

A Model-based Approach to Systems Engineering (MBSE)

Scarecrow Consultants is pleased to announce the launch of its brand new course 'A Model-based Approach to Systems Engineering (MBSE)'. Based on the IET book 'SysML for Systems Engineering: A model-based approach' by Jon Holt and Simon Perry, this course covers all major aspects of MBSE including concepts, modelling, frameworks and a team-based exercise. The fundamental question of 'Why MBSE?' will be addressed by considering benefits, pitfalls and, crucially, how to implement MBSE into your organisation by considering people, process and tools.

Course Outline

Modelling

- The importance of modelling, systems engineering and MBSE.
- Structural modelling with SysML
- Behavioural modelling with SysML

An essential and obvious enabler for MBSE is, of course, modelling. In this course we consider the need for modelling, the requirements for modelling and we introduce the SysML as a language that can satisfy these requirements.

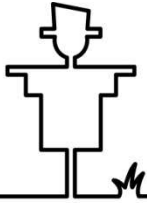
The emphasis of this part of the course is how to model, rather than attempting to learn all of the syntax of the language. By focusing on the use of modelling and consistency, we will demonstrate how to build up a true, consistent collection of views that make up a model, rather than just a collection of pictures.

MBSE Concepts - the MBSE Ontology

- Background
- Overview of ontology

A key part of any systems engineering endeavour is for all of your teams to share a common language. This is a great idea in principle, but the practice is somewhat more difficult to attain. When considering common language, it is essential that we think about both the spoken language and the domain-specific language. In real life we cannot assume that adopting a common spoken language, such as English will result in efficient communication as we need also consider the domain specific language, perhaps based on: the discipline (for example: electrical, mechanical, software, etc.), the industry (for example: automotive, aerospace, IT, etc.) or, indeed, the organisation. In this course we introduce the Systems Modelling Language (SysML) as the spoken language and the use of an ontology (defined using SysML) to capture the domain-specific language.





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This MBSE ontology captures all of the key concepts associated with MBSE, defines them and, very importantly, defines the relationships between the concepts. This MBSE ontology can then be traced back to over 40 different best-practice models including standards, guidelines and techniques.

The Concept of Frameworks

- What is a framework?
- Viewpoints and views
- Defining a framework

Modelling has now become a crucial part of any Systems Engineering endeavour and the issue, now that modelling has become accepted, is how do we model efficiently and effectively?

This course looks at the use of frameworks, driven by the ontology, that form the heart of any MBSE approach. We discuss not just the importance of the framework but also how to identify, define and implement your own bespoke frameworks to optimise modelling in your business.

The Workshop

In order to put all of the pieces together and see how the modelling works, a team-based exercise is conducted where the participants get to use the modelling techniques on an example.

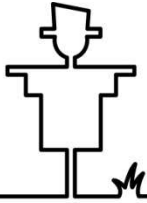
Implementing MBSE

- The Business Case for MBSE
- People
- Process
- Tools

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.





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Target Audience

This course is aimed at systems engineers and managers, software engineers and managers, quality personnel and anyone involved with business or enterprise modelling. The course requires no prior knowledge of any specific notations, modelling languages nor tools.

Benefits

The benefits of this course are as follows:

- Improved systems engineering through use of MBSE.
- How to achieve improved communication, enhanced understanding and how to minimise complexity through use of modelling.
- How to demonstrate benefits of MBSE and their associated value to stakeholders within the business.
- How to implement MBSE into a business.
- Above all, improved confidence for you, your teams, your business and your clients.

All course delegates receive a full set of notes, summary sheets and a copy of the book 'SysML for Systems Engineering: A model-based approach' by Jon Holt and Simon Perry.

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, model-based systems engineering.

Course Options

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

More Information

For more information on this course, or any of our other offerings, please contact Scarecrow Consultants Limited using the details above.