

Developing Real-Time and Embedded Software with UML 2

Duration:	3 days
Audience:	Software architects, development team managers, project managers, product managers, software developers, programmers involved in design and development of real-time and embedded software systems
Pre-requisites:	Participants should be familiar with the basic principles of software engineering, concurrent programming, and have some experience with object-oriented programming
Brief Description:	This course teaches the essentials of applying the industry standard UML 2 language and related profiles to the development of large and complex real-time and embedded systems using agile development approaches

Description:

The course includes a general introduction to model-based methods and technologies with special focus on the industry standard UML 2 language and related profiles as well as an overview of real-time systems issues. Methods for applying modeling technologies and related standard design patterns to the problem of designing complex real-time systems are described. In addition, the use of agile development methods to these problems is covered.

Target Audience

Real-time and/or embedded systems architects and developers; also project managers and product managers involved with the design and development of such systems

Course Level

Expert

Course Pre-requisites

Participants should be familiar with the basic principles of software engineering, concurrent programming, and have some experience with object-oriented programming

Course Objectives

Teaching how the industry-standard modeling language and related profiles and technologies can be used to develop complex real-time and embedded systems using agile approaches. Also, to cover some key design patterns that are generally applicable in the design of real-time and embedded systems.

Course Outline:

- Part 1: On Model-Driven Development
 - What is Model-Driven Development?
 - A short review of meta-modeling
- Part 2: An Overview of the Unified Modeling Language –version 2
 - Language Architecture and Semantic Foundations
 - Basic UML 2 Diagrams and Their Elements
 - Domain-specific Customization of UML: Profiles
- Part 3: Applying UML in the Design of Real-Time/Embedded Software Systems
 - The physics of software and real-time systems overview
 - The UML from a real-time programmer's perspective
 - Elements of the Real-Time UML Standard Profile (MARTE)
 - Application of the MARTE Profile to Model Analysis
 - Introduction to agile Model-Driven Software Engineering Process
- Part 4: Software Architectures for Real-Time and Embedded Systems

Summary and Conclusions