SUPPLY CHAIN SUSTAINABILITY SCHOOL

Quality in Construction
Lunch ‘N’ Learn – National Highways

26 March 2024, 1pm - 2pm

Please Participate!

Please ask your Questions via the Question and Answers

Speakers will respond during the session

The session will be recorded

Slides/recording will be distributed afterwards.

SUPPLY CHAIN SUSTAINABILITY SCHOOL

www.menti.com

Menti poll code

4899 6168

SUPPLY CHAIN SUSTAINABILITY SCHOOL

Welcome

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Programme Manager – National Highways
Supply Chain Sustainability School

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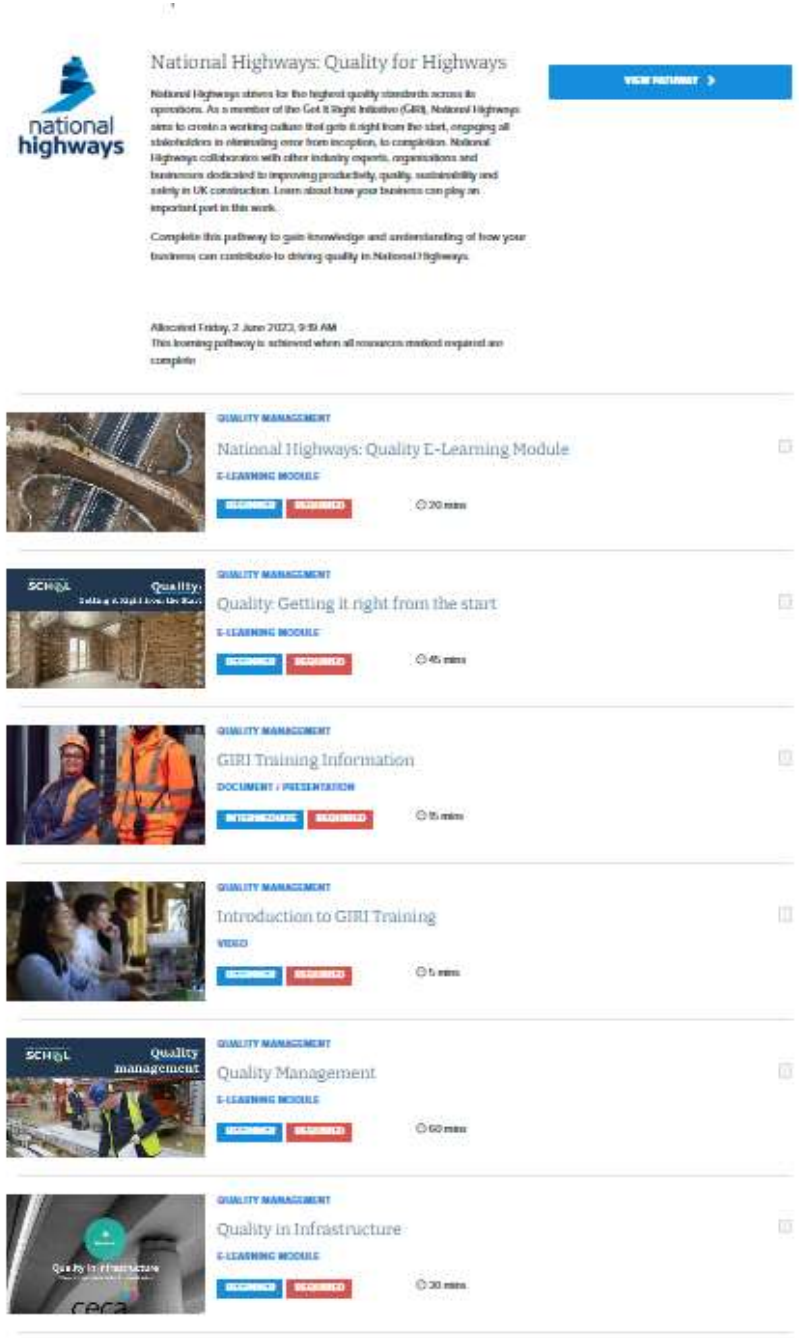
Agenda

- **Welcome and introductions**
- **Improving Quality in Construction -** Rob Andrewes, Head of Quality, Design & Standards, National Highways
- **Importance of Get It Right First Time approach** – Cliff Smith, Executive Director, GIRI
- **Adoption of GIRI and Learning –** Lynden Haworth, Head of Assurance, Galliford Try
- **Future Plans & The GIRI Framework–** Emer Murnaghan, Innovation Director, Graham and Strategic Leadership Time, GIRI
- **Questions and Answers**

New National Highways
E-Learning Pathways – enrol now

Pathways include:

- NEW Business Improvement, Productivity and PPC (Percentage Plan complete)
- NEW An Introduction to Health and Safety
- NEW Productivity and Lean
- NEW Quality for Highways
- Social Value Pathways 1 & 2
- FIR Pathways Level 1 & 2
- Customer Experience Pathways x 3 – Strategic Procurement, Roadworks & Supplier Customer Maturity
- Supplier Development System
- Core 1 & 2 Pathways
- Sustainability and Net Zero Pathway



Rob Andrewes

Head of Quality, Design & Standards
National Highways

Improving Quality in Construction

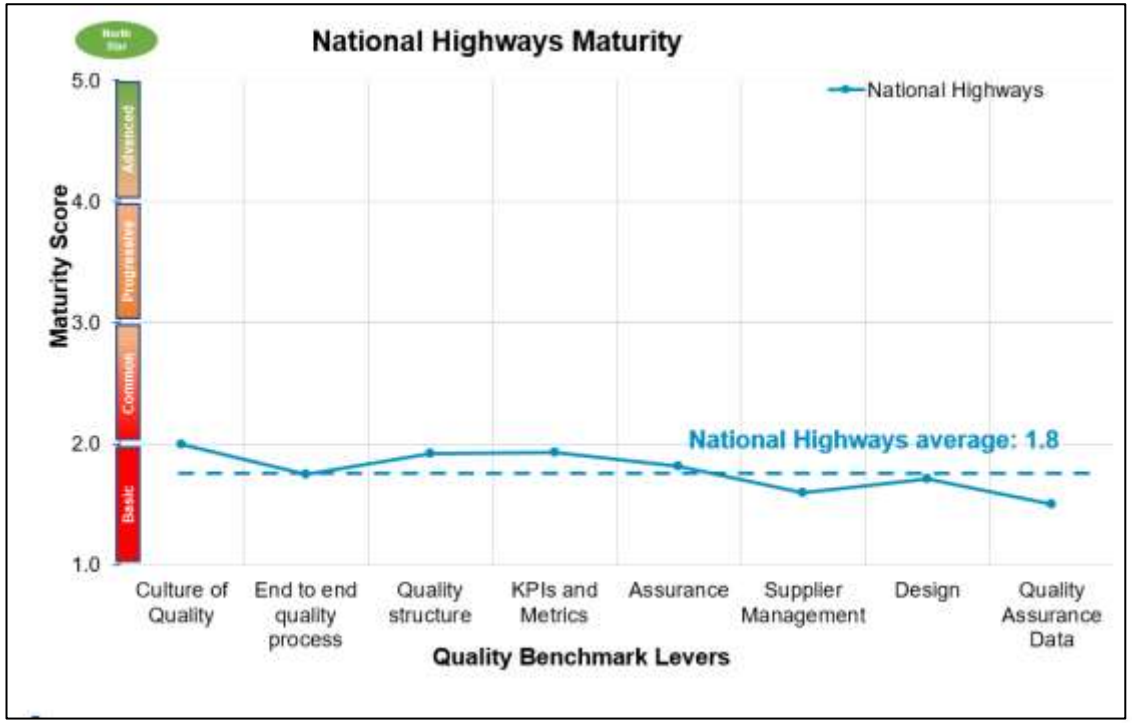
Rob Andrewes
National Highways
Head of Quality – Design & Standards

The Opportunity

GIRI
Get It Right Initiative

GIRI research has estimated that quality issues account for between 10% and 25% of project costs

".....to improve quality we need to engage leadership and change attitudes....."



Basic – but a good platform to improve

national highways

The Opportunity

Millions of potential savings

by reducing Cost of Poor Quality NH by end of RIS 2

Reduced **customer disruption** due to rework.

Improved **customer experience**

KPI benefits

potential efficiency gains in RIS 3 by aligning quality maturity with industry average. Reducing the risk of significant failure.

Opportunity to deliver up to

10% carbon emission reduction

to drive the decarbonisation plan

Safety impacts:

Reduced strategic **risk of asset failure.**

Reduced **site risk** due to rework

national highways

National Highways – Our 5 priority actions

national highways

Supplier Quality Group established

MORGAN SINDALL · national highways · AGGREGATE INDUSTRIES · ATKINS · bam · COSTAIN · GallifordTry · Keyline · KIER · Polypipe · SKANSKA · TARMAC · wsp · Jacobs · Arup · Graham

Collaboration and building momentum

e learning

SUPPLY CHAIN SUSTAINABILITY SCHOOL

Working closely with Supplier Development & Performance Team to expand the Quality Learning Pathway.

Create a consistent approach to measuring Quality maturity through Tier 1s and into our extended supply chain.

Support Supplier Quality Maturity assessment for Tier 2+ and provide tailored learning through the school

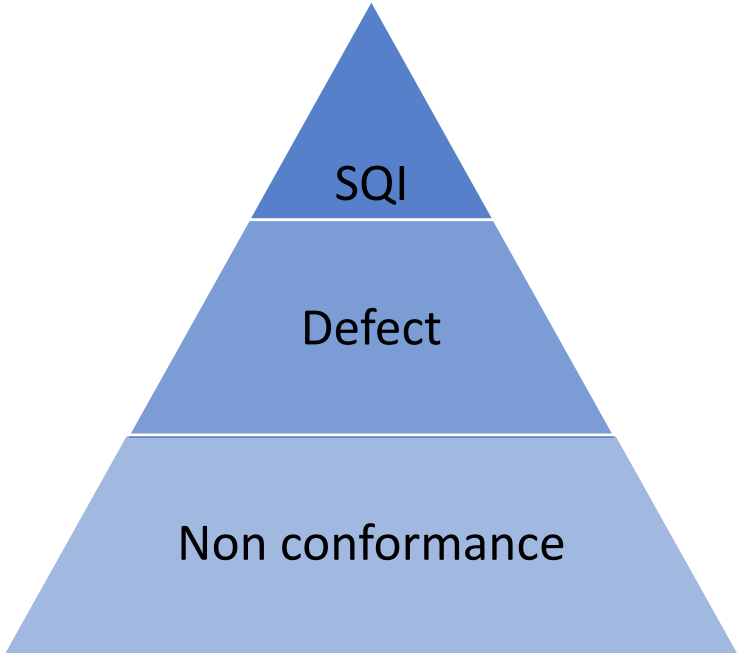
Significant Quality Incidents

An SQI is an instance where the quality of delivery has the potential to cause:

- *Significant harm, such as someone being killed or seriously injured.*
- *Significant impact on our customers, such as a full road closure.*
- *Significant impact on delivery of our work, such as causing a delay to one of our schemes.*
- *Significant additional cost, such as remedial work costing in excess of £100, 000.*
- *Significant impact on the organisation's reputation, such as negative articles appearing in the national media.*
- *The repeated reoccurrence of lower-level issues that may require root cause analysis and more significant intervention.*

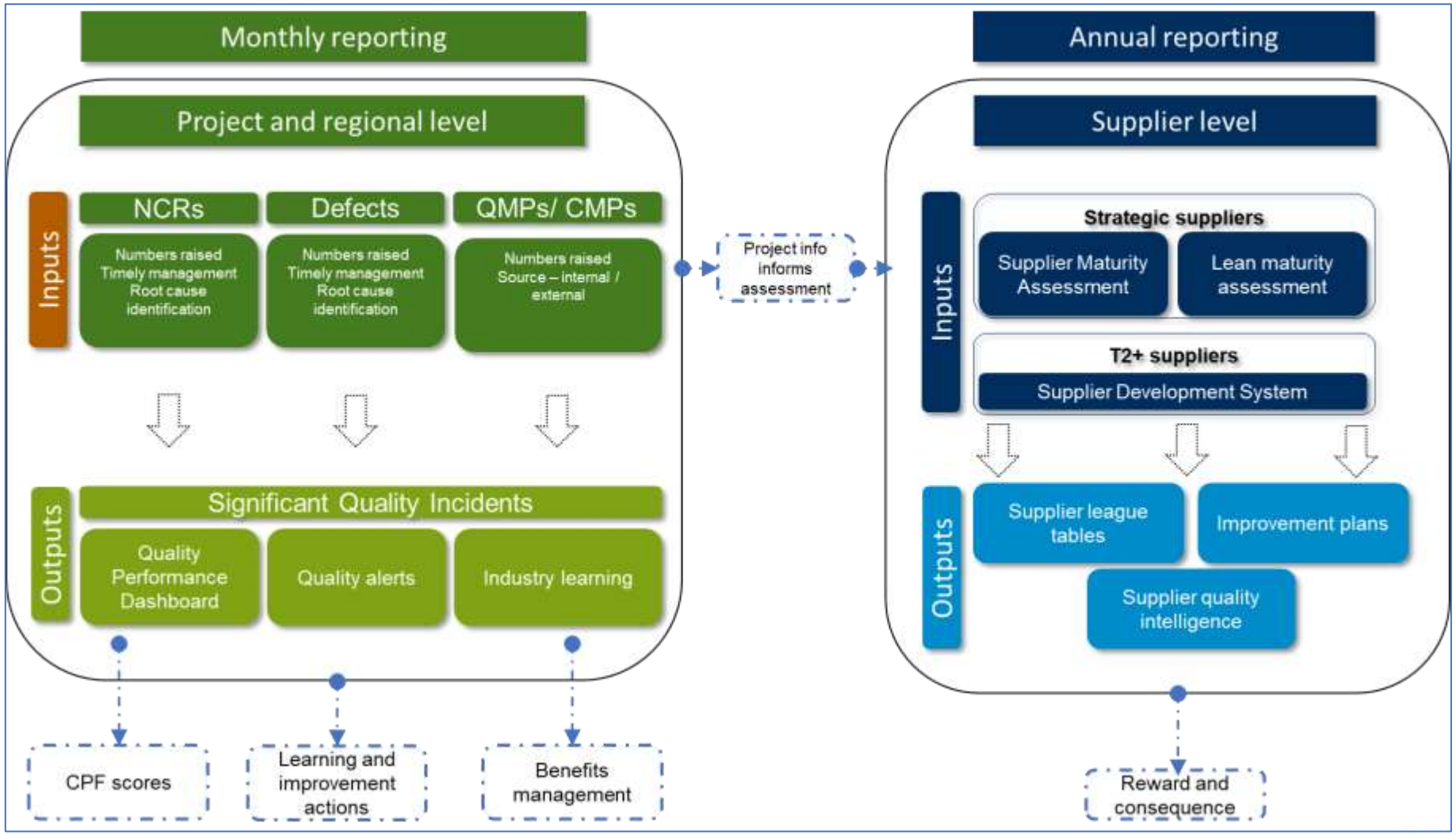
Reporting an SQI

Link to SQI form

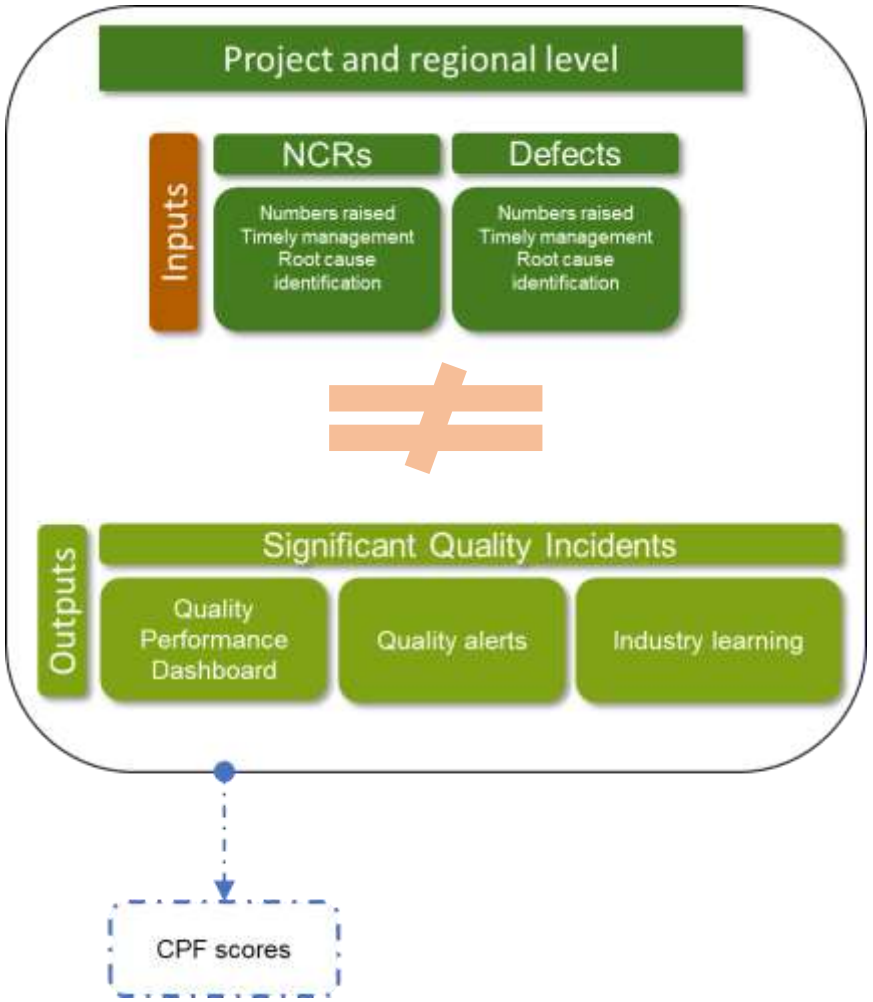


national highways

National Highways Quality Performance System



Challenges…



- Different data formats
- Different data captured
- Different definitions (or interpretations)
- Different language e.g. root causes
- Different environments & motivations
- Different approaches e.g. remedial cost estimates
- Not aligned to CPF

national highways

Improving Quality in Construction

Cliff Smith

Executive Director

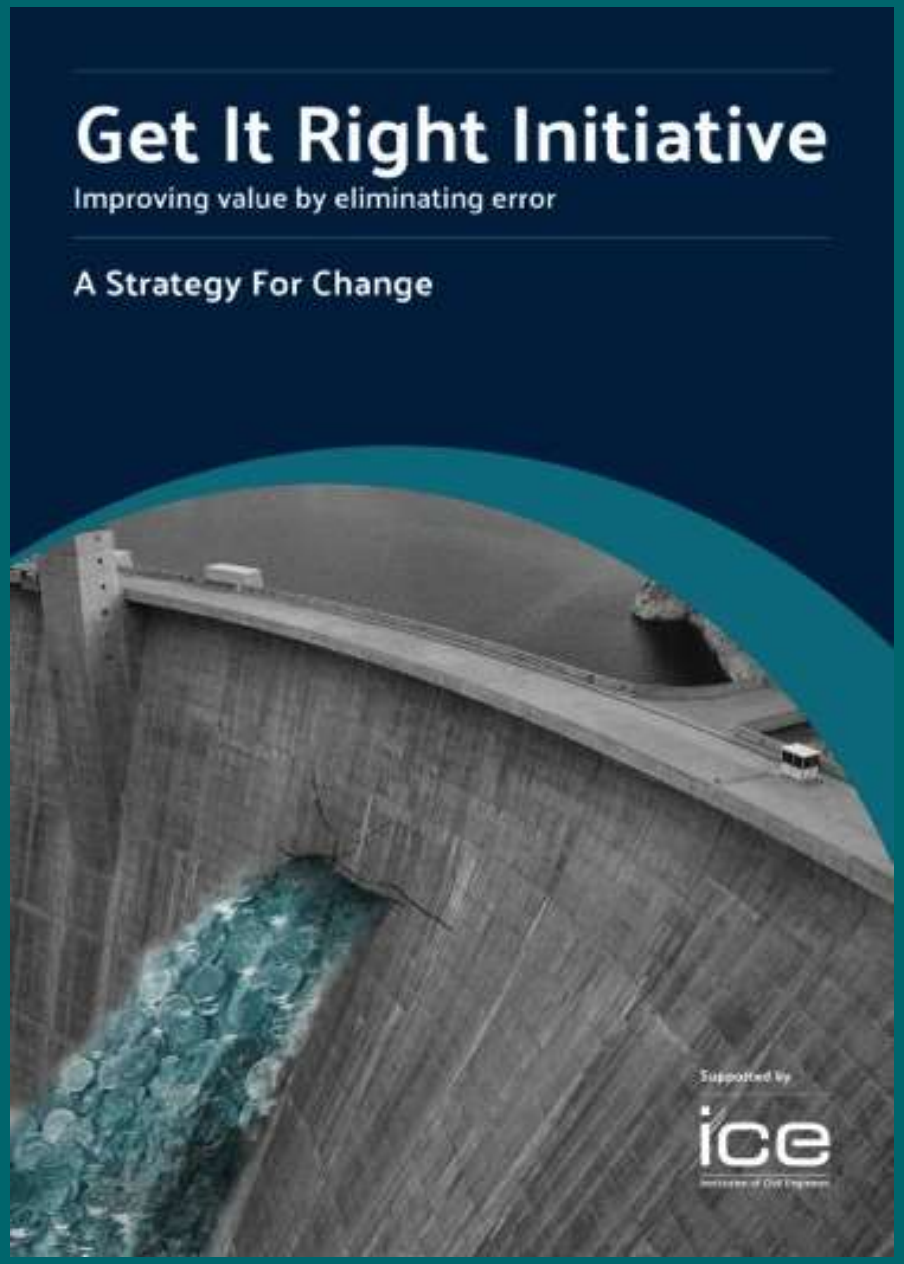
Get It Right First Time Initiative / GIRI

Introduction to GIRI

NH SCS March 2024

Cliff Smith GIRI Executive Director

Working together to eliminate error,
by industry, for industry.



Initial research report:
Strategy for Change

GIRI
Get It Right Initiative

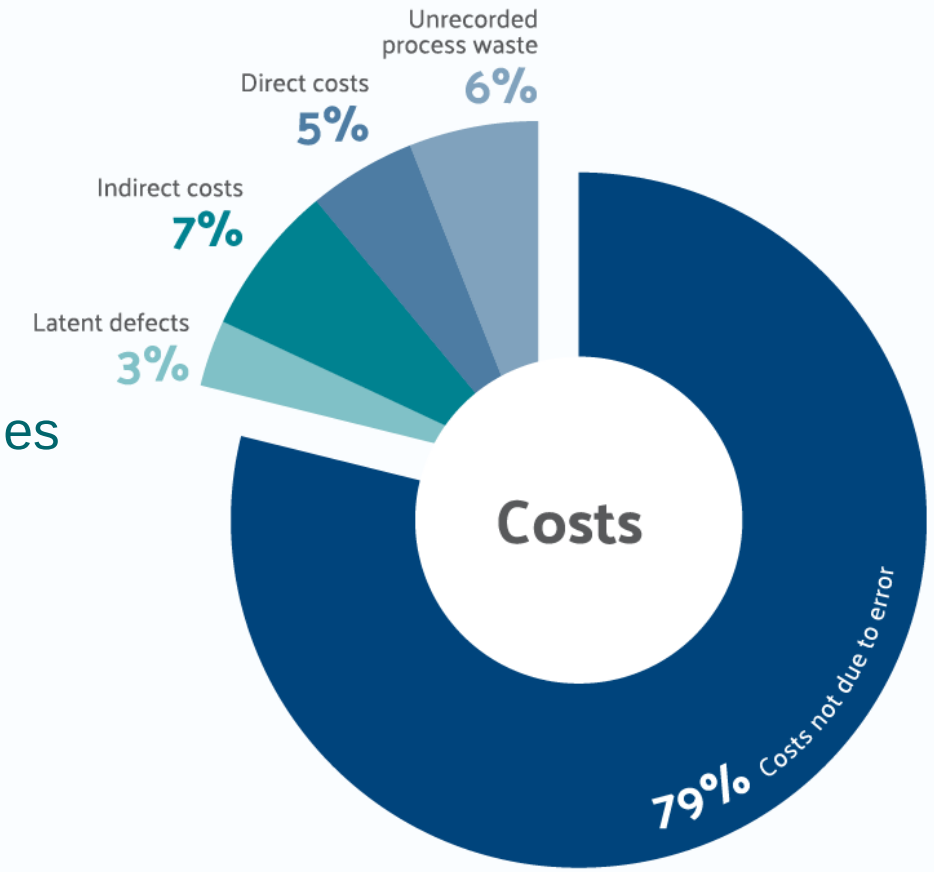
Wasted spend on error

Direct costs of error (5%)
resources used in correcting an error

Indirect costs of error (7%)
Resources used in follow on work and costs to other parties

Unrecorded process waste (6%)
Errors occur, are identified and corrected without being recorded

Latent defects (3%)
remain in place after client acceptance and any 'defects liability period' has passed



GIRI

- **Which areas of construction have the costliest mistakes?**

Use the poll

www.menti.com

Menti poll code 4899 6168

Areas in which cost of error is greatest

- Concrete works
- Mechanical systems
- Facades/cladding
- Electrical systems
- Finishes
- Roofing
- Basement waterproofing
- Setting out
- Drainage
- Drainage to completed works
- Steelwork coatings
- Piling
- Roads & pavements

What do you think are the most likely root causes of error?

Use the poll

www.menti.com

Menti poll code
4899 6168

Root causes of error

- Inadequate planning (from task through to project level)
- Late design changes
- Poorly communicated design information
- Poor culture in relation to quality
- Poorly coordinated and incorrect design information
- Inadequate attention paid in the design to construction
- Excessive commercial (financial and time) pressures
- Poor interface management and design
- Ineffective communication between team members
- Inadequate supervisory skills

Defining productivity

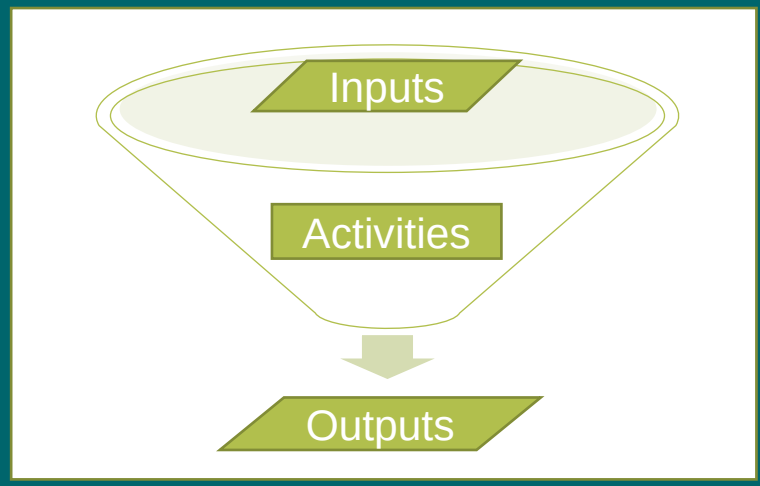
Our definition of productivity relates to activities, which take inputs and produce outputs (see Figure 1).

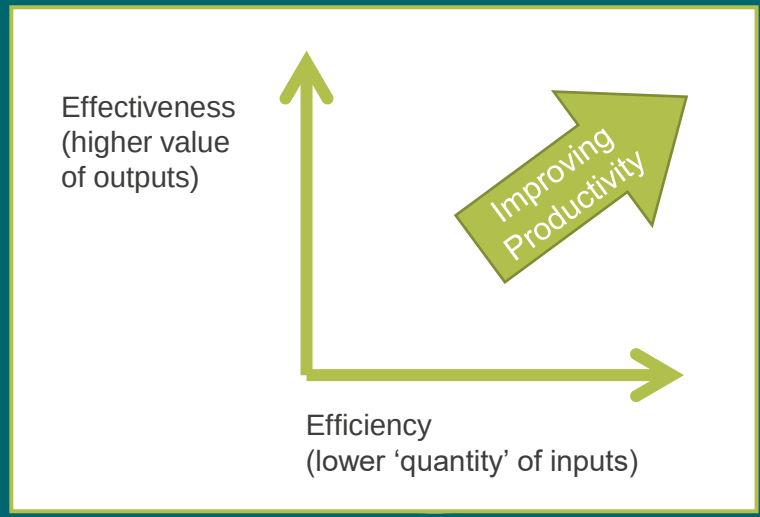
The two concepts of effectiveness and efficiency are important to consideration of productivity where:

- Effectiveness refers to the **quality or value or scale** of the outputs; and
- Efficiency refers to some **ratio of outputs to inputs**

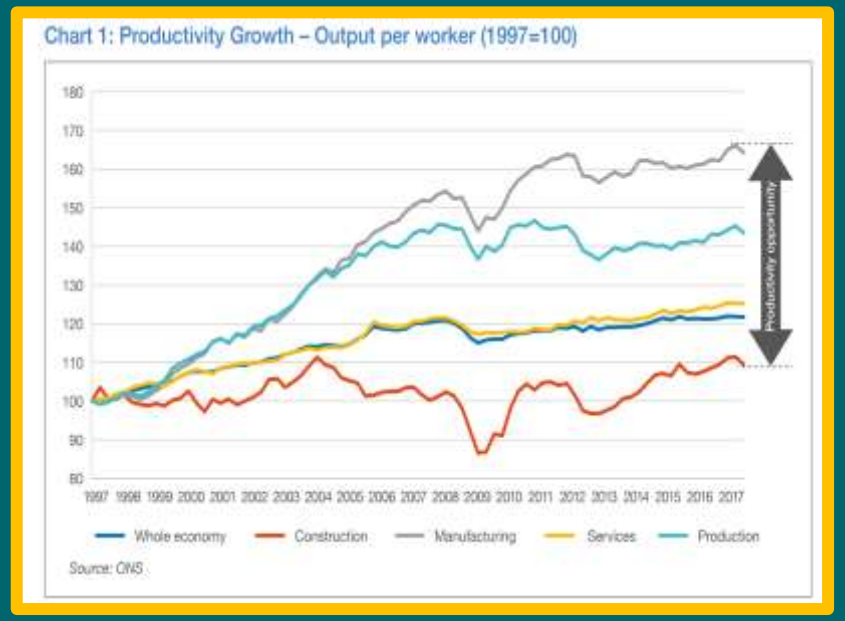
$$\text{Efficiency} = \frac{\text{Output}}{\text{Input}}$$

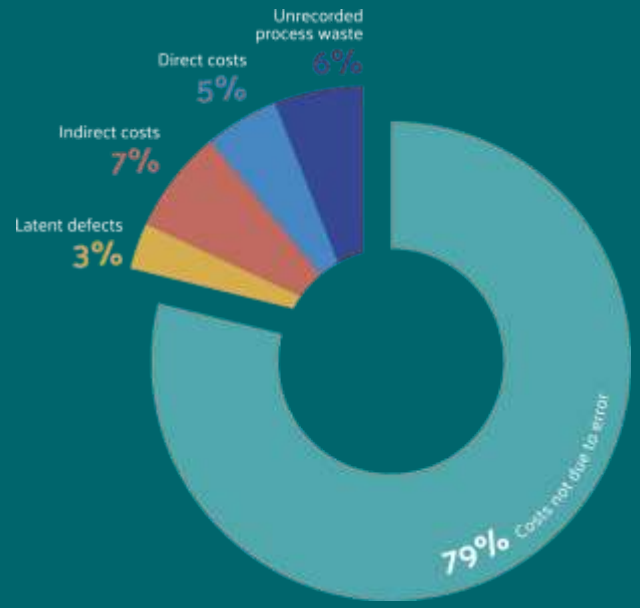
Improving productivity means increasing both effectiveness and efficiency.

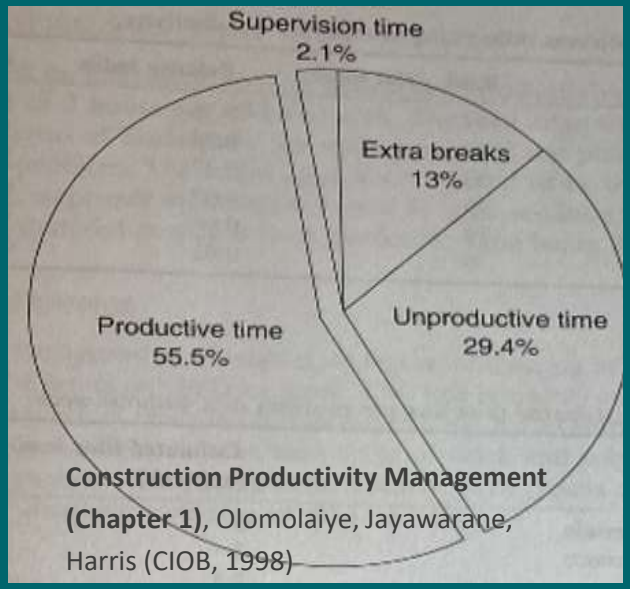




The construction productivity problem







Construction Productivity Management (Chapter 1), Olomolaiye, Jayawarane, Harris (CIOB, 1998)

Changing to compete (2009) found that:

"Engineering construction project productivity in the UK was identified as being highly variable - up to twenty or thirty percent better or worse than average."

Summary root causes of error:

- Culture
- Planning
- Design
- Supervision

Human cost of error

Synergies health & safety and quality

1994 First Version of CDM

Building Safety Act 2022

GIRI

- **sharing knowledge**
- **changing behaviour**
- **developing competence**

GIRI

Get It Right Initiative

Strategic aim of GIRI

To improve construction productivity & quality, and reduce costs & waste by eliminating error.

GIRI aims & objectives

- Create a culture and working environment to get it right from the start.
- Change attitudes and harness leadership responsibility to reduce error, waste & rework and improve quality, productivity & safety.
- Engage all stakeholders in eliminating error from inception, through operation, to completion.
- Share knowledge about error reduction processes and systems.
- Improve skills across the sector creating a positive approach to pre-empting error.

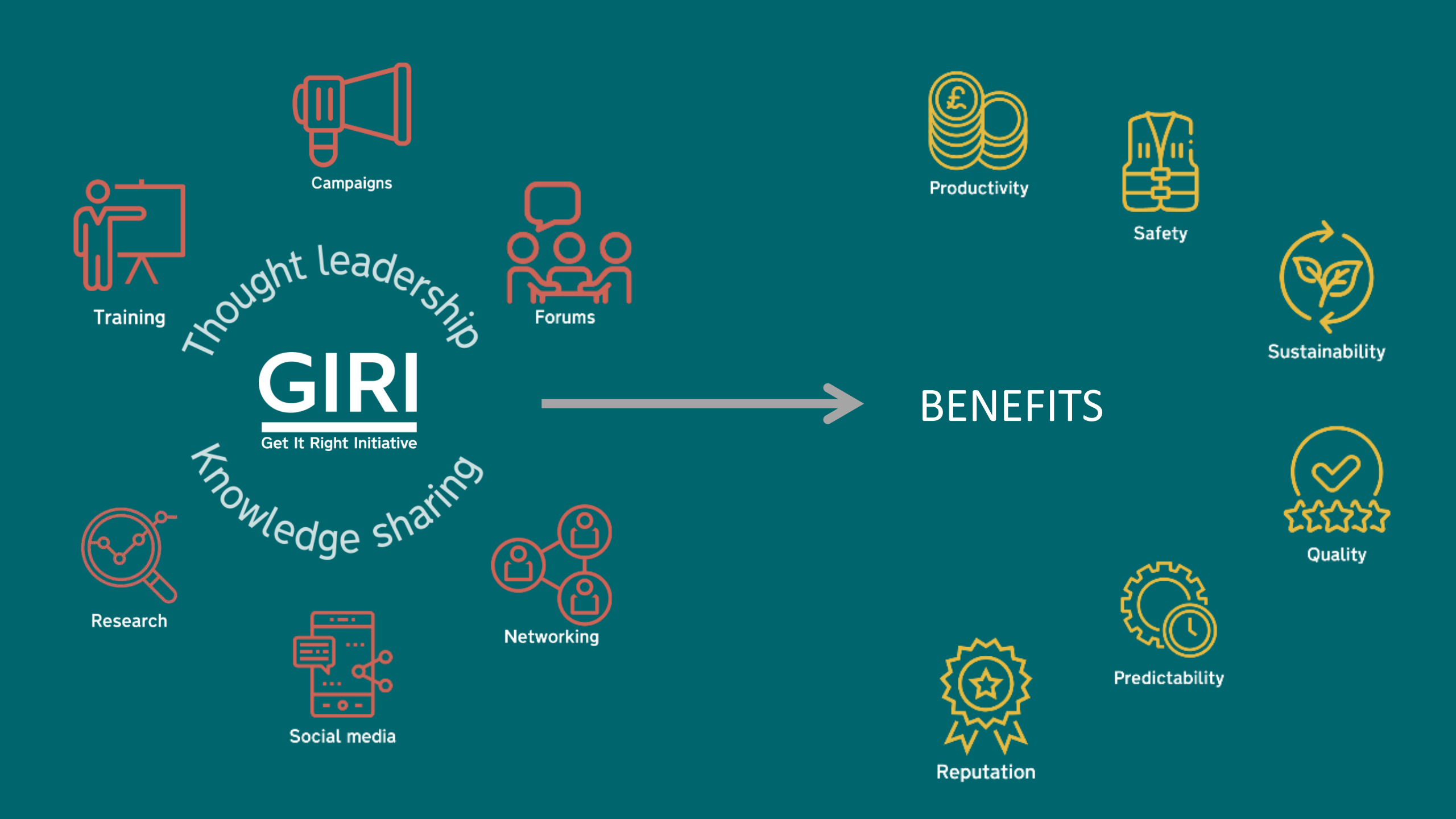
GIRI strategic priority themes

- Deliver a strategic awareness campaign to improve sector attitudes to error
- Develop and implement an error reduction skills programme across the sector
- Develop improvements to processes, systems and technology to remove error
- Provide opportunities for members to share experience and network

Current GIRI membership: 90+ companies

- Government advisory bodies
- Clients
- Architects
- Structural and M&E engineers
- Tier one and tier two contractors
- Lawyers
- Insurers and insurance brokers

GIRI MEMBERS


Campaigns
Training
Forums
Thought leadership
GIRI
Get It Right Initiative
Knowledge sharing
Research
Networking
Social media
Productivity
Safety
Sustainability
BENEFITS
Quality
Predictability
Reputation

GIRI

Get It Right Initiative

Training

Four CITB-accredited courses

- *Leadership training*
- *Interface & design management training*
- *Supervisor & manager training*
- *Trainer training*

GIRI Framework Toolkit Mapping

GIRI Training
GIRI Developed Tools
Industry Tools

Enabler actions

- Executive Briefing
- GIRI Maturity Matrix
- Error Impact Workshop
- GIRI Leadership Training

Understanding the system

1 System analysis

- Systems Definition Diagram
- Error Lists Tool
- Error Impact Workshop
- GIRI Research

2 Detailed diagnosis

Develop the intervention

3 Intervention development

4 Implementation plan

- GIRI Training
- GIRI Design Guide

Analyse the outcome

5 Measuring and reporting

- GIRI Maturity Matrix

6 Learning and sustaining

Industry-recommended tools

- Pareto analysis technique
- Stakeholder definition tool
- Causal factor chart
- Five Whys
- Fishbone analysis
- Design/Process Failure Mode and Effects Analysis Tool (D/P – FMEA)
- Flow process mapping
- Value-stream mapping
- Customer journey mapping
- Brainstorming tools
- Future state mapping
- SWOT analysis
- Pugh matrix
- Value effort matrix
- Kotter's 8 Steps model
- VMOST model
- Supplier, Input, Process, Output and Customer (SPIOC) diagram
- RACI analysis
- SWOT analysis
- SMART metrics setting tool
- AAR (After Assessment Review)

GIRI Error Maturity Matrix

The GIRI Maturity Matrix was developed to help organisations measure their readiness to manage error and support an error-free environment. The matrix was developed based on COM-B behaviour model which suggests that to drive the right behaviour you need to have the right capability, opportunity and motivation in your organisation. GIRI Error Maturity Matrix factors have been developed as shown on the left hand side diagram below.

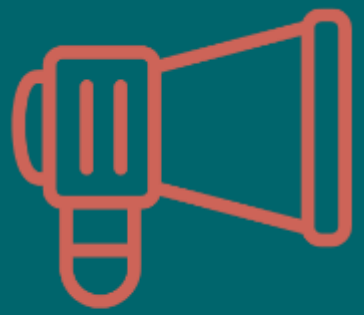
COM-B Behavioural Model

Behaviour

Capability	Opportunity	Motivation

Physical capability	Psychological capability	Reflective motivation	Automatic motivation	Social opportunity	Physical opportunity
Physical competence *Competency assurance* *Tools and equipment* *Training and development programmes*	*Knowledge and understanding of tasks* *Interdisciplinary awareness and skills* *Error awareness* *Decision-making skills* *Managing psychological factors*	*Communication and shared learning* *Cross-functional collaboration* *Contractual arrangements and procurement processes* *Leadership support*	*Quality management systems and processes* *Decision-making procedures* *Information access* *Safe working environment*	*Cultural support for error reduction* *Strategies* *Individual attitudes* *Care about reputation and success*	*Reward and recognition incentive systems* *Environmental cues* *Automated systems* *Continuous improvement incentives*

GIRI Error Maturity Matrix



Campaigns

Communications – strategy

- Presentations and collaborations
- Aligning our message on error with wider industry challenges
  - Building safety
  - Productivity
  - Reducing error on the way to net zero
- Amplifying GIRI's voice through media and public affairs

Design Guide

Research

- Re-edit following survey
- Edit complete
- New web-based platform for ease of navigation

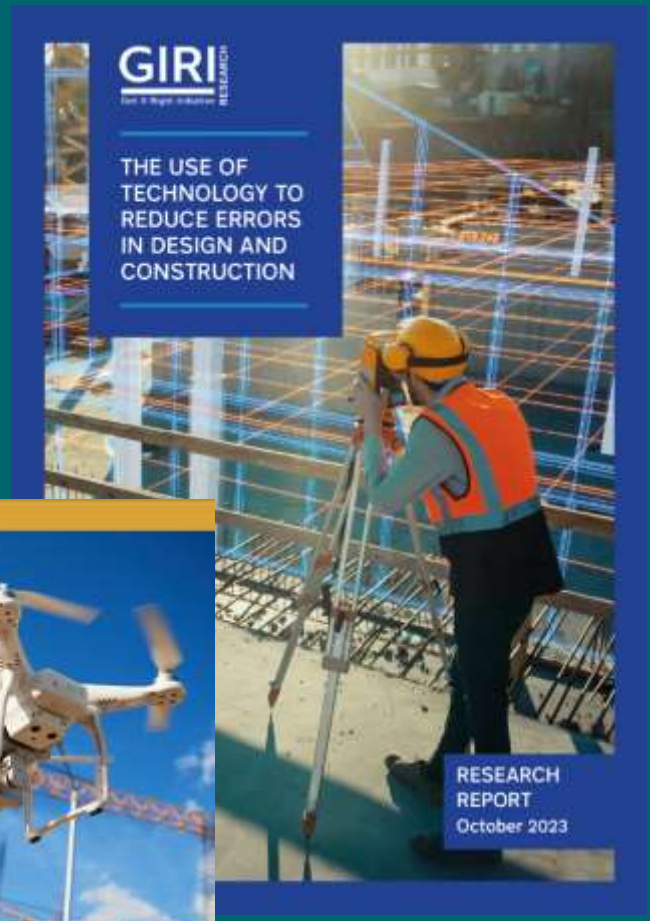

GIRI

Technology Group

Research

Research into

- various technology applications to avoid error
- effectiveness of technology at workface



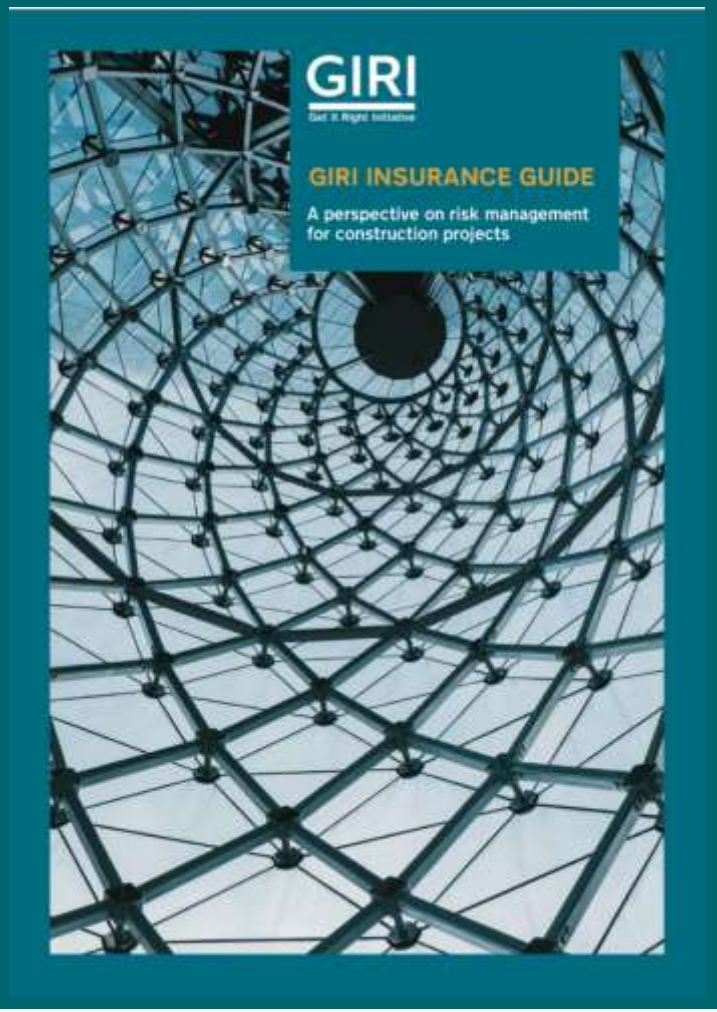
GIRI

Get It Right Initiative

Insurance working group

Research

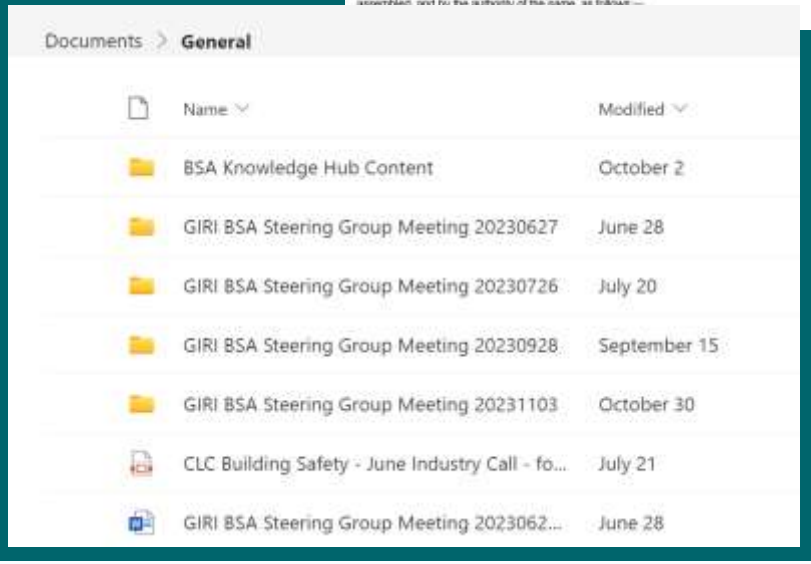
- Guidance document issued September 2023



BSA Steering Group

Research

- **Established July 2022**
- **Focus on reducing error in implementation of new Act.**



Research

GIRI Metrics

CLC and GIRI carrying out a pilot research project re: industry wide EFR

HS2 GIRI Efficiency project undertaken leading to identification of project level error metric process

Collaboration

Constructing Excellence

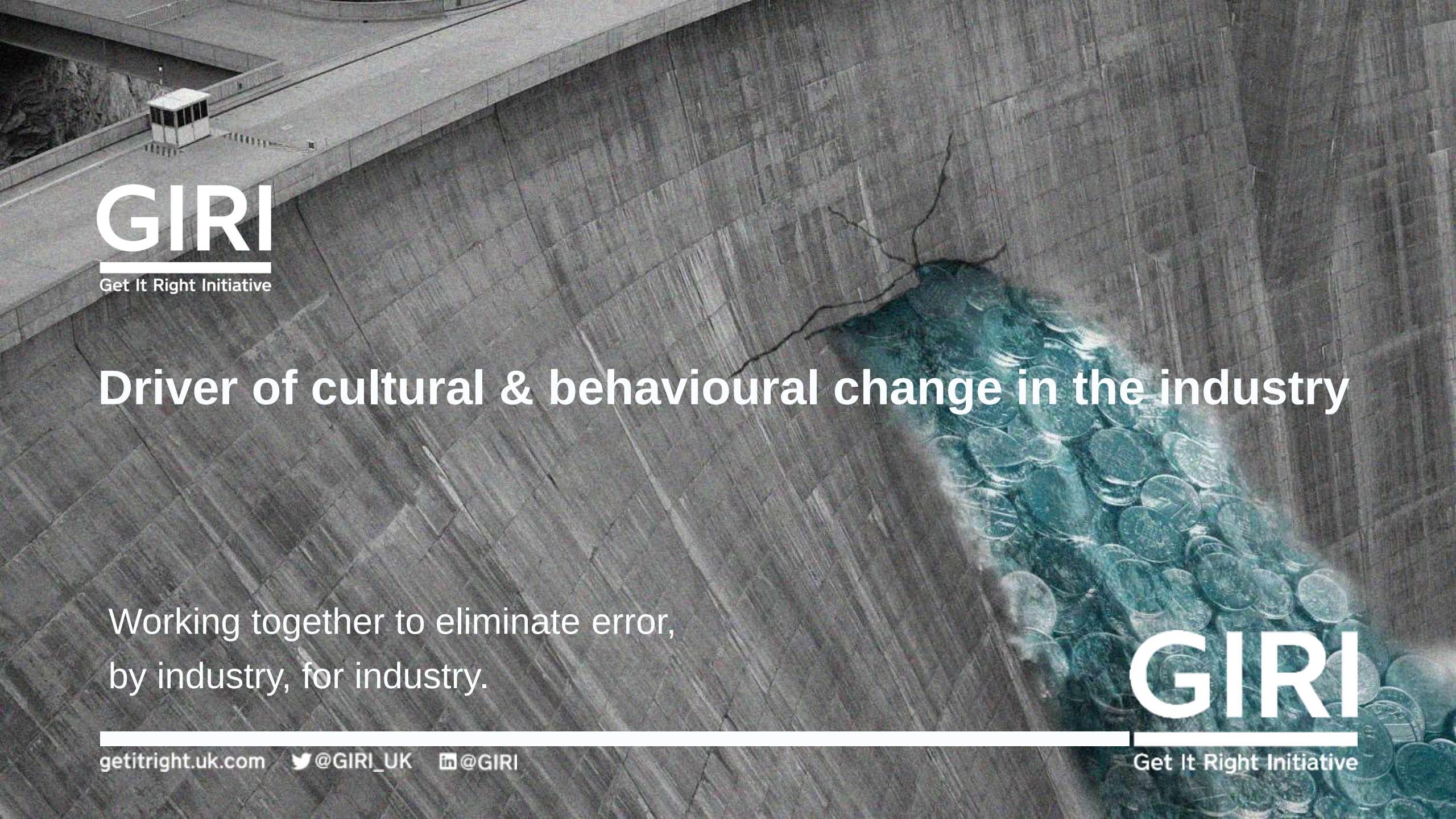
CQI

ConSIG

Temporary Works forum

BSI – QS/1/4 Committee

BSF


GIRI
Get It Right Initiative
Driver of cultural & behavioural change in the industry
Working together to eliminate error,
by industry, for industry.
GIRI
Get It Right Initiative
getitright.uk.com
@GIRI_UK
@GIRI

Lynden Haworth

Head of Assurance

Galliford Try / GT Infrastructure

Quality in construction: Measuring, Understanding & Improving for Excellence

26th March 2024

GallifordTry

Lynden Haworth

Head of Assurance

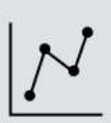
GT Infrastructure

Introduction

“Improving quality through culture, collaboration, consistent delivery and continual improvement.”

Introduction

QUALITY OBJECTIVES



Data and reporting

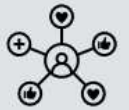
- What don't we know
- Discover and measure the status quo
- Report trend analysis
- Compare similarities and differences
- Search strengths and weaknesses

Continual Improvement

- Back to basic principles
- Calibration
- Consistency
- Achieve robust data
- Create opportunities
- Enhance knowledge and training

Behaviours and culture

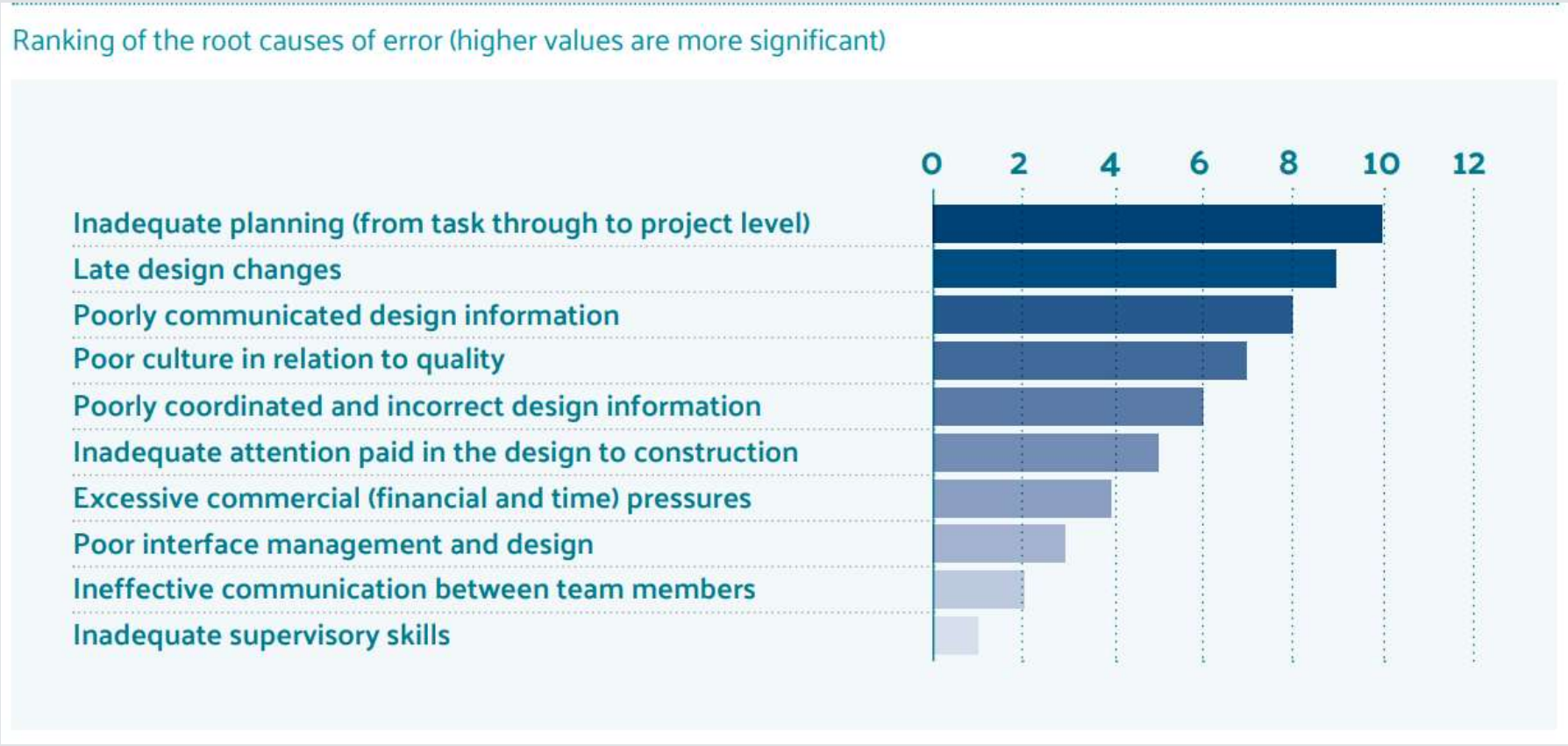
- Behavioural change
- Create and maintain 'safe' space
- CPD
- Doing the right thing
- Shared values
- Innovate



Collaboration

- Feedback mechanisms
- Share experiences
- Within project teams
- Across GT
- Across our external network

What ~~don't~~ we know?



- Recognise that we get things wrong.
- Don't accept that there's nothing we can do.

Back to basic principles

Report

- Include Product Quality in Contract Reviews.
- Share lessons learned.
- Report project performance.
- Ensure we have full and compliant records at completion.

Monitor

- Are installations compliant?
- Weekly Site meeting review.
- Field View dashboards.
- Detail compliance reporting.
- Have we got the records we need?
- Report all non-conformity, workmanship or defective materials.

Build

- Inspect quality at the start of each site activity.
- Inspect the works progressively in line with ITP.
- Follow the agreed build sequence.
- Openly discuss quality at site inductions.
- Don't walk by. Raise quality concerns.

Design

- Buildability and simple interfaces considered.
- Safety, health and quality by design.
- Compliance with brief and regulations.
- Engage with the right supply chain and design consultants.
- Implement learning from previous projects.
- Product details and specifications included in design.

Plan

Pre-start meeting actions

- Inspection and Test Plans (ITP).
- Check Sheets.
- Training and knowledge.
- Field View best practice set-up.
- Quality toolbox talks. Site mock-ups.
- TEDs and POMMs include quality requirements.

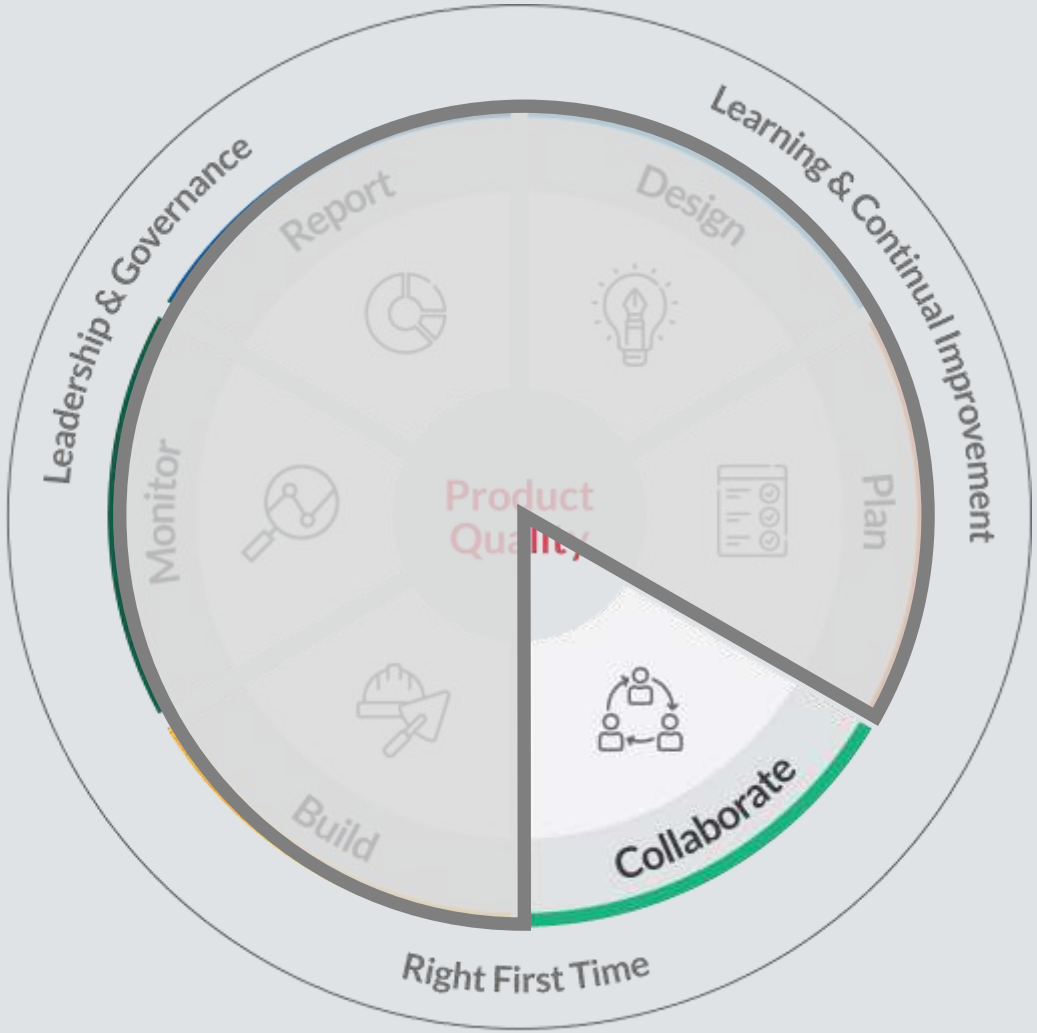
Collaborate

Establish roles and responsibilities in the

- Project site team.
- Supply chain and design consultants.
- Manufacturers.
- Clients and third parties.

Our Quality wheel was created to provide an overview of our keep it simple approach to delivering a quality project.

Collaborate



- Project site team
- Supply chain and design partners
- Manufacturers
- Clients and third parties

Behavioural change

- Project site team
- Supply chain and design consultants
- Manufacturers
- Clients and third parties

9 events currently planned to end June 2024

Feedback mechanisms

"…. It allowed us to focus our minds on the problem and establish mitigation well in advance of the works being undertaken. It's not a dramatic or ground-breaking exercise, it is the simplicity that makes it work……"

Start: *"why do we need to do more training?" and "this will be a load of rubbish."*

1st break: *"this is good" and "it's different."*

End: *"that was really worthwhile" and "can we do more of it?"*


GallifordTry

Emer Murnaghan

Innovation Director, Graham &
Strategic Leadership Group, GIRI

GIRI Error Reduction Framework

NH SSCS Webinar 26th March 2024

Emer Murnaghan – Innovation Director, GRAHAM
& GIRI Strategic Leadership Team

**Working together to eliminate error,
by industry, for industry**

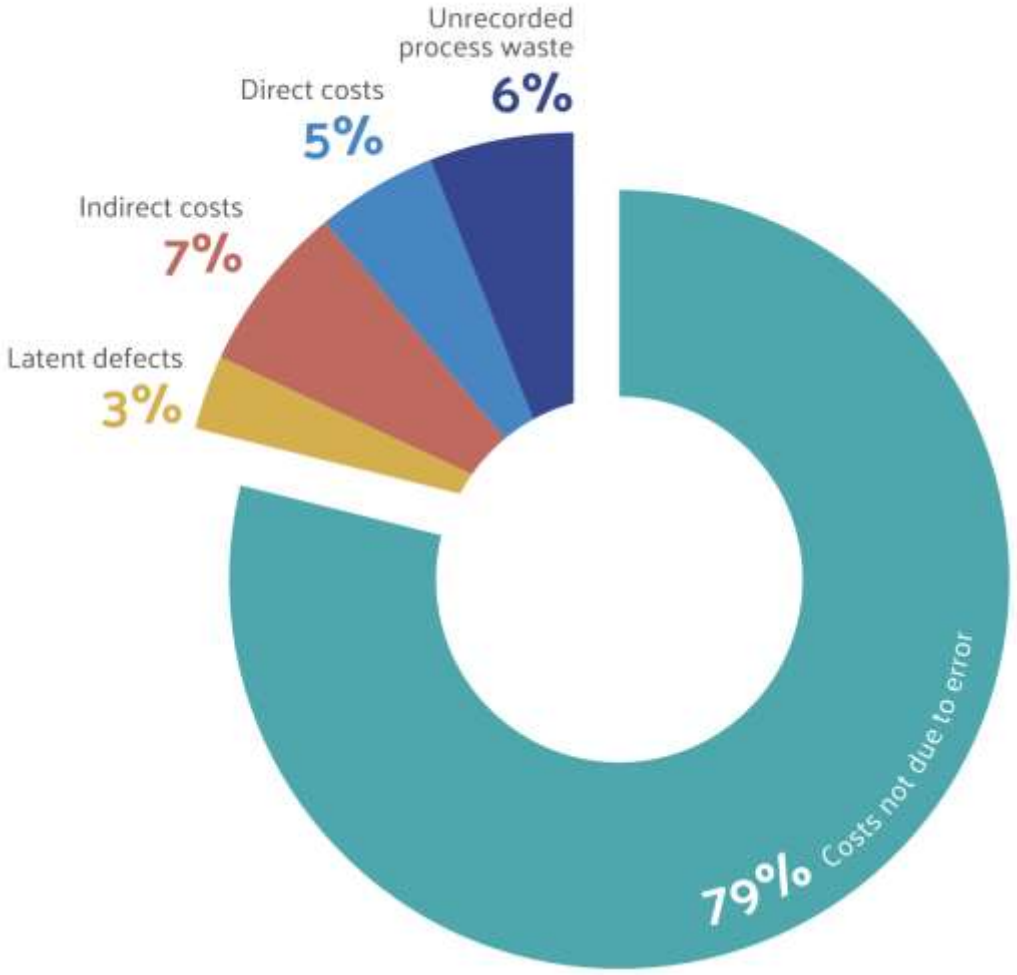
Significant cost impact of error – why we need to do something!

Unrecorded process waste (6%): occurs and is identified and corrected without being recorded

Direct costs of error (5%): resources used in correcting an error.

Indirect costs of error (7%): resources used in follow-on work and costs to other parties.

Latent defects (3%): remain in place after client acceptance and any 'defects liability period' has passed.



*'The annual spend due to error is estimated as **seven times the total annual profit** of the UK construction industry.'*

The Challenge of Addressing Errors in Construction – if it was easy, we would have sorted it by now!

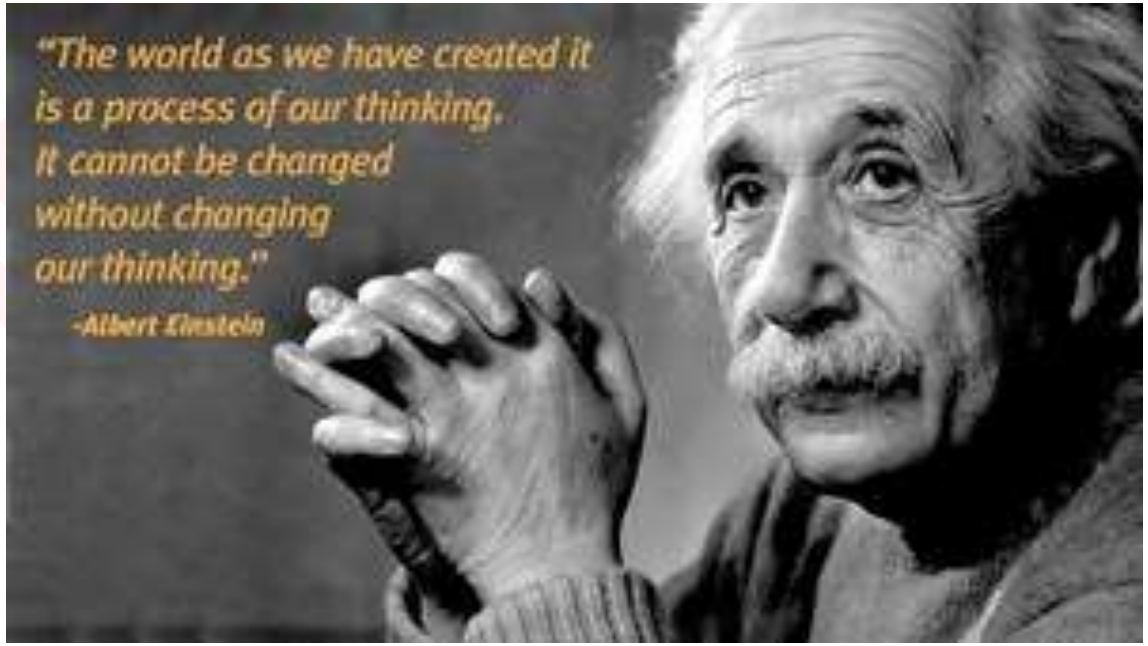
Addressing errors in the construction industry is challenging due to several key factors:

- **Complexity of Construction Projects:** The intricate nature of construction projects requires a holistic approach for error mitigation, making traditional quality improvement methods less effective.
- **Behavioural and Cultural Considerations:** Beyond technical challenges, the industry's stance on errors and the behaviours contributing to them must be addressed to foster lasting change and continuous improvement.
- **Impact of Poor Organisational Health:** Errors often stem from systemic issues within organisations, emphasising the need for maintaining organisational health to prevent error-prone environments.
- **Broader Organisational Impact:** Beyond technical challenges, the industry's stance on errors and the behaviours contributing to them must be addressed to foster lasting change and continuous improvement.

The basis for the GIRI Error Reduction Framework

- ***Error is not just a quality concern but can often be a symptom of deeper systemic issues within an organisation.***

- *To effectively address errors, it is essential to look at the underlying systemic issues.*

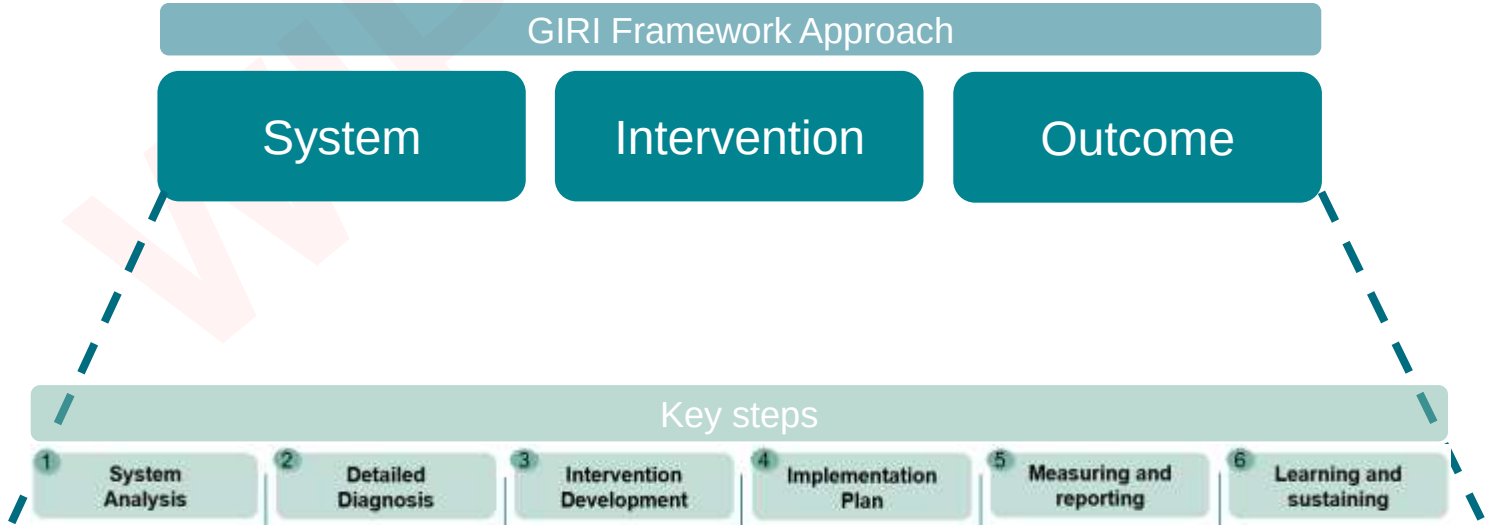


GIRI Approach to Reducing Error

GIRI recommended approach to error reduction is starting with the key enabler actions and then applying the GIRI Error Reduction Framework to define effective interventions. This presentation is the first step is getting decision makers aware of this process.

Enabler actions

1. Obtain leadership support
2. Evaluate error impact
3. Assess organisational readiness



Next enabler actions

2 Evaluate error impact

The second recommended step involved gaining a high-level understanding of the potential errors in your organisation and impact of addressing error. GIRI recommends running the GIRI Error Impact Workshop together with the key project stakeholders to determine key potential errors that need addressing and identify high level ways to address the issues.

3 Assess organisational readiness

If your organisation is committed to addressing errors, the third critical step is to assess its readiness in managing errors. To assess this, GIRI recommends using the GIRI Error Reduction Matrix Tool, developed based on the COM-B model, which can be used to assess whether your organisation provides the necessary capability, opportunity and motivation to drives the right behaviour in managing error.

GIRI Maturity Matrix

The Maturity Matrix was developed to evaluate organisational readiness to manage error. It considers whether the organisation has the appropriate factors in place to drive the right behaviours to eliminate error.

The Matrix is based on the COM-B model, a framework to understand and analyse key factors that lead to certain behaviours. The model suggests that behaviour is influenced by three key factors: motivation, capability and opportunity, each comprising a physical and a psychological part, leading to the following key sub-factors: physical capability, psychological capability, social opportunity, physical opportunity, reflective motivation and automatic motivation.

The model was adapted to error reduction needs by defining the key impact factors within each sub-factor that can impact error management in an organisation.

When to apply this tool

The Matrix can be used to assess the maturity of the user's organization. It can also be used in workshop discussions to explore potential areas of error.

How to use this tool

The Matrix can be used alongside the interactive GIRI Maturity Model Excel tool to input the rating and calculate a maturity chart.

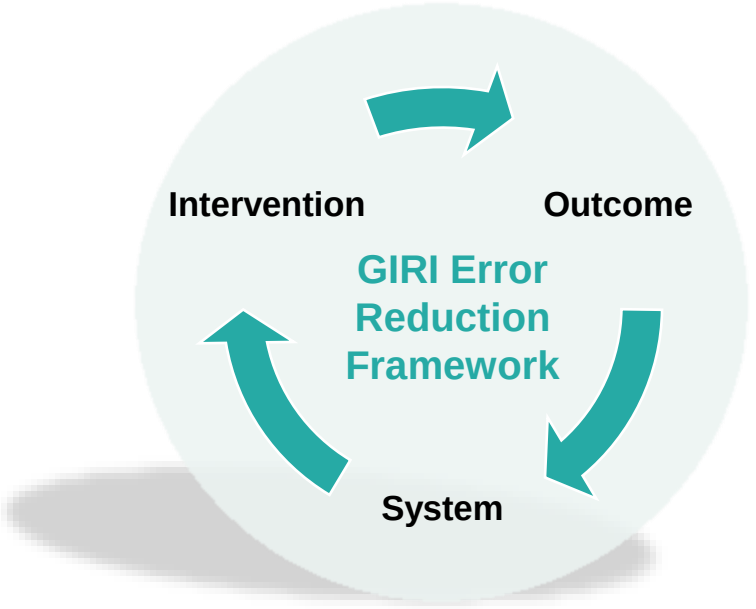
Physical capability	Psychological capability	Reflective motivation	Automatic motivation	Social opportunity	Physical opportunity
Physical competence	*Knowledge and understanding of tasks*	*Communication and shared learning*	*Quality management systems and processes*	*Cultural support for error reduction*	*Reward and recognition incentive systems*
Competency assurance	*Interdisciplinary awareness and skills*	*Cross-functional collaboration*	*Decision-making procedures*	*Strategies*	*Environmental cues*
Tools and equipment	*Error awareness*	*Contractual arrangements and procurement processes*	*Information access*	*Individual attitudes*	*Automated systems*
Training and development programmes	*Decision-making skills*	*Leadership support*	*Safe working environment*	*Care about reputation and success*	*Continuous improvement incentives*
	Managing psychological factors				

COM-B Model (top) and Error impact factors defined under each COM-B sub-category table (bottom)

Eliminating errors with GIRI Error Reduction Framework

Once error has been determined, GIRI Error Reduction Framework can be used to develop effective change programmes.

The Framework uses a systems change approach to target systemic issues that lead to error and to achieve organisation change that supports an error-free environment. The Framework consists of a six-step methodology and step-by-step guidance explaining how to tackle each step, from identifying errors through to ways in which change can be embedded.



Understanding the system

1. System analysis
2. Detailed diagnosis

Develop the intervention

3. Intervention development
4. Implementation plan

Analyse the outcome

5. Measuring and reporting
6. Learning and sustaining

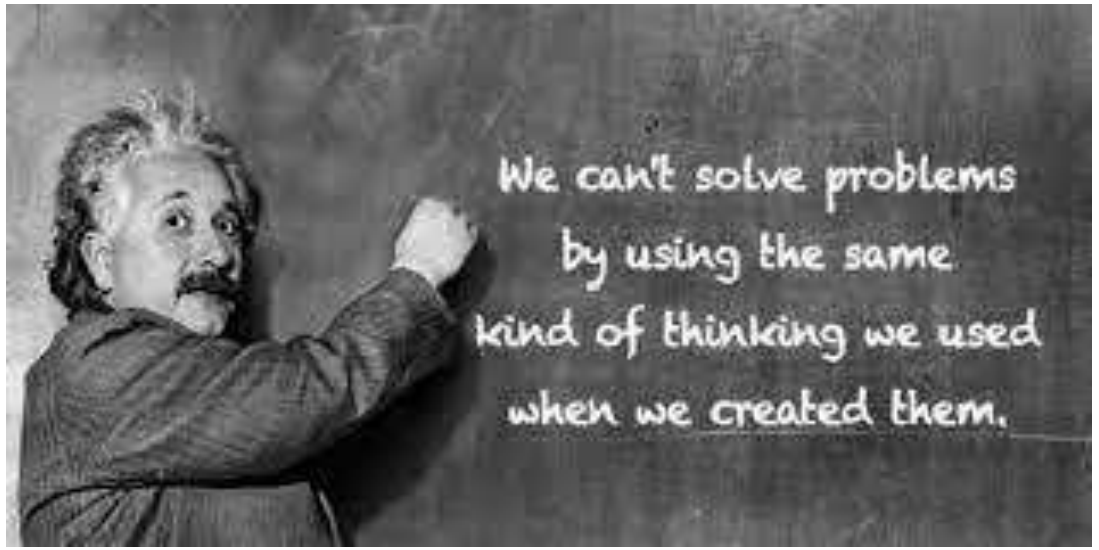
Why bother?.....Benefits of addressing error in your organisation

Improve	Improve	Improve	Provide
Improve organisational health	Significantly improve productivity, quality, reputation and social impact	Significantly improve cost margins	Provide a guiding compass for continuous improvement

What next?.....do something!

[Home | Get It Right Initiative]

Find out	Consider	Invest in	Implement
Find out the impact of error in your business.	Consider the role that GIRI can play in reducing error within your organisation.	Invest in the GIRI Error Reduction Framework	Implement change, reduce error, and benefit.



Keep in touch!

Click here to sign up to the GIRI newsletter.

If you are interested in getting involved with or knowing more about the Get It Right Initiative, please get in touch:
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GIRI

Get It Right Initiative

National Highways Supplier Development Training

National Highways Supply Chain Training Sessions – Please Circulate Widely

Lunch ‘n’ Learns – BOOK NOW (share the links)

PAS 2080: New approaches to managing carbon in highways 16 April 12:00-13:00

Operational Excellence : Practical Steps to Improve Productivity 11 June 12:00-13:00

Operational Excellence: Effective Collaboration and Collaborative Working 1 October 12:00-13:00

Operational Excellence: Driving Predictability into your Programme Delivery and Costs 21 November 11:00-12:00

Thank you for joining!

We really value your feedback, please do fill out our Feedback Form - click here before you leave.

This will only take 2 minutes!