John Michelsen
ITKO, Inc.

BUILDING A CENTER OF EXCELLENCE FOR SOA LIFECYCLE QUALITY

THURSDAY — 10:15 – 11:15

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Continuously Aware:

Evolving the Business & Tech-Savvy QA Organization

John Michelsen
Founder, Chief Architect
iTKO, Inc.
May 1st, 2008

iTKO LISA™

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iTKO: Who We Are

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Technology Partners

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Delivery Partners

accenture, TATA, WIPRO Applying Thought, Satyam, patni, [ipt], Infosys, Cognizant

Awards

Gartner cool vendor 2006, software development 10th annual productivity award, VERY GOOD InfoWorld, JAVA DEVELOPER'S JOURNAL EDITOR'S CHOICE 2003, TECH TITANS PURE GENIUS, SD Times 100 2005, SD Times 100 2006, SD Times 100 2007

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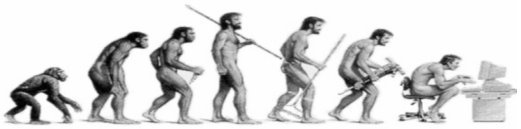
Strategy for Testing is Evolving

- **Application Complexity and Variability are Increasing**
- **Today/Tomorrows Applications are Services-Based** (aka SOA, Composite Applications, ESB Integrated, and/or Loosely Coupled)
- **It's a good thing but it is causing additional downtime & performance issues**
- **Test/Validation driving into the Governance Realm**
- **Test Strategy moving forward must address the 3 critical objectives of Complete, Collaborative, and Continuous**
- **Virtualization can be applied to bring teams into parallel cycles**



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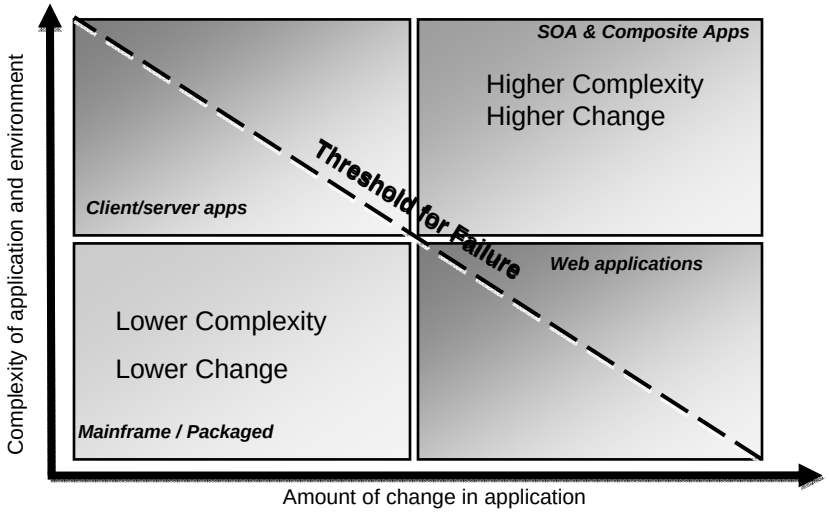
Pressures Causing QA Evolution



Complexity x Change = Risk of Failure

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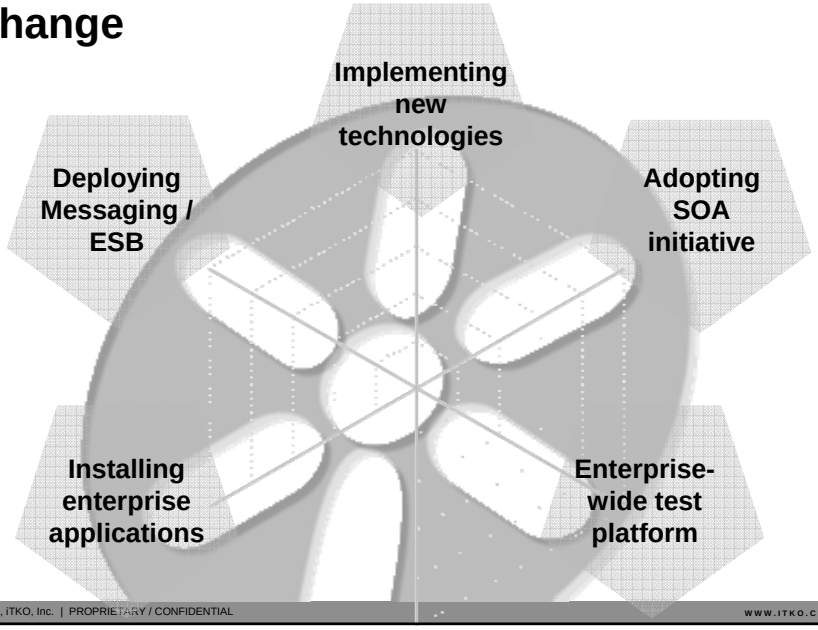
Initiatives that Drive Complexity & Change



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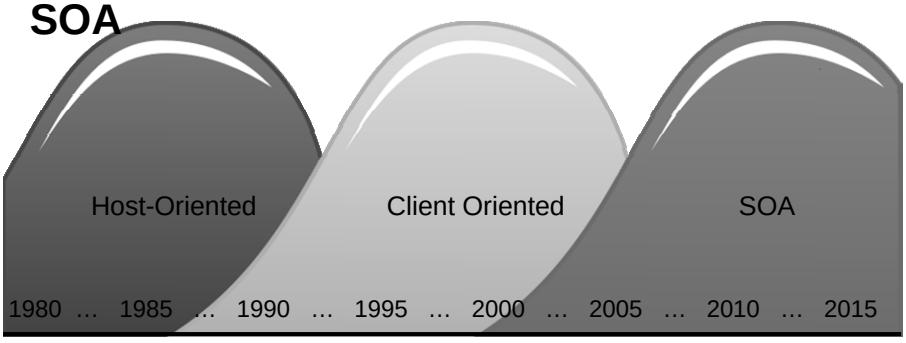
Fundamental Enterprise IT Shift to SOA



- Aberdeen: 90% of $1B+ (Large) companies have SOA In Process by 2006.
- Gartner: “By 2009, more than 80% of development and integration budgets will be dedicated to applications delivered as an SOA.”
- McKinsey survey in Forbes: one of two CIO Priorities for 2007, 70% implementing SOA in 2007

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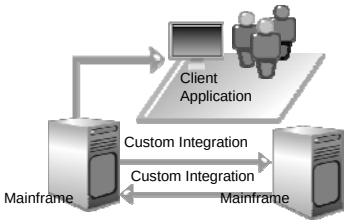
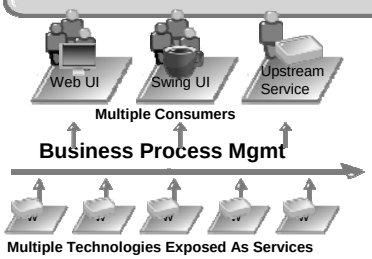
What is SOA?

Traditional Applications



- Rigid Infrastructure, Large Applications
- Long cycle (months) to reflect business changes
- Very expensive to maintain integration

SOA Approach



- Loosely-coupled & Heterogeneous integration strategy
- Leverage & Extend existing & 3rd Party Services
- Agile IT and Business Alignment

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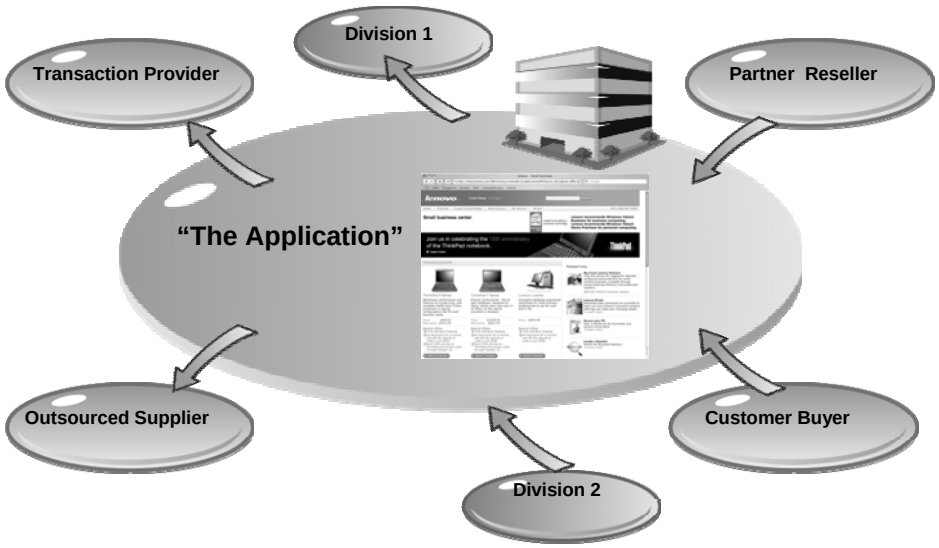
SOA On the Whiteboard



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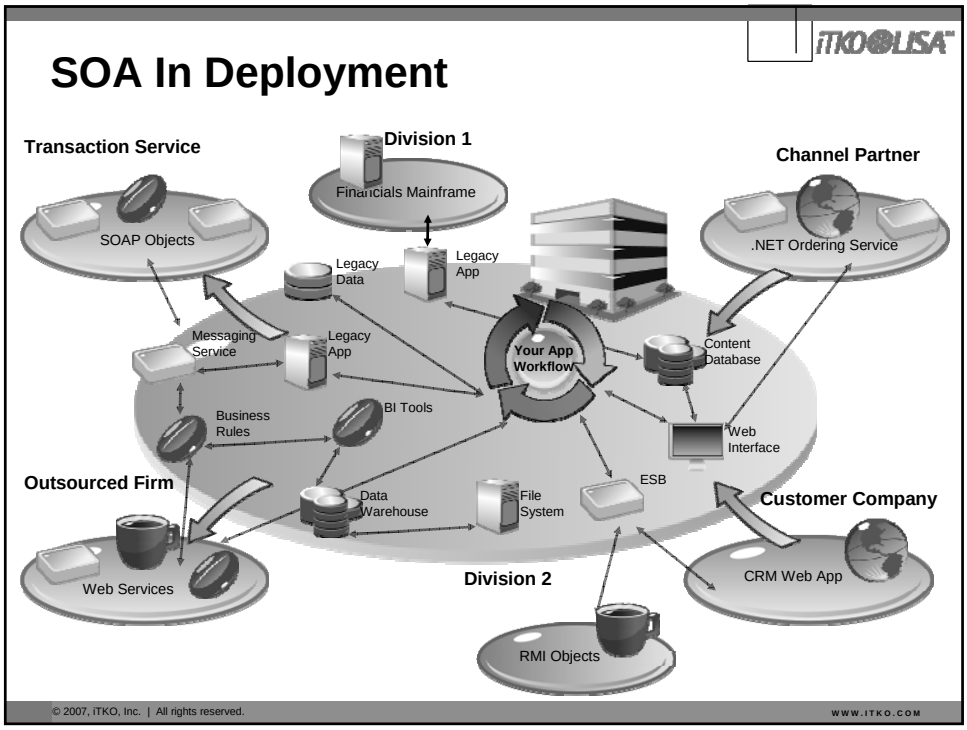
SOA In Deployment
Transaction Service
Division 1
Channel Partner
Financials Mainframe
SOAP Objects
.NET Ordering Service
Legacy Data
Legacy App
Messaging Service
Legacy App
Your App Workflow
Content Database
Business Rules
BI Tools
Web Interface
Outsourced Firm
Data Warehouse
File System
ESB
Customer Company
Web Services
CRM Web App
Division 2
RMI Objects
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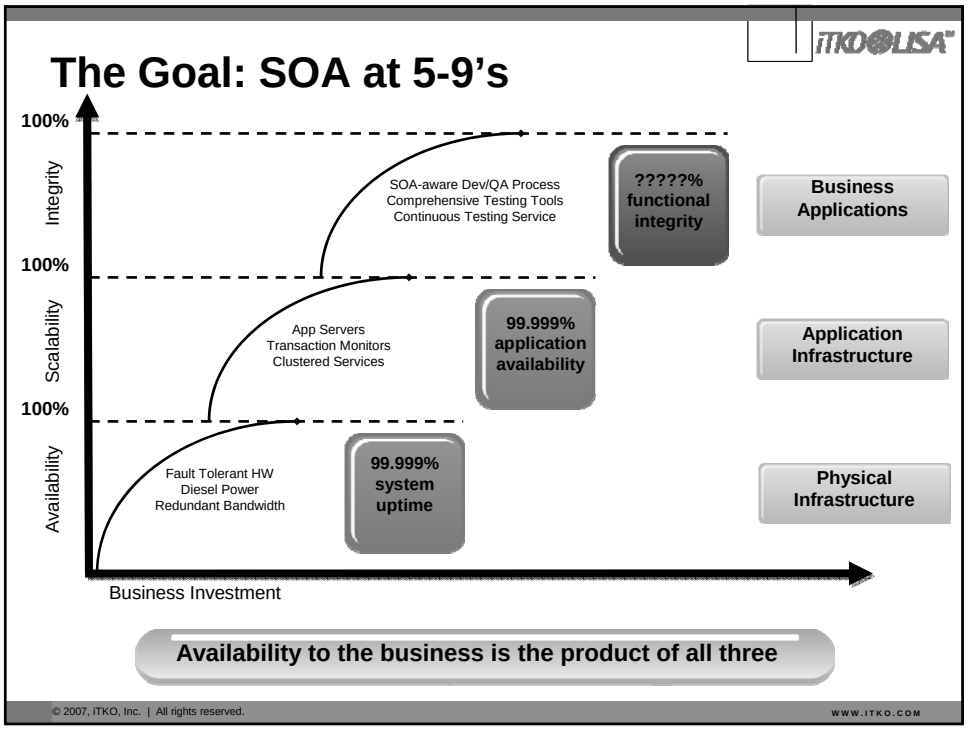
The Goal: SOA at 5-9's
100%
Integrity
SOA-aware Dev/QA Process
Comprehensive Testing Tools
Continuous Testing Service
?????% functional integrity
Business Applications
100%
Scalability
App Servers
Transaction Monitors
Clustered Services
99.999% application availability
Application Infrastructure
100%
Availability
Fault Tolerant HW
Diesel Power
Redundant Bandwidth
99.999% system uptime
Physical Infrastructure
Business Investment
Availability to the business is the product of all three
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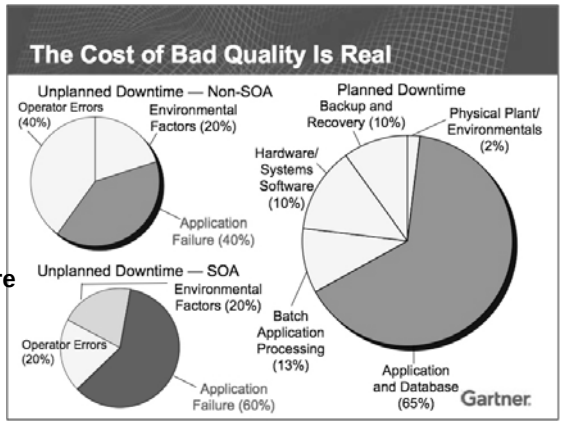
But the Opposite is Happening!

Downtime is Increasing

Application Failure is The Cause



"Through 2009, 60% of unplanned downtime for SOA-based, loosely coupled applications will be due to application failure, up from 40% on non-SOA-based applications (0.7 probability)."

Source: Allie Young, Gartner, March, 2007

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The SOA Governance Triangle

Source: ZapThink

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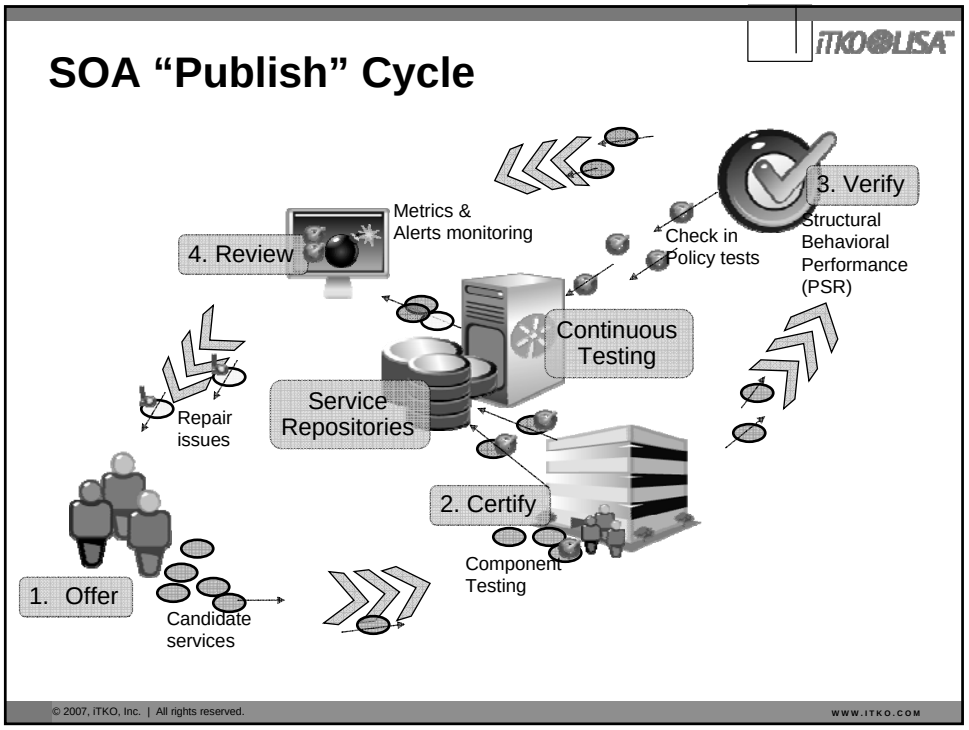
SOA "Publish" Cycle
iTKO LISA
3. Verify
Structural
Behavioral
Performance
(PSR)
Check in
Policy tests
Metrics &
Alerts monitoring
4. Review
Continuous
Testing
Service
Repositories
Repair
issues
2. Certify
Component
Testing
1. Offer
Candidate
services
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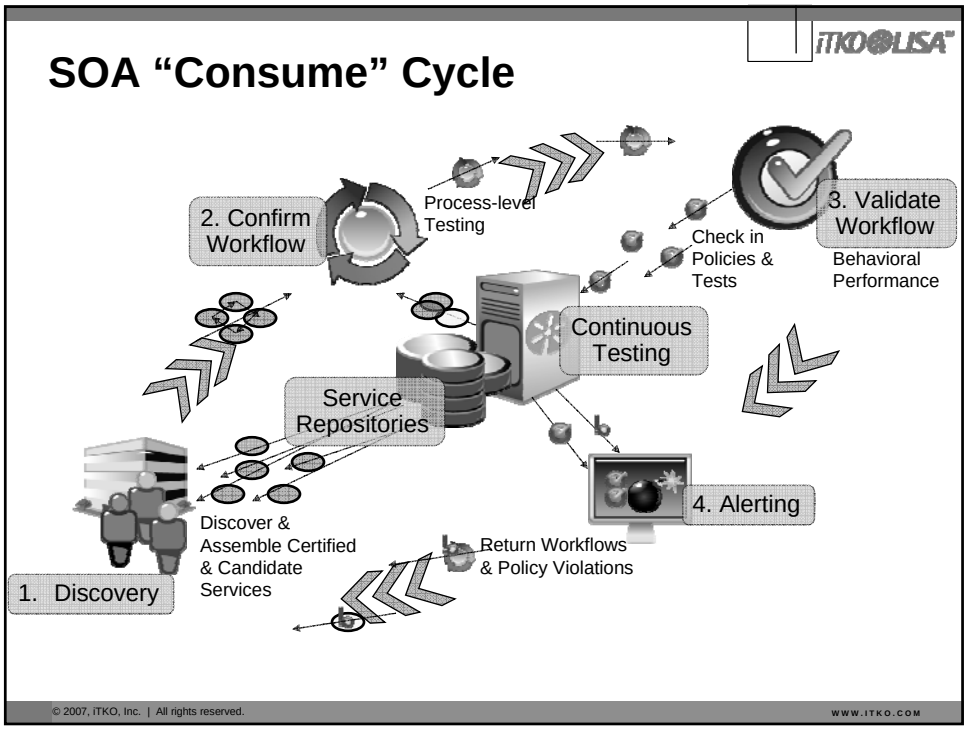
SOA "Consume" Cycle
iTKO LISA
2. Confirm
Workflow
Process-level
Testing
3. Validate
Workflow
Behavioral
Performance
Check in
Policies &
Tests
Continuous
Testing
Service
Repositories
4. Alerting
Discover &
Assemble Certified
& Candidate
Services
Return Workflows
& Policy Violations
1. Discovery
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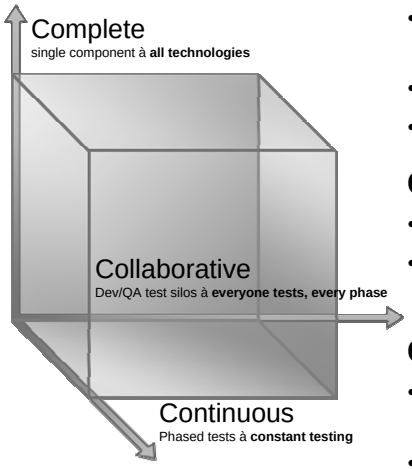
SOA Test Strategy: The 3-C's



Complete Testing

- Every heterogeneous layer of architecture
- Invoke and Verify
- Discover composition of apps/services

Collaborative Testing

- Test early before UIs are created
- Leverage test assets across unit, functional, performance, etc

Continuously Test

- Push Validation to the point of Integration and Runtime
- Add testing of new services to existing testing workflows

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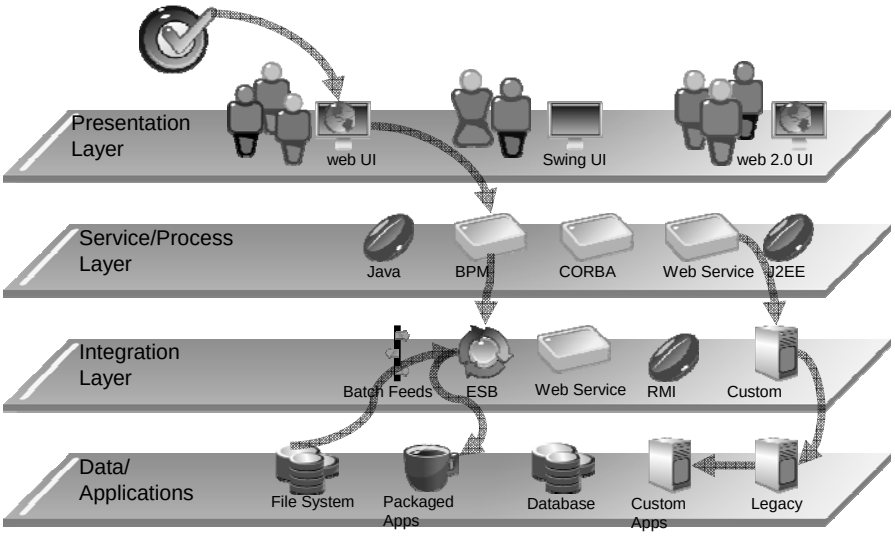
Complete SOA Test Map - Simplified



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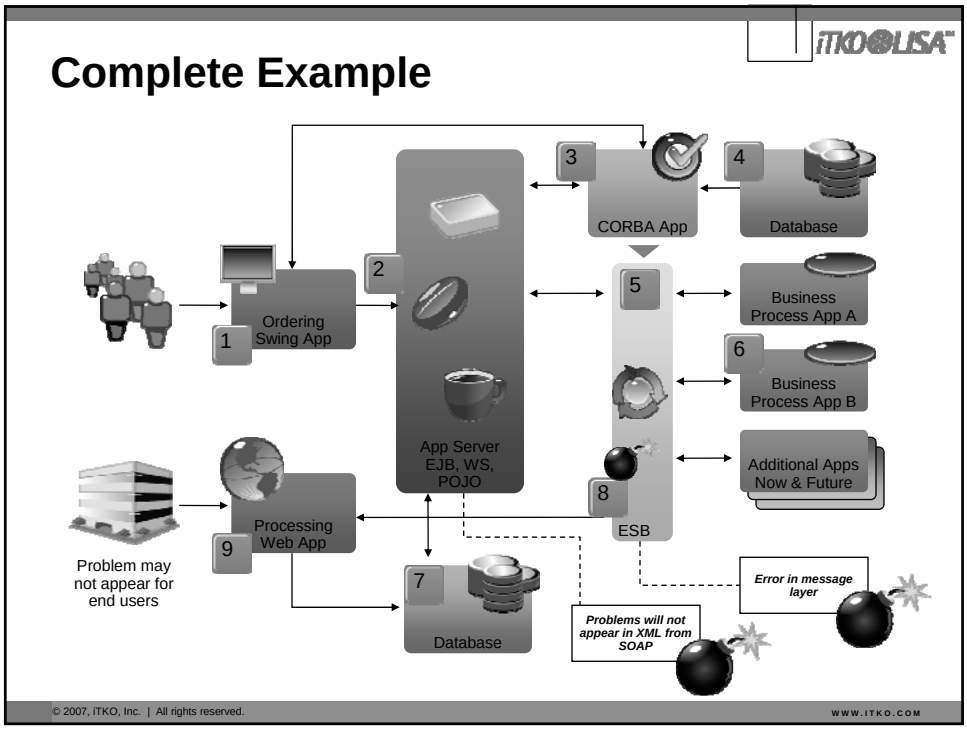
Complete Example
iTKO LISA
Ordering Swing App
1
2
App Server EJB, WS, POJO
3
CORBA App
4
Database
5
ESB
Business Process App A
6
Business Process App B
Additional Apps Now & Future
8
Processing Web App
9
Problem may not appear for end users
7
Database
Error in message layer
Problems will not appear in XML from SOAP
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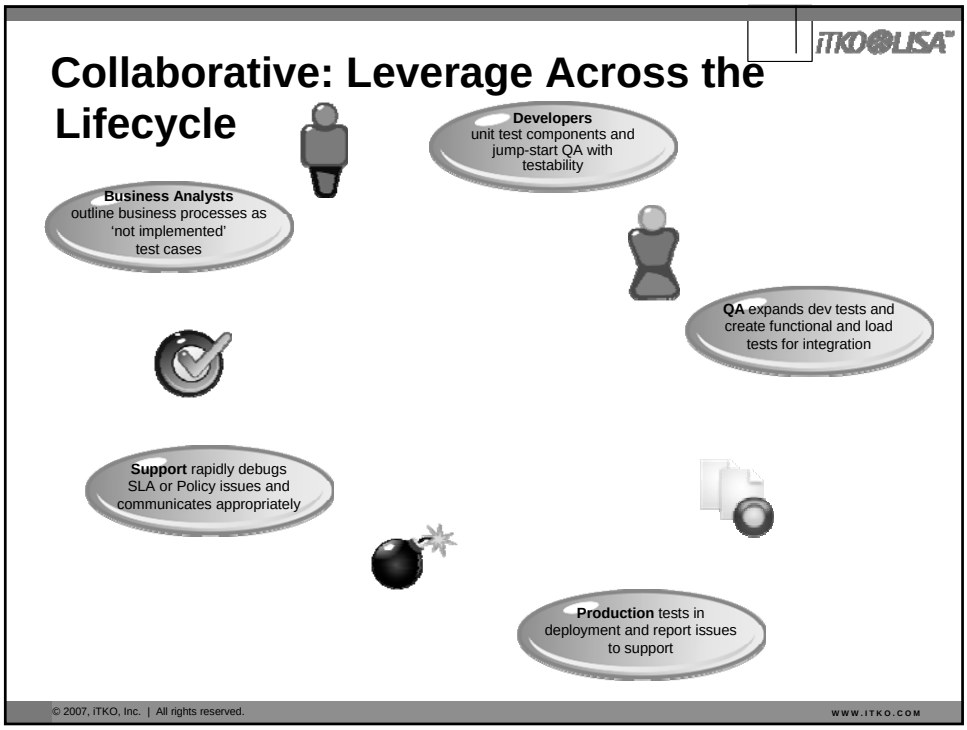
Collaborative: Leverage Across the Lifecycle
iTKO LISA
Developers unit test components and jump-start QA with testability
Business Analysts outline business processes as 'not implemented' test cases
QA expands dev tests and create functional and load tests for integration
Support rapidly debugs SLA or Policy issues and communicates appropriately
Production tests in deployment and report issues to support
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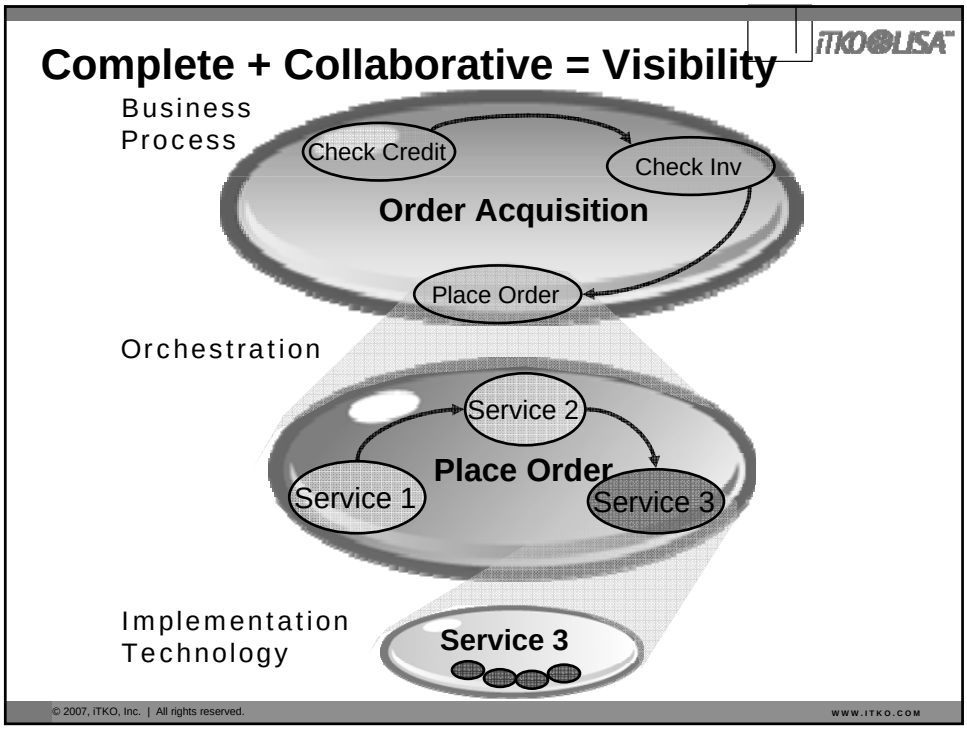
Complete + Collaborative = Visibility
Business Process
Check Credit
Check Inv
Order Acquisition
Place Order
Orchestration
Service 2
Place Order
Service 1
Service 3
Implementation Technology
Service 3
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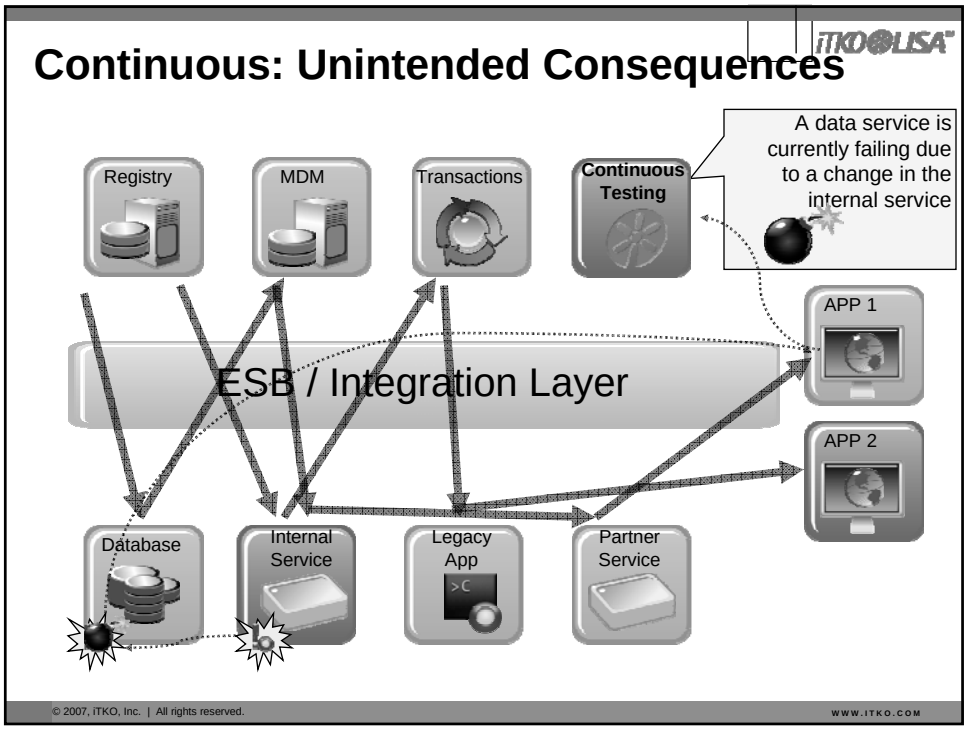
Continuous: Unintended Consequences
A data service is currently failing due to a change in the internal service
Registry
MDM
Transactions
Continuous Testing
APP 1
ESB / Integration Layer
APP 2
Database
Internal Service
Legacy App
Partner Service
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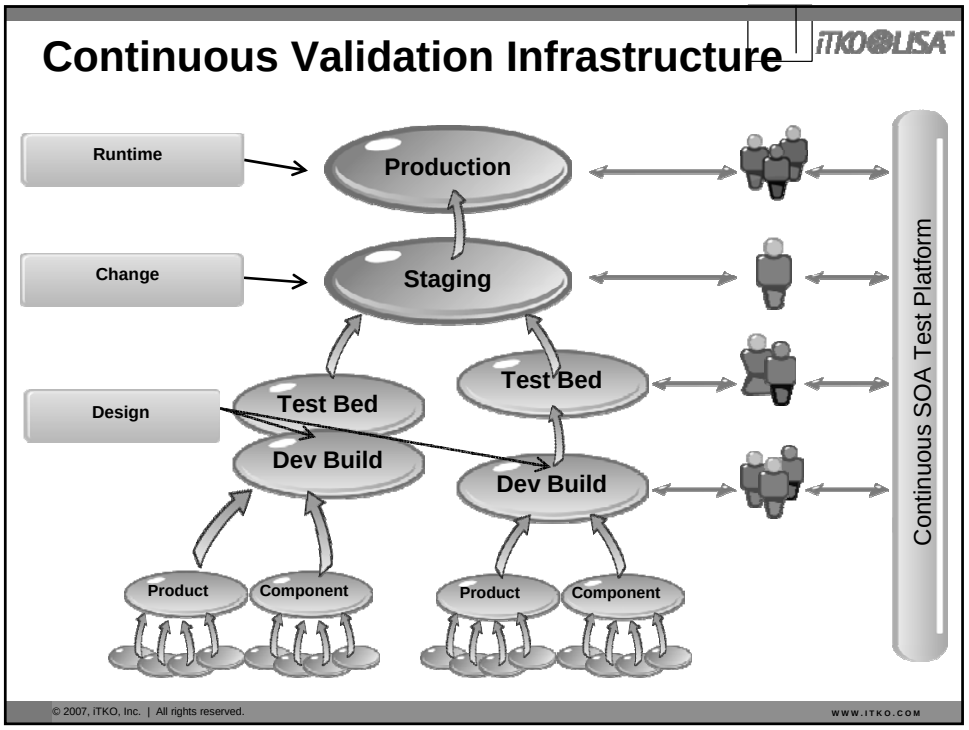
Continuous Validation Infrastructure
iTKO LISA
Runtime
Change
Design
Production
Staging
Test Bed
Dev Build
Test Bed
Dev Build
Product
Component
Product
Component
Continuous SOA Test Platform
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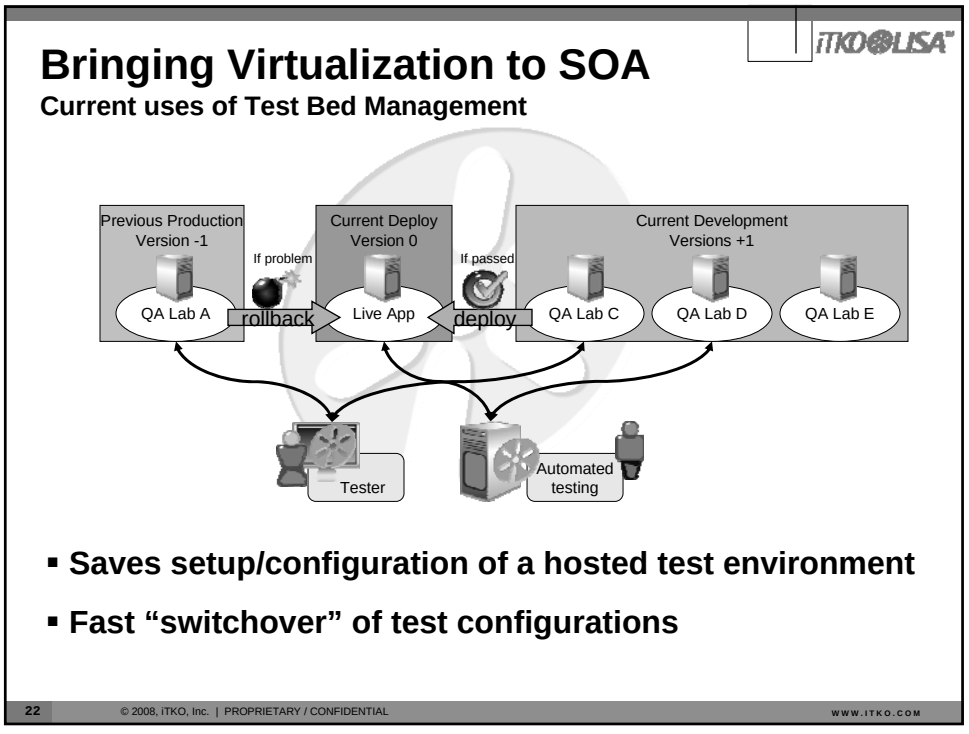
Bringing Virtualization to SOA
Current uses of Test Bed Management
iTKO LISA
Previous Production Version -1
Current Deploy Version 0
Current Development Versions +1
If problem
If passed
QA Lab A
rollback
Live App
deploy
QA Lab C
QA Lab D
QA Lab E
Tester
Automated testing
Saves setup/configuration of a hosted test environment
Fast "switchover" of test configurations
22
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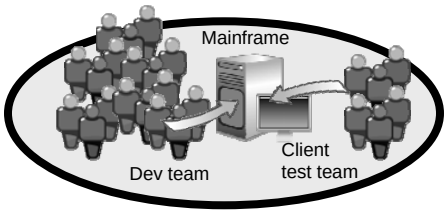
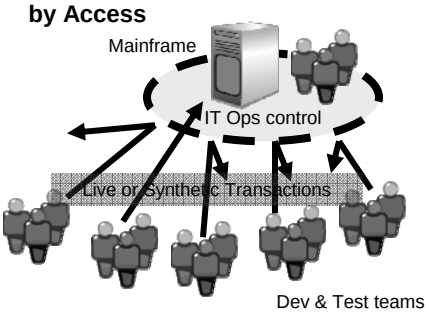
1. Contention for Shared Resources

- Live services are not always available for dev & testing
- Administrators control or prohibit access to prevent overload and downtime
- Multiple dev & test teams create scheduling conflicts for access to key systems

Traditional Dev & QA = Centralized Control, Longer Cycles



SOA Development = Constrained by Access



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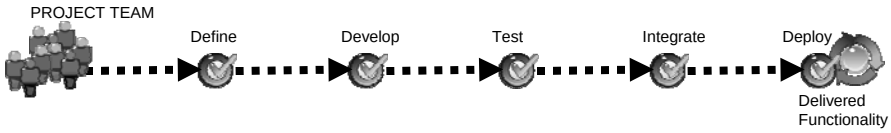
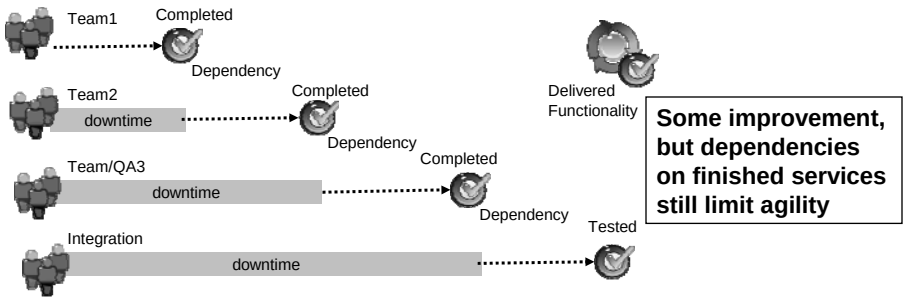
2. Dependencies in Development Cycles

Conventional "Waterfall" development cycle…



Attempt to break up SOA development to distributed teams



Some improvement, but dependencies on finished services still limit agility

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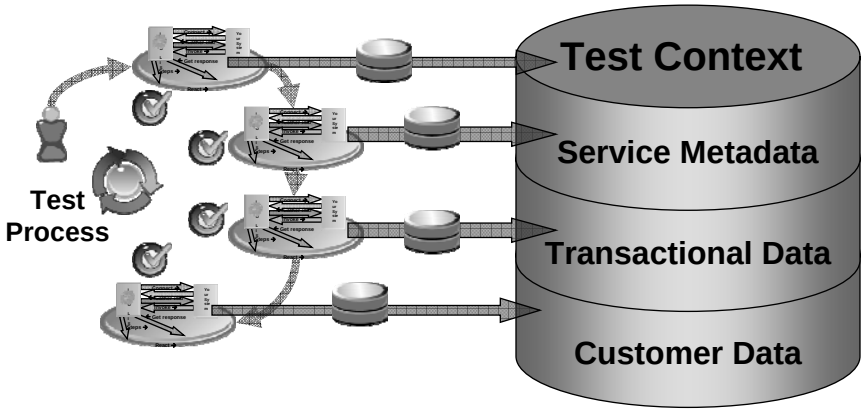
3. Expense of Test Data Creation



- Creating realistic, repeatable test scenarios for SOA represents a huge data maintenance effort
- Changing behavior of services makes test data brittle

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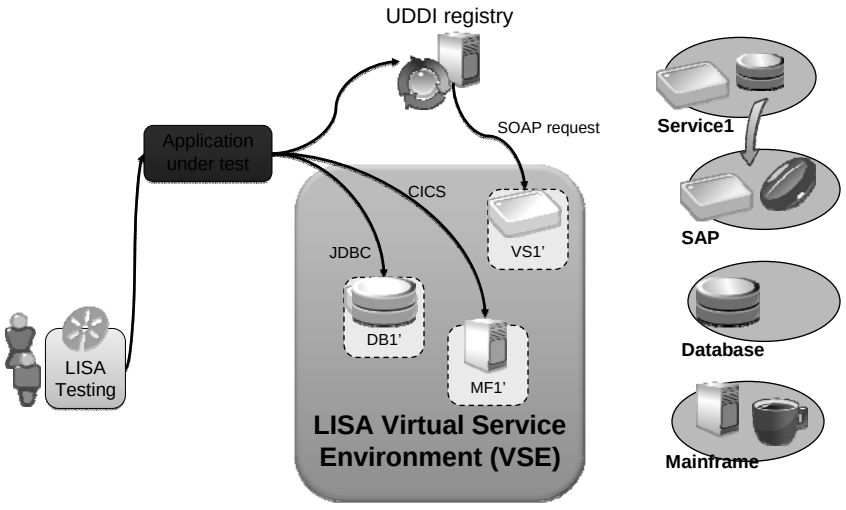
Applying Service Oriented Virtualization (SOV)



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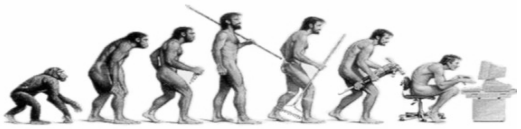
Summary (Reprise)

- **Application Complexity and Variability are Increasing**
- **Today/Tomorrows Applications are Services-Based**
- **It's a good thing for Reuse & Flexibility but it is causing additional downtime & performance issues**
- **Test/Validation driving into the Governance Realm**
- **Test Strategy moving forward must address the 3 critical objectives of Complete, Collaborative, and Continuous**
- **Virtualizing the Behaviors of applications allows Test/Validation across teams and breaks limitations of Access, Dependency & Data Management**



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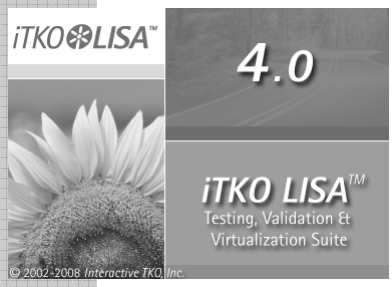

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