



IBM System z Software

P1 - BRMS Fundamentals and System z value

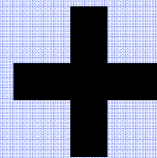
Revitalizing Your WebSphere:
Business Rules with ILOG and Rational Software on System z



Today's Imperatives Are...

Cost Optimization

to slash operational and maintenance expense and maximize efficiency necessary for all economic climates



Agility

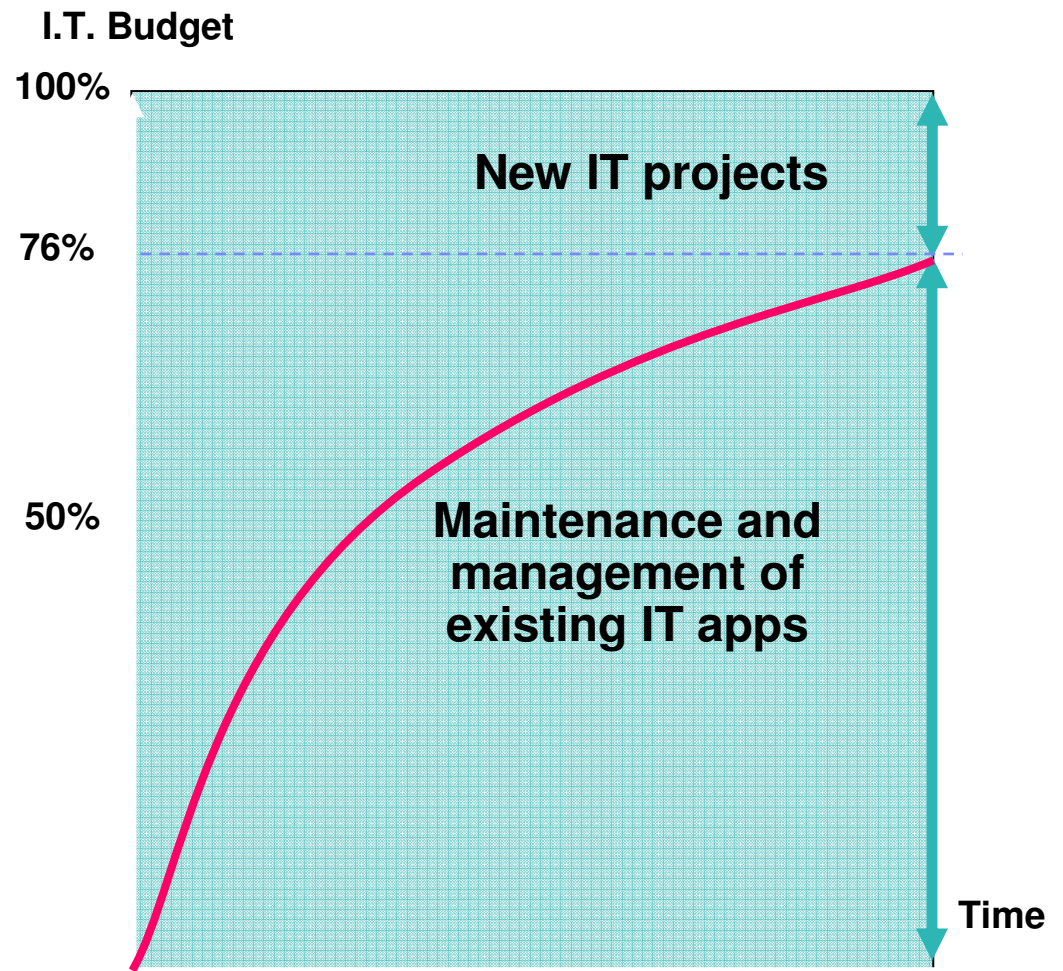
to take advantage of new revenue opportunities and address competitive threats

To Survive... To Succeed!



Where are you spending your IT Budgets?

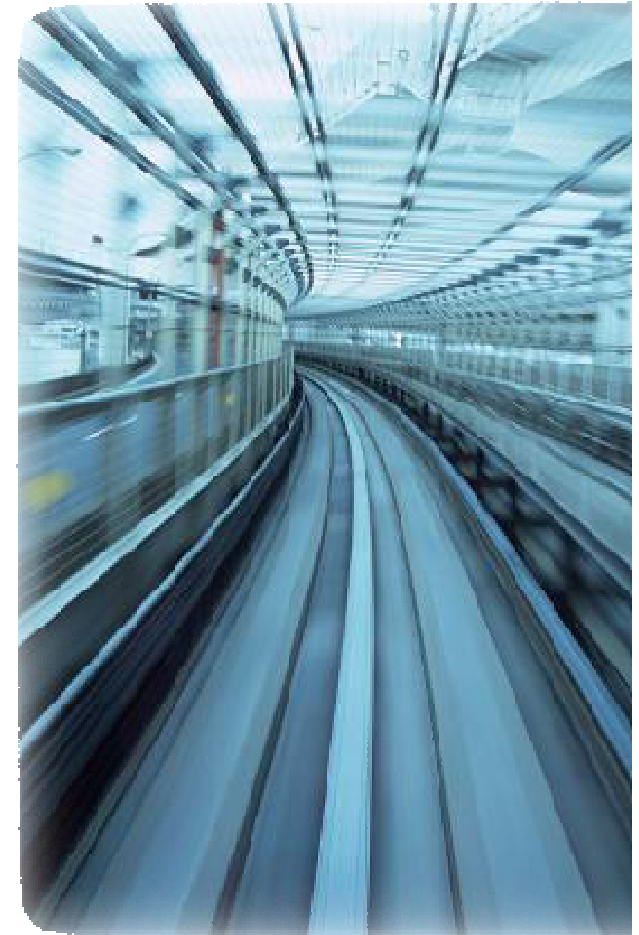
“76% of I.T budgets are spent on MAINTENANCE, leaving only 24% for NEW INVESTMENTS.”
 --- Forrester Research



We face the challenge of accelerating market shifts

- **Rising consumer expectations compel improvements in speed and personalization**
- **Rapid swings in economic and commodity markets highlight lack of adaptability**
- **Lower barriers to entry in a digital, flat world, enable fast and easy access by new competitors**

How do businesses evolve
to adapt and respond dynamically?



Flexible process automation increases agility and enables rapid change

- **Improve agility and time to market**
- **Manage rule based decisions**
- **Incremental application modernization**



Business rules to drive flexible process automation

Veterans Affairs Health Eligibility Center

Situation

- Large volume of requests: 900K new enrollees/year & growing
- Volatile & complex regulations
- Processing backlog
- Legacy system does not keep up with volume & pace of change requests

Goals

- Upgrade legacy with automated, flexible & scalable eligibility decision service
- Lower TCO with centralized maintenance of business rules
- Improve policy formulation pre-legislation through simulation & impact analysis

Solution

- An IBM ILOG BRMS based solution
 - to automate enrolment validation, eligibility check, case assignment & exception handling
 - to centralize all rules into a single platform for improved control & auditability
 - to enable accurate & swift policy formulation

Benefits

- Streamlined & scalable enrolment automation
 - 7 minutes turn around time vs. 6 weeks, no backlog
 - System can now keep up with pace of change requests
- Centralized business policies for easier management & audits
 - Audit & simulation now available to check accuracy & anticipate impact of changes



ILOG – 23+ Years of Decisioning Corporate Outline and some Canadian BRMS Clients:

- Founded in 1987
- Acquired by IBM January 2009
- \$181.0M FY 2008 (FY 2007 = 162M;
FY 2006 = \$134M; FY 2005 = \$125M)
- 2500+ customers
- 850+ Employees



BELL CANADA



Communications Security Establishment Canada

Centre de la sécurité des télécommunications Canada



Communications Research Centre Canada

Centre de recherches sur les communications Canada



TAKING YOU FARTHER™



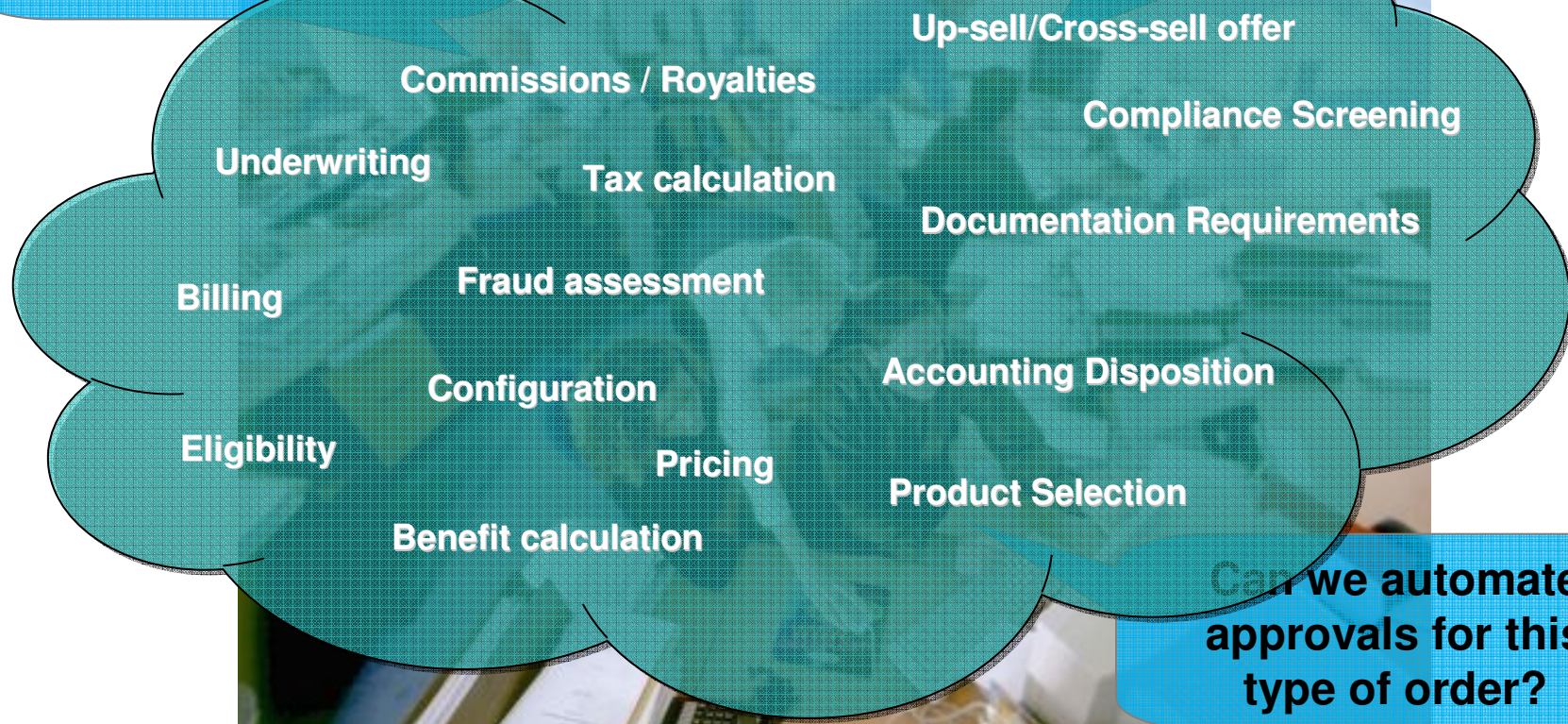
Agenda

- **What are Business Rules and a Business Rule Management System (BRMS)?**
- **Where a BRMS fits within your z Architecture and what are your options?**
- **What are the ILOG BRMS System z Solutions?**

Business Decisions are Everyplace....

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.



Can we automate approvals for this type of order?

And Changing Frequently



Examples of Decisions Suitable for a BRMS Solution

Banking

- Loan Origination
- Credit Decisioning
- Sales Advisory
- Payments
- Accounting

Insurance

- Claims Processing
- Underwriting
- Quoting
- Rating
- Commissioning

Capital Markets

- Automated Trading
- Trade Order Management
- Accounting
- Compliance KYC / AML
- On Boarding

Public Sector

- Claims Processing
- Entitlement and Benefit calculation
- Fraud Detection and Management
- Screening and Targeting

Telecom

- Offer Configuration
- Order Management
- Fraud Detection and Management
- Loyalty Programs
- Network Monitoring

Transportation and Travel

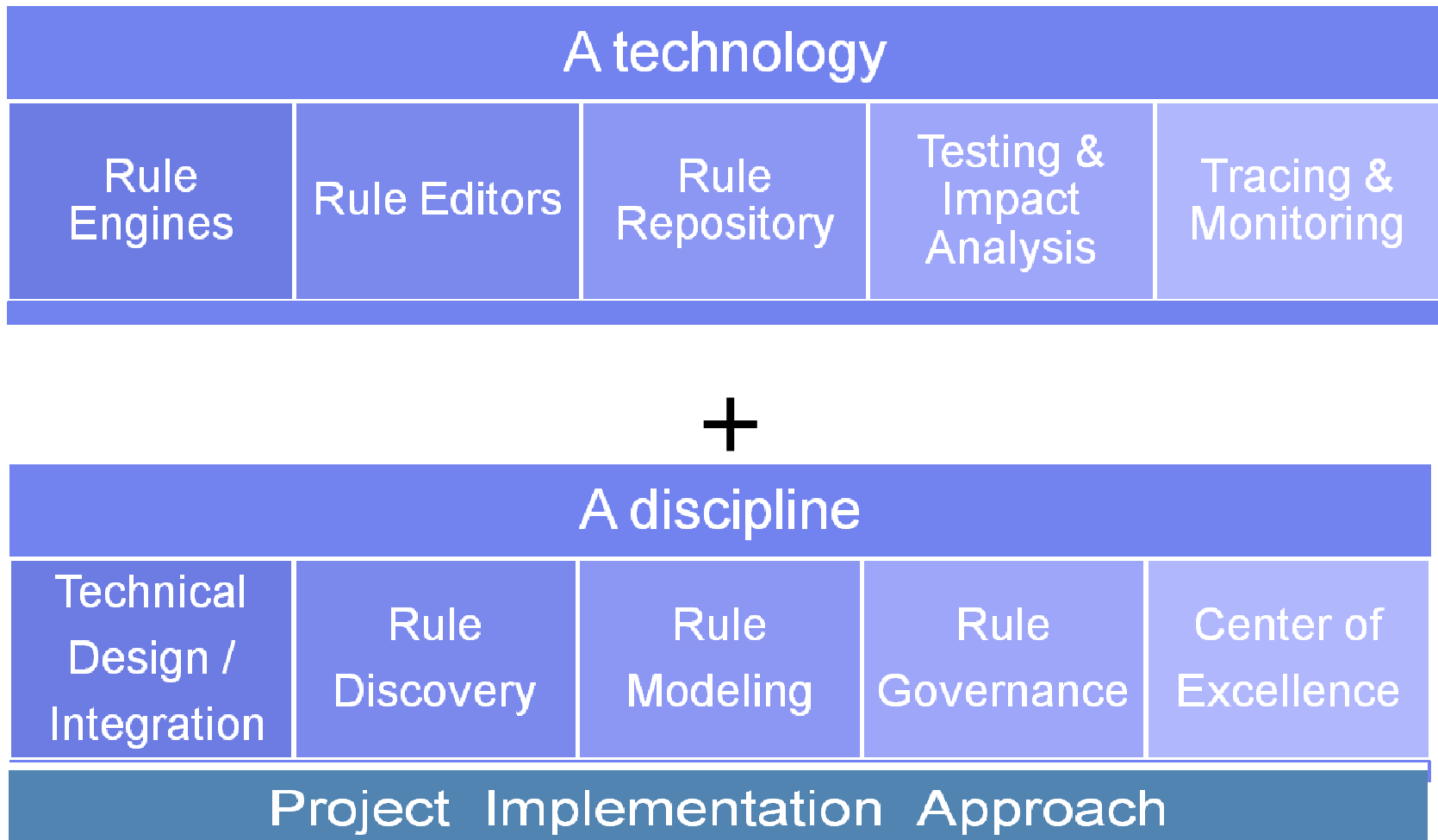
- Promotions Management
- Loyalty Programs
- Customer Service
- Billing
- Contract Management

Retail

- Online recommendation
- Campaign Management
- Order Management
- Pricing

Manufacturing

- Order Management
- Billing
- Contract Management



What Are Business Rules?

Example 1:

*IF a person is a senior citizen,
THEN provide a 5% discount.*

Example 2:

*IF a person drives more than 150 miles a week to and from work,
THEN add \$25 to their auto insurance premium.*

Example 3:

*IF a customer invests less than \$5000
THEN place the customer in the bronze level.*

OR

*IF a customer invests \$5000 or more but less than \$10,000
THEN classify the customer as silver.*

OR

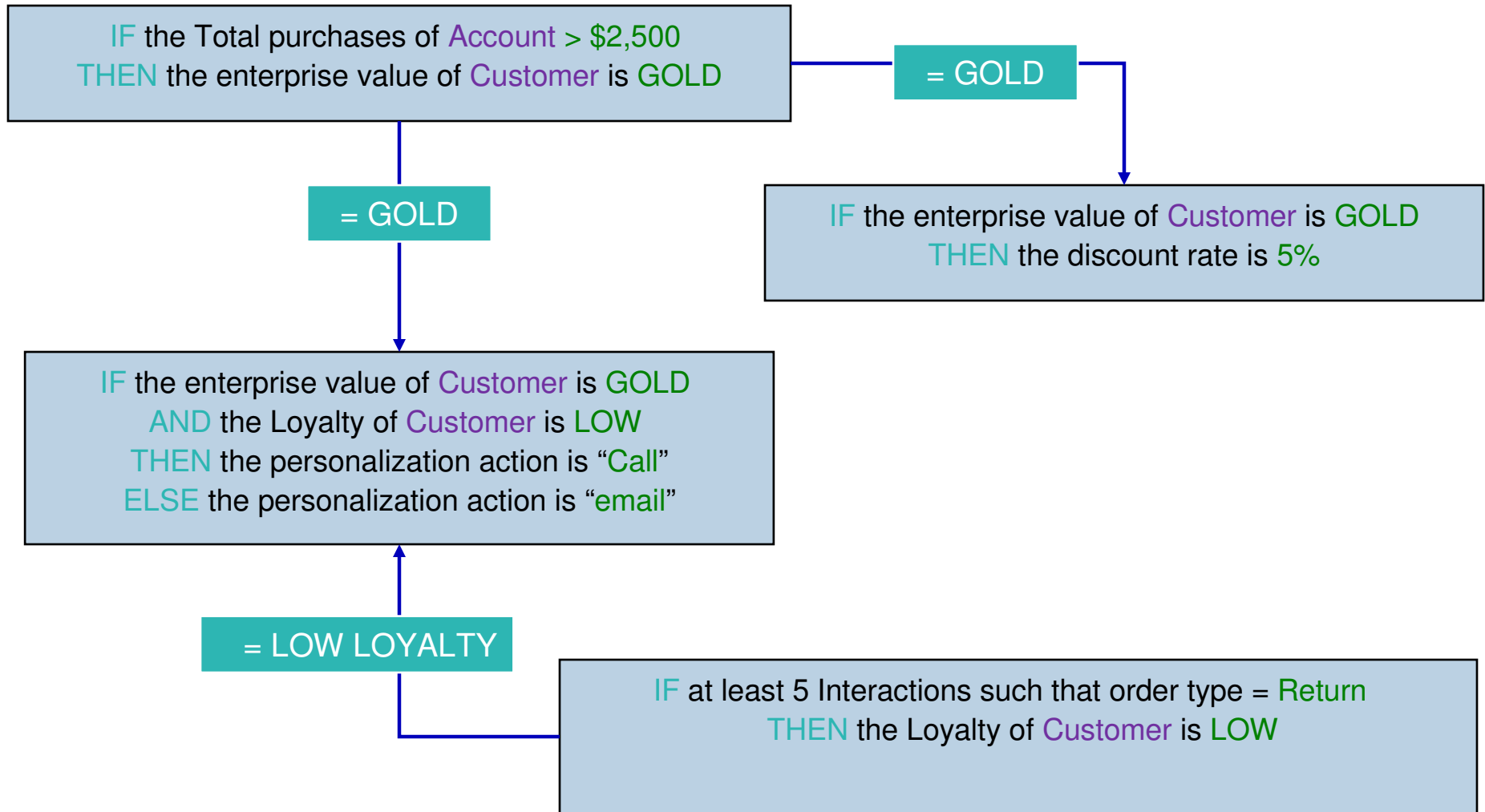
*IF a customer invests more than \$10,000
THEN consider the customer as gold.*

Policies

&

Procedures

What is a Business Decision?



What is a Decision Service/Decision Point?

Is this a valid Trade?

Is the loan approved?

Is this a valid application?

Rating?

What is the "Risk"?

Score?

What is the next step in the process?

What is the price?

What Discount should apply?



Traditional Approach for Managing Decision Change

Business rules are crucial to operational systems, and they change over time. 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

```

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, "WSAStartup 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);
    
```

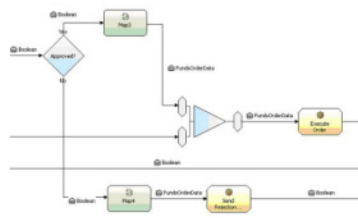
Applications



Documents



People



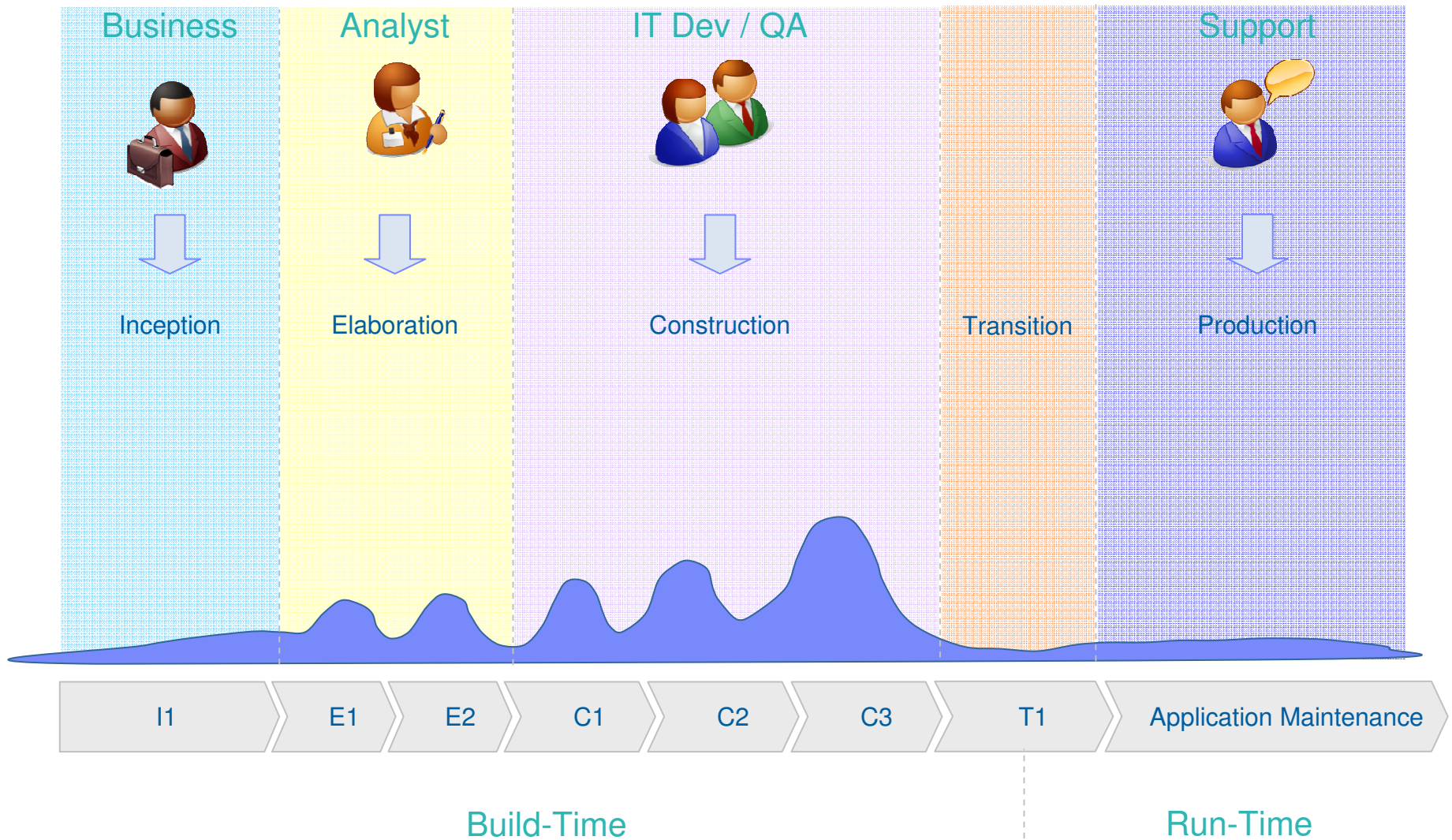
Processes

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

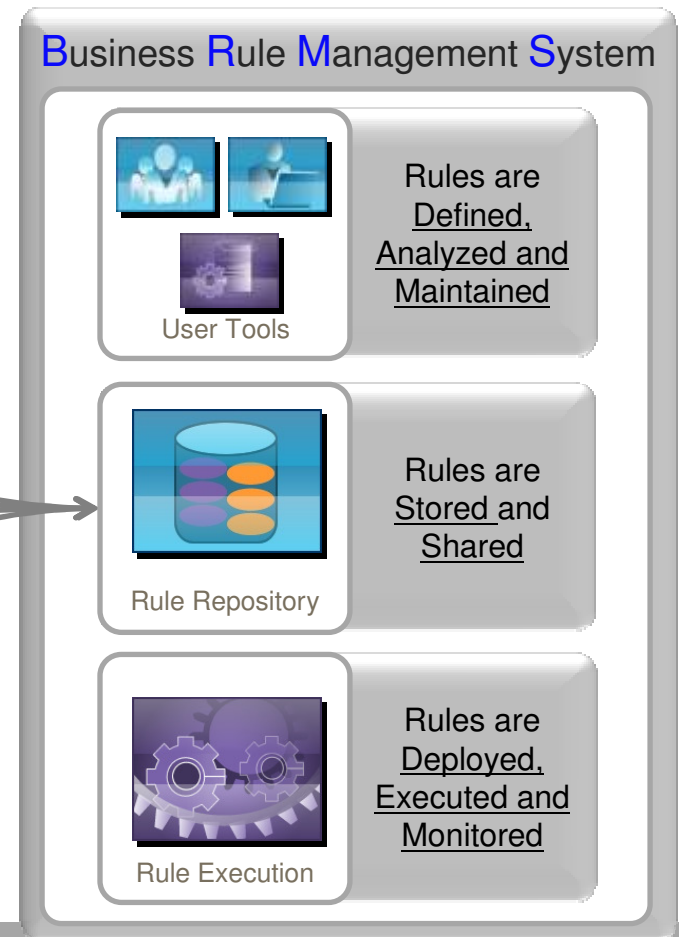
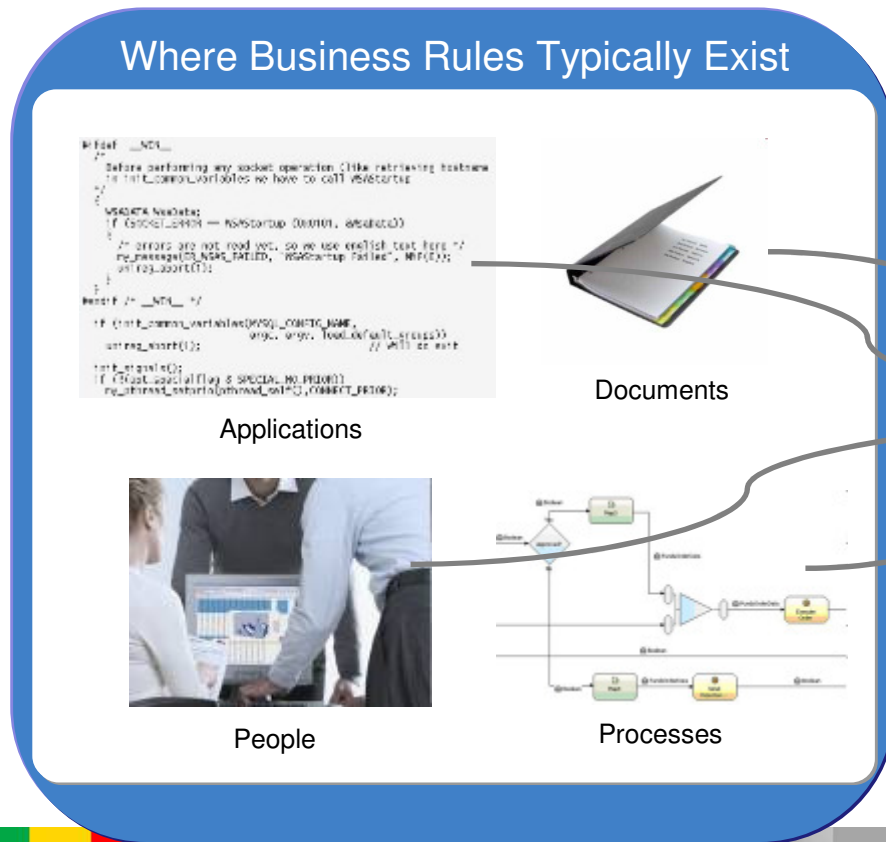


Traditional Software Lifecycle

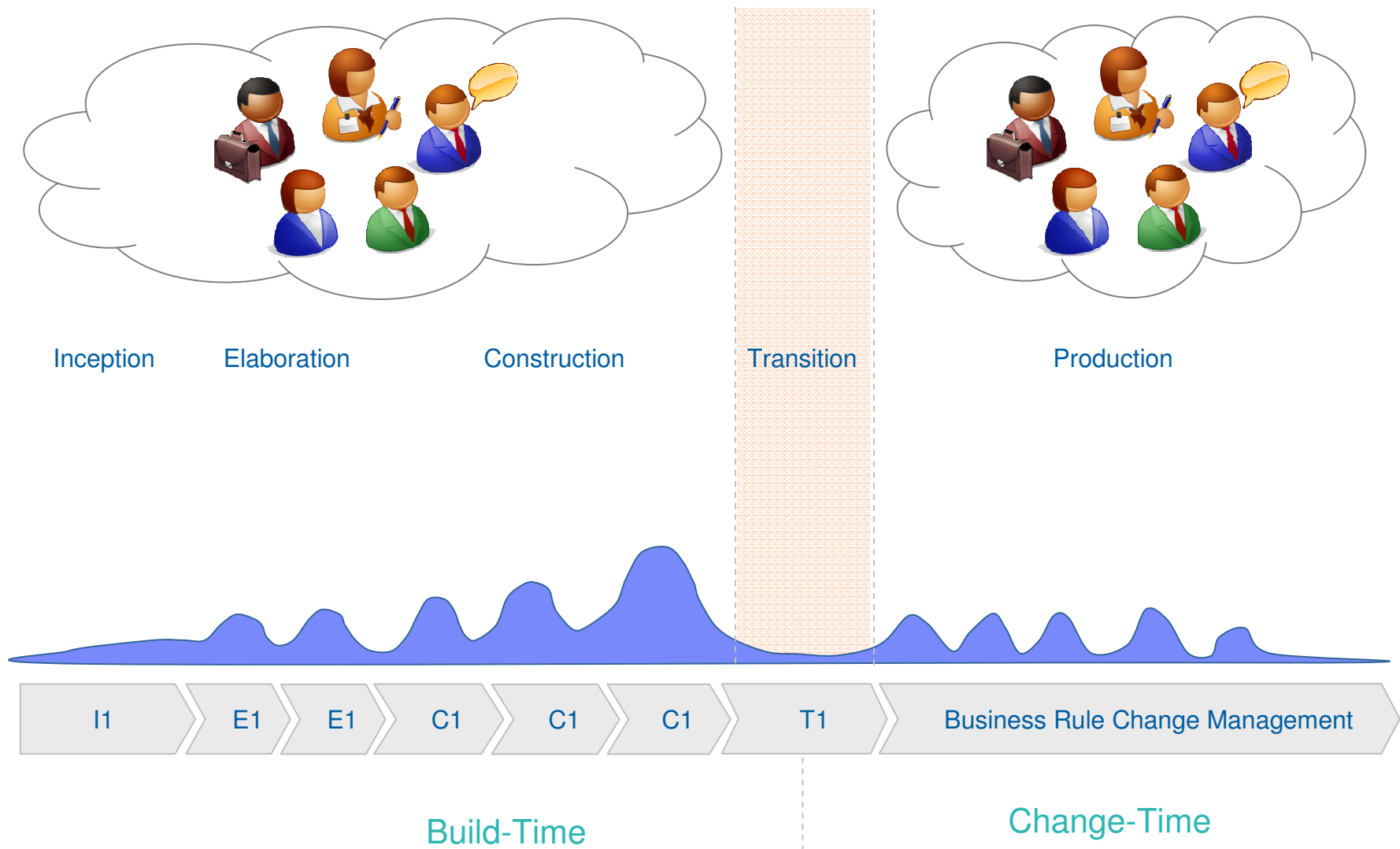


Manage and Automate Decision Logic with BRMS

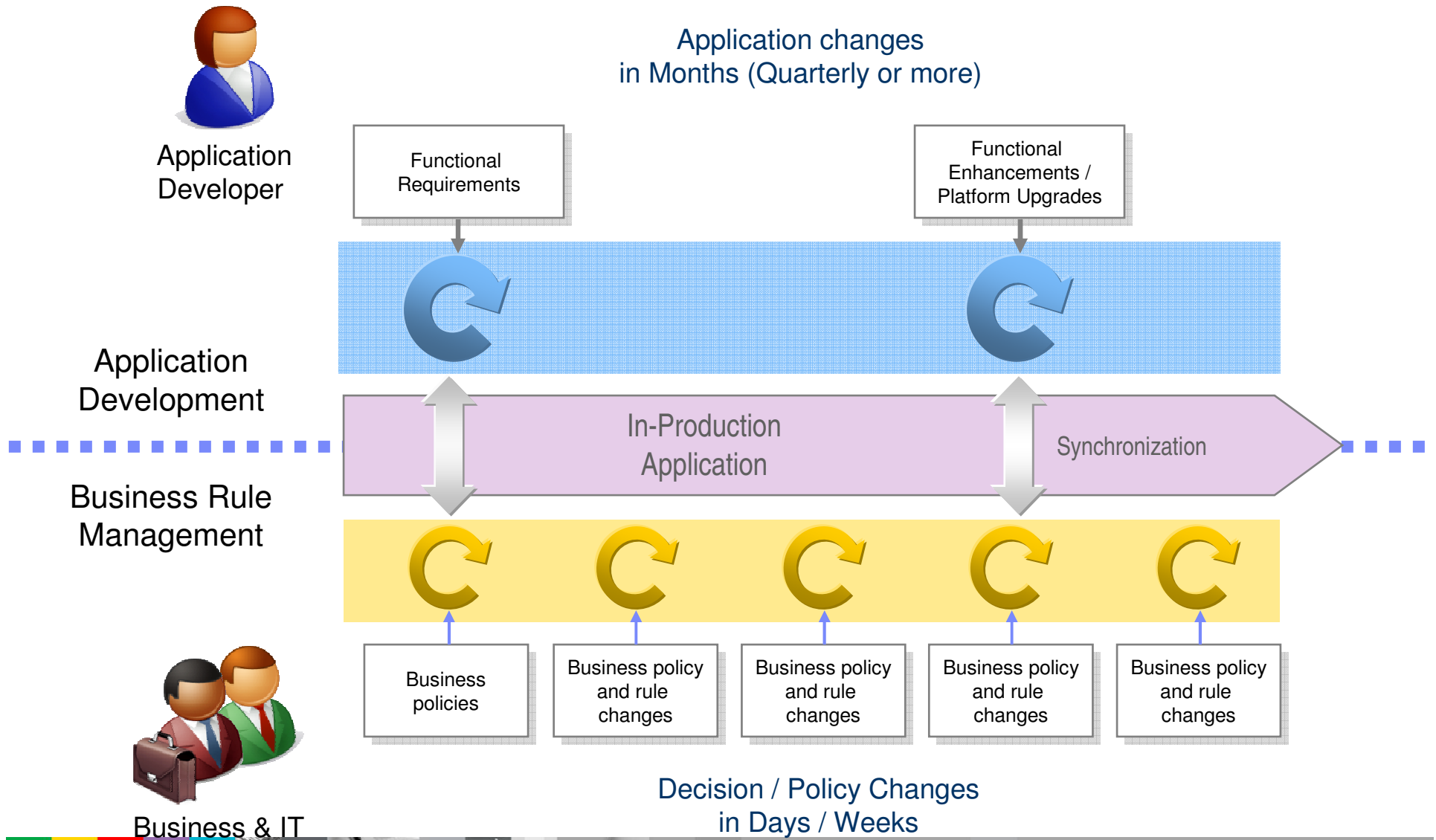
- Make decision logic accessible to Business and IT
- Reduce maintenance time & cost
- Increase decision automation
- Eliminate decision silos – drive consistency
- Create an audit trail for decisions & decision logic



BRMS Software Lifecycle – Collaborative Working



Separate Application Development and Rule Lifecycles



BRMS Value across Roles



IT Leader

Benefits for my role:

- Lower TCO
- Increase automation
- Better service level to users



Business Leader

Benefits for my role:

- Competitive advantage
- Reduced risk
- Increase automation



IT Architect

Benefits for my role:

- Easier to support architecture
- Reduced integration costs
- Enterprise sharing of rules



Process Owner

Benefits for my role:

- Better visibility
- Enterprise sharing of rules



IT Developer

Benefits for my role:

- Higher development productivity
- Offload overhead to business
- Greater app control but giving greater user flexibility



Business Analyst

Benefits for my role:

- Implement rules outside of normal release cycle
- Non-technical rules
- More responsive system



What is a business rule ?

Quasi-natural language

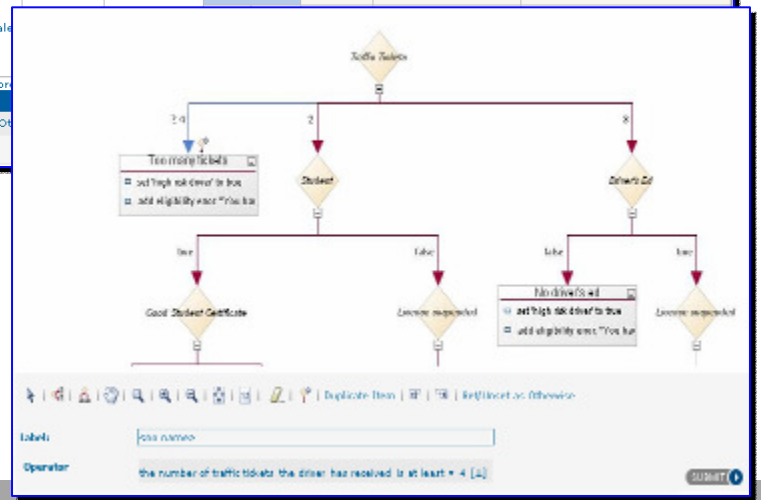
```

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' ;
    
```

Decision Tables

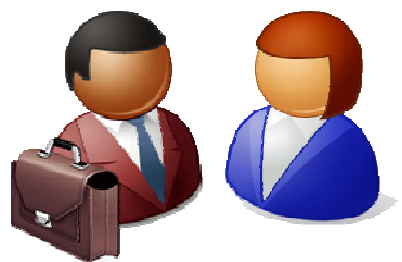
	Gender	Is Married?	Is Graduate?	Age		Dollar	Adjustment Type	Surcharge	Reason
				Min	Max				
0				≤ 23		23	surcharge		Driver Profile Surcharge
1		false	false	24	30	18	surcharge		Driver Profile Surcharge
2	31			35	13	surcharge		Driver Profile Surcharge	
3				≤ 23		20	surcharge		Driver Profile Surcharge
4			true	24	30	15	surcharge		Driver Profile Surcharge
5				31	35	10	surcharge		Driver Profile Surcharge
6	male			≤ 23		18	surcharge		Driver Profile Surcharge
7		true	false	24	30	14	surcharge		Driver Profile Surcharge
8				31	35	10	surcharge		Driver Profile Surcharge
9				≤ 23		15	surcharge		Driver Profile Surcharge
10			true	24	30	10	surcharge		Driver Profile Surcharge
11				31	35	5	surcharge		Driver Profile Surcharge
12				≤ 35		16	surcharge		Driver Profile Surcharge
13	female								
14									
15									

Decision Trees

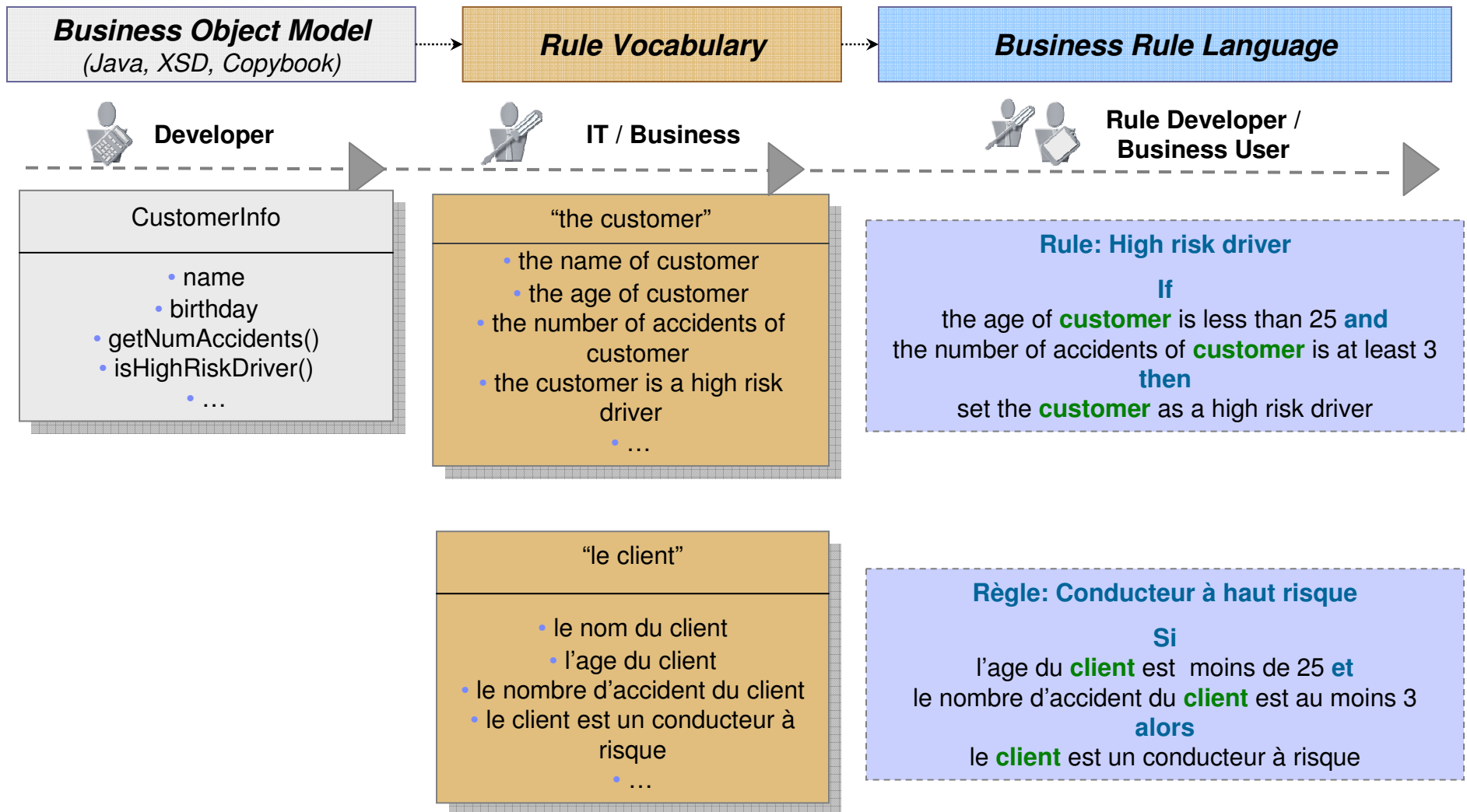


A statement of business logic that:

- ✓ Is not cryptic code!
- ✓ Can be authored by business users
- ✓ Is self-documented, executable, reusable



Domain specific rule vocabulary



Intuitive Rule Authoring - Advanced Decision Tables

	Grade	Amount of loan ✘		Insurance required	Insurance rate
		Min	Max		
0	A	< 100,000		false	0.000
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 ⊘	0.0025
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

Built-in Gap/Overlap Checking

Actions

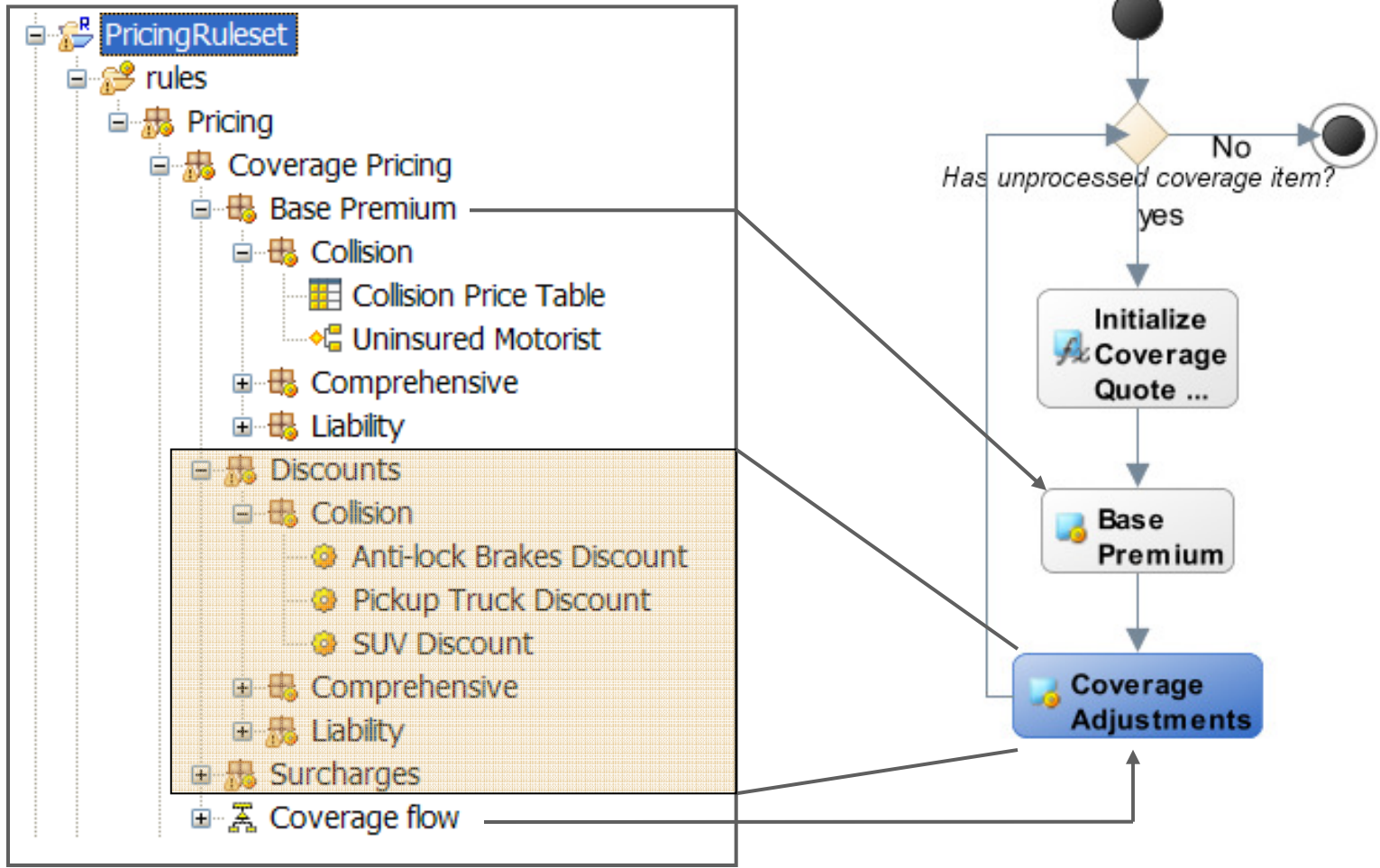
if
all of the following conditions are true :
 - the loan grade in 'the loan report' is "C"
 - the amount of 'the loan' is at least 600000 ,
then
 set insurance required in 'the loan report' to *true* ;
 set the insurance rate in 'the loan report' to 0.0145 ;

Automatic Rule Generation

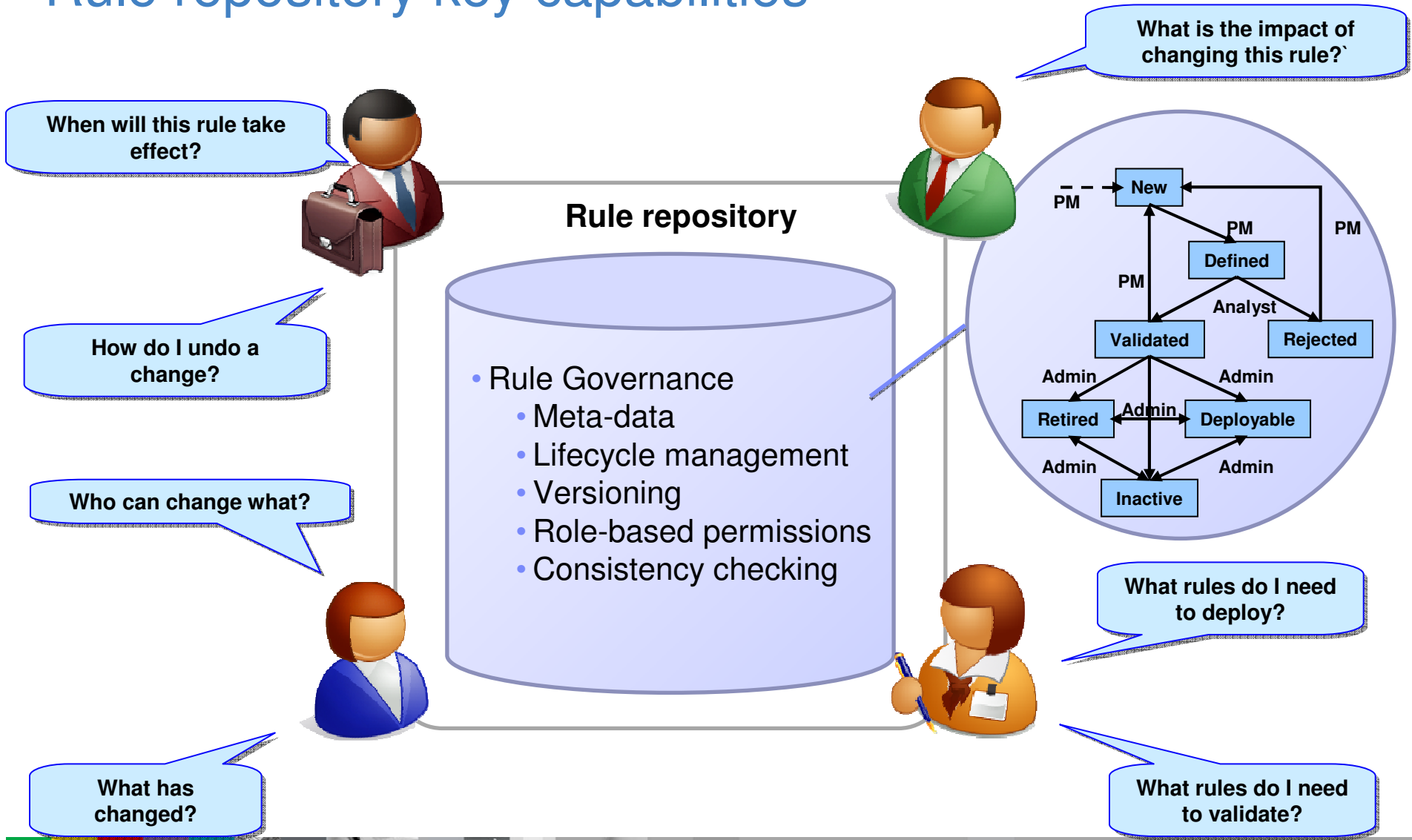


Ruleflow

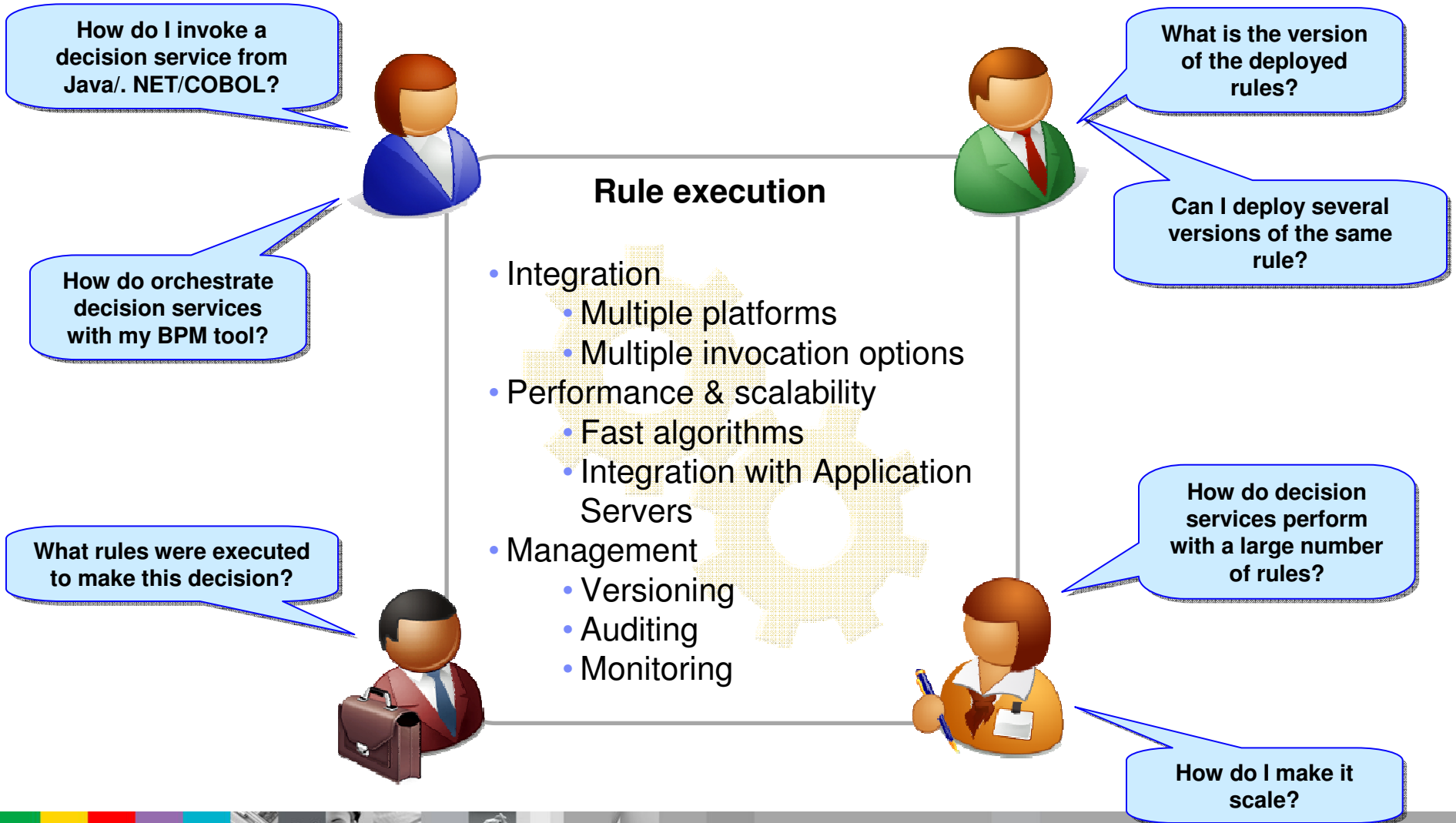
Graphical editor to model and control rule execution sequence



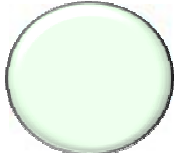
Rule repository key capabilities




Rule execution key capabilities



WebSphere ILOG JRules BRMS


**IT
Development**


**Rule
Studio**




**Line Of
Business**


**Rule Solutions
for Office**


**Rule Team
Server**

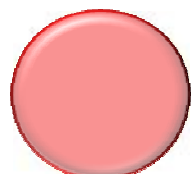

**Decision Validation
Services**


**Custom
Web
Applications**

Design

Maintain

Share



**IT
Operations**


**Rule Execution Server
(SOA - Java)**

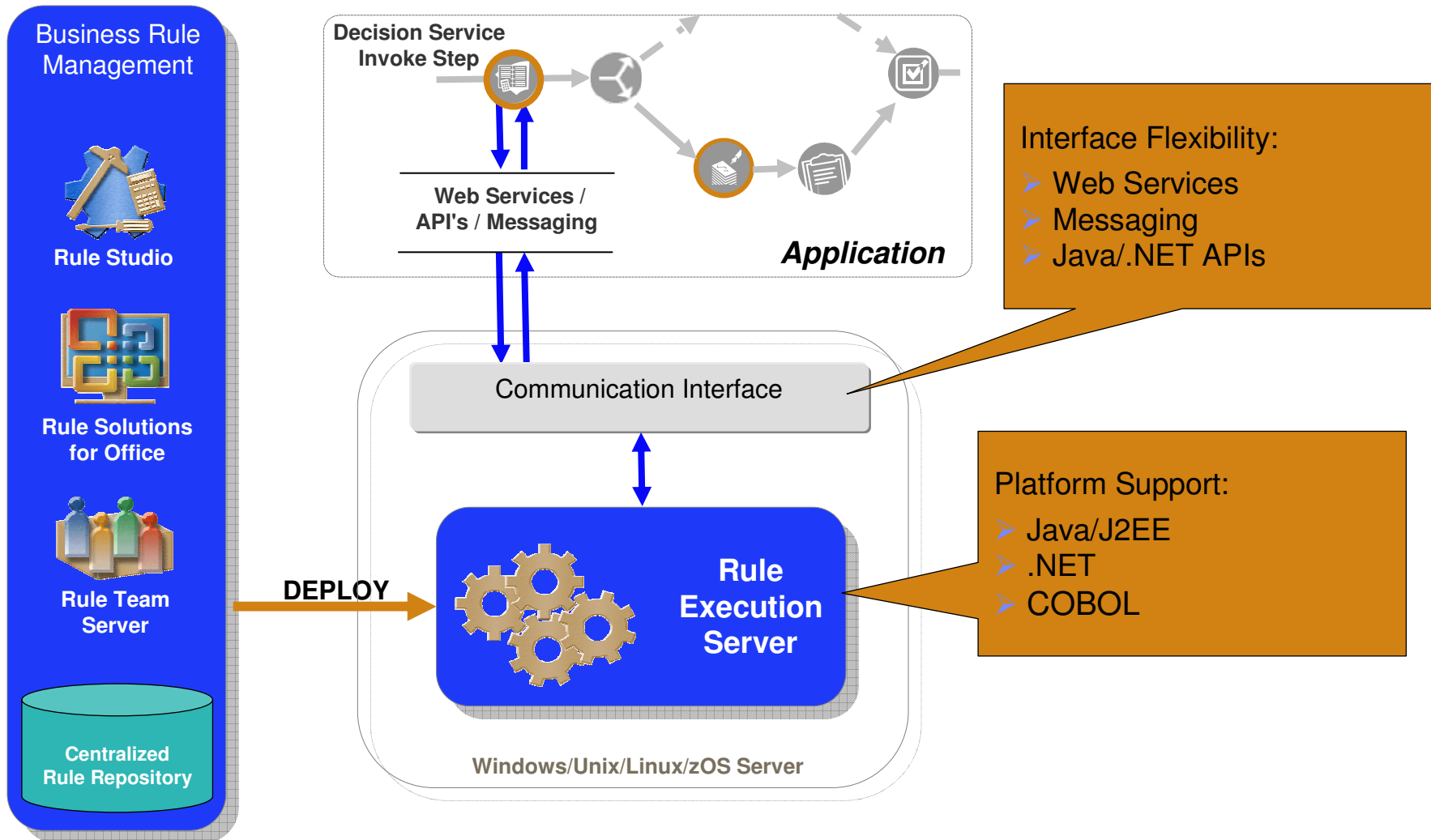

**Rule Execution
Server .NET**


**Rules for
COBOL**

Deploy



ILOG BRMS: Architecture Overview



User tool key functions

Web browser

MS Office

Business Rules

Name	Status	Priority	Last Changed By	Last Changed On
approval	New	Low	ruAdmin	17/10/08 17:56
checkCreditScore	New	ruAdmin	17/10/08 17:56	
checkIncome	New	ruAdmin	17/10/08 17:56	
grade	New	high	ruAdmin	17/10/08 17:56

Decision Table Preview

Yearly repayment	Composite score		Grade	Message
	Min	Max		
0	10,000	2,900	A	Very low risk loan
3	30,000	3,900	A	Very low risk loan
6	35,000	3,000	C	Average risk loan
7	30,000	2,900	B	Low risk loan
9	30,000	600	D	Risky loan
10	40,000	2,900	C	Average risk loan
11	240,000	600	D	Risky loan
12	40,000	600	E	Very risky loan

Prising Policies

Compute the Base Rate

Author: Beatrix
Creation Date: 7/5/2007
Last Modification Date: 8/1/2007

Definitions:
Let "the requested car group" be the requested car group of the rental agreement;
Let "the rental agreement qualifies for the "base" offer" be the rental agreement "base" price is the number of weeks of the rental agreement * the weekly rate of the requested car group = the remaining number of days of the rental agreement * the daily rate of the requested car group;

Documentation: This business rule defines the Base rate for all rental agreements. The rule does not include an if part, hence the rule is automatically applied to all agreements, there is no need for any condition statements. The base price depends on the duration of the rental and on the requested car group. The pricing of all the other special offers is computed from this base price.

Default Special Offer

This section defines eligibility and pricing for the Default special offer. Even if a rental agreement is not eligible for any other special offers, the Default special offer will still be applied.

Default Special Offer: Eligibility

Author: Beatrix
Creation Date: 7/5/2007
Last Modification Date: 8/1/2007

Let "the rental agreement qualifies for the "Default" offer" define the message "The rental agreement is eligible for the Default special offer";

User Tools



- Integration in the user's familiar environment
- Language technology
 - Business vocabulary & syntax
 - Assisted editors

Eclipse

Business Rules approval

```

    graph TD
        Start(( )) --> Approval[Approval]
        Approval --> Eligibility[Eligibility]
        Eligibility --> Imputation[Imputation]
        Imputation --> SignApproved[Sign approved]
        SignApproved --> End(( ))
    
```

Visual Studio .NET

is at least 21

less than 21

there are at most 6 numbers

there are less than 6 numbers

Solution Explorer - Solution: Business Rules

- BusinessRules (2 projects)
 - BusinessObjectModel
 - AssemblyInfo.cs
 - BusinessAssemblyInfo.cs
 - Customer.cs
 - BusinessRules
 - References
 - Eligibility.dll
 - Eligibility.fx

Accept customer AgeCheck

Active: True
Author: Beatrix
Categories: Any
Creation Date: 4/3/2007 11:12 AM
Documentation: Last Modification Date: 4/4/2007 6:59 AM
Name: Accept customer

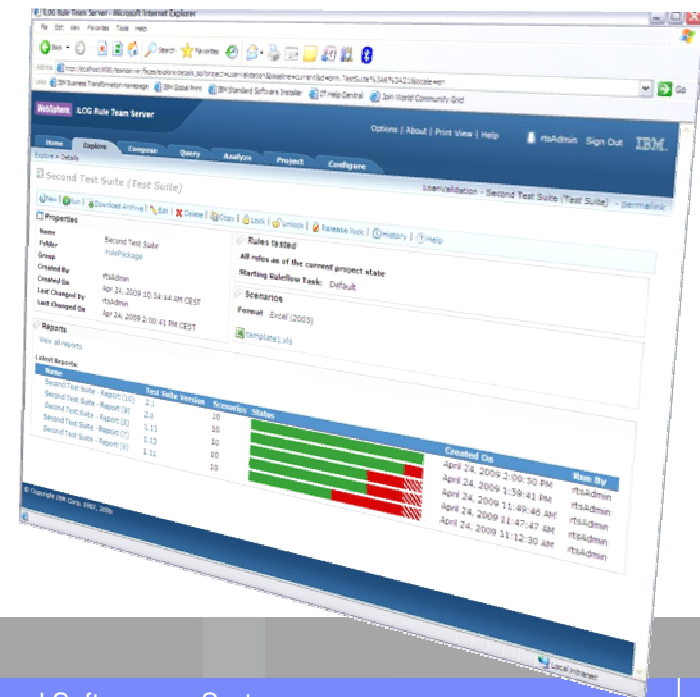
Active: Indicates whether the rule is active.

Decision Validation Services

- Unit and regression testing to ensure rules execute as expected
- Functional testing to execute sets of rules (“rulesets”) with data and capture the results
- Simulation to measure or verify rulesets against either historical or test data
- Rule execution auditing to review decision outputs

DVS gives business users the ability to:

- ✓ Input data from either Excel or enterprise data sources
- ✓ Easily modify test cases and expected outputs
- ✓ Run simulations against KPIs and what-if scenarios
- ✓ Send results to Excel or HTML



Decision Warehouse

- Gives end users a detailed overview of all rules that have been applied to a product
- Gives developers, testers a way to easily test that their business rules work fine
- Allows the details of every rule-based decision to be automatically logged to a database, for example compliance purposes.
- Provides extension points to allow integration with existing analytics databases and 3rd-party business intelligence tools.

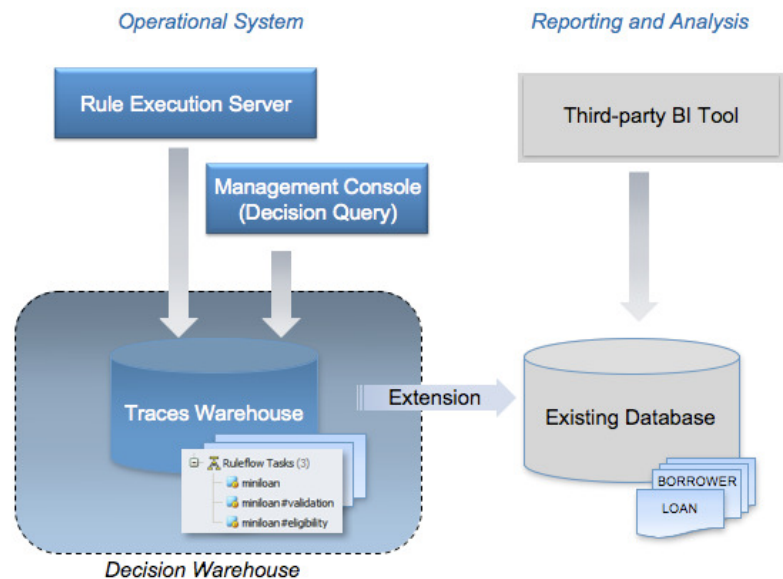
Execution Details

Decision ID:	8d5c9b6f-9c77-42f0-a912-2853ef0a612d
Date:	2009-04-23 12:46:11
Executed ruleset path:	/loanvalidationrulesruleapp/1.0/loanvalidationrules/1.0
Processing Time (ms)	16
Number of rules fired	7
Number of tasks executed	6

Decision Trace

```

graph TD
    RT[Ruleflow Tasks (1)] --> L[loanvalidation (5)]
    L --> L1[loanvalidation>initResult]
    L --> L2[loanvalidation>validation]
    L --> L3[loanvalidation>computation (5)]
    L --> L4[loanvalidation>eligibility]
    L --> L5[loanvalidation>insurance (2)]
    L3 --> C1[computation.initialCorporateScore]
    L3 --> C2[computation.neverBankruptcy]
    L3 --> C3[computation.salary2score 5]
    L3 --> C4[computation.rate 6]
    L3 --> C5[computation.repayment]
    L5 --> I1[insurance.insurance 4]
    L5 --> I2[insurance.defaultInsurance]
    
```

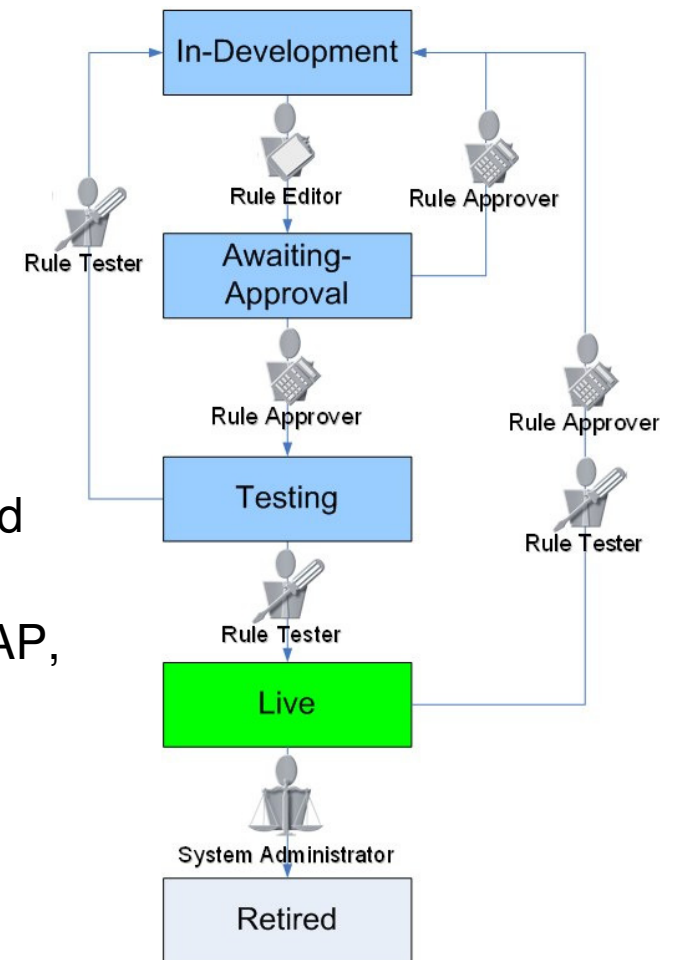


Security and Rule Promotion

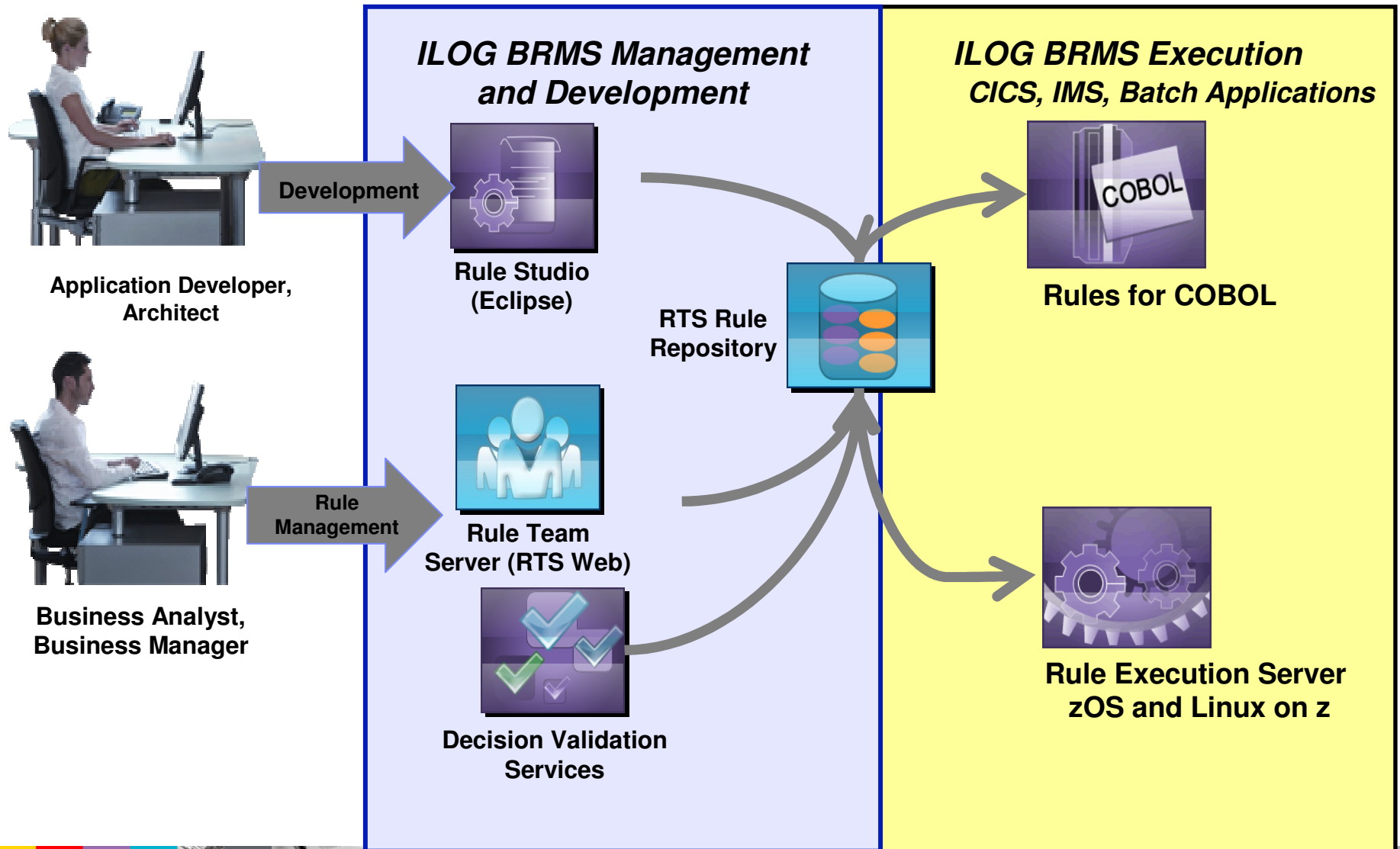
- Authentication, Authorisation & Security
- Fine-grained permission management

<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

- Rule Team Server (RTS) utilizes J2EE-standard role based security
- Utilise any role/permission service via API (LDAP, RDBMS...)
- Rule life cycle
 - Control rule validation & promotion to the live environment
 - Tailored to fit your process



ILOG Business Rule Management Solutions for System z



How Does a BRMS Benefit?

- **Consolidation and/or maintenance of COBOL applications**
 - Author rules in JRules...verify which rules will move them into the future
 - Rules can now be shared across applications...new and **old**
- **2010 Maintenance Projects**
 - Projects that are changing rules...why not upgrade to a BRMS and make rules available to Business Users...faster changes....decrease future maintenance costs and time
- **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.

Value of BRMS on Mainframes

- **Without a BRMS:**
 - Rules are hidden in COBOL code, databases,...and costly to change
 - Potentially undocumented
 - Programs are versioned...not rules
 - Business is not able to change/review the Rules - only accessible by IT
 - Subject to same life cycle as the code
- **With BRMS automated decisions are:**
 - Changeable/reviewable by Business....when the needs of the business dictate
 - Expressed and documented in business terms
 - Versioned
 - Managed with collaborative web tools
 - Reused across all enterprise applications

ILOG Rules for System Z— Manage Change with Confidence



- Implement change in a way that is easy, safe and predictable



- Reduce the time and cost required to develop and maintain operational systems that are affected by change



- Provide a way for IT and Business functions to work collaboratively on defining and updating the decision logic that drives operational systems



- Increase the visibility of how systems use and are affected by decision logic



ILOG BRMS Resources

- **DeveloperWorks** (Red paper, Forum, ...)
<http://www.ibm.com/developerworks/websphere/zones/brms>
- **Methodology & Best practices**
https://www.ibm.com/developerworks/mydeveloperworks/blogs/isis/?lang=en_us
- **Industry Solution Center @ La Gaude**
<http://www-05.ibm.com/fr/ibmforum/lagaude/>



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Questions

