

Training Program

**SOFTWARE ARCHITECTURE &  
DESIGN PROFESSIONAL**



## Introduction

### Overview

This 4 days Software Architectural Design courses is specifically is designed to help practicing software professionals quickly gain insight into the latest concepts of what software architecture is and how to use it successfully, to provides attendees with in-depth coverage of the concepts needed to effectively design and analyze a software architecture, to shows software architects how to produce a comprehensive documentation package for a software architecture that is useful to stakeholders

### Duration

4 – days workshop.

## Program Objectives

### Learning Objectives

#### By the end of the course participants should:

- ❖ Understand what is a software architecture
- ❖ Explain why a software architecture is important
- ❖ Describe the architecture influence cycle
- ❖ Describe the relationships between system qualities and software architectures
- ❖ Describe software architectural patterns and tactics, and their relationship to system qualities
- ❖ Able to apply the QAW for eliciting critical quality attributes
- ❖ Understand the essential considerations in any architectural design process
- ❖ Be able to apply attribute-driven design
- ❖ Be able to document a software architecture documentation
- ❖ Be able to evaluating software architecture effectively using ATAM, CBAM
- ❖ Be able to Apply architectural reuse via software product lines
- ❖ Understand Difference Perspectives of Software Architecture

### Target Audience

#### This course is intended for those as below:

- ❖ Software Engineer
- ❖ Designer
- ❖ Developer
- ❖ Software Architect
- ❖ Technical Lead
- ❖ Project Manager
- ❖ Product Line Manager
- ❖ Software Engineering Manager

## Training Contents

### Module 1: Introduction to Software Architecture

- ❖ What is software architecture?
- ❖ Who is software architect?
- ❖ What's the difference Between Architecture and Design?
- ❖ Why is software architect important?
- ❖ Architecture in Technical, Business, Professional Context
- ❖ Architecture in a Project Life-Cycle Context
- ❖ The architecture influence cycle
- ❖ Underlying Competencies of Software Architecture

### Module 2: Architecture and Requirements

- ❖ Gathering Architecturally Significant Requirement (ASR)
- ❖ The Quality Attribute Workshop (QAW)
- ❖ Capturing Architecturally Significant Requirement

### Module 3: Designing an Architecture

- ❖ Design Strategy and The Attribute-Drive Design Method
- ❖ Understanding Quality Attributes
- ❖ Architectural Tactics
- ❖ Architecture Patterns
- ❖ Quality Attribute Modeling and Analysis

### Module 4: Documenting Software Architectures

#### Overview of Architecture

#### Documentation

- ❖ Uses and Audiences for Architecture Documentation
- ❖ Architecture Documentation and Quality Attributes
- ❖ Architecture View and Architecture Styles
- ❖ Seven rules for sound Documentation
- ❖ Notations for Architecture Documentation
- ❖ Documenting Software Interfaces
- ❖ Documenting Behavior

#### Building the Architecture

#### Documentation

- ❖ Choosing the Views
- ❖ Documenting a View, Beyond Views, a Mapping to Requirements
- ❖ Packaging the Architecture Documentation
- ❖ Reviewing an Architecture Document

### Module 5: Architecture Evaluation

- ❖ Evaluation Factors
- ❖ The Architecture Tradeoff Analysis Method
- ❖ Lightweight Architecture Evaluation
- ❖ Decision-Making Context
- ❖ The Basis for the Economic Analyses
- ❖ Putting Theory into Practice: The CBAM

### Module 6: Architecture Reconstruction and Conformance

- ❖ Architecture Reconstruction Process
- ❖ Raw View Extraction
- ❖ Database Construction
- ❖ View Fusion
- ❖ Architecture Analysis: Finding Violations

### Module 9: Architecture in Agile Projects

- ❖ Agility and Architecture Methods
- ❖ Examples of Agile Architecting
- ❖ Guidelines for the Agile Architect

### Module 7: Architecture, Implementation, and Testing

- ❖ Embedding the Design in the Code
- ❖ Using Frameworks and Code Templates
- ❖ Keeping Code and Architecture Consistent
- ❖ Levels of Testing and How Architecture Plays a Role in Each

### Module 10: Architecture Reuse via Software Product Lines

- ❖ Product Line Variability and Quality Attribute of Variability
- ❖ What Makes a Software Product Line Work?
- ❖ Product Line Scope and Variation Mechanisms
- ❖ The Role of a Product Line Architecture
- ❖ Evaluating a Product Line Architecture
- ❖ Key Software Product Line Issues

### Module 8: Management and Governance

- ❖ The top-down and bottom-up budget and schedule
- ❖ Developing architecture design and the release plans
- ❖ Responsibilities of Project Manager and Software Architect
- ❖ Global Development
- ❖ Tradeoffs, incremental development, and managing risk.
- ❖ Global Metrics, Phase Metrics and Costs to Complete
- ❖ Controls, Compliance, Processes and Practices

### Module 11: Architecture in the Cloud

- ❖ Basic Cloud Definitions
- ❖ Service Models and Deployment Options
- ❖ Base Mechanisms: Hypervisor, Page Mapper, Storage, Network
- ❖ Sample Technologies: virtual resource managers, HBase, MongoDB
- ❖ Architecting in a Cloud Environment

## Key Features

- 32 hours of high quality learning
- Quizzes in the end of each chapter
- 4 Real life exercises and case study
- Learn from experience and passionate trainers
- Quick reference card, toolkits
- Course completion exams
- Apply the knowledge and technique to handle the role
- Invited to our professional community
- Certificate of Completion

