

The role of accident investigation in the management of railway risk

Rail Safety Summit
13 September 2017

Rail Accident Investigation Branch



Introduction

How best can we ensure that we find the gaps in our safety defences?

- the way we always have, by experience



Learning from experience



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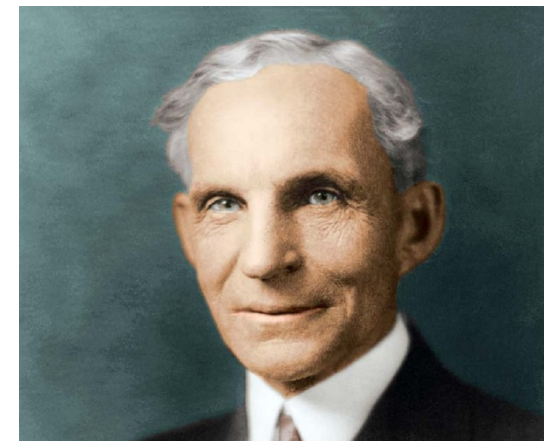
“Experience is simply the name we give our mistakes.”

Oscar Wilde

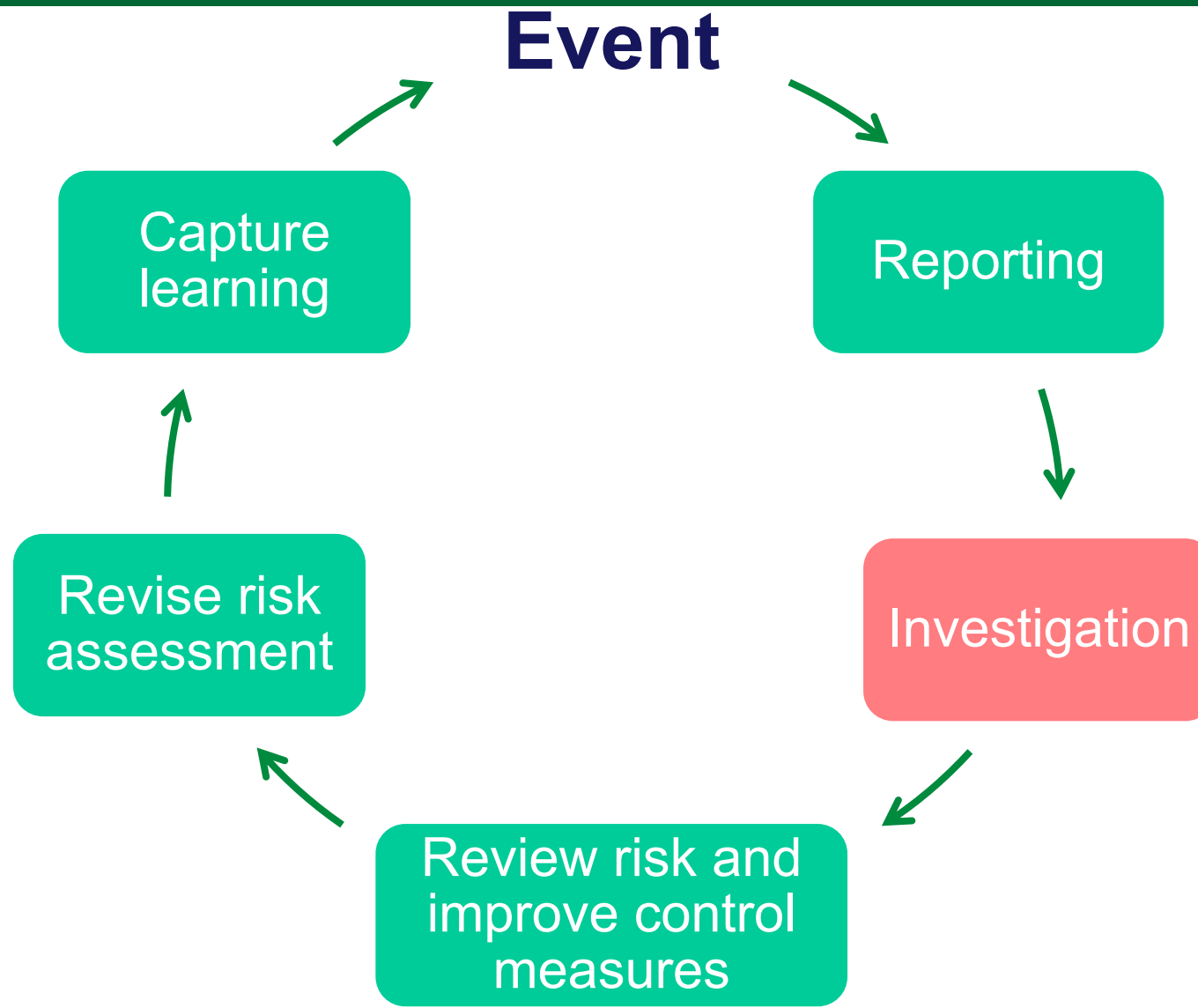


“The only real mistake is the one from which we learn nothing.”

Henry Ford



Learning from experience – what does this look like?



Learning from experience



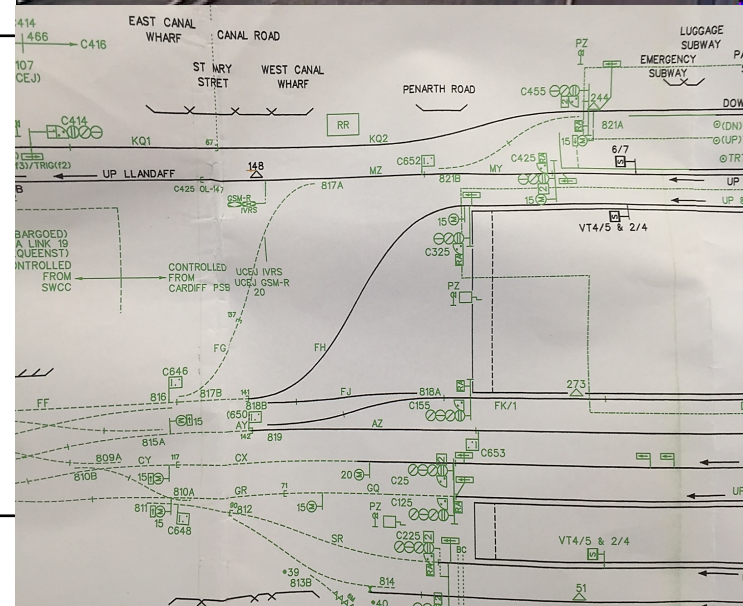
- Learning from experience is an essential element of any risk management system
- Effective learning from experience is dependent on:
 - ❖ management assurance systems to monitor and review performance
 - ❖ a reporting culture
 - ❖ the ability to investigate adverse events and analyse the findings
 - ❖ the willingness of the organisation to learn, and then change

Finding the gaps



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Control measure	Investigation finding	RAIB investigation
<p>The control of working hours and fatigue management systems</p>	<p>Worker slept in his car for a week to avoid long commute, but felt unable to tell his employer</p>	<p>Shawford (Report 05/2017)</p>
	<p>Long hour culture in projects</p> <ul style="list-style-type: none"> some staff rostered to work 10 x 12 hour shifts without a day-off 	<p>Cardiff (ongoing investigation)</p>



Finding the gaps



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Control measure	Investigation finding	RAIB investigation
Personal track safety: <ul style="list-style-type: none">• rules• training• planning	Poor sighting, 'site lookout' located 180 metres ahead of the gang and warning of approaching trains using horn	Great Chesterford (Safety Digest 12/2017)



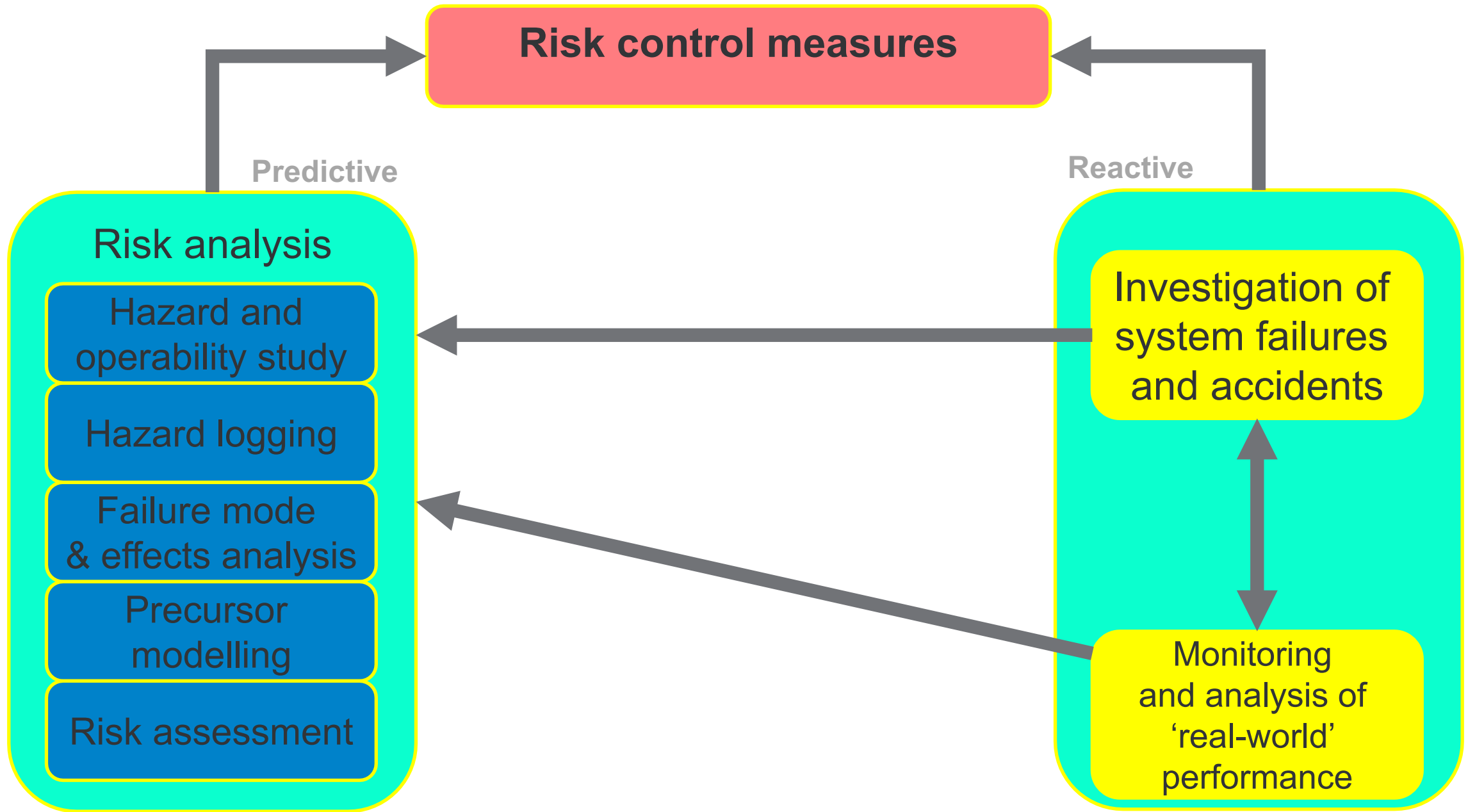
Finding the gaps



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Control measure	Investigation finding	RAIB investigation
Carriage and wagon maintenance and inspection procedures	Missing floor in toilet!	South Devon Railway (ongoing investigation)





Risk control measures

Predictive

Reactive

Risk analysis

Hazard and operability study

Hazard logging

Failure mode & effects analysis

Precursor modelling

Risk assessment

Investigation of system failures and accidents

Monitoring and analysis of 'real-world' performance

The benefits of accident investigation

- Investigations highlight the vulnerability of existing risk mitigation measures and assist the design of new measures
- Investigations shine a searchlight into particular corners of the railway industry, providing valuable intelligence to those with the responsibility for safety
- Investigations demonstrate to those involved, those affected and wider society that action is being taken and lessons will be learnt
- Investigations reveal how combinations of factors combined to create a dangerous event



The power of accident investigation



- **Focus** – careful analysis of a particular set of circumstances
- **Objectivity** – looking beyond compliance with process
- **Connectivity** – identification of links between parts of a system
- **Empowerment** - of investigators to follow the causal chains, wherever they may lead
- **Climate** – a willingness to cooperate with an investigation

Case study – use of learning from multiple events

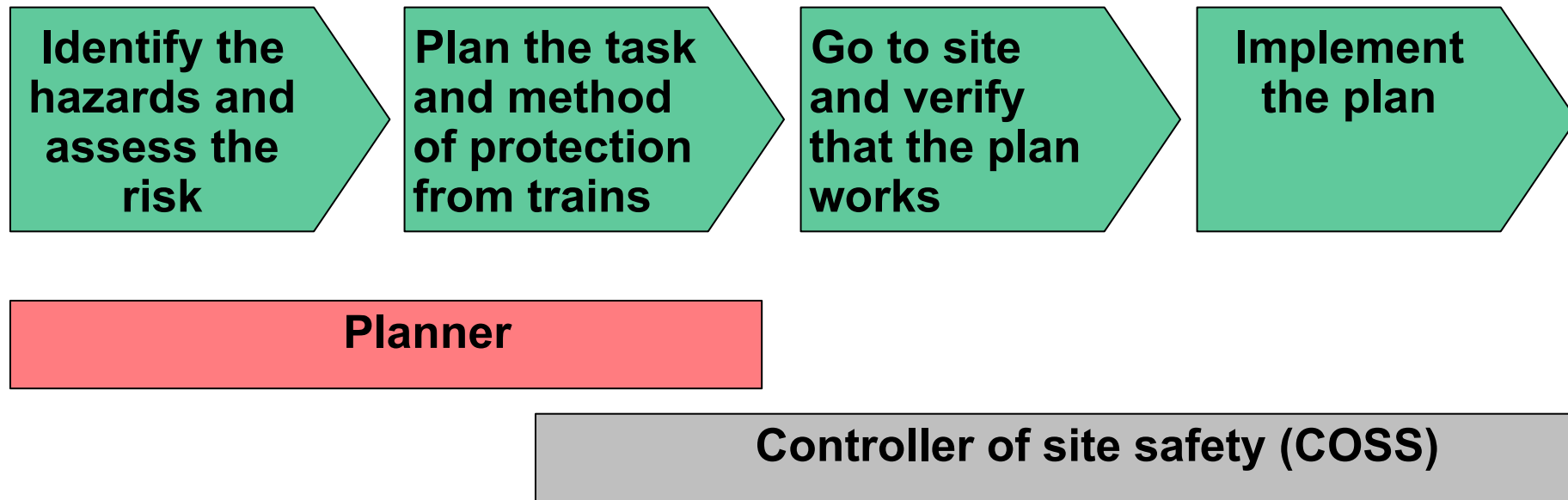
RAIB report 07/2017, ‘Class investigation into accidents and near misses involving trains and track workers outside possessions’

- looked at 71 close-call incidents, and then analysed 10 of these in more detail
- compared recurrent factors with those previously identified in RAIB investigations



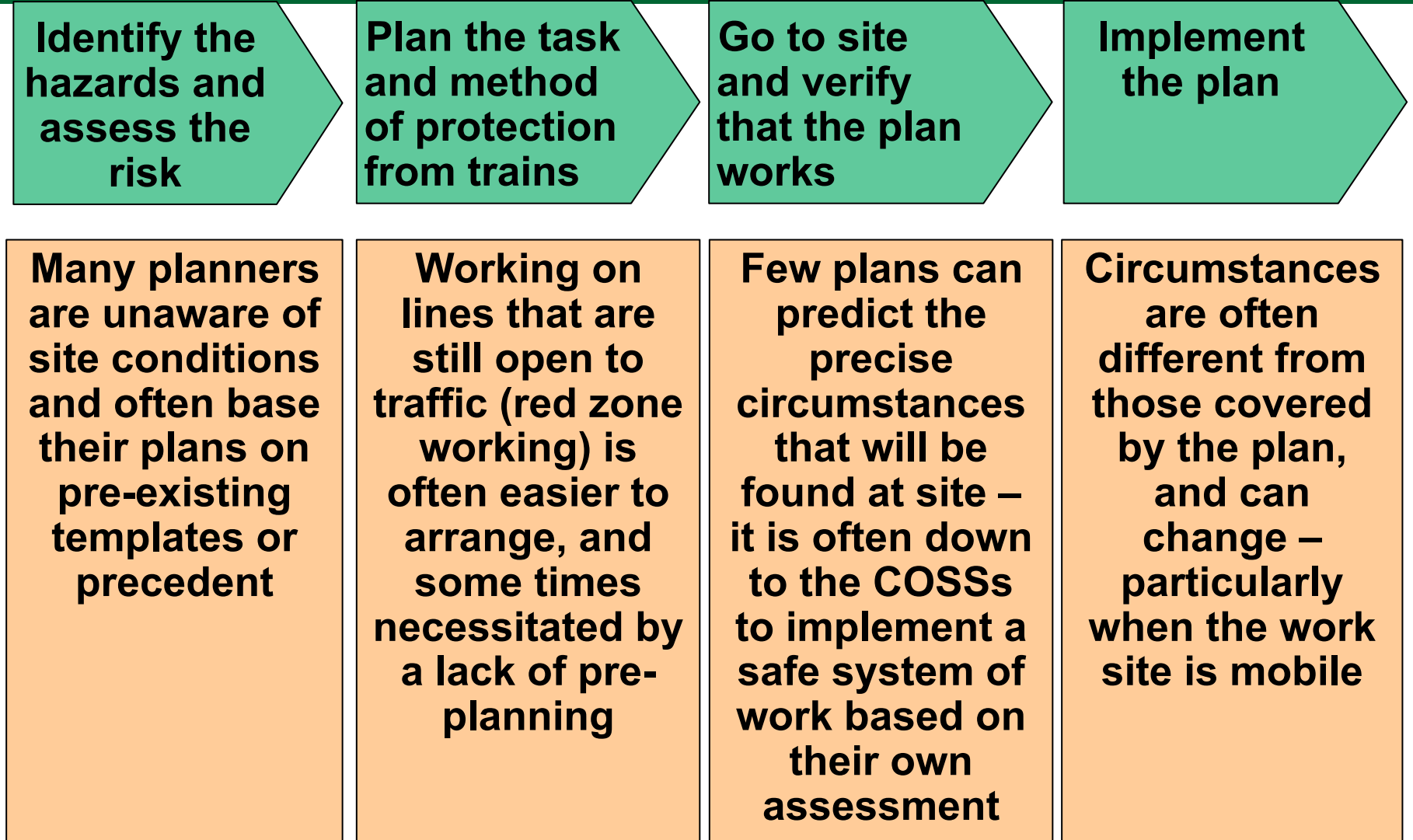
How the railway aims to control the risk to track workers

How the railway aims to control the risk to track workers



How the railway controls the risk to track workers – the reality

RAIB report 07/2017, 'Class investigation into accidents and near misses involving trains and track workers outside possessions';



Learning from those that get it right

- In more than half of the incidents examined, circumstances on site had changed from those envisaged by the pre-planned safe system of work.
- So why aren't we seeing more incidents and accidents?
- What can we learn from those COSSs who are able to adapt to circumstances without putting their teams at risk?

The 'optimum' relationship between the planner and COSS

THE PLANNER

In consultation with the COSS:

- decides how the team should be protected from trains?
-and what permissions and resources are required to provide this protection?

THE COSS

Implements the planned method of protection

Recognises local hazards and circumstances not addressed by the plan

Assesses risks and adapts the safe system of work accordingly

Empowering competent leaders to make safe decisions within clearly defined guidelines

So what do site safety leaders need?

- a good relationship with the planner and a meaningful involvement in pre-planning
- the ability to recognise when circumstances have changed
- training to help spot hazards and assess risk in a dynamic environment
- clearly defined guidelines for making changes to the system of work
- the confidence to make any necessary changes, or to call the job off if it becomes unsafe
- the trust of their managers and a sense of responsibility for the outcome
- the personal qualities and capabilities to provide effective leadership of a team

The question posed by the RAIB

Can we build upon existing good practice to better equip safety leaders on site to make safe decisions when encountering circumstances not covered by the plan?

Any changes should be based on the principle of compliance with:

- the planned method of protection, except where this can no longer be safely implemented
- the rule book

[RAIB report 07/2017, 'Class investigation into accidents and near misses involving trains and track workers outside possessions'; Rec 1]

Conclusions



- A proper understanding of railway risk must be informed by ‘real-world’ experience
- Good predictions of risk are informed by an understanding of how systems and people have performed (and sometimes failed) in the ‘real-world’
- Good accident investigations highlight:
 - real world performance and behaviours
 - gaps and areas of weakness in control measures
 - the validity of previous assessments of risk

Questions?



“You must learn from the mistakes of others. You can't possibly live long enough to make them all yourself.”

Samuel Levenson

