Business Driven Development for Service-Oriented Architecture
Questions You Need to Consider

- What is Service Orientation and SOA and why is it important for your business?
- Is it real? Are customers really using it today?
- What are the core elements brought together under SOA?
- How can IBM help you get started?
Agenda

- Why SOA?
- What is SOA?
- SOA and the IBM Rational Software Development Platform
- Summary
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What’s on the minds of 450 of the world’s leading CEOs?

<table>
<thead>
<tr>
<th>CEO needs</th>
<th>CIO challenges</th>
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<tbody>
<tr>
<td><strong>Revenue growth</strong> with cost containment</td>
<td>Aligning IT and business goals to grow revenue and contain costs</td>
</tr>
<tr>
<td>Key competency: <strong>responsiveness</strong></td>
<td>Building responsiveness and agility into the organization through IT</td>
</tr>
<tr>
<td>Critical success factor: enable effectiveness of <strong>people</strong> and <strong>processes</strong></td>
<td>How can IT help enable people and teams to be more effective</td>
</tr>
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</table>

*Source: CEO Study of 456 WW CEOs, IBM Corp. 2004*

*Source: Operating Environment Market Drivers Study, IBM Corp. 2004*
Consistent imperatives ….

**Flexibility**

... Grow faster

- Bekins, a moving company, increased revenue by $75M through integration with business partners to serve a new market
- PineBank increased customer traffic by 300% and revenues by $8M

**Efficiency**

... Spend less

- Kookmin Bank should save $250 million from reduction of duplicate processes
- Volkswagen realized a 20% productivity gain

**Responsiveness**

... Increase customer satisfaction

- Dassault Aviation reduced concept-to-runway development time by 30%
- British Petroleum decreased user-provisioning time from 5 days to 10 minutes
Business flexibility depends on IT flexibility

“Today’s IT architectures, arcane as they may be, are the biggest roadblocks most companies face when making strategic moves.”

The McKinsey Quarterly Special to CNET News.com,

“Flexible IT, Better Strategy”, January 24, 2004

- Lack of business process standards
- Architectural policy limited
- Point application buys to support redundant line of business needs
- Infrastructure built with no roadmap

Actual application architecture for a consumer electronics company
Service Oriented Architecture: the blueprint for change

“Half of all companies and 77% of large enterprises reported that they are or will be using SOA by the end of 2005. Why? Evidence is mounting that SOA provides real benefits for business integration and flexibility.”


- Componentized
- Interoperable
- Modular
- Encapsulated
- Re-usable
- Scaleable
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What is .....?

... a service?
A repeatable business task – e.g., check customer credit; open new account

... service orientation?
A way of integrating your business as linked services and the outcomes that they bring

... service oriented architecture (SOA)?
An IT architectural style that supports service orientation

... a composite application?
A set of related & integrated services that support a business process built on an SOA
SOA in Action – It’s All About the Business
SOA in Action – It’s All About the Business

Change: Customer Order Entry
SOA in Action – It’s All About the Business

Change: Shared Service – Marketing, Billing, Receivables
SOA in Action – It’s All About the Business

Change: Supplier Handles Inventory (VMI)
SOA in Action – It’s All About the Business

Change: Shipping by FedEx, DHL, or UPS
SOA in Action – It’s All About the Business

Change: Collections Outsourced
SOA in Action – It’s All About the Business

Change: Process Optimization
Why SOA now?

- To keep pace with global competition:
  - “We are taking apart each task and sending it … to whomever can do it best, … and then we are reassembling all the pieces”
    from Thomas Friedman’s ‘The World is Flat’

- The standards and technology are finally in place, with broad industry support

- Availability of best practices for effective governance

- The necessary software to get started is available today
What Differentiates SOA from Claims Like This in the Past?

<table>
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<tr>
<th>Standards</th>
<th>Organizational Commitment</th>
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<tbody>
<tr>
<td>Broadly adopted Web services ensure well-defined interfaces.</td>
<td>Business and IT are united behind SOA (63% of projects today are driven by LOB)*</td>
</tr>
<tr>
<td>Before, proprietary standards limited interoperability</td>
<td>Before, communication channels &amp; ‘vocabulary’ not in place</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Degree of Focus</th>
<th>Connections</th>
<th>Level of Reuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOA services focus on business-level activities &amp; interactions</td>
<td>SOA services are linked dynamically and flexibly</td>
<td>SOA services can be extensively re-used to leverage existing IT assets</td>
</tr>
<tr>
<td>Before, focus was on narrow, technical sub-tasks</td>
<td>Before, service interactions were hard-coded and dependent on the application</td>
<td>Before, any reuse was within silo’ed applications</td>
</tr>
</tbody>
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*Source: Cutter Benchmark Survey
SOA Challenges

- Governance
  - Good SOA demands good governance

- Complexity
  - Composing applications of independent and loosely services increases complexity

- Reuse
  - What do we have and what does it do?

- Process
  - SOA is a new way of thinking and requires process and process guidance

- Team communication
  - Successful SOA brings LOB and IT closer, requiring seamless communication
Business Benefits of SOA

- Flexibility and scalability
- Decreased time to market
- Improved quality
- Reduced cost
- Applications designed for change
- Productivity gains
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What is Business Driven Development?

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

Development as a business process
- Align Technology and Business priorities
  - Improve efficiency and responsiveness
  - Create innovative products
- Higher productivity - 50% + increase in developer productivity
  - Improved quality - 80% fewer bugs
  - Greater predictability

Software development becomes a driver of competitive advantage.
The value of Business Driven Development

- **Resilience**: Improve business alignment of applications and their compliance to market and regulatory requirements
- **Efficiency**: Reduce costs through increased productivity and reuse
- **Growth**: Increase differentiation of products and improve customer service
The business-driven development lifecycle

- Business
  - Senior Executive
  - Define Requirements
  - Model the Business
  - Analyze & Design
  - Implement
  - Test
  - Deploy
  - Manage Change & Assets
  - Optimize

- IT Operations Manager
- Application Support
- Project Manager
- Deployment Manager
- Tester
- Analyst
- Architect
- Developer
How are customers thinking technically about flexible IT through SOA?

*The SOA Lifecycle*

- Gather requirements
- Model & Simulate
- Design
- Discover
- Construct & Test
- Compose
- Assemble
- Integrate
  - People
  - Process
  - Information
- Deploy
- Manage applications & services
- Manage identity & compliance
- Monitor business metrics
- Financial transparency
- Business/IT alignment
- Process control
- Governance & Best Practices
- Model
- Manage
Introducing the IBM SOA Foundation

Provides What You Need to Get Started with SOA

**IBM SOA Foundation:** Integrated, open set of software, best practices, and patterns

- **Extends value** of your existing investments, regardless of vendor
- Supports complete lifecycle with a **modular** approach
- **Extensive business and IT standards support;** facilitating greater **interoperability & portability**
- **Scalable:** start small and grow as fast as the business requires
SOA Foundation is more than just software

**Governance and Process**
- SOA Center of Excellence
- Rational Unified Process (RUP)
- IT Infrastructure Library (ITIL)

**Best Practices**
- SOA-Related IP
  - Patterns
  - Redbooks
  - Engagement Experience

**Education**
- Introduction to Value and Governance Model of SOA
- Web services for managers
- Technologies and Standards for SOA Project Implementation
- Design SOA Solutions and Apply Governance
The IBM Rational Software Development Platform

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

**Architect**
- Design the services architecture
- Harvest, acquire & construct the services
- Assemble & deploy the composite application

**Developer**
- Test the individual services & composite application

**Tester**
- Provision, configure, tune and troubleshoot composite applications

**Project Manager**
- Follow a service-oriented process
- Manage requirements
- Manage SOA assets
- Manage quality

**IT Executive**
- Align business strategy with IT execution
- Govern SOA – align, execute and control investments
Governance is key to a successful transition to SOA

- Discover
- Construct & Test
- Compose

- Integrate
  - People
  - Process
  - Information

- Gather requirements
- Model & Simulate
- Design

- Financial transparency
- Business/IT alignment
- Process control

- Manage applications & services
- Manage identity & compliance
- Monitor business metrics
Model the Business, Identify Services, Design the Services Architecture

- Discover
- Construct & Test
- Compose

- Gather requirements
- Model & Simulate
- Design
  - Rational RequisitePro
  - WebSphere Business Modeler
  - Rational Software Architect

- Financial transparency
- Business/IT alignment
- Process control

- Integrate
  - People
  - Process
  - Information

- Manage applications & services
- Manage identity & compliance
- Monitor business metrics
Discover and re-use Assets

- Discover
- Construct & Test
- Compose

- Gather requirements
- Model & Simulate
- Design

- Financial transparency
- Business/IT alignment
- Process control

- Rational Software Architect
- WebSphere Studio Asset Analyzer

- Integrate
  - People
  - Process
  - Information

- Manage applications & services
- Manage identity & compliance
- Monitor business metrics
Construct & Test the Services

- Discover
- Construct & Test
- Compose

- Rational Application Developer

- Integrate
  - People
  - Process
  - Information

- Gather requirements
- Model & Simulate
- Design

- Financial transparency
- Business/IT alignment
- Process control

- Manage applications & services
- Manage identity & compliance
- Monitor business metrics
Construct and Test the Composite Application

- Discover
- Construct & Test
- Compose

- Gather requirements
- Model & Simulate
- Design

- Financial transparency
- Business/IT alignment
- Process control

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

WebSphere Integration Developer

- People
- Process
- Information
Verify the Quality

- Discover
- Construct & Test
- Compose
- Rational Manual Tester
- Rational Functional Tester
- Rational Performance Tester
- Integrate
  - People
  - Process
  - Information
- Gather requirements
- Model & Simulate
- Design
- Financial transparency
- Business/IT alignment
- Process control
- Manage applications & services
- Manage identity & compliance
- Monitor business metrics
Overview of the Roles, Responsibilities, Process & Tools

**Rational Portfolio Manager**
- Understand Risk, Project Costs, and ROI
- Identify and Manage Projects and Resources

**Rational RequisitePro**
- Document Business Strategy
- Capture Business Goals, Objectives and Requirements
- Trace Business Objectives, Requirements & Create Business Use Case Outlines

**WebSphere Business Modeler**
- Create Financial Reports & ROI Estimates
- Create, Simulate & Analyze As-Is Business Model
- Create, Simulate, Analyze and Optimize To-Be Business Model
- Create Observation Model with KPIs & export to Monitor
- Run-time Statistics

**Rational Software Architect**
- Create & Manage System Requirements and Use Cases
- Trace Requirements & Architect System Use Case Realizations

**Rational Application Developer**
- Implement Services, & expose as Web Services
- Develop Portlets (App UI and Monitor)

**WebSphere Integration Developer**
- Choreograph services using BPEL, WSDL, etc.
- Configure Human Task Manager (including Ad-Hoc) & Client
- Use Business Rules, State Machines, Web Services, Adapters, ESB, etc.

**Tester**
- Rational Functional Tester
- Rational Performance Tester

**Deploy/Run**
- EAR
- Database Developer
- Business Operations Manager
- IBM Rational Team Unifying Platform

**Model Services**

**UML**

**BPEL**

**IBM Rational Team Unifying Platform**

**Business Driven Development with SOA**
Addressing SOA Challenges

- **Governance**
  - Implement IT governance processes with built-in models and workflows

- **Complexity**
  - Visually model business processes, services, components and applications
  - Apply patterns/transformations for SOA design and implementation best practices
    - Significant reduction of manual error prone coding
  - Validate new and existing services against standards
  - Automate testing of services for functionality and performance

- **Reuse**
  - Create, package, search, discover and deploy assets as services and manage the asset lifecycle
  - Package existing software as reusable services
  - Pattern frameworks to codify, catalog and reuse best practices

- **Process**
  - Adopt a flexible software development process platform to deliver customized yet consistent process guidance to project team

- **Team communication**
  - Embrace a comprehensive life-cycle solution for requirements management, process flow, project status and tracking in order to create a foundation for communication and effective collaboration among all disciplines
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Why Rational for SOA?

- **Right processes and tools**
  - Rational BDD for SOA is the right set of processes and tools to address SOA challenges

- **Simplifies and accelerates entire lifecycle**
  - Business process modeling, design, construction, assembly and test of service-oriented applications
  - Process guidance for SOA helps lead teams

- **Enables cross-lifecycle integration**
  - Better communication, guidance, traceability, change control between teams
Why IBM for SOA?

IBM understands service orientation and your business

- Expertise in aligning business and IT processes
  - SOA consultants, architects and IT specialists
  - Dozens of SOA-enabled business solutions
  - Unique intellectual property and methods

- Thriving ecosystem of partners (ISVs, SIs, Resellers)
  - 500+ partners in SOA community

- Extensive Industry experience and best practices
  - Over 1000 customers worldwide

- Unmatched breadth and depth of products
  - Over $1B/yr invested in SOA
  - Leadership in open standards: active in 50+ committees
  - Over 300 SOA-related patents
Analysts position IBM in the lead

“According to the IT pros surveyed [by Yankee Group], **IBM ranked at the top of the list for SOA capabilities.**”

*SearchDataCenter.com, Yankee Group: SOA Everywhere by 2006, Sept 22*

**AMR Research**

“This technology is the heart of the next wave of innovation”, said Eric Austvold, research director at AMR Research in Boston. “The leaders that do this well are able to rapidly change the way their current businesses work to meet the ever-changing demands of their customers.”

*Reuters - IBM launches software for mid-sized businesses, Sept 12*

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**Worldwide Service Oriented Architecture (SOA) Market Shares, 2004**

- IBM, 44%
- Sun/SeeBeyond, 13%
- BEA, 10%
- Tibco, 13%
- webMethods, 3%
- Sybase, 1%
- Other, 17%

*Source: WinterGreen Research, 2005*
IBM in Leaders Quadrant

- **Object-oriented Analysis and Design Tools** (as of 10/2004)
  Magic Quadrant for OOA&D Tools, Update for 2005, Michael J. Blechar, 17 September 2004

- **Web Services Platforms** (as of 7/2005)
  Magic Quadrant for Web Services Platforms. David Mitchell Smith, Charles Abrams, Daniel Sholler, Daryl C. Plummer, Michele Cantara, 12 July 2005

- **Integration Backbone Software** (as of 4/2005)

- **Enterprise Application Servers** (as of 4/2005)

- **Programmatic Integration Servers** (as of 2/2005)
  Magic Quadrant for Programmatic Integration Servers, 2005, Dale Vecchio, 25 February 2005

- **Horizontal Portal** (as of 5/2005)

- **Enterprise-Scope Application Platform Suites** (as of 7/2005)
  Magic Quadrant for Enterprise-Scope Application Platform Suites, Yefim V. Natis, Massimo Pezzini, Daryl C. Plummer, Cameron Haight, Kimihiko Iijima, 20 July 2005

- **J2EE Application Server Management** (as of 4/2005)
  Magic Quadrant for J2EE Application Server Management, 2005, C. Haight, 4 April 2005
Summary

- **SOA is a team sport:**
  - Business Team and IT Team work hand-in-hand

- **SOA Foundation is critical:**
  - Establish an enterprise architecture & infrastructure, based upon SOA principles to enable your journey

- **Project Entry points are important**
  - Avoid The “Big Bang” Approach

- **Governance is a must for success**

*The first step is the most important… so plan ahead*
Questions