SEI Training

Designing Modern Service-Based Systems

FROM A BUZZWORD IN THE EARLY 2000s, service-oriented architecture (SOA) has evolved into an established paradigm for developing distributed software systems. But SOA today has a much different face. Microservices, API gateways, REST constraints, and event-driven messaging are just some of the design concepts that developers of modern service-based systems should be familiar with.

Course attendees will acquire a clear understanding of the main types of design elements and technologies that can be employed in service-based solutions, including REST services, platform-specific services, message brokers, and API gateways.

The course also compares microservices and the monolithic deployment model, discusses design alternatives for integrating microservices with external or legacy systems, and overviews other important design decisions, including security, transaction management, and service deployment.

Objectives

After attending this course, learners will understand

- benefits and challenges of microservices
- what is necessary to be successful with SOA and microservices
- main types of components found in modern service-based solutions
- important design considerations for service-based solutions

Completion of this course fulfills a training requirement for the SEI's Service-Based Architecture Professional Certificate.

Who should attend?

This course is valuable for

- software and application architects
- developers who use service technologies in their solutions
- project managers and IT personnel responsible for microservice implementations

Topics

The following topics are covered in this class:

- quick review of service and related concepts
- the pillars of successful SOA and microservice adoption: technology, governance, architecture, and business alignment
- design considerations for REST services, and services that use platform-specific component technologies
- other elements used in service-based designs: service interceptors, messaging infrastructure, API gateways, and orchestration servers
- other design considerations for service-based solutions: microservices vs. monolith, security, and alternatives for integration with external systems

Prerequisites

Participants must have a basic understanding of distributed systems and Web-based applications.

Materials

Participants will receive copies of the course presentation slides, the class exercises, and a "cheat sheet" with the most important concepts. Participants will also receive a printed Certificate of Completion at the end of the class.

Two Ways to Attend

1. Public, instructor-led offering at an SEI office
2. Private, instructor-led training at customer sites

Training courses provided by the SEI are not academic courses for academic credit toward a degree. Any certificates provided are evidence of the completion of the courses and are not official academic credentials.

About the SEI

The Software Engineering Institute is a federally funded research and development center (FFRDC) that works with defense and government organizations, industry, and academia to advance the state-of-the art in software engineering and cybersecurity to benefit public interest. Part of Carnegie Mellon University, the SEI is a national resource in pioneering emerging technologies, cybersecurity, software acquisition, and software lifecycle assurance.