Service Oriented Architecture

Aligning IT with Business
Goals through SOA
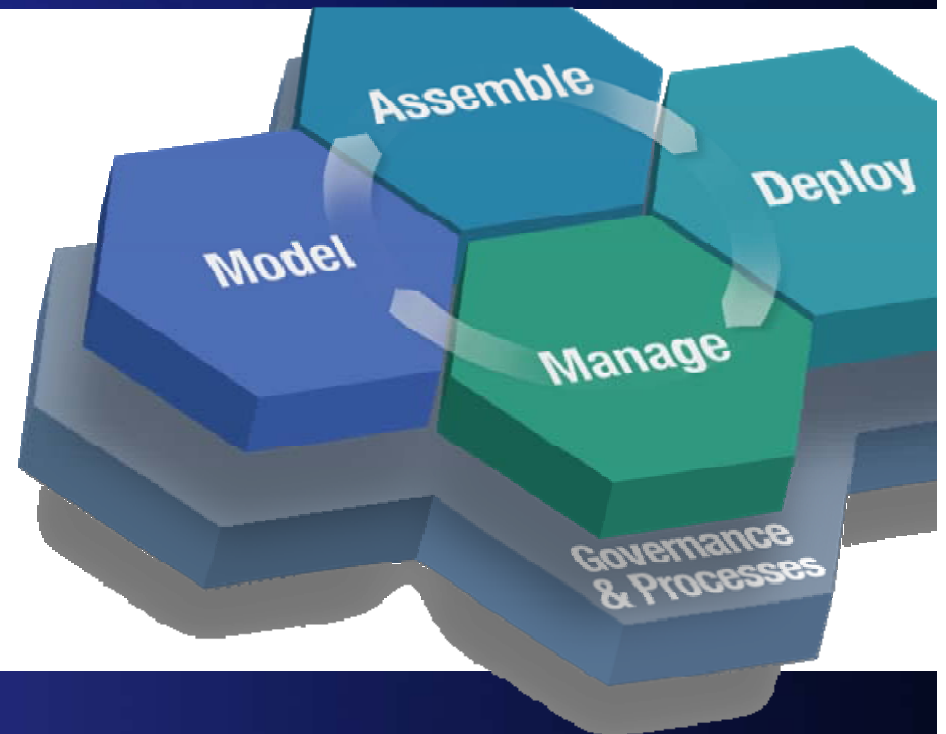
Business and IT Alignment

"The process through which business people and IT delivery organisations collaborate to create an environment in which investment in IT and delivery of IT services reflect business priorities, whether IT services are sourced internally or externally; and in which business priorities are influenced by understanding of IT capabilities and limitations."

Source: "On IT-business alignment" Macehiter Ward-Dutton, Feb 2005

Collaborative business and IT decision making that ensures …

✓ IT investments are made based on business priorities

✓ IT service delivery provides a business result

✓ Business priorities are assessed with IT capabilities and limitations in mind

… why is alignment so important?

ON DEMAND BUSINESS

A clear need for responsiveness ...

- 75% of CEOs place a high or very high priority on **the ability to respond rapidly**

- Only 1 in 10 CEOs believe that their organization has the ability to be very responsive to react to changing market conditions

Responsiveness: the new key competence

So growth is back on the agenda – but it won't just happen by itself. CEOs all over the world have identified organizational responsiveness, agility and flexibility as necessary competencies. Developing the ability of the organization to not just sense, but to anticipate and respond to the changing marketplace and subsequent customer requirements is one of the great challenges for today's CEO.

CEOs are now focusing on how their organizations read, listen and react to dynamically changing external and internal conditions. As one CEO put it, "we have to implement a competitive

Source: IBM Global CEO Survey, Feb 2004

CEO Needs translate to CIO Challenges

CEO needs	CIO challenges
■ **Revenue growth** with cost containment	■ Aligning business and IT goals to grow revenue and contain costs
■ Key competency: **responsiveness**	■ Building responsiveness and agility into the organization through IT
■ Critical success factor: enable effectiveness of **people** and **processes**	■ How can IT help enable people and teams to be more effective
Source: CEO Study of 456 WW CEOs, IBM Corp. 2004	*Source: Operating Environment Market Drivers Study, IBM Corp. 2004*

… what will facilitate better business/IT alignment?

ON DEMAND BUSINESS™

A History of Growing IT Importance
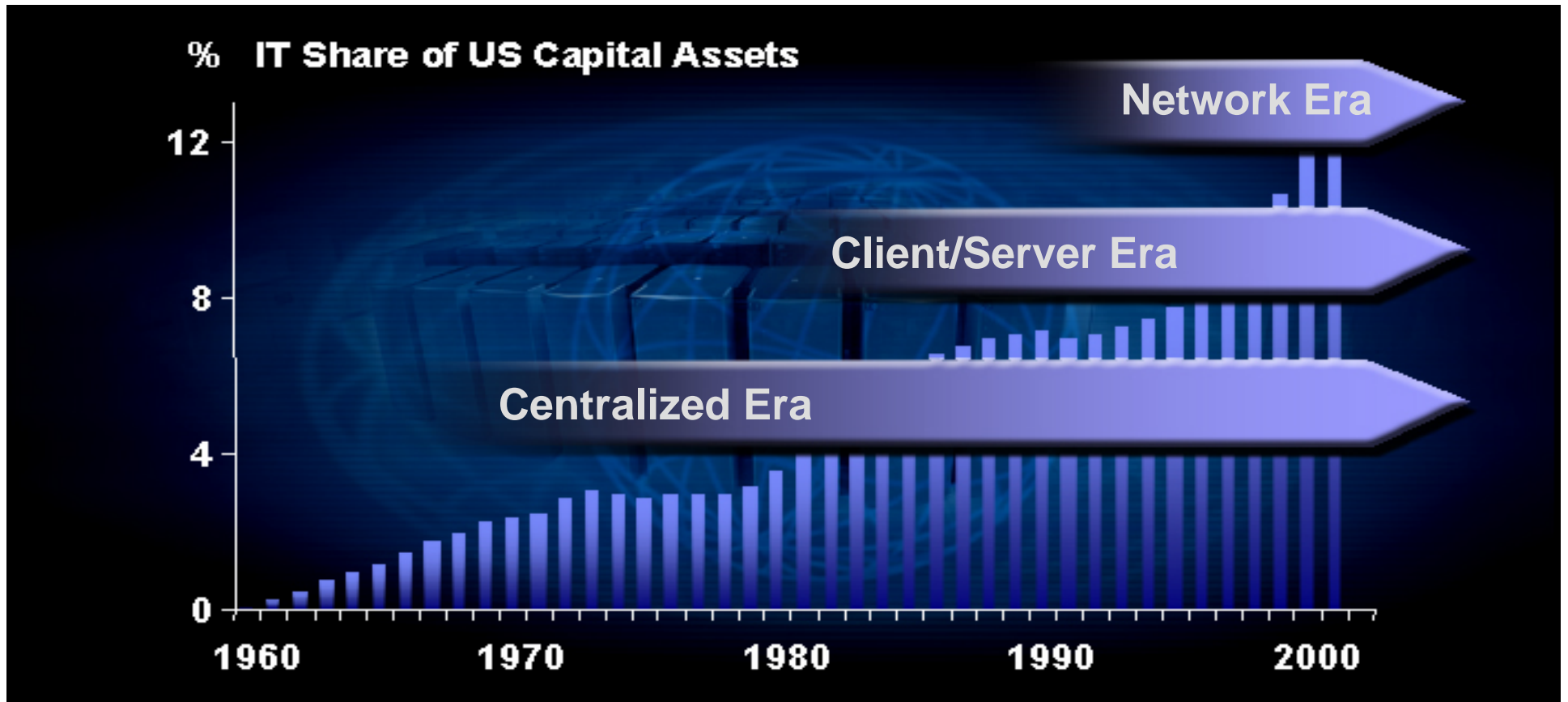
… **A history that has moved IT from the back office to the mainstream, impacting all aspects of product delivery across the entire value chain**

Service Oriented Architecture: the blueprint for change

"Service-oriented architecture deployments are increasing and becoming a mainstream architectural model for developing services, applications and infrastructures."

"Effective Web Services and SOBAs Require Management"
Frank Kenney, Gartner
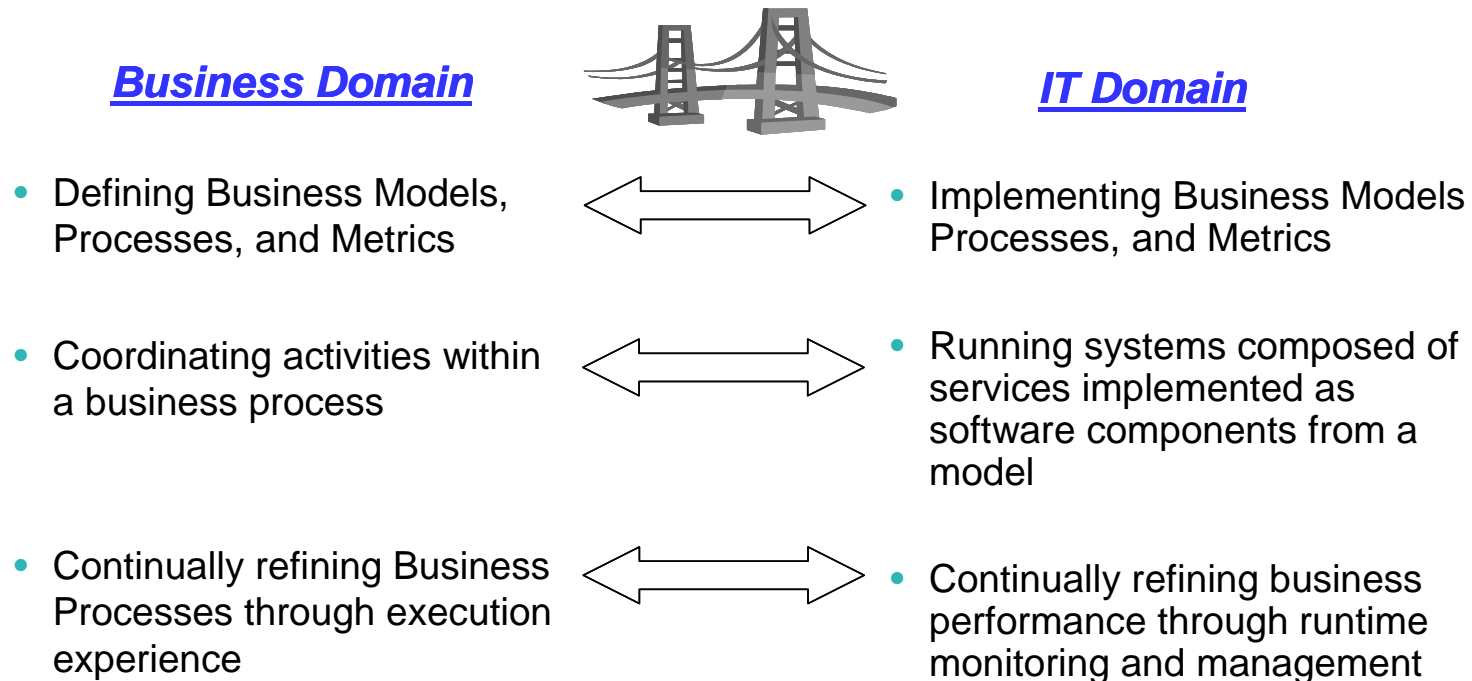*September 28, 2004*

Why SOA?

- Flexibility

- Facilitates re-use of existing applications

- Supports effective business process implementations

- Designed for change

Aligns Business and IT goals to grow revenue and contain costs

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The glue that binds …..

Business Processes
How companies complete the tasks involved in delivering value to customers

Business Domain   **IT Domain**

- Defining Business Models, Processes, and Metrics

⟷

- Implementing Business Models Processes, and Metrics

- Coordinating activities within a business process

⟷

- Running systems composed of services implemented as software components from a model

- Continually refining Business Processes through execution experience

⟷

- Continually refining business performance through runtime monitoring and management

SOA drives a shift in thinking
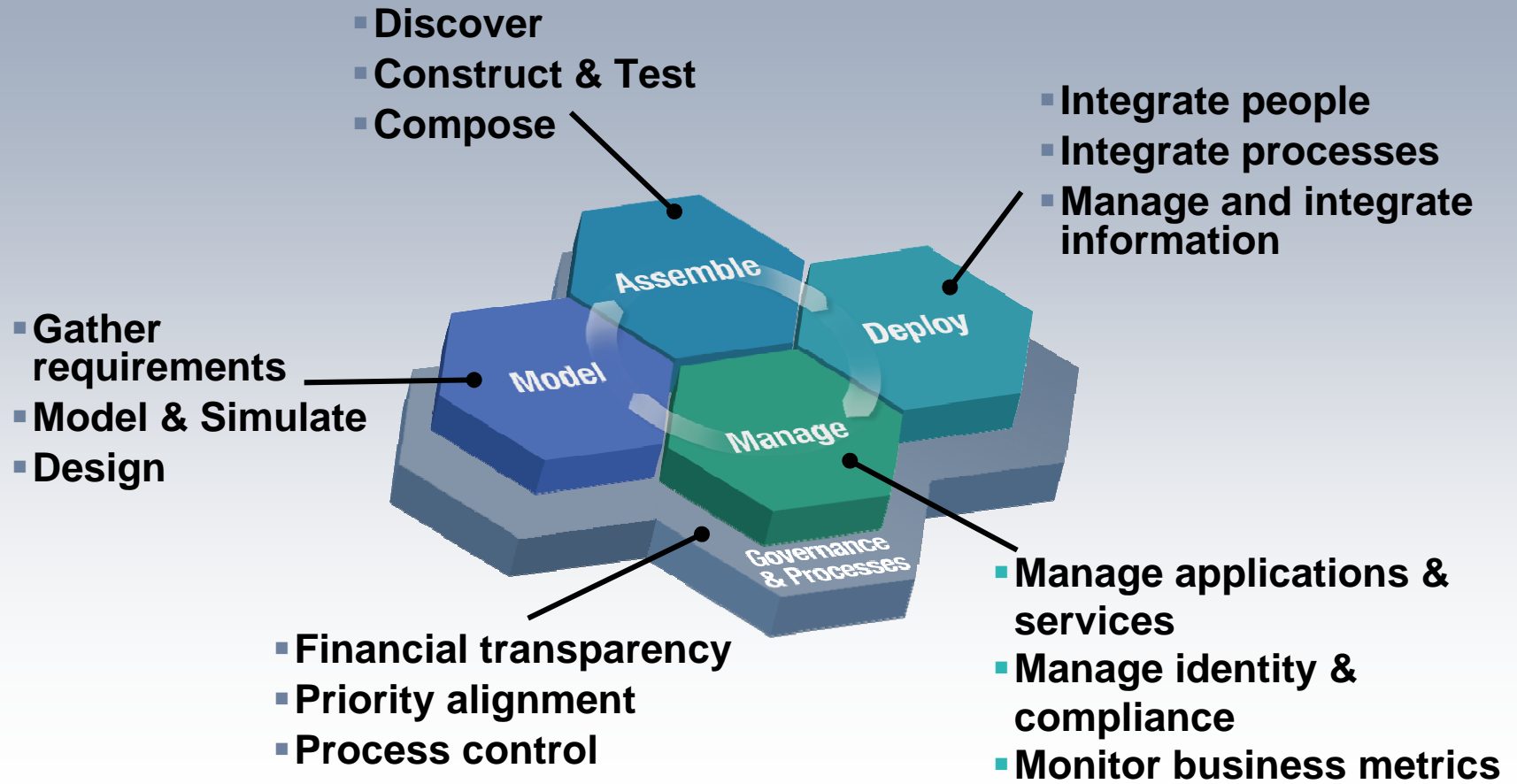
From	To
Function-oriented	**Process-oriented**
Build for permanence	Build to change
One long development cycle	Incremental development cycles
Application silos	Orchestrated solutions that work together
Tightly coupled	Loosely coupled
Structuring applications using components and objects	Structure applications using services
Known implementation	Implementation abstraction
Large, long-term IT investment	Small, short-term IT investment

Greater Flexibility Required From Business Models And The Supporting IT Architecture

Flexible Business

Transformation
Business Process Outsourcing
Mergers, Acquisitions & Divestitures

Composable
Processes
(CBM)
*Component
Business Modeling*

Flexible IT

On Demand Operating Environment

Service Oriented Architecture (SOA)

Development	Infrastructure	Management
Software Development	Integration	Infrastructure Management

Composable
Services
(SOA)

The SOA Lifecycle … supporting a Business Process focus

- Discover
- Construct & Test
- Compose

- Integrate people
- Integrate processes
- Manage and integrate information

Assemble

Deploy

- Gather requirements
- Model & Simulate
- Design

Model

Manage

Governance & Processes

- Financial transparency
- Priority alignment
- Process control

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

Business process management is key to your SOA

Flexible business demands automating and optimizing business processes
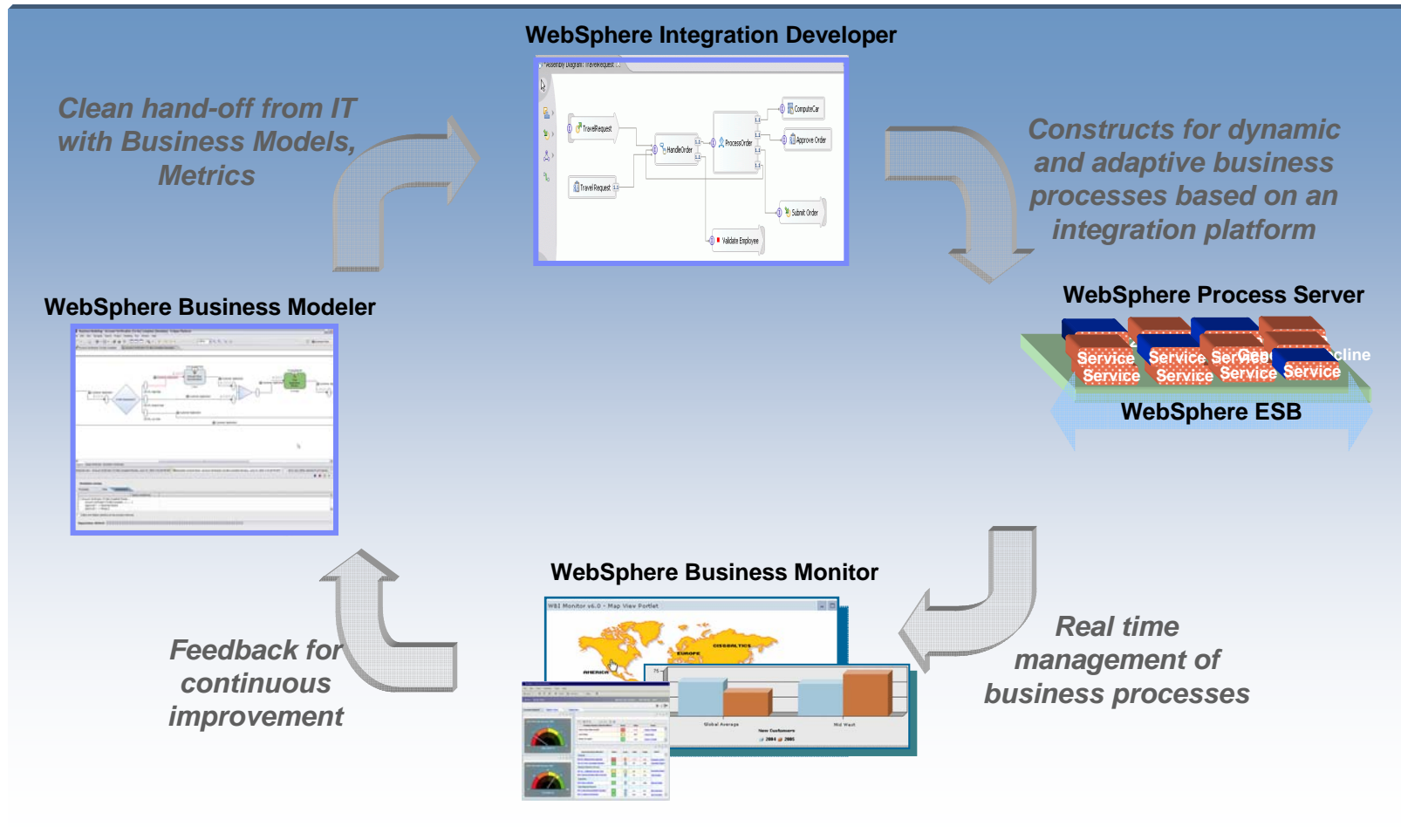
- ***Identify and eliminate*** redundancies and bottlenecks

- ***Reduce risk*** by gaining an understanding of process impacts prior to operationalizing

- ***Automate*** process implementation, eliminating manual deployment tasks

- ***Immediately execute*** new business rules and processes

- ***Visualize*** actual process performance against key performance indicators

- ***Pinpoint*** future process improvements

Without business process management, this would be achieved manually or through a dis-integrated set of tools from multiple vendors
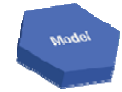
Managing Your Business Processes with a Service Oriented Architecture

Enabling complete life cycle of business process

WebSphere Integration Developer

Clean hand-off from IT with Business Models, Metrics

Constructs for dynamic and adaptive business processes based on an integration platform

WebSphere Business Modeler

WebSphere Process Server

Service Service Service Service Service Service Service Service

WebSphere ESB

WebSphere Business Monitor

Real time management of business processes

Feedback for continuous improvement

The Way Customers do Business Process Modeling

- **Modeling For Documentation & Compliance**
  - Document processes to better understand your business
  - Understand and capture complex behaviors and domain expertise in processes
  - Use output for training, collaboration, and documentation, i.e. requirements for compliance regulations (Sarbanes-Oxley and Basel II)

- **Modeling For Redesign & Optimization**
  - Discover potential areas for process improvement and latent value in processes
  - Document both the current state and future state business process and the comparison to validate enhancements and ROI before committing resources
  - Establish and track measurable process metrics for performance
  - Modeler for services decomposition

- **Modeling For Execution**
  - Ability to change the business process to respond to changes in market
  - Future state business process is ready to be passed to application, workflow and business process development tools to be executed as a new running process
  - Linked real-time monitoring provides feedback on process improvements and reporting for compliance on running processes

New Version! WebSphere Business Modeler
*Provides Quick Results Right Out of the Box*

Expanded user experience and analytical capabilities

- More granular and precise modeling of activities

- Business analyst can now manage end-to-end processes across the organization

Collaborative modeling to enable team work

- Ability to publish, share and comment on models through the web

- Versioning control for capturing most recent changes
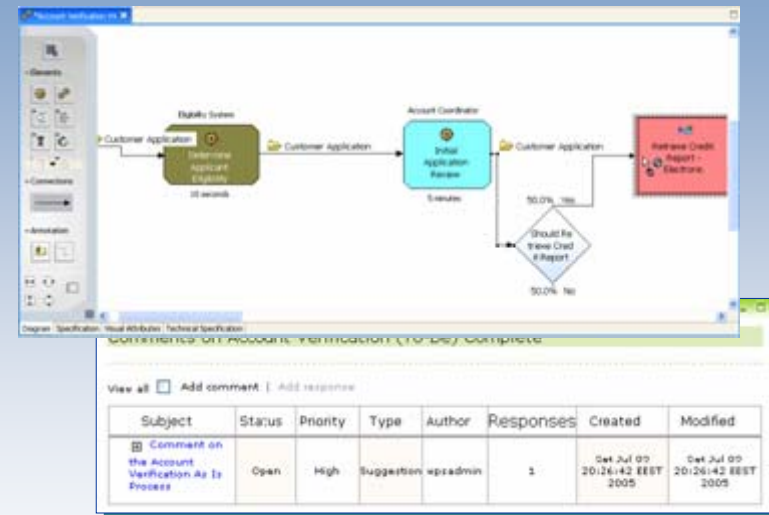
Business performance modeling

- Fine tune operations to increase growth and market share

- Continuous process optimization and improvement

ON DEMAND BUSINESS
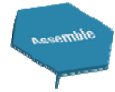
Model - For The IT User

*Using patterns to speed up the process*

Model using industry standard UML 2, integrating the architecture into development

**Enhanced!** **Rational Software Architect V6.0.1**

- Model in UML and transform to Web service

- Use patterns to help automate development of applications and promote reuse

- Use Process and best practices ensure repeatable success

- Integrates with business process modeling to ensure business needs drive development

New! **Rational Software Architect Pattern Solutions**

- Improve productivity with reusable assets

- Rapidly build and configure the Enterprise Service Bus (ESB) with the WebSphere Platform Messaging Patterns

ON DEMAND BUSINESS™
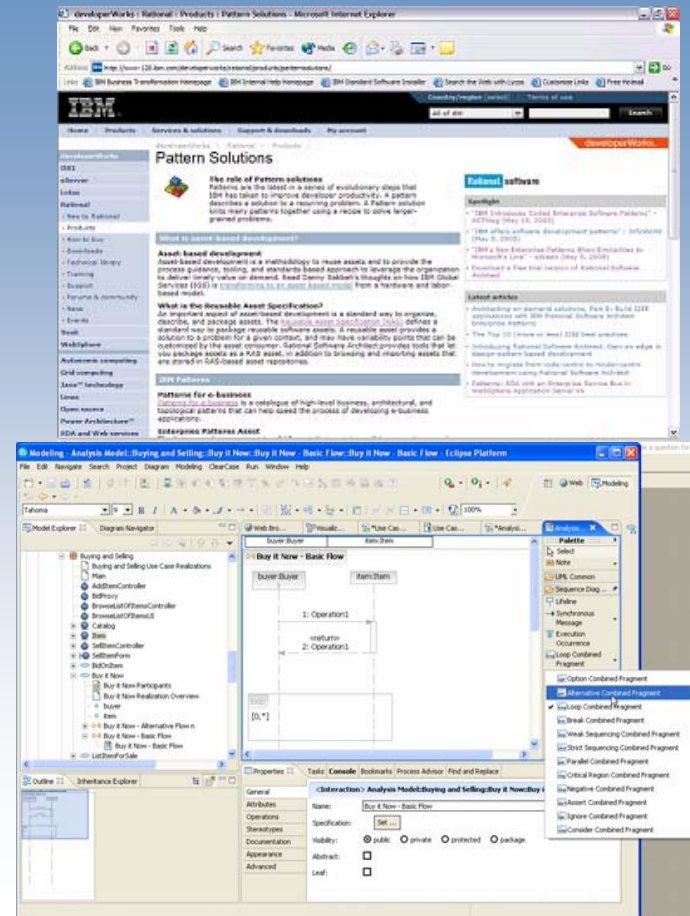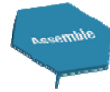
New Product! WebSphere Integration Developer

Graphical Tools for Assembling Composite Applications

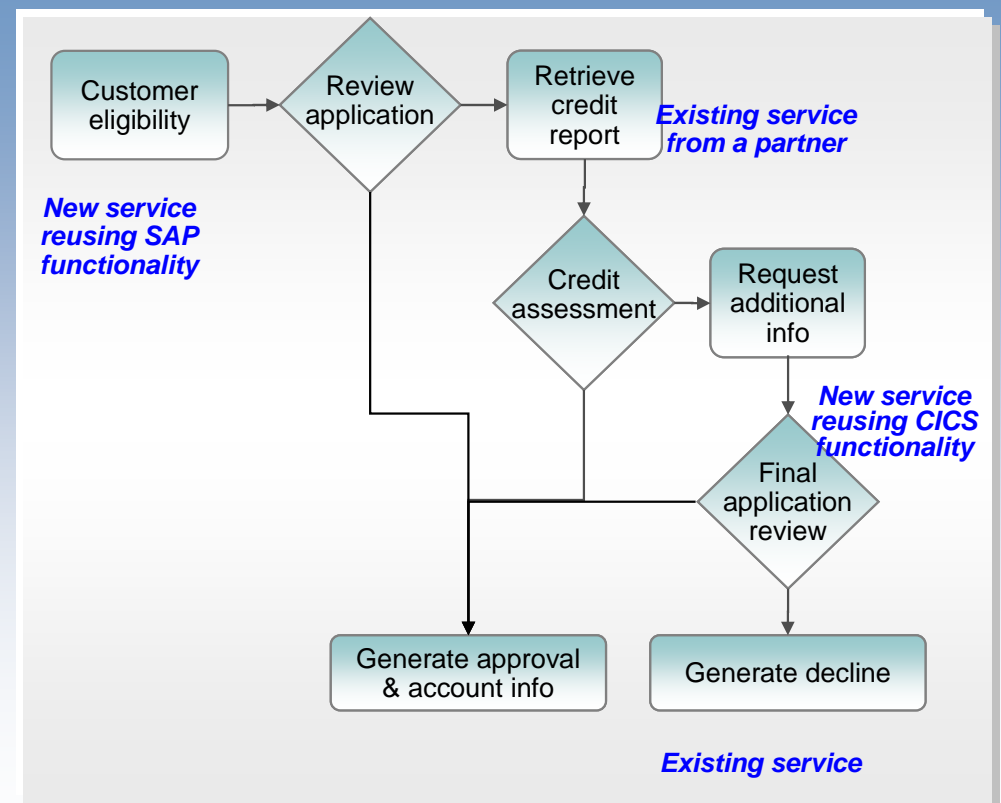## Streamlining process design hand-off between business and IT

- Import and work with business process models directly from the business analyst (WebSphere Modeler)
- Single architecture that supports multiple roles

Simplifying and speeding development

- Easy to use tools where everything can be done through the GUI
- Can be the starting point for developing business processes through IT
- Single way to define all types of processes (human, automated, rules, etc.)

Maximizing re-use

- Ability to leverage existing services and develop for future reuse
- Leverages existing skills through technology built on Eclipse
- Migration tools allow you to use what you have today through WebSphere applications

New service reusing SAP functionality

Existing service from a partner

New service reusing CICS functionality

Existing service

Customer eligibility → Review application → Retrieve credit report → Credit assessment → Request additional info → Final application review → Generate decline

Generate approval & account info

ON DEMAND BUSINESS™

New Product! WebSphere Process Server

Comprehensive Business Flexibility
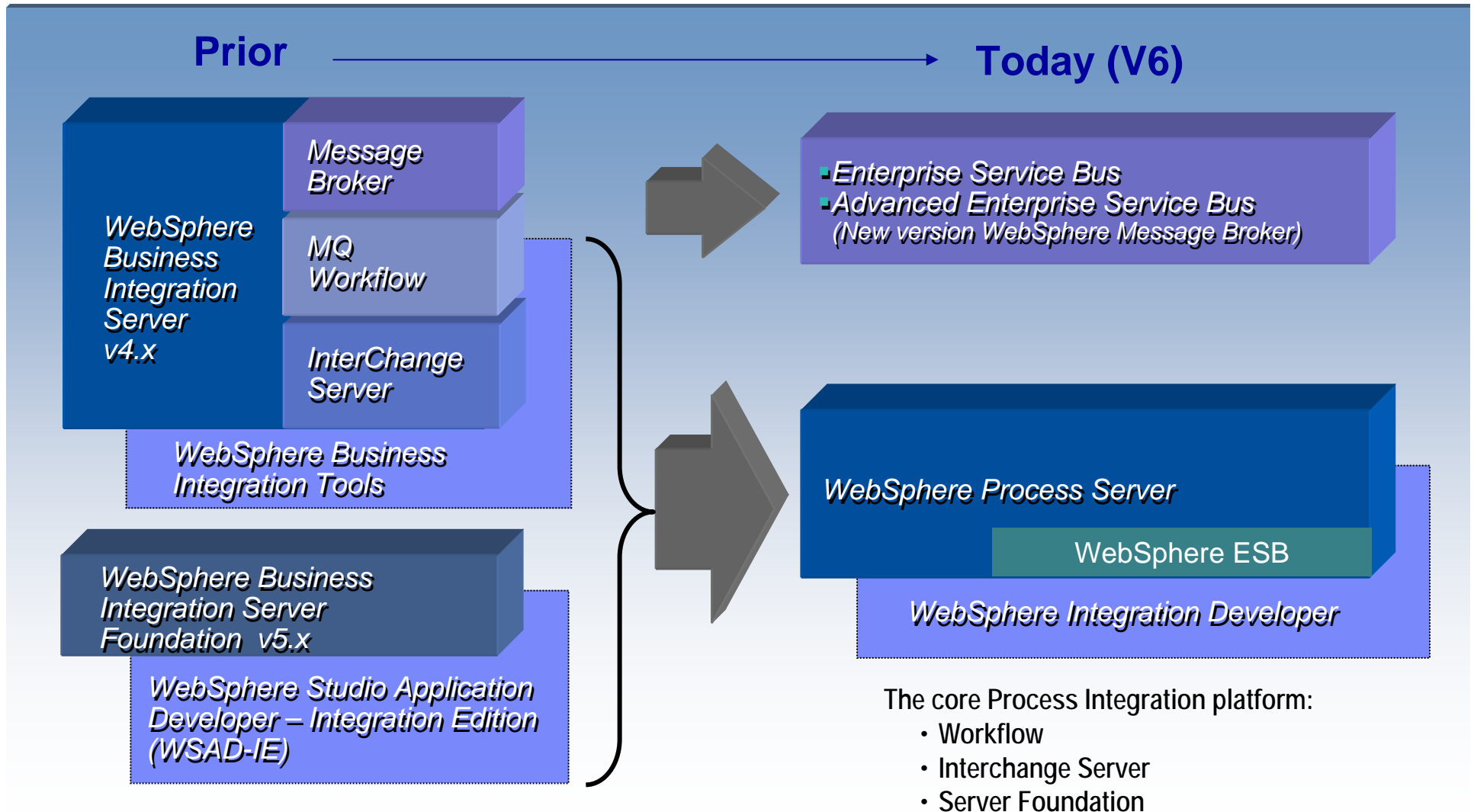
Businesses want to understand and change their operational processes quickly
…But their processes are: misunderstood, inconsistent, hard-wired, or inflexible

- Support all aspects of process integration
  - ✓ process flows
  - ✓ business rules
  - ✓ human steps
  - ✓ events
  - ✓ services
  - ✓ active state management

- Rapidly change process behavior to keep pace with business requirements
  - ✓ build process flows without knowing where the information is coming from (late binding of services)
  - ✓ business rules control the execution sequence of the process and can change dynamically

- Based on an WebSphere ESB for Integration

"Once the up-front analysis and definition work are completed, the Business Integration infrastructure allows us to implement new business processes at a rate of one every few weeks for medium to complex processes."
– EAI Project Manager, Electrabel nv/SA

IBM WebSphere Integration Evolution

Prior → **Today (V6)**

Message Broker

WebSphere Business Integration Server v4.x

MQ Workflow

InterChange Server

WebSphere Business Integration Tools

- Enterprise Service Bus
- Advanced Enterprise Service Bus
  (New version WebSphere Message Broker)

WebSphere Business Integration Server Foundation v5.x

WebSphere Studio Application Developer – Integration Edition (WSAD-IE)

WebSphere Process Server

WebSphere ESB

WebSphere Integration Developer

The core Process Integration platform:
- Workflow
- Interchange Server
- Server Foundation

WebSphere ESB
Improving time to value

Gain a cost effective solution for services integration
- Leverage your existing IT investments by quickly building a flexible integration infrastructure
- Modular approach supports ability to start small and grow as fast as the business requires
- Extensive standards support facilitates greater interoperability and portability

Utilize first class support for hundreds of ISV solutions
- Extensive WebSphere Adapter support, including new JCA-based adapters
- Support for numerous ISVs within the WebSphere Platform partner ecosystem

Save time and development costs by utilizing pre-built mediations
- Mediations operate on messages/events as they are processed by the system
- Operate on both one-way and request-response interactions
- Pre-supplied mediation primitives allow message flows to be visually composed and include XML transformation, message logging, message filtering, database lookup, custom, etc.

Dynamically re-configure to meet changing business needs
- Avoid system downtime by adding or changing integration logic dynamically
- Adapt to business change by easily plugging in and out service end points

ON DEMAND BUSINESS™

New Product! WebSphere ESB
Delivering an Enterprise Service Bus to power your SOA

Provides Web Services connectivity, JMS messaging and service oriented integration

- Improve flexibility through the adoption of service oriented interfaces
- Minimize disruption by using an ESB to handle integration logic

Ease of use

- Easy to use tools that require minimal programming skills
- Simple to install, configure, build and manage

Improve time to value

- Cost effective solution for services integration
- Support for over hundreds of ISV solutions
- Save time and development costs by utilizing pre-built mediations
- Dynamically re-configure to meet changing business processing loads

Seamless integration with the WebSphere platform

- Leverages WebSphere qualities of service: clustering, fail-over, systems management, security
- Easily extends to leverage WebSphere Process Server as needs dictate
- Integrates tightly with IBM Tivoli security and systems management offerings

New Version! WebSphere Message Broker
Delivering an advanced ESB to power your SOA

Deploy

Provides universal connectivity

- Provides Web Services connectivity and non standard interface connectivity
- Unmatched ability in integrating many systems, platforms, devices, and APIs
- Facilitates service oriented integration

Provides universal data transformation

- Advanced message transformation, enrichment, and routing
- Option to use WebSphere DataStage TX
- Support for industry standard data formats (AL3, HL7, SWIFT, HIPAA, EDI, etc.)

New & improved pre-built capabilities to improve ROI

- Leverage existing skills with rich Java and XML support
- Implement complex event processing with no programming
- Offers simple and easy to use tools with advanced capabilities

Leverage the performance

- Offers performance of traditional transactional processing environments
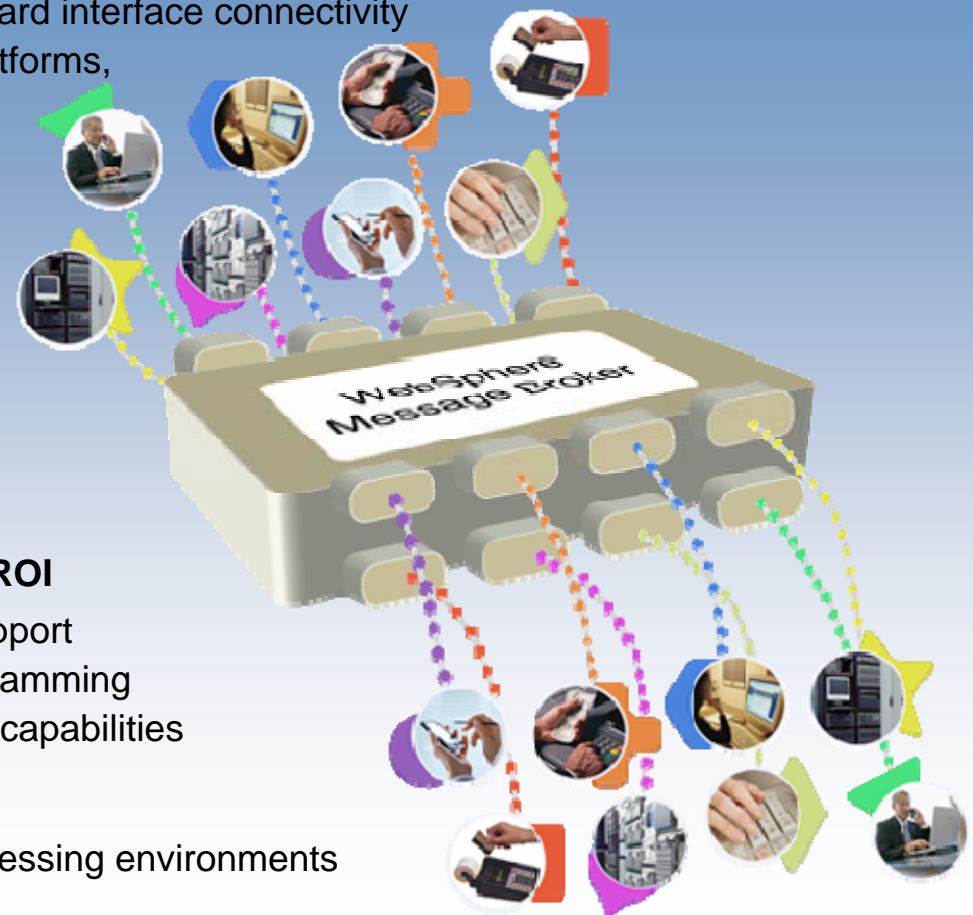
Integrate existing non-service enabled applications into an SOA

ON DEMAND BUSINESS™

WebSphere ESB and WebSphere Message Broker

Challenge: Retail Stores, Inc. faced three integration headaches: Integration efforts at the corporate data center were brittle, a new store system scheduled for introduction required integration to occur at the store level, and each of the over 500 store locations had to be seamlessly linked to the corporate data center.

WebSphere Message Broker at corporate data center

- Connectivity hub for distributing information to the store locations
- Transforms messages between various applications and systems
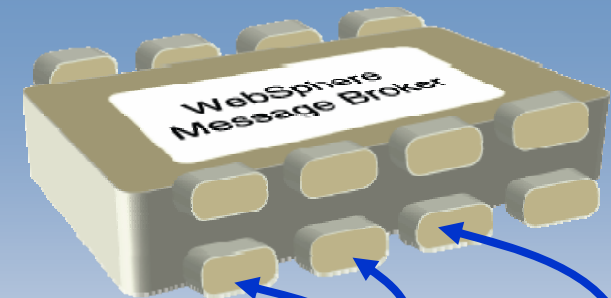
WebSphere ESB at each store location

- Links multiple J2EE applications in addition to linking to Point of Sale terminals

Corporate Data Center
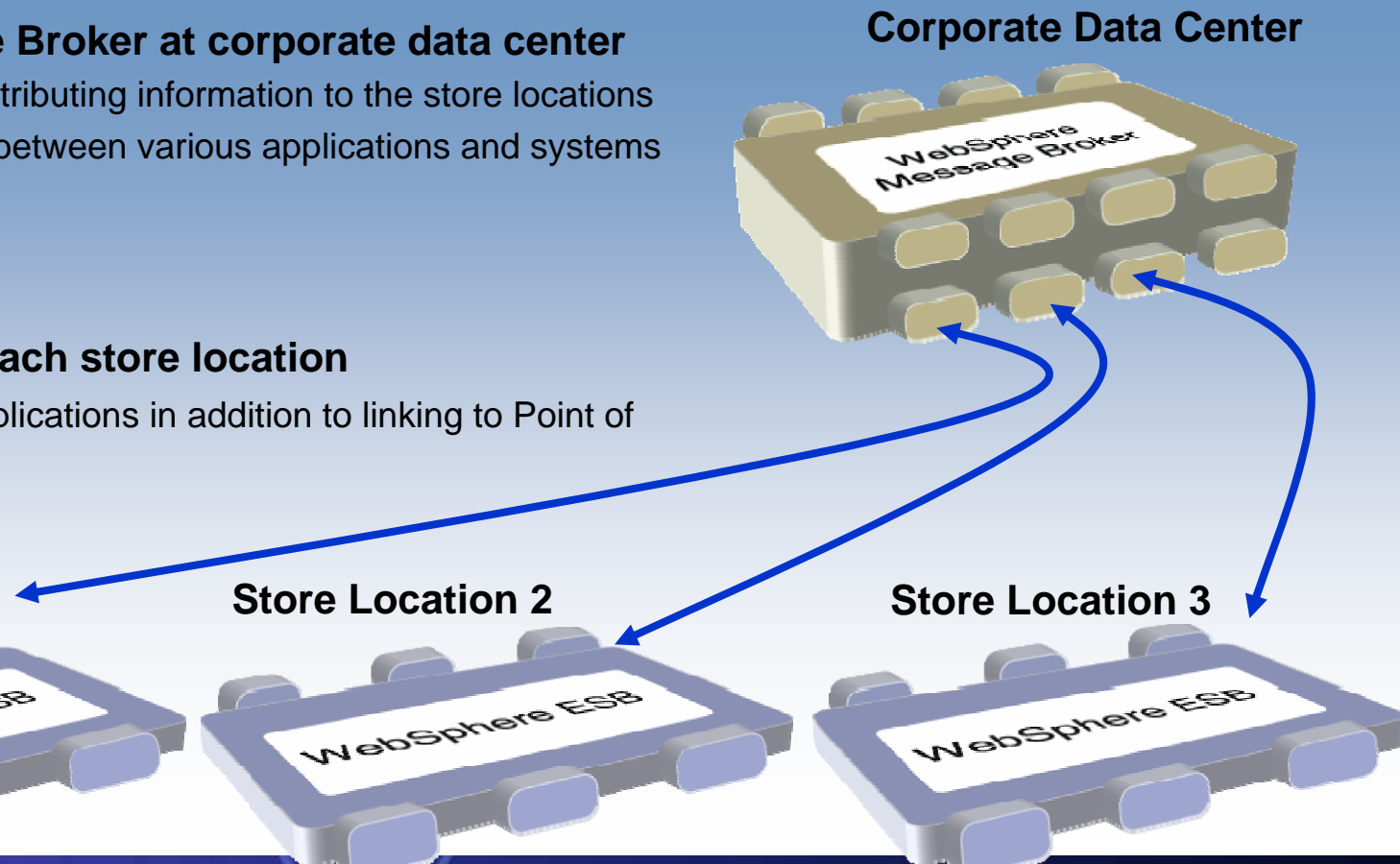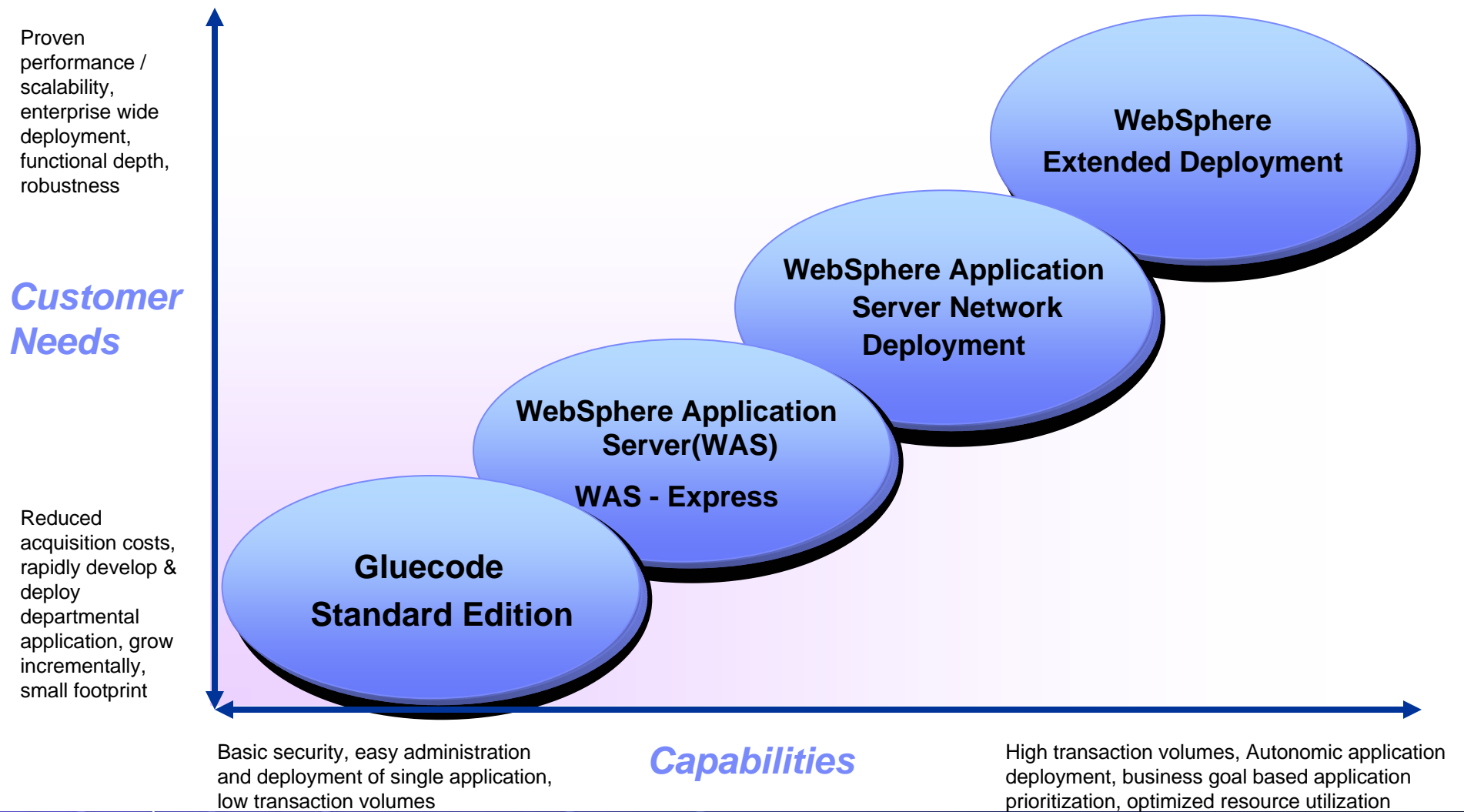
WebSphere Message Broker

Store Location 1

WebSphere ESB

Store Location 2

WebSphere ESB

Store Location 3

WebSphere ESB

WebSphere Foundation Products

- Scaling Up and Scaling Out to address the needs of all our customers

Customer Needs

Proven performance / scalability, enterprise wide deployment, functional depth, robustness

Reduced acquisition costs, rapidly develop & deploy departmental application, grow incrementally, small footprint

Gluecode Standard Edition

WebSphere Application Server(WAS)

WAS - Express

WebSphere Application Server Network Deployment

WebSphere Extended Deployment

Capabilities

Basic security, easy administration and deployment of single application, low transaction volumes

High transaction volumes, Autonomic application deployment, business goal based application prioritization, optimized resource utilization

Deploy – Application Infrastructure

Delivering high qualities of service to a distributed SOA

Enhanced! WebSphere Extended Deployment
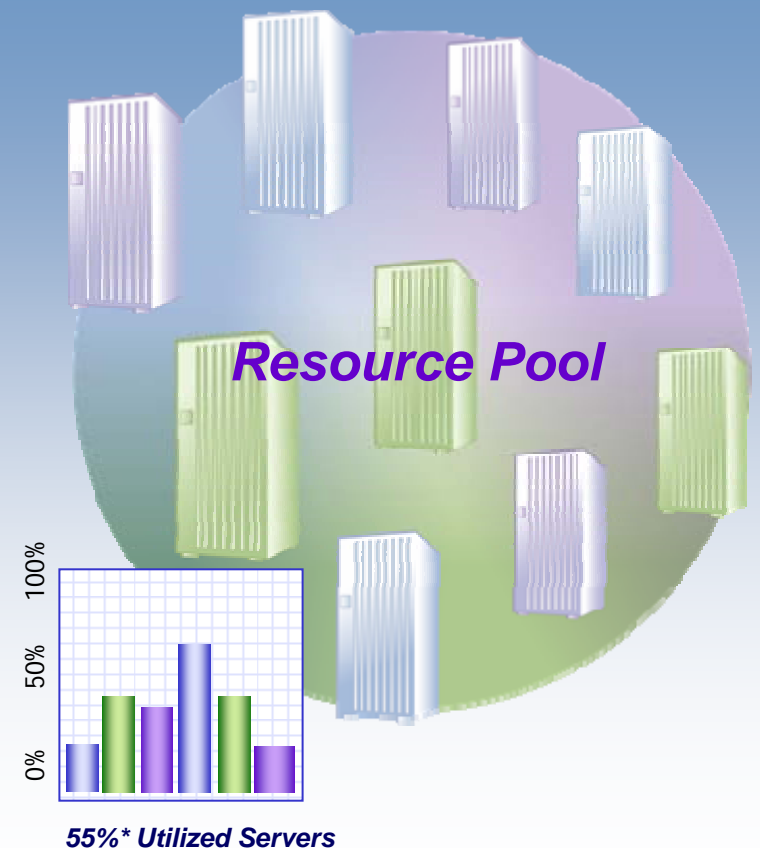
Flexibility for your heterogeneous environment

- Efficiently support mixed workloads

- Effectively enable quality of service management for a mixed application servers and data sources

Optimizing the performance and throughput of your transactions

- ObjectGrid, a caching fabric which enables object data to be shared among multiple clients

- Partitioning facility enables the development of highly scalable, high performance J2EE applications
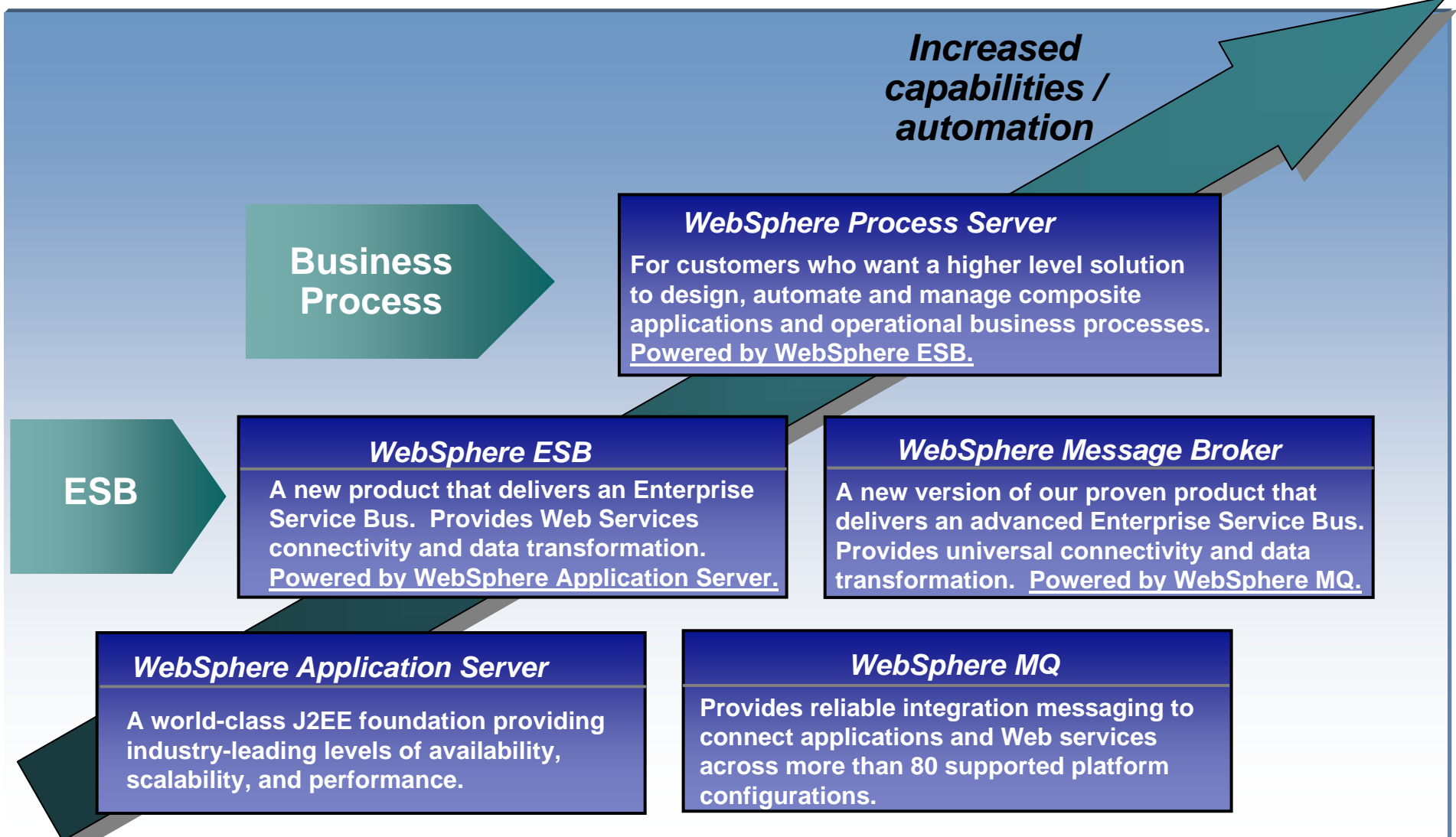
Enhanced manageability

- At-a-glance assessments of system vitality and improved application manageability

- Interruption-free application updates to manage the deployment of multiple application versions
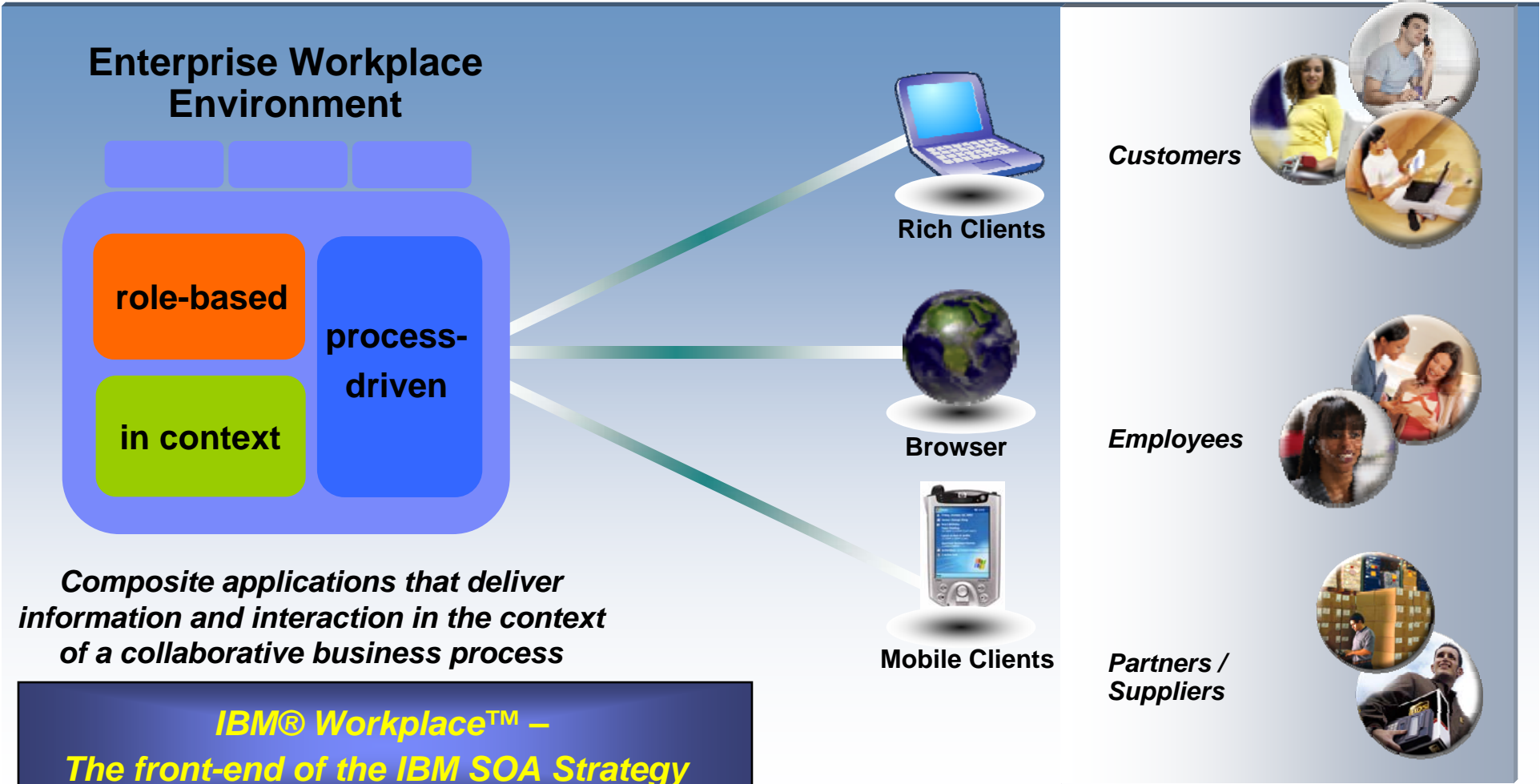
Resource Pool

100%

50%

0%

55% Utilized Servers*

ON DEMAND BUSINESS

IBM leads with the most complete product family for SOA

Increased capabilities / automation

Business Process

WebSphere Process Server

For customers who want a higher level solution to design, automate and manage composite applications and operational business processes. Powered by WebSphere ESB.

ESB

WebSphere ESB

A new product that delivers an Enterprise Service Bus. Provides Web Services connectivity and data transformation. Powered by WebSphere Application Server.

WebSphere Message Broker

A new version of our proven product that delivers an advanced Enterprise Service Bus. Provides universal connectivity and data transformation. Powered by WebSphere MQ.

WebSphere Application Server

A world-class J2EE foundation providing industry-leading levels of availability, scalability, and performance.

WebSphere MQ

Provides reliable integration messaging to connect applications and Web services across more than 80 supported platform configurations.

How do People Interact and Collaborate in an SOA?
Delivered through a natural, intuitive, adaptive user experience

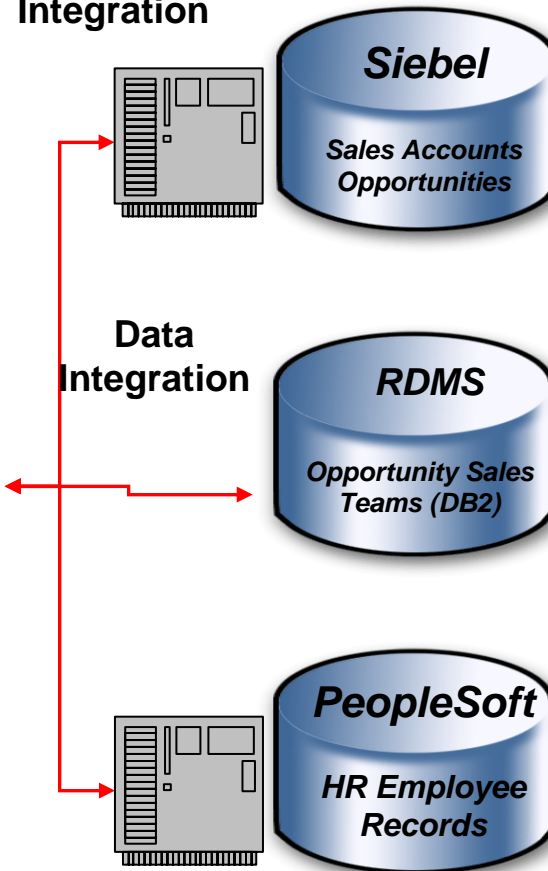**Enterprise Workplace Environment**

role-based

process-driven

in context

Rich Clients

Browser

Mobile Clients

Customers

Employees

Partners / Suppliers

Composite applications that deliver information and interaction in the context of a collaborative business process

IBM® Workplace™ – The front-end of the IBM SOA Strategy

ON DEMAND BUSINESS™

Portal = Single User Experience
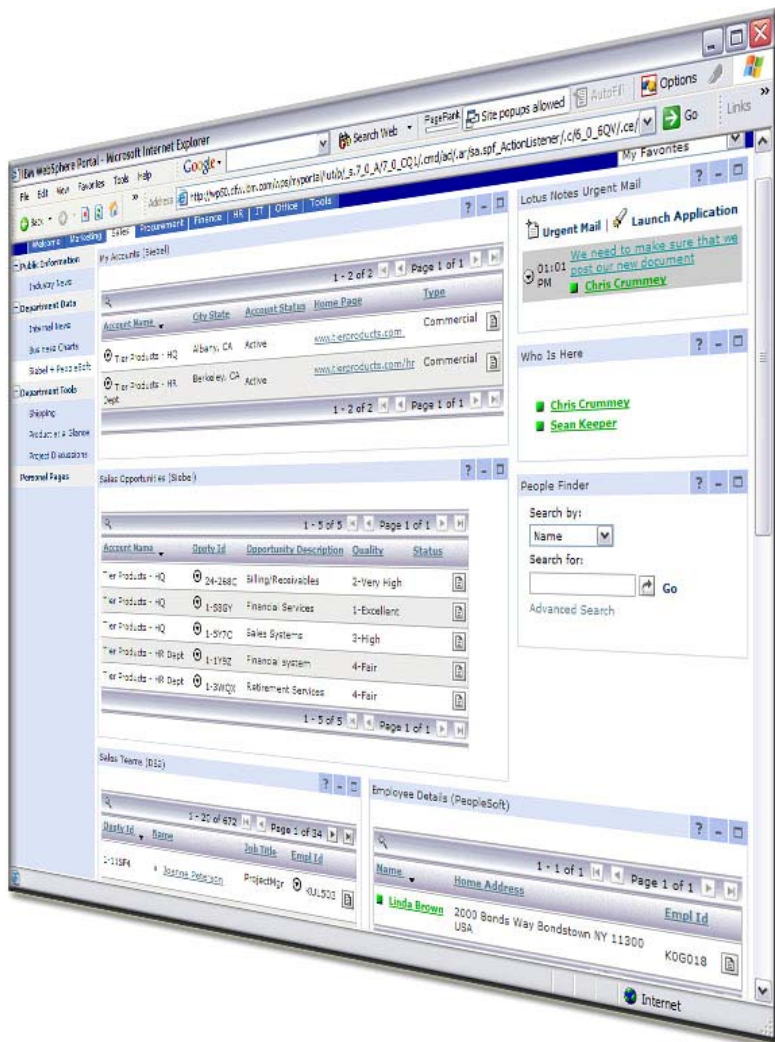
Application Integration

Siebel
Sales Accounts Opportunities

Data Integration

RDMS
Opportunity Sales Teams (DB2)

PeopleSoft
HR Employee Records

- •Unified point of access
- •Single Sign On
- •Role Based Access
- •Security
- •Portlet Communication
- •Themes and Page Aggregation
- •User Profile Services
- •Framework for integrating other applications

Deploy – People

Deliver Collaboration, Mobility, & Composite Applications 'on the glass'

Enhanced! IBM WebSphere Portal

- **Ease of use**
  - Now supporting WebSphere Process Server V6 for process-driven portal capabilities

- **Ease of management**
  - Virtual portals and policy-driven administration

- **Reduced total cost of ownership**
  - Reuse of SOA components across customer, employee, and partner/supplier portal environments

Enhanced! IBM Workplace Collaboration Services

- **Ease of Use**
  - Single, consistent, unified interface w/ activity centric experience

- **Ease of Management**
  - Efficient network delivery & managed at admin level

- **Flexibility, Choice, Openness**
  - Full range of collaboration services available on demand

New! WebSphere Everyplace Deployment

- Advanced user interfaces "beyond the browser"

- Access to applications & processes anywhere, anytime
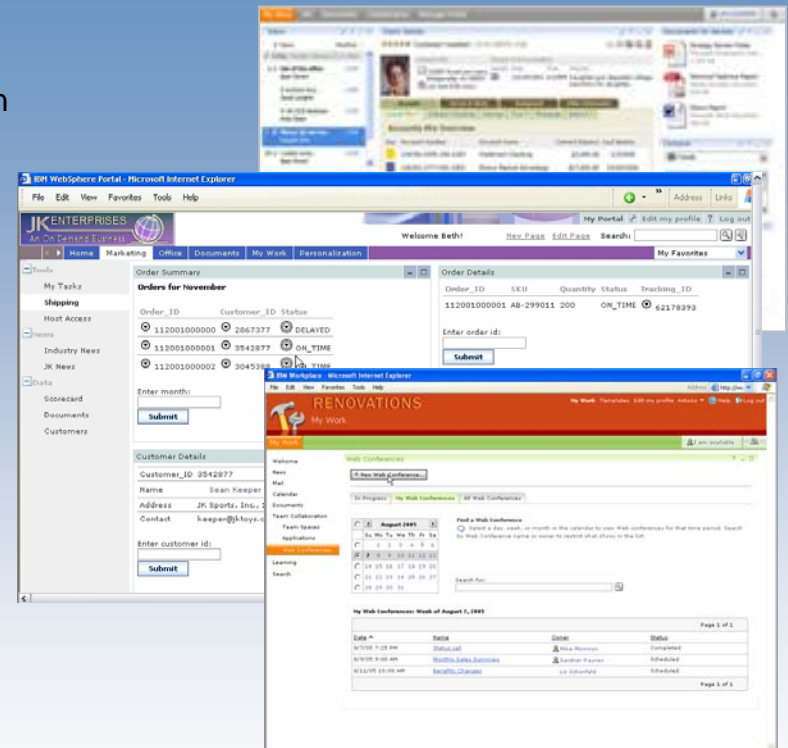
Deploy - Information Services

Tools & Applications

Dashboards

In-line, Real-time

Insight

Insightful Relationships

Business Context

Data & Content

Standards based: e.g., XQuery, JSR170, JDBC, Web Services...

Information as a Service

Real Time : e.g., On Line Help, Synchronized Master Data…

Heterogeneous Applications & Information

SAP — **DB2**

External Supplier / Business Partner — **abc…**

Silicon Plains Technologies — **IBM Content Manager**

Internally Developed — **xyz…**

PeopleSoft — **Oracle**

and more…

Deploy – Information as a Service

Using the Power of Information to Improve Business Applications and Processes

New! WebSphere Customer Center

Customer Data Integration System

Extends IBM Leadership in Master Data Management

– **Control Customer, Product, Location, Supplier & Other Master Data**
  • Increase revenues, decrease costs, consolidate systems, comply with mandates
– **Mature SOA-enabled Master Data Services**
  • Scalable product information management and customer data integration systems with robust master data integration capabilities
  • Over 50 master data solutions and accelerators
  • Most live clients, most industry-focused solutions and broadest partner support

Enhanced! WebSphere Information Integration

Design and Deploy Services to Analyze, Cleanse, Transform and Virtualize Access to Information from Disparate Sources

– **Ease of Use**
  • Business-driven data analysis and data quality measurement services
  • Design and mapping of federated queries spanning disparate data sources
  • Visual, codeless design and deployment
– **Ease of Management**
  • Wizard-based deployment and management as Web Services, or JMS or EJB objects

New! DB2 Viper (Native XML Support in DB2)

Next Generation Database Unifies XML Documents and Relational Data

– **Enables Innovative Applications**
  • Ensures fidelity of XML documents; highly optimized performance
– **Promotes Business Agility**
  • Single platform for business critical data
  • Flexibility of XML; Choice of XQuery or SQL

ON DEMAND BUSINESS™
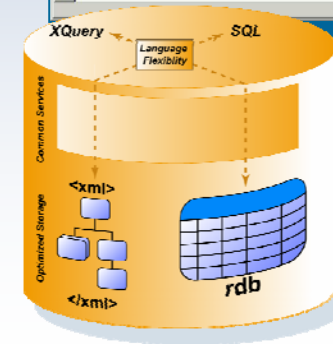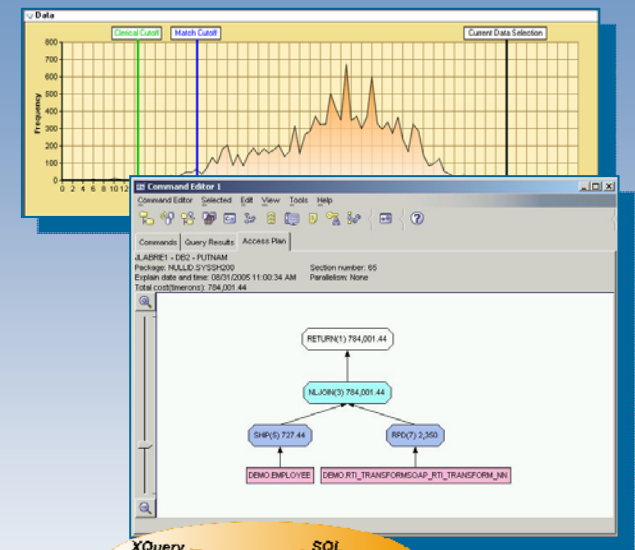
Announcing DataPower

DataPower – Addressing Infrastructure Needs for SOA Deployment

A game changer product to help companies embrace SOA - minimizing complexity while enhancing performance, security and management of business processes implemented under SOA principles

An SOA Appliance that…

- **Simplifies**: streamlines SOA infrastructure with specialized software/hardware devices

- **Accelerates**: expedites SOA XML processing

- **Helps Protect**: XML-level protection, enhances Tivoli SOA security management

XI50 Integration Device

XS40 XML Security Gateway

XA35 XML Accelerator

New Product! WebSphere Business Monitor

Real Time Visibility into Business Performance

View performance and modify dashboards in real time
- ✓ Scorecard view of Key Performance Indicators
- ✓ Track cost, time and resources
- ✓ Identify bottlenecks, balance workloads, reduce latencies

Ability to intervene in deployed processes
- ✓ Set situational triggers and notifications
- ✓ Dynamically respond to these alerts

Supporting continuous process improvement
- ✓ Monitor in-flight business processes
- ✓ Make process modifications based upon real-time data sent back to the Modeler for simulations
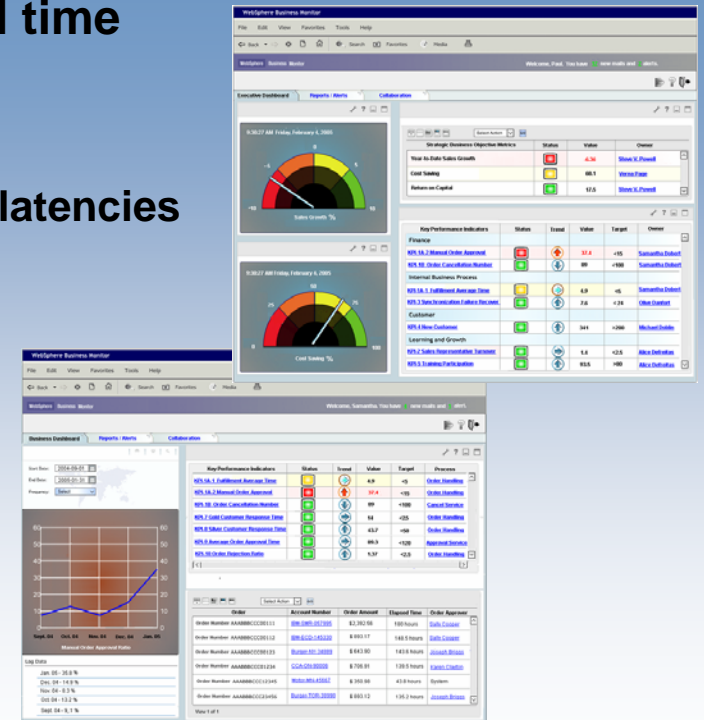
Manage – For IT

Monitoring service & application performance across your SOA

IBM Tivoli Composite Application Manager for WebSphere

- Reduced support cost in determining the cause of SOA application downtime / slow down

- Ensure SOA Application performance and availability by automating IT for your business processes
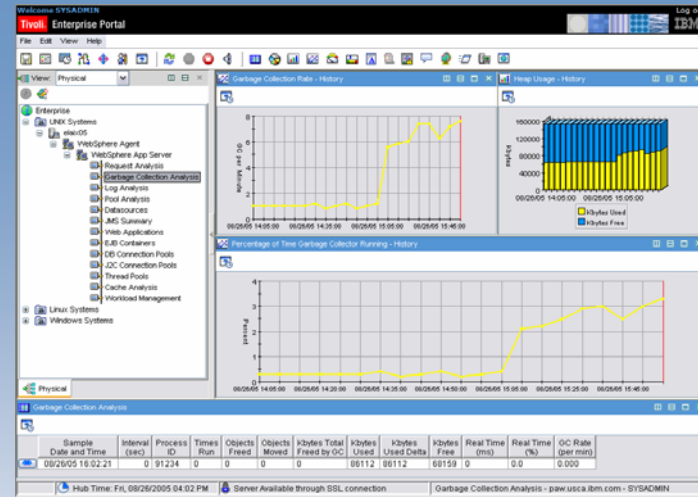
IBM Tivoli Composite Application Manager for SOA

- Service problem identification and resolution enables identification of Web service bottlenecks and failures

- Service management provides built-in and extensible alerts, mediations, situations and workflows.

- Service flow diagnostics allows deep understanding of service flows and relationships

IBM Tivoli Business Systems Manager

- Prioritize IT operation activities according to business value

- Communicate business service status in real-time

- Enable impact assessment of planned changes

IT Operations
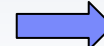
Application Subject Matter Expert

ON DEMAND BUSINESS™
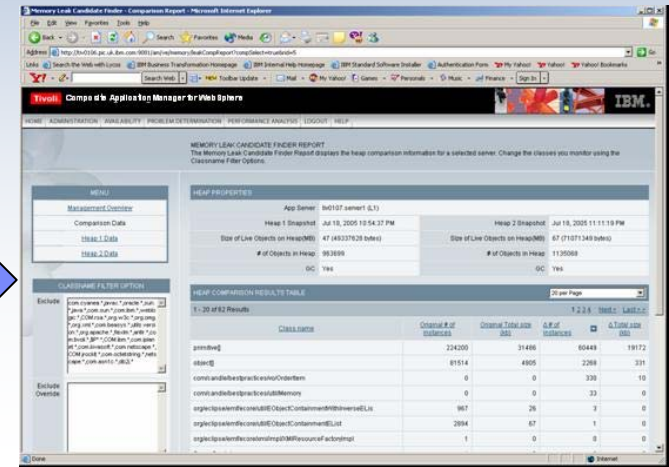
# SOA Foundation is more than just software

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

Leading Practices

- **Funding**
  - Maintain Top Leadership Commitment
  - Establish an appropriate funding model
  - Plan and budget for refactoring of services
- **Processes**
  - Plan and adapt for reuse in an incremental fashion
  - Model the business – Align IT
  - Establish the SOA Vision and Roadmap and measure progress
- **Organization**
  - Assess Maturity and impact of change
  - Chose an overall governance approach – Central or Distributed
  - Understand and staff roles for proper governance
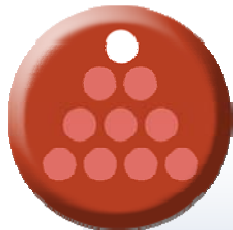
Best Practices
- SOA-Related IP
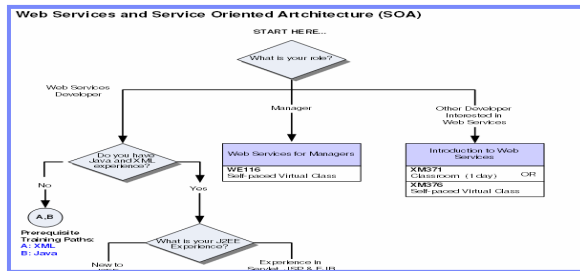 - Patterns
  - Redbooks
- Engagement Experience

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

Tools to Help Accelerate Understanding and Value

SOA Education

New education available internally, as well as for customers and partners:

- Learn about the basics of SOA and Web services, including business aspects

- Deeper technical training for architects as well as developers

- Built based on our experiences and best practices

- Classroom as well as online

SOA Jumpstart Workshop

Leverage IBM's Experience to help Jumpstart your SOA project and understanding:

- What is it?   2 Day On-site Session

- Price?   No charge

- Where is it available? Worldwide

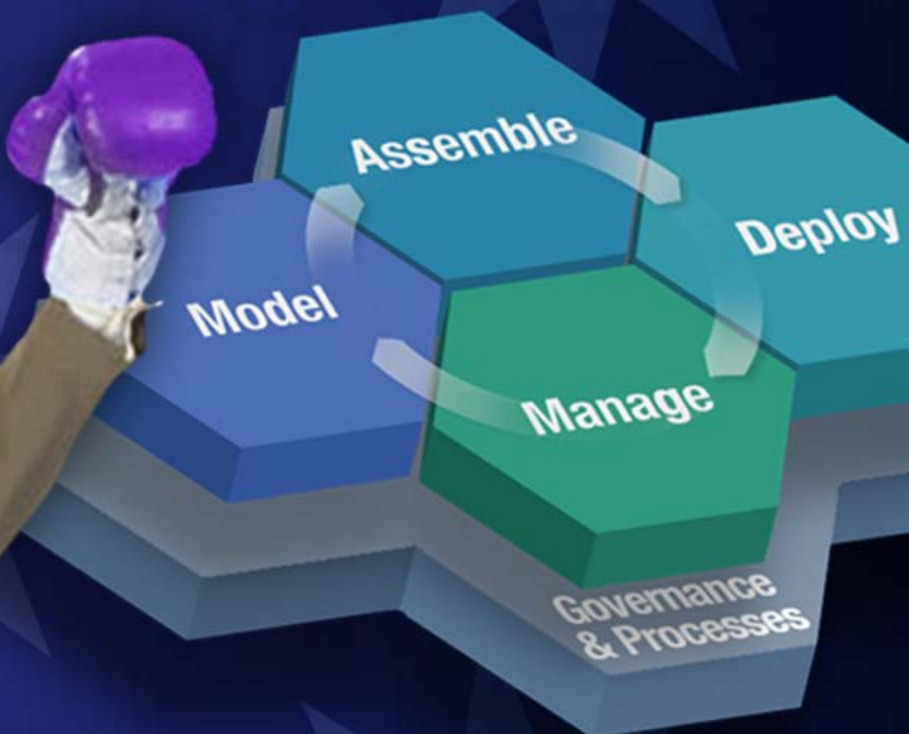- When is it available?   Now

Summary

SOA: An approach for designing and implementing distributed systems that allows a tight correlation between the business model and the IT implementation

- **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**

Thank You