S15464 – Oracle SOA Suite, the leading and most capable integration stack

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Institute of Electrical & Electronic Engineers (IEEE)
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How to Focus on SOA at OpenWorld 2011
Over 60 SOA-related sessions, labs and demos

"Focus On SOA" document


General Sessions

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<tr>
<th>TIME</th>
<th>TITLE</th>
<th>LOCATION</th>
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<tbody>
<tr>
<td>11:00 am – 12:00 pm</td>
<td>Oracle Fusion Middleware 11g—Foundation for Innovation Hasan Rizvi, SVP - Oracle</td>
<td>Moscone North - Hall D</td>
</tr>
<tr>
<td>11:00 am – 12:00 pm</td>
<td>General Sessions: High Technology Industry—Building Enterprise Agility Sanjay Jalona, VP &amp; Head, Manufacturing – Infosys Technologies Guy Schlacter, Director High Technology Industry Strategy and Marketing Jonathan Oomrigan, VP IBU - Oracle</td>
<td>Palace Hotel - Sea Cliff</td>
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<tr>
<td>2:00 pm – 03:00 pm</td>
<td>An Inside Look Into Oracle Fusion Applications and Oracle Fusion Middleware</td>
<td>Moscone West - 2002 / 2004</td>
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Navigate to the “Focus On” documents www.oracle.com/openworld
Oracle SOA Suite Program Agenda

• Differentiators & Adoption
• Overview
• Customer use cases
• Oracle SOA Suite at IEEE
• Roadmap
SOA = Service-Oriented Architecture

“… a set of principles and methodologies for designing and developing software in the form of interoperable services.”*

(*: source Wikipedia)

It often starts with a “simple” integration project…

Benefits:
- Improve Time-to-Market
- Drive Down Costs
- Improve Customer Service
- Expand Channels
- Drive Process Improvements
- Enable Business Visibility
- Comply With Regulations
- Accelerate M&A Integrations
Oracle SOA Suite
Fusion Middleware
Oracle SOA Suite – Key Differentiators

**Complete**
- Comprehensive SOA Offering
- One-stop integration solution

**Integrated**
- Designed to Work Together
- Less Effort More Value

**Open**
- Standards-Based Architecture
- Maximize Existing & Future Investments

**Best of Breed**
- Industry Leader
- Robust, Proven Industry leading Software
SOA Adoption within Oracle

APPLICATIONS

Fusion Applications
SOA Suite 11g as the foundation for the next generation of Applications
Workflow Service for all human workflows and approvals manager
EDN for events
BPEL, BPMN, BPA Suite and Business Rules leveraged heavily

Apps Unlimited (EBS, Peoplesoft, Siebel, JDE)
SOA Suite recommended integration approach for customers (e.g. 8.48, 8.51 PeoplesTools and beyond certified with SOA Suite)
EBS 12.1.1 bundles SOA Suite EBS adapter to publish services

Vertical Business Units (e.g. Retail, Utilities, etc)
SOA Suite recommended integration approach for customers
Primavera: Replacing workflow with Oracle BPM 11g
Financial Services (iFlex) embedded BPM, SOA and CEP

Application Integration Architecture (AIA)
Predefined integration processes between apps implemented with SOA Suite, BPEL PM and ODI

MIDDLEWARE

Oracle Unified Content Management
BPEL PM for document workflows
BPEL PM for invoice processing solutions
Building next gen workflow on 11gR1 Oracle BPM

WebCenter
Worklist portlet
Exchange synchronization

Identity Management
BPEL PM for identity provisioning workflows

Business Intelligence
ODI as new ETL tool in BI EE, Hyperion and BAM

OPERATIONS

Oracle Global IT
11g SOA Suite enables all partner and supplier interactions
BPEL PM for Oracle Alerts workflows
BPEL PM to sync customer data and quotes between the Oracle EBS Global Single Instance and Siebel
Oracle SOA Suite
Program Agenda

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Connect & normalize
Adapters

- Over 200 adapters
- For all technologies & applications: EBS, PSFT, Siebel, SAP, Databases, Files, FTP, JMS, MQ, etc.
- Graphical introspection of target
- Abstract complexity of underlying applications
- Convert from proprietary formats to XML
Virtualize, route, scale

Enterprise Service Bus

- Foundation for your shared services infrastructure
- Convert from one protocol and format to another, on the fly (ex: consume a Mainframe service from .NET over SOAP)
- Add scalability through caching

TPS msg/s

INTEGRATE VIRTUALIZE

Service Bus

Oracle Coherence Data Grid

TPS

1,000’s services

ERP MAINFRAME SERVICES DB PARTNERS
Orchestrate
Standards-based BPEL & BPMN

- Build process logic
- Involve people (human workflow) as well as systems
- Self-describing graphical design-time environment
- Build compensation logic for non-transactional services
Add security, management, governance and eventing
Global, Policy-driven Security

- Clearly separates:
  - process logic from
  - security concerns

- Centralized policy management & visibility: versioning, rollback, auditing

- Attach/detach policies at design-time…
  (right in JDeveloper)

- Or attach/detach policies at runtime, after deployment
  (in Enterprise Manager)
Out-of-the-box visibility
End-to-end instance tracking in Enterprise Manager

- All-in-one management console
- End-to-end (process) instance tracking
- No explicit work required from developer to enable tracing
- Unified error handling
Exceptions Handling

- Unified exception handling framework ("Error hospital"):  
  - Search  
  - Delete  
  - Recover failed instances (individual or batch)
- Directly access corresponding log entries
Monitor Express

Instrument BPEL processes right from JDeveloper

Available Monitor Objects:
Interval / Counter / Capture

Feed into pre-built BAM dashboards (or build your own)
Oracle SOA Suite
Program Agenda

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Norwegian Shipping Insurance Company

Used Oracle SOA Suite to provide single-view across internal and cloud applications

Project Metrics:
- Single developer (OSB, jQuery)
- Just a couple of months to production
SPS Commerce
Oracle SOA Suite used to build a public cloud

- **65,000 suppliers** and **1,200+ retailers** worldwide: Wal-Mart, Amazon, Rite-Aid, Ford, …

✓ Oracle Fusion Middleware reduced processing times by 10x
✓ Multi-tenant single instance installation provides economies of scale

Project Metrics:
- 50,000 business docs/hr (peak)
- 600,000 BPEL instances/hr (peak)
- Growing fast (over 7 million BPEL instances on Black Friday!)
- Dehydration store close to 1TB a day

- Purchase orders (PO)
- Advanced Shipping Notices (ASN)
- Catalogs
- Inventory inquiries
- etc.
Oracle SOA Suite
Program Agenda

- Differentiators & Adoption
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- Roadmap
SOA at IEEE

Carl Scott
Staff Director of Architecture & Development
Institute of Electrical & Electronic Engineers (IEEE)

• Who, What, and Why
• Current SOA Strategy and Toolset
• IBP SOA Conceptual/Logical Views
• Selected Use Cases
• Closing Thoughts
Who are we?

- IEEE is the world’s largest professional association dedicated to advancing technological innovation and excellence for the benefit of humanity.
- IEEE and its members inspire a global community through its highly cited publications, conferences, technology standards, and professional and educational activities.
- Founded in 1884 as a professional association for Electrical Engineers.
<table>
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<th>Membership &amp; Services</th>
<th>Societies &amp; Communities</th>
<th>Publications &amp; Standards</th>
<th>Conferences &amp; Events</th>
<th>Education &amp; Careers</th>
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<tr>
<td>• IEEE memberships support IEEE's mission to advance technology for humanity and the profession</td>
<td>• 38 societies and 7 technical councils representing a wide range of IEEE technical interests</td>
<td>• 3 million documents in the IEEE Xplore Digital Library with more than 7 million downloads</td>
<td>• sponsors more than 1,200 conferences in 78 countries while: - partnering with more than 1,100 non-IEEE entities globally; - attracting more than 450,000 conference attendees; and - publishing more than 1,200 conference proceedings via IEEE Xplore</td>
<td>• IEEE offers a wide range of learning, career enhancement, and employment opportunities within the engineering sciences, research, and other technology areas</td>
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<tr>
<td>• 400,000+ members worldwide</td>
<td>• IEEE membership benefits include: - IEEE Spectrum magazine subscription - myIEEE member portal access - IEEE Xplore Digital Library discounts</td>
<td>• publishes more than 150 transactions, journals and magazines each month</td>
<td>• 1,300 standards and projects under development</td>
<td>• IEEE career enhancement programs offer various online and in class certification and professional development opportunities.</td>
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Why SOA?

- A few key services were put in place in the past

- IEEE Business Platform (IBP) Program serves as the impetus to create enterprise SOA strategy to:
  - Drive a comprehensive set of custom UIs and further integrate backend systems in real-time
  - Achieve benefits such things as efficiency, effectiveness, agility, interoperability and security.
Current SOA Strategy

- Focus on enterprise web services and component architectures

- Leverage well-established SOA standards to build a robust, compliant environment

- Architect solution using market leader toolset - **Oracle Fusion Middleware** - which offers business process integration across IEEE systems and other third party systems.

- Establish/enforce governance through the appropriate set of policies, tools, and processes
Current Toolset

- **Oracle SOA Suite** for service composition and service orchestration
- **Oracle Service Bus** for service virtualization and protocol transformation
- **Oracle Web Services Manager** for securing web services
- **Oracle Enterprise Repository** and **Oracle Service Registry** for design-time governance
- **Oracle Business Transaction Monitoring** for run-time governance
Oracle SOA Suite Component Usage

- BPEL Process Manager for process orchestration
- BPM for business process modeling
- Mediator for simple routing and transformation
- AQ for achieving asynchronous messaging
- DB adaptor for database interaction
- BAM for measuring vital KPIs
- Coherence to cache results in OSB
IBP SOA Conceptual View (Layers)
IBP SOA Logical View
Use Case - Integration With Siebel CRM
Use Case - Integration With Identity Providers
Use Case - Enterprise Utility Services

Enterprise Level Utility Services

- Credit Card
- Tax
- Lookup
- Log/Exception

Enterprise Data Integration

OSB/SOA Suite

Customers
- Data
Outsourcers
- Data
Partners
- Data
Use Case - Integration With BI Publisher
Use Case - Integration With Cloud Solutions
Closing Thoughts

- Well-planned steps are required to implement enterprise SOA

- Approaching enterprise SOA from a maturation process is important

- The choice of the toolset counts—using Oracle Fusion Middleware has been critical to achieving the promised results of SOA
Oracle SOA Suite
Program Agenda

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Oracle SOA Suite roadmap

**11gR1**
- SCA
- BAM Java
- B2B
- Integrated security policies
- CEP

**11gR1 PS1**
- SOA Composer (Rules, DVM)
- Spring Java Component
- Resequencer
- Monitor Express

**11gR1 PS2**
- Composite partitions
- HTTP binding
- WS-AT

**OSB 11g**
- Result cache
- OWSM policies

**BPM 11g**
- Unified BPM
- BPMN 2.0
- Process Composer

**11gR1 PS3**
- Hot-Pluggability: WebSphere
- Single JVM SOA developer install
- BPEL 2.0
- Generic adapter wizard
- Purging improvements
- Exalogic Certification

**11gR1 PS4FP**
- Key BPM features
  - Grab / Alter Flow
  - Modify process for existing instances
  - Process Composer enhancements

**11gR1 PS5**
- Healthcare Adapter enhancements
- Oracle Virtual Assembly Builder support
- Diagnosability: integration with WLDF
- Active GridLink for RAC
- UMS Adapter

All information subject to change and final capabilities of released product may differ - Intended for information purposes only and may not be incorporated into any contract.
Oracle SOA Suite directions

Oracle has the most complete stack today
Oracle has the most integrated stack today
→ No technology disruption in 12c

Focus areas:
→ Industrial SOA
→ Developer’s productivity
Industrial SOA

“heavy duty”
“Individual manual labor is often replaced by mechanized mass production and craftsmen are replaced by assembly lines.”

1. More out-of-the-box productivity:
   1. Templating
   2. Zero-config dev environments
   3. Mapping improvements

2. Performance & Scalability

3. Diagnosability

4. Built-in Governance
Industrial SOA
Exalogic: Extreme Performance SOA and BPM Platform

• High-Performance Compute Nodes
• Integrated Storage
• InfiniBand Interconnect Fabric
• Tuned and Optimized SOA Platform:
  • Faster XML Processing
  • Scalability optimizations
  • Platform Optimizations

SOA 11g
Response Time

520ms

9X

58ms

Standard Hardware
Exalogic
Oracle SOA Suite - Summary

• The most complete & integrated offering
• Mature, widely adopted – and growing faster than any other solution
• Stable roadmap

➔ the leading and most capable integration stack
Oracle SOA and BPM Suites – Related Books

SOA
Getting Started with Oracle SOA Suite 11g R1 – A Hands-On Tutorial

BPM
Getting Started with Oracle BPM Suite 11g R1

admin
Oracle SOA Suite 11g Handbooks

OSB
The Definitive Guide to SOA

BPEL
BPEL & OSB operational management with Oracle Enterprise Manager 10g Grid Control

References
Oracle SOA Suite 11g R1 Developer’s Guide

Q&A

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ENGINEERED FOR INNOVATION
Checkbox enabled

- Cache Results?
- Cache Token
- Time To Live

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<th>Cache Token Expression</th>
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<td>$body/stock:getQuote/ticker/text()</td>
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<td>Duration 0 days 0 hours 02 : 00 min : sec</td>
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<td>XQuery Expression Request</td>
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Benefits of SOA

• Improve Time-to-Market
• Drive Down Costs
• Improve Customer Service
• Expand Channels
• Drive Process Improvements
• Enable Business Visibility
• Comply With Regulations
• Accelerate M&A Integrations
SOA Enables

- Modular design
- Standardized interfaces
- Reuse of component services
- Direct input from the business (e.g. BPA/BPM)
- Declarative business processes and rules
- Standardized skill sets

CUSTOMER PERSPECTIVE

“75% of our project was already completed before the project even started (due to reuse of services)”

Doug Mutart, Chief Architect, OnStar

CHALLENGES

- Business logic was duplicated in many different systems, making it difficult to change
- Custom client/server solution that was very difficult to maintain and change
- Overall, tightly coupled, point-to-point web of interfaces with millions of lines of “glue code” between legacy systems

RESULTS

- Achieved tremendous benefits thru loosely coupled, modular, and reusable services built using Oracle SOA
- 40% reduction in application development effort vs. point-to-point integration
- Estimated 45% reduction in application sustenance cost
SOA Drives Down Cost

**SOA ENABLES**

- Lower development costs
  - Service reuse
  - Declarative tools
  - Standard skills
- Lower maintenance costs
  - Decoupled components
  - Centralized management
- Lower integration costs
  - Standard interfaces
  - Intermediation layer
- Lower business process costs
  - Process improvements through visibility

**CUSTOMER PERSPECTIVE**

“Oracle SOA Suite and Oracle WebCenter Suite enable us to provide a dynamic, real-time, active collaboration-driven workplace environment for our business partners, delivered via a next-generation Web 2.0-enabled platform.”

*Michael Higgins*, Senior Vice President, IT

**CHALLENGES**

- Develop new application screens and customized landing pages rapidly and inexpensively to meet needs of 40 business partners using Orchesphere, the company’s state-of-the-art, cloud-based virtual collaborative supply chain management environment

**RESULTS**

- Boosted return on investment for service-oriented architecture (SOA)
- Launched services in days and cut development costs by 75%
- Set up supply chain networks of multiple partners in hours
- Cut total cost of ownership by 80% over traditional solutions and 35% by leveraging Oracle SOA Suite
SOA Improves Customer Service

SOA ENABLES

- Process portals (e.g. in the call center)
  - Drive and track manual business processes across applications using one or more portlets
- Self-service
  - Allow customers to apply for products and check status themselves
- 360° view of the customer for all sales channels
  - Improve call center performance
  - Enable up-sell & cross-sell opportunities

CUSTOMER PERSPECTIVE

“Oracle has been a strategic partner as we created and rolled out our service-oriented architecture. This architecture enabled us to deliver revolutionary products, such as the customized plan, in a record time to our customers.”
Ricardo Santoro, Chief Information Officer

CHALLENGES

- Enable an integrated view of communications services customers on just one screen, eliminating fragmented and inconsistent information distributed across several different systems
- Reduce the volume of calls at the call center through simultaneous availability of multiple service channels, such as the internet, for example

RESULTS

- Integrated and grew responsiveness of customer service with service-oriented-architecture (SOA) solution
- Achieved a tenfold improvement in back-end system performance
- Cut customer service response time in the call center by 10% and in specialized stores by 25%
SOA Enables New Channels

SOA ENABLES

- Multi-channel engagements:
  - Add new services without point 2 point integration
  - Add Web, Call center, Agent, Email
- One back office set of applications and processes
  - Single view of the business
  - Single view of the customer across channels
- Leverage B2B for secure, reliable messaging with partners

CUSTOMER PERSPECTIVE
“With Oracle, we have accelerated time-to-market for new services by two-thirds and have built 35-to-39 new services since deploying the solution two years ago.”

Goutham Nellutla, Head of North American Shared Services Organization

CHALLENGES
- Accelerate time-to-market for new services and reduce operational costs to maintain a competitive edge
- Adopt a service-oriented architecture (SOA) approach to enable the reuse of services to maximize cost efficiencies, reduce application development timelines, and advance standardization
- Facilitate regulatory compliance and provide the agility to enter new markets and easily drop new components into the company’s existing IT infrastructure

RESULTS
- Provided 360-degree visibility into all enterprise IT assets—improving IT governance
- Accelerated the introduction of new products and entry into new markets
- Reduced the time required to build new IT services by two-thirds
- Reduced the time required to meet regulatory requirements for new markets
SOA Drives Process Improvements

SOA ENABLES

• Design and simulate processes with BPM
• Automate manual processes
• Reduce exception rates
• Track KPIs and SLAs with BAM

CUSTOMER PERSPECTIVE

“With Oracle Fusion Middleware, we not only saved 4.8 tons of paper per year—we improved accounting approval workflow by 65% and reported an estimated return on investment in less than two months.”

John Chung, Vice President, Information Technology

CHALLENGES

• Enable the company to reach its goal of reducing paper consumption by 30%
• Comply with Canadian Real Estate Industry practices and standards related to environmental sustainability within the commercial, industrial, and retail sectors
• Manage real estate properties in an environmentally responsible manner by reducing the company’s corporate carbon footprint
• Use existing technology to create new models of efficiency and environmental sustainability

RESULTS

• Streamlined reporting processes by 40% and achieved a return on investment in under two months
• Improved accounting approval workflow by 65%
• Cut server energy usage by 35% and built long term scalability
• Reduced energy use by 15% across 600 properties
SOA Drives Process Improvements

SOA ENABLES

• Design and simulate processes with BPM
• Automate manual processes
• Reduce exception rates
• Track KPIs and SLAs with BAM

CUSTOMER PERSPECTIVE

“Together, Oracle BPEL and Oracle BAM helped us create a robust platform where we could easily monitor processes and provide a feedback loop for process optimization.”

Mark Simpson, Chief Architect, Griffiths Waite (SI at Cattles)

CHALLENGES

• Improve visibility into loan approval process and provide ability to take corrective actions (i.e. approve loans which have been denied)

RESULTS

• BPEL & Business Rules Engine automates end-to-end loan approval process
• BAM dashboards provides immediate visibility into the application pipeline
• SOA approach has led to 195% improvement in revenue.
SOA Enables Business Visibility

**SOA ENABLES**

- **Real time visibility of Business Processes**
  - BAM dashboards
  - Process instances

- **Standards based EAI**
  - Rapidly enable web/mobile access to critical real time data

**CUSTOMER PERSPECTIVE**

“Oracle Fusion Middleware allows us to create reusable components that enable us to deploy new campaigns faster and at a lower cost.”

*Ryan Klose, CIO*

**CHALLENGES**

- Optimize business processes and enable seamless transaction processing by integrating disparate applications and systems
- Provide greater agility to introduce new processes, e.g. mobile capabilities to support remote workers
- Enable more rapid implementation and integration of new systems using service-oriented architecture, and reduce the complexity of application upgrades
- Minimize error-prone manual processes by removing the organization’s reliance on spreadsheets and data rekeying

**RESULTS**

- Developed three complex business processes in three weeks, reducing the double handling of information to improve data accuracy and streamlining the creation of new products and campaigns
- Made it easier to provide status updates to trading partners on their pending liquor orders
- Provided mobile workers with remote access to a sales order system so they can work on the road
SOA Enables Compliance

**CUSTOMER PERSPECTIVE**

“By rapidly assembling critical services into modular and flexible business applications, Oracle is helping Yorkshire Water achieve its goals of reducing IT costs, improving efficiency, and increasing visibility.”

*Craig Walton, Application Platform Manager*

**CHALLENGES**

- Improve reservoir safety
- Automate the management of direct debit payments, change of address and meter reading processes
- Replace a system based on manual business processes initiated from multiple sources

**RESULTS**

- Brought the Reservoir Safety system to market up to 40% faster compared with traditional development tools
- Enabled faster inquiry resolution, improved customer satisfaction, and increased call center efficiency.
- Increased operational excellence
- Ensured compliance with water utility regulations

---

**SOA ENABLES**

- Comply with industry standards
  - Utility regulations
  - Oracle B2B supports standards like HIPAA & HL7
- Meet SOX requirements
  - Processes are self documenting with BPEL and BPA suite
  - Keep complete process and audit logs with BPEL
  - Monitor activity with BAM
- Improved Governance
  - Track and access control SOA artifacts
  - Change control

---

**SOA ENABLES**

- Comply with industry standards
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SOA Accelerates M&A Integration

SOA ENABLES

• Integrate application data
  • Standards based EAI

• Integrate business processes
  • HR
  • Finance
  • Procurement
  • Sales

• Oracle’s integration strategy

CHALLENGES

• Reduce the complexity of integrating newly acquired institutions to their corporate E-Business Suite financial system
• Provide up-to-date information on student facing portals
• Improve information technology and business operations
• Improve data quality as well as financial forecasting

RESULTS

• Dramatically reduced the time required to integrate newly acquired institutions
• Demonstrated the power and efficiency of integrating Oracle products (E-Business Suite, PeopleSoft, and SOA) to achieve business process automation.
• Retired over 60 E-Business Suite concurrent manager jobs freeing up several hours
• Process over 20,000 student invoices per day without manual intervention which equates to over 3 Million BPEL instantiations
Hardware and Software
Engineered to Work Together