


Consulting



Common Safety Methodology on Risk Evaluation and Assessment

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Network Rail

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London Kings Cross Station

- ▶ Operate 20,000 km's of track, 29,000 bridges, 48,000 signals and 700 tunnels
- ▶ Own 2,500 stations and operate 17 major stations
- ▶ Carry 20,000 train movements every day
- ▶ Own and operate and the second busiest in Europe, and the fifth busiest railway network in the world
- ▶ Operate and maintain the UK's high speed rail infrastructure
- ▶ Employ circa 35,000 people across all rail disciplines.

What we do



mar 2012



Network Rail Consulting

Our International consulting business was formed in 2012:

- ▶ Use the expertise within the organisation on the international stage
- ▶ Share our knowledge and develop partnerships with railway organisations around the world
- ▶ Provide opportunities for our staff to gain experience and grow in doing so helping to retain key staff in the organisation
- ▶ Learn lessons that we can bring back to the business to improve the way we work in the UK.

European Union – 28 Member States



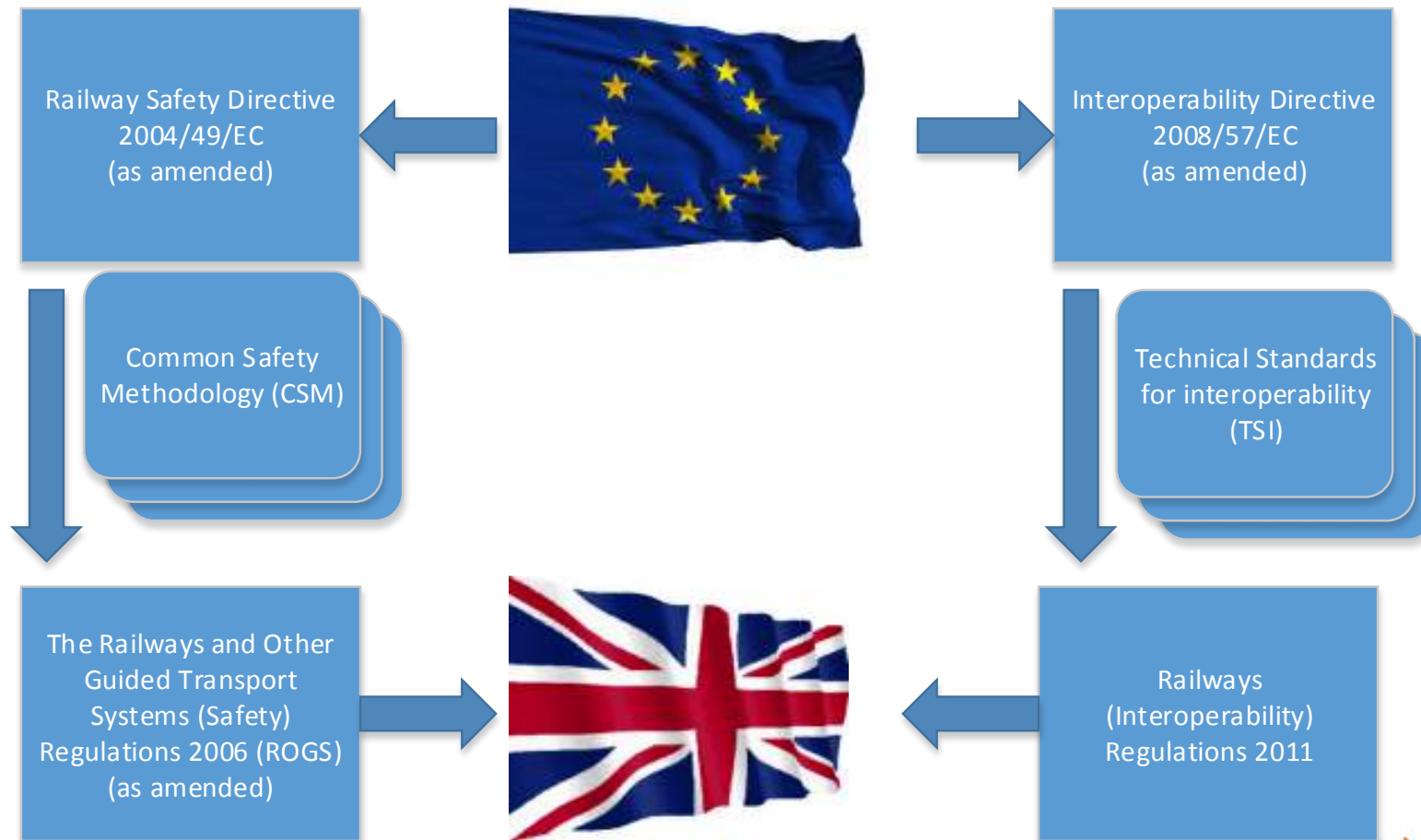
The European Railway Agency

Established in 2004, full operations commenced in 2006.

- ▶ Cross-border compatibility of railway systems – Interoperability
- ▶ Common approach to safety
- ▶ Reduce barriers for international operation
- ▶ Creation of a competitive European railway area.



EU Legislation enacted in the UK



European Safety Directive

- ▶ Common Safety Targets
- ▶ Common Safety Methods:
 - ▶ CSM for assessment of achievement of safety targets
 - ▶ CSM for assessing conformity with the requirements for obtaining a railway safety authorisation
 - ▶ CSM for assessing conformity with the requirements for obtaining railway safety certificates
 - ▶ CSM for supervision by national safety bodies
 - ▶ CSM for monitoring to be applied by railway undertakings, infrastructure managers and entities in charge of maintenance
 - ▶ **CSM for Risk Evaluation and Assessment (CSM REA)**

Why the need for CSM REA

Previously three main methods of demonstrating safety in use in Europe.

- ▶ UK – So Far As is Reasonably Practicable (SFAIRP)
- ▶ France – Globalement Au Moins Aussi Bon (GAMAB)

‘Overall at least as good’ is a way of comparing overall risk with that of a reference system.

- ▶ Germany – Minimum Endogenous Mortality (MEM)

A way of comparing risk to a reference value.

Three Nations who have a history of disagreeing with each other.

CSM is a way to stop nations using safety as an excuse for protectionism

Mainline Rail Structure in the UK

Mainline Railway Undertakings

Infrastructure Manager



Train Operating Companies



Freight Operating Companies



National Bodies



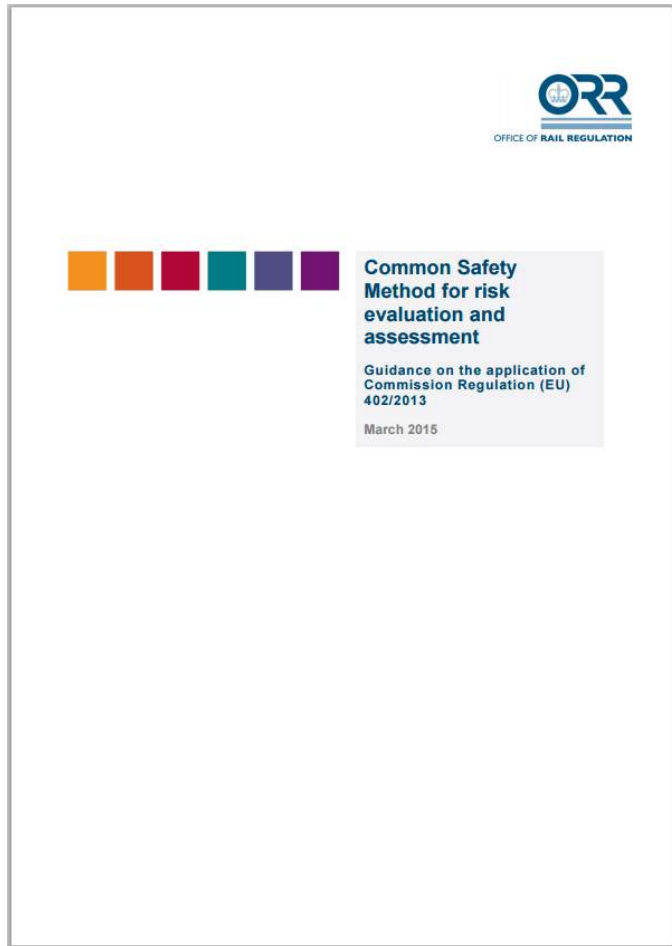
Department
for Transport



EU



ORR Guidance

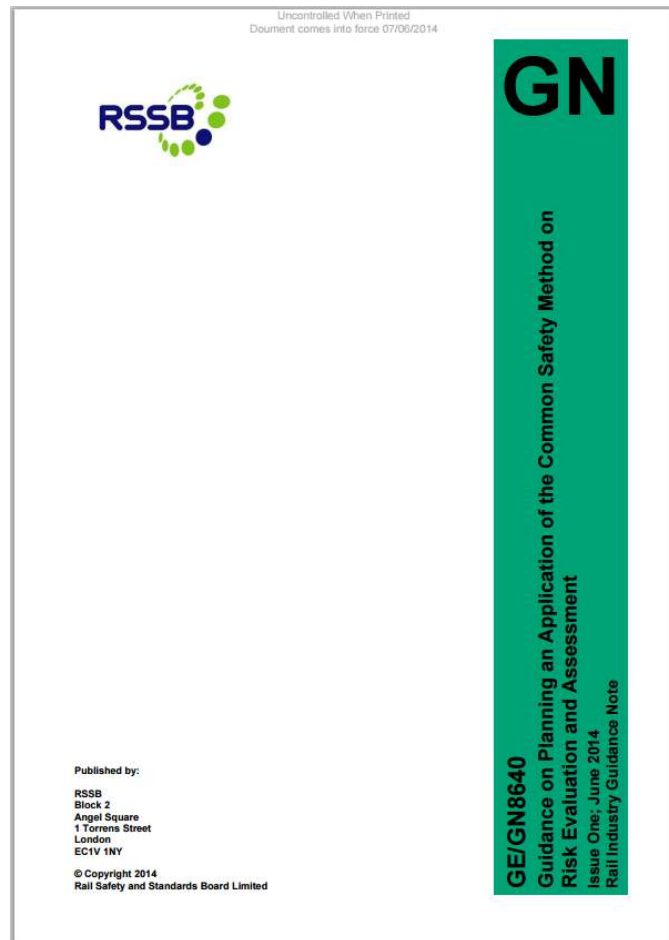


The Office of the Rail Regulator has produced guidance on how the CSM REA should be applied in the UK

http://orr.gov.uk/_data/assets/pdf_file/0006/3867/

[common_safety_method_guidance.pdf](#)

RSSB Guidance

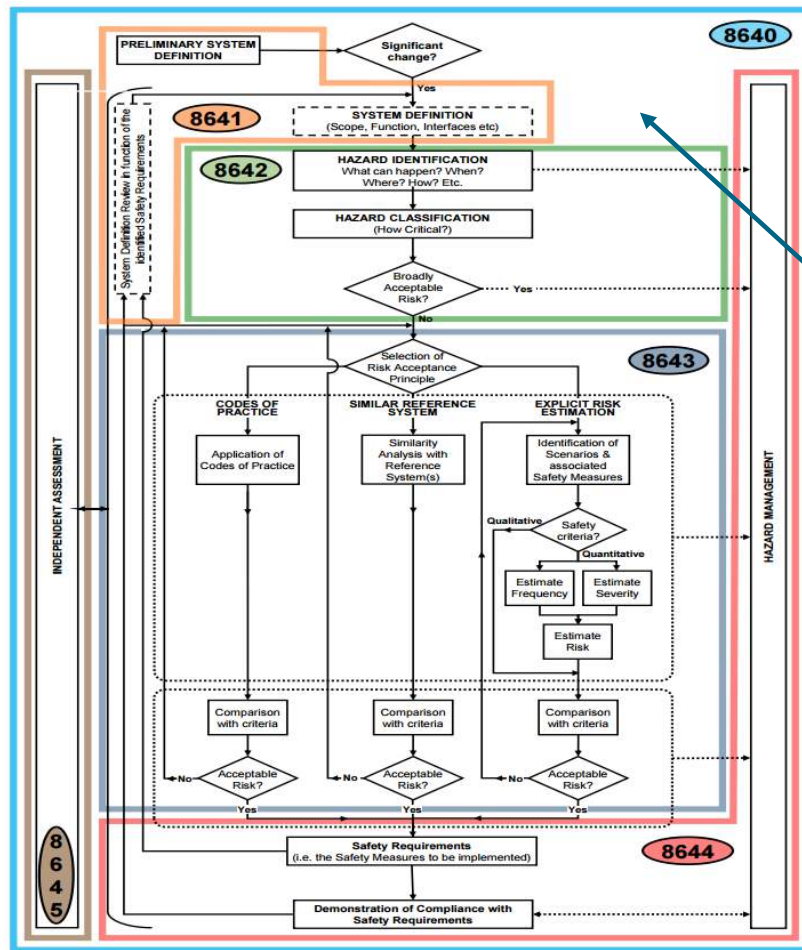


The RSSB has produced guidance on how the CSM REA should be applied in the UK:

- ▶ Guidance on Planning an Application of the Common Safety Method on Risk Evaluation and Assessment (GE/GN8640).
- ▶ Guidance on System Definition (GE/GN8641).
- ▶ Guidance on Hazard Identification and Classification (GE/GN8642).
- ▶ Guidance on Risk Evaluation and Risk Acceptance (GE/GN8643).
- ▶ Guidance on Safety Requirements and Hazard Management (GE/GN8644).
- ▶ Guidance on Independent Assessment (GE/GN8645).

<http://www.rgsonline.co.uk>

GE/GN864x Series



GE/GN8640 gives an overview of the entire process,

Each of the other Guidance Notes refers to a section of the CSM REA Process, e.g.:

Guidance on Hazard Identification and Classification (GE/GN8642).

Is the Change Significant?

The Proposer must determine if the change is significant using the six CSM criteria:

- ▶ Failure consequence: credible worst-case scenario;
- ▶ Novelty: innovative or new to organisation;
- ▶ Complexity: the complexity of the change;
- ▶ Monitoring: ability to monitor & intervene;
- ▶ Reversibility: the ability to revert to the original system;
- ▶ Additionality: to account for the sum of lots of minor changes.

RSSB recommend that CSM REA be applied to all changes

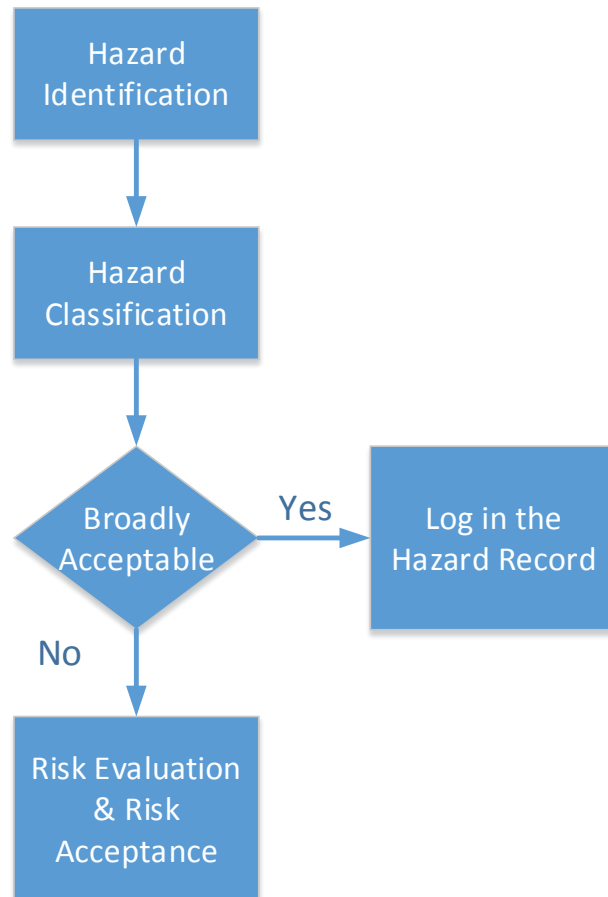
System Definition

The system definition should address at least the following issues:

- a) system objective, e.g. intended purpose
- b) system functions and elements
- c) system boundary including other interacting systems
- d) physical and functional interfaces
- e) system environment
- f) existing safety measures
- g) assumptions determining the limits of the risk assessment.

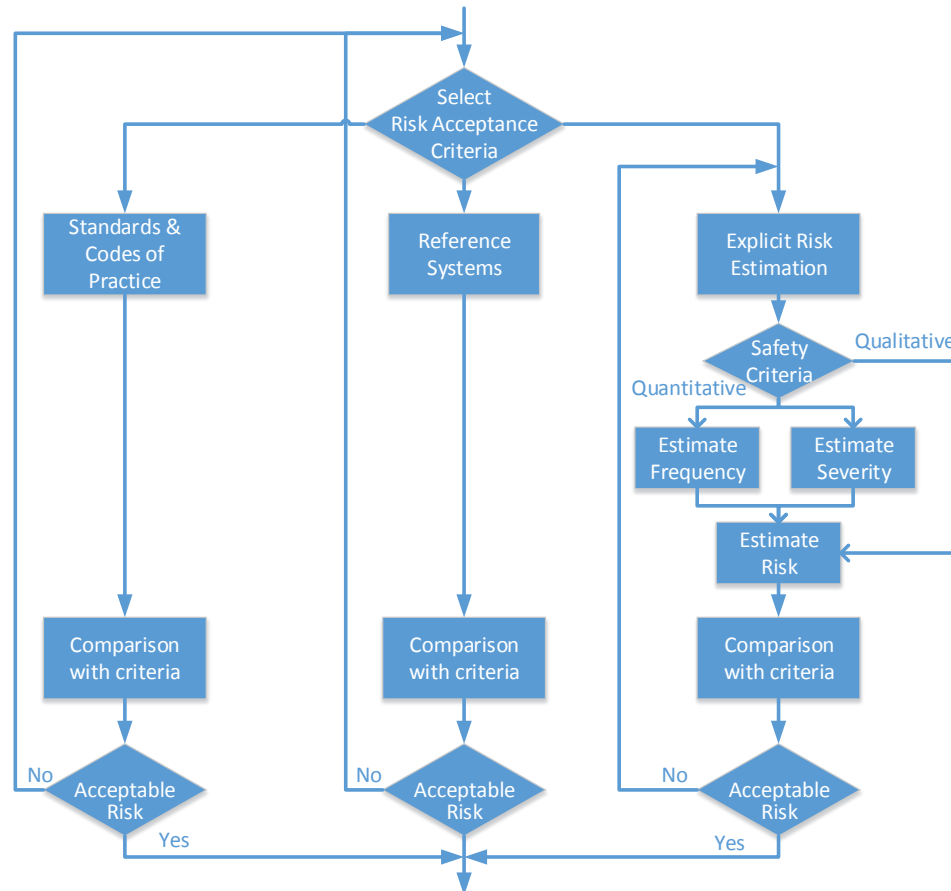


Hazard Identification and Classification



- ▶ Identify hazards in a structured fashion (HAZOP, HAZID, etc.)
- ▶ Hazard Classification based on expert judgement (Risk Ranking)
- ▶ Hazards that are broadly acceptable are added to the Hazard Record and do not need to be assessed further
- ▶ Hazards that are not broadly acceptable need to be evaluated and accepted in the next process.

Risk Evaluation and Risk Acceptance



- ▶ For each hazard select the acceptance criteria.
- ▶ Assess the hazard against the criteria to determine if it is acceptable.
- ▶ If not, re-evaluate the hazard.
- ▶ Add the findings to the Hazard Record.

Safety Requirements & Hazard Management



- ▶ Introduction to Requirements Management
- ▶ Introduction to Hazard Management
- ▶ Documenting Safety Requirements
- ▶ Demonstrating Compliance with Requirements
- ▶ Managing Safety Requirements
- ▶ The Hazard Record
- ▶ Managing Hazards
- ▶ Involving Others

Independent Assessment

An assessment body should be used to review all significant changes.

- ▶ Assessment body should understand the change and the processes.
- ▶ Plan and undertake an assessment programme
- ▶ Produce an assessment report
- ▶ Review the process that were used, not certifying the outcome.

If using CSM for all changes then a lower level of independent assessment can be used for non-significant changes.

Adopting CSM REA

- ▶ For organisations following Engineering Safety Management (ESM) principles then any changes will be minor
- ▶ Network Rail updated the Hazard Log process to record the risk evaluation and acceptance criteria
- ▶ EN50126 suite of standards being updated to incorporate reflect CSM REA
- ▶ It's important not to lose focus on the system level by breaking down into low level hazards.



CSM REA and UK Law

- ▶ **Management of Health and Safety at Work Regulations 1999** – Duty to undertake a suitable and sufficient risk assessment
- ▶ The UK Office of the Rail Regulator has deemed that compliance with the CSM REA constitutes a suitable and sufficient risk assessment. This is a policy statement and has not been tested in court
- ▶ **Health and Safety at Work Act (etc.) 1974** – Duty to reduce risks so far as is reasonably practicable
- ▶ Compliance with standards or a reference system has always been seen as a way to demonstrate SFAIRP. But it always leaves the question ‘is there anything more that could have been reasonably done?’
- ▶ I think this will remain the case with CSM REA and can only be tested in court.

Thank you

Any Questions?

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