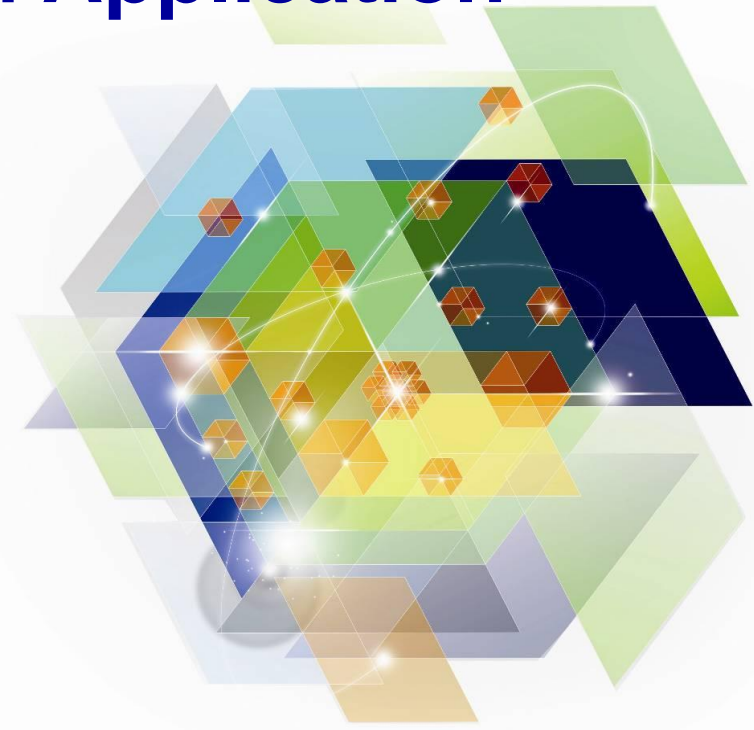




WebSphere Solutions on zEnterprise - Improving Business Agility through Automation and Enhanced Application Services

Yvonne Perkins,
Vice-President,
WebSphere on System z Development,
IBM Software Group



Successful CEOs Are Charting Their Roadmap to Agility

3

Accelerate change with optimized processes and decisions

Business Process Management

2

Strengthen relationships and integrate with customers, suppliers and partners

Service Oriented Architecture

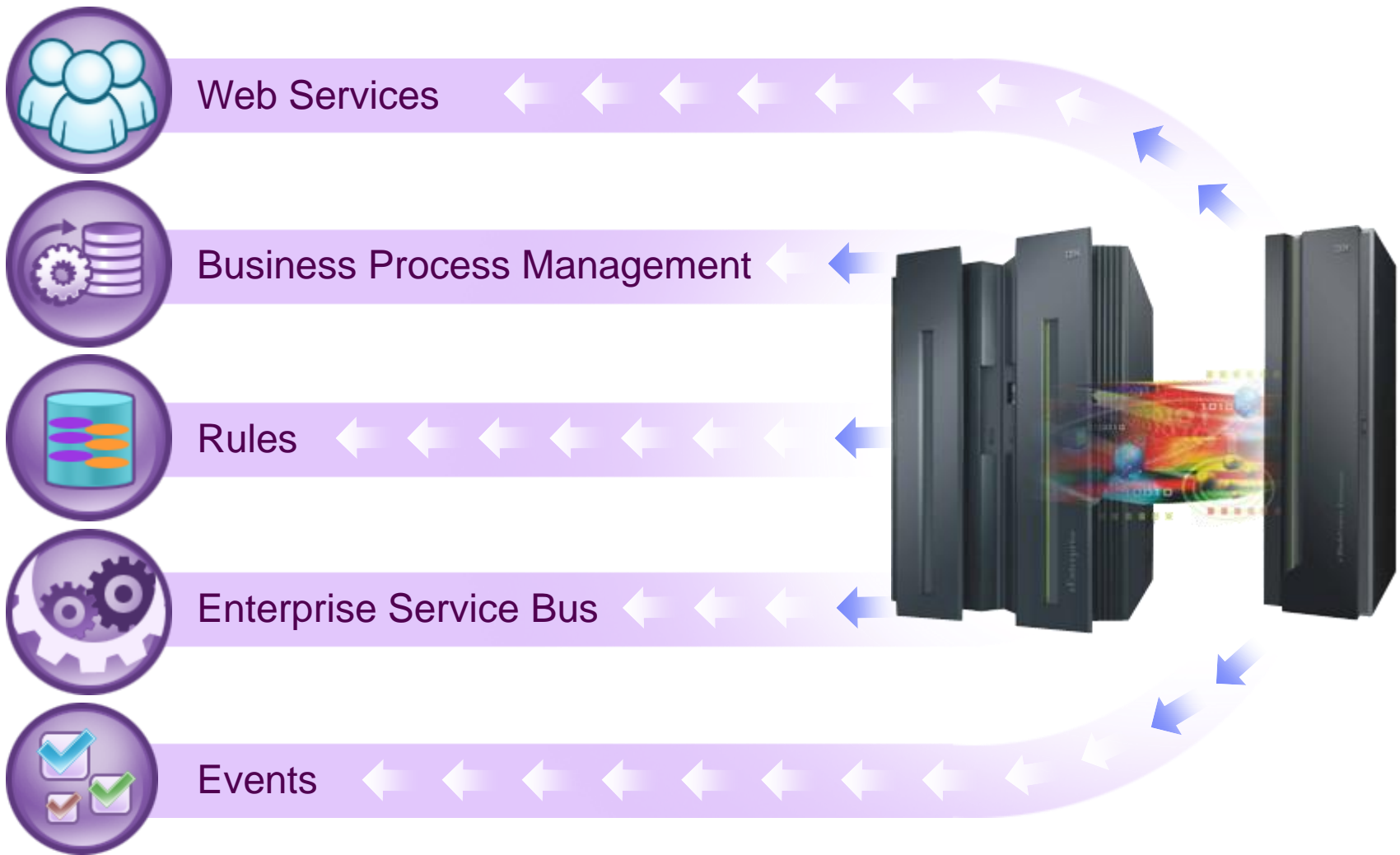
1

Control costs and add flexibility with virtualization and cloud

Application Infrastructure

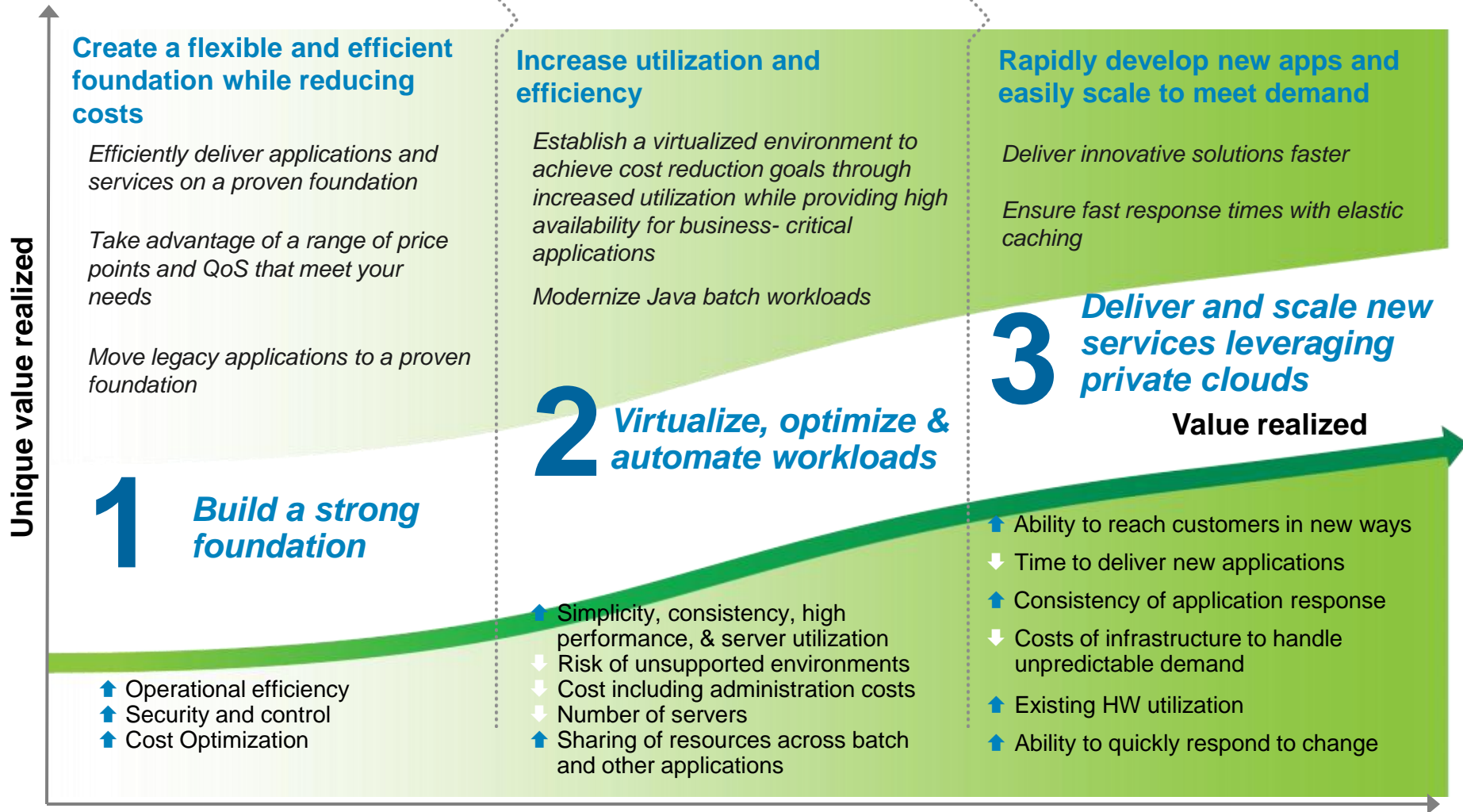
Across a Dynamic Business Network

Smarter Computing means extracting maximum business value from existing assets



Application Foundation, Virtualization and Cloud

Efficiently deliver innovative applications while optimizing resources and reducing costs



New workloads on System z match the top CIO priorities, accelerated by the capabilities of zEnterprise

Strategic workload

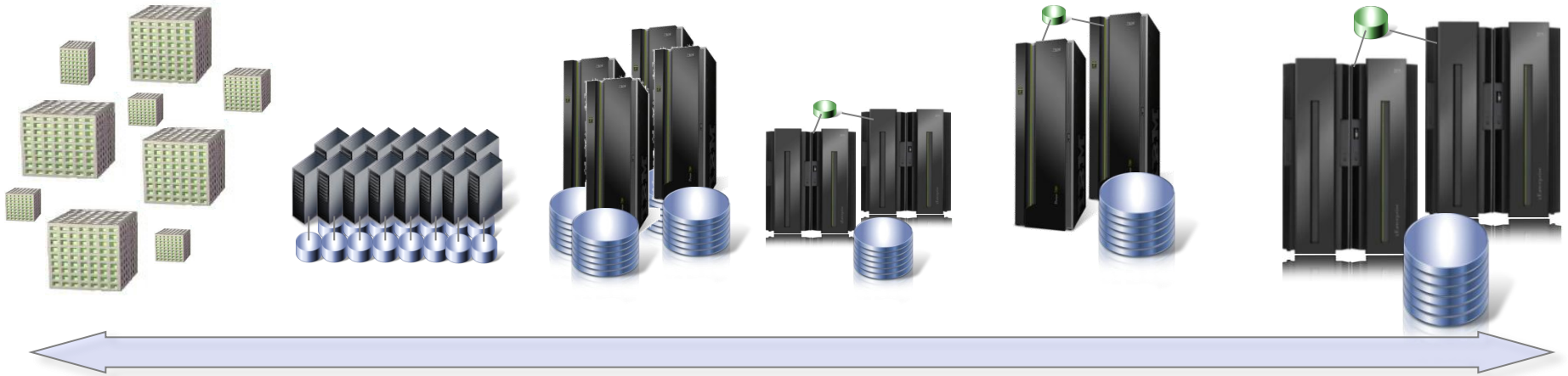
- ▶ Transaction Processing
- ▶ Virtualization
- ▶ Application Infrastructure/SOA
- ▶ BPM/BRMS

Why zEnterprise?

- ▶ Qualities of Service
- ▶ Capacity
- ▶ Efficiency
- ▶ Flexibility
- ▶ Leverage existing System z assets



Transaction processing capabilities can be combined to meet the changing demands of the business



Extreme Scale-Out

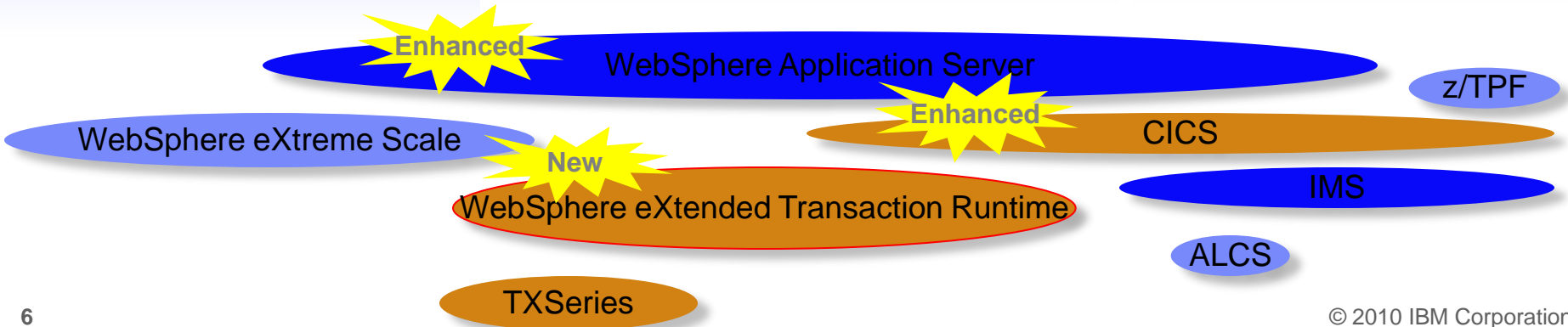
- Elastic distributed caching, in-memory databases, and XTP/Data Grid applications
- Performance and QOS focused

Broad Applicability in the Center

- Extensive standards and language support
- High ISV, application, and skill availability
- Broad platform and database support

Extreme Scale-Up

- Optimized for centralized data
- Database options affect scale
- Performance & QOS focused



Scalable, dependable transaction processing supports hundreds of millions of end users

Transaction Processing

Today's challenges

- ▶ Thousands of simultaneous users
- ▶ Infrastructure overload
- ▶ Data inconsistency

Why zEnterprise

- ▶ High volume reliable processing with sub-second response time
- ▶ Maintains the integrity of the transaction against all types of failures.
- ▶ Intelligent, automated error processing

SOLUTIONS

WebSphere Application Server
IBM Transaction Processing Facility
CICS Transaction Server

"Visa relies on System z for global transactions processing-- and confirmed the ability to handle the 2010 Christmas peak of almost 11,000 transactions a second."



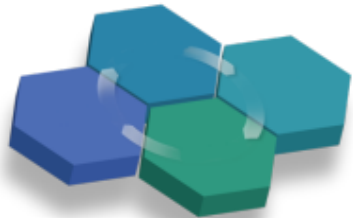
When is WebSphere Application Server for z/OS the right choice?

WAS offers unique capabilities for z/OS now and in parallel with business needs

- Expanded support for productivity enhancing programming models
- Faster time to value through a simplified and centralized product install
- Faster time to application development completion
- Enhanced security and governance capabilities
- Improved administration and migration capabilities
- Performance improvements
- Enhanced collocation



WebSphere Application Server: Over a Decade of Leadership & Trusted Delivery



- WebSphere Application Server V6
- WebSphere Application Server V6.0.2
- WebSphere Application Server V6.1

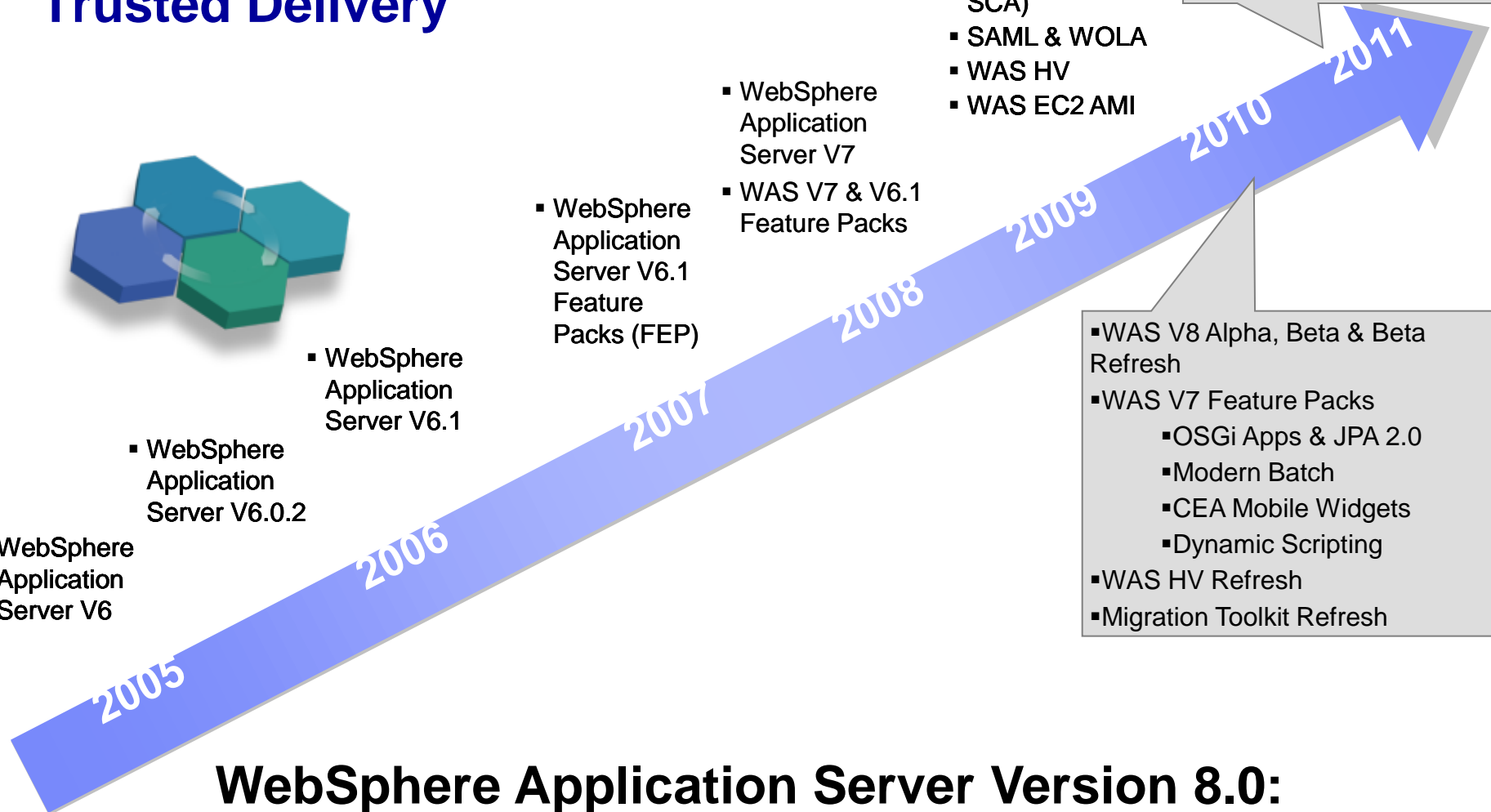
- WebSphere Application Server V6.1 Feature Packs (FEP)

- WebSphere Application Server V7
- WAS V7 & V6.1 Feature Packs

- WAS V7 Feature Packs (XML, CEA, SCA)
- SAML & WOLA
- WAS HV
- WAS EC2 AMI

- WAS V8
- Web 2.0 & Mobile FEP
- WAS HV Refresh
- Migration Toolkit Refresh

- WAS V8 Alpha, Beta & Beta Refresh
- WAS V7 Feature Packs
 - OSGi Apps & JPA 2.0
 - Modern Batch
 - CEA Mobile Widgets
 - Dynamic Scripting
- WAS HV Refresh
- Migration Toolkit Refresh



WebSphere Application Server Version 8.0:

Target Availability : 6/17/2011

WAS for z/OS as Multi-Platform Solution Provider



Driving scenarios

- ➔ *How do I improve reliability of my applications that are collocated with other data and application sub-systems for optimized performance, with failure detection and automatic failover of backend resources ?*
- ➔ *How do I consolidate applications requiring disparate server configurations in a single application server to drive more workload, improve utilization and lower operational cost?*
- ➔ *How do I leverage Java skills and WebSphere Administration capability to modernize my traditional workload without abandoning them while simultaneously adding more capability?*
- ➔ *How do I improve problem determination and traceability of my production infrastructure through fine grained control of resources?*
- ➔ *How do I ensure that every application deployed on various Operating Systems on zEnterprise provides the most optimal price-performance?*

Introducing ... WebSphere Application Server for z/OS V8.0



WAS as Multi-Platform Solution Provider: zEnterprise

Exploitation by applications, right fit deployment for business value

Rational
Application
Developer



Applications

Applications Deployed Where
They Have the "Right Fit"



WAS
Administrators

Common Open Standard Specification Support

WebSphere
Application
Server V8

WebSphere
Application
Server V8

WebSphere
Application
Server V8

• *Enhanced
commonality
across platforms*

Platform Specific Exploitation Below the Specification Line

WebSphere Application
Server Version 8



z/OS
Linux for Systemz

IBM System z

WebSphere Application
Server Version 8



AIX, i5/OS

IBM System p, i

WebSphere Application
Server Version 8



Linux
Windows

IBM System x

IBM zEnterprise
System

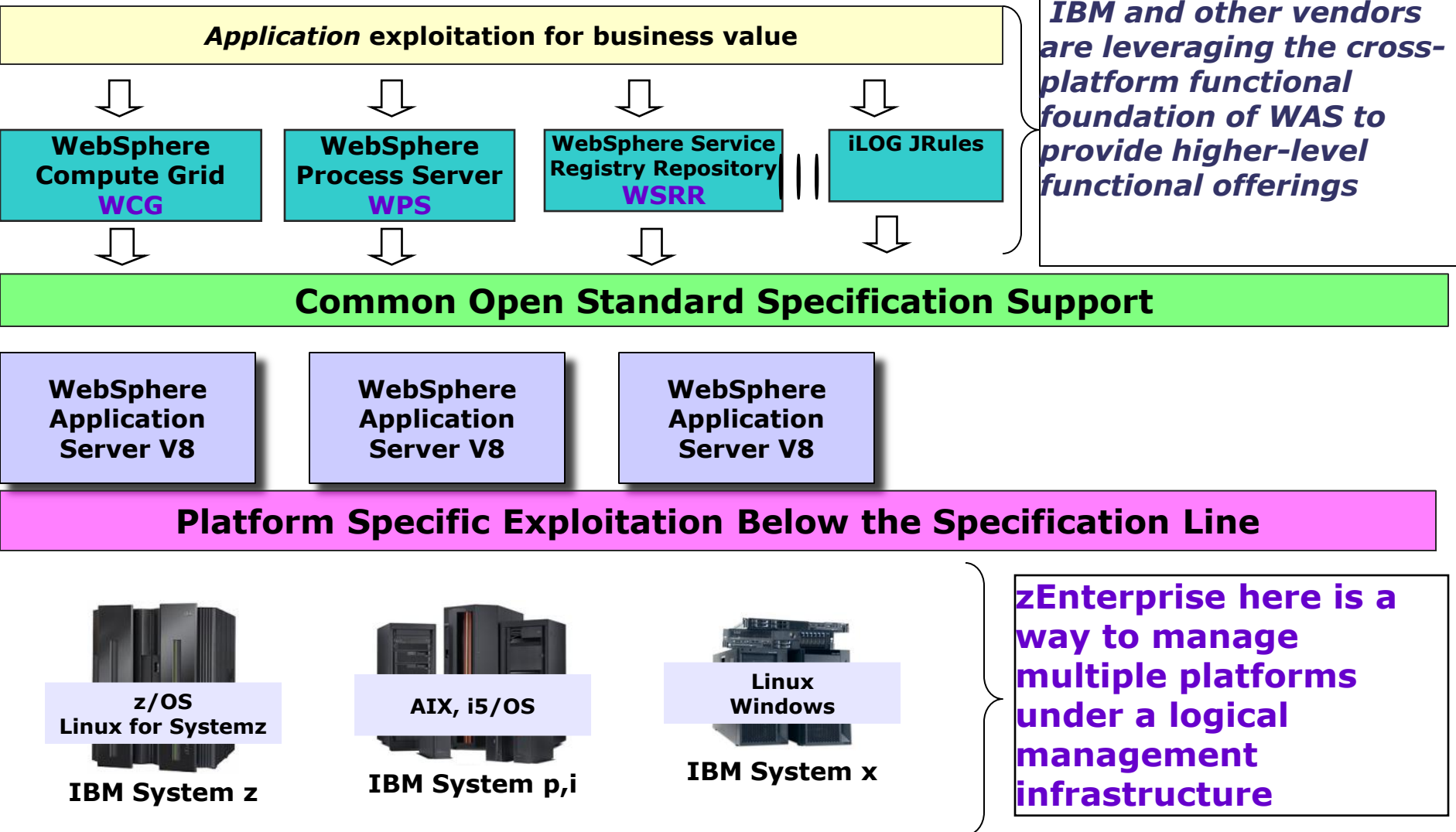
z196 = bigger, faster

zBX = blade extensions

z/OS, Linux for System z, AIX
and in the future, Windows

zManager oversees it all

WAS and zEnterprise as Foundation for Other Solutions



WebSphere Application Server z/OS Version 8.0:

Feature summary

Common features across platforms

- Existing skills carry forward
- Common install across distributed and z/OS
- Updated standards
 - Java EE 6, EJB 3.1, Servlet 3.0, JSP 3.0, ...
- Enhanced web services
 - JAXB, JAX-RS, JAX-WS
- Feature packs rolled in
 - SCA, XML, OSGi, JPA, Web 2.0, WOLA, Batch

z/OS differentiators

- Performance:
 - *z196 Hardware improvements*
 - *Enhanced Java 6 JVM*
 - *Direct exploitation of new instructions*
- Automatic detection of backend outage and failover to backup connection factory for data routing
- WOLA enhancement for high availability
 - *Failure detection and automatic failover of backend resources*
- Granular and dynamic RAS control
 - *Over attributes such as timeouts, tracing and SMF recording for improved traceability and problem determination*
 - *Over WLM classification of incoming requests at Server or Cell level*

High Performance

Enhanced!

Reduce TCO through higher performance application foundations

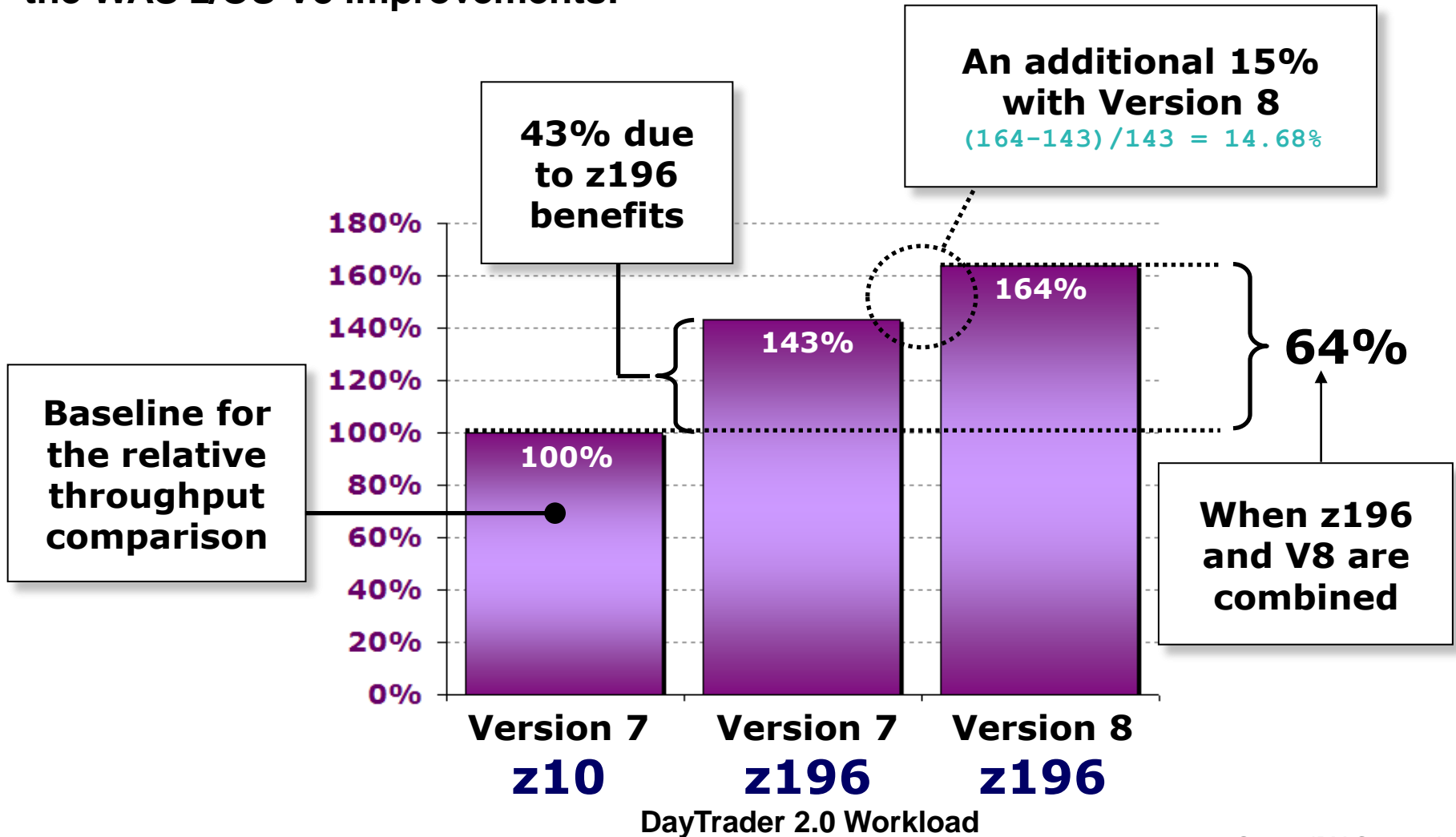
- **Java 6**
 - JVM runtime enhancements
 - JIT optimizations
 - Exploitation of new hardware instructions
- **Application Performance Improvements vs. WAS v7**
 - DayTrader: Up to 20%
- **End-to-end performance improvements vs. WAS v7**
 - Full performance report target availability @ GA



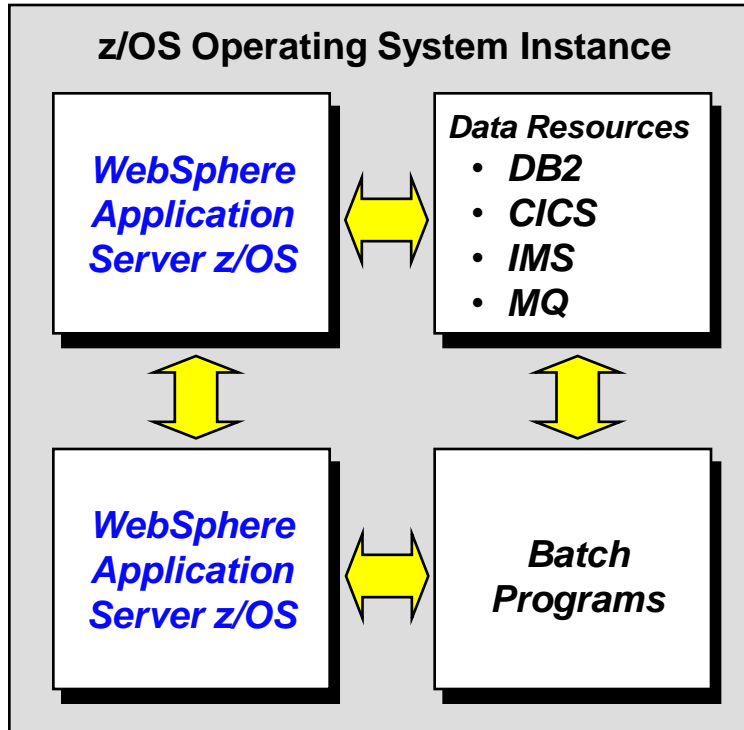
Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon many factors, including considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve results similar to those stated here.

Benefit of z196 and WAS z/OS V8

Here we see the benefits of both the z196 hardware improvements as well as the WAS z/OS V8 improvements:



Is it important to integrate web or Java applications to back end systems and achieve security and performance benefits from collocation?



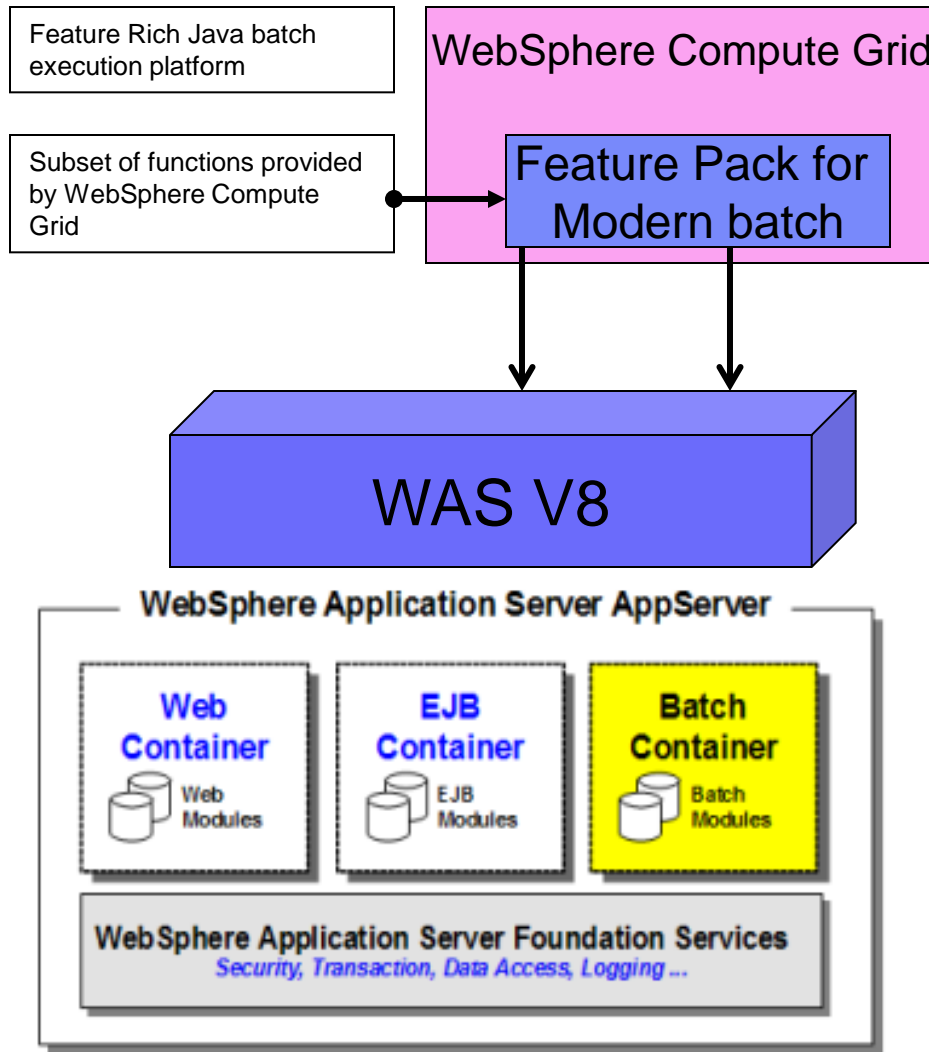
- **Extremely fast data transfer**
- **Tightly controlled by z/OS authorization processes**
- **Eliminate need to serialize and deserialize data and objects**
- **Eliminate need for encryption overhead**
- **Propagate several forms of user identity**

Efficient -- very low overhead so scalability can be addressed

Secure -- no network, can't be sniffed or hacked

Fast -- for very high volume workloads

WAS enables concurrent execution of Java batch and OLTP for faster output, cost savings



What is it?

Pre-integrated application framework to help increase developer productivity and time to value for Java batch applications allowing sharing of business logic between batch and OLTP applications

Value proposition

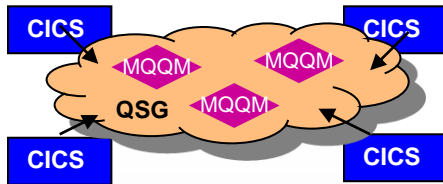
- Reduce cost of infrastructure due to concurrent execution of batch and OLTP workloads using shared business logic on a shared infrastructure integrated with WebSphere Application Server
- Reduced operational cost due to integrated administration of OLTP applications and batch jobs
- High throughput and low resource consumption on z/OS for Java Batch when collocated with data subsystems

CICS is at the heart of smart business

Revitalize Business

“Real-time visibility for smarter decisions and actions”

Integrated Tool Solutions

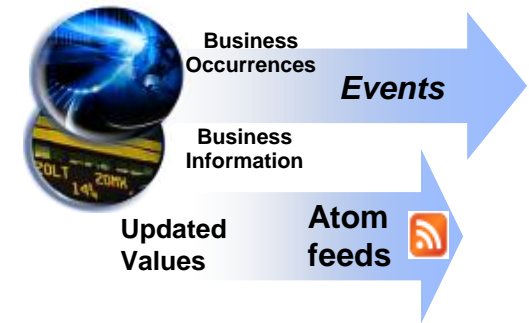


Tighter MQ Integration



Event source for Dynamic Business Networks

CICS Business Applications



Integration for LOB and COBOL business rule mgmt.

Revitalize Infrastructure

“Greater efficiency and reduced costs”

Revitalize Applications

“Faster and easier to respond to change”

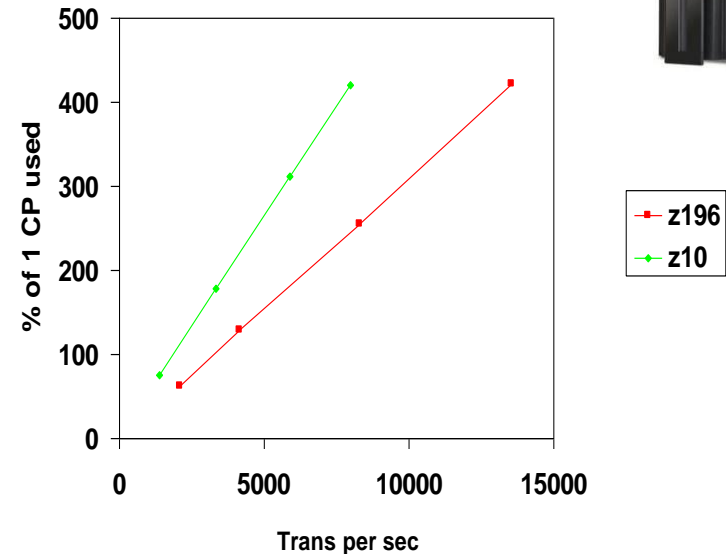
CICS Transaction Server V4.2 enhances events, Java development, connectivity, management, and scalability

- Events: including system health events to warn of potential problems
- Java: including 64-bit, multithreaded JVM, optimized for zEnterprise
- Connectivity: including option to offload Web services parsing to zAAPs
- Management: including cross system transaction tracking capabilities
- Scalability: including threadsafe and 64-bit exploitation



CICS delivers enhanced price/performance on z196

- **Workload**
 - Representative of a customer CICS WebServices Workload
 - Based on SOA Benchmark
 - XML SOAP messages directly into CICS via TCPIP
 - 5 CICS regions
 - 500 TCPIP clients per region
- **The Application**
 - Fairly complex XML
 - 3K and 69 elements inbound
 - 10K and 321 elements outbound
 - Back end application
 - COBOL Threadsafe OPENAPI
 - 1 additional link to another COBOL program
 - Average of 20 VSAM Reads
 - Data in memory
- **Hardware**
 - Systems under comparison
 - z10 2097-763 and z196 2817- 772
 - LPARs with 5 dedicated CPs
 - Separate LPAR for Network simulation
 - 4 data points highlighted on each machine



- Comparing 2097-705 with 2817- 705
- ITRs 9365 vs 16274 gives 73% improvement

Improve application performance with tools for development, tuning, and deployment

Session and user views,
Configuration,
Broadcast, User and
Admin commands

ISM

Daemon & Connection
Status & Test

TG

Develop
Test
Etc

RDz

Configuration
Status
Control, Test

MQ

Status
Situations
Topology

XE

Threadsafe, File, CPU,
Response Time,
Statistics, Alerts,
Graphical and
Sheet views

PA

Deployment,
Discovery,
Visualization, Cloning,
Automation & Control

DA



CICS, IMS,
DB2, & z/OS
Application
Debugging

DT

CICS, IMS, DB2,
& z/OS
Observation Requests
& Reporting

APA

Execution Tree
Dependencies
Queries
Command Flow

IA

CRUD/Install
History, Audit
Backout
Search, Compare

CM

CRUD/Install
Control, Filter
Topology
Events, ATOM

SM

ibm.com/cics/tools

ibm.com/cics/explorer

ibm.com/cics/explorer/download

SM	CICS Transaction Server
IA	CICS Interdependency Analyzer
PA	CICS Performance Analyzer
CM	CICS Configuration Manager
DA	CICS Deployment Assistant
TG	CICS Transaction Gateway
ISM	IBM Session Manager

APA	Application Performance Analyzer
FA	Fault Analyzer
DT	Debug Tool
MQ	WebSphere MQ
XE	OMEGAMON XE for CICS
RDz	Rational Developer for System z

zEnterprise helps to simplify the hybrid environment while reducing ongoing costs

Application
Infrastructure/
SOA

Today's challenges

- ▶ Siloed resources prevent sharing
- ▶ Massive data movement causes network bottlenecks
- ▶ Complexity increases security exposures and downtime

Why zEnterprise?

- ▶ Robust and highly available solution
- ▶ Qualities of Service extended to other platforms
- ▶ Reduced points of failure through private network
- ▶ Unmatched scalability and 85%-100% utilization

SOLUTIONS

- WebSphere Application Server Family
- CICS Transaction Server
- WebSphere Compute Grid
- CICS and PD Tools



Highmark's SOA investments...help to provide a flexible environment..that can be reassembled rapidly and cost-effectively into new services. .



zEnterprise helps to address the risks introduced into the complex business environment

Today's challenges

- Massive amounts of data to collect, transfer, and integrate increase bottlenecks
- Complexity induces operational errors, expands security exposures and downtime.

Why zEnterprise

- Unmatched levels of security inherent in the System z mitigate exposure
- QoS (qualities of service) extended to other platforms
- Reduced points of failure through private network
- Data integrity preserved and available for compliance

SOLUTIONS

Websphere DataPower X150z

WebSphere Application Server

WebSphere Enterprise Service Bus

WebSphere Process Server

WebSphere Business Rules for z/OS

CICS

The University of North Carolina Health Care System found the ability to quickly analyze data improves regulatory compliance

Hardware ESB offers universal connectivity capability to help enable Web 2.0 and Cloud



NEW!

What is it?

The IBM WebSphere DataPower Integration Appliance XI50 for zEnterprise can help simplify, govern, and enhance the security of XML and IT services by providing connectivity, gateway functions, data transformations, protocol bridging, and intelligent load distribution.



- Consumable hardware ESB



- “Any-to-any” conversion at wire-speed
- Dynamic routing; intelligent load distribution

How is it different?

- **Security:** VLAN support provides enforced isolation of network traffic with secure private networks. And integration with RACF® security.
- **Improved support:** Monitoring of hardware with “call home” for current/expected problems and support by System z Service Support Representative.
- **System z packaging:** Increased quality with pre-testing of blade and zBX. Upgrade history available to ease growth. Guided placement of blades to optimize.
- **Operational controls:** Monitoring rolled into System z environment from single console. Time coordination with System z. Consistent change management with Unified Resource Manager.

Business Process Management on System z enables agile processes for change

BPM

Today's challenges

- ▶ Inflexible systems inhibit responsiveness
- ▶ Difficult to use existing business logic for new services
- ▶ Change management inefficient or nonexistent

Why zEnterprise?

- ▶ Allows multi-tier application integration
- ▶ Automatically prioritizes and routes work
- ▶ Monitors for critical business events and initiates actions
- ▶ Integrate and manage the entire enterprise

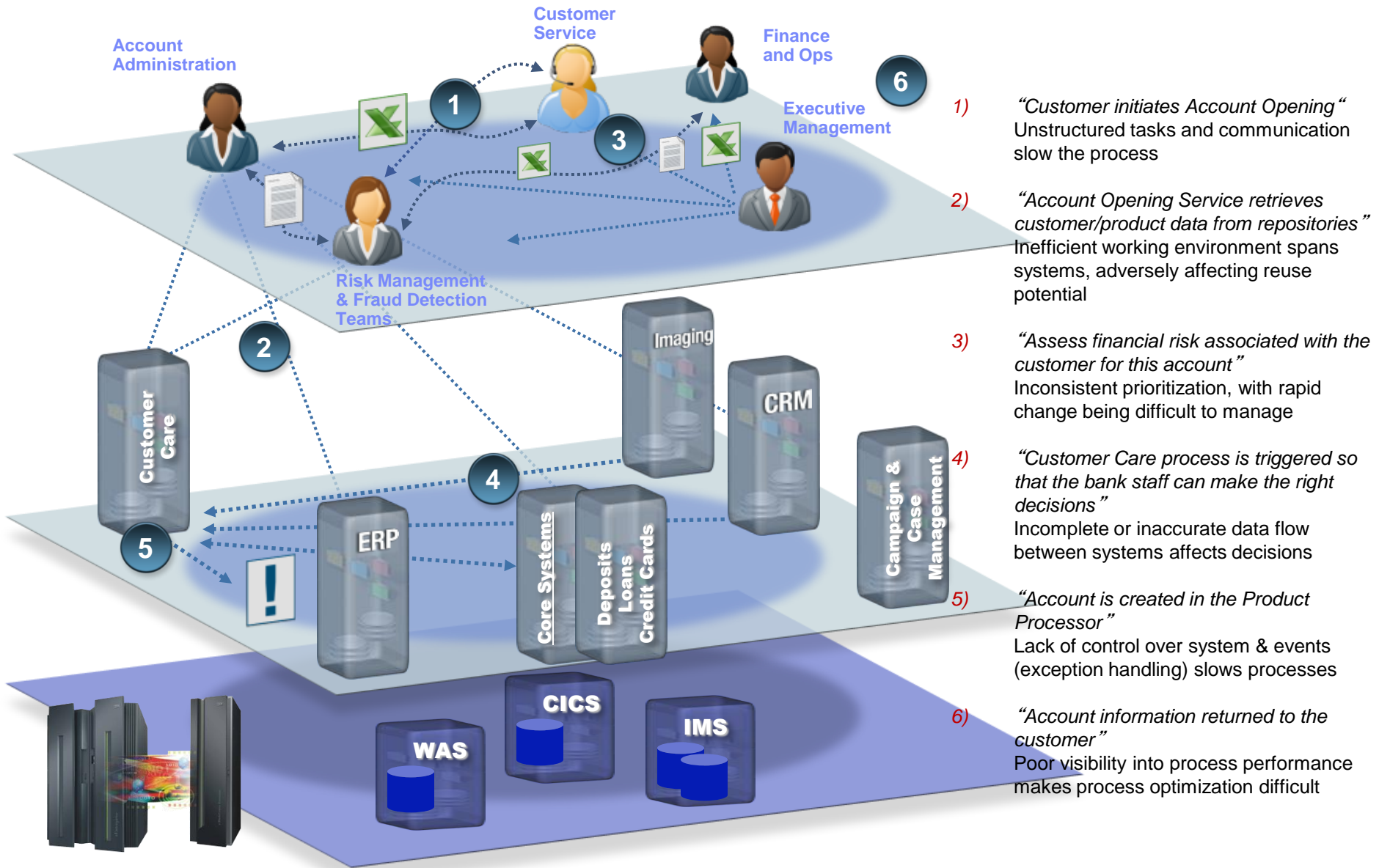
SOLUTIONS

IBM Business Process Management
WebSphere DataPower XI50z
WebSphere Decision Server

E. Sun uses WebSphere Message Broker and Process Server for an Enterprise Service Bus solution that connects applications across their heterogeneous systems

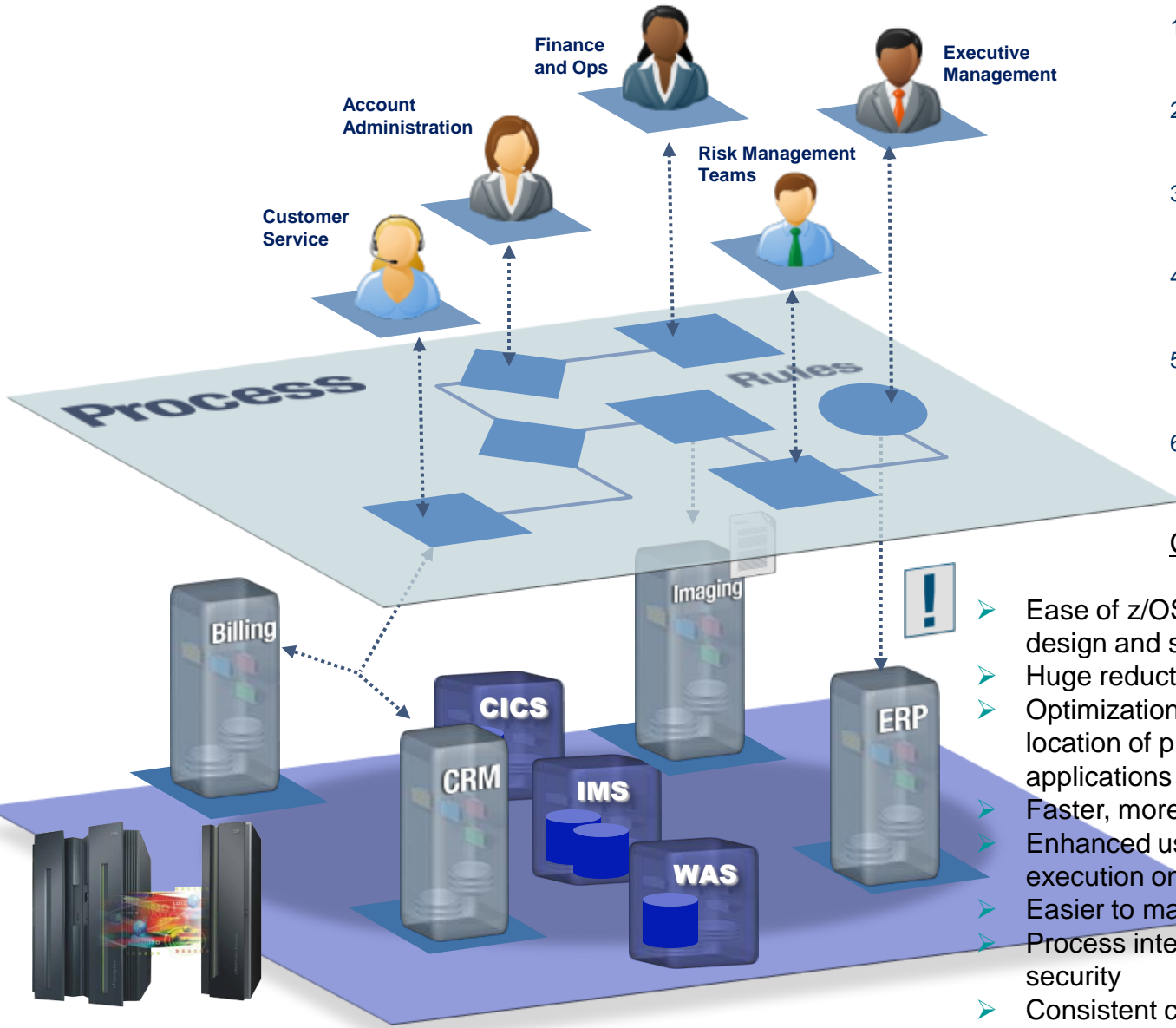


Typical Process Problems in a System z Environment



BPM on System z Brings Order to the Chaos

Extract maximum business value from existing assets



- 1) Automated workflow and decision making
- 2) Reduce errors and improve consistency
- 3) Standardize resolution across geographies
- 4) Leverage existing systems and data
- 5) Monitor for business events and initiate actions
- 6) Real-time visibility and process control

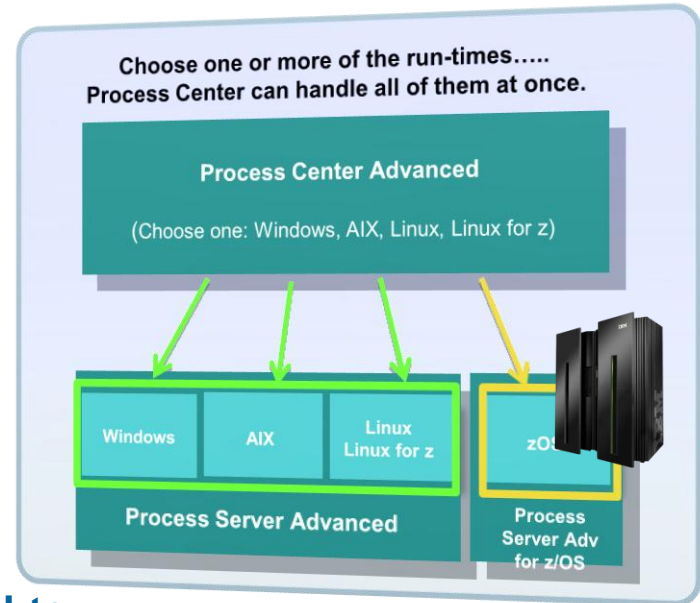
Customer Benefits:

- Ease of z/OS assets reuse with simplified design and specialized tooling
- Huge reduction in manual work & errors
- Optimization of z/OS resources through co-location of processes with z/OS data and applications
- Faster, more consistent issue resolution
- Enhanced usage of performance & process execution on z/OS platform
- Easier to manage the business
- Process integrity & stability with enhanced security
- Consistent case handling

Enabling Agile Business Processes on System Z

IBM Business Process Manager V7.5 for z/OS

- **Unified BPM platform** combines the **simplicity** of Lombardi Edition experience and the **power and scalability** of WebSphere Process Server – all integrated in a zEnterprise environment.
- **Leverages co-location** with IBM System z programs for superior performance, scalability, and access to data
- **High volume process automation** with greater availability and qualities of service



IBM Business Process Manager V7.5 for z/OS highlights

- Built-in SOA components for extensive enterprise-wide service integration and orchestration
- Full compatibility with the latest version of IBM WebSphere Process Server for z/OS
- Flexible deployment of process applications originally created with IBM WebSphere Lombardi Edition for Linux on System z or other platforms
- In-process rules authoring based-on WebSphere ILOG JRules technology
- Streamlined installation and configuration of BPM within IBM WebSphere Application Server on z/OS

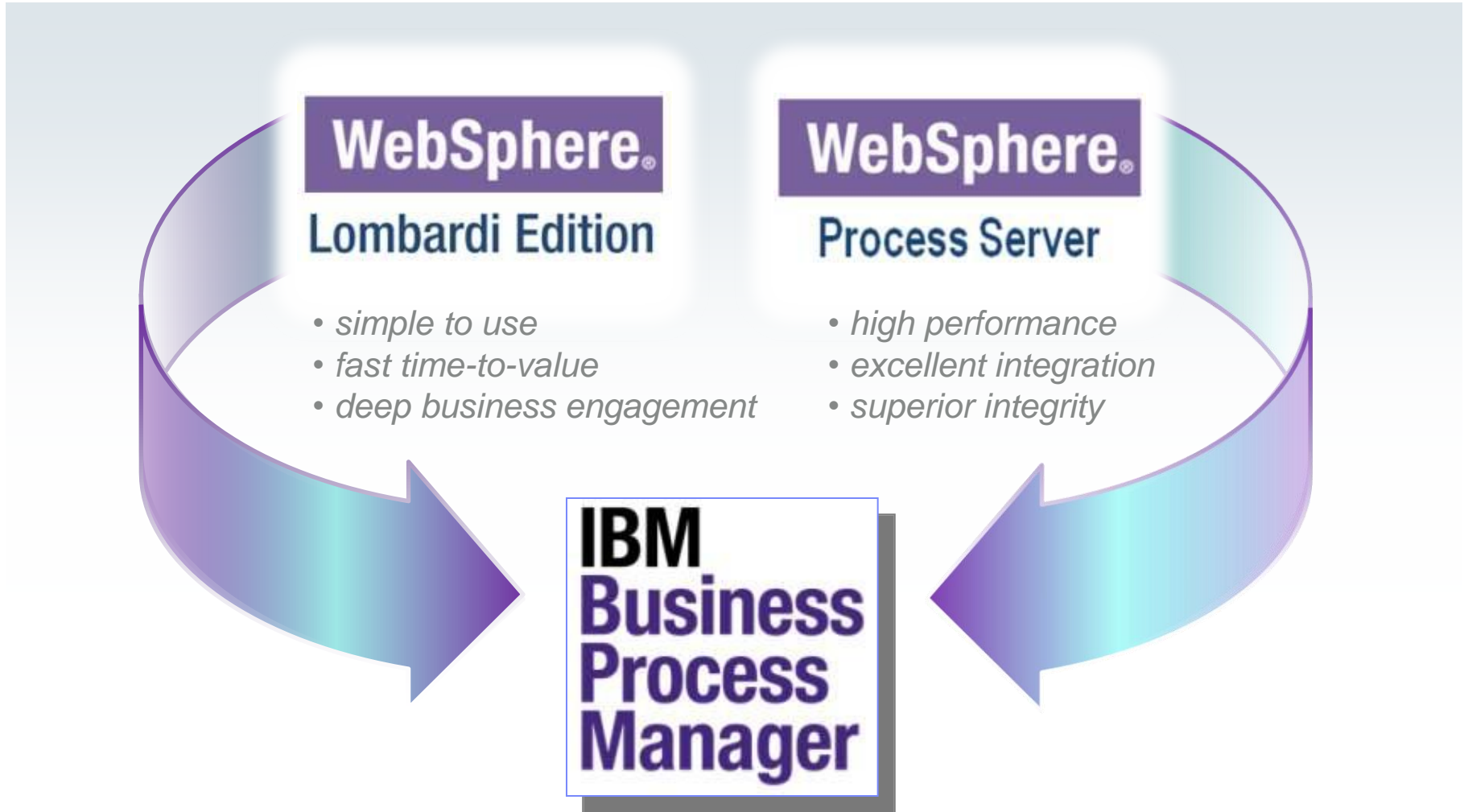
New!

• From Sandy Kemsley, BPM analyst: <http://www.column2.com/2011/09/enabling-agile-processes-with-ibm-bpm-for-zos/>

• Optimizing Process Management with System z white paper: <http://public.dhe.ibm.com/common/ssi/ecm/en/zsw03193usen/ZSW03193USEN.PDF>

IBM Business Process Management in 2011:

Unifying Two Market-Leading Platforms



Powerfully Simple Process Improvement

IBM Business Process Manager V7.5



- **Unified BPM platform** combines the **simplicity** of Lombardi Edition experience and the **power & scalability** of WebSphere Process Server.
- **Process Center and asset repository** provides maximum **collaboration & governance** required to scale up your BPM program.
- **Single product with multiple entry point configurations** and deployment options for companies & programs of all sizes.
- What's new in V7.5:
 - Joint WebSphere Lombardi Edition & WebSphere Process Server backward compatibility ensures preservation of your BPM investments to-date
 - WPS applications can tap into easy-to-use design, playback, rapid deployment, and optimization capabilities
 - WLE applications can extend their robustness & reach with SOA-based process automation, enterprise integration, and high reliability

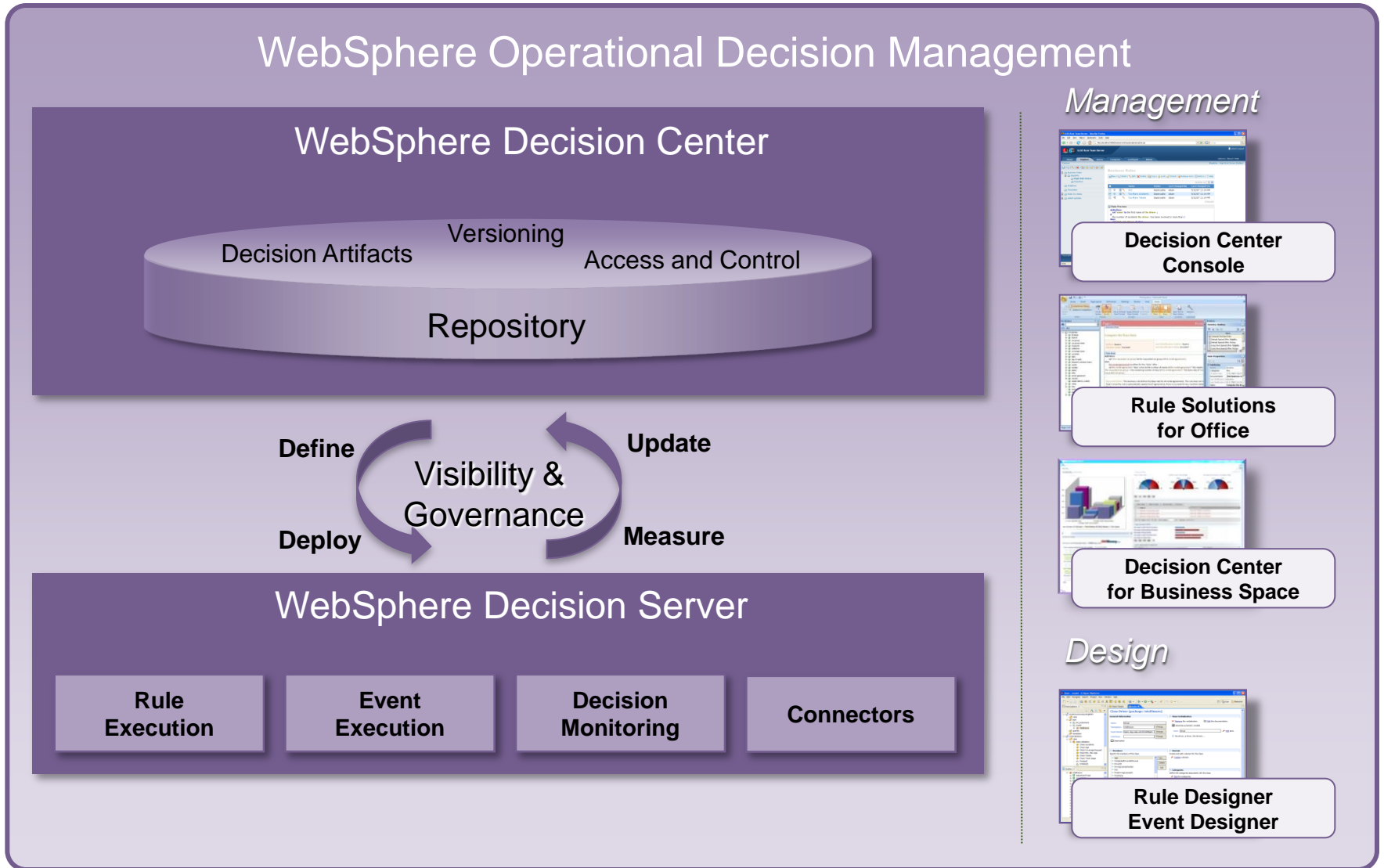


Empowers business users to take back their business by providing federated visibility across all process participants.

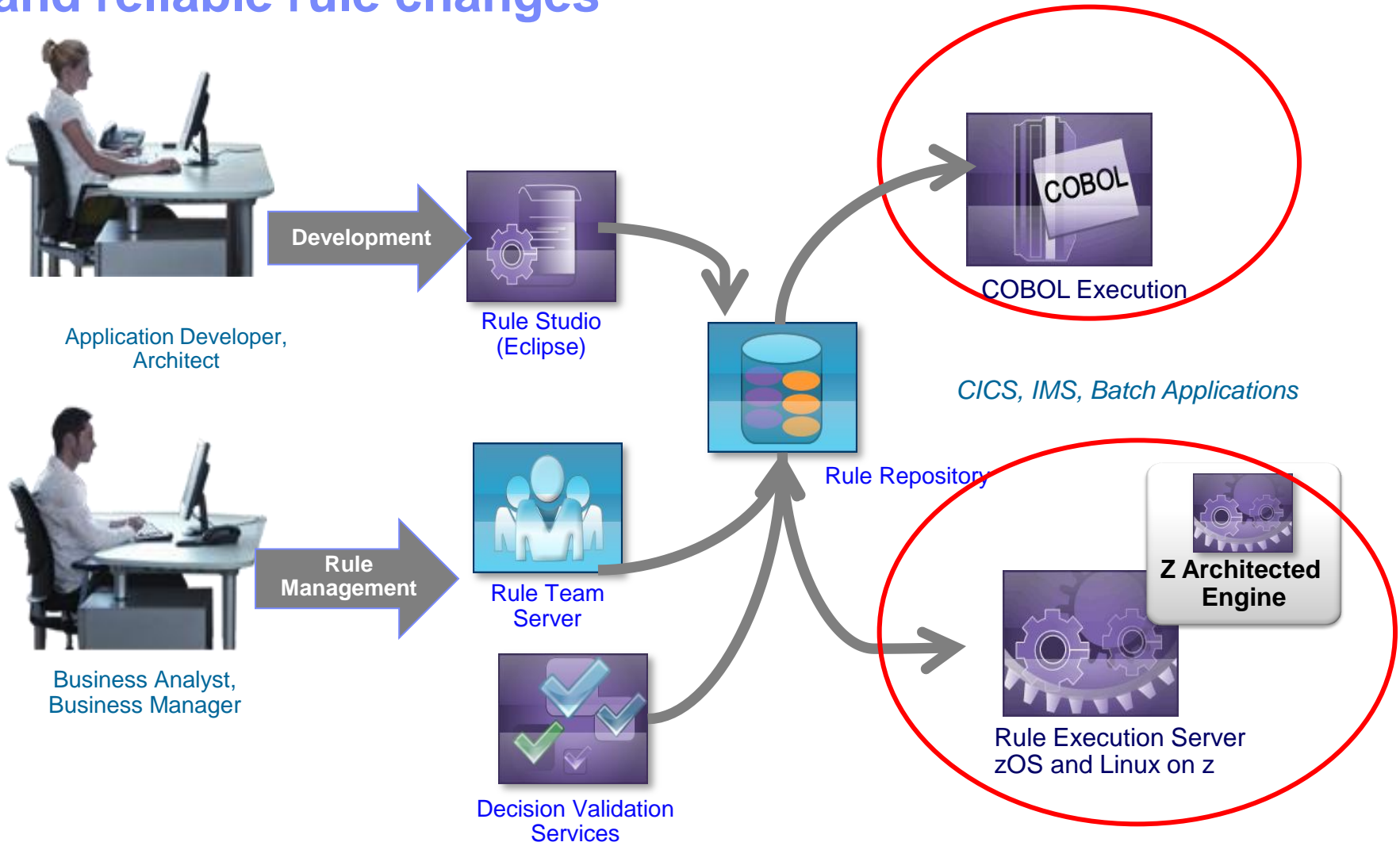
Designed to enable business-led change

Simple enough to engage process participants, regardless of their role, yet powerful enough to scale as needed to support enterprise-wide transformation.

WebSphere Operational Decision Management



WebSphere ILOG Rules for COBOL enables easy, safe and reliable rule changes



Look who's putting new workload on z

Challenge your enterprise architects to make the mainframe you already have more strategic

“We started our modernization project with open systems servers where **I had been a Java developer**. We were also heavy VMware users. What we really needed was a more stable, scalable environment. Performance for MQ was really impressive and **we moved a lot of MQ workloads to System z**. Now we are looking at other Java applications to move next. We see the dividing line for who owns and supports the server environment being the ESB layer. Infrastructure below the ESB is supported by the infrastructure team for System z servers which means the resources come from mainframe heritage. Within and above the ESB is now common middleware and is supported by the same team that supports our distributed open systems middleware implementations.”

--Gustavo Tadao, Senior Architect, Serasa Experian, Brazil

“**I do not come from a mainframe background myself but felt we should consider all possible options**. We ran a number of TCO platform comparisons for WAS and MQ messaging----and in every scenario, Linux on System z TCO came out far better. We currently support over 6M transactions per day, use far less memory than before, and are now looking for other workloads that are a fit for moving to System z for cost reductions.”

--Brent Halsey, Infrastructure Manager, Enterprise Middleware Infrastructure, Huntington Bank, USA

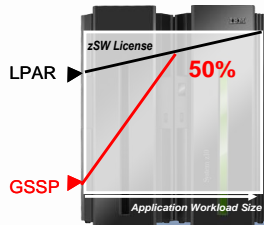
“For Garanti Bank, the mainframe also offers extremely low costs per transaction—we believe it to be lower than for any other platform. And each time we increase the capacity, the cost per transaction falls. A significant element in that is personnel costs, which are typically the single most costly element in IT operations. Although we've tripled the capacity of our System z environment, the number of staff managing it has remained steady at 40 people. **We want to put as many workloads as we can on the mainframe**. It gives us a highly robust transactional back end that can interact with any technology we choose for the front end..”

---Tufan Alatan, Executive Vice President, Garanti Bank, Turkey

Continuous price/performance enhancements for zEnterprise improve total cost of ownership



Enhanced Sub-Capacity Pricing for the z196



Getting Started Sub-capacity Pricing (GSSP)



Example zEnterprise Performance Improvements:

- CICS 75% throughput improvement over z10 for web services workload
- WebSphere 93% performance over z10 via hardware and software improvements

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Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput or performance improvements equivalent to the ratios stated here.

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