Course : Service-oriented architecture (SOA), overview

Seminar - 2d - 14h00 - Ref. OSA
Price : 1850 € E.T.

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The aim of SOA is to move from an IS seen as a collection of applications to service-oriented computing, in order to improve the responsiveness of the Information System. This seminar presents the various standards, concepts, techniques and tools required to implement an SOA.

🎯 Teaching objectives

At the end of the training, the participant will be able to:

- ✓ Understand the benefits of adopting an SOA approach
- ✓ Discover the components, services and layers of an SOA architecture
- ✓ Recognize the main technical building blocks of SOA architecture
- ✓ Discover SOA design and architecture approaches and models
- ✓ Identify key market players and products

Intended audience
Business and IT decision-makers looking for an overview of the SOA landscape and opportunities for the enterprise.

Prerequisites
Basic knowledge of application architecture and Web Services technologies.

Course schedule

1. Introduction: why SOA?

- What's at stake for the company?
- Multi-level architectures and business components: the limits of traditional middleware interoperability.
- Web services and IS interoperability.
- From components to service-oriented architectures (SOA): the limits of IS project management.
- Introduction to services, service contracts, service orchestration, enterprise service bus (ESB)...
- Benefits: alignment of IS with business processes, cost reduction, standardization, reuse, interoperability.

2. SOA architecture overview

- SOA architecture components and layers.
- Data access service, transaction management.
- Process management, user interaction, security, administration, supervision...
- Web Oriented Architecture (WOA) and microservices-based architectures.
- The principle of weak coupling between service provider and consumer.
- Micro-services-based architectures.
- Organizational and IS evolution.
- Service-oriented architecture (SOA) vs. microservices.

3. Services and processes

- The concept of service.
- Service exposure, weak coupling, synchronism versus asynchronism.
- Service provider and consumer, service contract, service typology (business, technical...).
- Differences between services and components, specifying quality of service.
- Business application components.
- Unit of operation in SOA, contract implementation, component dependencies and orchestration.
- Mapping business processes to services.
- Aligning IS with business processes: the importance of business modeling processes.
- OMG's BPMN modeling standard.
- Positioning in relation to the BPM.
- Move from a business process model to a service.

4 Technical aspects

- Implementation of Web Services (Java EE, .NET, PHP, etc.).
- XML foundations.
- XML schema for interoperability and application data description.
- Service description with WSDL and invocation with SOAP.
- RESTfull approach.
- Search and publish services (directories).
- Design Patterns for Web Services.
- Link between SOA and EAI.
- Message Oriented Middleware (MOM).
- Enterprise Service Bus: the ESB concept, ESB versus SOA. An update on standards.
- Web services orchestration and business process integration (BPM, BPEL...).
- Standards and their level of implementation: OMG, W3C, OASIS, WS-I...
- Security and Web Services (WS-Security), transaction management (WS-Coordination).
- Message delivery (WS-ReliableMessaging), interoperability and message identification (WS-Addressing).
- Links with other IS components and emerging technologies: Cloud, mobility, Big Data.

5 SOA architecture and design models

- SOA as an integration model and Enterprise Integration Patterns (EIP).
- SOA patterns.
- Attempts at standardized SCA and SDO approaches.
- Can REST be used to design an SOA architecture?
- The question of orchestration and the place of BPEL, BPMN and traditional development technologies.

6 SOA IS governance

- The SOA model's impact on the organization.
- Organize initial implementation and reuse with an SOA center of excellence.
- Key roles: business manager, technical manager, domain architect, technical architect.
- Typical governance activities: managing a service application, its implementation and evolution.
- Move from providing a service on demand to anticipating needs.
- How do you stay Agile with what appears to be a highly centralized model?
- Pitfalls and mistakes to avoid.

7 SOA design methodology

- Links between SOA and the Object-oriented approach.
- Methods available on the market: UP, EUP, TOGAF, NAF, Praxeme...
- SOA project lifecycle: strategic vision and organizational process.
- Urbanization metaphor and levels of aggregation.
- Conceptual model of an SOA.
- Modeling services within application architecture with UML.
- The transition from organizational processes to business services, and from business services to application services.
- OMG's MDA approach.

⑧ Market players and products

- Typology of existing products.
- Enterprise Service Bus (ESB).
- EAI platforms for new Web Services functionalities (Tibco, WebMethods…).
- SOA orchestrators, high layers for directories, orchestration, administration.
- Platform suppliers (IBM, BEA, Oracle, etc.).
- Cloud players (Amazon, Google…).
- BPMN modelers and their orchestration capabilities.
- Supervision tools (business and technical) and administration solutions.
- Open Source projects and offerings: Apache ServiceMix/FUSE, Mule, Celtix, Synapse…

Dates and locations

REMOTE CLASS
2026 : 24 Mar., 16 June, 29 Sep., 8 Dec.

PARIS LA DÉFENSE
2026 : 17 Mar., 9 June, 22 Sep., 1 Dec.