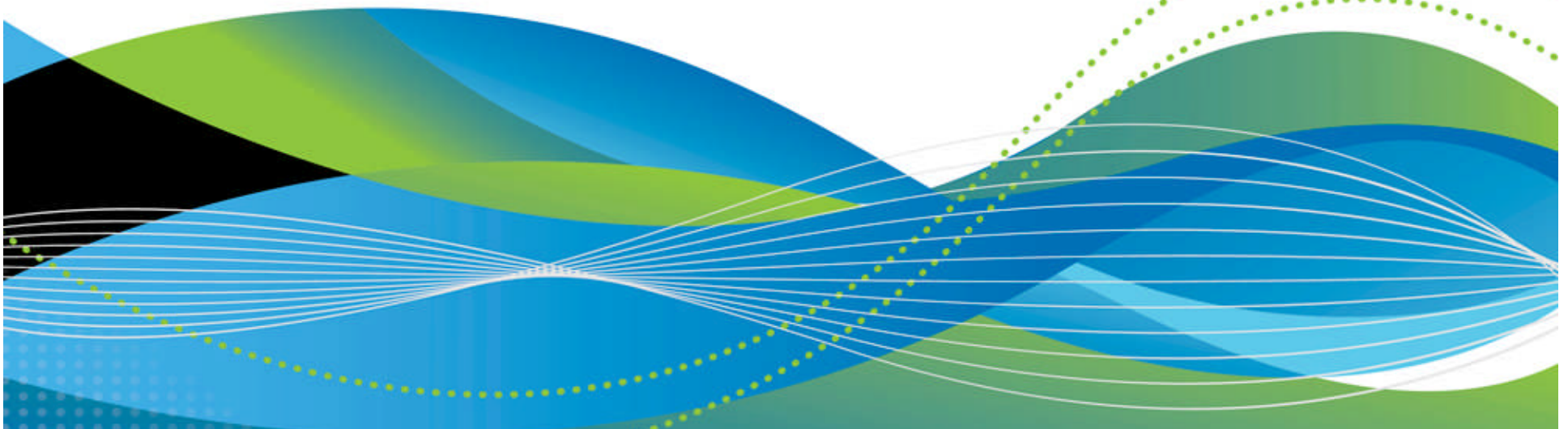**SHARE**
Technology · Connections · Results

Why Business Rules and Business Process Management are Important to System z Apps (and to you)

Janet K. Wall

IBM Corporation

Date of Presentation: Thursday, March 15, 2012
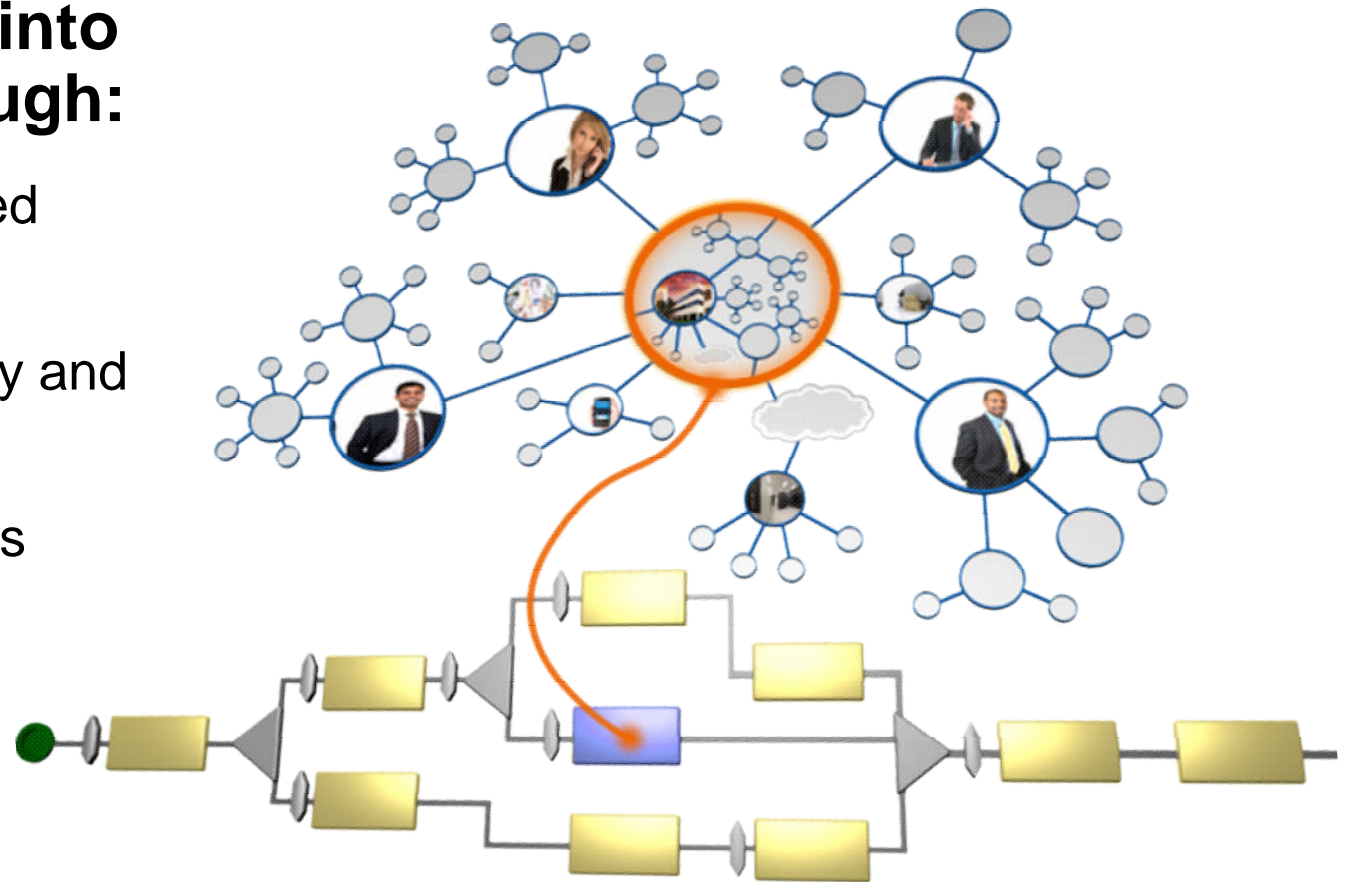
Session Number: 10743

Can Your Processes Handle Change, Uncertainty and Complexity?

Turn complexity into opportunity through:

- Simpler Business Led Change

- Full Process Visibility and Governance

- Optimized Processes and Decisions

Agile Processes and Decisions with
Business Process Management

What is *Business Process Management* ?

> *Through robust and flexible software capabilities and industry expertise, BPM enables customers to discover, model, execute, rapidly change, govern, and gain end-to-end visibility on their business processes*

Model and Simulate

- Align business strategy and IT execution
- Assess, capture, and analyze core value processes

Software Expertise

Deploy, Execute, and Change

- Automate business processes to improve efficiency and profitability
- Adapt and collaboratively respond to change

Visibility & Collaboration

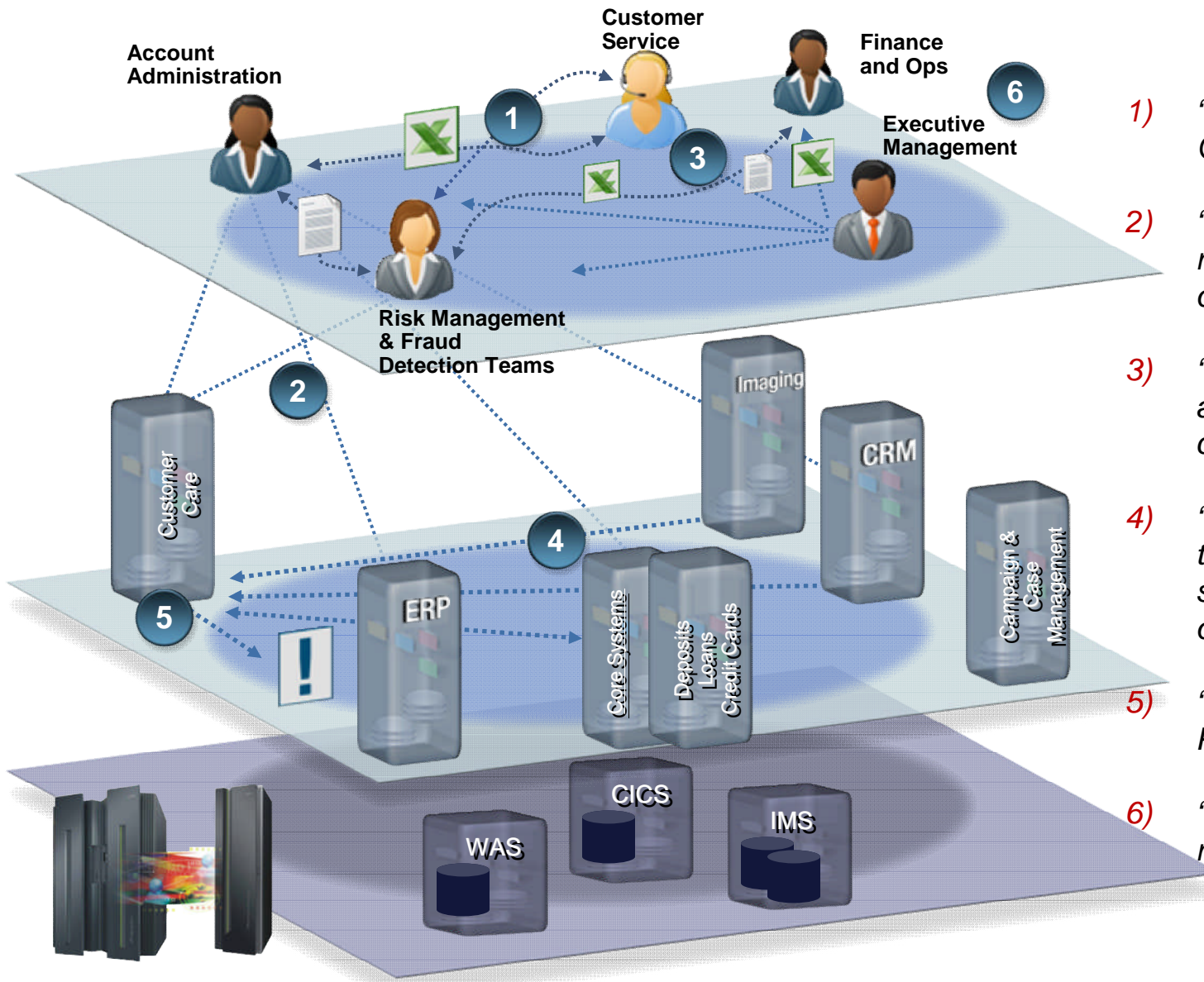Business User Engagement

Efficiency & Productivity

Monitor, Analyze, Predict and Act

- Business users monitor business performance and define new alerts based on KPIs

*Optimize processes for better business outcomes*

Typical Process Problems in a System Z Environment

1) *"Customer initiates Account Opening"*

2) *"Account Opening Service retrieves customer/product data from repositories"*

3) *"Assess financial risk associated with the customer for this account"*

4) *"Customer Care process is triggered so that the bank staff can make the right decisions"*

5) *"Account is created in the Product Processor"*

6) *"Account information returned to the customer"*

BPM on System z brings order to the chaos
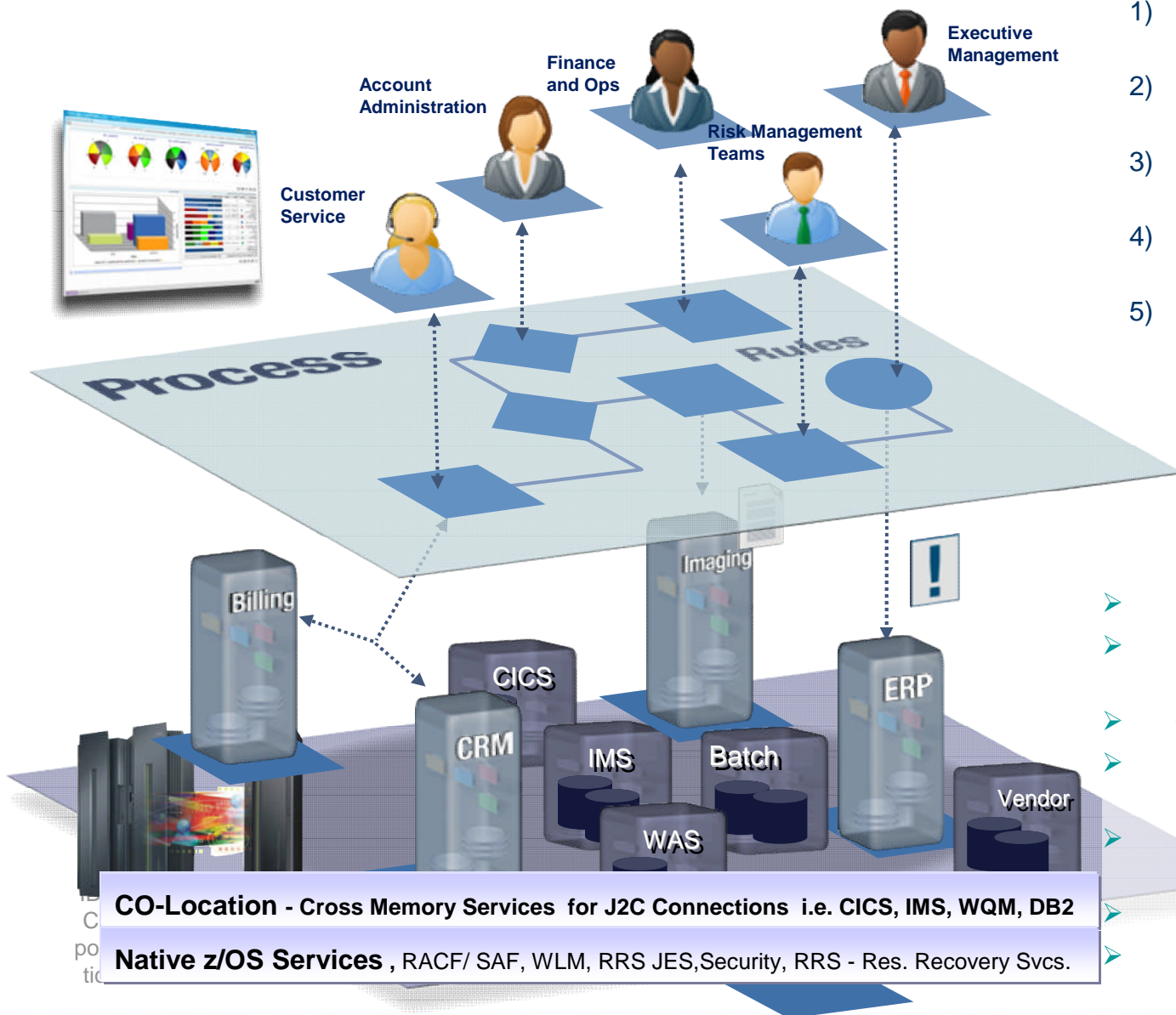
1) Automated workflow and decision making
2) Reduce errors and improve consistency
3) Leverage existing systems and data
4) Monitor for business events and initiate actions
5) Real-time visibility and process control

Customer Benefits:

➢ Ease of z/OS assets reuse
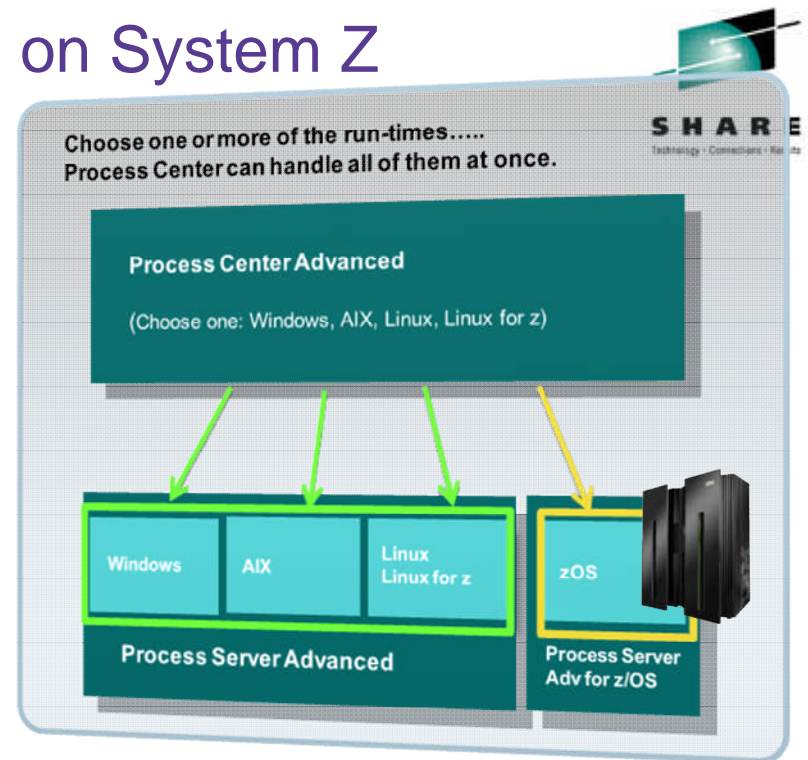➢ Huge reduction in manual work & errors
➢ Optimization of z/OS resources
➢ Faster, more consistent issue resolution
➢ Enhanced usage of process execution
➢ Easier to manage the business
➢ Process integrity & stability

CO-Location - **Cross Memory Services for J2C Connections i.e. CICS, IMS, WQM, DB2**

Native z/OS Services , RACF/ SAF, WLM, RRS JES,Security, RRS - Res. Recovery Svcs.

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 & scalability** of WebSphere Process Server – all integrated in a zEnterprise environment.

- **Leverages co-location** wit IBM System Z programs for superior performance, scalability, and access to data

- **High volume process automation** with greater availability and qualities of service

Choose one or more of the run-times.....
Process Center can handle all of them at once.

Process Center Advanced

(Choose one: Windows, AIX, Linux, Linux for z)

Windows | AIX | Linux Linux for z | zOS

Process Server Advanced | Process Server Adv for z/OS

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

IBM Business Process Manager Architecture

SHARE
Technology · Connections · Results

Process End-Users
Process Owners

Business & IT Authors

IT Developers

Process Designer

Authors & Administrators

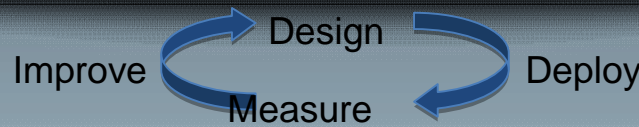**Integration Designer**

Process Center

Governance of Entire BPM Life Cycle

Versioned Assets

Shared Assets   Server Registry

BPM Repository

Design

Improve   Deploy

Measure

Backward compatibility, easy migration from WLE & WPS

Process Server

| BPMN | Rules | Monitoring | BPEL | ESB |

Out-of-box Process Portal
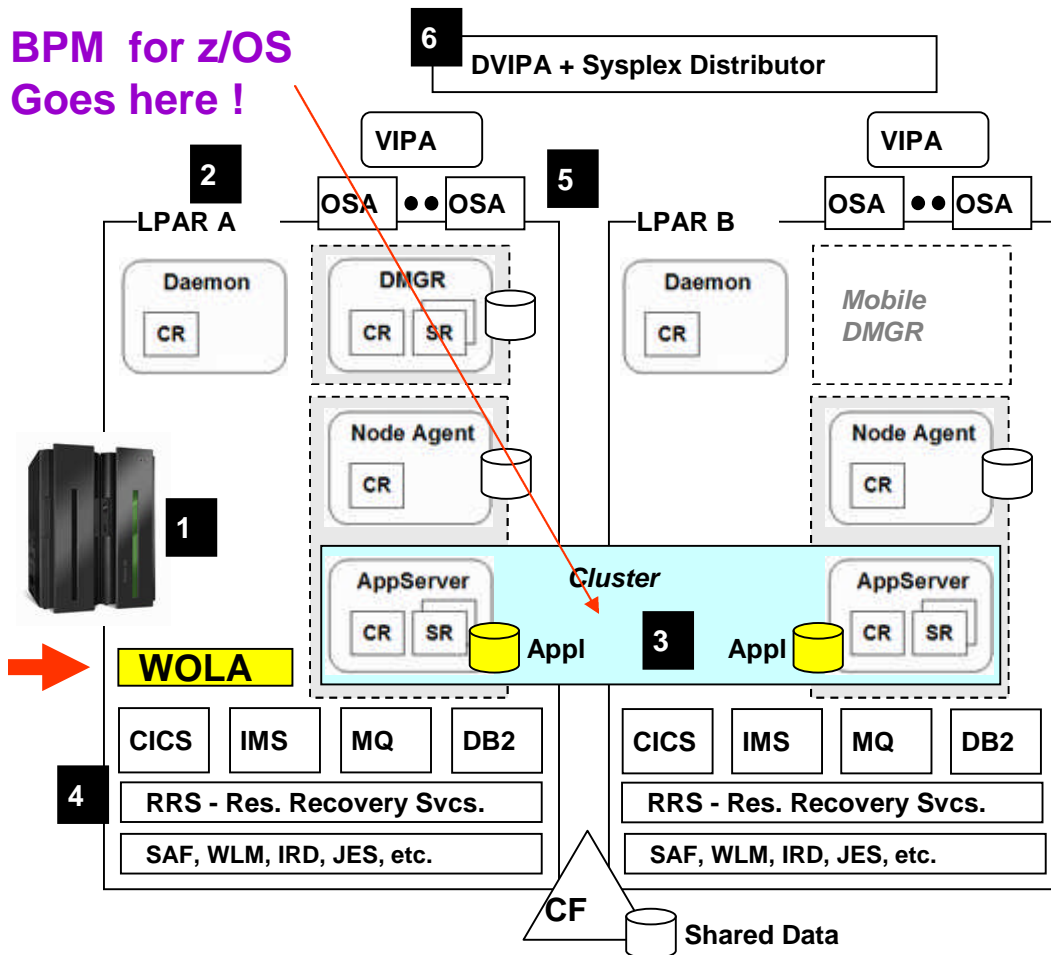
Configurable Business Space

Optional Microsoft Add-ons

2012

The Big Picture of WAS and BPM z/OS in Parallel Sysplex

It's all about redundancy *and* integration with platform HA / DR function

6 | DVIPA + Sysplex Distributor

BPM for z/OS Goes here !

2

LPAR A

VIPA

OSA ●● OSA

5

Daemon
CR

DMGR
CR SR

1

Node Agent
CR

AppServer
CR SR | Appl

Cluster

WOLA

| CICS | IMS | MQ | DB2 |

4 | RRS - Res. Recovery Svcs.

SAF, WLM, IRD, JES, etc.

LPAR B

VIPA

OSA ●● OSA

Daemon
CR

Mobile DMGR

Node Agent
CR

3 | Appl | AppServer
CR SR

| CICS | IMS | MQ | DB2 |

RRS - Res. Recovery Svcs.

SAF, WLM, IRD, JES, etc.
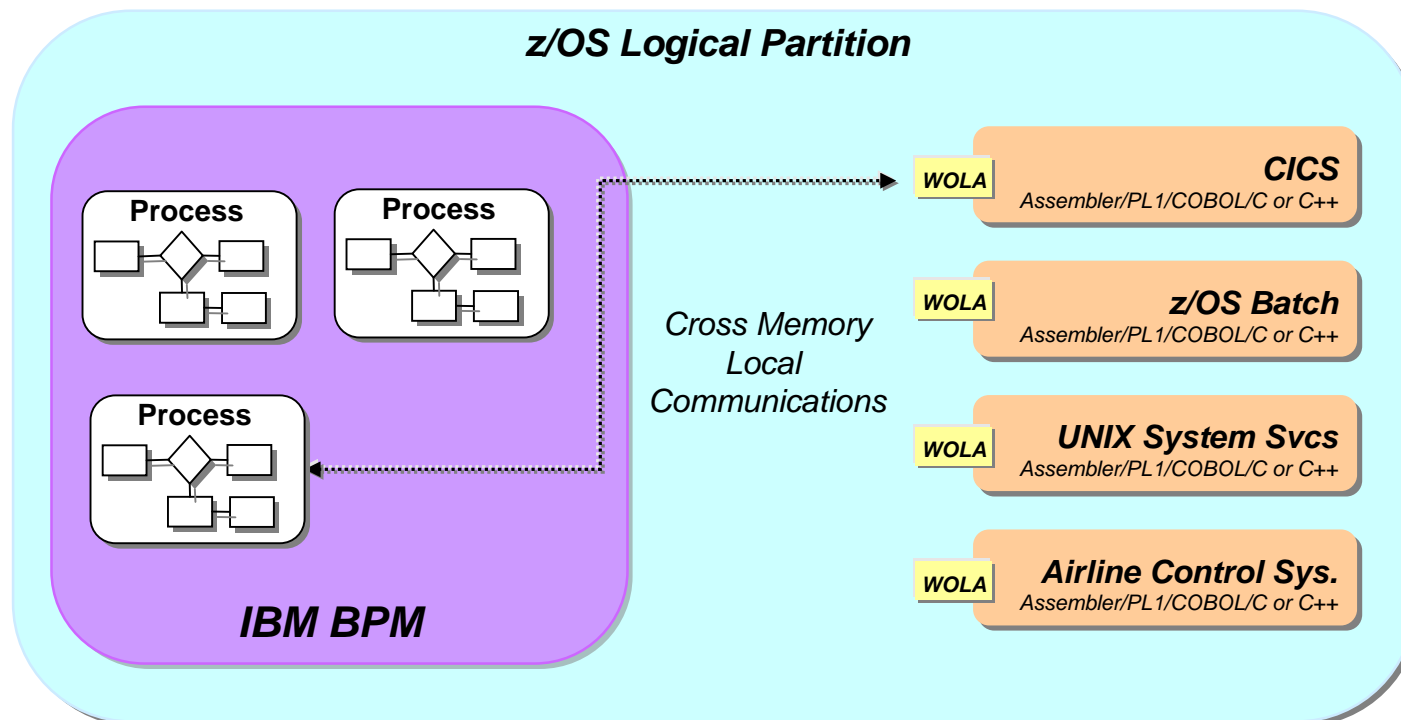
CF

Shared Data

1. Redundant and fault-tolerant hardware

2. Redundant z/OS instances

3. Clustered WebSphere z/OS servers

4. Redundant data resource managers with Sysplex shared data

5. Redundant network adapters hidden behind Virtual IP address

6. Workload distribution hidden behind distributed virtual IP and Sysplex Distributor

BPM for z/OS focus areas :
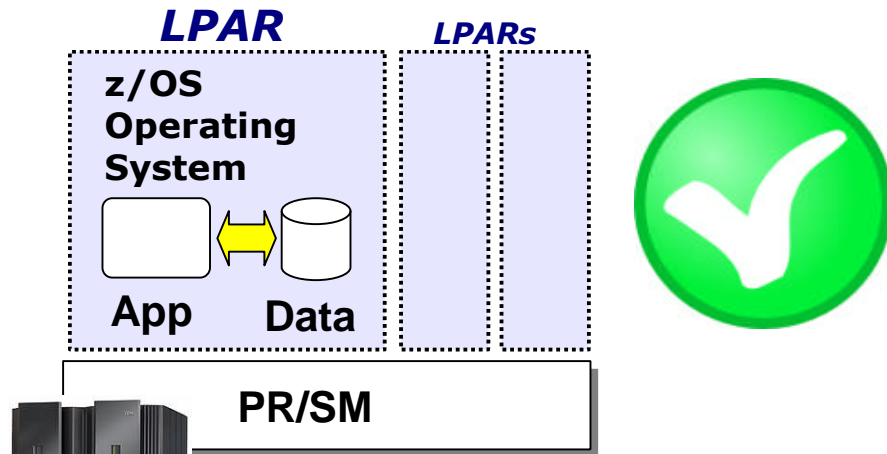H/A-DR, Local Connections, DS, Q Sharing and DB2 z/OS strengths

IBM BPM on zOS

- Co-locate Processes with Core Apps
- Based on Local Communications (*z/OS exclusive*)
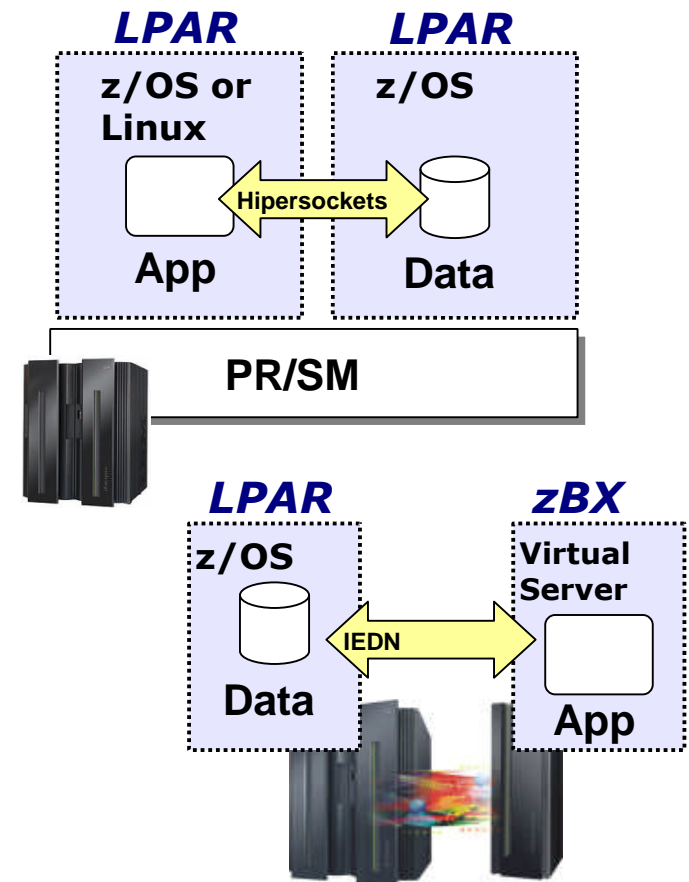- Bi-directional … WAS outbound or inbound to WAS (*WOLA exclusive*)

z/OS Logical Partition

Process

Process

Cross Memory Local Communications

Process

IBM BPM

WOLA · **CICS** · *Assembler/PL1/COBOL/C or C++*

WOLA · **z/OS Batch** · *Assembler/PL1/COBOL/C or C++*

WOLA · **UNIX System Svcs** · *Assembler/PL1/COBOL/C or C++*

WOLA · **Airline Control Sys.** · *Assembler/PL1/COBOL/C or C++*

WebSphere Optimized Local Adapters (WOLA) connect Business Processes and Java Applications to core legacy applications in Memory

SHARE in Atlanta 2012

"Co-Location"

We use the term "co-location" to mean the application and the data source resident on the *same instance of z/OS:*

LPAR

z/OS
Operating
System

App   Data

LPARs

PR/SM

Exploiting *cross-memory co-location* services of z/OS

LPAR

z/OS or
Linux

App

Hipersockets

LPAR

z/OS

Data

PR/SM

LPAR

z/OS

Data

IEDN

zBX

Virtual
Server

App

May be applicable to business
needs, but this is not what we
mean by "co-location"

IBM BPM V7.5 ~ Authoring Scenarios

Process Designer

Integration Designer

Process Center
Governance of Entire BPM Life Cycle

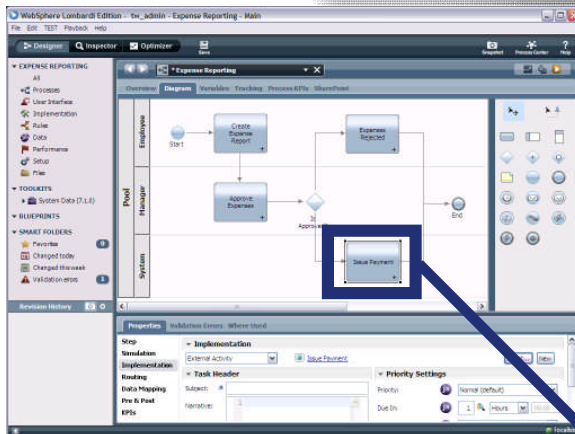Shared Assets   Versioned Assets
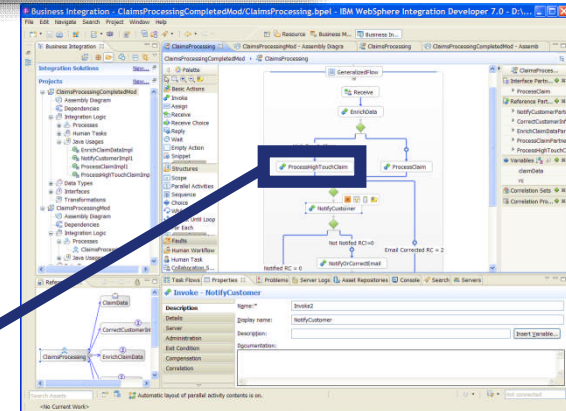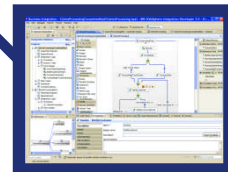
BPM Repository

Business & IT Authors

IT Developers

Business Author requires a back-end integration for an Expense Reporting process that he is building

Integration Developer is building a straight-through Credit Check process that has a business exception path requiring human interaction

Process Designer and CICS COBOL Integration Basic Process Flow

Connect to CICS and IMS z/OS Services

Designers will able to interact with applications on zOS using familiar COBOL data structures

(1) Select Adapter
(2) Specify interaction info
(3) Specify Service name

Leverage Native z/OS Data Structures

COBOL copybook

New Business Object From External Data

Provide Details for the Mapping

Specify the mapping details for the business objects you want to create.

Choose mapping: COBOL to Business Object

COBOL file:* D:\Ddrive\eroot\taderc99.ccp   Browse...

New Business Object From External Data

Select an Input Source

Select how the external data is described. This description will be used to create the business objects.

Filter: type filter text

Input sources:

- Adapters
- Languages
  - C
  - C (CICS Channel)
  - C (Multiple Output)
  - COBOL
  - COBOL (CICS Channel)
  - COBOL (Multiple Output)
  - PL/I
  - PL/I (CICS Channel)
  - PL/I (Multiple Output)

Language support
Support C, COBOL, PL/1, Channel Records, Multiple output
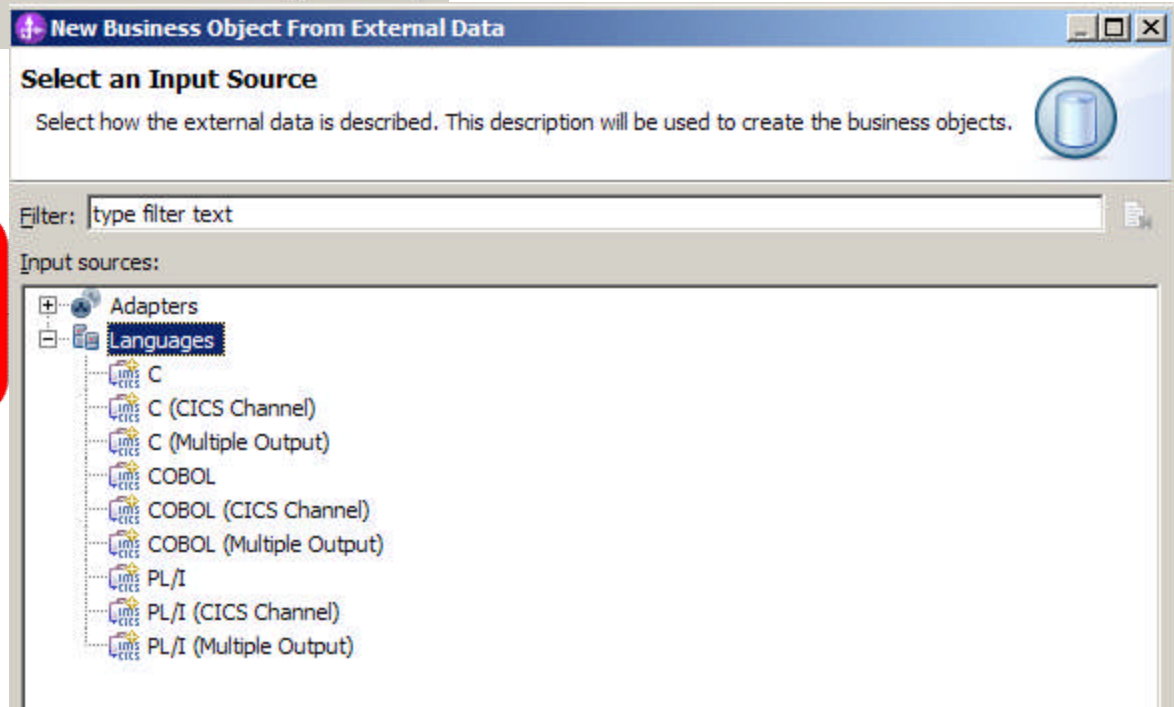
Leverage mission-critical applications and processes

- **Process integrity** delivers reliability, consistency, scalability, and predictability

- Enables **consistent transaction processing** in an SOA environment

- Link, extend, and improve **process flow** through existing COBOL applications

- Tight integration with CICS, IMS, SAP – leveraging z/OS resource recovery services and two-phase commit for **transaction coordination on z/OS**
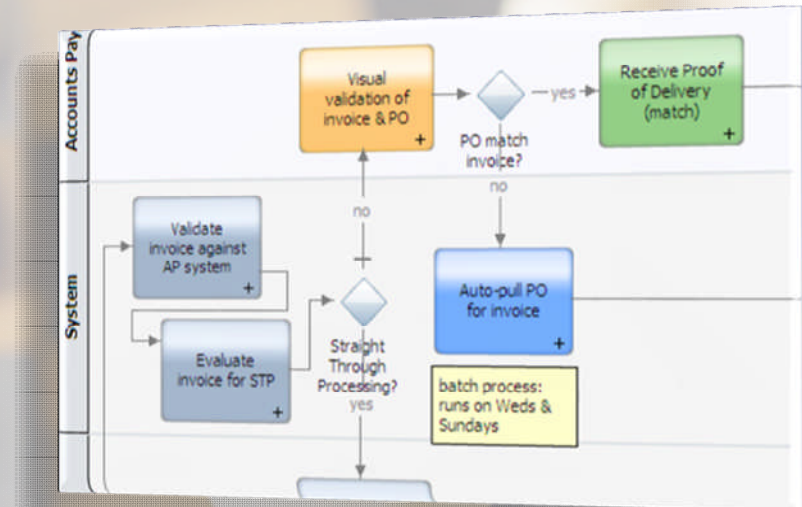
Leverage co-location on z/OS of processes that frequently interact with CICS, IMS, or DB2

- BPM enables *automated and efficient* process implementations

- *Long-running processes* with DB2 z/OS

- *Straight-thru* (integration-centric) processes with CICS, IMS, DB2

- *Web-based interface* for business users
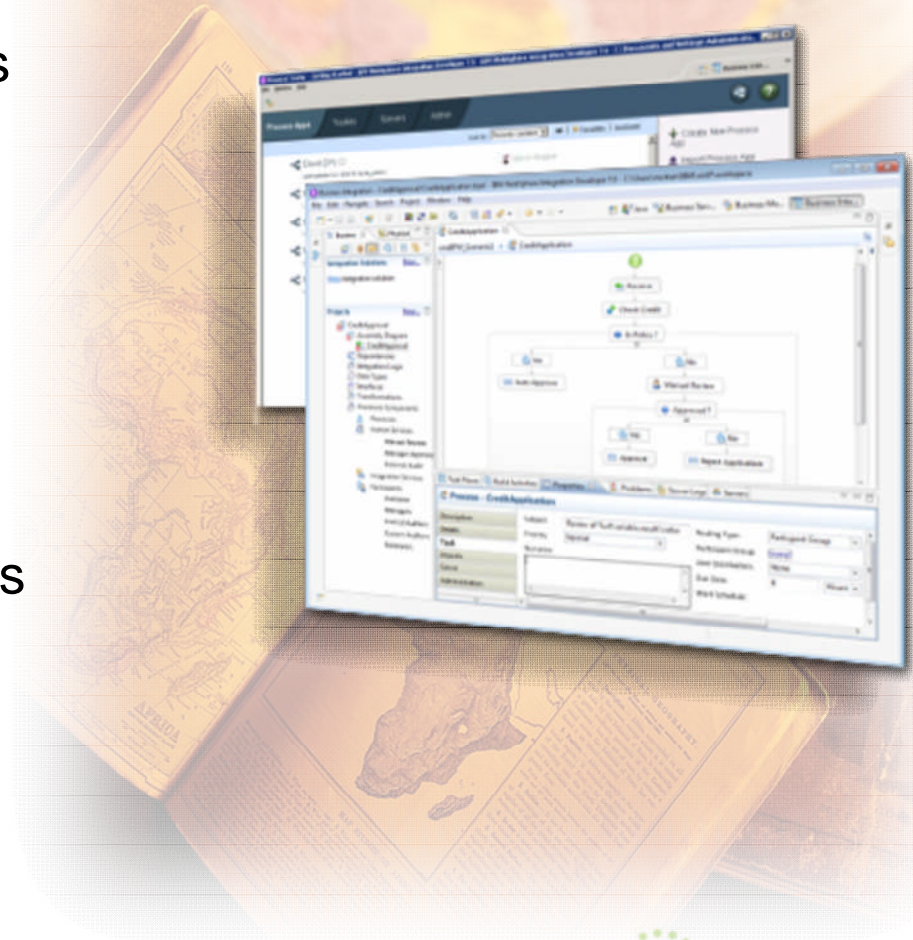
Adapt dynamically to change across processes and business rules

- ***Robust support for process owners*** to easily manage task assignments

- Respond to ***changing business needs*** with greater flexibility

- ***Dynamically assign roles*** based on runtime context

- Support for ***ad-hoc human collaboration*** based on personnel assignments
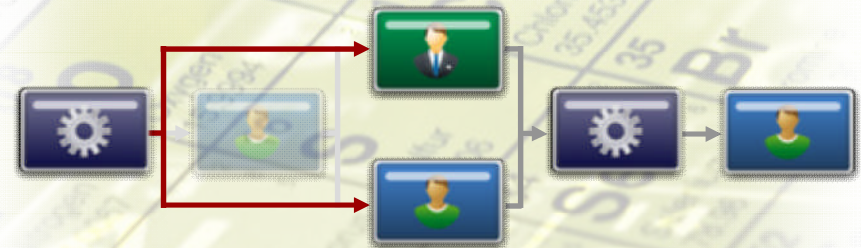
Skip steps within a process instance
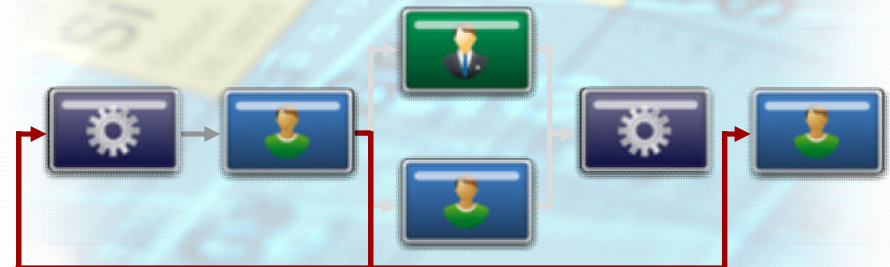
Jump forward and backwards within a process instance

Unify through powerfully simple process improvement and seamless deployment across platforms

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

- *Unified BPM platform* designed to enable business-led change

- Process Center and asset repository provides *maximum collaboration and governance* required to scale up your BPM program

Leverage performance, robustness, and scalability

- *Quicker ROI* through independent deployment of processes and decision services

- *Different roles* can drive implementations of process and/or rules management

- *WebSphere for System Z deployment* leverages existing investment in zEnterprise

- Process and decision changes can have *separate lifecycles and governance requirements*

Continuous Price Performance Improvements of BPM on z/OS

Cost of 10K Transactions

Legend: ■ WPS ■ MLC ■ Specialty Processors ■ General Purpose Processors

BEFORE: $8.82

$3.77
$1.79
$3.19

-39%

$5.36

$1.32
$0.29
$0.81
$2.86

-41%

$3.15

$1.32
$0.29
$0.81
$0.64

-30%

NOW: $2.18

$0.94
$0.23
$0.58
$0.42

WPS v7 and DB2 on z10 using General Purpose Engines Only

zAAP/zIIP Specialty Engines

Getting Started Sub-capacity Pricing

New z196 HW + Integrated Workload Pricing
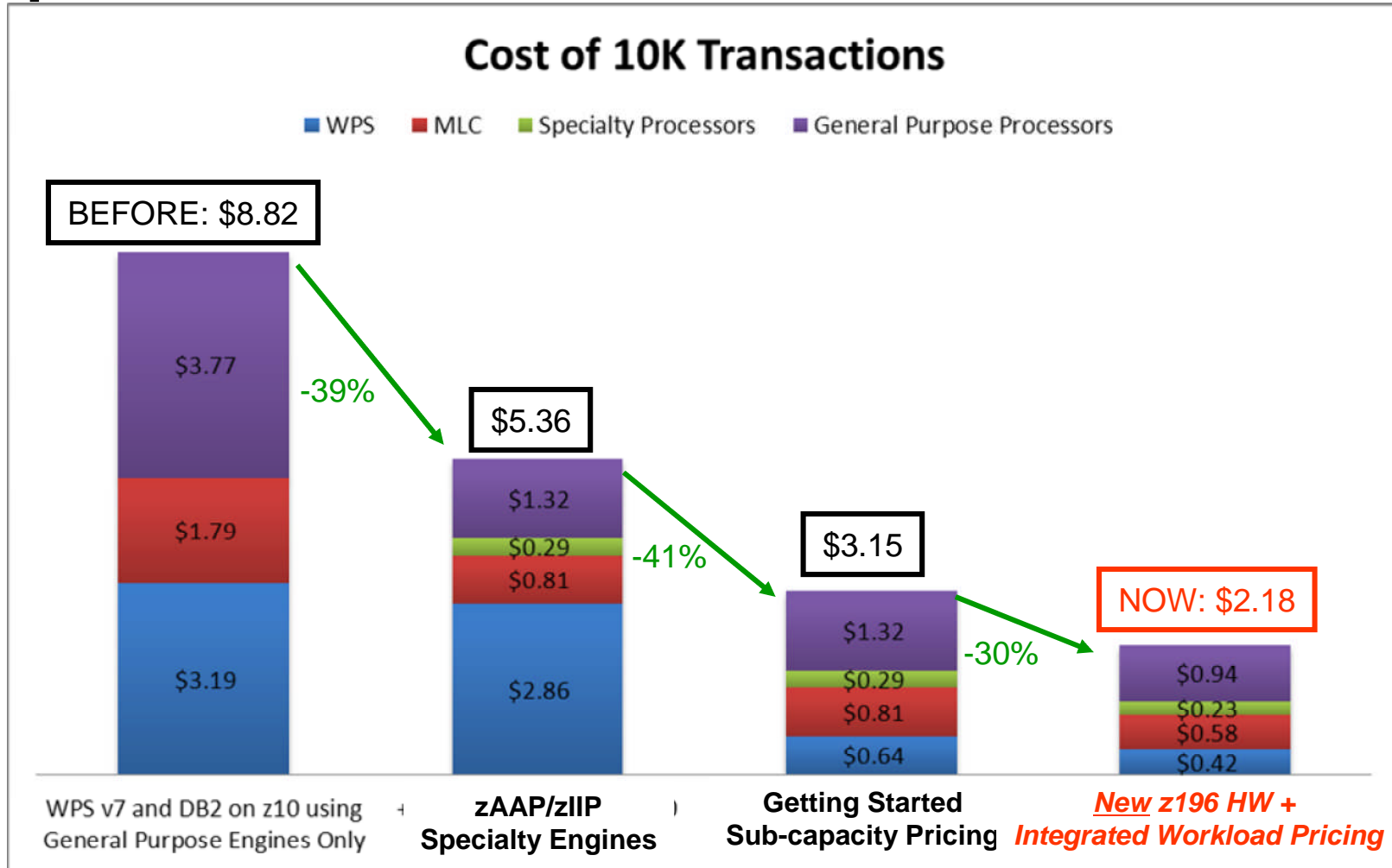
Specialty Processors Reduce Costs
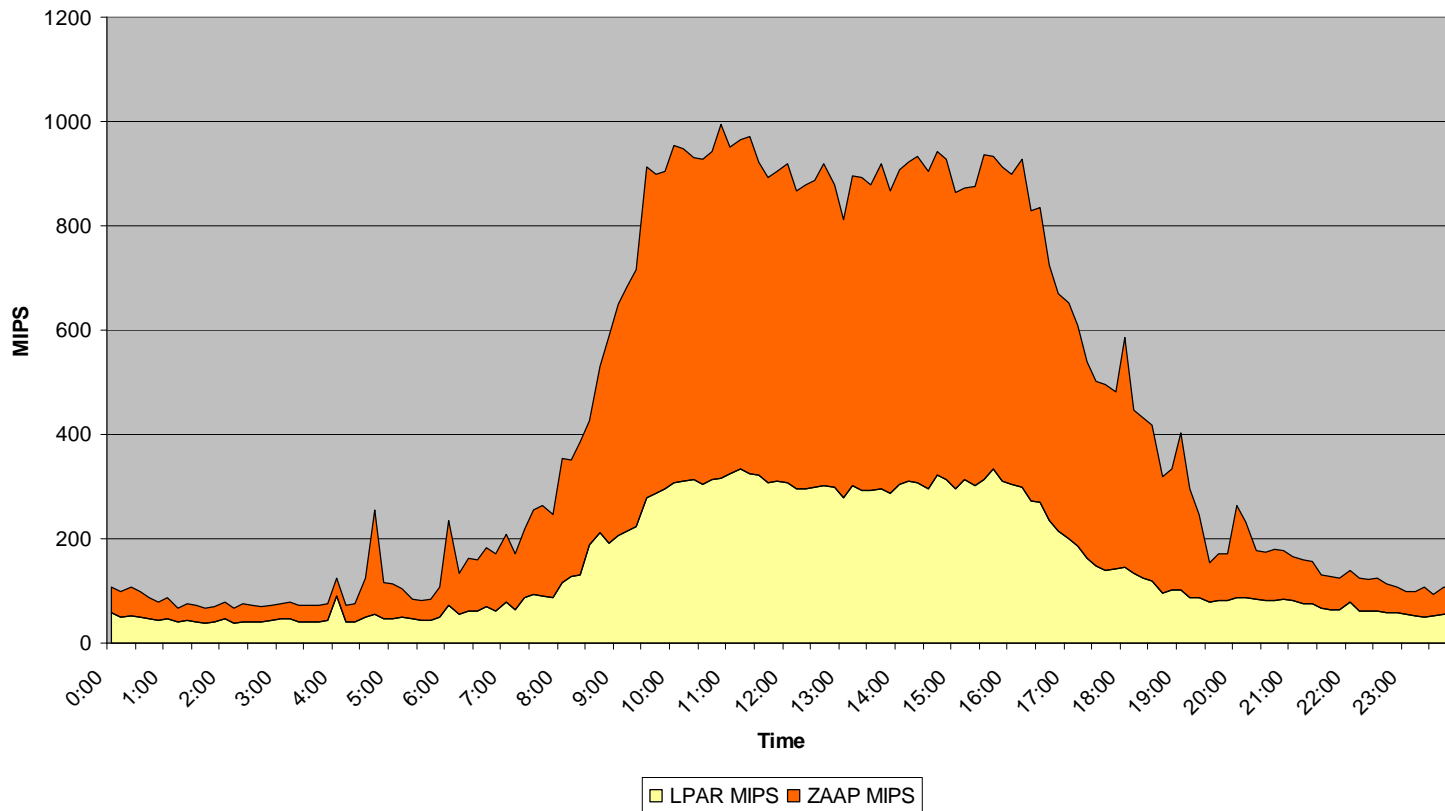
"Costs reduced both by usage of zAAPs (66% offload achieved) and running Java on z10 (approx 8% reduction in CPU workload)"

Source: Large AP Bank

Enhance BPM agility with Decision Management

- Rapidly deploy changes across processes

- Re-use decision assets

- Maximize automation

- Improve decision governance

- Extend rule authoring to business users

User Tools

Rule Repository

Execution Server

Transparent Decision Service
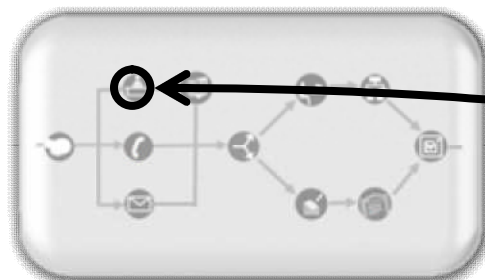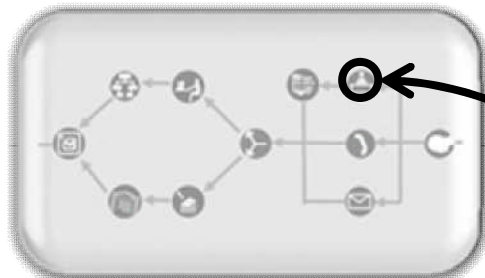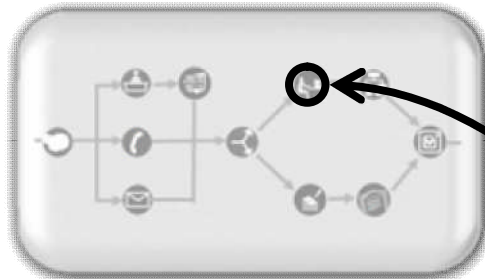
Orchestrated Processes

Automated Business Decisions

What is Decision Management?

Decision Management is a business discipline, supported by operational and analytics software, that enables organizations to automate, optimize and govern repeatable business decisions to improve the value of customer, partner and internal interactions.

Business Processes, Applications & Solutions

Decision Services

Operational Decision Management

Analytical Decision Management

- Policy
- Regulation
- Best Practices
- Know-how

Business Rules & Events

Predictive Analytics & Optimization

- Risk
- Clustering
- Segmentation
- Propensity

Scenario Analysis & Simulation

Internal & External Data

SHARE in Atlanta 2012
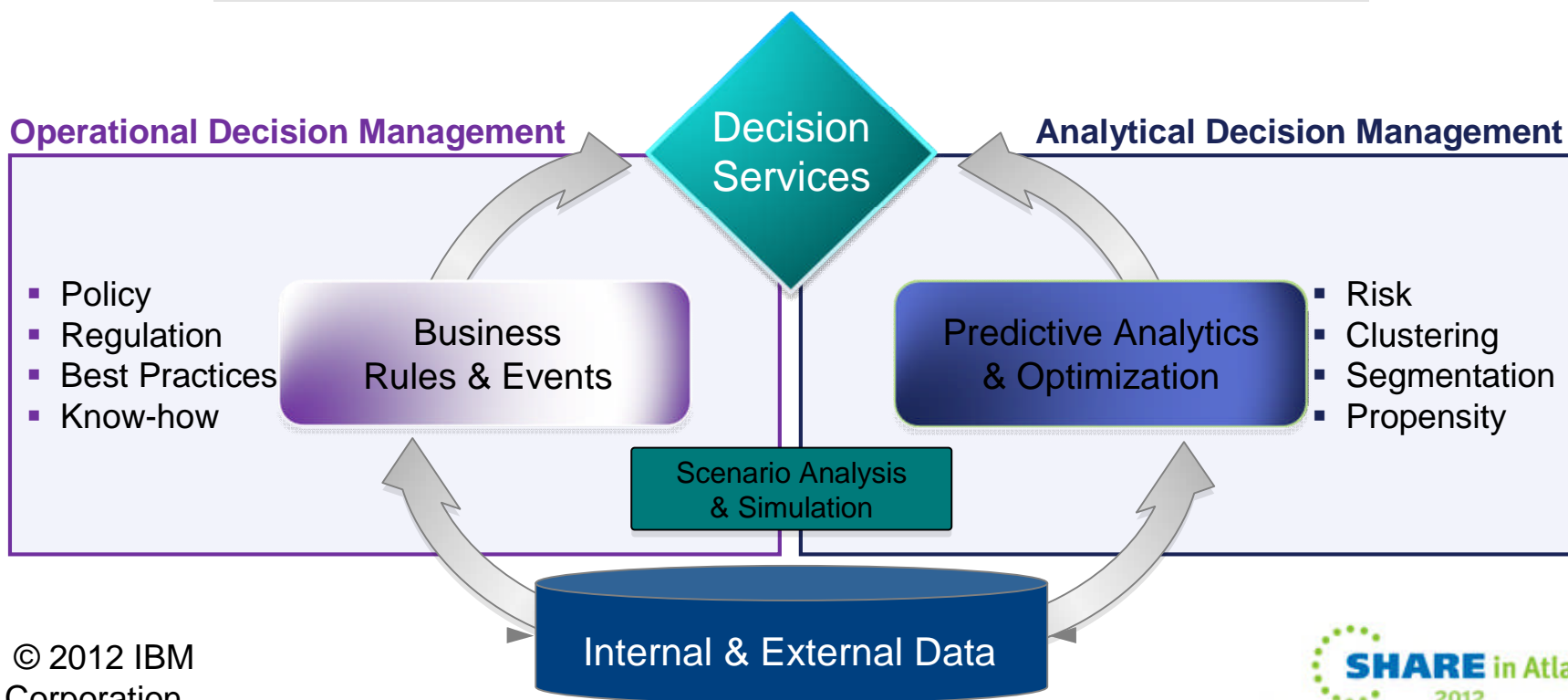
Business Rules and Business Events

Business Rules

Primarily implements a decision model – given a snapshot view of data, determines best course of action at a specific point in a process or application

Main purpose is to automate a decision based on a combination of factors (business policies, regs, best practices)

If the Passenger is a gold frequent traveler and flight distance is more than 4000 miles and the flight destination is in Europe or Asia Then Add 10,000 points to the fidelity card of the Passenger

Business Events

Primarily implements a time-based pattern detection model – correlating events as data is in motion

Main purpose is to determine what of interest is transpiring and coordinate one or more responses by other systems or generate alerts to people

If more than 2 customer withdraws in an ATM are done in the same day and the 2 ATMs are from 2 foreign countries Then Investigate possible fraud Reduce cash redraw max amount to 100$

Gartner characterizes Rules and Complex Event systems as complementary notions. The combination being required to implement intelligent decision management programs.

Business Decisions stated in business language

COBOL Copybook	Rule Vocabulary	Business Rule Language
Developer	IT / Business	Rule Developer / Business User

```
01  TRANSACTION-MSTR-FLE.
      03  TRNS-CNBR-ASGND      PIC 9(10).
      03  TRNS-CACCT-CD        PIC 9(5).
      03  TRNS-AGE             PIC 999.
      03  TRNS-ST              PIC XX.
      03  CUST-STATUS          PIC XX.
      03  CUST-AVAIL-CRSC      PIC 9999.
      03  CUST-ASK-AMT         PIC 9(8)V99.
      03  TRNS-ADDR.
          05  LINE1            PIC X(25)
          05  LINE2            PIC X(25).
          05  LINE3            PIC X(25).
      03  CUST-INFO OCCURS 5 TIMES.
          05  MSG-LINE1        PIC X(30).
          05  MSG-LINE2        PIC X(30).
```

"customer"

- the name of ...
- the birthday of ...
- the number of accidents of   ...
- the ... is a high risk driver

"client"

- le nom du ...
- l'anniversaire du ...
- Le nombre d'accidents du ...
- le ... est un conducteur à risque
- …

Rule: High risk driver

if

the birthday of **customer** is after **12/9/1975** and
the number of accidents of **customer** is at least **3**

then
set the **customer** as a **high risk driver**

Règle: Conducteur à risque

si

L'anniversaire du **client** est après le **12/9/1975** et
le nombre d'accident du **client** est au moins **3**

alors
Classer le **client** comme **conducteur à risque**

- Customizable vocabulary specific to your organization, industry, application (etc.)
- Supports language localization
- Integrates with external data sources (e.g. list of countries)
- Drop down lists for customized domain data
- Templates facilitate new rule and event creation
- Empower business experts to manage and validate decision logic, eliminating delays in business

Why modernize with Decision Management on z/OS

Modernization issues to resolve

1. Consolidation of COBOL application portfolio

2. Be able to react to changes requested by business in days, not months.

3. Sharing rules across platforms
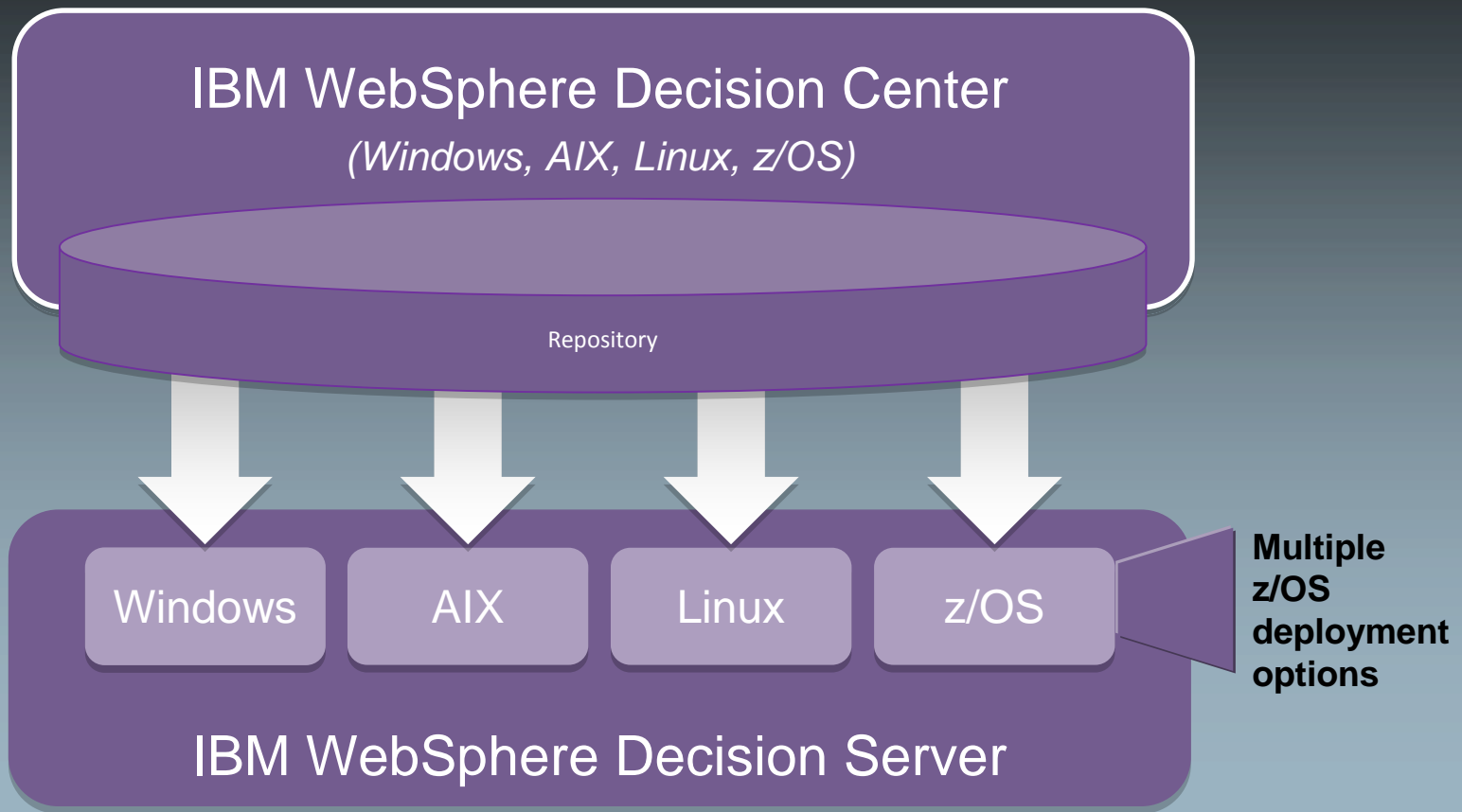
4. Running parallel

Benefits of a BRMS

✓ **Cost savings**
  – More effective application development & maintenance with less business risk
  – Consolidation/restructure of existing applications, saving hardware & resources
  – Rule testing and simulation to ensure accuracy of changes prior to deployment which will minimize re-work

✓ **Changing ratio of source inventory to development skills**
  – Forcing need for formal processes with an on line electronic repository

✓ **Improved agility**
  – Decouple development and business rule lifecycles
  – New rules to enforce new business policies to multiple applications

✓ **Incremental rule modernization: applying technology and process to gain increased "decision making" agility**
  – Gradually pull out rules from existing applications - does not require a "big bang" change
  – Rewrite business rules in natural language

2012

IBM WebSphere Operational Decision Management

Leverage a wide range of platforms to meet the varying needs of enterprise architectures

IBM WebSphere Decision Center
(Windows, AIX, Linux, z/OS)

Repository

| Windows | AIX | Linux | z/OS |

Multiple z/OS deployment options

IBM WebSphere Decision Server

Decision Server for z/OS – Rule Components

- Decisions can be invoked from existing CICS and batch applications

- Runtime support for COBOL data types

- Flexible runtime deployment to fit any System z environment:
  - Deployed on WebSphere Application Server for z/OS
  - Deployed standalone to z/OS
  - Deployed in CICS TS 4.x JVMServer environment

WODS for z/OS

	zRule Execution Server	
zRule Execution Server (on CICS)	zEvents Execution	
CICS TS v4.x	WebSphere Application Server for z/OS*	zRule Execution Server (Standalone)

z/OS

*OEM
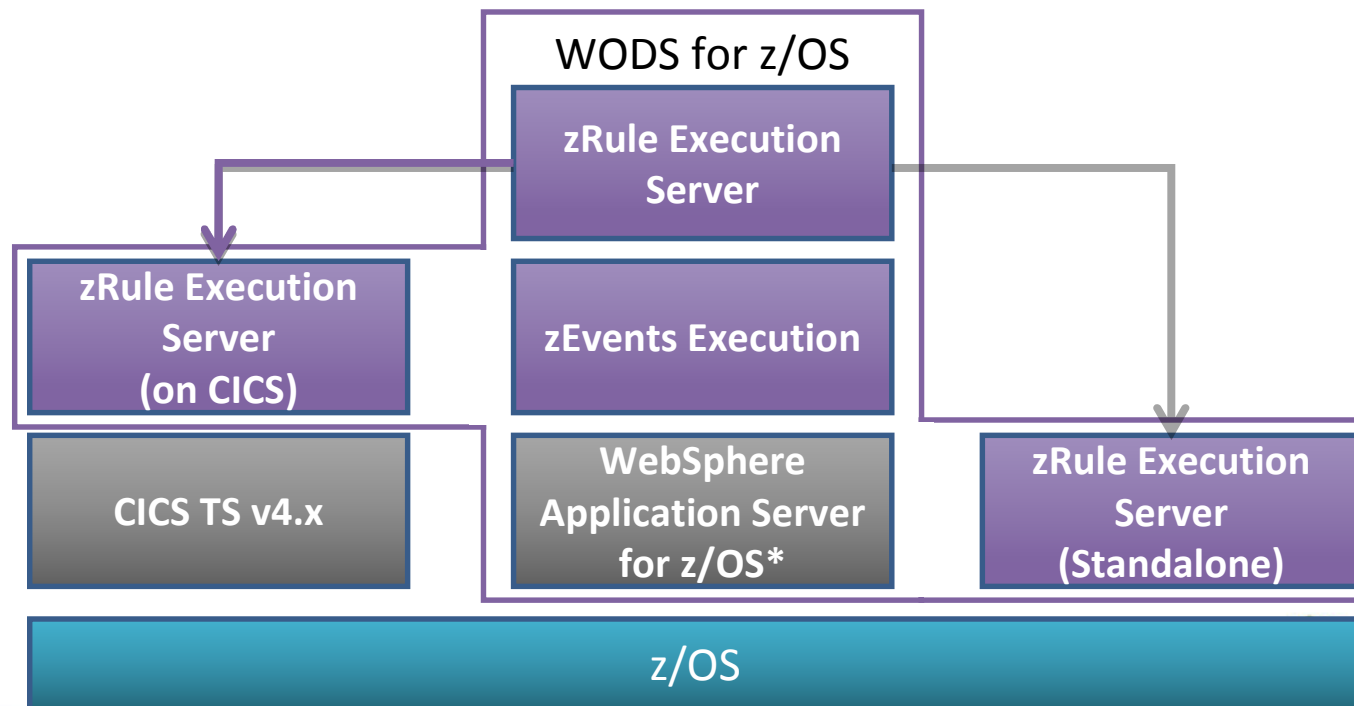
Rule Invocation Options for System z Applications
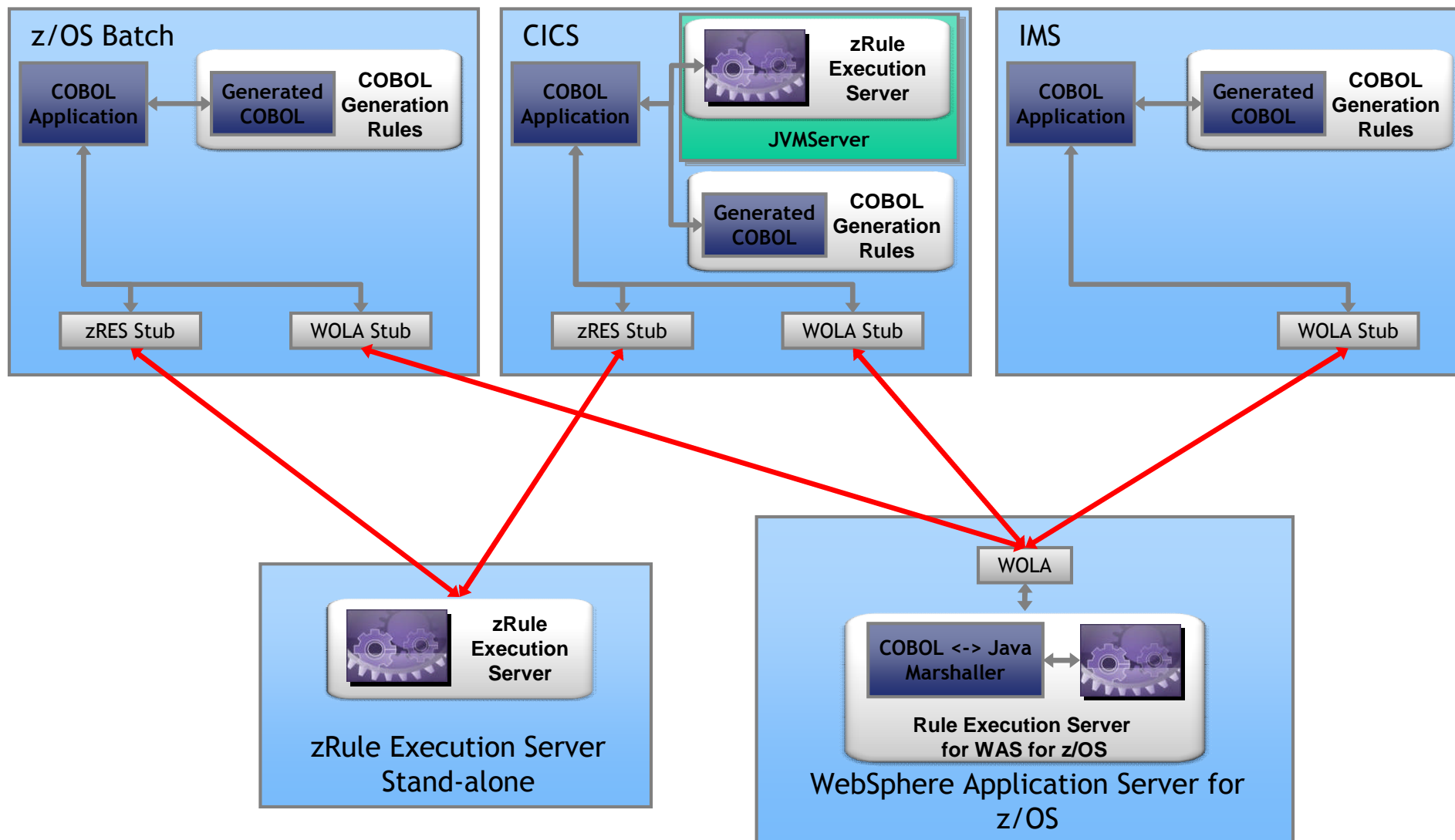
Rule Execution Server for WAS on z/OS
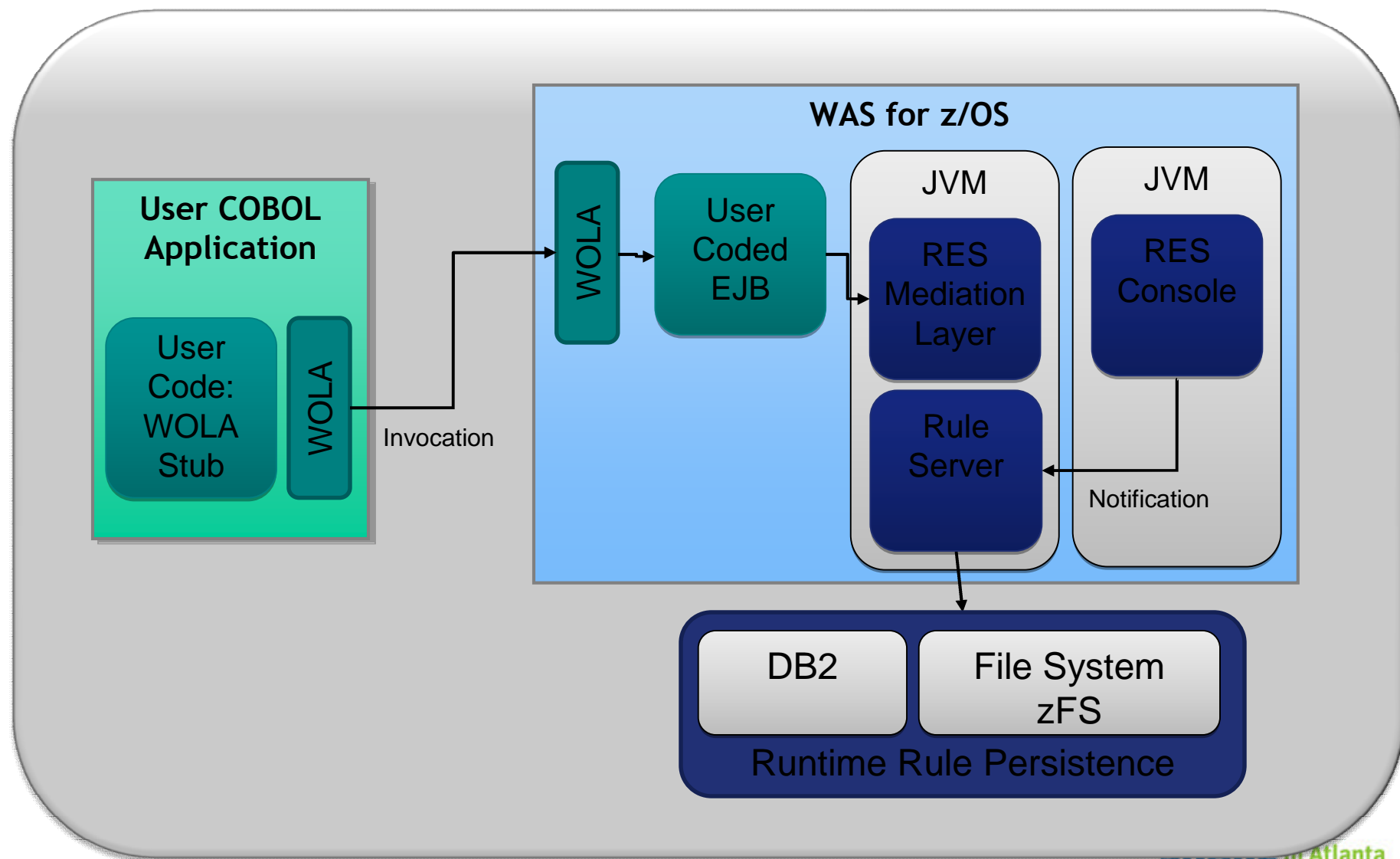
zRule Execution Server for z/OS – Stand alone
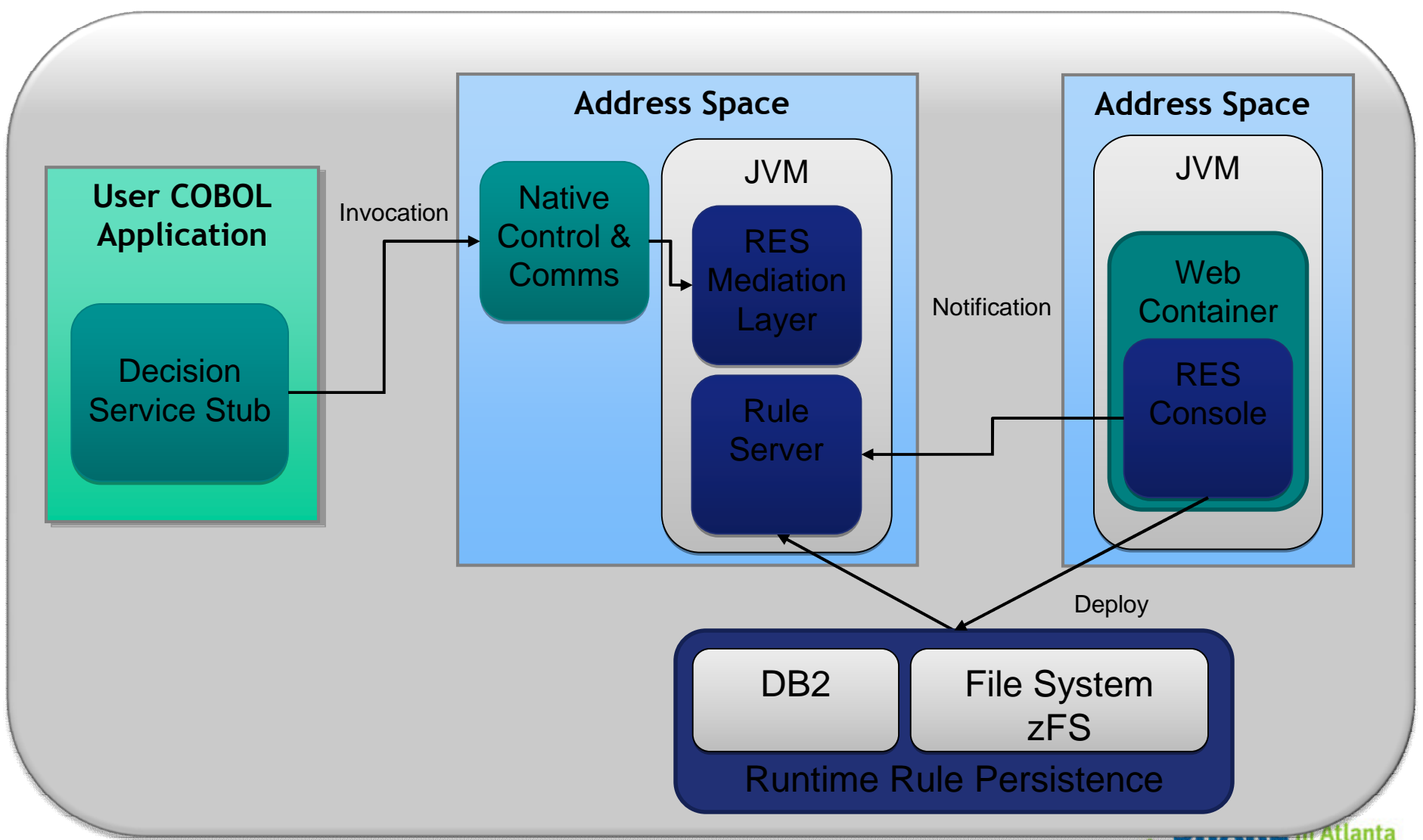
zRule Execution Server for z/OS – CICS TS 4.x
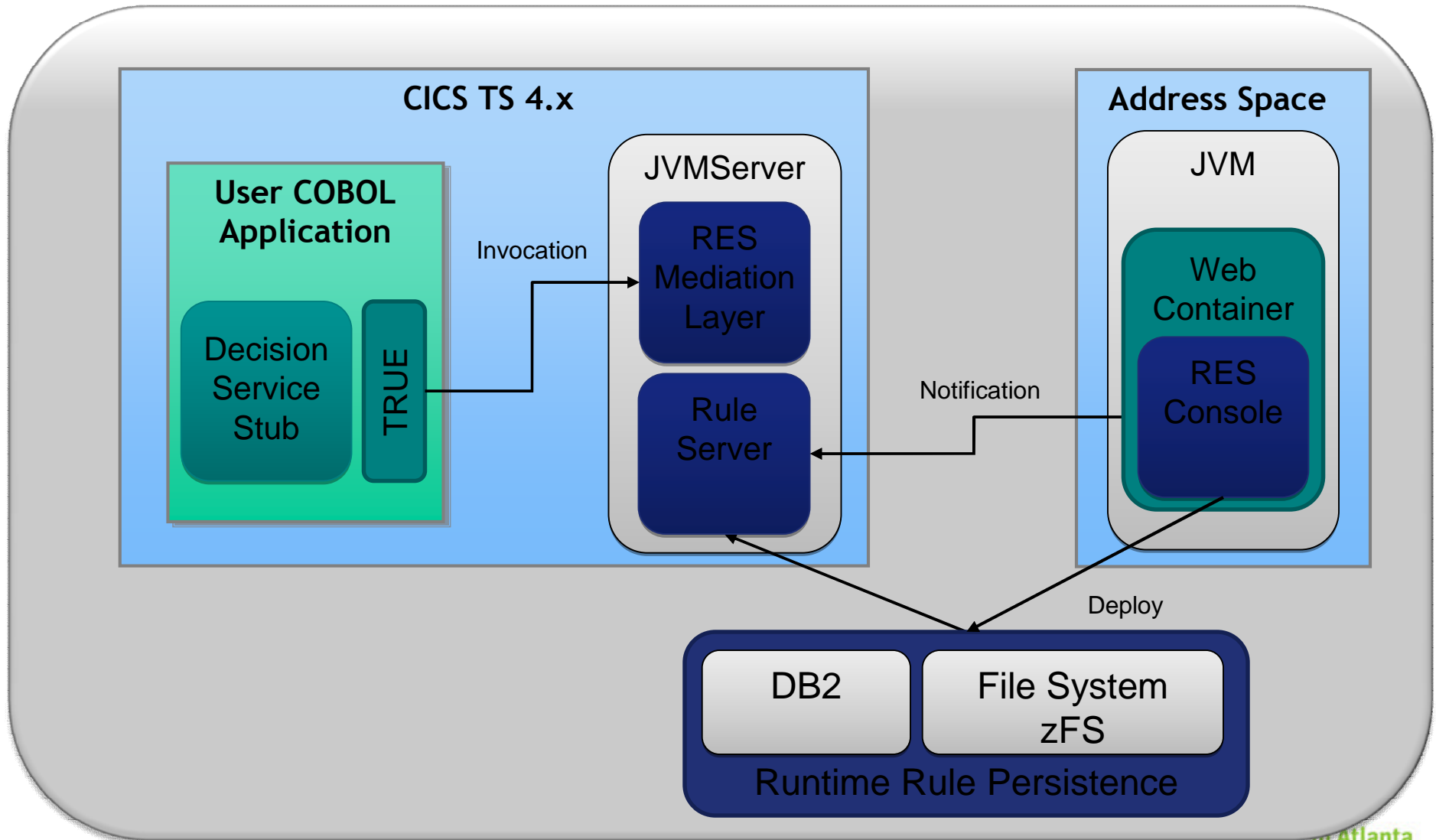
Business event emission from CICS Transaction Server to WODM

Event Sources	Event Emission	Situation Detection	Business Action

CICS TS v4.x	WODM v7.5

CICS Business Logic

Unmodified

Events captured by CICS runtime

CICS Events runtime support

- Transform into an event format (Event Runtime XML)
- Add application context

Events

WODM Event Runtime
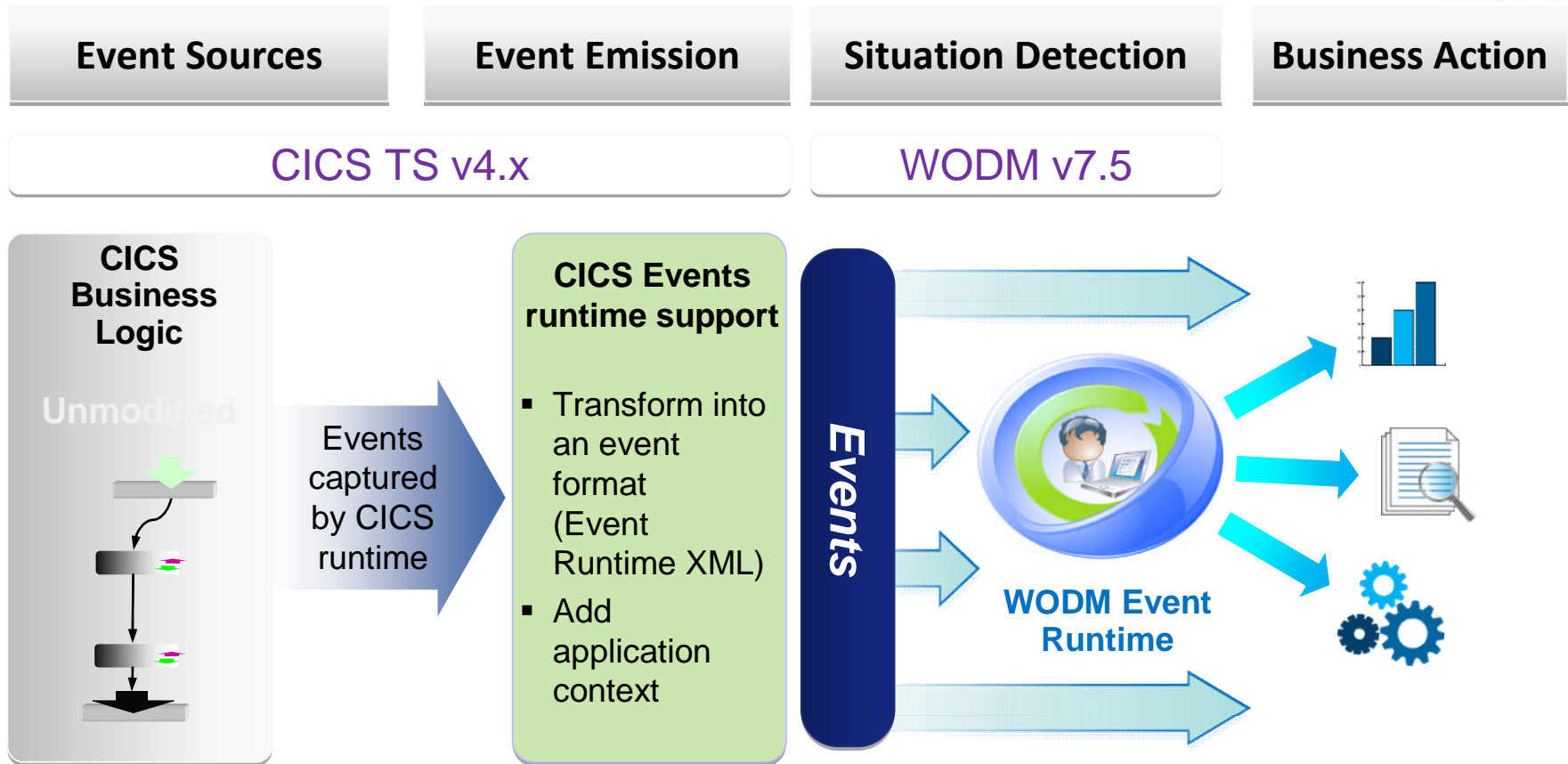
CICS Events with WODM 7.5 help you to
- Observe business applications
- Recognize interesting or suspicious situations
- Drive new processing

Deployment options for WODM on System z

z Blade eXtension (zBX)

System z 196 (or 114)

Labels within the diagram:

Decision Server / *Decision Center* / *WebSphere* / *AIX, Linux or Windows* / **Power or Intel Blade**

Decision Server / *Decision Center* / *WebSphere* / *z/Linux* / *z/VM*

Decision Server zRES for z/OS / *Decision Server* RES for WAS on zOS / *Decision Center* / *WebSphere* / *z/OS* / **Sysplex, LPAR, etc.**

| **Security** | Safe | Safer | Safest |
| **Application/Data Access** | Fast | Faster | Fastest |

Review of a Business Rule Maturity Model

Source: The Lustratus BRMS Maturity Model

Rules-based Enterprise
- Full enterprise operations based on cross-domain shared rule sets
- Rules-based compliance management, audit, governance

Business Driven
- Business units create and manage rules
- Optionally, IT still controls deployment

Direct Business Interaction
- IT builds rules, but business units can edit them as needed

Development / Business Collaboration
- IT shares and discusses rules with business units

Development Efficiency
- IT drives rules usage, to make maintenance quicker and easier