

Software Architecture Modeling Essentials (SAM-E)

Using Sparx Systems EA software and UML

Document Reference: SAM-E-2017-v1

Learning Outcomes

This course covers the essential analytical and modelling techniques to develop Software Architecture using the universal modelling standards such as UML and the Sparx Systems Enterprise Architect modeling software.

Upon completion of this course, trainees will have the competencies to:

- **Understand** what is a model, the process and benefits of modelling, universal modelling standards such as UML, the challenges in modelling and how to incorporate modeling practices into existing software development lifecycle (SDLC)
- **Analyse** information be it in document, diagram, models or verbal form to develop the software functional architecture, data architecture and technical design architecture
- **Develop** the functional requirement models (FRM), data requirement models (DRM) and technical design models (TDM) based on UML Use Case models, Class Diagram, Sequence Diagram and Package Diagram using Sparx Systems Enterprise Architect modeling software
- **Review** the models to ensure correctness and completeness
- **Manage** models such as model baseline, traceability, transformations and specification document generation

Curriculum Structure

The consultative-centric training curriculum is designed in such a way to take advantage of the benefits of different learning and teaching methodologies such as:

- **Lecture** by trainer on key concepts of Software Architecture modeling
- **Demo** of the modeling tool by trainer on how to develop the UML and other related models
- **Hands-on Workshops** for trainees to have in-depth practice to apply what they have learnt
- **Presentation** of workshop solutions by trainees for feedback
- **Reflection** on how to apply lessons learnt into a live project

Target Audience

This course is suitable for anyone who needs to:

- Interact with users to identify and analyse users' needs for software or system to support their business.
- Translates users' needs into technical functionality, data architecture and technical design

Pre-requisites

Trainees should have the knowledge and/or experience in object oriented concepts and programming.

Duration

3-days

Venue Options

Public training:

- 80Twenty venue.
- Trainees will be from various organizations in the same class.

Exclusive training:

- 80Twenty or customer or customer-preferred venue.
- Class exclusive to only your own company's trainees.

Suggested Topics

Lessons will run daily from 9am to 5pm inclusive of 1-hour lunch break and two 15-minute breaks.

1. Introduction

- General
- Modelling & Software Architecture Modelling
- Modeling Language: UML

Workshop 1: Getting Started with Sparx Systems EA

- Install and configure EA
- Start a new EA project
- User Interface: Menus, Windows, Drag-and-drop and many more
- Modeling Basics using UML Package Diagram

2. Functional Requirement Modeling (FRM) – Part 1

- Introduction to FRM
- Techniques to identify functional requirements such as users, external system interfaces, functions, sub-functions and other exceptions handling
- Best practices in develop the use case diagram
- Trace FRM to Business Requirements

Workshop 2: Analyse, identify, model, review, & baseline FRM

3. Functional Requirement Modeling (FRM) – Part 2

- Best practices in specifying the functional requirements using the use case model scenario specifications
- Baseline FRM

Workshop 3: Specify use case scenario structured specifications

4. Data Requirement Modeling (DRM)

- Introduction to DRM
- Techniques to identify data requirements such entity classes, attributes and relationships
- Best practices in specifying the data requirements using the Class Diagram
- Transform DRM to ERD & Generate DDL
- Trace DRM to FRM
- Baseline DRM

Workshop 4: Analyse, identify, model, review & trace DRM and Generate DDL

5. Preliminary Design Modeling (PDM)

- Introduction to PDM
- Techniques to identify classes based on the MVC design patterns
- Reverse engineer of existing code definitions
- Trace PDMs to FRM

Workshop 5: Analyse, identify, model, review and trace PDM

6. Detail Design Modeling (DDM)

- Introduction to DDM
- Techniques to detail classes with member functions, signatures and relationships using UML Class Diagram & Sequence Diagram.
- Generate class definitions
- Trace DDM to class definitions

Workshop 6

- Analyse, identify, model, review and trace DDM
- Final elaboration on the PDM & DDM based on feedback during the presentation.

Systems Requirements

Trainees are responsible to bring the following hardware and software for the training:

1. Hardware

- PC/Notebook running on MS-Windows 7 Professional Edition or better 4GB RAM, with Admin access rights to install software.

2. Software

- Sparx Systems EA Systems Corporate Standard/Floating License Edition (1 license key per trainee)
- 30-day software evaluation license is available and can be used during the training