SEI Training

Software Architecture Design and Analysis

About the Course

A system's software architecture is widely regarded as one of the most important software artifacts. Software professionals routinely make decisions that impact that architecture, yet many times that impact is not fully considered or well understood.

- Which design decisions will lead to a software architecture that successfully addresses the desired system qualities?

- How do you know if a given software architecture is deficient or at risk relative to its target system qualities?

This two-day course provides in-depth coverage of the principles and practices needed to effectively design and analyze a software architecture. Through multiple exercises, participants study the application of these practices and get a chance to apply them to sample problems.

This course is based on the book *Designing Software Architectures: A Practical Approach.*

Objectives

This course provides attendees with in-depth coverage of the concepts needed to effectively design and analyze a software architecture. After attending this course, participants will have a better understanding of

- the essential considerations in any architectural design and analysis process

- the Quality Attributes Workshop (QAW) for eliciting critical quality attributes

- the Attribute-Driven Design (ADD) method for designing an architecture

- the role of architecture evaluation

- using these methods within a software development life cycle

This course is also a required course in the SEI's Software Architecture Professional certificate program.

Who Should Attend?
• practicing software architects

• designers and developers of software-reliant systems

Topics
• lifecycle view of architecture design and analysis methods

• the QAW, a method for eliciting critical quality attributes, such as availability, performance, security, interoperability, and modifiability

• the ADD method, a method for designing a software architecture

• the Architecture Tradeoff Analysis Method® (ATAM®), a method for evaluating a software architecture based on a set of attribute-specific measures of the system such as performance, availability, modifiability, and security

• lightweight architecture evaluation methods

• the architecture design process in the organization

Prerequisites
Before registering for this course, participants must

• complete the Software Architecture: Principles and Practices course, which is available as instructor-led classroom training and as eLearning

Materials
Participants will receive a copy of lecture slides, exercises, and the book *Designing Software Architectures: A Practical Approach.*

Two Ways to Attend
1. Public, instructor-led offering at an SEI office

2. Private, instructor-led training at customer sites

For More Information
To learn more and to register for the course, visit
sei.cmu.edu/training/p34.cfm
sei.cmu.edu/training/certificates/architecture

For Course Registration
sei.cmu.edu/training/registration

About the SEI
Always focused on the future, the Software Engineering Institute (SEI) advances software as a strategic advantage for national security. We lead research and direct transition of software engineering, cybersecurity, and artificial intelligence technologies at the intersection of academia, industry, and government. We serve the nation as a federally funded research and development center (FFRDC) sponsored by the U.S. Department of Defense (DoD) and are based at Carnegie Mellon University, a global research university annually rated among the best for its programs in computer science and engineering.

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