The Operating Strategy

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March 2012
Session overview

• Background to the Operating Strategy
  • Operating Strategy Vision
  • Traffic Management development
  • Industry engagement activity
  • Questions

If there are any further expectations I’d be happy to incorporate.
The operating strategy encompasses a wide scope that aims to address our core operational challenge of the future.

How can we operate and control the rail network differently to give us greater business benefit?
Initial development steps undertaken

- Understanding current operating ability & existing development work in GB & elsewhere
- "As Is" Modelling
- Far fetched scenarios tested; outputs generated inputs for development of options
- Framework for the future debate and development of the vision
- Base-data research
- Visioning
- Identification of Building Blocks
- Creation of key dimensions of the vision
- Industry experts mapped current ops in steady state and disturbance
- Analysed outputs from visioning work to establish discrete elements from which options can be built

Industry input into the initial development steps was through NTF-OG and it’s nominated representatives
We analysed a number of options to develop the core elements of the strategy.

Potential building blocks of an operating strategy

1. Signalling technology
2. Traffic management
3. Increasing span of control

The building blocks were grouped around three dimensions:

- Signalling technology
- Traffic management
- Increasing span of control

A wide range of options around the three dimensions were analysed against business benefits.
Congestion on the railway is increasing as we continue to run more services on the network.

Improved traffic management will allow us to run more trains on the network without requiring infrastructure capacity enhancements.

8% increase since 2006/07
Performance has steadily improved until recently but further improvements will become more challenging.

- There are a number of initiatives to reduce causes of primary delay, e.g. through improved maintenance regimes.
- The ability to reduce reactionary delay is entirely dependent upon how we operate and control the network.

A step change in incident management is required to significantly improve performance.
The current signalling estate provides varied working environments and signalling interfaces

<table>
<thead>
<tr>
<th>Built</th>
<th>19th Century</th>
<th>20th Century</th>
<th>21st Century</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approx Number</td>
<td>500+</td>
<td>200+</td>
<td>8 (with 6 more planned)</td>
</tr>
<tr>
<td>Interface/grade</td>
<td>Mechanical lever, typically lower grade</td>
<td>Panel, typically medium-upper grades</td>
<td>VDU, typically senior grades</td>
</tr>
<tr>
<td>Characteristics</td>
<td>Frequently single manned boxes located in rural areas.</td>
<td>Some single manned, many larger boxes.</td>
<td>Modern ergonomically designed working environments.</td>
</tr>
<tr>
<td>Employees</td>
<td>Network Rail</td>
<td>Network Rail</td>
<td>Network Rail + TOC/FOC control</td>
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</tbody>
</table>

Current signalling technology offers minimal predictive capability, resulting in a largely reactive railway.
The network is currently operated from 900 workstations of varying levels of productivity.

The Operating Strategy aims to control the entire network from workstations of >=250 SEUs per workstation.

18% of Network Control
49% of Operating Costs

28% of Network Control
26% of Operating Costs

42% of Network Control
21% of Operating Costs

12% of Network Control
4% of Operating Costs
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There is a logical sequence of activity to reach the Operating Vision for the future

Construct remaining Rail Operating Centres (ROCs)

- Releases significant long term benefits regardless of investment in new technology, future roles or pace of migration
- Delivers greater operational resilience (e.g. heavy snow)
- Provides environment for co-location of control

Develop & deploy Traffic Management to Rail Operating Centres

- Traffic management drives industry benefit within the fewer centres:
  - Delivery of performance/capacity benefits
  - Improved management information
- Enhances capability to accelerate the pace of migration

Accelerate migration

- Condition led migration partially fills the centres over 35 years
- For most of the network accelerating consolidation has a good business case
- A small area of the workbank offers weak returns based on opex
- The pace of acceleration can be varied over time

The benefits from co-location and performance are not factored in but are believed to be significant and will allow further acceleration.
Through Route engagement and refinement at various levels, we identified 14 Rail Operating Centres for the future.

In identification of best fit Rail Operating Centre (ROC) locations, the following factors were considered:

- Use of existing locations where possible
- Accessibility of locations for displaced signallers to commute to
- Operational considerations such as alignment to customers, controllers, integration of assets, security, service flows & delivery and workforce & knowledge retention
- Costs, risks, speed and opportunities involved with the migration strategy
- For new buildings, specific site selection criteria based on land suitability, operational desirability (NR/customer), deliverability and people

We believe all operational elements to deliver the train service should be included in the new centres in the long term.

Centres built during CP3 or investment complete
1 - Derby
2 - Gillingham
3 - Cardiff
4 - Saltley
5 - Edinburgh
6 - Ashford

Existing buildings requiring investment
7 - Didcot
8 - Glasgow

New buildings proposed
9 - Romford 2014
10 - Three Bridges 2013
11 – York 2014
12 – Manchester 2013
13 – Rugby 2016
14 – Basingstoke 2014

N.B. Circle size is relative to the number of SEUs controlled.
The components of Traffic Management deliver various benefits, with options around how we deploy.

During the supplier dialogue phase we employed scenario based supplier questioning along with benefits modelling to determine which TM capabilities contribute most benefit.

**System View**

Traffic Management Systems
- National Systems
  - Reference Data
  - Train Status
  - Operating Centres
  - Remote Interlocking Interface

**Benefit Areas**

**OPERATIONAL BENEFITS**
around 4C’s; customer experience, capacity, carbon and cost and vary by
- operating scenario
- functionality
- type of network

**OPEX BENEFITS**

**Deployment choices**

**National**
Develop incrementally to balance cost/risk/operational priorities

**Choice**
Different elements of traffic management system capabilities will be tailored to individual operating centres

**Scheme Specific**
Driven locally, stand alone business cases
Signal box closures have been part of railway life for more than a century, but have slowed since privatisation.

- From the 1960s onwards (post-Beeching), boxes were closing on an average of c.120 boxes per year
- Since privatisation and a focus on reducing asset costs (eg through the life extension of mechanical signalling) this has dropped to c.10 per year

We are planning to close around 100 locations over CP4.
Accelerating signalling migration beyond condition driven renewals delivers significant operational efficiencies

Signalling Workstation Efficiency – end CP7 (2028/29)

- 4% of Network Control
- 17% of Operating Costs
- 18% of Network Control
- 30% of Operating Costs
- 55% of Network Control
- 41% of Operating Costs
- 23% of Network Control
- 11% of Operating Costs
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Traffic Management uses technology based tools to improve on-the-day execution and optimisation of the plan

What is Traffic Management?

Systems & telecommunications based tools to facilitate the on-the-day execution and optimisation of the plan with the resources available

Traffic Management principles:

- Highly automated meaning more time to concentrate on safety critical tasks
- Prediction & resolution of real-time conflicts
- Just in time planning
- Reconfigurable control areas to handle disruption
- Improved co-ordination with people management, major event, emergency services

Traffic Management is projected to significantly improve our ability to recover the service when things go wrong.
Traffic Management technology has already been successfully deployed on other networks.

We have recently completed supplier selection to support the prototype development phase.
Traffic Management will allow us to manage changes to the plan closer to the point of delivery.

Traffic Management is projected to significantly improve our ability to recover the service when things go wrong.
We have developed an outline specification for Traffic Management, including a set of 32 business capabilities.

- Geographic Model (BC1)
- Integrated Desktop (BC2)
- Real Time Plan Distribution (BC3)
- Network Displays & Schematics (BC4)
- Predict Operational Situation (BC5)
- Train Location Tracking (BC6)
- Train Movement Enquiries (BC7)
- Identify Conflicts (BC8)
- Train Graph (BC9)
- Contingency Planning (BC10)
- Real Time Planning (BC11)
- Validate Plan (BC12)
- Incidents Management (BC13)
- Operational Events and Alerts (BC14)
- Operational Logging (BC15)
- Resolve Conflicts (BC16)
- Train Prioritisation (BC17)
- Network & Traffic Restrictions (BC18)
- Possession Management (BC19)
- Advisory Train Speeds (BC20)
- Drivers Advisory Information (BC21)
- Train Consist and Load Information (BC22)
- Train Crew Information (BC23)
- Automatic Movement Authority (BC24)
- Level-crossing CCTV Monitoring (BC25)
- Infrastructure Indications Distribution (BC26)
- RIF (BC27)
- Reconfigure Control Area (BC28)
- Distribution (BC29)
- Telecoms (BC30)
- Post Event Processing (BC31)
- Training & Simulation (BC32)

A feed of real-time train information will be provided direct from the TM control system to feed passenger information and other down-stream reporting systems.
Traffic Management scope highlights potential interfaces with other systems and collaboration on development going forward
We aim to create a technical architecture that enables the industry to align processes and technology

We have engaged in dialogue to work with suppliers and their clients to further refine and prioritise our TM requirements and implementation strategy, using their skills and experiences of doing this elsewhere.

The shaping of operator requirements within this is to:

- Enable real-time Customer information to be driven directly from the Traffic Management control system
- Standardise and improve the granularity of interfaces for the transfer of data for crew and fleet
- Enable an improvement in the process for decision making on the day and resulting changes to the day plan
- Provide a single industry view of real-time train position for down-stream processing by NR and TOC/FOC systems
- Inform and align with the ATOC customer information strategy especially the functionality of Darwin
- Prepare for a smooth transfer of functionality from existing legacy business systems to traffic management

The Traffic Management team are currently working with ATOC to feed into the Customer Information Strategy.
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We engaged widely across the industry through 2011, and believe we understand primary opportunities and concerns.

### Spring
Planning Oversight Group 1-2-1s
- Chris Burdell, Managing Director
- Matt Watson, HR Director
- Chris Brooks, Head of Stations
- Bob Holland, Managing Director - UK trains
- Hugh Clancy, Rail Division Commercial Director, First Group
- Kevin Gale, Operations Director First Great Western
- Duncan Waugh, UK Rail IS and Business Systems Manager First Group
- Jeremy Candlefield, Director General
- Chris Gibb, Chief Operating Officer
- Paul Furse – Waddock, Business Development Director
- Mike Hopcroft, Control Systems Manager
- Tom Jones, Senior Rail Strategist
- ATOC performance Forum
  - Gary Cooper, Head of Operations
  - John Quaranty, Operations Manager
  - Tony Deighan

### Summer
CP5 1-2-1s
- Andrew Markham, Commercial
- Mike Hogg, Operations
- Adrian Callier, Head of Operations Projects
- Julian Drury, Managing Director
- Vince Lucas, Service Delivery Director
- Richard Dean, Head of Train Services
- Andrew Gilling, IT Applications Manager
- Mark Steward, Operations Director
- David Horne, Managing director
- Nigel Jones, Head of Planning
- Rob Wares, Performance and Planning Director
- Steve Butcher, Chief Operating Officer – Northern Rail

### Autumn
NTF 1-2-1s
- Adrian Shooter, Chairman
- Elaine Holt, Chairman DOR
- Michael Holden, incoming Chairman
- Paul Boyle, Head of Performance
- Delivery EC
- Tony Collins, Group CEO
- Andy Pitt, Managing Director
- Andrew Fairbanks, Head of Train Service Delivery
- Ian Johnston, Operations Director
- Mark Hopwood, Managing Director
- Mark Phillips, Operations Director
- Ben Rule, Deputy Operations Director
- Kevin Fraser, Operations Director C2C
- Chris Burdell, Managing Director
- James Burt, Service Delivery Director
- Michael Roberts, Chief Executive
- Gary Cooper, Head of Operations
- Dominic Booth, COO

In addition to bilateral discussions the Operating Strategy has been discussed at POG, Scotland POG, CP5 Group, NTF and NTF-OG. Beyond TM, operator engagement is now owned by the Routes.
Operating strategy benefits are interpreted in different ways by key industry stakeholder groups

<table>
<thead>
<tr>
<th>Funding Bodies</th>
<th>Network Rail</th>
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<tbody>
<tr>
<td>• A value for money alternative to ongoing RPI+ costs of operating the network.</td>
<td>• Reduced costs and improved performance or capacity</td>
</tr>
<tr>
<td>• Politically palatable as optimising capacity without building new lines</td>
<td>• Integrated control locations allow effective customer engagement</td>
</tr>
<tr>
<td>• Enables benefits to all regions, and impacting nationally</td>
<td>• Improved employee engagement and 21st century jobs</td>
</tr>
<tr>
<td>• Good green credentials</td>
<td>• Safe, high quality working environments for our people</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TOCs/FOCs</th>
<th>Operating Strategy Benefits</th>
<th>Passengers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Increased revenue where additional capacity can be realised</td>
<td>• Reduced reactionary delay – quicker recovery when things go wrong, more integration with other organisations</td>
<td></td>
</tr>
<tr>
<td>• Improved performance and passenger information</td>
<td>• Single source of information – quicker, more accurate, more consistent</td>
<td></td>
</tr>
<tr>
<td>• 24/7 railway (particularly beneficial to freight operators)</td>
<td>• Later trains through 24/7 railway</td>
<td></td>
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<tr>
<td>• Potential for simpler railway with reduced driver training and rulebook complexity</td>
<td>• Potential for reduced fares through lower track access charges</td>
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We have a workstream focussed on working with non-funding related stakeholders including rail workers, Trade Unions and heritage.
NTF dialogue highlighted several areas for further discussion

- A number of industry **priority opportunities** were identified to be taken forward within the operating strategy, notably customer information, train crew / rolling stock

- **Localisation of the strategy** - there is a strong belief that this is not a one size fits all and we need to transition to local plans between NR and operators

- There were some **further areas of opportunity identified**, including:
  - ATO
  - Automation of possessions
  - ERTMS
  - TM alignment with ITPS

- Recognition that we have engaged widely but that we need to be able to create a **decision making capability** on both the Operating Strategy and wider opportunities.
We have held operator workshops on Traffic Management, with sessions led by Peter Glass (EMT)/Chris Prior (FGW)

The workshops were also supported by the NR Traffic Management team, with activity planned through 2012 to support key areas identified.
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