

IN PARTNERSHIP WITH **RAIL**

# Collaboration



**FREE**  
16-page  
Special



JACK BOSKETT.

## SEE INSIDE FOR:

- Outstanding teamwork on the East London Line
- Parkeon's transformative TVM technology
- Award-winning projects from Taylor Woodrow
- Carillion's collaborative spirit
- Siemens' research partnership
- Colas Rail's key to alliancing



# Proud to be part of the National Rail Awards

- 1. **King's Cross Station Redevelopment**  
Project of the Year 2012
- 2. **Nottingham Hub**  
Large Station of the Year 2016
- 3. **Old Oak Common Depot**  
Sustainability Award 2016
- 4. **Tottenham Court Road**  
Nominated for Major Project of the Year 2017

EXCELLENCE    COLLABORATION    INNOVATION    INTEGRITY    DISCIPLINE



PAUL BIGLAND

## Welcome

Effective teamwork forms the underpinnings of any successful business or industry sector. Britain's railways are certainly no exception to this rule, as track and train operations are being increasingly integrated in order to accommodate record numbers of passengers and a more intensive usage of the network than ever.

In this 16-page special, we see how collaboration within and across companies and organisations has achieved improved outcomes such as improved safety and value for money.

Examples of outstanding teamwork include a number of winners and highly commended entries in this year's National Rail Awards, that have all successfully blended a wide range of complementary strengths from their constituent parts to deliver impressive results.

We start with Parkeon (p44-45) and its innovative ticket vending machine technology, which has been deployed to great effect with a number of different operators.

Carillion then demonstrates the collaborative ethos that permeates the entire company (p46-47), while Colas Rail shows why it is the only rail contractor to date that

can claim membership of three major UK project alliances.

Several award-winning projects involving Taylor Woodrow go under the spotlight (p50-51) before Siemens discusses its central role within a research and development consortium alongside several of the UK's leading universities (p52-53).

Finally, Richard Clinnick reports on the Right Time Right Pathway train regulation policy that has delivered significant performance gains on the East London Line (p54-56) as a result of collaborative working.

**PAUL STEPHEN**  
Assistant Features Editor, RAIL

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## ENGINEERING EPIPHANY

Oxford station. More than 6.5 million passengers a year, three train operators, and a host of daily freight services. Add to that the close proximity of housing and you have a recipe for a challenging worksite on the railway. But between July 21 and 31, it was the scene of a nine-day blockade to enable several hundred metres of plain line track renewal and the installation of nine switches and crossings.

Part of Network Rail's Oxford remodelling work, the blockade was a vital piece of a very big jigsaw to facilitate a further 16-day blockade next year for commissioning of the works. More than that, those nine days raised the bar for collaboration on these types of projects.

John Fitzpatrick is a senior project manager for Carillion (a principal contractor on the works). A former Navy man, he joined the rail industry because he wanted to find the same kind of team spirit he was used to in the Forces, and 28 years later, he's never looked back.

For Fitzpatrick, his team is everything - an ethos which runs through the entire company: "We worked as a team, and I like to say 'a team' because that's what it was on this project - us, NR and our suppliers. The 'one team' approach all working together is a bit of a cliché, but that's what it was."

What made this job different?

"The team had worked together on other big projects. They did all the track works on the Reading station redevelopment. We've always had that collaborative approach and we've won awards for it. The foundations for this were laid following our Reading works."

### Working in the true spirit of collaboration has been an enlightening experience for Carillion's JOHN FITZPATRICK and COLIN WEALLANS, reports STEFANIE FOSTER

Fitzpatrick reports to Colin Weallans, operations director on Crossrail West, Western and Wales. He takes up the story: "As a result of the team working together before, we worked with NR and other contractors as one. For me, that's the success. We don't see ourselves as a Carillion project and a Siemens project and NR as the client. We just see ourselves as one team, one project. We're all equal, so it's very collaborative."

The Oxford blockade was a step above the works at Reading though. A robust planning and review process made this job "the smoothest" Fitzpatrick has worked on in recent years. He is convinced that robust planning was key to the success of the work - being clear about the scope from day one and not making several late additions that put the programme at risk. Planning started at the end of 2014 and the scope of the works was defined at an early stage.

This extends to contingency planning to

take into account any problems during the works. There were times during the blockade when the programme was five or six hours behind schedule, but close collaboration between Carillion, the other suppliers and NR meant that the project finished half an hour before the deadline. How was this achieved?

Says Fitzpatrick: "There was no panic. The biggest thing for me was the pre-planning and management throughout the blockade. Wherever we were in the programme, ourselves and the client were always in control of where we were. People work a lot better when they're not under pressure. They can make mistakes otherwise. There was no pointing of fingers or accusing people of doing things wrong. It was a very calm, co-ordinated way of managing the programme, which is a testament to everyone involved in managing the blockade."

Weallans continues: "It's the same people that have stayed together, which is great because on some of the other contracts you don't have the opportunity to build the same sort of relationships. We understand the good, the bad and the ugly in everybody. Everyone has their own strengths and weaknesses. Because we know that, we can help each other. For me, that goes into the engineering

### GATEWAY TO BUSINESS GROWTH RAIL MENTOR

Collaboration with the whole supply chain is key to the success of any project in the rail industry, but often the smaller or more recent entrants to the market find rail a difficult place to do business. Carillion is part of the Rail Mentor Programme, which helps these businesses to get a foothold in the rail supply chain.

On July 6, Carillion held an event in conjunction with the Rail Alliance at Long Marston in Warwickshire for small businesses in the sector to meet

decision-makers in Carillion and learn about how to supply to the company and the wider industry. The event was a success. Here are some of the comments attendees made:

Mike Bird, Principal Environmental Consultant, ARCUS: "It is unusual for us to have such an extended opportunity to present to, and ask questions of senior members of a potential client's procurement team."

Jim Herbert, Civil and Environmental Sales, ABG: "I doubt that ABG would

have had the same kind of access to senior decision-makers within Carillion without the aid of the mentoring scheme. I also think that the set-up of the event allowed Carillion to provide good guidance and ideas on how the businesses that attended can make progress in the UK rail market, as opposed to the usual supplier/contractor meetings which tend to focus on a particular work enquiry rather than the wider market opportunities perspective."

element as well. We can look at each other's resources and say 'rather than me book another crane, can I use your crane'? We don't do it contractually, we just do it. We had a big Kirow crane on site. Siemens would borrow it and our supervision to do their work for an hour or two. [Lifts using the Kirow crane were planned by the Volker crew, manning the crane in consultation with Siemens and Carillion]. It reduces risk in the project because everyone knows what everyone else is doing. It was planned to maximise everyone's utilisation to make it very cost-effective, as well as safer."

This was a really important factor - maintaining the safety of the workforce. Carillion encourages staff to use a logging system called 'Don't walk by', by which anyone on a job can highlight potential safety issues and suggest preventative measures. But for this task, they also implemented something else. NR asked Carillion to take on a principal contractor role, enabling the company to put managers on site for the duration of the blockade whose sole focus was on health and safety.

Says Fitzpatrick: "We focused our HSE

team on supporting the delivery of the job in a sort of advisory/guidance role, so if there were any issues they could react and put them right. One of the things you find on these jobs is that people are so focused on delivery that they don't see what's going on around them. Having those eyes and ears around on the job enabled us to support and avoid any potential incidents or accidents. If there was an issue, we didn't have to stop the works, these guys could guide and advise them on whatever the issue was."

That close working relationship extended into the way everyone involved interacted with the general public. Oxford station is right on the boundaries of a residential area, so the potential for public complaints was very high. Amazingly, not a single complaint was made. Fitzpatrick puts this down to how the NR managed communications with local residents from a very early stage, with support from everyone else on the project.

"Residents are not shy in coming forward when there's a problem! But because they understood what was happening, it became easier. While they all understood what we were trying to achieve, when there's

a machine banging away outside their windows at three o'clock in the morning, you can understand why they might be upset! But we got buy-in from them. We've done a lot of work over the last 18 months on community engagement."

The work doesn't stop there though. With a further blockade to prepare for next year, there is still a programme of follow-up works to complete. Because of the contingency built into this year's blockade, between 75 and 80% of the follow-up works were completed during the initial possession, meaning that the planned eight weekend works before next year has been reduced to three weekends, saving Carillion and NR time and money.

Weallans is clear about how this was achieved: "Everybody looked out for each other, irrespective of their job function, or the company they worked for. I mean that sincerely. People say they work collaboratively but they don't really. Here though, we really did."

Fitzpatrick agrees: "The integration of the client and the other suppliers within this package of works - it wouldn't have happened without that." ■



# ALLIANCING AT ITS BEST

**PAUL STEPHEN** finds out why COLAS RAIL is championing the alliancing approach, and what has made it the partner of choice for this highly collaborative form of project delivery

Alliancing is a relatively new way of working for the rail industry, having made its debut in 2012.

Already a popular and highly effective contractual arrangement in the construction sector, its application to the complex and more risk-diverse environment of rail was a key recommendation of Sir Roy McNulty's Rail Value for Money Study published a year earlier.

The theory behind it is quite simple: all participants adopt a 'one team' approach, rather than merely working within their own organisation. By aligning individual objectives to achieve a mutually agreed outcome, everyone is incentivised to work together to quickly resolve problems, drive down costs, and more efficiently deliver enhancements and renewals.

Risk becomes a collective responsibility, while the proceeds of cost reductions are also shared, creating strong, commercially driven outcomes.

Forming an alliance is less simple in practice, however, and requires not only suitable commercial terms to be in place, but also a strong commitment from participants to make the behavioural and cultural changes necessary for this type of close partnership working to succeed.

Alliancing is therefore just as much about ethos as a contractor's technical and engineering prowess, and the effectiveness of any alliance will rest on its people, and their motivation to achieve outstanding results.

Leading the way in making these challenging adaptations is Colas Rail, which has positively embraced the alliancing model, and is the only rail contractor to be part of three major UK alliances.

Not only does this demonstrate the global company's enthusiastic support of the concept, but that it also possesses the full range of disciplines needed to make it succeed by being an effective and reliable partner.

These three alliances feature varying degrees of complexity, duration and resource, but are all underpinned by Colas Rail's ability to show trust, respect and openness to its partners while sharing in knowledge and creative ideas.

They also show what can be achieved through alliancing to exceed customers' requirements, and why the future of this model looks bright into Control Period 6 (April 2019-March 2024) and beyond.

## S&C SOUTH ALLIANCE



The S&C South Alliance is a ten-year collaborative framework agreement with Network Rail and AECOM to deliver renewal and enhancement work to switches and crossings, plus associated catenary, third rail, signalling and civil engineering work.

Said Lahssioui, Colas Rail's S&C South Alliance Director, says: "We delivered trackwork for Riccardo's team at Waterloo, which could well be the first time an alliance has worked for another alliance, and is a great demonstration of its scalability."

"The complexity of both our alliance and the Wessex Capacity Alliance is similar, and we face the same problems and share the same spirit of collaboration, but the key thing is that we share risk and share opportunities."

"The fact that alliancing will be crucial on HS2 is not surprising because having one interface between a client and contractors is great for a project, but HS2 is not just doing it for the sake of it."

"You cannot force alliances together - it's a big step in culture, in which Colas Rail has lots of experience. Everyone wins or everyone loses, and everything must be done in the spirit of fairness, with no place for individual claim."

"Everyone can challenge each other because everyone has the same status - there are no second-class members."

## WESSEX CAPACITY ALLIANCE



Colas Rail is working in alliance with AECOM, Mott MacDonald, Network Rail and Skanska to deliver £400 million worth of multidisciplinary upgrades to Britain's busiest station, Waterloo and its approaches.

This included a 23-day partial blockade of the station throughout August to reconfigure the station throat, extend four platforms and increase capacity by 30%.

During the upgrade, more than 180,000 hours were worked to lay 1,270m of track, install 230m of pre-cast concrete, lay seven miles of cable and build 160m of new platform.

Alliance Director Riccardo Zampieri says that delivering this amount of work in just 23 days would not have been possible without working



Four platforms were extended and more than a kilometre of new track laid during a 23-day partial blockade of Waterloo in August, demonstrating the power of alliancing. PAUL BIGLAND.

as part of an alliance, and believes it is an optimal way to deliver similar projects in future.

He adds: "Our success was measured by the amount of work we did in such a short space of time while maintaining an acceptable level of service. One company simply couldn't have done that due to its complexity, and because the client would not have been part of the alliance."

"By working as one team, everyone got around each obstacle to keep the railway and the project running, with full buy-in from Network Rail. Our biggest problem was how congested the work site was over the 23 days, but this was planned in military fashion, and we built a BIM model to make sure there were no conflicting activities and to maintain a safe level of planning."

"Setting up the alliance and getting the culture right took a long time, but

once we'd got up and running we took the project from GRIP 4-6 [Governance for Railway Investment Projects] in just over 18 months, which would have taken twice as long on a conventional project. That speed, and the fact we came in under budget, was quite exceptional."

"If I was given the choice between a conventional project or another alliance, the latter would win hands down. I've experienced this exciting method of working, where the client makes decisions very quickly and projects do not come to a standstill. The 'showstoppers' vanish and everyone concentrates on delivering the project."

## MIDLAND METRO ALLIANCE

The Midland Metro Alliance was created in 2016 to deliver a



challenging ten-year enhancement programme that involves the construction or extension of lines for the West Midlands' light rail system.

This includes a £149 million extension between Birmingham New Street and Edgbaston, which was given the go-ahead for Department for Transport funding on September 1 and which will feature a catenary-free section, across which trams will be powered using onboard batteries.

The alliance is formed of five international partners (three of them being sub-alliance members), including the client (West Midlands Combined Authority). It is led by Alejandro Moreno of Colas Rail, who was appointed Midland Metro Alliance Director in September 2016.

He says: "Creating the necessary culture for alliancing is a challenge, but we did it very well here. Across the whole programme, we expect to be on time and under budget because we all share common objectives and

incentives.

"The client is also embedded in the alliance, which speeds up decision-making and increases trust - everything is an open book."

"And there's a real mutual understanding of what the client wants, and the mechanisms on the delivery side."

He adds: "We are achieving our objective of delivering value for money on a budget of £1.3 billion."

"We're also leaving a legacy in the West Midlands - up-lifting skills in local people by providing six-weeks training courses for NEETs [young persons not in education, employment or training] so we are creating a future for unemployed people in the area."

"There are more than 250 cities throughout Europe with light rail systems, and each of them is different. But I can say with confidence that the one solution everyone will be happy with for future projects is alliancing." ■

# INTERFACING WITH THE CUSTOMER

Ticketing is a contentious subject with UK rail fares frequently the subject of negative press coverage for being too complicated, and sometimes offering poor value for money to confused passengers.

With the fares structure largely regulated by the Department for Transport (DfT), train operating companies (TOCs) have been forced to examine the way in which tickets are sold instead, in order to retain trust and boost passenger satisfaction by making the process both simpler and clearer.

As the number of manned ticket offices across the network is in decline, and in light of shifting consumer behaviours, this crucial interaction increasingly takes place on station concourses with a ticket vending machine (TVM).

And for more than a decade the trend has been that more and more of us are using TVMs, either to purchase our tickets immediately before departure or to print tickets that have been bought in advance via the internet.

Parkeon entered the rail market in the UK in 2009, following a long history of successfully providing innovative ticketing and payment systems for UK bus operators, and to train operators in its native France.

Finding that large numbers of basic first-generation TVMs had already been installed by UK TOCs, Parkeon adopted a strategy to concentrate on developing the next wave of TVMs, by addressing the glaring deficiencies that were already beginning to emerge.

Parkeon's bespoke solution was the small-footprint ToDler TVM, which featured a larger touchscreen for passengers to more easily input booking reference numbers, and more efficient printing and computer processing technology. Its first ToDler customer was

Since entering the market only eight years ago, there are now more than 700 Parkeon TVMs in operation across the country. PARKEON.

## PAUL STEPHEN learns how Parkeon's industry-leading TVM technology is transforming passenger experience

Stagecoach, which wanted a TVM that could process transactions faster for pre-paid tickets, in order to reduce queuing at busy stations.

Impressed by Parkeon's claims that it was up to three times faster than existing TVM technology, Stagecoach Group bought a total of 40 ToDler TVMs for its South West Trains and East Midlands Trains franchises, which it placed at major stations including London St Pancras, London Waterloo, Sheffield, Nottingham, Bournemouth and Southampton.

Paul Moirano, Sales Director - UK Rail, explains: "Dwell times could be as long as four or five minutes, with people using pieces of paper and booking references to get their tickets, and sometimes they would even miss their trains. Stagecoach was aware of what we were doing and said they would buy a solution if it was cost-effective, so we went away and designed what later became the industry standard.

"In the TVM market we were interested in closely collaborating with TOCs. We were here to play the long game and focused on asking our customers what they needed to improve."

As Parkeon's commercial success went from strength to strength, it began a continuous cycle of R&D investment at the company's UK base in Poole, where its 200 employees worked tirelessly to establish Parkeon as a major player in the UK market.

The next breakthrough came when Parkeon added live train running information to its existing TVMs, sparking further orders for TVMs before the company turned its attention to providing remote assistance in its TVMs to help passengers in real time by connecting them with a manned contact centre.

The result is IRIS, which was trialed in a partnership arrangement with South West Trains in 2015.

Using a two-way video and audio system which could be installed either in new machines or retrofitted to existing models, it linked TVM users with a dedicated customer service team which could field any enquiries to speed up the purchasing of tickets, and to provide a human point of contact at unmanned stations. The technology even enabled SWT staff to take over the TVM remotely, if needed, to assist with transactions.

It was well-received by SWT's customers, and over 30,000 passengers were assisted during the first nine months of IRIS.

"The first thing was to prove the technology worked," adds Moirano, "so we put the first pilot machine into Sherborne station. It proved highly successful

after a month-long trial, so we put another machine into Woking station, where there had been long queues and was used by many non-English native speakers. The ticket office on the Up platform was part-time, so calls were put through to SWT's Southampton Customer Service Centre."

Having seen the customer reaction, and the interest shown by the DfT, SWT added a commitment to buy more of these machines into the extension of its franchise, and ordered 91 of them for small unmanned stations. They created a dedicated call service centre at Basingstoke proving that, by using IRIS, SWT passengers could get a much better service without it costing a fortune.

With an enviable reputation for bringing exciting technological advances to market and a strong track record of highly productive collaborative working with other stakeholders, Parkeon was asked to represent TVM suppliers in a TVM improvement project run jointly by the DfT, Rail Delivery Group and Office of Rail and Road. Meanwhile, representatives from all three organisations have subsequently visited Parkeon to see its latest TVM technology first-hand.

From this improvement project, a roadmap for TVM service levels and functionality has been created, and a ten-point plan devised which shaped the requirements of the TVM Code of Practice written by the ORR.

Moirano adds: "We think we are a leading light, from an innovation and supplier point of view, but this has to be done in partnership with TOCs. It's not about buying from a brochure anymore, it's about working together to create a solution. There is not always an easy solution, but it is something the industry has to get to grips with, with our help."

Parkeon's latest rail TVM solution is the RetailWall - a module that incorporates tablet-like technology to deliver new levels of information and accessibility in rail retailing.

Developed using detailed input from TOCs and passenger groups, a RetailWall user is faced with what looks more like a mobile phone screen, with an icon-driven interface that shows cheapest fares information, live train running information, a journey planning facility, notices, advertising, news and social media feeds without overwhelming the user.

It also incorporates intelligent proximity and height detection systems that automatically orientate the screen display to match the user's eye level, plus an induction

**“ We were here to play the long game and focused on asking our customers what they needed to improve. ”**

Paul Moirano, Sales Director - UK Rail, Parkeon



Parkeon's latest generation of TVM technology is the RetailWall, pictured here at Harrogate having been developed as a joint partnership and co-investment with Northern Rail. PARKEON.

loop to make it more inclusive to the needs of all rail users.

There is also an option for TOCs to include a smaller screen for IRIS, while the RetailWall will also carry advertising to increase revenue.

The product was officially launched by Transport Minister Andrew Jones at Harrogate station 18 months ago, where reports confirmed that transaction times had been sped up significantly compared to older TVMs. Developed in partnership with Northern Rail, a further RetailWall has since been installed at Leeds, heralding a

new era of more modern TVM technology, more befitting of a retail environment now characterised by mobile ticketing and contactless payment.

Moirano says the RetailWall also perfectly embodies the flexibility now on offer to TOCs, where the information displayed can be tailored to any given locality.

He concludes: "With the legacy TVMs, it was like buying a suit off the rack - all you could specify was the size and colour. But with this next-generation TVM, it's like going to a tailor and choosing everything down to the buttons. It's a completely blank canvas."

And the success continues! As this issue of RAIL went to press, it was announced that Arriva Group has awarded Parkeon the largest UK rail TVM contract since privatisation, covering more than 680 advanced technology units for the Northern and Chiltern Railways networks. ■

# JOINED-UP WORKING

Bringing people together and keeping them working as a team is hard work, explains Taylor Woodrow's Rail Sector Director FRED GARNER to PAUL STEPHEN, but the benefits are too great to ignore

Taylor Woodrow played a major part in the redevelopment of King's Cross, which was adjudged Project of the Year at RAIL's National Rail Awards in 2012. TAYLOR WOODROW.



## COLLABORATION AND CHANGE

Businesses and projects are frequently called upon to react to new circumstances driven by factors that are outside of their immediate control. Guiding teams through changing circumstances without losing control of the course of direction is one of the key challenges facing managers today.

Taylor Woodrow is basing the next in a series of Inspiration Evenings on how to adapt to this change using leadership, collaboration and resilience. The event is set to take place in November and will bring clients, consultants, partners, supply chain and team members

together for what looks set to be a lively debate on this contemporary topic.

The evening is aimed at providing a fresh insight into the tools that will equip any team to successfully manage change, and offer attendees a valuable opportunity to network and build the relationships that are key to working collaboratively.

Headline speakers on each of the three areas will be announced soon via the team's website and the @TaylorWoodrow1 Twitter feed. Limited spaces are available by contacting Kelly, tanner@taylorwoodrow.com

station's original Victorian façade, while updating the building to comply with modern safety standards.

The team learned a lot from working with Network Rail at King's Cross which, in the early days, benefited from being part of the Thameslink Collaborative Delivery Framework. That provided professional support and a number of tools to help the teams build supportive co-operative relationships.

Garner adds: "Teams must always be aware of how their project fits into the bigger picture. Working collaboratively enables smaller milestones to be met that build towards major ones which, for the King's Cross project, was the successful completion to meet the deadline of the 2012 London Olympic Games."

In 2016, another Taylor Woodrow project won a prestigious National Rail Award, when its work to redevelop Nottingham station and build a modern interchange with the tram network helped it to win Large Station of the Year.

An integral element of this £60 million project was Taylor Woodrow's collaboration with operator East Midlands Trains in order to limit disruption to the seven million passengers that use it each year, while enhancing the heritage features of the existing station.

A second project that won a National Rail Award in 2016 was the redevelopment of Old Oak Common, which was recognised for its sustainability credentials. Taylor Woodrow's design for the new depot, which will accommodate the Elizabeth Line's fleet of 70 trains, was praised for exceeding the amount of renewable energy generated on site by more than 50% of the target level, and securing a reduction in carbon dioxide emissions of more than 65% above target.

To achieve this award-winning solution the company relied heavily on its supply chain partners to design and install the innovative technology that is projected to provide a 1500% return on investment.

Garner adds: "This kind of thinking takes

collaboration to a new level, as the solution that the combined team delivered can be easily transferred to other projects, and is therefore capable of bringing significant cost benefits to the entire rail industry."

Last but not least, the redevelopment of Tottenham Court Road Tube station was adjudged Major Project of the Year at this year's National Rail Awards ceremony. In a joint venture with BAM Nuttall, Taylor Woodrow has completed a station upgrade that will accommodate up to 200,000 passengers a day as a key interchange with Elizabeth Line services from December 2018, and perhaps Crossrail 2 in the future.

The new ticket hall is six times larger than the original and includes step-free access from street to platform level via eight new escalators and six new lifts.

Taylor Woodrow heavily collaborated with its partners on an upgrade where disruption was inevitable, and so solutions to minimise that while delivering value for money for the customer were needed. For example, it became the first team ever to install a shotcrete cavern over a live operational railway, while cutting out the crown of the Central Line tunnel to install permanent overbridge beams, during just two 52-hour possessions.

Garner concludes: "Collaboration isn't just about a BS11000 process, and it doesn't happen by accident. It involves extensive planning for how to bring people together, and then working extremely hard to help them stay together and achieve a common goal.

"We have successfully demonstrated in each of these examples that collaboration is not just focusing on working to a set of official standards, but that we have really taken it back to basics.

"Fairness, inclusion and respect are intrinsic to the team's culture, and it's about recognising each other's differences and what they bring to the team. Different people have different viewpoints, which leads to new ways of thinking and, ultimately, better decisions being made." ■

The essence of collaboration is people working together towards a shared goal.

Without it, the delivery of the complex new pieces of infrastructure that benefit society just wouldn't be possible because of the innovation, shared problem-solving and imaginative thinking that collaboration brings.

Taylor Woodrow is very well aware of this, having helped design and build some of the UK's largest construction projects in the rail, highways and energy sectors.

Working in partnership has been a core value throughout the company's history, with the integrated delivery team approach vigorously promoted ever since Taylor Woodrow's foundation in 1921.

"It's about being open and honest and working as one team where there is a constant exchange of knowledge between suppliers, main contractors and clients," explains Taylor Woodrow's Rail Sector Director Fred Garner.

"The real benefit occurs when there is a problem, as collaboration will give rise to solutions that no individual working alone could ever have imagined."

Exemplifying these benefits are the three Taylor Woodrow projects that have won National Rail Awards in recent years, while a fourth was victorious in 2017.

This external recognition not only demonstrates that the company is an industry leader in this area, but that great outcomes are achieved through collaborative working.

The first project is the redevelopment of

King's Cross, which won Project of the Year in 2012 for the re-engineering of a classic piece of Grade 1-listed railway heritage into a transport hub fit for the 21st century.

Taylor Woodrow worked with multiple stakeholders to deliver a major upgrade to this iconic station, which included planning 13 fully functioning interim station layouts for the Underground station's ticket hall throughout its reconstruction.

Minimising disruption was a major challenge from the outset, as was respecting the historical fabric of the station, but collaborative planning enabled passenger flows to be maintained throughout the work. Meanwhile, the team worked closely with heritage specialists to meticulously plan and execute the preservation of the

“ Collaboration will give rise to solutions that no individual working alone could ever have imagined.”

Fred Garner, Rail Sector Director, Taylor Woodrow



# UNIVERSITY CHALLENGE

Britain's universities are renowned throughout the world for producing innovative people and projects, which is why Siemens is so heavily committed to collaborating with them in order to tap into a wave of new technologies and new ways of thinking.

The company already has a long-standing relationship with leading universities such as Newcastle University and the University of Huddersfield, with whom it has successfully tested and developed a range of advanced technologies, such as signalling solutions and intelligent track-monitoring systems.

But Siemens has now gone a step further by being a key partner in a newly created consortium, known as the UK Railway Research and Innovation Network (UKRRIN), which links 17 companies from the rail sector and seven universities.

Bringing together the rail supply chain and academia to undertake groundbreaking research and innovation, at the heart of UKRRIN are the three Centres of Excellence it is establishing in Digital Systems, Rolling Stock and Infrastructure.

UKRRIN is closely aligned with the aims of the Government's industrial strategy to position the UK as a leading player in a number of global markets, including rail, but also the Rail Supply Chain's Fast Track to the Future strategy to support productivity and growth in the UK rail supply chain.

The £92 million cost of creating UKRRIN has therefore been met under a funding formula whereby a £28.1m award has been

## Siemens has made a sizeable investment in the future of the rail industry - and the UK economy in general. The firm's Head of Innovation JO BINSTED talks to PAUL STEPHEN

made by the UK Research Partnership Investment Fund, and the remaining £64m pledged by UKRRIN's supply chain partners, including Siemens. Non-financial support has also been forthcoming from Network Rail, HS2 Ltd and Transport for London.

Siemens Head of Innovation Jo Binstead says that UKRRIN is a win-win situation for all parties as universities are given access to industry experts and their students are provided with an opportunity to work on 'real life' projects, thereby boosting their prospects for employment after graduation. On the other hand, Siemens and its industry partners are able to identify areas of research that are relevant to their businesses and have wider benefits to the rail industry.

In recognition of Siemens' leading role in university engagement and the strength of its commitment to developing the next generation of digital railway expertise, Binstead was chosen to chair UKRRIN's interim steering committee.

She says: "Discussions to set up UKRRIN started about a year ago, and the University

of Birmingham led the bid for funding through the UK Research Partnership Investment Fund, which is managed by the Higher Education Funding Council for England. But it was clear that UKRRIN would also need industry support, so a call went out through the Rail Industry Association and the RSSB.

"The supply chain stepped up and the UKRPIF award was announced in July, so we are now putting together contract agreements with UKRRIN's industry partners and are pushing ahead with the creation of the three Centres of Excellence."

All three sites are expected to be complete by 2020 and will comprise a mixture of new and existing facilities at UKRRIN's seven university partners. These are: University of Birmingham, University of Huddersfield, University of Newcastle, Loughborough University, University of Southampton, University of Sheffield and Heriot-Watt University.

Siemens will also provide a further £12m to support these centres in the form of PhD

The National Training Academy for Rail's 2017 intake. SIEMENS.



## TRAINING FOR THE FUTURE

Siemens has a strong track record of not only collaborating in research and development, but also in training and skills development through the National Training Academy for Rail (NTAR).

Opened in October 2015 by former Rail Minister Claire Perry, NTAR was co-established by Siemens to help tackle a forecasted industry skills shortfall of around 8,000 people over the next decade in rolling stock maintenance and engineering.

This is partly a symptom of an ageing workforce. But there's a need for people with new skills, as more technologically advanced rolling stock joins the UK train fleet, featuring the sophisticated equipment needed for Network Rail's Digital Railway programme.

NTAR is a public-private partnership between Siemens, which provided 50% of the £7 million start-up cost, and government, with the remaining 50% coming from the Department for Business, Innovation & Skills (BIS), the National Skills Academy for Rail (NSAR) and the Department for Transport (DfT).

Under this agreement, NTAR offers 20,000 days of training per year by releasing half its capacity to Siemens' employees, and the remainder to the wider UK rail sector.

NTAR's national hub is located at Siemens' King's Heath Traincare facility in Northampton, which is equipped with the latest digital, 3D and virtual reality technology to give students the right tools to perform vital maintenance roles in the digital age.

It is now welcoming its third intake both at Northampton, and also through its growing number of regional partners located at other training academies,

colleges and train care facilities across the country.

It also has a growing number of trusted partners to help deliver parts of the curriculum, including IMechE and the Institute of Railway Research.

It offers courses in Digital Railway, leadership and management, professional skills development and technical training, alongside apprenticeships to new entrants to the industry after becoming one of the first training providers to offer the Rail Engineering Technician 'Trailblazer' Apprenticeship Standard.

Simon Rennie, NTAR's general manager, explains: "We've built this facility and put competitive interest aside for the wider benefit of the industry and everyone here receives a common rail engineering apprenticeship standard

regardless of the organisation they belong to.

"NTAR is also creating more and more partnerships and delivering high-quality training across a network of colleges, so the location, and having everything here in Northampton, is becoming less critical.

"In terms of where we go next, we keep a close eye on new technological developments, and what standards we can adopt that will be useful for Network Rail's evolving Digital Railway programme."

He adds: "We're also working with the National College for High Speed Rail to share ETCS equipment, which shows training providers that we're not just sitting here accidentally competing, but that we're using our skills sets collaboratively for the benefit of the industry."



The National Training Academy for Rail opened in 2016. SIEMENS.

studentships, training and continuous professional development and membership fees, which will help fund equipment and staff needed to support project development.

Binstead adds that membership of UKRRIN is not expected to be static, and it will be open to new suppliers and universities in order to increase the breadth of both its research facilities and expertise.

It is hoped that UKRRIN will eventually mirror the model used by other 'Catapult'

organisations that operate in different sectors, such as high-value manufacturing, medicines and renewable energy, and which share its aim to bring research and idea conceptualisation closer to commercialisation.

Under this model, research and development can either be collaborative to support industry, or proprietary for a single client with the associated protection of Intellectual Property rights.

**“ If we're really going to change the way railways operate, then we must understand what impact digitisation will have on rolling stock and the rest of the network. ”**

Jo Binstead, Head of Innovation, Siemens

Either way, the success of UKRRIN clearly holds the potential to transform railway operations in the UK, and support the delivery of major rail investment programmes such as HS2.

"This is not a closed shop, so other people will be encouraged to get involved," says Binstead.

"If we're really going to change the way railways operate, then we must understand what impact digitisation will have on rolling stock and the rest of the network. We have to ask ourselves questions, such as: 'if HS2 is going to be a 21st or even 22nd century railway, what technologies does it need?'"

"These Centres of Excellence are critical to answering those sorts of questions and equipping ourselves for the future, so we can continue to grow both individually and collectively, while supporting the supply chain and UK plc to prosper." ■

# Right place, right time



The dysfunctional interface between railways was further hindered by a tangled mess of regulations - until a collaboration project took the bull by the horns, writes **RICHARD CLINNICK**

The East London Line opened in 2010. It operates over part of the former London Underground network, and links the former Southern Region at New Cross Gate with the North London Line at Highbury & Islington, running along part of the railway that once served Broad Street, until it closed in 1986.

Carrying trains delivered in 2008-11, the ELL is part of the LO network, and on the section north of New Cross Gate it is purely Transport for London infrastructure. Network Rail is responsible for the infrastructure shared by Govia Thameslink Railway, and on the NLL, but in between is TfL. Trains operated by LO were being delayed by trains operating on NR infrastructure, which delayed their arrival onto the core section of the ELL.

The problem centred on the dependence on the Sydenham corridor to deliver trains into the core ELL section on time. This had a negative impact on ELL performance, and it was clear that changes were needed.

With the introduction of a new concession

operator for London Overground, there was an opportunity to introduce new ideas and new ways of working, in a programme aimed at getting the line's trains to run on time. However, improving reliability was not that simple. It required collaboration from three key stakeholders, changes in the way of working, and a rethink of train regulation policy. And it would have to be done quickly, to minimise delays.

The 'Right Time Right Pathway' trial was implemented. Not only did it have the potential to improve punctuality and performance, but by simplifying the various processes, it improved safety by reducing the likelihood of human error. Unlike similar trials, this was carried out on a complex section of railway.

Legacy regulation policies had become increasingly complicated, with amendments made over time purely on an ad hoc basis. This had, in turn, created sub-optimal outcomes for punctuality on the East London Line as trains were arriving at the core late. Arriva Rail London, which took over the

concession in November last year, says that the policies had evolved into a complex operating environment for signallers. And because the railway is so heavily used in this section, the fear of unintended and catastrophic side-effects of any change had hampered progress. The project team in charge of the trial overcame these fears through the introduction of a collaborative and consultative approach from the very start of the trial, and that became the key to winning the support of all those involved.

ARL collaborated with both GTR and NR to adopt a project management approach that was built on cross-industry consultation and early engagement with signallers in order to set up the trial. While the trial was running, existing regulation policies were suspended in favour of the new method.

## LONG-TERM BENEFITS FOR RAIL

The 'Right Time Right Pathway' trial has potential long-term benefits, not just in and around London, but for the rail industry as a whole.

It's believed that an industry leading train regulation policy approach could set the railway on the path to being a 'right time railway' in Control Period 6 (April 1 2019-March 31 2024). It could deliver significant safety benefits by ensuring that intervals are maintained, which in turn means that capacity can be planned and managed, and overcrowding can be reduced. The implementation of the methodology across the industry could also deliver value for money for rail and for passengers as, according to the National Rail Awards submission, "a right time railway will have greater opportunities to reinvest incentive bonuses into making future performance and reliability improvements."

was needed.

For its part, Network Rail recognised the mutual benefit of simplifying the signaller information and seeking to improve operator-on-operator delay.

ARL needed to work with Govia Thameslink Railway, and so ARL's performance manager worked as early as possible with his GTR counterpart to secure 'buy-in' on the project. This was seen as vital so that the idea could be sold upwards within GTR, speeding up the process.

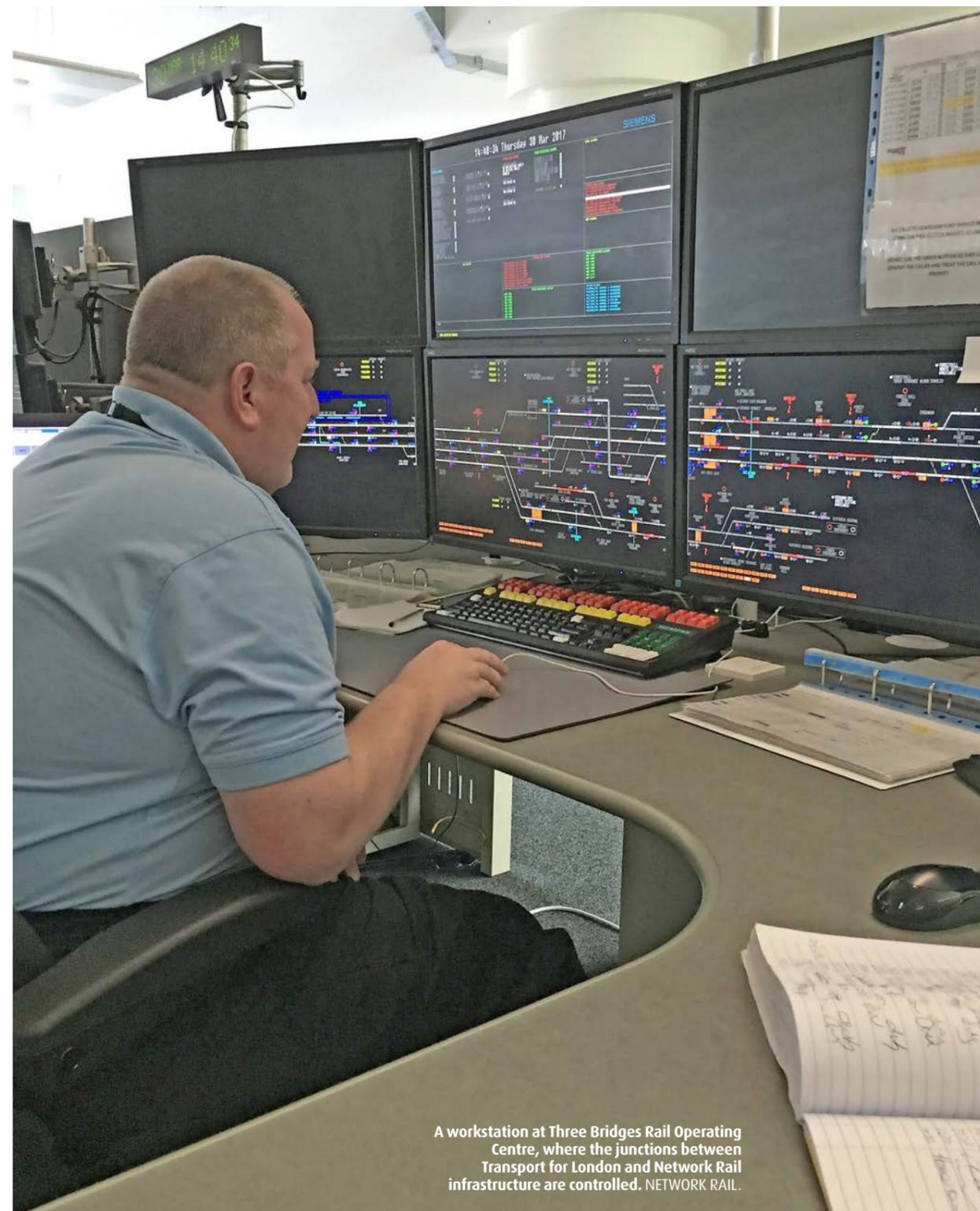
Early engagement with signallers and their union representatives was also a key priority in the project planning phase to ensure all teams involved in the train regulation trial bought into the project.

## THE IDEA

The concept for 'Right Time Right Pathway' was initially proposed by the performance team at Arriva Rail London. This was done as part of the step-change in performance that was required as part of the new London Overground concession that started on November 13 last year because there was a need to improve punctuality levels across the LO network, especially on the ELL.

The trial was viewed as an opportunity to "bring to life Arriva Rail London's vision of 'every train in its path' and push the boundaries of what had been done before in this area."

It was clear that the existing train regulation policy simply wasn't working effectively, and that a new approach



A workstation at Three Bridges Rail Operating Centre, where the junctions between Transport for London and Network Rail infrastructure are controlled. NETWORK RAIL.

Two members of ARL operational staff were seconded to NR, so the latter could gain valuable operator insight and experience. In these roles, the seconded staff acted on behalf of NR.

The trial itself involved the creation of a revised train regulation policy at specific locations on the ELL where both operators ran trains. The idea was to see if changes

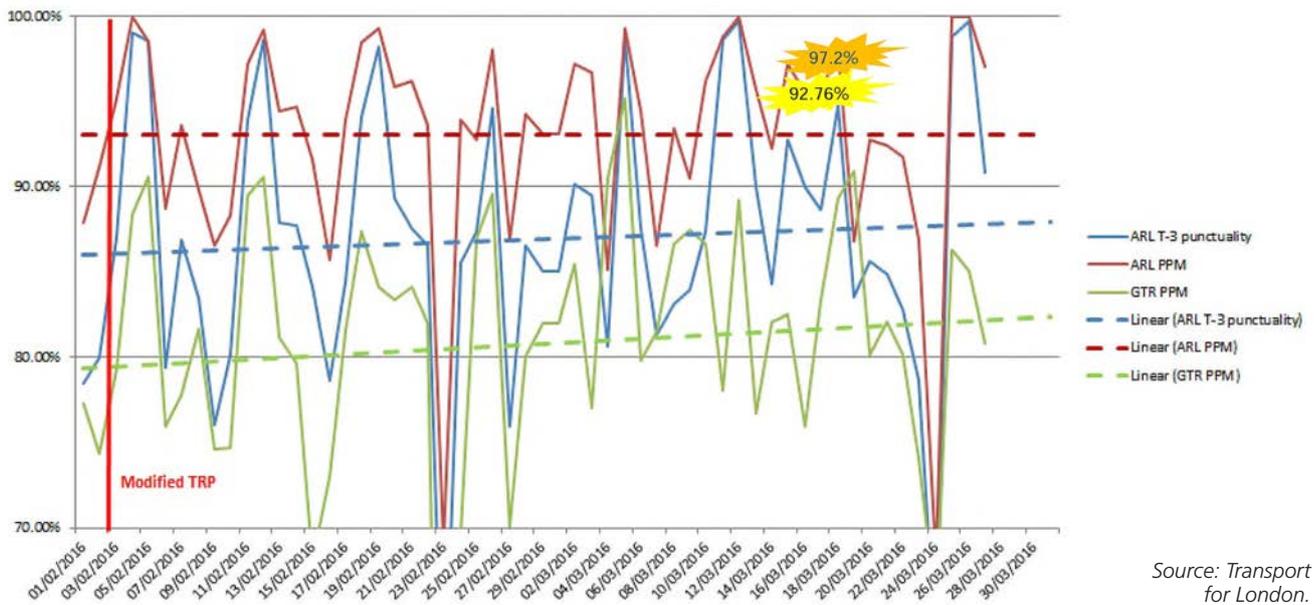
could be made to improve performance and simplify regulation decisions that needed to be made by signallers.

The trial took place during Railway Period 12, which ran for four weeks starting on February 6 this year. The project team agreed that a set of success criteria should be identified. This included a 50% reduction in operator-on-operator Public

Performance Measurement (PPM) failures and a 50% reduction in regulation-attributed incidents within the trial areas, as well as no significant issues being raised at a Post Implementation Review.

The results showed a 5.7% uplift in train punctuality on the ELL, with a rise from 80.92% in Period 11 (2016-2017) to 85.52% in Period 12 (2016-2017). This, ARL

## THE RESULTS PPM



Source: Transport for London.

“ The entry represents true collaboration, cutting across the commercial and contractual interests of the different parties involved. ”

**NRA Panel**

► says, showed a period of sustained and continuous improvement as a “direct result of the ‘Right Time Right Pathway’ regulation policy introduced by the trial. At the time of entry submission for the National Rail Awards, ARL reports that it had recorded the best ever punctuality on a weekday for the ELL of 92.76%.

The post-trial review highlighted, among other things, that the success criteria was achieved, that the signallers were involved from the outset and that their views were listened to. The latter has also reported that

they like the fact the process has simplified train regulation policies, which in turn helps them regulate trains, and that these decisions are reflected in improved performance.

What this shows, says ARL, is the impact of what can be achieved through the implementation of collaborative cross-industry partnerships. There was a hugely positive reaction from all organisations involved and an agreement to convert the trial to a permanent change.

The project has also created opportunities for ARL, GTR and NR to transfer what has

been learned from this trial to other parts of the rail network, with ARL looking to implement similar methods of working onto the West Anglia route, while GTR is using what it has learned to “bring benefit to the preparation of upcoming timetable changes on Thameslink”. This will be in regards to the need for trains on the TL core section to arrive on time, and ready to pass through that section.

This project has deservedly been given the National Rail Awards Teamwork of the Year accolade. It identified and challenged a perceived weakness in the industry and delivered much-needed improvement to such an extent that Network Rail is considering widening the geographical scope of the ‘Right Time Right Pathway’ train regulation policy, and also to use the process to test modified train regulation policies on other NR routes. That is to be applauded. ■

## WHAT THE JUDGES SAID

“There is enthusiastic support for a desperately needed improvement in East London Line performance and its dependence on the Sydenham corridor, to deliver trains to the core ELL section on time.

“This corridor is regulated by three control offices at Three Bridges and Victoria. The project involved generating enthusiasm for change in established practice across companies, locations, and simplifying the 26-page regulation instructions into a single A4 sheet with four action points.

“The entry represents true collaboration, cutting across the commercial and contractual interests of the different parties involved.

“The energy and enthusiasm were spread by the core ‘team’ in the ARL/GTR and NR horizontally and vertically throughout their respective organisations with buy-in from Transport for London.

“They will have faced major barriers in doing this and challenging standard industry practice. Implementation risk was mitigated by a clear “abort” option based on clear performance impact criteria.

“The panel was impressed by the extent of the behavioural change, and the demonstration of results with clear benefits relating to a 5% contribution to a 9% Public Performance Measurement (PPM) improvement, all achieved with

many fewer controller interventions, and a significant reduction in regulation errors as the signaller instructions are greatly simplified. Passenger impact, staff welfare and system safety are all positively affected.

“Apart from the identified, realistic and proven performance benefits, the panel were impressed by the importance of the approach to the success of the Thameslink project delivering necessary improvements vital to a 24 trains per hour service in 2018.

“Additionally, the methodology is transferable and required elsewhere to facilitate capacity improvements, not to mention major projects such as the Elizabeth Line.”

