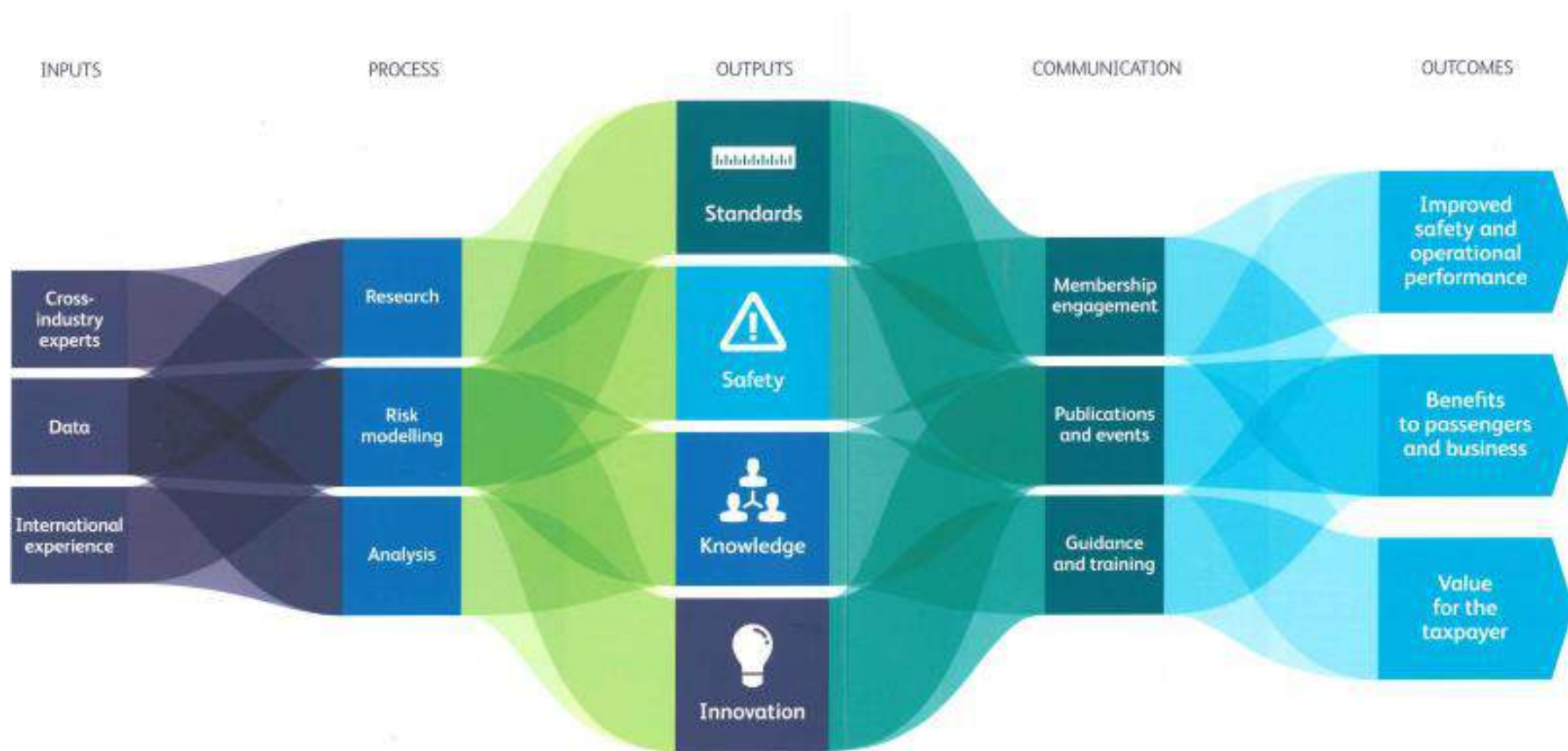




# The Rise of Non Technical Skills

Presented by Ann Mills  
**6 July 2015**

# How RSSB works



# The Rise of Non Technical Skills

## Introduction

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- NTS origins

- The link to HF

- NTS in the rail Industry

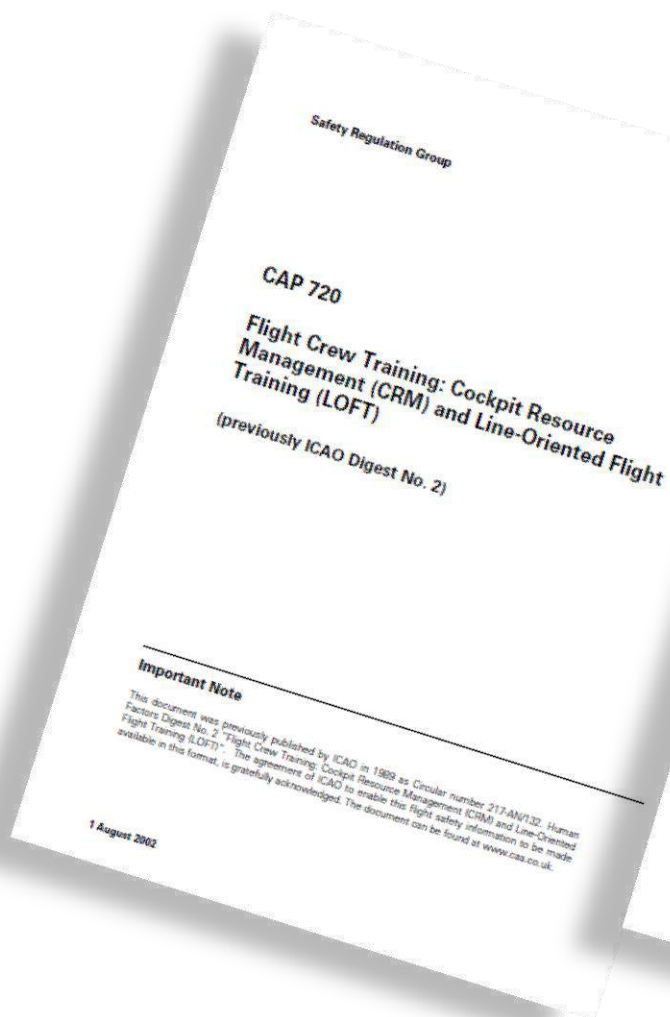
- Where to next....

# NTS Origins





# Mandatory Regulations....





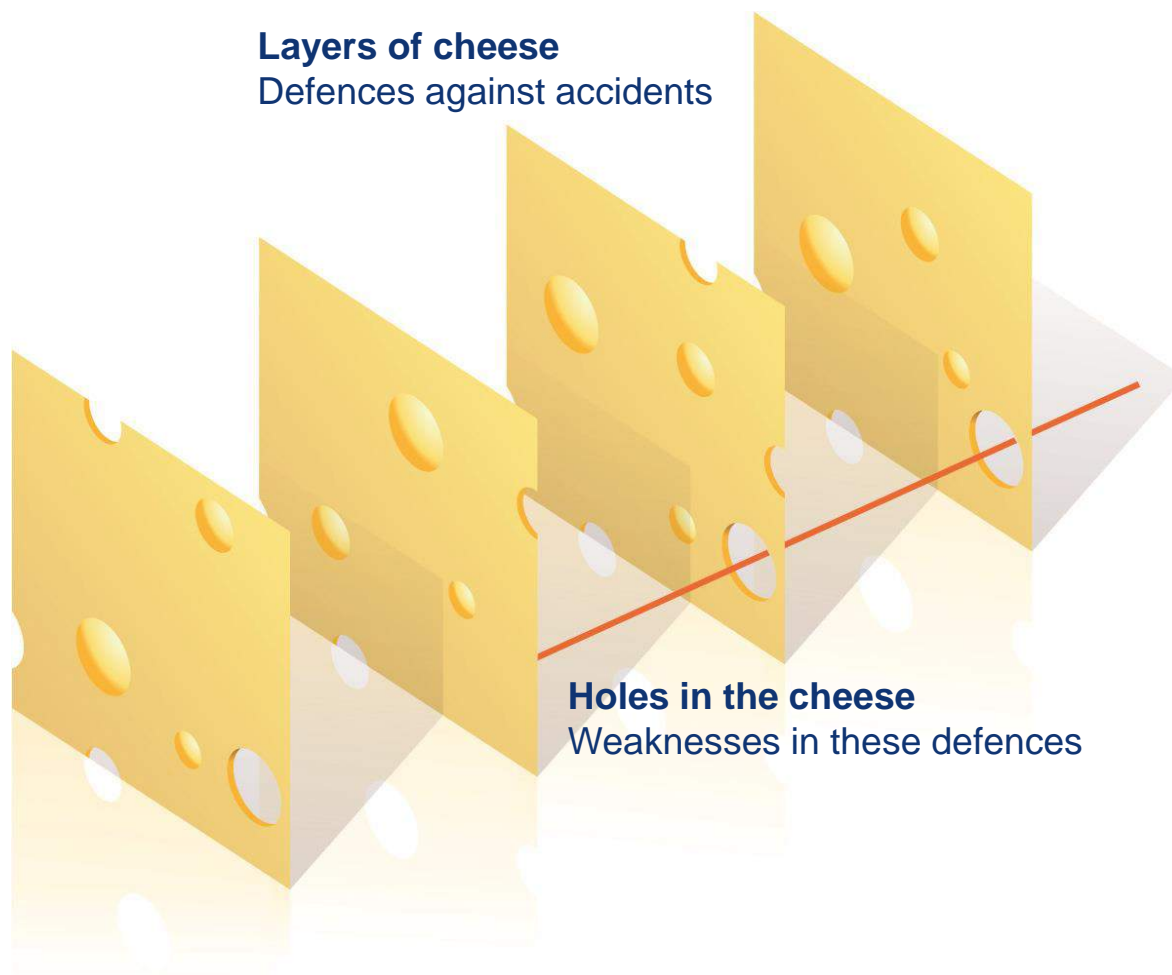




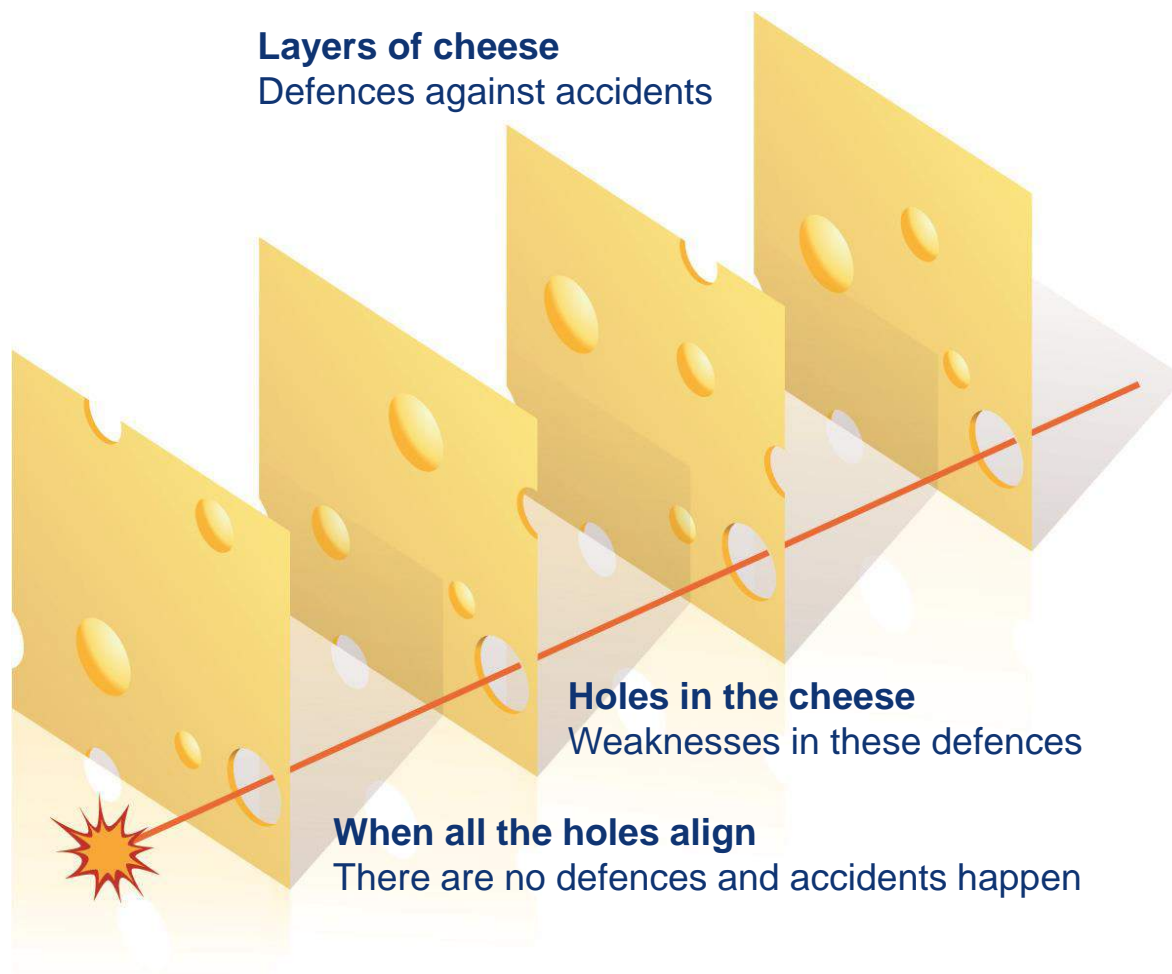
All that cheese....

# Defences and weaknesses

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# Defences and weaknesses



# The Link to Human Factors

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## Organisation

- Safety culture
- Knowledge and skills (CMS and training)
- Supervision and management
- Change

# At the job/workplace level

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## Job/ workplace

- Equipment
- Workload
- Communication and teamwork
- Practices, processes and information
- Work environment

# At the individual level



## Individual

- Distraction
- Fatigue
- Physical and mental well-being
- Work-related attitudes
- Experience
- **Non-technical skills**



# NTS in the Rail Industry

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# What makes a good member of staff?



# What are non-technical skills?

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**Generic skills that underpin and enhance technical tasks and improve safety by helping people to anticipate, identify and mitigate errors**

<b>NTS categories</b>
Situational awareness
Workload management
Decision making and action
Conscientiousness
Communication
Cooperation and working with others
Self-management



Click image above to play video

# Attention is like a spotlight

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NTS CATEGORY	SKILL
1. Situational awareness	<ul style="list-style-type: none"> <li>1.1 Attention to detail</li> <li>1.2 Overall awareness</li> <li>1.3 Maintain concentration</li> <li>1.4 Retain information</li> <li>1.5 Anticipation of risk</li> </ul>
2. Conscientiousness	<ul style="list-style-type: none"> <li>2.1 Systematic and thorough approach</li> <li>2.2 Checking</li> <li>2.3 Positive attitude towards rules and procedures</li> </ul>
3. Communication	<ul style="list-style-type: none"> <li>3.1 Listening</li> <li>3.2 Clarity</li> <li>3.3 Assertiveness</li> <li>3.4 Sharing information</li> </ul>
4. Decision making and action	<ul style="list-style-type: none"> <li>4.1 Effective decisions</li> <li>4.2 Timely decisions</li> <li>4.3 Diagnosing and solving problems</li> </ul>
5. Cooperation and working with others	<ul style="list-style-type: none"> <li>5.1 Considering others needs</li> <li>5.2 Supporting others</li> <li>5.3 Treating others with respect</li> <li>5.4 Dealing with conflict / aggressive behaviour</li> </ul>
6. Workload management	<ul style="list-style-type: none"> <li>6.1 Multi-tasking and selective attention</li> <li>6.2 Prioritising</li> <li>6.3 Calm under pressure</li> </ul>
7. Self-management	<ul style="list-style-type: none"> <li>7.1 Motivation</li> <li>7.2 Confidence and initiative</li> <li>7.3 Maintain and develop skills and knowledge</li> <li>7.4 Prepared and organised</li> </ul>



## SPAD Error Details (257)

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70%

of SPADs have driver **slips/lapses** as causal/contributory factors

46%

of SPADs have **driver distraction** factors underpinning slip/lapses

NTS CATEGORY	SKILL
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7. Self-management	7.1 Motivation 7.2 Confidence and initiative 7.3 Maintain and develop skills and knowledge 7.4 Prepared and organised

# What are behavioural markers?

## 4.1 Situational awareness

### Definition

Situational awareness is being aware of what is going on around you so that you are able to anticipate what could happen in the future.

There are various skills that come under situational awareness :

**Table 3 - Situational awareness skills**

1.1	Attention to detail
1.2	Overall awareness
1.3	Maintain concentration
1.4	Retain information (during shift)
1.5	Anticipation of risk

### 4.1.1 Attention to detail

This is the ability to pay attention to detail, read information carefully, and identify unusual or incorrect information.

### Behavioural markers

**Table 4 - Behavioural markers**

Positive markers	Negative markers
A. Demonstrates ability to explain why particular details are important	A. Is sloppy in his or her work. Does not appreciate the need to attend to details
B. Pays attention to the details required to carry out a task eg uses the correct form	B. Overlooks important details in carrying out a task
C. Pays attention to the details required to understand the situation eg equipment displays or feedback	C. Overlooks important details that are necessary to carry out a task/ understand a situation
D. Identifies an anomaly in a complex situation eg physically responds to a fault or problem	D. Does not identify inconsistent or unusual information, ie does not respond or acknowledge in any way

# What are behavioural markers and why do we use them?

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Operationalise NTS

Provide clear and observable evidence of NTS for measurement

Show the NTS fundamental for enhancing the way tasks and procedures are carried out

Can train and measure NTS in a meaningful and consistent way

Provides clarity on what 'good' performance (or 'gut feel') looks like

Gives a common vocabulary to NTS



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## The case for investment



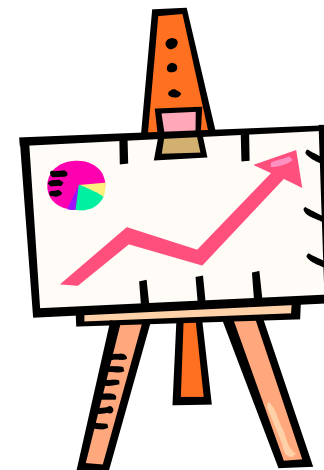
# Why train non-technical skills?

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Training is traditionally rules-based and assessments typically compliance-based



HOW tasks are done can affect the outcome: NTS underpin and enhance technical tasks



NTS contribute to incidents and accidents – training is a proactive approach

Proficient to expert

Encouraging results in other industries





# NTS success elsewhere



**1/3 fewer safety incidents**



**Incidents down 81%**

**Reduced costs**

**46% fewer human-caused incidents**

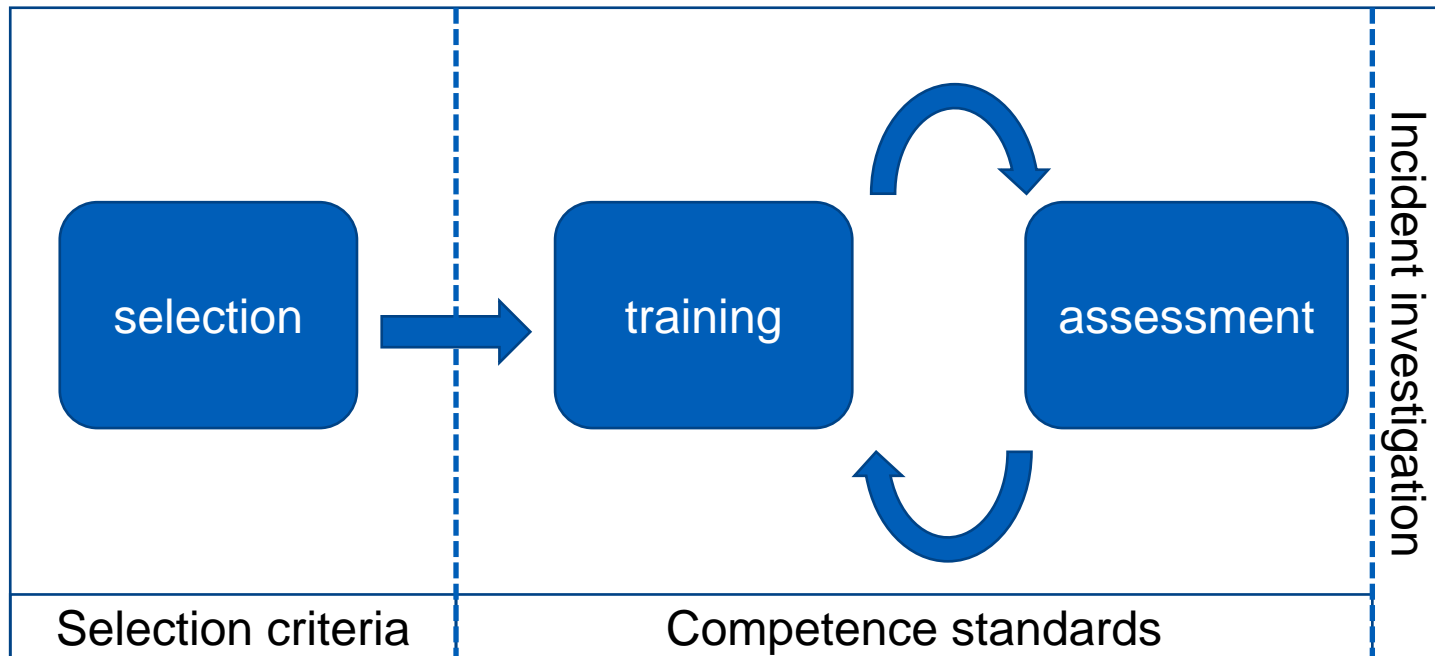


**1/2 as likely to SPAD**

**Other benefits**

# Integrating across the CMS

## Competence management process



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# Background to the RSSB work



# NTS project scope

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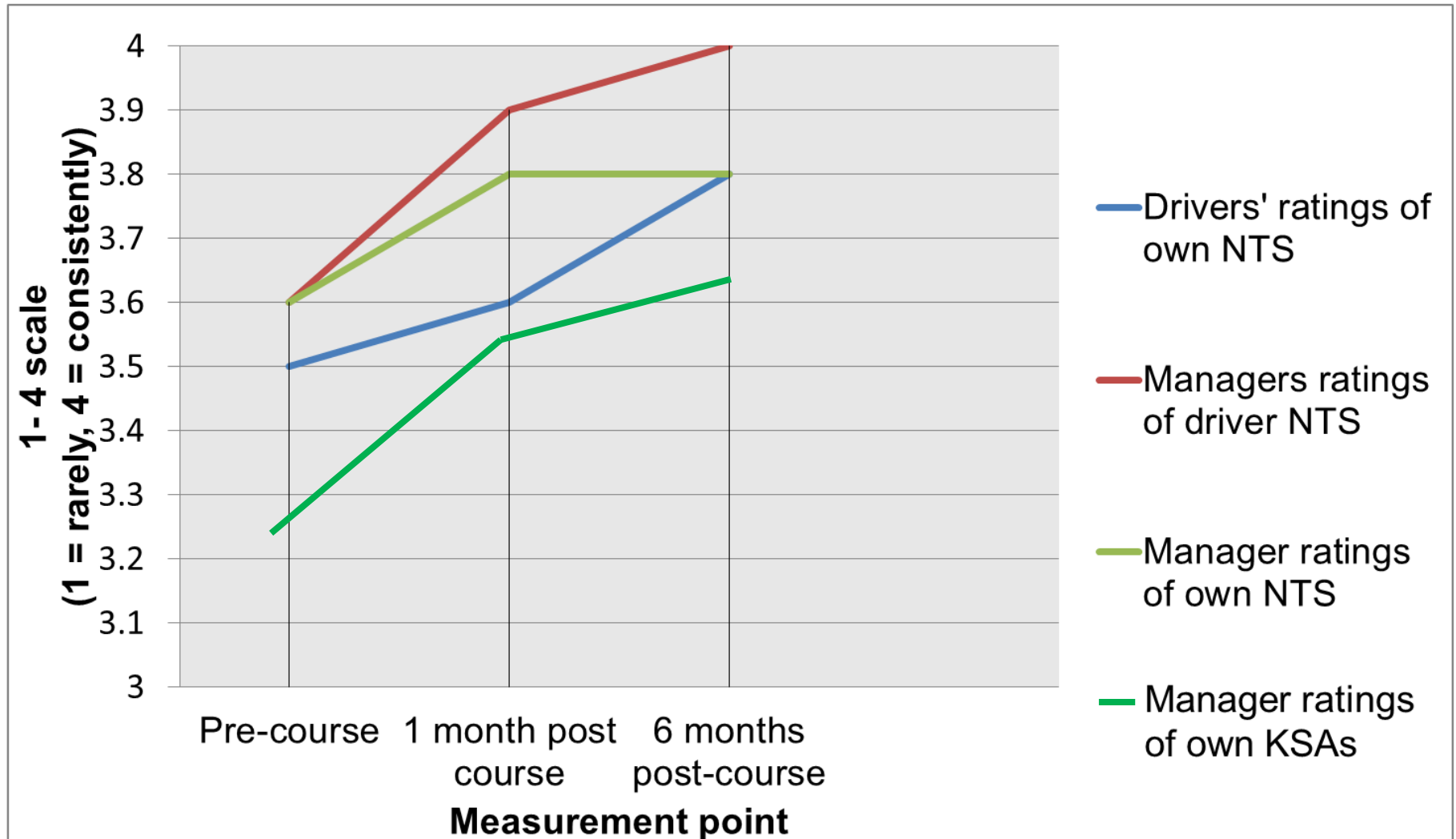
1. Identified relevant NTS and behavioural markers

2. Designed NTS courses for front-line staff and their managers

3. Piloted the courses

4. Evaluated the courses and refined training materials

# Improvements following the courses



## Comments received

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*It has been useful to identify and 'label' areas of competence/incompetence, Have previously been doing most of these things without realising!*

*This area [NTS] has been 'overlooked' in the past and now provides the greatest scope to improve safety in the future*

*Very useful I feel I got the tool to improve myself*

*It provides a new way / slant on looking at things*

*I enjoyed the SPAD video clip and going over the reasons why it happened, in relation to human factors*



# Impact

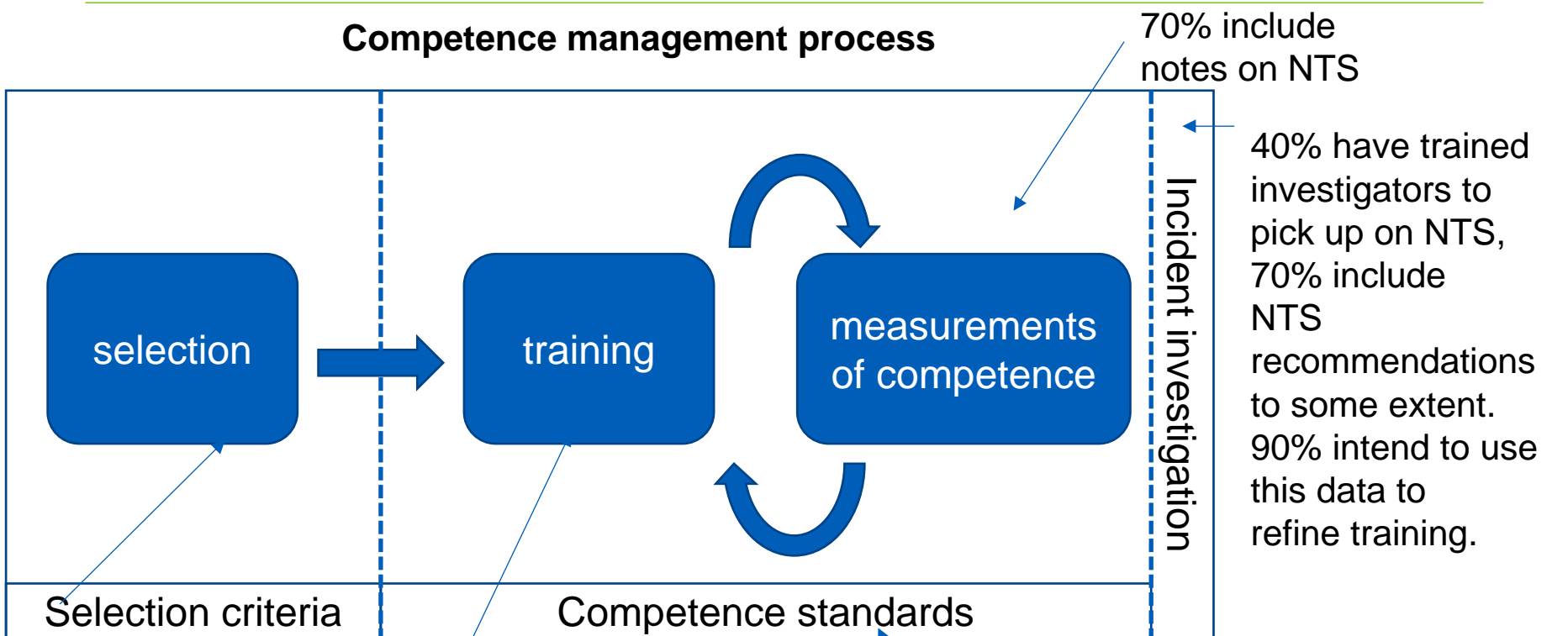
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- Training materials being rolled out across the rail industry - drivers, managers and many other staff
- Strong support from unions, industry groups and the Office for Rail Regulation
- Evidence that training had a positive impact on performance
- Has initiated a broader campaign to integrate NTS across all parts of the life cycle

# NTS survey results

## Competence management process



70% include notes on NTS

40% have trained investigators to pick up on NTS, 70% include NTS recommendations to some extent. 90% intend to use this data to refine training.

Selection criteria

Competence standards

Incident investigation

40% companies say included for some staff

Include reference to NTS in 70% companies. Coverage of roles varied.

Drivers, train dispatch, guards, conductors. Some stand alone, some integrated. Supplemented with anecdotes, case studies (rail & non), sims. Good reactions.

Where to next?

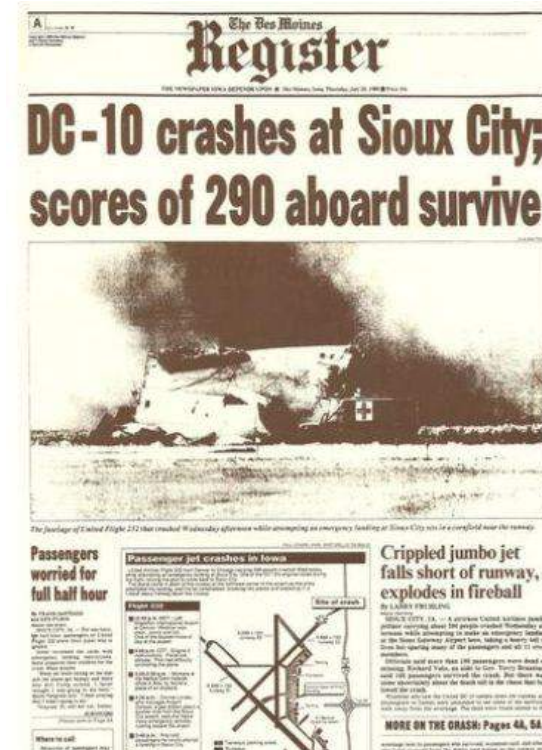
## Next Steps for RSSB

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- NTS Strategy
- Training for trainers, competence managers, accident investigators, standards managers
- Support to companies integrating NTS
- NTS forums and mini conferences
- GPG on NTS integration
- Development of case study materials for other roles
- NTS/human error classification imbedded in SMIS+
- Research into the development of a just culture in incident investigation

# Captain Al Haynes

...the preparation that paid off for the crew was something ... called Cockpit Resource Management....Up until 1980, we kind of worked on the concept that the captain was THE authority on the aircraft. What he said, goes. And we lost a few airplanes because of that. Sometimes the captain isn't as smart as we thought he was. And we would listen to him, and do what he said, and we wouldn't know what he's talking about. And **we had 103 years of flying experience there in the cockpit, trying to get that airplane on the ground, not one minute of which we had actually practiced, any one of us.** So why would I know more about getting that airplane on the ground under those conditions than the other three. **So if I hadn't used [CRM], if we had not let everybody put their input in, it's a cinch we wouldn't have made it.**



# A positive example

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## Summary

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We all use NTS in our everyday lives

Human error is inevitable, but NTS can help avoid and mitigate errors

NTS can be developed through discussion (raising awareness) and practice

Managers are key to NTS development

NTS measurement must be evidence-based, valid, reliable and fair

To gain maximum effect, NTS should be integrated throughout the company

Identify company champions

Customise and adapt to suit your learners and your company priorities



Thank you

