FIRTT

Future Integrated Railway Think Tank

Redefining rail's role in an integrated transport system post COVID-19

IRSE///
Institution of Railway Signal Engineers

WSP

Rail Delivery Group
National Rail

KPMG

REDEFINING RAIL'S ROLE IN AN INTEGRATED TRANSPORT SYSTEM POST-COVID-19

Summary

In the second in our series of think tanks – and the first one to be held virtually – guests from across industry joined the FIRTT team to discuss rail's role as part of an integrated transport system in a post-Covid-19 world.

Chaired by Ben Foulser, Director and lead of KPMG's Future Mobility Team, the assembled participants took on this wide-ranging topic by tackling three core themes:

- Renewing/instilling public confidence in mass public transport

- Communications-led intelligence to support better informed, more flexible and joined up journeys

- Industry structure, governance, resourcing and funding

Underlining these key themes Steve Denniss, Technical Director of WSP and Strategic Leader of the Think Tank, expressed an ambition for the industry to collaborate to not just adapt to the current situation and keep everyone safe, but to emerge stronger from the crisis; to reinvent ourselves. With a long-term drop in passenger demand set to continue, the challenge for rail is to combine the intrinsic benefits it has over other modes with innovative thinking from inside and outside the sector, to become a key part of a truly integrated transport system.

Route to Recovery

A resilient approach to COVID-19 recovery for transport operators

May 2020
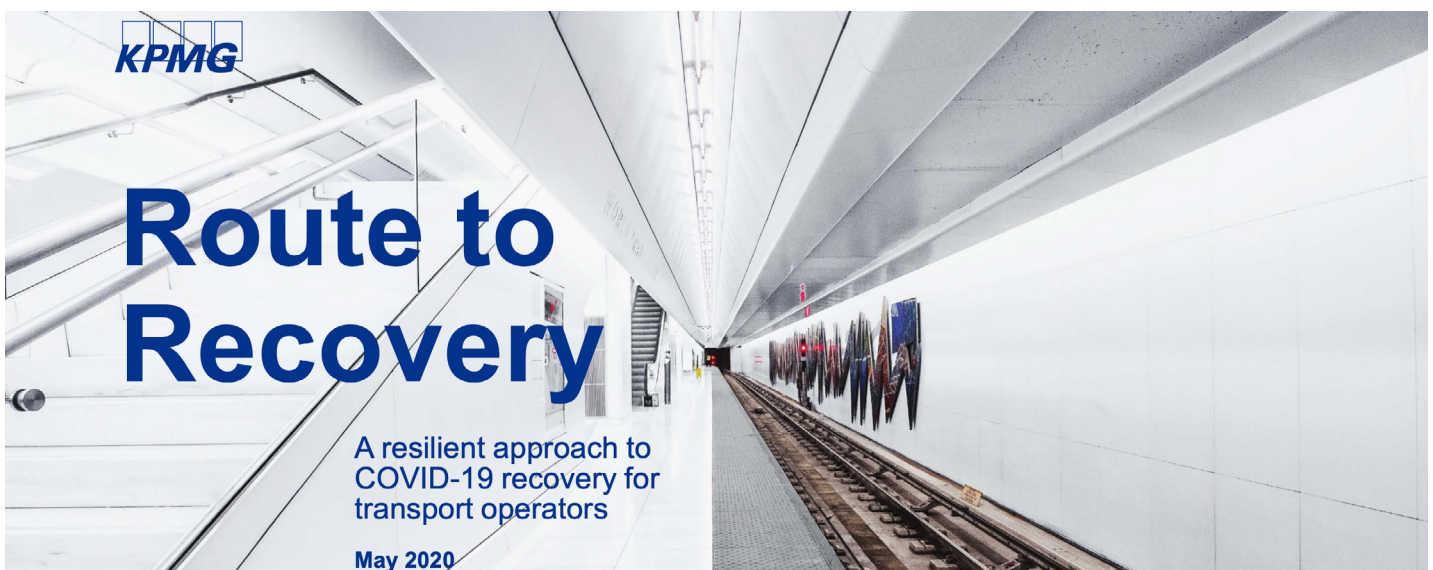
Introduction from KPMG: A route to recovery?

Ben Foulser introduced the webinar. He discussed both the immediate and prolonged effect that Covid-19 is having on public transport, based on KPMG's work with government, economists and transport companies. Sharing TfL research, Ben demonstrated that while social distancing constraints make meeting capacity on London's buses very challenging, the challenge is compounded further for the Tube and train. The imperative for us to find safe ways to maximise capacity and provision of mobility services is clear.

Economists predict that the most likely scenario we face is a deferred recovery, with mini-lockdowns as the 'R rate' rises causing peaks and troughs in demand. This deferred return to normal demand presents us with an opportunity to reform our system. So, what can we do differently?

How can we mitigate the 'headwinds' of increased use of home- and tele-working; social distancing restrictions; pre-Covid increases in mobility options affecting market share; the allure of motoring due to less congested roads, cheaper fuel, etc.

How can we harness the 'tailwinds', among them increased awareness and appreciation of the public health and environmental benefits of rail over other modes, especially improvements in air quality? What about the safety standards that operators have established in the public transport system - does this not represent an advantage?

Can rail respond to a popular shift towards active mobility, which promotes mental and physical health? How can we influence the regulatory change needed to realise a vision of the future that benefits operators and customers alike?

Using a three-phased response plan, Ben described how we can grasp the opportunity to reform, not just rebuild, and take actions to create a new normal that serves industry, passengers, freight users and broader society. This requires a top down and bottom up approach, details of which can be found in Ben's slides. If you have any questions, you can contact Ben at **ben.foulser@kpmg.co.uk**

Can rail respond to a popular shift towards active mobility, which promotes mental and physical health?
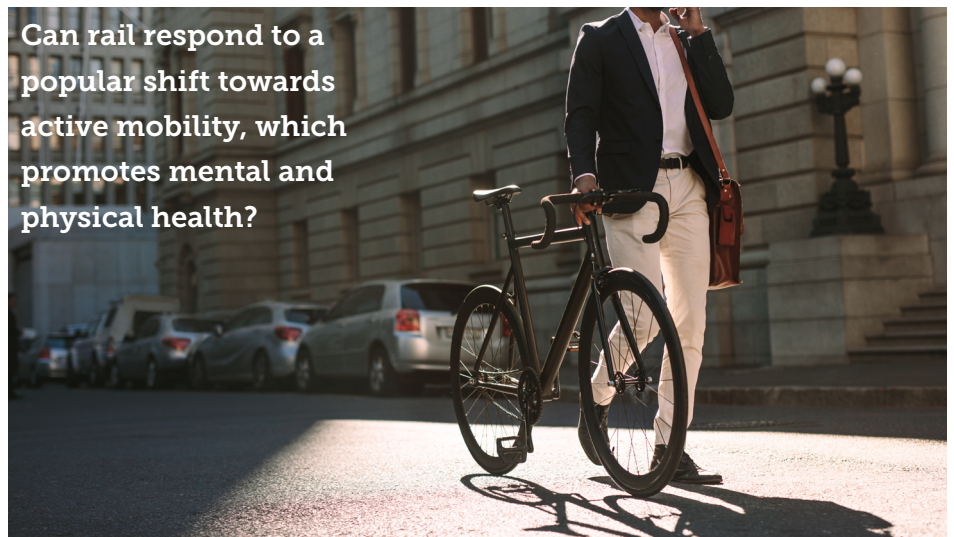
Keynote presentation by Siemens: Redefining rail's role in an integrated transport system post-COVID-19

The keynote presentation was delivered by technology experts Andy Woods (Digitalisation & Innovation Strategy Lead, Siemens Mobility) and Alex Stewart (General Manager, Siemens Mobility Inter Modal Solutions).

Their view was that rail was doing pretty well before the pandemic: usage was up 3%; punctuality and safety was improving; customer satisfaction was greater than with other public transport modes, and demand for rail freight was also on the up. Through our 'habitual and unthinking' relationship with transport, we have come to depend on the familiar to dictate how we move around. To plan his journeys, Andy said that he relies on 'silos' of information from a multitude of apps all competing to offer transport options, but none of them fully understanding his end-to-end journey requirements.

This equates to a lot of options and partial solutions - and a lot of tickets! Where rail is concerned, the common perception of a 'labyrinthine' and even 'conspiratorial' system is only strengthened by the far-from-perfect system of split ticketing. Alex argued that by looking at how data is shared in parts of Europe to offer something closer to Mobility-as-a-Service (MaaS), we can see a mechanism by which supplier data can be given back to the traveller for our collective good.

Looking at what has changed since COVID-19, we can see rail usage is down by 90-95%, crippling operators' ability to run services cost-effectively. With the massive increase in, and success of, remote working it may be that people will never return to commuting at pre-pandemic levels. For rail freight the picture is more encouraging, stepping up to provide a more resilient (and greener) alternative to the road network during the pandemic.

What the future might look like:

- city centres become more leisure focussed, and less business-oriented
- growth in door-to-door supply chains, instead of door-to-hub/supermarkets
- renaissance of 'local'; high streets offering niche and specialist goods and services
- move away from global supply chains, driven by people's growing awareness of their adverse impacts
- greater use of automated systems that do not rely on people to operate them
- population shift away from larger conurbations towards rural areas

What future transport trends might be:

- reduction in peak time commuting
- less business traffic
- more rail freight
- more demand for rural transport services
- reduction in personal car ownership as alternatives become increasingly viable

How public transport needs to respond:

Future transport will need to be dynamic and responsive to events as they happen. Transport solutions need to be based on people's actual travel intentions and requirements. We need to use large scale models to pull data together to provide integrated end-to-end journey options for passengers. We need to shift from an output focus to an outcome focus, rather than concentrating our efforts on moving vehicles.

Transport needs to be more efficient and better informed. By exchanging data about people's travel needs we can avoid wasting energy and resources. We need to automate more menial tasks so that staff can focus on the higher-cognitive ability tasks that add value for passengers. Such tasks are more challenging and, by extension, more enjoyable for those undertaking them.

Equipping passengers with the information they need to make the best choice:

Future rail users will place more value on the hygiene and cleanliness of trains, not just the timing and reliability of their train.

Apps will help to restore confidence and trust in transport by communicating these factors to passengers, for instance informing passengers when carriages were last cleaned. It is about giving passengers all the information they want in order to make their journey.

If trains can only support ~10% of their normal capacity for the foreseeable future, we will need a smarter approach to managing crowding at stations. Perhaps this starts with how people book their tickets; maybe passengers will in future have to book access to the station as well!

The future rail user will be able to mix and match transport options that work for them and meet their needs, and they will want to be able to do so with confidence. While technology will get us part of the way there, for change to occur that really meets customers' needs and expectations, we need a two-way discussion between operators and passengers.

Most people use the railway because they have to, but by embracing active mobility we can change this in favour

of people wanting to use railways. For example, complementary systems and better designed carriages can make trains a greater part of cycling holidays.

A key element in making a success of such initiatives will be finding ways to bring our costs down near to the level of other public and private transport options.

Finally, given the low carbon benefits of train travel compared with aviation, there is a strong case for rail to become part of a larger and wider integrated transport system in a post-COVID-19 world.
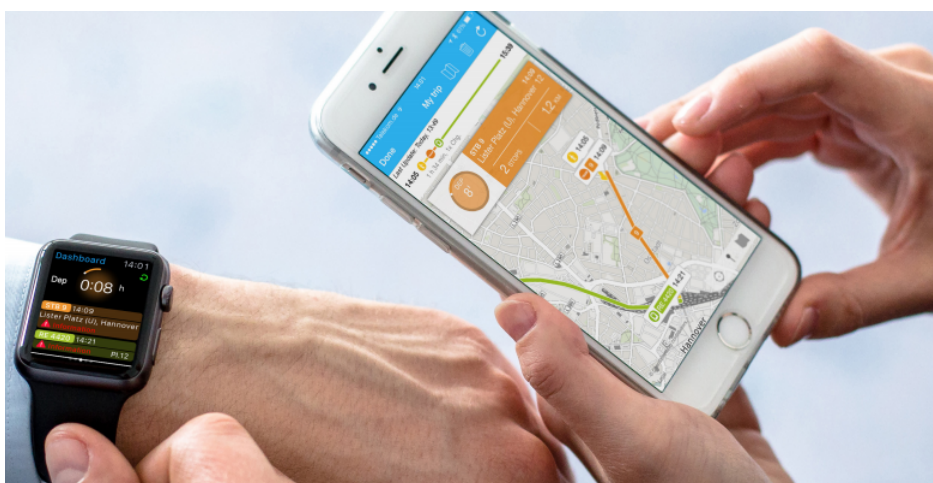
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Key discussion points

Championing digital solutions:
Managing crowding in stations and loading/unloading of trains is a critical issue for social distancing. If we design for current social distancing rules, how do we future proof for changes in restrictions without needing to completely redesign? 'Digital' provides capability for planning and simulation.

Digital Twins* can help us predict how people will use a station and identify pinch points to help us find contingencies that go beyond just emergency scenarios. Digital options are more flexible, and the Digital Twin approach allows modelling of layout options as part of design selection.

By modelling passengers' historic travel intentions and activities, we can optimise flow around stations. This can help us make big improvements with simple measures, such as changing the direction of escalators to account for more frequent and unpredictable fluctuations in traffic. With digital signage and apps that are based on those same intentions, we can help people move safely around the station; this is especially pertinent now with the layouts of some stations having completely changed (e.g. exit- or entrance-only), thereby becoming unfamiliar environments for users.

A MaaS platform can provide customers with the information they need to plan and book journeys that suit their precise needs and budgets. And a digital ticketing system that covers all transport modes would make it easier to implement an end-to-end journey planning solution for customers that truly puts their needs first. The University of Cambridge's Centre for Digital Built Britain[1] is delivering an Information Management Framework to align industry, academia and government to enable the National Digital Twin Programme.

Radical thinking v realistic goals:
Reduced demand for services, coupled with the need for social distancing, has up-ended the capacity challenge that was facing the railway before Covid-19. We may even move away from 12-car trains towards shorter train sets and more frequent services. In the long-term we may even see the use of small travel pods on railways, rather than large trains, enabling rapid and timetable-free passenger movement.

In the meantime, the move from fixed block lineside signalling to ETCS level 2 (and eventually level 3) and intelligent traffic management will enable us to deliver a range of benefits. For instance, we will be able to provide relatively inexpensive bi-directional signalling and significantly reduce delay minutes. With level 3 we could allow trains to run closer together and dramatically reduce costs on lightly used parts of the rail network. There is no 'one size fits all' solution however, and we need to be open minded about the technology we choose, but we should be optimistic.

Lighter vehicles, reduced costs of running the network and automated maintenance are all in development today. They need to be implemented!

[1] www.cdbb.cam.ac.uk

Promoting rail's environmental credentials:

To go from London to Brussels by plane accounts for 106g/Km CO2 per passenger; the same journey by rail is just 6g/Km per passenger. Clearly, there are some big opportunities for industry to promote the intrinsic environmental benefits of rail and its part in meeting the broader decarbonisation goals. With the beleaguered aviation sector facing up to ten years of turmoil, the case for rail on environmental grounds will only strengthen. The carbon efficiency of rail over road is just as compelling.

Mitigating decreased passenger demand:

With a precipitous drop in passenger demand and the highly likely scenario of a deferred and very gradual recovery, how do we preserve yield and make running the railway affordable? Parcel deliveries offer a window of opportunity for rail; organisations are already removing lorries from the road with such services.

Innovative organisations are already proposing dual-purpose carriage designs, which can carry both passengers and light freight/parcels. More efficient use of information and the deployment of automation will help increase rail's yield. Smarter integration with other modes and affordable ticketing will help rail tap into the domestic holiday and leisure market.

Collaborate to cut costs:

Cost reduction is more critical than ever. But as an industry do we really know where our 'big cost buckets' are

and where opportunities exist to reduce these? We need to work collaboratively to reduce the high-fixed costs that characterise the railway. There are encouraging signs of industry working together to reduce costs. For example, Project 190, led by Network Rail and supported by Department for Transport and the Department for Business Energy and Industrial Strategy, aims to triple the volume of Signal Equivalent Units installed (a unit cost measure of providing signalling) while halving the unit price. In a similar vein, the Coventry Very Light Rail project aims to develop a low cost trackform for the low cost light rail carriages that are already in development.

Daring to leave our comfort zone:

Rail is arguably and understandably obsessed with how the railway operates. But this can detract attention away from understanding what the end user wants.

We know that, for most customers, frequency is more important than speed, and reliability is more important than shorter journey time. But while these are 'knowns', we don't allow them to drive our objectives, and this has to change. Rather than putting our effort into how we "move metal boxes between stations", we need to understand and design our services to prioritise customer demand and needs. The customer journey does not begin and end at the station, and rail is just one link in the chain. We need to think in terms of end-to-end and 'door-to-door'.

Railway operations, while fundamental to the running of a railway, are simply

an enabler for us to give the passenger this holistic journey solution. Until we can accurately gauge how individual travellers want to use the railway, these 'metal boxes' will remain a proxy for people.

We need to be able to count numbers of passengers on trains automatically, and our control systems need to know where people are and where they are going (what their start and end points are and what their connections are). Just knowing where the trains are timetabled to go is not sufficient.

Accurate behavioural data used in concert with intuition, imagination and empathy (putting ourselves in the shoes of the passengers) will help us achieve a truly passenger-focussed railway.

Driving a cultural shift:

Driving a cultural shift - Rail will need to be agile in responding to post-Covid-19 commuter working patterns, including how ticketing works. We will need to align with an inevitable rejection of the rigid five-day working week in order to remain a cost-effective transport mode for commuters.

Flexible season tickets and seat reservations on long-distance travel may help us do this and retain and attract passengers. But it is not just the demand side that needs our attention. To deliver what passengers want we need to remove those deeply embedded but unhelpful 'drivers' which influence our railway culture.

Can we remove the KPIs that our Train Operating Companies are driven by, for example? If we want to foster genuine collaboration, can we remove the need for operators to compete for the same journeys?

Such changes require bold decisions and strong leadership.

As we await the outcomes of the Williams Review, we need to push for a National Transport Strategy to encourage collaboration, and not competition, between parties. Perhaps greater collaboration between operators and authorities should be the first step to enacting cultural change.

Improving our image:
While we are good at promoting ourselves within the rail industry, most mainstream media coverage of our railways is negative - whether it is poor service, late delivery of costly infrastructure projects, or industrial disputes.

We must work together to present the industry in a more positive light. We need to showcase our cutting-edge use of technology, our progress in making the industry a more diverse and gender balanced work force, and explain why rail could be the 'hero' of our national transport network over all other modes.

Attracting the next generation:
Attracting new talent into rail is key for its future health; be they operational, supply chain or construction roles, UK rail should be a strong contender for the most aspirant and capable of our young

new talent is key for future health

people and promises to provide careers that deliver transferable skills and digital capability. Sadly, its poor image and the misperception from some that we are an industry slow to embrace change has limited its allure as a viable career path for many.

We cannot simply rely on the implementation of digital technology to excite the interests of the next generation, although it is important we promote this exciting aspect of our industry. We must also engage with the values of young people; they care about the environment and decarbonisation; they want to make a positive contribution to the world. We know a career in rail can fulfil these needs.

Our challenge is in communicating this message to show potential new talent that what drives them can be found within our industry.

How do we secure a bright future?
Our think tank discussion demonstrates that rail can indeed play a major role in the integrated transport system of the future. The profound disruption and uncertainty caused by Covid-19 provides us with an opportunity to reform, not just rebuild; becoming a more attractive

transport mode than ever before for both passengers and freight. But this requires big and bold decisions to be made, strong leadership, a rejection of the silo mentality and competitive culture that holds back progress, and wholesale support from all corners of our industry.

To secure a bright future, we need to work as one towards:

- **the development of digital solutions to the problems, challenges and opportunities - including the alignment of Digital Twins with the Digital Built Britain initiative**
- **a national transport strategy that supports collaboration over competition**
- **less regulation to free up industry players to ensure their contribution to the railway is both what customers want and is cost effective**
- **promoting and improving further rail's environmental advantages, as part of the Government's Decarbonisation plan**
- **the development of whole-journey, modally integrated solutions – both for journey planning and for ticketing**
- **innovative train design that supports flexible usage**
- **a pipeline of new talent attracted to an industry by its dynamism, use of transferable skills and its commitment to meeting the transport needs of our society**