

SYSTEMS  
ENGINEERING  
IN THE RAILWAY

2 DAY TRAINING

# SYSTEMS ENGINEERING IN THE RAILWAY

Rail Systems Engineering Limited

2015

## Introduction

The goal of systems engineering is to “To transform mission operational requirements .. into system architecture, performance parameters and detail design”.

The management of complexity in railway systems and interfaces is the absolute reason to spend time and effort on systems engineering.

This course is focussed upon providing delegates with the essential knowledge and skill to be able to begin evaluating current approaches and applying new knowledge to solve typical systems engineering problems.

### Course Director

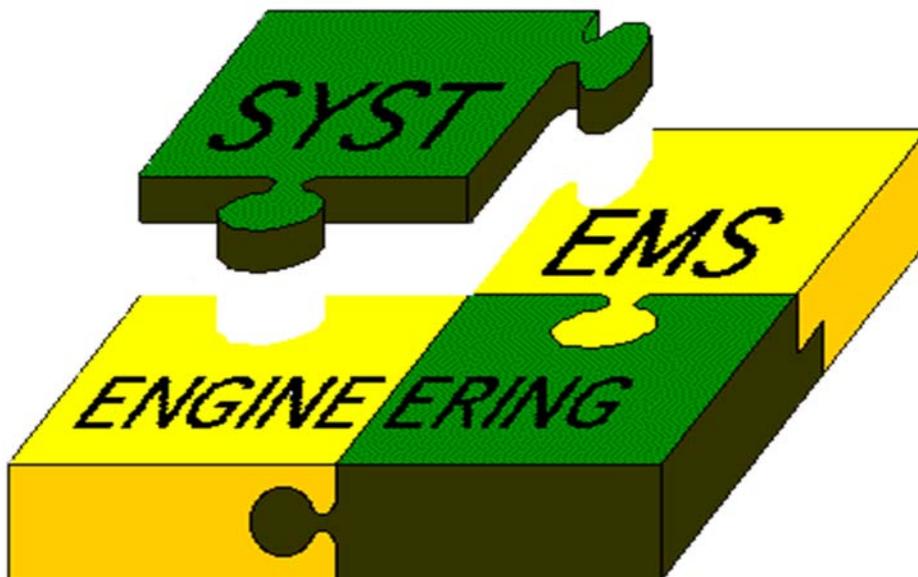
#### Dr Howard Parkinson

Howard is a chartered engineer with 20+ years' experience in the international railway industry as an independent consultant, researcher & training.

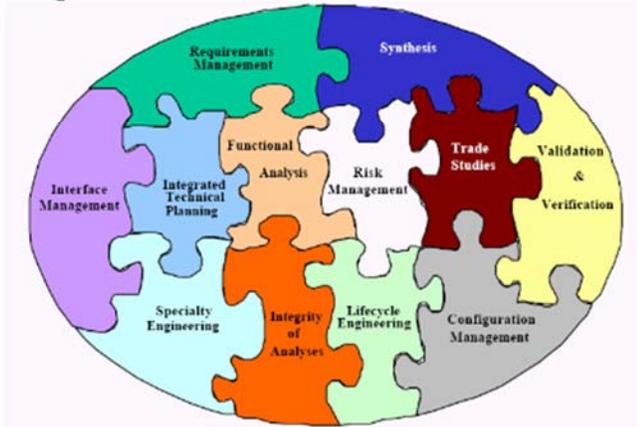


### Minimising costs, maximising benefits

Our Systems Engineering training provides a complete overview of the most important European standards with a well structured presentation and frequent discussion sessions to ensure that attendees get the most value from participating.



Railway Systems Engineering



Methods for Engineering Rail Systems

### About the Course

This two day training course introduces systems engineering, how the management of safety fits in with this and how systems engineering has been and can be applied in the railway. One of the greatest challenges that face the railway engineer is dealing with the complexity of even quite minor railway projects. A narrow way of thinking can lead to hazards in the system. The engineer must consider the whole system and the interface of their particular engineering discipline and subsystem with the larger system. This course will review and discuss the problems faced and the tools the engineer may use to initiate this process and deal with the issues and take advantage of opportunities..

### Course Objectives

This training has primarily been compiled to provide a good foundation of knowledge of the basic terms and principles of the Systems Engineering and standards. It provides an in depth introduction for engineers, managers and decision makers who need to have a good grasp of the concepts and philosophies of the standards and their application in the railway industry.

It can be used for a refresher by those who are already familiar with systems engineering standards, and also for people who have experience in other industries and are familiar with systems engineering from outside the railway domain.

Howard has experience in signalling, rolling stock, infrastructure and railway systems projects at a senior level and has just finished an assignment in Australia working on systems integration for automatic train protection. Howard’s project work has included systems assurance manager, senior project manager, lead safety assessor, and head of systems engineering and safety in metro, tram and heavy rail (conventional and high speed).



Systems Engineering is the key to success in today's complex railway systems world with the increasing use of software in control systems and complex human interfaces and multiple stakeholders. Old approaches may have been workable in the electro/mechanically controlled, vertically integrated railway, but no longer.



## Who Will Benefit?

The delegates will take away a good understanding of the systems engineering and its application in the railway domain enabling them to make more informed decisions and to have enough understanding to be able to begin optimising their organisations implementation of the systems engineering without undue waste and effort. There will be the opportunity to identify means by which the techniques taught can lead to a safer and more efficient railway system.



## Recommended Pre-requisites:

Participants should have a general understanding of engineering and project management principles and practice.

## 2 Day Course Outline

### Day 1

- Overview of the Railway System
- Structural Relationships of railway systems
- Railway stakeholders
- Railway requirements
- What is a system and how is it managed effectively
- The System Life Cycle and Solution Development
- The Systems Engineering Process: Principles, Concepts and Elements
- Requirement Elicitation and Requirements Analysis
- Development of the System
- Effectiveness Evaluation and Decision Making
- Case studies of good practice and not so good practice.

### Day 2

- Description of System Elements – Requirements Specification Development
- System Integration
- Verification and Validation
- Systems Engineering Management , Planning, Principles, Project Breakdown Structures
- Configuration Management (CM)
- Technical Performance Measurement
- Risk Management
- Sources of Guidelines and Information:
- Limitations of the approach and suggestions for optimising the approach
- Concluding Remarks



## About us

We are experienced, highly qualified, and discreet engineering professionals, with excellent references and a broad range of experience specialising in railway training.

We specialise in Safety, Reliability and Systems Engineering Training in the Railway Industry. We are truly international company being currently active in various countries includ-

## Contact Us

Call for more information about our services and products

**RailSystems Engineering Limited**

32 Garstang Road

+44 (0) 7803 581 849

hjparkin-  
son@railsystems.co.uk

Visit us on the web at  
[www.railsystems.co.uk](http://www.railsystems.co.uk)

RailSystems Engineering Limited for all your rail training needs

