

The Systems Modeling Language (SysML®) Using Enterprise Architect 13.x or 14.x

Two Day Course Syllabus (includes many example diagrams and exercises)

Introduction to Enterprise Architect

DAY 1

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
- Model patterns
- Project Browser Features

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 general types
- Personal and global configuration options

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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

SysML Requirements

- Extensions
- Key relationships

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

- Block definition and contents
- Compartments
- Block definition versus usage
- Interface Block
- Creating an IBD
 - Automatic Property creation
- Association Blocks
- Classification hierarchies and generalization
- Block behavior: Operations, Signals, and Receptions
 - Directed Features
- Properties
 - Part
 - Reference
 - Value
 - Connector
 - Adjunct
 - Classifier Behavior
 - Bound Reference
 - End Path Multiplicity
 - Other property stereotypes

Redefining/Subsetting properties
BDD relationships
 Part Association
 Reference Association
 Other relationships
IBD relationships
 Connector
 Binding Connector
Typing Connectors with Associations
Value Types

Ports

Definition and usage
Full Port
Proxy Port
Conjugation
Redefines

Flows

Flow property
Item Flow

DAY 2

Parametric diagram

Constraint Block

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

SysML Use Case diagram

Extensions

Activity diagram

UML Activity diagram

Core features
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:

Probability Edges
Control Operator
Optional Parameter
Continuous and Discrete rate of flow
No Buffer Object Node
Overwrite Object Node
Mapping Activity behavior to a Block
Mapping Signal Event Actions to Receptions

Sequence diagram

UML Sequence diagram

Core features
Combined Fragments

SysML Sequence diagram

State Machine diagram

UML State Machine diagram

Core features

SysML State Machine diagram

Allocations (cross-cutting constructs)

Overview
Allocate Dependency
Allocations report

Measures of Effectiveness (SysML Extension)

MOE trade studies
Objective Function

DAY 3

SysML end-to-end Modeling Exercise

The air compressor model, or a User defined model

Traceability Features

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

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
- Model Views
- Glossary

Q&A