THE NEXT GENERATION OF RAIL AND METRO WIRELESS COMMUNICATIONS

GAINING the trust and building the models to deliver unprecedented connectivity to passengers.

THE INSIDE STORY on how non-stop connectivity was delivered to riders on the New York Subway.

HOW Google’s unique partnership delivering passenger Wi-Fi to 400 Indian train stations.
Dear colleague,

Many thanks for downloading ‘The Next Generation of Rail and Metro Wireless Communications’ the 24th digital guide from the team at SmartRail World.

In this edition we are focussed on how the next generation of wireless communications are helping train and metro operators overcome some of their key challenges; delivering passenger Wi-Fi and connectivity, ensuring passenger safety and security, moving communications from voice and traditional train control services to high data rate services, mastering bandwidth intensive passenger services such as on-board and wayside HD video surveillance, real-time high data rate services and video streaming.

To develop innovations that match the growth of the industry, train and metro operators are putting in place a new generation of broadband telecommunication networks, using a variety of wireless technologies and models for their deployment. Whilst the rail industry has been using wireless communications in operational applications for many years, the opportunities are significant but the challenges are growing.

With communication technology evolving rapidly, obsolescence can quickly occur – there’s no 40 year life cycle in this section of the industry. Another issue is that long established rail and metro networks typically have a wide variety of assets from many different suppliers that have been supplied on a project-by-project basis that can create hard systems to navigate. Some networks are train-borne rather than infrastructure based which adds an extra level of complexity. And then there’s the cost – installation can be very expensive.

To help ensure the industry is able to take advantage of the evolution of rail and metro wireless communications, our editorial team have spoken to a number of senior executives at rail and metro operators around the world and also sought contributions from some of the leading solutions providers in this sector.

This guide wouldn’t have been possible without the expertise and support from our partners BAI Communications who design, build and operate highly available communications networks for customers around the world. They are at the heart of some of the most innovative technology around; technology that is keeping metro passengers in New York, Toronto, Hong Kong and soon to be Boston connected throughout their journey.

We’d also like to thank the industry experts at ALE, Kontron and LILEE Systems for their support and expertise.

If you would like to contribute to future features and publications, please e-mail me Luke.Upton@GlobalTransportForum.com

Many thanks to all the contributors for sharing their time and helping make this guide happen.

Regards and thanks,

Luke Upton
Editor
SmartRail World
www.smartrailworld.com
Gaining the trust and building the models to deliver unprecedented connectivity to passengers.

“What might begin as a neutral relationship, where we are engaged to build and operate a network for cellular and Wi-Fi networks, grows as the PNO is entrusted first with non-critical transit systems, as a means of leveraging the new network infrastructure”

One word links passengers on Hong Kong’s MTR West Island Line, New York’s Metro and Toronto’s network of subway stations – connectivity. The riders on those networks, among the world’s busiest, can remain connected throughout their journey whether answering emails, reading the news or communicating with friends and family. Today we gain an exclusive insight into how this has been made possible. Yes, there’s cutting-edge technology, some fantastic digital innovation and plenty of hard work but what we are focussing on today is the unique business platform that BAI Communications use to deliver this for some of the world’s most demanding metro passengers.

Over the last decade, passenger connectivity on public transport has moved from a welcome bonus to an expected service. The proliferation of opportunities around remote monitoring, scheduling, signage and other digital enhancements have opened a world of potential for efficiencies and smarter running of networks to transit agencies. But to deliver these transit communications solutions and platforms is a significant challenge for metro and subway operators.

Where to begin with the hurdles that need to be overcome? Well there’s the cost of course. Few metros have large cash reserves available for major investments into a communications network and typically rely on a patchwork of funding to drive projects forward. There’s the risk of something failing, we can all think of examples where big projects haven’t worked as hoped and a major financial, political and professional fall-out has ensued. Then there’s the distraction from the metro’s core responsibility – of moving its passenger quickly, efficiently and cost effectively from A to B. And finally there’s a skills gap – new digital systems demand specialists who keep up to date with the latest technologies and are able to deploy and maintain them. If an operator doesn’t have these skills in house – and it probably won’t – it needs to be outsourced. And with this comes a matter of trust. To relinquish control over mission critical systems to a 3rd party, private network operator (PNO) a metro has to be very confident in their ability, diligence and security.

It’s pretty tough. One company agrees and has responded by resetting industry thinking by launching a new approach for transit communications. That company is BAI Communications, a global company that builds and operates highly available communications networks – Wi-Fi, cellular, broadcast and radio, – across sectors challenged with connectivity, and mostly in public transport. It is these innovators that are keeping those passengers in Hong Kong, New York and Toronto metros connected whilst on-board and allow those metros to focus on the business of running its trains.

The system that BAI Communications deploys is highly sophisticated, founded on an optical fiber backbone, installing reliable and seamlessly integrated LAN, cellular and Wi-Fi connectivity both above and below ground. In addition to providing cellular and Wi-Fi coverage to billions of riders annually, it also enables digital fare collections, public safety communications, remote monitoring and control, commuter analytics, scheduling and digital signage – the full portfolio of transit communication requirements.

The PNO they offer is agile and fast when it comes to network expansion and maintenance, and responsive to the transit authority’s needs. Best of all, the transit authority no longer has to sink resources into building and running a communications network, or keep abreast of the latest technology developments.
It can trust BAI to ensure communications run smoothly, secure in the knowledge this is not only a practical solution, but an economical and low-risk one as well.

Working with a 3rd party in such a significant way is still a major departure for most metro and subway operators. We asked Jerry Elliott, CEO at BAI Communications USA to share some more about how an operator reaches a point where it is comfortable partnering with a PNO to operate some or all of its critical communication systems; “It’s all about trust. And it has to be won gradually. We typically engage in long term agreements – 20 – 30 years - with transit authorities. What might begin as a neutral relationship, where we are engaged to build and operate a network for cellular and Wi-Fi networks, grows as the PNO is entrusted first with non-critical transit systems, as a means of leveraging the new network infrastructure. As the PNO proves itself, this trust progresses to some critical systems, until the transit authority considers the PNO its trusted network partner. This is definitely the case in our New York and Toronto projects.”

The neutrality is a key point, with BAI Communications the host for a multitude of customers across a range of technologies and experts across multiple wireless technologies including 3G, LTE, High Frequency Wi-Fi, subscription services and public safety communications such as TETRA, TETRAPOL and LTE-A networks. In addition to giving the operator confidence they will make the best purchasing decisions, collocation when it does occur can provide a cost-effective solution by sharing infrastructure with carriers, service providers or large enterprises seeking access to high capacity networks.

So with an insight into the benefits, we’ve seen the technology involved, learnt about how trust is earned step by step but what about that all important final test? How this is all going to be financed?

BAI acknowledge this is a challenge for the operator and again offer a unique platform – they are a willing investor and take the long-term view, with the typical length of a partnership with an operator being 20-30 years. “We have the financial stability and capability to take on the cost and the risk of the build. In New York, we’ve invested USD$300m over five years to build the entire network at no cost to the MTA or the NYC tax payers. As we typically engage in long term partnership with transit operators, we can apply our expertise in the operation and commercialisation of the network over time,” said Jerry Elliott, CEO BAI Communications USA.

Alternative funding approaches possible – revenue shares or licence fees are available to support investments. One construction cost can be borne for all services whilst commercial simplicity through a single point of contact to various users of the networks including mobile carriers simplifies each process. And future-proofed systems can satisfy an ever-growing demand for wireless connectivity.

And finally, the widening of BAI Communications work with the industry has continued this year, with the acquisition of inMOTION Wireless together with a 20+ year licence to build and operate the Massachusetts Bay Transit Authority (MBTA) Wi-Fi public network for daily riders and local network. The build has now commenced and soon those in New England will be soon joining the exclusive band of constantly connected passengers.

To learn more about BAI Communications visit www.baicommunications.com or contact info@baicommunications.com
Across the globe, BAI Communications delivers advanced wireless services to large scale transit networks – improving outcomes for transit operators and enhancing the travel experience for passengers.

A shared communications network enables 2G, 3G, 4G/LTE, Wi-Fi, public safety and transit services, with substantial cost and operational benefits for transit operators, wireless carriers and public safety agencies.

Every year, 2.6 billion passengers stay connected while in the NYC subway, thanks to Transit Wireless, a BAI Communications company.

Learn more E info@baicommunications.com W baicommunications.com
The inside story on how non-stop connectivity was delivered to riders on the New York Subway.

You may be familiar with the term, ‘In a New York minute’ - it’s an imaginary unit of time that denotes the fervour and frenetic energy of the Big Apple. Or, as the famous U.S. talk show host Johnny Carson once described it, “it’s the time between one of the city’s traffic lights turning green and the guy behind you honking his horn.” Whether for business or entertainment, most New Yorkers expect non-stop connectivity, and this extends to time spent on the city’s subway. In response to passenger demands, in 2010 the Metropolitan Transportation Authority (MTA) and then-Mayor, Michael Bloomberg, stated their plan to facilitate the deployment of Wi-Fi and cellular services in the subway, thus launching one of the most ambitious projects in transit telecommunications history.

The company tasked to complete this ambitious undertaking was Transit Wireless, who signed an exclusive 27-year contract with the MTA and New York City Transit Authority to design, build, finance and operate a multi-application high speed communications infrastructure for the subway system that spans 4 boroughs and 277 underground stations. The services provisioned included cellular service provided by the 4 major U.S. wireless carriers; a 4.9 GHz band for public safety; Wi-Fi for public, private, and business applications; and a range of other communications infrastructure elements.

A project of this scale and complexity cannot be accomplished alone, and Transit Wireless sought partners to help overcome its many challenges – including finding a network switch that could handle intense traffic density and work reliably in the harsh underground environment. This is where ALE joined the project. Luke Upton recently spoke to Daniel Faurlin, Director, Product & Solutions Marketing at ALE about how they overcame this particular challenge:

“ALE supplied switches in each of the New York City Transit Subway stations. In addition to its resistance to extreme temperatures, the Alcatel-Lucent OmniSwitch® 6855 also has a high throughput, great port density, and can be remotely managed. With an eye on the future befitting a long-term contract, it has open standards that support multiple vendors, and its expandable nature is able to match the growth of the network and support the implementation of new HD displays, Help Point Intercoms and additional future developments.”

In 2011, Transit Wireless (@transitwireless) connected their first six stations in the Chelsea neighbourhood of Manhattan. Five years later in December 2016, the project was completed two years ahead of the original time frame, with full connections throughout all of Manhattan, Brooklyn, the Bronx, and Queens. All stations in the New York City underground subway now have cellular connectivity on AT&T, Sprint, T-Mobile and Verizon networks, in addition to free public Wi-Fi connectivity.
The inside story on how non-stop connectivity was delivered to riders on the New York Subway. [cont]

As a result, the network has revolutionized the passenger experience. With an annual ridership of over 1.7 billion, the New York City underground now enables New Yorkers immediate access to cellular, Wi-Fi, and emergency 911 services—all through the Transit Wireless network.

“It’s been fantastic to see some of the developments since the network was first installed,” stated Rob Hemmerich (@robHemmerich) Director, Business Development at ALE (@ALUEnterprise). “When this project began, we knew that the network had to be of the highest quality and provide a consistent experience for the passengers. Over time, it became apparent that the high-performing network was an important selling point for partners and advertisers, opening up significant additional revenue opportunities. For example, in Summer 2016, Penguin Random House offered passengers the opportunity to download short stories or book chapters to their mobile devices from the subway platform. It’s a great initiative and one that we are proud to support with our equipment.”

With demand growing at a tremendous rate, this is a fantastic example of industry collaboration and problem-solving, while delivering a service that passengers are demanding—in an efficient and financially sound manner.

Thomas McCarthy, Director of Network Operations, Transit Wireless concludes by telling us, “thanks to the ALE solution, more than 10,000,000 users access free Wi-Fi in the New York subway every month. We’re constantly looking to move the technological needle forward and have plans to increase bandwidth and quality. Alcatel-Lucent Enterprise is proactive in proposing new products and solutions that will help us achieve these goals. We look forward to our continued collaboration and mutual success.”

For more information please contact transportation@al-enterprise.com

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The international partnership aiming to make the ‘connected train’ a reality.

“This ‘digital transformation’ is expanding where consumers now want greater access to more personalized information throughout their travels.”

With increasingly demanding passengers, public transportation agencies have always strived to remain at the forefront of technological innovation. Serving daily ridership of millions of passengers one particularly busy North American transit agency demands a high level of robustness, continuity and confidence when deploying new technologies and systems. That is why it is exciting to today spotlight an advanced new Integrated Multi-Modal Communications System from CSiT that is in the process of being fully validated by this large transit authority. In a real-world setting, the communications systems’ public address, passenger infotainment, media/advertising, CCTV and wireless connectivity functions are being put to the test.

Founded in 2011 by a group of senior executives from Telecite and ALSTOM, CSiT has decades of experience in delivering integrated communication and security systems to the transit industry worldwide. Their partners in developing this platform is Kontron, a leading global provider of Embedded Computing Technology (ECT) who blend Silicon Valley innovation with German engineering. To learn more about how the companies are working together to make the connected train a reality, our Editor Luke Upton spoke exclusively to Denis Poliquin, President of CSiT and Valentin Scinteie, Transportation Business Development Manager at Kontron to learn more about what the TRANSIS Train system can offer transit authorities.

The genesis of their successful collaboration started long before Valentin and Denis’ careers at Kontron and CSiT with both men having worked together for almost 20 years solving rail system challenges at other technology companies. Kontron’s embedded computing solutions and Valentin’s extensive transportation industry expertise provided the ideal supplier match that met Denis’ high standards for advanced, proven technologies equivalent to CSiT’s state-of-the-art communication systems. It is this strong relationship foundation that allows both companies to deliver value-added solutions to positively influence and enhance the future of transit operations.

With CSiT recognized expertise in proven information integration and wireless communication, I asked Denis what drives their unique approach: “CSiT understands that the informational evolution occurring with smart devices, social media and the internet is changing passenger transit experience expectations. This ‘digital transformation’ is expanding where consumers now want greater access to more personalized information throughout their travels. By making the connected train a reality with their highly integrated and interoperable systems, CSiT is a valuable contributor in the push to implement Smart Cities.”
“This large municipal transit agency has one of the most rigorous approval cycles for new equipment and solutions. One of the primary reasons this agency is working with CSiT is our commitment to supplying standardized systems, and I believe we are the first vendor worldwide to integrate COTS-based communication systems on trains. Standards-based solutions, unlike previous proprietary ones, ensure long-term scalability and interoperability with existing installed systems.”

And Valentin gave us some insight into how Kontron’s technology supports CSiT’s bold vision: “Our TRACe™ transportation operational computers are completely compatible and fully validated with CSiT’s system solutions. TRACe products deliver the commercial-off-the-shelf (COTS) open architecture computing technologies that give CSiT the modular building blocks allowing them to offer maximum scalability and ease of upgradeability to their transit agency customers.”

“Delivering the proven standardized technologies crucial to ensure interoperability between the diverse types of sub-systems found in the transportation environment, TRACe also helps CSiT simplify development allowing them to focus on what they do best – build powerful, highly integrated and value-added systems specifically designed for the transportation industry. Kontron’s comprehensive line of TRACe platforms meet the full breadth of security, interoperability, reliable connectivity and power efficiency requirements of today’s transit agencies” continued Valentin.

CSiT is in the process of installing its TRANSIS-Train system on a busy subway line. The installation should be complete in two weeks for revenue operations. The CSiT TRANSIS-Train system is running on Kontron’s TRACe B304-TR and TRACe V304-TR EN50155-certified fanless transportation computers and two TRACe HMI D104 driver consoles.

Denis shares some more on the process: “This large municipal transit agency has one of the most rigorous approval cycles for new equipment and solutions. One of the primary reasons this agency is working with CSiT is our commitment to supplying standardized systems, and I believe we are the first vendor worldwide to integrate COTS-based communication systems on trains. Standards-based solutions, unlike previous proprietary ones, ensure long-term scalability and interoperability with existing installed systems.”

On the question of future-proofing, Valentin understands the importance to metros; “Design and installation investments are futureproofed as our TRACe products are based on modular computer-on-module (COM) technology. The COM building block approach permits easy customization of an application and streamlines upgrades to the latest high performance Intel® Core i3/i5/i7 processor. To make these changes, all that is needed is to switch out the COM Express® module on the carrier board, all while maintaining compatibility with existing installed rail systems. TRACe also provides the ability to integrate mezzanine options that adds further value, allowing our partner CSiT to create new systems without significant modification to its original base design. At Kontron, we are thrilled to be able to demonstrate how our TRACe transportation computers are helping to drive the data revolution benefits of the connected train.”

If you’d like to find out more about TRACe COTS open architecture transportation products, contact Valentin Scinteie via email at Valentin.Scinteie@kontron.com
Kontron is actively driving the data revolution in the transportation industry. As a global leader in secure IoT-enabled COTs open architecture platforms and HPEC technology, Kontron’s powerful on-board computers with the latest Intel processors are helping trains adapt the concepts used in AV cars. Our TRACe™ transportation products address the broadest range of modern, connected rolling stock and in-vehicle applications through easily customizable, EN50155 pre-certified application-oriented computer profiles resulting in accelerated time-to-market, reduced total-cost-of-ownership with the most reliable embedded technology.

New TRACe LoRa-MQTT secure IoT Gateway for continuous communications from LoRa-based devices to the Cloud. Explore the benefits of Kontron’s rugged, comprehensive line of operational transportation computers.
Google’s unique partnership delivering passenger Wi-Fi to 400 Indian rail stations and millions of users.

India’s railways are famous for moving millions of people around the country every day and now thanks to optic fibre and tech giant Google they are moving huge amounts of data too. Some 45,000km (28,000 miles) of cable run alongside India’s rail tracks taking high speed free Wi-Fi to currently 115 stations on the network with the target of 400 by 2018. Google is working with India’s state-owned rail company, RailTel, by using a Google Cloud-based virtual evolved packet core (vEPC). This free connectivity, is helping transform stations as they become digital as well as railway hubs.

The ‘Google Station’ programme, launched at Mumbai Central in January 2016 and is now being rolled out across the country. With over six million monthly users, consuming about 200 Terabits (Tb) of data per day, passengers are now gaining access to high-speed, quality Wi-Fi for the first time on-board. And the number is growing, with 15000 first time users every day.

On the installation of Wi-Fi at the 100th station, at Udhagamandalam (Ooty). Gulzar Azad, Country Head – Connectivity, Google India told reporters; “We’re really excited about reaching this milestone and it is an incredible feeling to look back and see how far we’ve come since we announced that we were partnering with Indian Railways and RailTel to provide Wi-Fi at 400 railway stations throughout the country. But what has really inspired us are the stories of how people are using this high-speed access to the full and open Internet. They’re using Railwire Wi-Fi to be more productive with their time and to get things done more efficiently.”

There are four key elements of the network:

- A cloud-based virtual control plane.
- A cloud-based service operations platform.
- Fiber backhaul. RailTel provides the fiber backhaul through its fiber-optic network that runs along most of the company’s railroad tracks covering about 26,000 miles.
- An analytics platform.

Speaking at the Layer 123 NFV World Congress, Geng Lin, CTO of Enterprise Network and Infrastructure Services at Google said that Google’s analytics platform constantly collects network data and runs it through various analytics models to provide a real-time assessment of the network. “This system cuts down significantly on human intervention,” Lin said. “At this moment, to run a service with millions of monthly users you only need two engineers behind the scenes.”

He also added how Google is showcasing a new way to deliver network services using the public cloud. “At the network architecture level it is getting to the stage where we can massively commoditize the network function services through software, which fundamentally changes the control plane,” Lin said. “When you transform the control plane architecture, you can alter the capex structure.”
The wireless carriers previously installed wireless service in all of the Metro underground stations. Working together, the latest tunnel segment is the second portion of the system to have wireless service, following the segment between Potomac Avenue and Stadium Armory on the Blue, Orange and Silver lines, which was activated in December 2016. As a result of the new wireless coverage announced today, a Metro customer can now travel from Glenmont to Silver Spring with an uninterrupted wireless signal.

Metro is installing special cable along 100 miles of tunnel walls to support wireless service as the transit agency also installs the infrastructure needed for a new radio system for trains and emergency responders.

"Customers have told us that they want the ability to stay connected while on Metro, and we are pleased to have worked with the wireless carriers to deliver this service," said Metro GM/CEO Paul J. Wiedefeld. "I look forward to announcing the activation of additional tunnel segments in the months ahead."

The process of installing the wireless cable in Metro’s tunnels requires weekend track outages to allow crews and contractors to drill special brackets along the walls. Under a new approach that maximizes efficiency, cellular cable is being installed concurrently with Metro’s new radio system. Once the cellular cable is mounted and secured, the cable infrastructure is turned over to the wireless carriers to install the electronics needed to connect and optimize their networks. Wireless service on Metro is funded, operated and maintained jointly by the carriers.

Also in April, Metro announced a list of 30 underground stations that will have free customer Wi-Fi service by the end of the year. Currently, six stations already have Wi-Fi - Metro Center, Gallery Place, L’Enfant Plaza, Judiciary Square, Union Station and Archives. Metro will announce Wi-Fi availability as each station is activated. All remaining underground stations will have Wi-Fi by mid-2018. Metro’s Wi-Fi service is in addition to existing cellular service (already available at all Metro stations) enabling customers to make calls, send text messages, and access the web.
LILEE Systems offers an integrated and open platform that enables reliable and secure wireless connectivity for:

- Consolidation of operational, safety, and passenger applications with a simplified network architecture
- Seamless switching from cellular to trackside radio to Wi-Fi without service disruption
- Always-on passenger connectivity that enhances the customer experience and creates new business opportunities

To learn more about LILEE's fully managed connectivity-as-a-service, contact sales@lileesystems.com
Nokia successfully installs communications network on Malaysia’s first rapid transit line.

Malaysia has launched its first Mass Rapid Transit line with support from Nokia and Korea-based systems integrator LG CNS. Together they will provide the mission-critical communications network to support the latest railway operations developing in the country. This project is part of the new Sungai Buloh-Kajang (SBK) line that will ultimately cover 51km and serve 1.2 million residents in and around Malaysia’s capital Kuala Lumpur. Nokia will provide the integral transmission network based on Internet Protocol/Multi-Protocol Label Switching (IP/MPLS) technology. This will support a variety of both passenger and operational services including passenger information and security systems. Key challenges for rail operators today are the same for tomorrow: safety is the number one priority. So for Malaysia’s rail operator, the communications part of the train operation is crucial.

This mass rapid transit line starts from Sungai Buloh which is located to the north-west of Kuala Lumpur, runs through the city centre of Kuala Lumpur, and ends in Kajang. The line serves a corridor with an estimated population of 1.2 million people. Phase One of the SBK Line from Sungai Buloh to Semantan had become operational at the end of 2016, while Phase Two from Semantan to Kajang will become operational by July 2017, allowing trains to serve the entire line.

To date, Nokia has deployed IP/MPLS networks in more than 30 railways worldwide. It also highlights the growing momentum behind Nokia’s strategy to expand its customer base to organisations outside of the traditional telecommunications sphere. Communication networks play a crucial role in helping railway operators and public transport authorities ensure on-time, safe and connected journeys. They run alongside the railways infrastructure and are the path to providing reliable voice and data services for train control, operations and emergency communications, multimedia collaboration, video protection and also passenger connectivity.

Nokia therefore, will be able to contribute by helping Malaysia’s mass rapid transit guarantee future-proof investments with carrier-grade, highly reliable network solutions based on standardised technologies. Additionally, it will enable a smooth migration of legacy products and services towards the next generation of railways’ broadband technology.

The IP/MPLS network consists of the 7750 Service Router and 7210 Service Access Switch, satisfying the stringent requirements of reliability and security. The network provides scalable Layer-2 and Layer-3 virtual private network services to support the different railway sub-systems. End-to-end network and services management is handled by the Nokia Network Services Platform, enabling efficient provisioning, maintenance and troubleshooting. Nokia also provided a range of professional services for the project, including network design, installation, test and commissioning and training.

Byung Il Park, Project Director of LG CNS said: “Nokia’s strong solutions for the railway industry, deep local presence and global experience in delivering sophisticated solutions and services made them an ideal partner for this large and complex project.”

How a successful communications network can help rail operators: Stuart Hendry, head of Global Enterprise & Public Sector for Asia Pacific & Japan at Nokia, said: “Nokia’s IP/MPLS solution for railways is designed to address railway operators’ demanding requirements in terms of performance, reliability and, most importantly, safety. We are pleased to play such an important role in helping ensure safe, on-time and connected journeys for Kuala Lumpur’s residents.”

For the Malaysian project, Nokia will provide wireless transmission and operational support subsystems such as supervisory control and data acquisition, maintenance management syste, automated fare collection and more.
Network Rail manages 20,000 miles of track, 40,000 bridges and viaducts, thousands of tunnels, signals, level crossings and rail timetabling in England, Scotland and Wales. These demands require a devoted workforce of 34,000 to ensure all these are carried out. At the moment, the company are in the process of the biggest and most ambitious upgrade on the UK’s rail network in over 150 years. Beginning in 2014 and continuing through to 2019, the Railway Upgrade Plan has been devised in response to the tremendous growth of Britain’s railway. It’s a comprehensive programme of improvements to provide more capacity on the rail network and relieve crowding and congestion. The key benefits are hoped to be: longer, faster, more frequent trains; a better, more reliable infrastructure; and better facilities for passengers, especially at stations.

This week our reporter spoke to Sarah Wright, Peter Guy, stations. This week our reporter spoke to Sarah Wright, Peter Guy, the Group Business Continuity Manager for Network Rail, to find out more about what inspired him to join the rail industry after 16 years of service in the Army and why he’s never looked back.

Sarah Wright (SW): How did you get into the rail industry?

Peter Guy (PG): Prior to working in the rail industry, I served as an Army Officer for 16 years, leaving in 2005. I didn’t really have any inkling of where I wanted to work, be that in what industry or where, but I had a reasonable idea that my skills and experience were better aligned to organisational resilience and/or programme management. I did the usual things of registering with job banks, networking and using recruitment consultants, however, it was a job bank that landed me my first role with London & Continental, working as the Security Manager for the High Speed 1 programme. It was whilst I was doing my interview preparation that I had my eyes opened to the huge responsibilities and complexities of owning and running a rail infrastructure, and it was almost quite by accident that I began working in a very challenging and rewarding industry.

SW: What do like most about your job?

PG: That’s easy! – being part of something that delivers a service for a rail operator which passionately wants to transform the railway to provide a modern and passenger-focused transport system. It’s about what and how we contribute to improving the service for others and how this can support economic growth, jobs, and housing. Our railway has been growing by three or four per cent for 20 years, representing the fastest level of growth since the Victorian era – and passenger numbers are expected to double over the next 25 years. Who wouldn’t want to be part of the team that delivers the solution to that challenge? A very close second are the people. Network Rail (@networkrail) has great people working for it – they are the backbone and the eyes and ears to its success and future. And, we also make sure we have fun – you have to enjoy something you spend a lot of time doing!

SW: What’s the biggest challenge in your role?

PG: As mentioned already, we have experienced a significant rise in passenger numbers and with this comes rising congestion. Though our infrastructure is the most reliable it has ever been, each incident on the railway now has a bigger impact, causing more knock-on delays than they did in the past. Addressing this capacity issue is a priority, which is why our upgrade programmes are so important. Designing a Business Continuity Management Framework that allows us to recover effectively from the more impactful incidents is key to Network Rail meeting its obligations to its business partners and the travelling public. Giving those teams ‘on the front line’ and the various levels of management the right tools and processes to be part of the recovery solution is both vital and challenging, especially when they have to continue to run an operational railway at the same time!

SW: What will be some of the biggest differences between rail now and in 10 years’ time?

PG: Foremost - harnessing and engaging technology. We have quickly realised that traditional enhancement methods alone cannot meet the capacity challenge Network Rail faces now and in the future - we need to continue to find innovative ways of squeezing more from the existing network. By harnessing relevant and targeted digital technologies, we can solve critical capacity issues on the railway and journeys will be safer and more environmentally friendly, as well as more frequent and more reliable. Another key development will be our relationship with customers. We have deliberately taken the view that solutions to improving the railway can only be successful if undertaken in partnership with our Train and Freight Operating partners. Hence why we have devoted more authority and accountability to our routes and have created “Alliances” that promote a unity of purpose between us and the operators. This devolution and alliancing will increase over the coming years.

SW: What’s your favourite rail journey?

PG: Many years ago, I travelled from Inverness to Edinburgh at the height of summer. The views and the changing countryside were spectacular. I used to spend many of my holidays travelling around Scotland, mostly by car, but the rail journey allowed me to sit back and just enjoy the views. I remember driving the same journey once in late autumn – it wasn’t even the same sport. That’s one of the beauties of railways – you can switch off and relax instead of concentrating on the road or worried about being in a metal tube at 30,000 feet...!
Thanks for reading ‘The Next Generation of Rail and Metro Wireless Communications’.

SmartRail World Publishing has commissioned the following digital guides for 2017

Keeping Pace with the Demands of the Digital Passenger
(Published 27th January)

Using data to enhance rail and metro operational performance
(Published 7th March)

Protecting Rail and Metro from Cyber Security Threats
(Published 29th March)

The evolution and future of transit Wireless Communications

Tracks into the Future: Digital Signalling and Train Control
(23rd June)

Rail & Metro Innovation Guide 2018
(18th August)

Creating new revenue streams for rail and metro operators
(20th – 25th October)

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