

WebSphere Operational Decision Management System z

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Architecture Lessons and Best Practices for Achieving Operational Agility on z/OS

- Business executives demand technology tools and technology solutions that will maximize the organization's agility and flexibility in order to respond quickly and effectively to growth opportunities, rising customer expectations and volatile market forces.
- The combination of Business Event Processing and Business Rules Management, drives intelligent, responsive decision automation, that can dramatically increase business process agility.
- Operational Decision management is a business technology/architecture that combines software and human intelligence to improve business decision making for a Smarter Planet.



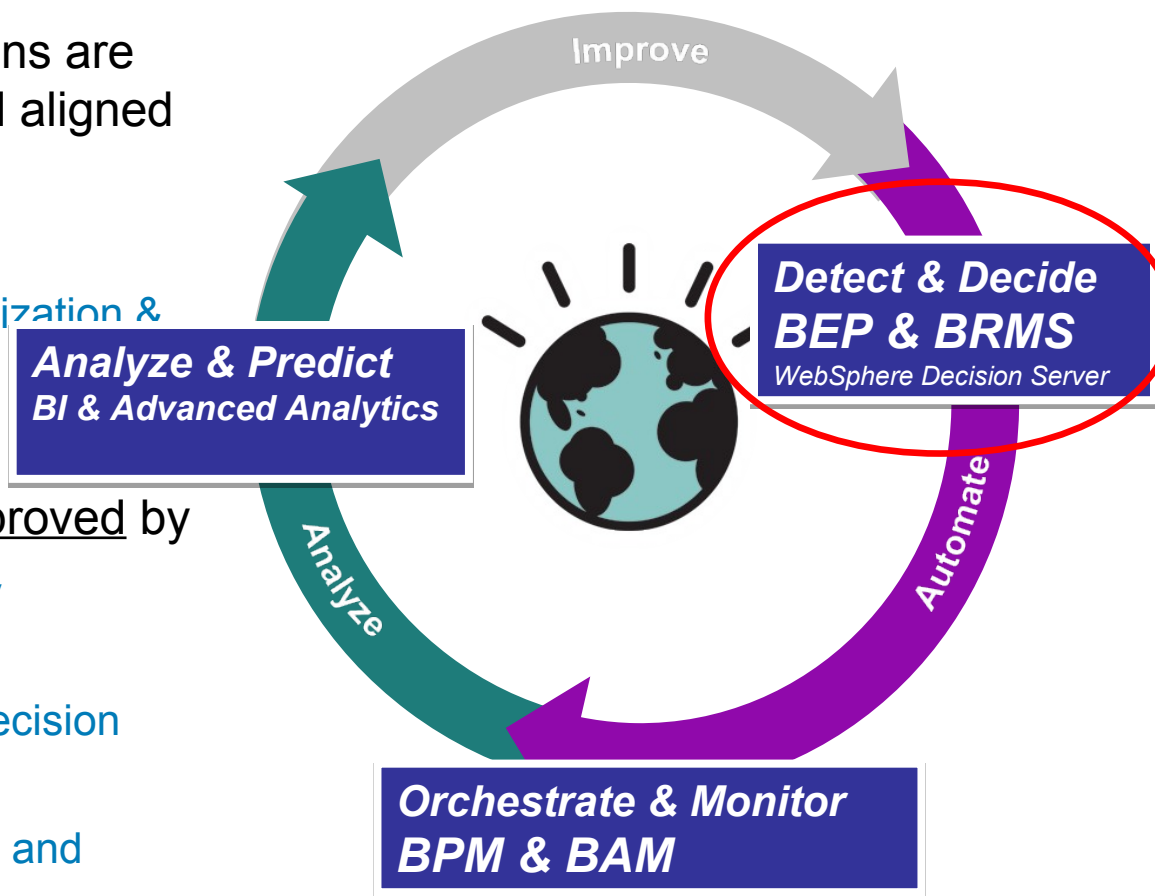
What is Decision Management?

BEP, BRMS, BAM and BI

A discipline that combines LOB and IT expertise to *automate and enhance operational decisions*, aligned with business strategy

- Operational business decisions are externalized, automated, and aligned with business goals using
 - BRMS and BEP
 - Predictive Analytics, Optimization & other technologies

- Automated decisions are improved by
 - Actively monitoring to verify compliance and success
 - Systematically improving decision drivers against goals
 - Actively managing as goals and business conditions evolve



Beta Installation; lessons learned

- Hybrid solution
 - Fit for purpose
 - Diversity of technical skills
- Implement solution using two tracks
 - Infrastructure - installation, configuration, connectivity and customization
 - Rules - modeling, writing, testing, governance and integration
- Architect solution to support the enterprise
 - Service for reuse
 - Simple to industrial strength
 - Modernize to exploit
- Idioms and proverbs
 - Walk before you run
 - Look before you leap
 - Plan before you act

WebSphere Operational Decision Management

Agenda

System z



Solution Overview



1 Rules Authoring



2 Rule Execution Options



3 Rule Management



4 Business Events



Business Decisions Are Critical to Success

The 2011 IBM CIO Study interviewed more than 3000 CIOs worldwide.

72%

of CIOs with mandates to **expand cross-enterprise growth** are leading the charge to “drive **better real-time decisions.**”

75%

of CIOs with mandates to **transform the business** are looking to “drive **better real-time decisions.**”

Why?

- Decisions are at the center of managing risk and improving profitability
- Decisions are essential to ensuring compliance with internal policies and external requirements

Business Decisions are everywhere...but change frequently & are under scrutiny

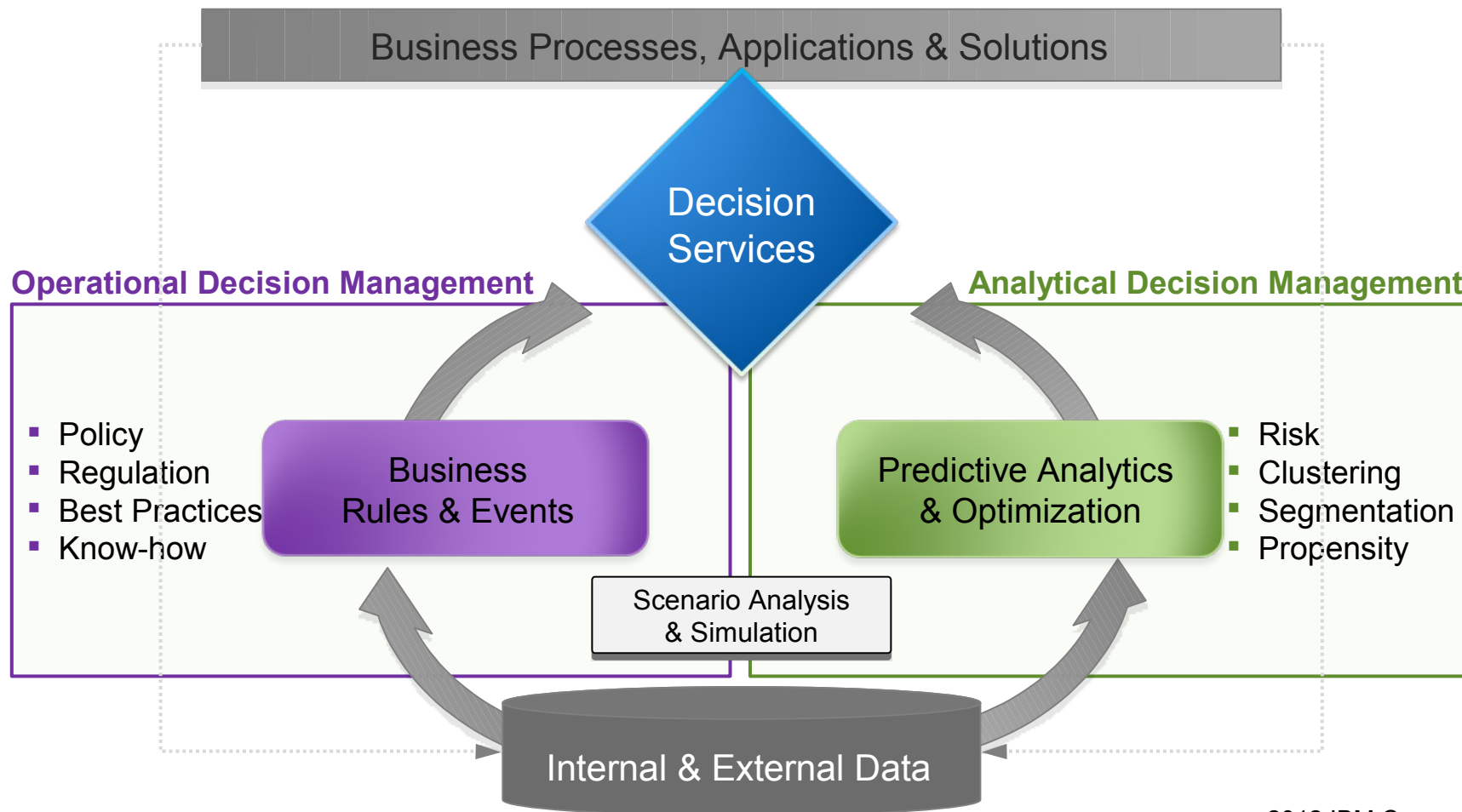
We need to add an eligibility check to meet the requirements of the new regulation.

Let's create a special promotion for our best customers.



What is Decision Management?

Decision Management is a business discipline that enables organizations to automate, optimize and govern repeatable business decisions.



Two Key Entry Points to Decision Management

Operational Decision Management

Focuses on the automation and governance of frequently occurring, repeatable decisions that control critical business systems

Enabled by:

- Business Rule Management with Business Event Processing

Closely integrated with:

- Analytical Decision Management
- Business Process Management

Analytical Decision Management

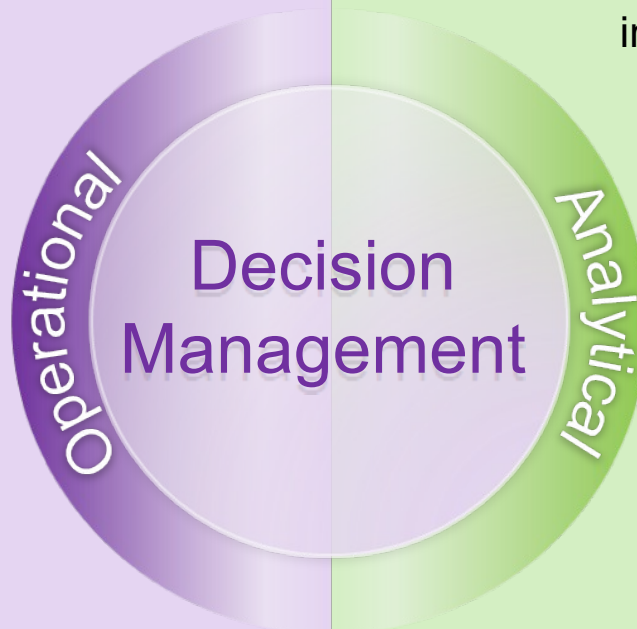
Focuses on the development and deployment of decision services bringing intelligence and predictive insight into repeatable decisions while maximizing outcomes

Enabled by:

- Predictive Analytics with Optimization

Closely integrated with:

- Operational Decision Management
- Business Intelligence



Two Key Entry Points to Decision Management

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Analytical Decision Management

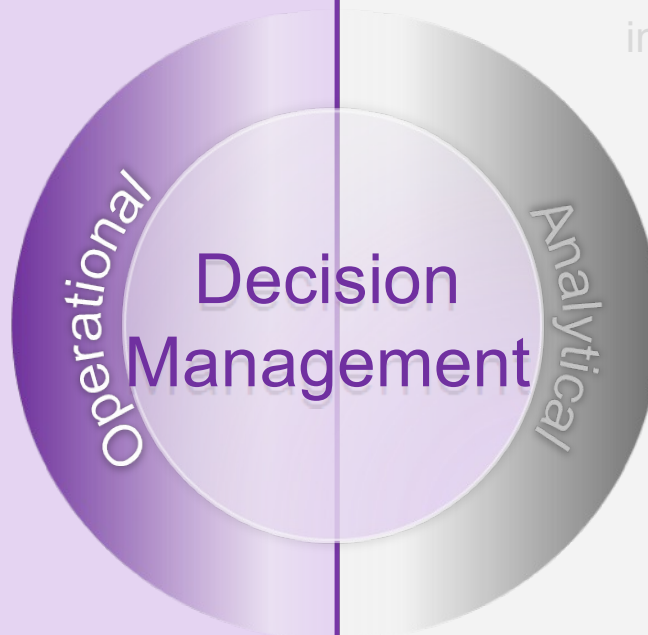
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Enabled by:

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WebSphere Operational Decision Management 7.5

- Combined business rules and events management
 - Common tools/interfaces/repository
 - Aligned concept of operations
- Full decision life cycle management
 - Business – IT alignment and collaboration
 - Unified governance
- Advanced configuration management



What is a Business Rule ?

Business Rule Examples

If the **Passenger** is a **gold frequent traveler**
and the **flight distance** is more than 40000 miles
and the **flight destination** is in Europe or Asia
Then
Add 10.000 points to the fidelity card of the **Passenger**

If the **Vehicle** is not an SUV
and all the following conditions are true

- the **vehicle** is equipped with dual passenger airbag
- the **driver** has a good driver certificate
- the **driver** age is between 30 and 50
- the number of accident the **driver** was responsible for is 0

then
Apply a **5% discount** on the premium coverage price

Business Contexts

Passenger(age, address, gender, frequent traveler level, company)

Vehicle (VIN, Manufacturer, Data, Type, Brand)

Order (Amount, items) **Promotion** (Code, amount, type, article)

Flight (FID, Airline, Depart, Destination, Distance, Date)

Plant (Location; production, Profitability)

Business Decisions

Reasoning with

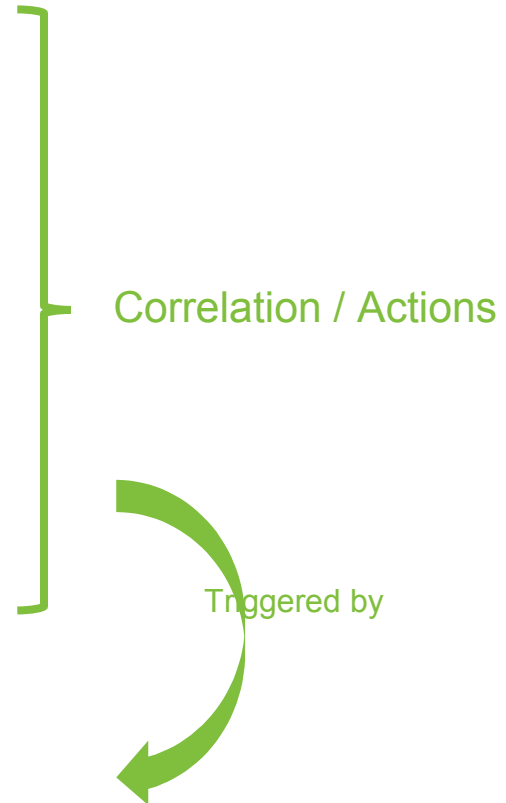


What is a Business Event ?

Event Pattern Examples

*If the **low temperature has been detected** more than **3 times in the last 5 minutes**
 and the number of occurrence the **outside air temperature has increased** in the **past 5 minutes** is zero
 then
 Raise a severity alarm
 Notify the maintenance team
 Reduce activity by 15%*

*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 to cash redraw max amount to 100\$*



Event Triggers

RFID badge detected at the room entrance

Customer withdraw in an ATM

Debts threshold exceeded

Application rejected

Incoming call at the call center

Application form submitted

Low temperature detected



A Quick Example...

Imagine an auto insurance company has 2 basic requirements for a new project:



1. Provide more detailed coverage pricing, in real-time, and to make it dependent on a wide-array of business data.
2. Follow-up on potential customers who have declined a quote from any channel (web, call center, office) a certain number of times, and are not yet customers.

Different Scenarios Have Different Requirements



1. Provide more detailed coverage pricing, in real-time, and to make it dependent on a wide-array of business data.
 - ✓ Adjust logic within an application
 - ✓ Return a fixed-set of information
 - ✓ Must be easy-to-use but have sophisticated governance
2. Follow-up on potential customers who have declined a quote from any channel (web, call center, office) a certain number of times, and are not yet customers.
 - ✓ Adjust logic across multiple applications
 - ✓ Decision criteria is time-based
 - ✓ Dependency on occurrence, and absence, of events

Different Requirements, Different Types of Decisions

1. Provide more detailed coverage pricing, in real-time, and to make it dependent on a wide-array of business data.

- ✓ Adjust logic within an application
- ✓ Return a fixed-set of information
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Business Rules

2. Follow-up on potential customers who have declined a quote from any channel (web, call center, office) a certain number of times, and are not yet customers.

- ✓ Adjust logic across multiple applications
- ✓ Decision criteria is time-based
- ✓ Dependency on occurrence, and absence, of events



Event Rules

What a Rule is ! What an Event is !

if
 the driver has completed drivers ed course
and the number of accidents the driver has been involved is 0
then
 add a 2 % discount to 'Auto Quote Response' , reason: "Good Driver Discount" ;

	Vehicle Value		Deductible	Base Premium
	Lower	Upper		
1			\$250	\$ 36
2	\$ 0	\$ 4,000	\$500	\$ 33
3			\$1000	\$ 23
4			\$250	\$ 43
5	\$ 4,000	\$ 10,000	\$500	\$ 39
6			\$1000	\$ 27
7			\$250	\$ 47
8	\$ 10,000	\$ 30,000	\$500	\$ 41
9			\$1000	\$ 32
10			\$250	\$ 52
11	\$ 30,000	\$ 60,000	\$500	\$ 49
12			\$1000	\$ 40
13			\$250	\$ 62
14	\$ 60,000	\$ 100,000	\$500	\$ 59
15			\$1000	\$ 48

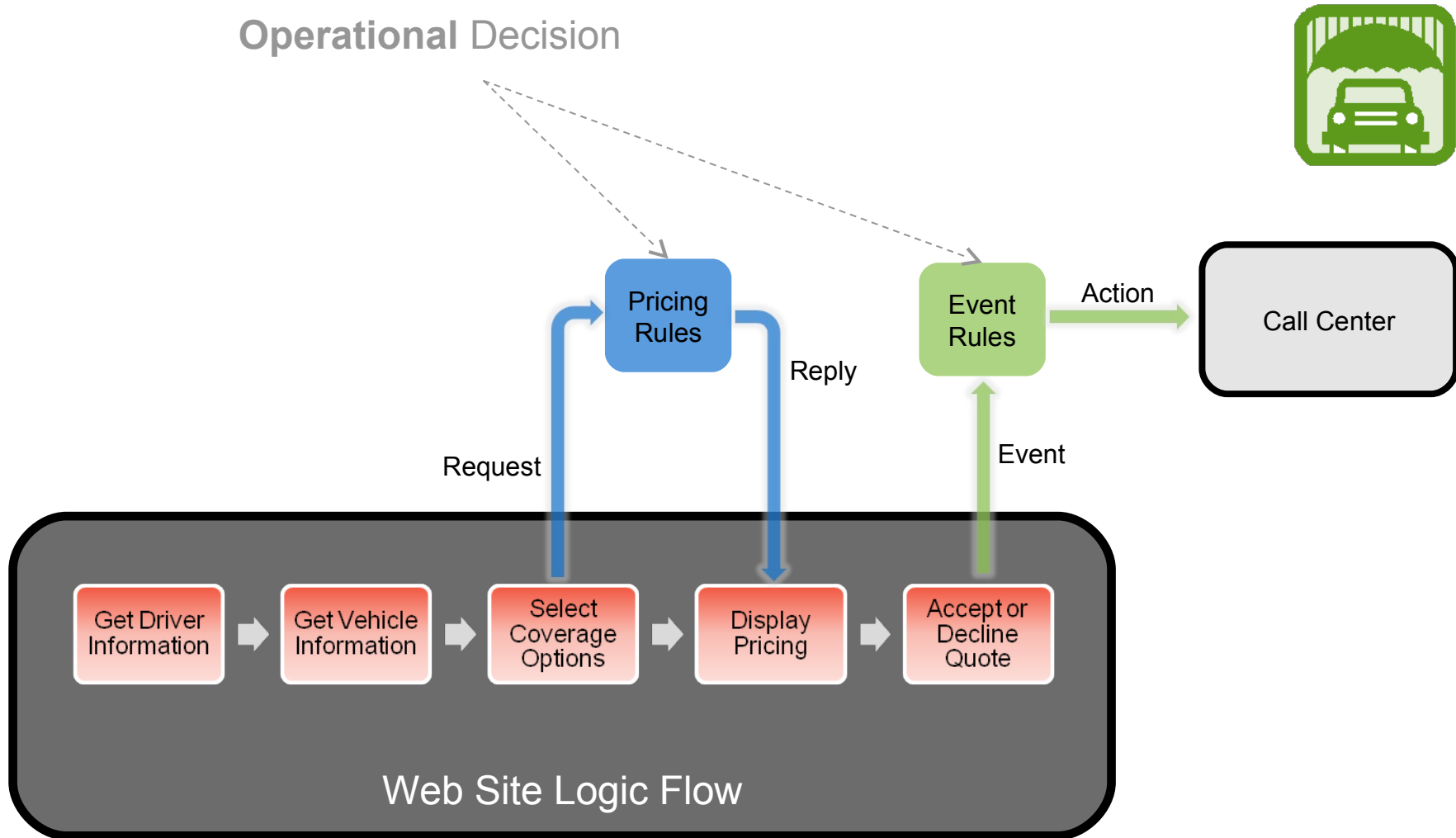


Business Rules

if
 past occurrences of web quote rejected within 1 minute is at least 3
and
 past occurrences of customer accepts web quote within 1 minute is 0
then
 follow up quote request ;
 refer customer to call center ;

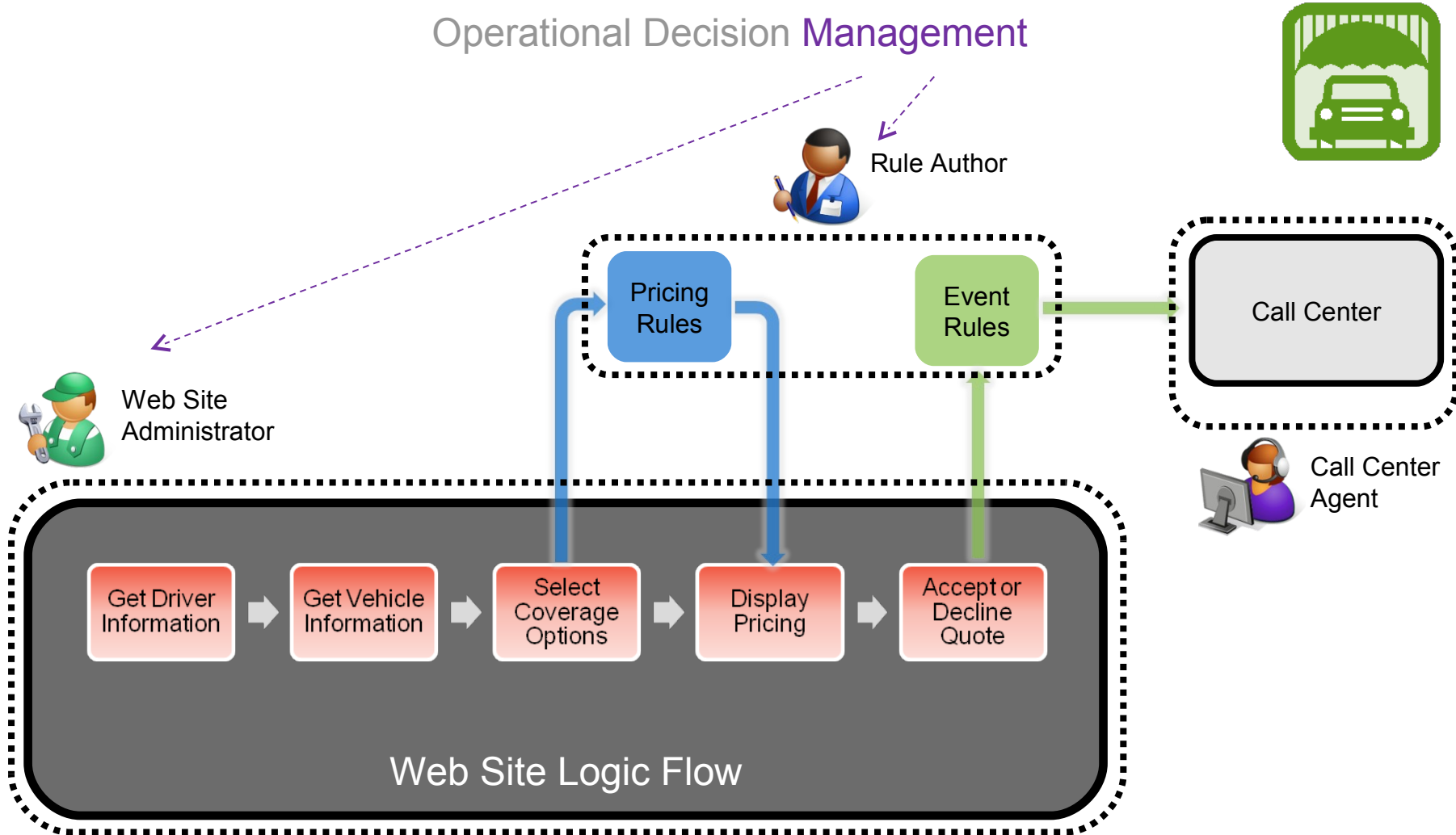
Event Rule

How Decisions Can Be Different

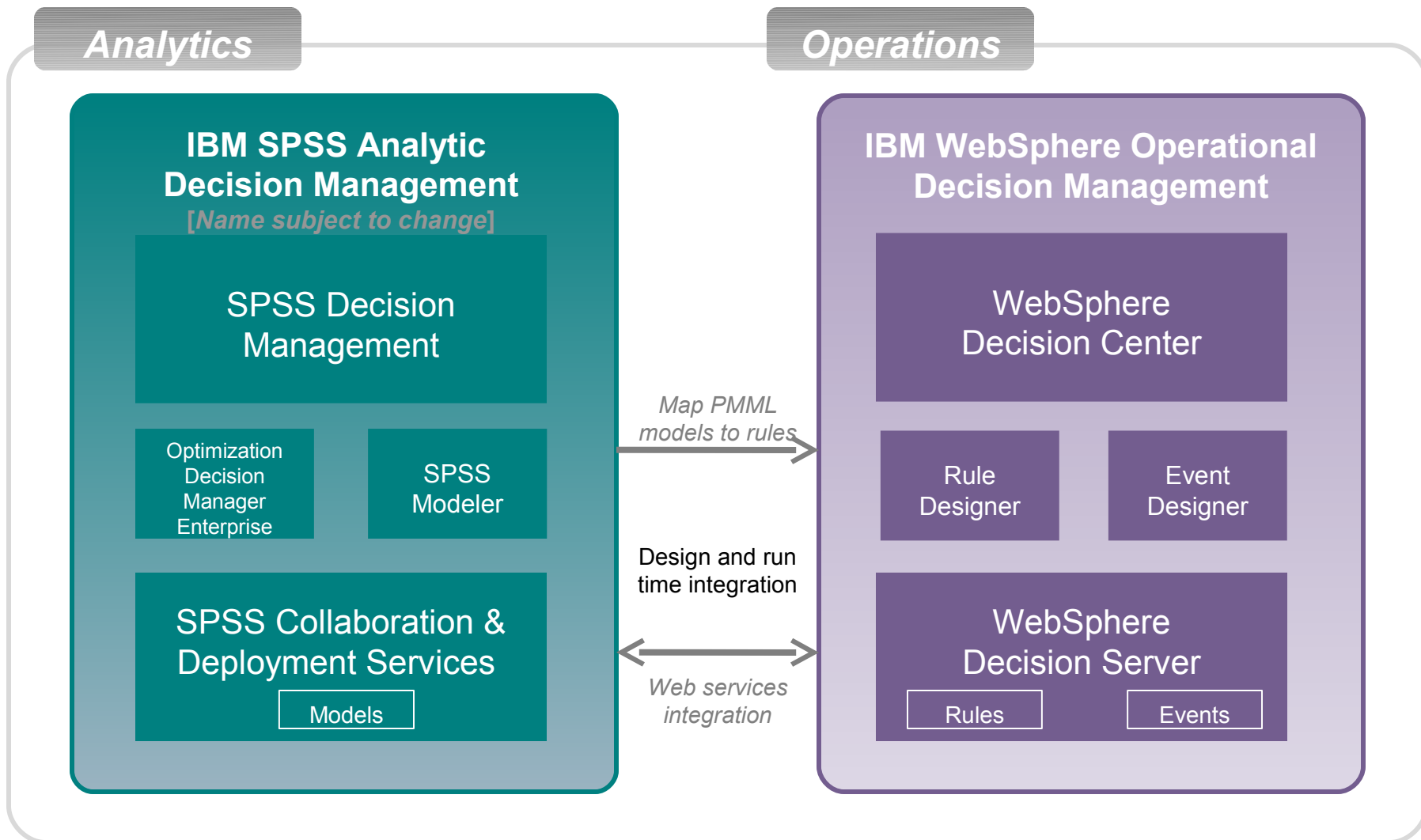


Ownership is Also Important

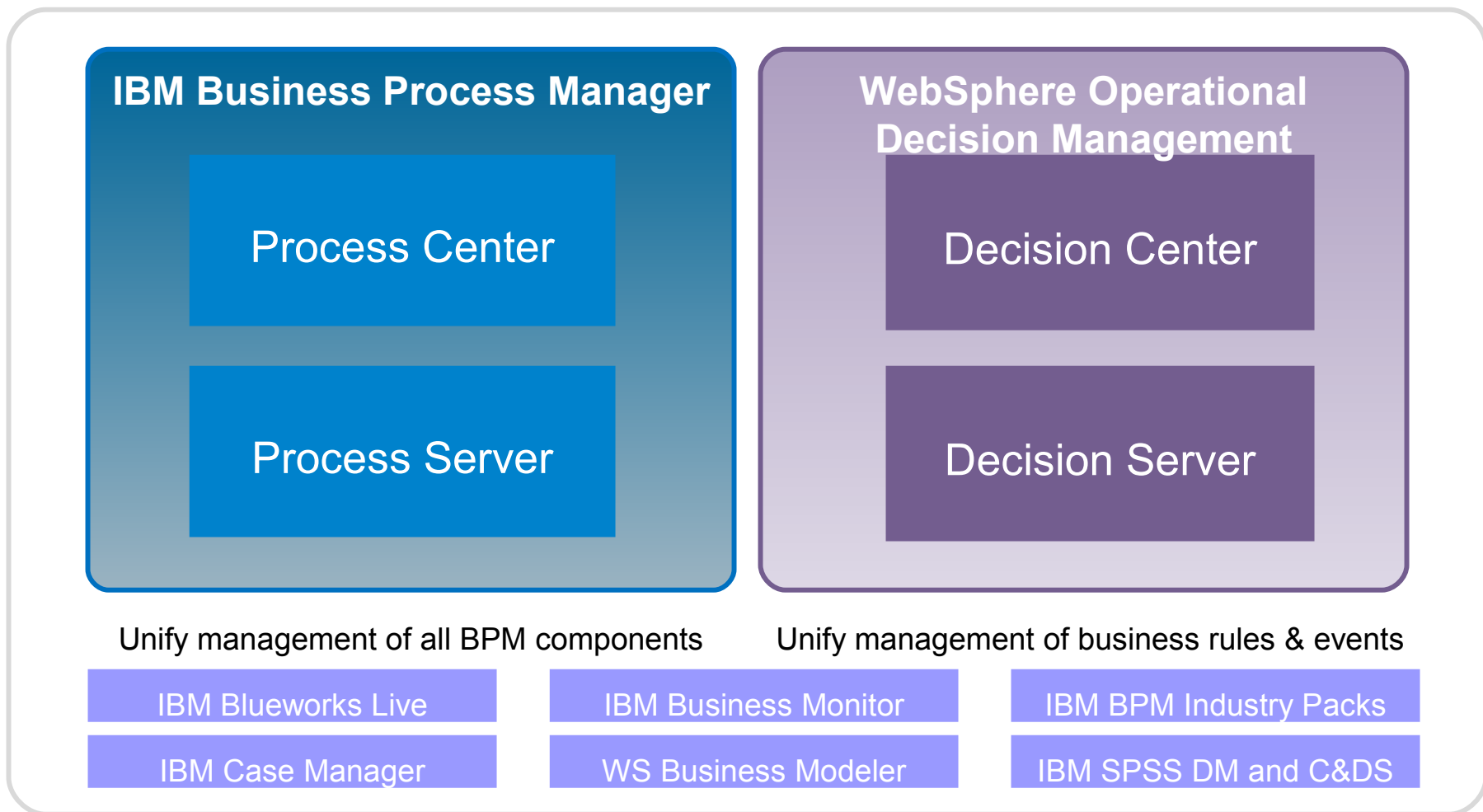
Operational Decision Management



IBM Solutions for Decision Management

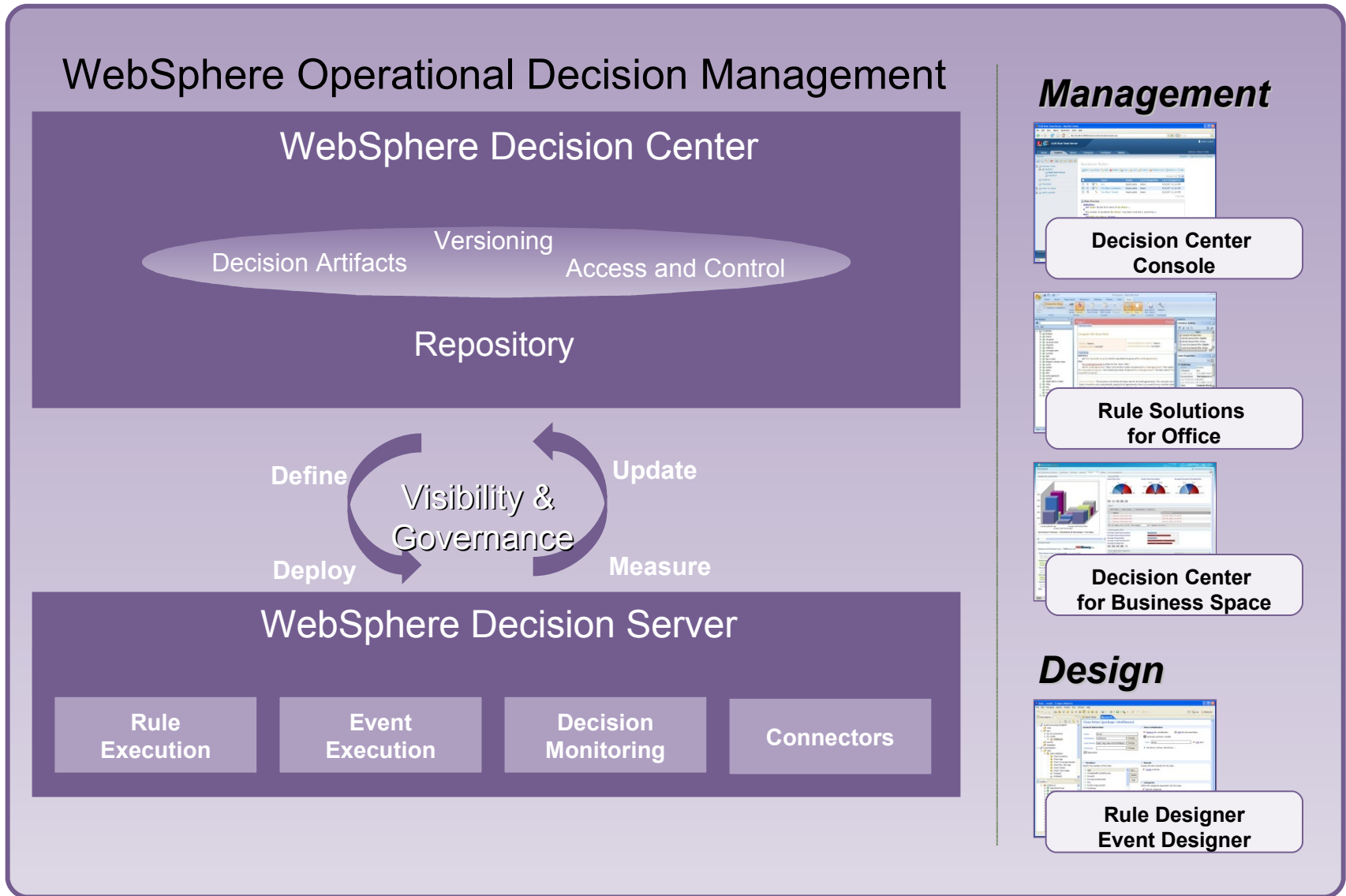


Parallel Product Structure for BPM & DM



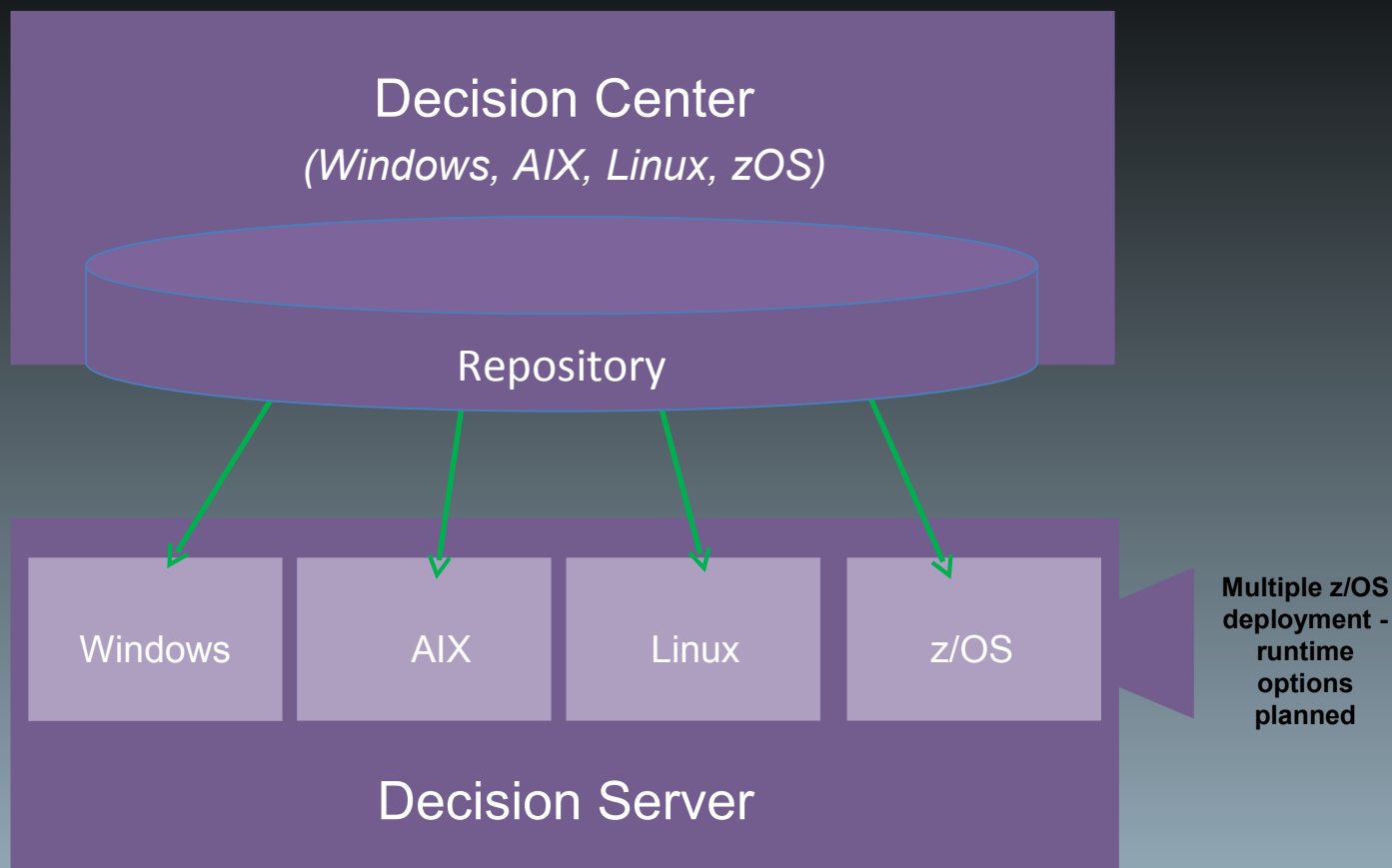
Working together to deliver effective solutions for business operation improvement

WebSphere Operational Decision Management - components



Run-time support begins with the Decision Center

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



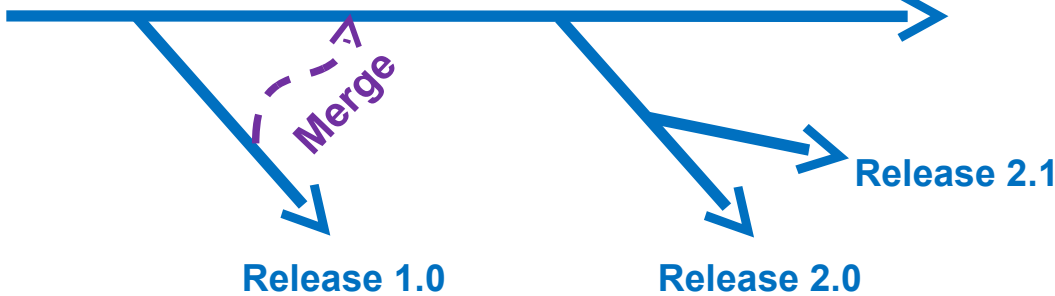
Decision Governance: Lifecycle Rules Management

Multiple Release Management

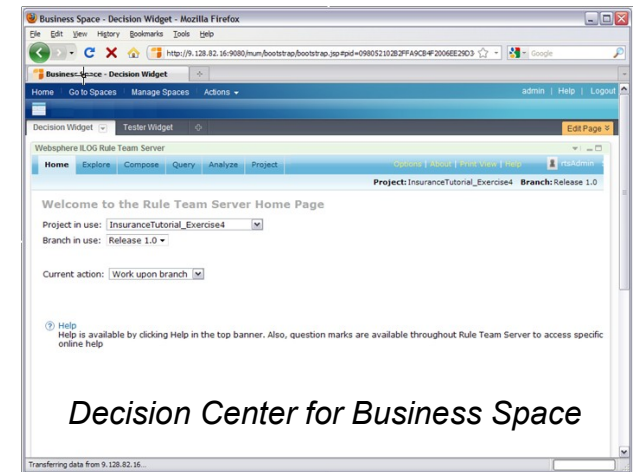
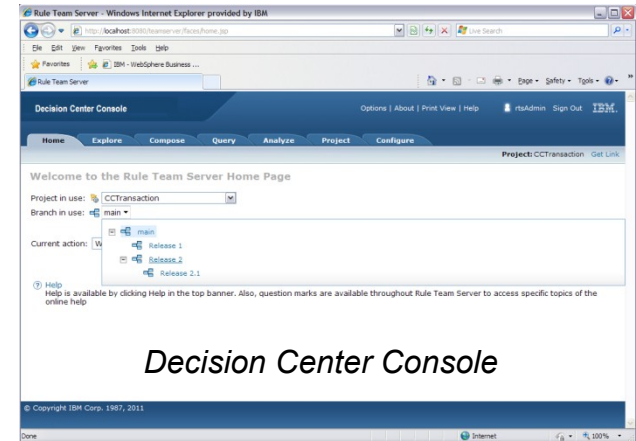
Capabilities:

- Enable business users to make changes to a deployed rule application without interfering with work they are doing on an upcoming release
- Merge and diff between releases

Project X: Ongoing upcoming release work



Availability



Decision Center: Unified Governance

Business User Empowerment for Rule and Event-based Decision Logic

- **One business language** for capturing decisions including time based reasoning
- **Same management** and authoring environments for business users
- Team collaboration through **multi-user access** for business users and synchronization between IT and business user environments
- **Project governance**, including role-based security, history maintenance and custom metadata

Actions	Name	Last Changed By	Last Changed On
<input checked="" type="checkbox"/>	Add To Campaign	rtsAdmin	4/14/11 5:42 PM
<input type="checkbox"/>	Add To Campaign Next Year	rtsAdmin	4/12/11 11:45 AM
<input type="checkbox"/>	Make Followup Call	rtsAdmin	4/12/11 11:46 AM
<input type="checkbox"/>	Register with Campaign	rtsAdmin	4/12/11 12:44 PM
<input type="checkbox"/>	Remove from Campaign	rtsAdmin	4/12/11 12:45 PM
<input type="checkbox"/>	Send to alternate Campaign	rtsAdmin	4/12/11 12:44 PM

Preview

Name Add To Campaign

Event WebsiteQuoteRequest

Context the registration of the car

Logic: if has not been added to marketing campaign yet and has not purchased a policy then addtocampaign ;

Decision Center Console

Integration with Microsoft Office

- Extends rule maintenance across the organization
- “Ruledocs” have full understanding of object model and rule syntax
- Integrated with Rule Team Server



Rule Solutions for Office

The screenshot displays two overlapping windows from Microsoft Office. The background window is Microsoft Excel, showing a spreadsheet with columns labeled 'Grade', 'Amount of loan', and 'Insurance required'. The foreground window is Microsoft Word, displaying a document titled 'loanvalidation-rules.docx'. The Word window features a 'Rules' ribbon with options like 'Completion Menu', 'Check For Gaps', and 'RuleDoc Outline'. The main text area contains business rule logic, including conditions like 'in the loan report, reject the data with the message' and 'set insurance required in the loan report to true; set the insurance rate in the loan report to 0.006;'. The right-hand pane shows the 'RuleDoc Outline' and 'Rule Properties' sections.

MS Office Excel

MS Office Word

Web Commerce Use Cases

Response to Product Inquiry Abandonment

A new customer application might be started on the web and abandoned, while the customer may follow-up by phone, in a branch location, or not at all. BEP can recognize the pattern of activities and coordinate pro-active customer support or sales contact, improving customer experience and taking advantage of new customer opportunities.



Product Up-Sell and Cross-Sell: *Customer account activity, including a pattern of new product inquiries, offer key insights into opportunities for development of profitable customer relationships.*



Customer Relationship Use Cases

Customer Retention and Responsiveness:

Changes in customer patterns of account activity (e.g. fewer or smaller orders) can help to identify customers that are potentially at risk of moving their accounts to a competitor. Immediately engaging with these customers can improve customer retention and ensure positive customer relationships.



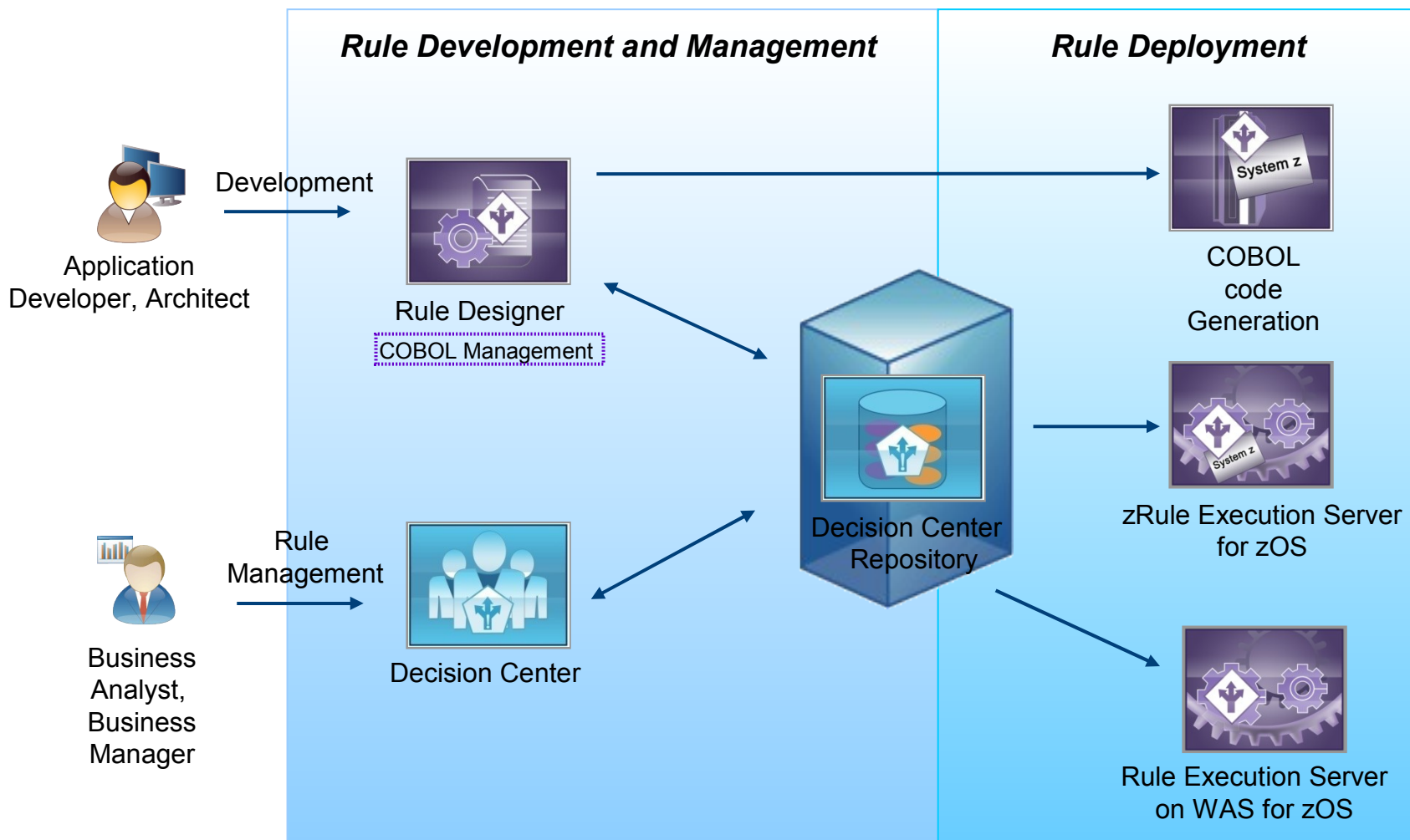
Gain Customer Insight



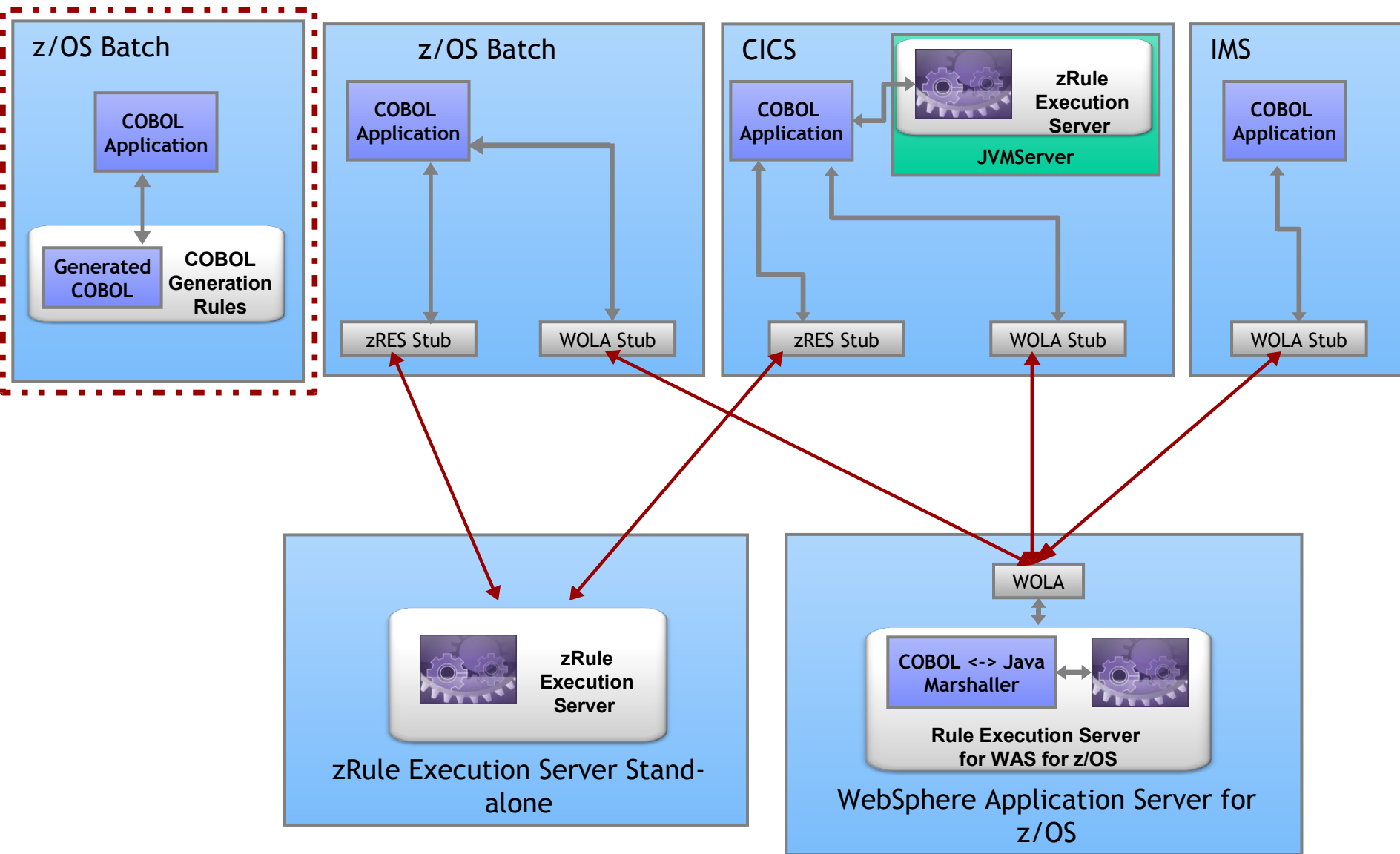
Mitigate Risk

Distressed Financial Situation: *Late payments and credit rating reduction could identify a financially distressed customer situation. Identify this situation could be used to change credit and purchasing provisions.*

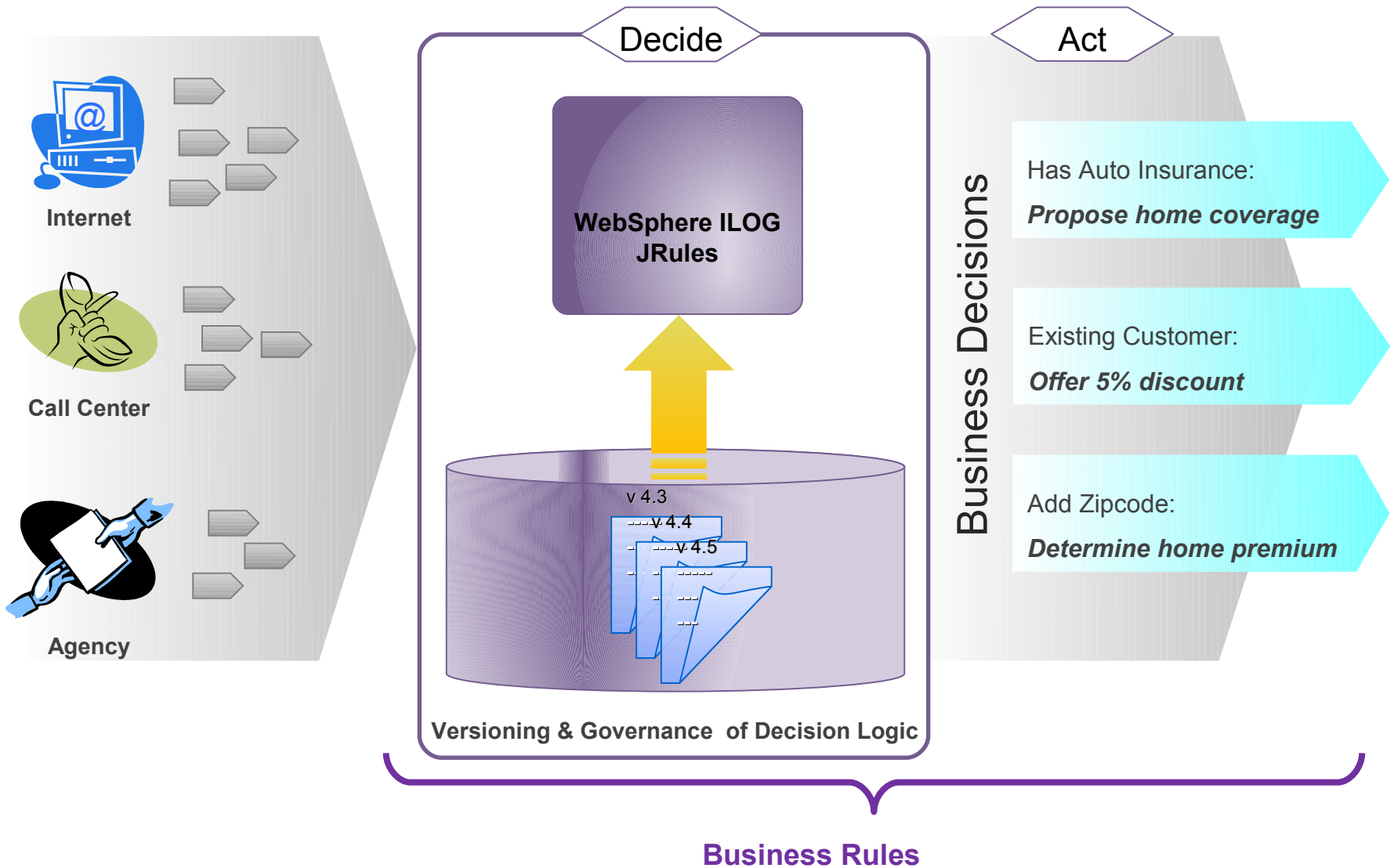
Decision Center/Server for z/OS: Business Rules Options



Rule Invocation Options for System z Applications

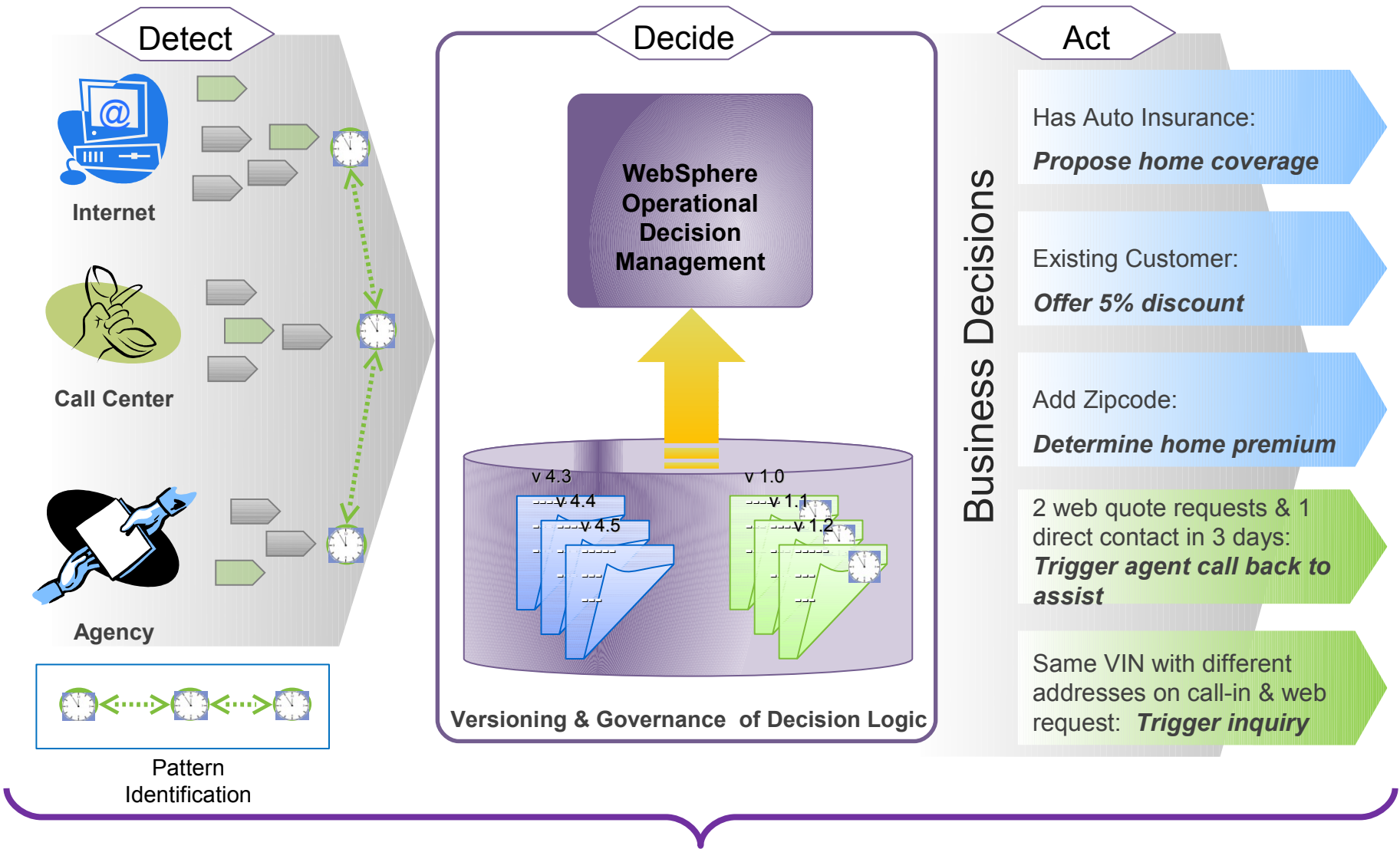


ASIS: Today's Business Decision Support



Insurance use case: Customer acquisition

TOBE: Richer, more Powerful Decisioning Capabilities



Business Rules and Events

Thank You



WebSphere Operational Decision Management

Agenda

System z



Solution Overview



1 Rules Authoring



2 Rule Execution Options



3 Rule Management



4 Business Events



BRMS is the IBM technology for creating, maintaining and implementing decision service.

Relevant when...

- IT Executives are **under pressure** to respond more quickly to their internal customers
- LOB wants to **respond more quickly** to changes in the external environment
- **Automating** or standardizing business decisions across the enterprise or LOB
- Business users need to be **more involved** as part of the change management process
- Transforming or **modernizing** legacy applications

Traditional approach for managing change

Where Business Rules typically exist

```

#ifdef __WIN__
/*
  Before performing any socket operation (like retrieving hostname
  in init_common_variables we have to call WSASStartup
  */
{
  WSADATA WsaData;
  if (SOCKET_ERROR == WSASStartup (0x0101, &WsaData))
  {
    /* errors are not read yet, so we use english text here */
    my_message(ER_WSAS_FAILED, "WSASStartup Failed", MYF(0));
    unireg_abort();
  }
}
#endif /* __WIN__ */

if (init_common_variables(MYSQL_CONFIG_NAME,
                        argc, argv, load_default_groups))
  unireg_abort(); // Will do exit

init_signals();
if ((opt_specialflag & SPECIAL_NO_PRIOR))
  my_thread_setprio(pthread_self(), CONNECT_PRIOR);
    
```

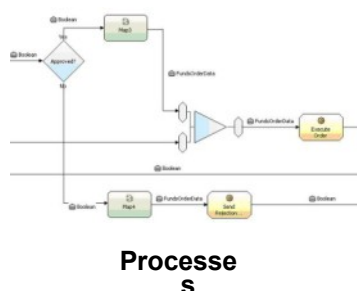


**Documents
Databases**

Applications



People



Processes

Issues

- Rules are hidden in code or isolated within the organization
- Changes are hard to track and maintain over time
- Rules used by systems have to be programmed and require IT resources
- Duplication and multiple versions of the same rules
- Lack of auditability, traceability
- Decision changes cannot be easily tested or simulated

- 💣 **Reduced organizational agility**
- 💣 **Reduced employee productivity**
- 💣 **Increased load on IT**

Easy, safe, reliable change with BRMS

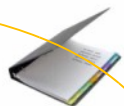
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```



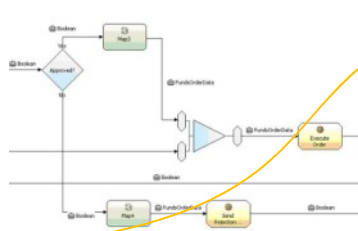
Applications



Documents
Databases

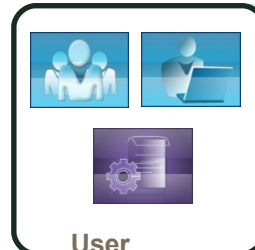


People

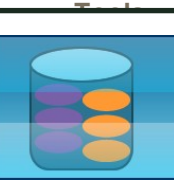


Processes

Business Rule Management System



Rules are Defined,
Analyzed &
Maintained



Rules are Stored &
Shared

Rule Repository



Rules are Deployed,
Executed &
Monitored

Execution Server

Code

```

definitions
set item to an item in the items of 'list of products' ;
if the country of origin SE of the assembly of the product information of item is "Imported"
then
add "Msg02-add a 2.5% restocking fee for returns" to the decision messages of item ;
    
```

Rule Designer (RD)

■ Eclipse-based Development Environment

- Developers
- Business Analysts

The screenshot displays the Eclipse Rule Designer environment. The main editor shows a rule with the following logic:

```

the limits of the coverage is min: $25,000 and max: $50,000

```

	Coverage Limit		Annual Mileage		Base Premium (\$)
	Min Limit	Max Limit	Min	Max	
0			< 5 000		\$100
1	\$15,000	\$30,000	[5 000	15 000]	\$105
2			[15 000	25 000]	\$110
3			> 25 000		\$125
4			< 5 000		\$110
5	\$25,000	\$50,000	[5 000	15 000]	\$115
6			[15 000	25 000]	\$120
7			> 25 000		\$135
8			5 000		\$115
9			15 000]		\$120
10			25 000]		\$125
11			25 000		\$140

The rule logic includes the following conditions and actions:

```

if
  all of the following conditions are true :
    - the limits of 'the coverage' is min: $25,000 and max: $50,000
    - the annual mileage of 'the vehicle coverage request' is at least 25000
then
  set base premium for 'the coverage quote' to $ 135 ;

```

The Properties view at the bottom shows the following details for the rule:

Property	Value
active	true
documentation	
effective date	
expiration date	
locale	en_US
name	Liability Price Table
overridden rules	[]
priority	
status	deployable
tags	[group=tsUser]
template	

Designer: Low Cost of Ownership for Developers

- Ease to learn
 - Familiar environment
 - Project map for new users
 - Follows Eclipse style and design guidelines
- Easy to use
 - Auto-completion in rule text editor
 - Re-factoring
 - Wizard-driven Java, XML, WSDL data integration
- Productivity
 - Integrated Rules and Java debugging

The screenshot shows the 'Rule Explorer' on the left with a tree view of a project named 'carrental-xom'. The tree includes folders for 'rules', 'queries', and 'templates', and files like 'COVERAGES.xls'. The 'rules' folder is expanded to show 'pricing', which contains 'price' (with sub-elements 'LongTermDiscount', 'Standard', 'SuperBowl') and 'qualifyFor'. The 'Variables' panel on the right shows a table of variables for a rule named 'pricing.qualifyFor.LongTermDiscount'. The table lists variables like 'actualCarGroup', 'assigned', 'bestOffer', 'carGroup', 'coverages', 'customer', and 'duration'. Below the variables, there is a text area showing '[standard price: 579.90]' and a table with columns for 'State', 'Age of the customer' (Min, Max), 'Rental Request', and 'Reason'.

Problems 0 errors, 2 warnings, 0 infos

Description	Resource	In Folder
col: 1, line: 0: Overlapped by 1 cell(s).	Minimum Age.dta	decisiontable-rules-start/rules/eligibility
col: 1, line: 1: Overlapped by 1 cell(s).	Minimum Age.dta	decisiontable-rules-start/rules/eligibility

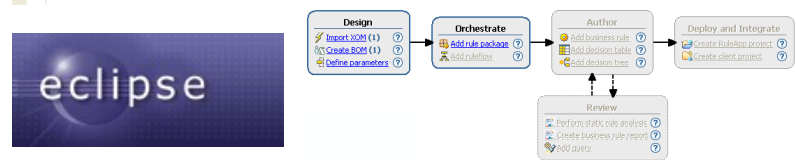
Code

```

if
'young customer' is loyalty program member
and
    @the age of the customer of <a rental agreement>
    @the best offer of <a rental agreement>
    @the birth date of <a customer>
    @the birth day of month of <a customer>
    @the birth month of <a customer>
    @the birth year of <a customer>
    @the car group of <a rental agreement>

```

Phrase : the birth date of <a customer > : date



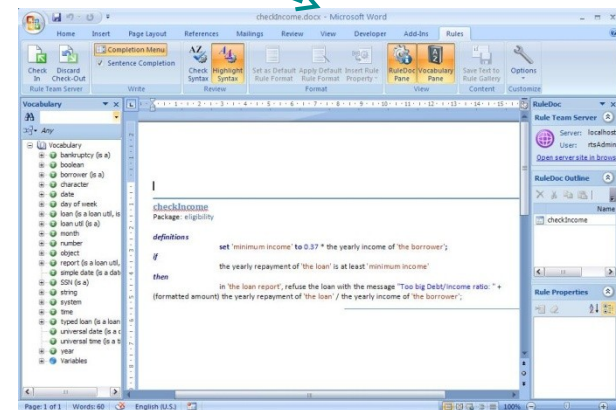
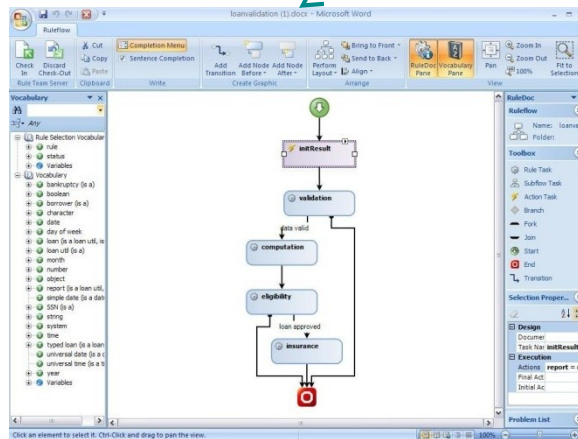
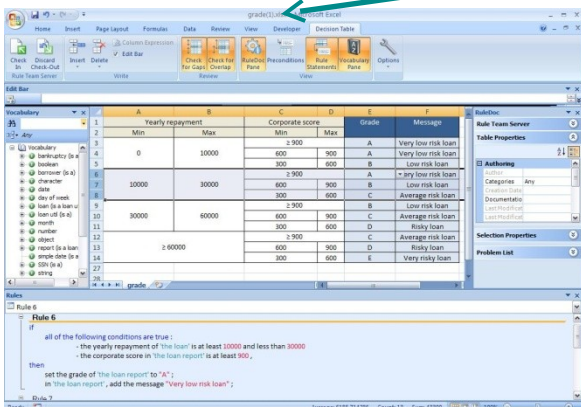
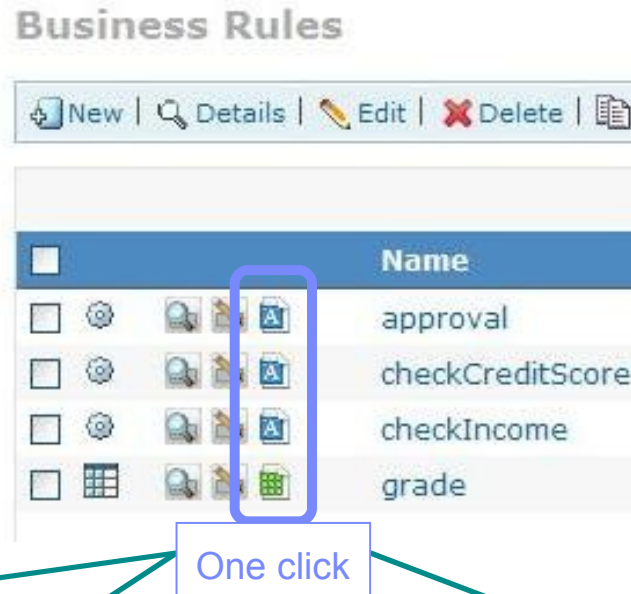
Designer: Strong Support for Business Analysts

- Business rule modeling support
 - Business Object Model
 - Business vocabulary
 - Templates creation
 - If..then..else, Decision tables and decision trees
 - RuleFlow
- Support for large organizations
 - Modular Business Object Model
 - Modular Project organization
 - Semantic queries

The image displays two screenshots of the IBM Business Rule Designer interface. The top screenshot shows the 'Member Verbalization' configuration for a rule. It includes options to 'Remove' or 'Edit' the verbalization, and a 'Navigation' section with a template: '{number of accidents}- {this} has been involved'. The bottom screenshot shows the 'Class Driver' configuration for the 'Driver' class in the 'Intellinsure' package. It includes sections for 'General Information', 'Class Verbalization', 'Members', and 'Domain'. The 'Members' list includes attributes like Age, DriverID, and Gender. The 'Domain' section shows a list of members including CompletedDriver'sCourse, DriverID, DrivingLicenseNumber, DUI, FirstDrivingLicenseDt, Firstname, FullTimeStudent, Gender, GoodStudentCertificate, Graduated, Lastname, and License.

Extended rule authoring experience

- Direct access to MS editing
- Ruleflow edition thru Word
- Automatic synchronization
- Automatic lock of edited elements



Decision Table in MS Excel

Rule Flow in MS Word

Action rules in MS Word

Advanced Decision Tables

	Grade	Amount of loan ✘		Insurance required	Insurance rate
		Min	Max		
0	A	< 100,000		false	
1		100,000	300,000	true	0.001
2		300,000	600,000	true	0.003
3		≥ 600,000		true	0.005
4	B	< 100,000		false ⊘	
		100,000	300,001	true	0.0025
		300,000	600,000	true	0.005
7		≥ 600,000		true	0.0075
8	C	< 100,000		true	0.0035
9		100,000	300,000	true	0.006
10		300,000	600,000	true	0.0085
11		≥ 600,000		true	0.0145
12	Otherwise			true	0.022

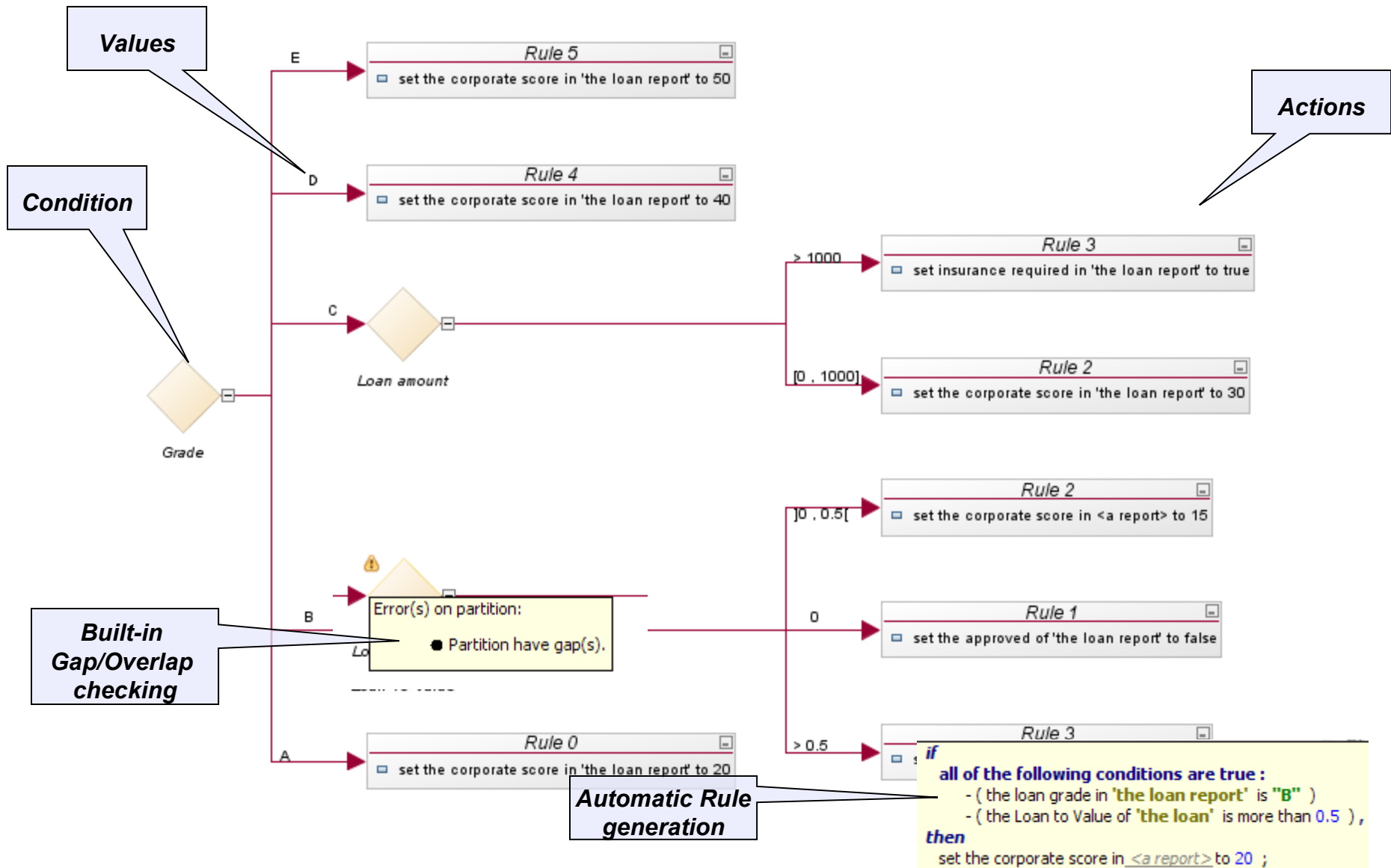
Built-in Gap/Overlap Checking

Actions

if
all of the following conditions are true :
 - the loan grade in 'the loan report' is "C"
 - the amount of 'the loan' is at least 600000 ,
then
 set insurance required in 'the loan report' to *true* ;
 set the insurance rate in 'the loan report' to 0.0145 ;

Automatic Rule Generation

Decision Trees



One Business Language

Supports a wide range of business decisions

Content

definitions

```

set 'minimum score' to 200 ;
if
the credit score of 'the borrower' is less than 'minimum score'
then
in 'the loan report' , refuse the loan with the message "Credit score below " + 'minimum score' ;

```

Easy to **Understand**

Same language for **Business and IT people**

Triggering real business **Actions**

if has Not purchased a policy **and** second quotation request within 3 months
and all occurrences of websiteQuoteRequest after <a date>
then FollowUpCall ;

▲ <date>
 <> <duration>
 ▲ <simple date>
 ▲ <universal date>
 @ all occurrences of <an event or action>
 @ all occurrences of <an event or action> after <a date>
 @ all occurrences of <an event or action> before <a date>
 @ last occurrence of <an event or action>

Business Rule Language

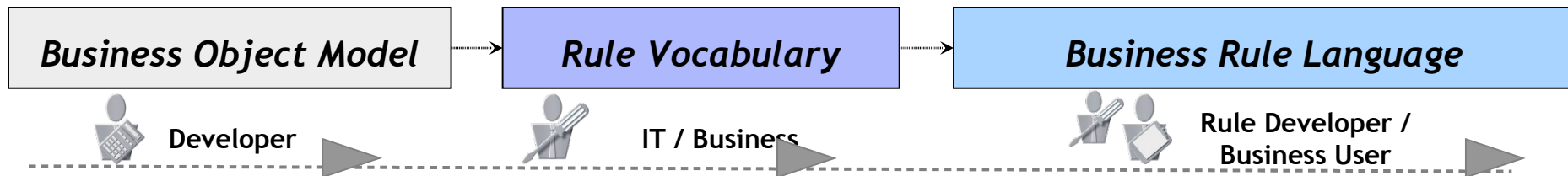
```
if
the type of claim is Veterinary cost
then
Processing type for claim is :
Automate
else
Processing type for claim is : Manual
```

- 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 creation

```
if
the credit score of the borrower is less than 200
then
add "Credit score below 200" to the messages of the loan
reject the loan;
```

- Supports all kind of rules:
 - Basic to cross validations
 - Derivations
 - Inference based rules
 - Calculations rules
 - Product offering
 - Underwriting
 - Scoring
 - Rating...

Data Model - Verbalization



CustomerInfo

- name
- birthday
- getNumAccidents()
- isHighRiskDriver()
- ...

“customer”

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

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

- Automatic generation of the rule vocabulary.
- Comprehensive industry focused business terms to define its data and associated actions.
- Localizable vocabulary

“client”

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

Règle: Conducteur à risque

si

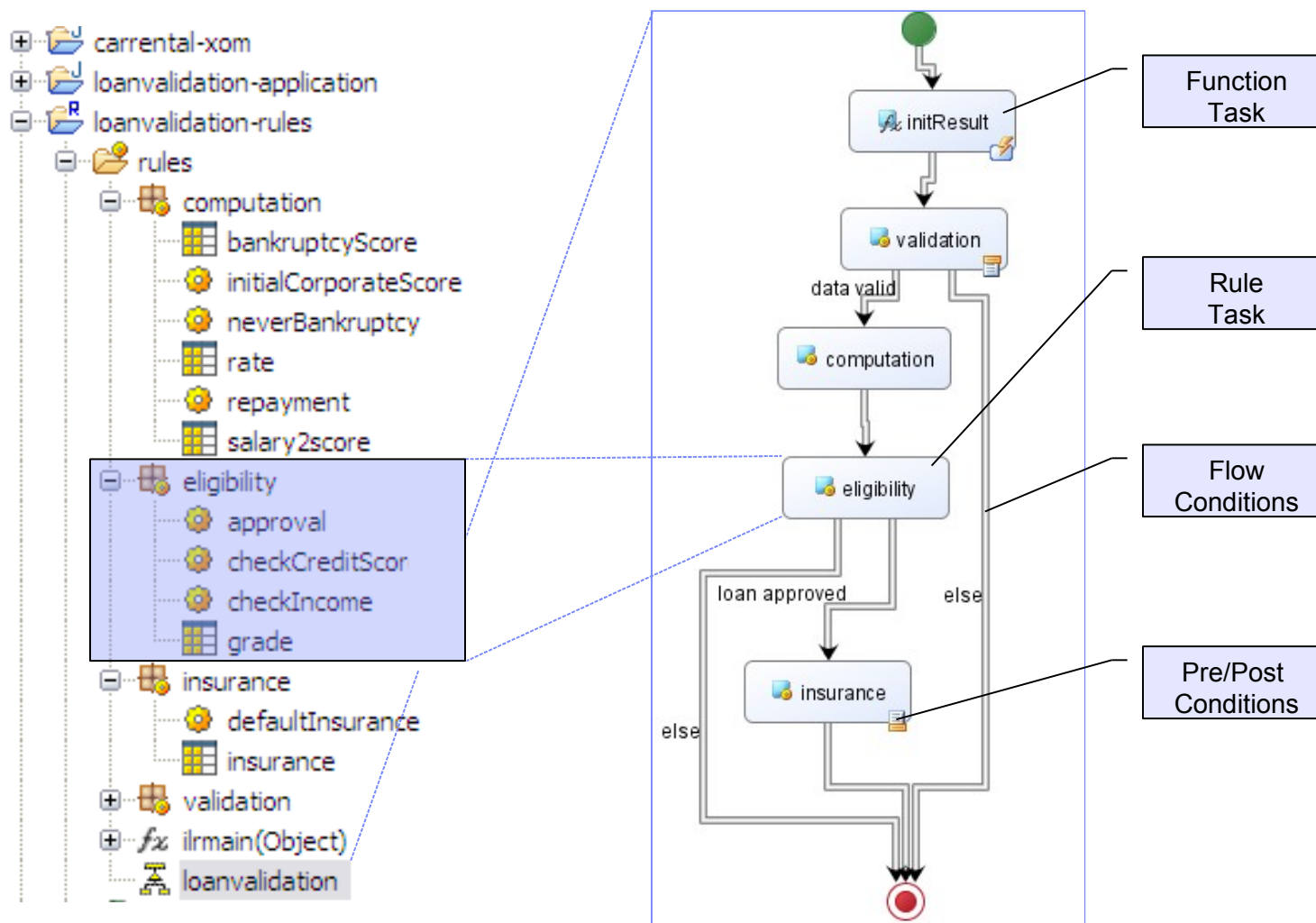
L’anniversaire du **client** est après le 12/9/1975 et le nombre d’accident du **client** est au moins 3

alors

Classifier le **client** comme conducteur à risque

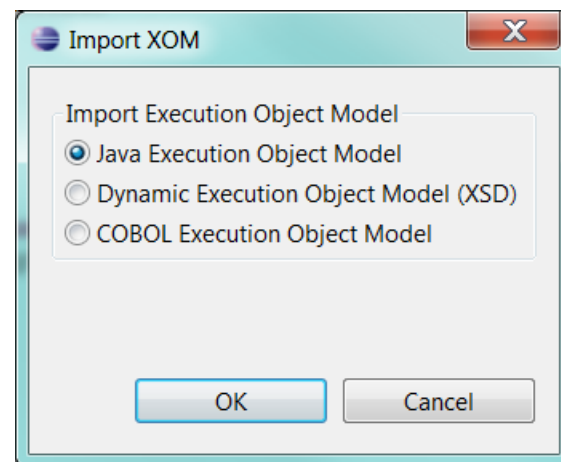
Rule Authoring: Visual Decisioning Flow

- Graphical editor to model and control rule execution sequence (ruleflow)



Rule Authoring – XOM options

- 3 options for the underlying execution model
 - Java object graph
 - XML schema
 - COBOL copybook
- Java
 - Standard approach
 - Engine always uses Java regardless of choice
 - Best performance
- XML Schema
 - Java dynamically created at runtime

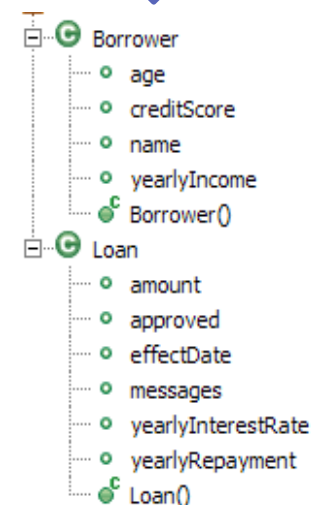
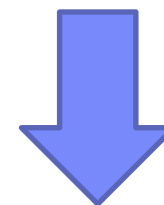


Rule Authoring – COBOL Copybook XOM

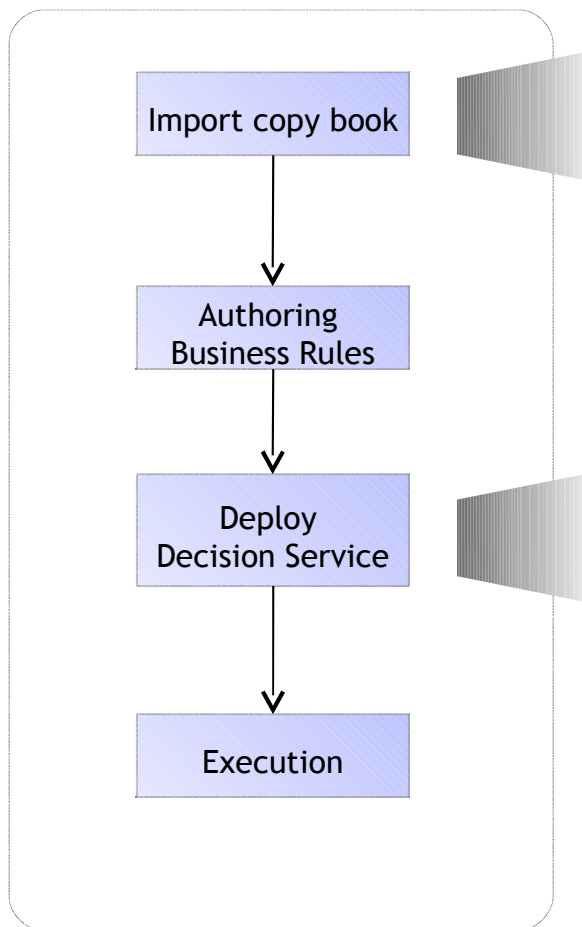
- Support Enterprise COBOL 3.4, 4.1 & 4.2
- A Java is created from the copybook structure
 - Java XOM & Java code to marshal between COBOL <-> Java
 - 01 level structures mapped to class in BOM
- Redefines statements supported
 - Select which redefines structure to import
- COBOL Table support
 - Mapped to Java `List<type>` structures
- COPY statements supported
- Level 88 supported
 - Mapped to methods in BOM

```

01 Borrower.
05 name          PIC X(20) .
05 creditScore   PIC S9(10) .
05 yearlyIncome  PIC 9(10) .
05 age           PIC 9(3) .
01 Loan.
05 amount        PIC 9(10) .
05 yearlyInterestRate PIC 99 .
05 yearlyRepayment PIC 9(10) .
05 effectDate    PIC X(8) .
05 approved      PIC X .
05 messageCount  PIC 9(2) .
05 messages      PIC X(60)
                  OCCURS 0 TO 99 TIMES
                  DEPENDING ON messageCount .
  
```



Starting with a COBOL copy book



Scenario

- Existing COBOL containing business rules
- Data model defined in COBOL copybook
- Use BRMS to modernize the business policy

Benefits

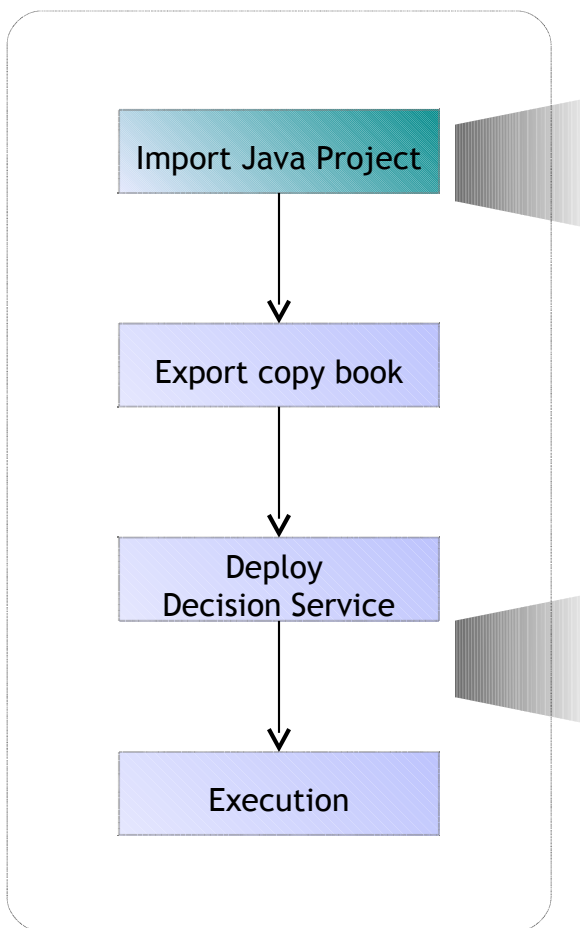
- Modernize business policies in BRMS
- Rules can be invoked 'naturally' from existing application
- Business policy/rule lifecycle detached from application lifecycle

COBOL data type mapping summary

COBOL Model Type	COBOL usage	Picture string	Example	Java type
COBOL AlphaNumericType	DISPLAY	X and combination of A, X, and 9	PIC X(12).	String
COBOL NumericType	DISPLAY COMP-3 PACKED-DECIMAL BINARY COMP COMP-4	S9(1) through S9(4) 9(1) through 9(4)		short
		S9(5) through S9(9) 9(5) through 9(9)		int
		S9(10) through S9(18) 9(10) through 9(18)		long
		As above with decimal (V or P)		BigDecimal
COBOL Internal Float Type	COMP-1			float
	COMP-2			double

- Support for special type with marshal converter
 - Supplied date and boolean converters
 - Option to extend marshaling with custom converters

Starting with an existing Java Project



Scenario

- Existing Rule projects exist that are currently in use on distributed platforms
- Concurrent execution of rules required on System z

Benefits

- Consistent decision rules where ever executed
- Rules can be invoked 'naturally' from existing applications on all platforms
- Enables central rule management across System z and distributed execution
- Business policy/rule lifecycle detached from application lifecycle

Methods in BOMs – When to use

- **BOM methods should be used sparingly**
- Don't try and integrate business logic with decision logic
 - Rules are not there to replace the application!
- Best practices
 - Use methods where it aids the verbalization for the business user
 - Use methods to simplify repeated, multi step actions
 - Use methods very sparingly to augment data supplied as ruleset parameters
 - Look up data in a VSAM file / DB2
 - Best practice is to pass in all data required for decision
 - Avoid using COBOL mapped methods wherever possible
 - Problems when later migrating to zRES execution

Thank
YOU



WebSphere Operational Decision Management

Agenda

System z



Solution Overview



1 Rules Authoring



2 Rule Execution Options



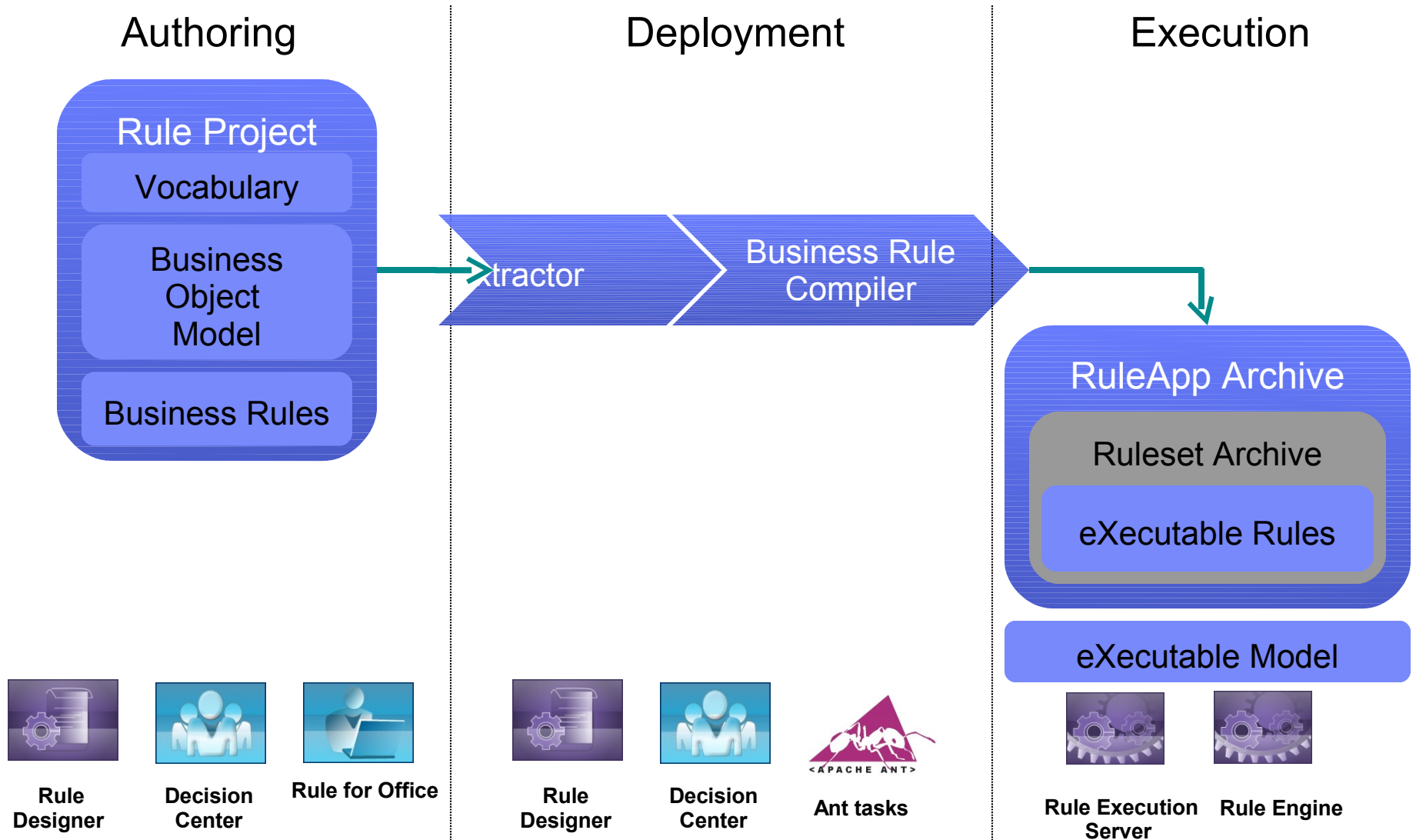
3 Rule Management



4 Business Events



BRMS Artifact pipeline (basic architecture)



Rule Engine

- Execution kernel
- Optimized for condition & test sharing
- Programming model
 - Passive component: runs only when invoked
 - Synchronous
 - Parameters & working memory
- In memory processing
 - No duplication of processed objects
 - No requirement on processed objects (Interface or contract)
- Object Model
 - Java - classes passed by the classloader
 - XSD

Java Rule Engine Implementation

- 100% Java
- One engine runs in one VM
- Deployment based on a ruleset archive
- Threading
 - Thread-safe
 - Execute in the current thread
 - No thread created in your back by the engine
- Byte code generated at parse & run time

Decision Service Deployment Artifacts

- Ruleset Archive

- Contains

- eXecutable Rules as text files
 - executable XSD
 - NOT Java eXecutable Object Model
 - Java XOM is passed by the calling app

- RuleApp archive

- Kind of EAR for Business Rules

- Aggregates one or several Ruleset archives

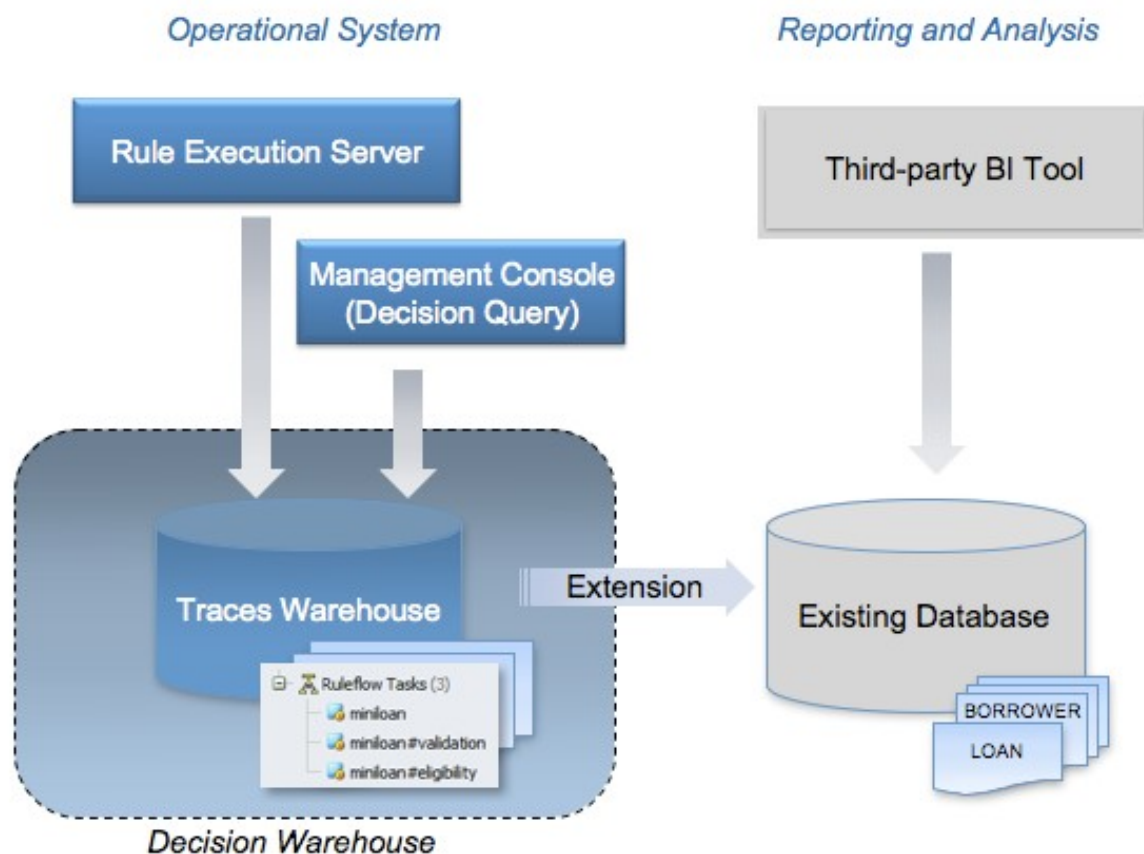
- Versioning & path

- Contains

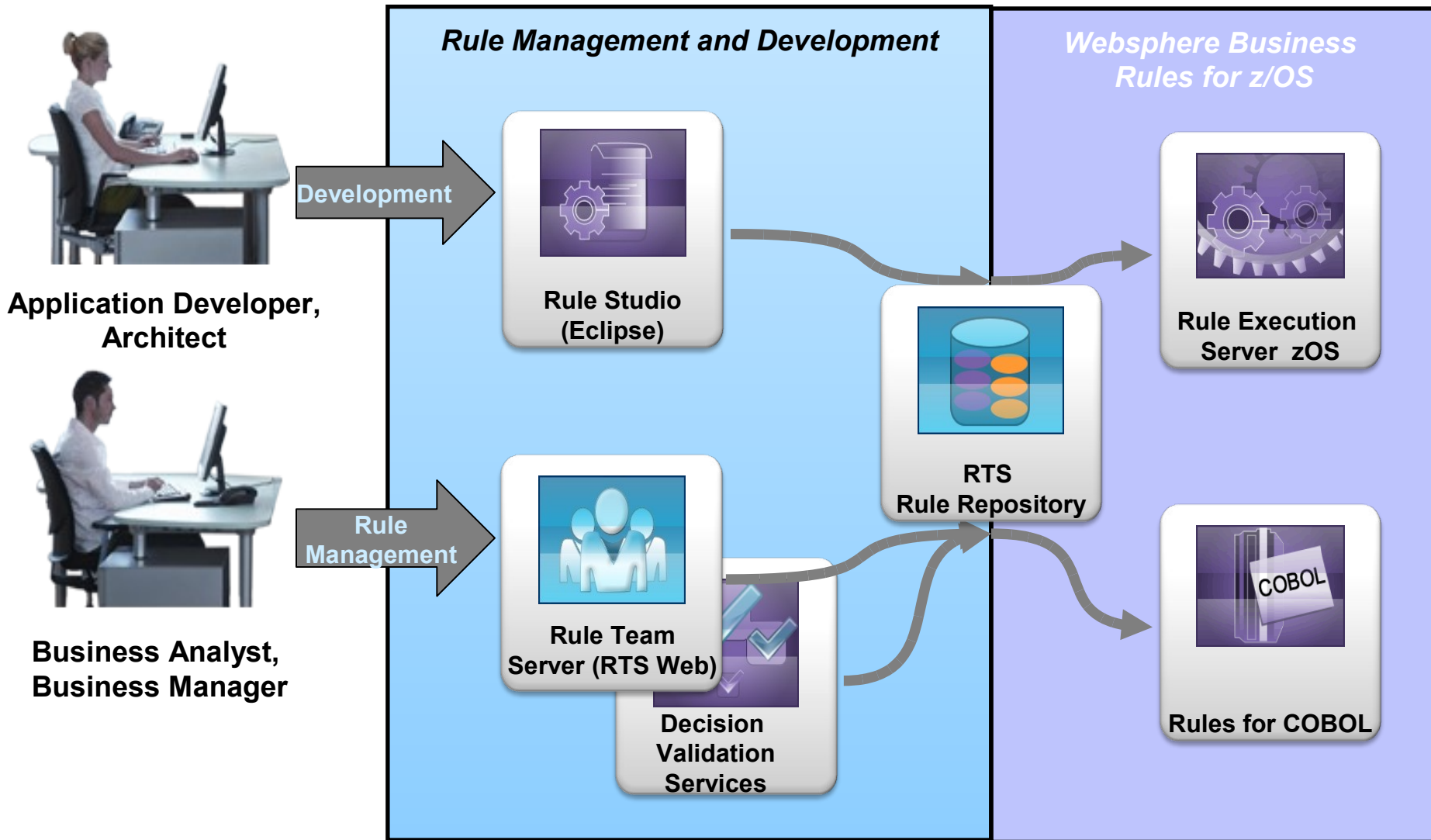
- Whole runnable business logic for execution
 - Metadata at RuleApp & Ruleset levels

Decision Warehouse

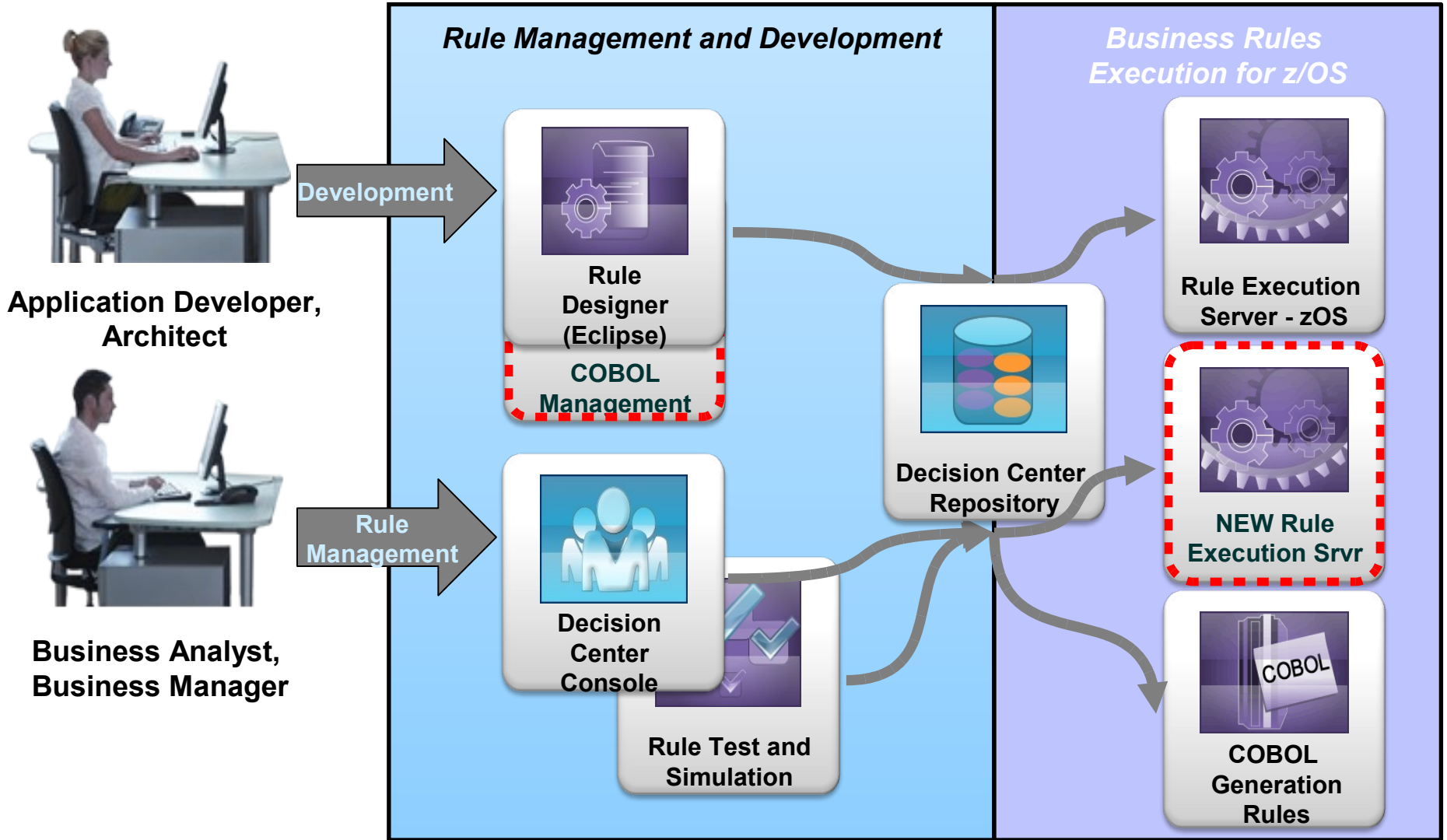
- Provides extension points to allow integration with existing analytics databases and 3rd-party business intelligence (BI) tools.



ASIS: WebSphere Business Rules for zOS

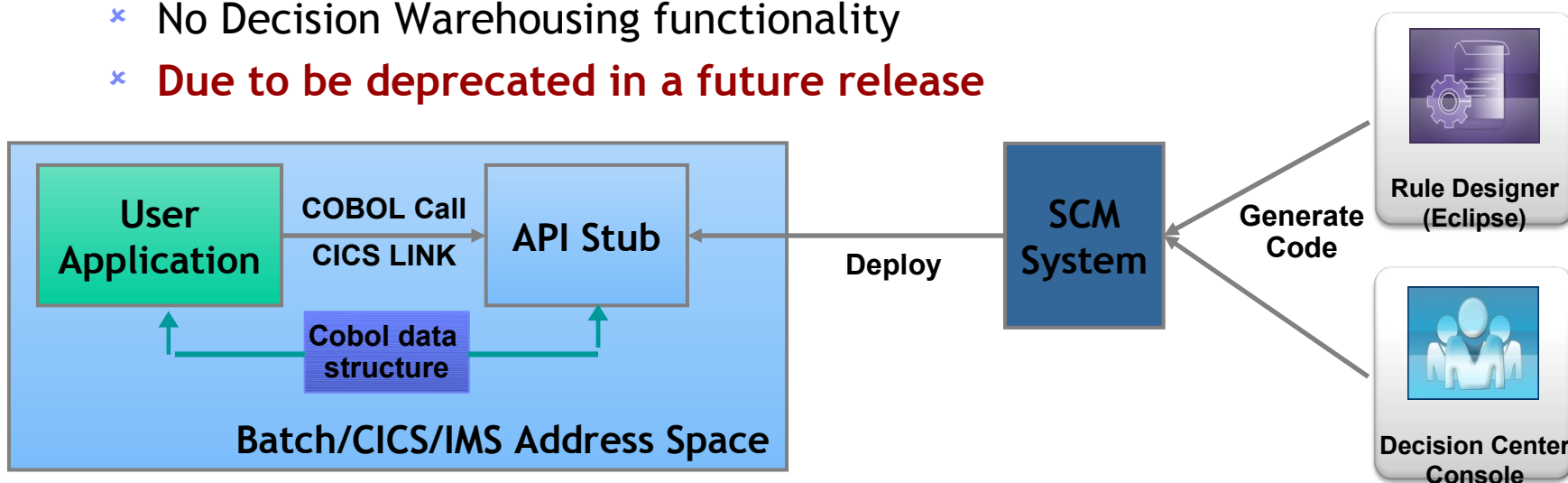


TOBE: Decision Manager for z/OS – Rule Components

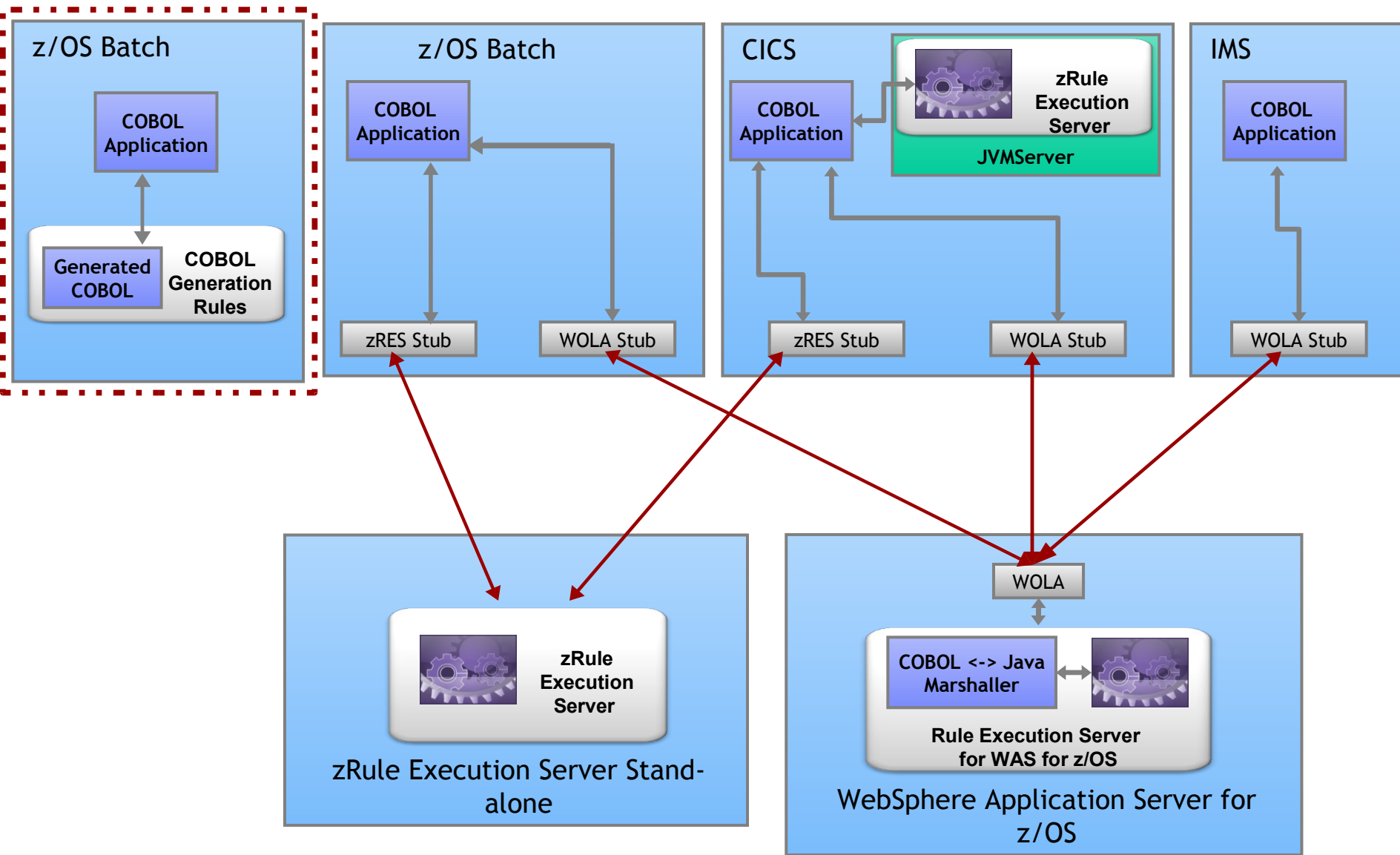


COBOL Generation Rules

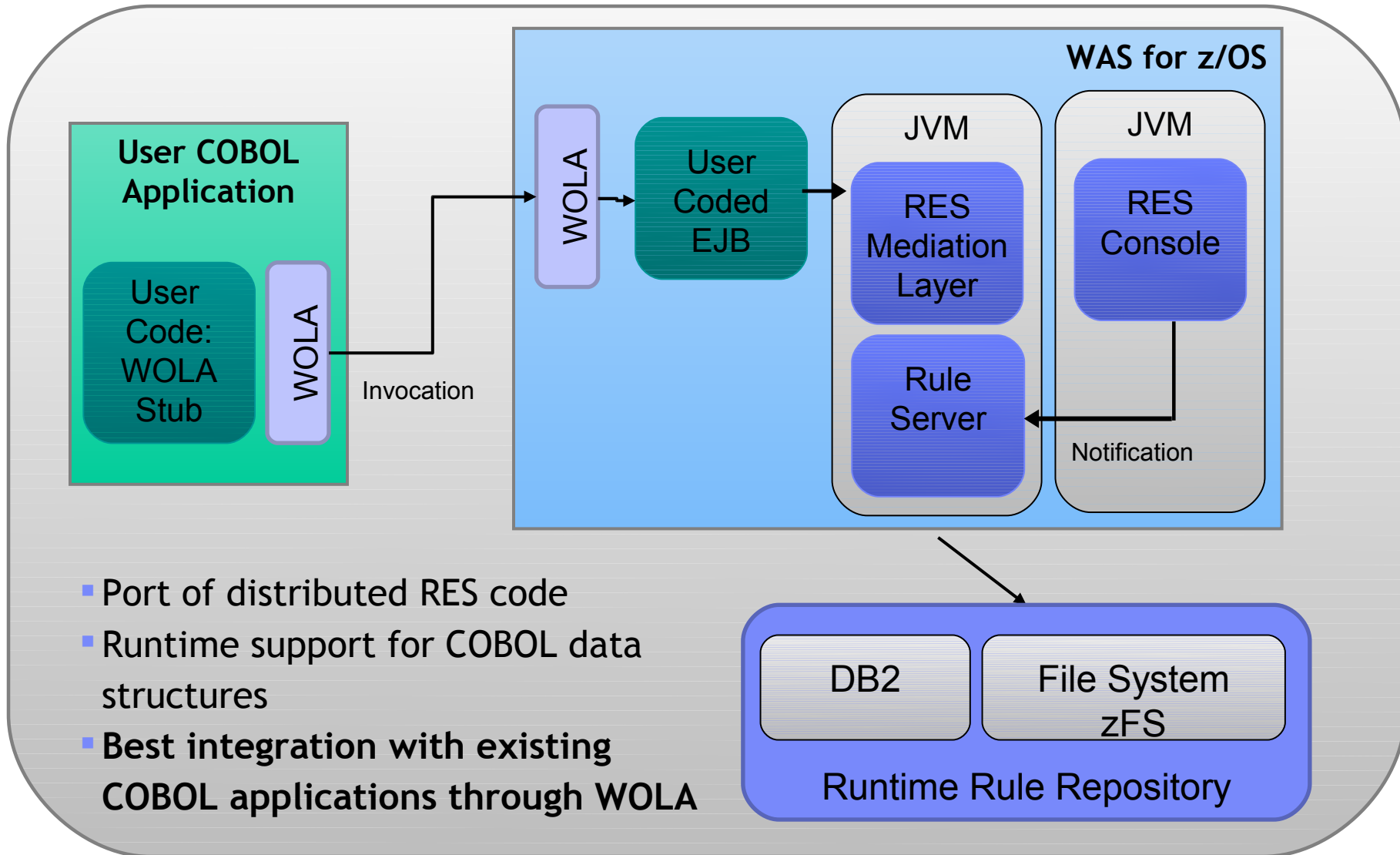
- COBOL module generated to contain the implementation of the rules
- Considerations with this Approach
 - ✓ Fits in easily with COBOL application architecture
 - ✓ Better performance due to COBOL code and co-location of rule execution
 - ✗ No Hot deployment of rules - subject to code deployment process
 - ✗ No Rule Execution Server management capabilities
 - ✗ No simulation and testing capabilities
 - ✗ No Decision Warehousing functionality
 - ✗ **Due to be deprecated in a future release**



Rule Invocation Options for System z Applications



Rule Execution Server for WAS on z/OS



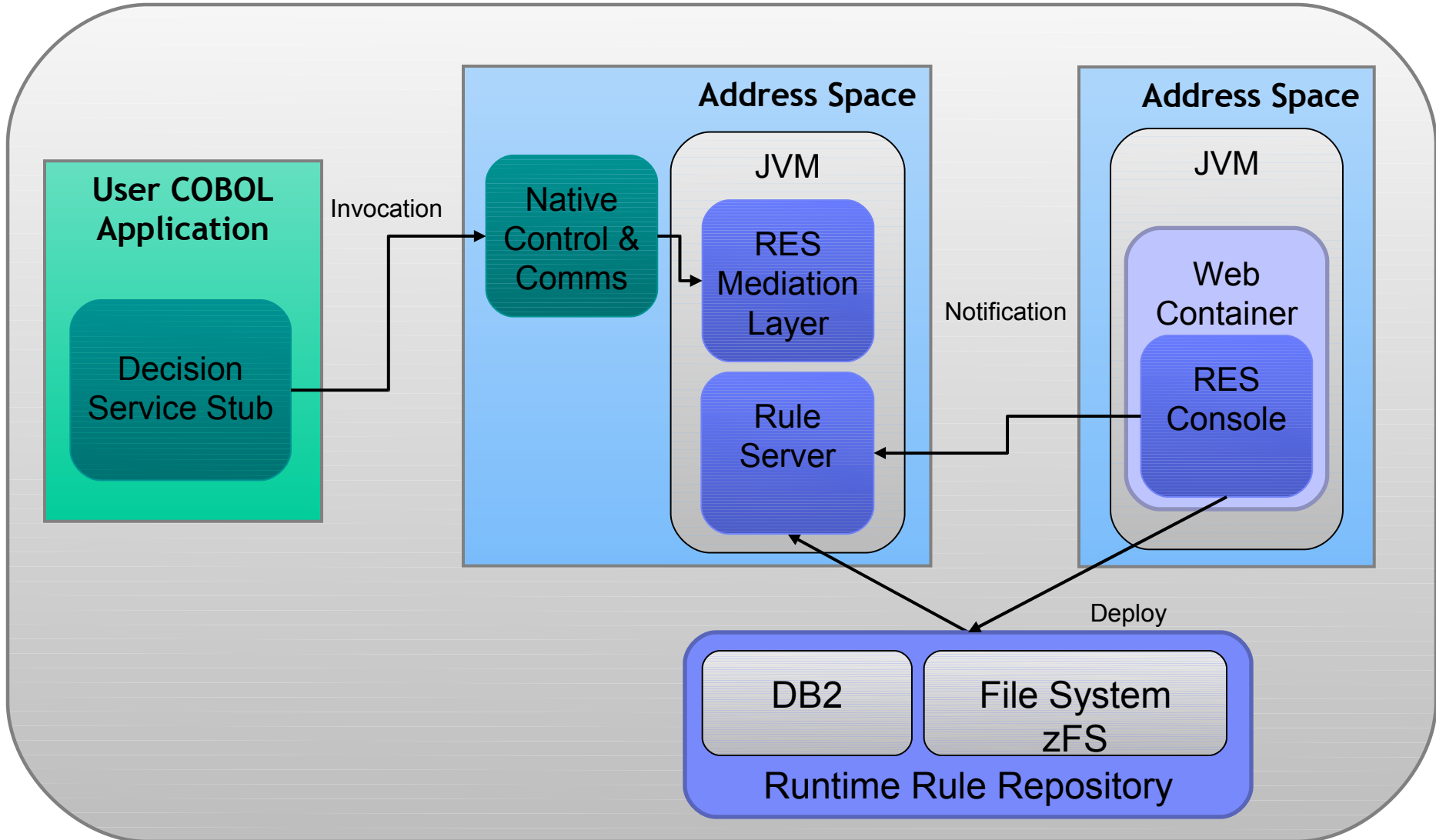
- Port of distributed RES code
- Runtime support for COBOL data structures
- **Best integration with existing COBOL applications through WOLA**

Rule Execution Server for WAS on z/OS

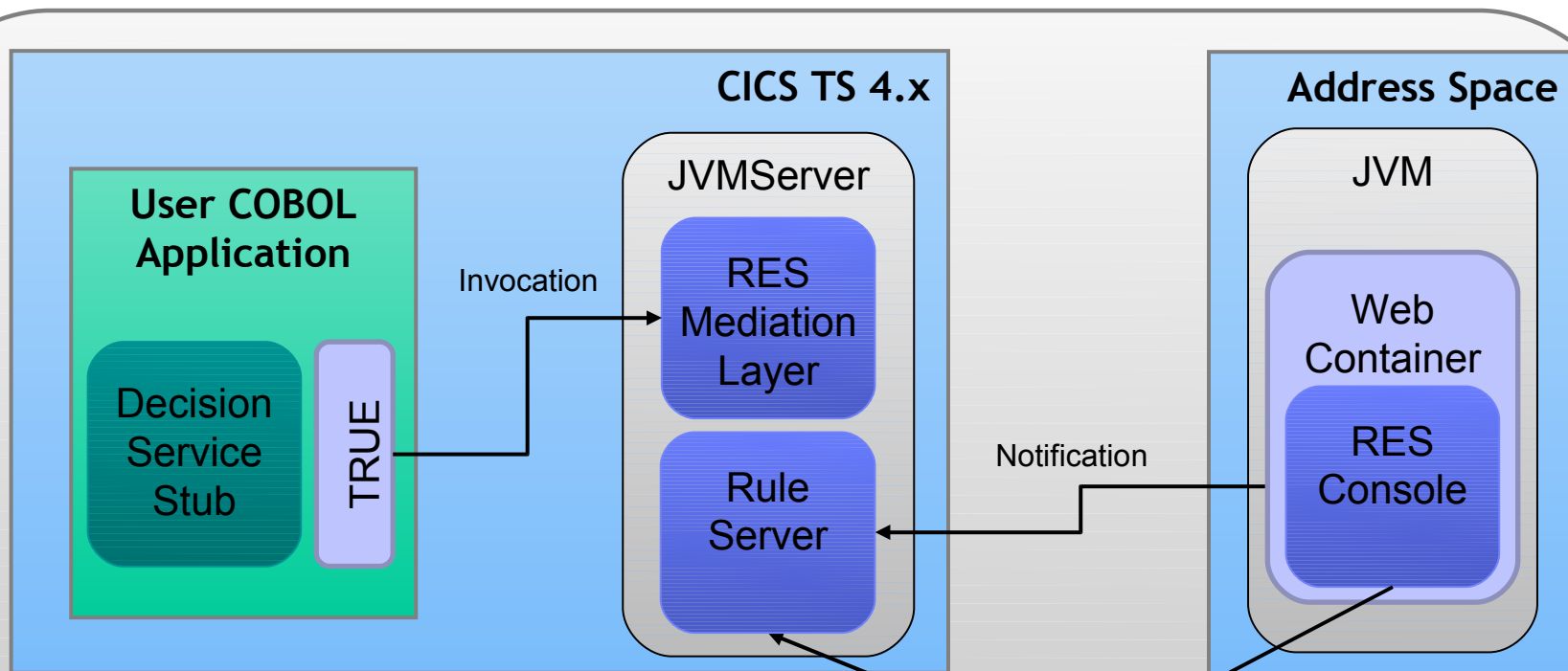
- Considerations with this Approach
 - ✓ Full decision lifecycle and integration with WODM components
 - ✓ Full scalability and HA capabilities through WAS container
 - ✓ Local execution of Testing & Simulation of rules
 - ✓ Support decisions on z and distributed
 - ✓ % of execution cost zAAP offloadable

 - ✗ Requires configuration of WOLA for best performance
 - ✗ Requires co-location of WAS with calling COBOL application
 - ✗ Requires custom coding for WOLA stub / EJB endpoints
 - ✗ Requires some Java knowledge

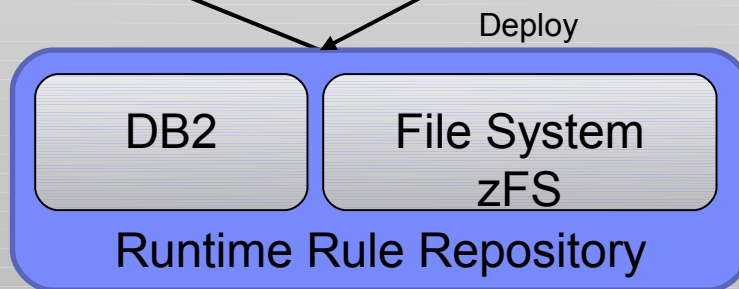
zRule Execution Server for z/OS – Stand alone (batch)



zRule Execution Server for z/OS – CICS TS 4.x



- Built on Java SE version of Rule
- Execution Server codebase
- Dual deployment options
 - Stand alone single server address space
 - Co-location in CICS JVMServer environment
- Support for 64 bit execution



New zRule Execution Server Environment

- Considerations with this approach
 - ✓ Full decision lifecycle and integration with key WODM components
 - ✓ Easy integration with existing z COBOL running in CICS & Batch
 - ✓ **Initial tests show 96% of execution cost zAAP offloadable**
 - ✓ Options for low impact, close location with COBOL applications
 - ✓ Scalability and full HA when deployed in CICS environment

- × Single server, single JVM architecture as stand alone address space
 - Mitigated by option to have multiple instances per LPAR
- × No Decision Warehouse support for rule auditing
- × Requires some Java knowledge

Rule Execution Options

	<i>Rule Execution Server for WAS AND z/OS</i>	<i>zRule Execution Server for z/OS</i>	<i>COBOL-generation Rules</i>
OTTB integration with COBOL applications		✓	✓
Full support for all rule authoring constructs	✓	✓	
Hot deployment support for new decision versions	✓	✓	
Integration with Decision Center business tooling	✓	✓	✓
Testing and simulation support	✓	✓	
Decision Warehousing rule autiding support	✓		
Easy sharing of rules with distributed deployments	✓	✓	
Co-exists in same COBOL environment as calling app			✓
Local execution support for CICS TS v4.x		✓	✓
Full HA & transaction support through WAS for z/OS	✓		

Summary: Fit For Purpose Recommendations

- **Customer has WAS for z/OS co-located in LPAR**
 - RES for WAS on z/OS provides the best QoS
- **Calling application is hosted in CICS TS 4.x**
 - zRES hosted in CICS JVMServer provides the best balance between functionality and performance
- **CICS TS 3.x**
 - zRES stand alone environment
 - One zRES to a CICS region with shared rules database
- **Batch workload**
 - zRES stand alone environment
 - One zRES per batch job
 - COBOL code generation (if restrictions aren't too limiting)

Thank
YOU



WebSphere Operational Decision Management

Agenda

System z



Solution Overview



1 Rules Authoring



2 Rule Execution Options



3 Rule Management



4 Business Events



What are the challenges using and managing rules?

- Business involvement and new business processes
 - How do I know when rules change?
 - Where can I find the rules?
- Data modeling
 - What is the business vocabulary?
 - Where do my business objects come from?
- Rule acquisition, modeling, and execution
 - What is the complexity of rules? How do I write new rules?
 - How do I validate the rules?
- Integration, performance, and scalability
 - Will I have good performance at full production scale?
 - How do I integrate business rules into my IT architecture?

Decision Center: A Complete Set Of Capabilities

- **Authoring**
 - Plain English, Decision Table, Decision Tree
 - Quick edit mode using MS Office
 - Templates
- **Managing**
 - Queries
 - Smart Views
 - Version Management
 - Baseline
- **Validating**
 - Syntactic Check
 - Semantic Check
 - Semantic Queries
- **Testing / Simulating**
 - Decision Validation Services
- **Auditing**
 - Version Management
 - Baseline
 - Query-based reporting
- **Deploying**
 - Query base Extraction
 - Rule service management
- **Administration and configuration**
 - Authorization policies
 - Rule Service
 - Display Options

Rule Management for Business Users

- Web-based collaborative environment
- Easy-to-Use, Easy-To-Learn
- Powerful Governance Capabilities

- **Integrated rule testing and simulation** (*Decision Validation Services*)
- **Integration with Microsoft Office Word and Excel** for guided, offline rule editing (*Rule Solutions for Office*)

The screenshot displays the WebSphere ILOG Rule Team Server interface. The top navigation bar includes 'Home', 'Explore', 'Compose', 'Query', 'Analyze', 'Project', and 'Configure'. The main content area is titled 'Business Rules' and shows a table of rules. Below the table is a 'Rule Preview' section for the selected 'approval' rule.

Name	Status	Priority	Last Changed By	Last Changed On
approval	New	low	rtsAdmin	4/3/09 10:10 AM
checkCreditScore	New		rtsAdmin	4/3/09 10:10 AM
checkIncome	New		rtsAdmin	4/3/09 10:10 AM
grade	New	high	rtsAdmin	4/3/09 10:10 AM

Rule Preview

```

Name approval
Status New

if
  'the loan report' is approved
and
  the loan grade in 'the loan report' is one of { "A" , "B" , "C" }
then
  in 'the loan report' , accept the loan with the message "Congratulations! Your loan has been approved" ;
else
  in 'the loan report' , refuse the loan with the message "We are sorry. Your loan has not been approved" ;

```

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Decision Center: Web-based Console for Rule Maintenance

- Access rule artifacts concurrently without conflict or delay

- Represent complex policies using rule overrides and hierarchies

- Take control of very large rulebases with Smart Views, easy search and reporting

- Get automatic notification of rule conflicts, redundancies

- See where rules are used across projects using queries

- Hot-deploy rule changes in minute

- Integrated with enterprise security facility, including single sign-on

The screenshot displays the WebSphere ILOG Rule Team Server interface. The top navigation bar includes 'Home', 'Explore', 'Compose', 'Query', 'Analyze', 'Project', and 'Configure'. The main content area is titled 'Business Rules' and shows a table of rules. The 'approval' rule is selected, and its details are shown in the 'Rule Preview' section below.

Name	Status	Priority	Last Changed By	Last Changed On
approval	New	low	rtsAdmin	4/3/09 10:10 AM
checkCreditScore	New		rtsAdmin	4/3/09 10:10 AM
checkIncome	New		rtsAdmin	4/3/09 10:10 AM
grade	New	high	rtsAdmin	4/3/09 10:10 AM

Rule Preview

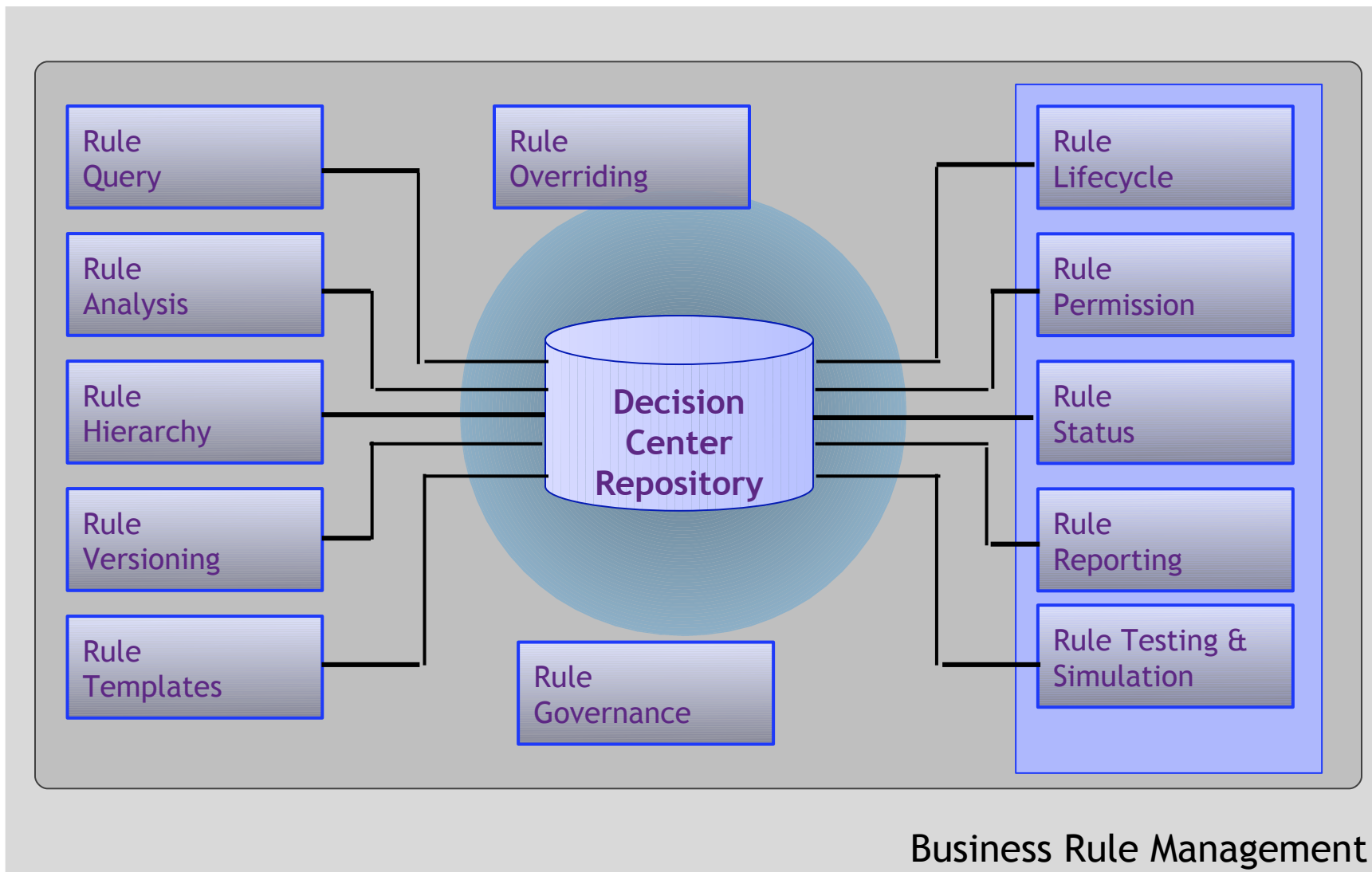
```

Name approval
Status New

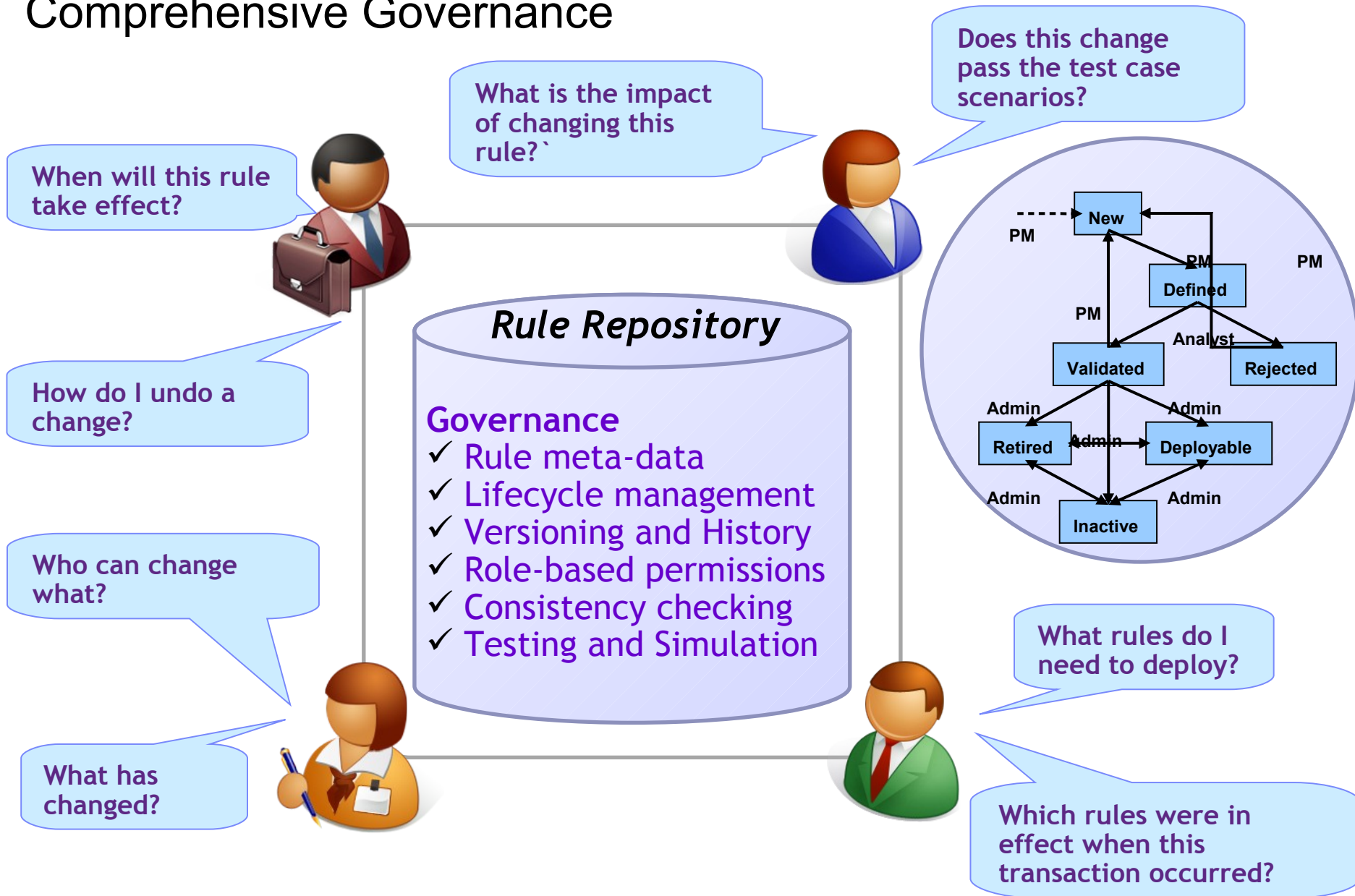
if
  'the loan report' is approved
  and the loan grade in 'the loan report' is one of { "A", "B", "C" }
then
  in 'the loan report', accept the loan with the message "Congratulations! Your loan has been approved" ;
else
  in 'the loan report', refuse the loan with the message "We are sorry. Your loan has not been approved" ;

```

Flexible Rule Deployment with Versioning



Comprehensive Governance



Security and Rule Promotion

- Authentication, Authorisation & Security

- Fine-grained permission management

<input type="checkbox"/>	PERMISSION	TYPE	PROPERTY	VALUE
<input type="checkbox"/>	▲ ▼ Create	Action Rule	-	Yes
<input type="checkbox"/>	▲ ▼ Create	Smart View	-	Yes
<input type="checkbox"/>	▲ ▼ Create	Folder	-	Yes
<input type="checkbox"/>	▲ ▼ View	Action Rule	-	Yes
<input type="checkbox"/>	▲ ▼ Update	Action Rule	*	Group
<input type="checkbox"/>	▲ ▼ Update	Action Rule	Status	No

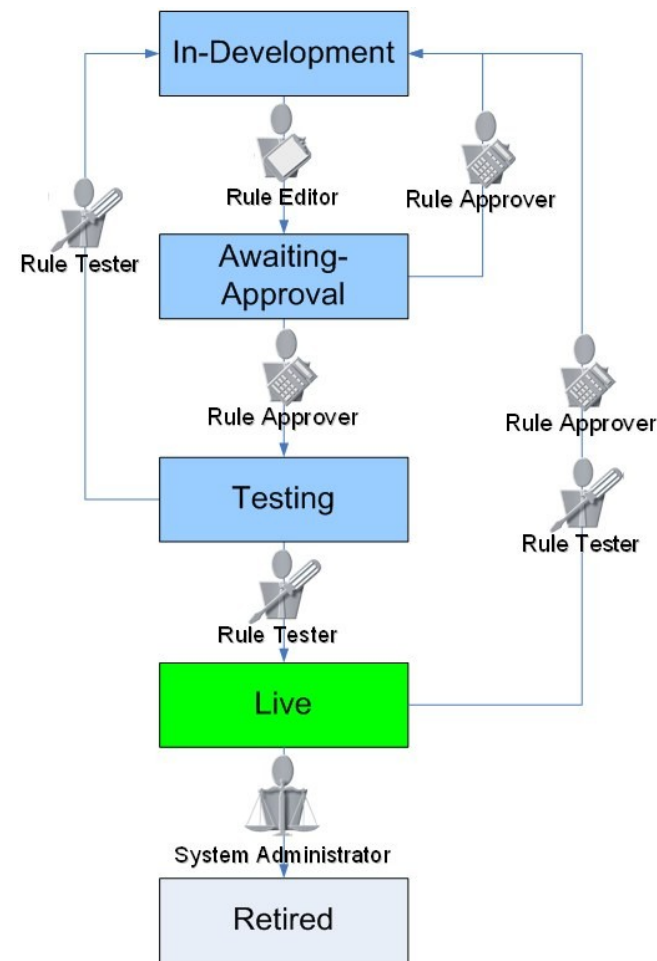
- Decision Center utilizes J2EE-standard role based security

- Utilise any role/permission service via API - Lightweight Directory Access Protocol (LDAP), relational database management system (RDBMS)

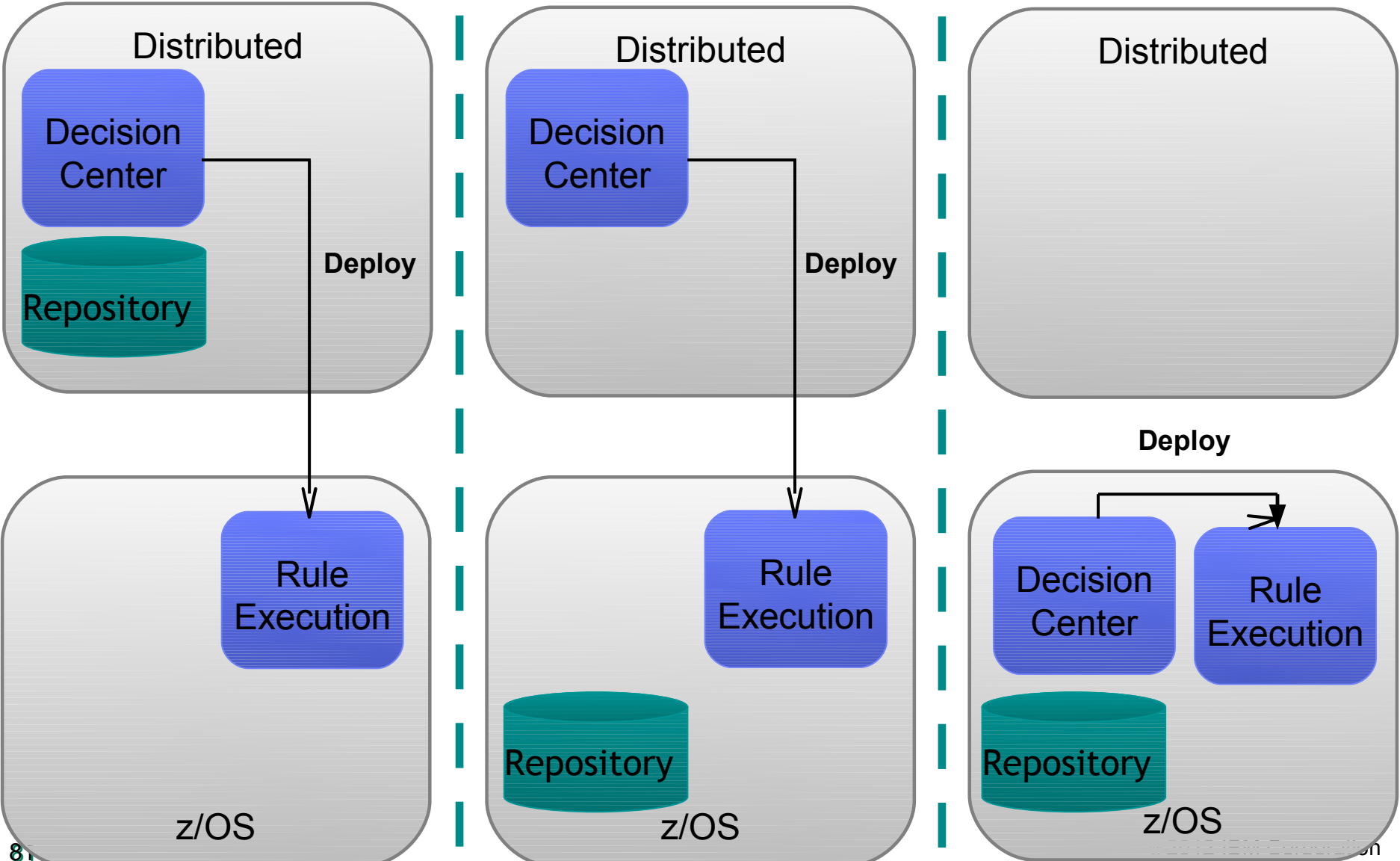
- Rule life cycle

- Control rule validation & promotion to the live environment

- Tailored to fit your process



Decision Center Deployment Options for z



Empowering Business Users

- Decision table editing in MS Excel 2007
 - Automatic Spread sheet generation from DC
 - Additional DT menus in MS Excel
 - Automatic Gap / Overlap detection in the spreadsheet

- Action rules and RuleFlow editing in MS Word 2007
 - Automatic Document generation from RTS
 - Additional Rule menus in MS Word
 - Guided rule edition in Word
 - Vocabulary access

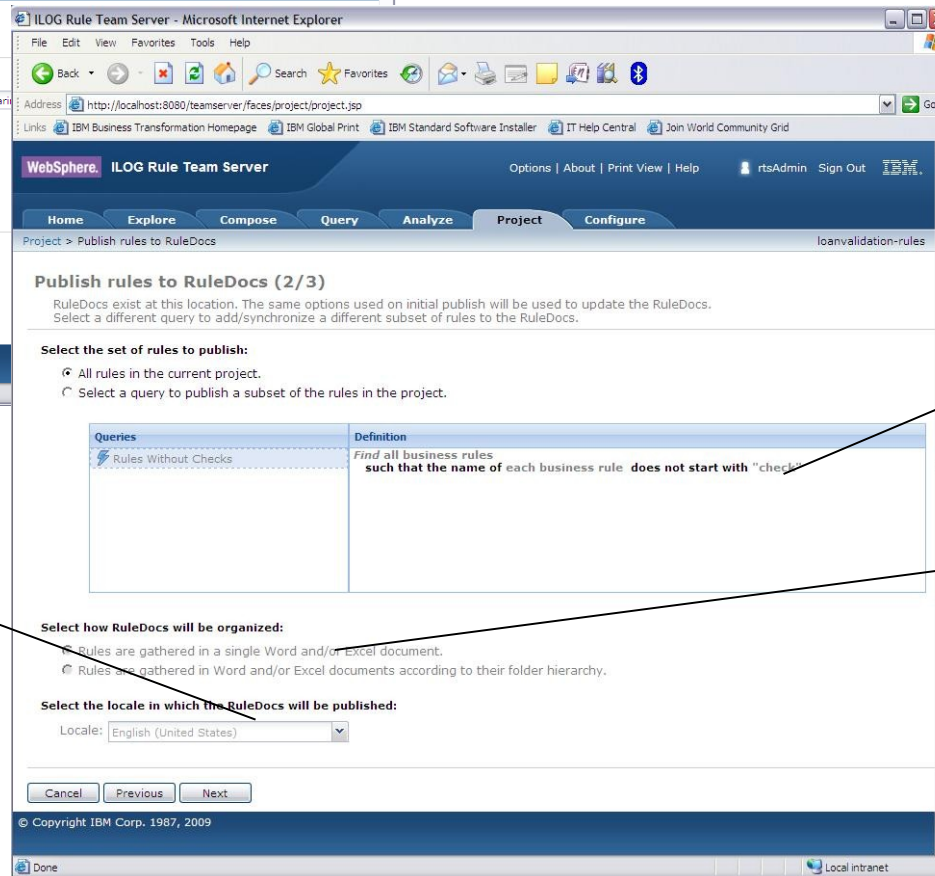
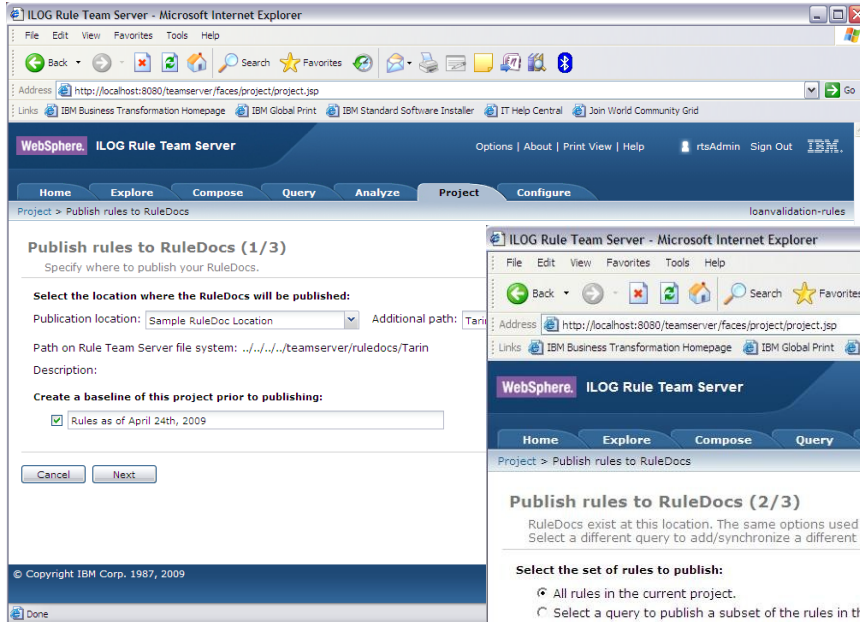
Publish Ruledocs from Decision Center



Decision Center



Rule Solutions for Office



Locale Selection

Rule Filter

Rule Organization

Editing a Decision Table in MS Excel

The screenshot shows the Microsoft Excel interface with the 'Decision Table' ribbon active. The main workspace contains a decision table with columns for 'Grade', 'Amount of loan' (Min/Max), 'Insurance required', and 'Insurance rate'. The 'Rules' pane at the bottom displays the logic for 'Rule 12'.

Decision Table Data:

Grade	Amount of loan		Insurance required	Insurance rate
	Min	Max		
A	< 100000		false	
	100000	300000	true	0,001
	300000	600000	true	0,003
B	≥ 600000		true	0,005
	< 100000		false	
	100000	300000	true	0,0025
C	300001	600000	true	0,005
	≥ 600000		true	0,0075
	< 100000		true	0,0035
	100000	300000	true	0,006
	300000	600000	true	0,0085
	≥ 600000		true	0,0145

Rule 12 Logic:

```

if
  all of the following conditions are true :
    - the loan grade in 'the loan report' is not empty
    - all of the following conditions are true :
      - the loan grade in 'the loan report' is "C"
      - the amount of 'the loan' is at least 100000 and less than 300000 , ,
  then
    set insurance required in 'the loan report' to true ;
    set the insurance rate in 'the loan report' to 0.006 ;
    
```

Gap / Overlap Highlight

Decision Table Toolbar

Artifact Properties

Problem List

Automatic rule translation

MS Office Excel

Editing an Action rule in MS Word

The screenshot shows the Microsoft Word interface for editing a rule document. The main window displays the rule text in a guided editor format. On the left, the Business Vocabulary pane is open, showing a tree view of terms. At the top, the Rule Toolbar contains icons for various actions like 'Set as Default', 'Apply Default', and 'Insert Rule'. On the right, the RuleDoc Outline pane shows a list of rule elements, and the Problem List pane shows a list of errors. A callout box points to the main editing area, highlighting the guided editor with automatic completion.

Business Vocabulary

Rule Toolbar

RuleDoc Outline

Problem List

Guided editor with automatic completion

MS Office Word

Editing a Rule Flow in MS Word

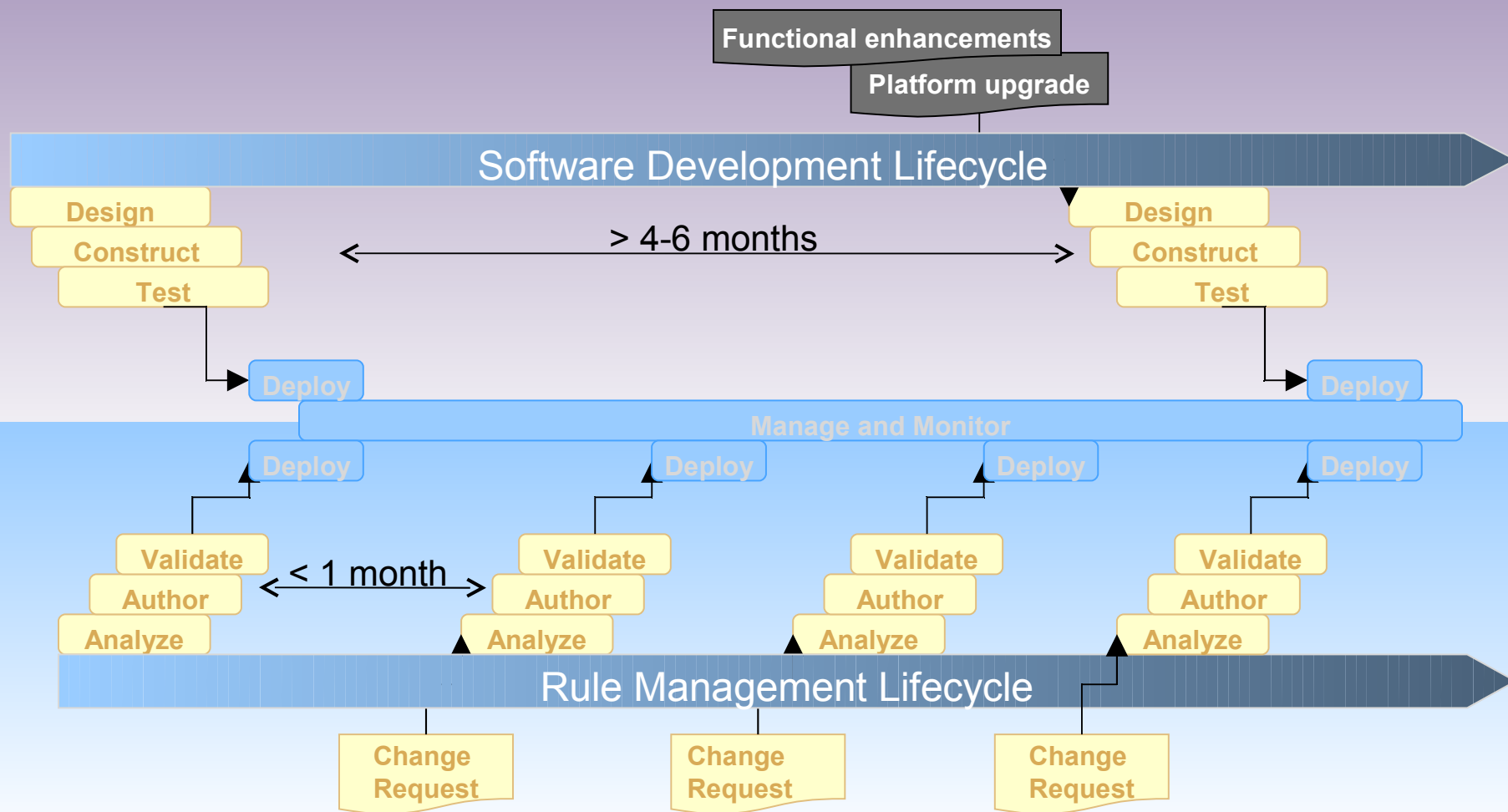
The screenshot displays the Microsoft Word interface with a 'Ruleflow' ribbon. The central area is a graphical editor showing a flowchart with nodes: 'initResult', 'validation', 'computation', 'eligibility', and 'insurance'. A 'Business Vocabulary' pane on the left lists terms like 'rule', 'status', 'Variables', 'boolean', etc. A 'RuleDoc' pane on the right shows 'Ruleflow' details and a 'Toolbox' with icons for 'Rule Task', 'Subflow Task', 'Action Task', 'Branch', 'Fork', 'Join', 'Start', 'End', and 'Transition'. A 'Problem List' pane is also visible. Callouts point to the 'Rule Toolbar' (top right), 'Complete Graphical toolbar' (right side), 'Problem List' (bottom right), and 'Graphical editor' (bottom center).

MS Office Word

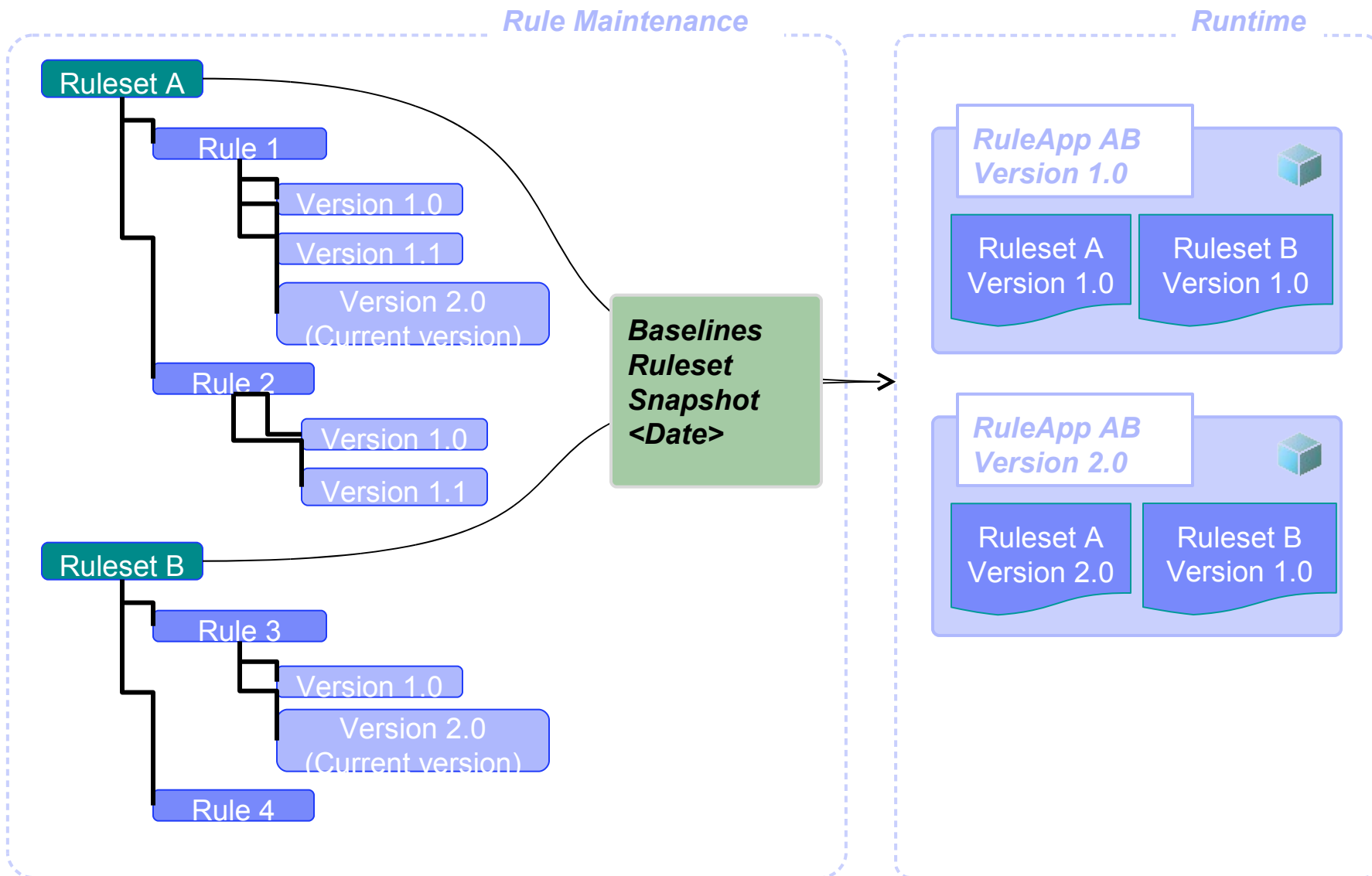
Graphical editor

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Rule & Software Development Lifecycles



Flexible Rule Deployment with Versioning



Testing and Simulation

- The feature formally known as Decision Validation Services
- Functionality Overview
 - Out-of-the-box ruleset testing in Rule Team Server
 - Business impact simulation in Rule Team Server
 - Scenario configuration and customization in Rule Studio
 - Audit - Decision Warehouse in Rule Execution Server

The screenshot displays the ILOG Rule Team Server web interface in Microsoft Internet Explorer. The browser title is "ILOG Rule Team Server - Microsoft Internet Explorer". The address bar shows the URL: `http://localhost:8080/teamsrver/faces/explore/details.jsp?project=LoanValidation&baseline=current&id=brm.TestSuite%3A6%3A21&locale=en`. The page header includes "WebSphere. ILOG Rule Team Server" and navigation tabs: Home, Explore, Compose, Query, Analyze, Project, Configure. The current page is "Explore > Details" for "LoanValidation - Second Test Suite (Test Suite)".

The main content area shows the "Second Test Suite (Test Suite)" details. It includes a "Properties" section with the following information:

Name	Second Test Suite
Folder	/rulePackage
Group	
Created By	rtsAdmin
Created On	Apr 24, 2009 10:54:44 AM CEST
Last Changed By	rtsAdmin
Last Changed On	Apr 24, 2009 2:00:41 PM CEST

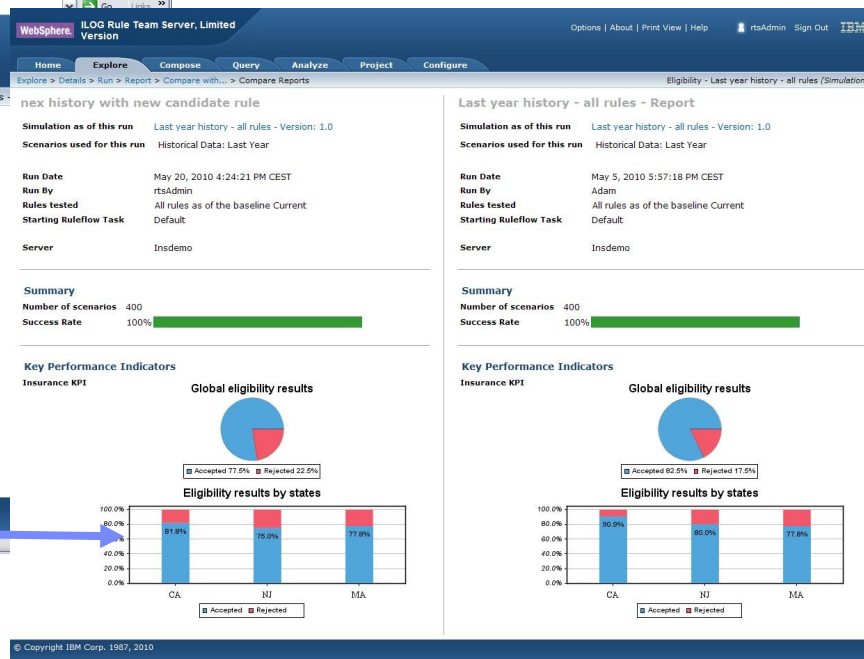
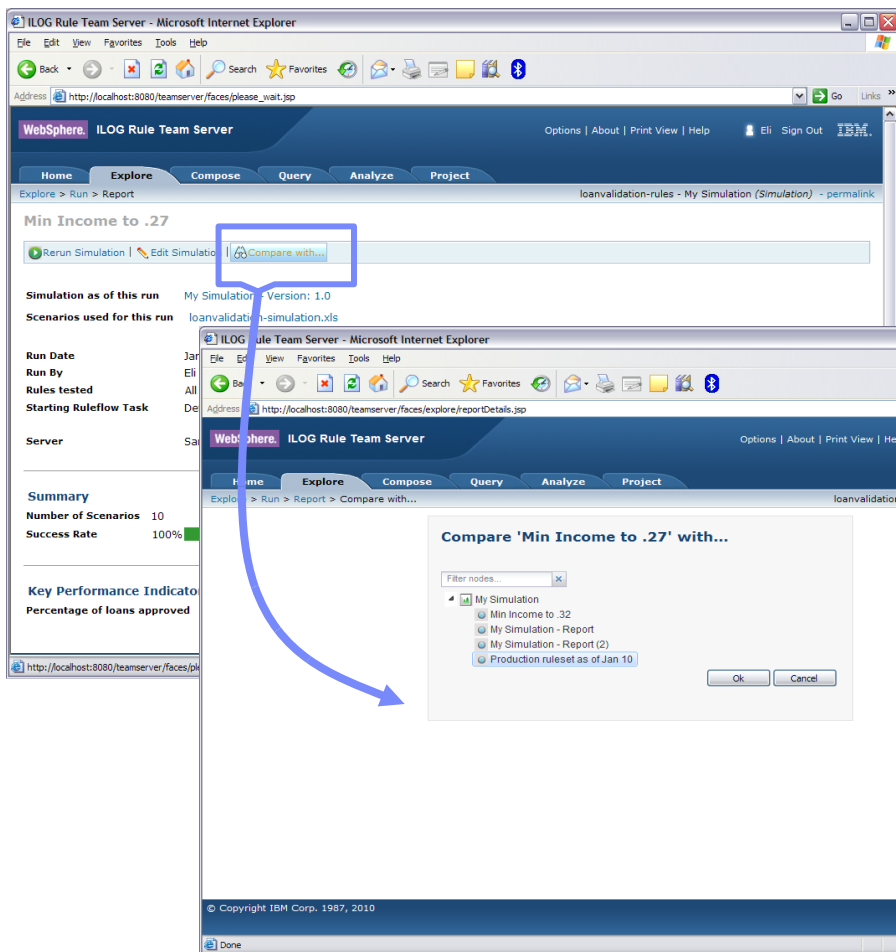
Other sections include "Rules tested" (All rules as of the current project state), "Scenarios" (Format: Excel (2003), template1.xls), and "Reports". The "Latest Reports:" section contains a table with the following data:

Name	Test Suite Version	Scenarios	Status	Created On	Run By
Second Test Suite - Report (10)	2.1	10		April 24, 2009 2:00:50 PM	rtsAdmin
Second Test Suite - Report (9)	2.0	10		April 24, 2009 1:59:41 PM	rtsAdmin
Second Test Suite - Report (8)	1.13	10		April 24, 2009 11:49:46 AM	rtsAdmin
Second Test Suite - Report (7)	1.13	10		April 24, 2009 11:47:47 AM	rtsAdmin
Second Test Suite - Report (6)	1.11	10		April 24, 2009 11:12:30 AM	rtsAdmin

The footer of the page shows "© Copyright IBM Corp. 1987, 2009" and "Local intranet".

Simulation Capabilities

- Test suite comparison
- Simulation suite comparison
- Champion and challenger scenario
- Allows what if analysis



Side by side comparison

Today

Tomorrow

Scenario Definition

The screenshot displays three overlapping spreadsheet windows. The top window, titled 'A19', shows a table of scenario definitions. The middle window, titled 'L15', shows the 'Expected Results' for these scenarios. The bottom window, titled 'F9', shows 'Expected Processing Results' including the number of ruleflow tasks and rules fired for each scenario.

Input Data (A19):

Scenario name	Description	borrower		loan				
		yearly income	credit score	name	amount	approved	yearly interest rate	duration
Scenario 1	Good credit; get rate with insurance	75000	600	John Simons	250000	FALSE	0.0625	120
Scenario 2	Good credit; get higher rate	110000	700	Jane Howe	300000	FALSE	0.0575	120
Scenario 3	Good credit; get rate	125000	750	Isaac Mintner	500000	FALSE	0.0625	120
Scenario 4	Great credit; get lower rate	100000	800	Fernando Rodriguez	300000	FALSE	0.075	120
Scenario 5	Good credit; loan too high	90000	700	Jaclyn Perkins	500000	FALSE	0.0775	120

Expected Results (L15):

Scenario name	Approved	Yearly Repayment
Scenario 1	TRUE	1595.45
Scenario 2	TRUE	1755.45
Scenario 3	TRUE	3190.9
Scenario 4	TRUE	1755.45
Scenario 5	FALSE	0

Rulset Tests (F9):

Scenario name	Number of ruleflow tasks executed	Number of rules fired
Scenario 1	4	15
Scenario 2	4	16
Scenario 3	4	14
Scenario 4	4	15
Scenario 5	3	5

Test Suite in Rule Studio

The screenshot displays the Eclipse SDK interface for Rule Studio. On the left, the **Rule Explorer** shows a project structure with a **testsuite.xls** file. The **Run** dialog is open, showing configuration options for the test suite. A callout box labeled **Generated Scenario Document** points to the **testsuite.xls** file. Another callout box labeled **Configuration editing** points to the **Run** dialog. The **WebSphere. Execution Report** is displayed, showing a summary of the test execution results. A callout box labeled **Detailed Scenario Reports** points to the **Details for all Scenarios** table.

WebSphere. Execution Report

Summary

Execution	Local
Decimal Precision	Use all digits
Scenarios	19
Tests	19
Success Rate	73 %
Failures	4
Errors	1

Details for all Scenarios

Name	Success Rate	Tests	Failures
Scenario 1	100 %	1	0
Scenario 2	100 %	1	0
Scenario 3	100 %	1	0
Scenario 4	100 %	1	0
Scenario 5	100 %	1	0
Scenario 6	100 %	1	0
Scenario 7	100 %	1	0
Scenario 8	0 %	0	0
Scenario 9	100 %	1	0

Test Suite in Decision Server

Second Test Suite - Report (6)

Test Suite as of this run: Second Test Suite - Version: 1.11
 Scenarios used for this run: template1.xls

Run Date: Apr 24, 2009 11:12:30 AM CEST
 Run By: rtsAdmin
 Rules tested: All rules as of the baseline Current
 Starting Ruleflow Task: Default
 Server: Sample

Summary

Number of Scenarios	10
Scenarios with Failures	2
Scenarios with Errors	1
Success Rate	70%

Details

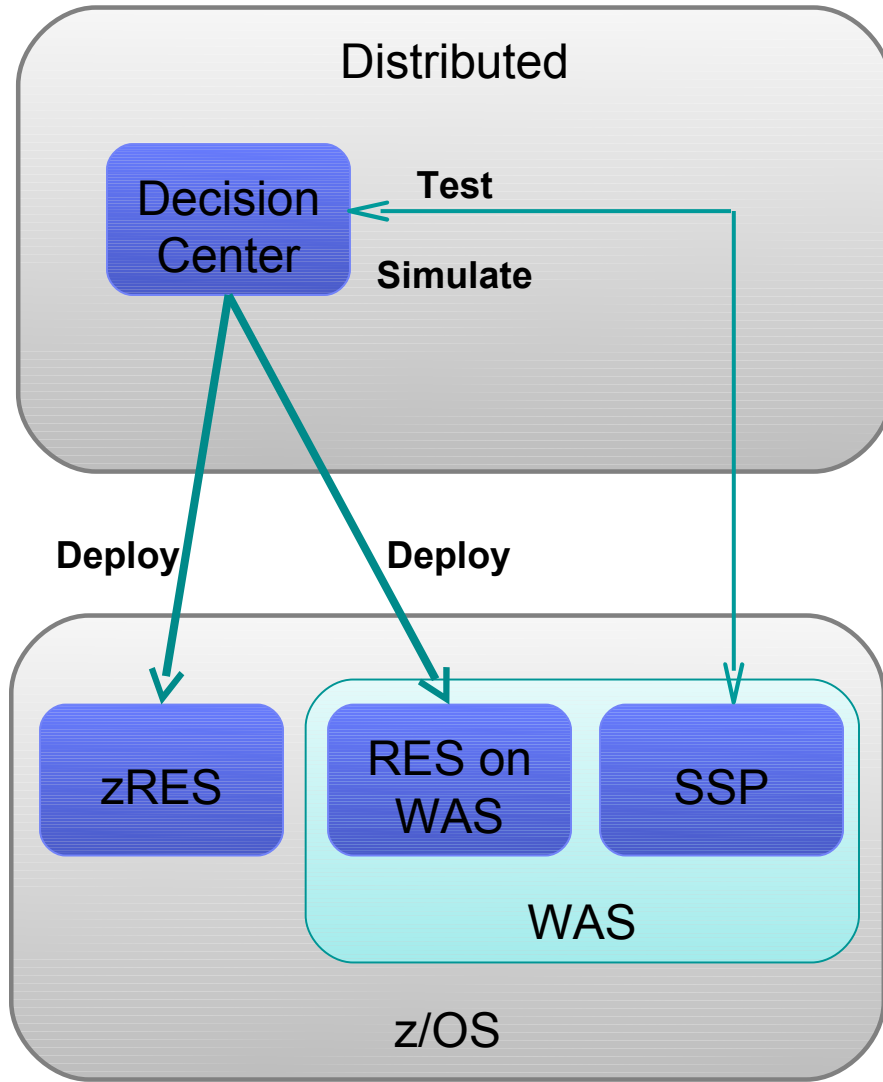
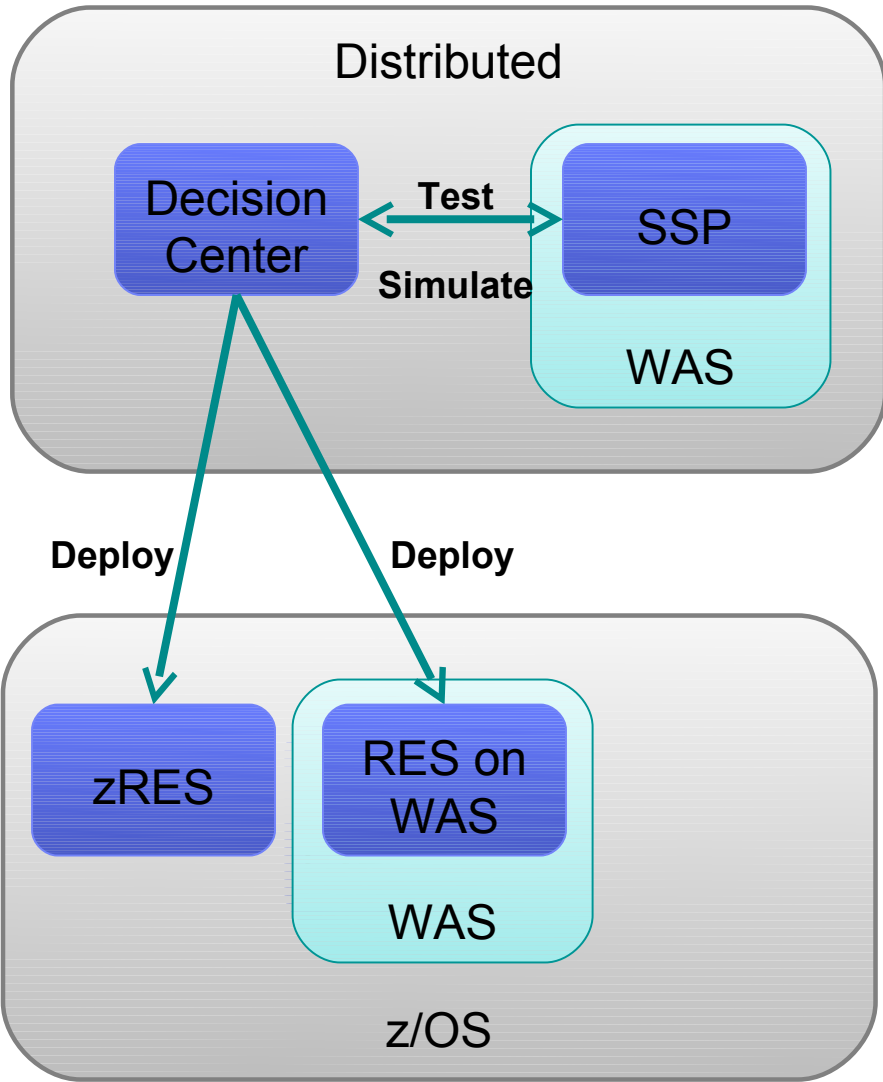
Name	Status
Scenario 1	Failed
Scenario 2	Failed
Scenario 3	Passed
Scenario 4	Passed
Scenario 5	Passed
Scenario 6	Passed
Scenario 7	Passed
Scenario 8	Passed
Scenario 9	Failed
Scenario 10	Passed

DS Test Suite Results

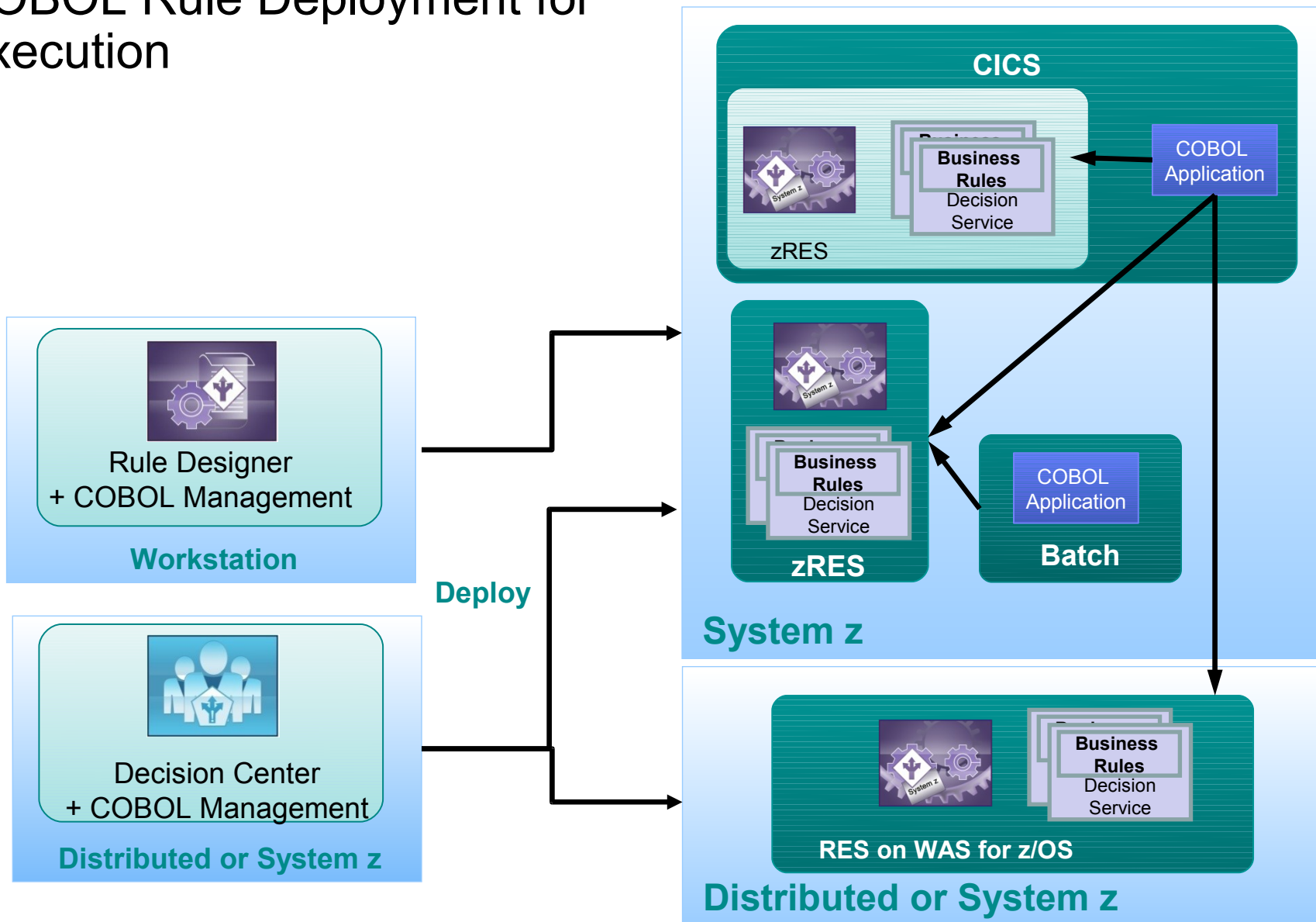
Detailed Scenario Reports

Name	Status	Test Results																								
Scenario 1	7 test(s) (1 failure(s) - 0 error(s))	<table border="1"> <thead> <tr> <th>Status</th> <th>Test</th> <th>Message</th> </tr> </thead> <tbody> <tr><td>✓</td><td>the application result of borrower equals</td><td>the observed value Low Risk is the expected value</td></tr> <tr><td>✓</td><td>the credit check report of borrower equals</td><td>the observed value null is the expected value</td></tr> <tr><td>✓</td><td>the credit check result of borrower equals</td><td>the observed value Refused is the expected value</td></tr> <tr><td>✓</td><td>the fraud probability of borrower equals</td><td>the observed value 5 is the expected value</td></tr> <tr><td>✓</td><td>the fraud report of borrower equals</td><td>the observed value tarin from paris rej is the expected value</td></tr> <tr><td>✓</td><td>the fraud result of borrower equals</td><td>the observed value Low Risk is the expected value</td></tr> <tr><td>✗</td><td>the execution duration in milliseconds is lower than or equals</td><td>the observed value 78 is greater than 50</td></tr> </tbody> </table> <p>The list of rules fired: rulePackage.businessRule The list of executed ruleflow tasks: mainRuleflow, mainRuleflow>rulePackage The duration (in ms) of execution: 78</p>	Status	Test	Message	✓	the application result of borrower equals	the observed value Low Risk is the expected value	✓	the credit check report of borrower equals	the observed value null is the expected value	✓	the credit check result of borrower equals	the observed value Refused is the expected value	✓	the fraud probability of borrower equals	the observed value 5 is the expected value	✓	the fraud report of borrower equals	the observed value tarin from paris rej is the expected value	✓	the fraud result of borrower equals	the observed value Low Risk is the expected value	✗	the execution duration in milliseconds is lower than or equals	the observed value 78 is greater than 50
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✗	the execution duration in milliseconds is lower than or equals	the observed value 78 is greater than 50																								
Scenario 2	7 test(s) (2 failure(s) - 0 error(s))	<table border="1"> <thead> <tr> <th>Status</th> <th>Test</th> <th>Message</th> </tr> </thead> <tbody> <tr><td>✗</td><td>the application result of borrower equals</td><td>the observed value Low Risk does not equal the expected value High risk</td></tr> <tr><td>✓</td><td>the credit check report of borrower equals</td><td>the observed value null is the expected value</td></tr> <tr><td>✓</td><td>the credit check result of borrower equals</td><td>the observed value Refused is the expected value</td></tr> <tr><td>✗</td><td>the fraud probability of borrower equals</td><td>the observed value 5 does not equal the expected value 6</td></tr> <tr><td>✓</td><td>the fraud report of borrower equals</td><td>the observed value tarin from paris rej is the expected value</td></tr> <tr><td>✓</td><td>the fraud result of borrower equals</td><td>the observed value Low Risk is the expected value</td></tr> <tr><td>✓</td><td>the execution duration in milliseconds is lower than or equals</td><td>the observed value 0 is not greater than 13</td></tr> </tbody> </table> <p>The list of rules fired: rulePackage.businessRule The list of executed ruleflow tasks: mainRuleflow, mainRuleflow>rulePackage The duration (in ms) of execution: 0</p>	Status	Test	Message	✗	the application result of borrower equals	the observed value Low Risk does not equal the expected value High risk	✓	the credit check report of borrower equals	the observed value null is the expected value	✓	the credit check result of borrower equals	the observed value Refused is the expected value	✗	the fraud probability of borrower equals	the observed value 5 does not equal the expected value 6	✓	the fraud report of borrower equals	the observed value tarin from paris rej is the expected value	✓	the fraud result of borrower equals	the observed value Low Risk is the expected value	✓	the execution duration in milliseconds is lower than or equals	the observed value 0 is not greater than 13
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Scenario 3	0 test(s) (0 failure(s) - 0 error(s))																									
Scenario 4	0 test(s) (0 failure(s) - 0 error(s))																									
Scenario 5	0 test(s) (0 failure(s) - 0 error(s))																									
Scenario 6	0 test(s) (0 failure(s) - 0 error(s))																									
Scenario 7	0 test(s) (0 failure(s) - 0 error(s))																									

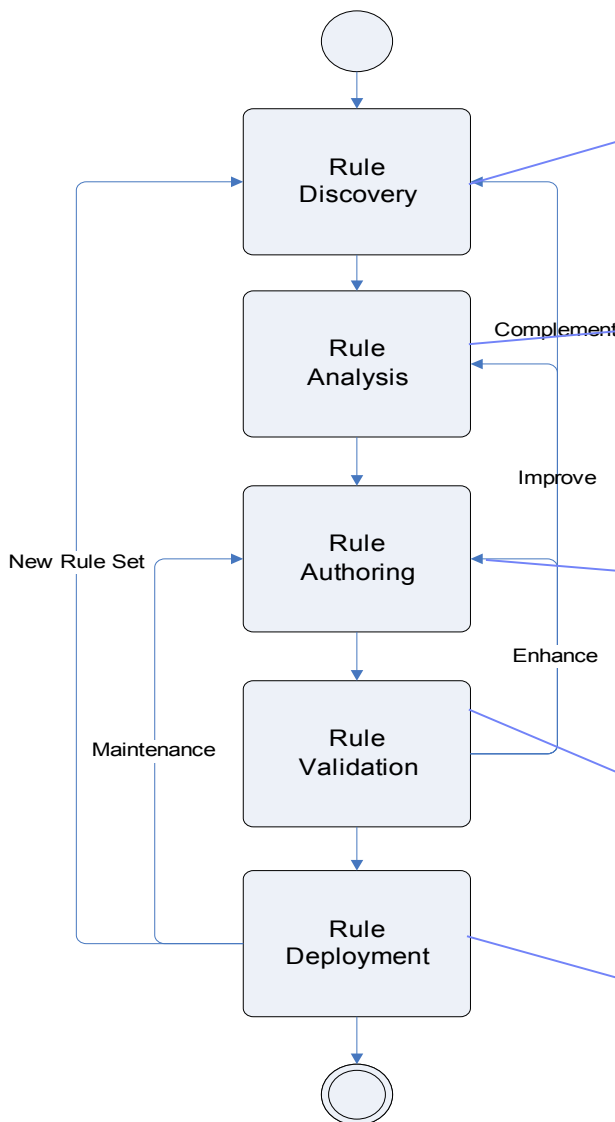
Test & Simulate Options for z



COBOL Rule Deployment for Execution



Agile Business Rule Development



- Capture the raw business rules for one decision service
- Harvest rule using short workshop sessions

- Form a set of coherent business rules applying industry standard benchmarks, including redundancy and overlap checks
- Isolate and factor out common rules

- Develop domain object model
- Design a scalable rule repository structure
- Develop ruleflow, rules, decision tables...

- Test in Sandbox deployment environment
- Involve subject matter expert (SME) for feedback

- Use rule execution server staging platform

Thank
YOU



WebSphere Operational Decision Management

Agenda

System z



Solution Overview



1 Rules Authoring



2 Rule Execution Options



3 Rule Management



4 Business Events



Business Events are Everywhere

Address Change

Large Transaction

Logged into website

Bill paid

Accept offer

Wire transfer

Account rollover

Customer complaint

Close account

Late payment

Increase in activity

Added dependent

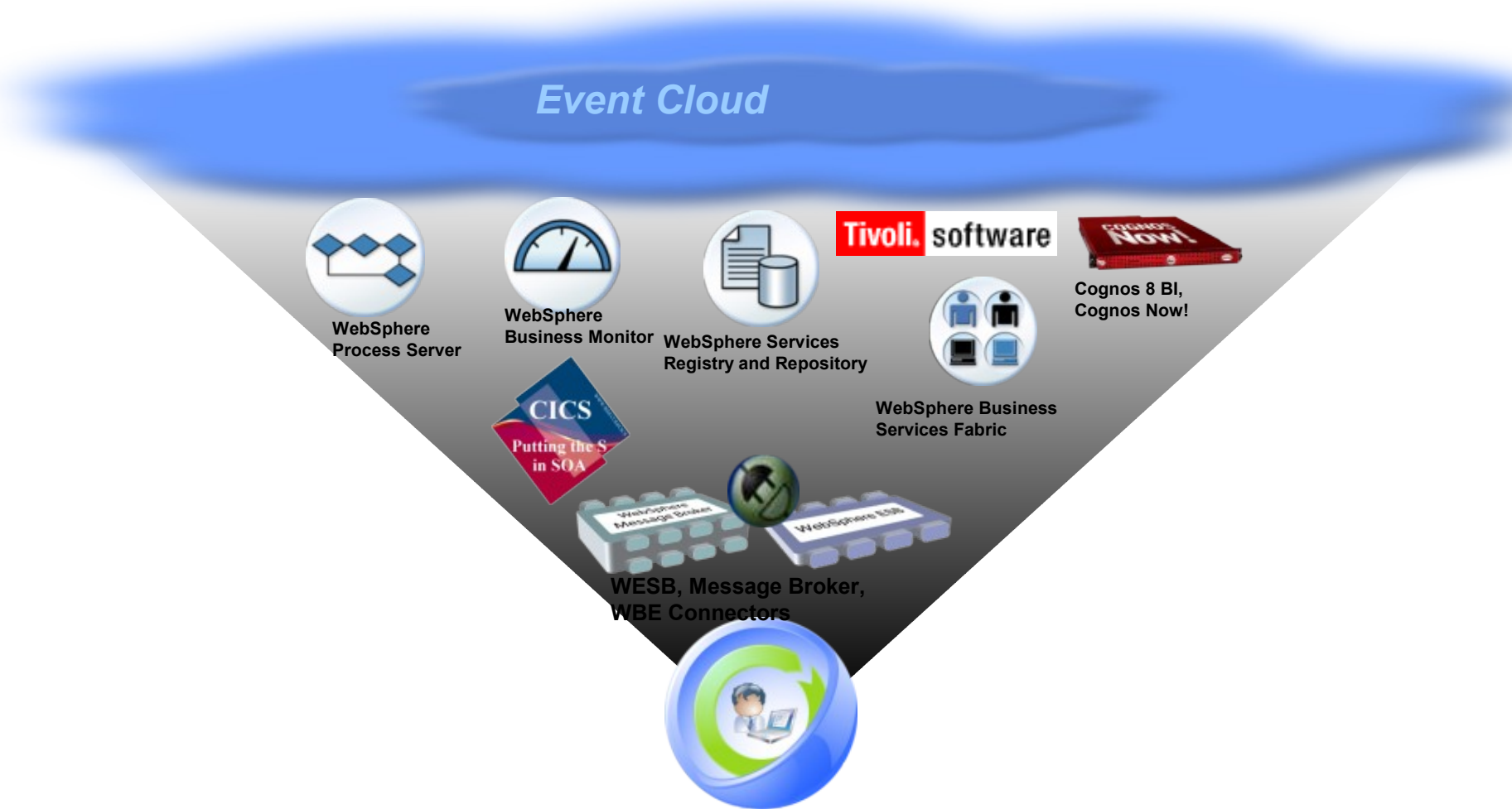
Open account

Suspicious activity

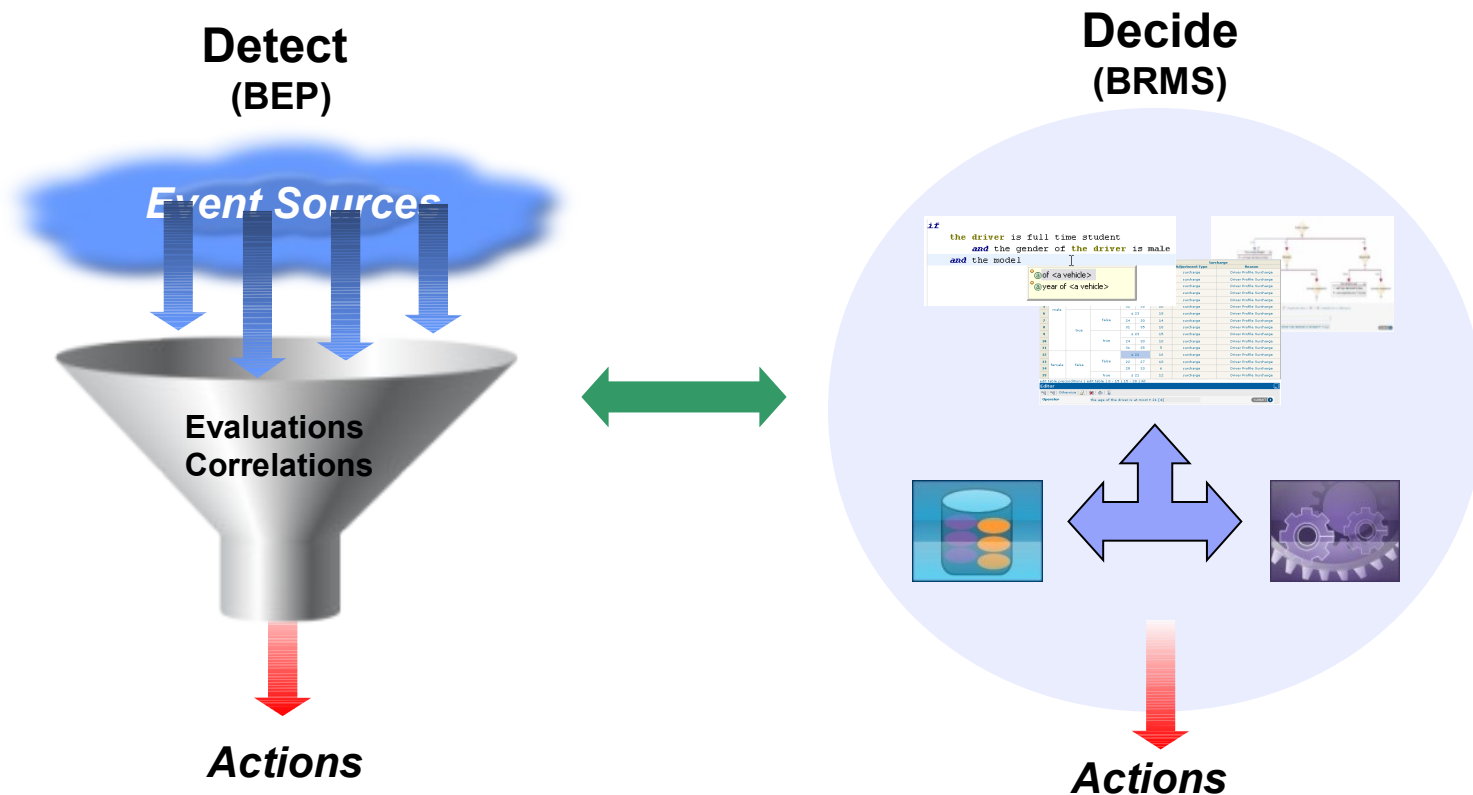
And Constantly Increasing

Start Application for
New Account

IBM Delivers Business Event Processing



Together: Additional Insight for Action



▶ **BEP - Detects** when events or patterns of events occur to notify people or systems to take action

▶ **BRMS - Decides** business outcome through execution of business rules against available data

Business Event Processing



Define WBE Interactions (Logic)

Empowers IT and Business Analyst to define the logic

Interaction UI

The screenshot shows the 'Interaction Set' configuration for 'Respond To Large Price'. It is related to 'Customer.Id'. The event is 'Price Quote (Website)'. The conditions are 'After 3 days', 'If: Large Premium', and 'and: No Purchase Event'. The actions are 'Then: Immediately Sales Followup (CRM System)' and 'Immediately Send Promotion Mailing (Direct Mailing)'. An arrow points from the 'No Purchase Event' filter in the Filter UI below to the 'and' condition in the Interaction UI.



IT Developer



Business Analyst

Event

Conditions

Actions

Filter UI

The screenshot shows two filter rules. The first filter is 'Large Premium' with the condition 'Customer.Customer Premium Is Greater Than 1000'. The second filter is 'No Purchase Event' with the condition '(All Occurrences Of Purchase) Is 0'.

- Drop-down, Point & Click Construction
- Business Vernacular
- Reusable Assets – Events, Filters, Actions

With Building Blocks Defined, Business Analyst Define the Logic

Assemble Event Flows

Drag & drop to visualize relationship between Interactions



IT Developer



Business User



Business Analyst

Event Flow

Interactions

Interaction Set: Failed Login Threshold Related by Customer.Account ID

In response to: Failed Login (Website)

Immediately

If: Event Repeats 3 Times

Then: Immediately Level 1 Suspicious (Fraud)

Else: no action

Interaction Set: Watch For Large Withdrawal Related by Customer.Account ID

In response to: Withdrawal (ATM System)

Immediately

If: Changed PIN in Last 24 Hours and Large Withdrawal

Then: Immediately Level 1 Suspicious (Fraud)

Else: no action

Interaction Set: Level 1 Threshold Related by Customer.Account ID

In response to: Level 1 Suspicious (Fraud)

Immediately

If: Event Repeats 3 Times

Then: Immediately Level 2 Suspicious (Fraud)

Else: no action

Interaction Set: Level 2 Threshold Related by Customer.Account ID

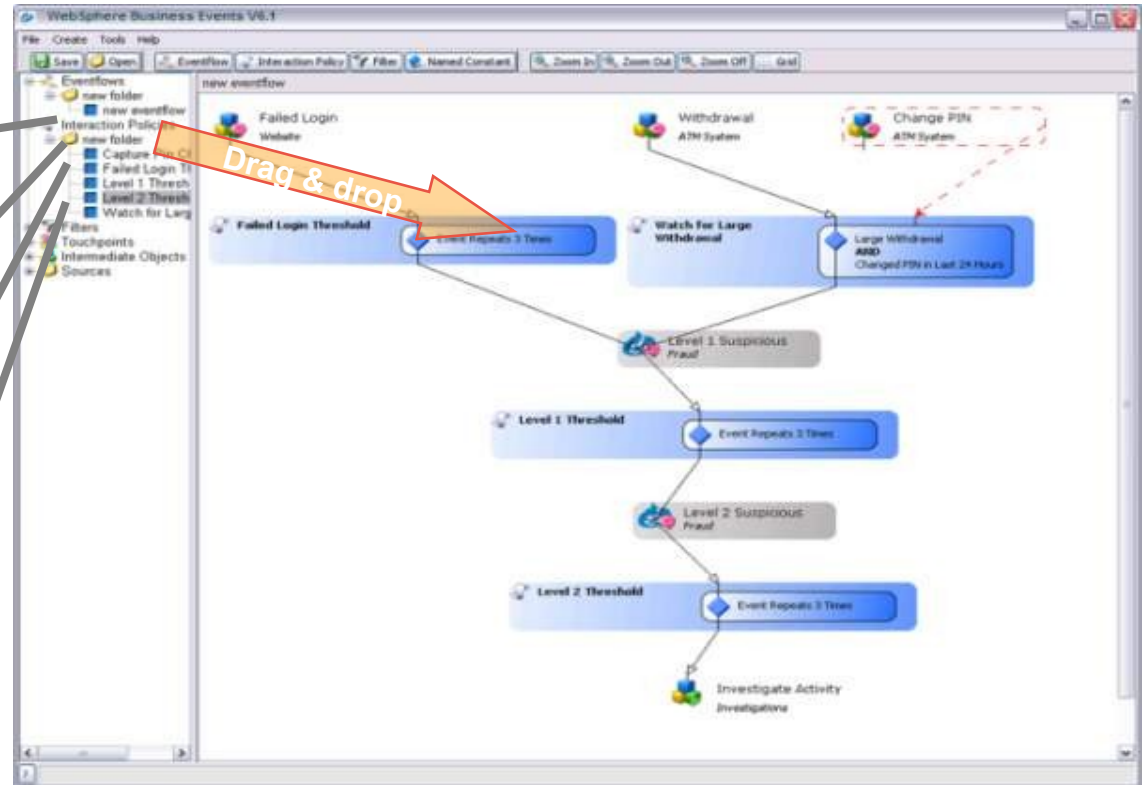
In response to: Level 2 Suspicious (Fraud)

Immediately

If: Event Repeats 3 Times

Then: Immediately Investigate Activity (Investigations)

Else: no action

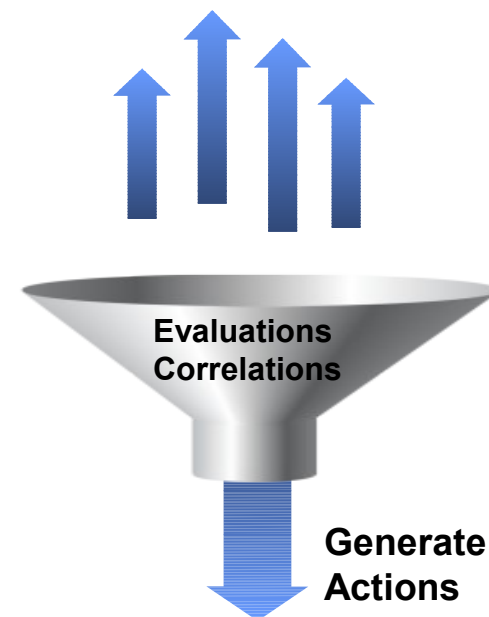


With event logic defined, Business maps out the event flow

What's in a pattern?

Use business events to identify event patterns

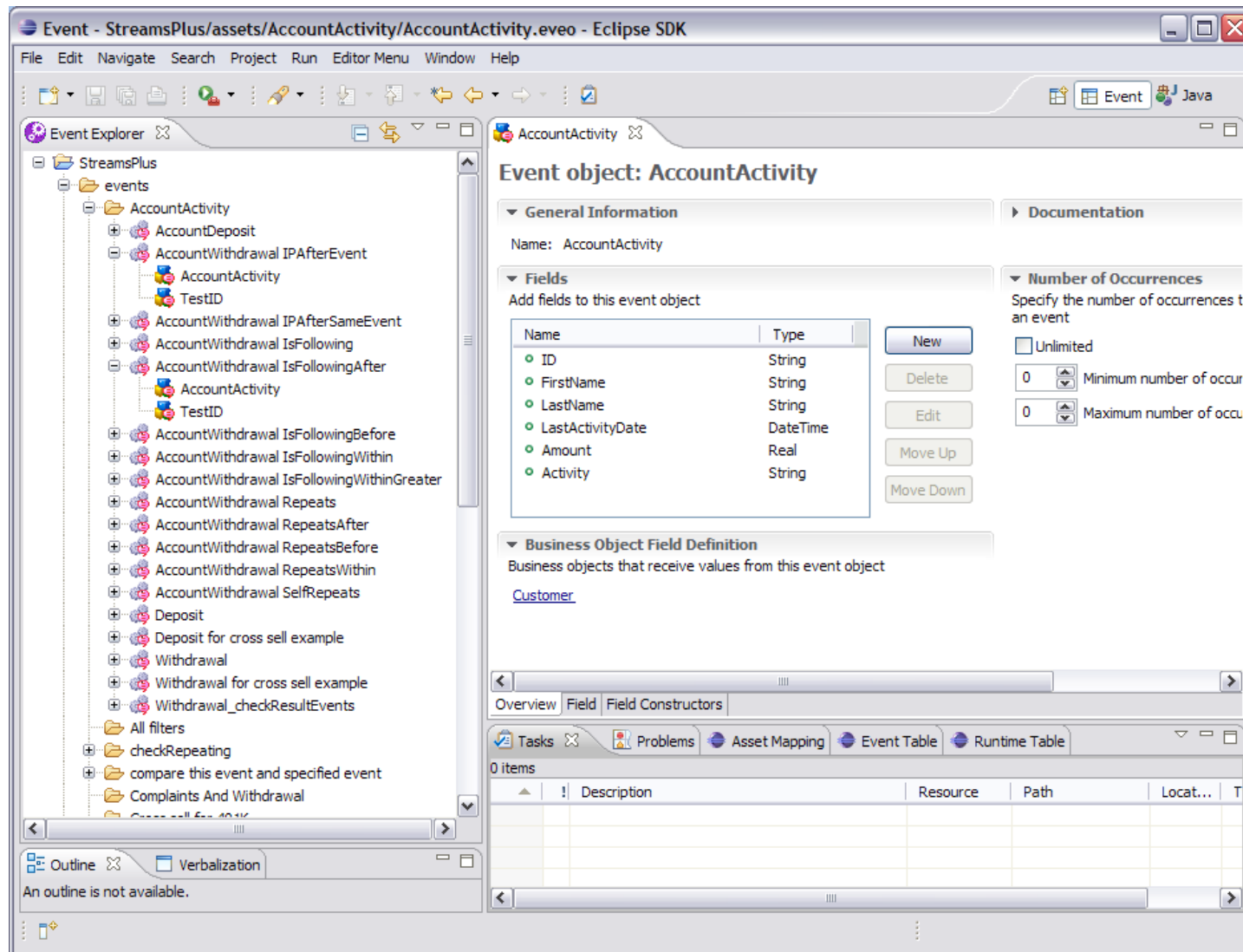
- Where the actionable event needs to be derived from physical events
- Where the action is not an immediate result of a single event
- Across multiple event types, different event sources
- Where the non-occurrence of an event is significant
- Where events or may not may not be ordered
- Where events are time related - must occur by a particular time, or within a particular time of one another





Patterns within the business



Decision Server – Event Designer Development Tool



Business Event Language & Editor

 Add To Campaign 

Event rule: Add To Campaign

▼ General Information ▶ Documentation

Name: Add To Campaign

▼ Event Rule Context and Event

Context ID: [Change Context...](#)

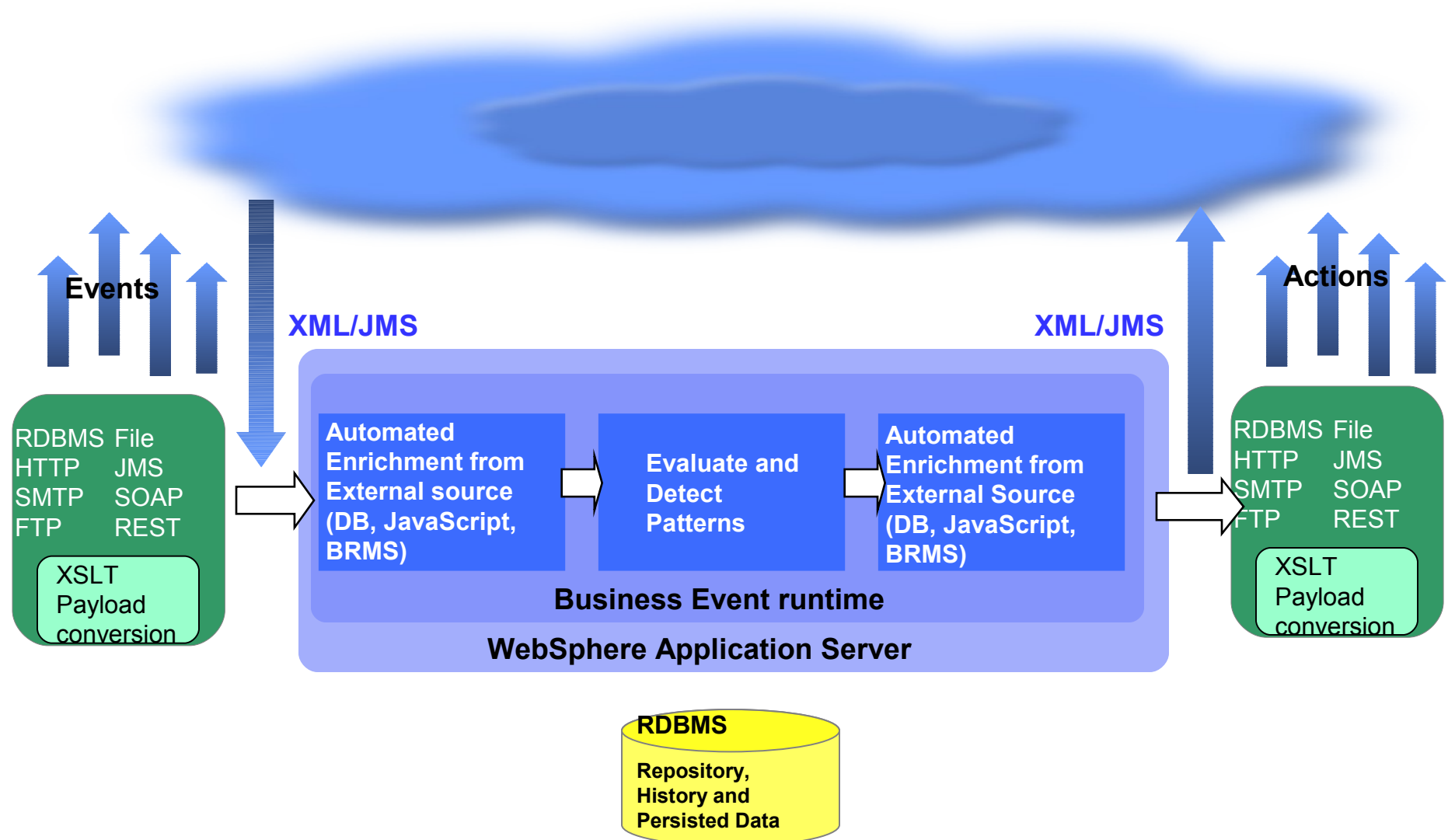
Event: [Change Event...](#)

Content

Directly type in this section to create or modify your event rule definition

if past occurrences of **Send our flyer** within **3 weeks** is less than **5** **and**
the registration of **the information request** ends with **"Z"**
then after **2 days** : Send our flyer ;

Business Events Runtime Overview

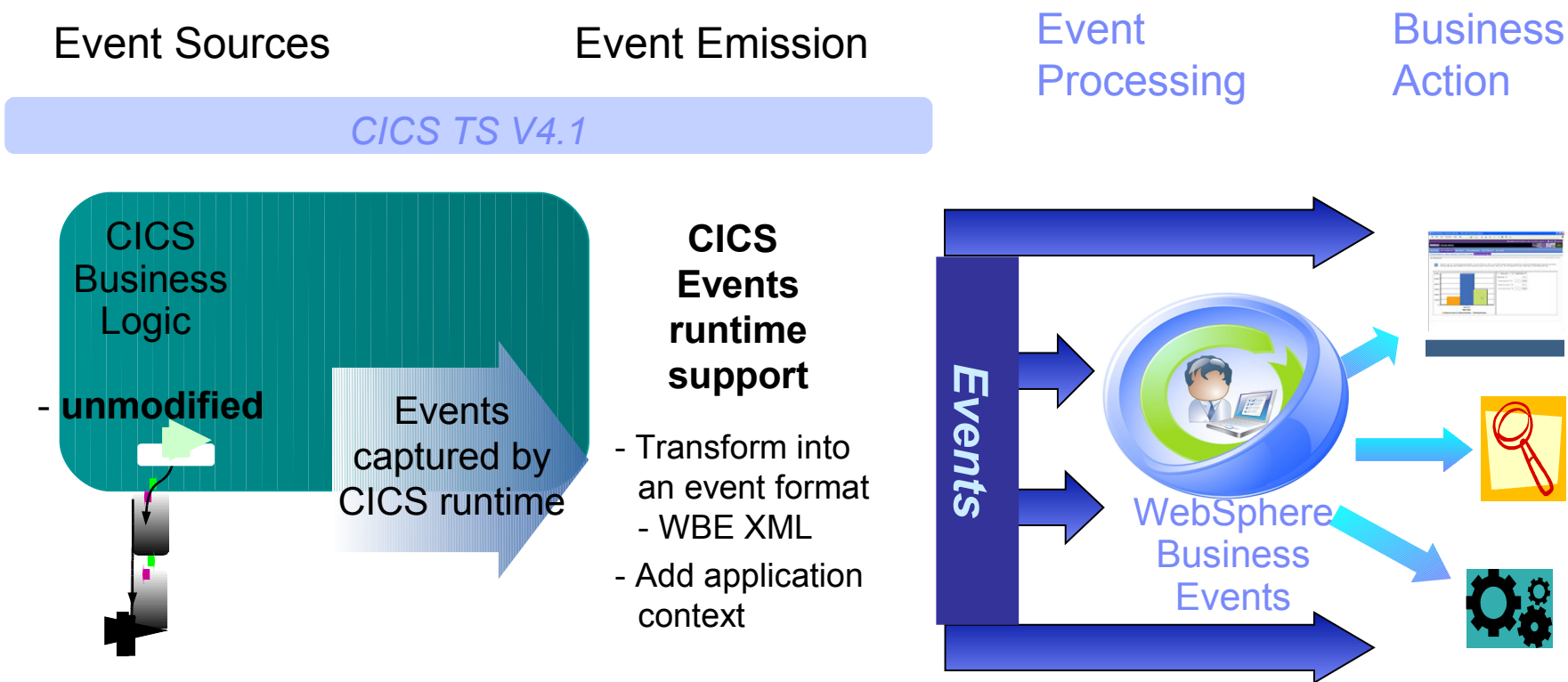


Business Events and System z

- Provide greater business agility for proven and trusted traditional System z applications
- Deliver new value and insight from legacy systems and transaction processing
- Enable the initiation of follow-on processing based on actionable patterns of transactions
- Provide means for coordinating information sharing across operational systems
- Increases efficiency and effectiveness providing faster time to value



Events from CICS Transaction Server



CICS Events help you to

- *Observe business processes*
- *Recognize suspicious activity*
- *Drive new processing*

CICS Event Binding Editor Tooling – Event Specification

The screenshot displays the IBM CICS Explorer interface. On the left is the Project Explorer showing a tree of applications, with 'Large Transactions.evbind' selected. The main workspace is titled 'Specifications' and shows a tree of event types, with 'LargeCashWithdrawal' selected. The right pane shows the configuration for this event, divided into three sections: General, Emitted Business Information, and Capture Specifications.

General
 Identify and describe the event.
 Name: LargeCashWithdrawal
 Description: Event emitted when a large cash withdrawal is made

Emitted Business Information
 Describe and order the business information to be emitted by the event.

Name	Type	Length	Precision	Description
Account_Number	Text	10	0	Account Number
Amount	Numeric	0	0	Withdrawal amount
Transaction_Type	Text	3	0	Type of transaction
Channel	Text	3	0	Channel used for transaction

Capture Specifications
 Add Capture Specifications to this event.
 Add a Capture Specification...

At the bottom, the Problems window shows 0 items. The status bar at the very bottom indicates the user is connected to a host.

Event Binding Editor Tooling – Capture Specification

The screenshot displays the IBM CICS Explorer Event Binding Editor. The main window is titled 'LargeTransactions.evbind' and shows the 'Specifications' tab. The left pane shows a project explorer with various applications, including 'LargeTransactions.evbind'. The main area is divided into three sections: 'Application Context', 'Application Command Options', and 'Application Data'.

Application Context
 Define predicates to filter events.

Context	Operator	Value
Transaction ID	All	
Current Program	Equals	CPPEPM33
User ID	All	
Response Code	All	Ok

Application Command Options
 Define predicates for command options. Predicates marked with * should be specified to maintain CICS performance.

Name	Operator	Value
PROGRAM*	Equals	WPPEPM33
CHANNEL	All	

Application Data
 Define predicates for application data. Import a language structure and pick an item to specify the data format.

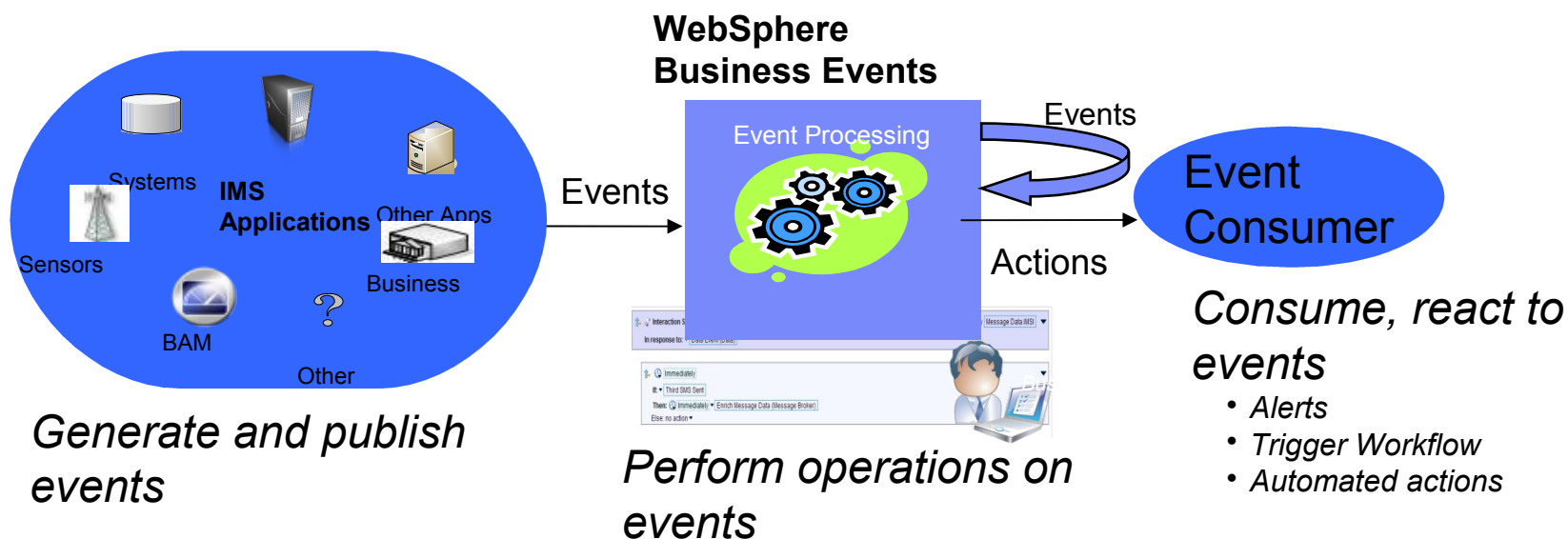
Source	Container	Offset	Length	Operator	Value
COMMAREA		77	8	Greater Than	5000

At the bottom of the Application Data section, there are buttons for 'Add...', 'Edit...', 'Remove...', and 'Move Up'.

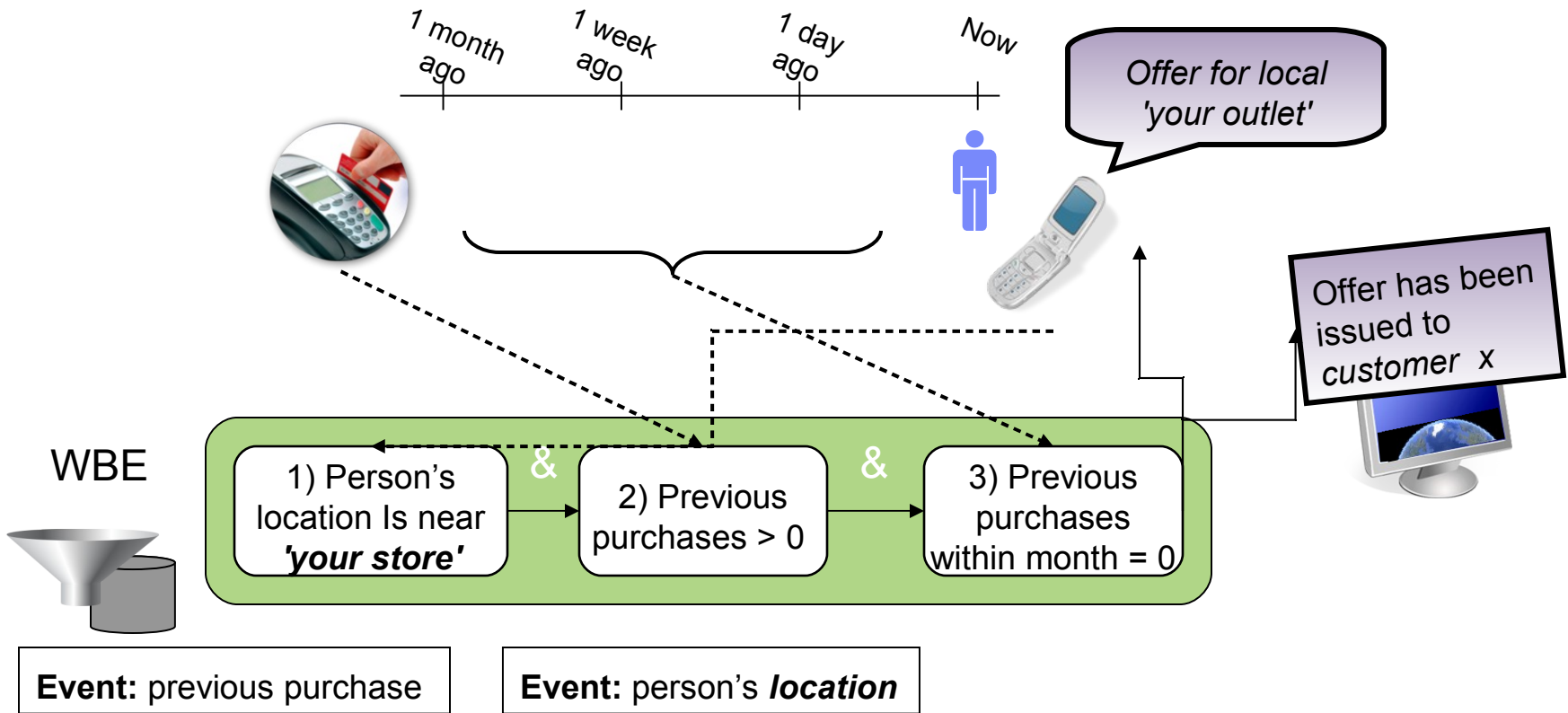
The status bar at the bottom shows: CNX01001 Connected user MOXEYC to host winmvs2c.hursley.ibm.com on port 27392. The user PEGIYCWZCGO is also visible.

IMS Business Event support for DM

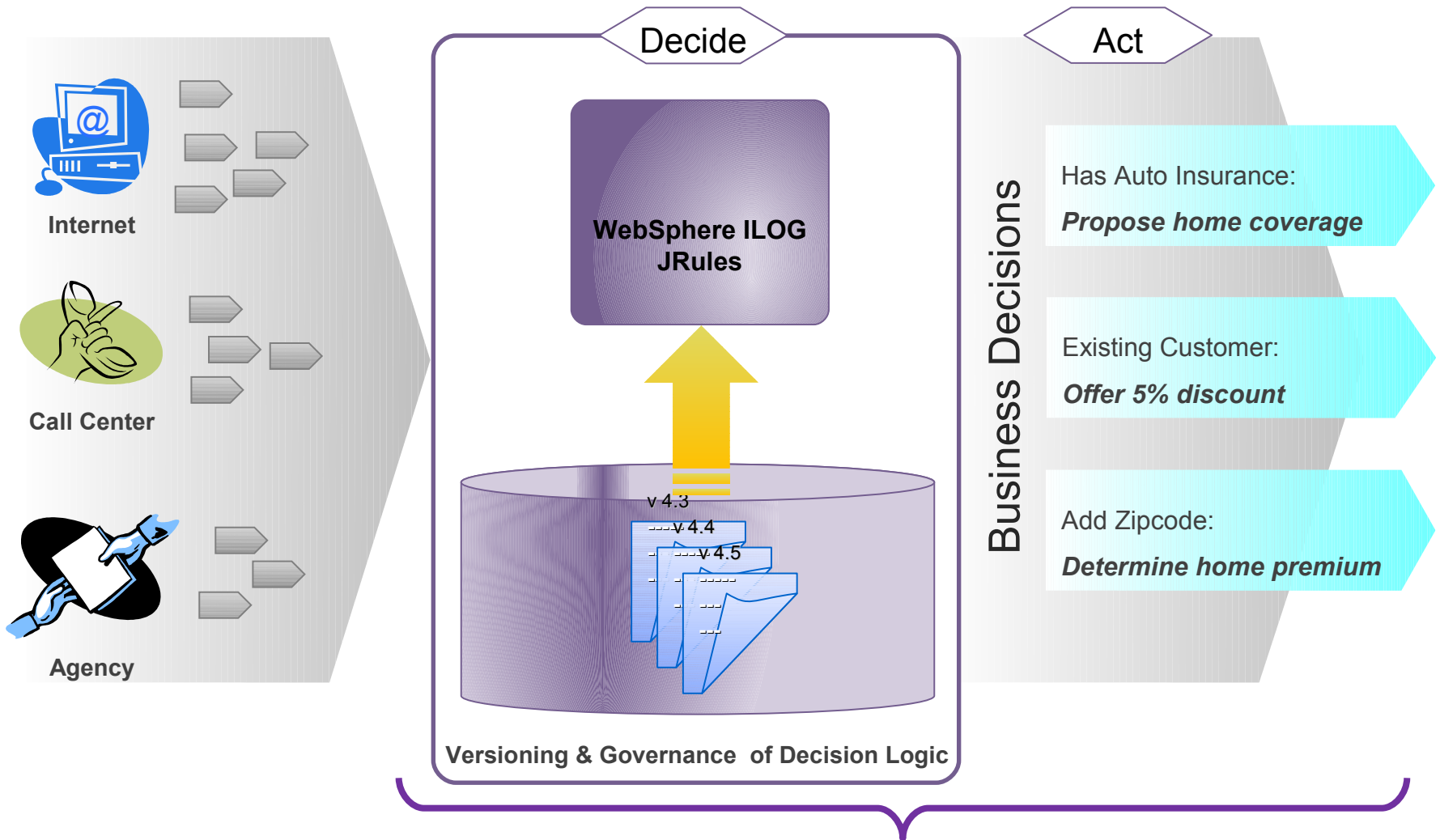
- Enable WebSphere Business Events (WBE) to receive business event data from IMS applications for business events processing and execution
- Empower business users to define and proactively manage business events with easy-to-use graphical tools
- Provide the ability to detect, decide and dynamically react to both simple and complex relationships among people, events and information



Location based marketing; smart meters



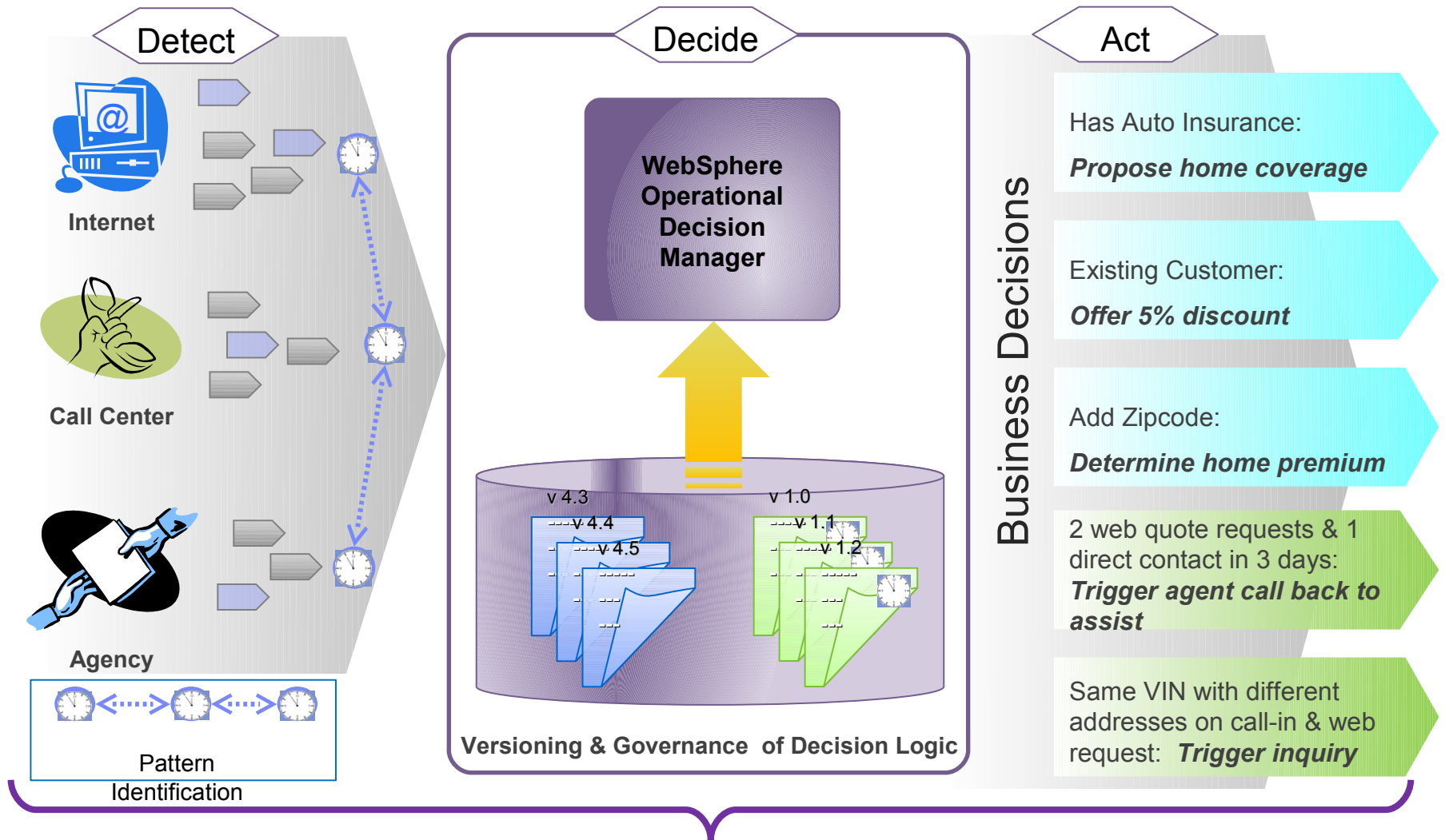
Summary: Today's Business Decision Support



WebSphere ODM JRules

Insurance use case: Customer acquisition

Summary: Tomorrow's Business Decision Support



WebSphere Operational Decision Management

Insurance use case: Customer acquisition

Thank You

