



The importance of robust software requirements and safety analysis throughout the software development cycle cannot be understated. Increasingly, high integrity, safety-related complex systems rely on software to achieve fit-for-purpose functionality. The consequences of poor or inadequate software hazard analysis can result in unacceptable system performance and/or an unsafe act of the system software which could have extremely serious consequences.

This training course provides a thorough foundation in the development of software for safety-related systems, with a focus on techniques for the analysis of potential software safety issues and the formulation of software safety arguments with an emphasis on civil aviation and defence contexts. Throughout the course, examples of software analysis techniques are demonstrated and reinforced using exercises and discussion.

The course also examines the assurance requirements of Programmable Logic Devices (PLDs) in safety systems, the use of Commercial-Off-The-Shelf (COTS) software and Software Of Unknown Pedigree (SOUP) in safety systems.

Your Programme

Day one

- 08.45** Registration and refreshments
- 09.00** **Introduction**
- Overview of software safety**
- What is software safety?
 - Relation to system safety
 - Regulations and standards.
- Desk exercise: Safety arguments**
- Safety requirements for software**
- Derivation, specification, validation and traceability of software safety requirements.
- Refreshments
- Group exercise: Safety requirements for software**
- Safety Integrity Level (SIL) of software**
- Concept and purpose of software SIL
 - Variations from different industries and standards
 - Software partitioning and modularity.
- 12.30** Lunch
- Safety planning for software**
- Development lifecycles and processes
 - Outline safety plan
 - Requirements of standards.
- Software safety design**
- Fault tolerance techniques
 - Software fault tolerance
 - Self-checking software
 - Multi-version programming.
- Refreshments
- Group exercise: Safety design**
- Software testing of safety systems**
- Levels of testing and test coverage
 - Test planning
 - Regression testing and impact analysis.
- Desk exercise: Testing**
- Summary, discussion and questions.**
- 17.30** Close.

Day two

- 08.45** Refreshments
- 09.00** **Introduction**
- Overview of software safety analysis and argument**
- Processes for safety analysis of software
 - Arguing that software is safe
 - Certification of software.
- Safety analysis techniques for software systems**
- Objectives of safety analysis
 - Analysis techniques: Hazard and Operability Study (HAZOPS), Fault Tree Analysis (FTA), Failure Modes and Effects Analysis (FMEA)
 - Standards.
- Refreshments
- Group exercise: Safety analysis techniques**
- Coding and analysis**
- Language selection
 - Concepts and benefits of static analysis
 - Techniques and supporting tools.
- Desk exercise: Review**
- 12.30** Lunch
- Programmable logic**
- PLDs and Field Programmable Gate Arrays (FPGAs)
 - Complex electronic hardware.
- Safety arguments for software**
- Outline software safety argument
 - Developing a software safety case.
- Exercise: Whole group review**
- Refreshments
- Group exercise: Safety arguments**
- Designing a safety system with SOUP and COTS**
- Assessment issues and types of evidence
 - Stages of safety justifications
 - Summarising and combining evidence
 - Architectural safety
 - The use of SOUP and COTS.
- Summary and questions.**
- 17.00** Close.

Ever thought about in-company training?

This course can be delivered at your site. To discuss your training requirements, please call the Events Team on +44 (0)1372 367319.



Your speakers



Clive Lee - Senior Safety Consultant, ERA Technology Ltd

Clive has over 30 years experience in software development and software assessment of both real time, embedded systems and large IT applications. Clive's current responsibilities include leading and contributing to safety and software consultancy and assessment projects in a range of industrial sectors, with a recent focus on military and civil avionics.



William Marsh - Lecturer, School of Electronic Engineering and Computer Science, Queen Mary, University of London

William has been working in the field of software and systems safety and dependability since 1989. He proffers experience in the development of tools and techniques for static analysis of safe subsets of programming languages. He has audited a number of safety-related software projects, as well as conducting research into new techniques.

Booking form

Please photocopy this form if you wish to register more than one delegate. Send a second person at a discounted price!

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Name <small>Dr Mr Mrs Miss</small>
Job Title
Organisation
Address
Postcode
Telephone
Fax
E-mail
VAT number (EU customers only)
<input type="checkbox"/> Please tick if you are happy to receive further information about ERA Technology Ltd via e-mail. It is our policy NOT to supply your details to third parties.

Bookings

I wish to make a firm booking for:

Software Safety: Software Development for Safety-Related Systems

14-15 September 2011 Ref: 31128 18-19 April 2012 Ref: 31209

Fees*

Fee rate	Fee	VAT@20%	Total	Please tick
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Enquiries:

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