Digital Railway

Early Contractor Involvement Report

Delivering Digital Train Control Technology Efficiently
- to drive capacity and performance on the railway

Working together for a better railway:

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Foreword

By David Waboso CBE, Managing Director, Digital Railway & Gordon Wakeford, Chair, Rail Supply Group

David Waboso CBE & Gordon Wakeford

We are delighted to endorse the publication of the Early Contractor Involvement (ECI) report, which represents the combined view of the Rail Supply Group and its global rail supply chain member organisations.

This report was commissioned by Digital Railway in August 2016 and the process of early contractor involvement has been widely endorsed by industry stakeholders. This has re-energised the supply chain to focus their support for the Digital Railway programme.

The railway is critical to our national growth. Increasing travel between and across our cities has led to a rise in demand for rail journeys and we need to act now to ensure the railway continues to enable this growth in the future.

There is significant benefit to harnessing digital train control technologies, as part of a system with conventional enhancements, to deliver capacity and performance benefits. This system approach will make a real difference to how we manage and operate our railway. This is imperative to delivering an improved and reliable service to freight customers and passengers.

The Digital Railway Programme - **on behalf of the rail industry** - is now very focused on how we can deploy these appropriate technologies to solve critical capacity and performance challenges on the railway in the coming years. The Rail Supply Group has also brought together the relevant parts of the supply chain to address this. The work done to date shows that a package of digital and conventional investment is likely to be more cost effective than a purely conventional approach to increasing capacity, such as building new viaducts and structures through our dense urban space.

> *"A package of digital and conventional investment is likely to be more cost effective than a purely conventional approach to increasing capacity."*

However this report demonstrates that to achieve this ambitious goal it requires a **fundamental change to the way industry works with the supply chain** to bring down the forecasted costs of digital technologies, including the cost of maintaining and operating train control systems on the railway. This is how the supply chain works in other industries, and indeed on other parts of the railway in the UK and around the world; taking greater accountability for our systems delivery including its whole of life performance.

This would materially strengthen the business case for digital technologies to be deployed, **as part of a package of investment, to meet the growing demand**. This is a choice that the rail industry would be hard pressed to ignore, when the strategic outline business cases on specific parts of the network are completed in April 2017.

Achieving this will need an **industry reform programme** that focuses the supply chain on delivering outcomes for rail customers, and to take a view of costs across the whole life of train control and signalling assets. We must decide as an industry whether we are willing to make these changes to achieve this goal of ensuring the railway continues to support economic growth in this country. It will take commitment and upfront investment to make this happen. That is why we are pleased that the Digital Railway Advisory Group, which represents the railway industry, has already endorsed this report and is keen to take forward the recommendations.

Finally, we are delighted that the Chancellor of the Exchequer announced in the **2016 Autumn Statement £450 million of funding for digital signalling**. This provides the confidence and direction needed for the rail industry and supply chain to make these reforms and long-term investments in new technologies, as well as retain the skills and talent that already exists.

Executive Summary

In August 2016 the Digital Railway programme, acting on behalf of industry, commissioned members of the global supply chain to explore whether, and how, they could drive a more cost effective and outcome focused approach for rail customers. These suppliers, supported by the Rail Supply Group, looked at the targeted deployment of digital technology which claims to deliver capacity and performance benefits on the rail network.

This report represents a coordinated response from the global Digital Railway supply chain. They were involved in the programme of seven work streams that have now completed their initial phase of work.

This new approach to early contractor involvement (ECI) has been strongly welcomed and has already resulted in the development of new ideas and potential solutions. An innovative business information tool has also been used to provide immediate and real asset performance data. This has empowered suppliers to develop the right solutions which could bring significant benefits for customers of the railway - supporting a stronger business case for the Digital Railway.

By participating in the ECI programme, and producing the report, the suppliers have demonstrated a willingness to radically change the cultures and behaviours of project delivery. Collectively, the supply chain has shown that working across industry boundaries as well as investing and supporting the development of better processes will result in a better railway for the future.

> "*This innovative approach to early contractor involvement has already resulted in the development of new ideas and potential solutions which could bring significant benefits for customers of the railway.*"

Main Findings

The report makes recommendations in three key areas that will support the future development of the Digital Railway business case. The areas are costs, benefits, and supply chain investment in the long-term:

Costs

1 **The cost to deploy digital train control could be lower if the industry radically changes the way it works with the supply chain.** Telling suppliers what is needed should be replaced with conversations about the issues, so that the right solutions are developed together. Changing the current practice would result in the supply chain being more engaged to deliver performance outcomes for the railway, which is supported by supplier investment, productivity and lower 'whole life' costs. A conservative estimate suggests this could be 10 %, with significantly more savings over time, which could exceed 30 %.

10% to 30% reduction of costs on digital train control deployment

"We're working together to improve the railway for all customers"

Global Supply Chain

2 **Rail customers will receive a better experience when suppliers take a holistic view of deploying digital solutions. This is encouraged through earlier engagement with the supply chain.** As an example, disruption could be minimised during project deployment. Risks could also be identified earlier. This would reduce unnecessary costs and delay, resulting in a positive relationship for clients, suppliers and ultimately, rail customers.

Benefits

3 **The case for Traffic Management (TM) deployment remains strong and the supply chain believe it can deliver immediate customer benefit**. 10 % performance benefits can be achieved at key junctions and high utilisation lines when deployed in conjunction with conventional infrastructure upgrades. The analysis also shows that there is a case for initial implementation of Traffic Management in isolated mode (a stand-alone tool that supports signallers to make decisions), which will quickly deliver around 60 % of this performance benefit. In addition it can be deployed with minimal disruption to rail customers.

60%
of performance benefits
can be quickly achieved through Traffic Management in isolated mode
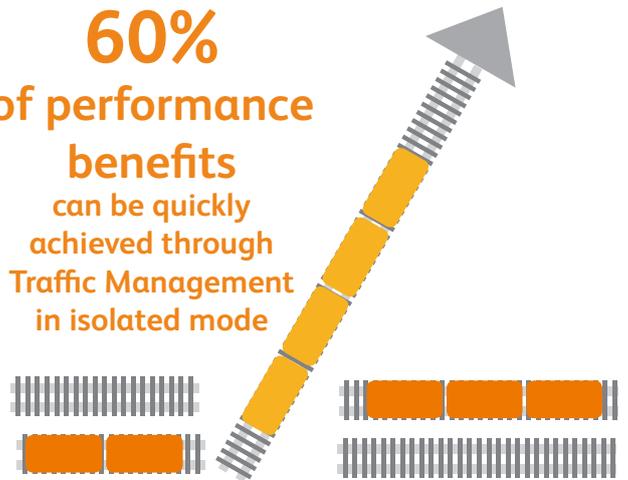
Better passenger information, timetabling and environmental impact

| LONDON | NEXT TRAIN IN | 2 MINS |
| LONDON | | 5 MINS |

4 **Traffic Management has other benefits for rail customers such as better passenger information, more accurate timetabling and smoother journeys (which has less impact on the environment)**. The global supply chain has been involved in deploying Traffic Management to achieve these benefits in many other countries such as Germany, Austria, Italy, Spain and Portugal. However to achieve these benefits, it is critical that the rail industry focuses early on defining and agreeing the organisational and process changes needed to integrate the technology successfully.

5 **The supply chain endorses the Digital Railway's inclusive approach of developing targeted business cases - based on rail customers' needs.** The supply chain have demonstrated that significant safety and capacity benefits can be achieved by using combinations of digital technology solutions such as Traffic Management and European Train Control System (ETCS). In addition, predict and prevent tools on the infrastructure and on trains will provide rail customers with improved benefits through efficiencies and fewer failures.

Supply chain say
YES
to Digital Railway's approach to develop targeted business cases - driving safety benefits & capacity increases

Supply chain investment in the long-term

6 **The supply chain wants to invest in world class resource growth and skills development in the UK. It will also invest in modern and innovative tools for project delivery, such as automated design.** This will deliver tangible benefits for customers of the railway - supporting the government's industrial strategy to boost our export capability. This requires commitment by the industry's Digital Railway programme to develop longer-term and larger packages of work. Without this, the recent trend of workforce reductions across the digital rail supply chain may continue.

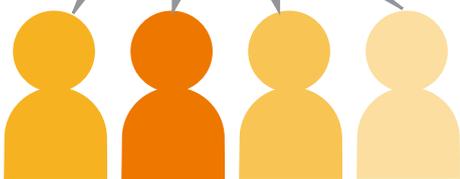**Supply chain is investing in resource growth & skills in the UK**

7 **A robust procurement strategy and forward-looking delivery plan, which fully involves both large and small companies, is imperative to building confidence within the supply chain - the consistent approach will improve productivity and reduce cost.** There is significant concern amonst suppliers around the commitment to deploy Digital Railway solutions. Strong evidence suggests this is adversely impacting skills and technology investment in the UK. Historically, the number of cancelled bids and opportunities has taken a heavy toll on suppliers. It is imperative this changes through a steadfast and unwavering approach.

Consistency is key
to building confidence and reducing cost

8 **Government has a role to play to provide confidence for the supply chain to invest in the long-term**. The Rail Supply Group and its members, welcome the Government's recent engagement and public commitment in the Autumn Statement with the announcement of £450 million for digital signalling. This, together with the ECI programme has helped to improve confidence within the supply chain.

We have an idea...

9 **The Digital Railway Programme must continue to drive behavioural change** through strong and focused leadership to promote collaboration and a culture of learning, whereby challenges are quickly overcome. This includes learning critical lessons from the recently deployed digital schemes. To achieve this, and be fit for the future, all stakeholders particularly the client and supplier, must accept significant changes to their existing processes, standards and expectations. This will ensure the end goal of a more effective and efficient railway is reached which meets the needs of rail customers over the next 40 years (the typical operating life of digital rail units).

Strong and focused leadership will promote collaboration

> *"The Digital Railway programme is a tremendous opportunity to demonstrate the capability of UK railways and we are delighted with the co-created approach outlined here for early supplier engagement. The supply chain is energised and mobilised by this commitment to a new approach for working together to deliver a programme that will transform our railway operations and the experience for our travelling public."*

David Tonkin, Interim Chief Executive of Railway Industry Association

The future

The recommendations made by the ECI programme provide strong evidence to support the Digital Railway programme's work to develop targeted business cases. These business cases will focus on key parts of the network. The Digital Railway team will work closely with suppliers, local operators and infrastructure providers.

Further engagement is required with those already involved in the ECI programme, and with other parts of the supply chain who have not yet been involved. Working with the Rail Supply Group, the Digital Railway programme will continue the ECI programme to further develop evidence in support of the initial findings and embed those into the targeted set of business cases.

The findings will also inform the work the Digital Railway programme is doing to develop an integrated industry plan. This will be in conjunction with key stakeholders across the rail industry and government to ensure that digital deployment is aligned with rail re-franchising and re-signalling schemes planned in the coming years. More widely, the ECI programme will also undertake further work to support the Digital Railway to consider key issues that are critical to the programme's success.

These include:

- **Exploring alternative funding mechanisms;**

- **Developing whole of life commercial strategy, which rewards and incentivises successful collaboration and delivery;**

- **Developing a Digital Railway industrial strategy focused on supplier and skills development;**

- **Reviewing restrictive legacy specifications;**

- **Exploiting the opportunities from Intelligent Infrastructure (e.g. Predict and Prevent tool);**

- **Working with the telecommunications supply chain to ensure integration of requirements into digital train control specifications.**

> **Ideas for other areas that the ECI programme should consider investigating are welcomed and should be emailed to: DigitalRailwayComms@networkrail.co.uk**

*Thank you to the global suppliers
who have supported
and will continue to support
the development of the
early contractor involvement programme.*

Digital Railway