

Mastering Requirements Using MBSE

- Context-Based Requirements Engineering

Course Overview

This course provides an introduction to the world of requirements and, in particular, shows how modelling can help with the capture, analysis, validation and specification of requirements.

The course comprises a mixture of teaching and hands-on exercises. The taught content covers the background, theory and best practice of requirements engineering, along with more pragmatic issues, such as implementing a requirements strategy in a real organisation.

Target Audience

The course is aimed at, but not limited to engineers, scientists and managers who deal with requirements engineering or management in their working lives. No previous experience of modelling is required for this course.

Course Outline

Introduction to Model-Based Systems Engineering

This introductory module establishes the need for MBSE. It

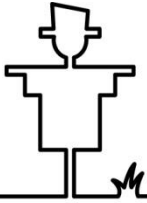
- Introduces the MBSE Mantra of People, Process & Tools
- Gives an overview of MBSE in One Slide
- Discusses the evolution of MBSE in your organisation.
- Discusses how context-based requirements engineering (also known as model-based requirements engineering - MBRE) fits in to the larger MBSE.

Modelling

An essential and obvious enabler for MBRE is, of course, modelling. In this module we:

- Discuss the what, where, when & how of modelling.
- Give an overview of each SysML diagram, with a focus on the relationships between the diagrams.
- Discuss the two aspects of any model, the structural and behavioural aspects, through two of the SysML diagrams which are covered in some detail.
- Demonstrate, by focusing on the use of modelling and consistency, how to build up a true, consistent collection of views that make up a model, rather than just a collection of pictures.





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2 Essential Requirements Terminology and Concepts

- Requirement descriptions
- Requirement rules
- Requirement sources
- Stakeholder identification
- Context identification
- Context definition
- Validation of requirements
- The requirements ontology

This module discusses all of the essential concepts and terms needed to understand, define and manage requirements. Each concept is introduced, defined, discussed and justified and then used to build up requirements domain-specific language in the form of an ontology.

3 The Requirements Workshop

- Describing requirements exercise
- Context modelling exercise
- Validation – semi-formal scenarios exercise
- Validation – formal scenarios exercise
- Traceability exercise

The workshop forms the bulk of the course where the delegates are divided into small groups in order to carry out the requirements exercise. The workshop itself is divided into five sections where the delegates are gently introduced to the modelling techniques needed to evolve their knowledge of the requirements through exercises. Each section comprises a short introduction, a facilitated group exercise and then a presentation session where teams present back to the tutors and other teams to validate their understanding of the concepts and techniques.

4. Implementing a Requirements Strategy

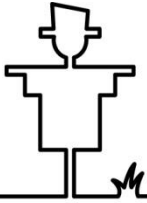
This section of the course addresses the question of how to implement MBSE into your business. This will cover how to sell MBSE to different stakeholders within the business, as people in different roles will see different benefits of MBSE. This is an essential part of making the business case for MBSE.

Once the business case has been made, it is then possible to look at the three crucial enablers for MBSE which are people, process and tools. By 'people' here, we mean competent people with the right skills for their role. By 'process' we mean the underlying MBSE approach, including ontologies, frameworks and their associated process descriptions. By 'tools' here we mean the use of modelling tools, how to assess and select tools and to ensure that your approach drives the tool and not the other way around.

Course material

Face-to-face courses: Full set of printed notes and a copy of 'SysML for Systems Engineering – 3rd edition: A model-based approach' written by the course tutors.





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Remote courses: Full set of electronic notes.

Course tutors

All courses are delivered by Prof Jon Holt and Simon Perry. Jon and Simon are internationally-recognised authors, tutors and public speakers in the world of requirements engineering. They have authored nine books covering many aspects of systems modelling, including process modelling, competence, architectures and, of course, requirements engineering.

Course options

This course is available as a two- or three-day course. The main difference between the two is the amount of time spent on the workshop.