

How collaboration is key to transforming the way we do things on the railways

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The rail industry has never faced the challenges that it has today – with passenger numbers spiralling, more complex timetables and maintenance opportunities ever more restricted.

UK passenger journeys have doubled over the last 20 years – a trend set to continue – and that is alongside limited resources and public pressure to deliver.

But a half glass full and this in an era of huge opportunity – record investment in the rail industry and more and more people choosing trains as their preferred mode of travel.

Mark Phillips is helping to lead the way when it comes to the improvements needed for the industry to meet its full potential. He is the Chief Executive of the Rail Safety and Standards Board (RSSB), which brings together members from across the national rail network to support shared decisions, products and services.

He's spoken to Rail Business Daily about the importance of 2020 being the 'year to act', particularly in the industry's use of technology and data to drive further improvements in safety. RSSB is also leading

industry's thinking on the important agenda of decarbonisation and clean air. The organisation is analysing the opportunities and threats that the industry is facing and focusing on the emerging technologies which have unrealised potential.

"Hard work is needed and it's not going to be a quick fix, and we've got some catching up to do, particular in the use of technology and data," he said.

"Our railway was built by visionaries, transport pioneers who changed the world. But you know that rail has never faced the challenges that it's got today.

"Passenger numbers are spiralling, the timetable's getting ever more complex and maintenance opportunities are ever more restricted. This is set against limited resources and passenger pressure to deliver.

"I believe it's time for us to step up and transform the way we do things. It's time to be visionaries again, time to perform, and perform collaboratively."

Catching up with technology

Research, analysis and insight delivered by RSSB is helping the industry to tackle the current issues and enable the railway of the future to be better, safer and more sustainable.

It's something which can't be done in isolation - but needs to be done collectively using cross-industry research and innovation to develop the knowledge, technologies and operational solutions.

"There is too much focus on immediate issues and not enough planning to make the future better," said Mark who was appointed CEO in 2016.

"Our strategic vision has been poor - in fact the industry doesn't have a strategy. When you look at other transport sectors, such as aviation and automobiles, they are far more advanced when it comes to technology and customer service."

RSSB, a private limited company, is applying research to improving rail adhesion, long run train performance, and clean air from diesel emissions.

In recent months ground-breaking research has been carried out on defining the characteristics of train seat comfort studies on improving the capability of WiFi on trains and inroads into looking at sustainability when it comes to carbon emissions.

Recent air quality investigations, such as one carried out by the Financial Times in the London Underground, has shown that air quality is lower in tube stations and in the carriages. RSSB is conducting work of a similar nature for national rail which may recommend changes to rolling stock through to station ventilation.

He said: "We can come up with guidance and ideas for the industry to adopt. Just as an example, we're

looking at how better we can use technology to improve reliability, such as the use of robotics in train maintenance.

“For this to work, and the rail industry to catch up, it is down to the industry to work collaboratively to identify the capital investment required. We’ll develop the prototype, but others need to devote the capital. Collaboration is needed.”

The RSSB’s drive to push on collaboration and innovation has been seen through its many research competitions over the last couple of years, which aims to stimulate businesses to bid for funding to develop ideas which will make a difference to the UK’s railways.

Data science

Leveraging the data that the rail industry collects is key to improving the running of the railway and with it the customer experience. RSSB is working hard to make data more accessible to those who can make best use of it.

Mark says the industry is ‘a million miles away’, in the way data is analysed. His example of the analogue railway, where many assets are not remotely monitored to track when they are about to fail through to some assets producing large quantities of data which is not analysed effectively to identify trends – something which needs to move forward with the times.

RSSB’s Data Sandbox is just one example – which has found evidence of how machine learning, graph theory and data analytic techniques can be used to make accurate predictions about the impact of reactionary delays and dwell time variations.

Data is a major part of the Rail Sector Deal, which will transform its use to improve operations and customer experience by establishing a data platform to securely share rail industry data – enhancing passenger experience and door-to-door travel as well as more effective movement of goods and reduced costs.

He said: “We need to capture and use the data more efficiently We need to look at the different sectors which are using data well and take ideas from them. We also need to recruit more data specialists in a bid to catch up.

“There is so much data available. We are not using it to the degree we should do. As an example, look at people’s travelling patterns – more people are working flexibly. We need to come up with a service offering which better meets passengers’ needs.”

Research to enable better performance

Over the coming weeks RSSB is highlighting the research they are delivering to enable better performance across UK rail.

The Enabling Better Performance Research Challenge (PERFORM) sets out to achieve performance

improvements to run more trains on time today, while improving the rail performance of tomorrow.

It was officially launched last year following a survey which found punctuality remains the biggest single influence on dissatisfaction. Keeping freight trains running so that the goods they transport arrive on time is also important to UK businesses and the wider economy.

Among the research currently underway is the development of an operational decision-making model for abnormal working. Support tools and models that have been developed are currently nearing the end of testing with East Midlands Trains and Network Rail's London and North Eastern route.

Mark said: "Overall the aim is to help reduce small-scale operational delays by improving the effectiveness of operational decision-making through the development of decision support tools, models, or other developmental techniques

"The project has reviewed decision making support tools and models which are available to staff in other safety critical industries including aviation, emergency services and the military, and developed a tool for rail.

"The research also identified the important requirements for decision making tools to be effective, which include staff needing to be trained properly in how to use them."

2020

Mark barely touched the surface when it comes to the wide variety of work being carried out by RSSB, but one thing for certain is the fact that hard work lies ahead for the railway industry.

But with great challenges come great opportunities and huge potential. Investment is needed to improve its infrastructure and collaboration is needed to fulfil the industry's full potential.

The UK's railway is one of the safest and most intensively used rail networks in the world. Each system is operated by a number of organisations, each with clearly defined roles.

Despite his concerns, Mark is optimistic that the rail industry has the expertise, but it has to come together and start to catch up with technological advances. 2020 has to be the year of doing, not just talking.

He said: "The changes are going to take time. There is no quick fix. Even with the likes of the Williams Review – it is going to take several years to implement.

"Overall more money needs to be invested in creating resilience, investment in spare resources, more in training, a focus on identifying the problems and eradicating issues on top of sorting out delays in delivering new rolling stock.

"Collaboration is going to be important, but we need to be quite clear, these conversations shouldn't be fluffy, we need to be quite clear of our commitments.

“We want rail to be the mode of choice for passengers and moving freight efficiently and cost effectively; for the industry to thrive and for rail to have a positive impact on the environment.

“This requires unprecedented collaboration by the industry and a common focus and a catch up in our use of technology and data.”