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Service Oriented Integration (SOI) - Concepts, Technologies, and Best Practices

From Integration Infrastructure to Business Value

IT managers have been under increasing pressure to migrate a portfolio of independent "stovepipe" applications to an integrated set of business services. The complexity of application portfolios has to be reduced by eliminating functional redundancies. The mandate is to support new business processes faster, with reduced cost, and to improve the alignment of IT with business requirements. How to integrate applications in a predictable, consistent and repeatable fashion is a challenge that has consistently been among the top priorities of most CIOs.

This seminar starts with examples of integration projects that are typical for the problems and challenges that companies are trying to address today. For example, how to reduce the latency in a pipeline of batch processes by migrating to (near) real-time messaging, or how to integrate newly developed services and legacy systems into a Composite Application. The seminar then provides an overview of the concepts of SOA and its relationship to Event Driven Architecture (EDA). It outlines the key issues and guidelines that architects should consider when defining a Service Oriented Integration Architecture. The seminar will then provide you with an understanding of a complete integration "stack", i.e. a set of techniques for implementing all aspects of integration. This stack is mapped to the relevant standards (including Web Services) and technologies that can support SOI architectures.

One of the highlights of the seminar is a case study that illustrates how the concepts and best practices taught in the seminar have been applied in a real project implementation. Without best practices based approach companies often end up with silos of redundant services that are too difficult to integrate and manage. The case study explains the key architectural and design decisions that have resulted in the implementation of a set of services that were reused beyond one particular project.

Benefits of Attending

- Understand how to employ a Service-Oriented Architecture to integrate your application portfolio.
- Learn how to define an Enterprise SOA for Integration and how to apply it to integrate your application portfolio
- Learn how services can be used to integrate applications within your enterprise and across a B2B value chain.
- Distinguish between hype and reality so that you can put the technology to its optimal use in your organization.

Who Should Attend

- IT Managers that need to understand what Service Oriented Integration comprises and how the SOI technologies and standards stack up.
- Architects who want to define a Service Oriented Integration architecture to facilitate successful integration projects.
- IT professionals who need to see when and how SOI can be applied to application integration.
- IT Managers and IT Strategists selecting new standards and technologies.
- Consultants who need to recommend different strategies for defining and implementing SOI solutions.

Prerequisite: This class does not require attendees to posses detailed knowledge in any specific technology; however, a good understanding of distributed application architectures and middleware technologies will be beneficial

Seminar Outline

1) Defining the Need for Integration

a) Business strategies that drive integration
b) Typical integration scenarios

2) First Things First: Building an Integration Architecture

a) Enterprise Architecture (EA)
   (1) Definition of architecture
   (2) What drives the need for enterprise architecture?
   (3) Enterprise Reference Architectures
b) Service Oriented Architecture (SOA)
   (1) The changing notion of applications
   (2) Services and SOA defined
   (3) Event & Service Oriented Architecture (e-SOA)
c) High-level integration architecture patterns
   (1) Portals - integration on the glass
   (2) Data centric integration
   (3) Using interfaces for application integration
   (4) From SOA to Service Oriented Integration (SOI)
   (5) Process level integration
d) Strategies to leverage and preserve your investment

3) Dissecting the Integration Puzzle: Techniques and Standards

a) Evolution of integration solutions
   (1) The need for intermediation
b) The integration stack
   (1) Service interface description
      - Web Services Definition Language (WSDL)
   (2) Communication mechanisms
      - SOAP - the basic message envelope
      - Reliable messaging
      - Publish / subscribe (notifications)
   (3) Data transformation
   (4) Content-based routing
   (5) Security
      - WS-Security
   (6) Establishing application connectivity through adapters
   (7) Repositories & registries
      - Universal Description, Discovery and Integration (UDDI)
   (8) Monitoring & management
   (9) Moving beyond basic integration

4) Dissecting the Integration Puzzle: Advanced Technologies

a) Business Process Management
   (1) BPEL & BPMN
   (2) Human workflow (BPEL4People, WS-HumanTask)
   (3) Web Services Invocation Framework (WSIF)
b) Transactions
   (1) OASIS transaction standards
c) Business Activity Monitoring (BAM)
d) Complex Event Processing (CEP)
e) B2B integration
f) Web Services Interoperability (WS-I)

5) Integration Middleware: Enterprise Service Bus (ESB), Java EE, .NET, and Open Source Software

a) The Enterprise Service Bus
   (1) Introducing the bus
   (2) ESB architectures
   (3) Standards compliance
b) Java EE
   (1) Java EE Platform Layers
   (2) Web Services in Java EE
   (3) Java Business Integration (JBI)
   (4) J2EE Connector Architecture (J2CA)
c) .NET
   (1) Windows Communication Foundation (WCF)
   (2) Web Services in .NET
   (3) BizTalk Server
d) Integration between Java EE and .NET
e) Open Source Software (OSS)
   (1) ESBs: Celtix, Synapse, Mule
   (2) Spring Integration
   (3) Other OSS tools for SOI

6) Using a Well-Defined Methodology for SOI Projects

a) Requirements for an SOI methodology and why it's needed
b) Organizational impact of SOI projects
   (1) Roles and responsibilities within the organization
   (2) Building the Integration Competence Center (ICC)
   (3) Governance
c) Sample SOI methodology
d) Approaches on how to calculate Return On Investment (ROI)

7) Best Practices, Case Study, and Conclusions

a) Best Practices
b) Case study: Luxury Travel Service Provider Company
   (1) Project overview
   (2) Three dimensions of business partner integration
   (3) Service Oriented Integration Architecture
   (4) Definition of service layering

(5) Verifying SOA principles
(6) Designing service interfaces
(7) Designing the Schemas
(8) Interface consolidation
(9) WSDL and XML Schema
(10) Do we need SOAP?
(11) Composing business processes with BPEL

c) Conclusions