



international Engineering Safety  
Management  
Independent Assessment  
Accreditation

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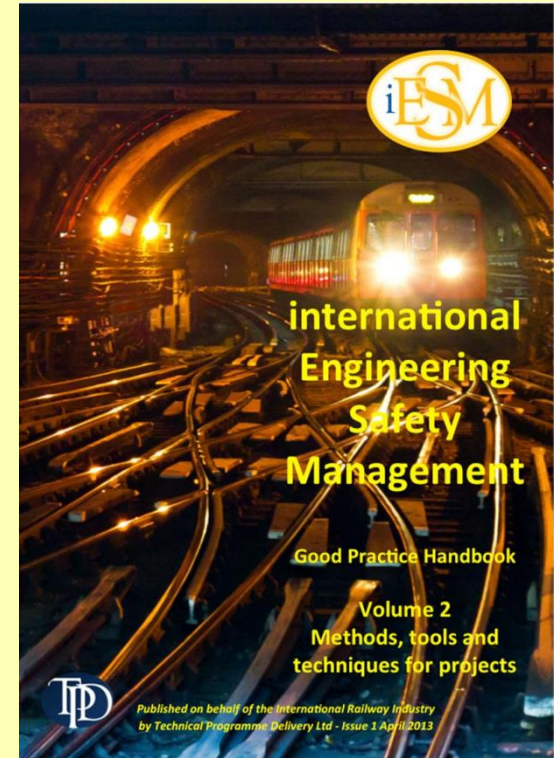
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# iESM - Aim

- To assist the international railway industry in delivering products/systems with acceptable levels of safety by developing & sharing good practice in railway Engineering Safety Management worldwide.
- Developed as part of the TPD internal research activities, for the good of the rail industry, supported by MTR Corporation.



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# iESM supporters Worldwide



# AN 4 Independent Assessment



*“Your organization must ensure that engineering safety management activities are reviewed by competent people who are not involved with the activities concerned.”*

iESM  
Principle

- Provides more detailed guidance on iESM Guidance, Volume 2, Chapter 17 – **how to do it**
- Aimed at Independent Assessment organizations / Independent Assessors
- Useful for railway administrations, Project Managers and Project Safety Managers



# *“Quis custodiet ipsos custodes?”*

- *“Who will guard the guards themselves?”*  
– Juvenal (Satires)
- *“Who watches the watchmen”* – Star Trek
- *“There are checks and balances in science. There’s somebody checking the people doing the science and then there is somebody who checks the checkers and somebody who checks the checker’s checkers.”*  
– Michael Shermer
- EXCEPT THERE ISN’ T - Who assesses the independent assessors? – as far as we can tell no one!
- Surely a gap in the safety assurance arrangements for clients and suppliers alike?



# Existing safety-related schemes

- Mandatory accreditation schemes for:
  - Assessment Bodies (under the Common Safety Methods for Risk Assessment)
  - Notified Bodies (under Interoperability Regulations)
  - Design Bodies (under National Notified Technical Rules)
- Client specified schemes such as IRSE Signaling licensing
- But nothing for Independent Assessment (apart from generic audit training)



# Assessment or Certification?

## Risk-based:

*“In this situation, with these assumptions, caveats and dependencies this is adequate”*

A judgement based on professional opinion supported by objective evidence of process, inspection of output and compliance with standards



## Compliance-based:

*“This complies with the specified standard”*

A statement of fact where no judgement, risk assessment or test of reasonable practicability is necessary





# Life saving second opinions

- Primary purpose of independent assessment is provide confidence that the product or application under consideration that the risk is controlled to an acceptable level.
- A secondary purpose is to improve the ESM evidence and / or its presentation.
- Not about seeking a single, elusive “right answer”





# Emerging CENELEC requirement

- The emerging draft of new CENELEC EN50126-2 includes a set of key competences for an Assessor including having an *“acceptance/license” from a recognized safety authority.*
- The standard offers no further guidance on what is expected or how it may be achieved.....



# CENELEC Requirements for an Assessor

No	Requirement
1	Be competent in the domain/technologies where independent assessment is carried out
2	Have acceptance / license from a recognized safety authority
3	Have / strive to continually gain sufficient levels of experience in the safety principles and the application of the principles within the application domain
4	Be competent to check that a suitable method or combination of methods in a given context have been applied
5	Be competent in understanding the relevant safety, human resource, technical and quality management processes in fulfilling the requirements of the EN 50126
6	Be competent in independent assessment approaches/methodologies
7	Have analytical thinking ability and good observation skills
8	Be capable of combining different sources and types of evidence and synthesize an overall view about fitness for purpose or constraints and limitations on application
9	Have an understanding of the overall system including its application environment
10	Understand the requirements of EN 50126



# Additional iESM requirements

11	Professional status in an engineering or scientific discipline relevant to the system or equipment
12	Prior experience as an independent assessor or safety engineer for a minimum of 5 years in areas relevant to the system or equipment
13	A commitment to safety
14	The flexibility to adapt to changing circumstances and the perform assessment tasks efficiently and to minimize wastage of physical and virtual resources



# iESM Approach

Professional  
Registration

- **Behavioural competence** – including for example maintaining independence
- **Technical competence** - e.g. safety engineering and risk acceptance techniques, assessment and audit, general consultancy skills
- **Knowledge** – legal requirements, domain, system, technology, specialist areas

iESM training, self  
assessment with  
“Responsible  
Manager”

CV, company  
processes



# Independent Assessment

- Scope & Content Appreciation
- Assessment Strategy Selection and Planning
- Reviewing Safety Documentation
- Assessing Safety Analysis
- Producing assessment reports including formation of an overall judgment on the safety of a product or system, or process used.
- Managing Outcomes
- (excluding audit)



# Evidence of competence



“Have you done it?”

Or if not:

- A demonstration that the Assessor would be able to apply the competency correctly in a hypothetical situation (**can be applied**);
- The ability to answer questions pertaining to the competency based on past experience (**can be tested**);
- Evidence of having been trained in that particular competency (**has been shown**).



# Levels of competence

- **Level 1** is the base level which indicates that the Assessor has sufficient knowledge and understanding of good practice to be able to work on assessment tasks under supervision. Their competencies are likely to have been developed through targeted training and work on non-assessment projects.
- At **Level 2**, the Assessor has sufficient knowledge and understanding of good practice and has sufficiently demonstrable experience, to be able to work on the tasks associated with the overall activity without the need for detailed supervision.
- At **Level 3**, the Assessor has sufficient understanding of why things are done in certain ways, and sufficiently demonstrable skills, to be able to undertake overall responsibility for leading a task or project. A Level Three Assessor will be familiar with the ways in which systems or products have failed in the past. They are able to deal with a multiplicity of problems under pressure without jeopardising safety or quality issues.





# Summary

- New iESM Accreditation scheme is available for individuals and independent assessment service providers.
- Aims to be “light-touch” but give substantial credibility to the Assessors who achieve the mark through a combination of training, experience and demonstrable competence.
- Piloted in Australia and should fill a gap in the assurance arrangements for clients and suppliers.
- Supported by iESM and IA training courses from TPD and their partners



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