



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

### *3-day seminar*

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

There has been a lot of talk about unsuccessful SOA projects during the last couple of years. Some analysts have gone as far as pronouncing SOA dead. The truth is there is nothing wrong with SOA, but it has often been the victim of “identity theft”: Web Services technologies and middleware products pretend to be the architectural blueprint for your SOA. However, SOA’s true identity lies in the best practices for service orientation, a well defined architecture blueprint, and service oriented development processes that we can rely on to achieve predictable results.

Many companies have embraced a SOA approach for development and integration projects. Now they are embarking on the next phase – 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. It is time to expand our view on SOA: how can we assess the maturity level of our organization and define a roadmap for future projects? How do we navigate the increasing number of standards and overlapping product offerings? Governance and security have to be a concern from the very beginning, and we need to prepare our service based applications to run in a cloud without requiring costly modifications.

This seminar starts with examples of key business strategies that drive SOA and explains how SOA can enable them. It then discusses the progression of a SOA through three phases: we will talk about the typical elements that comprise a basic SOA, followed by the second phase where services are being virtualized and middleware technology is introduced as an intermediary, and finally moving SOA into the cloud in the third phase.

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 Rich Internet Applications (RIAs) and discusses the key standards that one should consider when implementing services.

Next, the seminar gives you insight into the organizational challenges that IT managers face with the adoption of SOA, and how to increase the maturity level of the IT organization 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 a service oriented development methodology.

The seminar then examines open source tools in terms of their support for SOA and concludes with two case studies that exemplify how service oriented analysis, modeling, and design principles have been applied in a real world project, and how RIA, REST, SOAP-based services and legacy encapsulation were used to modernize a large-scale business system that has a multitude of interdependencies on other systems.



### 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.
- Understand the synergies between SOA and Cloud Computing.
- Determine how your organization scores on a SOA Maturity Model and define a SOA Roadmap to move to the next level.
- 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.
- See how service oriented analysis, modeling, and design were applied in a project.

### 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 Developers who want to know how SOA 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 distributed computing concepts.



## Seminar Outline

### **1. SOA From a Business Perspective**

- How SOA enables business strategies
- How to align business and IT through SOA
- SOA use cases

### **2. SOA Phase 1: The Basics**

- Services defined
- SOA defined
- What is the notion of “Applications” in SOA?
- The Service Layer model
  - Infrastructure services
  - Application services
  - Orchestration services
- Next Generation SOA
  - SOA vs. Event Driven Architecture (EDA)
  - Synchronous vs. Asynchronous services
- One size doesn't fit all:
  - Degrees of service orientation and loose coupling
- SOA and standards
- Project oriented SOA vs. Governance oriented SOA

### **3. SOA Phase 2: Service Oriented Integration (SOI), Service Mediation & Service Virtualization**

- Increased business velocity challenges IT
  - The IT response: Service Oriented Integration (SOI)
  - What integration functionality do we need?
  - From SOA to SOI
  - How standards can enable Plug & Play integration
- Evolving the approach to integration
  - The need for intermediation
  - Enterprise Service Bus (ESB)
    - Introducing the bus
    - Moving beyond basic mediation
    - Implementation choices for intermediaries
  - Service virtualization

### **4. SOA Phase 3: Moving Into The Cloud**

- Overview of cloud computing
  - Cloud definition
  - From dedicated servers to virtualization to the cloud
  - Sharing & elasticity = economies of scale
  - Cloud deployment models
- Choose your flavor: Infrastructure as a Service (IaaS), Software as a Service (SaaS), or Platform as a Service (PaaS)
  - Who is using what and why??
  - IaaS example: Amazon Web Services (AWS)



- Synergy of SOA and Cloud
  - The Analyst view
  - Approaches to meet demand
  - Architecting applications to take advantage of the cloud
  - Service virtualization vs. server virtualization
  - Automated, on-demand resource provisioning
  - Building multi-tenancy applications based on SOA

## ***5. First Things First: Defining the Architecture – Part 1***

- Definition of (Enterprise) Architecture
  - Enterprise Architecture and SOA
  - What drives the need for architecture?
  - Architecture objectives and standards
- Logical vs. physical architectures
- Sample outline for an architecture document
- Sample business event walk-through
- Composite Applications – a prevalent application architecture enabled by SOA
- SOA and the data architecture

## ***6. First Things First: Defining the Architecture – Part 2***

- Representational State Transfer (REST)
  - The concept of resources
  - The uniform interface
  - Architectural constraints
  - Exploiting HTTP
  - What about business logic?
  - Perceived deficiencies of REST
  - Examples
- Rich Internet Applications (RIAs) and SOA
  - The synergy of RIA and REST
  - JavaScript Object Notation (JSON) vs. XML for RIAs

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

- Overview of standards bodies
- Establishing connectivity through SOAP
- Defining service interfaces with Web Services Definition Language (WSDL)
- 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
- Web Services Security
- Web Services Transactions
- Mapping standards to SOA

## ***8. The IT Perspective: Managing the SOA Evolution***

- Implications of SOA on the IT organization
- Migration from previously existing architectures to SOA



- Service oriented development – a new SDLC methodology
- Managing SOA adoption
  - Overview of SOA Maturity Models
- SOA Governance
  - Why SOA needs governance
  - Business vs. IT vs. EA vs. SOA Governance
  - SOA Governance overview

## **9. Open Source Software (OSS) for 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 I: B2B Gateway**

- 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

## **11. Case Study II: Legacy Modernization**

- Overview of the current system
- Requirements and objectives for the new system
- Conceptual architecture and service layers
- The Rich Internet Application front end
- REST-based services
- SOAP-based services
- Legacy encapsulation
- Sample sequence diagrams

## **12. Conclusions**

- Seminar conclusions
- SOA outlook



From Chaos to Order – Delivering e-Business Integration Solutions

**INTERNATIONAL**  
Systems Group, Inc.

## ***Appendix A***

- List of commonly used acronyms