IT Security, Management and Infrastructure Extensions to Maximize SOA Value

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VP, Middleware Services

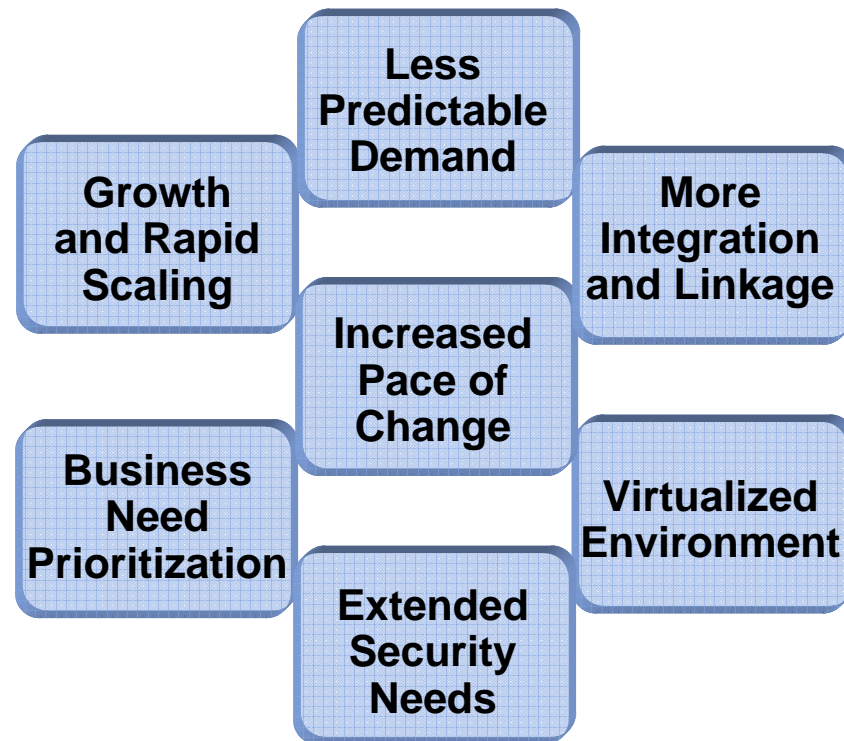Global Technology Services

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Agenda

- **SOA impact on IT infrastructure**

- **Extending IT security for SOA**

- **Service management for SOA**

- **Establishing an IT infrastructure roadmap for SOA**

- **Flexible IT infrastructure for SOA**

- **Q&A**

SOA impact on IT infrastructure

SOA Service Benefits

- **Cross traditional silos**

- **Reuse applications in new dynamic ways**

- **Build from a combination of multiple sources**

- **Change and deploy rapidly**

- **Route to any available resource**

- **Distribute access**

IT Infrastructure Impacts

Less Predictable Demand

Growth and Rapid Scaling

More Integration and Linkage

Increased Pace of Change

Business Need Prioritization

Virtualized Environment

Extended Security Needs

How SOA Affects the IT Lifecycle

IBM

Model	Assemble	Deploy	Manage

Rational software

"I need a business service, does it exist?"

"How might the business service be traceable to the IT realization?"

"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 runtime flow matches the design expectation?"

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

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

"What are the service levels and KPIs that apply to this business Service?"

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

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

"What services can users access?"

"How does the business service translate to the IT-enabled service?"

Existing IT infrastructure can inhibit maximizing the value from SOA

- Limited security
- Cumbersome management
- Lack of flexibility
- Poor response to demand spikes
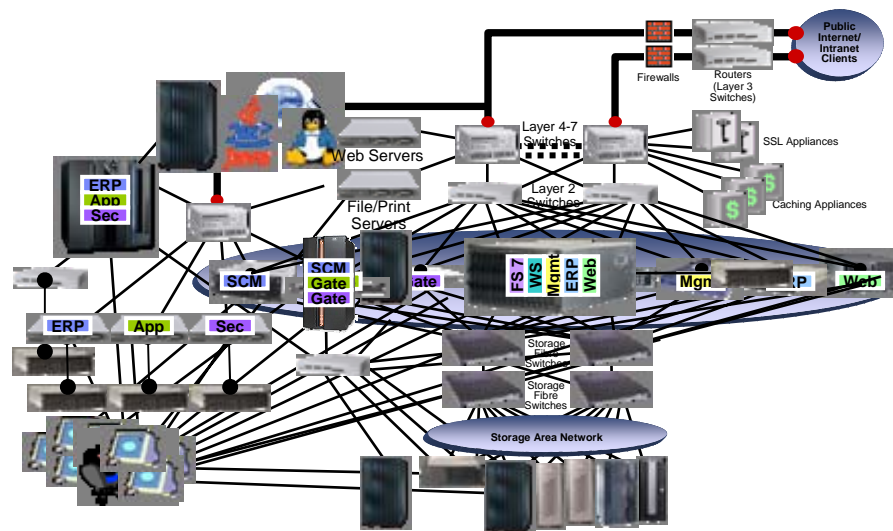
IT infrastructure needs to evolve with SOA deployment

Meeting the Infrastructure Challenge for SOA

Extended Security

- Access control and federation across services
- Assure services and applications
- Consistently enforce security policies for audit

Service Management

- Resiliency of interconnected services
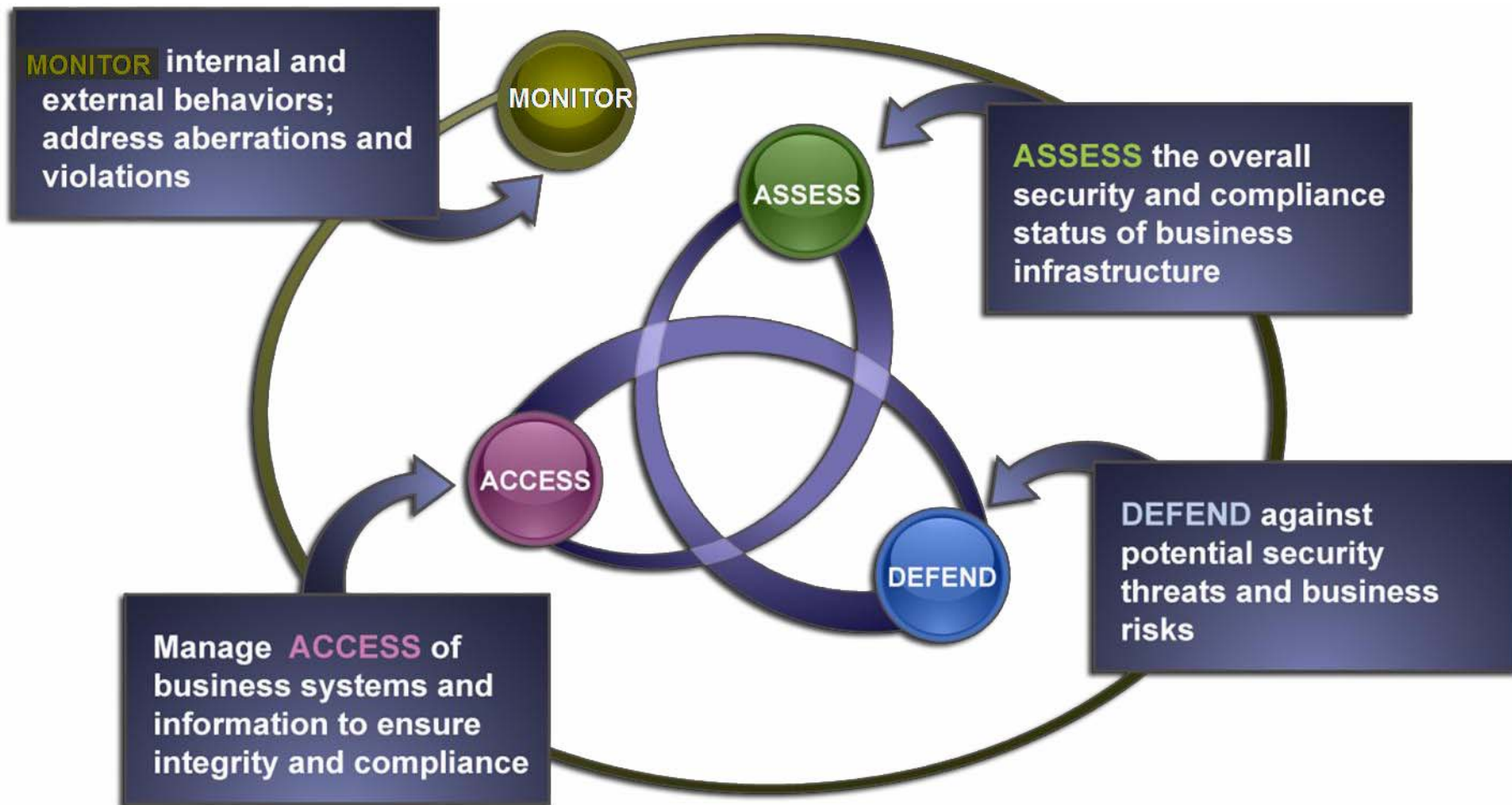- Manage performance through changing demand
- Effective change management

Flexible Infrastructure

- End-to-end virtualization
- Quality of service during change
- Platform flexibility

IBM's Security Management Vision and Strategy

Preemptive, comprehensive security and compliance offerings

MONITOR internal and external behaviors; address aberrations and violations

ASSESS the overall security and compliance status of business infrastructure

Manage **ACCESS** of business systems and information to ensure integrity and compliance

DEFEND against potential security threats and business risks

Extending Security for SOA

Identity, Assurance and Compliance

Identity and Access Control

Identity & access control across services

- End-to-end identity propagation from silos to services

- Control access levels to services with trusted identities

- Provision identities automatically to reduce costs

Assurance

Assure service security with message and user-based protection

- Unified trust management to create secure communities

- Secure XML messaging and threat protection

- Identity-driven security across heterogeneous domains & environments (applications, services, data & transactions)
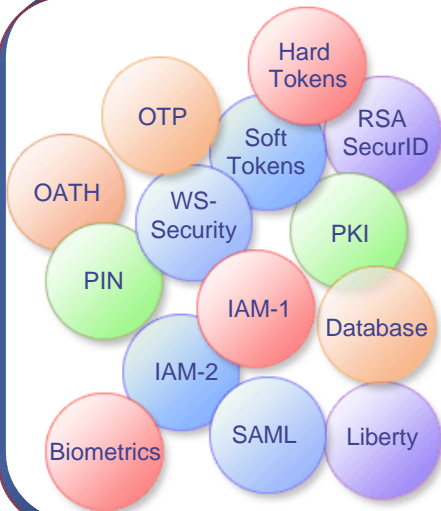
Compliance

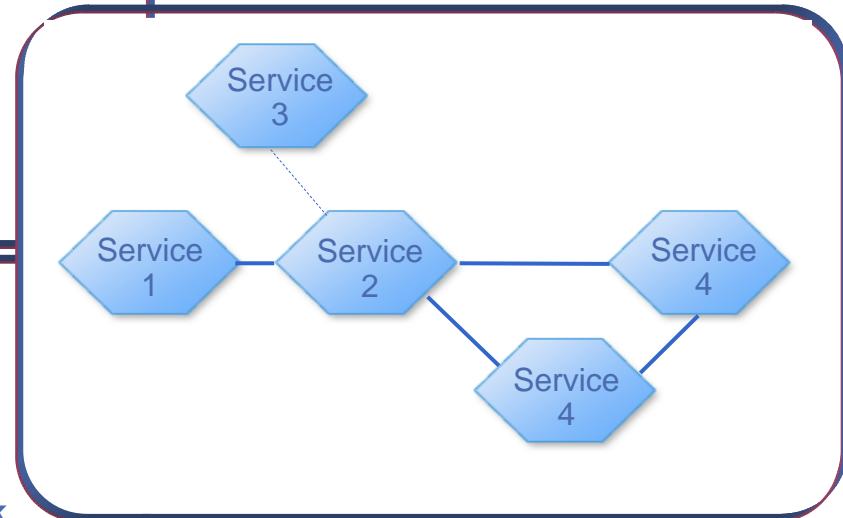*Monitor and enforce policies for audit & compliance*

- Enterprise security monitoring, management and reporting

- Consistently enforce security policies for services

- Automate user account validation to enforce access policies

Identity Integration Challenges in SOA

IBM
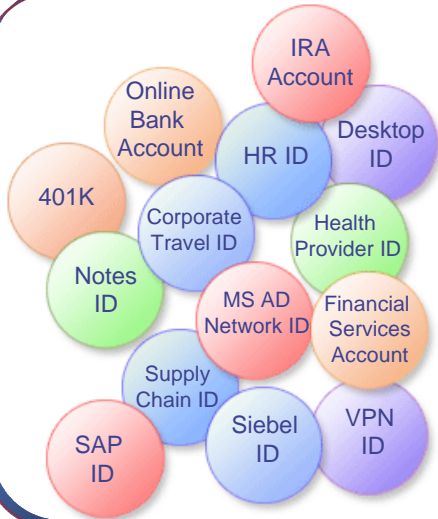
- **Each application brings its own ID**
- **Each ID does not work with other IDs**
- **Each ID adds cost and complexity**
- **Each ID adds business risk to compliance**

IRA Account
Online Bank Account
Desktop ID
HR ID
401K
Corporate Travel ID
Health Provider ID
Notes ID
MS AD Network ID
Financial Services Account
Supply Chain ID
SAP ID
Siebel ID
VPN ID

- **Each application brings its own credential**
- **Each credential does not work with other IDs**
- **Each credential needs risk assessment and management before sharing**
- **Each CRED adds business risk to compliance**

Hard Tokens
OTP
RSA SecurID
Soft Tokens
OATH
WS-Security
PKI
PIN
IAM-1
Database
IAM-2
Biometrics
SAML
Liberty

Service 3
Service 1
Service 2
Service 4
Service 4

IBM SOA Security Management Offerings

New and Enhanced!

IBM Professional Services

- SOA Application Security Assessment
- SOA Security Requirements
- SOA Security Architecture
- SOA Security Implementation
- Data Integrity and Privacy Services
- Infrastructure Security Services
- **ISS Managed Services**

IBM Hardware Solutions

- **WebSphere DataPower XML Security Gateway XS40**
- Storage
  - Encrypted tape drive and Psec Encryption for distance extension and protocol conversion
- System z
  - Encryption facility for z/OS
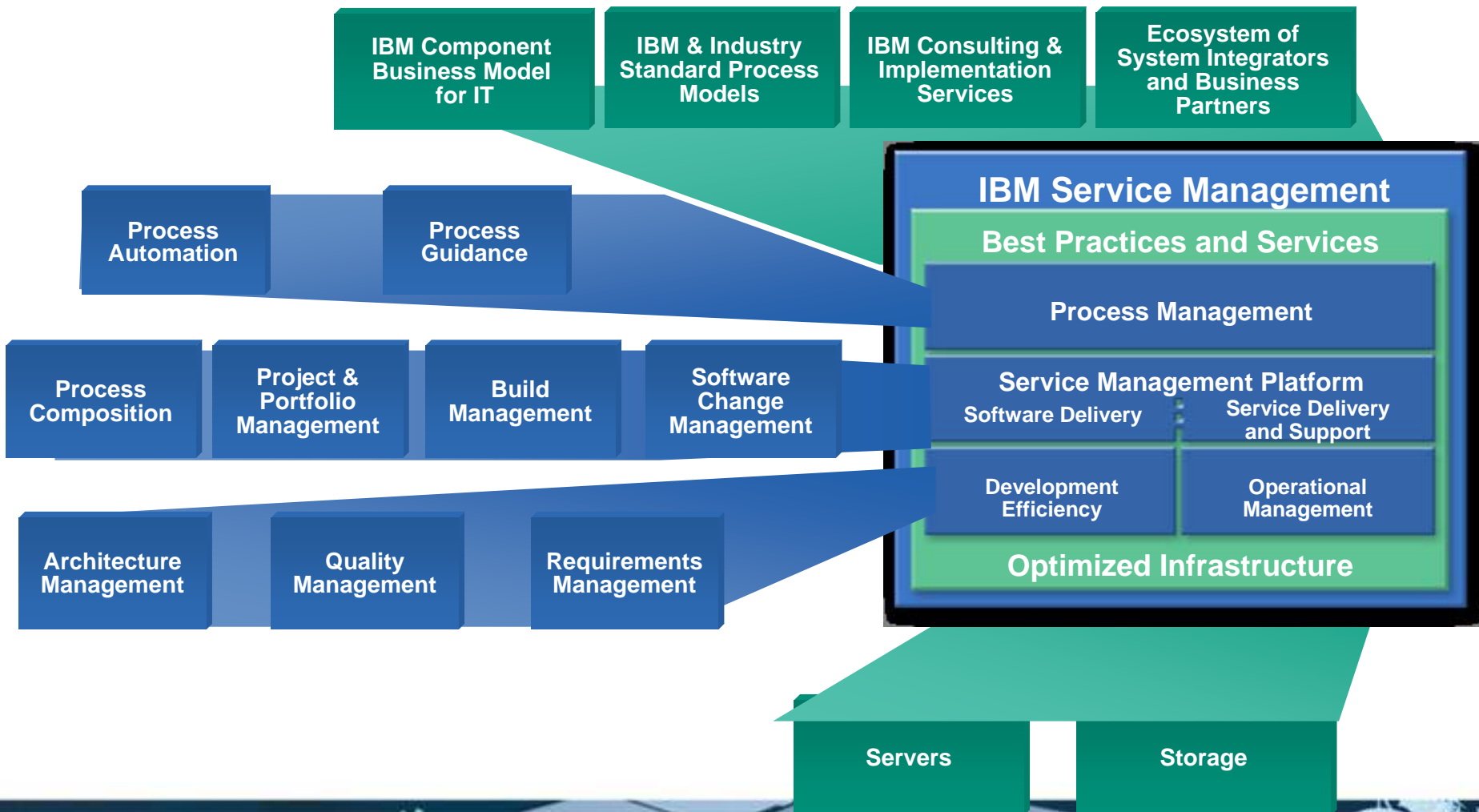 - CryptoExpress2 secure key

IBM SOA Security Software Solutions

- Tivoli Access Manager
- Tivoli Federated Identity Manager
  - Identity propagation
  - Federated single sign-on
- **Tivoli Federated Identity Manager on zSeries**
- **Tivoli Federated Identity Manager Business Gateway**
- **Tivoli Consul Insight Suite**
  - **Compliance Dashboard**
  - **User Activity Monitoring**
- Tivoli Security Operations Manager
- **Tivoli Composite Application Manager SE for DataPower**

A Comprehensive Approach to Creating Value

With IBM Service Management

IBM Component Business Model for IT	IBM & Industry Standard Process Models	IBM Consulting & Implementation Services	Ecosystem of System Integrators and Business Partners

IBM Service Management

Best Practices and Services

Process Management

Process Automation	Process Guidance

Service Management Platform

Software Delivery — Service Delivery and Support

Process Composition	Project & Portfolio Management	Build Management	Software Change Management

Development Efficiency — Operational Management

Optimized Infrastructure

Architecture Management	Quality Management	Requirements Management

Servers	Storage

Service Management for SOA

Insight, Visibility, and Control

Service Resiliency

Ensure resiliency of interconnected services and resources

- Monitor services end to end to isolate and fix problems
- Performance management across all services
- Availability management for supporting applications

Manage Performance

Manage performance based on QoS through changing demand

- Use services dashboard to view application demand levels and related service level reporting
- Manage performance of services components - Messages
- Automate provisioning and control of services to meet SLAs

Effective Change Management

Effective change management across linked services

- Discover relationships to improve application availability
- Track and predict change to reduce costs and downtime
- Dynamic reroute of services for upgrades or changes in real time

IBM SOA Summit

IBM SOA Service Management Offerings

New and Enhanced!

IBM Professional Services

- *Business of IT Executive Workshop*
- **Business of IT Dashboard**
- Management of Services for SOA
- SOA Management Planning
- **Test Center of Excellence for SOA**
- Service Management Strategy/Planning
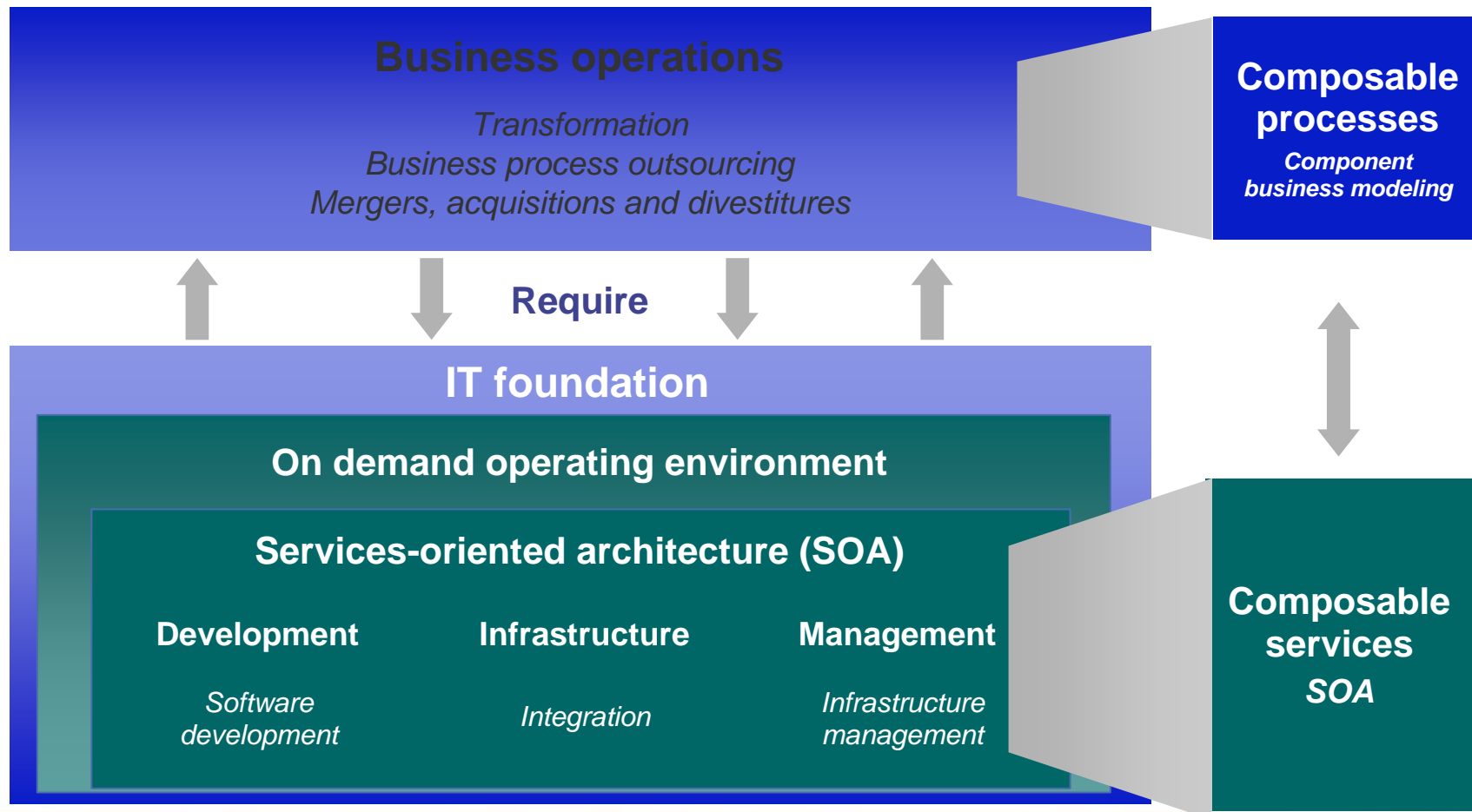- Service Management Implementation

Development Efficiency with IBM Rational Software

- Process and Portfolio Management
- Quality and Testing
  - **IBM Rational Tester for SOA Quality**

Operational Manage... with IBM Tivoli Software

- **IBM Tivoli Composite Application Management (ITCAM) Family**
  - **ITCAM for Response Time**
  - **ITCAM for Web Resources**
  - **ITCAM for SOA enhancements**
    - **Views by service requestor for charge back and SLA reporting**
    - **Support for monitoring service flows through WebSphere Message Broker**
- Monitoring
  - **zSeries (OMEGAMON) to PDA Monitoring**
  - Tivoli Business Services Manager
- Change and Release Management
  - CCMDB
  - IBM Tivoli Release Manager
  - IBM Tivoli Process Manager

Effective Business Operations

Requires close integration with IT foundation

Business operations

Transformation
Business process outsourcing
Mergers, acquisitions and divestitures

Composable processes
Component business modeling

Require

IT foundation

On demand operating environment

Services-oriented architecture (SOA)

Development	Infrastructure	Management
Software development	*Integration*	*Infrastructure management*

Composable services
SOA

IBM's Leading Architecture for Transformation

Component Business Modeling (CBM) is an IBM-developed technique for modeling an enterprise as non-overlapping components in order to identify opportunities for innovation and improvement.

Industry specific CBM

	Business Administra-tion	New Business Development	Relationship Management	Servicing & Sales	Product Fulfillment	Financial Control and Accounting
Directing	Business Planning	Sector Planning	Account Planning	Sales Planning	Fulfillment Planning	Portfolio Planning
Controlling	Business Unit Tracking	Sector Manage-ment	Customer Relations	Sales Manage-ment	Fulfillment Planning	Compliance
	Staff Appraisals	Product Manage-ment	Credit Assessment			Reconcilia-tion
Executing	Staff Adminis-tration	Product Directory	Credit Administ-ration	Sales	Product Fulfillment	Customer Accounts
	Production Adminis-tration	Marketing Campaigns		Customer Dialogue	Document Manage-ment	General Ledger
				Contact Routing		

CBM for the Business of IT

	IT Customer Relationship Management	IT Business Management	Business Resilience	Information and Knowledge Management	Service and Solution Development	Service and Solution Deployment	Service Delivery and Support
Directing							
Controlling							
Executing							

A business component is the combination of people, process, information, and technology necessary to perform a function

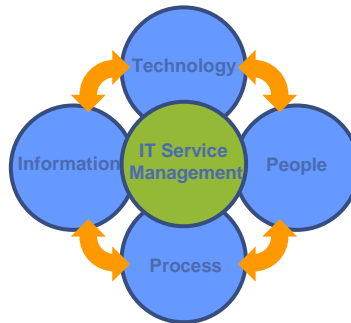# Service Management Strategy & Planning develops a comprehensive roadmap for implementing or improving IT

Service Management Strategy and Planning

1. Understand Strategy and Plans

Align with Business Drivers and Customer Expectations

2. Baseline Current Capabilities

- Technology
- Information
- IT Service Management
- People
- Process

Evaluate Current State to Identify Capability Gaps and Improvements

3. Develop ITSM Strategy

Define Service Catalog and Required ITSM Capabilities

4. Evaluate Solution Approaches

Evaluate Development and Sourcing Options

5. Develop Value Proposition

Justify Initiatives and Develop Business Case

6. Implementation Roadmap

Prioritize and Sequence Design and Implementation Initiatives

Flexible approach: 10–12-week full engagement, 6-week readiness planning or rapid planning techniques

| Identify goals | Assess environment | Design a blueprint for achieving desired end-state | Deliver a prioritized project plan |

Facilitated workshops and analytics that guide decision-making and investment prioritization:

- IBM Component Business Model™ and business of IT executive workshop
- Best practices for IT tools, governance capabilities and processes
- IT service management (ITSM) strategy, planning and design using:
  - IT Infrastructure Library® (ITIL®), COBIT, ISO IEC 20000
  - Process Reference Model for IT (PRM-IT)
  - ITIL and PRM-IT maturity models and ITSM adoption model
  - ITSM flash assessment technique

ITSM Flash Assessment

ITIL & PRMIT Maturity Model

ITSM Adoption Model
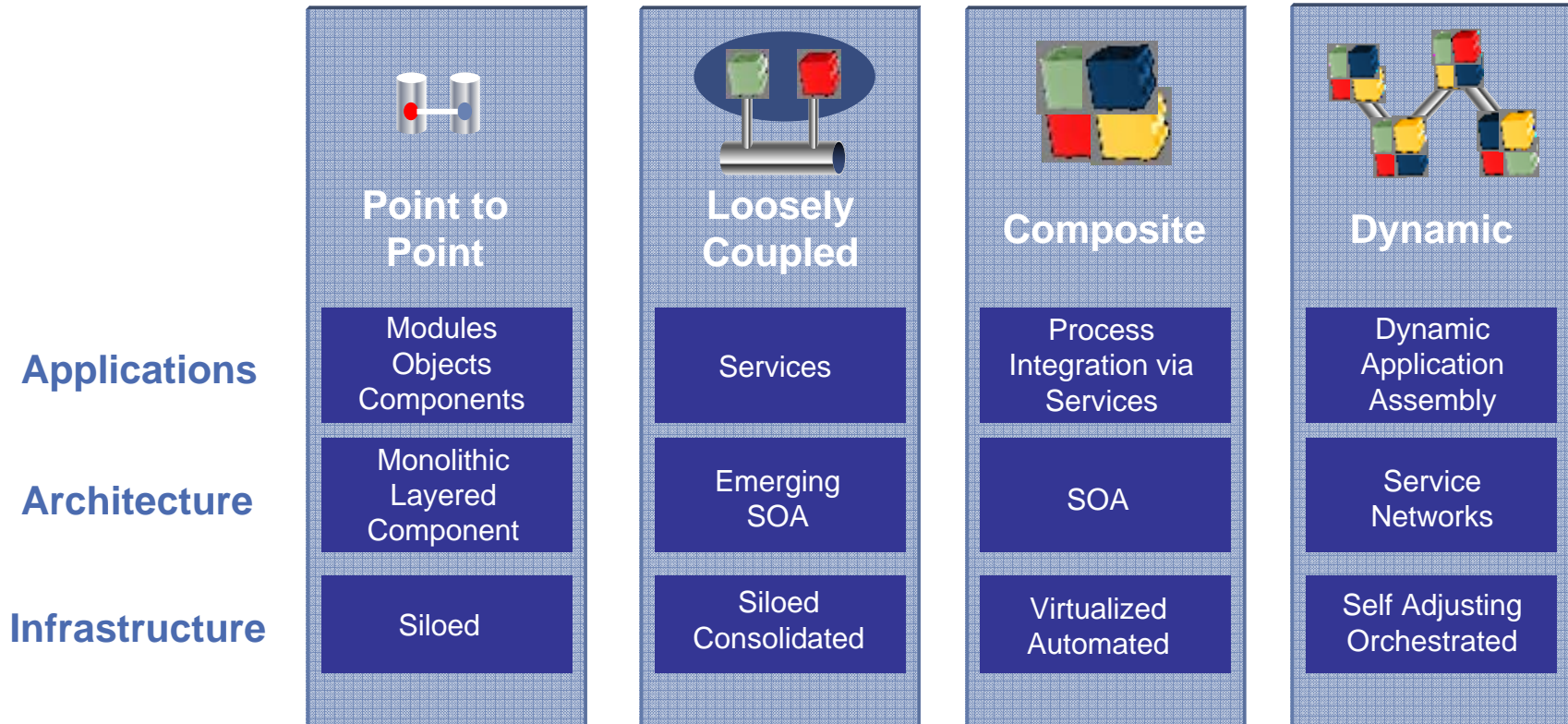
Business of IT Dashboard Overview

A Business-Oriented View of How Well IT Services are Performing

- Assess, design, implement and run an IT dashboard that incorporates:
  - Business service level management
  - Integrated service management
  - Business quality management
  - Business impact management
- Incorporates Services Best Practices
  - Business Impact and Value Assessments
  - Architectural and Implementation Assets
- **Integrates** IBM Tivoli Service Management Technology **with the client's existing system management tools**
- Benefits:
  - Synchronizes IT and business performance
  - Provides end-to-end visibility to manage the entire IT service, not just the infrastructure
  - Supports IT cost take-out through deployment of best practices

Business of IT Dashboard

As SOA Evolves, so must the Infrastructure . . . IBM

Service Integration Maturity Model

|	Point to Point	Loosely Coupled	Composite	Dynamic
Applications	Modules Objects Components	Services	Process Integration via Services	Dynamic Application Assembly
Architecture	Monolithic Layered Component	Emerging SOA	SOA	Service Networks
Infrastructure	Siloed	Siloed Consolidated	Virtualized Automated	Self Adjusting Orchestrated

SOA Deployment Best Practices and Lessons Learned

Methodical, cross-IBM, global approach to capture, analyze, feedback SOA deployment experiences

- **SOA Deployment Lessons Learned / Best Practices Conference executed through IBM Academy of Technology**
- **Applied standardized Case Study Template**
  - incl. client situation, project, architectural work products, intellectual capital, lessons learned, best practices)
- **Structured into 10 domain categories**
  - BPM, ESB, Information, Methods, Solutions, NFRs, PoCs, Development, Testing, Organization
- **200+ submissions resulted in ~100 completed case studies, with 750 lessons learned/650 best practices**
  - analyzed and fed back to product and services organizations
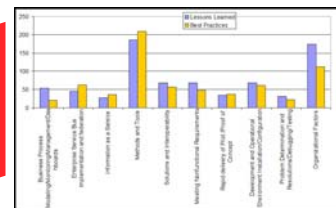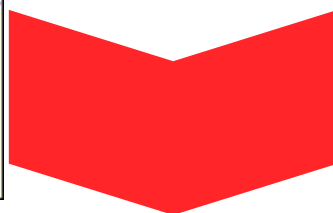
Architecting the right SOA Infrastructure is a core activity of SOA deployments

- **Early consideration of infrastructure requirements is essential, to avoid an out-of-synch situation between functional and non-functional requirements**
- **SOA infrastructure may be project specific in early stages, often real benefits to be gained from standardization at a broader enterprise level, with its own adoption path/maturity model**
- **Paradigm shift visible in IT organizations from being resource providers to becoming service providers, with an infrastructure becoming service-based itself**
- **Virtualization and provisioning capabilities enable a service-oriented infrastructure**
- **The right balance between flexibility and complexity is an important architectural consideration**

Evolving Client's Infrastructure requires an End-to-end Approach

IBM

Strategy and Planning	➤	Architecture and Design	➤	Implementation And Test

Strategy and Planning

- *Identify opportunities to apply SOA innovations to meet business and IT objectives?*

- *Understand how SOA infrastructure management and service management will support the SOA environment?*

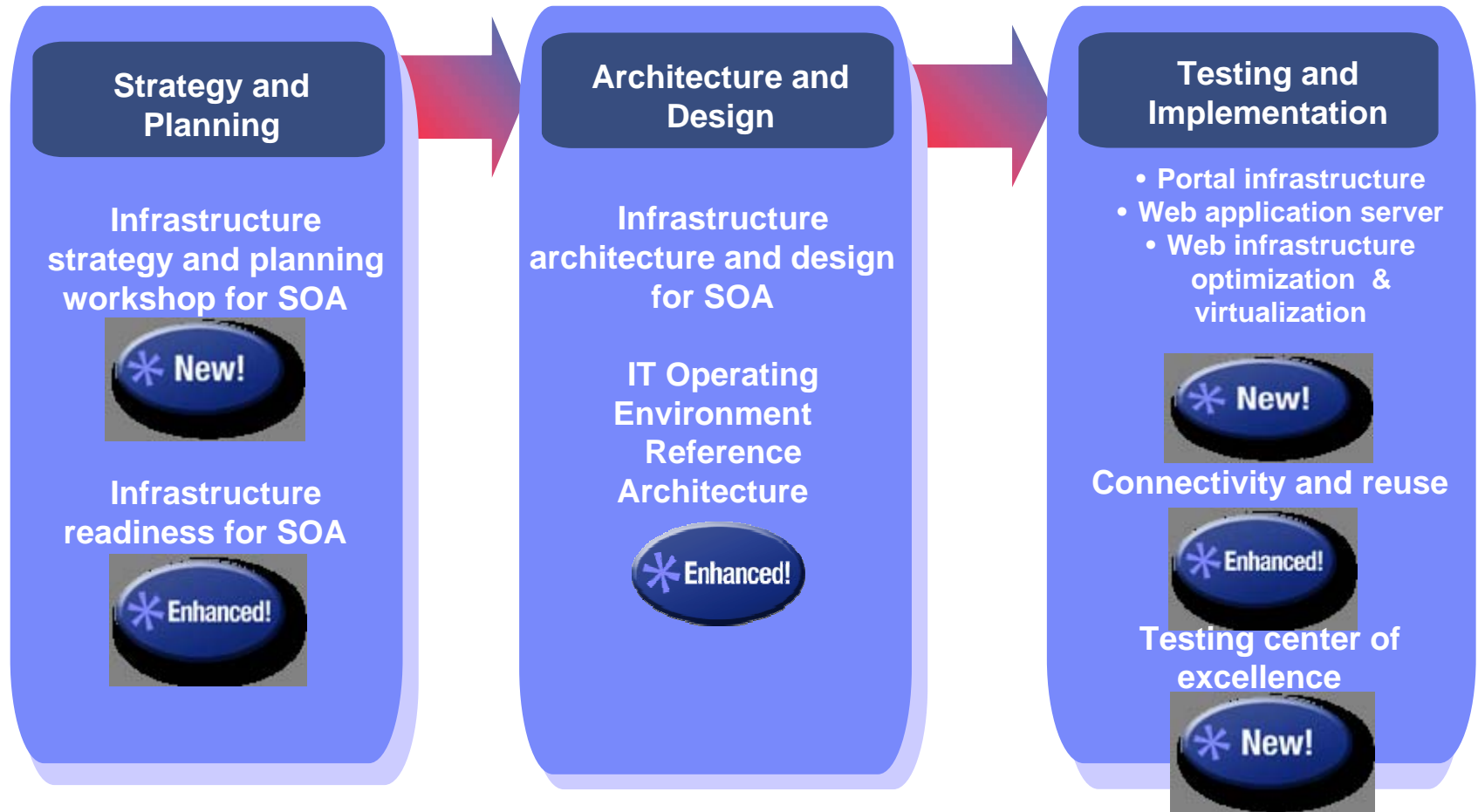- *Determine IT readiness to incorporate SOA technologies into the environment?*

How do you :

- *Create an architectural framework and the infrastructure designs to support SOA?*

- *Accelerate and refine the SOA architecture and design process and transition plan?*

- *Develop SOA infrastructure solution plan including business case, detailed designs, operational model ?*

Implementation And Test

- *Integrate siloed applications and value net through an extensible infrastructure foundation*

- *Optimize, scale and automate your SOA foundation?*

- *Integrate with your existing middleware infrastructure?*

- *Ensure your new SOA services respond under normal and peak conditions?*

New & Enhanced IBM Services to help Clients Transition their IT Infrastructure to Support SOA

IBM

Strategy and Planning

Infrastructure strategy and planning workshop for SOA

New!

Infrastructure readiness for SOA

Enhanced!

Architecture and Design

Infrastructure architecture and design for SOA

IT Operating Environment Reference Architecture

Enhanced!

Testing and Implementation

- **Portal infrastructure**
- **Web application server**
- **Web infrastructure optimization & virtualization**

New!

Connectivity and reuse

Enhanced!

Testing center of excellence

New!

Key Flexible Infrastructure Characteristics for SOA

IBM

Virtualization

"Optimize workloads across shared resources"

- Service workload virtualization
- Pooled resources moving beyond physical constraints
- Proactive management and control of virtual infrastructure for SOA

Quality of Service

"Fast and predictable execution of work"

- Responsiveness to service performance demands
- High service availability
- Dynamically adjust infrastructure

Platform Flexibility

"The right infrastructure for the job"

- Easily configure infrastructure for specific service workload needs
- Platform choice with common management
- Overcome datacenter limitations to SOA growth

Value of a Dynamic Infrastructure for SOA Implementations

IBM

Support dynamic workload

Increased integration required

Decoupling of application from business process

Need to meet Service Quality demands

**Manage virtualized infrastructure response to meet workload demands**

Integration middleware connects processes

Storage virtualization allows info sharing

Virtualized systems with access and resource pooling across a shared infrastructure

Manage to service levels & business goals

Predict & manage across linked services
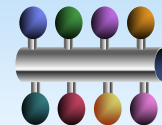
End to End Virtualization is Key
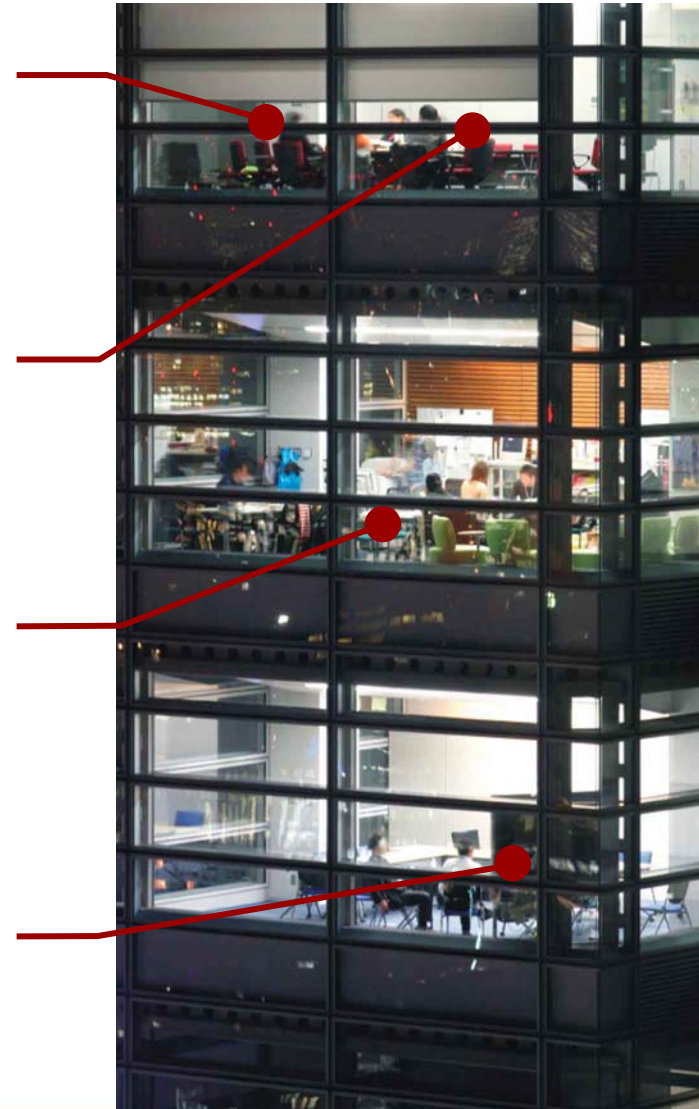
End-to-end Virtualization

Resource Virtualization
- Consolidate resources into a single virtual pool
- Improved asset utilization
- Dynamically allocate processing capabilities

Workload Virtualization
- Use server resources more effectively
- Quickly adapt to changing workload and business requirements
- Drive up utilization, achieve SLA
- Automate selected admin functions to reduce complexity

Information Virtualization
- Relieve load on backend data store
- Improve transaction throughput & response time
- Achieve near-linear scalability
- Reduce or eliminate need for constant tuning

Flexible deployment options

System z™

z/OS

z/VM

**Capacity on Demand
Extreme Virtualization**

System Storage™
San Volume Controller

IBM TotalStorage
SAN Volume Controller

System i™

i5OS

System p™

AIX L

Advanced POWER Virtualization
NEW - Live Partition Mobility

System x™ and BladeCenter®

vmware®

Microsoft Virtual Server

Xen

Specialized Appliances & Engines
• WebSphere DataPower SOA Appliances
• zIIP, zAAP and IFL engines for System z

WebSphere® software

Implementation Options for Virtualized Infrastructure from GTS

IBM

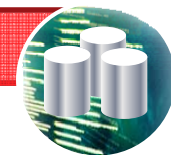## Web infrastructure optimization and virtualization services

- Design and implementation services for WebSphere Extended Edition
- Consolidates resources into single virtual pool and dynamically allocates processing capabilities

New!

Web Workload Virtualization

Information Virtualization

Server and Storage virtualization services

- Solution Framing, Design, implement and deploy services

Benefits:
Higher success rate
Faster deployment
Reduced errors & risk
Simplified infrastructure
Cross-platform solution

UPMC is Transforming Healthcare with SOA and a Dynamic Infrastructure

UPMC
University of Pittsburgh Medical Center

▶ Business Challenge:
**Experiencing 59% annual data growth
High systems complexity
Desire to shape future healthcare**

▶ **Solution:** Simplified and integrated the patient data infrastructure using SOA and virtualization on IBM Systems.

▶ **Results:** Improved agility to develop and profit from clinical innovations. Improved caregiver efficiency and quality of care. Projected 20% IT cost savings.

▶ **Implementation Details:** Leveraged IBM Professional Services to implement a solution using IBM System x, p, z, BladeCenter, and Storage along with IBM virtualization technology, WebSphere Application Server, WebSphere Business Integration, and Tivoli software.

Business Centric SOA: Information Entry Point

Why IBM?

Demonstrated Leadership

Unique Blend of SOA Expertise and Infrastructure and Management Software, Hardware and Professional Services Offerings in Support of SOA

Contributors to **over 50 SOA-based** standards committees

600 employees are subject matter thought leaders in IT strategy and architecture

Practical application of expertise: **IBM's own IT** transformation and cost optimization project

55,000 employees trained as IT infrastructure experts in 164 countries

Lead

40 years of virtualization experience (IBM invented it)

2,500 storage virtualization clients

Over 33,000 Mainframe, UNIX®, and System i companies exploit systems-level virtualization

5000+ member global service management community of practice

IBM can virtualize over **80%** of a client's infrastructure

Over 4000 SOA engagements and assessments

We're Ready with Unmatched Capabilities

For Scaling to Production Volumes, Reliability & Availability

Wimbledon had peak 1 million hits/min, 30K simultaneous access to scoreboard

The IBM ODW handles high volumes of traffic, averaging 30 million requests a day, while maintaining sub-second transaction response times for many applications

Schwab.com handles 16.5 million transactions per day

Wimbledon

Tony Awards

Australian Open

IBM On Demand Workplace

eBay

Office Depot

Schwab

Nissan

Bank of Montreal

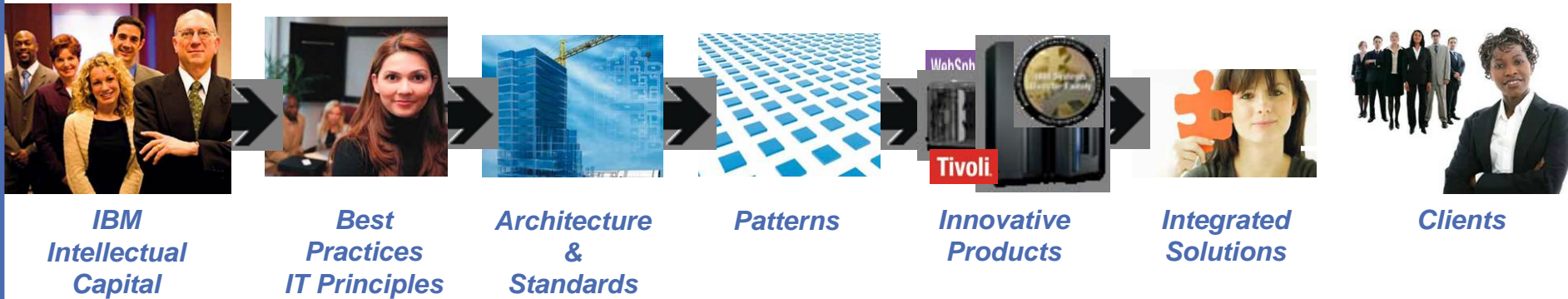**AAA Carolinas**

Shell

Pear's Gourmet

Tennis Australia had 4.2 million unique fans view over 145 million pages on its site during the 14-day tournament

eBay.com is running on WebSphere and handles 1+ billion page views/day

Implementing the Infrastructure

Vast internal and external engagement experience

| IBM Intellectual Capital | Best Practices IT Principles | Architecture & Standards | Patterns | Innovative Products | Integrated Solutions | Clients |

Point of View – "The full picture"

How to best apply technology and methods to improve your IT cost, flexibility, and service level.

Questions & Answers