

# Freight and the Digital Railway

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# Freight Background

- Rail freight is an economic and environmental success story.
- Rail freight has successfully grown key segments such as construction and intermodal – whilst managing the structural decline of the once-dominant coal sector.
- Rail freight customers value rail's benefits, but also recognise its risks.
- FOCs are private sector entities, owning or leasing their own assets:
  - No Government support
  - Highly competitive, both within the mode and with road;
  - Low margin;
  - Nationwide businesses - not tied to routes;
  - 750 locomotives, over 5,000 staff.
- As a result, FOCs are very different to TOCs.
- The historic competitive and regulatory environment has not encouraged FOCs to work together.

# What is the “Digital Railway” ?

The adoption of new Command, Control and Signalling technologies across the UK network in ways that will fundamentally change how the railway operates:

These technologies include :

- European Train Control System – i.e. in-cab signalling.
- Traffic Management – timetable and train running management, including conflict resolution.
- Stock and Crew Management.
- Automatic Train Operation.
- Driver-advisory systems – most useful when linked to real-time Traffic Management.

This is not simply an introduction of technologies – **it is a massive “change” programme to the way the railway operates:**

- Extensive, ongoing, training programmes will be needed for many grades of staff – e.g. drivers, maintainers, ground staff
- Significant changes will be needed to operational rules, procedures, systems, methods of work etc.

## Why is this needed?

- UK Government "signed up" to support ETCS as the CCS technology of the future a decade ago.
- There is a huge "bow-wave" of signalling renewals across the UK network that are neither affordable nor deliverable using conventional signalling technology.
- DR technologies are less expensive per Signalling Equivalent Unit than conventional technologies, even taking rolling stock and people costs into account.
- DR technologies, together with enhancement plans, will help to deliver improvements in capacity, performance and resilience across the network.
- Freight customers need an efficient, reliable, cost-effective network with the capacity needed for volume growth, business 'churn' and reliable performance.
- The current Freight plan supports, and is aligned with, Network Rail's Long Term Plan for the deployment of ETCS in conjunction with re-signalling from CP7 onwards, which is essential to reverse the decline in the average remaining life of signalling assets.

# Examples of how the railway will change

## ETCS

- There will no longer be lineside signals.
  - Almost all the information needed by the driver will be provided in the cab display
  - Route learning knowledge will be different, and hopefully minimised.
- Most, if not all, railway operational procedures will have to be changed/modified – e.g. shunting, assisting failed trains.
- Train data entry requirements will change and become safety-critical in a way they are not today.
- For at least two decades, the railway will be a mix of conventional and digital signalling systems and the transition between the two will have to be managed carefully to avoid importing risk onto the network.

# How are we managing this in Freight?

- We developed a collective industry approach to the Digital Railway, with 7 FOCs working together and in collaboration with NR;
- An integrated Freight industry governance and functional working group structure has now been in place for 6 years, incorporated within the wider Digital Railway programme;
- Freight has collaborative links with the NJRP (passenger rolling stock procurement programme);
- Joint working has delivered, and continues to deliver, cost-effective technical and commercial solutions;
- In December 2017 NR simultaneously signed:
  - a contract with Siemens, for the design and retro-fitment of the freight locomotive fleet; and
  - a suite of back-back contracts between NR, Siemens and each FOC for support and services.
  - A commercial agreement between NR and each FOC.
- These innovative and ground-breaking agreements were truly “firsts” for UK rail, allowing for nationwide freight operations whatever the infrastructure programme.

# Where are we now?

- Freight ETCS has moved from being a ‘talking’ to a ‘doing’ programme.
- Funding is now in place for the design and completion of 20 First in Class ETCS designs – this will take the programme forward until March 2022.
  - Classes 66 and 67 both approaching Preliminary Design.
  - Class 92 approaching Concept Design.
  - Classes 60, 70, surveys close to approval.
  - Classes 66/5, 325 surveys underway..
  - Some locomotive classes comprise a number of company-specific variants – so a greater number of solutions may need to be developed.
- Baseline cab fitment programme is under development – current thinking is to link funding to infrastructure schemes.
- FOC ‘Putting into Use’ process has now commenced – FOCs have collectively appointed Aegis to develop generic material.
- FOCs are now actively planning for the operational/ training/people requirements for both testing and the first ETCS deployments.
- FOCs and FNPO are handling the Route-based non-ETCS developments as best they can – recognising that (e.g.) the development of Traffic Management on the Brighton Main Line does not have a significant freight involvement.



# Network Rail devolution

- Digital Railway infrastructure schemes are now being developed and managed by the Route concerned, not the Digital Rail Programme.
- A group of “National Enabler” schemes are being managed centrally by the DR Programme – including Freight locomotive ETCS retrofitment.
- This complicates governance for Freight.
- The Freight Stakeholder Group remains the main governance group for Freight and the DR Programme, but Routes have separate governance.
- The first two planned Route infrastructure schemes for ETCS Level 2 “signals away” that affect Freight are :
  - East Coast Main Line South
  - Transpennine Route Upgrade
- On ECMLS, DB Cargo represents all FOCs and the rest of the sector on the Route Steering Board. FSG has good links with the LNE team.
- On TRU, Freight is not yet fully represented on TRU Route governance. Better links are being built.
- FOC input to Traffic Management is sometimes via FNPO, and sometimes directly with the sponsoring Route.

# What are the potential benefits of DR for freight?

- Safety;
- Increased capacity;
- Reduced complexity and cost of new / modified connections;
- Easier to decommission redundant lines / connections;
- Improved incident and disaster recovery;
- Greater agility and responsiveness in train planning;
- Improved customer information;
- Tangible demonstration to customers – and especially potential customers - that rail is forward looking.

# What challenges and concerns remain?

## General

- The continued development of an infrastructure programme complicates efficient planning.
- Ensuring compatibility between different Route developments.
- Understanding and exploiting the wider benefits of Digital Railway.

## ETCS

- Capacity benefits are yet to be proven in a mixed traffic network - particularly at Level 2.
- Achieving the contractual equipment reliability target to ensure no impact on train service performance.
- Freight Braking curves not yet resolved (so potential risk to either safety, or operational effectiveness).
- Potential business disruption: e.g. First in Class work , Fleet Fitment programme; , Training significant numbers of staff.
- How to manage trains operating across more than one signalling system.
- Managing any increased costs from the programme and the transfer of signalling risk.
- Changing both FOC and NR business systems and processes.

**Remaining focussed upon what matters to Freight customers – performance, reliability and cost.**

- The national nature of Freight makes it an important element of all Digital Railway proposals – hence the need for a flexible ETCS framework that can support any emerging infrastructure proposal.
- The Freight sector, Network Rail and Siemens have risen to the challenge of developing an efficient but flexible framework and programme for ETCS retrofitment.
- Network Rail devolution will increase the pressure on FOCs to ensure appropriate and adequate engagement with the development of route-led DR implementations.
- As the Digital Railway develops over the next five years, all Freight customers and stakeholders will begin to become involved with the changes and – hopefully – the benefits.

Thank you for listening