IBM SOA Architect Summit

SOA on your terms and our expertise
Model and Assemble: Business Driven Development

Brian Morley
EMEA Technical Sales

A Presentation for the Enterprise Architect
Agenda

- Business Driven Development for SOA
- Software Development Platform for Business Driven Development and SOA
- Summary
The SOA Lifecycle

- Discover
- Construct & Test
- Compose

- Gather requirements
- Model & Simulate
- Design

- Integrate people
- Integrate processes
- Manage and integrate information

- Finalize deliverables
- Business/IT alignment
- Process control

- Manage applications & services
- Manage identity & compliance
- Monitor business metrics

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Complexity is Forcing Change
But … Tools & Technology Applied Correctly
Can Pave the Way for Successful Business Innovation

- Standards (including open source) for interoperability
- Self-defined, loosely coupled interfaces
- Tools to visualize and integrate existing assets
- Model Driven Architecture (MDA)
- Declarative specifications and languages
- Architecture is one of the key factors for successful business innovation
What is Business Driven Development?

*Development as a Business Process*

An integrated approach to software development that aligns line-of-business, development and operations teams to improve business performance.

- Align Technology and Business priorities
- Improve efficiency and responsiveness
- Address Governance and Compliance requirements

Software development becomes a driver of competitive advantage.
The IBM Vision for Business Driven Development

*Business applications will be deployed, monitored and managed through the manipulation of multi-level models*

Value: Accurately and reliably capture and translate business intent into IT solutions
Three Key Concepts
To Adapt for Business Driven Development

Service Oriented Architecture
*Focus on Flexibility and Reuse*
- An approach for designing and implementing distributed systems that allows a tight correlation between the business model and the IT implementation

Model Driven Architecture
*Focus on Efficiency and Quality*
- A style of enterprise application development and integration based on using tooling to build system independent models and transform them into efficient implementations

Business Innovation and Optimization
*Focus on Responsiveness and Optimization*
- A monitoring and management approach that leverages integrated resources to achieve aligned, accountable, and action-oriented business operations
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)

Security (WS-SEC)
Transactions (WS-Tx)
Management

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Business Driven Development

**Key Development Phases**

**Model**
- Business Level Modeling
- Service Oriented Modeling and Design

**Assemble**
- Construction of Services
- Assembly of Services (new and existing)
- Choreography of Services

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SOA Programming Model

- **Design**
  - Focus on business design modeling, simplification, and role-based collaboration

- **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
SOA Programming Model Supported by Key Standards

- **JavaServer Faces**
  - Standard way to construct user interfaces for web applications, JSR 168 portlets, etc.
  - MVC based User Interaction Framework

- **Service Component Architecture (SCA)**
  - Component services programming model which provides a consistent framework for assembling solutions
  - Jointly developed/endorsed by IBM, BEA, IONA, Oracle, SAP, and Sybase
  - Apache Open Source Incubator Project

- **Service Data Objects (SDO)**
  - Uniform (technology independent) way to represent data
  - Provides *single abstraction* (common API) across JDBC ResultSet, JCA Record, XML DOM, JAXB, Entity EJB, CMI (for MQ messages), and so on
  - Co-developed by IBM and BEA

- **Business Process Execution Language (WS-BPEL)**
  - Standard way to choreograph business processes
  - Standardization through OASIS
  - WEF 1.1 for events
Development-time Service Lifecycle

- At development time services are:
  - Identified, Produced, Consumed, and Managed
Agenda

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The IBM Rational Software Development Platform

**Analyst**
Model the business & identify the business services

**Architect**
Design the services architecture
Analyze assets for reuse

**Developer**
Construct the services
Assemble & deploy the composite application

**Tester**
Test the individual services & composite application

**Deployment Manager**
Provision, configure, tune and troubleshoot composite applications

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**Project Manager**
- Follow a service-oriented process
- Manage requirements
- Manage SOA assets
- Manage quality
- Align business strategy with IT execution
- Govern SOA – align, execute and control investments

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**IT Executive**

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Benefits of Business Modeling and Analysis

- Helps you understand and transform your business
- Highlights complex behaviors even in simple processes
- Discover potential areas for process improvement and latent value in existing processes
- Validate enhancements prior to committing resource & implementing technical solutions
- Examine the financial implications of, and justification for process change
- Establish initial targets for process performance
- Define a business measurement structure with rigour and repeatability
Modeling motivations…

- **Modeling For Compliance/Documentation**
  - Document processes for use by a business to understand the business process
  - Customers use output for training, collaboration, documentation requirements for compliance regulations (Sarbanes-Oxley and Basel II)
  - Linkage to real-time monitoring provides a feedback mechanism for reporting requirements needed for compliance

- **Modeling For Redesign**
  - Document both the current state and future state business process and the comparison to determine Return on Investment (ROI) analysis
  - Six Sigma and Process Improvement are common methodologies

- **Modeling For Execution**
  - Modeler can create artifacts from the business model and make them available in technology development tools to reduce the overall implementation time of new business processes.
Drivers for Business Understanding

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<th>Business Modeling</th>
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<tr>
<td>Customers model processes for many purposes:</td>
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<tr>
<td>• Modeling For Compliance/Documentation</td>
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<td>• Modeling For Redesign</td>
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<th>Domain and Tooling Gap</th>
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<td>• Service Implementations</td>
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<td>• Process Choreography and Human Workflow</td>
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MDD: Drivers for Business Understanding

Business Modeling

1. Model processes and procedures (learn about processes)
2. Analyze/simulate existing and proposed processes (focus approach)
3. Understand technical/non-technical solutions (make decisions)
4. Move to technology solutions (implement)

Business Driven Development

Application Development

Process Choreography and Human Workflow
Business Driven Development Scenario

**Business and Construction Focused Tools**

- **Business Focused Tools**
  - Portfolio/Project Management
  - Business Performance Monitoring
  - Business Modeling
  - Message Mediations
  - Process Orchestration

- **IT Focused Tools**
  - Requirements Management
  - Software Architecture
  - Design and Assemble
  - Developer

**Middleware Platform**

- Process Server
- Portal Server
- Enterprise Service Bus
- Enterprise Application Server

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Requirements Management

- Create Business Vision Documents
- Create Business Use Case Specifications
- Define/Document Business Rule, Business Goal Requirements
- Define detailed system requirements (use cases and supplementary requirements)
- Trace enterprise requirements to business processes and service implementations

**Customer Benefit:**
- Document and capture business requirements
- Capture traceability relationships between elements in the application
Business Process Modeling and Analysis

- Business analyst analyzes, designs, and simulates business process
- Model from a Business perspective
  - As Is and To Be modeling
  - Business service identification
  - Specification of business KPI’s
    - e.g. Average time to open an account should be <18 hours
    - 80% or more of the total account opening requests should be approved
- Business-level simulation
  - Used to optimize business process by understanding Process Duration, Costing, ROI, etc.

**Customer Benefit:**
- Business-level tools for modeling and simulation
- Describe business-level services in context of business improvement
Service Oriented Analysis, Modeling, and Design

- **Business Process Model** can be transformed and visualized as a UML model
  - Create the design model from the business process model
  - Understand the business intent

- **IT service identification**
  - Create design model for new services (top-down)
  - Identify existing components for reuse (bottom-up)
  - Meet in the middle (most common)
  - UML Profile for Software Services aids in designing software services

- **Artifacts in Design Models** can be transformed into service implementations

**Customer Benefit:**
- Architecture and design for service implementations
- Automate application of design patterns
- Build transformations from analysis and design to implementation
Business Process Choreography & Mediation

- Business Process Choreography is linking services together to form *deployable* business processes:
  - Deployable process model based on WS-BPEL
  - Both Flow and Event based Business Process can be modeled
    - *BPEL Editor (Flow based)*
    - *Business State Machine Editor (Event based)*
  - Choreography includes automated and human based services

- Mediation creation to transform/route service requests and responses

**Customer Benefit:**
- Simplified, standards-based business process development
- Easily create mediations for routing/transforming requests between services
User Interface Development

- Use automated tools to build portlets that expose business capabilities (services)
  - Portlet wizards to face J2EE applications with portal UI
  - eForms to extend user interactions beyond the Enterprise and offline
  - Custom-built “situational” applications to fill in missing capabilities

- Configure portlets into user interface compositions with role dependent access

**Customer Benefit:**
- Role appropriate user interface
- Only relevant portions of applications or services are exposed
- Rapid time to value
Test Early, Test Often

- Testing needs to occur across Business Driven Development:
  - Component
  - Service
  - Business Process
  - Composite Application
  - Functional
  - User Interface
  - Performance
  - Regression
  - System

- Integrated set of test tools (that support SOA) and an integrated test environment is important
  - IDE’s provided
SOA Governance for Business Driven Development

*A Governed Lifecycle End-to-end*

**Development Process**

An approach and tools that effectively enable organizations to
- Determine the business priorities
- Execute development against those priorities
- Measure their effectiveness

**Development Infrastructure**

In the context of a secure / governed infrastructure
- Supports complex sourcing models (including geographically disperse)
- Provides development compliance (audit trails and security that is transparent to the developers)
SOA Governance for Business Driven Development

- IBM SOA Governance & Management Method
  - Defines Roles, Responsibilities, Tasks, and Policies for SOA governance based on best practices and real-world experience

- Tools used to help automate the governance process
  - Method content can be customized content based on customer requirements

- Manage SOA projects
  - Build project plans and allocate resources
Business Process Management capabilities in a SOA

*Designed to Start Anywhere in the Cycle, Use Only What You Need*

- **Clean hand-off to IT with Business Models, Metrics**
- **Enabling complete life cycle management and improvement of business processes to drive innovation**
- **Integrated deployment of policies and rules, based on an SOA platform**
- **Workflow and Choreography**
- **Content Management**
- **Business Monitoring, Dashboards and Analytics**
- **Feedback for continuous improvement and optimization**
- **Real time collaboration and management of business processes**

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Summary
  - Mapping to the IBM Products
Key Products - Business Driven Development

**WebSphere Business Modeler**

**Rational RequisitePro**

**Rational Software Architect**

**Rational Application Developer**

**WebSphere Integration Developer**
Thank You