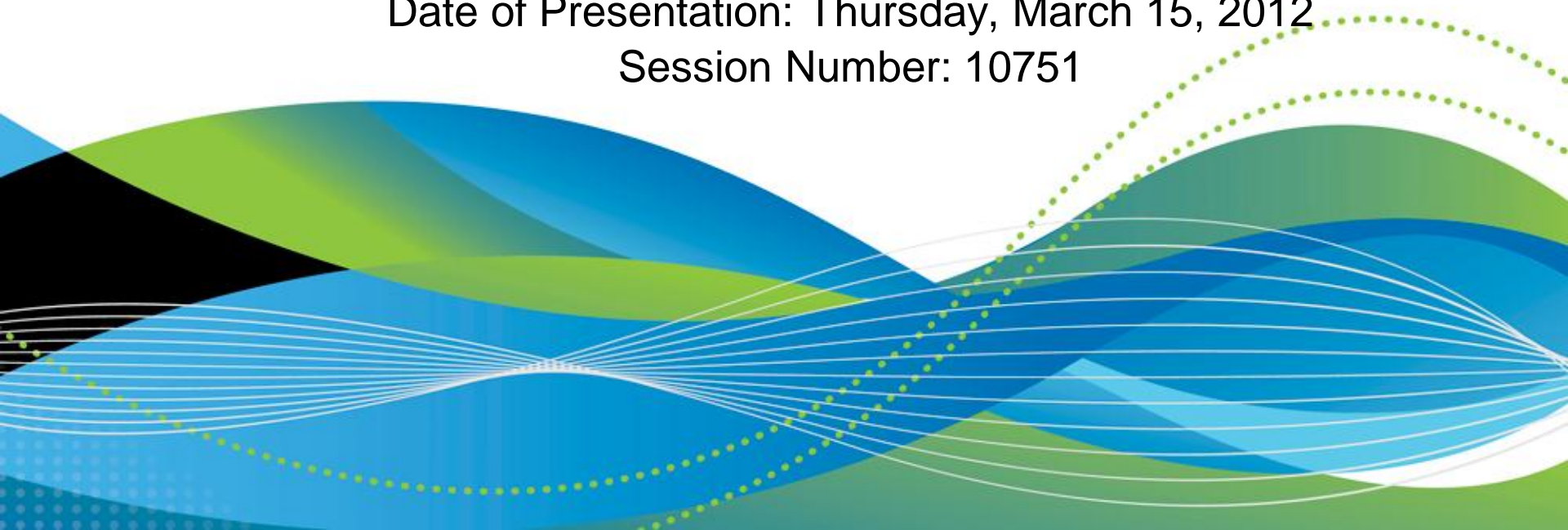


Modernization of Mainframe Applications with WebSphere Operational Decision Management for z/OS

Janet K. Wall, Richard Szulewski
IBM Corporation

Date of Presentation: Thursday, March 15, 2012
Session Number: 10751



IBM BPM and IBM WebSphere Operational Decision Management on z/OS SHARE sessions – join us



10736: Making zEnterprise Relevant to Line of Business

Monday, March 12, 2012: 1:30 PM-2:30 PM, International Ballroom E

10740: CICS and Decision Management: Perfect Together

Tuesday, March 13, 2012: 3:00 PM-4:00 PM, Dogwood A

11094: Decision Management for CICS: Optimizing CICS Infrastructure for Business Rules Execution - Lunch & Learn

Wednesday, March 14, 2012: 12:15 PM-1:15 PM, International Ballroom B

10742: Using Business Rules to Achieve Affordable Agility in System z Applications

Thursday, March 15, 2012: 8:00 AM-9:00 AM, International Ballroom E

10751: Modernization of Mainframe Applications with WebSphere Operational Decision Management for z/OS

Thursday, March 15, 2012: 9:30 AM-10:30 AM, International Ballroom E

10743: Why Business Rules and Business Process Management are Important to System z Apps (and to you)

Thursday, March 15, 2012: 4:30 PM-5:30 PM, International Ballroom E

Application modernization enables clients to reduce total cost of ownership, and align business and IT investment while improving business agility



Cost

Alignment

Time to
Market

Agility

Risk

“The bottom-up view of application modernization — tactical improvements to individual applications with insufficient regard for any longer-term strategy — is toxic to the business. While tactical actions must continue, they need a guiding hand — an overarching strategy that brings balance to the whole feet, not preferential treatment to a favored geographic region or a politically powerful hub.”

"Justifying Application Modernization: Industry Analogies Explain Choices In A Business Context," Forrester Research Inc., March 17, 2009

Solution Drivers and Barriers

Your management asks:

- *"how do I maximize what I have?"*
- *"how do I get from here to there?"*

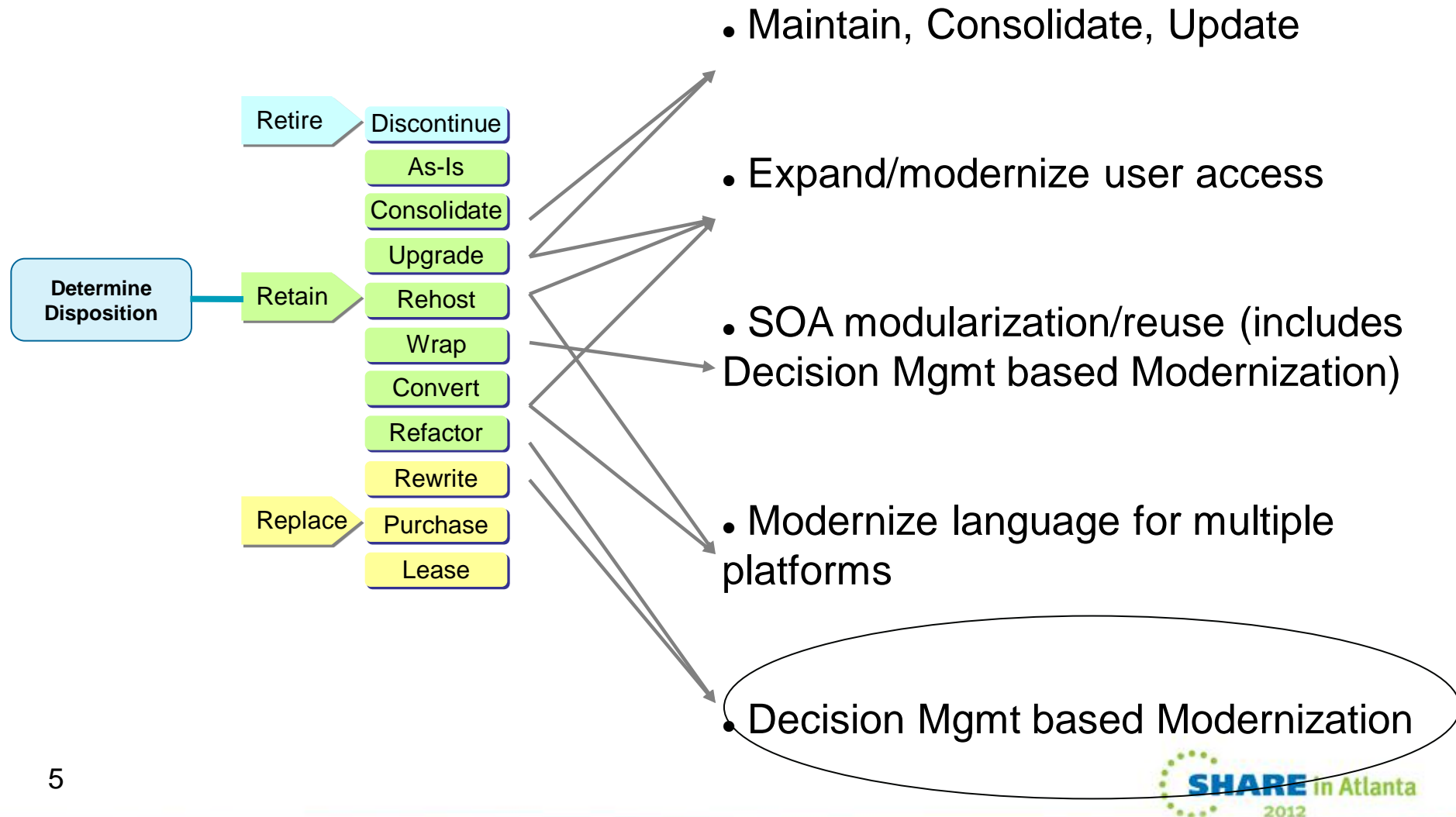


You are faced with:

- Undocumented business application
- Business applications are brittle.
- Rewriting the application is costly and long.
- Need to make business changes today.
- Perceived inability to evolve current architecture.

Application Modernization:

What are the modernization options



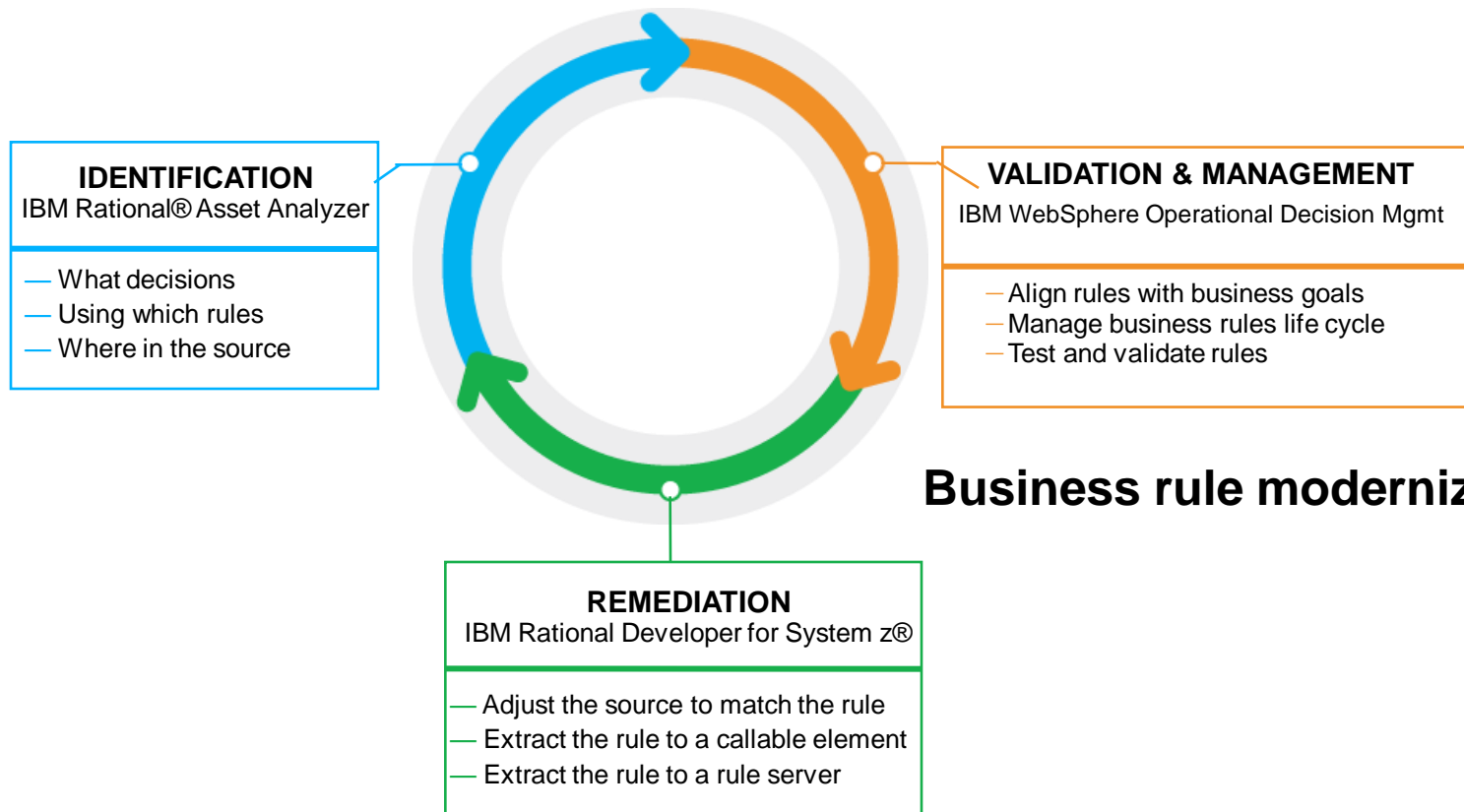
Solution Characteristics: Required for success



- Ability to document and demystify the existing application portfolio
- Ability to functionally segregate business rule intensive source code
- Mechanism to mine business rules and facilitate rapid authoring in Decision Management tool
- Ability to enable and modify business rules rapidly and accurately
- Ability to implement Decision Management in CICS, batch and WebSphere on z/OS

Rational Asset Analyzer

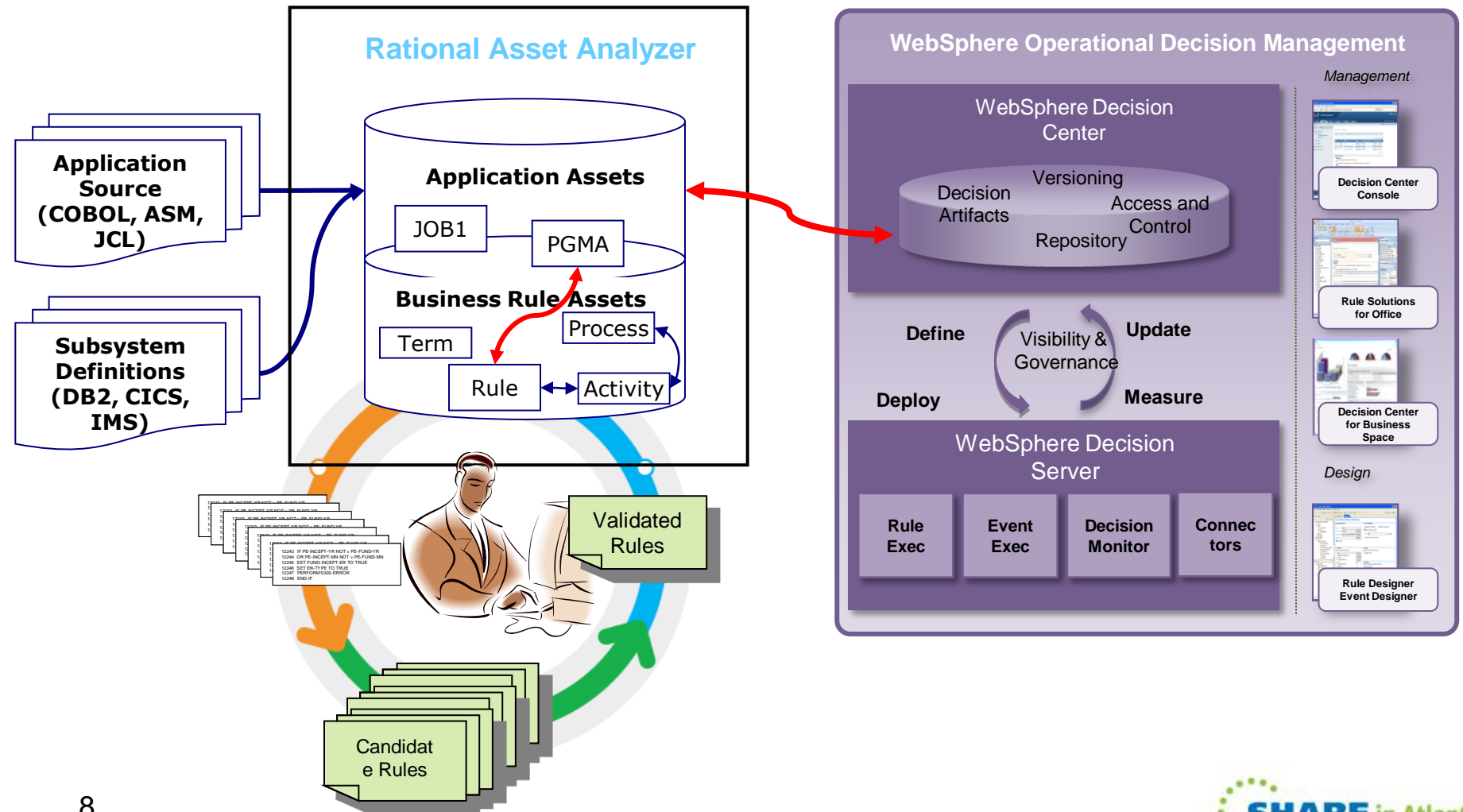
integrates with WebSphere Operational Decision Management



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.

Application Understanding and Rule Identification



The RAA inventory process scans, categorizes and indexes application components

Explore MVS assets - Rational Asset Analyzer - Windows Internet Explorer

http://localhost:9080/dmh/DmhPageServlet?pagetype=explore

File Edit View Favorites Tools Help

Explore MVS assets - Rational Asset Analyzer

Rational Asset Analyzer

Home Explore Impact analysis Database

Explore MVS assets Actions Select an Action

Search MVS asset names: Go ☒ Ignore case [Advanced search](#)

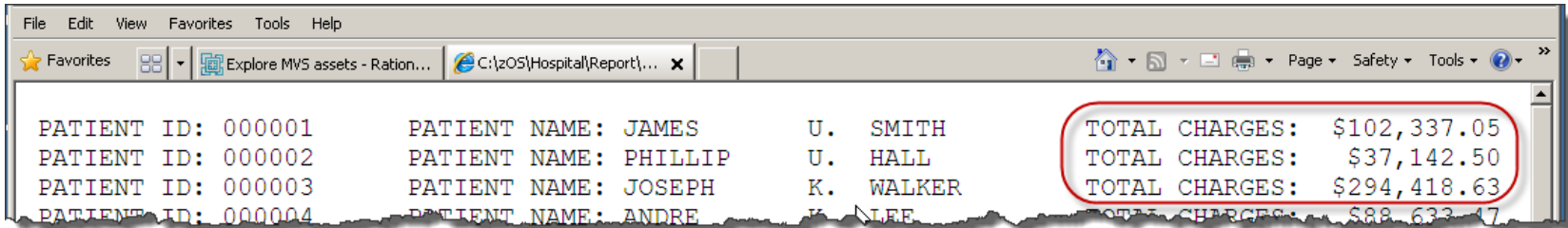
Run time	Total	Program	Total	Data	Total
Batch job	3	BMS map definition	0	Data element ?	5798
CICS group	0	BMS map set definition	0	Data set	29
CICS online region	0	Concatenation set	1	Data store	63
CICS transaction	0	DB2 stored procedure	1	DB2 column	32
DB2 system	2	Entry point	17	DB2 table	7
IMS DBD	0	IMS PSB	0	DD name	136
IMS subsystem	0	Literal	1635	I/O record description	137
IMS transaction	0	Program	17		
Run unit ?	20				

IBM. [About Rational Asset Analyzer V6.0.0.4, Trial license - 89 days remaining](#) Sep 5, 2011 5:29:17 PM

Local intranet 100%

RAA builds linkages between all components

- For example, from initial information contained in an output file or report (named PATRPT in this example)



PATIENT ID	PATIENT NAME	U.	TOTAL CHARGES
000001	JAMES	SMITH	\$102,337.05
000002	PHILLIP	HALL	\$37,142.50
000003	JOSEPH	WALKER	\$294,418.63
000004	ANDRE	LEE	\$88,633.47

- RAA provides hyperlinks to quickly determine
 - Which program(s) create and access the file
 - Which file(s) is used
 - Which data elements make up the record
 - The name of the top-level element in the data structure
 - Which copybook(s) contain the record description

RAA provides a flexible searching mechanism

- Providing single search term will identify all matching assets
- Searching on “PATRPT”, and drilling down two levels, will display the record used to write the PATRPT report or file:

Data element details

Actions Select an Action

Details

Data element:	WS-PATIENT-RPT-REC
Type:	GRP
Length physical/logical:	95/0
Level:	1
Initial value:	Not initialized
Program:	MSTRUPDT
Language/type:	COBOL / Program source
File:	MSTRUPDT.cbl
Container:	E:/HOSPITAL
Site:	RN200

Immediate children

Data element (6)	Program source location	Declared line	Level	Language	Type	Physical length	Logical length	Scale	Declared in copy?
FILLER	E:/HOSPITAL/MSTRUPDT.cbl	154	5	COB	CHAR	12	12		N
PATIENT-ID-Q	E:/HOSPITAL/MSTRUPDT.cbl	155	5	COB	NUMB	6	6		N
FILLER	E:/HOSPITAL/MSTRUPDT.cbl	156	5	COB	CHAR	20	20		N
PATIENT-NAME-Q	E:/HOSPITAL/MSTRUPDT.cbl	157	5	COB	GRP	26			N
FILLER	E:/HOSPITAL/MSTRUPDT.cbl	163	5	COB	CHAR	18	18		N
TOTAL-CHARGES	E:/HOSPITAL/MSTRUPDT.cbl	164	5	COB	NUMB	13	9	2	N

- Drilling through on the TOTAL-CHARGES element, it can be determined what element(s) update it

Modified by		
Asset (1)	Statement	Program
Data element: PATIENT-TOT-AMT	MOVE	MSTRUPDT

- An input to the business decision can be discovered by linking from the updating element to its master record

Data element details
Actions

Details

Data element:	PATIENT-MASTER-REC
Type:	GRP
Length physical/logical:	2965/0
Level:	1
Initial value:	Not initialized
Program:	MSTRUPDT
Language/type:	COBOL / Included source
File:	PATMSTR.cpy
Container:	E:/HOSPITAL
Site:	RN200

Immediate children

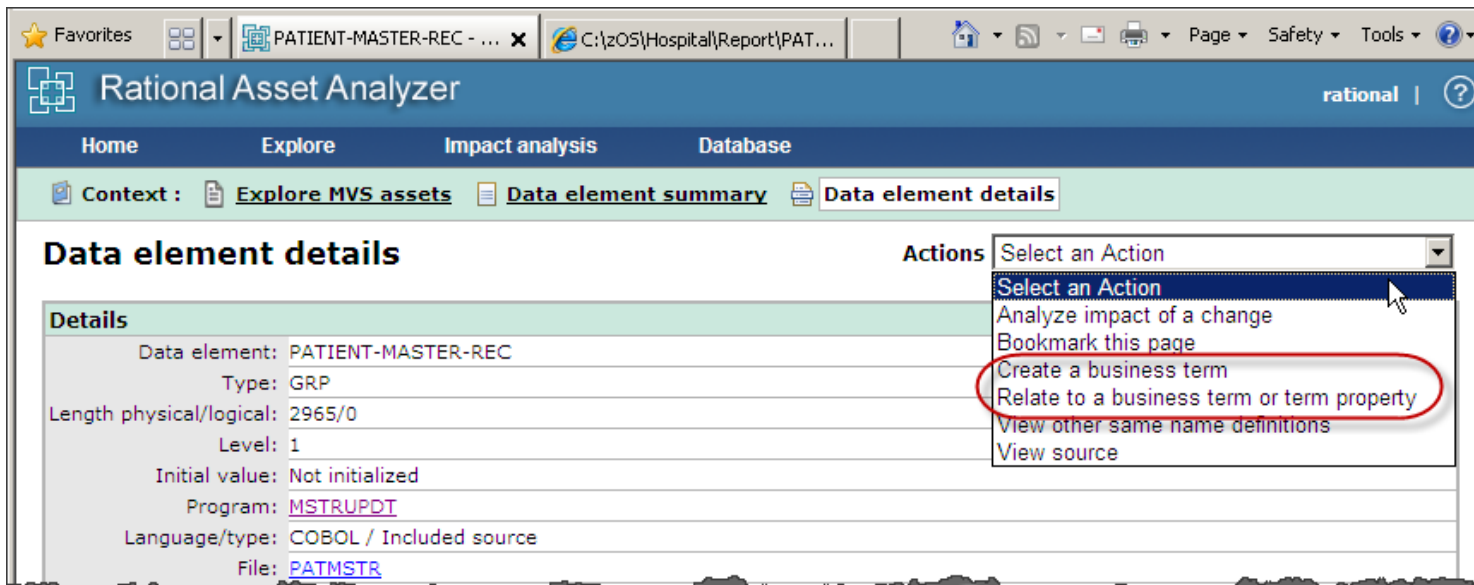
Data element (22)	Program source location	Declared line	Level	Language	Type	Physical length	Logical length	Scale	Declared in copy?
PATIENT-ID	E:/HOSPITAL/MSTRUPDT.cbl	4	5	COB	CHAR	6	6		Y
PATIENT-TYPE	E:/HOSPITAL/MSTRUPDT.cbl	5	5	COB	CHAR	1	1		Y
PREVIOUS-PATIENT-IND	E:/HOSPITAL/MSTRUPDT.cbl	9	5	COB	CHAR	1	1		Y

RAA provides business term and property functionality

- Business terms, properties and rules can be created within RAA

And/or

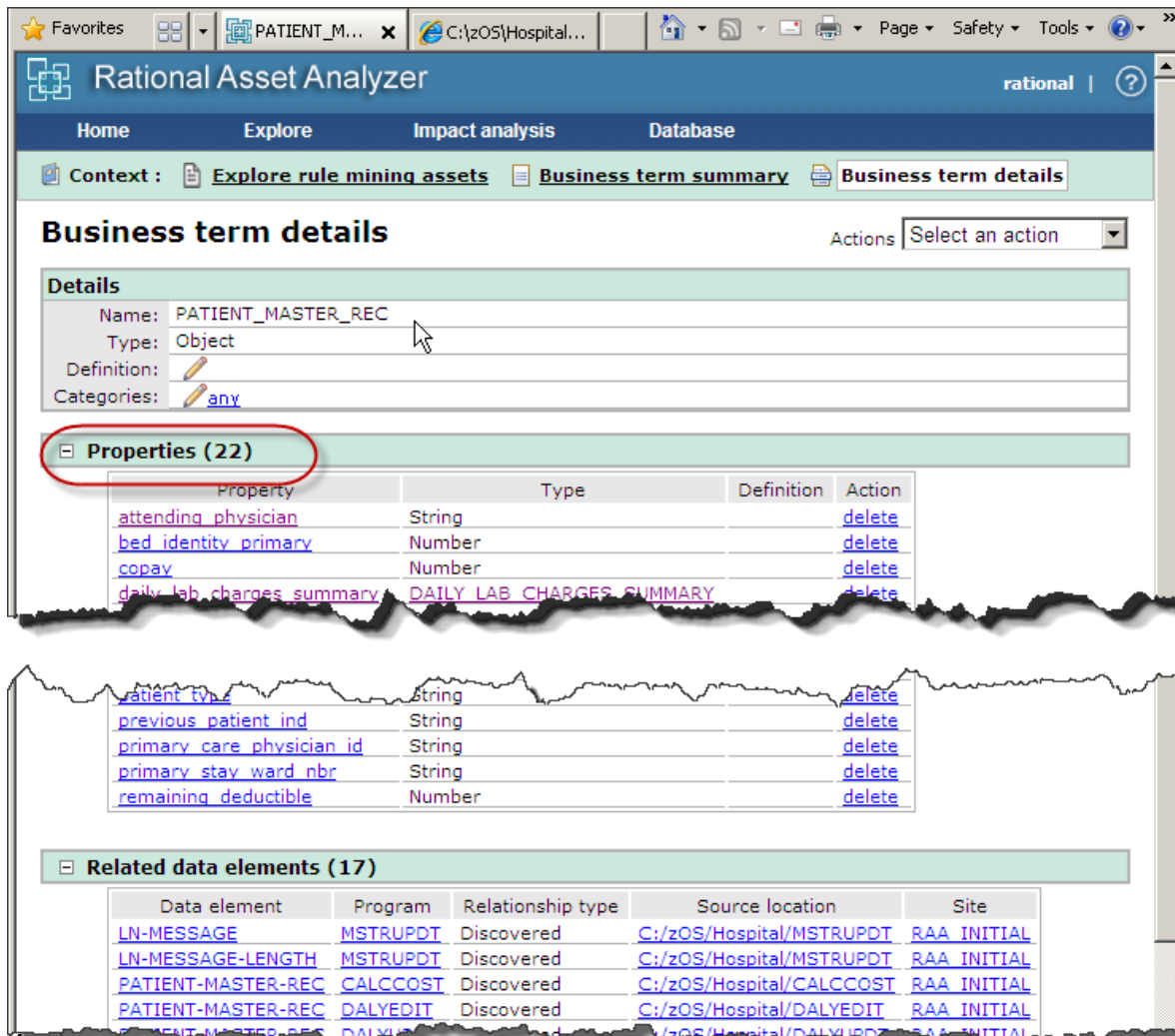
- RAA can import existing WODM business terms and properties



The screenshot shows the Rational Asset Analyzer (RAA) web interface. The browser window has tabs for 'PATIENT-MASTER-REC' and 'C:\z05\Hospital\Report\PAT...'. The RAA interface includes a navigation bar with 'Home', 'Explore', 'Impact analysis', and 'Database'. Below this is a 'Context' bar with 'Explore MVS assets', 'Data element summary', and 'Data element details'. The main content area is titled 'Data element details' and shows a table of details for the data element 'PATIENT-MASTER-REC'. The details include Type: GRP, Length physical/logical: 2965/0, Level: 1, Initial value: Not initialized, Program: MSTRUPDT, Language/type: COBOL / Included source, and File: PATMSTR. An 'Actions' dropdown menu is open, showing options: 'Select an Action', 'Analyze impact of a change', 'Bookmark this page', 'Create a business term', 'Relate to a business term or term property', 'View other same name definitions', and 'View source'. The options 'Create a business term' and 'Relate to a business term or term property' are circled in red.

Details	
Data element:	PATIENT-MASTER-REC
Type:	GRP
Length physical/logical:	2965/0
Level:	1
Initial value:	Not initialized
Program:	MSTRUPDT
Language/type:	COBOL / Included source
File:	PATMSTR

- From the master record, RAA can create candidate terms and properties automatically



The screenshot shows the Rational Asset Analyzer (RAA) interface. The top navigation bar includes 'Home', 'Explore', 'Impact analysis', and 'Database'. The 'Explore' tab is active, showing 'Context : Explore rule mining assets', 'Business term summary', and 'Business term details'. The 'Business term details' section is expanded, showing details for 'PATIENT_MASTER_REC'.

Business term details

Details

Name: PATIENT_MASTER_REC
Type: Object
Definition:
Categories: any

Properties (22)

Property	Type	Definition	Action
attending_physician	String		delete
bed_identity_primary	Number		delete
copay	Number		delete
daily_lab_charges_summary	DAILY LAB CHARGES SUMMARY		delete
patient_type	String		delete
previous_patient_id	String		delete
primary_care_physician_id	String		delete
primary_stay_ward_nbr	String		delete
remaining_deductible	Number		delete

Related data elements (17)

Data element	Program	Relationship type	Source location	Site
LN-MESSAGE	MSTRUPDT	Discovered	C:/zOS/Hospital/MSTRUPDT	RAA_INITIAL
LN-MESSAGE-LENGTH	MSTRUPDT	Discovered	C:/zOS/Hospital/MSTRUPDT	RAA_INITIAL
PATIENT-MASTER-REC	CALCCOST	Discovered	C:/zOS/Hospital/CALCCOST	RAA_INITIAL
PATIENT-MASTER-REC	DALYEDIT	Discovered	C:/zOS/Hospital/DALYEDIT	RAA_INITIAL

- From the source display, data elements can be related to business terms and business term properties:

Relate to a Business Term or Term Property [X]

Relate the WS-LAB-CHARGES Data element to a business term or term property.

Filter by category (optional):
[Dropdown]

Business term or term property:
PATIENT_MASTER_REC [Dropdown]

▶ Add a new term
▼ Add a new term property

Name of the term:
PATIENT_MASTER_REC [Dropdown]

Name of the property:
lab_charges_for_patient [Text]

Type:
Number [Dropdown]

Description (optional):
[Text Area]

[Add] [Relate] [Cancel]

- A business property link can be followed to identify candidate business rules in the source code:

Business term property: patient_tot_amt

ST.cbl DALYEDIT.cbl DALYUPDT.cbl MSTRUPDT.cbl PATLIST.cbl PATMSTR.cpy PATSR

☒ Show related ☐ Show all

```

164      05  TOTAL-CHARGES  PIC $$$,$$$,$$9.99.
168      COPY PATMSTR.
287      MOVE PATIENT-TOT-AMT  TO TOTAL-CHARGES.
606      MOVE ZERO TO PATIENT-TOT-AMT, STATE-FACTOR.
638      COMPUTE PATIENT-TOT-AMT =
639          ( WS-LAB-CHARGES + WS-EQUIP-CHARGES )
640          * ( ( REIMBURSE-PCT / 100 ) + ( STATE-FACTOR / 100 ) )
669      COMPUTE PATIENT-TOT-AMT =
670          ( WS-LAB-CHARGES + WS-EQUIP-CHARGES )
671          * ( ( REIMBURSE-PCT / 100 ) + ( STATE-FACTOR / 100 ) )

```

- Dark blue statements are business rule candidates
- Lighter blue elements may be related to business terms or term properties
- Elements outlined in red have already been related to a term, term property or business rule

Candidate Business Rule Summary Page

Rational. Asset Analyzer

Home Explore Business rules Impact analysis Database ?

Context : Explore MVS assets Business rule summary

Business rule summary

Actions

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

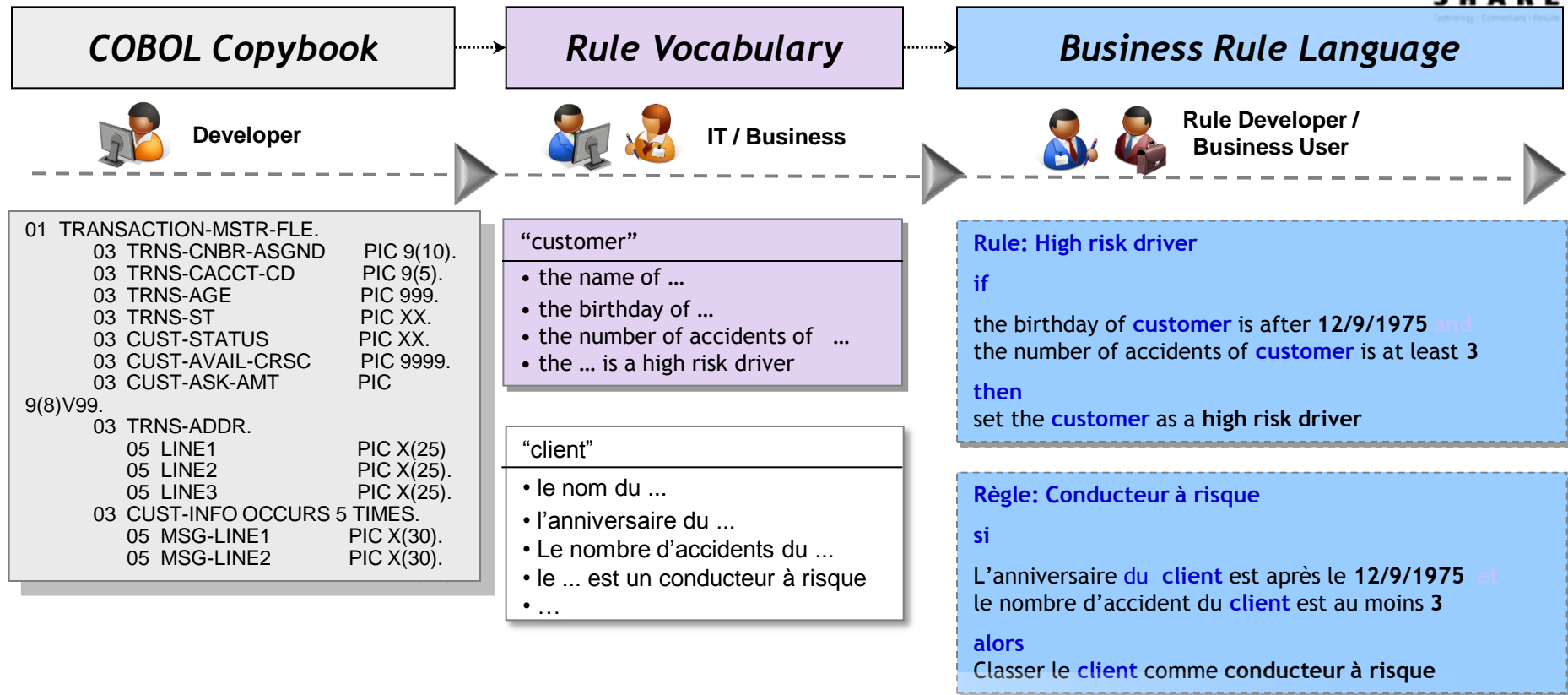
page 1 of 1

1 - 6 of 6 | Show groups of 15

<input type="checkbox"/>	Row	Name	Description
<input type="checkbox"/>	1	bankruptcyScore	Decision Table
<input type="checkbox"/>	2	initialCorporateScore	then set the corporate score in 'the loan report' to the credit score of 'the borrower';
<input type="checkbox"/>	3	neverBankruptcy	if it is not true that 'the borrower' has filed bankruptcy then add 20 to the corporate score in 'the loan report';
<input type="checkbox"/>	4	rate	Decision Table
<input type="checkbox"/>	5	repayment	definitions set amount to the amount of 'the loan'; set duration to the number of monthly payments of 'the loan'; set rate to the yearly interest rate of 'the loan'; then set the monthly repayment of 'the loan' to the computed monthly repayment...
<input type="checkbox"/>	6	salary2score	Decision Table

page 1 of 1

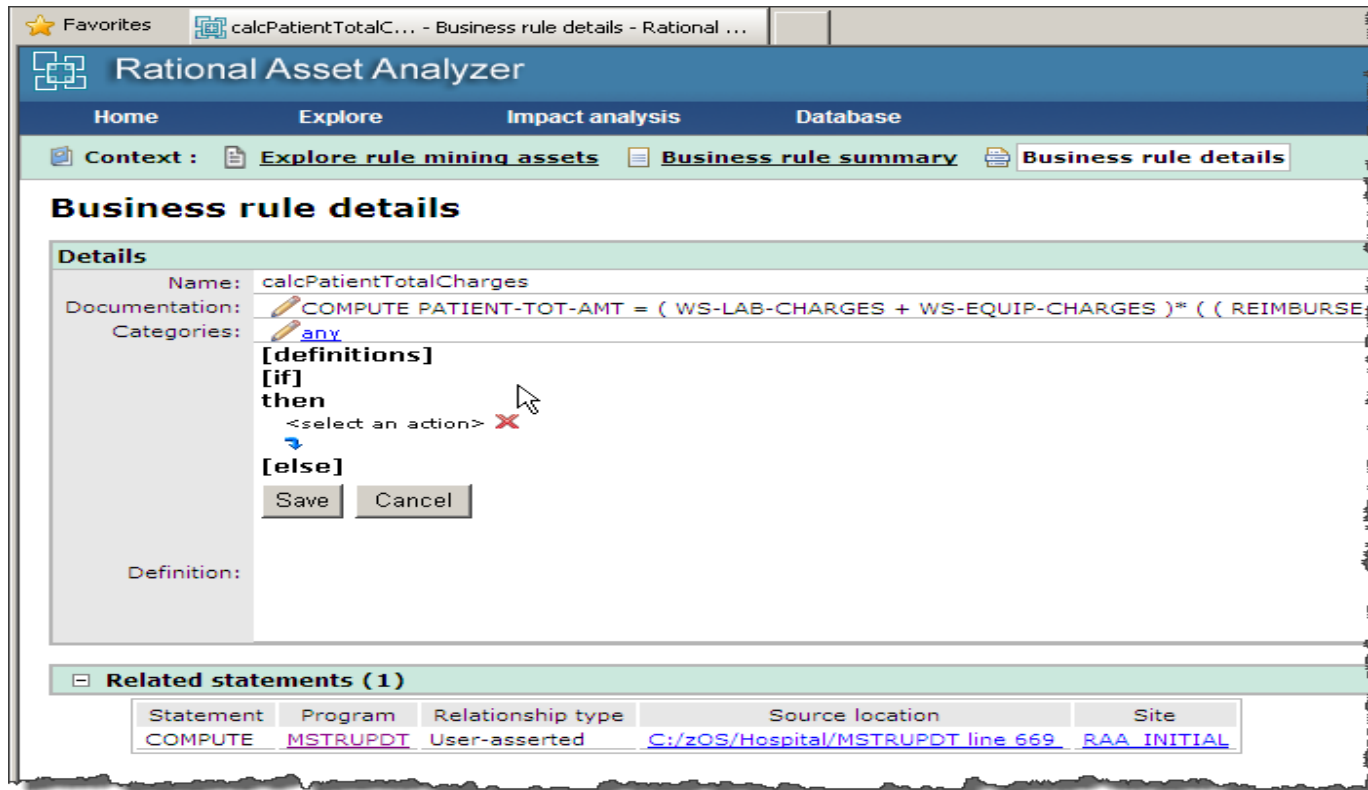
Business Decisions stated in business language



- 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 and event creation
- Empower business experts to manage and validate decision logic, eliminating delays in business

RAA provides the ability to specify rules for use by the WODM and Business Rules for z/OS

- The WODM structured rules editor is available within RAA for specification of structured WODM rules



The screenshot shows the Rational Asset Analyzer (RAA) interface. The title bar indicates the current window is 'calcPatientTotalC... - Business rule details - Rational ...'. The main menu includes 'Home', 'Explore', 'Impact analysis', and 'Database'. The 'Context' bar shows 'Explore rule mining assets', 'Business rule summary', and 'Business rule details' (selected). The main content area is titled 'Business rule details' and contains a 'Details' section with the following information:

- Name:** calcPatientTotalCharges
- Documentation:** COMPUTE PATIENT-TOT-AMT = (WS-LAB-CHARGES + WS-EQUIP-CHARGES) * ((REIMBURSE
- Categories:** any

Below the categories, there is a structured rule editor with the following content:

```
[definitions]
[if]
then
  <select an action> 
[else]
  Save Cancel
```

At the bottom, there is a 'Definition:' label and a 'Related statements (1)' section. The 'Related statements' section contains a table with the following data:

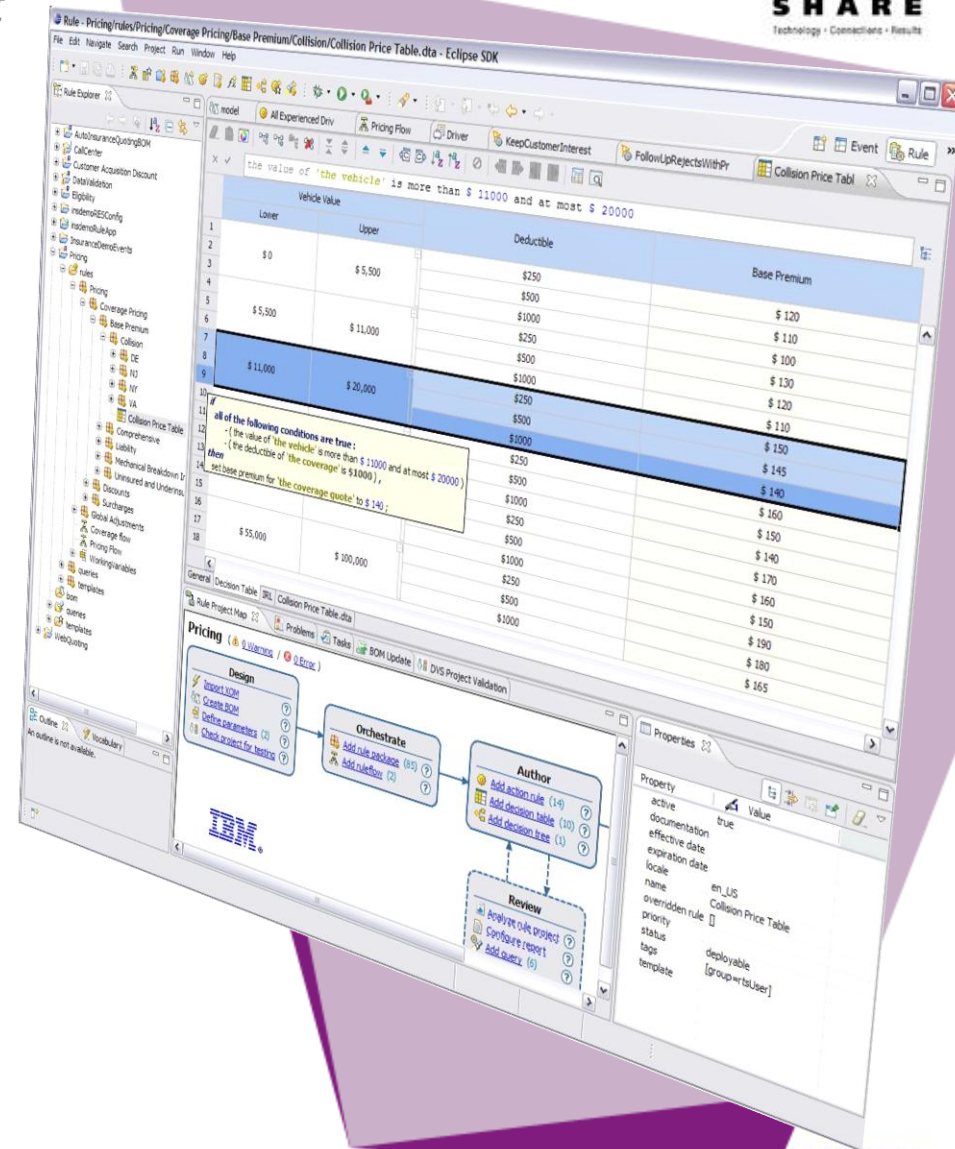
Statement	Program	Relationship type	Source location	Site
COMPUTE	MSTRUPDT	User-asserted	C:/zOS/Hospital/MSTRUPDT line 669	RAA_INITIAL

Rule Designer

Eclipse-based Development Environment



- Validation
 - Rule Project Design
 - Rule Analysis
 - Business decision modeling support
 - rules templates
 - if... then... else decision tables and decision trees
 - Design, test, configure, and deploy
- Implementation
 - Choices for Rule Execution on z/OS
 - Rules can be invoked 'naturally' from existing application
 - Business policy/rule lifecycle detached from application lifecycle

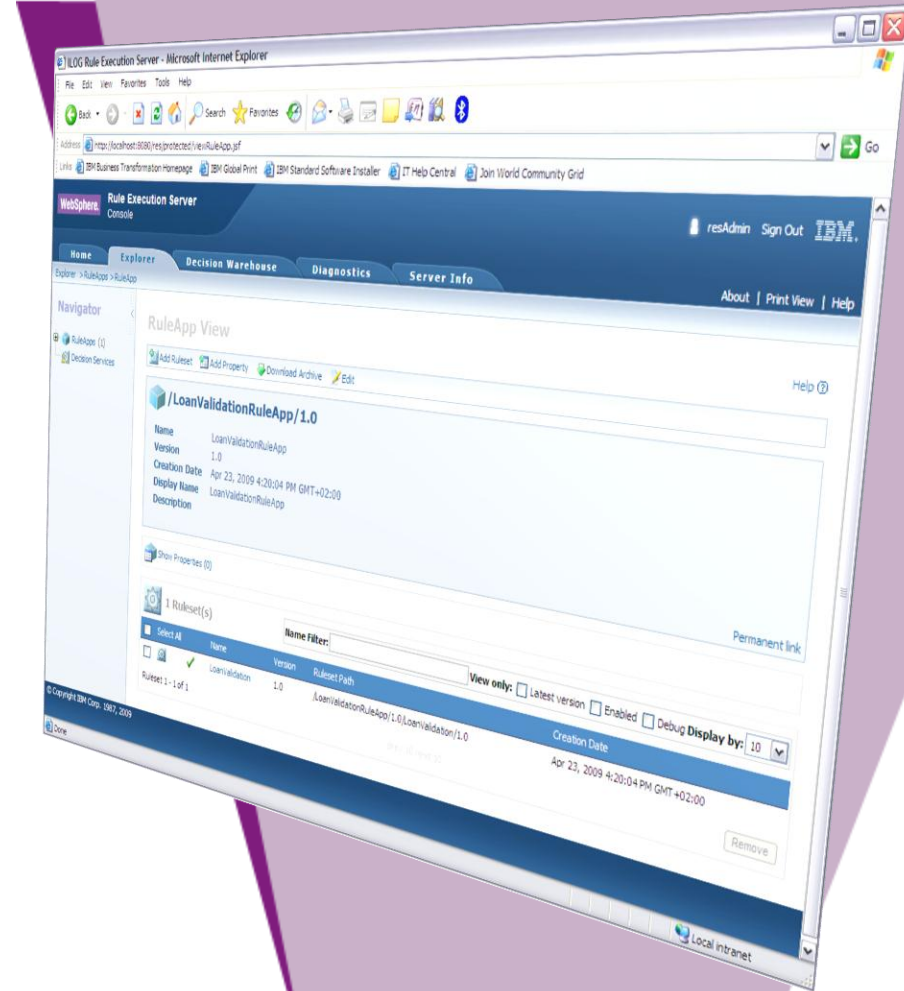


Rule Execution Server

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



WODM on z/OS Runtime Options

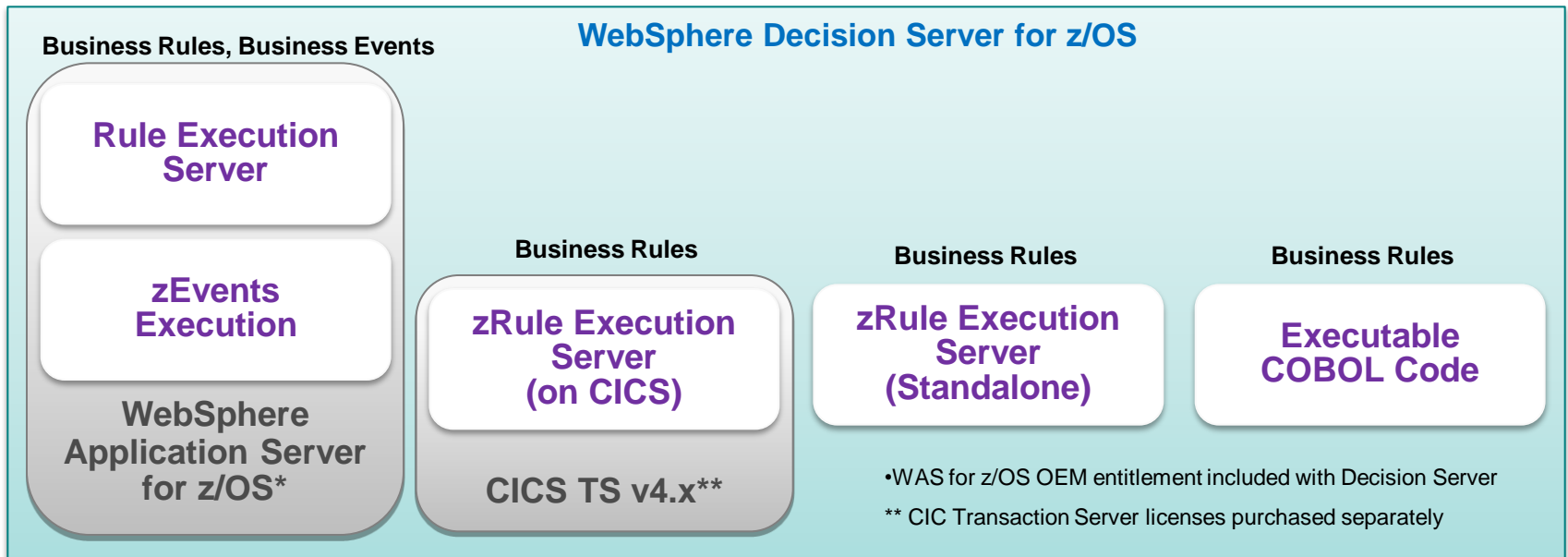


Decisions can be invoked from existing CICS and batch applications

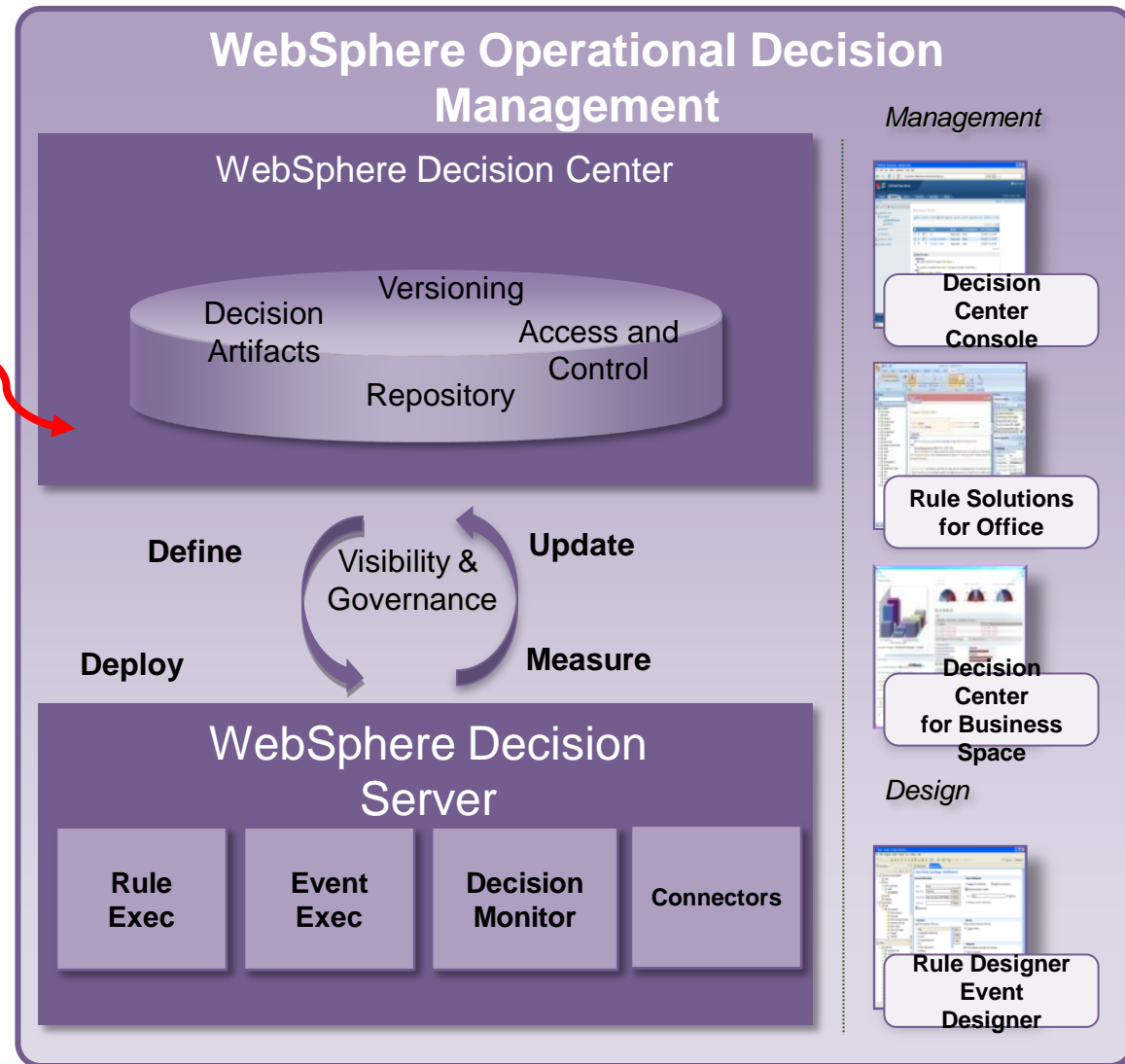
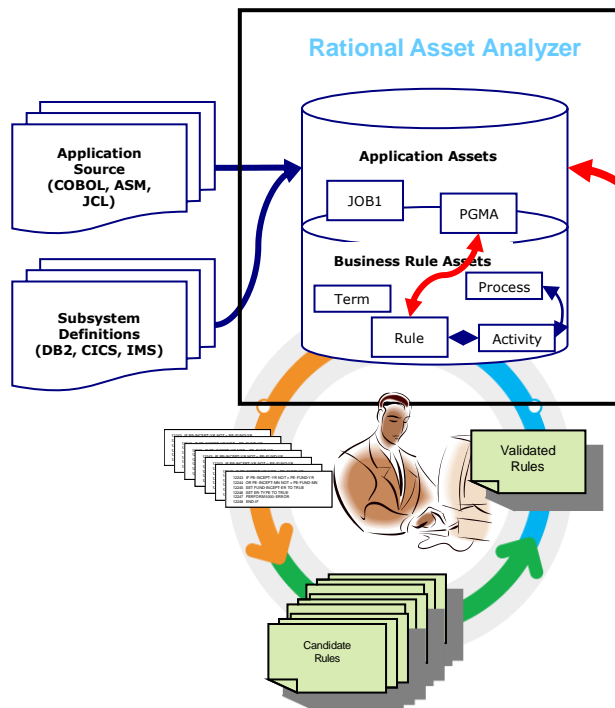
Runtime support for COBOL data types

Flexible runtime deployment to fit any System z environment:

- Deployed on WebSphere Application Server for z/OS
- Deployed standalone to z/OS
- Deployed on CICS TS 4.x (JVM server environment)
- Deployed as executable COBOL code



Business Rule Validation and Management



Decision Center Console

Web-based Event and Rule Maintenance



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



Major Oil Company Transforms business functionality to improve brand image

Client objectives

- Transform and enhance financial software package provided to the energy industry
- Capture 20 years of business logic to be used for future development
- Simplify and improve application usability to achieve greater competitive advantage and a modern brand image



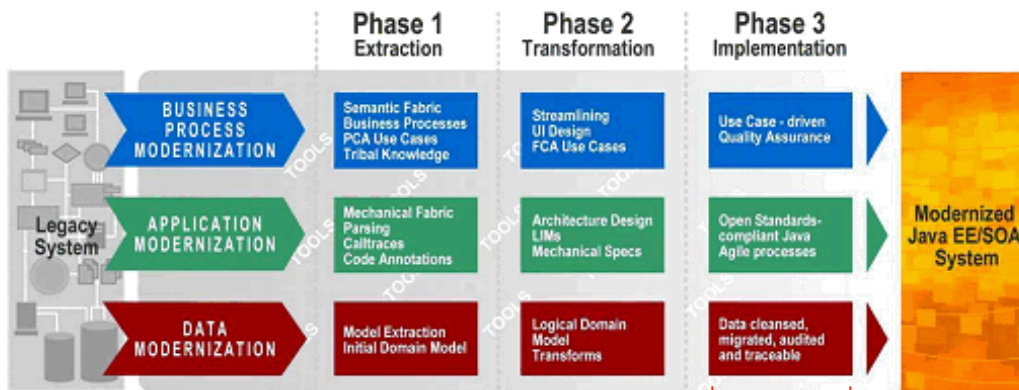
IBM Business Application Modernization

- Extract Business Logic
- Re-architect
- Streamline navigation and workflow
- Add functionality



Business outcomes

- Significantly enhanced business functionality and ease of maintenance – 129 application enhancements
- Increased team productivity
- Mapped 100% of data to the new data model
- Cut implementations by 80%
- Reduced conversions by 80%
- Faster time to market and improved competitiveness



- 246 screens
- 343 reports
- 850,000 lines of code

In progress



Health program with modernization goals and realizing their functional enhancement “wish list”

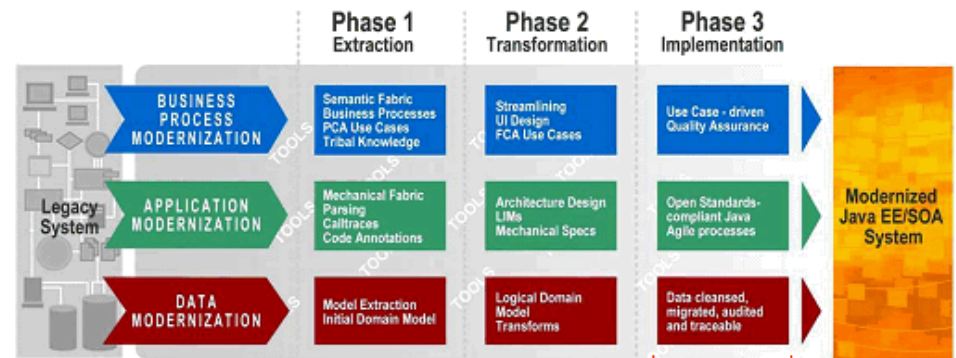


Client objectives

- Medical program introduced in 1971 and current system was implemented in 1982
- Needed to provide universal access to coverage for all eligible residents
- 1,300 Physicians; 750,000 Residents
- Processes included 6-7M Physician claims/year
- Major enhancements had been on-hold since the mid-1990s and in 2006, client elected to replace the system to:
 - Enable much needed enhancements
 - Move to a more cost-effective and modern technology environment
- Modernization project was the 3rd attempt to replace the legacy system



IBM Business Application Modernization



- 909,000 lines of natural code
- 365 batch jobs
- COBOL, DPS

In progress



Business outcomes

- Enabled latent demand for functional enhancements to be completed
- Reduced the lines of code by 80%
- Streamlined business process
- Achieved time and cost efficiencies

The Value of this Approach



What does it enable?

- Reduce time and resources required to deploy changes
- Improve understanding of your core business applications today
- Express decision logic with increased precision
- Increase decision automation
- Make decisions based on specific context

What is the value?

- Lower maintenance costs; respond quickly to change
- Leverage your architecture investment
- Increase profitability of product, pricing and promotional offerings
- Improve process efficiency
- Customize decisions when possible, standardize if needed

Rational Asset Analyzer with Rule Mining

Simplify identification of candidate business rules



- For customers who ...
 - ..are moving existing processing to BPM, SOA, WODM
 - Want to be more responsive in supporting an organizations or business units requirements for change
 - Need to get a detailed, complete view of existing business processing and how it fits into today's architectures
- Business Value
 - Improve developer productivity
 - Lower development, training, and mining costs
 - Increase speed and completeness of modernization
- Key RAA Capabilities
 - Visualization of application architectures, programs, data, and their interactions
 - Powerful search and tracing via impact analysis
- Highlights of RAA with rule mining functionality
 - Identification of terms and synonyms
 - Search across portfolios for direct and indirect usage of terms and rules
 - Identify and persist coding constructs that are candidate rules
 - Ability to author structure rules with the WODM' rule editors for import to WODM and Business Rules for z/OS

