OO59 *4 Days*	# Requirements with UML

This course focuses on showing how to perform Requirements capture with the UML to achieve reliable and robust systems. We show how Business Rules specifications are part of UML Techniques, and how to ensure that accuracy and completeness of Requirements are covered. Conventional techniques of Requirements Management and Organisation are presented within a UML context. The iterative process of capture and refinement is explained and the practical use of UML-based toolsets covered. UML and OO fundamentals are covered in detail, including the application of Robustness Analysis, to ensure that the basics are clearly understood.
The course is focussed on the real-world aspects of Use Case production and is supplemented by in-depth exercises and discussions of client-specific topics.

Course Objectives

- Explain the core Requirements capture techniques
- Show how JAD is used to capture Requirements
- Explain Requirements Specification techniques
- Show how complex Business Rules can be analysed with Decision tables.
- Show how UML is used to model business processes and avoid inconsistent design.
- Introduce the important concepts of entity lifecycles, using State Diagrams and Decision tables
- Describe the phases and workflows of the unified process and how they are applied with UML
- Show how UML is used to manage a smooth transition from Analysis to Design and Implementation
- Explain Object Oriented design and development techniques and terminology
- Show how OO Analysis and Design relates to traditional techniques
- Describe how the use of the UML for modelling fits with OO technology for software development
- Show how the UML is introduced into the Project lifecycle
- Describe Requirements capture and their management with Use Cases
- Show how static and dynamic attributes can be modelled in the UML
- The course is supplemented by numerous in-class exercises and a Case Study which runs throughout the course

Audience

- Staff needing to use UML Use Cases in their requirements capture process.
- Staff needing familiarity with UML for Requirements management
- Analysts needing to use UML to present their requirements, but no needing to produce code from UML diagrams.

Prerequisites

- Exposure to software design and / or development processes
- Interest in getting from Requirements to working software

Timetable

Register at 09:00 for 09:30 start. Finish at 17:00.

Presentation Style

Lectures, demonstrations, group discussions and hands-on exercises

Dates and Venues

Refer to *Course Schedules.*

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The course covers:

Requirements Capture

- Importance of Communication
- Good Requirements and how to get them
- Identifying Requirements
- Functional Requirements
- Non-functional Requirements
- Assumptions
- JAD, Use Cases Prototypes, Story Boards
- Prioritisation, MoSCoW Rules
- Bunching
- Managing Changing Requirements- Tools and Techniques
- Designing Acceptance Tests

Decision Tables

- What are Decision Tables?
- How to capture Business Rules
- Detecting errors in logic
- How to be sure of covering all options
- Code generation from Decision Tables
- Decision Tables as part of a Use Case

UML Overview

- Origins and purpose of UML
- A walkthrough of the UML diagrams
- What's New in UML 2.0
- Using UML diagrams
- Robustness Analysis – where it fits

OO Analysis and Design

- Analysis versus Design
- The analysis phase
- Domain modelling
- Use Cases in analysis
- The design phase
- Interface versus implementation

Use Cases

- What are Use Cases
- Constructing Use Case diagrams
- Requirements and Use Cases
- Documenting Use Cases
- Alternates and Exceptions
- Scenarios
- Capturing Business Rules
- Test Case creation
- Use Case Iteration
- Use Case-Lite techniques
- The Glossary

Static Modelling

- Classes and interfaces
- Class diagrams
- Object diagrams
- Class relationships
- Robustness analysis and Class diagrams
- Association
- Aggregation and composition
- Association classes
- Inheritance
- Abstract classes
- Interfaces
- Stereotypes
- Constraints
- Design by Contract

Dynamic Modelling

- Introduction to UML dynamic modelling
- Activity diagrams
- Sequence diagrams
- Collaboration diagrams
- Statecharts and Statetables
- Decision Tables as part of Dynamic Modelling

Summary & Conclusion

- Our Focus
- Core to Requirements
- Traceability
- Next Steps

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