Follow the Business Rules to succeed in Modernizing your IMS Applications

Teleconference, November 6, 2012
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I am IMS

Key challenges for modernization

How can we rapidly respond to evolving market demands, competitive actions and regulatory requirements?

→***Adapt*** to rapid change

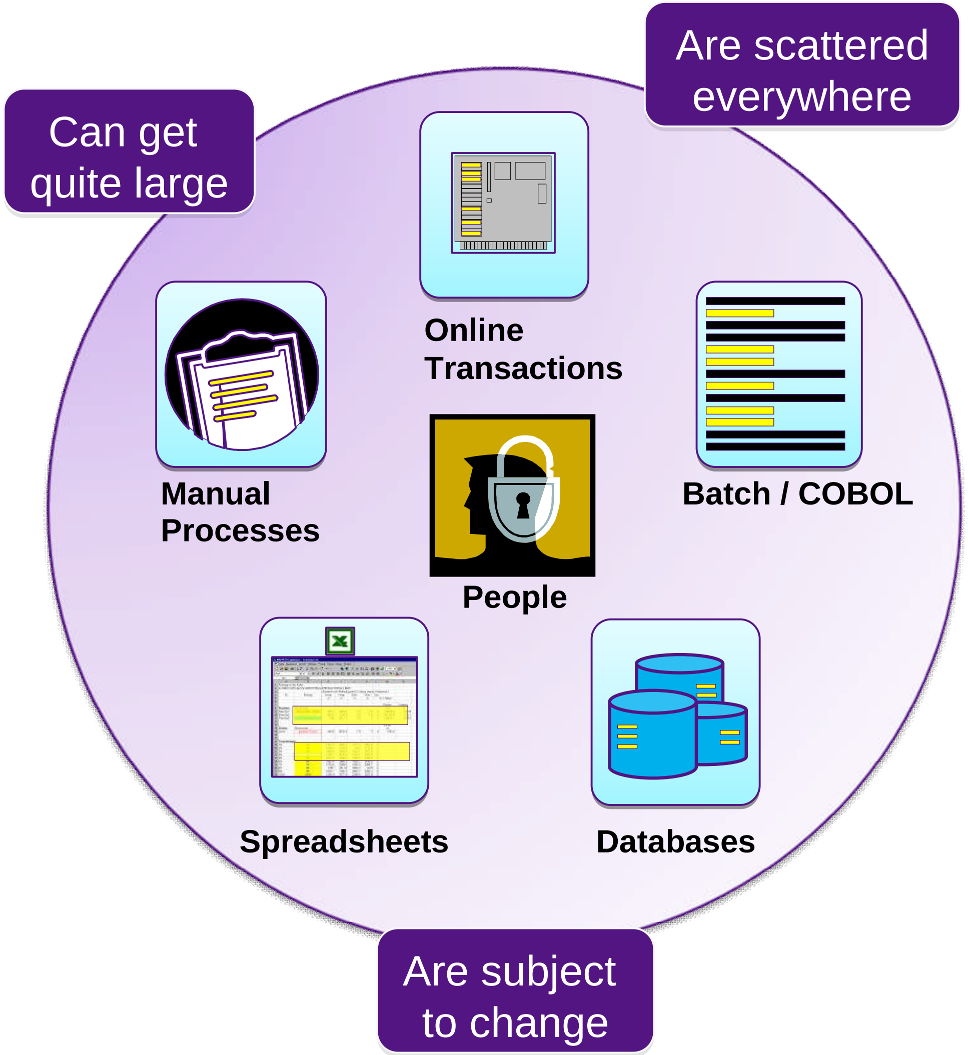
How can we simplify the visibility and governance of business decisions?

→***Align*** across business & IT

How can we ensure that business systems deliver the right interactions at the right time?

→***Act*** with precision and reliability

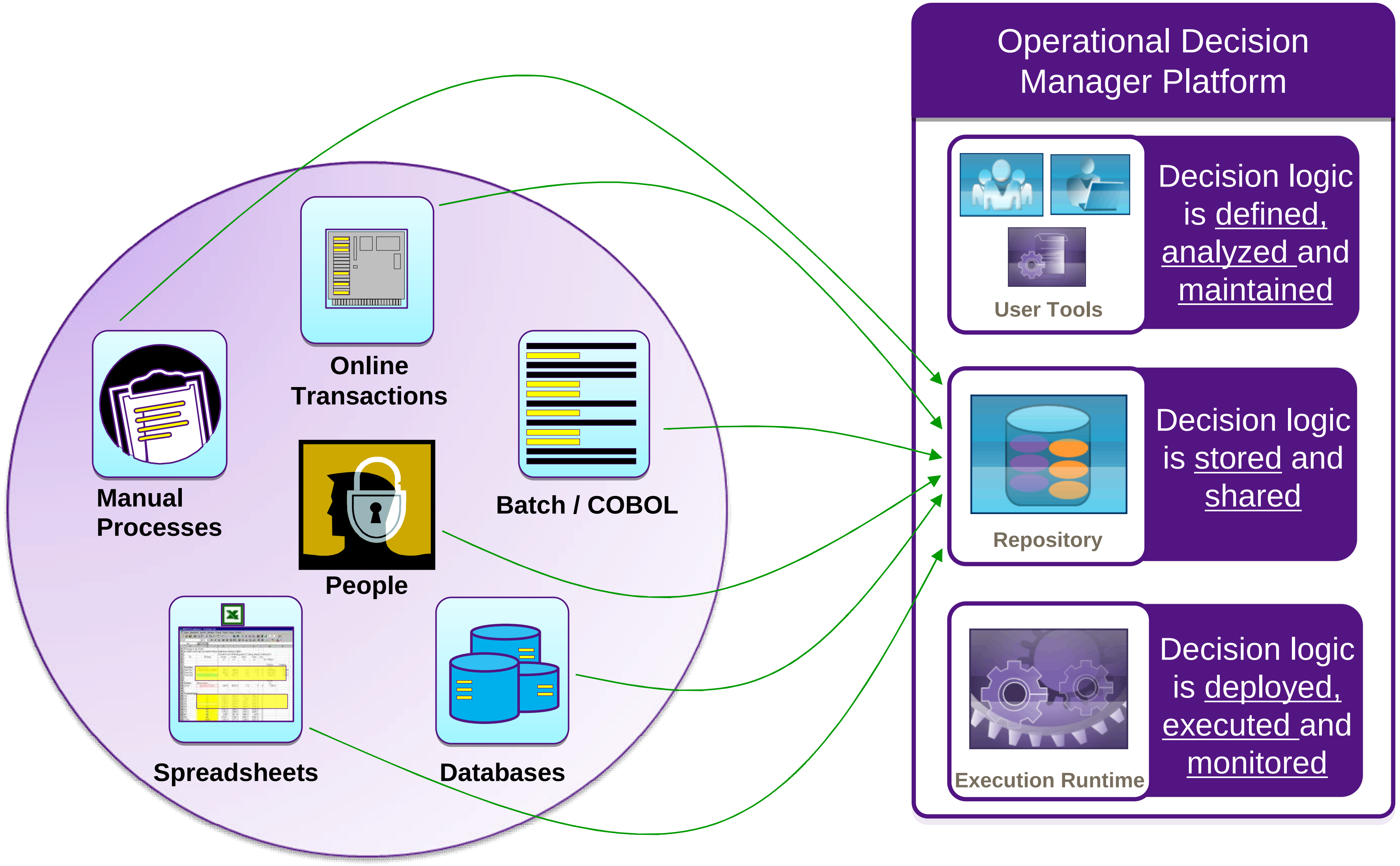
Operational decisions in organizations



Challenges for a Change Request

- Changes are costly, resource & time-intensive
  - Rules are hidden in COBOL code
  - Most changes have to be programmed – costly
- Lack of consistency
  - No central management
  - No reuse of decision logic
- Gap between business analysts & IT administrators
  - Knowledge fades over time
- Lack of audit ability
- No easy way to test/simulate changes

Operational Decision Manager approach



Manual Processes
Online Transactions
Batch / COBOL
People
Spreadsheets
Databases
Operational Decision Manager Platform
User Tools
Decision logic is defined, analyzed and maintained
Repository
Decision logic is stored and shared
Execution Runtime
Decision logic is deployed, executed and monitored

Why modernize with Decision Manager on z and why now?

Benefits of the ODM Approach

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 platform

4. Running parallel

✓ **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**

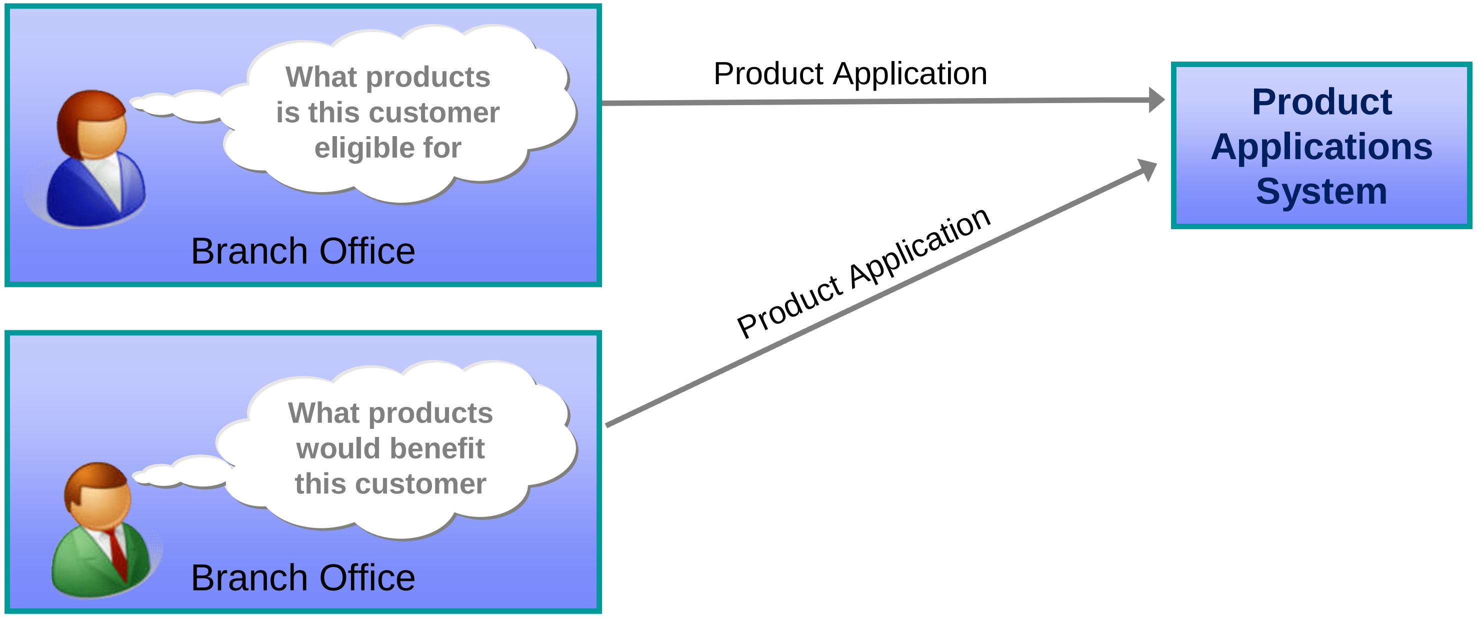
- Gradually pull out rules from existing applications - does not require a “big bang” change
- Rewrite business rules in natural language

A Top 5 North American Bank

- One of the largest financial service providers in the world
- Over 18 million clients worldwide
- Nearly ¼ million mortgages
- Nearly ½ million loan products
- Prioritizes branch office networks to build personal ties with its clients

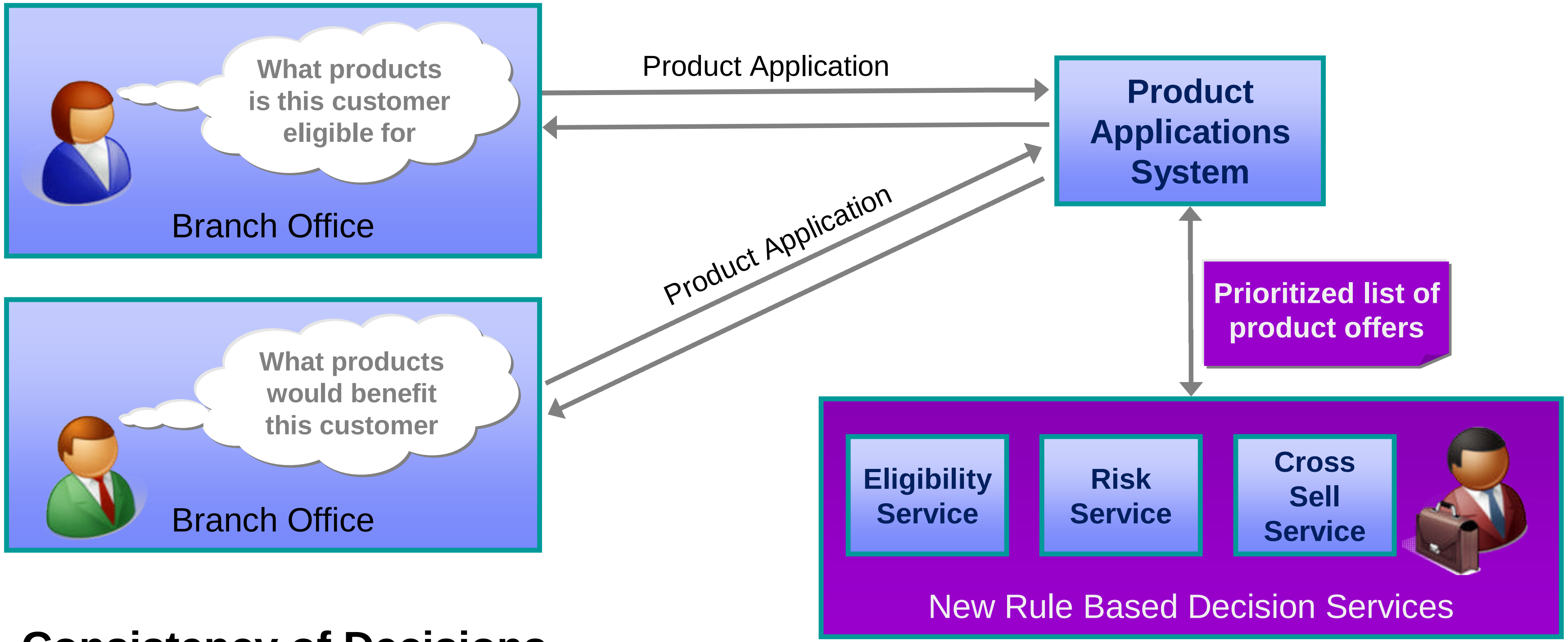
Large opportunity for the bank to cross sell / up sell financial products to existing customers

Existing Scenario


What products is this customer eligible for
Branch Office
Product Application
Product Applications System
Product Application
What products would benefit this customer
Branch Office

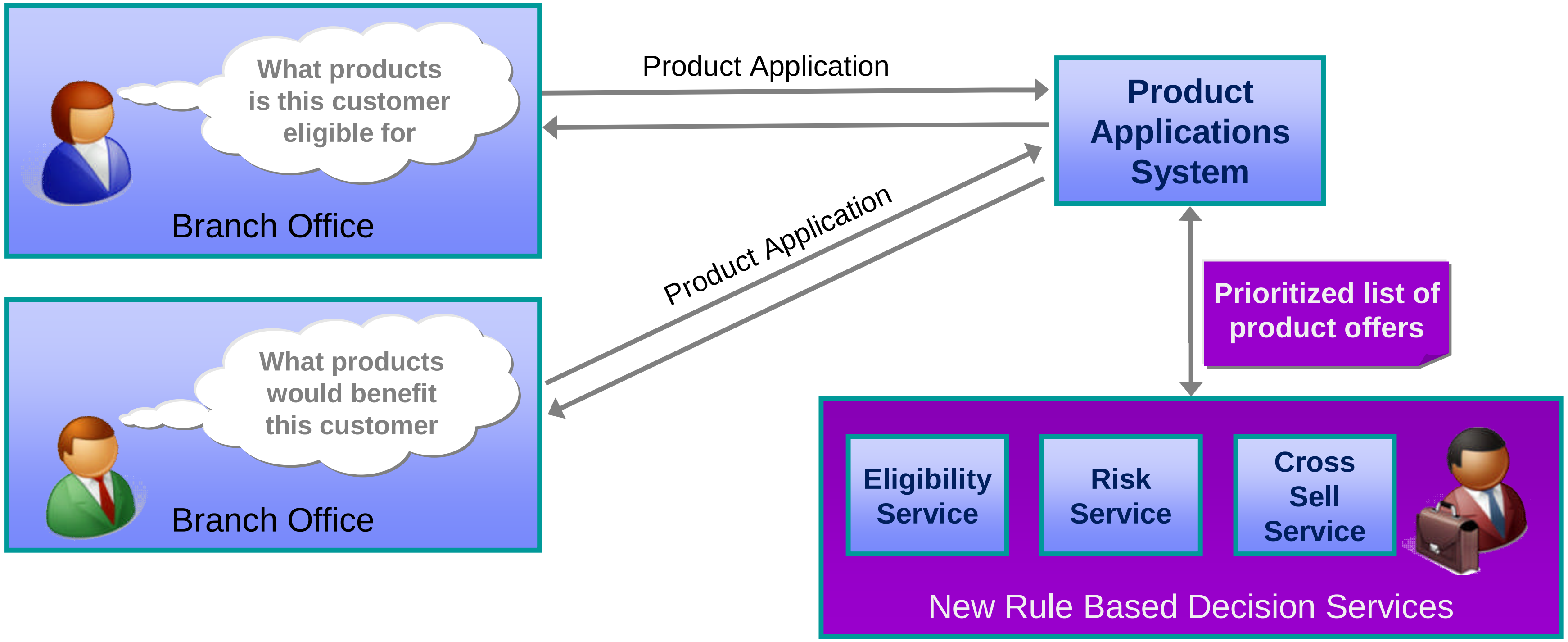
- **Poor customer experience**
  - Difficult to determine or identify who to cross sell or up sell to
  - Branch staff would sometimes try to cross-sell to clients who did not qualify
- **Inefficient use of customer service representative time**
  - Assessment times were too long
  - Separate application in order to know if client qualifies for an additional product

New Scenario


What products is this customer eligible for
Branch Office
What products would benefit this customer
Branch Office
Product Application
Product Application
Product Applications System
Prioritized list of product offers
Eligibility Service
Risk Service
Cross Sell Service
New Rule Based Decision Services

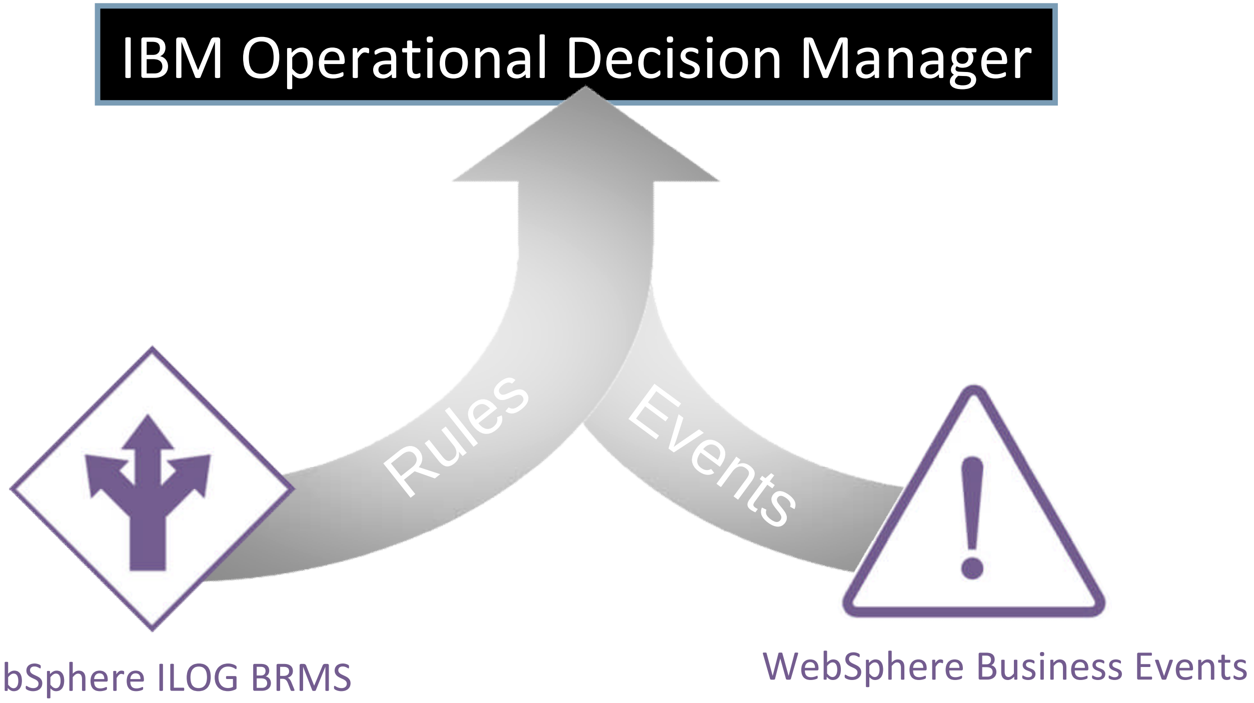
- **Consistency of Decisions**
  - Prioritized list of pre-approved product offers returned to customer service agent
  - New BRMS based decision services provides consistent decisions across branches
- **Improved time to market**
  - New policies can be introduced & managed across the company more effectively
- **Flexible solution enables incremental modernization**
  - Low development risk as new functionality incrementally added to existing application as new services

New Scenario


What products is this customer eligible for
Branch Office
What products would benefit this customer
Branch Office
Product Application
Product Application
Product Applications System
Prioritized list of product offers
Eligibility Service
Risk Service
Cross Sell Service
New Rule Based Decision Services

- **Employees equipped to make intelligent, consistent product recommendations in real time**
  - $14 million in new business in 2 ½ months
- **Customer experience enhanced with pre-approved offers that better match customer needs**
  - Offer acceptance increased from 3% to 20 – 30%

IBM Operational Decision Manager



WebSpere Operational Decision Manager Vision

- **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

Business rules and business events

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

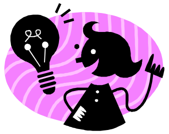
If more than 2 customer withdraws in an ATM are done in the same day
and the 2 ATMs are from 2 foreign countries
Then Investigate possible fraud Reduce cash redraw max amount to 100$

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

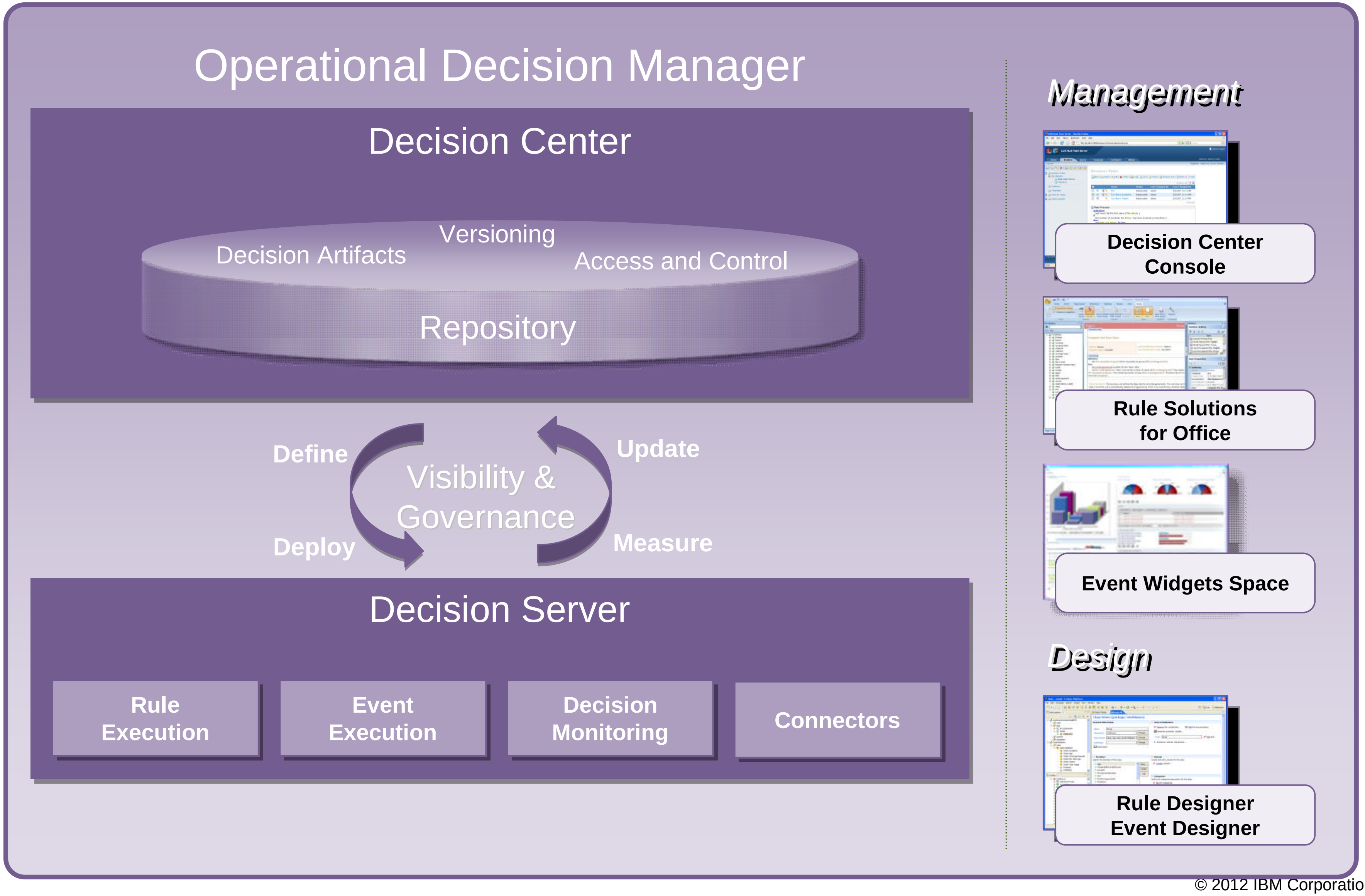
Main purpose is to automate a decision based on a combination of factors (business policies, regs, best practices)

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



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

IBM Operational Decision Manager



Operational Decision Manager

Decision Center

Decision Artifacts

Versioning

Access and Control

Repository

Define

Update

Visibility & Governance

Deploy

Measure

Decision Server

Rule Execution

Event Execution

Decision Monitoring

Connectors

Management

Decision Center Console

Rule Solutions for Office

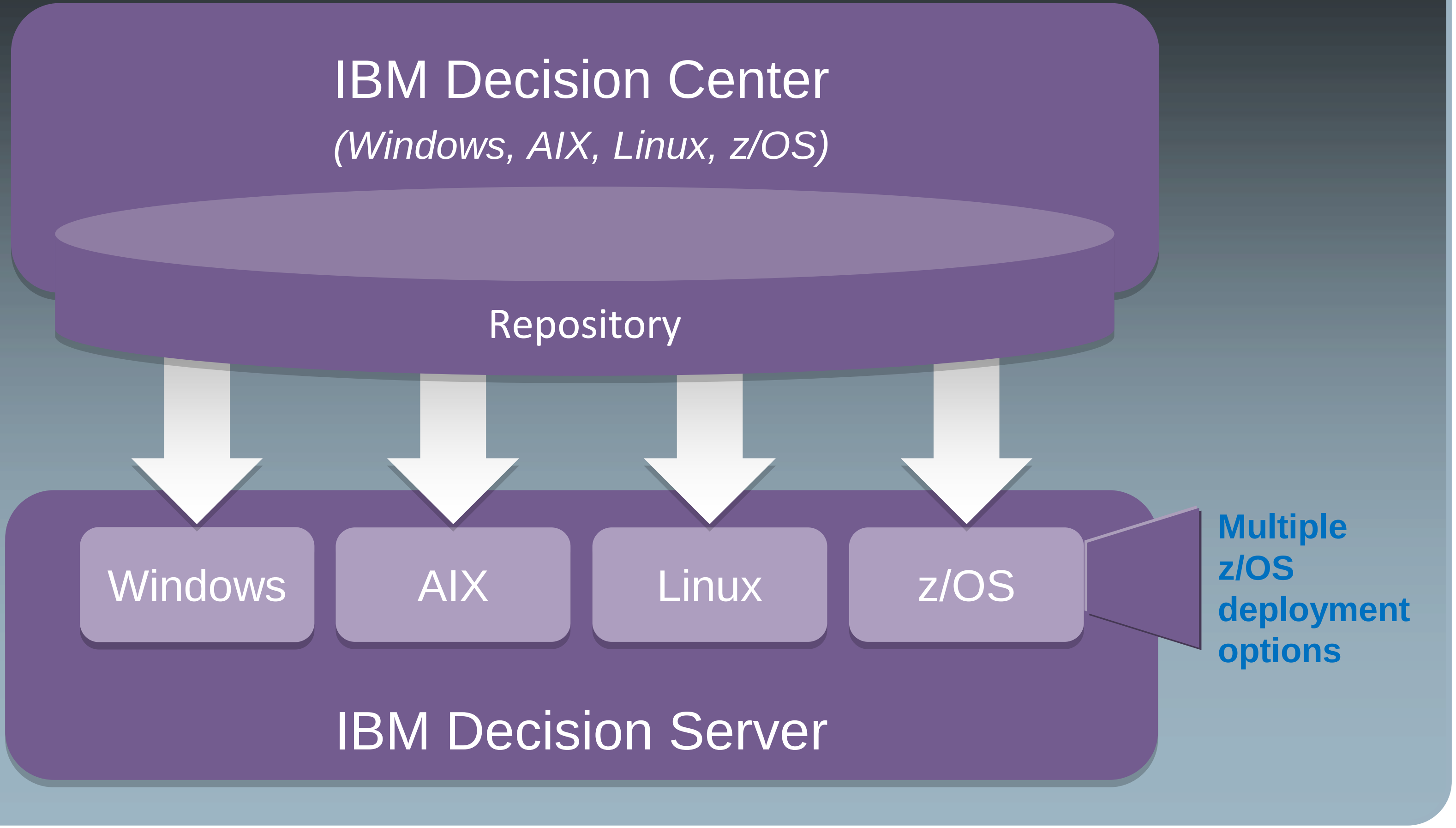
Event Widgets Space

Design

Rule Designer
Event Designer

Operational Decision Manager: Runtime Support

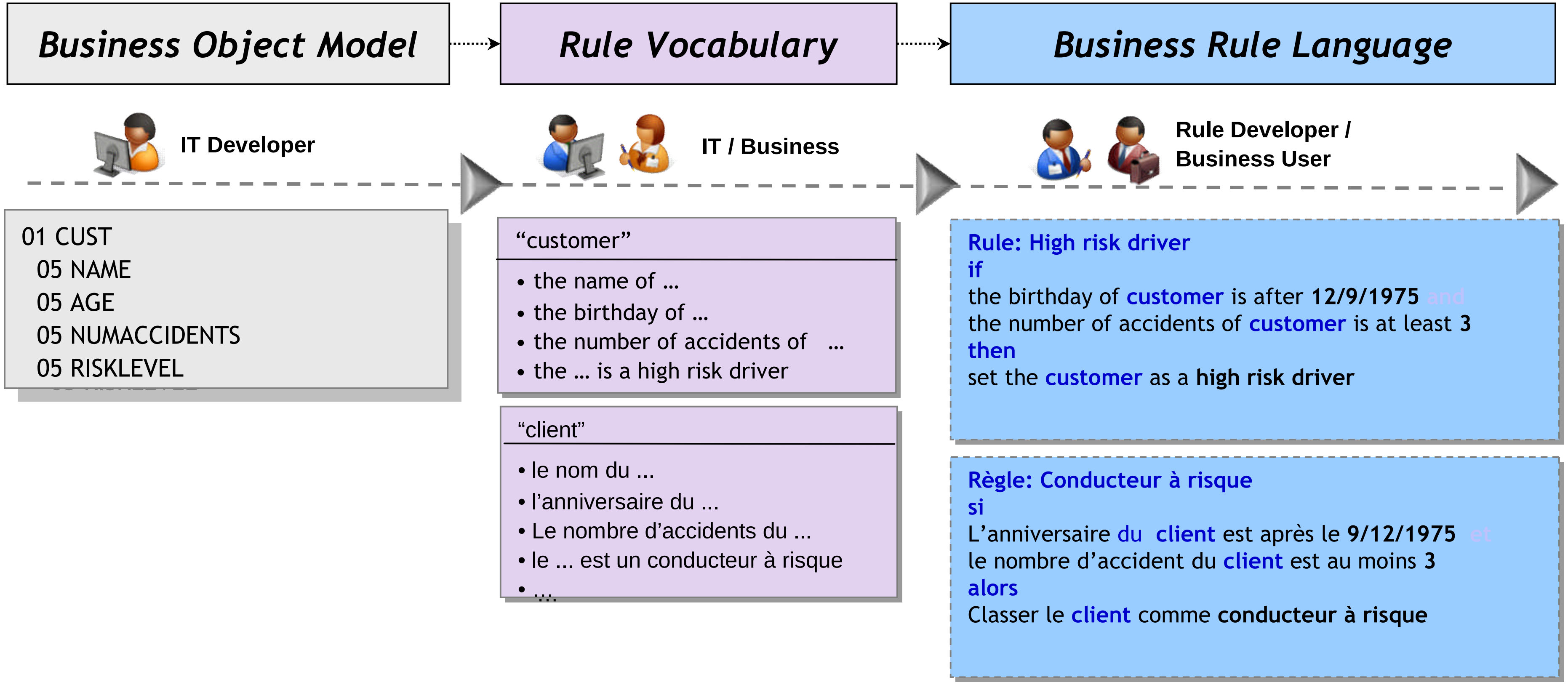
Leverage a wide range of platforms to meet the varying needs of enterprise architectures



Rule Authoring for IT and Business

Business Decisions stated in business language

Customizable vocabulary



Business Object Model

IT Developer

```
01 CUST
  05 NAME
  05 AGE
  05 NUMACCIDENTS
  05 RISKLEVEL
```

Rule Vocabulary

IT / Business

"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
- ...

Business Rule Language

Rule Developer / Business User

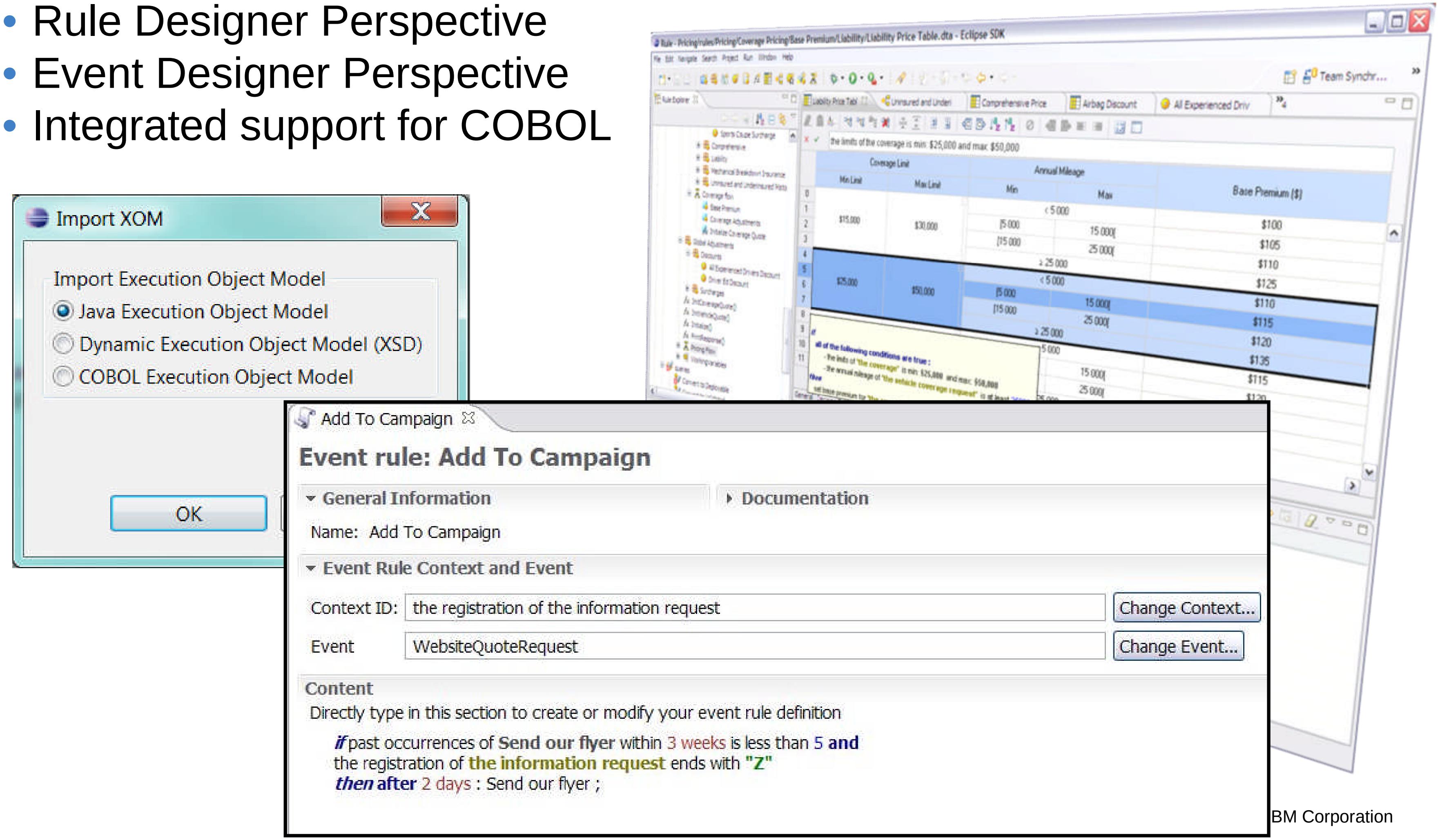
Rule: High risk driver
if
the birthday of **customer** is after **12/9/1975** and
the number of accidents of **customer** is at least **3**
then
set the **customer** as a **high risk driver**

Règle: Conducteur à risque
si
L'anniversaire du **client** est après le **9/12/1975** et
le nombre d'accident du **client** est au moins **3**
alors
Classer le **client** comme **conducteur à risque**

Empower business experts to manage and validate decision logic, eliminating delays in business

Rule & Event Designer

- Eclipse-based Development Environment
  - Rule Designer Perspective
  - Event Designer Perspective
  - Integrated support for COBOL



Rule - Pricing/rules/Pricing/Coverage Pricing/Base Premium/Liability/Liability Price Table.dta - Eclipse SDK

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	
1	$15,000	$30,000	< 5 000		$100
2			[5 000	15 000[	$105
3			[15 000	25 000[	$110
4			≥ 25 000		$125
5	$25,000	$50,000	< 5 000		$110
6			[5 000	15 000[	$115
7			[15 000	25 000[	$120
8			≥ 25 000		$135
9			5 000		$115
10				15 000[	$120

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 ...
then
set base premium for "the ...

Import XOM

Import Execution Object Model

● Java Execution Object Model
○ Dynamic Execution Object Model (XSD)
○ COBOL Execution Object Model

Add To Campaign

Event rule: Add To Campaign

General Information

Name: Add To Campaign

Documentation

Event Rule Context and Event

Context ID: the registration of the information request

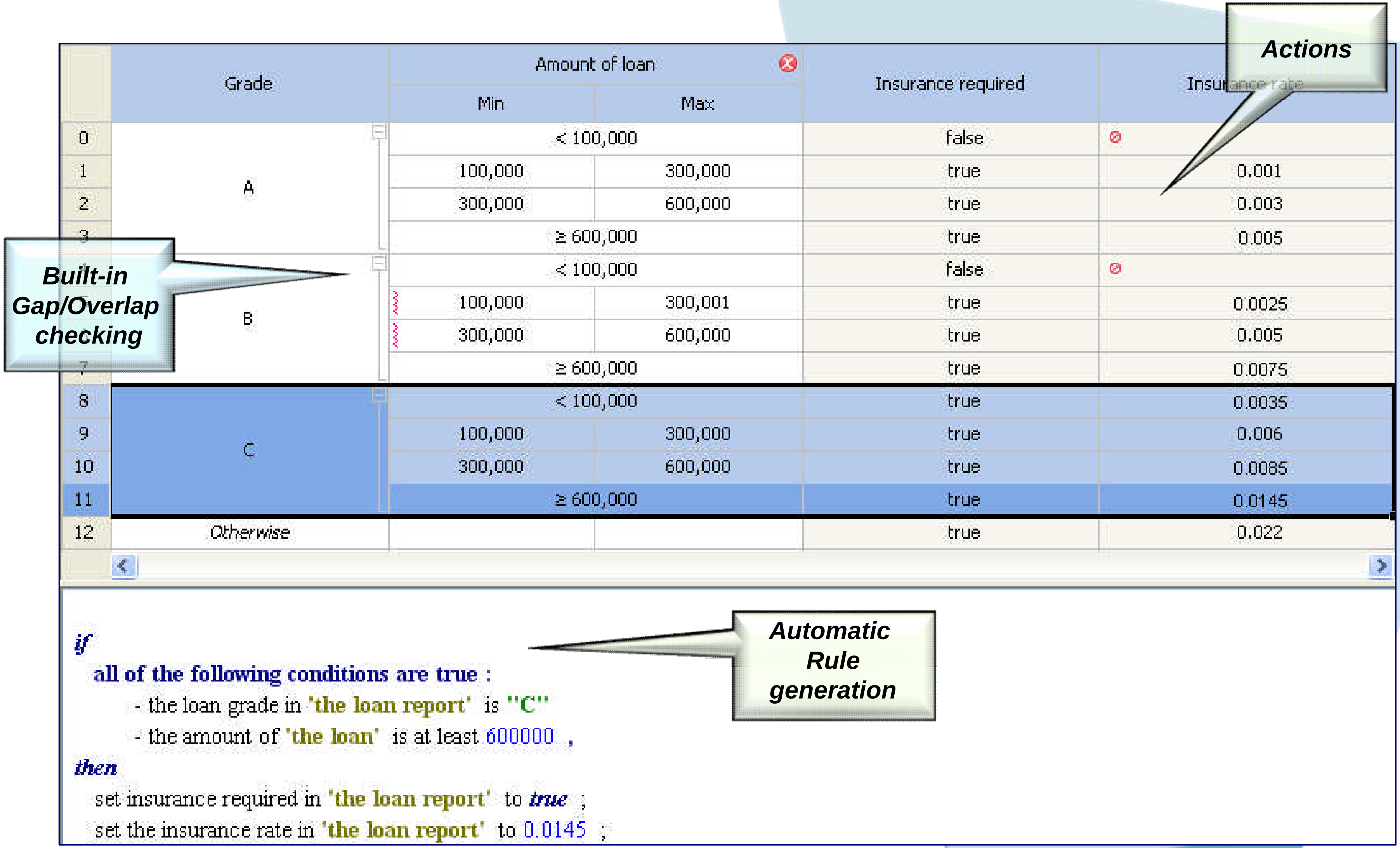
Event: WebsiteQuoteRequest

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 ;

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	⊘
5		100,000	300,001	true	0.0025
6		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

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 ;

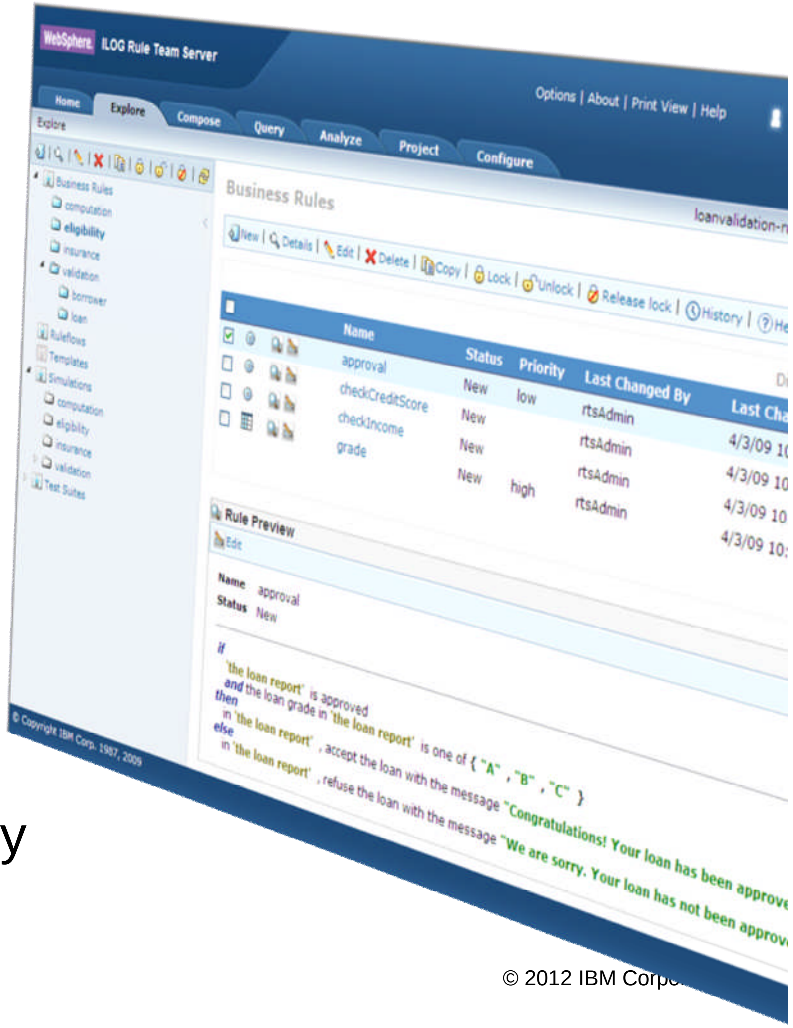
Actions

Built-in Gap/Overlap checking

Automatic Rule generation

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 minutes
- Secure, integrated with enterprise security facility including single sign-on



Name	Status	Priority	Last Changed By	Last Cha
approval	New	low	rtsAdmin	4/3/09 1
checkCreditScore	New		rtsAdmin	4/3/09 10
checkIncome	New		rtsAdmin	4/3/09 10
grade	New	high	rtsAdmin	4/3/09 10:

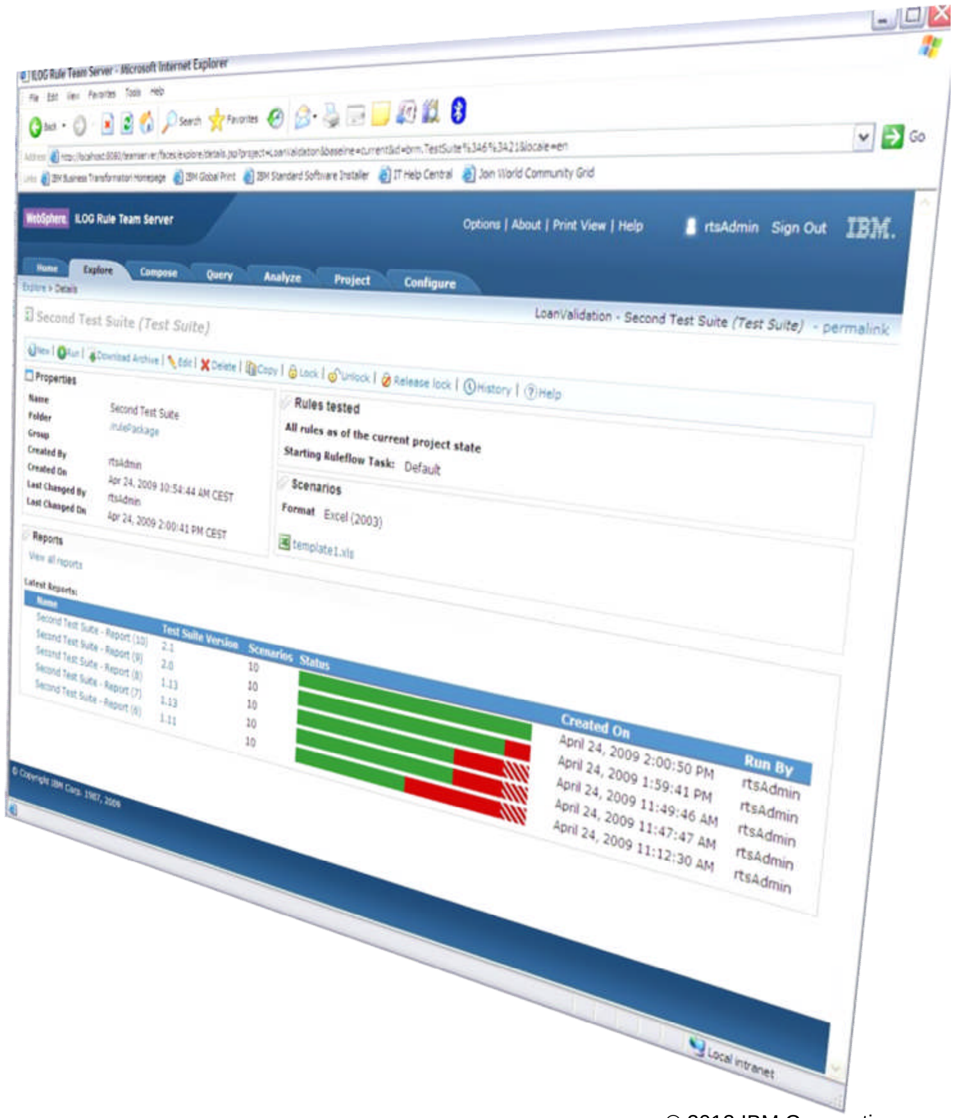
Name approval
Status New

```
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 approve
else
   in 'the loan report' , refuse the loan with the message "We are sorry. Your loan has not been approv
```

Testing and Simulation

- The feature formally know as Decision Validation Services

- Functionality Overview
  - Out-of-the-box ruleset testing in Decision Center
  - Business impact simulation in Decision Center
  - Scenario configuration and customization in Rule Studio
  - Audit - Decision Warehouse in Rule Execution Server


ILOG Rule Team Server - Microsoft Internet Explorer
WebSphere ILOG Rule Team Server
Options | About | Print View | Help
rtsAdmin Sign Out IBM.
Home
Explore
Compose
Query
Analyze
Project
Configure
Explore > Details
New | Run | Download Archive | Edit | Delete | Copy | Lock | Unlock | Release lock | History | Help
Local intranet

Second Test Suite *(Test Suite)*

LoanValidation - Second Test Suite *(Test Suite)* - permalink

Properties

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

Rules tested

All rules as of the current project state

Starting Ruleflow Task: Default

Scenarios

Format Excel (2003)

template1.xls

Reports

View all reports

Latest Reports:

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

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Rules Execution for IMS

Why BRMS for IMS?

- In today's economic climate, <u>**Agility**</u> is key

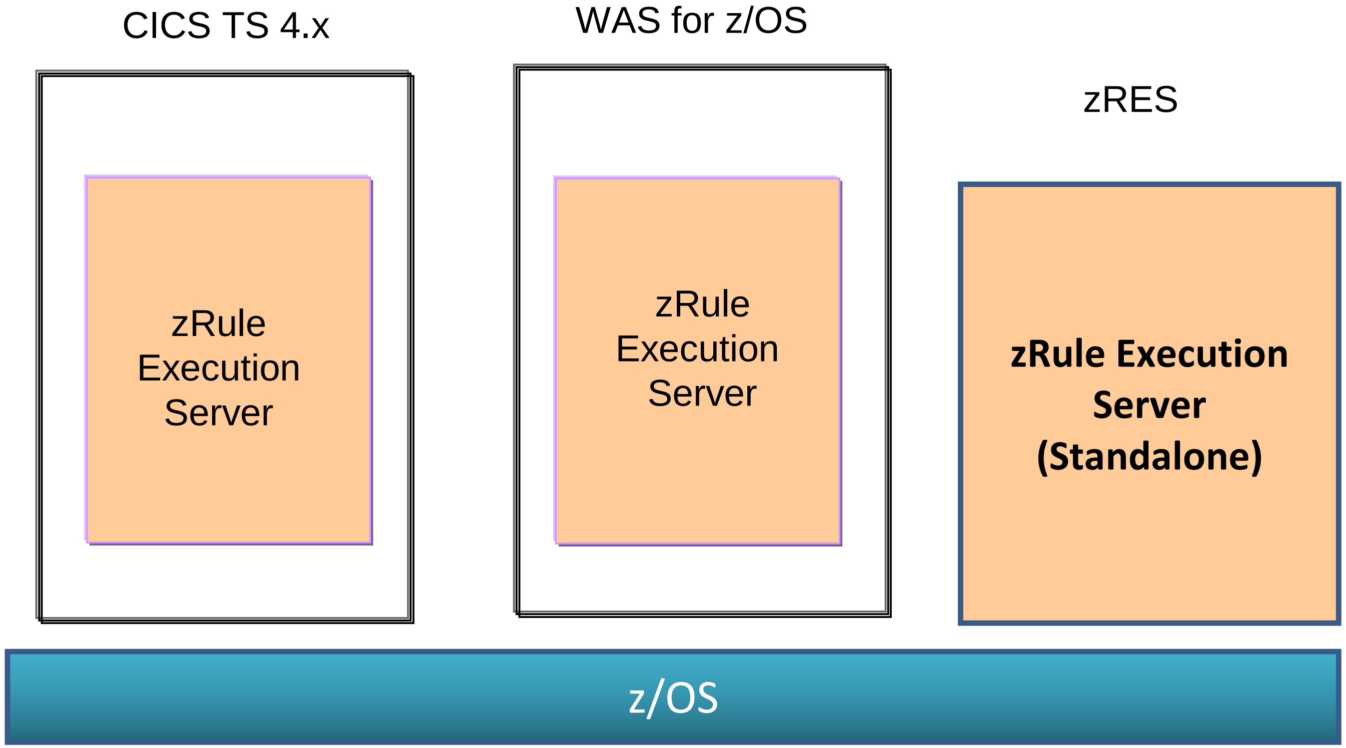
- Customers don't want rules buried in their code because changing them can take months.

- Before you can change them, you need to find those buried rules.
  - Difficult in legacy applications like IMS.

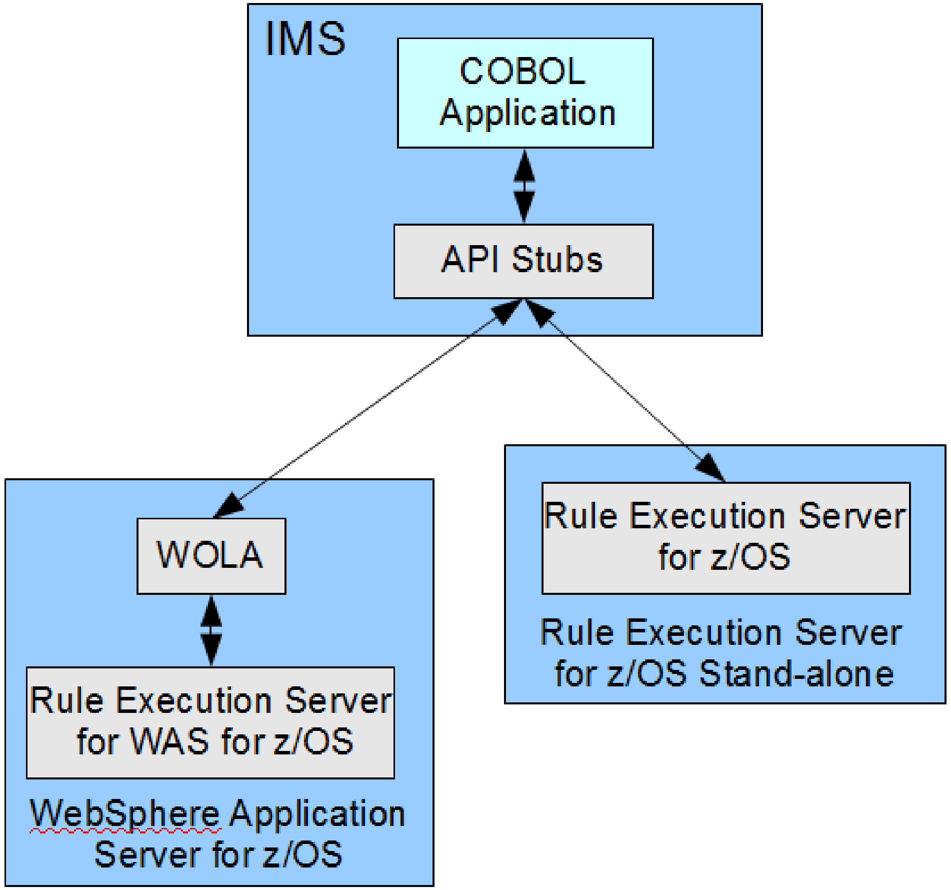
- Customers want to give business analysts (as opposed to the IT guy) the ability to view, modify & test rules.
  - This leads to the requirement that: rules be stated in business terms and not IT terminology.

Rules Execution server environments

- Flexible runtime deployment to fit any z/OS environment:
  - Deployed on WebSphere Application Server for z/OS
  - Deployed standalone to z/OS and accessed by CICS, IMS, TSO Batch
  - Deployed in CICS TS 4.x JVM Server environment



Invoking Rules Executions servers from IMS


IMS
COBOL Application
API Stubs
WOLA
Rule Execution Server for WAS for z/OS
WebSphere Application Server for z/OS
Rule Execution Server for z/OS
Rule Execution Server for z/OS Stand-alone

- ❑ IMS & the Rules Execution Server must be on the same LPAR

zRES vs Rules Execution Server in WAS for z/OS

- zRES PROS: Lightweight address space, highest performing option, consumes less real storage

- WAS CONS:
    - Customer's may not want to invest in WAS on z,
    - slower performance than stand alone zRES,
    - heavy WAS architecture (real storage usage, admin costs) to support rules engine.

- WAS PROS: Run rules engine side by side with Java Apps

New Programming API

```
* Connect to Execution Region
            call 'HBRCONN' using HBRA-CONN-AREA

* Populate Header with parameter data

* Invoke the Decision Service in the Execution Server
            call 'HBRRULE' using HBRA-CONN-AREA
            IF HBRA-CONN-COMPLETION-CODE = HBR-CC-OK
            THEN
 . . .

* Disconnect from Execution Region
            call 'HBRDISC'  using HBRA-CONN-AREA
```

HBR-CONN-AREA

```
01 HBRA-CONN-AREA.
         10 HBRA-CONN-EYE                PIC X(4)  VALUE 'HBRC'.
         10 HBRA-CONN-LENGTH             PIC S9(8) COMP  VALUE +3536.
         10 HBRA-CONN-LENTH              REDEFINES HBRA-CONN-LENGTH
                                         PIC S9(8) COMP.
         10 HBRA-CONN-VERSION            PIC S9(8) COMP  VALUE +2.
         10 HBRA-CONN-RETURN-CODES.
            15 HBRA-CONN-COMPLETION-CODE PIC S9(8) COMP  VALUE -1.
            15 HBRA-CONN-REASON-CODE     PIC S9(8) COMP  VALUE -1.
         10 HBRA-CONN-FLAGS              PIC S9(8) COMP  VALUE +1.
         10 HBRA-CONN-INSTANCE.
            15 HBRA-CONN-PRODCODE        PIC X(4) VALUE SPACES.
            15 HBRA-CONN-INSTCODE        PIC X(12) VALUE SPACES.
            15 HBRA-CONN-SSID            PIC X(4) VALUE SPACES.
            15 HBRA-CONN-RESERVED        PIC X(4) VALUE SPACES.
         10 HBRA-RESERVED01              PIC S9(8) COMP  VALUE 0.
         10 HBRA-RESERVED02              PIC S9(8) COMP  VALUE 0.
         10 HBRA-RESERVED03              PIC S9(8) COMP  VALUE 0.
         10 HBRA-CONN-RULE-CCSID         PIC S9(8) COMP  VALUE 0.
         10 HBRA-CONN-RULEAPP-PATH       PIC X(256) VALUE SPACES.  ←===   Rules to check
         10 HBRA-RESPONSE-AREA           VALUE SPACES.
            15 HBRA-RESPONSE-MESSAGE     PIC X(1024).              ←===  Text back from Rules app
         10 HBRA-RA-INIT                 VALUE LOW-VALUES.
            15 HBRA-RESERVED04           PIC X(1792).
         10 HBRA-RA-PARMETERS            REDEFINES HBRA-RA-INIT.
            15 HBRA-RA-PARMS             OCCURS 32.                ←===   Parms for the rules
               20 HBRA-RA-PARAMETER-NAME PIC X(48).
               20 HBRA-RA-DATA-ADDRESS   USAGE POINTER.
               20 HBRA-RA-DATA-LENGTH    PIC 9(8) BINARY.
         10 HBRA-RESERVED.
           15 HBRA-RESERVED05            PIC X(12).
           15 HBRA-RESERVED06            PIC X(64).
           15 HBRA-RESERVED07            PIC X(64).
           15 HBRA-RESERVED08            PIC X(128).
           15 HBRA-RESERVED09            PIC X(132).
```

This HBRA-CONN-AREA is provided as a copybook in <***HBRHLQ*>.SHBRCOBS(HBRWS).**

Connecting to Rules Execution Server

- Call ‘HBRCONN’ using HBRA-CONN-AREA

- Not necessary to define any information in HBRA-CONN-AREA before issuing the HBRCONN call.

- HBRENVPR DD statement in your JCL specifies which Rules execution server to connect to.

Invoking the Decision service in the Execution Server

- Call ‘HBRRULE’ using HBRA-CONN-AREA

- Program needs to specify which rules (or RuleApps) it wants to check in:
  HBRA-CONN-RULEAPP-PATH.

- Input and output parameters associated with the rules are specified in HBRA-RA-PARMS

- The Rule Application can pass back error text or informational messages.
  This is done in HBRA-RESPONSE-MESSAGE.

Invoking the Decision service in the Execution Server …

- After each call (connection, invocation and disconnection), the success or failure of the call is returned in HBRA-CONN-COMPLETION-CODE.

The possible values for HBRA-CONN-COMPLETION-CODE are:

```
10 HBR-CC-OK          PIC S9(9) BINARY VALUE 0.
10 HBR-CC-WARNING     PIC S9(9) BINARY VALUE 4.
10 HBR-CC-ERROR       PIC S9(9) BINARY VALUE 8.
10 HBR-CC-SEVERE      PIC S9(9) BINARY VALUE 12.
```

- If HBRA-CONN-COMPLETION-CODE = HBR-CC-OK then call was successful.

Otherwise, HBRA-CONN-REASON-CODE & HBRA-RESPONSE-MESSAGE can provide additional information as to why the call was not successful.

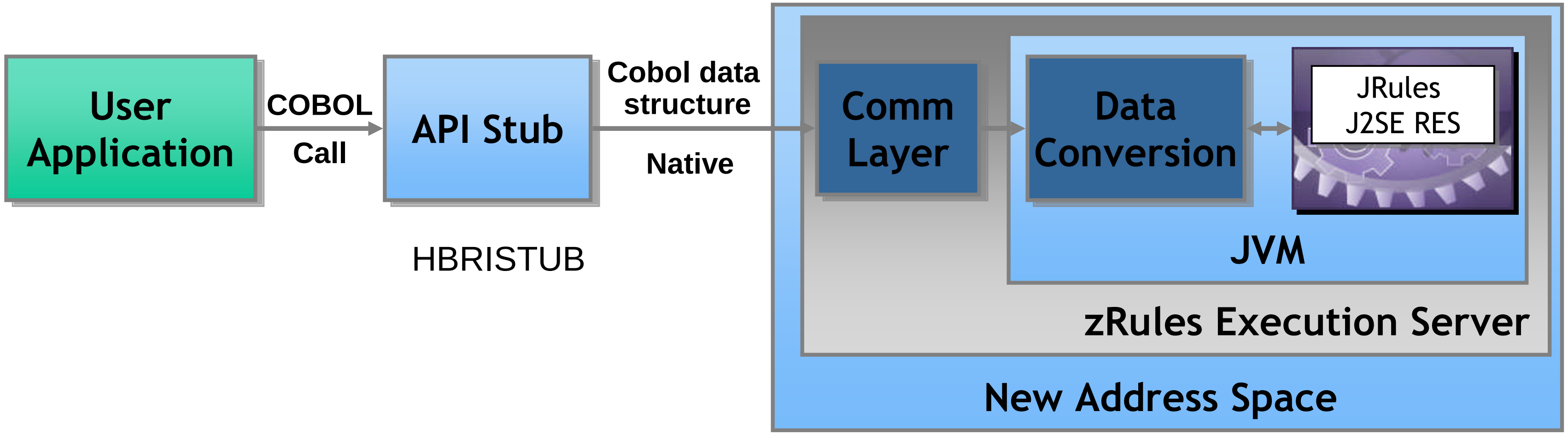
- Both the completion codes and reason codes are provided as a copybook in <*HBRHLQ*>.SHBRCOBS(HBRC)

Disconnecting from Rules Execution Server

- Call ‘HBRDISC’ using HBRA-CONN-AREA

- Not necessary to define any information in HBRA-CONN-AREA before issuing the HBRDISC call.

Call flow from application to zRes



IMS Program preparation tasks for using zRES

- link edited the IMS application with the HBRISTUB module.
  - Link edit step needs to have an include for HBRISTUB

    INCLUDE HBRLIB (HBRISTUB)

- In the JCL:
  - In the STEPLIB, concatenate the SHBRLOAD library.
  - Have a HBRENVPR DD statement that points to a dataset that contains a list of the zRES servers
    - ➢ Rule execution begins on the first available server in the list

- No other IMS definitions/setup is required

HBRENVPR DD statement definition for zRES

- Rule Execution Server for z/OS® instances are configured as server groups to enable rule execution to be transferred to another server if a server fails or if there is a planned outage.

- A server group can include 1 to 32 server instances.

- The list of Rule Execution servers is specified in a dataset pointed to by the HBRENVPR DD statement in your JCL.

- There are several ways to code this list in the HBRENVPR DD dataset.
You can code: HBRSSIDLIST=++HBRSSIDLIST++
This means that list will come from the server group membership list variable, ++HBRSSIDLIST++, in the SHBRPARM(HBRINST) data set member.

- Alternatively, you can specify your own list. Here is an example:
HBRSSIDLIST=HBR1,HBR2,HBR3
Here the server group consists of three servers whose subsystem IDs are HBR1, HBR2 and HBR3

- The execution JCL for an IMS application program that uses Rule execution server for Rules checking must include a dataset pointed to by the HBRENVPR DD statement.

Using Rules Execution Server in zWAS w/WOLA

In order to connect IMS to WOLA you will need to:

Create an external subsystem IMS PROCLIB member,
or update your existing member to include the following entry:
WOLA,BBOA,BBOAIEMT

Pass the SSM parameter into your IMS startup data.
Include the WOLA load library, created during the WOLA setup,
in your IMS Control region startup in both the STEPLIB and the DFSESL DDs.
Restart IMS to pick up the changes.

HBRENVPR DD when using Rules Execution Server in zWAS w/WOLA

HBRWOLALOADLIB – The load library that has been created as part of the setting up of WOLA with IMS
For example, <HLQ>.WAS.OLA.LOADLIB

HBRTARGETRES – Indicating that the connection should be to WOLA - enter the value WOLA

HBRWOLACELL – The cell name of the WAS server for the connection (for example CS03A1)

HBRWOLANODE – The node name of the WAS server for the connection (for example NS03A1)

HBRWOLASERVER – The server name of the WAS server for the connection (for example WSS03A1)

A sample can be seen in *<HBRHLQ>.SHBRPARM(HBRWOLA).*

Official support

- IODM 8.0 provides support for IMS DL/I Batch & BMP COBOL pgms
- Support for MPP programs should work but hasn’t been tested
  - Official support for MPPs in the next release of ODM

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