Adapting CICS Business Rules Quickly & Efficiently with WebSphere ILOG BRMS

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IBM

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Session Number 8282

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Agenda

1 The case for a Business Rule Management Systems

2 WebSphere ILOG BRMS

3 CICS & Business Rules working together
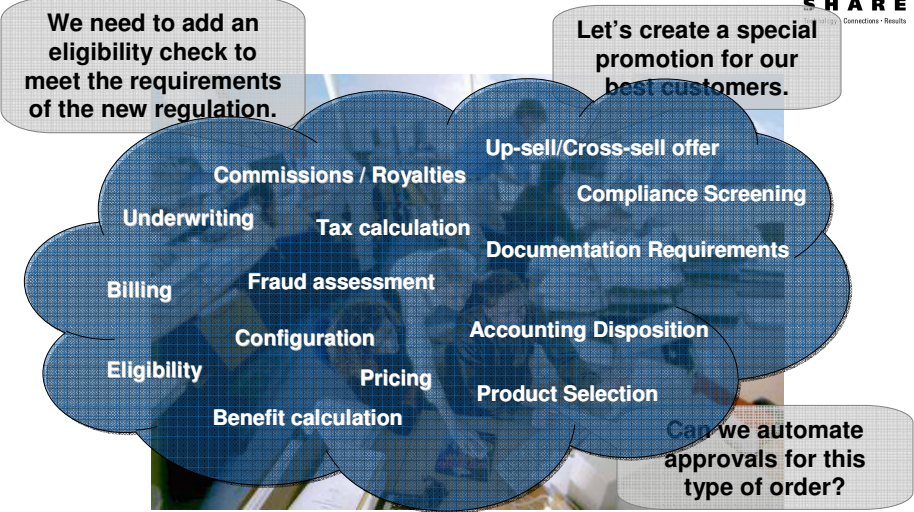
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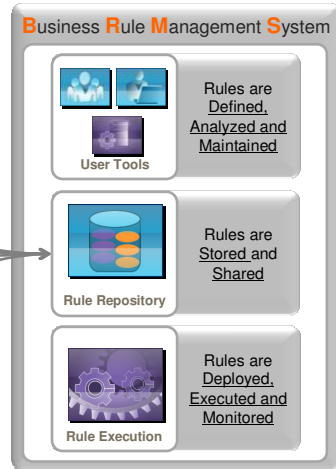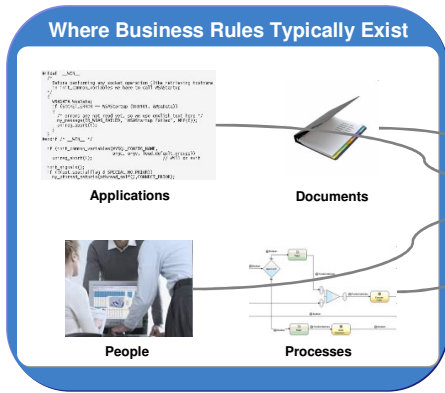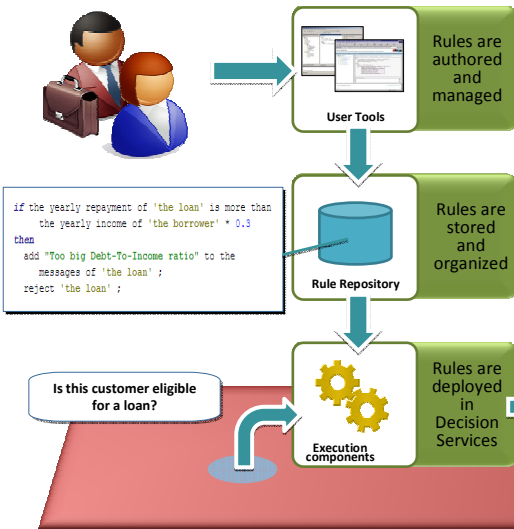
Business Decisions are Everywhere…

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.

Up-sell/Cross-sell offer

Commissions / Royalties

Compliance Screening

Underwriting

Tax calculation

Documentation Requirements

Billing

Fraud assessment

Accounting Disposition

Configuration

Eligibility

Pricing

Product Selection

Benefit calculation

Can we automate approvals for this type of order?

And Changing Frequently

Traditional Approach for Managing Decision Change

The traditional (ad hoc) approach of dealing with rule changes leads to…

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

Where Business Rules Typically Exist

Applications

Documents

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

Traditional Software Lifecycle

Business	Analyst	IT Dev / QA		Support
Inception	Elaboration	Construction	Transition	Production

I1	E1	E2	C1	C2	C3	T1	Application Maintenance

Build-Time

Run-Time

3

Manage and Automate Decision Logic with BRMS

- Make decision logic accessible to Business and IT
- Reduce maintenance time & cost
- Increase decision automation
- Eliminate decision silos – drive consistency
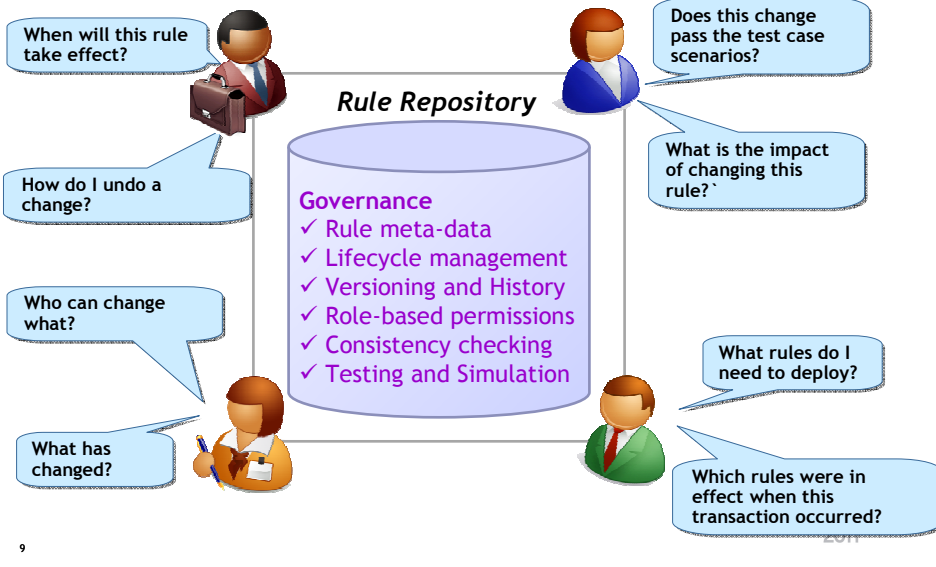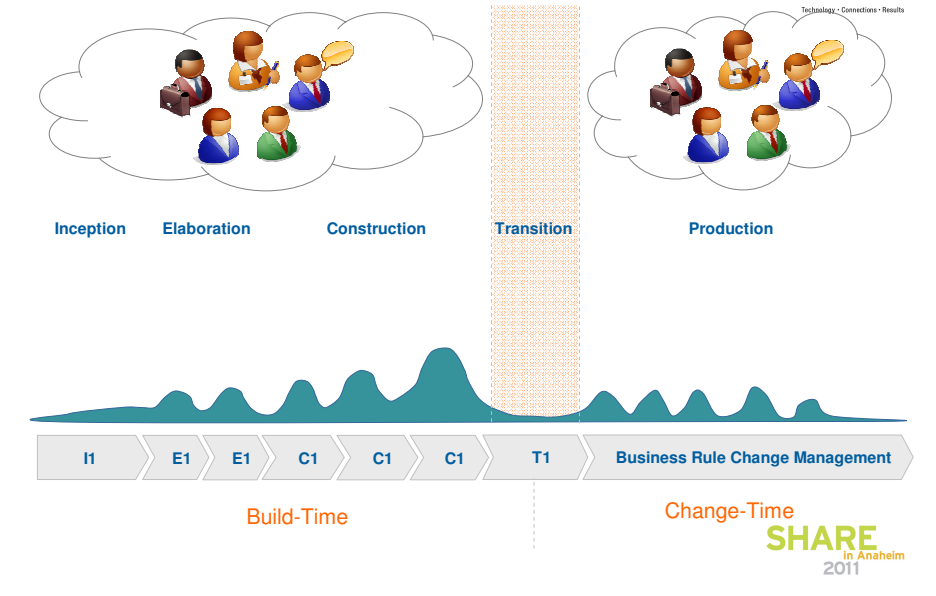- Create an audit trail for decisions & decision logic

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Business Rule Management System

Where Business Rules Typically Exist

Applications   Documents

People   Processes

User Tools
Rules are Defined, Analyzed and Maintained

Rule Repository
Rules are Stored and Shared

Rule Execution
Rules are Deployed, Executed and Monitored

A Business Rule Management System

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User Tools
Rules are authored and managed

```
if the yearly repayment of 'the loan' is more than
    the yearly income of 'the borrower' * 0.3
then
    add "Too big Debt-To-Income ratio" to the
    messages of 'the loan' ;
    reject 'the loan' ;
```

Rule Repository
Rules are stored and organized

Execution components
Rules are deployed in Decision Services

Is this customer eligible for a loan?

No, for the following reason:
Too big Debt-To-Income ratio

A technology for creating, maintaining and deploying rule based business decision

- Reduces the time to deploy changes
- Improves the understanding of how decisions are made
- Increases opportunities for logic automation
- Favors the reuse of business logic

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Comprehensive Rule Governance

Rule Repository

Governance
- Rule meta-data
- Lifecycle management
- Versioning and History
- Role-based permissions
- Consistency checking
- Testing and Simulation

When will this rule take effect?

How do I undo a change?

Who can change what?

What has changed?

Does this change pass the test case scenarios?

What is the impact of changing this rule?`

What rules do I need to deploy?

Which rules were in effect when this transaction occurred?

BRMS Software Lifecycle – Collaborative Working

Inception   Elaboration   Construction   Transition   Production

I1   E1   E1   C1   C1   C1   T1   Business Rule Change Management

Build-Time   Change-Time

Redefined Application Change Cycle
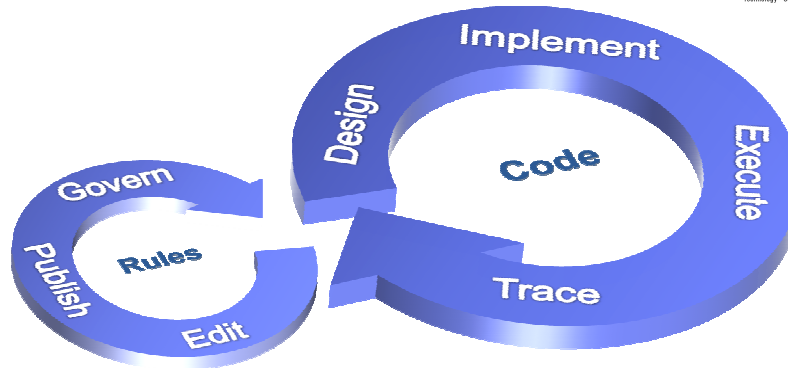
Business - IT

Decisions / Policies

Days / Weeks

Developer

Functions / Tasks / Flow

Weeks / Months

Precise, Automated Decisions

Horizontal: best/appropriate price, cross-sell/ up-sell recommendations, loyalty promotions, exception identification, risk/fraud assessment, straight-through processing approvals

Insurance	Banking	Healthcare	Government	Energy/Utility

• Claim
  • Validation
  • STP approval
  • Exception routing
• Policy/ Underwriting
  • Eligibility
  • Risk
  • Pricing
• Annuity
  • Recommendation
  • Commissioning
  • Payout calc.
	• Loan
	  • Eligibility
	  • Risk
	  • Pricing
	• Account
	  • Cross-sell
	  • Fraud/Alerts
	• Credit Card
	  • Mkg Offers
	  • Fraud
	  • Credit limit
		• Patient Care
		  • Drug interaction risk warnings
		  • Follow-up alerts
		• Member
		  • Services recommendation
		  • Eligibility
		  • Benefit calculation
		• Provider
		  • Patient eligibility for services
			• Benefits
			  • Eligibility
			  • Calculations
			• Tax Payer
			  • Classification
			  • Audit flagging
			• Citizen
			  • Program(s) recommendation
				• Land/Permits
				  • Conveyance processing
				  • Contract compliance
				• Service Mgmt
				  • Service prioritization
				  • SLA alerts
				  • Maintenance alerts
				  • Order configuration

Agenda

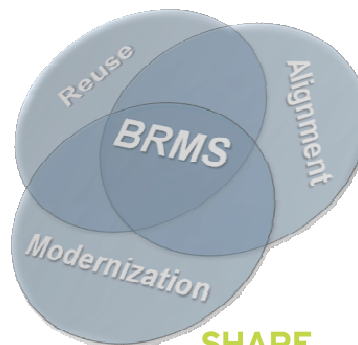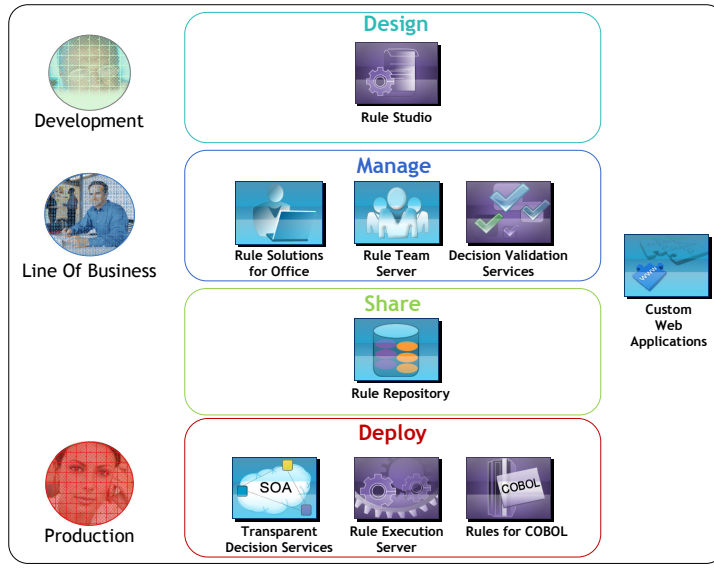| 1	The case for a Business Rule Management Systems
2	WebSphere ILOG BRMS
3	CICS & Business Rules working together

Manage Rule-based Decisions

WebSphere ILOG BRMS is *the IBM technology* for creating, maintaining and implementing decision services…

- Allows for easy implementation and reuse of business rules
- Provides a convenient communication channel between IT and business teams
- Improved regulatory compliance
- Consistency in applying business decisions across applications

Reuse Alignment BRMS Modernization

WebSphere ILOG JRules 7.0 Components

Design
Rule Studio

Development

Manage
Rule Solutions for Office | Rule Team Server | Decision Validation Services

Line Of Business

Share
Rule Repository

Custom Web Applications

Deploy
SOA — Transparent Decision Services | Rule Execution Server | COBOL — Rules for COBOL

Production

Intuitive Rule Authoring Environments

if

the one way driving distance of the vehicle coverage request is more than ▼ 50

and the type of

then

add a ▼ $ 25

Decision Tables

Web-based Console for Rule Management

- Take control of very large rulebases with Smart Views, easy search and reporting
- See where rules are used across projects using queries
- Access rule artifacts concurrently without conflict or delay
- Represent complex policies using rule overrides and hierarchies
- Get automatic notification of potential rule conflicts, redundancies
- Hot-deploy rule changes in minutes
- Secure: integrated with enterprise security facility including single sign-on
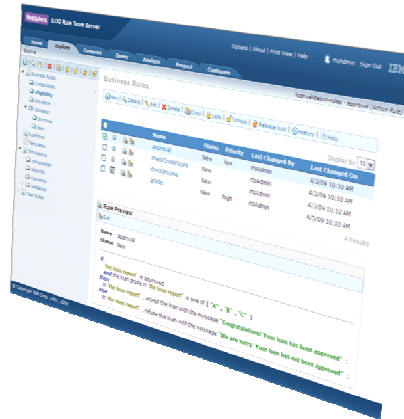
Rules Authoring Delivered to Business

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Business-focused Testing and Simulation Capabilities

- **Decision Validation Services extends Rule Team Server with:**
  - Out-of-the-box ruleset testing
  - Business impact simulation
  - Detailed scenario reports

- **Scenario configuration and customization in Rule Studio**

- **Audit - Decision Warehouse in Rule Execution Server**
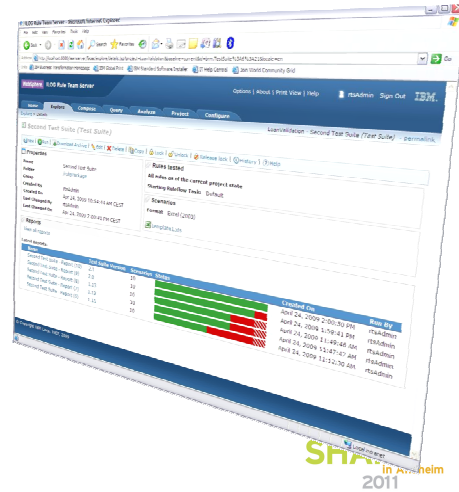
Business User Testing and Simulation

Detailed Scenario Reports

Impact and What-if Analysis
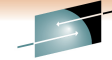
Managed Execution Environment

- High performance and scalable rule execution
  - Support transactional and batch rule execution
  - Inference (forward-chaining) and sequential rule engine
  - Cluster enabled
- Integrate with Java, XML, WSDL
- Exposes rule services as:
  - Rule Session (POJO, EJB or MDB)
  - Transparent Decision Services (Web services)
- Rule services management & monitoring
  - Rule Persistence and Versioning
  - Rule Execution statistics & trace
  - JMX-based administration console
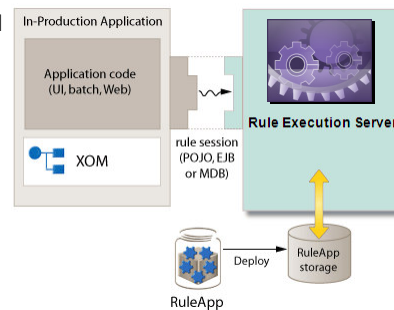
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Transforming the Enterprise through Smarter Work

Enable assets to become more agile, while leveraging the strengths of CICS

CICS

Reliability
Availability
Scalability
Security
Performance
System Management

Reuse
Alignment
BRMS
Modernization

Customizable decisions

Reduced time for changes

Business and IT alignment

Transparency and Auditability

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Separate Application Development and Rule Lifecycles

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**Mainframe Application changes
in Months (Quarterly or more)**

Application Developer

| Functional Requirements | | Functional Enhancements / Platform Upgrades |

Application Development

In-Production Application   Synchronization

Business Rule Management

Business & IT

| Business policies | Business policy and rule changes | Business policy and rule changes | Business policy and rule changes | Business policy and rule changes |

**Decision / Policy Changes
in Days / Weeks**

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Reduce the Load on IT Development

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Use ILOG BRMS to align Business and IT on decisions and rules

View rules

Change rules

Rule Team Server Repository

Business Users

IT Users

Author rules

Rule Studio

Rule Solutions for Office

- Provide visibility of business rules to Business Users via Web interface
- Provide selective rule authoring ability to Business Users via Web interface
  - E.g. IT can enable rule parameters to be changed by business
- **Rule Solutions for Office** extends Rule Team Server capabilities
  - Provides capabilities to author and change rules using familiar desktop tools

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Key Interests for System z Customers……

Consolidation and/or maintenance of COBOL applications

- Looking for costs savings – z Hardware and People
- Need to prove value of modernization of the COBOL applications sooner rather than later
  - Be able to react to changes requested by business
  - Be able to quickly find where to make the rule changes

How Does a BRMS Benefit?

- Author rules in JRules…verify which rules will move them into the future
- Rules can now be shared across applications and across platforms

---

Key Interests for System z Customers……

COBOL Maintenance Projects

- Projects that are to change rules … why not upgrade to a BRMS and make rules available to Business Users
- Faster changes …. Decrease future maintenance costs and time

How Does a BRMS Benefit?

- Projects that are change rules … why not upgrade to a BRMS and make rules available to Business Users
- Faster changes …. Decrease future maintenance costs and time

Key Interests for System z Customers……

Sharing Rules across Platform/Running Parallel

– Already understand the value of a BRMS…why not use this proven technology with their mission critical COBOL applications.

  – Have multiple processes running on multiple platforms, providing one point of rule maintenance for deployment to your choice of platforms can be handled through the ILOG BRMS.
  – Are possibly looking to migrate an application. It is impossible to turn off one application and turn on a new application. This needs to be done in phases but keeping the business rules in sync.

How Does a BRMS Benefit?

– Application Development efforts often involve modernization or simplification of large applications across multiple hardware platforms. Keeping the rules up to date and in sync takes resources and time. A BRMS can keep the rules in sync in those multiple applications
– Author once, Manage Centrally, Deploy anywhere
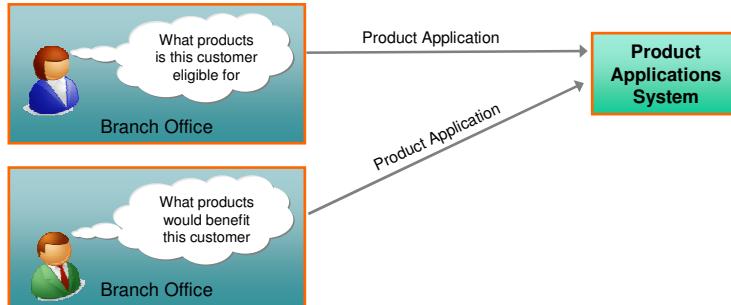

A Top 5 North American Bank

▶ 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

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Existing Scenario

What products is this customer eligible for

Branch Office

What products would benefit this customer

Branch Office

Product Application

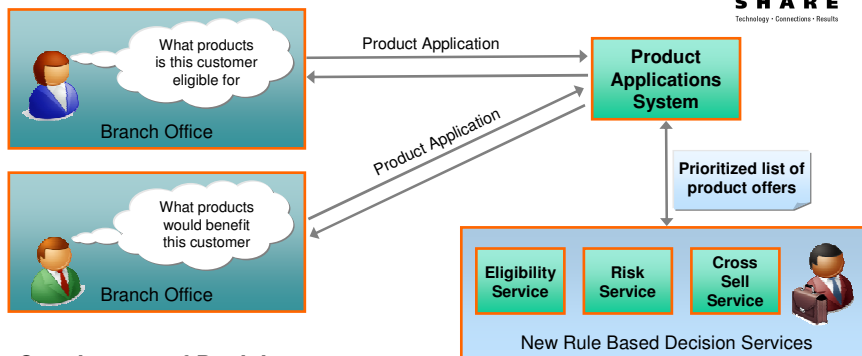Product Application

Product Applications System

- **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

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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

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Benefits to Organisation

▶ 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%

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BRMS Benefits to COBOL Development and Maintenance

- **Rule Analysis**
  – Get automatic notification of potential rule conflicts, redundancies prior to deployment
- **Impact Analysis**
  – See where rules are used across projects/applications using queries
- **Change Management**
  – Version Control,
  – Compare history of changes
- **Smart Views**
  – Take control of very large rule bases with Smart Views, easy search and reporting
- **Fast deployment of rule changes**
  – Hot-deploy rule changes
- **Rule Repository Security**
  – Secure: integrated with enterprise security facility including single sign-on

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Incrementally Modernize Applications

Use ILOG BRMS to unlock rules hidden in existing applications

Application

Rule 1

Rule 2

Rule 3
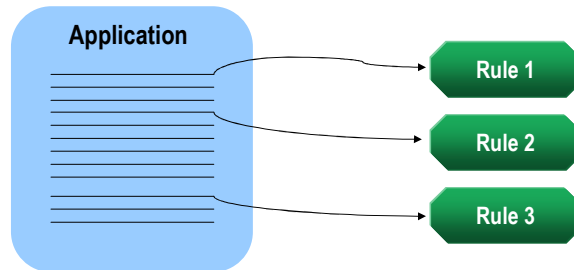
- Gradually pull out rules from existing applications
  - Rewrite business rules in natural language and store them in a central location
  - Does not require a "big bang" change

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Improve Application Agility

Use ILOG BRMS to rapidly modify business rules without having to update the application

Business Application

Call to rule

WebSphere ILOG BRMS

Rules Version 1

Rules Version 2

Rules are dynamically updated without application disruption
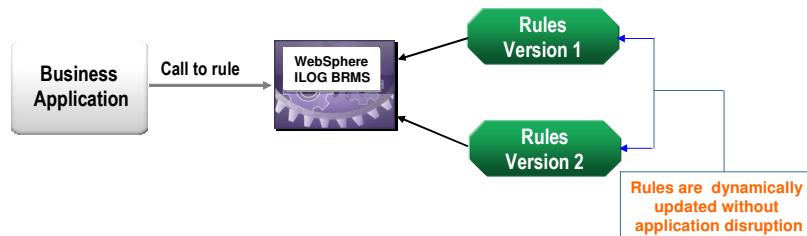
- Decouple development and business rule lifecycles
- New rules to enforce new business policies can be implemented with minimal application changes
- Centralized Rules Engine allows change to be implemented across multiple applications simultaneously

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ILOG BRMS System z Options

OPTION 1:
Rules using Rules for COBOL

Rule Studio
Rules are *Defined*, *Analyzed* and *Maintained*

User Tools

Rule Team Server
Rules are *Stored* and *Shared*

Rule Repository

OPTION 2:
JRules using Rule Execution Server

Rules are generated as COBOL source for execution in IMS, CICS, batch

Rule Server

Decision Services

Rules are deployed, executed and monitored in Java EE services

System z – z/OS and Linux

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ILOG Business Rules for z/OS in Motion

COBOL
Rules for COBOL

6. Deploy for Rule Execution
Design choice :
- Deploy to JRules RES
- Generate COBOL subprogram

Production Application Mainframe

z/OS

CICS

COBOL App

DB2

1. Initial Setup
Developer provides:
- Cobol Copybook and
- Code or document that identifies the business rules

2. Rule Service Design
- Imports copybook
- Setup business language
- Author rules

App Server Intranet

Java NET
Java NET
Java NET

3. Deploy for Rule Execution
Design choice :
- Deploy to JRules RES
- Generate COBOL subprogram

Workstation

Rule Studio

5. Policy change
Business requires change
BA modify the rules

4. Publish Rules in RTS
- To allow collaborative rule management through the web

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Options to Integrate CICS & JRules / Rules for COBOL

JRules via Web service	Use CICS support for Web services to make an external call out to a Rule Execution Server
JRules via MQ	Use CICS and MQ to make a JMS call out to a Rule Execution Server
JRules via WOLA	Use CICS and the WebSphere Application Server V7 WOLA connector to connect to a Rule Execution Server
Rules for COBOL	Deploy rules as a COBOL sub-program and link-edit this program into your application

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CICS calling JRules via Web Service

WebSphere Application Server (WAS)

JRules

RuleApp

Web Service

SOAP / HTTP

SOAP PIPELINE

Application
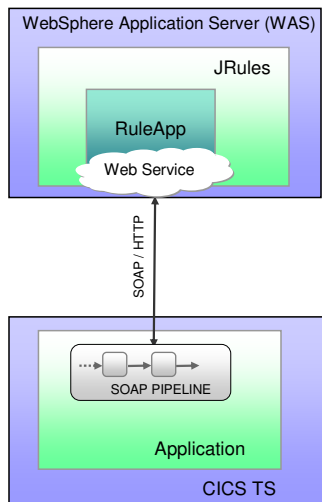
CICS TS

- **Scenario**
  Use CICS Web Services to call JRules hosted in WAS via a Web service
  - Full capability JRules Execution Server
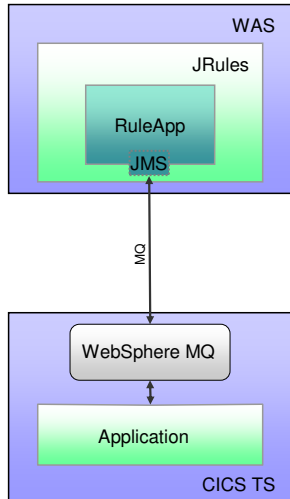 - Allows CICS to share rules with other platforms

- **Considerations with this Approach**
  - ✓ Standards-based integration
  - ✓ Decisions can be re-used/shared with other systems
  - ✓ Full BRMS management capabilities

  - ✗ Overhead of XML marshalling & network connection
  - ✗ Additional runtime to administer and maintain as the application processing is now split across multiple application servers

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CICS calling JRules via MQ

WAS

JRules

RuleApp

JMS

MQ

WebSphere MQ

Application

CICS TS

- **Scenario**

  Call a message-driven bean on WAS by sending a message from CICS via MQ.

  - Full capability JRules Execution Server
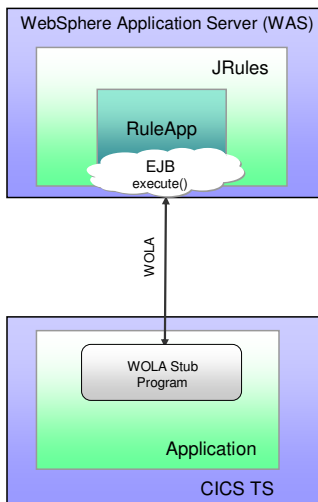 - Allows CICS to share rules with other platforms

- **Considerations with this Approach**

  - ✓ Standards-based integration (JMS)
  - ✓ Decisions can be re-used/shared with other systems
  - ✓ Full BRMS management capabilities

  - ✗ Overhead of marshalling & network connection
  - ✗ Custom marshalling code may be required to handle conversion to Java
  - ✗ Additional runtime to administer and maintain as the application processing is now split across multiple application servers

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CICS calling JRules via WebSphere Optimized Local Adapter

WebSphere Application Server (WAS)

JRules

RuleApp

EJB
execute()

WOLA

WOLA Stub
Program

Application

CICS TS

- **Scenario**

  Call JRules hosted in WAS in the same LPAR via a WebSphere Optimized Local Adapter (WOLA)

  - Full capability JRules Execution Server
 - Allows CICS to share rules with other platforms

- **Considerations with this Approach**

  - ✓ High performance connection to WAS
  - ✓ Decisions can be re-used/shared with other systems
  - ✓ Full BRMS management capabilities

  - ✗ CICS and WAS/JRules must reside in the same LPAR
  - ✗ Custom EJB and marshalling code required to receive request and handle conversion to Java
  - ✗ Additional runtime to administer and maintain as the application processing is now split across multiple application servers

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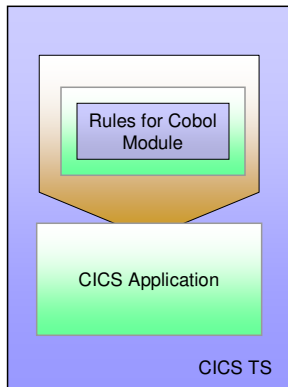
Rules for COBOL

- **Scenario**

  Use Rules for COBOL to generate a COBOL module that embodies the rules and executes within the CICS region

  - CICS app can call the module via static or dynamic linking
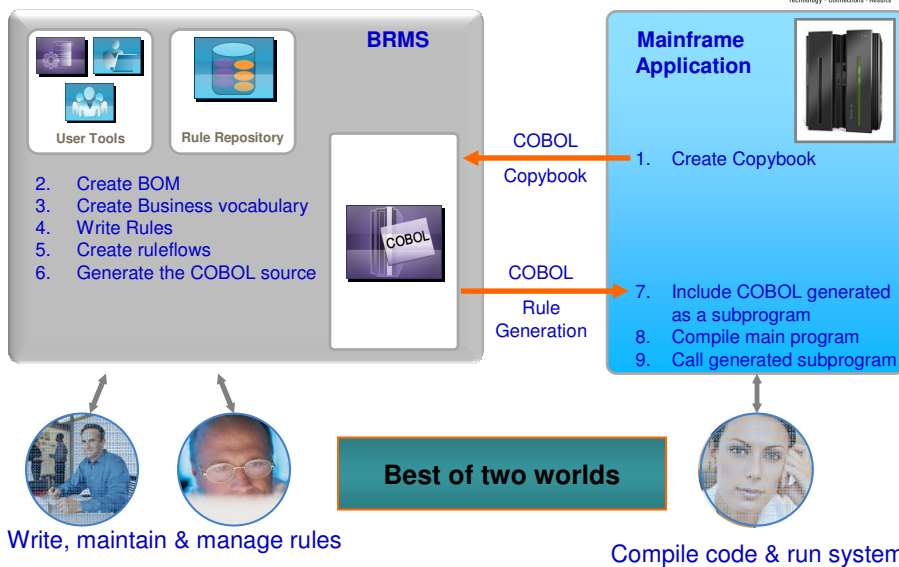 - Can be invoked via EXEC CICS LINK

- **Considerations with this Approach**

  - ✓ Fits in easily with COBOL application architecture
  - ✓ Better performance due to co-location of rule execution
  - ✓ Easy to reuse the COBOL rules in batch as well as CICS environments

  - ✗ No Rule Execution Server management capabilities
  - ✗ No Decision Warehousing functionality
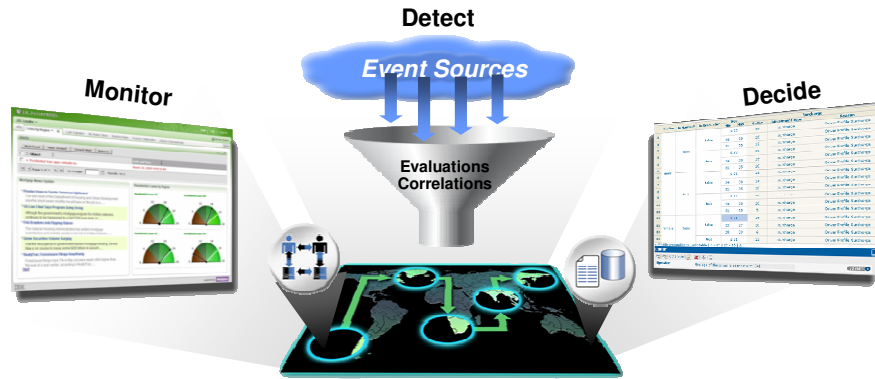 - ✗ No externally shared decisions

Rules for Cobol Module

CICS Application

CICS TS

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Overview of Rules for COBOL

BRMS

Mainframe Application

User Tools   Rule Repository

2. Create BOM
3. Create Business vocabulary
4. Write Rules
5. Create ruleflows
6. Generate the COBOL source

COBOL

COBOL
Copybook

COBOL

Rule
Generation

1. Create Copybook

7. Include COBOL generated as a subprogram
8. Compile main program
9. Call generated subprogram

Best of two worlds

Write, maintain & manage rules

Compile code & run system

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CICS Events and Business Rules

Leveraging BEP, BAM, and BRMS with CICS to achieve business agility

Detect

Monitor

Event Sources

Decide

Evaluations
Correlations

Know What's Happening, When to Act and What to Do

Automate and Improve High-volume Operational Decisions

IBM WebSphere Decision Server V7.1

New!

- Combines WebSphere Business Events and WebSphere ILOG JRules

  - **Detect** critical events and business situations occurring across applications and systems

  - **Automate** decisions in response to detected data patterns

  - Easily **implement changes** in how decisions are made

  - **Initiate actions** across transactional and process-oriented business systems

Can be used for fully automated interactions, or …

… to provide decision guidance for personal interactions with customers

Enable responsive, intelligent decision management solutions that span processes and applications
Combine with BPM to achieve better business outcomes from process improvement initiatives

Business Rule Modernization – Rational and ILOG BRMS

Identification
Rational Asset Analyser

- What decisions?
- Using which rules?
- Where in the code?

Validation & Management
WebSphere ILOG BRMS
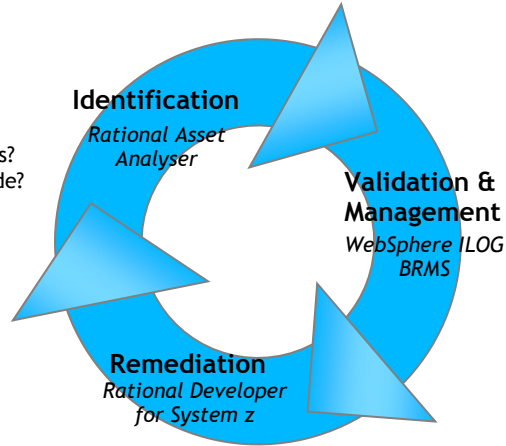
- Align rules with business goals
- Manage rules
- Execute rules

Remediation
Rational Developer for System z

- Adjust the source to match the rule invocation
- Extract the rules to a callable element

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Mining Rules Embedded from code to management in a BRMS

Register Application Assets into RAA Repository
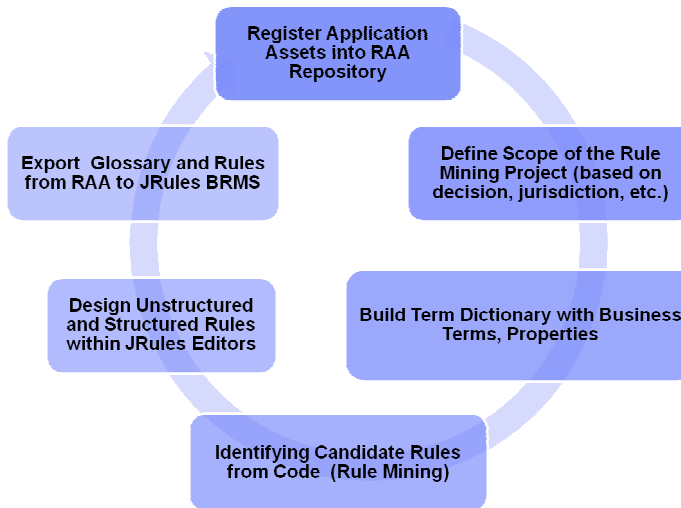
Export Glossary and Rules from RAA to JRules BRMS

Define Scope of the Rule Mining Project (based on decision, jurisdiction, etc.)

Design Unstructured and Structured Rules within JRules Editors

Build Term Dictionary with Business Terms, Properties

Identifying Candidate Rules from Code (Rule Mining)

Business Rule Modernization: Identification

- Source scan scoped by vocabulary
  - Imported from ILOG JRules or defined by the client in RAA
  - Maps business terms to application terms
  - Focused effort for faster time to value
- Identify candidate business rules
  - Locate relevant code segments using terms
  - Tie in relevant data elements
  - Construct candidate rules mapped to code segments
- Capture/redesign candidate rules using ILOG technologies
  - Unstructured format
  - Structured format using ILOG JRules guided editors

Business Rule Modernization: Identification

Business Rule Modernization: Validation & Management

Validation
- Reconciling what the source code does with what the business wants
- Drive an objective discussion and agreement between Business and IT using ILOG JRules
- Adjust the rule definitions in ILOG to conform to the agreement
- Execution with the core business applications running on System z

Management
- On-going process of keeping the source in sync with business policy
- Business rules updates should be handled via the ILOG technologies
- Approved changes will drive source code remediation

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Business Rule Modernization - Remediation

- **Share same Eclipse Shell with RDz and ILOG Rule Studio**
  - To import remote COBOL data structures in order to create the business model for authoring rules
  - Direct access to z/OS data sets or remote RDz projects to store the Generated COBOL subprogram
- **RDz provides remediation functionality:**
  - Web service generation
  - Deployment of code
  - SCM integration
  - Allow/restrict editing code

52
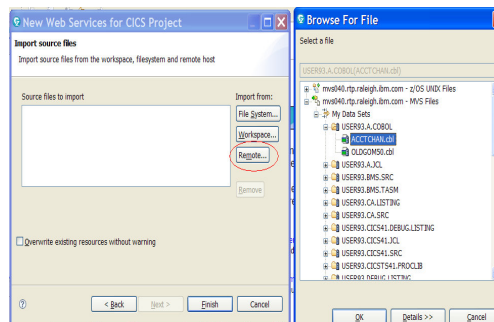
ILOG BRMS for System z enable smart organizations to capitalize on modernization and innovation

- *Faster Time to Market:*
  New products or changes implemented in days vs. months
    - Ability to react to changes in a fast pace competitive marketplace
- *Lower cost of maintenance*
    - Leading to improvement operational efficiency and total cost of ownership
- *Better visibility and control*
    - Leading to improvement to better corporate governance
- *Ability to implement the best rules for the best changes / rules for the best outcome*
    - Business users can see, understand and have the appropriate tools to support the needs of the organization by maximizing their IT investment
- *Manage and document business decisions executed in System z applications*
    - Ability to generate native COBOL from rules within the JRules BRMS
    - Authoring rules for COBOL in business terminology
    - Share business rules with Java and other COBOL applications

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Questions

धन्यवाद
Hindi

多謝
Traditional Chinese

ขอบคุณ
Thai

Спасибо
Russian

Gracias
Spanish

Merci
French

شكراً
Arabic

Obrigado
Brazilian Portuguese

Thank You
English

多谢
Simplified Chinese

Danke
German

Grazie
Italian

நன்றி
Tamil

ありがとうございました
Japanese

감사합니다
Korean

Teşekkürler
turkish