



WebSphere Education



# Defining business rules

## Unit 7



# Unit objectives

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After completing this unit, you should be able to:

- Explain business rules and their purpose
- Describe business rules tasks
- Explain business rules templates and if-then rules
- Define conditions and actions

The diagram illustrates the architecture of the WebSphere Business Modeler (WBM) and its interactions with other components. The central component is the **WebSphere Business Modeler** (highlighted with a thick orange border). It is connected to several other components:

- WebSphere Publishing Server**: Connected via a bidirectional arrow.
- WebSphere Business Monitor**: Connected via a bidirectional arrow.
- WebSphere Process Server**: Connected via a bidirectional arrow.
- WebSphere Integration Developer**: Connected via a bidirectional arrow.
- Rational RequisitePro**: Connected via a bidirectional arrow.
- Rational Data Architect**: Connected via a bidirectional arrow.
- Rational Software Architect**: Connected via a bidirectional arrow.
- External Data**: Connected via a bidirectional arrow.
- Rational ClearCase or CVS**: Connected via a bidirectional arrow.
- Rational Application Developer**: Connected via a bidirectional arrow.

The **WebSphere Business Modeler** also interacts with a **DB2** database, which is connected to the **WebSphere Business Monitor** and the **WebSphere Process Server**.

# Business rules

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- Business rules capture and implement business policies and practices
  - Dynamic response to changing business environment
- Allows you to capture business rules as separate elements and incorporate them into your process flow
  - Can be updated without changing process flows if used with business rules task
- A part of the business logic that may change frequently.
  - Usually does not require a programming change
  - Can be defined and managed by a business analyst
  - Does not change the nature of the application
  - The logic remains the same, but the values being applied may differ
- Example:
  - During customer loyalty appreciation month, if a customer has spent more than \$1000 in past 12 months and this purchase is greater than \$100, then apply 10% discount.
- Can be reused in other processes and projects

# Benefits of defining business rules

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- Enforcing business policies and practices
- Showing regulatory compliance by documenting business rules in a transparent way
- Automating complex decisions so that you can reduce costs, improve customer service, and react quickly to changing marketplace conditions
- Ensuring that the business view of the business rules is implemented accurately in applications by defining the underlying rule logic, including which parameter values can be modified in an application at run time
- Reducing the time and cost of implementing decision logic in applications by importing the business rules and rule logic into WebSphere Integration Developer
- Capturing business logic in a format that can be modified after it is deployed so that you can quickly adapt your business process to changes in the business environment
- Improving the quality of your processes by capturing the business rules in the design phase

# Business rules task (1 of 2)

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- Specialized task
- Represents activities to which business rules apply
- Can be global (reusable) or local (process-specific)
- Used to model complex decisions and to visually identify places in your process model where business policies and practices apply
- Simplifies modeling when a business decision takes the form of a series of if-then statements or a large number of unstructured sentences
- To define rule conditions and actions, use Intermediate, Advanced, or WebSphere Process Server modeling mode

# Business rules task (2 of 2)



- Business rule
  - Simple if-then logic
  - If a condition evaluates to true, then actions are invoked
- Business rule template
  - Create a rule template to reuse rule conditions and actions, or allow their parameter values to be changed in an application at run time

General Cost and Revenue Duration Inputs Output **Business Rules** sources Organizations Classifiers

Business rules

Identify the high-level business rules associated with the task.

Business rule	Description
Check Grade:1	Is this job applicant a candidate for an executive position?

Add  
Modify  
Remove

Scheduling

Specify which business rule should be used by default and which business rules are in effect on specific dates. Dates are set in local time zones, so the scheduling of business rules in an application at runtime occurs in the local time zone.

**Default business rule**

Check Grade:1

**Scheduled business rules**

Start date	End date	Business rule
Monday, January 1, 2007 12:00:00 AM	Monday, December 31, 2007 12:00:00 AM	Check Grade: 1

Add  
Remove

# Creating business rules tasks

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- Associate business rules with activities by using business rules tasks
  - If business rules apply to several processes, create a global (reusable) business rules task
  - If business rules apply to a particular process only, create a local business rules task
- Add business rules to the task
- Each rule has a condition and actions
  - Condition and actions are specified based on task inputs, task outputs, and rule parameters



# Creating a business rule

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- Create a stand-alone rule, or
- Use a template to create a set of rules that are similar and can be updated at run time by the business analyst

# Sample business rule

## Specify the rule logic as set of if-then rules

Create or modify one or more if-then rules that define the logic of the business rule. To create rule conditions and actions, the business rules task must have inputs and outputs defined.

### Name

Check Grade:1

### Description

Is this job applicant a candidate for an executive position?

### Important

To reuse rule conditions and actions or allow their parameter values to be changed in an application at runtime, create a rule template.

#### Rule Templates

#### If-Then Rules

### Definition

To specify rule conditions and actions, create any required rule parameters. Also ensure that the business rules task has inputs and outputs defined.

Template name	Rule condition	Rule action	Template description
Check Grade Template	('Check Grade.Input.Job.Salary' is greater than or equal to 'Check Grade.Output.Job.IsExecutive' is set to True AND ('Check Grade.Input.Job.Position' is equal to 'position'		Check the level of the de

Add

Remove

Move Up

Move Down

### Rule parameters

To change parameter values at runtime or add parameters to either the rule condition or action, specify rule parameters. Add constraint information as a description.

Parameter name	Type	Description
salary	Integer (long)	How much do they expect to make
position	Text	What kind of position are they looking for

Add

Remove

### Rule template presentation

Determine how the rule template is presented to users at runtime for modification of the rule parameter values.

☒ Automatically generate the text for the rule template presentation

☐ Customize the text for the rule template presentation

If ('Check Grade.Input.Job.Salary' is greater than or equal to 'salary')  
AND ('Check Grade.Input.Job.Position' is equal to 'position'),  
then 'Check Grade.Output.Job.IsExecutive' is set to True

# If-then rules

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- If-then rules define business rules
- If-then rules have rule conditions and actions
  - Based on task inputs, task outputs, and rule parameters
- Rule condition must evaluate to a Boolean value (true or false)
  - If rule condition is true, then assigned rule action is implemented
- Use Expression Builder in Intermediate, Advanced, or WebSphere Process Server mode to create expressions for rule conditions
- No semantic validation is performed on if-then rules
  - Similar or conflicting if-then rules are not identified
- If-then rules can be based on a previously defined rule template

# Business rule templates

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- Rule templates allow flexibility in managing business rules during run time
- Rule parameters can be added to rule templates without revising or redeploying the application in use
  - Create the rule parameters before creating the conditions or actions
  - They will be selectable when creating the rule conditions or actions
- Example: As interest rates change, update rule parameters in a business process management application at run time
- Rule templates simplify creation of similar if-then rules
  - You can base more than one if-then rule on a rule template and specify different parameter values for each if-then rule
- Presentation captures text displayed by a runtime client

# Rule parameters

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- Determine which aspects of rule template need rule parameters
  - Important because rule parameter values can be modified in an application at run time
- Can use only basic types (such as Integer type) to define rule parameters
- Can describe rule parameter constraints
  - Constraints on rule parameters can only be defined for implementation purposes using WebSphere Integration Developer

# Rule presentation

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- Rule presentation allows you to summarize rule conditions and actions for users of business process management applications at run time
- Users can change parameter values of deployed business rules based on templates
- Can customize rule presentations to make them easier to understand

# Creating a business rule template

## Specify the rule logic as set of if-then rules

Create or modify one or more if-then rules that define the logic of the business rule. To create rule conditions and actions, the business rules task must have inputs and outputs defined.

### Name

Check Grade:1

### Description

Is this job applicant a candidate for an executive position?

### Important

To reuse rule conditions and actions or allow their parameter values to be changed in an application at runtime, create a rule template.

#### Rule Templates

#### If-Then Rules

### Definition

To specify rule conditions and actions, create any required rule parameters. Also ensure that the business rules task has inputs and outputs defined.

Template name	Rule condition	Rule action	Template description
Check Grade Template	Check Grade.Input.Job.Salary' is greater than or equal to 'salary' AND ('Check Grade.Input.Job.Position' is equal to 'position')	Check Grade.Output.Job.IsExecutive' is set to True	Check the level of the de

Add  
Remove  
Move Up  
Move Down

### Rule parameters

To change parameter values at runtime or add parameters to either the rule condition or action, specify rule parameters. Add constraint information as a description.

Parameter name	Type	Description
salary	Integer (long)	How much do they expect to make
position	Text	What kind of position are they looking for

Add  
Remove

### Rule template presentation

Determine how the rule template is presented to users at runtime for modification of the rule parameter values.

- ☒ Automatically generate the text for the rule template presentation  
☐ Customize the text for the rule template presentation

If ('Check Grade.Input.Job.Salary' is greater than or equal to 'salary')  
AND ('Check Grade.Input.Job.Position' is equal to 'position'),  
then 'Check Grade.Output.Job.IsExecutive' is set to True

# Condition expression builder

- Template parameters are available when creating expressions for business rules

The screenshot shows the 'Expression Builder' window with the title 'Rule Condition'. A help message states: 'In an if-then rule, a rule condition must be satisfied for a rule action to take effect. The built expression must evaluate to "Boolean", to be valid.' A toolbar contains icons for logical operators (AND, OR, NOT), comparison operators (=>, <=>, <, >, <=, >=), and a 'Complex Expression' icon. The 'Simple binary expression' section provides instructions: 'Create a sequence of subexpressions using the expression composer, and specify the operators that connect the subexpressions. To create a complex expression, click the Complex Expression icon.' Below this is a table with two columns: 'Operator' and 'Expression'. The first row shows 'AND' with the expression '("Check Grade.Input.Job.Salary" is greater than or equal to 100000.0) ("Check Grade.Input.Job.Position" is equal to "CTO")'. To the right of the table are buttons for 'Add', 'Remove', 'Move Up', and 'Move Down'. The 'Expression Composer - Root expression' section at the bottom is divided into three panels. The 'First term:' panel shows 'Modeling artifact' selected in a dropdown, with 'First term details:' showing a tree of modeling artifacts including Job, Salary, Position, IsExecutive, and Demotion. The 'Operator:' panel lists operators: '--Select operator--', 'is equal to', 'is not equal to', 'is greater than', 'is greater than or equal to' (highlighted), 'is less than', and 'is less than or equal to'. The 'Second term:' panel also shows 'Modeling artifact' selected, with 'Second term details:' showing a tree of modeling artifacts including Input, Output, salary, and position. An 'Apply' button is located at the bottom right.

**Expression Builder**

**Rule Condition**

In an if-then rule, a rule condition must be satisfied for a rule action to take effect. The built expression must evaluate to "Boolean", to be valid.

**Simple binary expression**

Create a sequence of subexpressions using the expression composer, and specify the operators that connect the subexpressions. To create a complex expression, click the Complex Expression icon.

Operator	Expression
AND	("Check Grade.Input.Job.Salary" is greater than or equal to 100000.0) ("Check Grade.Input.Job.Position" is equal to "CTO")

**Expression Composer - Root expression**

**First term:** Modeling artifact

**First term details:**

**Modeling artifact:**

- Job
  - Salary
  - Position
  - IsExecutive
  - Demotion

**Operator:**

- Select operator--
- is equal to
- is not equal to
- is greater than
- is greater than or equal to
- is less than
- is less than or equal to

**Second term:** Modeling artifact

**Second term details:**


**Modeling artifact:**

- Input
- Output
  - salary
  - position

Apply



# Rule actions

 Specify Rule Action

**Specify the details of the rule action**  
The rule action is performed when the rule condition is true. For each part of the rule action, assign a value.

**Details**  
For task inputs and outputs, assign a value to the input, the output, or one or more input or output attributes.

Name	Type	Minim...	Maxi...	Value
[-] Check Grade	None			
[-] Input	Application	1	1	
[-] Applicant	Applicant	1	1	
[-] Job	Job	1	1	
[-] Documentation	Documentation	1	1	
[-] FirstApproval	Boolean	1	1	
[-] FinalApproval	Boolean	1	1	
[-] ApplicantAccept	Boolean	1	1	
[-] Output	Application	1	1	
[-] Applicant	Applicant	1	1	
[-] Job	Job	1	1	
[-] Salary	Integer	1	1	
[-] Position	Text	1	1	
[-] IsExecutive	Boolean	1	1	
[-] Documentation	Documentation	1	1	
[-] FirstApproval	Boolean	1	1	
[-] FinalApproval	Boolean	1	1	
[-] ApplicantAccept	Boolean	1	1	

**Value specification**  
The value must match the type.

☐ None

☒ Specific value

☐ Expression

Edit...

# Scheduling of business rules (1 of 2)

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- Scheduling business rules makes them active
- Define how the business rules for a particular activity relate to each other by scheduling when each business rule applies
- Can design business rules in advance to go into effect when required
- To make a business rule active when no other business rules are scheduled, make it the default business rule
- If there are several business rules for a business rules task, schedule when these business rules should become active
  - If business rule has no starting point, leave start date blank
  - If business rule has no definite end point, leave end date blank
- Setting overlapping dates for business rules generates a scheduling conflict error message

# Scheduling of business rules (2 of 2)

General	Cost and Revenue	Duration	Inputs	Outputs	Business Rules	Resources	Organizations	Classifiers
<b>Business rules</b>								
Identify the high-level business rules associated with the task.								
Business rule					Description			
Check Grade: 1					Is this job applicant a candidate for an executive position?			

Add  
Modify  
Remove

## Scheduling

Specify which business rule should be used by default and which business rules are in effect on specific dates. Dates are set in local time zones, so the scheduling of business rules in an application at runtime occurs in the local time zone.

### Default business rule

Check Grade: 1



### Scheduled business rules

Start date	End date	Business rule
Monday, January 1, 2007 12:00:00 AM	Monday, December 31, 2007 12:00:00 AM	Check Grade: 1

Add

Remove

Move Up

Move Down

# Modeling considerations

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- If there are rules specified for business items used as input to a business rules task, there is no interaction between:
  - The business item rules
  - The business rules defined for the business rules task
- Simulation does not evaluate business rules to:
  - Determine the outcome of a business rules task
  - Update the state of tokens flowing through the business process
- Predefined documentation reports for business rules tasks provide information about process modeling details and global business rules tasks
  - Reports do not provide information about individual business rules

# Importing business rules

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- Business rules from WebSphere Business Modeler can be imported into WebSphere Integration Developer for inclusion in an application
- However, business rules cannot be exported from WebSphere Integration Developer into WebSphere Business Modeler
  - Cannot update process model so that it stays in synch with applications under development

## Checkpoint: Defining business rules

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Your instructor will review these questions with you as a group. If time permits, the instructor may provide you time to answer the questions on your own before the group discussion.

1. What is a business rule?
2. What is a business rules task?
3. What is the purpose of scheduling business rules tasks?

# Checkpoint solutions: Defining business rules

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1. A representation of how business policies or practices apply to a business activity
2. A specialized task that represents activities to which business rules apply
3. Scheduling allows you to specify which business rule should be used by default and which are in effect on specific dates.

# Unit summary

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Having completed this unit, you should be able to:

- Explain business rules and their purpose
- Describe business rules tasks
- Explain business rules templates and if-then rules
- Define conditions and actions



# Exercise overview

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In this exercise, you will:

- Create and define business rules tasks
- Define business rules
- Define conditions and actions