



## **Service Oriented Architecture (SOA) – Architecture, Governance, Standards and Technologies**

*3-day seminar*

### **Give Your Business the Competitive Edge**

SOA has rapidly seized the momentum and center stage because it is seen as the key for enterprises to achieve business agility, improved quality of service, lowered total cost of ownership and to align business with technology. For many SOA is seen as an enabler for rapid creation of new IT capabilities, making companies more agile in an always changing market place. Over the recent years, many Fortune companies have started to embrace a SOA approach for development and integration projects. Now they are embarking on the next step – a more systematic adoption of service-oriented practices. However, simply buying into middleware technologies like Enterprise Service Bus and the latest generation of development tools is not sufficient for successful implementation of an enterprise SOA.

SOA represents a unique and rare opportunity to bring IT and Business together. However, this opportunity often necessitates organizational changes in IT and how IT and the stakeholders on the business side work together. The current IT culture must evolve, looking beyond the scope of project centric goals. We must consider requirements that span projects, lines of business, or the enterprise as a whole. This evolution drives the need for a new focus on governance that is aimed to exploit the benefits of service orientation on a large scale.

XML, Web Services and other standards play important roles when implementing a Service Oriented Architecture, but it should not be overlooked that core business functionality still has to be implemented behind the interfaces of the services. This requires a development methodology that extends component development into a service oriented Software Development Lifecycle (SDLC), as well as a comprehensive platform for service development, runtime, and management.

### **Putting Together the Pieces of the SOA Puzzle**

This seminar starts with examples of key business strategies that drive SOA and explains how SOA can enable them, fostering a better alignment between business requirements and IT deliverables. The seminar then outlines the important aspects that have to be addressed when defining an architecture blueprint, which is the cornerstone of a successful SOA. This includes defining a loosely coupled architecture and proper separation into service layers (i.e. orchestration, application, and infrastructure services), as well as a comparison of traditional Web Services based and RESTful architectures. The seminar also shows how SOA enables new types of clients and discusses the key standards that one should consider when implementing services. Special attention is given to the new security challenges that SOA introduces compared to the traditional Web application architecture.

Next, the seminar gives you insight into the organizational challenges that IT managers face with the adoption of SOA. It emphasizes the role of governance for IT organizations that need to increase their maturity level in order to evolve SOA to a large (enterprise) scale. It shows how to master the full service lifecycle – including design, implementation, deployment, and management - through efficient governance.



Furthermore, the seminar will help you understand how SOA can be applied to integration initiatives within your company and introduces the concept of the Enterprise Service Bus (ESB). The seminar then examines open source tools in terms of their support for SOA and concludes with a case study that highlights how the concepts taught in the seminar have been applied in a real world project.

### Benefits of Attending

- Learn how SOA can facilitate the alignment of IT with your business.
- Identify the challenges and benefits of developing an Enterprise Architecture.
- Determine where your organization is located in the SOA Maturity Model and define a roadmap for creating an application architecture that conforms to SOA best practices.
- Learn how IT culture has to change to successfully adopt the new style of architecture.
- Understand how Web Services and other standards can be used to implement a SOA.
- Discover the role of open source tools in a Service Oriented Architecture.
- Learn how Enterprise Service Buses (ESB) can enable and facilitate integration of applications within your enterprise and across a B2B value chain
- Understand the key elements of a service oriented Software Development Life Cycle.

### Who Should Attend

- Architects who want to adopt a Service Oriented Architecture.
- IT professionals who need to see how SOA can be applied to development as well as integration projects.
- IT Managers and IT Strategists selecting new standards and products for enterprise architecture
- IT Managers and IT Strategies evaluating feasible strategies for application development and integration.
- Architects and Application Developers who want a detailed look at the different technologies that can be used to implement SOA.
- Architects and Developers who want to know how these technologies can be applied to both, EAI and B2B application integration.
- Consultants who need to recommend and use different implementation strategies for building a SOA.

**Prerequisite:** This class requires attendees to have a high level understanding of middleware, component technologies, distributed computing, and application integration.



## Seminar Outline

### **1. Introduction to Service Oriented Architecture**

- Services defined
- SOA defined
- The Changing Notion Of “Applications”
- Next Generation SOA
  - Event & Service Oriented Architecture
- SOA and standards
- SOA challenges
- Typical SOA categories
- Developing a roadmap for SOA adoption

### **2. The Business Perspective**

- How SOA enables business strategies
- How to align business and IT through SOA
- SOA applicability examples

### **3. Defining the Architecture – Part I**

- Definition of Enterprise Architecture (EA)
  - What drives the need for EA?
  - Objectives of EA
  - EA standards
- Logical vs. physical architectures
- Sample outline for an architecture document
- Sample business event walk-through
- The service layer model
  - Orchestration services layer
  - Application services layer
  - Infrastructure services layer
- Loosely coupled architectures and services
  - Architectural decoupling
  - Characteristics of loosely coupled services
- Service virtualization / mediation
  - What is service virtualization?
  - Implementation choices for intermediaries
  - Combination with server virtualization



#### **4. Defining the Architecture – Part II**

- Typical application architectures that drive SOA
  - Multi-step Process
  - Composite Application
- SOA and the data architecture
  - How do services access data stores?
- SOA + Integration = Service Oriented Integration (SOI)
- Rich Internet Applications (RIAs) and SOA
- Moving beyond SOA with “Killer Applications”
  - Business Activity Monitoring (BAM)
  - Complex Event Processing (CEP)

#### **5. Standards That Are Important For SOA**

- Overview of standards bodies
- Establishing connectivity through SOAP
- Defining service interfaces with Web Services Definition Language (WSDL)
- Representational State Transfer (REST)
- JavaScript Object Notation (JSON)
- Governing services with Service Repositories and Service Registries (UDDI)
- Using Business Process Execution Language (BPEL) and Business Process Management Notation (BPMN) for orchestration
- Extending automated business processes with human tasks – BPEL4People
- Web Service Invocation Framework (WSIF)
- Asynchronous service interaction: Notification
- Reliable Messaging
- Transactions
- Mapping standards to SOA

#### **6. SOA Security**

- Web application security vs. SOA security
  - Security in traditional 3-Tier Web application systems
  - Extending the Web application system with SOA
- How to protect the complex SOA
  - Identity management
  - Authentication and authorization
  - Auditing
  - Data Protection
- Security standards for SOA
  - WS-Security
  - Extensible Access Control Markup Language (XACML)
- A consolidated security architecture for Web applications and SOA



## **7. The IT Perspective**

- Governance
  - IT governance
  - Enterprise architecture governance
  - SOA governance overview
  - Service lifecycle governance
  - SOA governance enforcement - a place for policies
- SOA Center Of Excellence (COE)
- Service oriented development – a new SDLC methodology
- Migration from previous architectures
- SOA maturity model
- Developing a roadmap for SOA adoption
- Return on Investment (ROI) – a client example

## **8. How Service-Oriented Facilitates Integration**

- Increased business velocity challenges IT
  - The IT response: Service Oriented Integration (SOI)
  - What integration functionality do we need?
  - Strategies to leverage and preserve your investments
- Evolving the approach to integration
  - The need for intermediation
  - Service virtualization
- Enterprise Service Bus (ESB)
  - Introducing the bus
  - Moving beyond basic mediation
  - How standards could enable plug-and-play integration
- Integration across platforms and programming languages - the WS-I standard

## **9. Open Source Software (OSS) And SOA**

- OSS definition
- Why use OSS?
- Linux, Apache, MySQL, PHP (or Perl) = LAMP
- OSS for SOA
  - Java Application Servers
  - Spring Framework
  - Enterprise Service Buses
  - Web Services
  - Other tools
- OSS vs. Java and Microsoft
- How OSS and SOA relate
- Concerns about OSS



## **10. Case Study & Conclusions**

- Recap of best practices
- Case study: Chauffeured Services Company
  - Project overview
  - Three dimensions of business partner integration
  - Service Oriented Integration architecture
  - Definition of service layering
  - Designing service interfaces
  - “REST-like” services
  - Detailed B2B Gateway logical architecture
  - Verifying SOA principles
  - Designing the Schemas – componentization yields reuse
  - Conclusions on case study
- SOA outlook

## **11. Appendix A**

- List of commonly used acronyms