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An Introduction to Business Rules

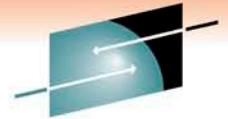
Janet K. Wall
IBM Corporation

Tuesday, March 1, 2011 (11:00 a.m. to 12:00 noon)
Session Number:8995



Improve agility and time to market

Business Decisions are Everywhere...

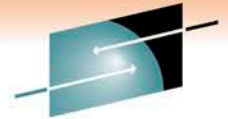


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Business Decisions are Everywhere...

We need to add a validation step to meet the requirements of the new regulation.

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

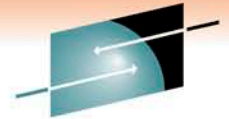


Can we automate approvals for this type of order?

And Changing Frequently

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Business Decisions are Everywhere...

We need to add a validation step 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

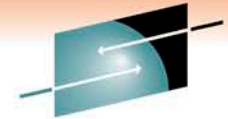
Product Selection

Benefit calculation

Can we automate approvals for this type of order?

And Changing Frequently

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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

```
MYSQLdef __MCA__
/*
Before performing any socket operation (like retrieving hostname
to test_common_variables we have to call MSAStartup
*/
{
MSADATA MsaData;
if (SOCKET_ERROR == MSAStartup (0x0101, &msadata))
/* errors are not read yet, so we use english text here */
my_message(ER_MSA_FAILED, "MSAStartup failed", MYF000);
unreg_abort();
}
#endif /* __MCA__ */
if (test_common_variables(MYSQL_CONFIG_NAME,
argc, argv, load_default_groups))
unreg_abort(); // will do exit
test_signals();
if (Tiget_special_flag & SPECIAL_NO_PRIORITY)
my_thread_setprio(pthread_self(), CONNECT_PRIORITY);
```

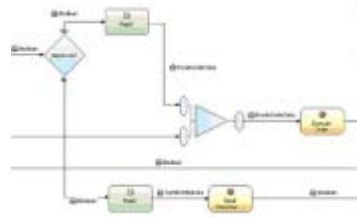
Applications



Documents



People

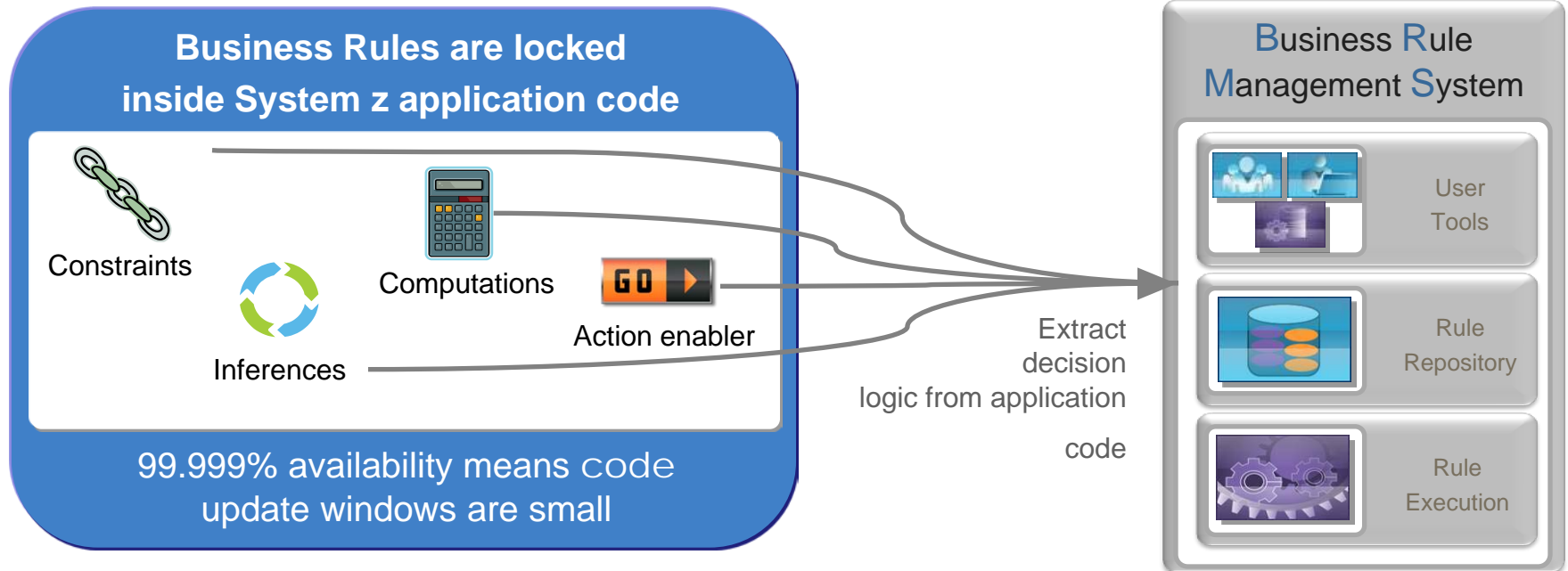


Processes

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

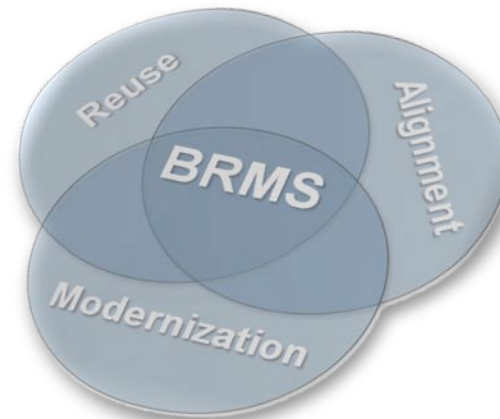
More Agile Approach with Business Rule Management System (BRMS)



- Adapt faster to ongoing change requirements
 - Respond to customer and industry demands by deploying rule changes independently from lengthy application maintenance cycles
- Reduce load on IT development
 - Express decision logic in business language terms to enable your business experts to participate in rule changes
 - Validate rules execution without the need to retest the whole CICS application

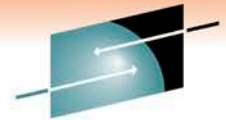
What is a BRMS (Business Rules Mgmt System)?

- A software system used to **define, deploy, execute, monitor and maintain** decision logic within an organization.
- Business Rules are known as the decision logic
 - May include policies, requirements and conditional statements that are used to determine the tactical actions that take place in applications and systems
- Held in a repository, can be maintained by IT and business experts, which allows decision logic to be external from application code

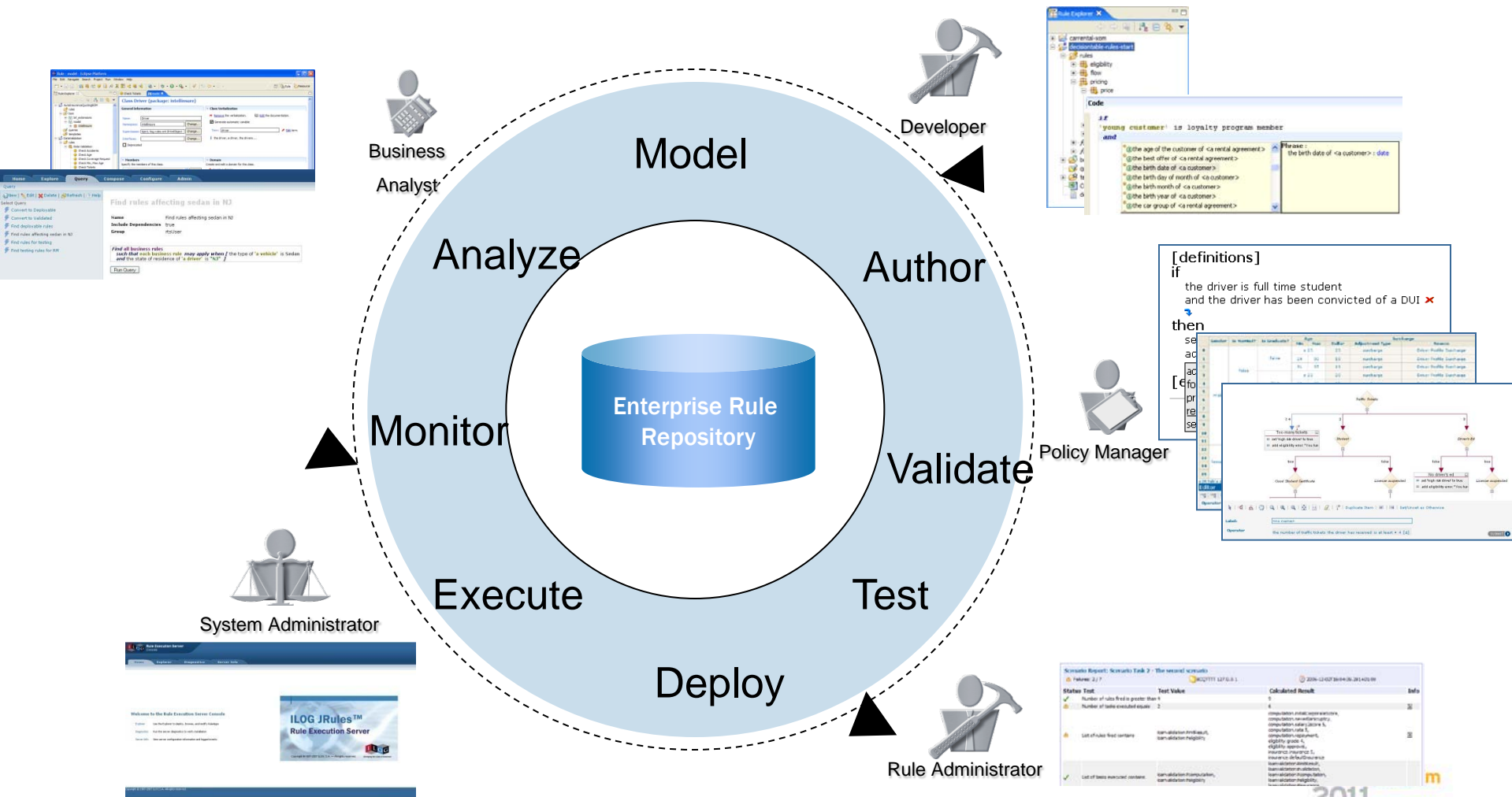


Business Rules Management System (BRMS)

Provides complete functionality and tooling to fully maintain and manage an organization's business rules through the complete business rule life cycle by multiple roles.



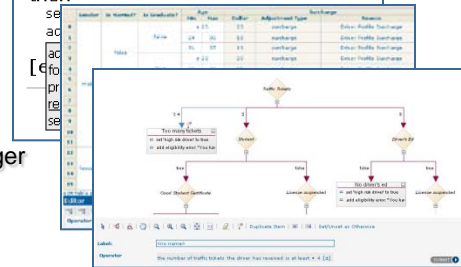
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```

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

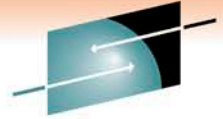
[definitions]
if
the driver is full time student
and the driver has been convicted of a DUI ✗
then



Screenshot of a 'Schema Report' showing test results for a scenario.

Schema Report: Scenario Test 7 - The second scenario	Status	Test Value	Calculated Result	Info
Number of rules fired in greater than 0	✓	2	4	
Number of rules excluded equal 2	✓	2	4	
List of rules fired contents		Simulation Probability, Simulation Eligibility	Simulation Probability, Simulation Eligibility, Eligibility, Insurance Program 1, Insurance Program 2, Insurance Program 3, Insurance Program 4, Insurance Program 5, Insurance Program 6, Insurance Program 7, Insurance Program 8, Insurance Program 9, Insurance Program 10, Insurance Program 11, Insurance Program 12, Insurance Program 13, Insurance Program 14, Insurance Program 15, Insurance Program 16, Insurance Program 17, Insurance Program 18, Insurance Program 19, Insurance Program 20, Insurance Program 21, Insurance Program 22, Insurance Program 23, Insurance Program 24, Insurance Program 25, Insurance Program 26, Insurance Program 27, Insurance Program 28, Insurance Program 29, Insurance Program 30, Insurance Program 31, Insurance Program 32, Insurance Program 33, Insurance Program 34, Insurance Program 35, Insurance Program 36, Insurance Program 37, Insurance Program 38, Insurance Program 39, Insurance Program 40, Insurance Program 41, Insurance Program 42, Insurance Program 43, Insurance Program 44, Insurance Program 45, Insurance Program 46, Insurance Program 47, Insurance Program 48, Insurance Program 49, Insurance Program 50, Insurance Program 51, Insurance Program 52, Insurance Program 53, Insurance Program 54, Insurance Program 55, Insurance Program 56, Insurance Program 57, Insurance Program 58, Insurance Program 59, Insurance Program 60, Insurance Program 61, Insurance Program 62, Insurance Program 63, Insurance Program 64, Insurance Program 65, Insurance Program 66, Insurance Program 67, Insurance Program 68, Insurance Program 69, Insurance Program 70, Insurance Program 71, Insurance Program 72, Insurance Program 73, Insurance Program 74, Insurance Program 75, Insurance Program 76, Insurance Program 77, Insurance Program 78, Insurance Program 79, Insurance Program 80, Insurance Program 81, Insurance Program 82, Insurance Program 83, Insurance Program 84, Insurance Program 85, Insurance Program 86, Insurance Program 87, Insurance Program 88, Insurance Program 89, Insurance Program 90, Insurance Program 91, Insurance Program 92, Insurance Program 93, Insurance Program 94, Insurance Program 95, Insurance Program 96, Insurance Program 97, Insurance Program 98, Insurance Program 99, Insurance Program 100	
List of rules excluded contents		Simulation Probability, Simulation Eligibility	Simulation Probability, Simulation Eligibility, Eligibility, Insurance Program 1, Insurance Program 2, Insurance Program 3, Insurance Program 4, Insurance Program 5, Insurance Program 6, Insurance Program 7, Insurance Program 8, Insurance Program 9, Insurance Program 10, Insurance Program 11, Insurance Program 12, Insurance Program 13, Insurance Program 14, Insurance Program 15, Insurance Program 16, Insurance Program 17, Insurance Program 18, Insurance Program 19, Insurance Program 20, Insurance Program 21, Insurance Program 22, Insurance Program 23, Insurance Program 24, Insurance Program 25, Insurance Program 26, Insurance Program 27, Insurance Program 28, Insurance Program 29, Insurance Program 30, Insurance Program 31, Insurance Program 32, Insurance Program 33, Insurance Program 34, Insurance Program 35, Insurance Program 36, Insurance Program 37, Insurance Program 38, Insurance Program 39, Insurance Program 40, Insurance Program 41, Insurance Program 42, Insurance Program 43, Insurance Program 44, Insurance Program 45, Insurance Program 46, Insurance Program 47, Insurance Program 48, Insurance Program 49, Insurance Program 50, Insurance Program 51, Insurance Program 52, Insurance Program 53, Insurance Program 54, Insurance Program 55, Insurance Program 56, Insurance Program 57, Insurance Program 58, Insurance Program 59, Insurance Program 60, Insurance Program 61, Insurance Program 62, Insurance Program 63, Insurance Program 64, Insurance Program 65, Insurance Program 66, Insurance Program 67, Insurance Program 68, Insurance Program 69, Insurance Program 70, Insurance Program 71, Insurance Program 72, Insurance Program 73, Insurance Program 74, Insurance Program 75, Insurance Program 76, Insurance Program 77, Insurance Program 78, Insurance Program 79, Insurance Program 80, Insurance Program 81, Insurance Program 82, Insurance Program 83, Insurance Program 84, Insurance Program 85, Insurance Program 86, Insurance Program 87, Insurance Program 88, Insurance Program 89, Insurance Program 90, Insurance Program 91, Insurance Program 92, Insurance Program 93, Insurance Program 94, Insurance Program 95, Insurance Program 96, Insurance Program 97, Insurance Program 98, Insurance Program 99, Insurance Program 100	
List of rules excluded contents		Simulation Probability, Simulation Eligibility	Simulation Probability, Simulation Eligibility, Eligibility, Insurance Program 1, Insurance Program 2, Insurance Program 3, Insurance Program 4, Insurance Program 5, Insurance Program 6, Insurance Program 7, Insurance Program 8, Insurance Program 9, Insurance Program 10, Insurance Program 11, Insurance Program 12, Insurance Program 13, Insurance Program 14, Insurance Program 15, Insurance Program 16, Insurance Program 17, Insurance Program 18, Insurance Program 19, Insurance Program 20, Insurance Program 21, Insurance Program 22, Insurance Program 23, Insurance Program 24, Insurance Program 25, Insurance Program 26, Insurance Program 27, Insurance Program 28, Insurance Program 29, Insurance Program 30, Insurance Program 31, Insurance Program 32, Insurance Program 33, Insurance Program 34, Insurance Program 35, Insurance Program 36, Insurance Program 37, Insurance Program 38, Insurance Program 39, Insurance Program 40, Insurance Program 41, Insurance Program 42, Insurance Program 43, Insurance Program 44, Insurance Program 45, Insurance Program 46, Insurance Program 47, Insurance Program 48, Insurance Program 49, Insurance Program 50, Insurance Program 51, Insurance Program 52, Insurance Program 53, Insurance Program 54, Insurance Program 55, Insurance Program 56, Insurance Program 57, Insurance Program 58, Insurance Program 59, Insurance Program 60, Insurance Program 61, Insurance Program 62, Insurance Program 63, Insurance Program 64, Insurance Program 65, Insurance Program 66, Insurance Program 67, Insurance Program 68, Insurance Program 69, Insurance Program 70, Insurance Program 71, Insurance Program 72, Insurance Program 73, Insurance Program 74, Insurance Program 75, Insurance Program 76, Insurance Program 77, Insurance Program 78, Insurance Program 79, Insurance Program 80, Insurance Program 81, Insurance Program 82, Insurance Program 83, Insurance Program 84, Insurance Program 85, Insurance Program 86, Insurance Program 87, Insurance Program 88, Insurance Program 89, Insurance Program 90, Insurance Program 91, Insurance Program 92, Insurance Program 93, Insurance Program 94, Insurance Program 95, Insurance Program 96, Insurance Program 97, Insurance Program 98, Insurance Program 99, Insurance Program 100	

WebSphere ILOG JRules BRMS



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IT Development



Rule Studio



Line Of Business



Rule Solutions for Office



Rule Team Server



Decision Validation Services



Custom Web Applications



Rule Repository



IT Operations



Transparent Decision Services



Rule Execution Server



Rules for COBOL

Design

Maintain

Share

Deploy

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Intuitive Rule Authoring Environments

if
 the one way driving distance of the vehicle coverage request [a] is more than ▼ 50 [a]
 and the type of the vehicle is Sport Utility Vehicle

then
 add a ▼ \$ 25 [a] surcharge to [a], reason: ▼ <enter a value> [a]

Point & Click

Coupe
 Pickup Truck
 Sedan
 Sport Utility Vehicle
 Sports Coupe

Decision Tables

	Gender	Is Married?	Is Graduate?	Age		Dollar	Adjustment Type	Reason	
				Min	Max				
0	male	false	false	≤ 23		23	surcharge	Driver Profile Surcharge	
1				24	30	18	surcharge	Driver Profile Surcharge	
2				31	35	10	surcharge	Driver Profile Surcharge	
3			≤ 23						
4			≤ 23						
5			≤ 23						
6	male	true	false	≤ 23		18	surcharge	Driver Profile Surcharge	
7				24	30	14	surcharge	Driver Profile Surcharge	
8				31	35	10	surcharge	Driver Profile Surcharge	
9			≤ 23				15	surcharge	Driver Profile Surcharge
10			≤ 23				10	surcharge	Driver Profile Surcharge
11			≤ 23				5	surcharge	Driver Profile Surcharge
12	female	false	false	≤ 21		16	surcharge	Driver Profile Surcharge	
13				22	27	10	surcharge	Driver Profile Surcharge	
14				28	33	6	surcharge	Driver Profile Surcharge	
15	female	true	true	≤ 21		12	surcharge	Driver Profile Surcharge	

edit table preconditions | edit table | 0 - 15 | 15 - 30 | All

Editor

Operator the age of the driver is at most ▼ 21 [±] **SUBMIT**

Scorecards

Attribute	Range	Weight(%)	Score	Reason Code
Months since last bankruptcy	1 ≤ Months since last bankruptcy < 3	100	0	NLB
	3 ≤ Months since last bankruptcy < 6		20	NLB
	6 ≤ Months since last bankruptcy < 9		60	
	9 ≤ Months since last bankruptcy < 12		150	
Number of Bankruptcies	1 ≤ Number of Bankruptcies < 2	30	100	
	2 ≤ Number of Bankruptcies < 3		50	
	3 ≤ Number of Bankruptcies < 4		150	
	4 ≤ Number of Bankruptcies < 5		0	NB
Number of Foreclosures	1 ≤ Number of Foreclosures < 2	20	100	
	2 ≤ Number of Foreclosures < 3		30	
	3 ≤ Number of Foreclosures < 4		10	
	4 ≤ Number of Foreclosures < 5		0	NF
Number of 30 days Late Payment	1 ≤ Number of 30 days Late Payment < 2	5	80	
	2 ≤ Number of 30 days Late Payment < 3		60	
	3 ≤ Number of 30 days Late Payment < 4		10	30LP
	4 ≤ Number of 30 days Late Payment < 5		0	
Number of 60 days Late Payment	1 ≤ Number of 60 days Late Payment < 2	15	100	
	2 ≤ Number of 60 days Late Payment < 3		80	
	3 ≤ Number of 60 days Late Payment < 4		10	
	4 ≤ Number of 60 days Late Payment < 5		0	

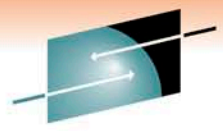
Decision Trees

```

  graph TD
    Root(( )) --> Tickets{Tickets}
    Tickets -->|≥ 4| TooMany[Too many tickets]
    Tickets -->|2| Student{Student}
    Tickets -->|3| Ed{Driver's Ed}
    
    TooMany -->|true| GoodStudent{Good Student Certificate}
    TooMany -->|false| Suspended1[License suspended]
    
    Student -->|true| Suspended2[License suspended]
    Student -->|false| Ed
    
    Ed -->|false| NoEd[No driver's ed]
    Ed -->|true| Suspended3[License suspended]
    
    NoEd -->|true| Suspended4[License suspended]
    NoEd -->|false| Suspended5[License suspended]
  
```

Operator the number of traffic tickets the driver has received is at least ▼ 4 [±] **SUBMIT**

Rules Authoring Delivered to Business



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Eligibility.xlsx - Microsoft Excel

Home Insert Page Layout Formulas Data Review View Decision Table

Check Gaps Check for Overlap RuleDoc Pane Preconditions Rule Statements

	A	B	C	D	E	F
1	A	City	C	D	E	
2			Min	Max		
3			≤ 22.00	FALSE	The customer's age is below the minimum for ren	
4	New Hampshire	X	23	70	TRUE	The customer is eligible to rent in New
5			≥ 71.00	FALSE	The customer's age is past the maximum for rent	
6			≤ 20.00	FALSE	The customer's age is below the minimum for re	
7	Rhode Island	A	21	70	TRUE	The customer is eligible to rent in Rho
8			≥ 71.00	FALSE	The customer's age is past the maximum for ren	

RuleDoc Table Properties Selection Properties Cells

Rules Row4

Definitions...

If

- all of the following conditions are true:
 - the state of the pickup branch of the rental agreement is New Hampshire
 - the last name of the customer starts with X
 - the age of the customer of the rental agreement is between 23 and 70

Then

- set the rental agreement accepted status to True
- display the message: The customer is eligible to rent in New Hampshire.

Else...



Word Tutorial - copied.docx - Microsoft Word

Mailings Review View Rules

Default Apply Default Insert Rule RuleDoc Pane Vocabulary Pane Save Text to Rule Gallery Options

Format Rule Format Property View Content Customize

Page 3

The following business rule defines the price of the Default Special Offer. The price is computed from the base

Business Rule

Definition: $Base Price * (1 - Percentage) / 100$

Author Created: 2007

Rule Body:

- the <a coverage name>
- the actual car group of <a rental agreement>
- the actual return branch of <a rental agreement>
- the actual return date of <a rental agreement>
- the age of <a customer>
- the birth date of <a customer>
- the branch
- the car group
- the car group of <a rental agreement>
- the car group upgrade level of <an offer>

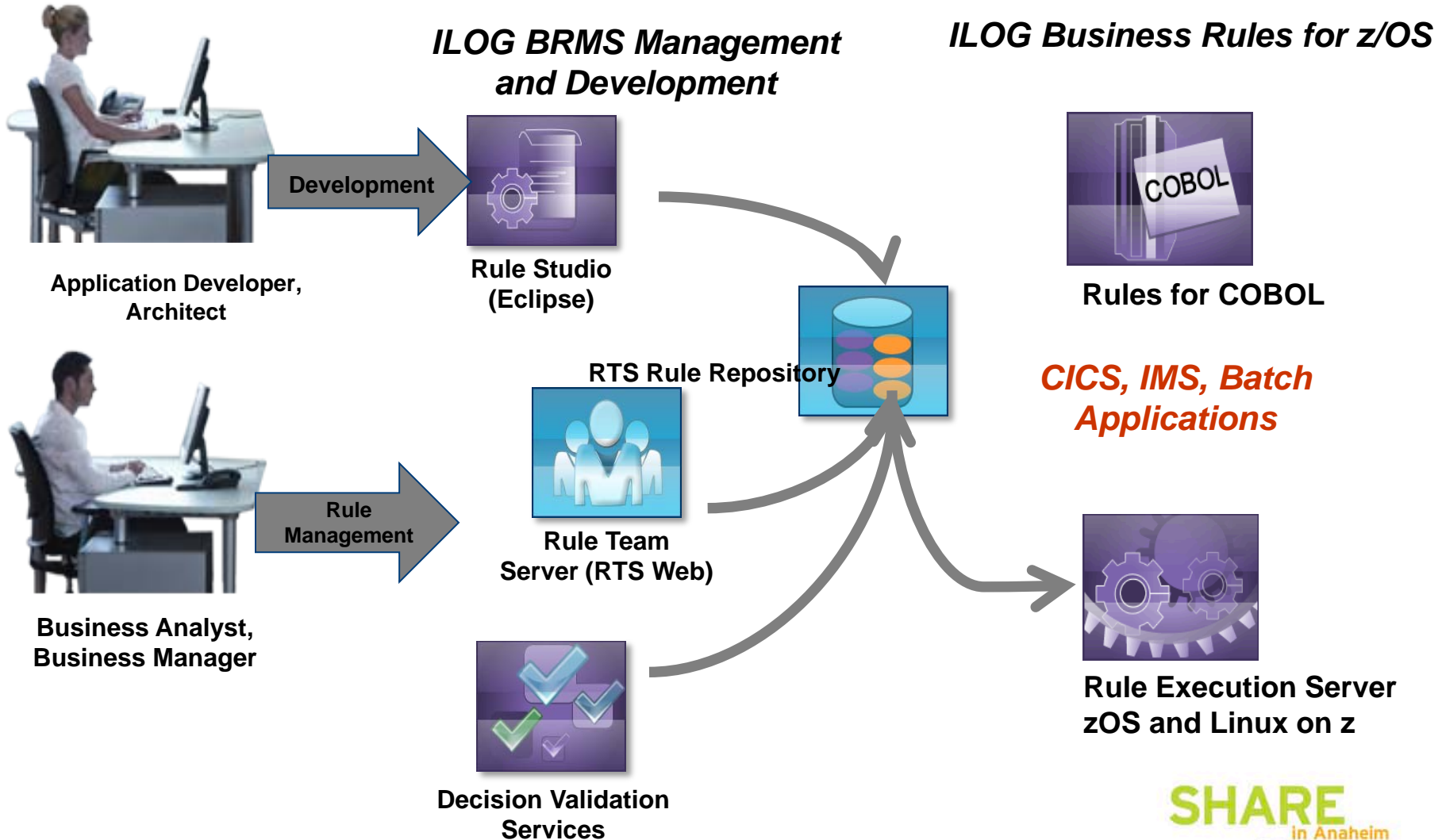
Set

- the rental agreement "Default" discount to 'the percentage';
- the rental agreement "Default" price to the rental agreement "Base" price * (1 - 'the percentage' / 100);
- Display the message: "The Default special offer corresponds to a 10% rebate on the Base offer price.";

RuleDoc RuleDoc Outline Rule Properties Problem List



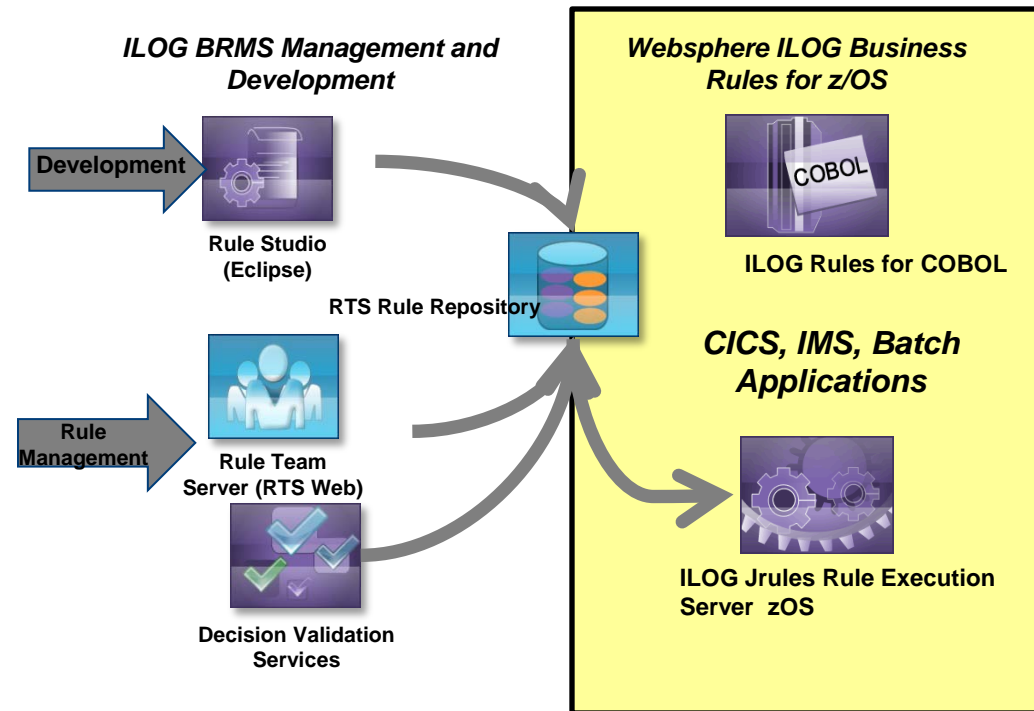
ILOG Business Rule Management Solutions for COBOL Applications on System z

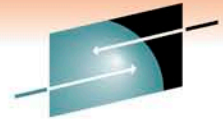


Dynamic Rules Management

Managed Execution Environment with BRMS

- **High performance and scalable** rule execution
- **Add new behaviors** to key COBOL business applications and minimize risk and disruption
- **Improve Agility** – author and reuse business decisions and rules across applications
- **Automate business decisions** – quick response to market and regulatory changes
- **Rule services management & monitoring**





Improve agility and time to market

ILOG BRMS Case Study

Challenge

- The company was missing revenue by not being able to present the right offer at the right time when a customer was on-line.
- Decision logics were scattered and inconsistent across channels.
- Poor customer experience: branch staff would sometimes try to cross-sell to clients who did not qualify for the additional credit, resulting in negative client experience

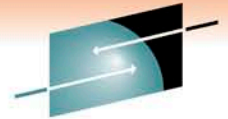
Solution

- Create an ILOG BRMS based cross-sell/up-sell solution
- Decision support throughout generation of personalized & qualified offers
- Cross-channel (branches, call centers, etc.), cross-product & customer centric
- Agile solution from both business & IT standpoints!

Business Benefits

- Improved client relationship – acquisition, retention & wallet-share
- Accelerated ROI
 - Increased revenues - \$14M in approved bookings in 2.5 months
 - Significantly increased cross-sell offers: from 13% to 40%
 - Significantly increased acceptance from 3% to 20%-30%
- Instant updates of rules fully managed by business users.

One of the Largest Financial Service Providers in the World Dramatically Increases Revenue through Cross-sell/Upsell



Challenge

- There are 6 different COBOL Applications mix of CICS and Batch. Each application contains similar functionality – the applications were included in the company portfolio as part of smaller company purchases.

Solution

Phase 1 - Start with identifying the corporate rules. These will be authored in Rules for COBOL and the generated Corporate rule program will be included in each of the 6 applications.

Phase 2 – Start with Country 1 App – migrate rules to Rules for COBOL and generate required rules program to call with app.

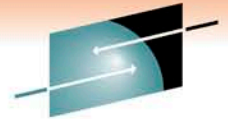
Phase 3 to xx – Continue with each country application but by business decision review each country rules with those already in the repository to determine where more common rules should be.

Concurrent with Phase 3 – Begin the new architecture design and new development for the claims application on distributed.

Business Benefits

- Enhanced use of IT resource time allocated to Application System Maintenance.
- Ability to have an efficient way to phase out duplicate application functionality with no impact to business activities
- Reduction in CPU utilization on System z due to eliminating multiple application systems

Large Multi Product European Insurance Company based



WebSphere ILOG BRMS Case Study – Rule Sharing

Challenge

- Numerous mainframe COBOL applications with little or no documentation
- Integration/feeds between the mainframe COBOL applications were done as “patch work” and not consistent
- Updates to applications systems require long lead times by lead time

Solution

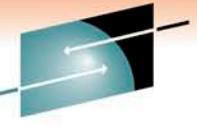
- Global processes will be the first phases and a BRMS is used in these process to ensure consistency and ease of adding in specific region business rules with new project phases.
 - Distributed solution using JRules BRMS
 - Rules for COBOL used to develop and maintain business object model.
- Involve business users early and through the development process
- Focus on time to market and agility.

Business Benefits

- Decreased Time to Market for new services and new pricings structures
- New technology in phased approach rather than complete rip and replace
 - New and existing applications will need to run in parallel
 - Corporate data will remain on the mainframe
- Employees trained and mentored during the first phases so they can continue with the ongoing development.

*One of the Largest US
Distribution Companies!*

Modernization Projects Examples for BRMS



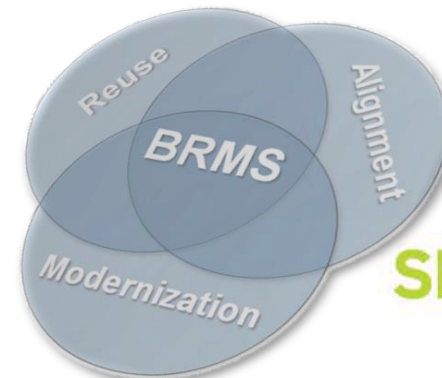
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Modernization Issues to resolve

1. **Consolidation of COBOL application portfolio**
 - Combine similar processes into one or two applications – cost savings on maintenance
2. **Maintenance Projects**
 - “Open up the application” to add new functionality; new product; etc.
3. **Sharing Rules across Platform/ Running Parallel**
 - Modernization or simplification of large applications across multiple platforms.
 - Keeping the rules in sync across multiple phases of projects.

Benefits of a BRMS

- Rule management
 - Version Control
 - Impact of rule change
 - Central repository for multiple rule deployments
- Rule testing and simulation to ensure accuracy of changes prior to deployment.
- Reuse of rules across platforms and applications – COBOL and Java
- Incremental modernization with rule management and execution – faster ROI.

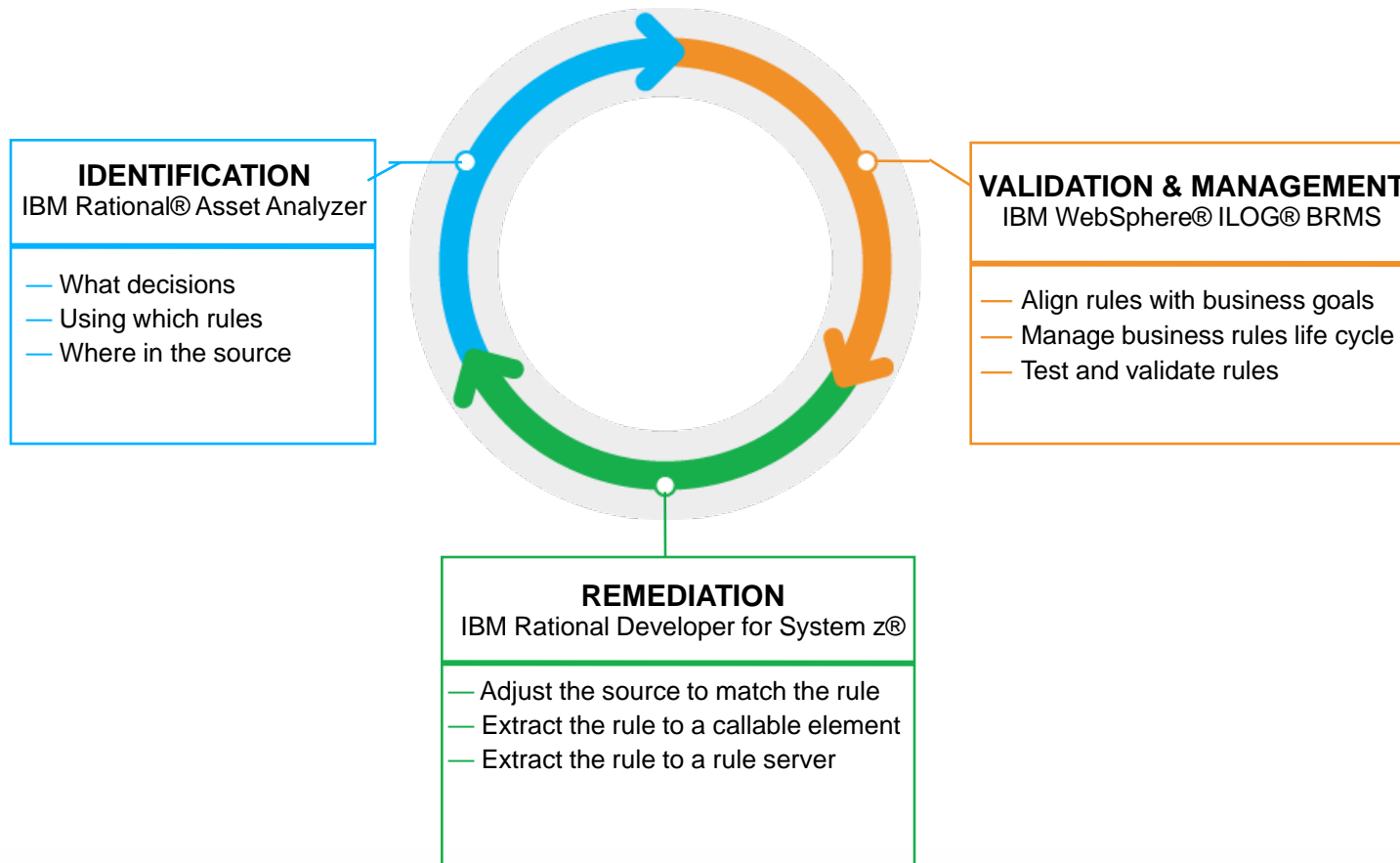


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BRMS Benefits to COBOL Development and Maintenance

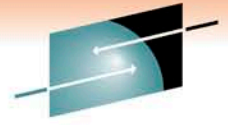
- Rule Analysis
 - Get automatic notification of potential rule conflicts, redundancies prior to deployment
- Impact Analysis
 - See where rules are used across projects/applications using queries
- Change Management
 - Version Control,
 - Compare history of changes
- Smart Views
 - Take control of very 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

Integration of RAA and ILOG BRMS to achieve Rule Modernization



Delivering...

The essentials for business rule mining of existing software assets enhancing the ability to capture, maintain and take advantage of application knowledge that can provide insight into an application's structure and its interactions with business data.



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ILOG BRMS for System z to capitalize on modernization and innovation

1

Improve

Improve Agility : author and reuse business decisions and rules across applications with BRMS Rule Studio

2

Adapt

Automate business decisions : Quick response to market and regulatory changes with BRMS Rule Team Server

3

Innovate

Add new behaviors to key COBOL business applications and minimize risk and disruption with Rules for COBOL.



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धन्यवाद

Hindi Hindi

多謝

Traditional Chinese

ขอบพระคุณ

Thai

Спасибо

Russian

Gracias

Spanish

Merci

French

Thank You

English

شكراً

Arabic

Obrigado

Brazilian Portuguese

多谢

Simplified Chinese

Danke

German

Grazie

Italian

நன்றி ありがとうございます

Tamil Tamil

Japanese

Teşekkürler

turkish

감사합니다

Korean