IBM Software Group

# Integrating Applications on IBM System z and zSeries

***Ed Boulay***

***Worldwide WebSphere Sales System z***

WebSphere software

ON DEMAND BUSINESS

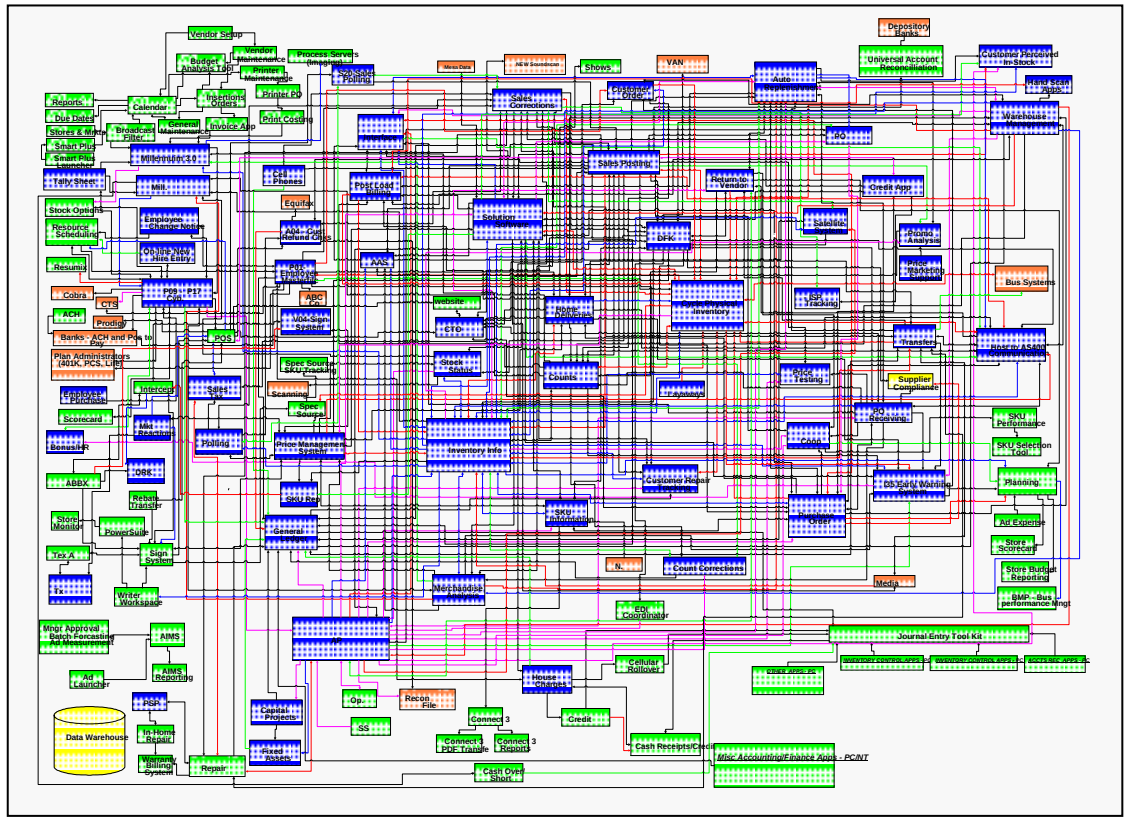
# Problem -- typical application topologies look like this…..

**…Resulting in ever increasing application maintenance costs.**

*"In 2004, **73% of I.T. budgets were spent on maintenance** and 27% on new investments.*

*In 2005, survey respondents expect to spend **76% on maintenance**, leaving just 24% for new investments."*

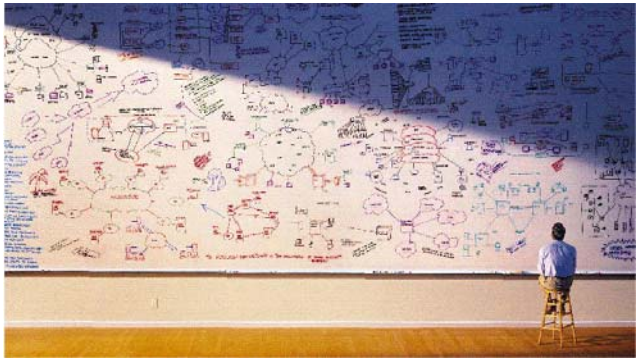
- Forrester Research*




*Actual application topology for a company*

* APM Tools Will Reach $500 Million To $700 Million By 2008, Forrester Research, Phil Murphy, July 2005

# Why? Because interface logic is buried within applications



**THE RESULT: COMPLEXITY**

**Companies spend their I.T. budgets managing interfaces not applications.**

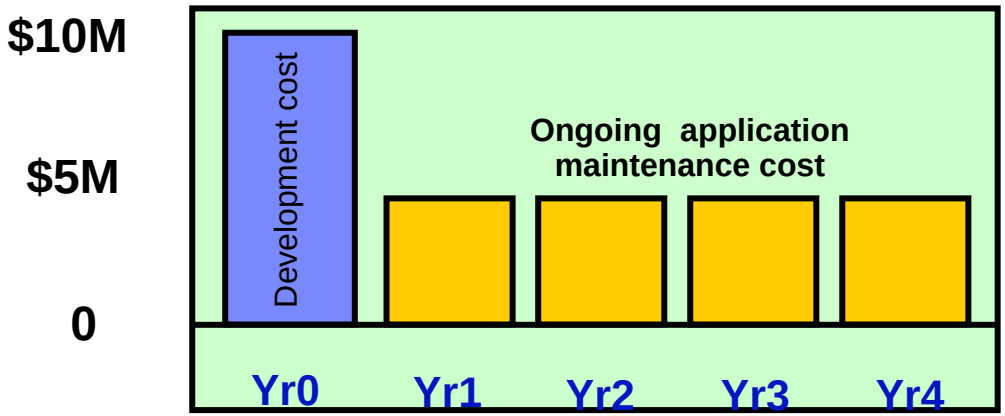



- Changing the application interface means opening up the application
- Applications are tightly coupled; one application change affects another
- The more interfaces, the more changes are required
- Interface logic soon exceeds business logic.

# What if there were a way to reduce both initial development costs as well as maintenance costs?

## TODAY

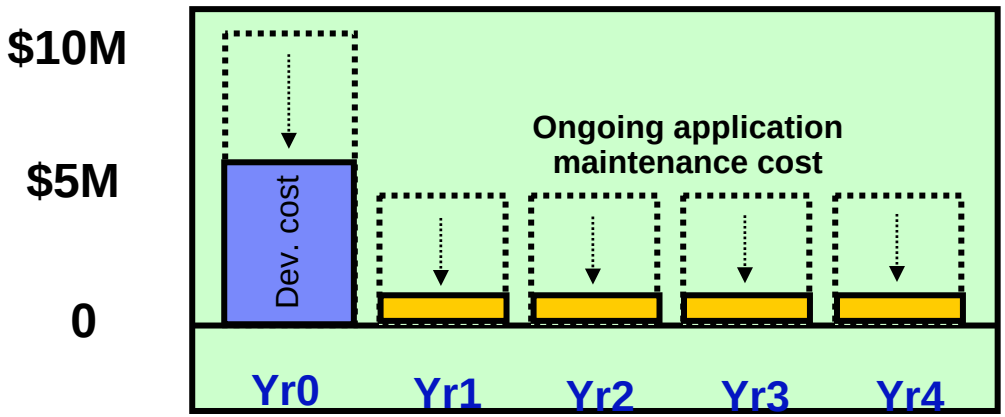
**On average, it costs 40% of the original cost of development just to maintain applications.**




## TOMORROW

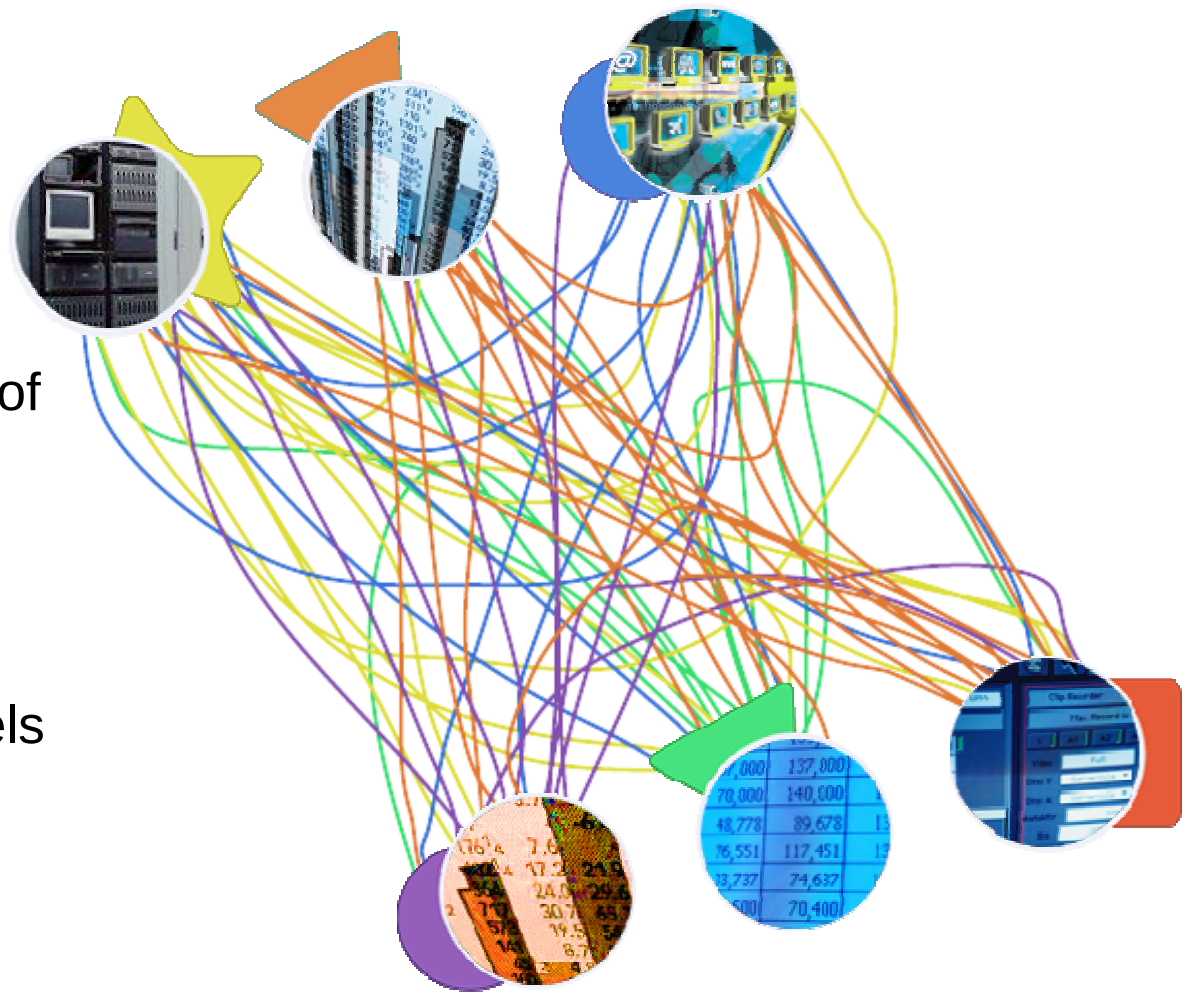
**What if you could reduce:**

- **Development costs and**
- **Ongoing application maintenance costs?**



# How can development and maintenance be made less complex?

- Decouple interfaces from applications
- Enable all applications to communicate with each other regardless of
  - Programming languages
  - System platforms
  - Programming models
  - Protocols
  - Data formats.



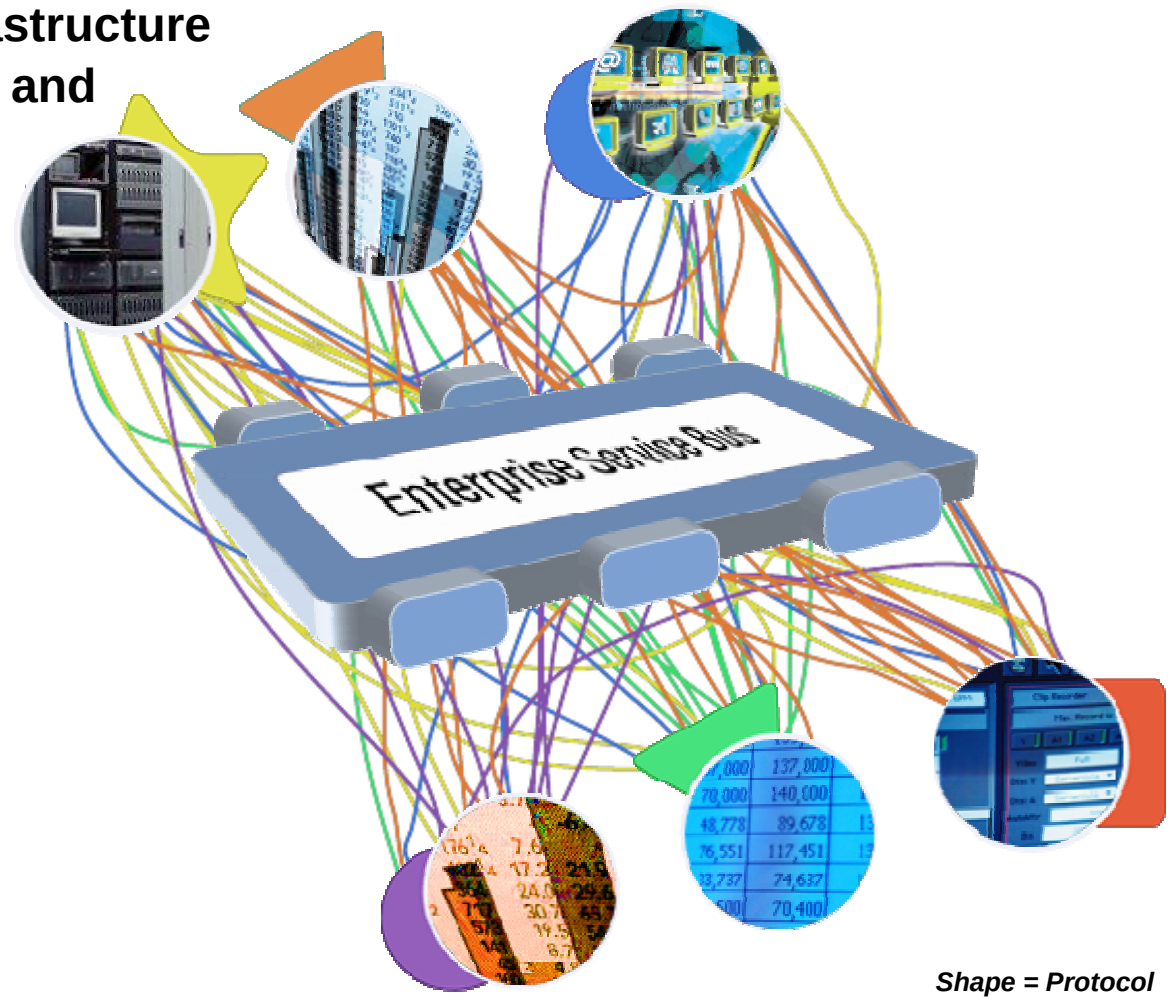
***The solution: the Enterprise Service Bus***

# What is an Enterprise Service Bus (ESB)?

**A flexible connectivity infrastructure for integrating applications and services…**

**……used to reduce the number, size, and complexity of interfaces.**

**An ESB:**




***Shape = Protocol***

***Color = Data type***

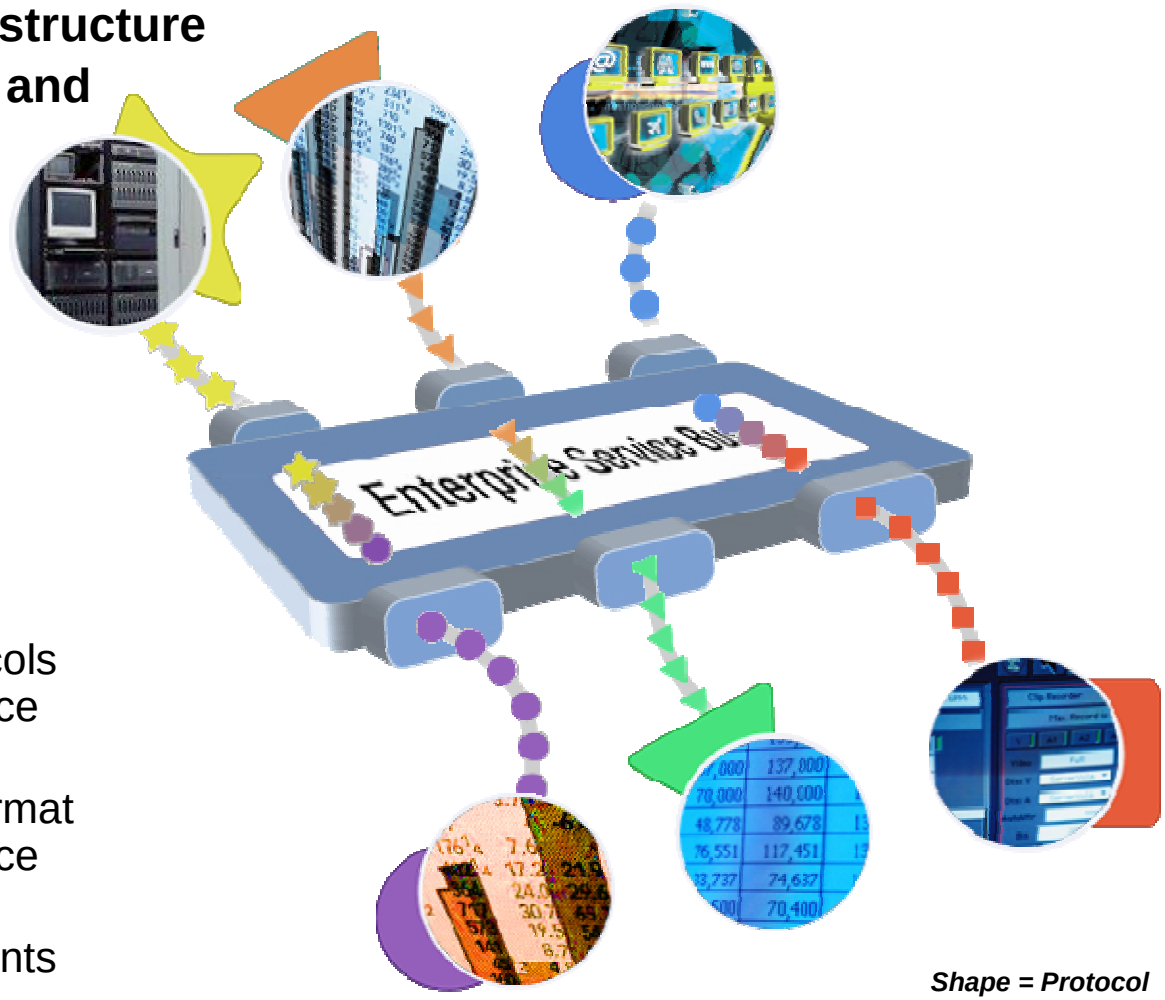
# What is an Enterprise Service Bus (ESB)?

**A flexible connectivity infrastructure for integrating applications and services…**

**……used to reduce the number, size, and complexity of interfaces.**

**An ESB:**

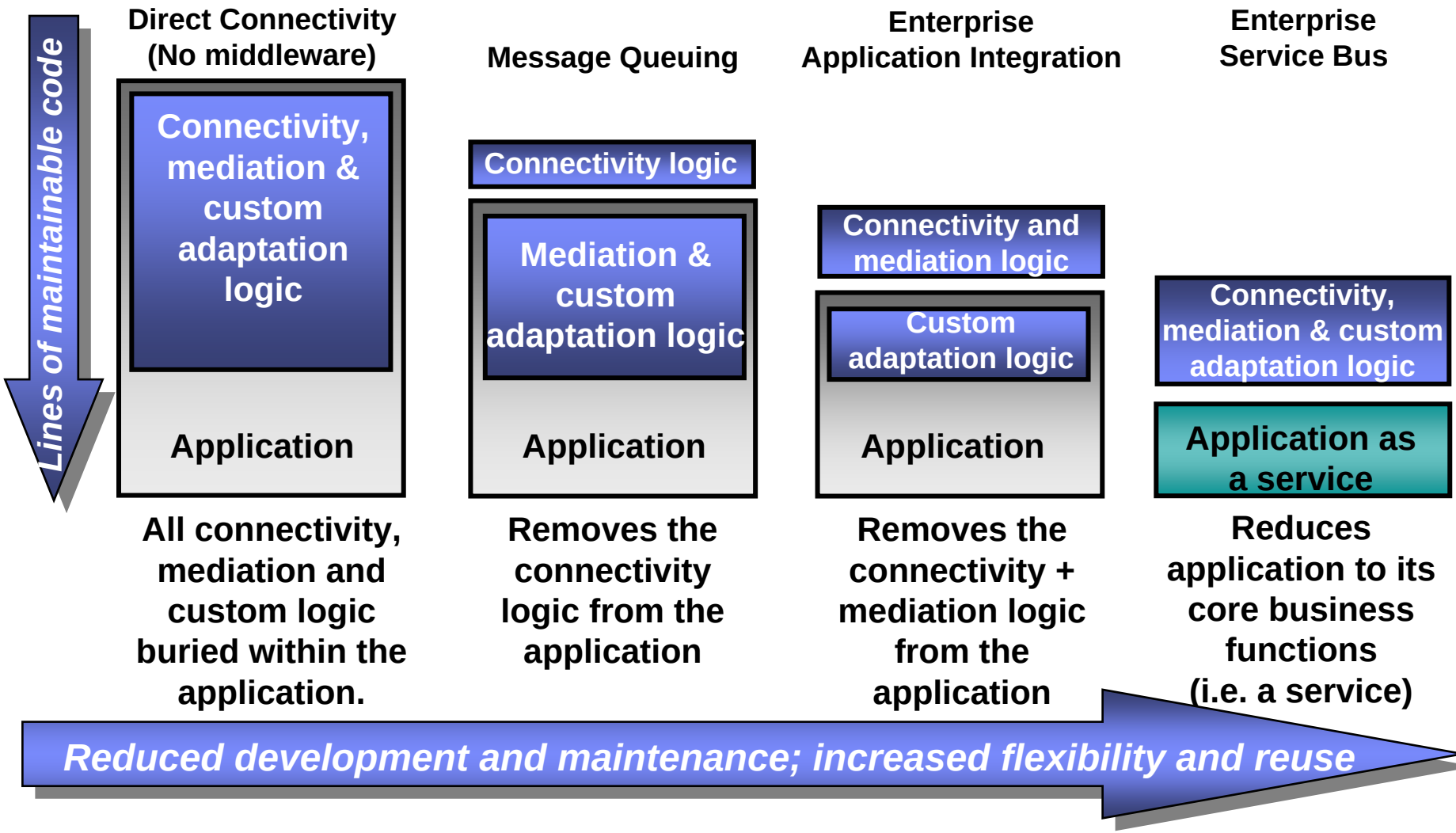
- **MATCHES & ROUTES** messages between services
- **CONVERTS** transport protocols between requestor and service
- **TRANSFORMS** message format between requestor and service
- **DISTRIBUTES** business events from/to disparate sources.




***Shape = Protocol***

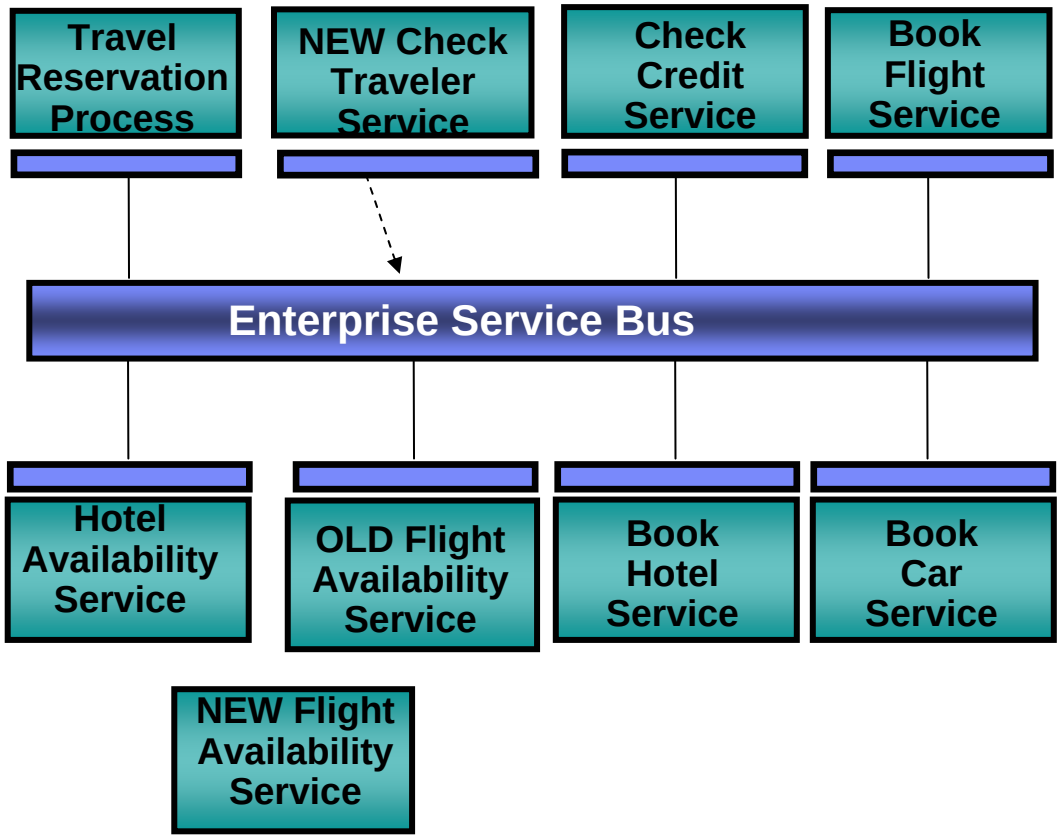
***Color = Data type***

# ESB is the next stage in the technology evolution



# The Business Value of an Enterprise Service Bus

## Change your IT without disrupting everything else




Add new services faster

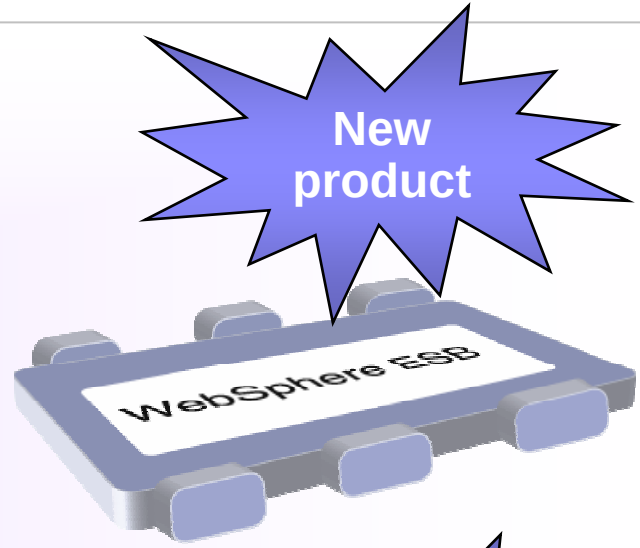
Change services with no impact to existing services

# The IBM ESB Portfolio

1

## A Basic ESB:

**WebSphere ESB V6,** a new product delivering an Enterprise Service Bus that facilitates SOA for Web services.



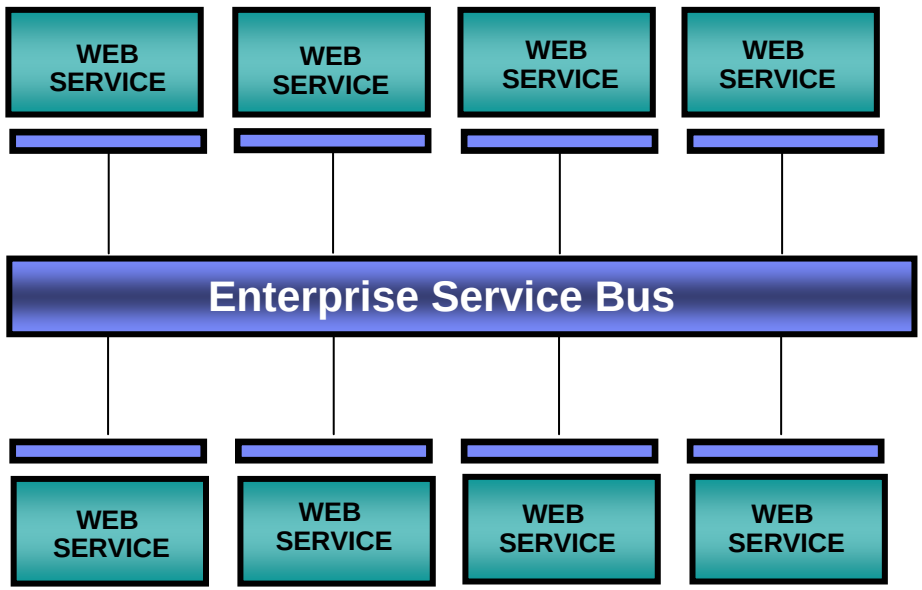

2

## An Advanced ESB:

**WebSphere Message Broker V6,** a new version of our proven product, delivers an *advanced* Enterprise Service Bus facilitating SOA for existing (non-Web services) applications.

# WebSphere ESB V6.0.1

**1** **If your focus is building, hosting, and mediating new Web Services…**




**A single system for hosting and integrating native Web Services and/or JMS applications.**

…then what you require is an **ESB <u>EMBEDDED</u> with a Web Services hosting platform.**

***An embedded ESB for simplicity and manageability***

**IBM WebSphere ESB v6**

# WebSphere Message Broker v6

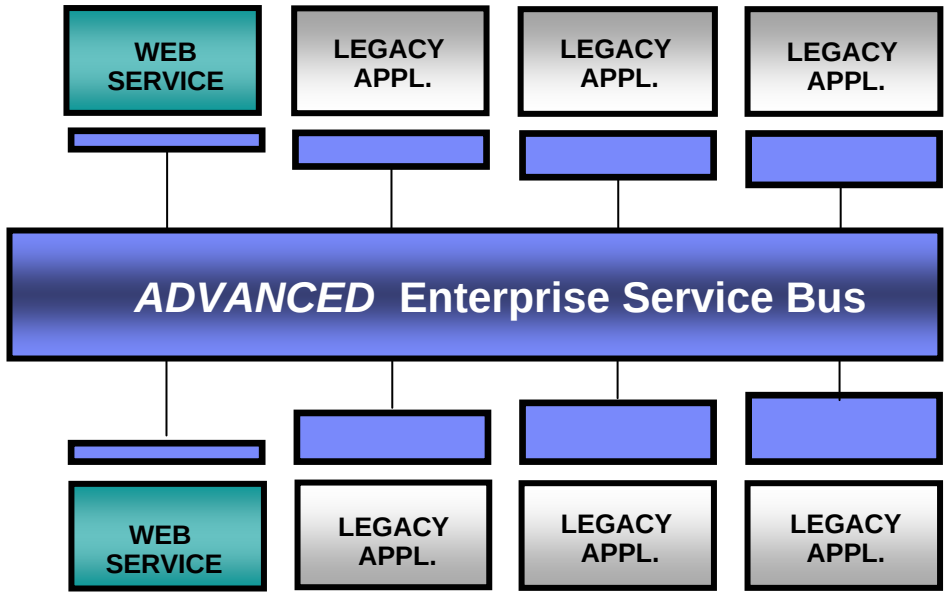
Web Services Application

Non-Web Services Application

2

**If your focus is integrating existing enterprise applications as services, or with Web services…**

Uniquely able to connect and integrate **all** applications across the enterprise, supporting **all** data types and most protocols.

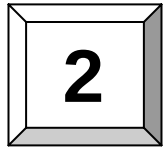



***An advanced ESB for range and reach***

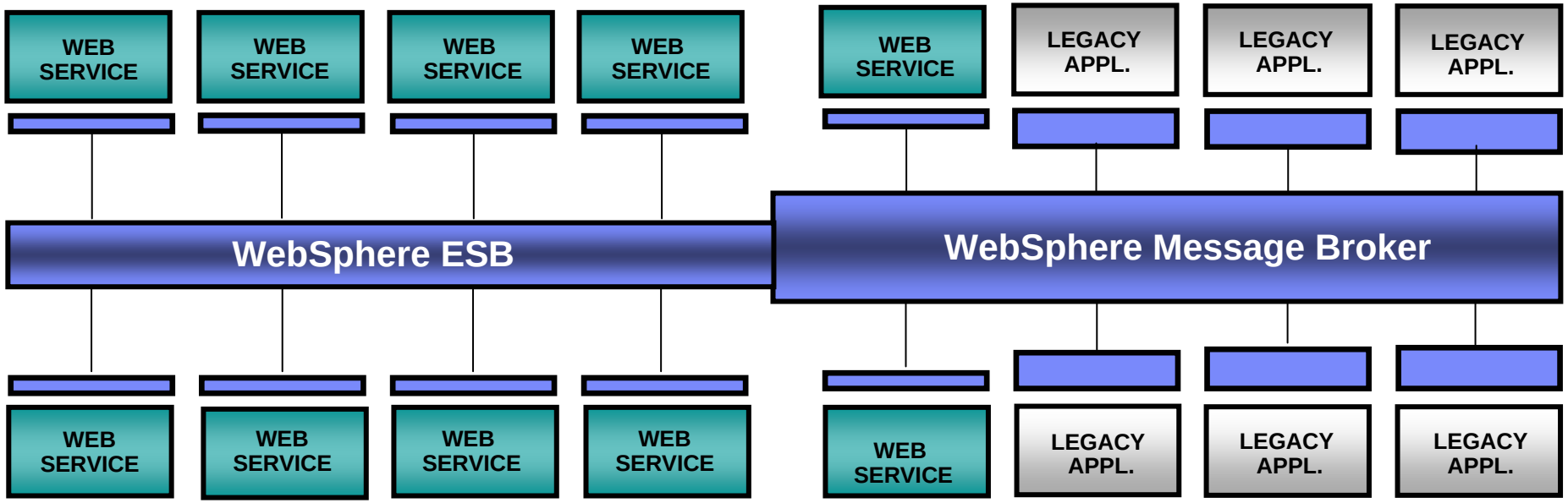
…then you will require a more **advanced ESB.**

# The IBM ESB Portfolio

What makes IBM's SOA vision different from other SOA and ESB vendors….

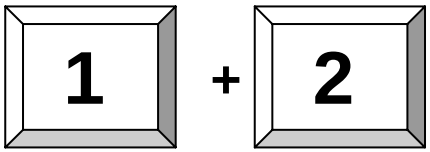



**If your focus is integrating existing enterprise applications into the world of Web Services…**

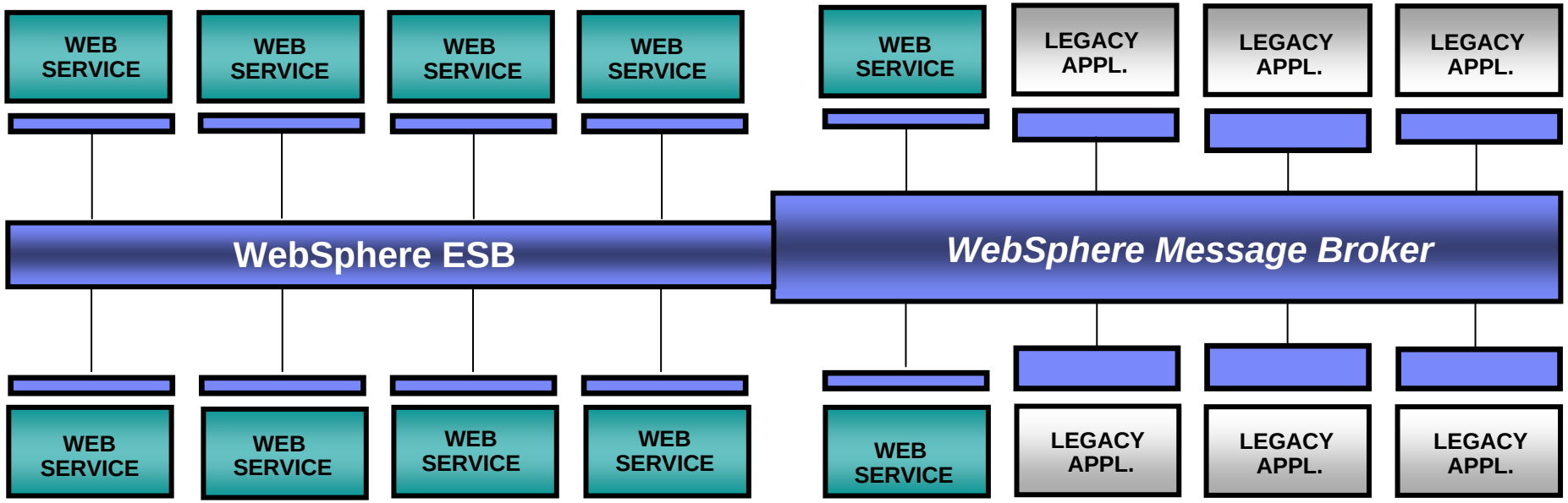



…then you will require a more **advanced ESB** focused on the integration of Web services with existing non-services applications.

# The IBM ESB Portfolio



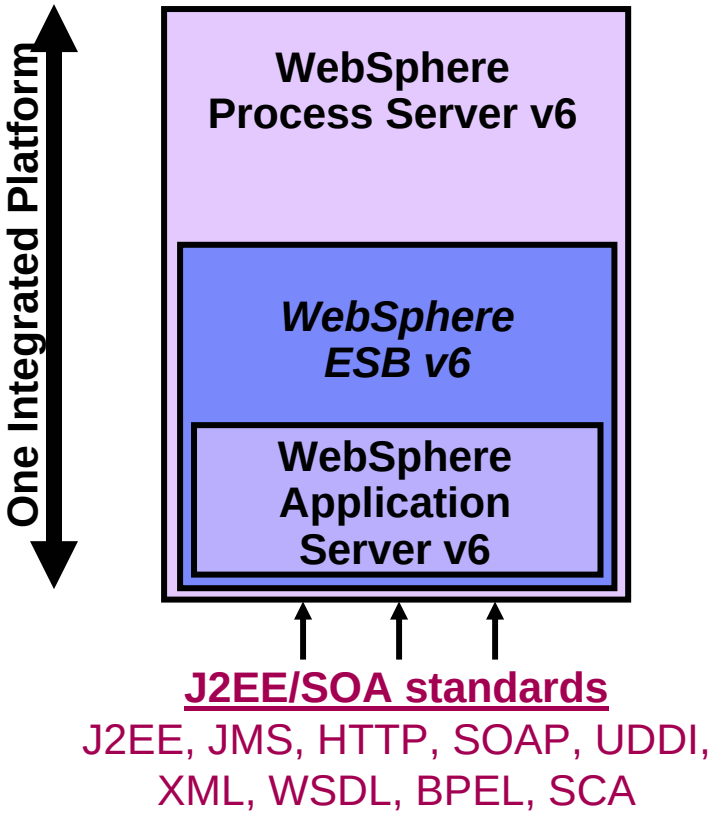

**Connectivity for the Enterprise Service Bus products is built using market leading IBM products, WebSphere MQ and WebSphere Application Server v6**




…depth of capability and seamless connectivity.

# WebSphere ESB V6 is part of the IBM SOA platform

**The *ONLY* offering in the industry combining all you need for SOA in *ONE* integrated platform.**

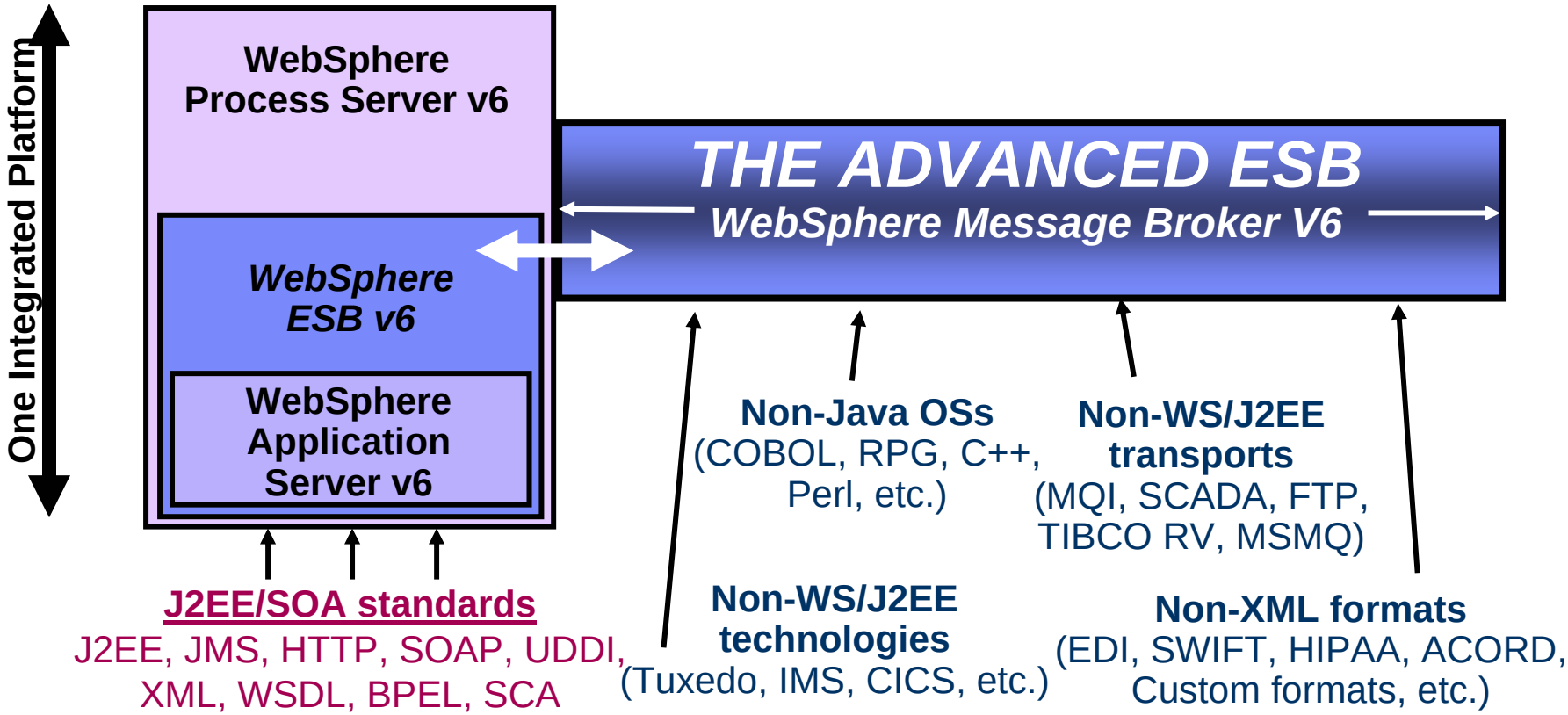



- **Service-based Process Management**
- **Service Mediation**
- **Service Hosting**

# Complementing the SOA Platform – the Advanced ESB

***Plugs into the IBM SOA platform***
***providing high-speed data movement and universal mediation…***

***…enabling non-SOA applications to participate as services.***



# New Product! WebSphere ESB for z/OS

*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
- Allow the flow of business events and add needed intelligence to that flow

**Ease of use**

- Integrated, interactive and visual development experience requires minimal programming skills
- Simple to develop, build, test, deploy and manage

**Improve time to value**

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

**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 with IBM Tivoli security and systems management offerings

# WebSphere ESB for z/OS

*Provides Web Services connectivity, messaging and service oriented integration*

## Improve flexibility through the adoption of service oriented interfaces

- Gain support for a variety of messaging protocols including JMS 1.1 to exploit a variety of transports and interoperate with the WebSphere family
- Utilize a broad range of interaction models (request/reply, point-to-point, publish/subscribe, etc.) to meet your requirements
- Leverage advanced Web services support to incorporate leading edge capabilities
- Take advantage of a comprehensive clients package to extend your environment
- Leverage UDDI 3.0 for secure description and discovery of Web services in an open standards based way
  - Rational Web Services Explorer access UDDI registries during development

## Minimize disruption by using WebSphere ESB to handle integration logic

- Customized routing – Transport/protocol specific routing and content based routing
- Protocol conversion between a variety of protocols: HTTP, IIOP, JMS
- Format transformation between standards: XML, SOAP, JMS messages and, when used with adapters, many more
- Supplied mediation function for database interaction
  - Support for message logging to database and message augmentation by database lookup

## Allow the flow of business events and add needed intelligence to that flow

- Leverage WebSphere Adapters for capture and dissemination of business events

# WebSphere ESB for z/OS

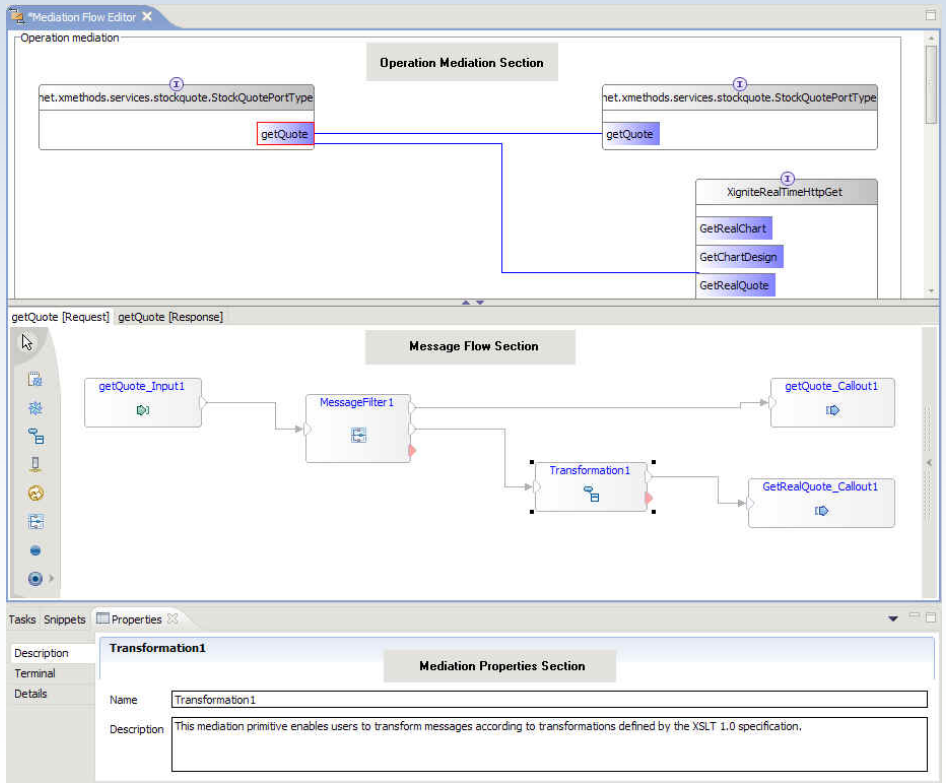
*Delivering an Enterprise Service Bus that's easy to use*

**WebSphere Integration Developer provides an integrated, interactive and visual development environment for rapid development of integration logic**

- Requires minimal knowledge of Java or J2EE

**Simple to develop, build, test, deploy and manage services components**

- Get up and running quickly with comprehensive documentation, easy to understand samples
- Provides a simplified and visual development experience for standards-based artifacts like XML schema, WSDL, XSLT, etc
- Supports the declaration of services and connectivity through a visual composition model
- Allows easy orchestration of mediation functions with first-class support for intelligent message routing, enrichment, and transformation
- Offers a seamless integrated tooling approach to connect between service-oriented and message-oriented services
- True role-based support provides a simplified administration experience



# WebSphere ESB for z/OS

*Improving time to value*

## Gain a cost effective solution for services integration

- Leverage your SOA IT investments by quickly building a flexible integration infrastructure to extend the value of your existing investments, regardless of vendor
- Modular approach supports ability to start small and grow as fast as the business requires
- Extensive business and IT standards support facilitates greater interoperability & 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 mediation functions

- Mediations operate on messages/events as they are passed between service requesters and service providers
- Operate on both One-Way and Request-Response interactions
- Pre-built mediation functions allow mediations to be visually composed and include XML transformation, message logging, message routing, and database lookup,
- Customers can augment the function provided by the supplied primitives by programming their own ‘custom primitives’

## Dynamically re-configure to meet changing business needs

- WebSphere ESB runtime provides the administrator with the ability to reconfigure service interactions
- Avoid system downtime by adding or replacing integration logic dynamically

# WebSphere ESB for z/OS

*Seamless integration with the WebSphere platform*

## Leverages WebSphere qualities of service

- Inherits the WebSphere runtime for world class scalability, clustering, and fail-over
- Utilizes the common WebSphere Administrative Console to enable system management across WebSphere Application Server, WebSphere ESB, and WebSphere Process Server
- Addresses end-to-end security requirements on authentication, resource access control, data integrity, confidentiality, privacy, and secure interoperability

## Easily extends to leverage WebSphere Platform as needs dictate

- Customers with the right skills can take full advantage of the underlying capabilities of WebSphere Application Server Network Deployment
- Extend your existing WebSphere MQ messaging foundation to integrate new environments in an open, standards-based way
- Common tooling and administration means the move from WebSphere ESB to WebSphere Process Server is painless

## Integrates with IBM Tivoli security, directory, and systems management offerings

- Includes Tivoli Access Manager, for optional use, to deliver a secure, unified and personalized experience that will help manage growth and complexity
- Integrates with IBM Tivoli Composite Application Manager for SOA for added monitoring and management capabilities

# New Version! WebSphere Message Broker for z/OS

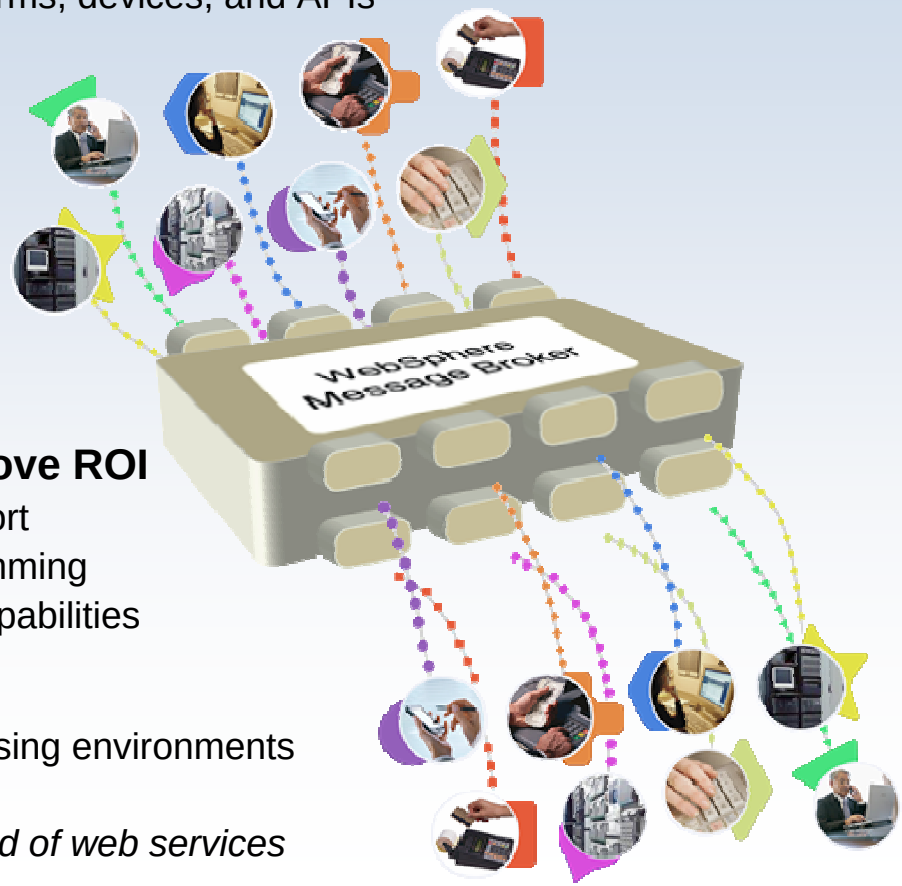
*Delivering an advanced ESB to power your SOA*

## 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 your existing environment with the world of web services*

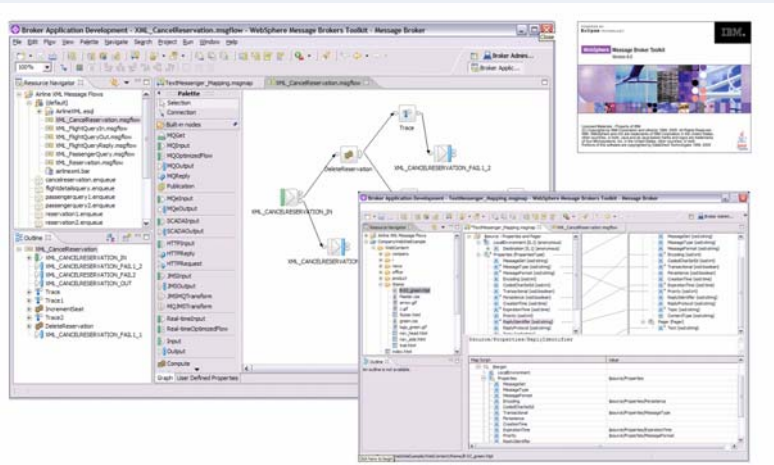
# WebSphere Message Broker for z/OS

*Provides universal connectivity*

WebSphere Message Broker serves as the connecting link between individual applications and problem-free data exchange.

- The Broker is unmatched in its ability to integrate many heterogeneous systems, platforms, devices, and APIs.
- It is designed to provide universal connectivity using SOA standards and non-SOA standards such as:

  - WMQ
  - Sonic MQ
  - Tibco Rendezvous
  - JMS
  - HTTP
  - SOAP
  - WSDL
  - MSMQ



# WebSphere Message Broker for z/OS

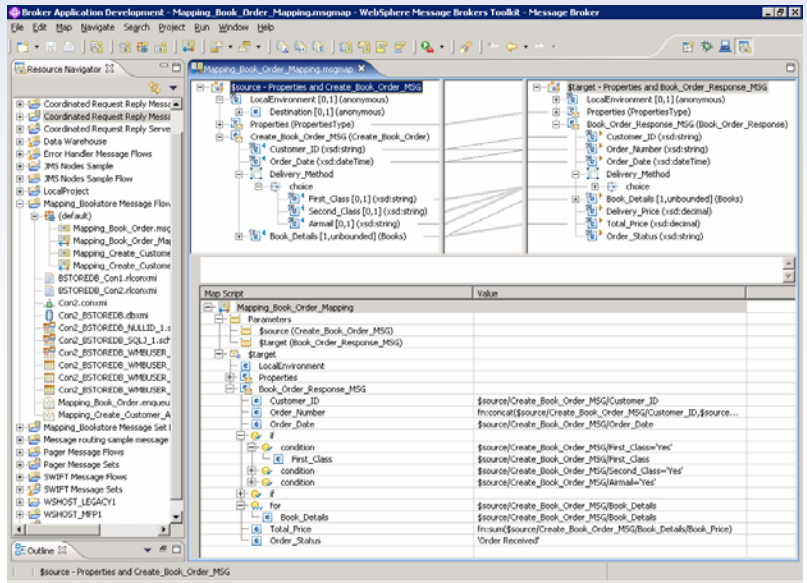
*Provides universal data transformation*

## The new Message Broker builds on its industry leadership in transformation capabilities

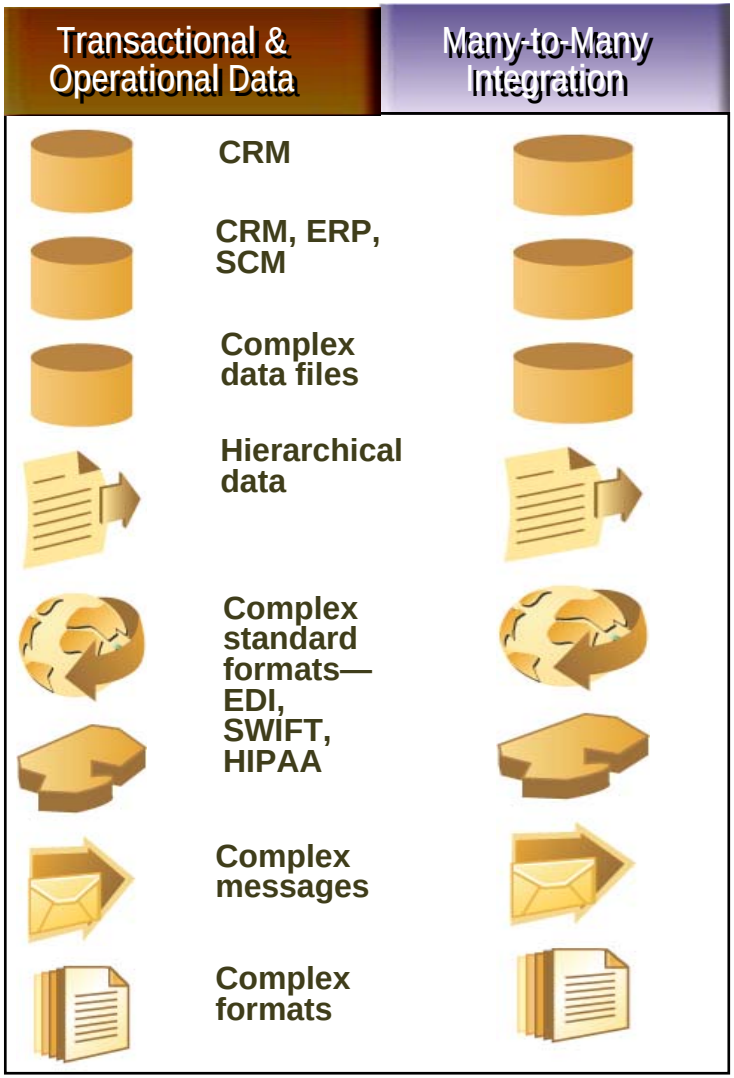
- Advanced message transformation, enrichment, and routing
- A newly introduced option to integrate WebSphere DataStage TX
- Support for industry standard data formats (AL3, HL7, SWIFT, HIPAA, EDI, etc.)

SWIFT
HL7
HIPAA
EDI-X.12
EDIFact
FIX
ACORD / AL3
TLOG
C structures

COBOL copybook
CICS
VSAM
DB2
IMS
MIME
Base64 (DSTX)
GZIP/ZLIB (DSTX)
TAR (DSTX)



# About WebSphere DataStage TX (formerly Mercator)

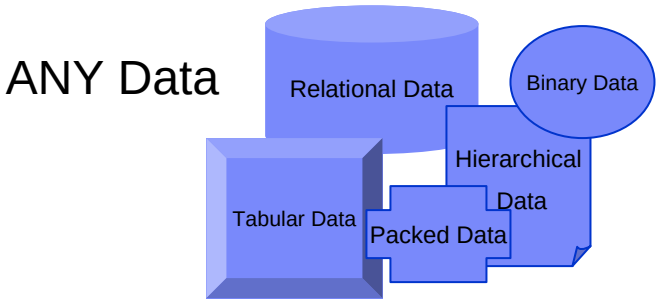


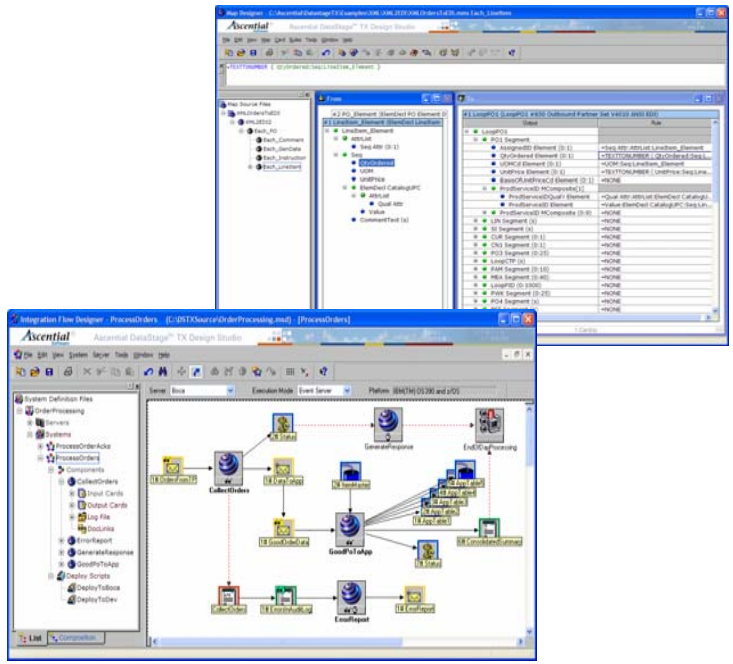

- Validates complex, hierarchical data without requiring coding
- Transforms complex, hierarchical data without requiring coding
  - Integrates multiple data sources with interdependencies
  - Transforms from multiple different sources to multiple different targets in a single step
  - Efficiently integrates large, complex messages or data records
  - Supports complex data formats like SWIFT (financial services), HIPAA (healthcare), and EDI (cross-industry)
- Integrated and sold with WebSphere Message Broker
- WebSphere DataStage TX Packs for “” provide add-on capability like HIPAA, SWIFT, X12, EDIFACT

# What does WebSphere DataStage TX do?

## Complex transformation engine that extends the value of WebSphere Message Broker

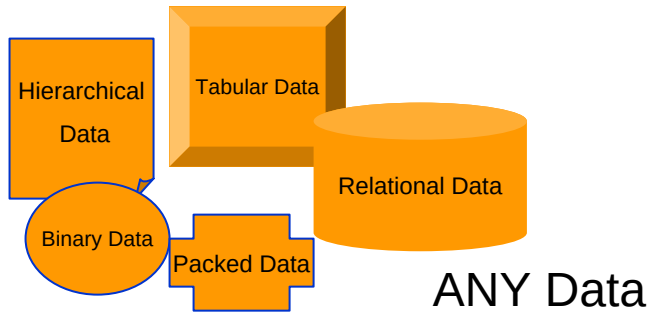
It takes any kind of data from its native form



Processes them together, natively, with no Code

And outputs them into their native target formats



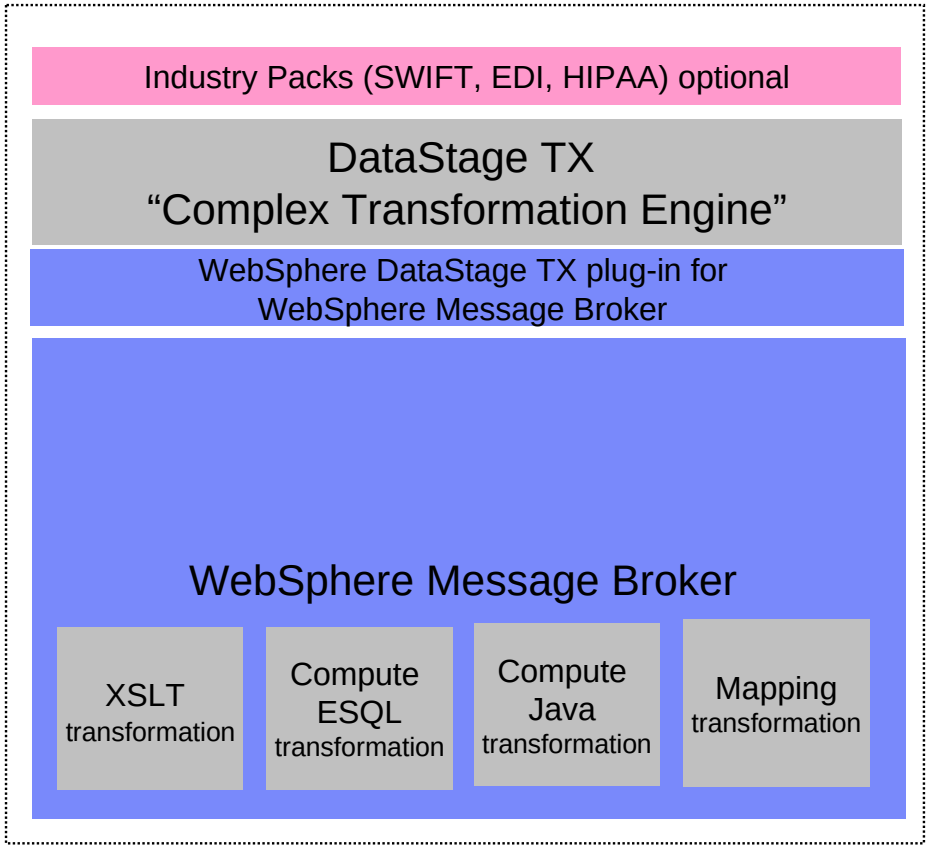
# WebSphere Message Broker and DataStage TX - together for added value

## WebSphere Message Broker is extended with the additional transformation style of complex data transformation

Complex, Hierarchical Data Transformation and additional support for industry standards

+

Powerful Enterprise Services Bus Solution




The Most Powerful Any-to-Any Integration Broker in the Market with industry-specific add-ons

# WebSphere Message Broker for z/OS

*New & improved pre-built capabilities improve ROI*

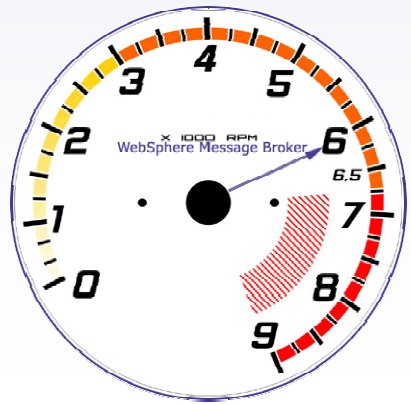
- **Leverage existing skills with rich Java and XML support**
  - New capability for Java programmers using the Java Compute node
  - Deploy Java JARs
- **JMS Input/Output node**
  - Native JMS Interoperability provides support for any JMS 1.1 provider
- **Implement complex event processing with no programming**
  - Processing of actions triggered not by a single event, but by a complex composition of events, happening at different times, and within different contexts
- **Offers pre-built, downloadable samples to get you started more quickly and efficiently**
  - Technology and application samples included out of the box
  - All samples are modifiable to give you the fastest time to value

# WebSphere Message Broker for z/OS

*Leverage the performance*

## Tuned for high performance:

- Ability to manage high-throughput, low latency messaging requirements
  - Up to 1,700 messages per second (based on a 1K message)
- Performance of traditional transaction processing environments
  - Full transactional support as a transaction coordinator at the message flow level
- Inherits the quality of service and high availability of WebSphere MQ
- Industry-leading scalability to meet your growing demands

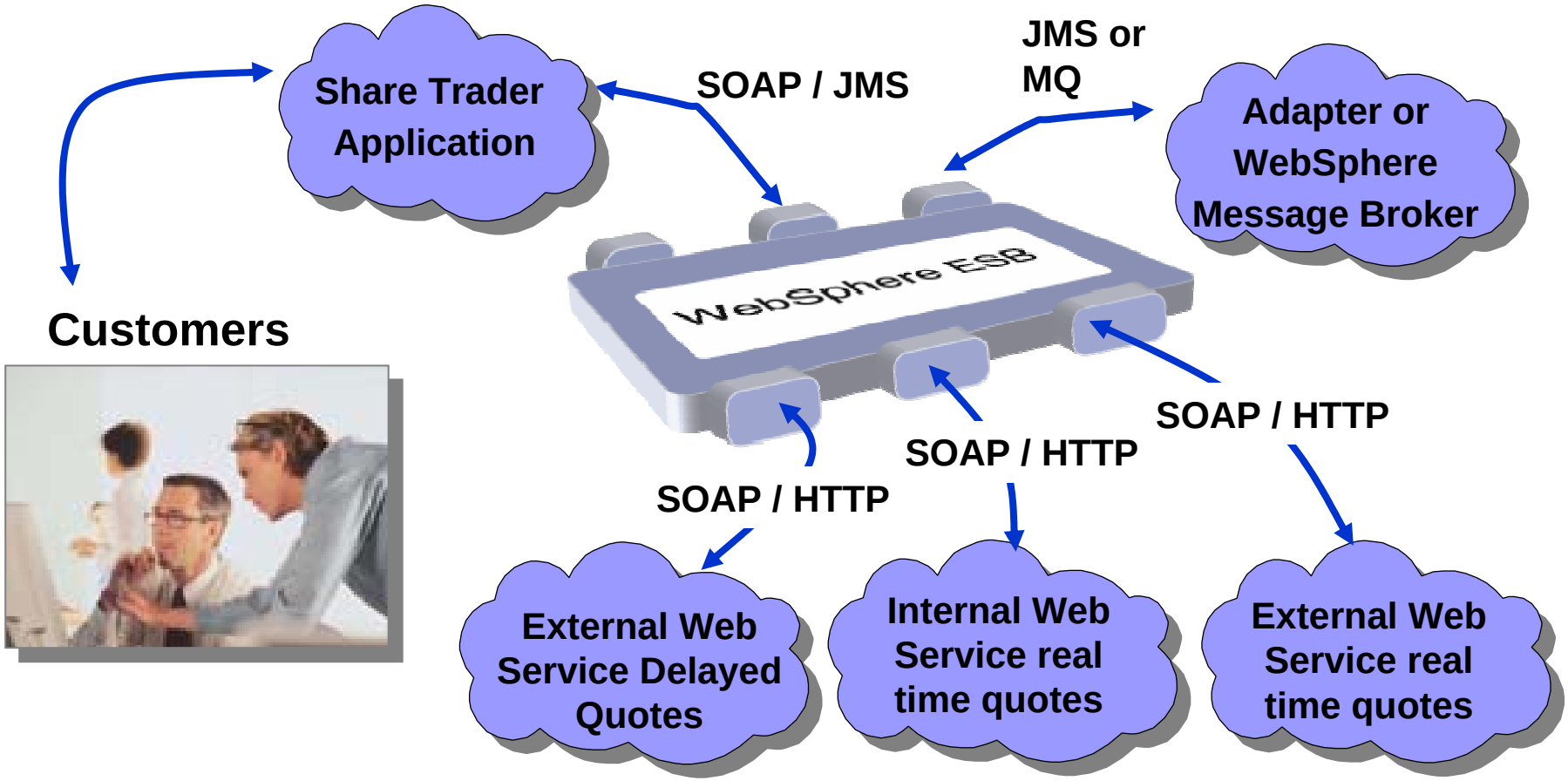


# Selecting your ESB depends on your requirements

| | Focus: Integrated Web Services Platform | Focus: Integration of Non-Web Services Assets for SOA |
|---|---|---|
| | **WebSphere ESB** | **WebSphere Message Broker** |
| Web Services Support | ● | ● |
| Message Transport & Protocol Switching | ● | ● |
| Intelligent Routing & Message Logging | ● | ● |
| Event Driven Processing | ● | ● |
| Native transformation of XML data formats | ● | ● |
| Native transformation of non-XML data formats | | ● |
| Complex event stream processing | | ● |
| Sensor & device Integration | | ● |
| Native integration with CICS & VSAM | | ● |
| Transactional integration of 3rd party JMS | | ● |

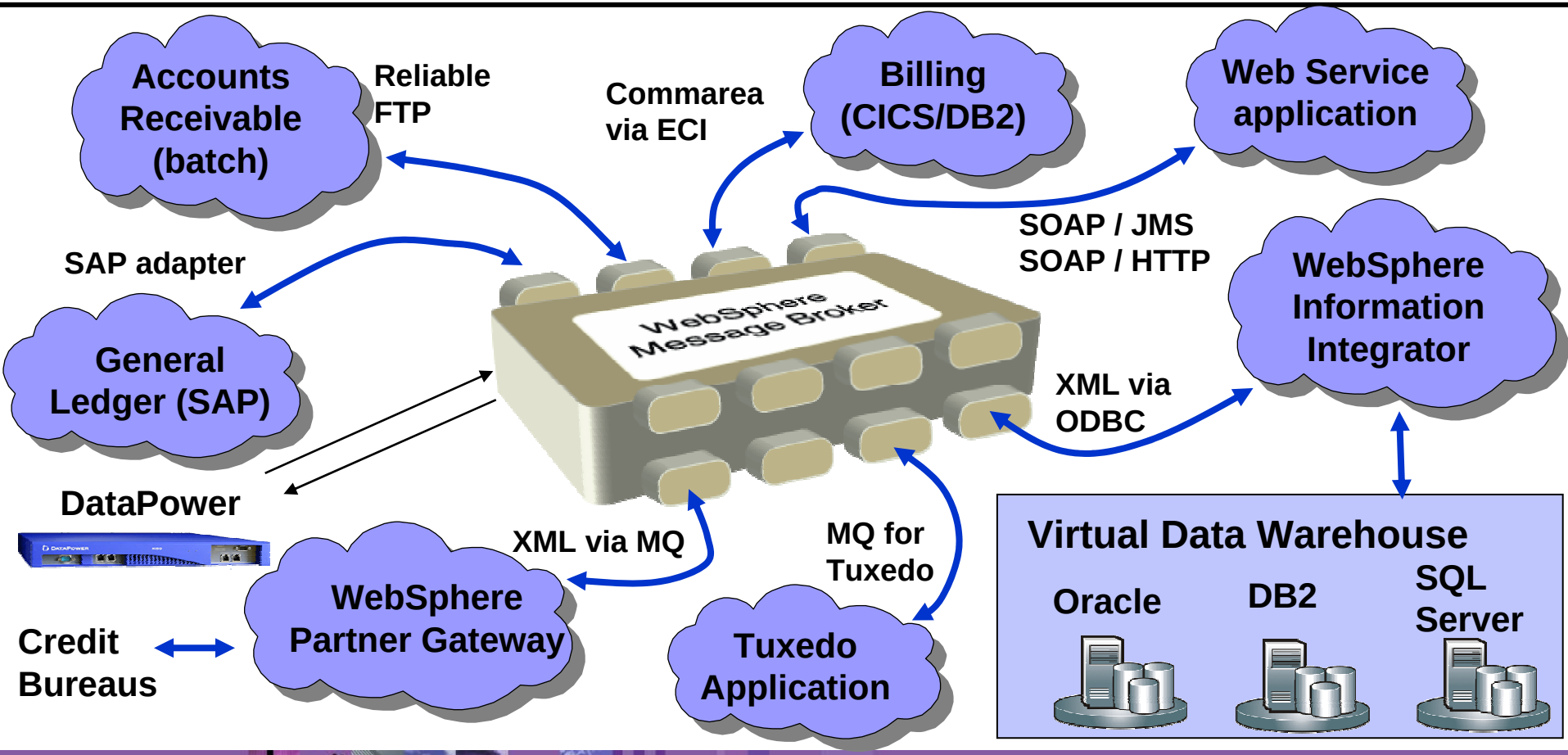
# Scenario 1: WebSphere ESB for z/OS

**Department or SMB** looking for a fully integrated, manageable solution who have bought into the ease of use of Web services. There is minimal requirement for connectivity to non SOA systems, and if there were, connectivity through an adapter or through a Message Broker would be sufficient.



# Scenario 2: WebSphere Message Broker for z/OS

**Central IT group in large or medium business** looking for a comprehensive solution for integrating widely disparate technologies or departments. They may require very high-speed and/or high-volume throughput, providing a central services function (including chargeback) to departmental groups.



# Scenario 3: WebSphere ESB and WebSphere Message Broker

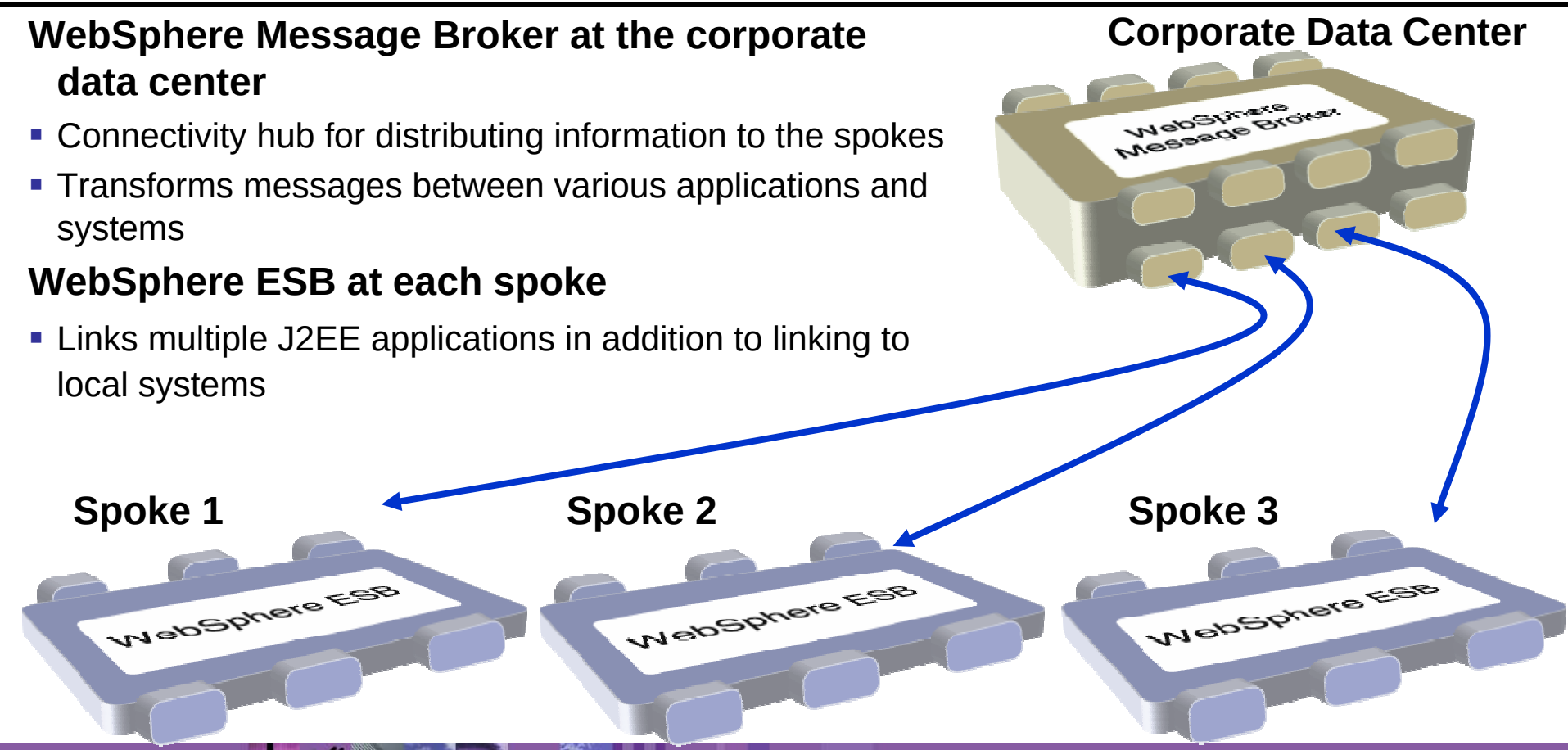
**Large organization with a hub (central data center) and spoke (branches, stores, or offices) business structure**. The spokes need to be rich in function but low in maintenance. The central office is the nerve center for the organization and provides connectivity for the overall organization.

## WebSphere Message Broker at the corporate data center

- Connectivity hub for distributing information to the spokes
- Transforms messages between various applications and systems

## WebSphere ESB at each spoke

- Links multiple J2EE applications in addition to linking to local systems



# WebSphere ESB
# Value for your business


1. **Ease of use:** Easy to use tools that require minimal programming skills with a compelling out of the box experience and pre-built capabilities save time and development costs.

2. **Extensibility:** Tight integration with WebSphere Process Server (powered by WebSphere ESB). Easily move up to solve higher level business problems.

3. **Unrivaled combination:** WebSphere Message Broker complements WebSphere ESB to integrate virtually anything regardless of platform and message format.

4. **Robust:** Built on the WebSphere Application Server: a world-class J2EE foundation providing industry-leading levels of availability, scalability, and performance.

# WebSphere Message Broker
# Value for your business


1. **Advanced integration, built on WebSphere MQ with unmatched ability in:**
   - Integrating many systems:  range of platforms, devices, APIs and data formats supported
   - Converting between many different formats: ability to transform anything into anything – not just XML
   - Seamlessly spanning the J2EE and non-J2EE world: range of programming models and programming languages supported

2. **No one integrates more reliably:**
   - 12,000+ Integration clients strong & tens of billions of messages everyday
   - 12+ years investment in integration product innovation & 80+ supported platforms
   - The only ESB product that can deliver performance comparable to traditional platforms such as CICS and IMS

3. **Proven results:**
   - #1 in Market Share for Worldwide Integration Suites New License Revenue (Gartner)*
   - Four out of every five buyers of Message Oriented Middleware chose WebSphere MQ
   - IBM application integration costs 2-4 times less than custom-built integration approaches **

* "Market Share: AIM and Portal Software, Worldwide, 2004"; Joanne Correia, Fabrizio Biscotti, Laurie Wurster, Yanna Dharmasthira; 14 June 2005
**Source:  Software Strategies Whitepaper, “Enterprise Integration Challenge,” April 2005

# The benefits of using WebSphere for your ESB solution

- ✓ Responsiveness and flexibility
- ✓ Reduced time, cost, and risk of integration
- ✓ Simplification
- ✓ Real-time data access
- ✓ Reliability

# Why IBM WebSphere software for SOA?

## Nobody has the same breadth and depth

- Broad portfolio relied on by over 87,000 customers
- #1 across application integration middleware
- Extensive ecosystem – more than 4,000 partners and 3,150 active ISV solutions

## Nobody invests more

- IBM investing over $1B a year around SOA and Web services
- Over 6,700 IBM developers
- Over 10,750 IGS technical practitioners trained on WebSphere

## Award winning SOA products

***IBM Overall Winner in Application Integration Middleware***

*-CRN Channel Champions Award (February 2006)*
*-CRN Channel Champions Award (March 2005)*

***IBM tops elite vendor list***

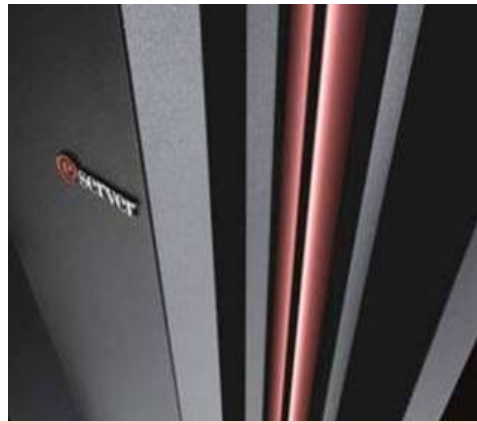
*-Intelligent Enterprise Editors' Choice Awards (April 2005)*

***WebSphere: "impressive management options, support for Web services and general ease of use … "***

*– Network Computing (February 2005)*

# zSeries and System z9: SOA for Today and Tomorrow

1. **Leverage zSeries infrastructure foundation platform for integration.**
   - ✓ z/Architecture, Virtualization, Sysplex, z/OS V1.6 and V1.7, WLM/IRD, zAAP, IFL, Linux
2. **Model & discover business functions and processes.**
   - ✓ WS Business Modeler, Service Flow Model for WDz, WS Asset Analyzer, Rational Rose/XDE, CICS Interdependency Manager
3. **Transform, modernize & extend legacy applications, processes and data.**
   - IMS Connect, WS MQ
4. **Integrate applications, processes and data; new and old.**
   - ✓ z/OS, PR/SM, zAAP, IFL / Linux, zVM, Hipersockets
   - ✓ WS MQ Workflow, WS MQ Message Broker
   - ✓ WebSphere ESB, WebSphere Process Server
5. **Manage workload performance against business objectives.**
   - ✓ WLM & IRD, EWLM, z/OS Security Server, IBM Director, Sysplex Distributor, VMRM
   - ✓ Tivoli OMEGAMON, ITCAM, WS Workload Simulator
   - ✓ WebSphere Business Monitor



***System z9 offers an advanced SOA integration platform for the on demand world!***

# Gartner Magic Quadrants: *IBM in the Leaders Quadrant*

## *IBM in Leaders Quadrant*

- **Object-oriented Analysis and Design Tools** (as of 10/2004)
  Magic Quadrant for OOA&D Tools, Update for 2005, Michael J. Blechar, 17 September 2004
- **Web Services Platforms** (as of 7/2005)
  *Magic Quadrant for Web Services Platforms. David Mitchell Smith, Charles Abrams, Daniel Sholler, Daryl C. Plummer, Michele Cantara, 12 July 2005*
- **Integration Backbone Software** (as of 4/2005)
  *Magic Quadrant for Application Integration Suites, 2Q04,* J. Thompson, R. Schulte, M. Cantara, J. Correia, K. Iijima, L. F. Kenney, B. Lheureux, Y. Natis, M. Pezzini, J. Sinur, P. Malinverno,15 April 2005
- **Enterprise Application Servers** (as of 4/2005)
  *Magic Quadrant for Enterprise Application Servers, 2Q05,* Y. Natis, M. Pezzini, K. Iijima, 15 April 2005
- **Programmatic Integration Servers** (as of 2/2005)
  *Magic Quadrant for Programmatic Integration Servers, 2005,* Dale Vecchio, 25 February 2005
- **Horizontal Portal** (as of 5/2005)
  *Magic Quadrant for Horizontal Portal Products, G.Phifer, R. Valdes, D.Gootzit, K.S. Underwood, L. F. Wurster,* 18 May 2005
- **Enterprise-Scope Application Platform Suites** (as of 7/2005)
  *Magic Quadrant for Enterprise-Scope Application Platform Suites, Yefim V. Natis, Massimo Pezzini, Daryl C. Plummer, Cameron Haight, Kimihiko Iijima, 20 July 2005*
- **J2EE Application Server Management** (as of 4/2005)
  *Magic Quadrant for J2EE Application Server Management, 2005,* C. Haight, 4 April 2005

# Summary

1. **Complex application interfaces are one of the biggest inhibitors to IT flexibility**

2. **SOA with an ESB solves the problem**

3. **IBM offers you the most complete set of SOA and ESB offerings. ESB offerings include:**

   - **WebSphere ESB, a new product which delivers an ESB**
     - Connect using SOA standards
   - **WebSphere Message Broker, a new version which delivers an *advanced* ESB**
     - Universal connectivity with SOA standards and non-SOA standards

***Only WebSphere delivers the most comprehensive Enterprise Service Bus solutions to power your SOA!***

# Key Links

- **IBM SOA Portal – case studies, whitepapers, videos, Webcasts**
  - www.ibm.com/soa
- **Learn more about IBM ESB Offerings**
  - www.ibm.com/software/integration/esb
- **SOA and Web Services Technical Resources on developer Works**
  - www.ibm.com/developerworks/webservices/newto
- **Business Case for SOA, CBDI Report**
  - www.ibm.com/software/solutions/webservices/pdf/cbdi_report_soa.pdf


Thank
You