

The Systems Modeling Language (SysML®) Using Enterprise Architect 13.x

Three Day Course Syllabus

DAY 1

Introduction to Enterprise Architect

User Interface

- Desktop layout
- Portals
- Commonly used Windows/Ribbons
- Perspectives: Workspace Layouts, Menu, and Ribbon Configuration

Managing Projects

- Creating and opening Projects
- Creating Root Nodes, Views and Packages
- Adding Models using the Wizard
- Organizing Models with Views and Packages

Managing Diagrams

- Toolbox
- Creation techniques
- Menu/ribbon options, context menu, properties and toolbar
- Navigation between diagrams
- Floating diagrams
- Copy/paste across diagrams

Creating Diagram Elements

- Creation techniques
- Editing properties
- Drag and drop

Customizing Diagram Element Appearance

- Color, Font, Image
- Layering
- Feature Visibility
- Layout and Alignment

Deleting Model Elements

- Diagram level deletions
- Repository level deletions

Managing Connectors

- Creation (toolbox and Quick Linker)
- Redirection
- Line bends
- Line styles

Managing Package Content

- Package Navigator
- Package Browser/List View (overview)

Tool Configuration

- Defining People
- Defining general types
- Personal and global configuration options

COURSE LEADER

Frank Truyen

is a principal consultant and trainer, with 20+ years of experience in the IT industry as a developer, architect, consultant and manager.

Strong expertise in different modeling notations such as UML®, SysML®, SoaML™, DDS™, UPDM™, ArchiMate® and BPMN™, allied with his extensive experience in using the Enterprise Architect modeling tool, allows Frank to successfully provide training and consulting services to a broad variety of customers across many industries.

SysML 1.4 / 1.5

Introduction

- Goals
- Relationship between UML and SysML
- UML metamodel extensions
- The four pillars

Diagrams

- Frames
- Kinds

Package diagram

- Purpose
- Views and Viewpoints – Addressing stakeholder concerns

Requirements diagram

Managing Requirements in Enterprise Architect

- Creating Requirements via a diagram
- Creating Requirements using the Specification Manager
- Other features
- Importing & exporting using Microsoft Excel
- Organizing Requirements
- Exercise

SysML Requirements

- Extensions
- Key relationships

Block Definition diagram (BDD) and Internal Block diagram (IBD)

- Block definition and contents
- Interface Block
- Compartments
- Block definition versus usage
- Association Blocks
- Operations and Receptions
- Properties
 - Part
 - Reference
 - Value
 - Connector
 - Adjunct
 - Classifier Behavior
 - Other property stereotypes
- BDD relationships
 - Part Association
 - Reference Association
 - Other relationships

IBD relationships
 Connector
 Binding Connector

Value Type
Directed Features
Exercise

Ports

Conjugation
Full Port
Proxy Port
Port redefines

Flows

Flow property
Item Flow
Exercise

DAY 2

Parametric diagram

Constraint Block
Exercise

Use Case diagram

UML Use Case diagram

Definition
Best practices
Creating
Discovering Actors
Guidelines
Modeling scenarios
Defining constraints
Using behavioral diagrams to illustrate scenarios
Tracing Requirements to Use Cases
Exercise

SysML Use Case diagram

Extensions

Activity diagram

UML Activity diagram

Core features
 Exercise
Advanced features:
 Multicast and multi-receive object flows
 Central Buffer Node
 Data Store
 Action Pin
 Action types (atomic, call behavior, call operation, accept event, send signal, ...)
 Activity Parameters
 Interruptible Region
 Expansion Region and Node

SysML Activity diagram

Extensions:

- Continuous and Discrete object flows
- Control Operator
- No Buffer Object Node
- Overwrite Object Node
- Optional Activity Parameter
- Probability Edges
- Exercise

Sequence diagram

UML Sequence diagram

Core features

Exercise

Combined Fragments

Exercise

SysML Sequence diagram

State Machine diagram

UML State Machine diagram

Core features

Exercise

SysML State Machine diagram

Allocations (cross-cutting constructs)

Overview

Allocate Dependency

DAY 3

Traceability and Navigation

Overview

The Relationships window

The Relationship Matrix

The Traceability window

Other traceability features

Core Tool Features

Documentation Generation

RTF/DOCX/PDF generator

Diagram, Package, and Element options

Linking generated documents into Microsoft Word

Model documents

Master documents

Generating HTML

Other features

Document Artifacts

- Creating
- Linked Documents
- External document links
- Document window

Model Searches

- Initiating
- Configuring
- Viewing results
- Custom searches
- Other features

Managing Baselines and comparing models

- Creating baselines
- Administering baselines
- Package comparisons
- Diagram comparisons

Collaboration Features

- Sharing strategies
- Model data (XML/XMI) import/export
 - Understanding globally unique identifiers (GUIDs)
- Version Control
 - Setup
 - Usage
 - Other features
- Security
 - Administration
 - Usage
- Import/Export of Reference Data
- Element Discussions and Formal Reviews
- Chat and Email

Extra Tool Features

- Diagram features
 - Automatic layout
 - Element resizing
 - Connector features
 - Boundaries, Swimlanes, Matrix, and Kanban
 - Content filters
 - Notes
 - Active legends
- Element features
 - Info View
 - Element Browser
 - Composite elements
 - Linking notes to feature documentation
 - Cloning diagrams, elements, Packages
 - Time Aware Modeling

Other features

- Working Sets
- Package management
- Charts, Dashboards, and Heatmaps
- Managing hyperlinks
- Keyboard shortcuts
- Getting help

SysML end-to-end Modeling Exercise