IBM WebSphere ILOG BRMS

Business Rule Management System

Ajit Shinde
Sales Leader, IBM WebSphere ILOG Software
Email:ajit.shinde@in.ibm.com
Mobile:+919892332820

WebSphere software

Agenda

- **Introduction to BRMS**

- Business policies and Business rules

- IBM Websphere ILOG JRules

- Used Cases/References

- Conclusion

Business decisions are everywhere…

And changing frequently

Business decisions are everywhere…

And changing frequently

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

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**

The Smarter Approach – Easy, Safe, Reliable Change with BRMS

- Eliminate decision silos
- Make decision logic accessible to Business and IT
- Allow business users to manage rules
- Implement fine-grained, context-specific decision automation
- Reduce maintenance time/cost

Where Business Rules Typically Exist

```
#ifdef __WIN__
/*
    Before performing any socket operation (like retrieving hostname
    in init_common_variables we have to call WSAStartup
*/
{
    WSADATA WsaData;
    if (SOCKET_ERROR == WSAStartup (0x0101, &WsaData))
    {
        /* errors are not read yet, so we use english text here */
        my_message(ER_WSAS_FAILED, "WSAStartup Failed", MYF(0));
        unireg_abort(1);
    }
}
#endif /* __WIN__ */

if (init_common_variables(MYSQL_CONFIG_NAME,
                    argc, argv, load_default_groups))
    unireg_abort(1);                     // Will do exit

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

Applications

Documents

People

Processes

Business Rule Management System

User Tools

Rules are Defined, Analyzed and Maintained

Rule Repository

Rules are Stored and Shared

Rule Server

Rules are Deployed, Executed and Monitored

Managing Change Across the Organization

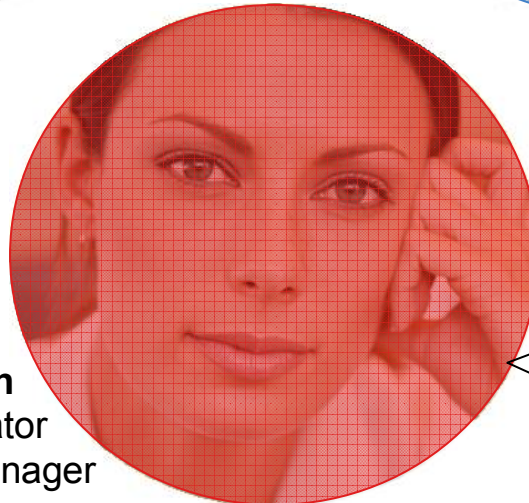I need a comprehensive rules development and maintenance environment

I need easy, efficient and reliable policy change delivery
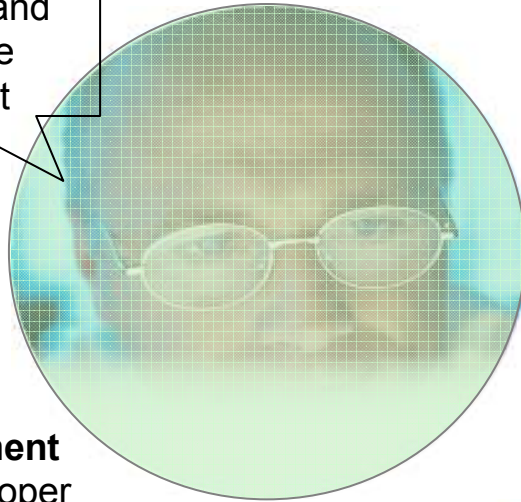
Development
Rule Developer
Rule Modeler
Business Analyst

Line of Business
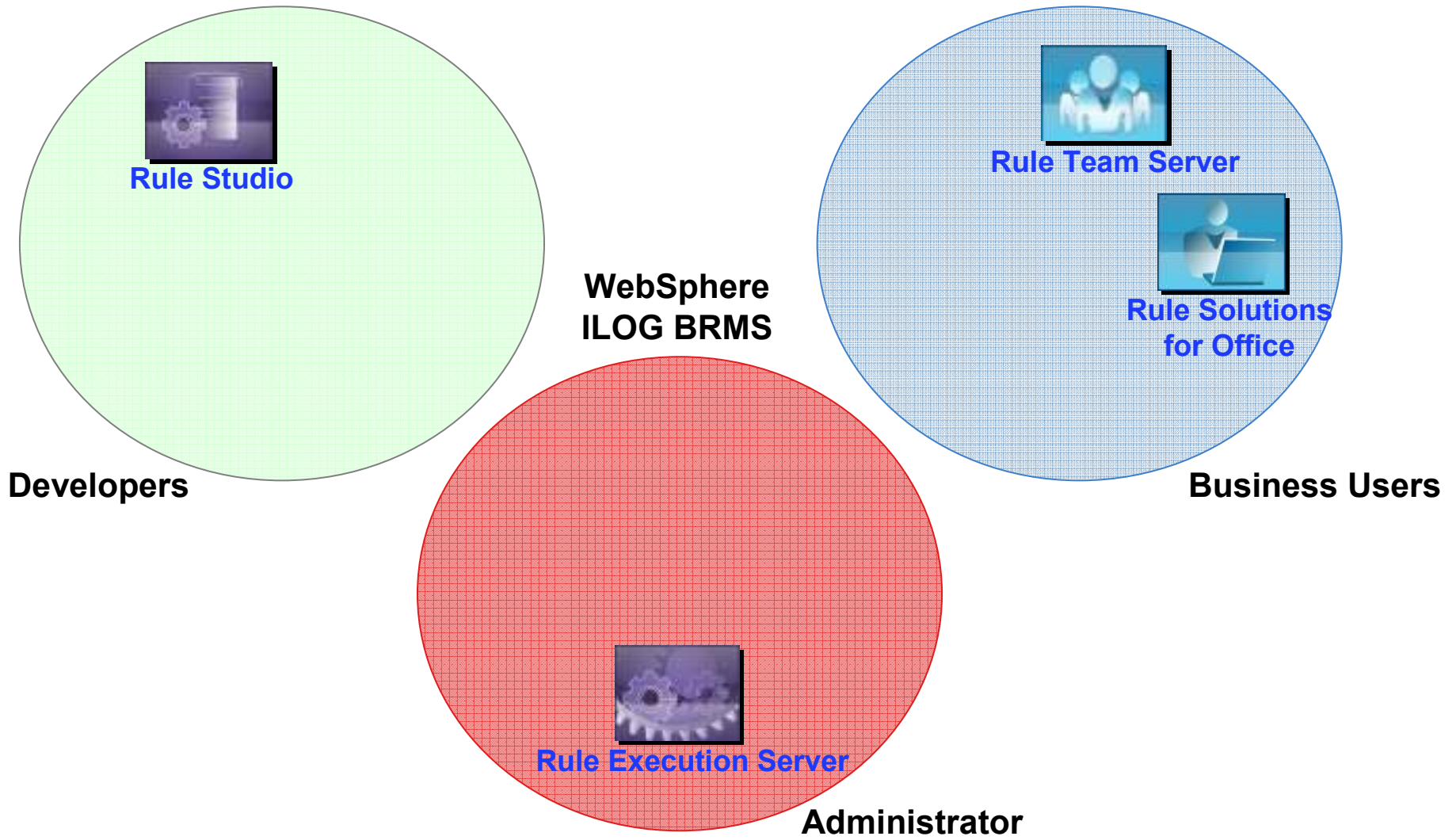Business Partner
Policy Manager
Line of Business Manager

Production
IT Administrator
System/Ops Manager

I need performance, scalability, monitoring and reliability of operations

Comprehensive Environments for Every User

Rule Studio

Rule Team Server

Rule Solutions for Office

WebSphere ILOG BRMS

Developers

Business Users

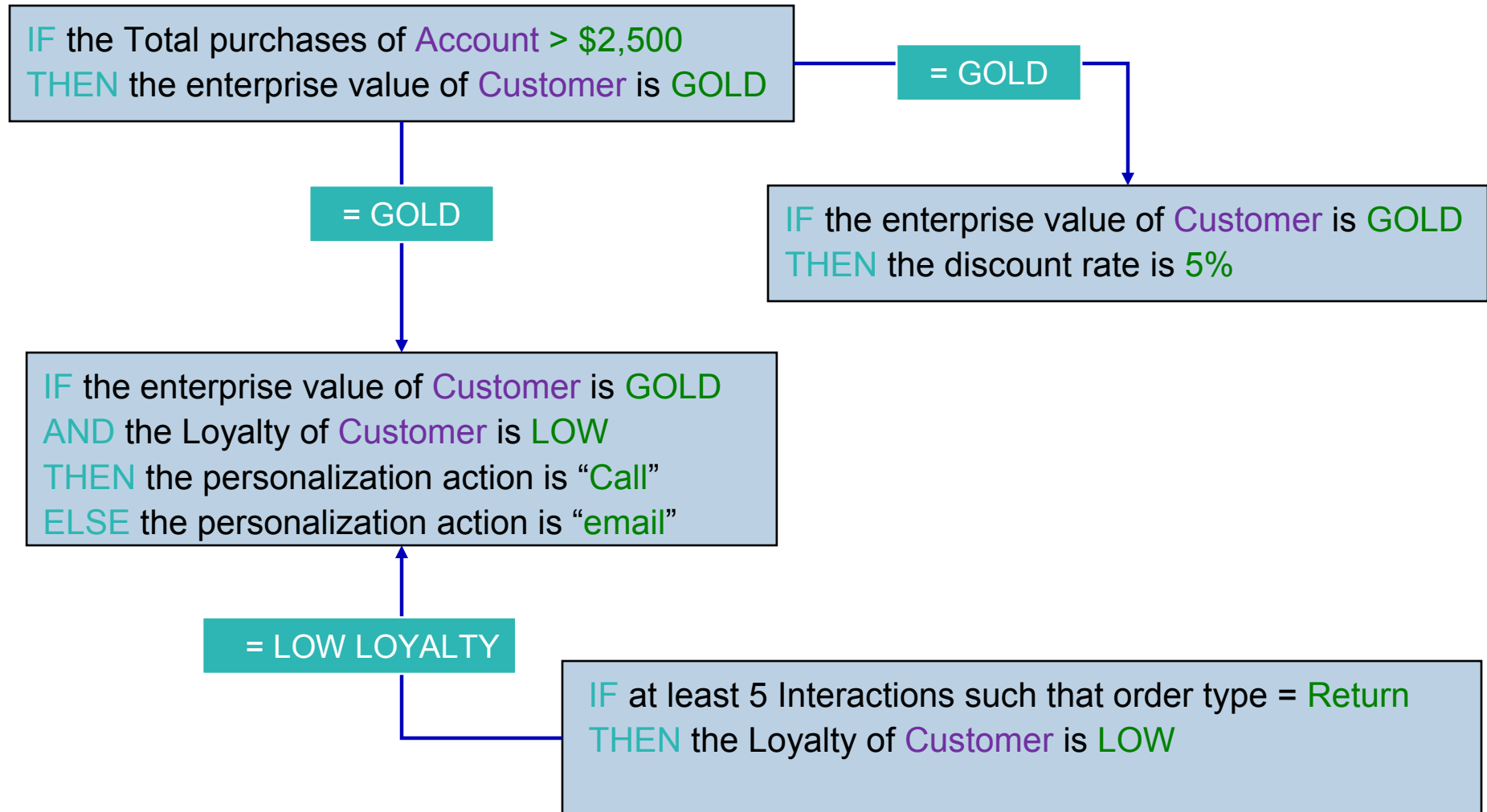**Rule Execution Server**

Administrator

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What is a Business Decision?

IF the Total purchases of Account > $2,500
THEN the enterprise value of Customer is GOLD

= GOLD

= GOLD

IF the enterprise value of Customer is GOLD
THEN the discount rate is 5%

IF the enterprise value of Customer is GOLD
AND the Loyalty of Customer is LOW
THEN the personalization action is "Call"
ELSE the personalization action is "email"

= LOW LOYALTY

IF at least 5 Interactions such that order type = Return
THEN the Loyalty of Customer is LOW

Business Rule Language

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

- Customizable vocabulary specific to your organization, industry, application (etc.)
- Supports language localization
- Integrates with external data sources (e.g. list of countries)
- Drop down lists for customized domain data
- Templates facilitate new rule creation

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

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

Advanced Decision Tables

	Grade	Amount of loan		Insurance required		Insurance rate
		Min	Max			
0		< 100,000		false	⊘	
1	A	100,000	300,000	true		0.001
2		300,000	600,000	true		0.003
3		≥ 600,000		true		0.005
4		< 100,000		false	⊘	
	B	100,000	300,001	true		0.0025
6		300,000	600,000	true		0.005
7		≥ 600,000		true		0.0075
8		< 100,000		true		0.0035
9	C	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

Automatic Rule Generation

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 ;

Decision Trees

Values

Condition

Actions

Built-in Gap/Overlap checking

Automatic Rule generation

E — **Rule 5**
☐ set the corporate score in 'the loan report' to 50

D — **Rule 4**
☐ set the corporate score in 'the loan report' to 40

C — Grade ◇ — Loan amount ◇
> 1000 — **Rule 3**
☐ set insurance required in 'the loan report' to true

[0 , 1000] — **Rule 2**
☐ set the corporate score in 'the loan report' to 30

]0 , 0.5[— **Rule 2**
☐ set the corporate score in <a report> to 15

B — ⚠
Error(s) on partition:
● Partition have gap(s).
Lo

0 — **Rule 1**
☐ set the approved of 'the loan report' to false

A — **Rule 0**
☐ set the corporate score in 'the loan report' to 20

> 0.5 — **Rule 3**
☐ set the corporate score in <a report> to 20

if
  all of the following conditions are true :
    - (the loan grade in **'the loan report'** is **"B"**)
    - (the Loan to Value of **'the loan'** is more than 0.5),
then
  set the corporate score in <a report> to 20 ;

Rule Editing with Domain Specific Languages

Business Object Model	→	**Rule Vocabulary**	→	**Business Rule Language**

Developer   ▷   IT / Business   ▷   Rule Developer / Business User   ▷

CustomerInfo

- name
- birthday
- getNumAccidents()
- isHighRiskDriver()
- …

"customer"

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

Rule: High risk driver

if

the birthday of **customer** is after **12/9/1975** **and**
the number of accidents of **customer** is at least **3**

then

set the **customer** as a **high risk driver**

- ▪ Automatic generation of the rule vocabulary.

"client"

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

Règle: Conducteur à risque

si

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

alors

Classer le **client** comme **conducteur à risque**

- ▪ Comprehensive industry focused business terms to define its data and associated actions.

- ▪ Localizable vocabulary

Flexible Rule Deployment with Versioning

Rule Maintenance

Runtime

Ruleset A
- Rule 1
  - Version 1.0
  - Version 1.1
  - Version 2.0 (Current version)
- Rule 2
  - Version 1.0
  - Version 1.1

Ruleset B
- Rule 3
  - Version 1.0
  - Version 2.0 (Current version)
- Rule 4

Baselines Ruleset Snapshot <Date>

RuleApp AB Version 1.0
| Ruleset A Version 1.0 | Ruleset B Version 1.0 |

RuleApp AB Version 2.0
| Ruleset A Version 2.0 | Ruleset B Version 1.0 |
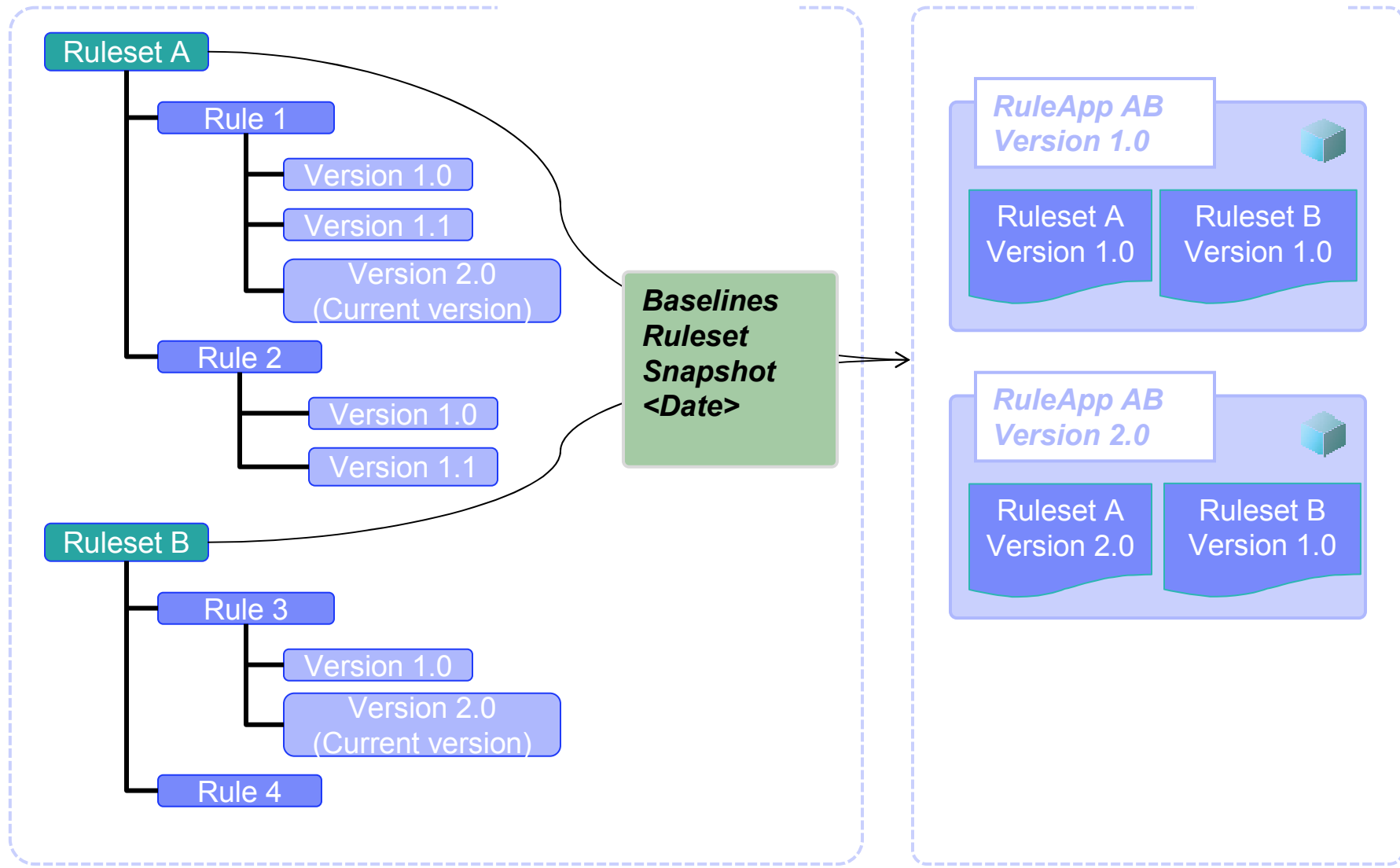
WebSphere ILOG BRMS – Full Rule Lifecycle Support

Business Analyst

Developer

Model

Analyze

Author

Enterprise Rule Repository

Monitor

Validate

Policy Manager

Execute

Test

System Administrator

Deploy

Rule Administrator
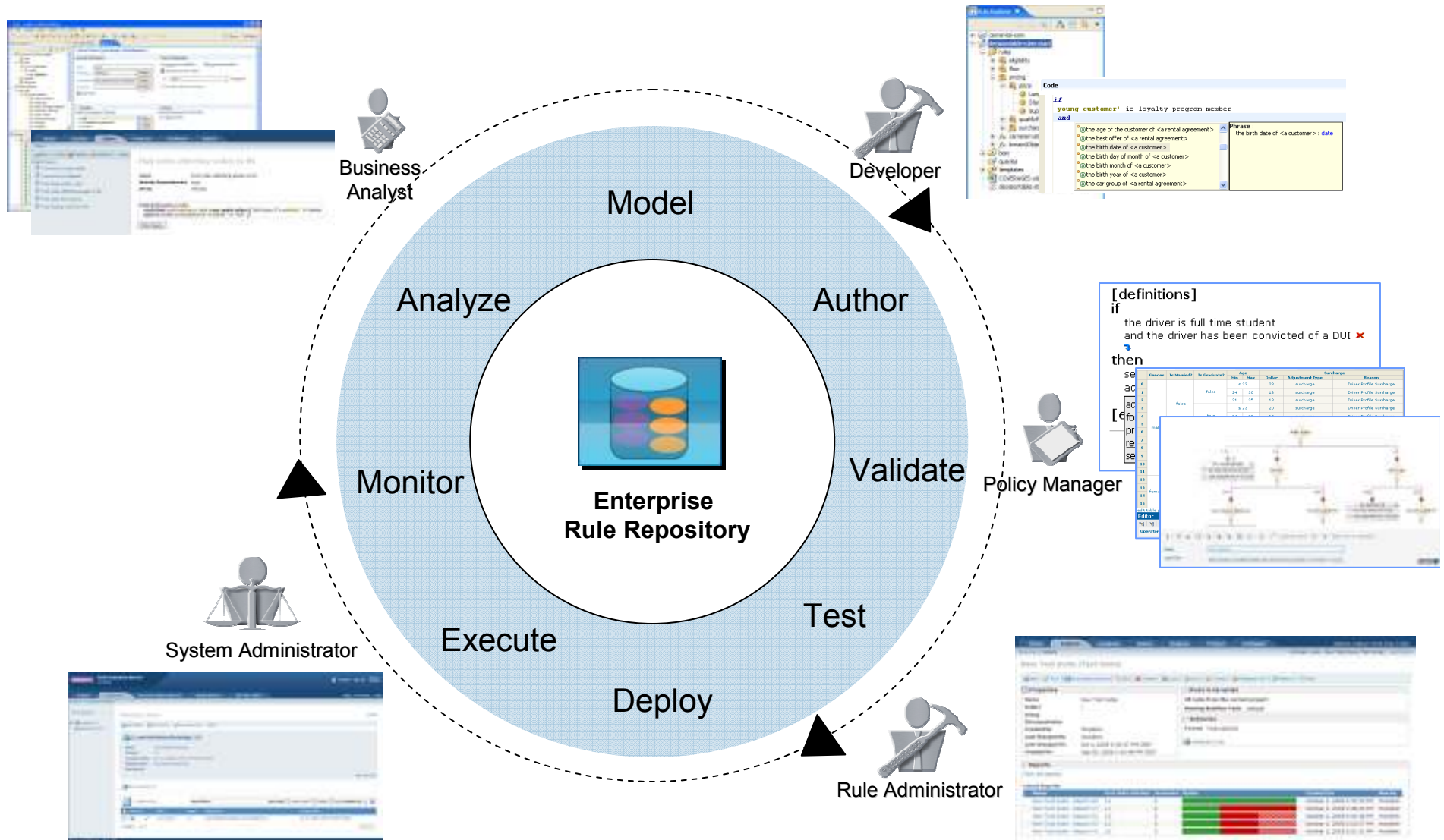
Examples of Customer BRMS Applications

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

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WebSphere ILOG JRules 7.1 Components

Development

Design

Rule Studio

Line Of Business

Maintain

Rule Solutions for Office

Rule Team Server

Decision Validation Services

Custom Web Applications

Share

Rule Repository

Deploy

Production

Transparent Decision Services

Rule Execution Server

Rules for COBOL
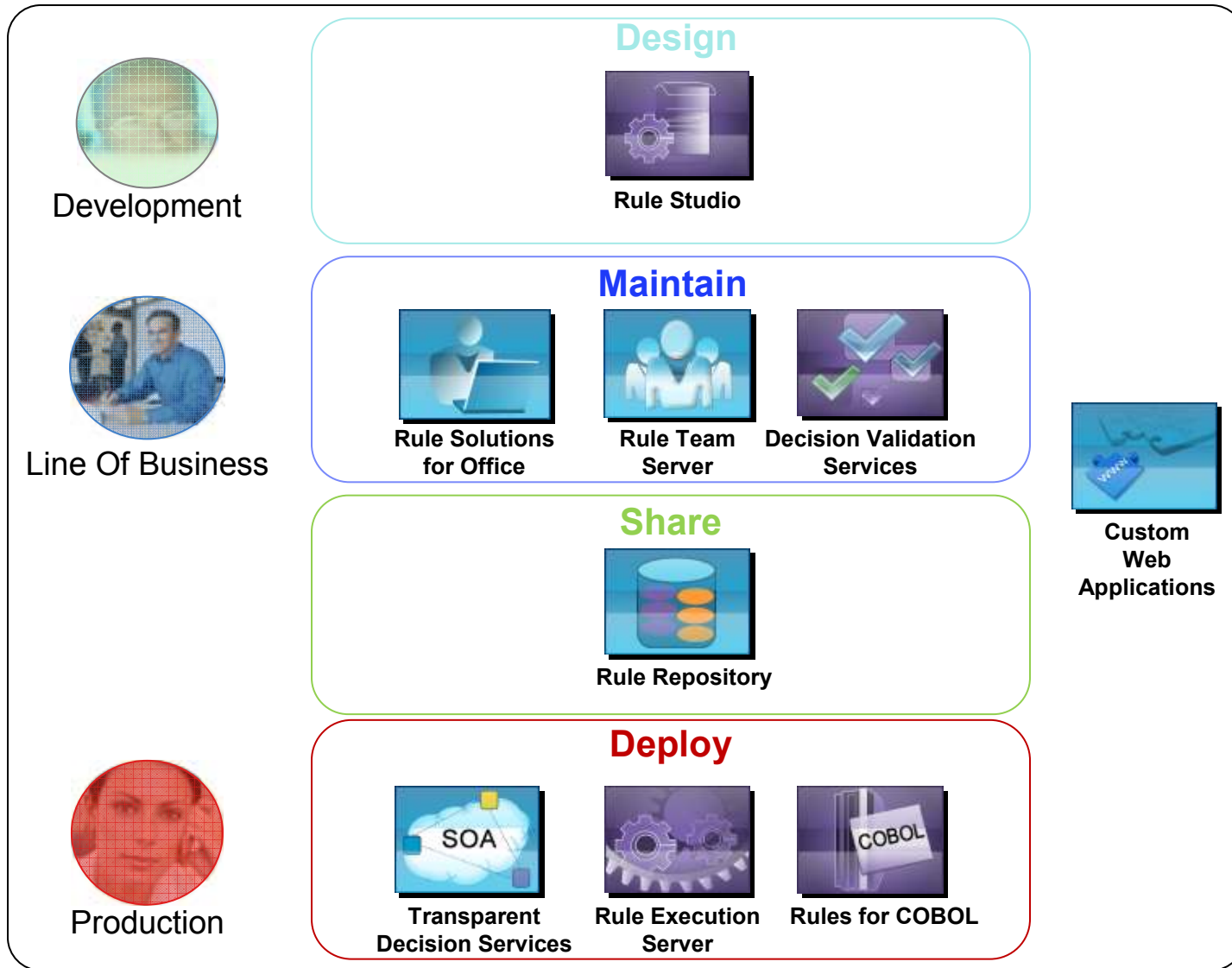
Rule Studio (RS)

- **Eclipse-based Development Environment**

- Developers
- Business Analysts
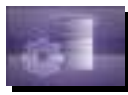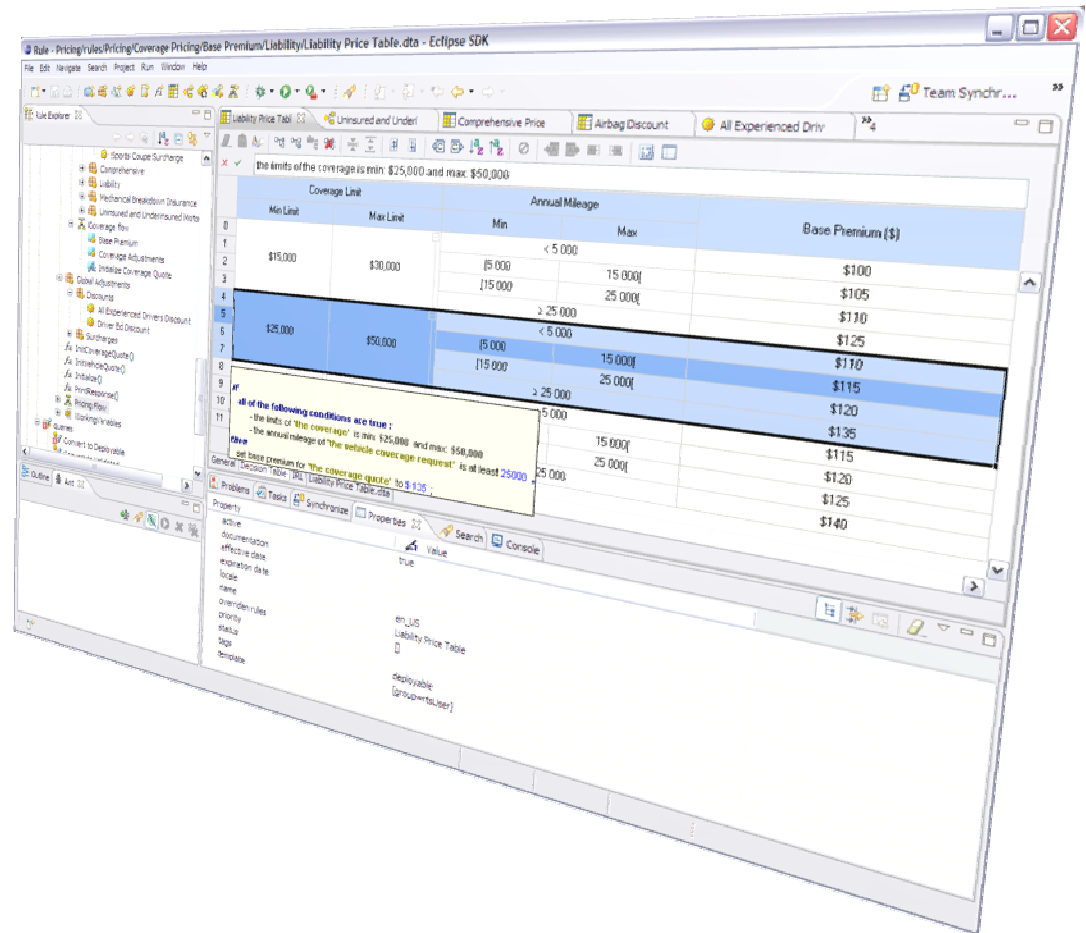
Rule Studio

RS: Low Cost of Ownership for Developers

- **Ease to learn**
  - Familiar environment
  - Project map for new users
  - Follows Eclipse style and design guidelines

- **Easy to use**
  - Auto-completion in rule text editor
  - Re-factoring
  - Wizard-driven Java, XML, WSDL data integration

- **Productivity**
  - Integrated Rules and Java debugging

Rule Studio

Rule Team Server (RTS)

- **Web-based Management Environment**

- Line Of Business
- Analysts
- Policy Manager

**Rule Team
Server**

RTS: A Complete Set Of Capabilities

- **Authoring**
  - Plain English, Decision Table, Decision Tree
  - Quick edit mode using MS Office
  - Templates

- **Managing**
  - Queries
  - Smart Views
  - Version Management
  - Baseline

- **Validating**
  - Syntactic Check
  - Semantic Check
  - Semantic Queries

- **Testing / Simulating**
  - Decision Validation Services

- **Auditing**
  - Version Management
  - Baseline
  - Query-based reporting

- **Deploying**
  - Query base Extraction
  - Rule service management

- **Administration and configuration**
  - Authorization policies
  - Rule Service
  - Display Options

Rule Team Server

Rule Execution Server (RES)

- **Managed Execution Environment**

- Rule Administrator
- System Administrator
- Rule Auditor

Rule Execution Server

RES– High Performance and Scalability

- 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

In-Production Application

Application code
(UI, batch, Web)

XOM

rule session
(POJO, EJB
or MDB)

Rule Execution Server

RuleApp

Deploy

RuleApp
storage
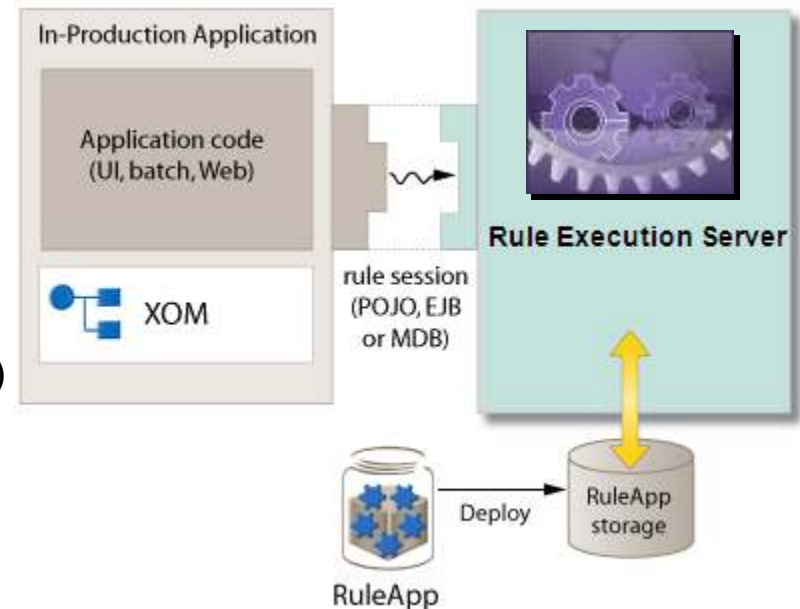
**Rule Execution
Server**

Rule Solutions For Office (RSO)

- **Business user rule authoring and maintenance using Microsoft Office Word and Excel**

MS Office Excel

MS Office Word

Rule Solutions
for Office
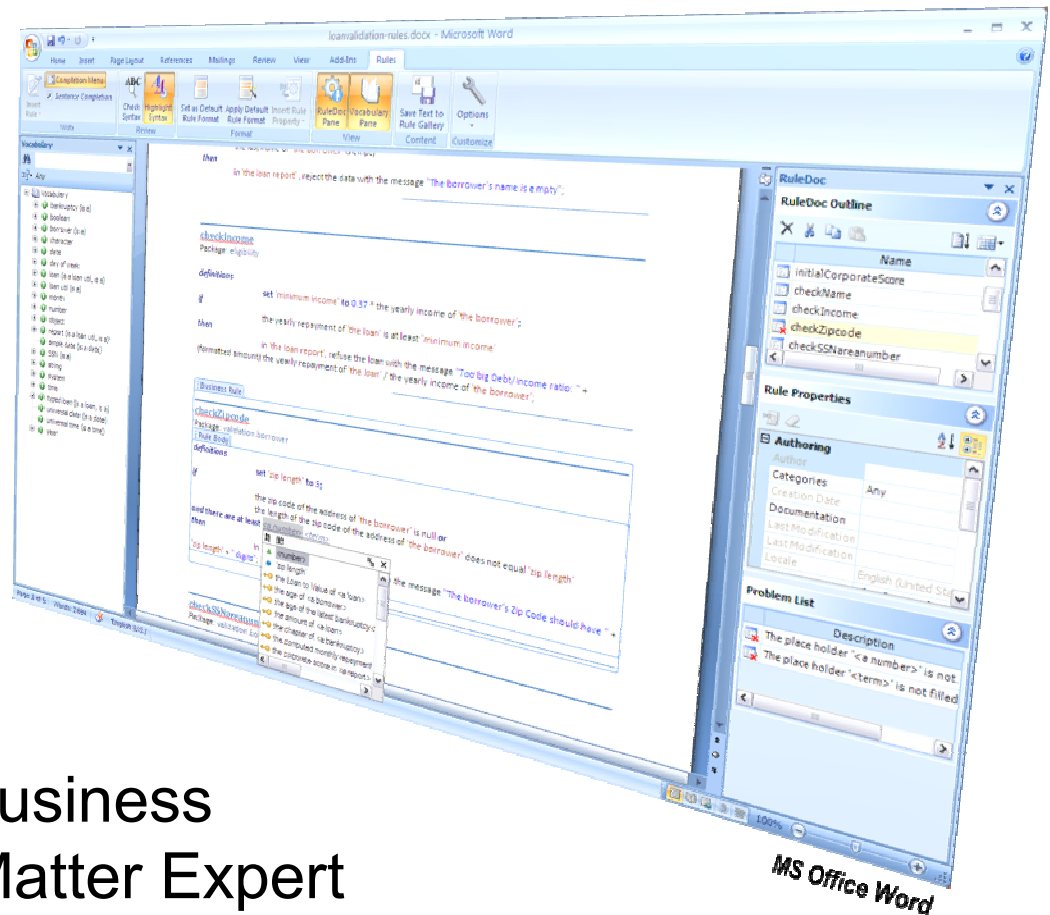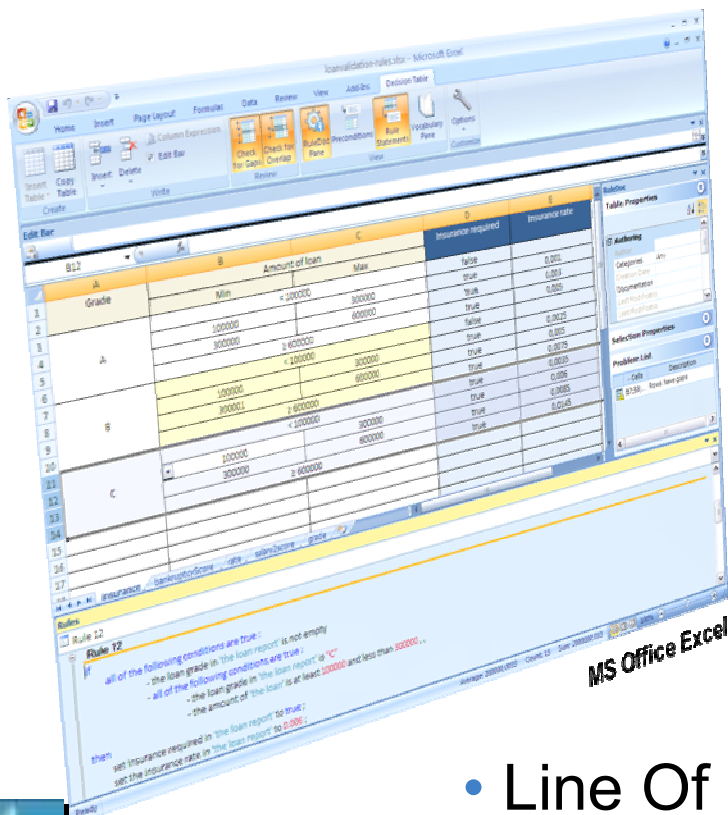
- Line Of Business
- Subject Matter Expert

RSO: Empowering Business Users

- **Decision table editing in MS Excel 2007**

  – Automatic Spread sheet generation from RTS

  – Additional DT menus in MS Excel

  – Automatic Gap / Overlap detection in the spreadsheet

- **Action rules and RuleFlow editing in MS Word 2007**

  – Automatic Document generation from RTS

  – Additional Rule menus in MS Word

  – Guided rule edition in Word

  – Vocabulary access

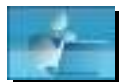**Rule Solutions
for Office**

RSO: Publish Ruledocs from RTS

Publish

Rule Team Server

Rule Solutions for Office
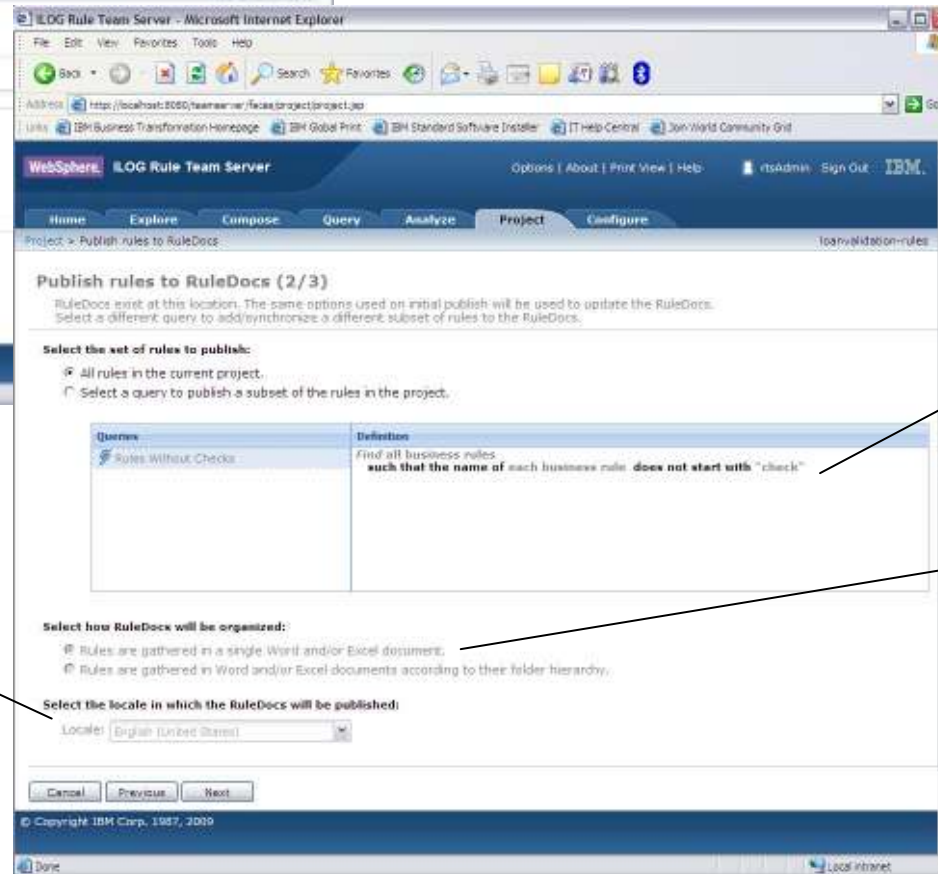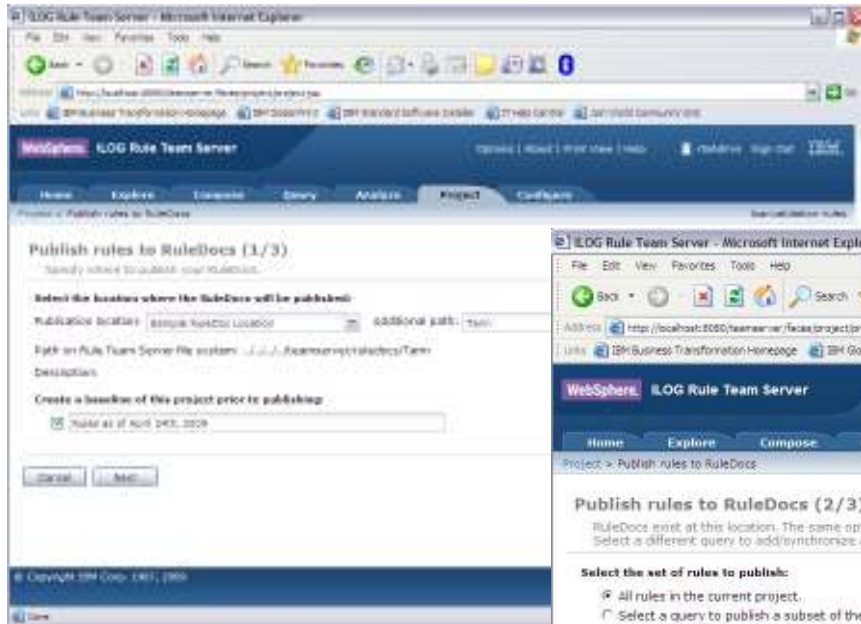
Rule Filter
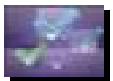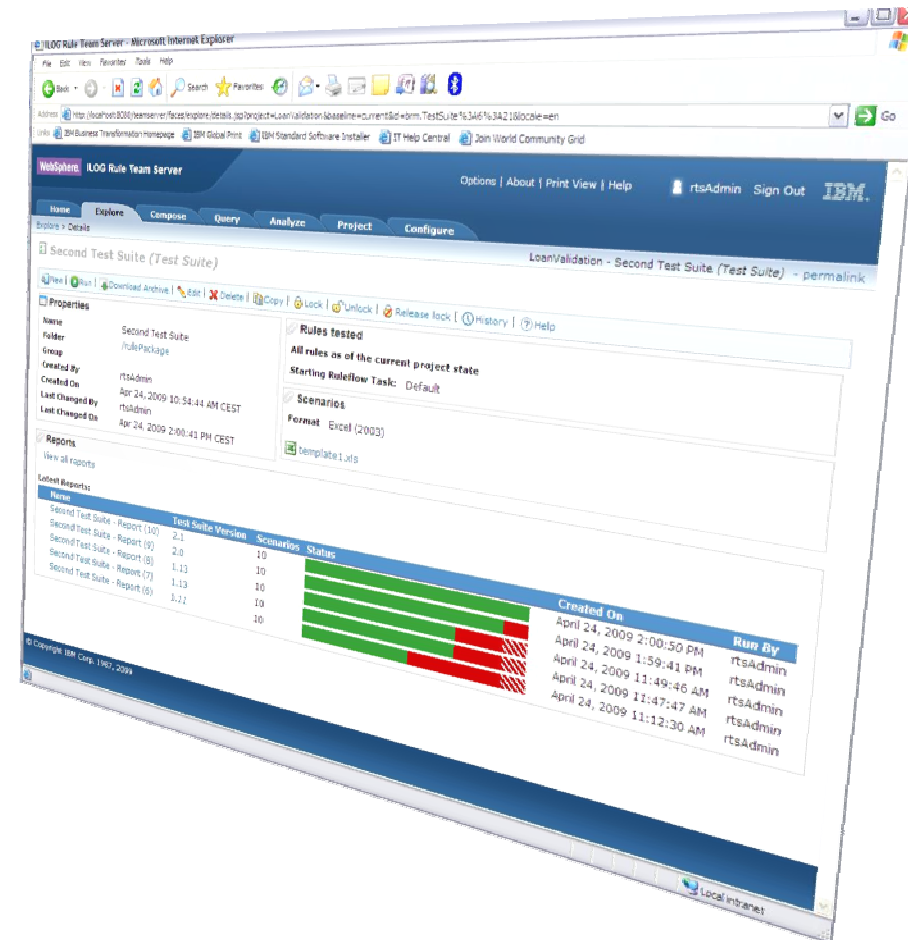
Rule Organization

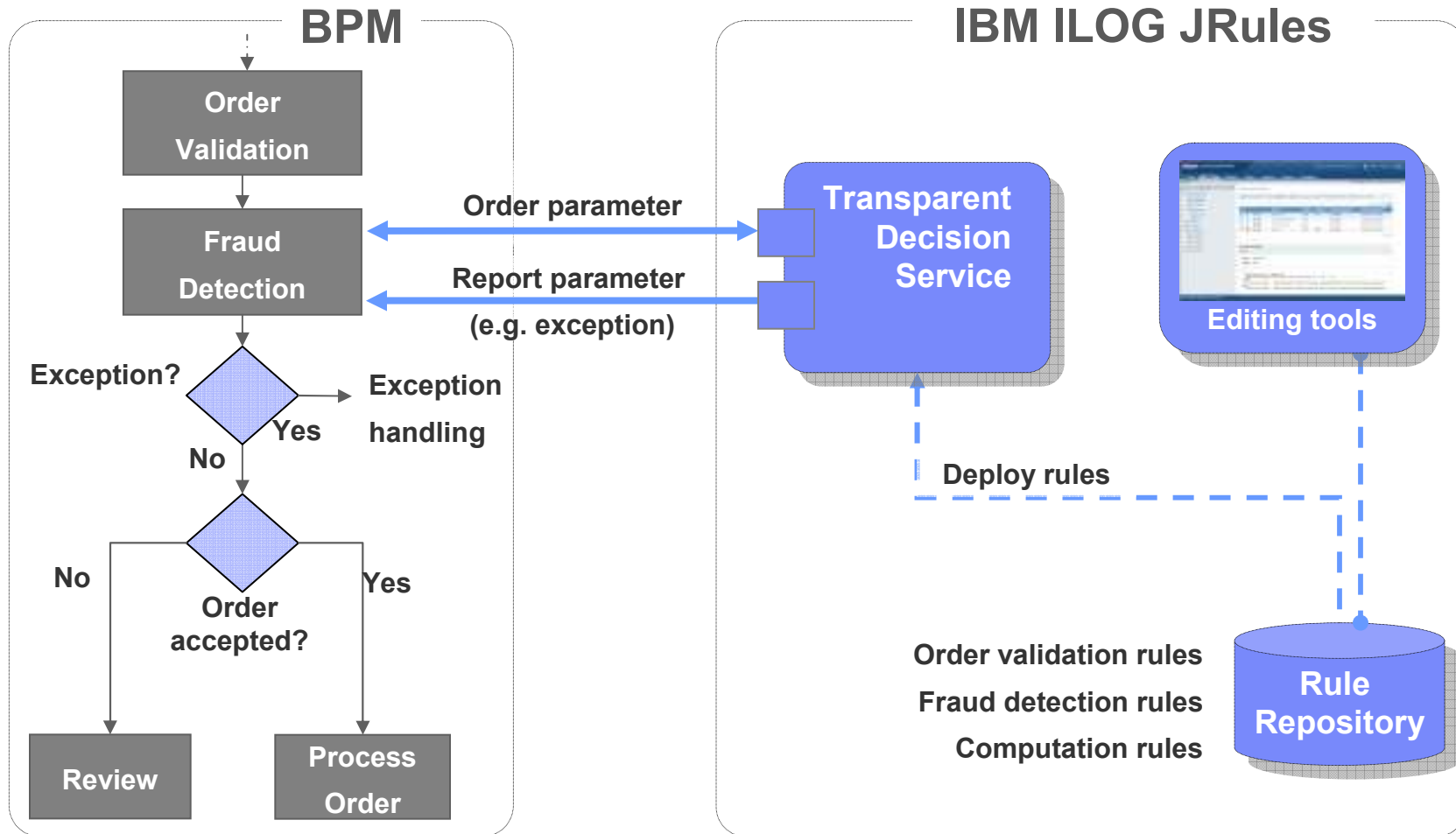**Locale Selection**

Rule Solutions for Office

Decision Validation Services (DVS)

- **Functionality Overview**

  - Out-of-the-box ruleset testing in Rule Team Server

  - Business impact simulation in Rule Team Server

  - Scenario configuration and customization in Rule Studio

  - Audit - Decision Warehouse in Rule Execution Server

Decision Validation Services

BPM & BRMS interoperability overview

BPM

```
Order
Validation
        │
        ▼
Fraud
Detection
        │
        ▼
Exception?  ◇ ──Yes──▶ Exception handling
        │No
        ▼
        ◇ Order accepted?
   No ◀─┤  └──Yes──▶
        ▼              ▼
     Review        Process Order
```

Order parameter ◀────▶

Report parameter (e.g. exception) ◀────

IBM ILOG JRules

Transparent Decision Service

Editing tools

Deploy rules

Order validation rules
Fraud detection rules
Computation rules

Rule Repository

SOA

Transparent Decision Services

The business logic within business processes changes more frequently than the business processes themselves

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Bank of the West

Application Type: Commercial Loan Origination

Situation
- Manual intensive & paper based process
  - Duplication of labor, loss of information…
- Long application processing time
- Exposure to processing errors due to misinterpretation of credit policies & standards

Goals
- Enable smarter & more efficient loan origination
- Lower processing cost & turn around time
- Improve customer service & employee satisfaction
- Reduce errors & ensure compliance to policy and regulation

Solution
- ILOG BRMS to handle core business logic across a number of functional areas including:
  - Credit approval authorization, overrides, prioritization, data validation & compliance
- IBM BPM to model & manage underwriting workflow automation
- IBM ECM to capture & manage loan documents

Benefits
- Reduced loan approval time from 15 days to one (93%)
- Boosted customer satisfaction with faster answers
- Cut costs & increased staff productivity - more automation, more focus, less paper…
- Greatly enhanced regulatory compliance & auditability – savings in 100's of man days

Royal Bank of Canada - Cross-sell/Up-sell

Application Type: Multi channel and multi-product Cross-Sell & Up-sell

Situation

- Lost opportunities
  - Bank is very customer focused, yet feeling of lost opportunities in wallet share
- Hardship to efficiently & accurately Cross-sell/Up-sell
  - Done at the branch based upon manager/client relationship
  - Manual & cumbersome: client information in many disparate sources, lack of integration with legacy origination, multiple screens…
- Propose and … hope

Goals

- Drive more revenues through automated cross-sell/up-sell offers
  - More granular identification, accurate & consistent qualification…
  - Better balance between customer needs & bank profitability & risk objective
- Propose suitable pre-approved client-centric offers
  - Select & rank - One or more financial products
  - Configure - Calculate limit/amount
  - 360° View - Access client info sources in real-time
  - Risk sensitive - Apply policy & risk guideline
- Shorten speed-to-market to implement offer & guideline changes
  - Business users in the driver's seat
- Build a technology foundation for agile applications

Royal Bank of Canada - Cross-sell/Up-sell

Application Type: Multi channel and multi-product Cross-Sell & Up-sell

Solution

- Create a 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
- Involve business users early & throughout the development process
- Agile solution from both business & IT standpoints!

Benefits

- Improved client relationship – acquisition, retention & wallet-share
  - Reduced approval processing time, improved competitive blocking
- Accelerated ROI
  - Significantly increased cross-sell offers: from 13% to 40%
  - Significantly increased acceptance: from 3% to 20%-30%
  - Increased revenues – $14M in approved bookings in 2.5 months
- Instant updates of rules fully managed by business users
- Greater sales force satisfaction: positive & confident on all offers

Travelers

Application Type: Underwriting

Situation

- Took over 5 months to implement risk assessment and rate changes
- Unable to provide the best price for the best risks
- Only 17% of small commercial policies qualified for straight thru processing

Goals

- Improve speed-to-market for implementing new risk classifications, rate and product changes
- Drive a more profitable book of business

Solution

- Created a flexible underwriting system where ILOG BRMS is used throughout the process to support commercial and personal lines for such functions as eligibility, risk assessment, referrals and pricing

Benefits

- Achieved speed to market gains of over 50%
  - Rule changes occurring within 1 week versus over 5 months
- Improved pass-through-rate from 17% to 76% (commercial); 80%+ personal lines
- Increased business flow by 50%

Bio-technology company - Producer of hybrid seeds & herbicides

BRMS for Mobile Agronomy Information System

Business Need: Customer needed to disseminate farming advisories based on pertinent information, viz. agronomy data, environment data, farmer profile, regulatory policies, etc.

Solution: JRules is used to evaluate the available information for a farmer & based on relevant business rules, recommend the appropriate set of advisory information that must be sent back to the farmer.

The solution involves creating JRules-powered application that will:

1. Read farmer data from various sources
2. Execute business rules in JRules to determine farmer advisories
3. Disseminate advisory (recommended by JRules) to the farmer through various channels like Text SMS, Voice SMS, Emails, etc.

Benefits:

- Rules-based advisory determination
- Ability to run targeted campaigns based on geo, crop, latest weather info, etc.
- Business users able to manage business rules without IT dependence.
- Rule organization & governance to address needs of different operational tiers – local, regional, country, global
- Scalable solution to support more volumes (farmers, products, geography)

- Industry: Bio-technology
- Solution: Java/ Unix
- Deployment country: India
- Product: WebSphere® ILOG JRules BRMS

Indian Leading Paint Manufacturer – Loyalty & Promotions rules

Situation

- Manual way of running promotional schemes using MS Word & Excel & SQL reporting
- Managing the schemes was time-consuming for regional sales-officers
- Managing bulk customer data using Excel was cumbersome & prone to formula errors
- Delay in announcing scheme results caused dissatisfaction among dealers
- Unable to effectively integrate Excel sheet with transactional systems

Goals

- Define promotional schemes with ease & communicate effectively to extended sales teams, dealers, etc.
- Reduce manual intervention in running the schemes at month-end
- Flexibility to run schemes at different organizational levels, viz. head-office, regional office, etc.
- Calculate risk score for determining collection strategy for customers, marketing campaigns, etc.
- Flexibility to make & apply changes quickly without dependence on IT

Solution

- Promotion rules authored using BAL rules, decision tables & rule-flows
- Sales officers can manage rules for respective regions as well as run head-office schemes seamlessly
- Sales officers can test & simulate rules to improve efficacy of the promotional schemes
- Ability to create custom vocabulary per industry standards
- Dynamic selection of promotional rules at run-time based on date/time, scheme, location, priority, etc achieved with out-of-box functionality without any customization

Benefits

- Increased automation of schemes allows quicker turnaround of scheme execution at month-end
- Rule governance enables various teams (sales-officers, marketing, etc.) to collaborate effectively while owning their respective rules
- Extensive audit trail of rule execution & reporting information to address dealer queries concerning incentive calculation

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- Concept of operations

- IBM Websphere ILOG JRules

- IBM ILOG JRules for Smart SOA

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BRMS: Before and After

- Agility
  - Business managers held back by long system change waiting periods, often measured in months

- Usage of IT resources
  - Typically, 40-50% of IT resources are deployed on application maintenance

- Consistency
  - Business logic reuse is impossible across applications, enterprise consistency suffers

- Transparency
  - Inability for managers and users to understand or trust the systems they depend upon, reducing competitiveness, efficiency and quality of customer service

- Auditability
  - Difficult to track what decisions were made and why

- Agility
  - Change request implemented in a matter of hours or days

- Usage of IT resources
  - Changes can be enacted by business organizations

- Consistency
  - Rule services can be reused across channel and organization

- Transparency
  - Business rules are accessible to anybody; what you see is what you get – traceability

- Auditability
  - Built-in auditability at management time and at run time

ILOG JRules BRMS – 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

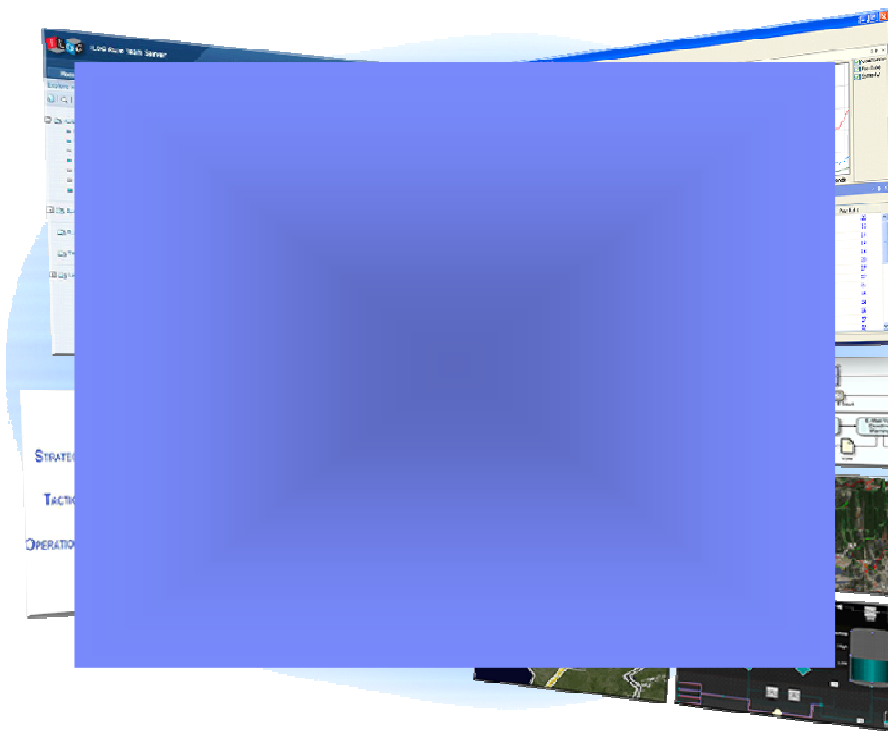- Increase the visibility of how systems use and are affected by decision logic

Q&A

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ILOG Lines of Business
Expanded Value for IBM clients

Powerful Business Rule Management System

Adapt and respond dynamically, automating process-based decisions with business rule management

Advanced Suite of Optimization Tools

Produce the best possible action plans & schedules, enhancing abilities to explore alternatives, understand trade-offs, and respond to changes in business operations

Efficient Supply Chain Management

Optimize supply chains, design & planning tools for improved efficiency and productivity

Innovative Visualization Tools

Transform insight into action, enhancing collaboration for smarter role-based business decisions

IBM ILOG Optimization and Supply Chain Solutions

- ILOG Optimization Solutions
  - Leader in optimization and performance- IBM ILOG CPLEX is the gold standard in optimization
  - Used by over 50% of the world's largest companies, 1000s of Universities, and 1000s of application providers
  - Over 1,000 commercial customers under maintenance
  - One third of Global 500 have built custom applications using ILOG Optimization engines and tools
  - Major software companies reach thousands more :

    - ## SAP, Oracle, Infor, JDA, Manhattan Associates, Red Prairie
  - Focus: ILOG Optimization solutions tackle the world's toughest problems allowing firms to gain a unique competitive advantage

- ILOG Supply Chain Applications
  - Used by over 50% of the world's largest supply chain and over 50% of AMR's top 50 global supply chains
  - Focus: easy-to-use, optimization-based decision support solutions to solve complex supply chain and production problems

- Proven Ability to Deliver
  - Rapid return on investment
  - Many very long-term, satisfied customers
  - Access to best of breed technology and R&D processes
  - Worldwide support and services capability

Two Core Engine Technologies

- Mathematical Programming (MP)
  - ILOG CPLEX – "gold standard" for linear programming & mixed integer programming (LP & MIP) in the Operations Research (OR) profession
    - Performance – can solve large MIP problems quickly
    - Robustness – dependable, accurate, consistent
    - Interactivity – able to stop and start at any point, able to force solutions, provide sensitivity information, etc.

- Constraint Programming (CP)
  - First commercial toolkits (ILOG CP) and optimizers (ILOG CP Optimizer) for handling the toughest scheduling & routing problems
    - Temporal and non-linear constraints
    - Dealing with the high end of the "combinatorial explosion" problem
    - Excels at finding feasible solutions, then making incremental improvements

Well-Documented Optimization ROI Cases

2 Chilean Forestry firms*	Timber Harvesting	$20M/yr + 30% fewer trucks
UPS*	Air Network Design	$40M/yr + 10% fewer planes
South African Defense*	Force/Equip Planning	$1.1B/yr
Motorola*	Procurement Mgmt	$100M-150M/yr
Samsung Electronics*	Semiconductor Mfg	50% reduction in cycle times
SNCF (French RR)*	Scheduling & Pricing	$16M/yr rev + 2% lower op ex
Continental Airlines*	Crew Re-scheduling	$40M/yr
AT&T*	Network Recovery	35% reduction spare capacity
Grant Mayo van Otterloo*	Portfolio Optimization	$4M/yr
Pepsi Bottling Group	Production Sourcing	$6M inv reduction + 2% fewer miles
Fonterra	Dairy Distribution	$15M annual savings
NA Brewing Company	Mfg Sourcing + Distribution	$150M/yr transportation savings
US Water Products Mfg	Inventory Optimization	$6.2M working capital reduction

*Franz Edelman Competition Finalists, Science of Better, http://www.scienceofbetter.org , Published Case Studies

# IBM ILOG Supply Chain Applications

Strategic Supply Chain Planning

- *LogicNet Plus (***LNP***)* - Network design and planning
  - Determine optimal number, location, territories, and size of warehouses, plants, and lines
  - Analyze production sourcing and carbon footprint
- *Transportation Analyst* **(TA)-** Transportation planning
  - Strategic routing for fleet sizing, load consolidation, backhauls, mode/carrier selection and more

Enterprise Inventory Planning

SAP® Certified
Integration with SAP Applications

- *Inventory Analyst* (**IA**) – Inventory Planning
  - Maintain correct inventory levels on an on-going basis by integrating directly with your ERP system
  - Determine push/pull and buffer locations
  - Optimize product flow to customers
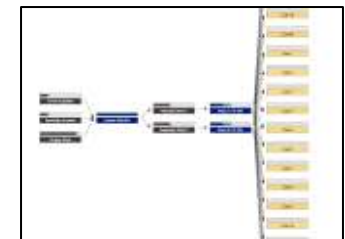
Production Planning and Detailed Scheduling

- *Plant PowerOps* **(PPO)**
  - Planning and detailed scheduling for process plants
 - Strategic and tactical process design

Strategic Network Design – Business Challenges

- What is the optimal number, location and capacities of suppliers, plants and production lines & processes?

- What is the right number, location and size of consolidation centers, forward DCs, cross-docks, etc.?

- How to best assign customers and products to DCs?

- How to best assign products to manufacturing facilities?

- How do I plan a pre-build strategy to handle seasonal demand?

- What is the impact of changes to production and warehousing capabilities on cost and service?

- Determining the trade-offs between

    - Inbound and outbound transportation costs, duties, tariffs, etc.

    - Transportation costs and fixed facility costs

    - Costs and service levels

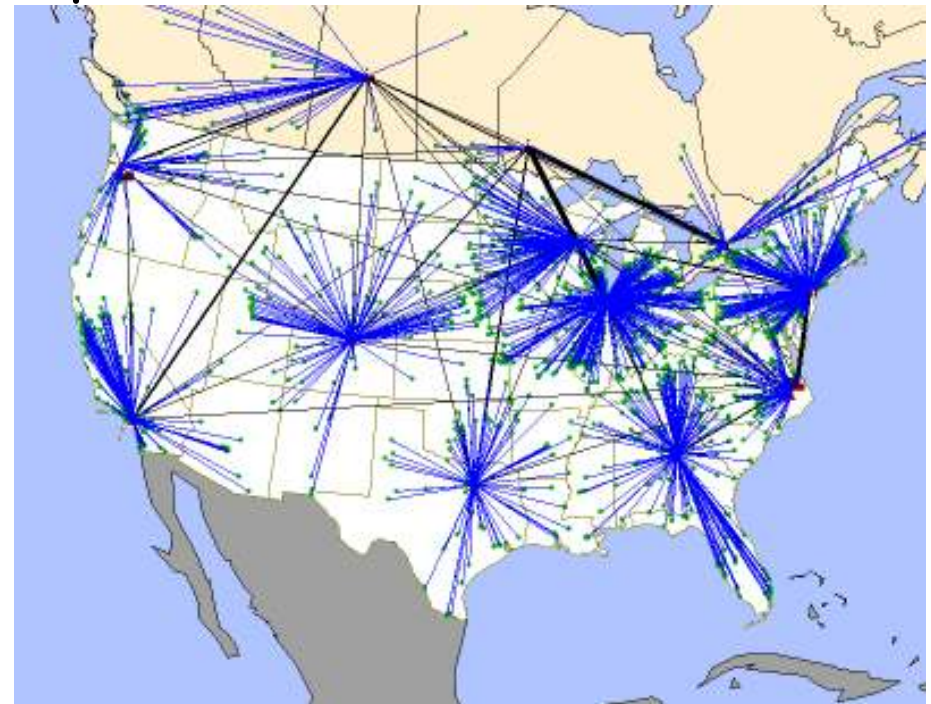   - Carbon Footprint and Carbon Costs

Making the Trade-Off Between Service and Cost

Optimal Network For Cost
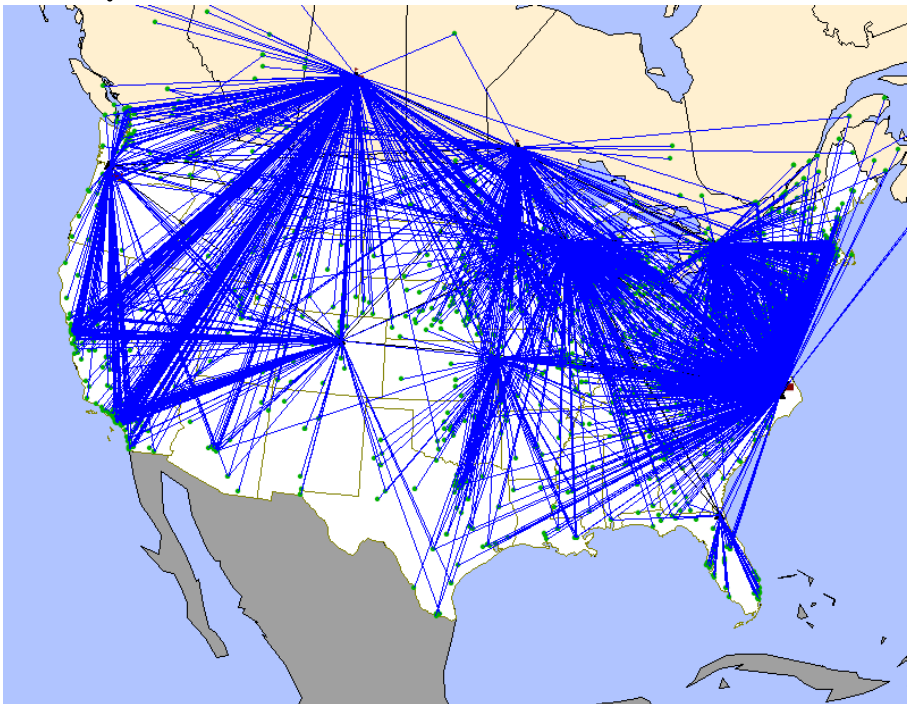
Savings: $6 million
Service: 40% next day

Optimal Network For Service

Savings: $3 million
Service: 80% next day

# Which is Better?

Pepsi Bottling Group

- Use LogicNet Plus on on-going basis to make decisions on what to make when and where considering demand, supply, transportation, and finance

- Documented Savings

  – An increase in the number of cases available to sell due to reduced warehouse out of stocks

    •Reduction in raw material and supplies inventory from $201 to $195 million

    •A 2 percentage point decline in the growth of transport miles even as PBG revenue grew

    •Increase in the return on invested capital

Business Value of LogicNet Plus

- 5-15% reduction in supply chain costs

- Better service levels to drive top-line revenue
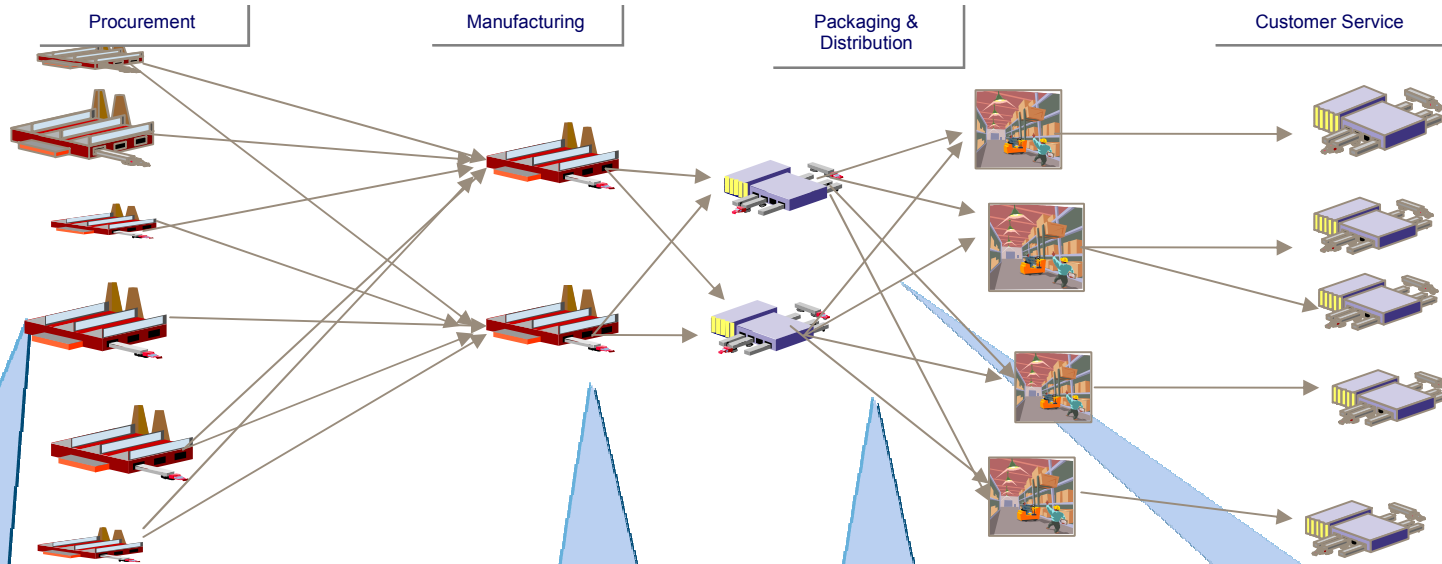

Source: AMR Research, BCI
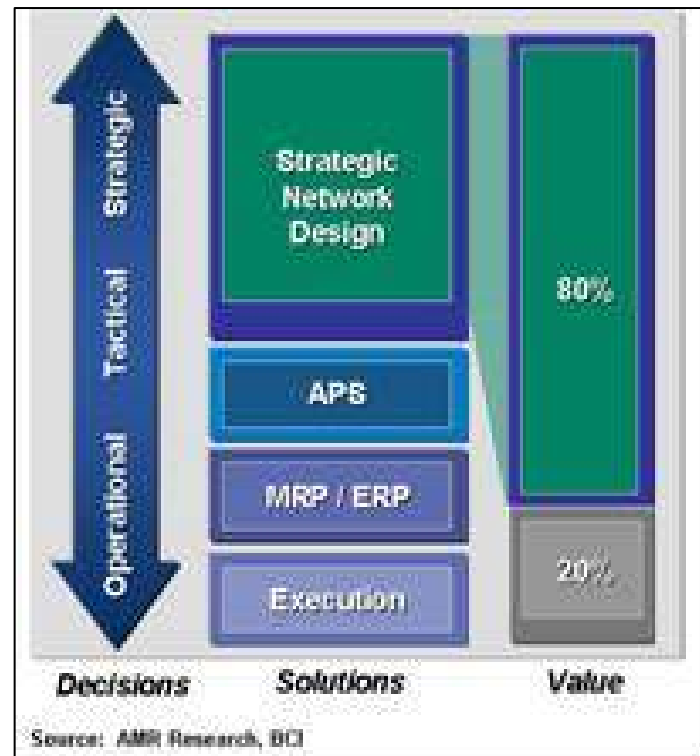
Inventory Optimization

Questions that we answer….

Inventory Questions:
1. How much per SKU?
2. Where?

Objective

1. Maximize Service Level
2. Minimize Inventory Cost

Procurement

Manufacturing

Packaging & Distribution

Customer Service

What impact does each supplier have on the entire supply chain?

Which facilities should be make to order or make to stock?

How should shipments and policies be coordinated?

How should I take advantage of centralization to reduce inventory?

Business Value from Inventory Optimization

- 10-20% reduction in inventory with on-going enterprise-wide inventory optimization

- 20-50% reduction in inventory by restructuring inventory strategies and policies

- Increased revenues and margins through better service levels

Typical Strategic Transportation Questions

- For a given set of shipments, what are the best routes?

  - Can be used to set budgets

  - To analyze different business rules– different time windows, different rules for service times

  - Determines how the routes should be structured

- What are the opportunities for combining shipments and finding continuous moves?

- What mode should be used? What should the fleet size be?

- What is the impact of backhauls? How can running inbound and outbound transportation together save additional money?

- After you re-design the supply chain, how does this impact the routes, multi-stops, and transportation operations

For More information , contact

Rishi Mehtani

Email : rmehtani@in.ibm.com

Thank You