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The Two Faces of Business Rules -- a Focus on Rules Extraction

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Topics

- ✓ **Business rule software landscape**
- ✓ **What are business rules for legacy mainframe applications?**
- ✓ **How to approach finding them**
- ✓ **PathPoint ‘s QuickStart solution**
- ✓ **Summary**

The business rules software landscape*

Software to Use Business Rules (Going Forward)

Traditional Licensed Proprietary

- ✓ IBM Operational Decision Manager
- ✓ IBM Operational Decision Manager Advanced for z/OS
- ✓ Business Rules for Bluemix
- ✓ IBM Operational Decision Manager on Cloud

Open Source

- ✓ Drools
- ✓ OpenRules
- ✓ Mandarax
- ✓ JRuleEngine
- ✓ The OpenStack Policy Engine, called Congress

Software to Identify Business Rules (Going Backward)

- ✓ blackboxIT through evolveIT product suite
- ✓ EvolveWare Business Rules Extraction
- ✓ IBM's Rational Asset Analyzer (RAA)
- ✓ PathPoint

*See our conference paper – The Two Faces of Business Rules

What are business rules for legacy mainframe applications?

- **Business rule**
  - A human description of some program logic that was coded to provide a business requirement

Business Rule example

Give a 5% discount for senior citizens, specifically anyone over 60 years of age.

Candidate for inclusion —

Program logic

```
IF AGE-OF-BUYER > 59
    MOVE 0.05 TO PRICE-DISCOUNT
END-IF
```

Not a Candidate—

Program logic

```
IF AGE-OF-RENTER NOT NUMERIC
    PERFORM BAD-RECORD-PROCESS
END-IF
```

Issues in doing business rule identification

- **Need a business context of processing**
  - Business functions are re-engineered, not programs
- **Need dynamic program flow by business function**
  - Business logic is along code path executed
- **Need to locate business logic within source code**
  - Many programs common to many business functions
  - Static analysis not specific to desired business logic
- **Application SMEs provide limited help**
  - Know what it does, not necessarily how it works
  - Often too busy

Overview of the QuickStart Solution

- **QuickStart solution**
  - Repeatable methodologies
  - Employs PathPoint software
  - 5 day on-site service and education
  - Ongoing support
- **Areas addressed**
  - New hire training
  - Application maintenance and support
  - Application performance
  - Business rule identification
- **Focus for today is business rule identification**

QuickStart methodology for business rules

- **Step 1**: For the desired Application
  - **Identify the major application business areas (Business Functions)**
  - **For each Business Function, identify the different business transactions (Scenarios) that it supports**
    - Online business transactions are made up of one or more Input Instances
      - **Input Instance –** user enters required screen data, hits enter, application processing occurs and a result is sent back to the user

Business Functions and related Scenarios (business transactions)

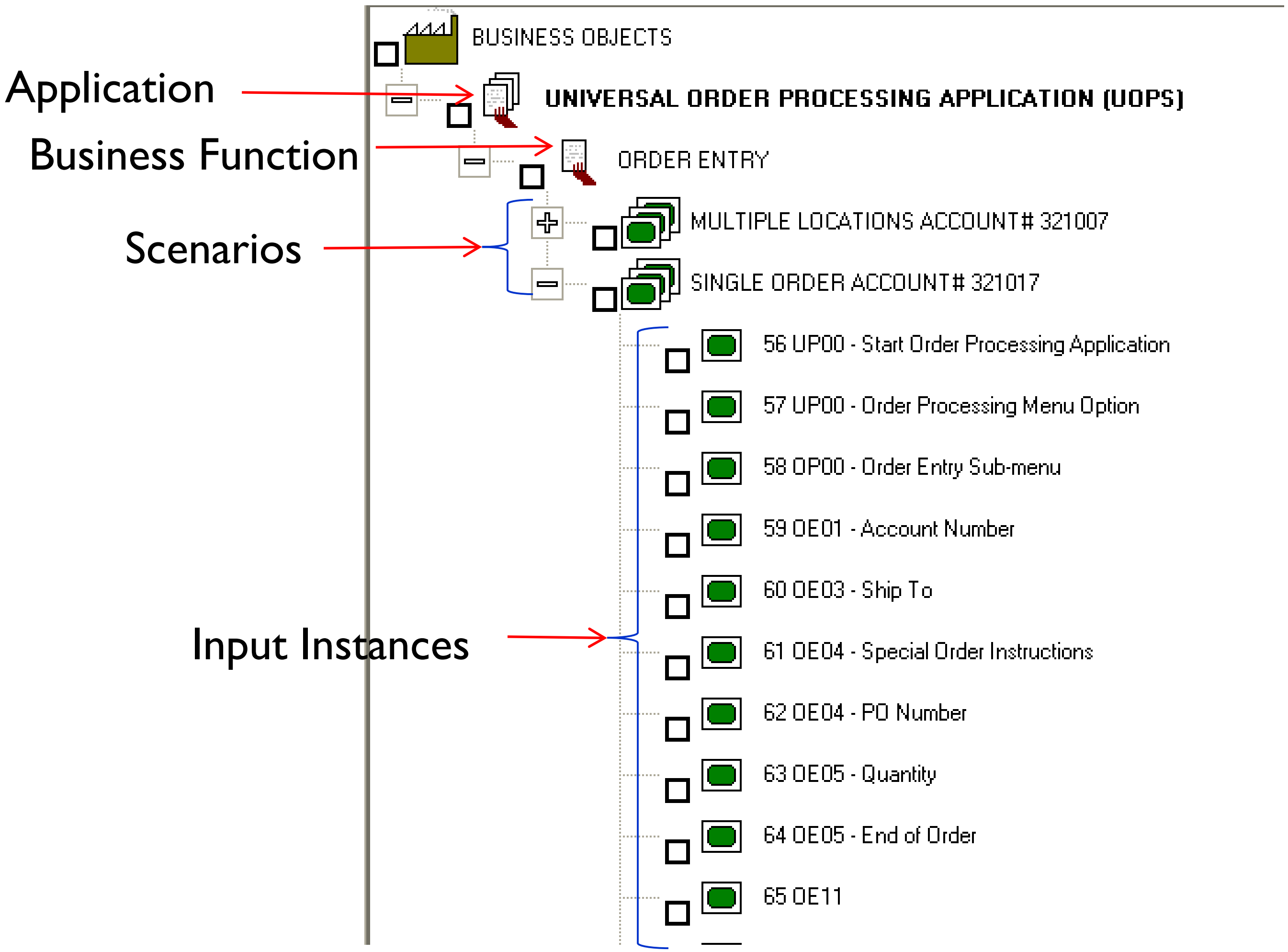
Business Functions for Books R Us app

```
            BOOKS R US
UNIVERSAL ORDER PROCESSING SYSTEM
            DIRECTORY

    1. ORDER PROCESSING (OP)

    2. INVENTORY CONTROL (IC)

    3. CUSTOMER CLAIMS & RETURNS (DC)

    4. FINISHED GOOD TRANSFERS (FG)

    5. PRODUCT ASSEMBLY (PA)

    6. REFERENCE FILE MAINTENANCE (FM)

    7. CREDIT REVIEW (CV)

    8. SHIPPING (SH)

    9. CUSTOMER SERVICE (CS)
```

Scenarios for the Order Processing business function

```
 1.  ORDER ENTRY
 2.  CUSTOMER SEARCH
 3.  TITLE SEARCH
 4.  EDI CORRECTIONS
 5.  ORDER HEADER INQUIRY
 6.  ORDER DETAIL INQUIRY
 7.  BACK ORDER MAINTENANCE
 8.  BACK ORDER INQUIRY
 9.  ORDER CANCEL RE-INSTATEMENT
10.  ORDER QUALITY CONTROL
11.  CREDIT CARD REJECTIONS
```

PathPoint screen shot of the Application hierarchy



We used PathPoint's QuickStart solution for our business rule project

- **The QuickStart solution for business rules addresses**
  - **Tight time schedules**
  - **Complexity of business application designs**
  - **Difficulty in locating desired business logic in source code**
- **QuickStart uses PathPoint software to**
  - **Capture sequence of input instances and real time program events in a business context**
    - Scenario within business function, within application
  - **Link to source code**
    - Line number references and paragraph names
    - Navigation logic (e.g., IF, PERFORM, fall through) between calls

The QuickStart approach

- **Installation planning and installation support**
- **On-site product education using repeatable approaches for eventual company-wide deployment**
- **One year software and support for one fixed price**
  - **Usage and defect support**

Trained application developers—

- ✓ **Enabled to work independently**
- ✓ **Require minimal application SME input**
- ✓ **Use PathPoint to get organized, verify changes and determine where to look**

Where do you find program logic from which to derive business rules?

- **Where to look**
  - **Execution path for each Input Instance of a Scenario (business transaction)**
  - **Conditional statements (IF, EVALUATE, ON conditions, etc.)**
  - **Prior to IO operations**
- **Where <u>not</u> to look**
  - **Certain kinds of programs**
    - *Error handling*
    - *IO modules*
    - *Program routing*
  - **Input Instances**
    - *Menu options*
    - *Data validation error*

What is needed to start using the QuickStart approach for business rule identification?

- **List of Business Functions being examined**
- **Compiled source code listings**
  - **Need expansion of copybooks, INCLUDEs and pre-compiler statements**
  - **External references option**
- **Collection of data for each Scenario**
  - **Use PathPoint software to capture runtime information for desired Scenarios**
  - **Collected data will be imported at the workstation for analysis**

The PathPoint software big picture

Specified User
Enters Desired
Scenarios (Business Transactions)

On-Line - by User-ID

Account Number	1004
P.O. Number	A44065
Item Number	AS54386
Quantity	3

Enter - New Orders

OR

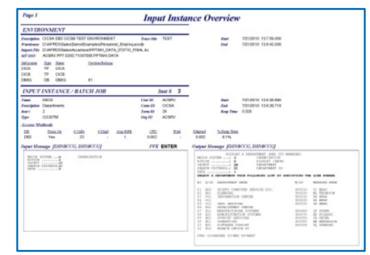
Batch – Job/Step Name

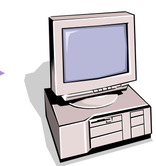
Mainframe Component
Traces & Captures
Processing Paths
As Application Executes

- System transactions
- IO w/Host Variables
- Program calls w/COMMAREA
- Database catalog info
- COBOL source references

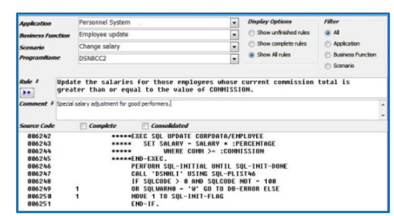
Captured Results
Downloaded
To PC Workstation
For Analysis

Reports

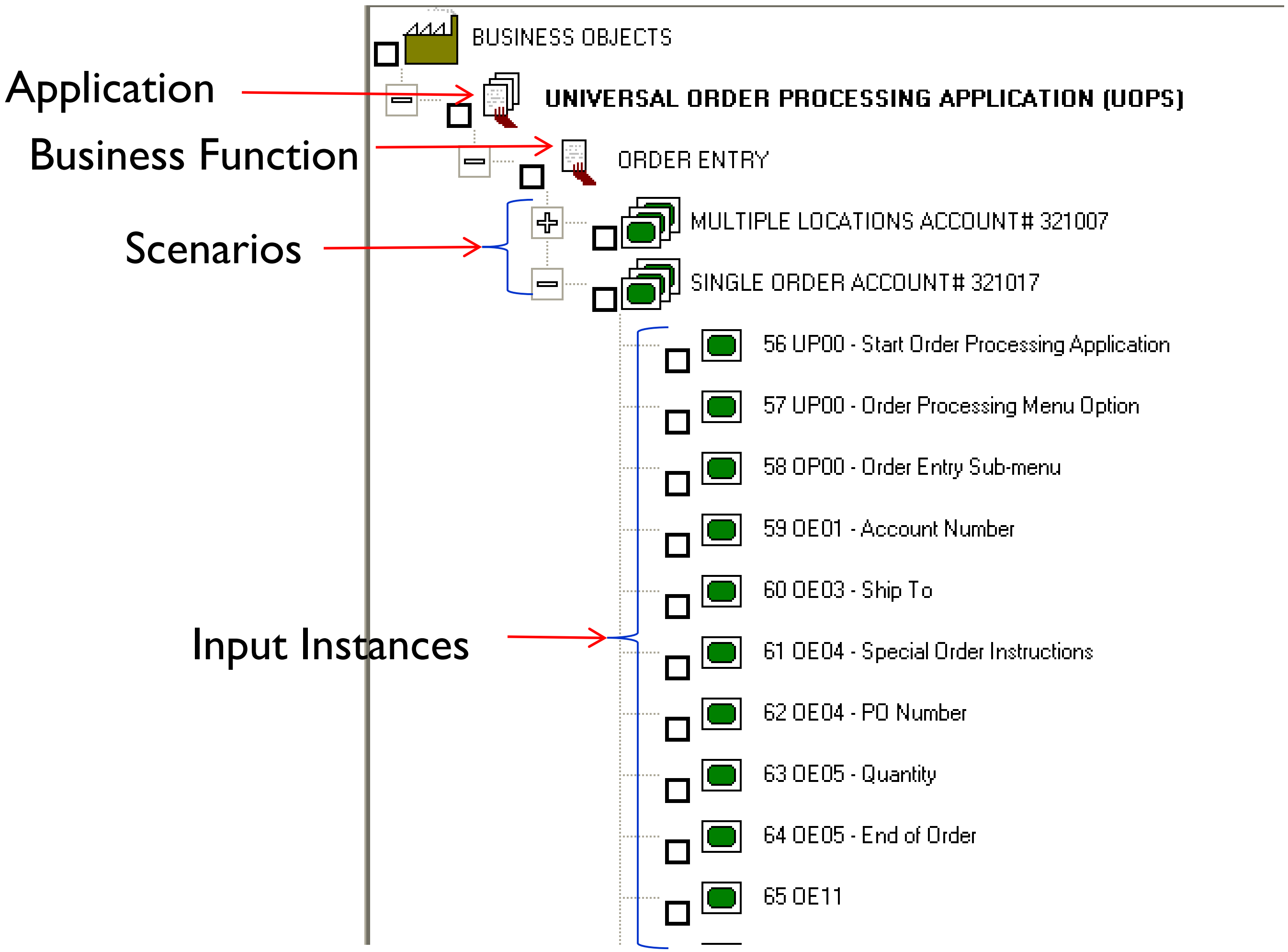




Windows



PathPoint screen shot of the application hierarchy



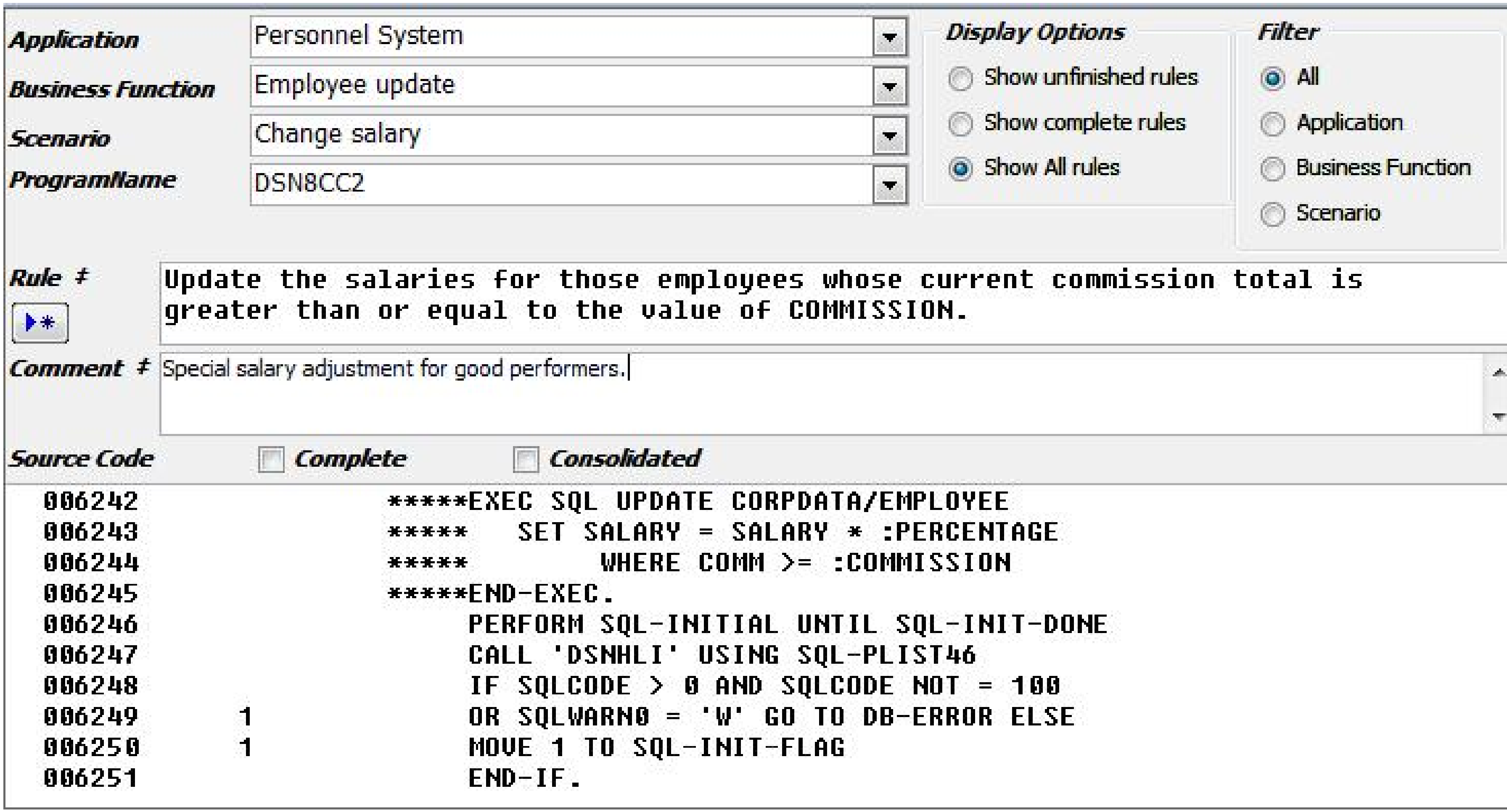
Statements in the call path for an Input Instance help identify programs of interest

Paragraph name — Compile line number — Statements

Statements

Seq	Subsystem	Tran/Step	Pgm/Pkg	Call Type	Stmt #	Occurs	Statement
1	CICA	D8CS	CICS	CICS/INIT	0	1	CALL DSN8CC0 (INIT) IN CO2
	1	*1 DSNSQL*			*946*	*FALL*	*SQL-SKIP (947)*
		2 SQL-SKIP			*948*	*GOTO*	*SQL-INIT-END (960)*
2	CICA	D8CS	DSN8CC0	DB2	993	1	SELECT LASTSCR INTO :PCONA.LASTSCR FROM VCONA WHERE
	1	*1 SQL-INIT-END*			*1024*	*IF*	*LASTSCR OF PCONA NOT = 'DSN8002 '*
		2 SQL-INIT-END			*1025*	*GOTO*	*CC0-LABEL1 (1056)*
3	CICA	D8CS	DSN8CC0	CICS	1069	1	EXEC CICS RECEIVE MAP(DSN8CCG) MAPSET(DSN8CCG)
	1	*1 CC0-LABEL1*			*1089*	*GOTO*	*CC0-LABEL3 (1100)*
		2 CC0-LABEL3			*1107*	*FALL*	*CC0-LABEL4 (1108)*
		3 CC0-LABEL4			*1115*	*FALL*	*CC0-LOOP4 (1116)*
		4 CC0-LOOP4			*1120*	*FALL*	*CC0-LABEL5 (1121)*
		5 CC0-LABEL5			*1126*	*GOTO*	*CC0-LABEL6 (1136)*
4	CICA	D8CS	DSN8CC0	CICS/LINK	1141	1	CALL DSN8CC1 (LINK) IN CO2
	1	*1 DSNSQL*			*1637*	*FALL*	*SQL-SKIP (1638)*
		2 SQL-SKIP			*1639*	*GOTO*	*SQL-INIT-END (1788)*
		3 SQL-INIT-END			*1970*	*FALL*	*DSN8MC1 (1971)*
		4 DSN8MC1			*1984*	*IF*	*DATAIN IN INAREA = SPACE*
		5 DSN8MC1			*1984*	*GOTO*	*MC1-18 (2038)*
		6 MC1-18			*2055*	*FALL*	*MC1-20 (2056)*
5	CICA	D8CS	DSN8CC1	DB2	2081	1	SELECT * INTO :PCONA.CONVID , :PCONA.LASTSCR , :PCONA.LAS

Business rules data base we use to convert program logic into business rules



Business rule analysis & consolidation

- **Business rules cut across input instances**
  - Earlier Input Instances rules also apply to subsequent Input Instance rules
- **Different rules apply to different end users**
- **Different rules apply to business transactions**
- **Business rules repeated**
  - Online / batch
  - Different programmer duplicating effort
  - Similar business transactions
  - Different variable names between programs
- **Organize for BRMS export**

QuickStart benefits

- **Well organized**
- **Repeatable procedure**
- **Requires limited prior application knowledge**
- **Enables one to work independently with limited SME support**
- **Approach lends itself to other uses**
  - New employee training
  - Application maintenance and support
  - Application performance analysis

Summary

- **The business rules landscape has proprietary and open source software**
- **Software is for business-rule identification in an application**
  - Used in the context of a method that includes human analysis of program logic once the targets have been identified
- **Placing program logic and derived business rules in a DB gives flexibility for future use of the rules**
- **Advance planning and research is best to help quantify the level of effort and skills required before starting the project**