THE INNOVATION GAME

PAUL STEPHEN exclusively reports from the inaugural UKRRIN Annual Conference (#UKRRINannual), on how the ground-breaking new partnership with universities is providing the rail industry with a step change in research, development and innovation

RAIL photography: JACK BOSKETT MEDIA LTD/UKRRIN

O n November 13, more than 170 delegates gathered at Kings Place in central London for the first ever UK Rail Research and Innovation Network (UKRRIN) Annual Conference. It came just nine months after the official launch of the partnership in February, and provided an early opportunity to learn more about UKRRIN and its benefits to members, as well as the capabilities, facilities and services that the wide-ranging network has to offer.

With a comprehensive line-up of speakers drawn from UKRRIN’s growing membership of nine leading universities and 15 rail sector companies, the conference also provided a powerful reminder of the strength of support that exists for its mission to bring together the industry’s leading players with academia.

It also demonstrated why the network is the UK’s foremost collaborative body in the rail sector, and how - through its varied current and future research activities - it looks set to propel innovation, new products and rail industry growth into Control Period 6 (CP6, April 2019-March 2024) and beyond.

The need to adopt a more joined-up approach in pursuit of these goals is enshrined in both the Rail Supply Group’s Fast Track to the Future productivity and growth strategy (published in February 2016) and the Rail Technical Strategy Capability Delivery Plan (published in 2012).

It is also expected to underpin the proposed Rail Sector Deal and UK Industrial Strategy that will set out the Government’s ambition to position the UK as a leading player in a number of global markets, including rail.

UKRRIN’s predecessor Rail Research UK Association (RRUKA) was created in 2010 to expand the achievements of RRUK as a much-needed bridge between the rail supply chain and academia.

RRUK and UKRRIN consolidated earlier this year in a bid to deliver five core functions to best meet industry needs. This consolidation also helped to clarify the rail research and innovation landscape, with one body representing collaboration between academia and industry in rail.

Binstead said that UKRRIN would now use this as a foundation to bring conceptual ideas and innovations to market much sooner, and on a larger global scale.

With the rail industry facing the tough task in CP6 of improving productivity while reducing costs, and with Brexit looming, UKRRIN also needs to help bring these products to market and to support growth against a more challenging backdrop of uncertainty than existed previously.

“We think UKRRIN is very special, and we’re already demonstrating success,” said Clive Roberts, Professor of Railway Systems at the University of Birmingham, which is the lead partner in UKRRIN’s dedicated Centre of Excellence in Digital Systems.

He told delegates that in just nine months the network had already grown, with UKRRIN welcoming Cranfield University as an academic partner and rolling stock company Porterbrook as a new industry member to complement the network’s founding members. Membership is expected to climb further still, with UKRRIN open to new suppliers and universities in order to increase the breadth of both its research facilities and expertise.

“IKRRIN will bring about what we cannot do already, such as system integration and more full-scale testing,” he said.

The rolling stock owning and leasing company Porterbrook as a new industry member to join UKRRIN. Their need to adopt a more joined-up approach in pursuit of these goals is enshrined in both the Rail Supply Group’s Fast Track to the Future productivity and growth strategy (published in February 2016) and the Rail Technical Strategy Capability Delivery Plan (published in 2012).

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The country is already benefiting from the high levels of collaboration we’ve already experienced, and we’d like to grow even further so that the rest of the industry has an opportunity to share in our success.”

Jo Binstead, UKRRIN’s Steering Group Chair

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Those of other key partners Transport for (RIDCs) at Melton Mowbray (Leicestershire) Rail Innovation & Development Centres an affiliate member of UKRRIN. Southampton, University of Nottingham, Loughborough University.

■ Birmingham. Rolling Stock (CERS). University of Cranfield University has recently joined as an affiliate member of UKRRIN. In 2019, the Centre of Excellence (CET) has been created in Test. This incorporates testing facilities at Network Rail’s Rail Innovation & Development Centres (RIDCs) at Mowden Moveway (Leicestershire) & Tardis (Nottingham), alongside those of other key partners Transport for London and the Quinton Rail Technology Centre (QRTC).

Together, those four Centres of Excellence are benefiting from more than £90 million investment to develop their research facilities - comprising £28.1m awarded by Research England and £64m from industry. All sites are due to be completed by 2020.

Those world-leading facilities will be open to UKRRIN industry members from the rail supply chain - including infrastructure managers, train operators, manufacturers and others that are in a position to fund research and then bring innovations to market.

In turn, university researchers and students will have improved access to industry experts at all four Centres, helping to expand their skill sets and boost their employability.

Senior representatives from each of the four Centres of Excellence made presentations at the UKRRIN annual conference, to deliver an insight into what facilities they could either already offer or those currentlyunder construction, and to provide a flavour of current or future research projects being undertaken.

Professor Simon Benwicke from the University of Huddersfield, which is the lead partner in UKRRIN’s Centre of Excellence in Rolling Stock, was up next to discuss future plans. He told delegates that new facilities are being built in Huddersfield for pantograph interaction dynamic testing and train hi-fidelity on-board motion simulations, while a new traction, drivetrain and braking facility will be built at the University of Newcastle. Flexible “hardware in the loop” facilities are also being installed on university campuses in Huddersfield and Loughborough.

He said: “Our objective is to be a one stop shop for rolling stock research, and like the other Centres of Excellence to support the four C’s of Rail Technical Strategy, which are: halving costs, doubling capacity on key routes, halving carbon emissions, and increasing customer satisfaction.”

Finally, Peter Ellis from Network Rail represented the Centre of Excellence for testing. He said: “Between NR, QRTC, and London Underground, we are three entities supporting UKRRIN with at-scale testing facilities for equipment and type testing at line speeds of up to 125mph. We are effectively the next stop along in the project lifecycle from the academic centre, provide a safe and representative railway environment to test innovations and to move stakeholders or funders along to see them in action.”

At the heart of UKRRIN is its co-ordinating hub, which is led by RSSB and brings together the Centre leads and representatives from RIA (Railway Industry Association) and Unipart. The hub supports the network in the five key areas of: green and decarbonisation; efficiency asset management and future train control.

“Collaboration will be critical for us because we are an infrastructure manager and don’t deliver products. We will increasingly be using mechanisms such as Small Business Research Initiatives and innovation partnerships like UKRRIN.”

“We need implementable ideas, and not ‘zombie projects’ that just meander along consuming resources. We need to make sure that projects are solid and agile enough for changing environments like Brexit, but to do that we must work together with people and organisations like you.”

Professor Clive Roberts, University of Birmingham.

“The important thing is that we’ll have a lot of collaborative space in the NIL. And it’s not just for students and staff in Southampton, but for everyone,” said Professor Simon Benwicke from the University of Huddersfield, which is the lead partner in UKRRIN’s Centre of Excellence in Rolling Stock, was up next to discuss future plans. He told delegates that new facilities are being built in Huddersfield for pantograph interaction dynamic testing and train hi-fidelity on-board motion simulations, while a new traction, drivetrain and braking facility will be built at the University of Newcastle. Flexible “hardware in the loop” facilities are also being installed on university campuses in Huddersfield and Loughborough.

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