Moving Ahead With SOA
Managing Service Oriented Architectures

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IBM, Tivoli

SOA on your terms and our expertise

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Agenda

Management and Security – key to successful implementation

- **The impact of integrating business with technology**

- **SOA Management – why is it different?**

- **Challenges of Managing SOA**

- **Managing Service Oriented Architectures**

- **Securing Service Oriented Architectures**

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The CEO Challenge

Bridging the business and technology integration gap

What Are CEOs Saying to IBM?

- **78% of CEOs believe that integrating business and technology is of great importance to driving business growth**

- **Only 45% of CEOs believe that they have successfully integrated business and technology in their organizations**

- *"…[organizations] must use technology to stay ahead of the curve…"*

- *"Technology must be integrated in the early stages of business strategy …"*

- *"Technology is the only way to cope with the surge of new work… [and] opportunities."*

Source: IBM Global CEO Survey, Jan. 2006

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Integration Delivers Significant Business Benefits

CEOs who have extensively integrated business and technology show superior results compared to CEOs with limited integration
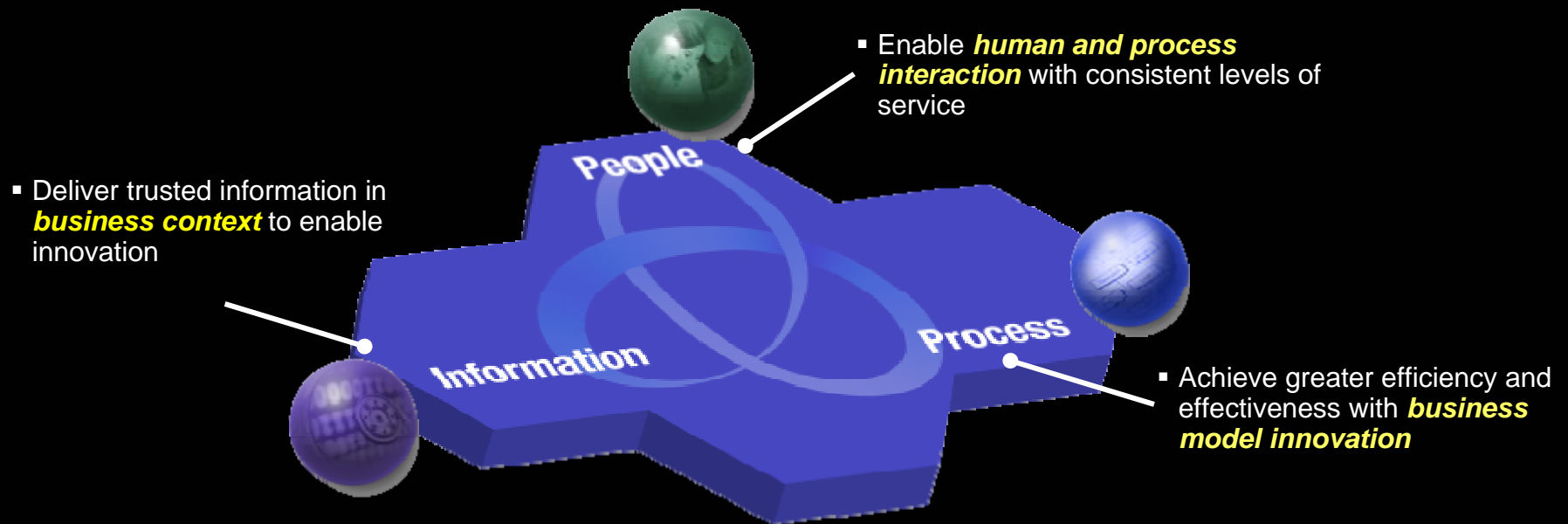
Extensive integrators are more successful:

- **2X as successful in reducing costs**

- **2X as successful increasing quality and customer satisfaction**

- **3X as successful increasing revenue**

■ **Limited Integrators**   ■ **Extensive Integrators**

Source: IBM Global CEO Survey, Jan. 2006

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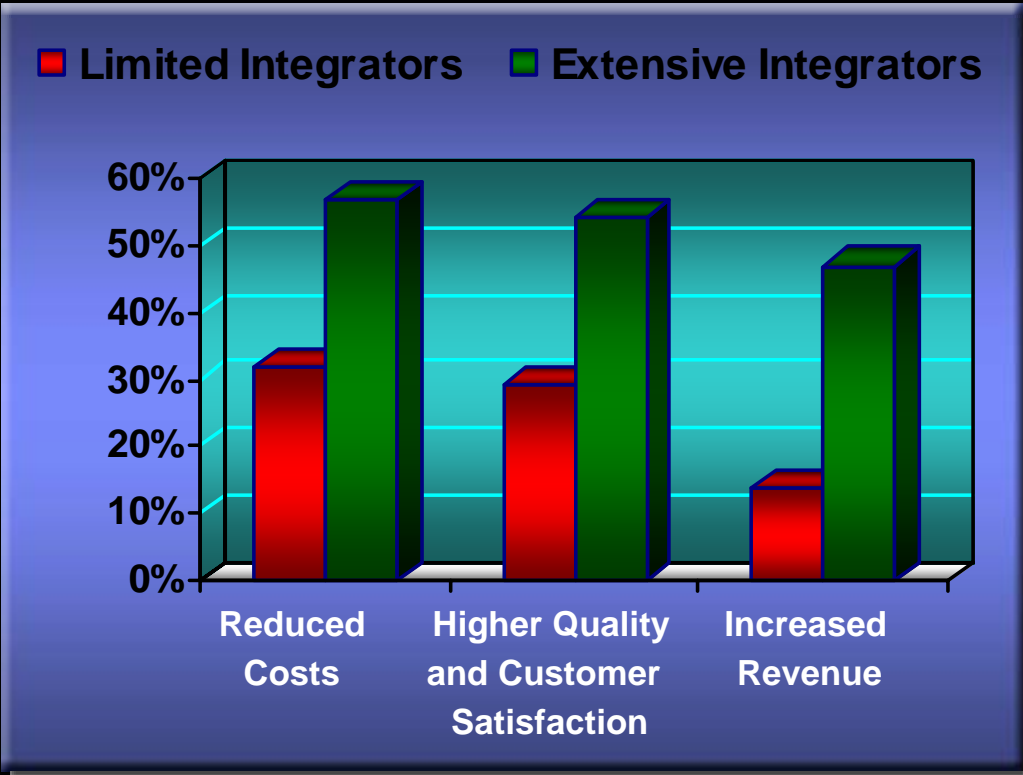
Business Centric SOA Starts with Your Most Critical Business Pain and Enables You to Build for Flexibility

- Enable *human and process interaction* with consistent levels of service

People

- Deliver trusted information in *business context* to enable innovation

Information

Process

- Achieve greater efficiency and effectiveness with *business model innovation*

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# And SOA Lifecycle Is The Key to Successful Projects

- Discover
- Construct & Test
- Compose

- Gather requirements
- Model & Simulate
- Design

People

Information

Process

Assemble

Deploy

Model

Manage

Governance & Best Practices

- Integrate people
- Integrate processes
- Integrate information

- Manage IT resources
- Manage Identity & Compliance
- Monitor business metrics

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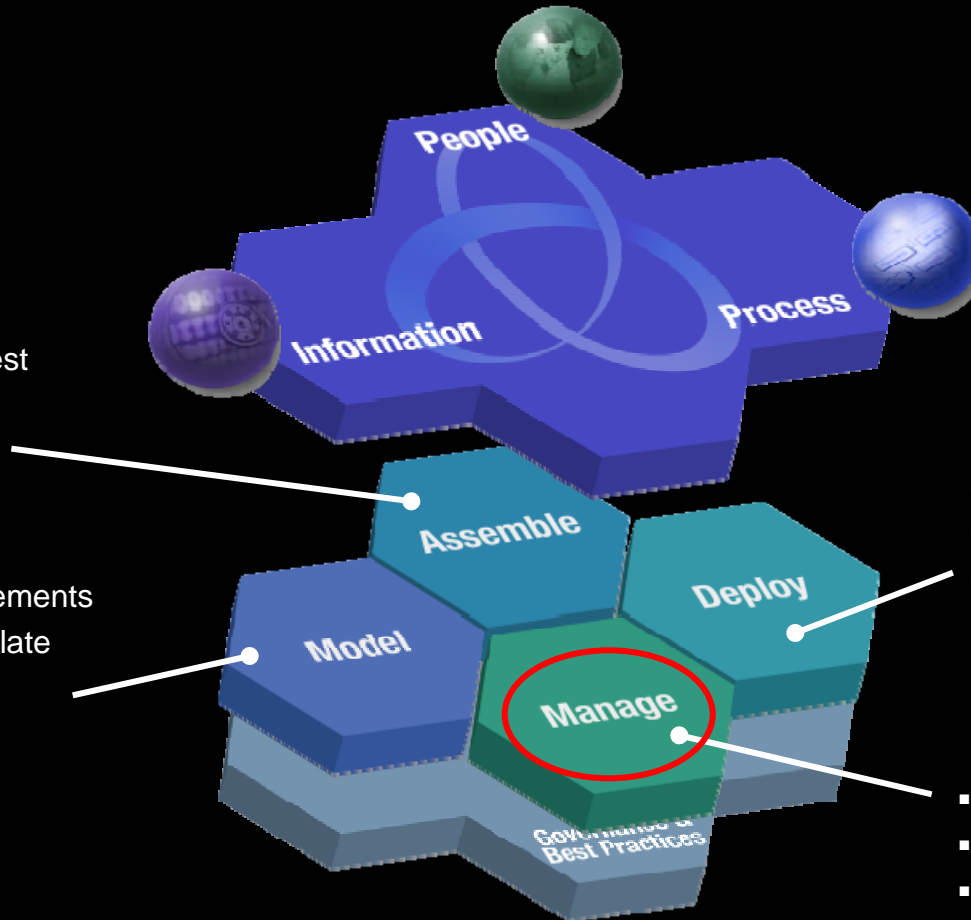
Management of SOA environments require integration of People, Process and Information Management

People
- Manage Identities and Access, and organization in clearly understood roles

Processes
- Integration and Automation of process and service workflows to reduce costs & increase reliability
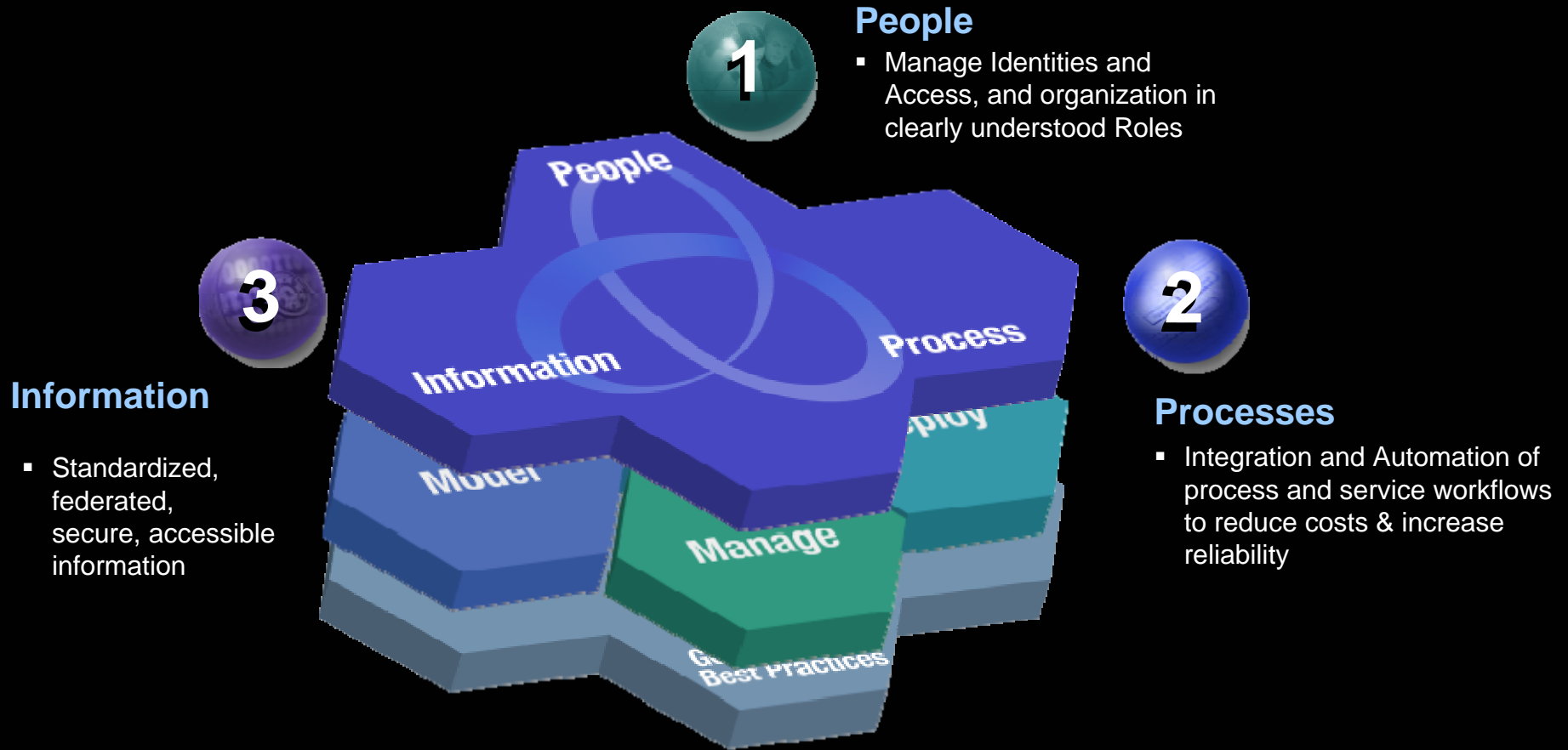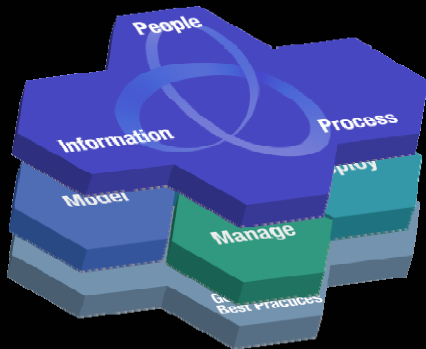
Information
- Standardized, federated, secure, accessible information

IBM IT Service Management – A comprehensive way to Manage SOA Environments

People
- Manage Identities and Access, and organization in clearly understood Roles

1

3

Information
- Standardized, federated, secure, accessible information

2

Processes
- Integration and Automation of process and service workflows to reduce costs & increase reliability

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IBM IT Service Management – A comprehensive way to Manage SOA Environments

People
- Identity Management
- Federated Identity Management
- Access Management
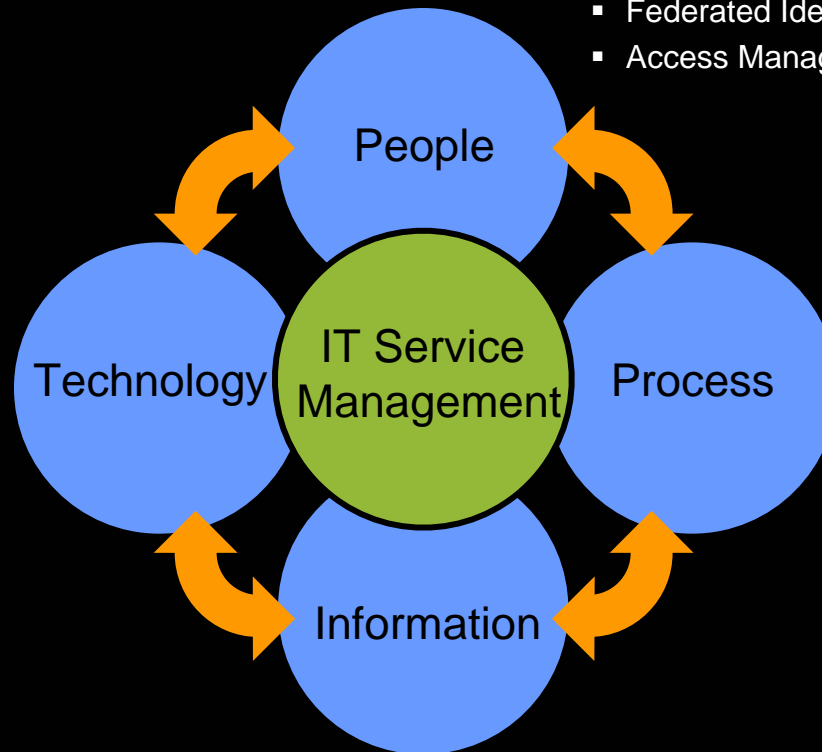
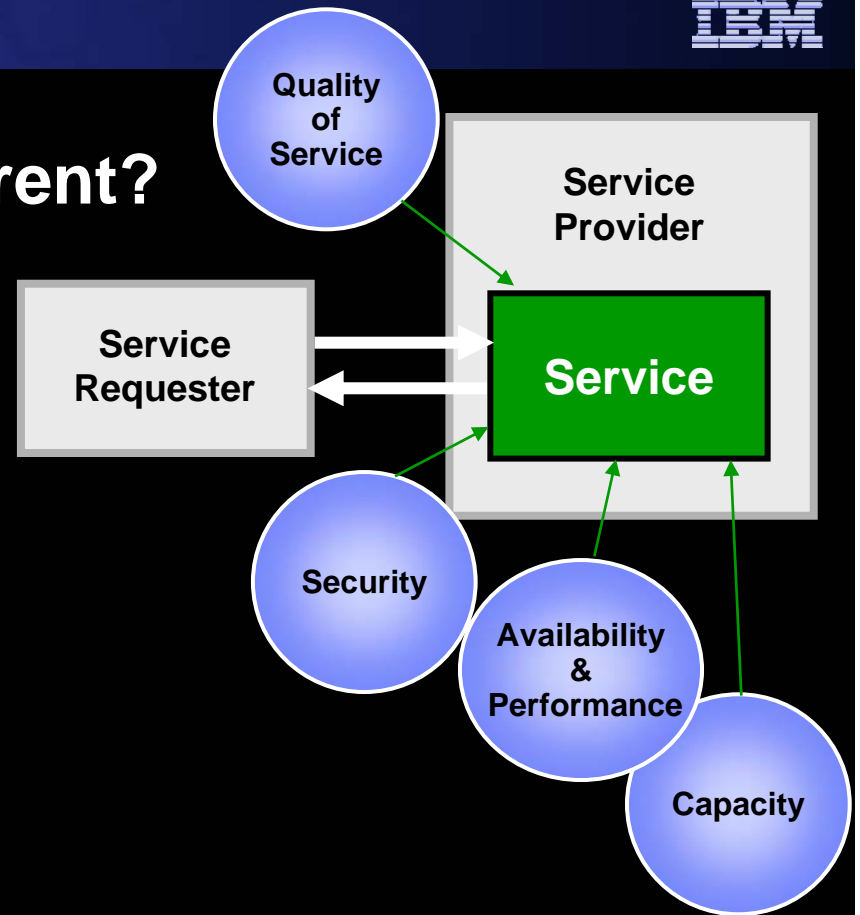**Information**
- CCMDB

Processes
- Process Managers
- ITCAM Family
- ITM/TEP

IT Service Management for SOA Technology integrates People, Processes and Information in an optimal way!

Why is SOA Management different?

- **Service characteristics:**
  - ▸ Availability and Performance
  - ▸ Security
  - ▸ Quality of Service

- **SOA Application characteristics:**
  - ▸ Loose coupling
  - ▸ Faster deployment and integration of composite application
  - ▸ Rapidly increasing application complexity
  - ▸ Virtualized application flows, difficult to track
  - ▸ A management challenge – during construction, deployment and operations

Quality of Service

Service Provider

Service Requester

Service

Security

Availability & Performance

Capacity

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SOA management - key to successful implementations

IT Benefits

- **Increase IT effectiveness**

- **Reduce cost of IT management**

- **Ensure Security of information within and beyond the corporation**

Business Benefits

- **Improve Agility**

- **Improve Flexibility**

- **Better alignment and integration with business partners**

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Managing Service Oriented Architectures

Management encompasses all aspects of SOA Lifecycle

Model	Assemble	Deploy	Manage

"How does application reuse affect the service levels of existing services?"

"Some of our services are used by our partners? How can I be sure they are meeting their SLAs?"

"How can I be sure that the service flow matches the design?"

"How can I debug my production application without reproducing the problem."

"Which part of the SOA infrastructure is causing this service problem? The app server or the messaging connections?"

"What are the Service Levels that apply to this Service?"

"I now have to write a service – how do I make sure it works securely with other services I'm dependent on?"

"What's the root-cause of this service problem – the service flow or the application components?"

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Managing Service Oriented Architectures

Manage Business Processes

Manage Services

Manage Transaction Performance

Service Consumer

Service Provider

Manage Supporting Middleware

Manage Supporting Systems
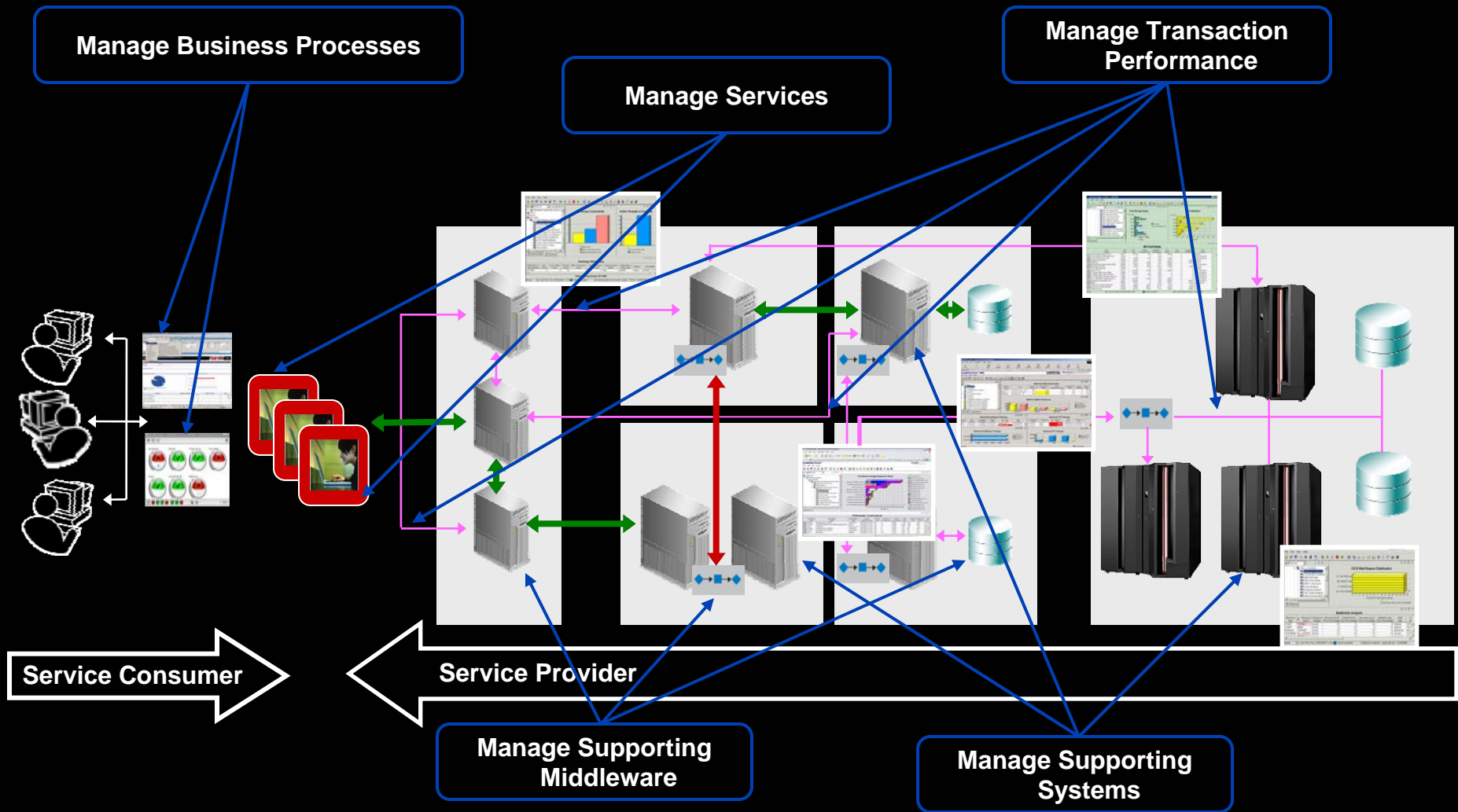
Challenges of SOA Management

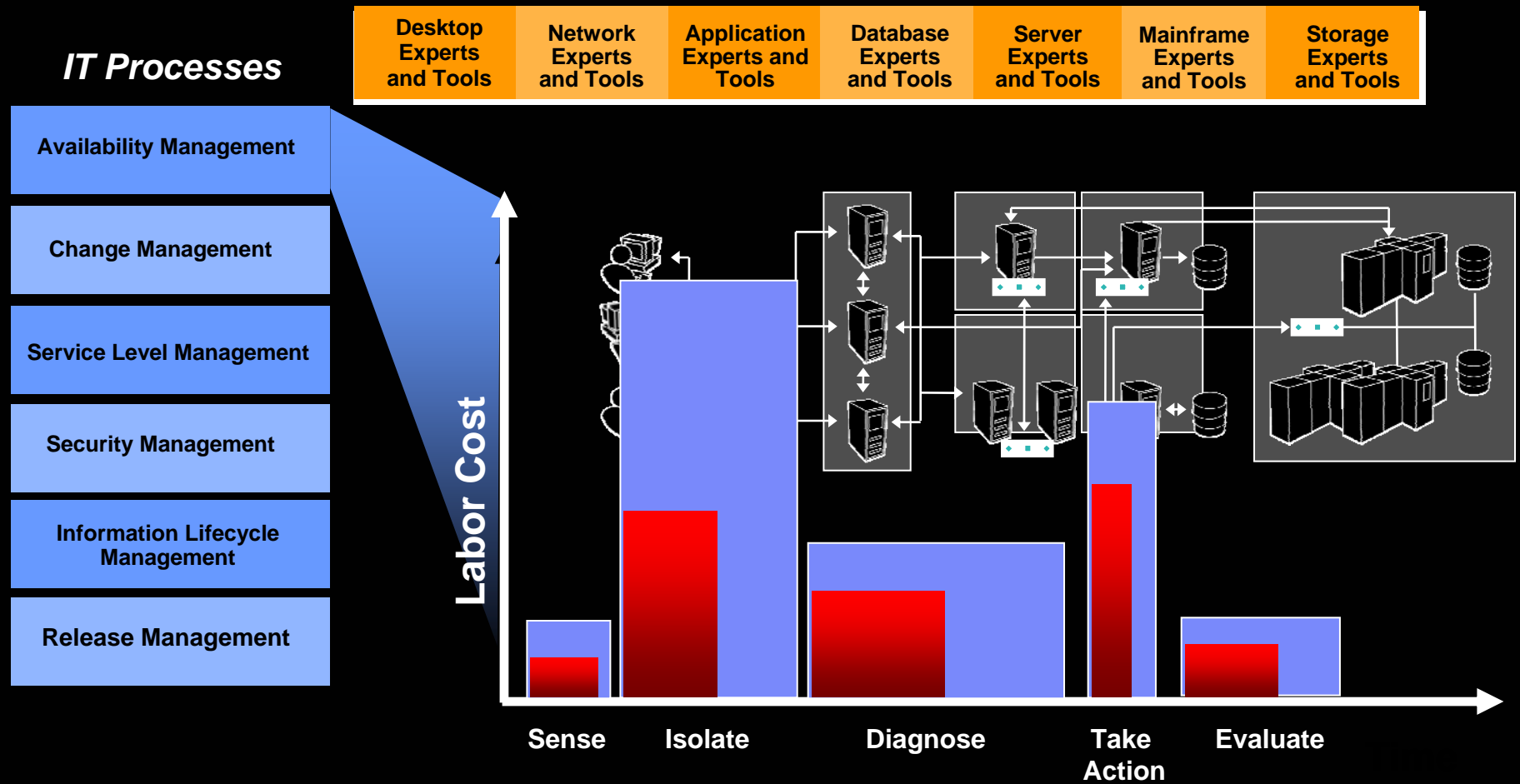**SOA-based** Composite Applications introduce management challenges …
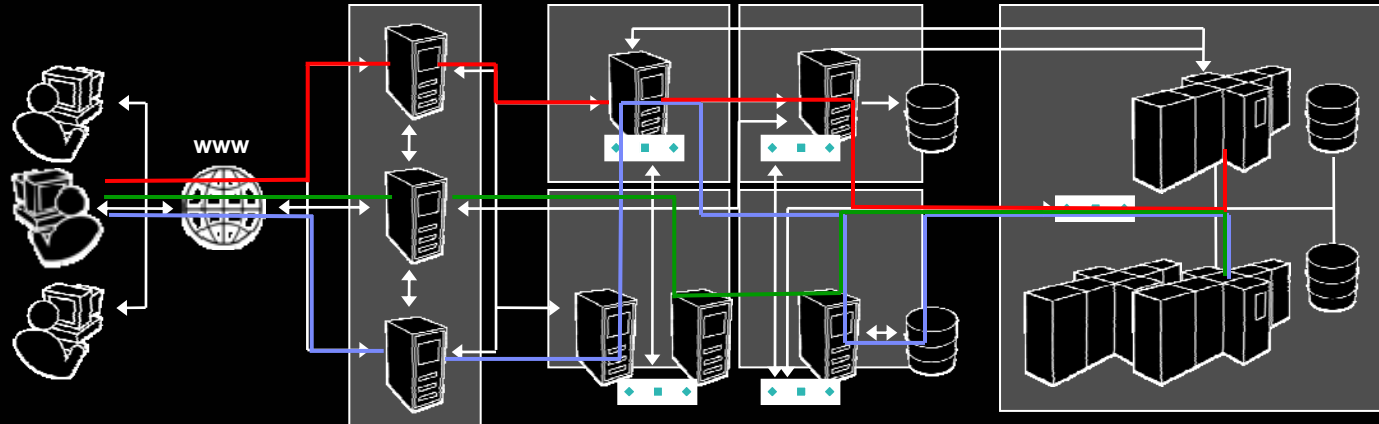
... that organizations must address:

- **"How can we measure and monitor end-to-end performance across the application?"**
  - **Application flows in Loosely coupled composite applications are not fixed**

- **"How do we coordinate problem resolution across all parts of the organization?"**
  - **SOA applications may cross departmental and organizational boundaries**

- **"How do we deploy and secure SOA based composite applications?"**
  - **Roles based access to Applications and data**

- **"How do you allocate costs among users of IT resources underneath the services?"**
  - **SOA applications cross cost-centers, functional, organization boundaries**

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Organizational Complexity Makes it Even Tougher

IT Organizational Silos

Desktop Experts and Tools	Network Experts and Tools	Application Experts and Tools	Database Experts and Tools	Server Experts and Tools	Mainframe Experts and Tools	Storage Experts and Tools

IT Processes

- Availability Management
- Change Management
- Service Level Management
- Security Management
- Information Lifecycle Management
- Release Management

Labor Cost

Sense   Isolate   Diagnose   Take Action   Evaluate

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Our Answer to the Challenge

Integrating People, Process, Information & Technology for IT Service Management

Security experts and tools	Network experts and tools	Application Experts	Database experts and tools	Mainframe experts	●	●	●

Availability Management

Security Mgmt.

Service Level Management

Change Management

Information Lifecycle Mgmt.

●

●

●

Technology
- **Infrastructure Management technologies:**
  - for resilient services
  - Automation
  - integration

Information
- **Standardized, federated, accessible information**

Technology

IT Service Management

Information

People

Process

People
- **Access privileges**
- **Roles, Teams, Organization in clearly understood roles**

Processes
- **Integrated to enable increased value add from IT Services**
- **Automation of process and service workflows to reduce costs & increase reliability**

SOA on your terms and our expertise

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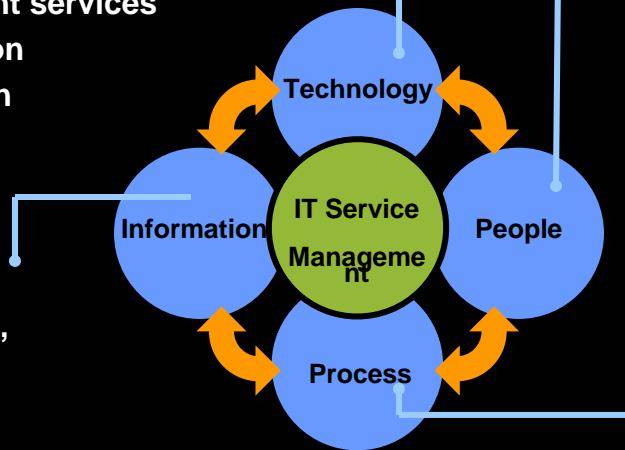
IBM IT Service Management
Built on SOA to Manage SOA

**IT Services and Process managers
to bridge Organizational Silos**

IT CRM & Business Management	Service Delivery & Support	Service Deployment	Information Management	Business Resilience

IBM IT Service Management

IT Process Management Products

IT Service Management Platform

IT Operational Management Products

Best Practices

- Availability Management Process Manager
- Change and configuration Management Process Manger

- Release Management Process Manager

- Storage Management Process Manager

Change and Configuration Management Database

A comprehensive portfolio of solutions to manage and secure SOA environments

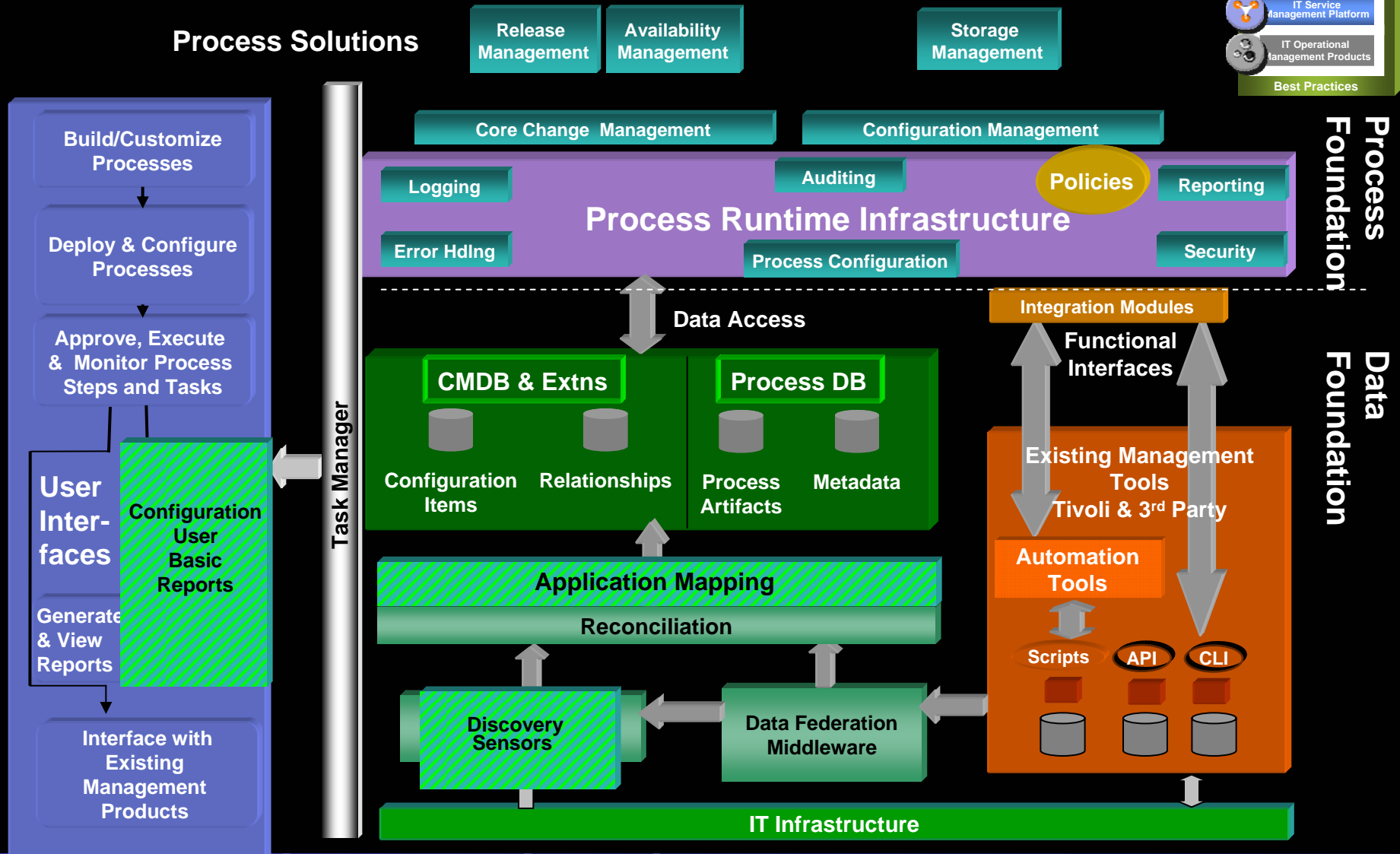| Business Application Management	Server, Network and Device Management	Storage Management	Security Management

- **Tivoli Composite Application Manager family**
- **Tivoli Monitoring family**
- **Tivoli Business Systems Manager**
- **Tivoli Financial Management family**

- **Tivoli Identity Manager**
- **Tivoli Access Manager**
- **Tivoli Federated Identity Manager**
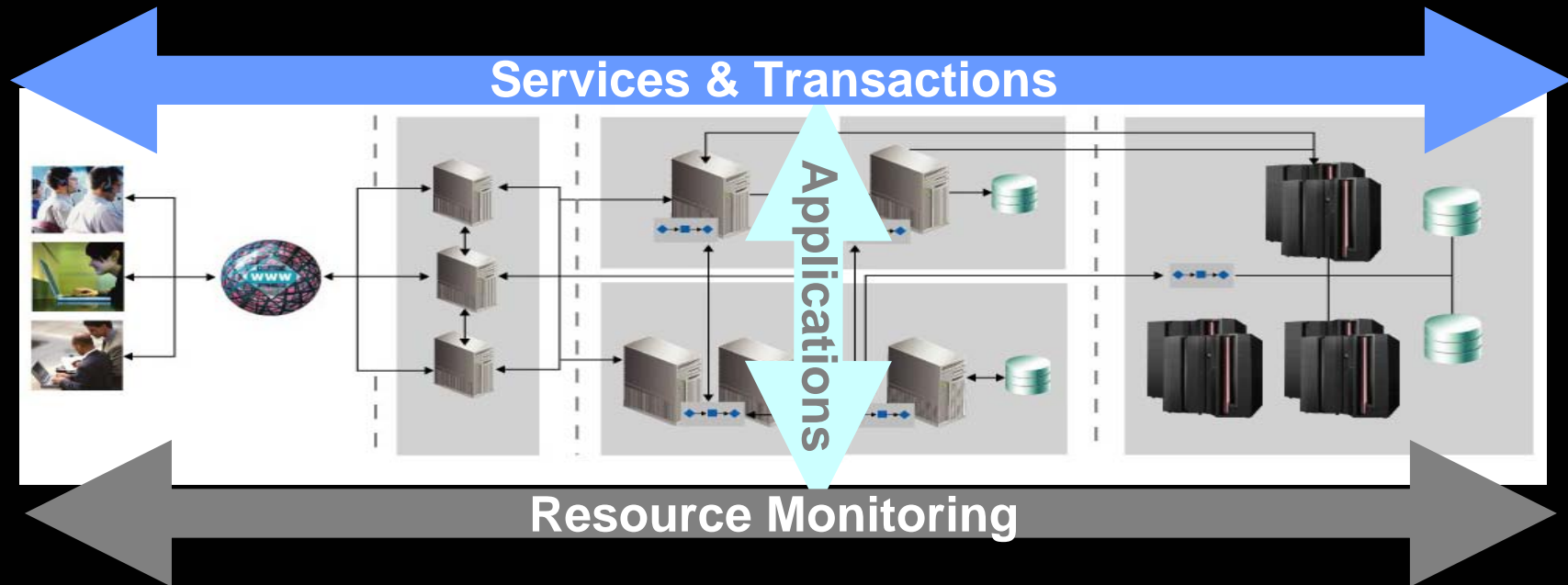- **Tivoli Netcool NeuSecure**

SOA on you

IBM

IBM IT Service Management

IT Process Management Products

IT Service Management Platform

IT Operational Management Products

Best Practices

ITSM for SOA – a service oriented approach

Process Solutions

| Release Management | Availability Management | | Storage Management |

Process Foundation

Data Foundation

| Core Change Management | Configuration Management |

Logging | Auditing | **Policies** | Reporting

Process Runtime Infrastructure

Error Hdlng | Process Configuration | Security

Data Access

Integration Modules

Functional Interfaces

Build/Customize Processes

↓

Deploy & Configure Processes

↓

Approve, Execute & Monitor Process Steps and Tasks

User Inter-faces

Generate & View Reports

Configuration User Basic Reports

Task Manager

CMDB & Extns

Process DB

Configuration Items | Relationships

Process Artifacts | Metadata

Existing Management Tools Tivoli & 3rd Party

Automation Tools

Application Mapping

Reconciliation

Scripts | API | CLI

Discovery Sensors

Data Federation Middleware

Interface with Existing Management Products

IT Infrastructure

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Managing composite SOA applications and services

Services & Transactions

Applications

Resource Monitoring

ITCAM for SOA	▪ **Web Services automated mediation and problem identification**
ITCAM for RTT	▪ **End-to-end transaction tracking isolates problems**
ITCAM for WebSphere	▪ **Drill down diagnostics for WebSphere application performance problems, including links to CICS, MQ, IMS**
IBM Tivoli OMEGAMON XE for WebSphere Business Integration	▪ **Resource analysis for WebSphere MQ, Message Broker and Interchange Server**

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IBM Tivoli Composite Application Manager for SOA 6.0

- **IT Service problem identification and resolution**
  - **Drill-down from services to application components to identify failures**

- **Heterogeneous SOA Platform Support**
  - **IBM WebSphere family (including Datapower and zSeries) Microsoft .NET and BEA WebLogic**

- **Life-cycle Management**
  - **Eclipse-based Web Services Navigator**

- **Integrated Console**
  - **Service views, alerts and automation included**

Service Operations View

Service Inventory View

Service Performance View

IT Dashboard - A Complete View of SOA Application Infrastructure

A single portal to monitor the overall health of the infrastructure

Business Services   **Distributed Resources**   **J2EE Transactions**   **Mainframe Resources**
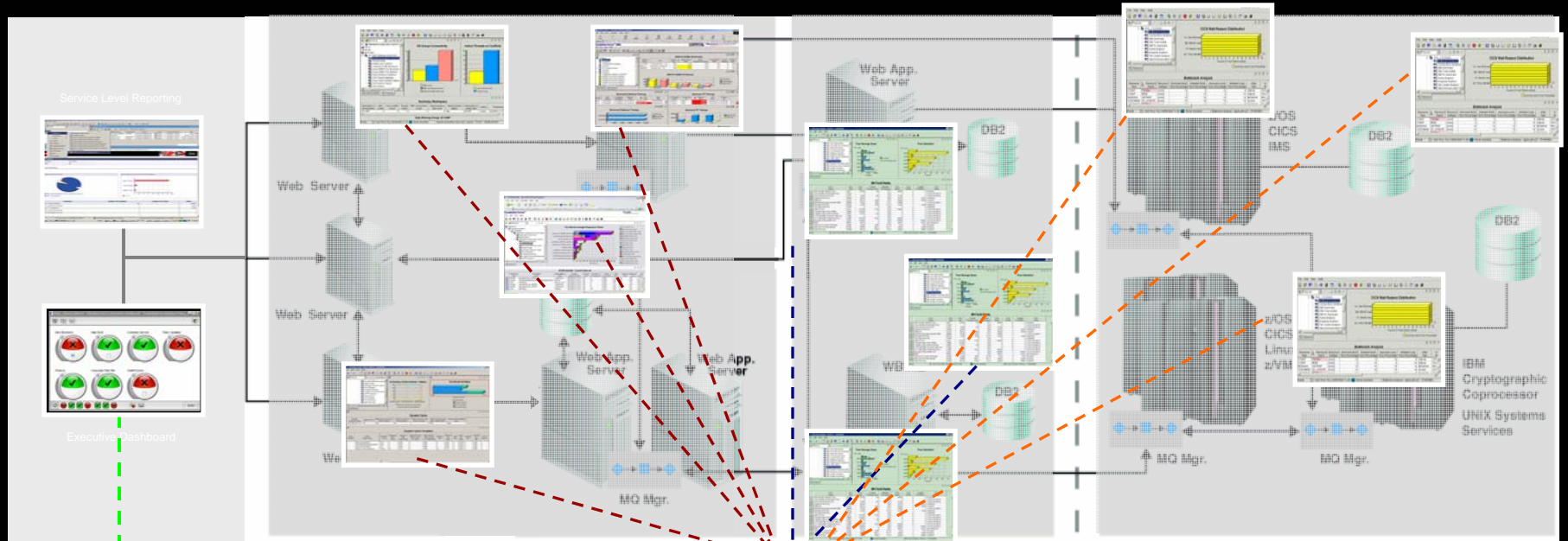
Launch in Context

Integrated Portal:
- **ITCAM**
- **Tivoli Distributed Monitoring**
- **Tivoli OMEGAMON**

Tivoli Enterprise Portal
Everything at your Fingertips

IT Financial Management for SOA – Know what it costs
Usage & Accounting Manager (ITUAM)

IT Service Level Advisor
Adjustments for Service
Level Violations
Cost reporting in SLA

Tivoli IT Asset
Management Solution
Dedicated Hardware &
Software

$

Usage & Accounting Manager IT Chargeback and Transaction Billing

Reports go to:
- **Cost Centers**
- **Departments**
- **Various slices for financial analysis**
- **Service catalog**

ITUAM Data Collectors

**Unix, Linux, Oracle, Storage,
Middleware, Applications and other
third party hardware and software**

ITUAM Data Collectors

**Windows, Exchange, Notes, SQL
Server, MS Disk Storage, Middleware
and Applications**

**Tivoli Decision Support
for z/OS**

**Batch TSO, Transaction
Processing, Database and Storage**

Customer Story: Advanced Integrated Solutions (AIS)
Computer Services Industry (< 99 employees)

"If you can improve processes and better manage the infrastructure, you will invariably reduce costs and be able to invest that money in business-relevant IT activities. IBM IT Service Management solutions make this possible."

— Jeff Stoddard
CEO and President
Advanced Integrated Solutions

Business Challenge

Help companies achieve service-level requirements while reducing the cost of IT management

Business Benefits

- Decreases the time and cost of infrastructure management
- Frees up IT staff for strategic projects
- Reduces IT complexity for increased business flexibility

Solution

- IT service management solutions based on IT Infrastructure Library (ITIL) best practices:
    - IBM Tivoli Business Systems Manager
    - IBM Tivoli Change and Configuration Management Database
    - IBM Tivoli Composite Application Manager
    - IBM Tivoli Configuration Manager
    - IBM Tivoli Enterprise Console®
    - IBM Tivoli Monitoring
    - IBM Tivoli Unified Process tool

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Securing Service Oriented Architectures

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Security encompasses all aspects of SOA Lifecycle

Model	Assemble	Deploy	Manage

"Do I have permission to use a service?"

"How do I ensure Integrity and Confidentiality in my Business transactions?"

"Now that I have created a service interface, how do I test to make sure it works with my Business Partner?"
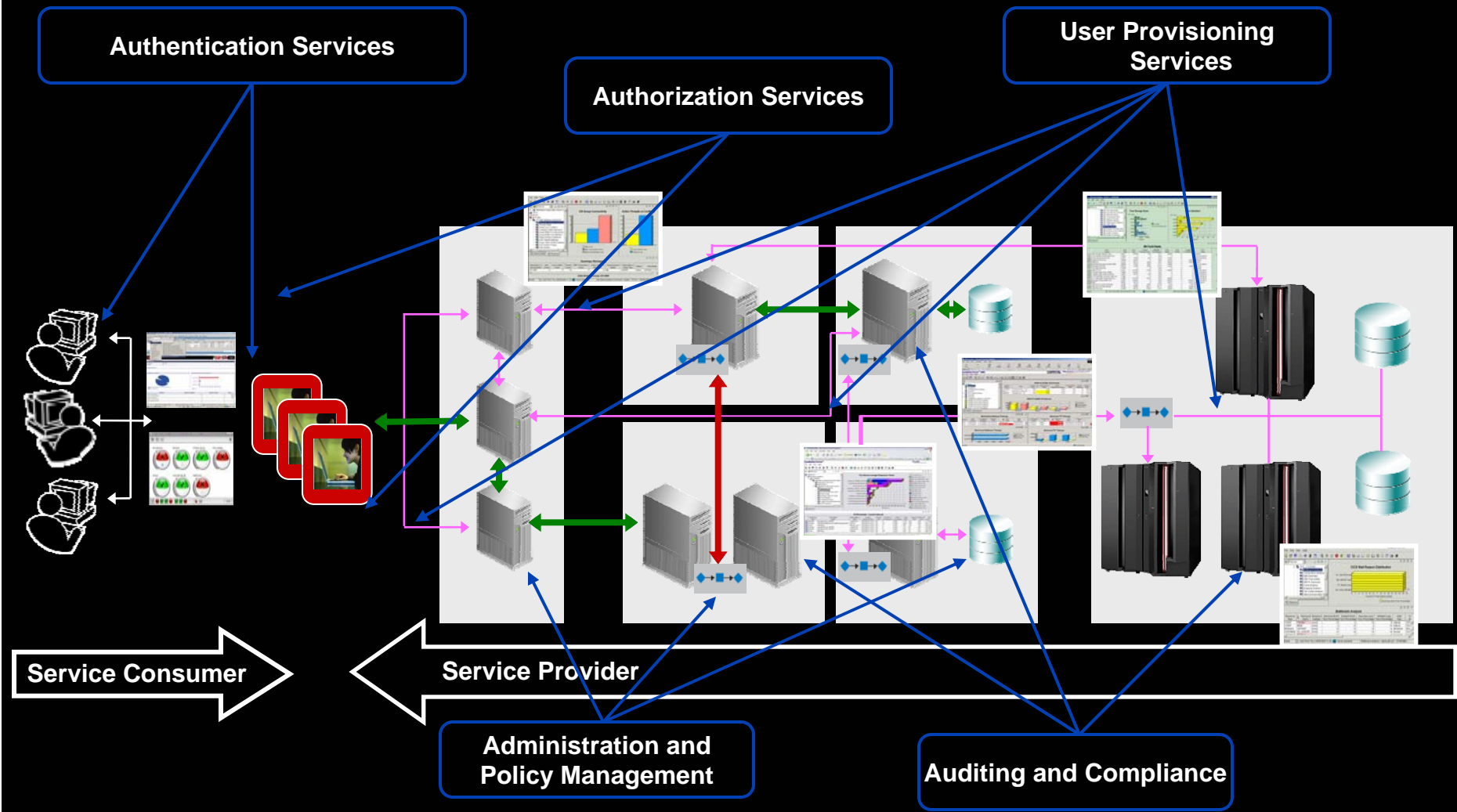
"My Business Partner wants 24x7 Availability. How do I ensure the infrastructure meets that requirement?"

"Which part of the SOA infrastructure is causing this service problem? The app server or the messaging connections?"

"How do I develop a secure service and make sure it works securely with other services I'm dependent on?"

"Does my new SOA application meet my company's Corporate Policy?"

"Who are the people involved in deploying and managing a service in my enterprise?

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Securing Service Oriented Architectures

Authentication Services

Authorization Services

User Provisioning Services

Service Consumer

Service Provider

Administration and Policy Management

Auditing and Compliance

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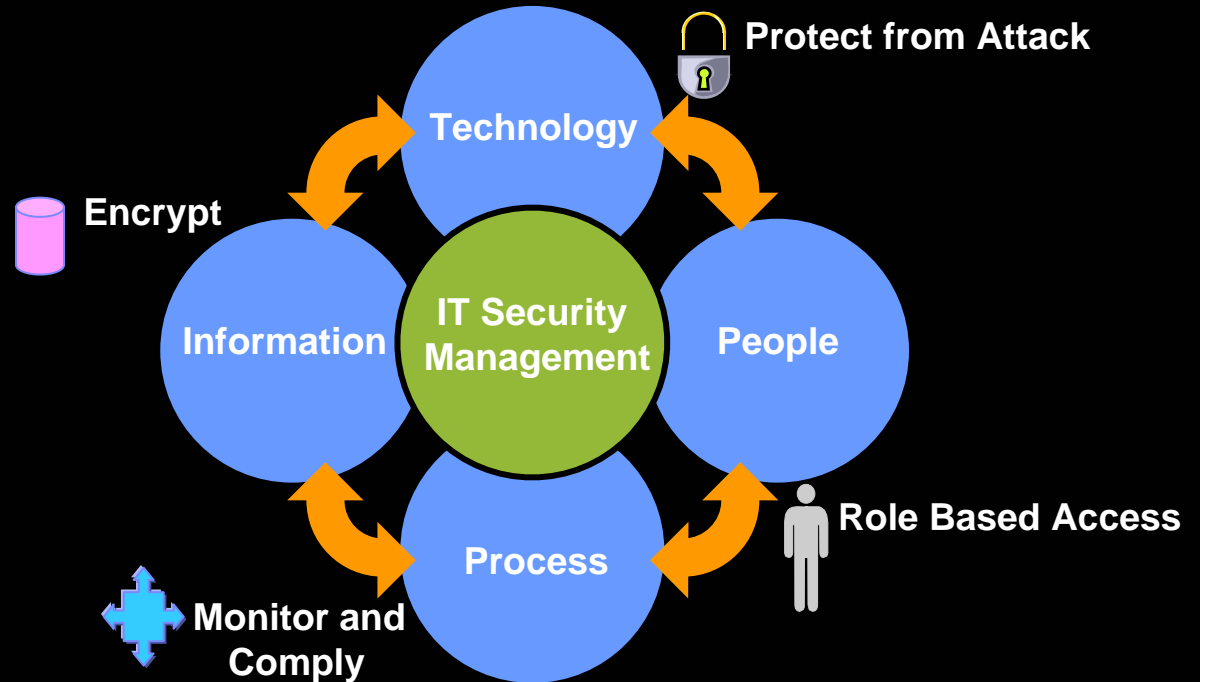
SOA Security and Compliance requires context across people, processes, information, and technology
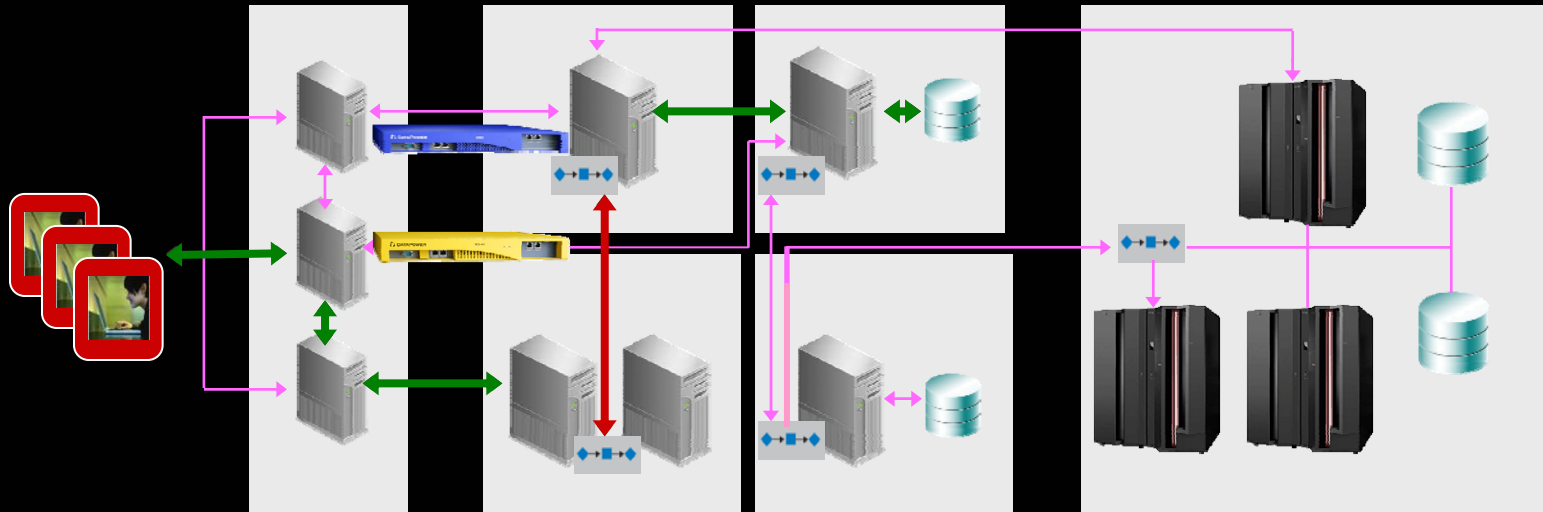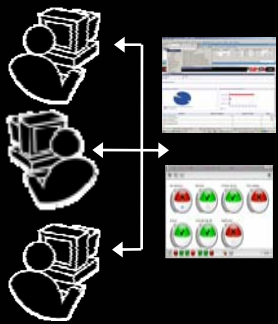
Yesterday's Security

Protect from Attack

Encrypt

Technology

IT Security Management

Information

People

Process

Role Based Access

Monitor and Comply

Securing information as it moves across & beyond enterprise

| Suppliers, Clients and Partners | Employees & Contractors in distributed systems | Employees in mainframe systems |

Information and Technology

**Partners
Customers**

Federated Identity Management

Identity and Access Management

Vulnerability and Network Monitoring
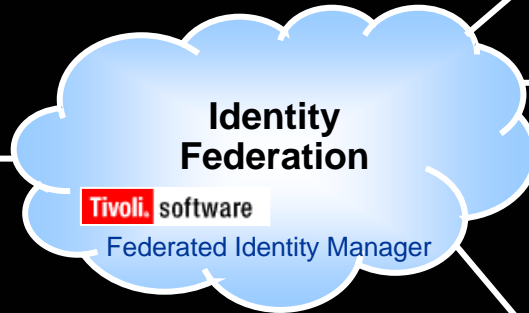
Confidentiality, Integrity and Availability

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Tivoli Federated Identity Manager

Third-Party Access

User

Trusted Identity Provider

Financial Institution

Identity Federation

Tivoli. software
Federated Identity Manager

Web Application

Employee Expenses

Web Services Provider

Credit Card Services

Web Services Provider

Life Insurance Services

Web Services Provider

Refinancing Services

- Reduce high identity management costs; manage "users" or "identities" that are now under your control

- Improve user experience; enable users to easily navigate between Web sites while maintaining a single login identity

- Simplify service integration; provide a common way to network identities between different companies or between applications

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Tivoli Netcool NeuSecure

- **Security event consolidation, correlation and analysis**

- **Advanced correlation techniques for finding business relevant threats and risks**

- **Broad device support – security, network, host, applications**

- **Incident management and investigation**

- **Automations to "close the loop"**

- **Compliance focused reporting**
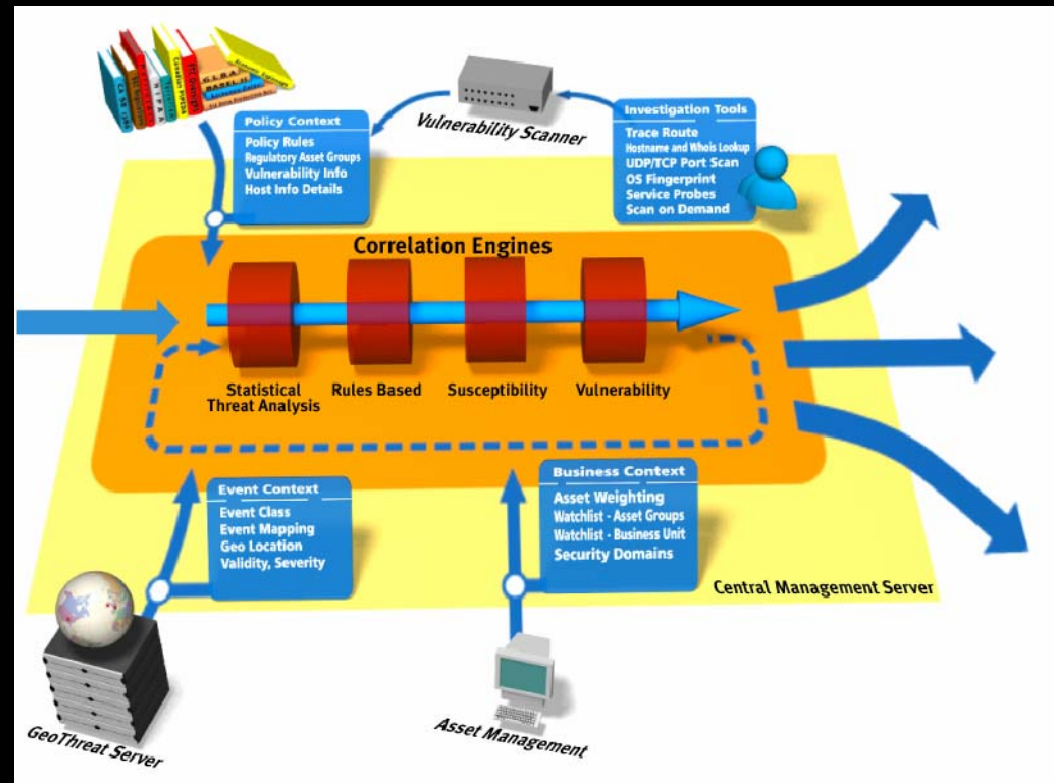
Customer Story: Avis

"Using IBM solutions, we've built a flexible service-oriented infrastructure that enables Avis to develop creative solutions to widen our competitive advantage… The automation provided by IBM solutions makes it much easier and more cost-effective to administer access and maintain control over our services."

— David Harris, Chief Information Officer, Avis Futures

Business Challenge

Expand brand leadership by strengthening customer service and accelerating delivery of new services

Business Benefits

- **Enables business to reduce the time and cost of delivering new services**
- **Helps business respond faster to customer requirements and competitive challenges**
- **Strengthens security to reduce risk**
- **Provides customers with a unified user experience**

Solution

A service-oriented infrastructure based on IBM WebSphere MQ, IBM WebSphere Business Integration Message Broker, IBM IMS-MQ Bridge, IBM IMS-MQ Adapter, IBM IMS, IBM Tivoli Access Manager for e-business, IBM Tivoli Access Manager for Operating Systems, IBM Tivoli Access Manager for Business Integration, IBM Tivoli Identity Manager

SOA Openness Enables flexibility and reuse

A Portable and Interoperable Services Model

- **Building on IBM's Strengths In Standards**
  - **New & Enhanced Web Services Support**
    - **Reliable Messaging**
    - **Security Extensions (Trust, SecureConversation)**
    - **Transactions (AtomicTransaction, Business Activity)**
    - **WS-Distributed Management - ratified standard**
    - **RAMP Profile**

- **Supporting and shaping Industry-based XML Standards**

- **Contributing to work around SOA Maturity Model**

- **SOA Management and Security**
  - *WSDM (SDD)*
  - **WS-Security, SAML, Liberty, UDDI, WSRP**
  - **WS-Federation**
  - **WS-Security Policy**
  - **WS-Trust**
  - **ARM**
  - **JMX**
- **Business Process Management**
  - *UML/Business Modeling Notations*
  - *BPEL Extensions for People and Sub Processes*
- **Interoperability in Heterogeneous Environments**
 - *Web Services Profiles*
  - *Open Document and XForms*
- **Simplified Implementation**
  - *SCA/SDO*
  - *Open Ajax*

WS-Business Activity   WS-Secure Conversation   **WS-Security**   WS-Security Policy   WS-Policy Attachments
WS-Metadata Exchange   WS-Reliable Messaging   WS-RF Resource Properties   WS-DM MOWS
WS-Coordination   WS-RF Service Groups   WS-RF Resource   BPEL4WS   **WS-Trust**
WS-Notification Topics   **WS-Addressing**   Metadata Descriptor   **WS-Agreements**   WS-Notification
WS-Atomic Transactions   XML Encryption Syntax   WS-DM MUWS   WS-Federation   Base Notification

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IBM– Whole story for management of SOA
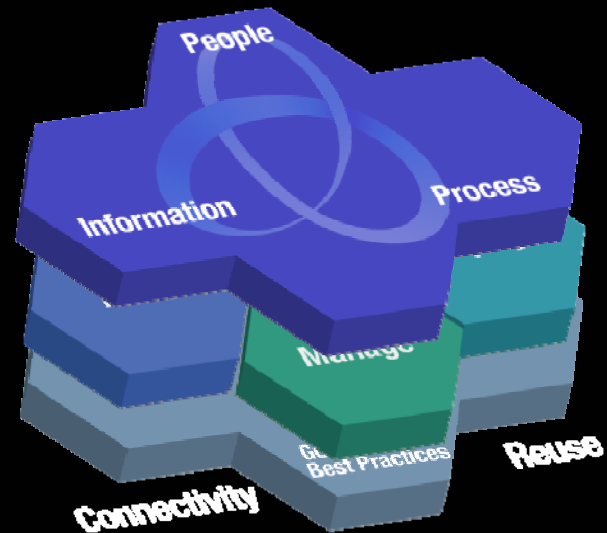
Management and Security
for SOA Applications

Products that integrate into
A single pane of glass

- **A Holistic comprehensive approach to managing SOA**

- **An Open platform based on Industry standards & best practices**

- **Consistent and high performance Security and Compliance for Applications and Users**

- **Management products for all phases of the SOA lifecycle**

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