

UML Testing Training 2009

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Course Overview

We deliver bespoke UML testing courses, mainly to in-house audiences. We have developed a series of training modules from which we construct individual courses. Apart from the familiarisation courses all skills courses include exercises developed from your own UML. This is essential as UML can vary enormously in the way it is used; your staff need to be taught how to use it in your environment. Here are some examples:

Basic Systems Testing with UML – 4.5 days. This course was for testers with no prior knowledge of OO and UML. The aim was partly to teach the main concepts of OO and UML, and then the skills required for basic systems testing. The course was taken from modules M110, M120 and M130 (see below).

UML Familiarisation for Test Managers – 2 or 3 days. This course was for test leaders and managers involved in planning and implementing the move to a UML environment. The aim was to familiarise the delegates with the technical, managerial and planning considerations required for the migration. The three-day version includes a day devoted to discussion periods where managers can raise their specific problems and understand the approach they need to take. This course contained summary elements of modules M110, M120, M130, M140, M150 and has now become a new module, M170.

Lifecycle UML Testing – 8 days. This course was for testers new to UML who wanted to develop a lifecycle approach to testing UML based systems. The syllabus included testing lifecycles, UML testability reviews, UML test analysis and design for systems and acceptance testing, test planning and control. The course contained the full syllabus of modules M110, M120, M130, M150 and parts of M170.

Introduction to UML Requirements-Based Testing – 1 day. This short course was for testers who wanted an appreciation of the difference between testing UML systems and more traditional systems. It focussed on requirements-based testing and the higher-level application and business models UML generates.

In most courses up to 40% of the time is allocated to exercises. We have developed a variety of exercises based on real systems.

Module Overview

The table below describes the UML Testing Training Modules available from Software Futures Ltd.

*New for 2009: Additional workshops will become available during 2009 and they outline for these is given. are described as well. Note: These courses do not teach testing basics, e.g. as covered by the ISEB testing syllabus. This knowledge is assumed.

Module	Description
M110	Introduction to Object Orientation
Duration	1 day
Prerequisite	None
Who should attend?	This module is for testing staff with no prior knowledge of Object Orientation.
Overview	This is a familiarisation course that teaches the background to OO and key OO concepts and their relation to testing.
Syllabus	<ul style="list-style-type: none"> • Traditional design and the problems that object orientation can solve. • Key concepts; object, class, hierarchy, inheritance, abstraction, encapsulation, attribute, method, message, collaboration, aggregation, association, polymorphism and cardinality. • The nature of object oriented systems; what do we test through the lifecycle? • The new error types that OO creates. • The implications for test work, how do we test?
Delivery	A single tutor class may teach up to 12 students. Students undertake simple modelling exercises in groups to gain familiarity with the concepts of OO.
Next step	Delegates who have completed this module can proceed to model 120 – Introduction to Unified Modelling Language.
M120	Introduction to Unified Modelling Language
Duration	1 day
Prerequisite	Completion of module 110 or equivalent.
Who should attend?	This module is for testing staff with no prior knowledge of UML.
Overview	This is a familiarisation course that teaches the major UML models, their purpose and their relation to testing.
Syllabus	<ul style="list-style-type: none"> • The background to UML and its relation to OO. • Types of models; static, dynamic and interaction. • Use Cases and requirements models, how they relate to systems testing. • Design and structural models, how they relate to unit and integration testing. • What each model type offers testers. • Non-functional behaviour. • Data design in UML. • Differences between V1.4 and V2.0 • Implications for testers.
Delivery	A single tutor class may teach up to 12 students. Students undertake modelling exercises in groups to gain familiarity with the UML.
Next step	This module completes the foundation training necessary for the UML skills courses, i.e. modules 150, 130 and 140.

M124	UML modelling introduction exercise
Duration	1 day
Prerequisite	Completion of module 120.
Who should attend?	This module is for testing staff that have access to their own project UML.
Overview	This is additional to module 120 and uses live project UML as the basis for a modelling exercise. It enables students to gain confidence working with UML in the style and format they will be expected to test from.
Syllabus	Some organisations wish to perform some UML modelling on an application relevant to their projects. You can specify a training example in your business domain from which we will develop a modelling exercise. The exercise may contain several tasks to produce a requirements or static model and/or supporting dynamic models.
Delivery	A single tutor class may teach up to 12 students. Students undertake modelling exercises in groups to gain familiarity with the UML.
Next step	UML skills courses, i.e. modules 150, 130 and 140.
M130	Systems Testing of UML based systems
Duration	3 days
Prerequisite	Foundation knowledge of OO and UML, e.g. modules 110 and 120.
Who should attend?	Systems testers and those involved with requirements based testing who need to learn the basic skills to analyse UML and produce test designs and scripts.
Overview	This skills course explains the use of UML requirements and design models for systems testing. Delegates are shown how to apply test selection techniques to UML models. UML does not capture all types of requirements and additional requirements documentation may be required for business modelling. There is significant practical content from two sources: <ul style="list-style-type: none"> • We using the Repo training model that is based on a financial trading system • We develop exercises based on your project UML.
Syllabus	<ul style="list-style-type: none"> • Testing lifecycles and UML delivery, iterations and increments. • Applying UML to requirements-based modelling, abstraction and decomposition. • Use Case model and Use Cases, structures, content and relationships • Activity diagrams, expanding process flows. • Sequence diagrams, showing timeline processing flows between objects. • Statechart diagrams, identifying states, transitions, activities and actions. • Class and type diagrams, understanding objects and their properties. • Documenting non-functional behaviours in a UML project. • Packaging UML for testing. • Test analysis and design techniques for developing test cases from models. • Use of storyboarding, journeys and object modelling to elucidate behaviour. • Using UML to design and document tests.
Delivery	A single tutor class may teach up to 12 students. Students undertake modelling exercises in groups to gain familiarity with the UML.
Next step	An advanced workshop based on module 180.

M140	Class and Interaction Testing of UML based systems
Duration	3 days
Prerequisite	Foundation knowledge of OO and UML, e.g. modules 110 and 120.
Who should attend?	Testers involved with unit and structural testing who need to learn the basic techniques for testing at the unit/class level and integration in the small.
Overview	<p>This skills course explains the use of UML design and implementation models for class and integration testing. OO structures pose unique testing problems and new test selection methods are needed. Major issues are testing framework and other incremental structures and component based testing. Hierarchical class structures enable polymorphic behaviour that creates new error types that require specific test techniques not found in traditional testing. There is significant practical content based on two sources:</p> <ul style="list-style-type: none"> • We using the Repo training model that is based on a financial trading system • We develop exercises based on your project UML.
Syllabus	<ul style="list-style-type: none"> • Testing lifecycles and UML delivery, iterations and increments. • Applying UML to design and structural modelling. • Use Case model and Use Cases, structures, content and relationships • Class models, data types and types of classes, functional, structural and interaction testing. • Collaboration models, messaging and relationships between objects. • Sequence diagrams, message flows to produce specified behaviours. • Statechart diagrams, identifying object states, transitions, activities and actions. • Testing classes and clusters of classes. • Test design and selection techniques, error types peculiar to OO, coping with inheritance and polymorphic behaviour. • Test harnesses, stubs and drivers. • Development strategies, framework, bottom-up and top-down approaches. • Testing strategies such as PACT. • Using UML to design and document tests.
Delivery	A single tutor class may teach up to 12 students. Students undertake modelling exercises in groups to gain familiarity with the UML.
Next step	An advanced workshop based on module 180.
M150	Reviewing UML for Testability
Duration	2 days
Prerequisite	Foundation knowledge of OO and UML, e.g. modules 110 and 120.
Who should attend?	Testers who will be involved in the early review of UML prior to test analysis and design phases.
Overview	<p>This is a course that teaches the technical skills needed to review UML models for testability. It includes guidance on how to develop a light but effective review process. There are two major exercises:</p> <ul style="list-style-type: none"> • The first learning exercise based on the Repo trading system model. • A live exercise based on your project UML that produces a report for the project.
Syllabus	<ul style="list-style-type: none"> • The economics and risk reduction associated with reviews. • Types of review; informal, walkthrough, formal and inspection. • Defining testability in the UML domain, the five criteria. • Testability criteria for major UML models; Use Cases, Activity diagrams, Sequence diagrams, Class models, Statechart models. • Introduction to the Testability Review Guide document set. • Building review processes that are effective and agile, aided by ETVX and IDEF0. • Developing an initial process that you can use immediately on your project.
Delivery	A single tutor class may teach up to 12 students. Students undertake modelling exercises in groups to gain familiarity with the UML.
Next step	-

M160	User Acceptance testing of UML based systems
Duration	2 days
Prerequisite	None.
Who should attend?	Users who will be required to specify acceptance criteria and be involved with acceptance testing.
Overview	<p>This course is for non-IT users who will be involved in UAT. No prior knowledge of OO or UML is assumed. Delegates will be taught the high level UML requirements models and how users can develop tests from them. A major issue with UML is that it may not replace highest-level requirements descriptions and user testers need to be aware of how and where they will obtain the information from which to design their tests.</p> <p>Included are exercises that are based on:</p> <ul style="list-style-type: none"> • The Repo trading system model, or preferred, • UML from one of your projects.
Syllabus	<ul style="list-style-type: none"> • The place of UAT in a UML based project. • Planning UAT testing tasks through the lifecycle; developing acceptance criteria, reviewing UML from a user perspective, test design and execution. • UML models that user testers will be expected to understand. • Test design techniques for UAT; business flow, transaction flow, scenario based testing. • Using UML to develop patterns of user behaviour. • Working with developers and systems testers; their roles and responsibilities, working as team.
Delivery	A single tutor class may teach up to 12 students. Students undertake modelling exercises in groups to gain familiarity with the UML.
Next step	-
M170	UML for Test Managers and Team Leaders
Duration	3 days
Prerequisite	None
Who should attend?	Managers and team leaders involved in the transition to and management of UML projects.
Overview	<p>This module is for test managers and team leaders who have to plan, manage and control a UML test project. They may not need the specific testing skills taught in other modules. Therefore this module covers key management issues; test planning, lifecycles and risk, test specification and design, testing running, training staff and skills development, and process/metrics design issues.</p>
Syllabus	<ul style="list-style-type: none"> • Principles of Object Orientation; objects classes and class structures, messaging and collaboration; inheritance and polymorphism, implications for testing OO structures. • Major UML models; Static, dynamic and interaction models, version 1.4 and 2.0. • A lifecycle approach to UML testing; incremental and iterative development, development and test strategies with UML, UML testing processes through the lifecycle. • Risk analysis of UML projects; project and business risks, development/technology risks, testing risks, identifying risks when they happen. • Controlling UML test projects; important tasks and periods in a UML project, metrics to support control. • Reviewing UML models; defining testability, techniques for reviewing UML, developing review criteria and managing the review process. • Designing tests from UML; when and how testers use the model types, test techniques required for different model types and combining models to increase test coverage. • Test estimation with UML; which models to analyse for estimation, what to count and how to estimate. • Planning the move to UML testing; planning framework, management, technical and personnel issues. • Demonstrating cost/benefit by identifying and meeting needs.
Delivery	A single tutor class may teach up to 12 students. Students undertake modelling exercises in

Next step	groups to gain familiarity with the UML. -
M180	Advanced UML Testing Workshop * new for 2009
Duration	3 – 5 days
Prerequisite	Students should have completed skills courses M150 and either M130 or M140 and have at least six months UML test project experience. Alternatively one or more years experience as a UML test practitioner.
Who should attend?	Testers progressing into positions requiring deep skills either due to the nature of the systems they are testing and/or to act as test lead to develop other testers.
Overview	The workshop is based on a real life client/server financial trading system that we helped test. Although a slimmed down version it still poses significant testing problems that will test the skills of a UML tester. Delegates perform hands-on testing that simulate a range of testing scenarios; the simulator can be configured to create small-scope simple exercises or much deeper problems spanning many UML models. Students are given appropriate UML for each exercise from which they plan, design and run tests. The simulator will be seeded with problems that relate to the UML they have been given, or to accepted testing common sense they would be expected to use. Exercises will be designed to focus on systems, or acceptance or structural testing depending on the students' needs. By analysing the errors found and those missed students can assess their test effectiveness and learn how to improve their techniques.
Delivery	A single tutor class may work with up to 6 students.

Course specifications may change without prior notification.