MBSE and SysML Training with Modelio

Length: 5 Days

Summary: This MBSE and SysML Training Workshop with Modelio is a 5-day comprehensive training provides a solid foundation in MBSE project processes and how to build system models using SysML notation and diagrams. Participants will learn how to use MBSE process and approach to create and build SysML diagrams to cover modern and agile systems engineering process steps including ConOps, Use Cases, Requirements, System Architecture and Design, Verification and Validation.

Modelio is the open source modeling environment to create SysML diagrams. An open source SysML modeling tool, Modelio SysML Architect, or Model-Based Systems Engineering (MBSE) applications.

The 5-day MBSE/SysML course teaches you how to implement essential MBSE and SysML modeling concepts through case studies, hands-on sessions and exercises with Modelio tool supporting Systems Modeling Language (SysML) modeling functional requirements, structural model, low level design model, behavioral model, parametric & simulation.

Audience: This course is designed for software and system engineers, scientists, analysts' managers, technicians, and anyone else who wants to learn MBSE and SysML.

What will you Learn?

- Explain the goals of Systems Engineering using Model Based System Applying MBSE approach to your project
- Modern system engineering approach with SysML model constructs
- Models in a Modelio SysML tool creating standard SysML diagrams
- Engineering (MBSE) Approach
- Learn the four pillars of MBSE: Requirements to Structure to Behavior to Parametrics
- Learn how to create SysML diagrams
- Explain SysML Diagram Taxonomy
- Create with Requirement Diagram
- Crate Behavioral Diagram: Use Case Diagram, Activity Diagram, Sequence Diagram, State Machine Diagram
- Creating Structural Diagrams: Package Diagram, Block Definition Diagram, and Internal Block Diagram
- Describe how to structure system models for testing, validation and requirement

COURSE CONTENT

Overview of MBSE (Model Based Systems Engineering)

- Principles of Modern Systems Engineering Principles
- What is Model Based System Engineering (MBSE)
- Principles of Systems Modeling Language (SysML)
- SysML and MBSE
- Systems modeling with MBSE and SysML systems diagram

SysML Diagram Taxonomy

- Behavioral Diagram
- Activity Diagram
- Sequence Diagram
- State Machine Diagram
- Use Case Diagram
- Requirement Diagram
- Structural Diagram
- Block Definition Diagram
- Internal Block Diagram
- Package Diagram

Working with SysML

- Structure: Definition and Use
- Behavior: Interaction, State Machine, and activity/functions
- Requirements
- Parametrics
- SysML Diagram Frames
- Package Diagram
- Internal Block Diagram
- Allocations
- Basic Structural elements

Creating Systems Modeling Language (SysML) Models

- SysML Behavior Diagram
- SysML Use Case Diagram
- SysML Activity Diagram
- SysML Sequence Diagram
- SysML State Machine Diagram
- SysML Requirements Diagram
- SysML Parametric Diagram
- Deploying MBSE and Models

Workshop (Hands-on Project with Modelio Tool)

- Working with a critical system modeling example and functional analysis using MBSE and SysML
- General Modeling Elements
- Discipline-Specific Elements
- Extended Requirement
- Systems and Subsystems
- Creating Structure and Concepts
- Creating System Stakeholders (Actors)
- The Use Case Diagram
- Actor Categories
- The Activity Diagram
- The State Machine Diagram
- Interaction Diagrams
- The Requirement Diagram
- Allocation
- Block Diagrams
- The Parametric Diagram
- System Context Elements
- System Processes
- Model with Packages
- Structure with Blocks
- Constraints with Parametrics
- Flow-Based Behavior with Activities
- Message-Based Behavior with Interactions
- Event-Based Behavior with State Machines
- Functionality with Use Cases
- Cross-Cutting Relationships with Allocations
- Essential Activity
- Domain Block
- Weighted Requirement Relationships
- Continuous and Secondary Use Cases