

Informa Connect

Academy

EN50716:2023 - Safety Critical Software in Rail

BLENDED LEARNING/ONLINE COURSE | 7 Self-Paced Modules + 3 Live Interactive Sessions



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Course Overview

The course has been updated to reflect the publication of the new standard **EN50716:2023 Railway Applications** — Requirements for software development.

The Safety Critical Software in Rail course is a blended training programme providing software developers, engineers, testers, managers and others involved in safety-related projects with a detailed understanding of the fundamentals of safety critical software development and testing. This course is supported by a competency-based structure.

The opening module provides background to software lifecycle, the standards and their application in the railway drawing upon best practice. The next modules introduce a number of incidents where software failures resulted in incidents. The succeeding modules go into depth regarding the content, aims and requirements for developing software for the railway in accordance with EN50716 for all SIL levels.

The course content is mapped to:

- Industry standard competencies, skills and evidence requirements relevant to rail safety work
- Industry regulations
- National and international standards

Information is interspersed with practical exercises. There is a short multiple-choice examination at the end to assess the identified learning outcomes.

Key Benefits

- Demonstrate a sound understanding of the principles and language of safety critical software
- Appreciate software risk in the context of railway design and safety management
- Describe how software design and the software safety lifecycle interact and influence each other
- Appreciate how current best practice in software safety standards and in particular latest EN50716:2023
- Understand the need for a risk-based system engineering lifecycle approach to enable built-in safety, value and performance
- Understand how to review case studies to understand the potential for things to go wrong on the railway
- Understand the complexity of railway accidents involving software failures
- The demonstration of SFAIRP and compliance in regard to software
- Identify and mitigate Security issues from cyberthreats



Who Should Participate

Any member of staff – decision makers, project managers, line managers, engineers, designers and others – who want to know what is safety critical software in rail and are involved with changes to the railway need an understanding of the latest best practice. The course provides a structured and robust approach to developing and testing complex railway projects safely that is aligned with the **LATEST CENELEC standard EN50716:2023**.

Fundamental Level Recommended Prerequisites

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

June – August 2025

Live Interactive Session:	24 June	17:00 AEST (24 June - 07:00am GMT)
Live Interactive Session:	7 August	17:00 AEST (7 August - 07:00am GMT)
Live Interactive Session:	21 August	17:00 AEST (21 August - 07:00am GMT)

November – December 2025

Live Interactive Session:	20 November	18:00 AEDT (20 November - 07:00am GMT)
Live Interactive Session:	4 December	18:00 AEDT (4 December - 07:00am GMT)
Live Interactive Session:	18 December	18:00 AEDT (18 December - 07:00am GMT)

Course Requirements and Certificates

Delegates must meet two criteria to be eligible for an Informa Connect Academy Certificate of Completion:

- **Satisfactory attendance** - Delegates must attend all sessions of the course. Assessments will be ongoing and based on in-class participation and activities.

If delegates have not attended all sessions, the certificate will clearly state the number of hours attended. *In-person delegates will receive a printed certificate and virtual delegates will receive a digital certificate.*



MODULE 1: Introduction to EN50716

- Overview of EN50716 and its scope.
- Software safety route map – Relationship between generic system development and application development.
- Key definitions relevant to software safety.
- Alignment of EN50716 with other railway standards (e.g., EN50126, EN50129).
- **Activity:** Desktop study to map key activities from EN50716 to a given example project.

MODULE 2: Case Studies of Software Failures

- Case studies of accidents related to software failures.
- Analysis of lessons learned from past mistakes.
- Detailed review of a specific case study caused by software errors and inadequate safety management.
- Risk mitigation strategies derived from historical failures.
- **Activity:** Group discussion to identify safety failures in a provided case and propose mitigations.

MODULE 3: Software Safety Integrity Level (SIL)

- Process for assigning SIL using EN50126 principles.
- Competence and responsibilities of personnel carrying out software safety activities.
- Levels of independence required for various SIL levels in software design and verification/validation.
- Strategies for maintaining compliance across SIL levels.
- **Activity:** Exercise to assess and assign SIL for a mock railway system.

MODULE 4: Software Requirements, Architecture, and Design

- Required properties for software requirement specifications.
- Techniques and methods for software architecture based on SIL.
- Software design and implementation techniques/methods in relation to SIL.

- Common pitfalls in software requirement and design phases.
- **Activity:** Develop a simplified software requirement specification for a safety-critical system.

MODULE 5: Development and Testing Techniques

- Techniques for building safety-critical software (Annex B of the standard).
- Certification requirements for tools used in software development and testing.
- Software verification/testing techniques and methods based on SIL.
- Best practices for iterative testing and feedback loops.
- **Activity:** Compare tools and techniques for safety-critical software compliance.

MODULE 6: Integration, Validation, and Maintenance

- Integration of software with hardware in safety-critical systems.
- Software validation techniques/methods based on SIL.
- Reporting requirements for software assessment and SW Quality Assurance.
- Considerations for software maintenance and lifecycle updates.
- **Activity:** Review a sample software assessment report for compliance with EN50716.

MODULE 7: Documentation and Emerging Practices

- Documentation and traceability requirements for safety-critical systems.
- Comparison of Agile vs. Waterfall methodologies in safety-critical software development.
- Process/workflow optimization for EN50716 compliance.
- Incorporating security measures against cyberthreats in software systems.
- **Activity:** Desktop study using the latest AI tool by Digital Transit to ensure software safety-critical documents comply with EN50716.

“Nice overview presented. Howard brought a lot of technical experience with him.”

Principal
Shakti Corp P/L



Howard Parkinson

Dr Howard Parkinson is a Chartered Engineer contributing to global standards in railway safety, software and systems engineering. With over 20 years of international experience, he has held senior roles in signalling, rolling stock, infrastructure, and railway systems, including Systems Assurance Manager and Head of Systems Engineering and Safety. His expertise spans metro, tram, and heavy rail, with a focus on safety, compliance, and reliability.

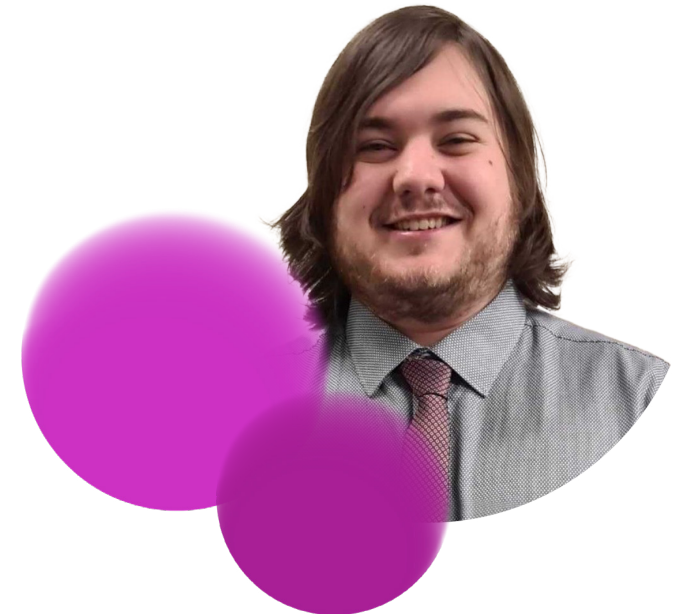
A Fellow of the Institution of Mechanical Engineers (FIMechE) and a member of the Institution of Railway Signal Engineers (MIRSE), Howard holds a doctorate in Mechanical and Aeronautical Engineering from the University of Manchester. Alongside consultancy and research, he delivers specialised training in engineering, safety, risk management, European interoperability, and railway legislation.



Dan Basher

Dan Basher is an accomplished railway software and safety professional based in Lancaster, with expertise in systems and compliance. He has played a pivotal role in the collaboration between the University of Huddersfield and Digital Transit Limited, contributing to the development of RAPORS—an innovative tool designed to support regulatory compliance in rail safety critical software development.

With a global outlook, Dan delivers training programmes on Safety Critical Software, OT cybersecurity, focusing on key standards such as EN50716. His work is dedicated to strengthening safety and cybersecurity practices worldwide, while fostering resilience and growth within the railway sector.



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ABOUT TIMINGS, PRICING AND DOCUMENTATION

Course fees include documentation, luncheon and refreshments for in-person learners. Delegates who attend all sessions and successfully complete the assessment, will receive a Informa Certificate and any applicable partner certificates. A hard copy will be provided to in-person learners and a soft-copy will be provided to virtual learners.

AVOID VISA DELAYS – BOOK NOW

Delegates requiring visas should contact the hotel they wish to stay at directly, as soon as possible.

To avoid delays, please ensure you apply for your visa several weeks before your intended travel date. Visa processing times can vary.

REGISTRATION, PAYMENTS AND CANCELLATION

All registrations are subject to our terms and conditions which are available at <https://informaconnect.com/delegate-terms-and-conditions>. Please read them as they include important information. By submitting your registration, you agree to be bound by the terms and conditions in full. All registrations are subject to acceptance by Informa Connect which will be confirmed to you in writing.

A confirmation letter and invoice will be sent upon receipt of your registration. Please note that full payment must be received prior to the course. Only those delegates whose fees have been paid in full will be admitted to the course.

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