IBM SOA Architect Summit

SOA on your terms and our expertise
Service Oriented Architecture

An Overview for the Enterprise Architect
Agenda

- Introduction
- SOA Reference Architecture
- SOA Roadmap
- SOA Governance
- Summary
Service Oriented Architecture

Different Things to Different People

<table>
<thead>
<tr>
<th>Capabilities that a business wants to expose as a set of services to clients and partner organizations</th>
<th>Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>An architectural style that requires a service provider, requestor and a service description. It addresses characteristics such as loose coupling, reuse and simple and composite implementations</td>
<td>Architecture</td>
</tr>
<tr>
<td>A programming model complete with standards, tools, methods and technologies such as Web services</td>
<td>Implementation</td>
</tr>
<tr>
<td>A set of agreements among service requestors and service providers that specify the quality of service and identify key business and IT metrics</td>
<td>Operations</td>
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The SOA Lifecycle

- Discover
  - Integrate people
  - Integrate processes
- Construct & Test
- Compose
- Manage and integrate information
- Model
- Manage applications & services
- Design
- Manage identity & compliance
- Gather requirements
- Monitor business metrics
- Model & Simulate
- Business/IT alignment
- Process control
SOA and Enterprise Architecture: A Common Goal

Aligning Business and IT Objectives

Business Objectives

- Accelerate Time to Market
- Increase Revenue
- Reduce Costs

Enterprise Architecture

- Reference Architecture
- Governance
- Roadmap

IT Objectives

- Function (Service Definition)
- Security & Compliance
- Performance & Quality (KPI)

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### SOA: The Focus of the Enterprise Architect

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Description</th>
<th>Overview</th>
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<tbody>
<tr>
<td>SOA Reference Architecture</td>
<td>The SOA Reference Architecture defines a reference framework and corresponding IT principles for SOA implementation projects</td>
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<tr>
<td>SOA Roadmap</td>
<td>The Roadmap is used to create a tailored transition plan for moving toward the SOA Reference Architecture</td>
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<tr>
<td>SOA Governance Model</td>
<td>The SOA Governance Model defines the decision rights along with the associated measurements and controls</td>
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Agenda

- Introduction

- SOA Reference Architecture
  - Providing a comprehensive model

- SOA Roadmap

- SOA Governance

- Summary
IT’s Architectural Evolution: Making IT More Responsive

- **Pre 1950’s To 1960’s**: Monolithic Architectures
- **1970’s to mid 1980’s**: Sub-routines/Remote Procedure Calls
- **1980’s to mid 1990’s**: Remote Object Invocation
- **Mid 1990’s to early 2000’s**: Message Processing
- **Late 1990’s**: Enterprise Application Integration (EAI)
- **Today**: Services (SOA)

*Increasing Modularity to Achieve Flexibility*
SOA: The Next Step on the Connectivity Evolution

Direct Connectivity
- Connectivity, mediation & process-control logic
- Application
  - All connectivity, mediation and additional logic buried in the application

Message Queuing
- Mediation & process-control logic
- Application
  - Abstracts the connectivity logic from the application

Message Brokering
- Connectivity and mediation logic
- Application
  - Abstracts the connectivity + mediation logic from the application

Service Orientation
- Connectivity, mediation & process-control logic
- Application Services
  - Reduces application to its core business functions (i.e. a service)

Increasing Modularity to Achieve Flexibility
SOA Reference Architecture
Supporting the SOA Lifecycle

**Business Services**
Supports enterprise business process and goals through business functional service

**Interaction Services**
Enables collaboration between people, processes & information

**Process Services**
Orchestrate and automate business processes

**Information Services**
Manages diverse data and content in a unified manner

**Partner Services**
Connect with trading partners

**Business App Services**
Build on a robust, scaleable, and secure services environment

**Access Services**
Facilitate interactions with existing information and application assets

**Infrastructure Services**
Optimizes throughput, availability and utilization

**Management Services**
Manage and secure services, applications & resources

**Enterprise Service Bus**
Integrated environment for design and creation of solution assets
SOA Solution Layering

Leveraging the SOA Reference Architecture

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A New Programming Model
Supporting the SOA Abstraction Layering

Traditional Software Development

Business Expertise
Users
Define/refine business processes
Limited Overlap
Developers
Program applications using core technologies
Technical Expertise

Service-Oriented Development

Business Expertise
Users
Define/refine business processes
Extensive Overlap
Application Developers
Translate business processes into applications by assembling and configuring building blocks
Service Developers
Create application building blocks - patterns, templates, and components using core technologies
Technical Expertise

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SOA Programming Model Aspects

- **Design**
  - Focus on business design modeling, simplification, and role-based collaboration
  - Use of declarative policy to control execution behavior and relationships

- **Invocation**
  - Loosely-coupled call-style and event-driven interconnection of services with built-in support for topology transparency, mediation, and brokering featuring standards-based interoperability

- **User Interaction**
  - Dynamic support for people integration into the business design

- **Composition of Business-level Applications**
  - Wired assembly of services to form business-level applications, workflows, and business orchestration

- **Information**
  - Built-in access to service state, disconnected service-data exchange, information composition and transformation

- **Business Components**
  - Composable and reusable services
Business Driven Development
An Iterative, Business-focused Development Process
Separation of Concerns
The SOA Reference Architecture in Action

Business Services
Supports enterprise business process and goals through businesses functional service

Interaction Services
Enable collaboration between processes & information

Process Services

Information Services
Manage diverse content in a uniform

Partner Services
Community Manager

Business App Services
Build on a robust, scalable & secure services environment

EJBs

Access Services
CICS
Siebel
DB adapter

Access Adapter

Federated Query

Management Services
Manage and secure services, applications & resources

Console

Open Access

Develop: Environment for design and creation of solution assets

Approved

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Key Standards for SOA

SOA and Web Service Standards

Semantic Standards
- Business Services: Service Offerings and Components
  e.g. Book Flight, Low Fare Search, Update PNR Data
- Evolving Industry Semantics
  (ACORD, SWIFT, FIXML, OTAXML, UCCNet)

Infrastructure Standards
- Service Interaction Components (WSRP, JSR 168)
- Service Orchestration (WS-BPEL)
- Service Discovery (WSIL, UDDI, RAS)
- Service Invocation & Messaging (WS-I, SOAP)
- Service Description (WSDL, RAS)
- XML (Infoset, Namespace, Schema)
- Network Protocol (HTTP, SMTP, Other)
The SOA Reference Architecture and its Key Principles

Providing IT Flexibility to Meet the Demands of Business

- Linkage between business and IT through support of the entire SOA Lifecycle
- Connectivity and Service Isolation through the Enterprise Service Bus
- Separation of Concerns/Modularity for incremental adoption
- Component-based Programming and Solution Development
- Business and IT Monitoring and Management
- Open Standards
Agenda

- Introduction
- SOA Reference Architecture
- SOA Roadmap
  - Relating business and IT objectives
- SOA Governance
- Summary
SOA Roadmap: A Plan for Adopting SOA

SOA Goal
- Market return through transformation: quicker time to production, lower costs, competitive differentiation

Two Primary Roadmap Perspectives
- **Strategic Vision**
  Business and IT statement of direction which can be used as a guideline for decision making, organizational buy-in, standards adoption
- **Project Plans**
  Implementation projects to meet immediate needs of the current business drivers
Roadmaps: Building Plans In Context

Business Goals and Imperatives

Scope of Services

- Assess current state
- Determine future state
- Identify required capabilities and initiatives
- Develop Roadmaps

Domain of Capability

- Business Function Services
- Information Services
- Common IT Services
- Infrastructure Services

Discrete → Partial Integration → Enterprise Integration → Partner Collaboration → Dynamic Partner Collaboration
## Service Integration Maturity Model (SIMM)

<table>
<thead>
<tr>
<th>Business View</th>
<th>Silo</th>
<th>Integrated</th>
<th>Componentized</th>
<th>Services</th>
<th>Composite Services</th>
<th>Virtualized Services</th>
<th>Dynamically Re-Configurable Services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function Oriented</strong></td>
<td>Function Oriented</td>
<td>Function Oriented</td>
<td>Function Oriented</td>
<td>Service Oriented</td>
<td>Service Oriented</td>
<td>Service Oriented</td>
<td>Service Oriented</td>
</tr>
<tr>
<td><strong>Ad hoc IT Governance</strong></td>
<td>Ad hoc IT Governance</td>
<td>Ad hoc IT Governance</td>
<td>Emerging SOA Governance</td>
<td>SOA and IT Governance Alignment</td>
<td>SOA and IT Governance Alignment</td>
<td>SOA and IT Governance Alignment</td>
<td></td>
</tr>
<tr>
<td><strong>Structured Analysis &amp; Design</strong></td>
<td>Structured Analysis &amp; Design</td>
<td>Object Oriented Modeling</td>
<td>Component Based Development</td>
<td>Service Oriented Modeling</td>
<td>Service Oriented Modeling</td>
<td>Service Oriented Modeling</td>
<td>Grammar Oriented Modeling</td>
</tr>
<tr>
<td><strong>Modules</strong></td>
<td>Objects</td>
<td>Components</td>
<td>Services</td>
<td>Process Integration via Services</td>
<td>Process Integration via Services</td>
<td>Process Integration via Services</td>
<td>Dynamic Application Assembly</td>
</tr>
<tr>
<td><strong>Monolithic Architecture</strong></td>
<td>Monolithic Architecture</td>
<td>Layered Architecture</td>
<td>Component Architecture</td>
<td>Emerging SOA</td>
<td>SOA</td>
<td>Grid Enabled SOA</td>
<td>Dynamically Re-Configurable Architecture</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td>Platform Specific</td>
<td>Platform Specific</td>
<td>Platform Specific</td>
<td>Platform Specific</td>
<td>Platform Specific</td>
<td>Platform Neutral</td>
<td>Dynamic Sense &amp; Respond</td>
</tr>
<tr>
<td><strong>Level 1</strong></td>
<td>Level 2</td>
<td>Level 3</td>
<td>Level 4</td>
<td>Level 5</td>
<td>Level 6</td>
<td>Level 7</td>
<td></td>
</tr>
</tbody>
</table>

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SOA Adoption Considerations

- **Business Drivers**
  - Accelerate time to market
  - Reduce costs
  - Increase revenue
  - Reduce risk and exposure

- **Organizational Readiness**
  - Executive support and sponsorship
  - Skills

- **Current Architecture and Environment**
  - Build and Runtime
  - Degree of heterogeneity

- **Operational Readiness**
  - Ability to monitor and manage current operations
  - Integration of monitoring functions into production environments
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  - Executing for success
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What is Governance?

**SOA Governance is a catalyst for improving overall IT Governance**

**IT Governance**
- Establishing decision making rights associated with IT
- Establishing mechanisms and policies used to measure and control the way IT decisions are made and carried out

**SOA Governance**
- Extension of IT governance focused on the lifecycle of services to ensure the business value of SOA
Why SOA Governance Matters

**SOA Governance empowers teams to innovate**

- Realize business benefits of SOA
  - Business process flexibility
  - Improved time to market

- Mitigate business risk and regain control
  - Maintaining quality of service
  - Ensuring consistency of service

- Improved team effectiveness
  - Measuring the right things
  - Communicating clearly between business and IT

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SOA Governance Lifecycle

Plan the Governance Need
- Document and validate business strategy for SOA and IT
- Assess current IT and SOA capabilities
- Define/Refine SOA vision and strategy
- Review current Governance capabilities and arrangements
- Layout governance plan

Define the Governance Approach
- Define/modify governance processes
- Design policies and enforcement mechanisms
- Identify success factors, metrics
- Identify owners and funding model
- Charter/refine SOA Center of Excellence
- Design governance IT infrastructure

Monitor and Manage the Governance Processes
- Monitor compliance with policies
- Monitor compliance with governance arrangements
- Monitor IT effectiveness metrics

Enable the Governance Model Incrementally
- Deploy governance mechanisms
- Deploy governance IT infrastructure
- Educate and deploy on expected behaviors and practices
- Deploy policies
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SOA for the Enterprise Architect …

- Understand your business goals, drivers, and context

- Understand your current environment
  - Development, Runtime, and Management

- Establish a Roadmap
  - Find appropriate starting point
  - Determine the development and runtime requirements
    - *Leverage Separation of Concerns and the SOA Programming Model*

- Establish Governance
  - Appropriate for your company culture and environment
Thank You

多謝

Danke

Danke

감사합니다

Merci

Obrigado

Grazie

Gracias

Spasibo

धन्यवाद

شكراً

Multumesc

Даник

ありがとう

Korean

Traditional Chinese

Spanish

Russian

Hindi

Arabic

Italian

German

French

Brazilian Portuguese

Japanese

Romanian

Simplified Chinese
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