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# Mastering Requirements Using MBSE

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## 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 and management, 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

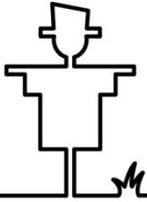
### ***1 Introduction to Requirements Engineering***

- The importance of requirements
- The need for requirements engineering
- Requirements engineering vs requirement management
- Requirements and the systems engineering life cycle
- Life cycles vs. processes
- Complexity, understanding and communication
- Modelling

This module sets the scene for the remainder of the course by stating the real-world need for a robust and rigorous approach to requirements engineering and management. The role of requirements in systems and project life cycles is considered and the essential differences between life cycle stages and processes is discussed. The need for a robust and rigorous approach to requirements is defined and the use of modelling introduced for the best solution to addressing this need.

### ***2 Essential Requirements Terminology and Concepts***

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



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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***

- People
- Process
- Tools

The final module considers essential aspects of introducing and implementing a requirements strategy in real organisations. The roles and associated competences for people involved in requirements are defined and discussed. The approach to requirements is then discussed that considers ontologies, frameworks and processes along with associated standards and best-practice models. Finally, the thorny subject of tool evaluation and selection is discussed, covering both engineering and modelling issues.

## **Course material**

Course materials include a full set of notes and a copy of 'SysML for Systems Engineering – 2<sup>nd</sup> edition: A model-based approach' written by the course tutors.

## **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.