



IBM System z Technology Summit

Business Rule Modernization

Rational - ILOG Update

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Agenda

- **What are Business Rules and Why use them?**
- **Business Rule Modernization Work flow**
- **Tools for Business Rules**
- **Rule Mining Projects**

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- **What are Business Rules and Why use them?**
- Business Rule Modernization Work flow
- Tools for Business Rules
- Rule Mining Projects

Why Business Rule Modernization & Why Now?

- Business need: Business application “decision making” needs to adapt to changes in the marketplace, in time to make a difference
- Application Development drivers
 - Cost savings
 - More effective application development & maintenance with less business risk
 - Consolidation/Restructure of existing applications, saving hardware & resources
 - Changing ratio of source inventory to development skills
 - Forcing need for formal processes with an on line electronic repository
 - Be able to react to changes requested by business in days, not months
- Business Rule Modernization: Applying technology and process to gain increased “decision making” agility for business applications

Rule Modernization: Business Perspective

▪ Business and IT Value

- Re-align applications to support emerging business requirements
- Manage the business rules to be visible and easily maintained by business analysts
- Provides a knowledge base that is accessible for application understanding and ongoing management.
- Enable decision services for SOA and other modernization strategies

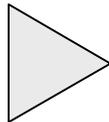


▪ Cost Optimization & Agility

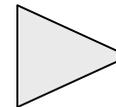
- ROI from effective, accelerated change management and governance of the rules that run your business
- Risk Reduction through reuse of proven, existing logic in a modernized architecture while rationalizing software assets that are misaligned with corporate priorities

Business Policies and Business Rules

Business Policies



Business Rules
Formal statements of business policies that define or constrain some aspect of the business

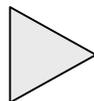


Business Applications

Pricing / Quoting
 Underwriting
 Commissioning
 Claim Processing
 Order Management
 Risk
 Fraud Detection
 Accounting...

Example:

Only prime loans are eligible for purchase



If loan amount is less than or equal to prime loan limit
 Then loan type is prime

If loan type is not prime
 Then reject loan



Point of Sale



Servicing



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

```

MIFdef __MCR__
/*
  Before performing any socket operation (like retrieving hostname
  in test_common_variables we have to call NSASStartup
  */
{
  NSASDATA MsdData;
  IF (SOCKET_ERROR == NSASStartup (0x0101, @MsdData))
  {
    /* errors are not read yet, so we use english text here */
    my_message(CER_NSAS_FAILED, "NSASStartup failed", MFC00);
    smreg_abort();
  }
}
Mendef /* __MCR__ */

IF (test_common_variables(MYSQL_CONFIG_NAME,
                        argc, argv, load_default_groups))
  smreg_abort(); // will do exit

test_signals();
IF (Tcpt_specialFlag & SPECIAL_NO_PRIORITY)
  my_thread_setprio(pthread_self(), CONNECT_PRIORITY);
    
```

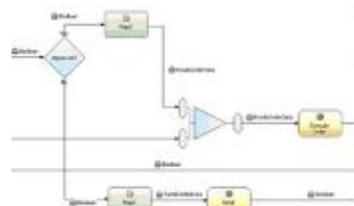
Applications



Documents



People



Processes

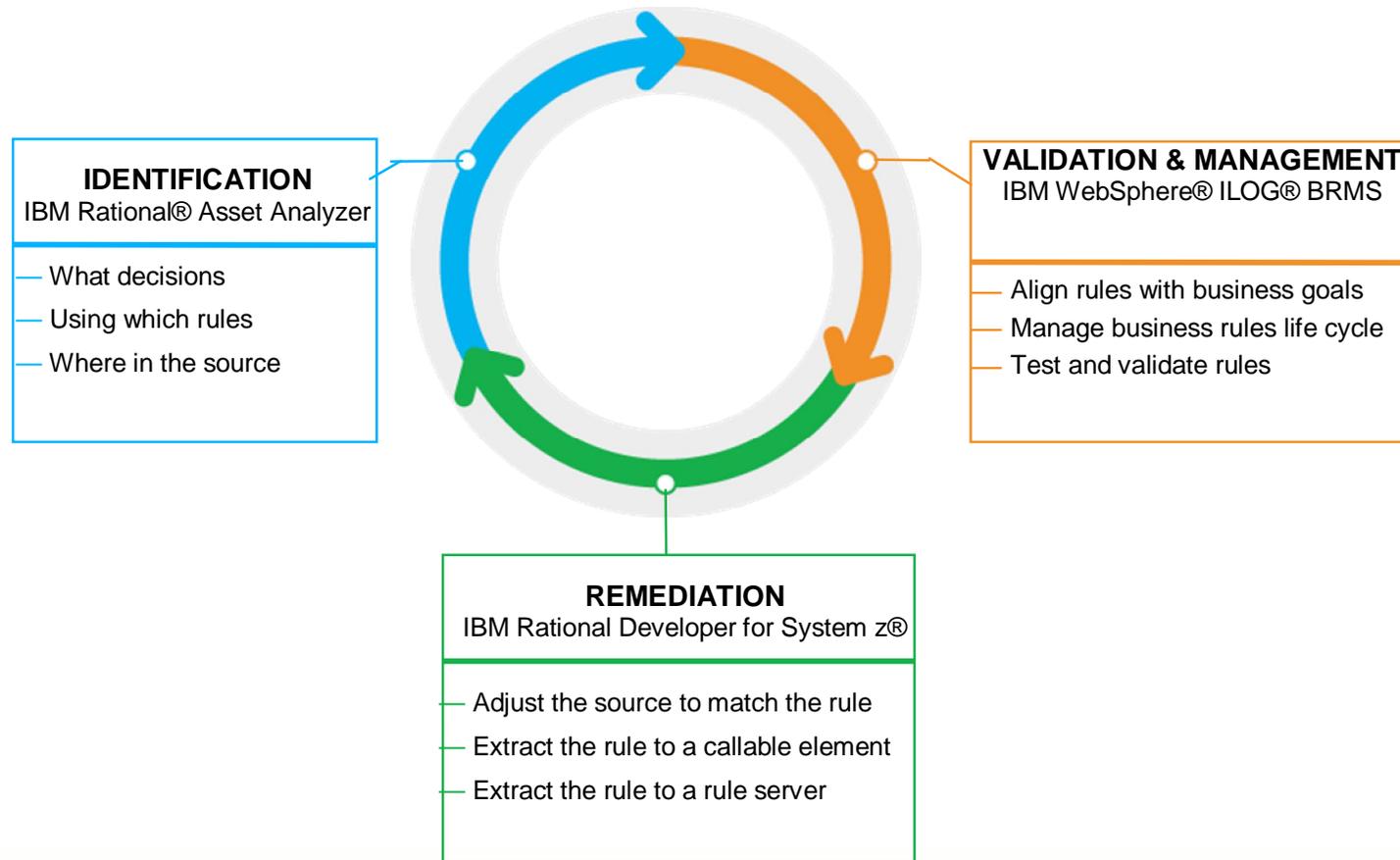
Issues

- 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 audibility, traceability
- Decision changes cannot be easily tested or simulated

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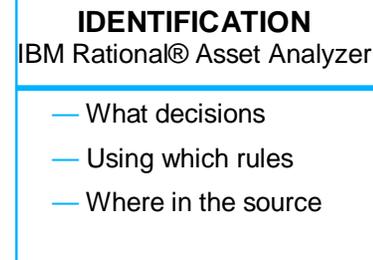
Business Rule Modernization



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.

Business Rule Identification



▪ Scope the effort

- Defined Business Goal: specific set of business decisions
- Deliver incremental value: Keep a manageable size with timely deliverables

▪ Establish the vocabulary

- Import Business Terms from ILOG BRMS or define them with RAA dialogs
- Map Business Terms to developer “terms”, code variables and data elements

▪ Define the candidate business rules

- RAA will identify source statements that “act” on the business terms via the variables, etc
- Consider source statements that act on the terms for candidate rules
- Map source statements to rule definitions using ILOG Editor within RAA

▪ Export Rules to ILOG BRMS

Business Rule Identification

```

31. 003100
32. 003200     IF HI
33. 003300         COMPUTE CUST-DISC-PCT = F1 + F2
34. 003400     ELSE
35. 003500         DISPLAY "NO DISCOUNT".
36. 003600
37. 003700     GOBACK.
38. 003800/
39. 003900 100-FACTOR2.
40. 004000
41. 004100     IF C-AGE > 55
42. 004200         COMP
43. 004300     ELSE
44. 004400         SET
    
```

- Relate statement to a business rule
- Relate data element to a business term or property**
- Show data element details

Relate to a Business Rule

Relate the IF Statement to a business rule.

Business rule:

The statement has the following data elements with related terms and term properties:

Data element	Term or term property
C-AGE	age

Add a Business Rule

Name of the business rule:

Documentation (optional):

Rational Asset Analyzer boyerpl | ?

Home Explore Impact analysis Database

Context: [Explore rule mining assets](#) [Business rule summary](#) [Business rule details](#)

Business rule details Actions:

Details

Name: Provide discount for seniors
 Documentation: If a person's age is over some threshold, give them a discount.

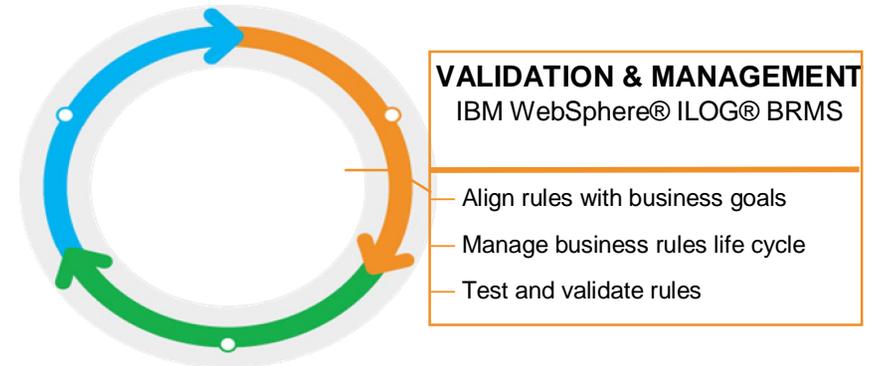
Related statements (1)

Statement	Program	Relationship type	Source location	Site
IF	DISCOWE	User-asserted	C:/brm/testdata/BusinessRuleMining/src/DISCOWE.CBL line 41	MYSITE

User-related assets (0)

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Business Rule Validation



▪ **Validate the Rules**

- Source derived rules create an objective basis for discussion
- Establish what the rule “should be” vs “what it is” in the source
- Within ILOG BRMS, capture any rule revisions

▪ **Integrate and Reconcile Rules with broader Rule policies**

- Identify and reconcile any conflicting rules
- Consider value/impact of sharing rules in common
- Within ILOG BRMS, capture any rule revisions

▪ **Select Source Code Remediation Options**

- Update application source to conform to ILOG rule(s)
- Update application source to call ILOG generated rules in COBOL
- Update application source to call ILOG Rule Server, directly or via web service

Business Rules Remediation

Bring the source code into compliance with business rule decisions

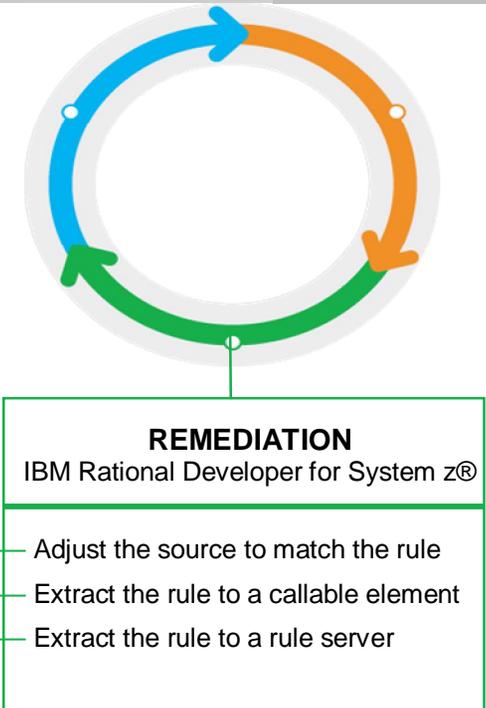
▪ Assess the complexity of the effort

- a) Small changes or the rules do not change frequently
- b) Need to modularize the rule code but constrained by performance requirements
- c) Need to move rule management to the business teams

▪ Select the compliance approach based on the complexity

- a) Adjust the source code
- b) Extract the rule execution code into a callable module
- c) Extract the rule execution code and replace it with calls to a Rule Server

Note: Compliance choices will drive how on-going rule updates will be handled



Business Rules Remediation

- Prioritize and drive the application update projects
- Exploit RDz – RAA synergy using RAA Integration Eclipse Plug-in
- Leverage the “breadcrumbs” left by the Analysis (*expanded future effort*)
- Redesign rules using ILOG JRules Rule Editors
- Governance and change management of rules using ILOG JRules

The screenshot displays the IBM Rational Developer for System z interface. The main window shows a COBOL program editor with the following code snippet:

```

Line 269      Column 38      Insert
-----*A-1-B-----2-----3-----4-----5-----6-----7-----8
000267      EXIT.
000268
000269      300-RECONCILE-DIAG-CODES-HOLD.
000270      MOVE "300-RECONCILE-DIAG-CODES-HOLD" TO PARA-NAME.
000271
000272      IF DIAG-CDE (ROW-SUB) EQUAL TO HOLD-DIAGNOSTIC-CODE-PRIMARY
000273      OR HOLD-DIAGNOSTIC-CODE-SECONDARY
000274      OR HOLD-DIAGNOSTIC-CODE-TERTIARY
000275      GO TO 300-EXIT.
000276
000277      IF DIAG-CDE (ROW-SUB) NOT = HOLD-DIAGNOSTIC-CODE-PRIMARY
000278      AND HOLD-DIAGNOSTIC-CODE-SECONDARY = SPACES
000279      MOVE DIAG-CDE (ROW-SUB) TO HOLD-DIAGNOSTIC-CODE-SECONDARY
000280      GO TO 300-EXIT.
000281
000282      IF DIAG-CDE (ROW-SUB) NOT = DIAGNOSTIC-CODE-SECONDARY
000283      AND HOLD-DIAGNOSTIC-CODE-TERTIARY = SPACES
000284      MOVE DIAG-CDE (ROW-SUB) TO HOLD-DIAGNOSTIC-CODE-TERTIARY
000285      GO TO 300-EXIT.
000286
000287      300-EXIT.
000288
000289      EXIT.
  
```

Below the code editor, a flowchart illustrates the program's logic flow. The flow starts with '300-RECONCILE-DIAG-CODES-HOLD' and branches into several paths, including '300-RECONCILE-DIAG-CODES-HOLD' and '300-EXIT'. The flowchart also shows other program components like '300-APPLY-UPDATES', '300-ABEND-RTN', and '300-CLEANUP'.

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- **Tools for Business Rules**
- Rule Mining Projects

Business Rules Modernization Tools

- **Identification and Mining**
 - Rational Asset Analyzer
- **Validation and Management**
 - WebSphere ILOG JRules
- **Remediation**
 - Rational Developer for System z
 - WebSphere ILOG JRules

Rational Asset Analyzer V6

Infrastructure Optimization

- Install, license management, etc.
- Support in RAA for Windows 7 – replace Compilers with Importers (Compiler Front-ends)
- Comprehensive RESTful access to RAA information, deprecating Web Services code
- Symbol Scanner for expanded artifact analysis

User Interface Enhancements

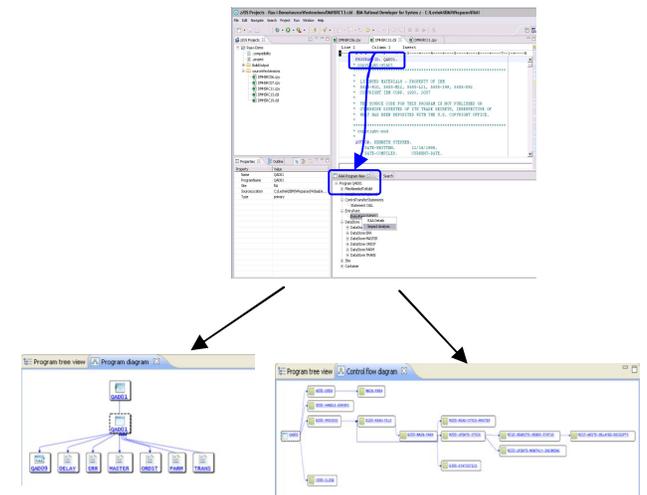
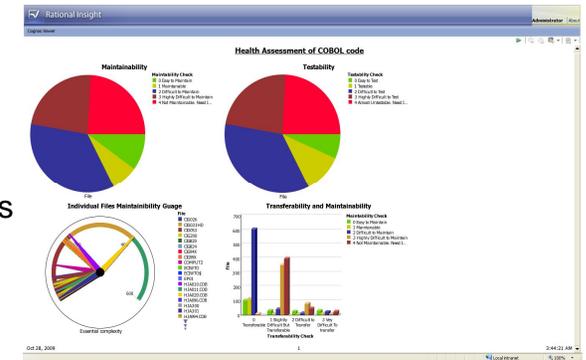
- RAA User Interface Enhancements
- Practical guidance White Paper for Insight based Reporting

RAAi and RDz Effectiveness

- RDz Remote Project Support
- RAAi provided in both z/OS and Windows packages

RAA and Business Rule Mining

- Extend RAA “vocabulary” to include business rule terms consistent with ILOG
- Leverage RAA's capabilities to identify and capture candidate business rules
- Interoperate w/ILOG BRMS technologies – Vocabulary and Rules



RAA Version 6 & RAA for System z: Sibling Products

- Independent offerings
- Common metadata schema
- Consistent results for common functions

RAA for System z

- Installs on z/OS
- Scans artifacts “in place”
- z/OS source & “resources of interest”
- Data retained in DB2 for z/OS
- Provides a remote component for Windows or AIX server for scan of Java assets
- Same functionality as RAA on Windows
- Supports “shared knowledge” use case

RAA

- Installs on Windows, including Windows 7
- Scans offloaded to Windows
- COBOL, PL/I, JCL downloaded to RAA
- Java EE on Windows only
- Data retained on DB2 on Windows
- Provides a light z/OS component for – CICS/IMS/DB2 “resources of interest”
- High Level Assembler
- Same functionality as RAA for System z
- Supports the “shared knowledge” and “individual (with RDz)” use cases

Business Rule Mining Capabilities

- New functionality to assist clients in their business rule mining efforts
- Allows you to identify, capture and relate business rule assets to its existing set of IT assets.

- Introducing new asset types:

- Business term (term)
- Business term property (property)
- Business rule (rule)
- Business category (category)
- Business process model (process model)
- Business activity (activity)

Rational Asset Analyzer

Home Explore Impact analysis Database

Explore rule mining assets Actions Select an action

Search names: A Go Ignore case [Advanced search](#)

Rule mining assets	Total
Business activity	2
Business process model	1
Business rule	1
Business term	10
Business term property	53

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- New dialogs, Source views and relationship detection
- Leveraging Web 2.0 technologies
- Import/Export function with WebSphere ILOG JRules

Business Rule Mining Asset Types

- Business activity (activity)** - a named, structured process or task that produces a specific service or product for a particular customer or customers of a business. A business activity may be a collection of related business activities.

The screenshot shows the Rational Asset Analyzer interface. The context is 'Explore rule mining assets' and the view is 'Business activity summary'. The table below lists two business activities:

Row	Name	Parent activity	Process model	Description
1	Create the RentalAgreement		Rent a car	This is what happens in order to actually rent a car
2	Return the car		Rent a car	This is what happens when the car is returned

- Business process model (process model)** - a named collector of business activities used to represent a core aspect of a business.

The screenshot shows the Rational Asset Analyzer interface. The context is 'Explore rule mining assets' and the view is 'Business process model summary'. The table below lists one business process model:

Row	Name	Description	Business activity
1	Rent a car		Create the RentalAgreement Return the car

Business Rule Mining Asset Types

- **Business term (term)** - a noun representing a concept used in the business.

Business term summary

Row	Name	Definition	Categories
1	Branch	A physical location in the country	Car rentals
2	CarGroup	A classification of cars having the same rental properties	Car rentals
3	Collection		any
4	Customer	A consumer of products	any
5	CustomerDiscountInfo	A reduced rate for a Customer	any
6	Invoice	A detailed list of goods or services rendered	any
7	LineItem	A particular good or service rendered	any
8	offer	An opportunity for renting at a reduced rate	Car rentals
9	RentalAgreement	An agreement to rent a car to a Customer for some period at some rate	Car rentals
10	Session		any

Business Term Dictionary

age
Type: Number
Description:
Used by: CustomerDiscountInfo

CustomerDiscountInfo
Description: A reduced rate for a Customer
Properties: age, customerNumber, discountPercent, location, region, status

customerNumber
Type: String
Description:
Used by: CustomerDiscountInfo

discountPercent
Type: Float
Description:
Used by: CustomerDiscountInfo

Float
Properties of this type: discountPercent

location
Type: String
Description:
Used by: CustomerDiscountInfo

Number
Properties of this type: age

region
Type: String
Description:

- **Business term property (property)** - a noun, of a specific type, representing an attribute or abstract quality associated with a business term. The relationships between business terms and business term properties are most often stated with the verb **has** (for example, *car has driver*) or the preposition **of** (for example, *driver of car*).

Business term property summary

Row	Name	Business term	Type	Definition
1	actualCarGroup	RentalAgreement	CarGroup	
2	address	Customer	String	
3	age	CustomerDiscountInfo	Number	
4	amount	LineItem	Float	
5	assigned	RentalAgreement	Boolean	
6	bestOffer	RentalAgreement	Offer	
7	birthDate	Customer	Date	
8	birthDayOfMonth	Customer	Number	
9	birthMonth	Customer	Number	
10	birthYear	Customer	Number	
11	carGroup	RentalAgreement	CarGroup	
12	carGroupUpgrade	Offer	Number	
13	city	Customer	String	
14	coverages	RentalAgreement	String	
15	customer	RentalAgreement	Customer	

Business Rule Mining Asset Types

- **Business rule (rule)** - a named statement, or set of statements, that defines or constrains some aspect of a business. Business rules can be captured in RAA in either an unstructured or structured form, or both.

The screenshot displays the Rational Asset Analyzer (RAA) interface. The main window shows a 'Business rule summary' view with a search bar and a table of results. A context menu is open over a rule entry, and two dialog boxes are shown: 'Add a Business Rule' and 'Relate to a Business Rule'.

Code Snippet:

```

31. 003100
32. 003200   IF HI
33. 003300     COMPUTE CUST-DISC-PCT = F1 + F2
34. 003400   ELSE
35. 003500     DISPLAY "NO DISCOUNT".
36. 003600
37. 003700   GOBACK.
38. 003800/
39. 003900 100-FACTOR2.
40. 004000
41. 004100   IF C-AGE > 55
42. 004200     COMP
43. 004300   ELSE
44. 004400     SET
  
```

Context Menu Options:

- Relate statement to a business rule
- Relate data element to a business term or property
- Show data element details

Add a Business Rule Dialog:

Name of the business rule: Provide discount for seniors
 Documentation (optional): If a person's age is over some threshold, give them a discount.]

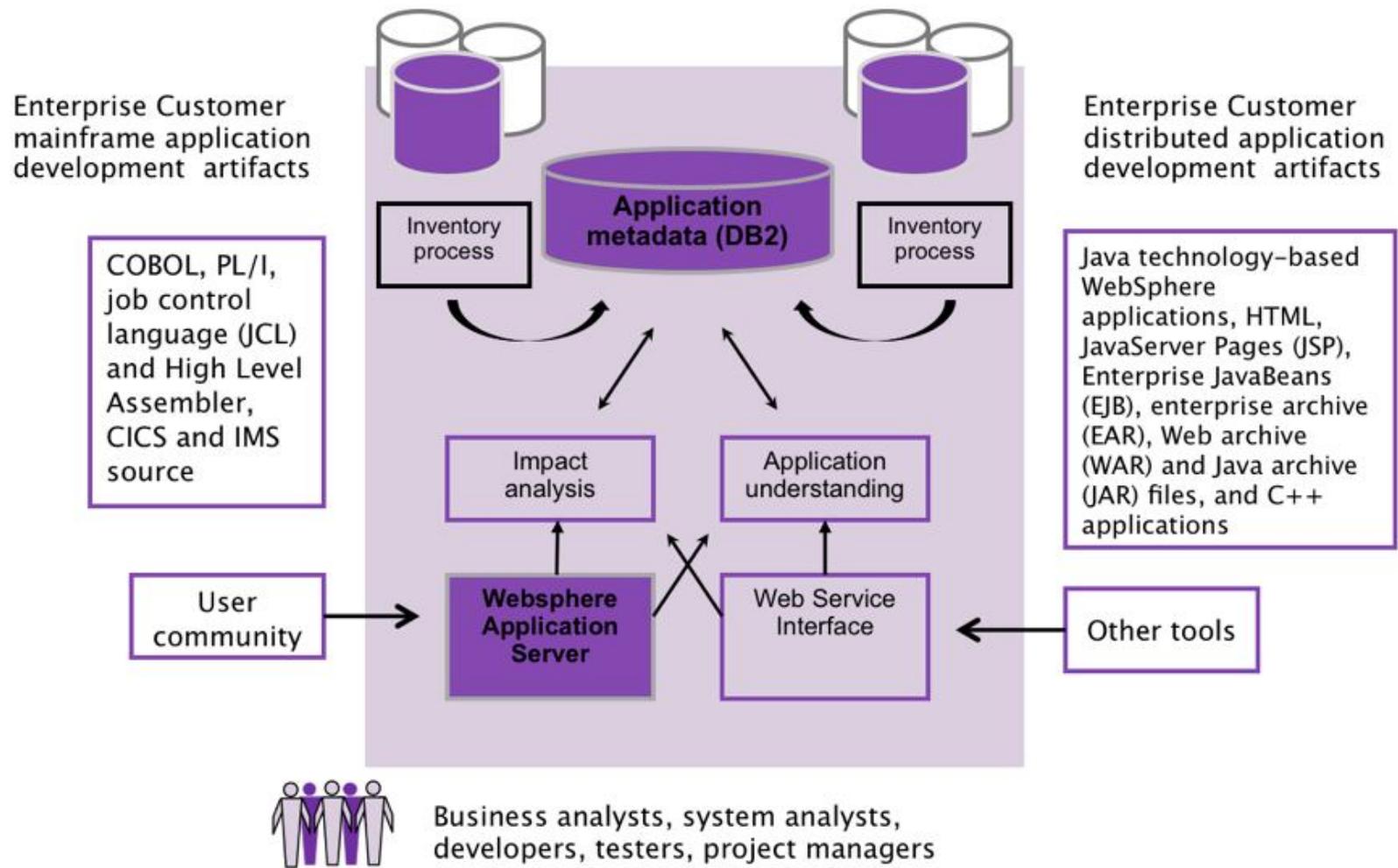
Relate to a Business Rule Dialog:

Relate the IF Statement to a business rule.
 Business rule: Provide discount for seniors

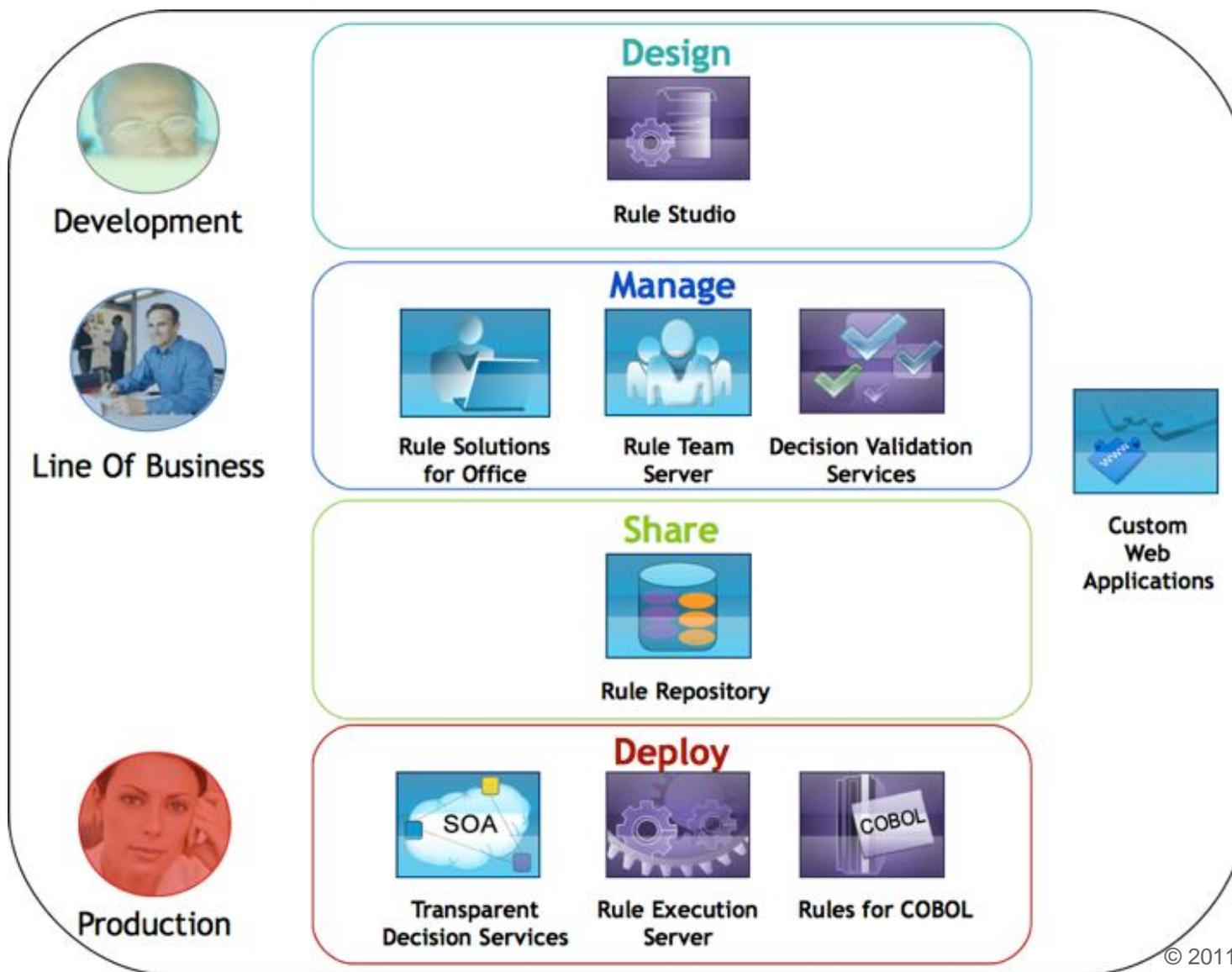
The statement has the following data elements with related terms and term properties:

Data element	Term or term property
C-AGE	age

Rational Asset Analyzer



WebSphere ILOG JRules 7.x Components



Rational Developer for System z

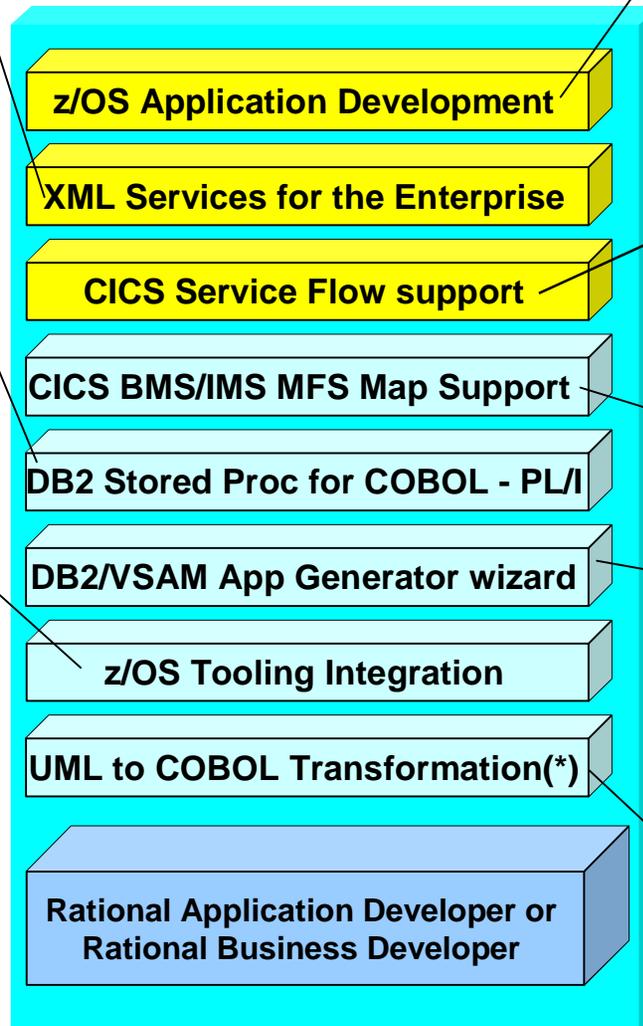
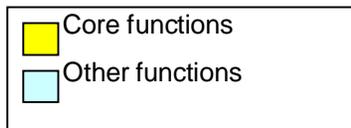
XML Services for the Enterprise

- SOA support for COBOL or PL/I using CICS or IMS
- Bottom-up/Top-down or meet-in-the-middle COBOL/PLI to XML mapping support
- meet-in-the-middle development scenario tooling wizards. for CICS, IMS, and batch applications



z/OS Tooling Integration

- Read/Write/Update VSAM datasets via integration with **IBM File Manager**
- Access **IBM Fault analyzer** reports for analyzing ABENDS and associating back to source code



z/OS Application Development

- Work with z/OS resources like COBOL, PL/I, C, C++, JCL, etc.
- Interact with the Job Entry Subsystem (JES) to submit jobs, monitor jobs, and review job output
- Perform dataset management actions
- Perform typical edit, compile, and debug tasks on remote z/OS resources from the workstation

CICS Service Flow support

- Supports CICS Service Flow Feature
- Wizards to build service flows out of your existing COMMAREA WSDL and Terminal based CICS applications.

CICS BMS/IMS MFS Map Support

- Visually create and modify BMS Map sets or IMS/MFS
- Generates JCL

DB2/VSAM App Generator wizard

- Generate WSDL, JCL and CICS COBOL program to access DB2
- Generate CRUD programs code from existing DB2 table, which can also be integrated into web service applications
- Generate JCL, BATCH or CICS COBOL program skeletons to access VSAM/QSAM

UML to COBOL Transformation(*)

- Provide UML assets in order to represent COBOL in UML (Models, Profiles, Patterns)
- UML transformations generate models more specific to COBOL target
- Final transformation generates COBOL source
- (*) Requires **Rational Software Architect (RSA)**

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How to Identify a First BRM Project?

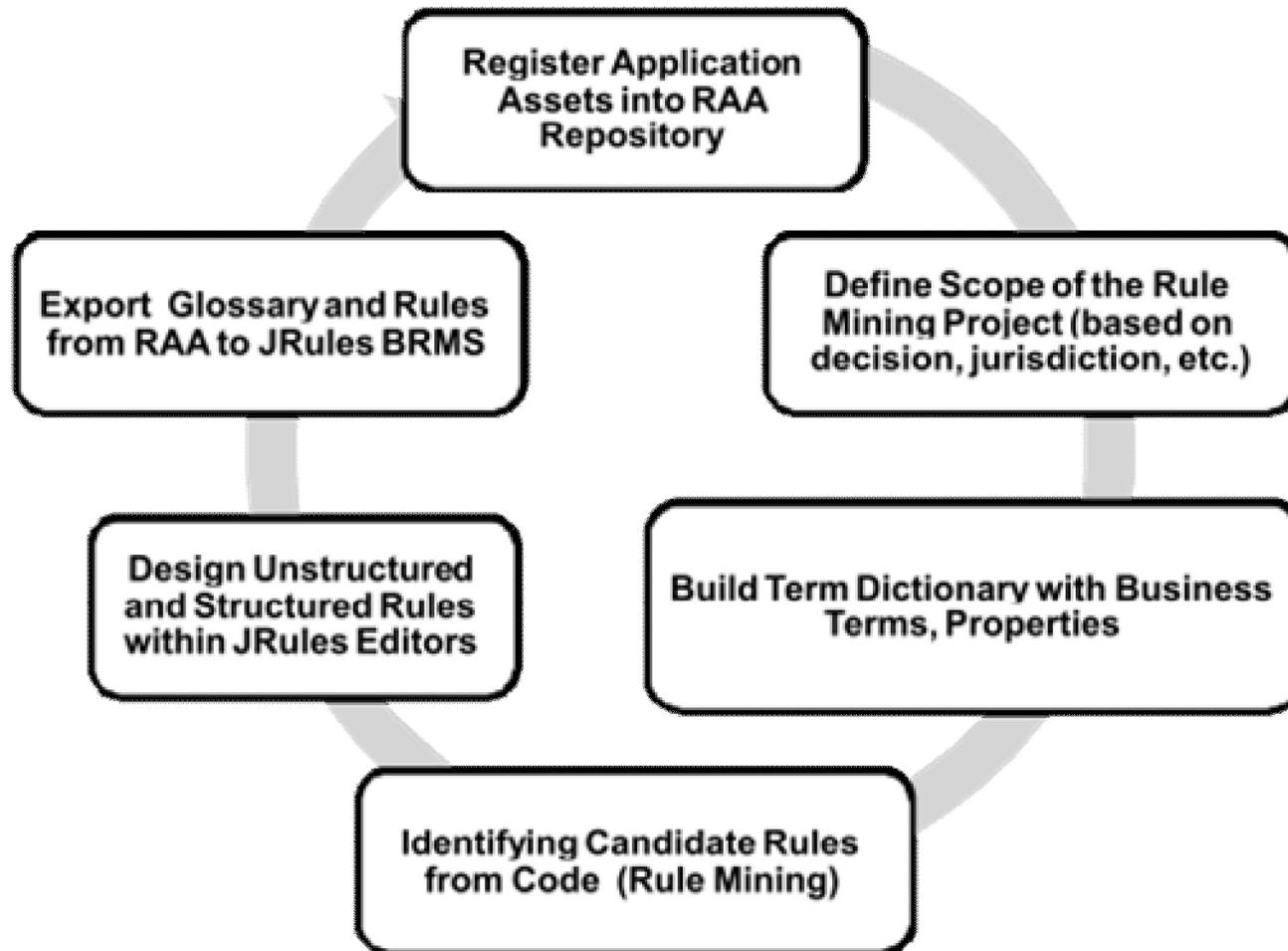
COBOL application projects in which there is a need to “open up the application”

- Add new functionality; new product; new business policy
- Maintenance project with massive changes
- Consolidate existing application

Business rule mining is the process of extracting essential intellectual business logic from packaged or application software, recasting them in a formal language, and managing them in a BRMS.



Business Rules Modernization Project Flow



Business Rules Mining and 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

For more information on Rational Asset Analyzer

- **ibm.com product web pages:**
 - <http://www.ibm.com/software/rational/products/raa/>
- **developerWorks pages:**
 - <http://www.ibm.com/developerworks/rational/products/raa/>
- **Data Sheet:**
 - http://www.ibm.com/common/ssi/cgi-bin/ssialias?infotype=PM&subtype=SP&appname=SWGE_RA_RA_USEN&htmlfid=RAD14021USEN&attachment=RAD14021USEN.PDF
- **Enterprise Modernization Sandbox:**
 - http://www.ibm.com/developerworks/downloads/emsandbox_systemz/index.html
- **Business Rule Modernization Brochure:**
 - http://www.ibm.com/common/ssi/cgi-bin/ssialias?infotype=PM&subtype=BR&appname=SWGE_RA_ZV_USEN&htmlfid=RAB14042USEN&attachment=RAB14042USEN.PDF
- **Trial download:**
 - http://www.ibm.com/developerworks/downloads/r/assetanalyzer/?S_CMP=rnav



QUESTIONS