فرع شركة نتورك ريل كونسلتنغ

NetworkRail

Consulting

Moving from Projects to Operational Rail

David Milburn, Technical Head Signalling & Control Systems
Network Rail Consulting (NRC)

2nd Annual Middle East Transport Infrastructure Projects 2015, Dubai

Contents

1 *Overview of Network Rail and the British Railway System*

2 *Creating a Strong Safety Culture*

3 *Establishing a Professional Asset Management Capability*

4 *Increasing Awareness of Operational Planning and Execution*

5 *Developing a Local Railway Operations & Maintenance Capability*

6 *Conclusions*

Network Rail and the British Railway System
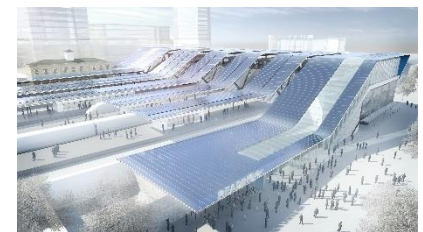
فرع شركة نتورك ريل كونسلتنغ

Consulting

NetworkRail

Key facts

The British Rail System

▸ £50 billion invested in our railway since 2002

▸ 29 billion tonne-kms of freight carried every year

▸ 1.6 billion passenger journeys every year

▸ 7 million train movements every year

▸ 31 operating companies use our infrastructure in the world's most liberalised railway

Network Rail

▸ £6 billion business

▸ 35,000 dedicated employees

We own, run, maintain and develop:

▸ 48,000 signals

▸ 32,000 km of track

▸ 30,000 bridges, tunnels and embankments

▸ 2,500 stations leased to train operators

▸ 19 major stations which handle 950 million passenger journeys

© Network Rail Consulting The Challenges of Moving from a Construction Project to an Operational Railway 4

We are one of Europe's leading railways….

Source: European Commission Rail Study, March 2013
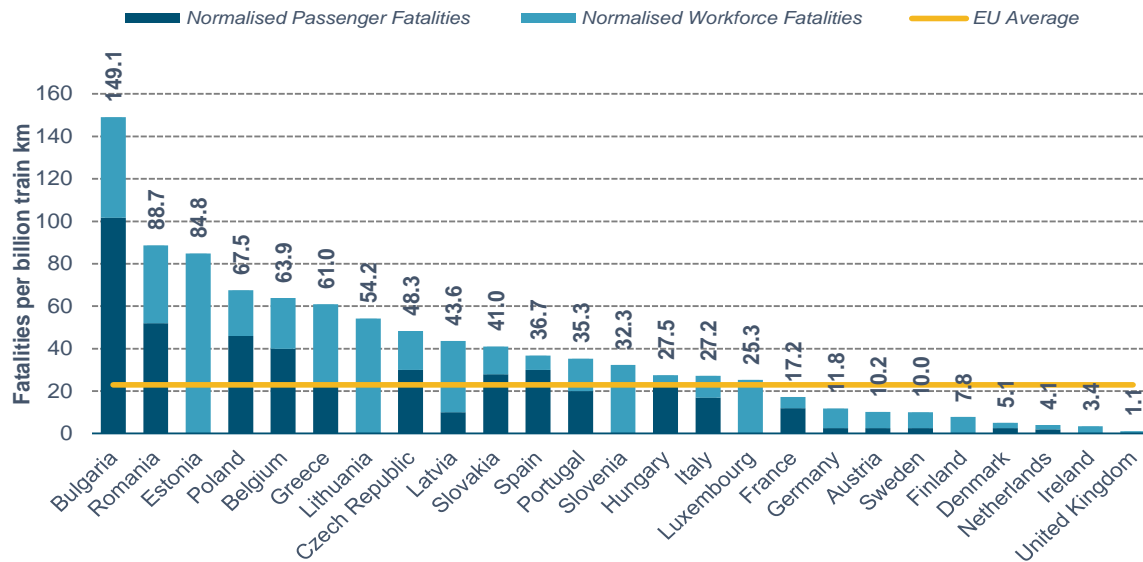
Creating a Strong Safety Culture

Network Rail's experience

Passenger and workforce fatality rates on European Union railways (2008-2012)

- ▸ Took over the GB Railway in 2002 at a time of serious concerns over the safe stewardship of the railway and large numbers of safety related speed restrictions

- ▸ By 2008 the railway had stabilised and from 2008 to 2012 the European Commission ranked the British railway as the safest in Europe

- ▸ Since then the UK has been ranked either first or second each year

Network Rail's safety vision

everyone home safe every day

Developing a **safety culture** through our:

▸ Life Saving Rules

▸ Fair culture – learning not punishing

▸ Open reporting culture

▸ Safety conversations

▸ Training courses

▸ Reviewing non-technical skills for key safety positions – particularly for 'Controllers of Site Safety'

What is a workplace safety culture?

A reflection of the way safety is managed in the workplace and is demonstrated by:

▸ Employee attitudes towards safety, and their beliefs and perceptions of the 'value' of safety

▸ Existence of, and compliance with, simple rules designed to ensure safety

▸ Processes to monitor and manage safety

▸ Belief that safety issues receive the attention warranted by their significance

From construction to operational use

Construction Site Safety Risks

- Working at height – ladders, scaffolding, roofworks, tower cranes

- Fires

- Mobile plant and machinery

- Groundworks and excavations

- Temporary works

- Risk of building collapse

- Heat and exhaustion

- Hazardous substances

- Noise and vibration

- Electrocution

Operational Railway Safety Risks

- Persons struck by train – can be through human error, poor visibility, infrastructure/vehicle failure

- Train derailment and collision – can be through human error, infrastructure/vehicle failure, external causes such as landslip

- Public safety risk

AND

**All of the construction**

site safety risks!

Applying our experience to the Middle East

▸ Our vision:

  ▸ "Everybody Home Safe Every Day"

▸ Our belief:

  ▸ "Outstanding safety performance and outstanding business performance go hand in hand"

▸ Focus will be on:

  ▸ Rolling out our "Life Saving Rules"

  ▸ Safety briefings and safe systems of work

  ▸ Risk management procedures

  ▸ Robust operational and infrastructure management

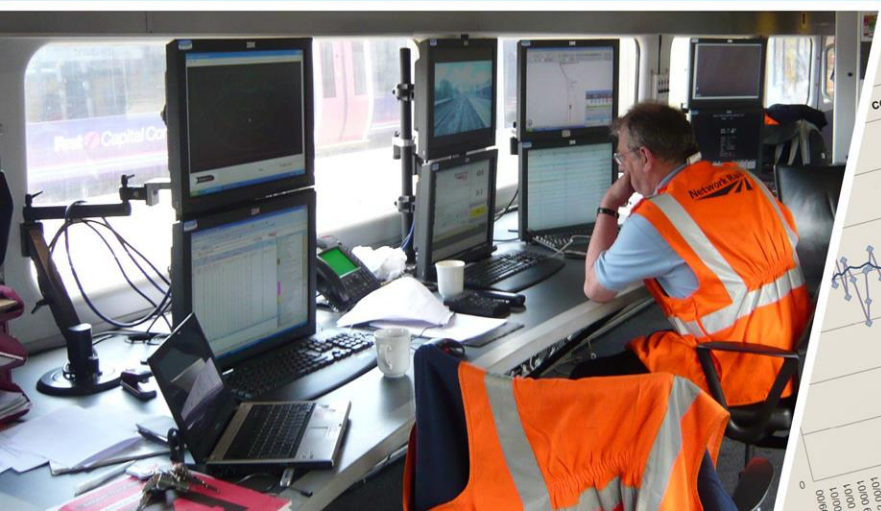 ▸ Competence management procedures

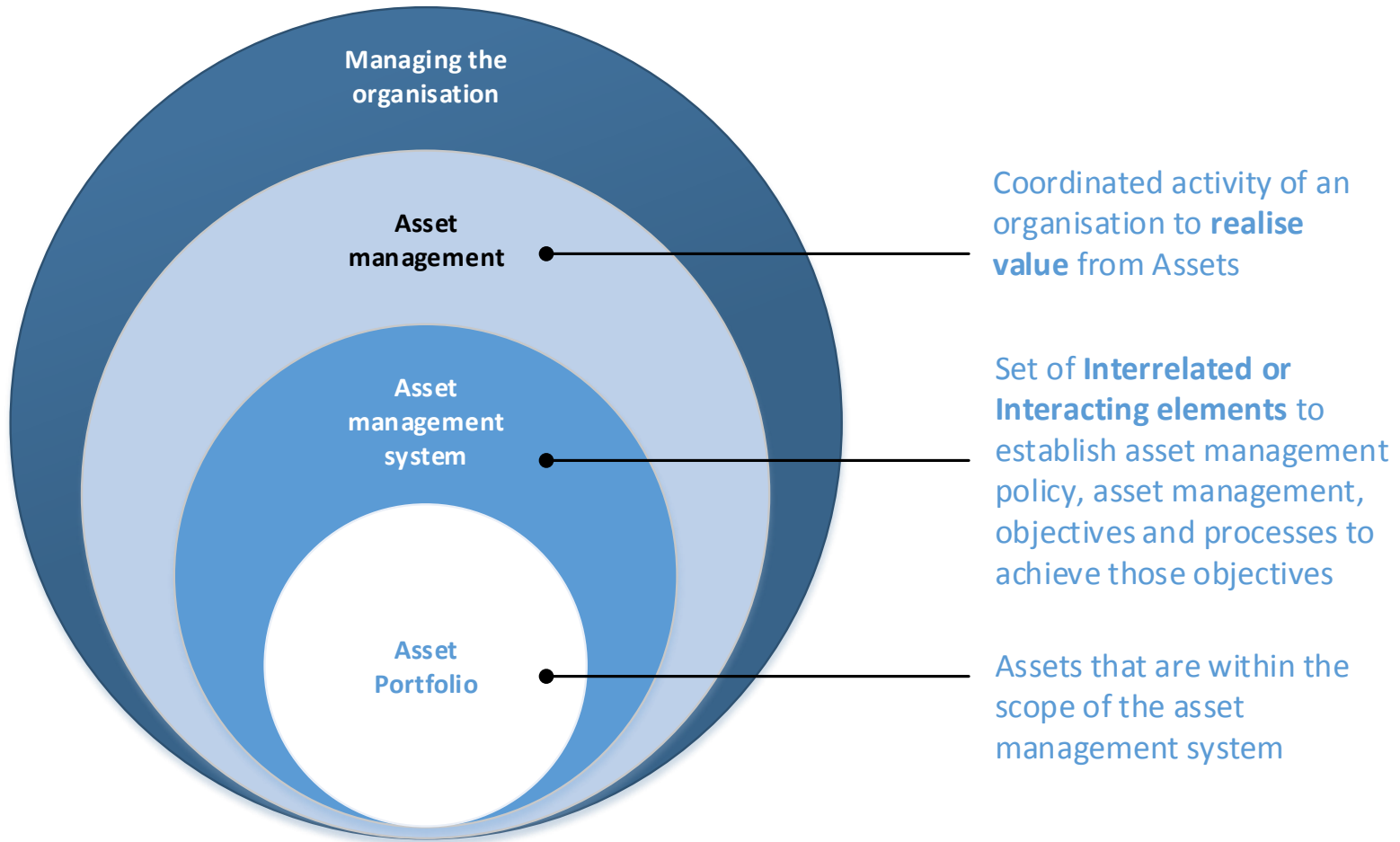 ▸ Metrics, audit and assurance

Our goal in the Middle East

▶ Employee trust

▶ Customer trust – freight and passengers

▶ Close call reporting, monitoring, investigations and actions

▶ Achieve top European levels of safety performance as measured by:

  ▶ Infrastructure accidents per million train km

  ▶ Weighted workplace accidents per million train km

  ▶ Audit compliance
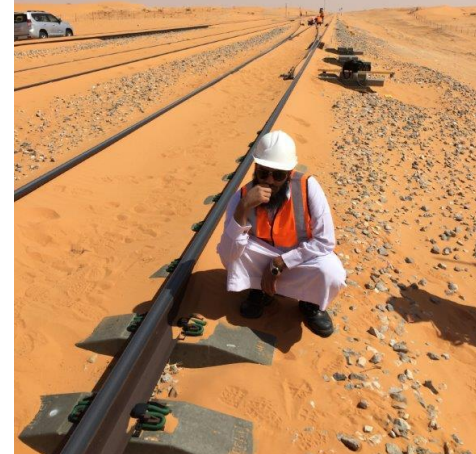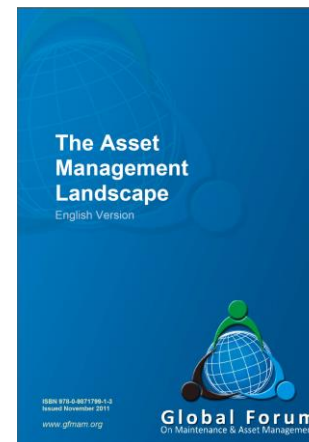
Establishing a Professional Asset Management Capability

Asset Management Context

Managing the organisation

Asset management

Asset management system

Asset Portfolio

Coordinated activity of an organisation to **realise value** from Assets

Set of **Interrelated or Interacting elements** to establish asset management policy, asset management, objectives and processes to achieve those objectives

Assets that are within the scope of the asset management system

Asset Management Excellence

- Risk and Review
- Asset Management Strategy and Planning
- Organisation and People Enablers
- Asset Management Decision Making
- Asset Knowledge Enablers
- Lifecycle Delivery Activities

Asset Management Excellence

Asset Management Strategy and Planning
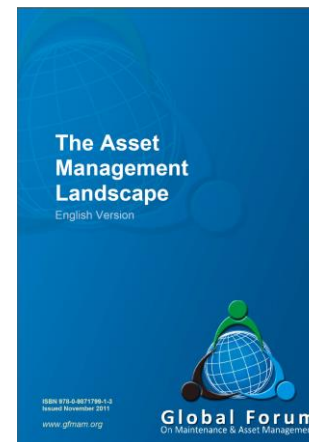
Asset Management Strategy and Planning

Risk and Review

Organisation and People Enablers

Asset Management Decision Making

Asset Knowledge Enablers

Lifecycle Delivery Activities
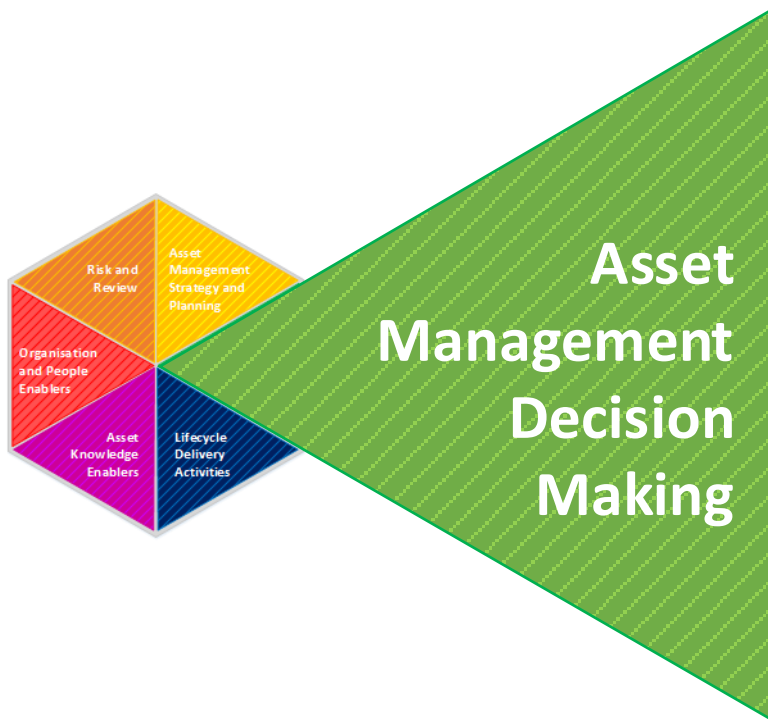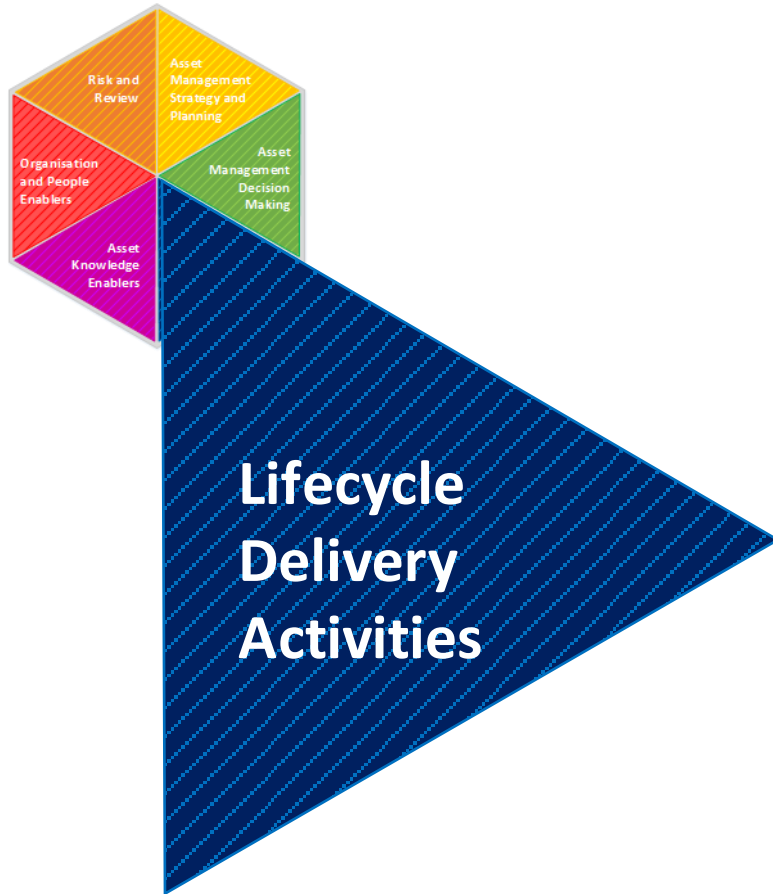
- Asset Management Policy

- Asset Management Strategy

- Demand Analysis

- Strategic Planning

- Asset Management Plan

Asset Management Decision Making

Asset Management Decision Making

Risk and Review

Asset Management Strategy and Planning

Organisation and People Enablers

Asset Knowledge Enablers

Lifecycle Delivery Activities

- Capital Investment Decision-Making
- Operations and Maintenance Decision-Making
- Life Cycle Cost and Value Optimisation
- Resourcing Strategy and Optimisation
- Shutdowns and Outage Strategy
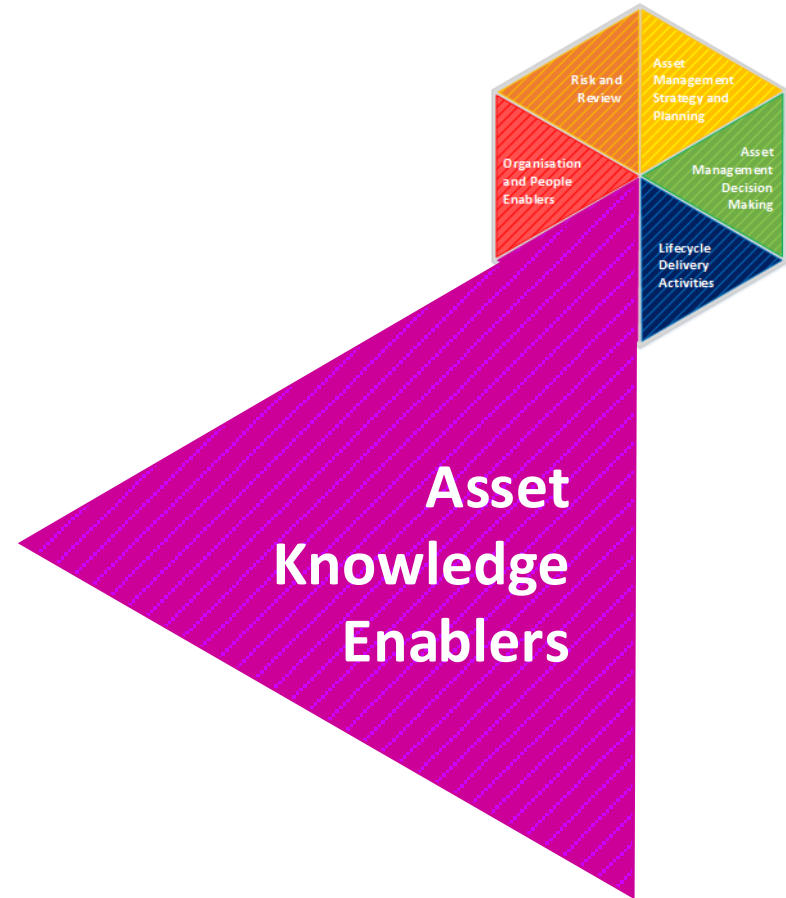- Optimisation Ageing Assets Strategy

Lifecycle Delivery Activities

Lifecycle Delivery Activities

Risk and Review

Asset Management Strategy and Planning

Organisation and People Enablers

Asset Management Decision Making

Asset Knowledge Enablers

- Technical Standards and Legislation
- Asset Creation and Acquisition
- Systems Engineering
- Configuration Management
- Maintenance Delivery
- Reliability Engineering and Root Cause
- Analysis Asset Operations
- Resource Management
- Shutdown and Outage Management
- Incident Response
- Asset Rationalisation and Disposal

Asset Knowledge Enablers

Asset Information Strategy

Asset Knowledge Standards

Asset Information Systems

Asset Data and Knowledge

Risk and Review

Asset Management Strategy and Planning

Organisation and People Enablers

Asset Management Decision Making

Lifecycle Delivery Activities

Asset Knowledge Enablers

Organisation and People Enablers

Contract and Supplier Management

Asset Management Leadership

Organisational Structure and Culture

Competence and Behaviour

Organisation and People Enablers

Risk and Review

Asset Management Strategy and Planning

Asset Management Decision Making

Asset Knowledge Enablers

Lifecycle Delivery Activities

Risk and Review

- Criticality, Risk Assessment and Management

- Contingency Planning and Resilience Analysis

- Sustainable Development

- Weather and Climate Change

- Assets and Systems Performance and Health

- Monitoring Asset and Systems Change Management

- Management Review, Audit and Assurance

- Accounting Practices

- Stakeholder Relations

Risk and Review

Asset Management Strategy and Planning

Organisation and People Enablers

Asset Management Decision Making

Asset Knowledge Enablers

Lifecycle Delivery Activities

Application in Network Rail
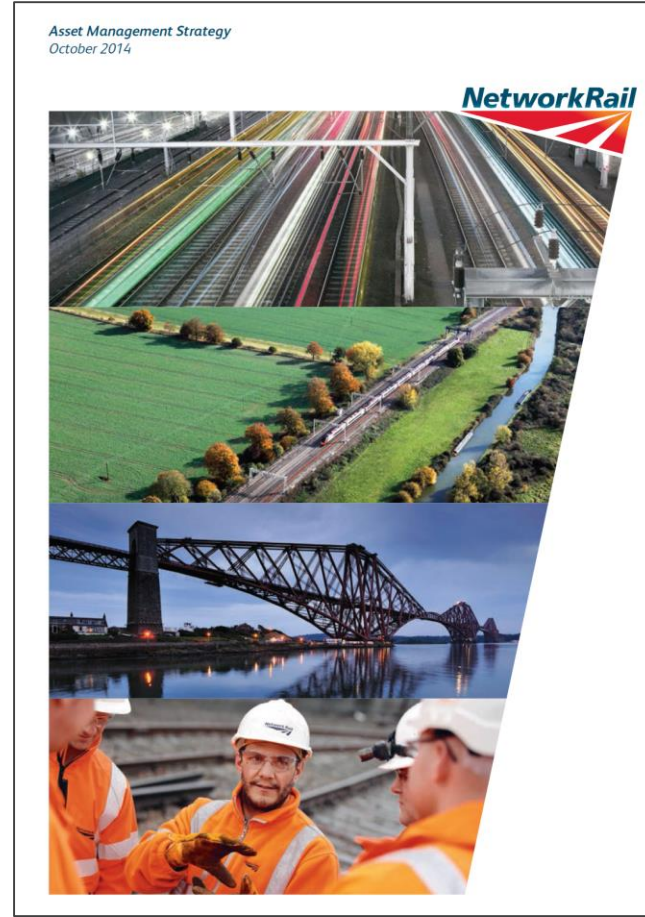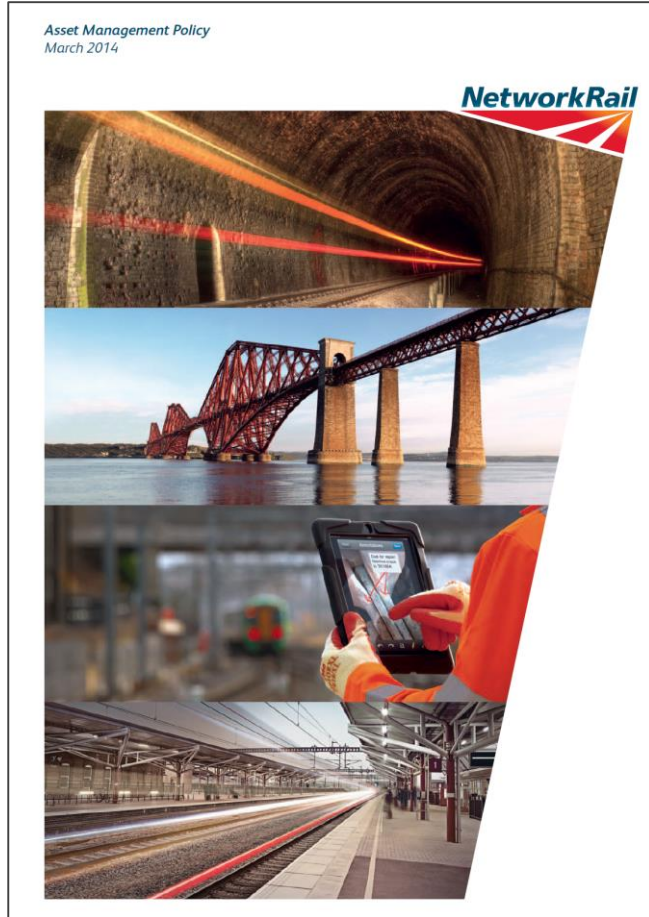
Increasing Awareness of Operational Planning and Execution
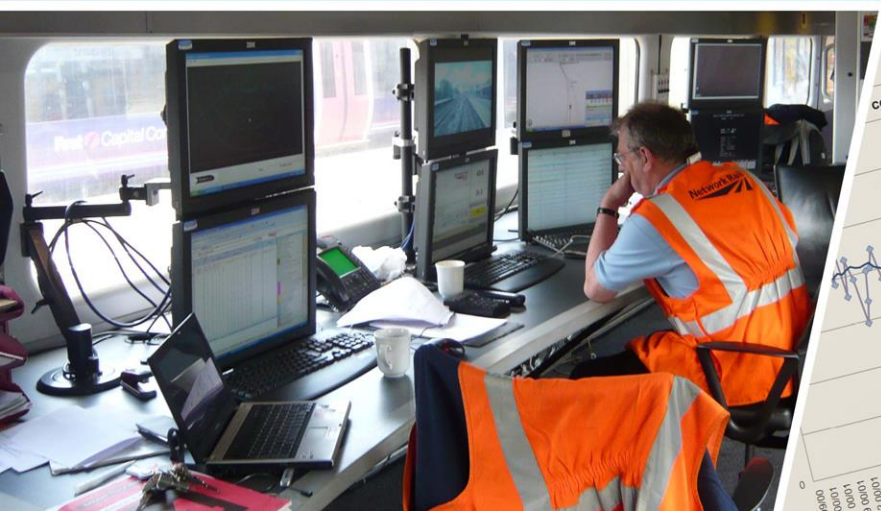
The Need for Operational Planning

▶ Operational Planning is a key activity for any successful railway

▶ A professionally planned railway operation provides:

▶ Customer service – Passengers and Freight Operators know when a train will arrive and depart

▶ Better resource allocation and management including rolling stock and train crew

▶ Infrastructure access can be planned

▶ Improved safety

▶ Efficient use of capacity and resources

▶ Performance monitoring and improvement

Timetables don't grow on trees

A timetable is built up from a number of key elements, such as:

- ▶ Traction types/units/locos;

- ▶ Sectional running times (SRT);

- ▶ Headway, margins, re-occupations and allowances;

- ▶ Methods of working (Absolute Block, Track Circuit, ERTMS/ETCS etc.);

- ▶ Engineering access plans – for day to day maintenance to ensure trains can run to the plan;

- ▶ Engineering access plans – for major renewal or enhancement works;

- ▶ Crew and unit requirements.

- ▶ Calculating engineering allowance to allow for Temporary Speed Restrictions (TSR) and other short term infrastructure issues;

- ▶ Network Trains path requirements (track maintenance trains, eg sand trains);

- ▶ Adding performance times into the timetable;

- ▶ Producing the Timetable Planning Rules' book, detailing all of the information required to plan trains;

- ▶ Customer plans.

How much operational planning is required?

The current process on the GB railway:

- New timetable work begins 104 weeks before timetable implementation

- 64 weeks before – NR publishes proposed rule changes to planning process – for agreement with train operators by 41 weeks before

- 55 weeks before, major timetable changes published and consultation commences

- 40 weeks – start of detailed timetable preparation

- 26 weeks – NR publishes new Working Timetable, subject to appeals

- 22 weeks – end of appeal period

- 15 weeks – timetable briefing completed

- 0 weeks – timetable commences

It needs to be appropriate to the individual circumstances

Measuring against the Plan

▸ Operational planning affords an opportunity for monitoring performance and increases awareness of operational and logistical requirements:

- ▸ Is the rolling stock ready on time?

- ▸ Did the train crew arrive at the depot on time?

- ▸ Was the train loaded and dispatched on time?

- ▸ Did train pass key locations at the expected time? Was it running to speed?

- ▸ Did any disruptive events occur? How disruptive?

- ▸ How often are trains delayed? What impact does this have on expected freight quantities or customer experiences?

Train planning facilitates performance improvement

- In GB, robust train planning has facilitated specific performance improvement work streams including:

  - Enabling signallers and controllers to spot key trains with limited turnaround times or of particular importance

  - Route and time-of-day specific contingency plans developed to minimise disruption when things go wrong

  - Schedules scrutinized against train running data for poorly performing or key trains

  - Signaller regulation decisions reviewed and improved

- GB performance has improved hugely over the last ten years, with punctuality MAA up from 81% 2003/04 to 90% MAA at present

# *Developing a Local Railway Operating Capability*

Key Challenges

- Relatively new to railway – need to develop institutional capability

  - Schooling and training

  - Common language

  - Technical guidance/advice

- Need to raise awareness of railway to other parties such as police, neighbours

- Need to develop bespoke solutions to unique problems (e.g. sand, heat)

- Delivering a reliable passenger service that is preferred over road and air

Developing the capability

To develop a railway capability that is focussed on:

▸ Safety

▸ Performance

▸ Customer Service

Through the application of
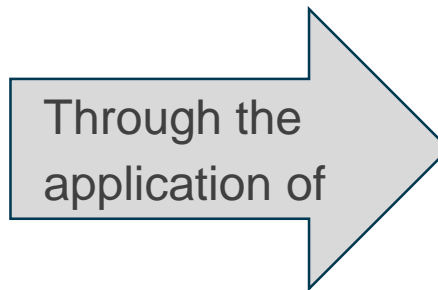
▸ Knowledge

▸ Experience; and

▸ Professionalism

We will:

▸ Link competence of infrastructure operations and maintenance staff to internationally recognized vocational qualifications; including asset management

▸ Embed initial training and development into a "route to competence journey,"

▸ Use "adult learning" training methods to embed the learning through a variety of approaches

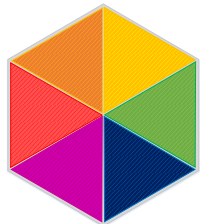▸ Empower local people to grow their railway careers

Conclusions

Conclusions

Embedding a strong safety culture is fundamental to running an efficient railway that is trusted by employees and customers to ensure that everyone is home safe every day

everyone home safe every day

WE'RE EUROPE'S SAFEST RAILWAY
BUT WE WANT TO KEEP MAKING IT SAFER
11TH
6TH ITALY
3RD FRANCE
1ST BRITAIN

Developing a railway that is founded upon professional staff, best practice asset management and operational delivery is essential if it is to be commercially successful

WE'RE EUROPE'S MOST IMPROVED RAILWAY
BUT WE WANT TO KEEP MAKING IT BETTER
BRITAIN 1ST
FRANCE 3RD
ITALY 6TH
15TH GERMANY

Network Rail Consulting is here to help develop a strong railway capability in the Middle East by drawing upon decades of learning and experience in the UK

Thank you

Network Rail Consulting Ltd (Dubai Branch)

Office 520, Al Nasr Plaza (Office)

Oud Metha Road, PO Box 33738

Dubai

United Arab Emirates

KSA Branch of Network Rail Consulting Ltd

Riyadh Business Gate, Airport Service Road, 2282

Qurtubah, Building C1, Unit no.2

Al Riyadh 13244 - 7440

Kingdom of Saudi Arabia

Network Rail Consulting Inc

1001 Connecticut Avenue, NW

Suite 725

Washington DC, 20036

United States

Network Rail Consulting Pty

Suite 2, Level 5

3 Spring Street

Sydney NSW 2000

Australia

Network Rail Consulting Ltd

42 Upper Berkeley Street

London, W1H 5PW

United Kingdom

www.networkrailconsulting.com