisation which designs public outdoor spaces with sustainability and great design at the heart of its strategy

Cyclepods' mission is to contribute to an enjoyable and high-quality environment in which people can live, work and play together inspired by innovative and smart concepts and products.

Cyclepods began working in the rail industry by supplying its Streetpods and continuing with its two-tier storage system, the Easylift+. Having now installed over 9,000 bike spaces across the UK rail network, it is in a good position to see how developing new technology can aid the convenience and accessibility of cycle storage.

With huge increases in the number of people cycling and the well-known benefits in getting on a bike there is a growing need for safer, smarter and convenient cycle routes and transport links across not only metropolitan areas but smaller towns and rural areas. The wide availability of public Wi-Fi networks such as 4G and faster, more accessible broadband is now bringing more opportunities for software-based solutions in cycle-rail integration that can provide these seamless transport links.



It isn't just commuter cyclists that need to be considered, there is a rise in leisure cyclists hopping on a train for a mountain biking day out or weekend in North Wales, a family cycle-ride on one of the many Sustrans county routes or a road trek through Yorkshire's moors.



For many city-dwellers, owning a car is not practical or economical. It's often impractical to drive to work and public transport or cycling is far more efficient in getting them from A to B. And when it comes to a weekend break outside of the city, it is the trains they look to. In fact, a train can get to all the previous destinations exampled just as fast or even faster than a car. From London it's possible to get a train and pick up a bike at the Tarka Trail bike hire at Barnstaple station in just over four hours and be cycling to a pub for dinner on the Devon coast, or hiring a bike in Manchester in under three hours to start a weekend of sightseeing around the city.

Cycle storage is, of course, the first step towards cycle-rail integration. When it comes to providing cycle storage at stations several things should be considered including; how many cyclists will be using the facilities every day? How long will they be storing their bike? Will providing better cycle storage encourage more cyclists?

Two-tier systems are ideal for stations, they provide a high-capacity, space-efficient and user-friendly solution which benefits both the station and cyclists.

Commuters cycling to their local station from home and commuting into a city centre for work could be leaving their bike for up to 10 or 11 hours during the day and want to know it is stored somewhere safe and secure.

For most of the year they are lucky enough to be cycling in daylight, but in winter it will most likely be dark on both ends of their journey. It is therefore important to ensure adequate lighting is provided. Lighting systems can now easily be installed or retro-fitted to shelters. As well as being practical they also act as a theft deterrent; not many thieves like to perform under a spotlight! CCTV is another tool





that can be installed to prevent thefts and will assure cyclists that their bikes are being looked after. Cyclists will feel safe leaving bikes in well-maintained storage facilities that have either a physical or digital security presence; they are less likely to use racks that are uncovered, unmanned and in less public areas within the station's boundaries.

If these measures are introduced it is very likely that more people will be encouraged to cycle, so a growth in cycle-rail journeys should be anticipated. From 2010-2015 rail journeys involving parking a bike at a station grew from around 16 million to 27 million.

Cycle hubs are a great way of cultivating this growth. As defined by the ATOC Tool-Kit, a true 'cycle hub' should have at least 50 cycle parking spaces in a secure, covered compound with CCTV & lighting, as well as access to maintenance facilities and ideally bike hire.

Access Control systems are the best way of maximising security in a cycle hub and can be linked to smart travelcards to provide a total travel package. Working with Southern Rail, Cyclepods installed access control in three hubs at Lewes, Brighton & Horsham which was linked to Southern's 'Key' smartcard. The 'Key' stores tickets for travel on all Southern routes and allows free entry into the hubs for cyclists to store bikes securely with the bonus of having access to bike maintenance. Commuting cyclists aren't the only ones that benefit from these facilities, at Brighton in particular we often hear from cyclists that have used the cycle hub to store their bikes while they enjoy a weekend in the town; travelling by train with their bikes into Brighton on Friday evening, they can keep their bikes in a secure location, book into a hotel and come back in the morning to cycle down the seafront. As cycle hubs get bigger, and are used more, cyclists need help to identify where the available spaces are. This is where Bike detection comes in. Bike detection systems are still in their infancy within the UK Rail network but are invaluable tools at high-volume cycle storage facilities in countries like the Netherlands, where at Rotterdam Centraal Station, for example, there are over 5,000 cycle parking spaces used daily.

As a bike is parked, sensors are activated which send a message to the control system indicating that the space is in use. This also allows the system to identify free spaces and to display this information on electronic signage and with green lights in aisles with spaces, much like the high-tech car parking systems in modern shopping centres. Information can also be accessible by mobile apps saving crucial seconds in the highly-pressurised commuter crush. Providing a bike detection system will save your commuters resorting to chaining their bikes to railings or missing their trains due to having to circle cycle hubs looking for a bike space.

Bike Hire is another welcome addition to any station and a staple element in providing seamless cycle-rail integration. The Santander Cycles scheme in London is incredibly popular with both commuters and tourists alike, and proves that even with great transport links within cities that cycling is an option that many people favour with the record for most cycle hires in a single day being 73,000.

Working with partners in the Netherlands, Cyclepods provided Abellio with the software required to launch their award-winning Bike&Go hire scheme. Bike&Go has now been introduced to 68 stations across England & Scotland. Keeping bike hire schemes simple and straightforward to use with the adoption of smartcard technology and online payment methods is important in order to attract commuters who don't want to hang around at the start or end of their working day waiting for a complicated procedure. Simplicity will also encourage leisure travellers who might be put off by long winded instructions or feel that it's only for regular rail users.

Cyclepods and CROWD see high technology solutions such as these as the future of cycle-parking and successful cycle-rail integration. Together they strive to develop and introduce these solutions to the UK rail sector to create efficient and 'smart' methods of travel.

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An integrated approach to survey data

Bridgeway Consulting's diverse capabilities allow it to deliver complex and high profile projects, from planning through to delivery, as a fully integrated team

Making the most of available access has always been the most challenging aspect of working on the rail infrastructure, and with an increased focus on working within all line possessions, due consideration must be given to employing innovative equipment and techniques to ensure that every minute spent on track is as productive as possible.

The Bridgeway Consulting Geomatics Team has long been involved in identifying and employing new technologies and expanding its range of services to offer a truly joined up approach to the gathering and presentation of geospatial survey data. Bridgeway Consulting began trading in 1995. The Geomatics Team was formed 16 years ago by two former mining surveyors and has expanded ever since, now employing more than 40 full-time members of staff. The team sits within a wider engineering capability, ensuring that a full suite of above and below ground survey data can be captured in the most challenging of environments including working at heights, on ropes, in water and in confined spaces.

The traditional core activities of the team were primarily the creation of survey control grids, track and topographical surveys, structure gauging and OLE surveys. As new technologies have developed the capabilities of the team have also diversified and expanded to include the collection of pointcloud data, 3D modelling and BIM consultancy, deformation monitoring, utilities surveys, CCTV surveys and aerial data capture.

Huge benefits can be gained when employing an integrated approach to work; therefore all of Bridgeway's engineering staff are trained to an absolute minimum of PTS and Industry Common Induction, with the vast majority trained to lookout/site warden, COSS, SWL 1 and 2, and ES by their in house Learning and Development Team. This enables teams to have a clear and safe understanding of the task to be carried out and the safe system of work to be used. Project managers are also trained to a minimum of COSS level to ensure that thorough and realistic planning can be achieved and ensuring that safety and productivity go hand-in-hand.

Bridgeway Consulting Limited = (3E)S
Exceeding Expectations Everywhere Safely


Traverse of tertiary control gird, London Liverpool Street Station

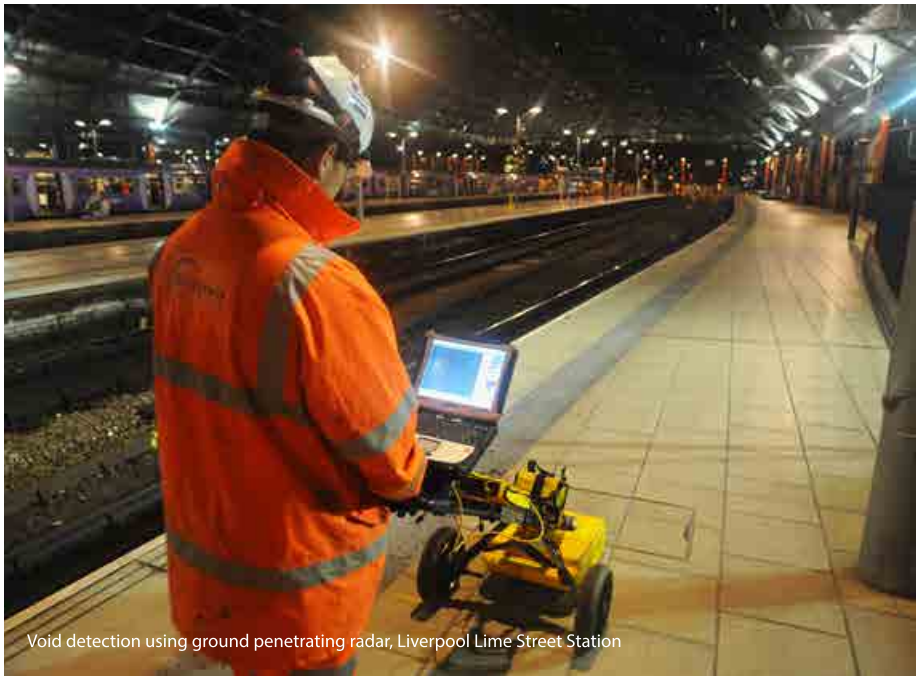
Partnered with this approach, Bridgeway also employs significant in-house possessions teams, AC and DC isolations teams, access planners, and SSOW and PDSW planners. They also hold a Network Rail Principal Contractor License, can effectively operate on a 'one stop shop' basis, and are able to successfully scope, plan and deliver complex tasks in a challenging working environment.

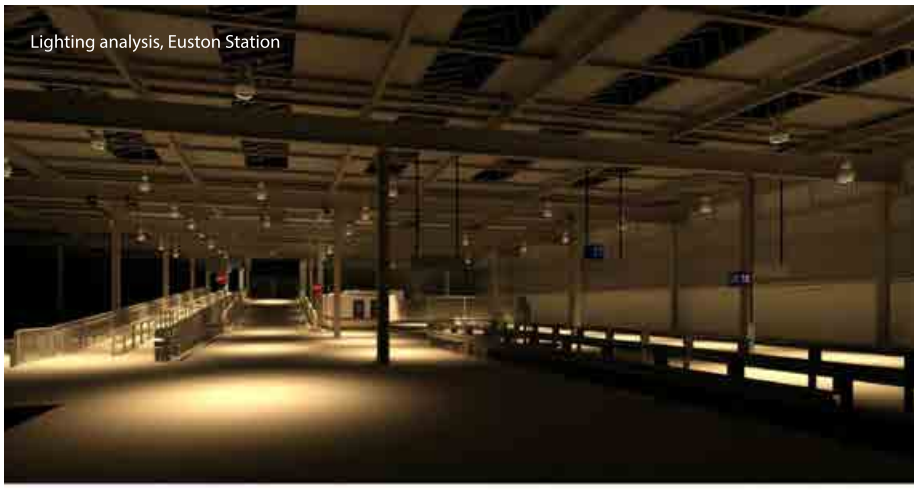
World of geomatics changing

The world of geomatics is changing, with an emphasis on reducing the need for boots on the ground at the very forefront of the industry. Ongoing and rapid developments in technology are enabling mass data capture to be undertaken quickly, moving the focus away from time spent on site and towards the presentation and interpretation of different data sets. In order to reduce site times, Bridgeway Geomatics teams use the most up-to-date equipment including vehicle and track mounted laser scanners, photogrammetry, UAV's and semi-automated data extraction software.

With speed though must come an appreciation of data accuracy. Come detailed design stages, there will always be a requirement for highly accurate survey data, while early stage design may only need a high level appreciation of site constraints to


Collection of high precision static scan data, London Liverpool Street


Void detection using ground penetrating radar, Liverpool Lime Street Station


Lighting analysis, Euston Station

allow for option selection. Additionally, the selection of differing survey methodologies may have wider implications as, for example, mass data collection has its own challenges when storing, manipulating and working with the data itself. It is at this point that Bridgeway offers its expertise in proposing the most appropriate method of data collection and presentation for each particular project.

With these key considerations in mind, Bridgeway is currently offering the following services as part of its expanding Geomatics portfolio:

Deformation monitoring

Key to any major project is an understanding of its effect on any existing infrastructure. Bridgeway is experienced in devising and deploying monitoring systems which are individually tailored to a specific project. The company employs multiple monitoring methods across its projects, including wireless mesh technology, tilt sensors, automated and manual optical measurement systems, photo and video systems, pointcloud, pressure gauges, strain gauges, and crack sensors. Multiple methodologies are often best employed to ensure that verification can be carried out, and the reporting of potential movement can be tailored to each client and their needs. As part of the integrated service, Bridgeway is able to carry out the planning and access arrangements, installation (including in difficult to reach locations), reporting, verification and ultimately decommissioning on sites including embankments, track and structures.

Utility Surveys

While the capture of above ground topography is becoming ever faster and easier, below ground services still pose a significant challenge. With cable strikes a constant concern, it is essential that full utility searches are carried out. Bridgeway has recently built an in-house utilities team, which works with the company's survey teams to ensure that all data collected is accurate and can be presented in a way that it is easily understood within the context of the wider site. Using a combination of utility provider searches, ground penetrating Radar and radio detection, the team is able to provide confidence in the existence and location of underground services. In line with PAS128, it can also carry out intrusive surveys with Bridgeway's in-house ground investigation teams where necessary.

UAV surveys

As part of its ongoing commitment to safety, Bridgeway currently undertakes UAV (unmanned aerial vehicle) surveys and inspections in challenging areas which would traditionally create significant risk when using a more hands on approach. With full Civil Aviation Authority and Network Rail approval, it is able to utilise UAV technology to gather a variety of airborne data from varied payloads, be that photo, video, thermal imaging or LIDAR. Combining with its core geomatics capabilities, it is able to ensure the highest possible accuracies by tying into pre-established control networks, and combine multiple data sets to create a comprehensive survey or inspection.

Building information modelling and data management

Upon collection of many varied data sets, the final piece of the puzzle is how to present, deliver and ultimately manage that data so that it gives real value to the client. Bridgeway is able to deliver survey data in various formats to match its clients' needs, whether that is 2D plans and sections, 3D wireframe and surface models, photo, video, pointcloud, through to solid parametric models incorporating above and below ground data. It creates full 3D BIM models to enable scheduling and phasing of work analysis, briefing and visualisation tools, clash detection and lighting analysis among many other benefits.

With the rail industry looking ever more towards BIM and information management, the company is also able to offer consultancy around relevant industry standards and support on the most appropriate deliverables and systems for its clients' projects. It also helps to enable long-term value by embedding asset information into 3D solid models, ensuring that the model can be used as an asset management tool in the future.

The diverse capabilities shown above enable Bridgeway to deliver complex and high profile projects on an ongoing basis from planning through to delivery as a fully integrated team. The industry is constantly evolving, and Bridgeway is dedicated to employing the most innovative and appropriate methodologies, to ensure it is able to continue to deliver its usual high standards within the rail environment.

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Unforgiving of unsafe behaviour

Genesee & Wyoming (G&W) acquisitions focus attention on aligning safety cultures with the help of **DuPont** workshops

G&W is North America's largest owner of short line and regional freight railroads. It is a US$2 billion business with 121 railroads in North America, Australia, the UK and continental Europe. Since 1985, the company has made 38 acquisitions including the 2012 acquisition of Rail America, which instantly doubled G&W's headcount. Today, G&W subsidiaries employ 7,500 people who serve more than 2,800 customers across 17,500 miles of track.

Beginning the safety journey at G&W

In 2006, safety performance of G&W subsidiaries varied widely across the company's railroads. With a collective workforce numbering 2,500 employees at the time, the railroads recorded 54 injuries. Expansion through acquisition was an on-going focus. Yet, instead of merely concentrating on the financial and business aspects of growth, G&W leaders were concerned about the need for controlling the safety performance in an environment that was in continual flux. G&W sought advice from DuPont, a global company renowned as an owner/operator with world-class safety performance.

DuPont Sustainable Solutions (DSS), the operations consulting division of DuPont, identified safety issues that were the result of a dispersed workforce with a high turnover of staff. After considering a variety of consultative and skill-development approaches offered by DSS, G&W leaders hired DSS to conduct a series of instructor-led safety leadership workshops in regional locations near G&W railroads.

'I had taken part in DuPont line supervisor workshops in my previous employment and was an advocate for them right from the start,' recalls Tyrone James, senior vice president of safety & compliance. 'DuPont's name is synonymous with safety. They're the gold standard on safety.'

All of the ten G&W senior vice presidents responsible for G&W's 10 regions took part in the first workshop with the objective of cascading the knowledge gained down to each region. James is clear: 'I see tremendous value in the DSS workshops. They are about accepting personal accountability, recognising one's shortcomings in safety and modelling a behaviour that we want people to emulate.'

The DuPont safety leadership workshops are just one part of G&W's overall safety programme. It also includes Operation Lifesaver, which educates local communities on grade crossing awareness, monthly conference calls with all senior regional leaders that have safety as the first point on the agenda, internally-developed safety training classes and processes based on DuPont's safety management philosophy.

G&W railroads previously performed inspections, but now perform safety audits because, as James says, 'audits focus on people while inspections focus on things.' DSS' focus on employee engagement is one of the reasons G&W felt DuPont's safety leadership workshops were a great fit for the way G&W works. The curriculum emphasizes DuPont's philosophy that safety is a line management responsibility and includes a demonstration of DSS's six-step safety observations process, incident investigation methodology and ways participants can integrate safety rituals into their daily work practices to create a culture of safety excellence.

The challenge: integrating a variety of safety cultures and beliefs under one common safety philosophy

G&W's rapid expansion through acquisition presented corporate leaders with the daunting challenge of uniting new people from different companies with different safety cultures, demographics and standards behind one common goal of uncompromising world-class safety. G&W leaders could ill-afford to introduce new employees to G&W railroads without a mechanism to quickly help them understand, work and live by G&W's approach to safety management. James concedes, 'It is challenging to integrate all these new companies.'

G&W decided to use safety as a rallying platform and DSS's safety leadership workshops as a cultural integration tool to bring together diverse cultures behind a common safety philosophy.

James explains, 'DuPont is critical for our growth. With DuPont, safety is a line management responsibility. I can see the change in attitude among participants of the workshops. They are different people leaving [the workshops [compared] to the people who come in.'

G&W believes safety is an investment in people because it is about people G&W runs an average of 10 workshops a year with each workshop accommodating up to 25 participants. The workshops rotate through hub cities such as Montreal, Atlanta, San Diego, Rotterdam in the Netherlands, London in the UK and Newcastle, just north of Sydney in Australia.

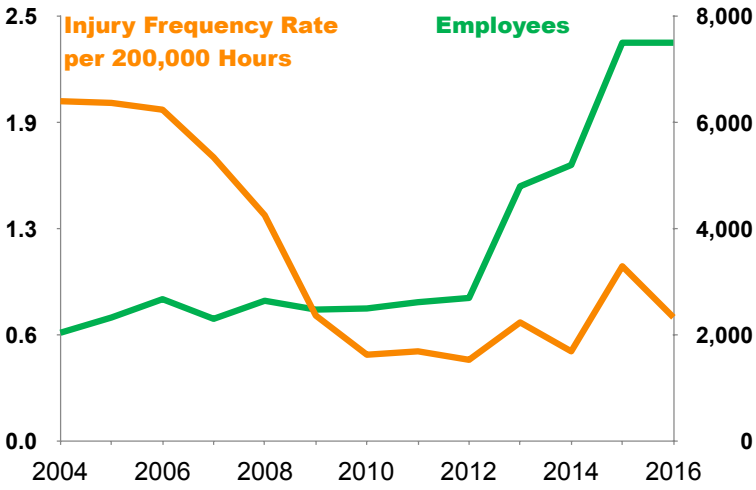
'The workshops are an investment made in you as a person' James explains. 'Safety is not just the job of the safety manager. You're there every day. You become the standard. You have to live by example.'

G&W's employee slogan is 'It Starts with Me'. G&W railroads emphasise this critical point by selecting the workshop participants

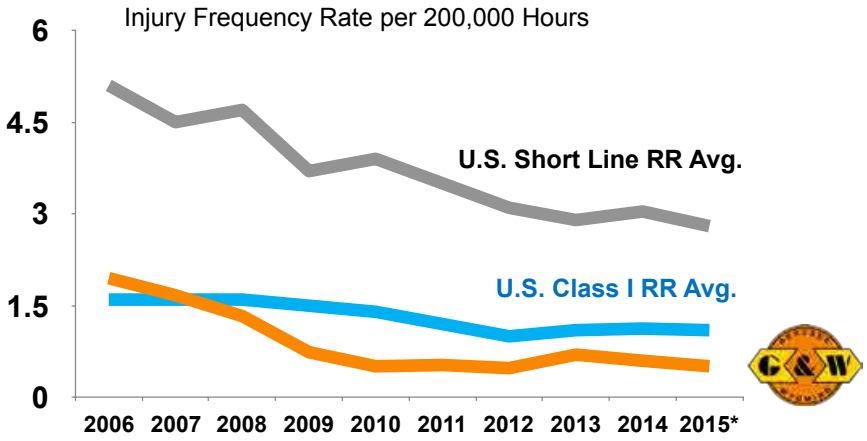




G&W Injury Frequency Rate and Number of Employees



Safety Culture: 2006-2015



*2015 G&W not including April Freightliner acquisition

from every corner of the organisation including administrative staff, vendors, contractors, customers and executive board members. By mid-2016, 1,342 employees at every level of the organisation had participated in approximately 60 safety leadership workshops.

At least eighty-five employees of G&W railroads, as well as Jack Hellmann, the CEO, have repeated the course. 'My number-one responsibility as CEO is the safety of our employees,' explains Hellmann, 'and G&W's core purpose is to be the safest and most respected rail service provider in the world. My attendance at the workshops helps demonstrate that those aren't just words on a page. The workshops haven't changed the message, but they reinforce that it's every employee's responsibility – and that includes me – to eliminate unsafe behaviours and unsafe conditions from the workplace. The workshops instil both the belief that all injuries are preventable and a methodology for their prevention, which attendees bring back to their railroads.'

The proof is in the results

Headcount grew by 300 per cent, and injuries fell by 70 per cent. Given the number of acquisitions, the increase in employee numbers from 2,500 to 7,500 and the vast increase in geographical spread of G&W operations, maintaining safety performance at 2006 levels would be quite an achievement. Yet as Jack Hellmann says, 'Since G&W began the DSS workshops in 2007, the combined injury-frequency rate per 200,000 hours for our railroads had by April 2015 improved by 70 per cent from 1.67 to 0.51, even as the number of employees more than doubled. The workshops are a key aspect of the G&W safety culture that produces that industry-leading performance.' And in 2016, G&W is on track for year-over-year safety performance improvements from further reductions in the injury rate.

Hellmann sees the impact and value from the DSS workshops in other parts of the business as well. His perspective is that the concepts covered in the workshop have helped drive performance improvements in productivity, down-time, general employee commitment and motivation.

'Without question, we have found that the attention to detail required to eliminate injuries translates to every aspect of operations, resulting in not only injury-free railroads but also efficient, well-run railroads with high customer satisfaction,' he said.

The safety journey never ends

In 2015, G&W acquired the Freightliner Group (FG), a leading rail freight provider with businesses in the UK, continental Europe, Australia and the Middle East. FG employs approximately 2,500 people. G&W quickly introduced FG to the DSS workshops as part of the established integration process. To date, FG has participated in an estimated 12 safety leadership workshops in the UK, Australia and Poland with many more courses being scheduled for sites in The Netherlands, Italy and Germany. FG is already seeing the results. Initial lagging indicators show an uptick in safety performance from rapidly decreasing injury frequency rates.

G&W's vision is to be an injury-free company. In partnership with DuPont, G&W is on the right track towards setting the gold standard for safety performance in the railroad industry.

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G&W subsidiaries' combined safety achievements with DuPont

- A 70% improvement in the combined injury-frequency rate per 200,000 hours since 2007
- … while increasing the workforce from 2,500 to 7,500 people
- More than 5 times safer than the average US short line railroad
- A safety performance that is approximately two times better than the Class 1 average

Rail industry torque – part 2

In the second of four articles on the use of torque tools in the rail industry, **Philip Brodey,** sales director at **Norbar Torque**, looks at the use of geared torque tools, also known as torque multipliers

Geared torque tools or torque multipliers are widely used in the rail industry. They generally use an epicyclic gear train to increase the torque generated from a low torque input device. The input device might be a hand torque wrench, a pneumatic motor, an electric motor (corded or battery) or hydraulic motor and there are various types available on the market for rail users.

Hand operated torque multipliers – HandTorque®

HandTorque multipliers take their input drive from a hand torque wrench and multiply the input by a precise amount to give a known output. Typical multiplication ratios are 5:1 for a basic multiplier through to 25:1 or even 125:1.

Using a torque multiplier, it is possible to use a low capacity torque wrench to achieve a very high final torque, which is ideal if there are space restrictions with a particular application.

The combination of a torque wrench with a multiplier may sometimes be lighter than a torque wrench of equivalent capacity alone. For example, Norbar's 22:1 ratio HT-52 plus a 60 N·m torque wrench achieve 1,000 N·m with a total weight of around 3 kg – about half the weight of a typical 1,000 N·m torque wrench.

HandTorque multipliers are therefore an excellent way of achieving accurate torque from a compact package. They are particularly useful in space-restricted areas or where there is no external power source.

The drawback with hand operated torque multipliers is that, if the torque input is multiplied by 25 times, you have to provide 25 revolutions of the input to achieve one revolution of the output. Therefore, operation can be slow which means that this is not the tool to use if there are multiple bolts to tighten.



Pneumatic torque tools – PneuTorque®

The first powered multipliers that Norbar manufactured employed an air motor, now known as the PneuTorque range.

Torque control is achieved by stalling the air motor as resistance from the tightening bolt is met. The greater the air pressure, the higher the stall torque. Each individual PneuTorque is supplied with an air pressure versus torque graph which ensures torque repeatability of better than ±5 per cent.

For more precise torque control, PneuTorques can be fitted with a torque transducer and a solenoid that cuts the air supply once the required torque has been reached.

These tools should not be confused with impact wrenches. PneuTorques have comparatively low noise (below 85 dB(A)) and much lower vibration levels – typically less than 2 m/s2. They also have much more repeatable and accurate torque control than impact wrenches and because there is minimal vibration they are less destructive to sockets, the application itself and, most importantly, to operators.

Operators familiar with impact wrenches will often question the relatively low speed of pneumatic torque wrenches. However, it should be remembered that the difference is in the free-running speed. Once the tool is under load, pneumatic torque wrenches will usually be as fast, or faster, than impact wrenches.

The drawback of pneumatic torque tools to rail operators is that the operator will need a source of compressed air which may not be available when working remotely.

A typical application for PneuTorque is found during the manufacture and maintenance of the London Midland Class 170 engine. The Auto Coupler bolts require tightening to 1,600 N·m. The torque required to remove the bolts increases to around 4,000 N·m due to the application of Loctite on the threads.

The solution was the use the PneuTorque which reduced the time taken to remove the bolts from over two hours per bolt to under one hour.



> Since their introduction, EvoTorque products are increasingly being used for bolted steelwork applications for rail infrastructure and are also ideal for locomotive and rolling stock assembly and maintenance

Electric torque tools – EvoTorque®

Applying an electric motor to a torque multiplier may seem like the obvious solution to the requirement for compressed air. However, electric tools are surprisingly difficult when it comes to accurately applying the desired levels of torque. Due to the high inertia inherent to most electric motors they will continue to run-on for several revolutions after the power is shut off, which adds further torque through the gearbox.

If all bolted joints were the same, it would be possible to allow for this run-on by simply sending the 'stop' signal to the motor early. However, bolted joints differ widely in their torque rate *i.e.* the angle of rotation necessary to take the joint from snug to tight. A soft joint needs more angular rotation to pull together the items to be joined than a hard joint, where there is already solid contact. The extra motor revolutions are absorbed by the soft joint but can lead to significant over tightening of a hard joint.

This limitation of electric torque tools led Norbar to remain outside of the market for several years whilst an appropriate solution was found. EvoTorque, launched in 2012, uses sophisticated software to monitor the torque rate of the joint being tightened and can apply kinetic breaking to avoid torque overshoot. The result is a tool that offers accurate results on any bolted joint that it is likely to encounter.

The second generation EvoTorque, EvoTorque2, which has been launched recently, can gather torque and angle tightening data for either live download or batch download to data management software. Download can be achieved either by Bluetooth or by USB cable.

All EvoTorque tools can be run from suitable generators and have a wide tolerance to voltage and frequency fluctuation. If the tool starts and runs, it will deliver the correct torque. If the voltage is outside the tolerance then the tool will not run and an error message will be displayed.

Since its introduction, EvoTorque products are increasingly being used for bolted steelwork applications for rail infrastructure and it is also ideal for locomotive and rolling stock assembly and maintenance.

Engineer to order products

For many applications the standard 'catalogue' product might not be suitable for a number of reasons, most commonly the fact that a bolt is inaccessible to the standard product.

The solution might be a special offset gearbox, a special torque reaction device or a nose extension for recessed bolts.

In one case a rail customer wished to drive the torque tools hydraulically, which led Norbar to attach a continuous rotation hydraulic motor to the gearbox that was powered from the power-take-off on the rail maintenance vehicle.

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Protecting connectivity

On-going power and data connectivity is vital in today's modern rail network. **Tim Creedon**, sales and marketing director of **Flexicon**, outlines how to get the cable protection specification right and introduces the company's new flexible conduit fitting

The rail industry has always recognised the vital role that cabling plays in safety critical applications, and is increasingly realising how it can help drive operational efficiencies based on effective use of data and devices interacting with each other.

A good example is Network Rail's Digital Railway strategy, which aims to increase capacity through making more effective use of existing infrastructure. It plans to achieve this using a combination of cab signalling and traffic management systems.

Cable protection is recognised in the industry as vital for services such as signalling systems, passenger information points, lighting and security, so it pays to get the specification right.

While there are significant pressures on budgets, specifiers must look at the total cost of ownership during specification and consider the risk of downtime or failure of a cable protection system. Equally this is not an excuse for an over-engineered system.

There is a real need for technical solutions that can be proven to meet the needs of the application.

The first step is to conduct a risk assessment for the particular applications, identify the likely hazards and then specify a complete conduit system to ensure the cable's long-term protection. This will in turn ensure continuity of power and data to keep vital systems functioning.

Generally most cabling will be subject to three or four different hazards, but these will vary according to the application. It may for instance need to cope with immersion in water due to flooding, exposure to UV light, freezing temperatures, attack from rodents, vandalism or potential cable theft, dynamic pulling, protection from electromagnetic interference, crushing and impact resistance, abrasion and the list goes on.

Each application is likely to be different and may require a different solution. Reputable manufacturers will generally have a range of standard conduit systems and their advice will help you make the right choice. Flexicon for instance has 56 different flexible conduit systems to choose from.

Even having identified the likely hazards, it's still a case of buyer beware. Take the issue of ingress protection. When it coms to water ingress, it is not simply a case of specifying the highest test and assuming that it is okay. The standard actually states that above IPx6 you cannot assume that the product will meet a lower level. This is because above this level each has a different type of test and is subject to different conditions and environments.

Water ingress with the rail infrastructure is likely to come from a number of sources, including possible immersion due to flooding, so you could need IPx7 or IPx8 protection.

This raises an interesting point. The test for IPx7 is perfectly clear: it states "30 minutes at 1 metre immersion under water." If however you want a higher performance level than this, then IPx8 is open to interpretation, it states "Immersion at a depth (pressure) and time stated by the manufacturer, but must be more onerous than IPx7."

In other words, the manufacturer decides the exact nature of the test, so check with them what they mean by IPx8. For the record, Flexicon has conducted tests on products immersed in 1 metre of water for 72 hours. We believe that this mimics what





An Ingress protection test for flexible conduit



Cable protection on rolling stock



The new Flexicon Ultra fitting offers best in class connectivity for electrical and data applications that demand continuity

the cabling might be subjected to if there are floods covering infrastructure.

The lesson is to identify the hazards, consider the degree of each hazard and then double check that the flexible conduit system will meet your needs.

Completing the connection

But this is just part of the story, to ensure long-term connectivity you need to consider the entire flexible conduit system. The fitting is an integral part of the protection and for many hazards the interface between the conduit and the fitting and/or the fitting and the equipment could be the potential weak link.

It pays to spend some time exploring different fittings for their properties and to take just as much care over their specification. Likely factors may include its IP rating, pull off strength, resistance to vibration and dynamic forces, resistance to tampering, plus, of course, ease of installation.

Just like flexible conduit, new fitting technology has made great strides in recent years.

The power of one

And now Flexicon claims to have developed the world's best flexible conduit fitting for applications where on-going connectivity is critical. Its patented Flexicon UltraTM combines a number of class leading performance criteria.

Its all round teeth provide 360º strength facilitating the strongest tensile strength available of up to 70Kg and the highest level of anti-vibration and shock protection performance tested to EN 613373 Cat 2. It is a true one piece fitting featuring integrated sealing technology to deliver IP ratings of 66, 67, 68 (2 bar), 68 (72 hours@1m) and 69.

Unusually for such a high performance fitting, Flexicon Ultra has a one-piece construction, so there is no risk of dropping parts on site and it is easily installed using a simple push and twist connection with the conduit.

The new fitting is tamper-proof, but you can remove it using a screwdriver if required. It is available as a straight, elbow, UNEF or flange with both male and female thread options for use with fine and coarse pitch corrugated nylon conduits.

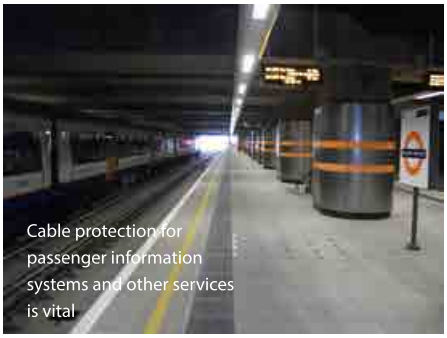
Trusted supplier

With an influx of new suppliers and solutions for cable protection, it is worth taking your time to get the specification right and knowing who your reliable suppliers are.

Most manufacturers can claim ISO 9001 in today's market, but the rail industry is well known for its exacting standards.

With this in mind, check that your supplier uses the Railway Industry Supplier Qualification Scheme (RISQS) and has achieved the International Railway Industry Standard or IRIS.

RISQS provides a pre-qualification service that suppliers can use to prove that they are capable providers of products and services to the rail industry. It is administered by Achilles and replaces the



Cable protection for passenger information systems and other services is vital

supplier Link-Up system.

IRIS complements the ISO 9001 quality standard but introduces specific rail industry requirements. It audits a company's business processes, efficiency and systems to provide a common basis for benchmarking suppliers and assessing their quality procedures. It also helps ensure that any cost reductions are the result of innovation and production efficiency, rather than affecting the quality of the products or systems applied.



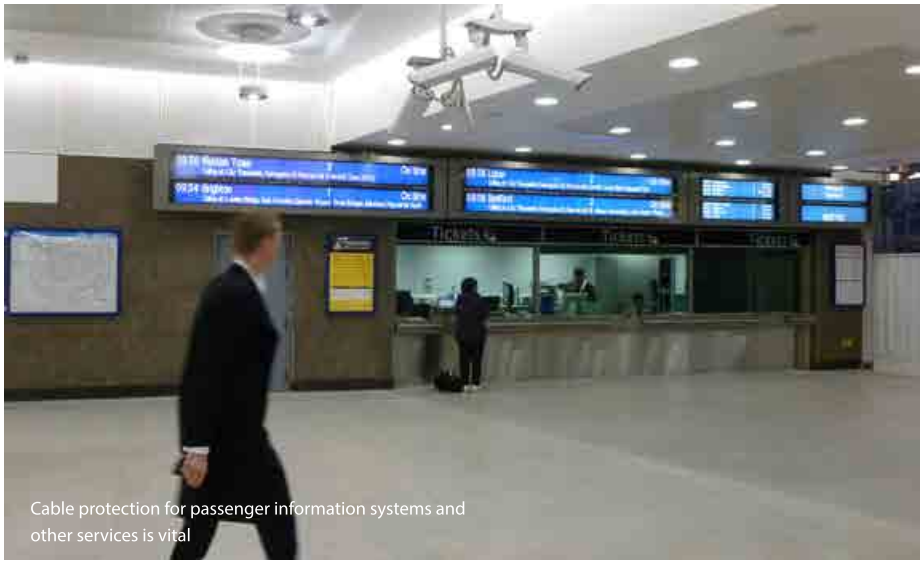
Cutaway of the Flexicon Ultra fitting which offers best in class connectivity for electrical and data applications that demand continuity

Flexicon is IRIS approved for the design, development and manufacture of flexible conduit cable protection systems and they are also a RISQS Verified Supplier, so specifiers and purchasing teams can have maximum confidence in the company's capabilities.

Final thoughts

Staying connected is vital for safety and efficiency. You need to specify cable protection with care, conduct a thorough risk analysis and consider the complete flexible conduit solution to include the fitting. Check that your supplier has IRIS accreditation and if they do liaise with them to get the best solution.

Get the cable protection right and you will enjoy many years of maintenance-free safe electrical and data connectivity. It's not even worth thinking about the potential consequences of getting it wrong.



Cable protection for passenger information systems and other services is vital

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Badge of honour

Top honours went to **Badgemaster** at the recent Professional Clothing Show

Name badge manufacturer, Badgemaster, scooped three highly commended awards at the Professional Clothing Awards; Best IT Innovation and Website, Made in the UK, and Best Manufacturer/Distributer.

Celebrating its achievements, Badgemaster was centre stage receiving the awards from Olympic star and TV presenter Sharron Davies at the glamorous event in London.

Co-founder and managing director, John Bancroft MBE describes his pride and delight at the achievements of the company's 100+ team: 'To receive these awards is a great honour – for our team, our clients, and for the local community in Nottinghamshire. To be globally recognised for our achievements is one of the great landmarks in our journey to deliver unparalleled products and service for our customers.'

Award 1: Best IT Innovation and Website Badgemaster.co.uk launched its new site with many innovative features earlier this year, providing enhanced services to customers to help them access highest quality, personalised badges with the Badgemaster price guarantee easily and efficiently.

Bespoke user friendly online badge design, helpful product information, expert advice and instant price quotations are part of the Badgemaster.co.uk experience. The company's customers can now place orders online giving them the fastest, the most accurate and the most economical way that there is to order a name badge.

With an average of 50 new enquiries and more than 1000 orders a day, the website is a key part of Badgemaster's customer service, helping 27,000 customers and an estimated 5,000,000 people wearing Badgemaster's name badges every day.

Award 2: Made in the UK Badgemaster, Europe's largest name badge manufacturer, had its first factory in a small portacabin in Hucknall, Nottingham. Twenty-four years later, the state-of-the-art purpose-built 12,000 square foot facility still resides in nearby Newstead Nottinghamshire. The company plays an important role in the local community, receiving governmental recognition for staff training and environmental responsibility; subjects close to the hearts of many of Badgemaster's employees, who come from the local ex-mining community.

The company's focus on British suppliers of the highest calibre has also earned it the British Standards Institute Accreditations for Quality and Environmental Management.

In 2006, Her Majesty the Queen granted Badgemaster the Royal Warrant.

Award 3: Best Manufacturer/Distributer Badgemaster's best in class reusable name badge, Instabadge®, was recognised for its quality and customer service benefits. It enables customers to create bespoke, professionally designed badges within their own premises. It's unique and innovative design enables customers to have almost all the quality and appearance of a professionally made ready-to-wear badge with all the economy and convenience of a reusable one.

Its benefits have been widely recognised, with more than 2,000 customers already enjoying the Instabadge benefits. As well as being available from Badgemaster directly, it is also now distributed through corporate clothing companies, catalogue and office stationery suppliers.

Yvette Ashby, the publisher of *Professional Clothing Director* -e magazine and director of the Professional Clothing Show and awards, was delighted to see these three important awards go to Badgemaster. 'It fills me with pride to see Badgemaster's great success at our 2016 awards. We had more than 400 attendees from all over the world from large global companies, independent organisations and some of the industry's rising stars from fashion designers to corporate tailors, who all play a part in ensuring the professional clothing industry remains cutting-edge, competitive and customer-focused.'

Tel: 01623 723 112
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Visit www.badgemaster.co.uk



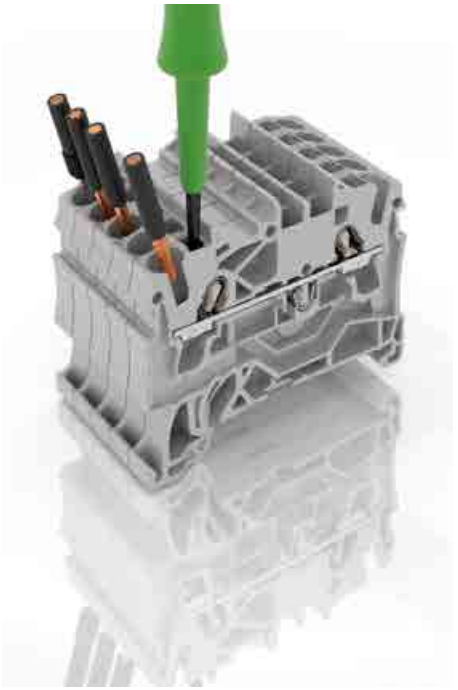
Badgemaster manufacturing manager Scott Warren with managing director John Bancroft MBE and customer service advisor Amy Dench receive the Made in UK award from Olympic star and TV presenter Sharron Davies

Your connections terminate here...

WAGO's **Paul Witherington** explains why reliable termination of electrical connections is crucial for the often harsh conditions found on and around Britain's railways

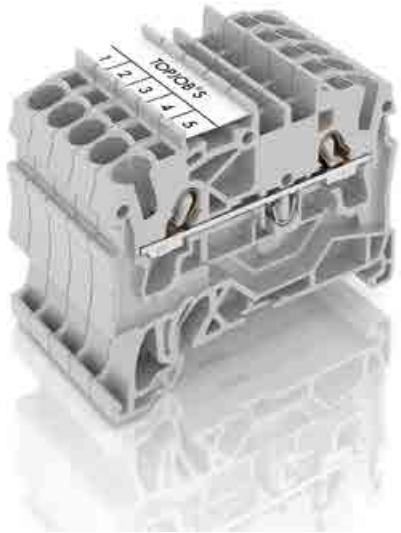
Every year we see the same stories in the papers – leaves on the track, flooding, 'the wrong kind of snow', too hot, too cold, too wet, too windy. But while these make good populist headlines they're often hugely unfair on the train operating companies that work hard to keep services running whatever the weather. However it does go to show that customers continue to have very little patience when it comes to reliability issues, and rightly so, as reliability and safety are more or less the minimum requirements of a satisfactory rail service.

When it comes to electronics, you need to be sure that your connections are reliable and secure, so that failures can be avoided wherever possible, even in the most extreme conditions.



The challenges presented by the British climate demand electrical connections that are sufficiently robust to withstand heat, cold and rain, and that's before you consider the rugged nature of the modern railway itself. As well as protection from the elements, connections also need to be able to withstand the rumbling of regular passing traffic and/or nearby engineering works.

As more and more devices across the UK rail network become electrified or automated both on-board and trackside, the safety, reliability and security of wire terminations becomes increasingly important. In this respect, clamp mechanisms are fast becoming the preferred method for termination of connections, due to their superior reliability and ease of use compared to screw-type methods. Screws will invariably loosen over time due to repeated temperature cycling, and eventually fail, even without factoring in the harsh environments and repeated vibrations found on railways. Screwless connections are far quicker and easier to install, and since the clamp mechanism doesn't damage the wires, individual connections can be rewired more quickly and entire cabinets can be subsequently reconfigured more easily with less downtime. Indeed, with no tools required and simple, push-in termination of solid and ferruled conductors, wiring time can be reduced by up to 75 per cent.

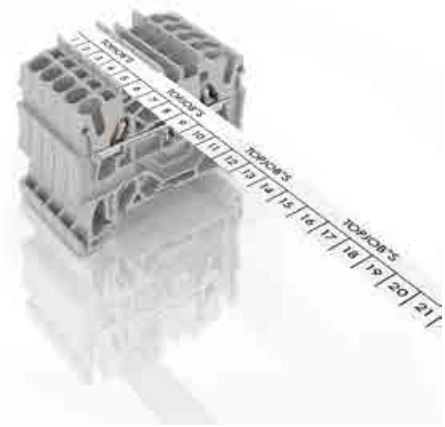


Demands of the modern railway

WAGO's TOPJOB® S DIN rail-mounted terminal block is ideally suited to the demands of the modern railway. It is suitable for all conductor types from 0.14 mm2 to 25 mm2 including stripped, solid, stranded and fine-stranded with ferrules. WAGO's Push-in CAGE CLAMP® technology means that once a wire is inserted, the spring adjusts automatically to the conductor size; this means that the wire is held securely and indefinitely. The terminal block can withstand shocks of up to 500G and vibrations of up to 20G, making it suitable for the harshest environments.

The product family comprises the industry's widest range of conductor sizes and includes single-, double-, triple- and quad-deck terminal blocks as well as fuse, disconnect and diode terminals. The TOPJOB® S rail mounted terminal blocks enable all of the above conductor types to connect one size greater than their rated cross section, saving up to 25 per cent on wiring space and costs. A comprehensive range of feed-through and special function terminal blocks are also available, providing safe, secure, reliable termination of connections for many different railway applications.





TOPJOB® S rail-mounted terminal blocks are quickly and clearly labelled using continuous marking strips. Using free software, the strips can be printed with four lines of information with sufficient space to designate each module and its function. This ensures wiring accuracy and saves time and waste.

Paul Witherington is marketing manager UK & Ireland at WAGO
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Email: ukmarketing@wago.com
Visit: http://global.wago.com/uk

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1st Solutions employment & training services ltd supply to clients in a variety of industry sectors, providing a bespoke, high quality service. This can form pre-tender through bid support and participation, managed service provision, personnel supply, training & assessing and minor works.

We are headquartered in Mountain Ash, just a short ten minute drive from the A470 in South Wales. And have branch offices in Plymouth and London.

We are proud to boast a state of the art training school at our head office, which includes an acre of land to be developed purely for the use of aiding our various specialist training courses. Our Rail specific training courses range from Personal Track Safety (PTS) through to Person In Charge Of Possession (PICOP) level.

For prospective clients please use the contact information above and we can provide you with a tailored quote or in-depth company introduction and full list of capability.

For prospective employees we are constantly looking for the right individuals to become part of our wider network and continue to provide an exceptional service to our clients. So please if you have rail and/or construction competency get in touch. Excellent rates of pay, mid to long term contracts and training/development for the right individuals.

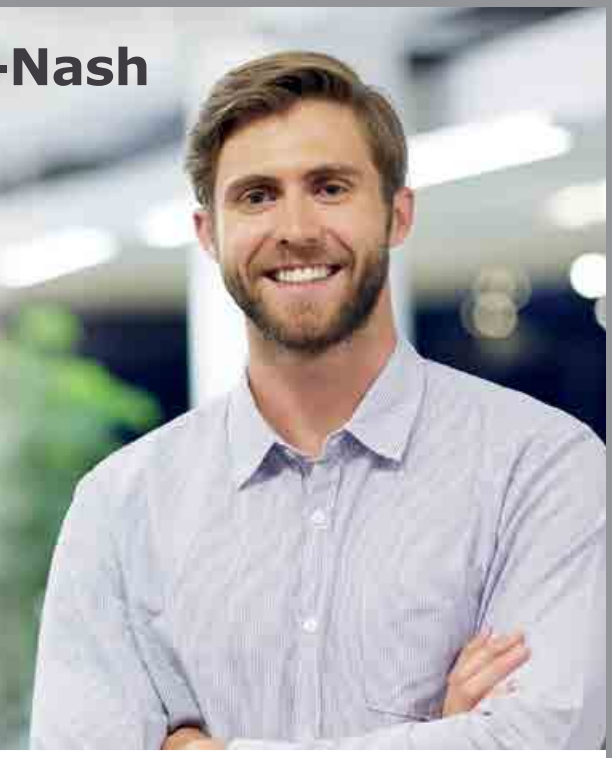
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1st Solutions offer professional and personalised employment solutions to employers and job seekers in a variety of sectors including rail, highways, industrial, health care and commercial. We are a RISQS audited labour supplier and specialist recruiter to the rail industry with over 20 years collective experience of supplying personnel to both the Rail Industry and Civil contractors.

Opportunities with Frazer-Nash



At Frazer-Nash, we employ dynamic and original thinkers who challenge all boundaries to find the perfect solution for clients. This way of thinking has enabled us to grow into a rapidly expanding systems and engineering technology consultancy, with offices throughout the UK and Australia.

We specialise in delivering creative engineering solutions to clients across the defence, nuclear, power and transport sectors. We are now looking to recruit the following roles:

- **Control and Instrumentation Engineer**
- **Rail Safety Consultant**
- **Rail ERTMS and Command, Control and Signalling Engineers**
- **Rail Systems Engineer**

Our staff are rewarded with a competitive salary, generous benefits package and the opportunity to work as part of a dynamic and successful team. We always look for strong talent in our key business sectors and across all of our locations in the UK and Australia.

To apply, please forward your CV and covering letter to cv@fnc.co.uk, quoting reference RP1016.

Due to the nature of the work that Frazer-Nash undertakes we will require successful candidates to gain UK security clearance.

Our market sectors
aerospace • transport • nuclear • marine • defence • renewable energy • oil and gas

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FirstGroup plc. is the leading transport operator in the UK, Republic of Ireland and North America with revenues of more than £6.9 billion a year. As the world's leading Transport Company, we help 2.5 billion passengers every year get to where they want to go.

The world of FirstGroup is incredibly diverse with our coaches, buses, trams and trains helping school children, commuters and passengers go on all kinds of journeys.

Our vision is to provide solutions for an increasingly congested world… keeping people moving and communities prospering. Enabling people to live ever closer together, yet still move about and prosper is a major challenge. However, we're one of the few organisations in the world with the scale and expertise to meet this challenge.

From our bus to our train drivers to our customer service and support teams, we all work as one big family to shape the future of travel and provide better journeys for life. With over 117,000 employees across our offices, bus depots and train stations, we provide our customers with a great experience and are looking for likeminded individuals to join our business every day.

www.firstgroupcareers.com

First

Merseytravel continues to move forward. Since the creation of the Liverpool City Region Combined Authority in April 2014, we have been even more at the forefront of providing strategic, professional and operational transport advice to the Liverpool City Region, whilst continuing our work to deliver a first class public transport network, putting transport at the heart of contributing to the growing economy of the region. The development of the city region Long Term Rail Strategy, the Northern Powerhouse and the Devolution agenda means we are now seeking experienced and enthusiastic candidates for key roles in taking the Rail team forward to the next step of our development.

Merseytravel

Rail Development Advisor (Stations)
£47,379 to £56,569

This role will support the development of the city region's Devolution proposals as it affects Rail, particularly in respect of stations. We are seeking a suitable candidate who will be capable of development of options through business case and economic appraisal, into a deliverable Devolution proposition demonstrating value for money that meets the strategic objectives of the city region. Following successful development of proposals we are looking to develop our in-house asset management capability which the post-holder will play a major part in establishing, including subsequent management of the asset portfolio maintenance and renewals within the operating model put in place.

With a degree in a transport, engineering or asset management related discipline and at least five years' experience in a similar role the successful candidate will work with colleagues, stakeholders, central government and wider industry partners to develop and deliver the Rail Stations' Devolution strategy for the benefit of the city region.

Rail Senior Project Manager
£38,522 to £42,096

Reporting to the Rail Development Manager the role will lead on the delivery of rail capital projects/programmes within the city region. Candidates are sought who will lead a small group of Rail Project Managers and are able to play a key role in the development and establishment of a core rail project management capability and competence framework. The Senior Project Manager will be central to ensuring that projects are managed within the parameters of time, cost and quality and that benefits are realised consistent with the business case requirements.

The successful candidate will hold a degree in a transport or engineering related field with significant commensurate experience, preferably within a rail environment. They will have demonstrable project and programme management skills evidenced by successful application through delivery. As well as managing a team the postholder will able to work closely with other colleagues, stakeholders and industry partners in delivery and realisation of benefits for the city region.

3 Year Graduateship (2 posts - 1 Rail and 1 Bus)
£20,956 to £23,572

Applicants are sought for Trainee roles to embark upon a career working within the Bus or Rail industry. Following a structured programme, postholders will assist in the development of projects and in managing service delivery whilst developing the knowledge and experience needed for future development and personal growth.

You will hold a transport Degree, alternatively HND or equivalent, along with an interest in and understanding of the transportation industry, particularly within the Liverpool City Region. Strong interpersonal skills and the ability to work with colleagues and stakeholders including elected members will be a key advantage. Excellent communication skills, a willingness to learn and flexibility in the nature of the work undertaken are a must. The ability to understand complex issues and data and to present cohesive reasoning to support recommendations for service and infrastructure improvements will be a key capability for successful candidates.

Application forms and further details are available from The HR Division, Merseytravel, PO Box 1976, Liverpool, L69 3HN, or by visiting our website at www.merseytravel.gov.uk
Completed application forms can be sent to: vacancy@merseytravel.gov.uk
Closing date: Friday 16th September 2016 @ 4.00pm


Jeremy Candfield

RIA director general retires

Jeremy Candfield, director general of the Railway Industry Association since 1998, has announced his retirement due to health reasons.

David Tonkin, former CEO of Atkins UK & Europe and past-RIA chairman, will step in as interim director general while a permanent replacement is found. Candfield will continue in a part-time role on particular projects until October.

'We owe Jeremy enormous thanks for the considerable service he has provided to RIA and to the rail industry. RIA has gone from strength to strength during his office,' said chairman Gordon Wakeford.


David Tonkin

New route MD for Wessex

Network Rail has appointed **Becky Lumlock** as route managing director for Wessex, one of the busiest routes on the rail network and the major commuter area to the south and west of London.


Becky Lumlock

Lumlock will join Network Rail on 1 November from Shell/BG where she is currently managing director of Dragon LNG, one of the major gas import terminals in the UK. She replaces John Halsall whose move to the company's South East route was announced last month.

Network Rail appoints two non-executive directors to new Property Board

Network Rail has announced the appointments as it continues to ramp up its property activities. **Neil Sachdev** and **Steve Smith** have a combined 73 years' experience working in the UK's property and regeneration sector.

The appointments follow the announcement in April that Network Rail had given its specialist transport property business, Network Rail Property, greater independence by establishing a property board which will approve and make recommendations about investments in and disposals of Network Rail's estate and property assets.

The new structure and governance arrangement will allow the company to increase its property activities to help generate £1.8 billion to fund the Railway Upgrade Plan by disposing of various assets.

The board will also provide greater focus on plans to deliver land for housing, while continuing to generate income from Network Rail's other property assets to reinvest into the railway.


Neil Sachdev

Steve Smith

Alstom appoints Nick Crossfield as MD for UK & Ireland

Crossfield will also continue in his current role as managing director train control until a successor is found.

Crossfield has worked for Alstom since 2015 and is a former managing director of Siemens Rail Automation UK, managing director of INVENSYS Rail and director, contracts & procurement at Network Rail.

'I could not be prouder to take up this crucial role,' he said. 'Alstom UK & Ireland is in a great place to deliver even more for our customers, and I am delighted to be leading us into this new period.'


Nick Crossfield

New signalling role at Alstom

The company has appointed **Jonathan Willcock** as MD for signalling and infrastructure in the UK & Ireland. In this newly created role, Willcock will bring together and oversee Alstom's signalling operation and its infrastructure division.

Willcock, who joined the company in 2013 as MD, Systems and Infrastructure, will report to Nick Crossfield.



Jonathan Willcock

New CFO for Eversholt Rail

Eversholt Rail has appointed **Andrea Wesson** to the role, where she is responsible for all aspects of commercial and corporate finance, tax, legal, risk and information technology.

During her eight years with Eversholt Rail, Wesson has held various roles in the finance function, with the latest being head of treasury and risk.

Wesson began her career at Forward Trust Group, the leasing arm of Midland Bank (HSBC), and was a member of the due diligence team when the bank acquired Eversholt Leasing in 1997.

Mary Kenny, CEO of Eversholt Rail, said: 'Andrea has thrived at Eversholt Rail'.

HS2 interim construction commissioner appointed

Gareth Epps, who previously held a senior community relations role at Crossrail, will investigate issues that have not reached a satisfactory conclusion through HS2 Ltd's complaints process.

Epps, who was appointed to the role by an independent panel, will provide, impartial decisions as well as advice on how to make a complaint.

Said Epps: 'It is important that residents and businesses along the route know they can seek fair and independent resolution of complaints if necessary.'

Senior appointments at East Midlands Trains

Andrew Conroy took up the role of customer experience director in July, and **Lawrence Bowman** joined as commercial director last month.

Conroy, who was previously head of customer experience delivery, joined the rail industry in 1985 as a British Rail trainee in the north east.

Bowman, who was previously head of business planning, has held various commercial and customer service roles within East Midlands Trains since the start of the franchise in 2007.

Conroy and Bowman replace **Neil Micklethwaite** who has moved to the role of commercial director for Stagecoach's Rail division, which includes South West Trains, East Midlands Trains, Virgin Trains East Coast and the Supertram light rail network in Sheffield.

New station manager

Abellio Greater Anglia has appointed **Mike Barry** as station manager – London Liverpool Street, responsible for customer service provision from the Toc's key London terminus which sees a footfall of more than 63 million people per year. Barry was previously assistant area customer service manager at Bishops Stortford.

New managing director for Fugro GeoServices

Ross Stevens has been appointed MD of the site characterisation specialist. Stevens joined Fugro Seacore in 2007 after a decade in project management and civils contracting. In 2012 he was appointed deputy MD of Fugro Engineers based in the Netherlands. He returned to Fugro Seacore as a director in 2015, ahead of its integration in October 2015 as part of Fugro GeoServices.



Nicola Hindle heading Amey's Consulting & Rail business

Andy Milner, CEO of the public and regulated services provider has named **Hindle** as managing director of its newly formed Consulting & Rail business.

Hindle joined Amey in 2005 and was previously finance director for the former Consulting and Strategic Infrastructure division.

Milner said of Hindle: 'Her focus, dedication and commercial expertise is a perfect fit.'



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Albatros UK INDUSTRIAL SERVICES

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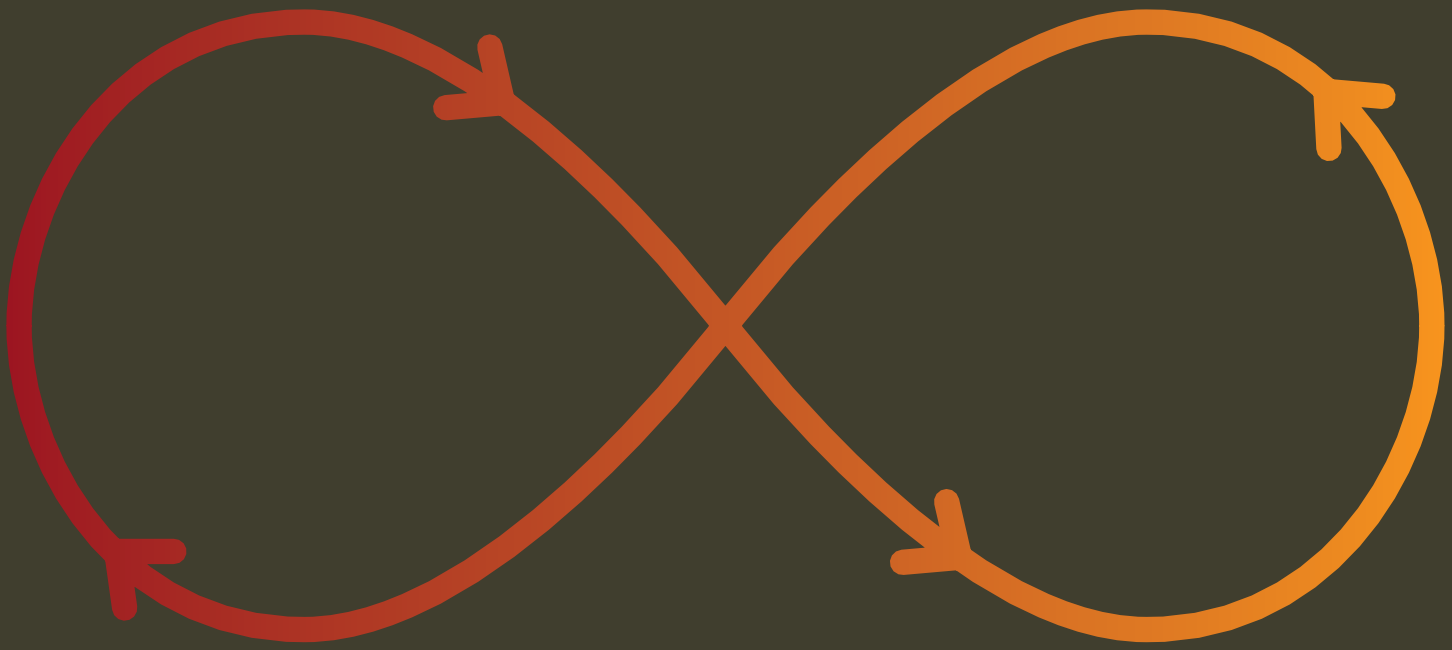
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