

Implementing Human Workflow and Notifications

Objectives

After completing this lesson, you should be able to:

- Describe human task concepts
- Explain the human task component
- Design a human task
- Invoke a human task from a BPEL process
- Interact with the Worklist application to act on tasks
- Add email notification to a BPEL process

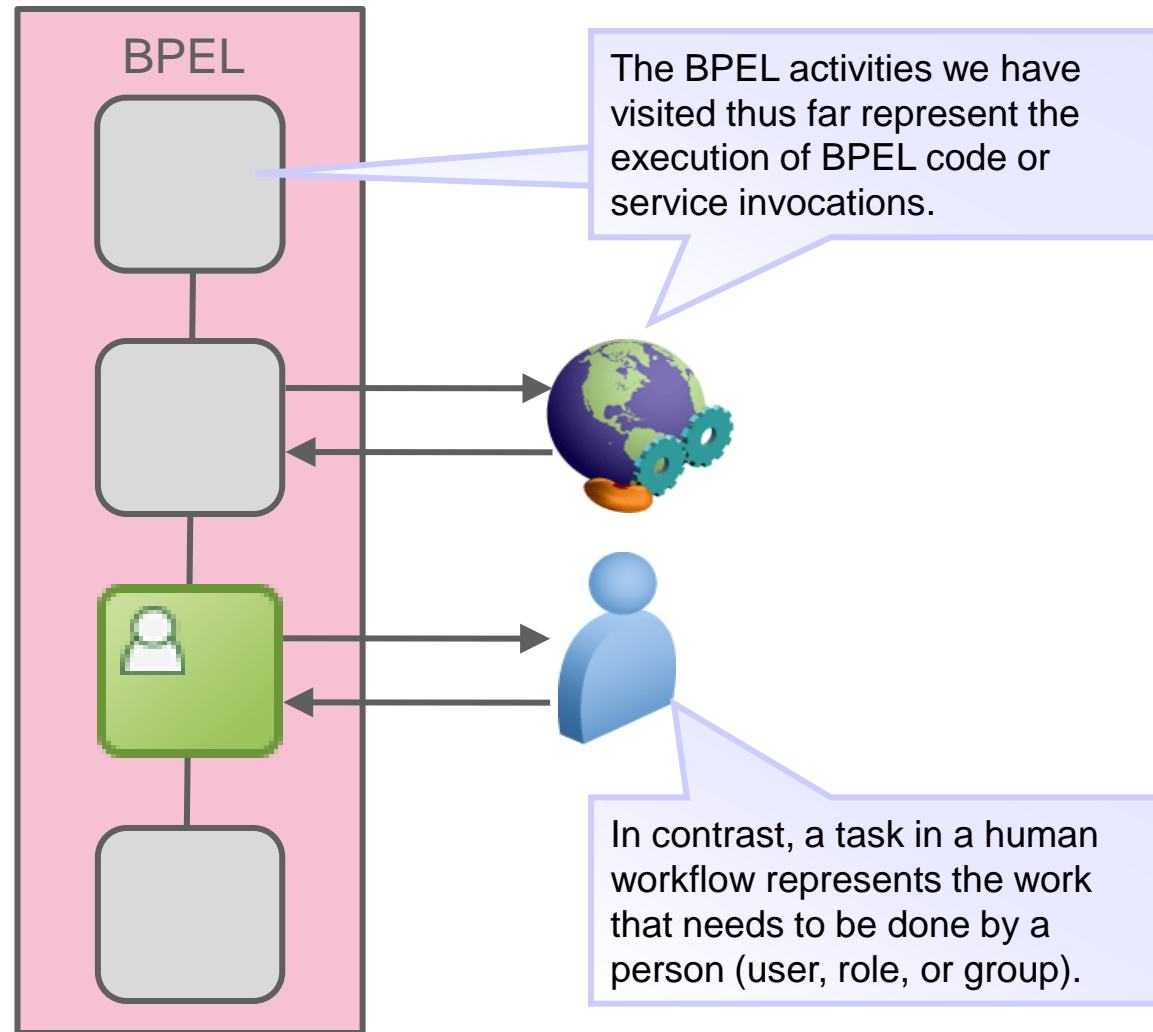


Agenda

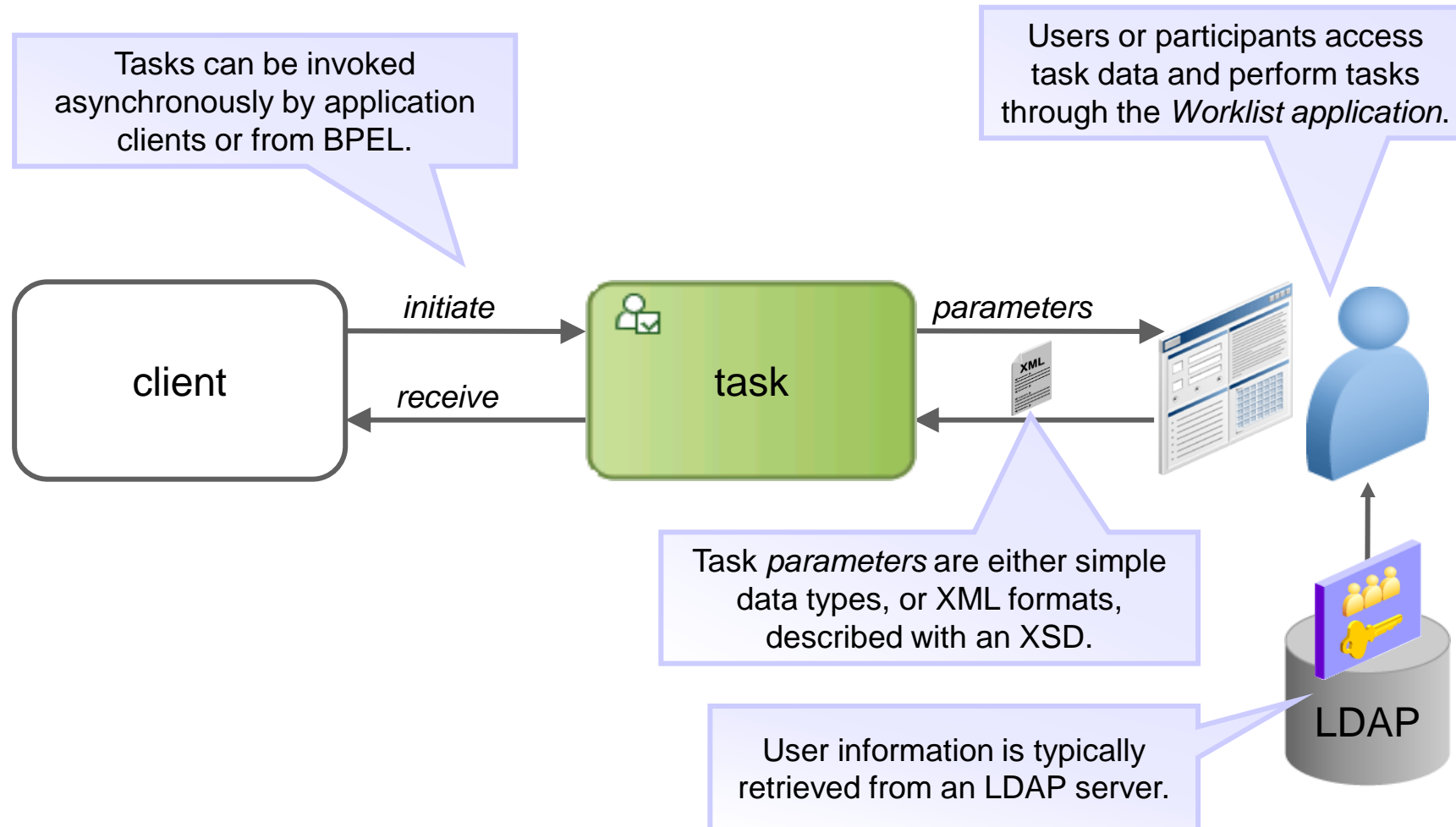
- Human Tasks
- The Worklist Application
- Notifications



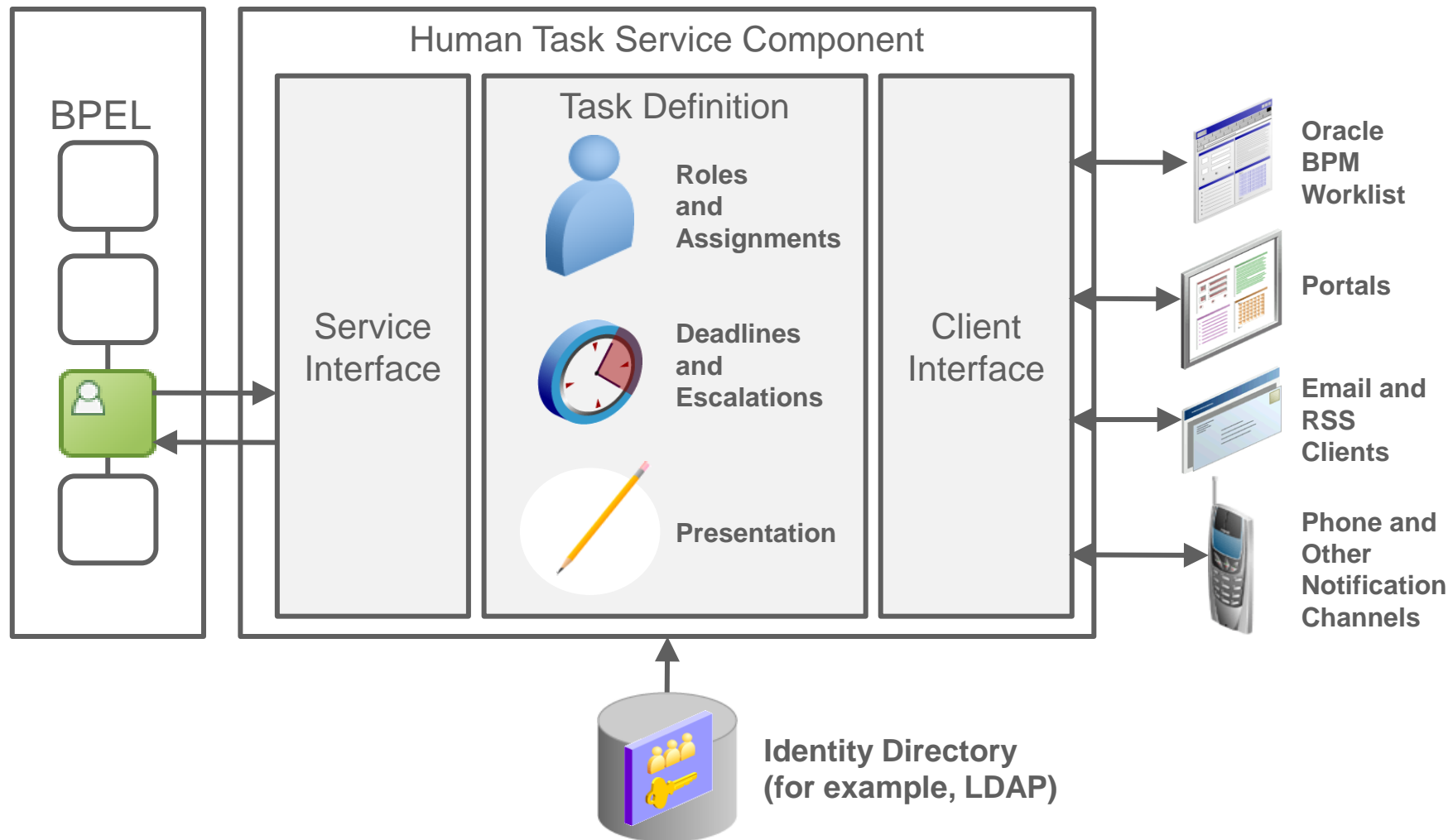
Human Tasks: Introduction



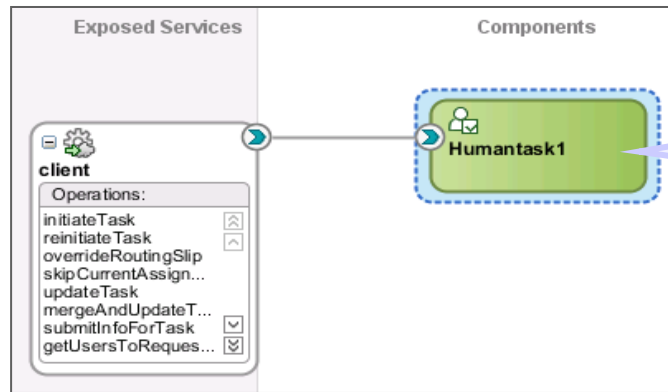
Human Tasks: Overview



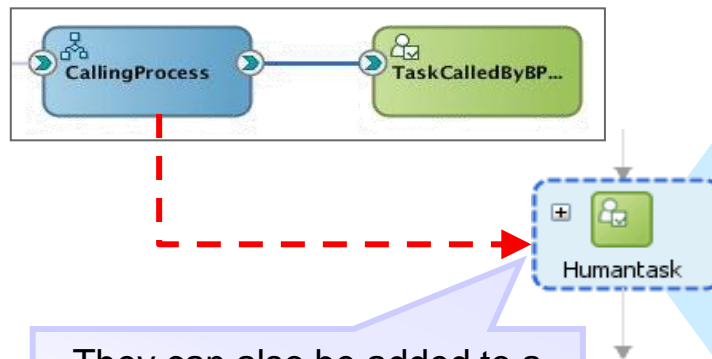
Human Task Service Component



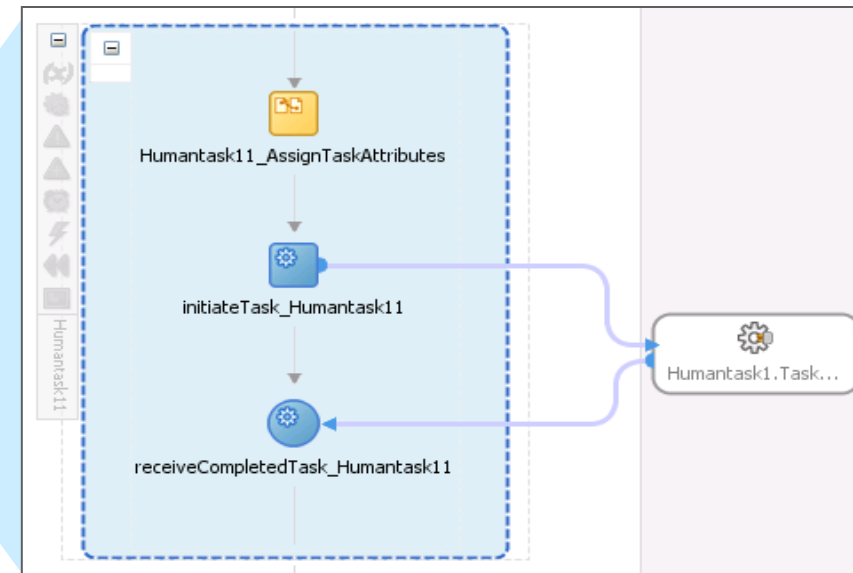
Human Tasks in a Composite Application



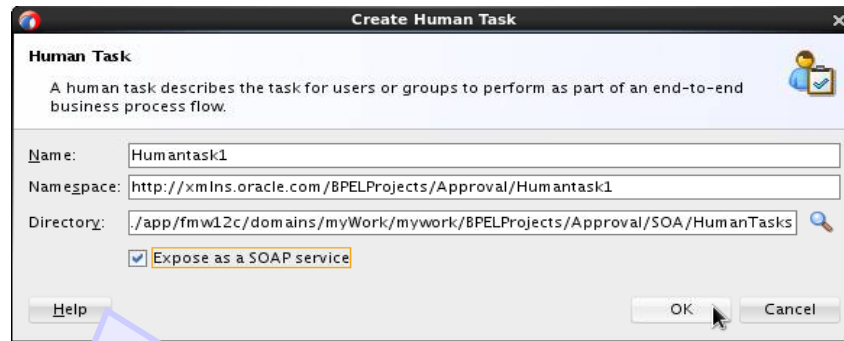
Human tasks can be created in a composite application as stand-alone components exposed as a service.



They can also be added to a BPEL process as part of an orchestrated interaction.



Adding a Human Task to a Composite Application



Create Human Task

A human task describes the task for users or groups to perform as part of an end-to-end business process flow.

Name: Humantask1

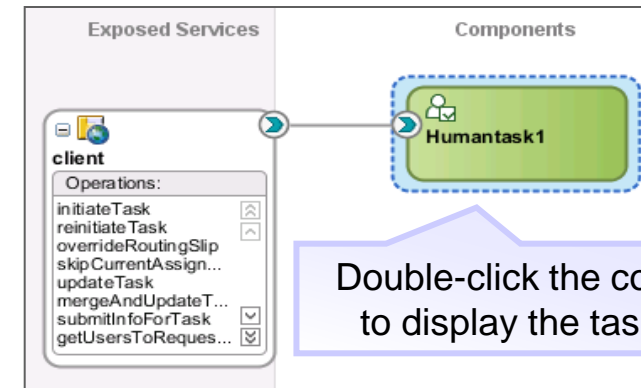
Namespace: http://xmlns.oracle.com/BPELProjects/Approval/Humantask1

Directory: /app/fmw12c/domains/myWork/mywork/BPELProjects/Approval/SOA/HumanTasks

☒ **Expose as a SOAP service**

Help OK Cancel

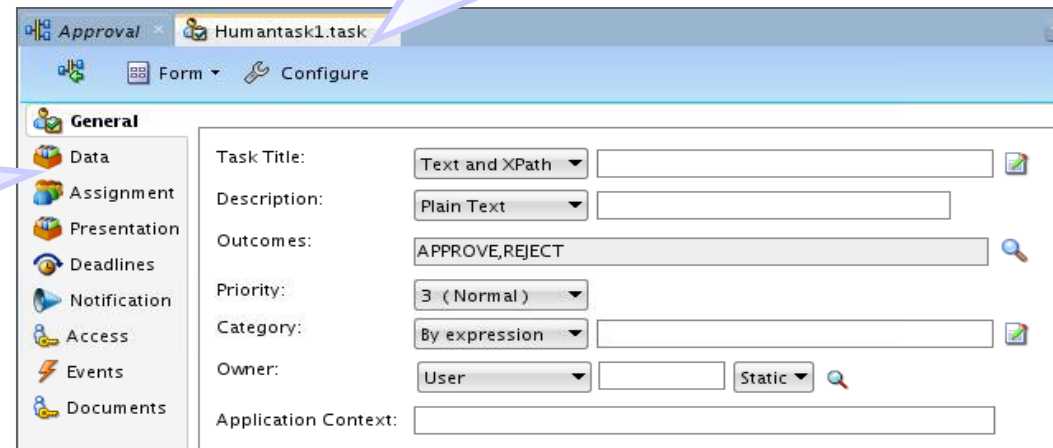
Select *Expose as a SOAP Service* to expose the task to clients of the composite application.



Double-click the component to display the task editor.

The configuration is stored in a **.task** file.

Tabs on the left side of the editor provide access to categories of configuration parameters.



Approval x **Humantask1.task**

Form Configure

General

- Data
- Assignment
- Presentation
- Deadlines
- Notification
- Access
- Events
- Documents

Task Title: Text and XPath

Description: Plain Text

Outcomes: APPROVE,REJECT

Priority: 3 (Normal)

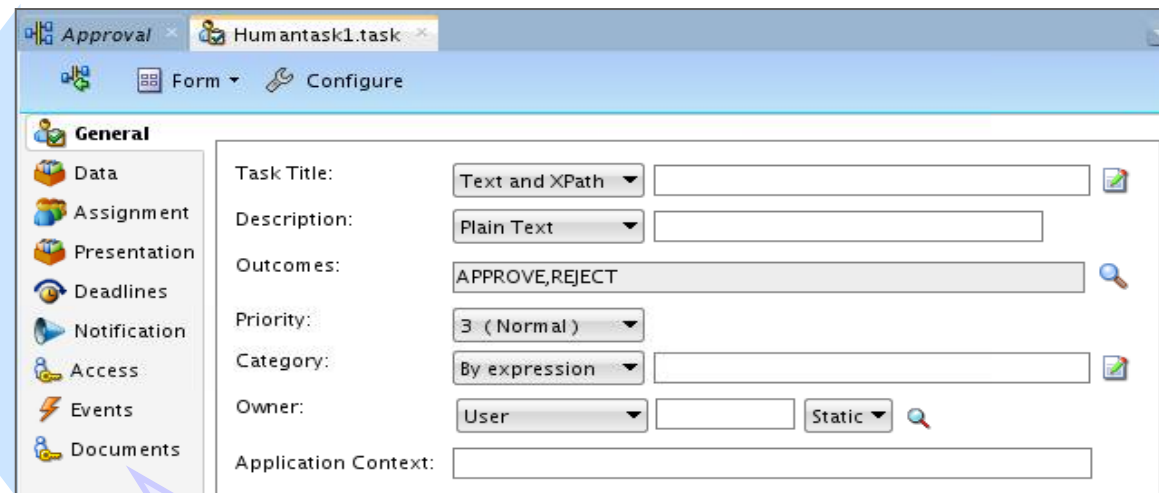
Category: By expression

Owner: User Static

Application Context:

Configuring the Human Task

The human task configuration is stored in a `.task` metadata file that is deployed with the project.

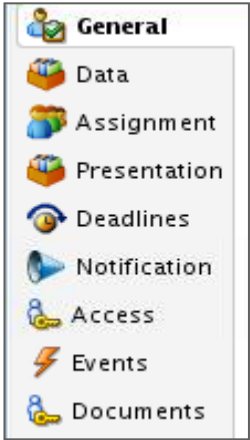


The screenshot shows the 'Configure' window for a human task named 'Humantask1.task'. The interface has a sidebar on the left with a list of configuration categories: General, Data, Assignment, Presentation, Deadlines, Notification, Access, Events, and Documents. The 'General' category is selected. The main area contains the following configuration fields:

Field	Value
Task Title:	Text and XPath
Description:	Plain Text
Outcomes:	APPROVE,REJECT
Priority:	3 (Normal)
Category:	By expression
Owner:	User
Application Context:	Static


The configuration options are organized into categories.

Configuring the Task Outcomes




Task Title: Text and XPath

Description: Plain Text

Outcomes: APPROVE, REJECT 

Priority: 3 (Normal)

Category: By expression


Owner: User Static 

Application Context:

Set a priority for the task.

Configure possible outcomes from a list, or define your own. Specify a default outcome.

Outcomes Dialog

Select one or more outcomes: 

- ☐ DEFER
- ☐ YES
- ☐ OK
- ☒ APPROVE
- ☐ ACCEPT
- ☒ REJECT
- ☐ NO

Actions Requiring Comment

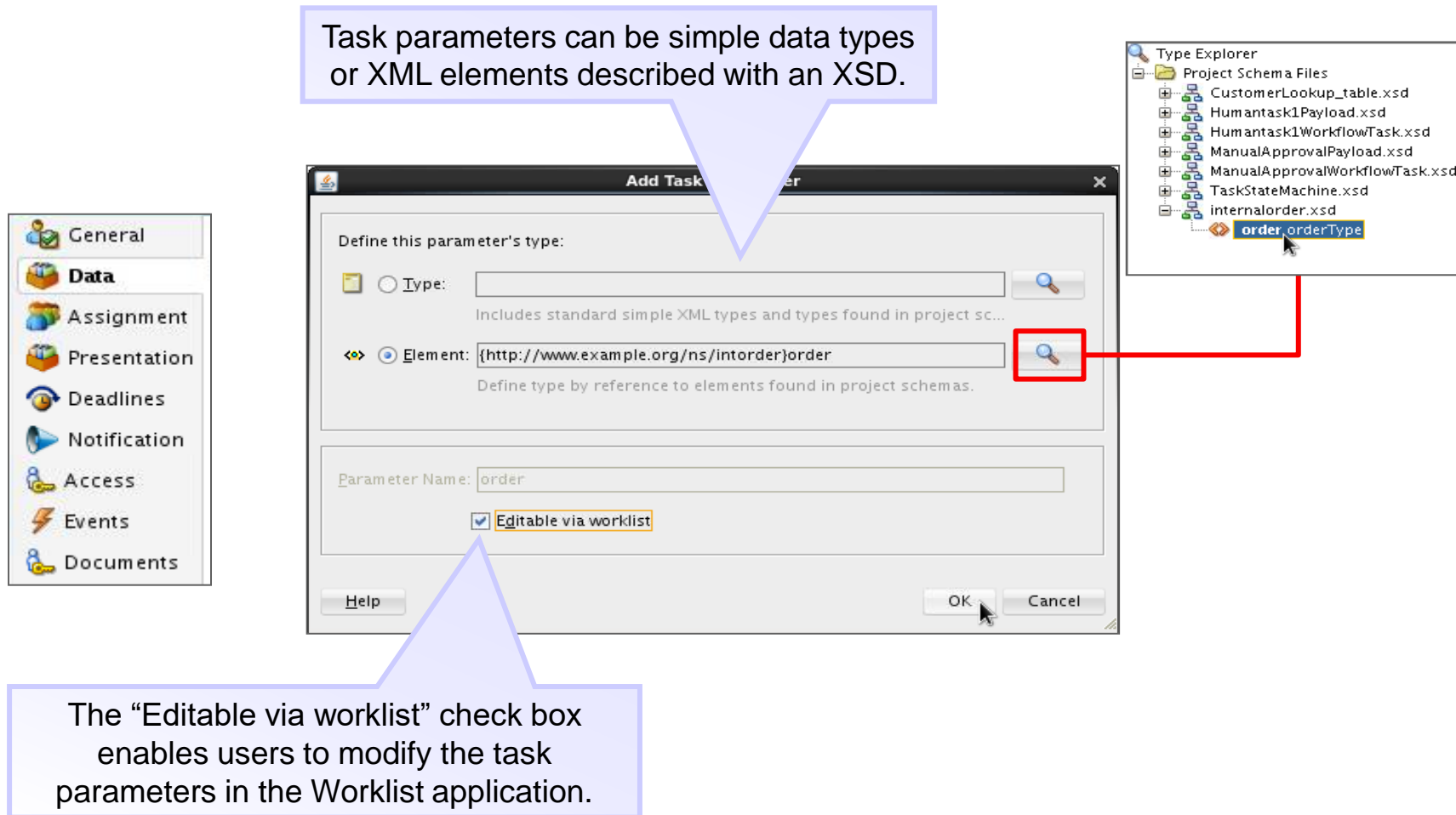
Actions requiring comments can only be performed from the task...

Default Outcome: APPROVE
REJECT

Help OK Cancel

Adding Human Task Parameters

Task parameters can be simple data types or XML elements described with an XSD.



The screenshot shows the 'Add Task Parameter' dialog box. On the left is a sidebar with tabs: General, Data, Assignment, Presentation, Deadlines, Notification, Access, Events, and Documents. The 'Data' tab is selected. The dialog has two main sections. The top section, 'Define this parameter's type:', has two options: 'Type' (with a text field and a search icon) and 'Element' (selected, with a text field containing '{http://www.example.org/ns/intorder}order' and a search icon). A red box highlights the search icon in the 'Element' section, with a red line pointing to the 'Type Explorer' on the right. The 'Type Explorer' shows a tree of 'Project Schema Files' with 'order.orderType' selected. The bottom section of the dialog has a 'Parameter Name' field with 'order' and a checked 'Editable via worklist' checkbox. A blue callout points to this checkbox. At the bottom are 'Help', 'OK', and 'Cancel' buttons.

The “Editable via worklist” check box enables users to modify the task parameters in the Worklist application.

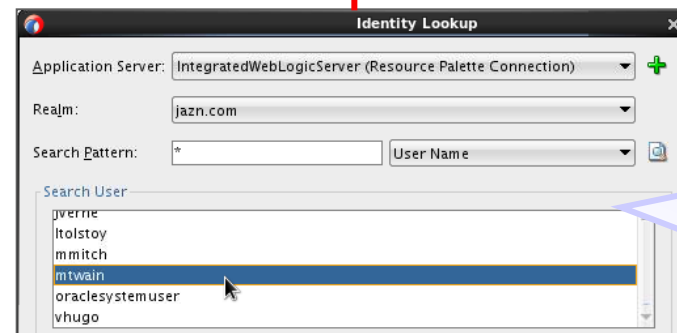
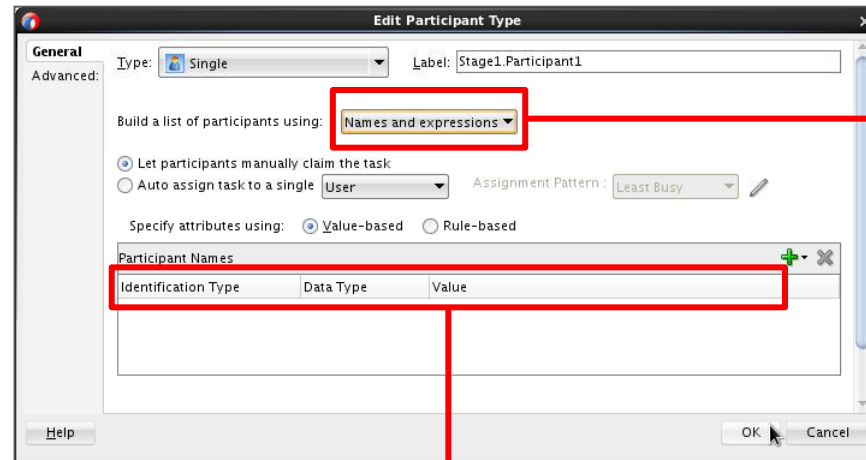
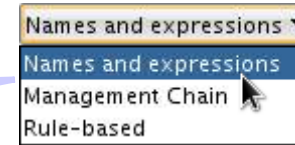
Assigning Task Participants

On the Assignment tab, you configure the route that the task will follow. You also assign the participants who will review and those who will receive errors.

The screenshot displays the Oracle BPM Workflow Editor interface. The left sidebar contains a navigation menu with the following items: General, Data, **Assignment** (highlighted), Presentation, Deadlines, Notification, Access, Events, and Documents. The main workspace shows a task configuration for 'Humantask1.task'. A red box highlights a list of configuration options: [Early Completion](#), [Dynamic Routing Rules](#), [Error Assignees](#), [Reviewers](#), and [Adhoc Routing](#). Below this list, a 'drop participants here' box is shown above a 'Stage1' icon. A callout box points to the 'Participants' panel on the right, which lists 'Chain Participant', 'FYI Participant', 'Parallel Participant', 'Single Participant' (highlighted), and 'Stage'. Another callout box points to the 'Single Participant' entry in the list, showing a tooltip that reads 'Single Participant' and 'Single Participant'. A third callout box points to the 'drop participants here' area, containing the text: 'Add a single participant or multiple participants in serial or parallel.'

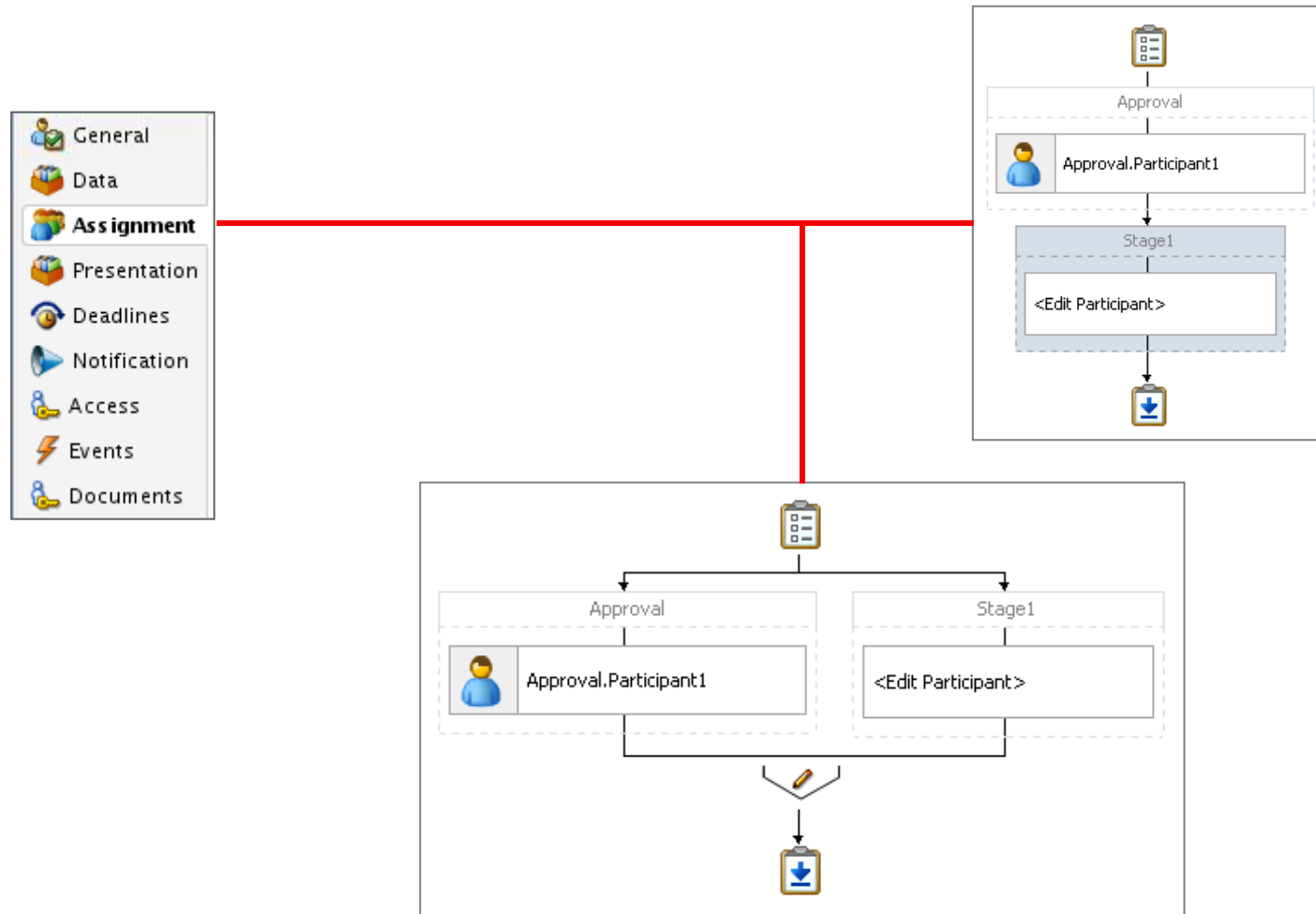
Configuring Task Participants

Build a list of participants based on different criteria.



An LDAP application typically serves as the source of participant information.

Configuring the Stages of a Task



Configuring Expiration and Escalation Settings




The screenshot shows the Oracle Task Manager configuration interface. On the left is a navigation pane with icons and labels for General, Data, Assignment, Presentation, **Deadlines**, Notification, Access, Events, and Documents. The main area is titled "Task Duration Settings:" and contains a dropdown menu with options: Never Expire, Never Expire, Expire after, Renew after, and Escalate after. Below this is a field for "Custom Escalation Java Function:" and a checkbox for "Action Requested Before :".

Three callout boxes provide additional information:

- Options provide a fixed duration in days, hours, and minutes, or a period calculated by using an expression.** This points to the "Expire after" dropdown, which has a menu with "Fixed Duration" (highlighted), "Fixed Duration", and "By Expression". To the right of the dropdown are input fields for Day (0), Hour (0), and Minutes (0).
- "Renew after" sets the number of renewals.** This points to the "Renew after" dropdown, which has a menu with "Fixed Duration" (highlighted) and "By Expression". To the right are input fields for Day (0), Hour (0), and Minutes (0). Below this is a "Maximum Renewals:" field with the value 0.
- "Escalate after" sets the number of levels and the highest approver title.** This points to the "Escalate after" dropdown, which has a menu with "Fixed Duration" (highlighted) and "By Expression". To the right are input fields for Day (0), Hour (0), and Minutes (0). Below these are fields for "Maximum Escalation Levels" (0) and "Highest Approver Title:" (a dropdown menu with options: Manager, Director, CEO - CEO is highlighted). At the bottom is a checkbox for "Action Requested Before :".

Configuring Notification Settings

Notifications are sent through channels such as email, voice message, instant message, and SMS.

General Advanced		
Task Status	Recipient	Notification Header
Assign	Assignees	
Complete	Initiator	
Error	Owner	

Notifications are sent to different types of participants for different actions.

General Advanced

No reminders Send once, no reminders

Encoding: UTF-8

☐ Make notifications secure (exclude details)

☐ Don't send multiple notifications for the same human task event

☒ Show worklist/workspace URL in notifications

☐ Make notification actionable

☐ Send task attachments with email notifications

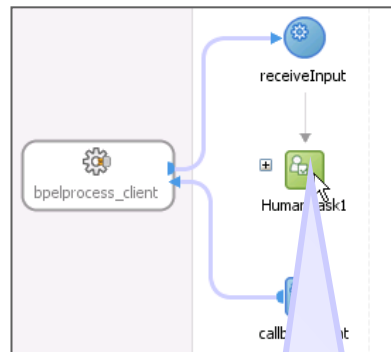
Comments and attachments scope: Task level

Group notification configuration: Send individual emails

☒ Use separate task forms based on locale

Notification header attributes

Adding a Human Task to a BPEL Process

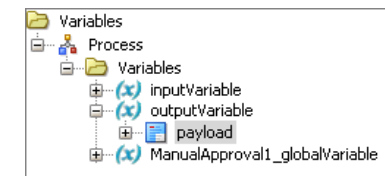


Double-click the human task activity to open the configuration dialog box.

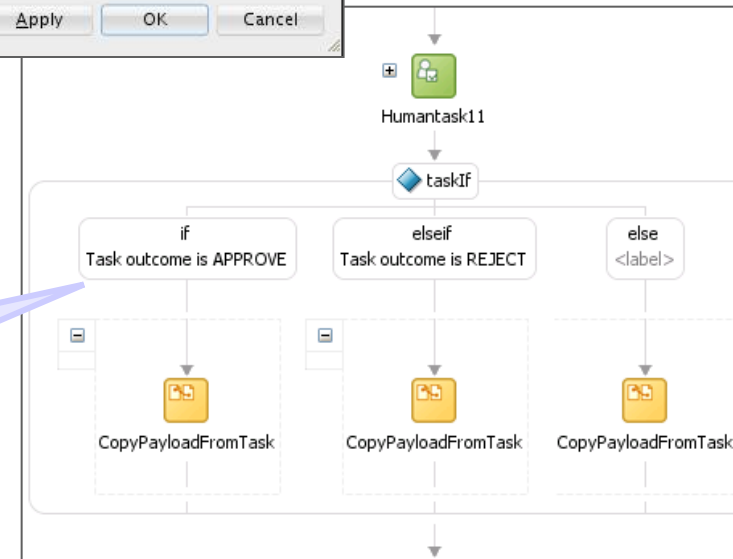
The 'Edit Human Task' configuration dialog box is shown. It has tabs for General, Advanced, Annotations, and Skip Conditions. The General tab is active, showing the Task Definition: ManualApproval, Task Title, Initiator, Priority, and Task Parameters table. The Task Parameters table has columns for order and BPEL Variable. The outputVariable is listed in the BPEL Variable column. A red box highlights the ellipsis button next to the outputVariable.

Task Parameters	BPEL Variable
order	outputVariable

Use the configuration dialog box to relate BPEL variables to the task input and output values.



When the configuration dialog box is closed, an <if> activity is created to process each of the possible outcomes of the task.



Quiz



A human task can be used only by a BPEL process component.

- a. True
- b. False



Agenda

- Human Tasks
- The Worklist Application
- Notifications



Task Display Forms

Task display forms are:

- Designed to display and optionally modify task information supplied as parameters to a human task in a composite application
- Generated as JavaServer Page XML (.jspx) files by using:
 - The human task activity in a BPEL process component
 - The “ADF Task Flow Based on Human Task” item in the JSF category of the New Gallery window

Generating a Task Display Form

Approval x ManualApproval.task x

Form Configure

Auto-Generate Task Form...
Launch Task Form Wizard...
Go to existing business form task flow

Manual Approval

Description: Plain Text Manually approve orders

Outcomes: APPROVE,REJECT

Priority: 3 (Normal)

Category: By expression

Owner: User

Application Context:

Task parameters obtained from a task payload definition

#{...title.inputValue} context

???LABEL_TASK_SNAPSHOT??? ???LABEL_FUTURE_PARTICIPANTS??? ???LABEL_

???DETAILS??? i

???ASSIGNEES??? #{...displayName}

EXPIRATION_DATE??? #{...expirationDate.inputValue}

???ACQUIRED_BY??? #{...acquiredBy.inputValue}

???CREATOR??? #{...creator.inputValue}

???DUE_DATE??? #{...dueDate.inputValue}

???UPDATE_DATE??? #{...updatedDate.inputValue}

???OUTCOME??? #{...actionDisplayName.inputValue}

???CONTENTS???>

Customer Id #{...customerId.inputValue}

Order Id #{...orderId.inputValue}

Pay Method #{...payMethod.inputValue}

Ship Method #{...shipMethod.inputValue}

Order Total #{...orderTotal.inputValue}

Status #{...status.inputValue}

Order - Credit Card

Card Type #{...cardType.inputValue}

Card Number #{...cardNumber.inputValue}

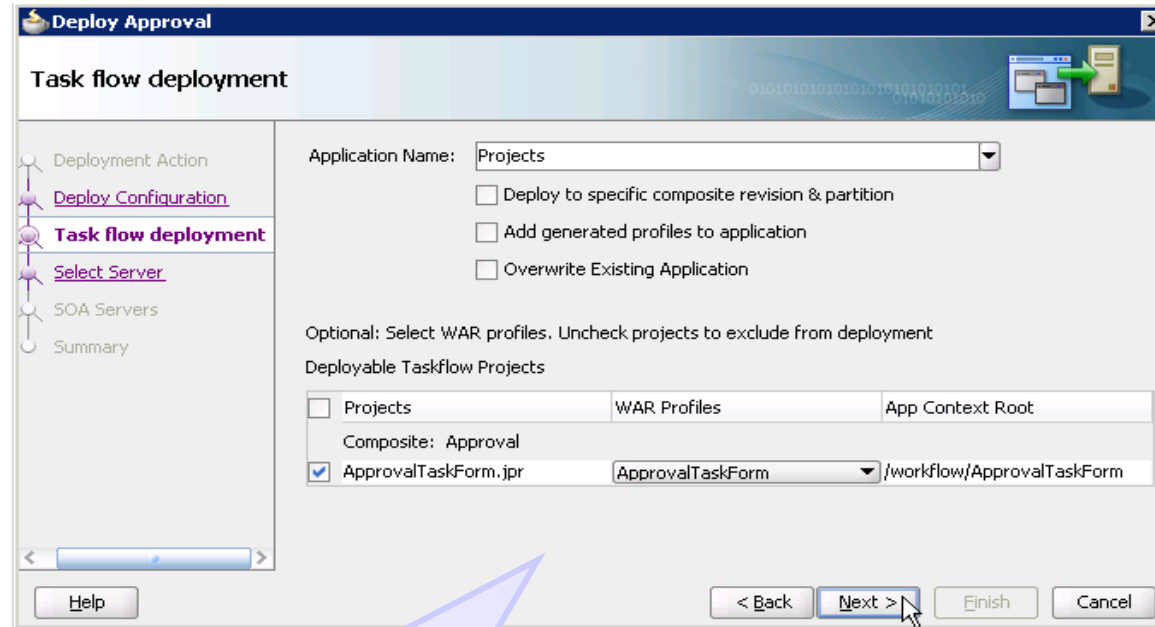
Order - Items

In Stock #{...inStock.inputValue}

Order - Items CreateInsert Delete

Prod Id	Prod Name	Price	Qty	Item Total
#{...prodId.inputV}	#{...prodName.inp	#{...price.inputVa	#{...qty.inputValu	#{...itemTotal.inpu
#{...prodId.inputV	#{...prodName.inp	#{...price.inputVa	#{...qty.inputValu	#{...itemTotal.inpu
#{...prodId.inputV	#{...prodName.inp	#{...price.inputVa	#{...qty.inputValu	#{...itemTotal.inpu

Deploying Task Display Forms



The screenshot shows the 'Deploy Approval' dialog box with the 'Task flow deployment' step selected in the left-hand navigation pane. The main area displays the following configuration:

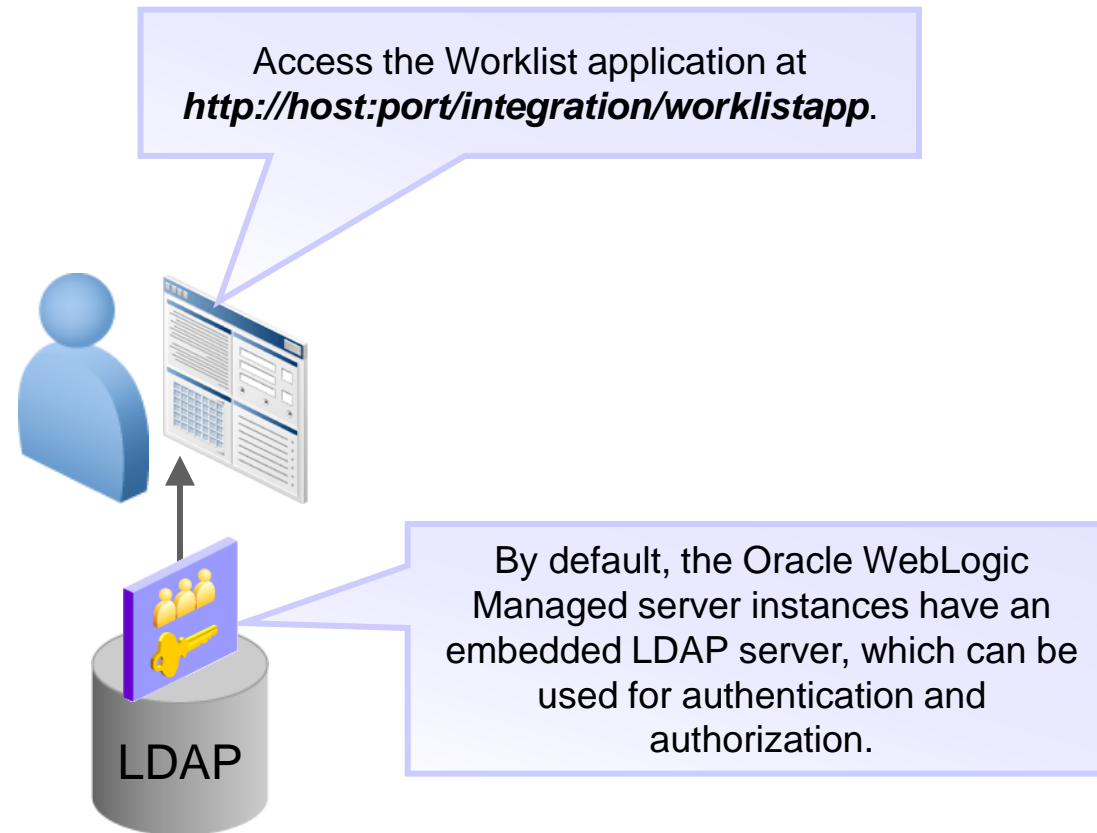
- Application Name:** Projects (dropdown menu)
- ☐ Deploy to specific composite revision & partition
- ☐ Add generated profiles to application
- ☐ Overwrite Existing Application
- Optional:** Select WAR profiles. Uncheck projects to exclude from deployment
- Deployable Taskflow Projects:**

	WAR Profiles	App Context Root
<input type="checkbox"/> Projects		
Composite: Approval		
<input checked="" type="checkbox"/> ApprovalTaskForm.jpr	ApprovalTaskForm (dropdown)	/workflow/ApprovalTaskForm

At the bottom, there are buttons for '< Back', 'Next >', 'Finish', and 'Cancel'. A mouse cursor is pointing at the 'Next >' button.

Task flows can be deployed with their related composite applications.

Accessing the Worklist Application



Viewing and Acting on Task Information

Views

- Inbox**
- My Tasks**
- Initiated Tasks
- Administrative Tasks
- Views**
- Due Soon
- High Priority
- Past Day
- Past Week
- Past Month
- Past Quarter
- New Tasks

My Tasks(1) + ✎ ✕ **Actions** ☑ ✕ 🔍

Title	iber	Creator	Assigned	Priority
Manual Approval	108		Oct 6, 2014 3:42 AM	3

Manual Approval Approve Reject **Actions** ↩ ➡ ✕

👤 **Details** ℹ

Contents

Customer Id

Order Id

Pay Method

Ship Method

Order Total

Status

Order - Credit Card

Card Type

Card Number

Order - Items

In Stock

Order - Items CreateInsert Delete

Prod Id	Prod Name	Price	Qty	Item Total
SKU301	Music Player 1Gb	45	3	135

Task information is visible if task display forms are deployed with the composite application.

Quiz



Task display forms provide Worklist application users with a way to view and (optionally) modify task data.

- a. True
- b. False

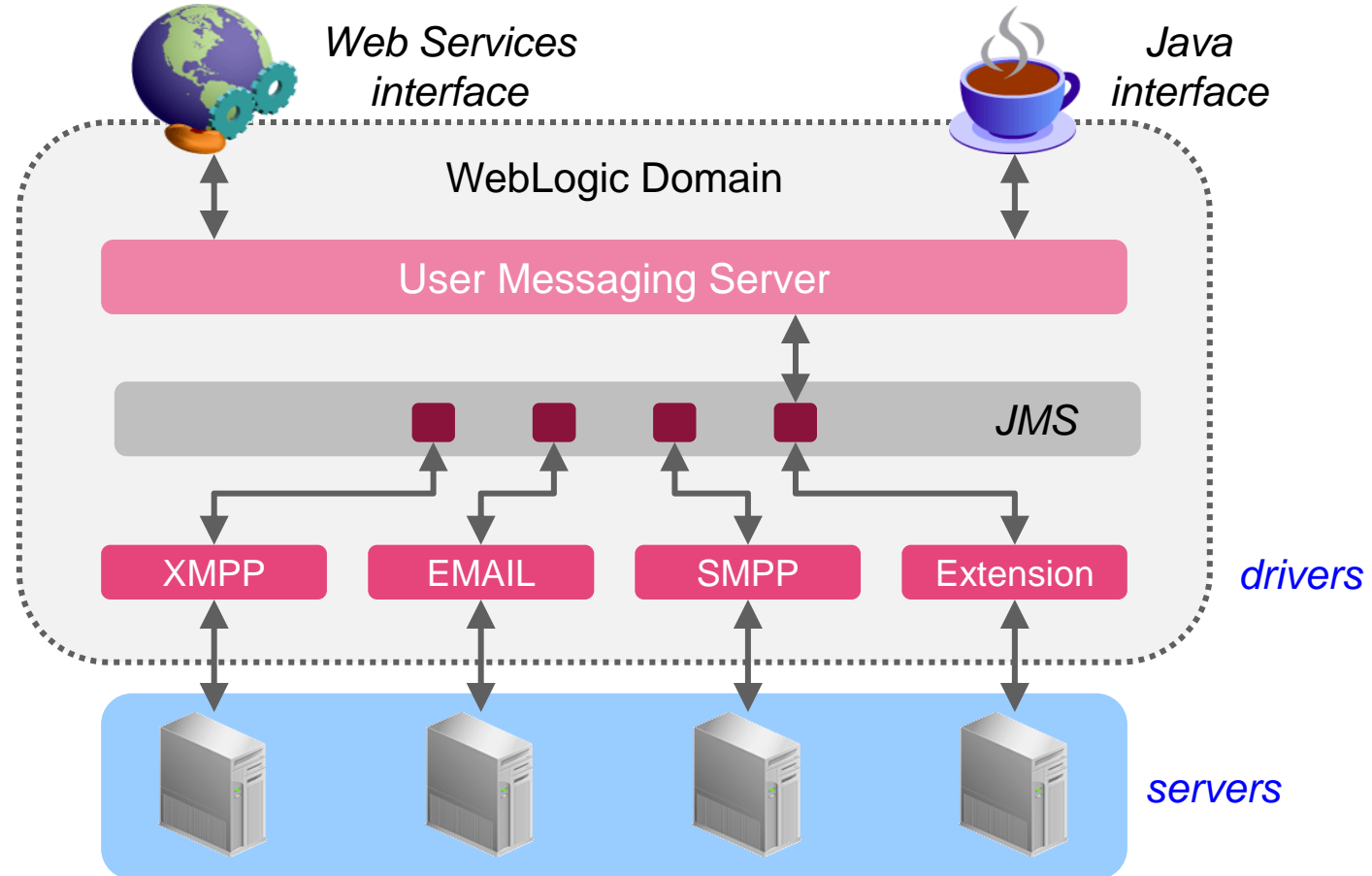


Agenda

- Human Tasks
- The Worklist Application
- **Notifications**



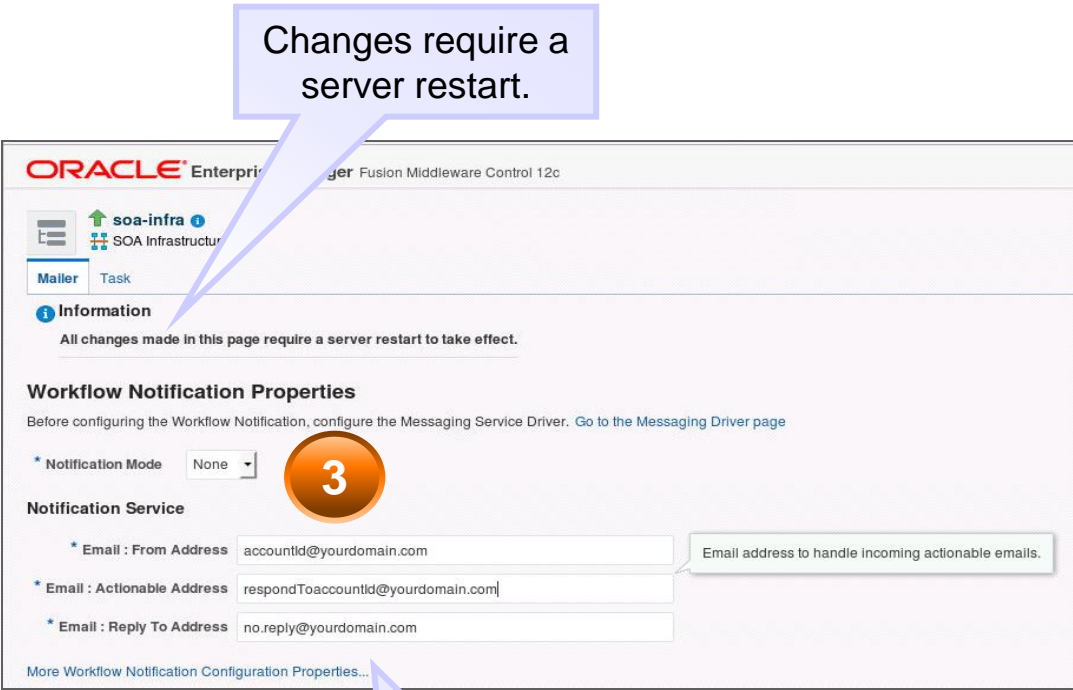
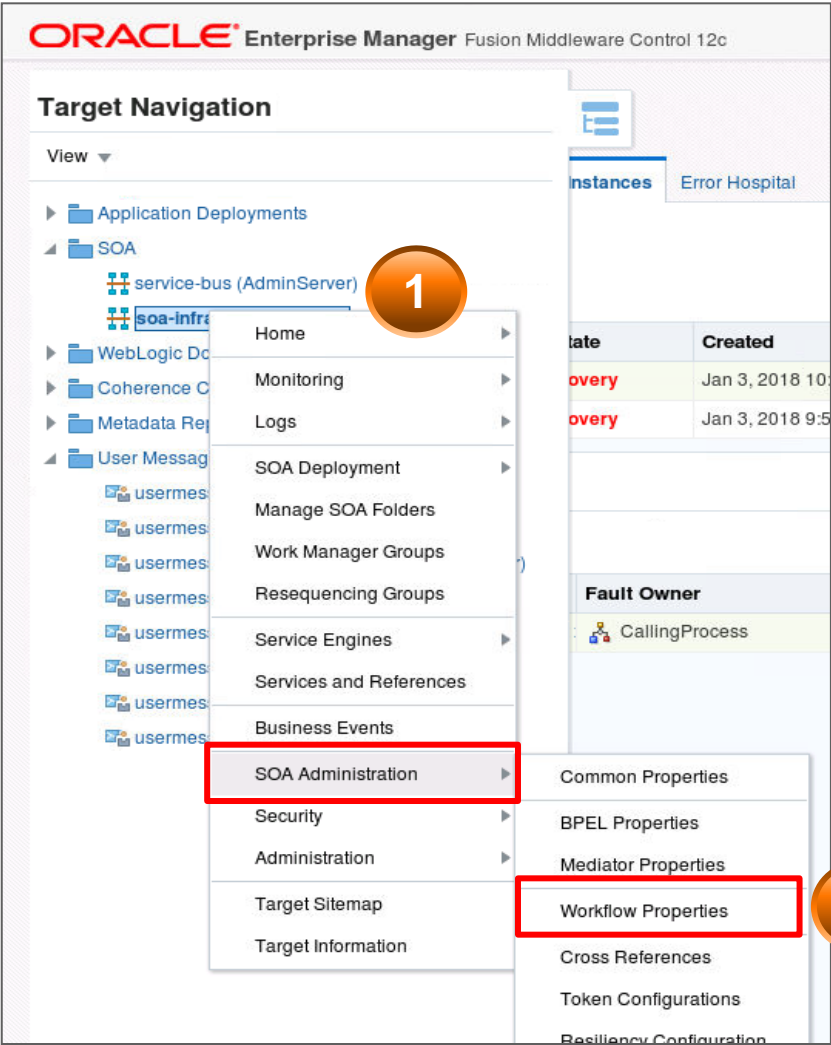
Working with Notification Services



Oracle User Messaging Service (UMS)

- Enables sending notification through email, voice, IM, or SMS channels
- Supports two-way messaging (sending and receiving messages)
- Provides user messaging preferences, enabling users to configure how and when to receive notifications
- Integrates with Fusion Middleware components through:
 - BPEL notification activities, such as email, IM, and voice
 - Human workflow notifications that also provide actionable messages
 - Oracle BAM alerts for monitored events

Configuring UMS Notification Properties



Creating the User Messaging Email Driver

1

Workflow Notification Properties

Before configuring the Workflow Notification, configure the Messaging Service Driver. [Go to the Messaging Driver page](#)

Associated Drivers

Local All

Name	Driver Type	Cluster Name	Status	Configuration Level	Configure Driver
/Domain_soa_domain/soa_domain/AdminServer/usermessagingdriver-smpp	User Messaging SMPP Driver		↑	Unconfigured	
/Domain_soa_domain/soa_domain/AdminServer/usermessagingdriver-xmpp	User Messaging XMPP Driver		↑	Unconfigured	
/Domain_soa_domain/soa_domain/AdminServer/usermessagingdriver-apns	User Messaging APNS Driver		↑	Unconfigured	
/Domain_soa_domain/soa_domain/AdminServer/usermessagingdriver-email	User Messaging Email Driver		↑	Unconfigured	

2

usermessagingserver
 User Messaging Service ▼

Email Driver Properties

The UMS driver supports multiple configurations, at server or cluster level. Create or edit a configuration to configure the driver properties.

View ▼ **+ Create** Edit Delete

Name	Driver Type	Configuration Level
------	-------------	---------------------

No driver configurations found

3

Configuring the User Messaging Email Driver

ORACLE® Enterprise Manager Fusion Middleware Control 12c

usermessagingserver
User Messaging Service

Create Driver Properties

Common Configuration

Name

Driver Type User Messaging Email Driver

Configuration Level
☒ Server
☐ AdminServer
☐ Cluster

Supported Delivery Types EMAIL

Capability SEND, RECEIVE

Supported Content Types *

Supported Status Types DELIVERY_TO_GATEWAY_SUCCESS, DELIVERY_TO_GATEWAY_FAILURE, USER_REPLY_ACKNOWLEDGEMENT_SUCCESS, USER_REPLY_ACKNOWLEDGEMENT_FAILURE

Supported Protocols SMTP

Supported Carriers

Supported Application Names

Sender Address
☒ Use Sender Addresses
☐ Use Default Sender Address

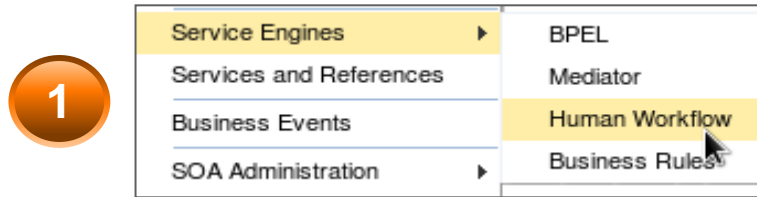
Cost

Speed

Driver-Specific Configuration

Name	Description	Mandatory	Encoded Credential	Value
E-mail Receiving Proto	E-mail receiving protocol. The possible values are IMAP and POP3.			IMAP
Auto Delete	Whether the driver should mark the messages deleted after they have been processed. The default is disabled. For the POP3 protocol, the messages are always deleted right after they are processed.			<input type="checkbox"/>

Viewing and Testing Email Notifications



2

Outgoing Notifications

Search

Select View Resend Resend All Similar Notifications View Bad Addresses Delete

Source ID	Source Type	Channel	Recipient	Status
	BPEL	Email	sking@emailexample.com	Sent
14654b9c-d7b5-4...	WORKFLOW	Email	jcooper@emailexample.com	Sent
	BPEL	Email	sking@emailexample.com	Sent
707ba6dd-139b-4...	WORKFLOW	Email	jcooper@emailexample.com	Sent
	BPEL	Email	sking@emailexample.com	Sent
e9994a81-303c-4...	WORKFLOW	Email	jcooper@emailexample.com	Sent
	RDFI	Email	sking@emailexample.com	Sent

3

Send Test Notification

Subject: Test from SOA Server

Content: Test message to check if email channel is working.

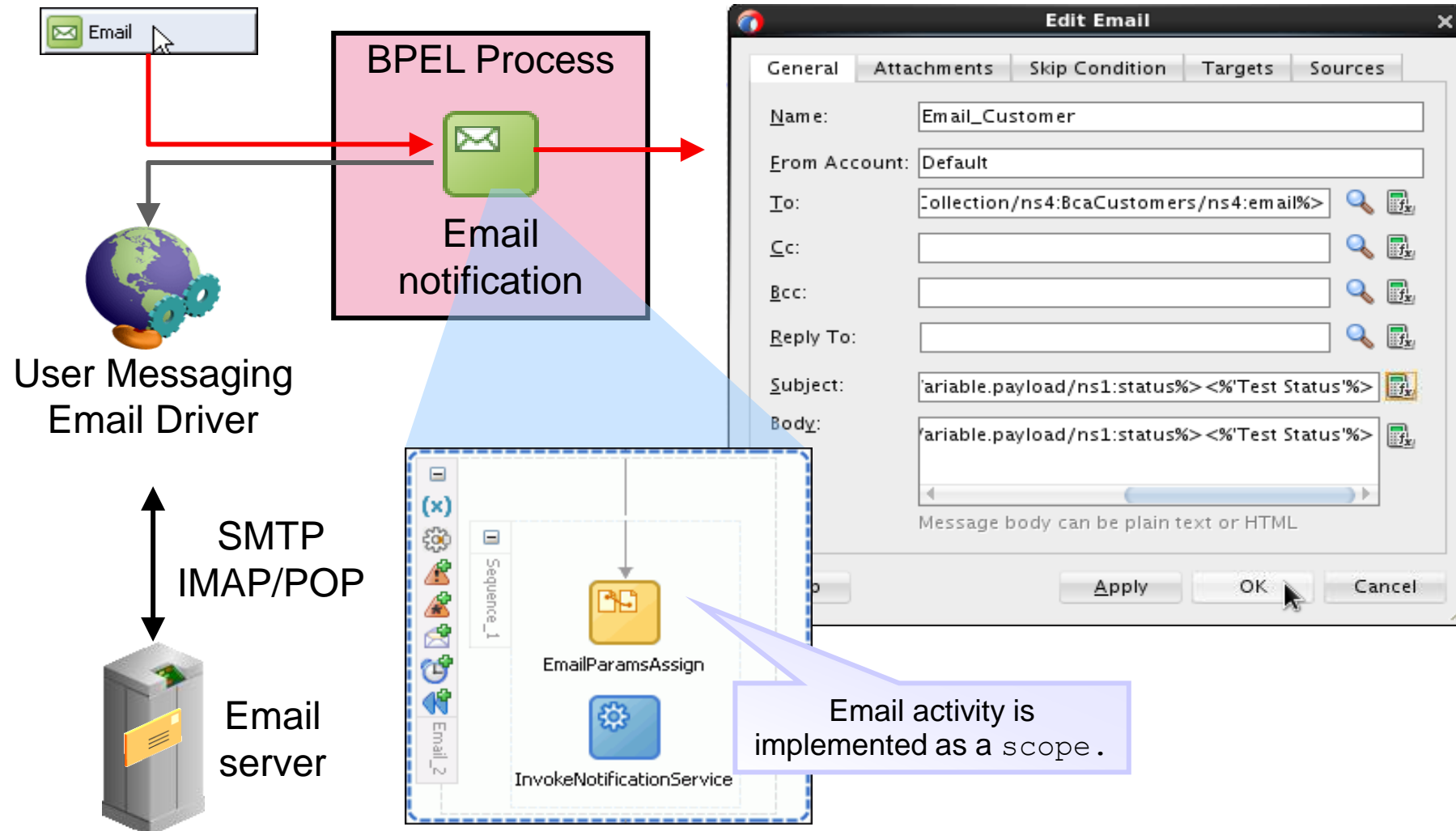
* Send To: jcooper@emailexample.com

* Channel: Email

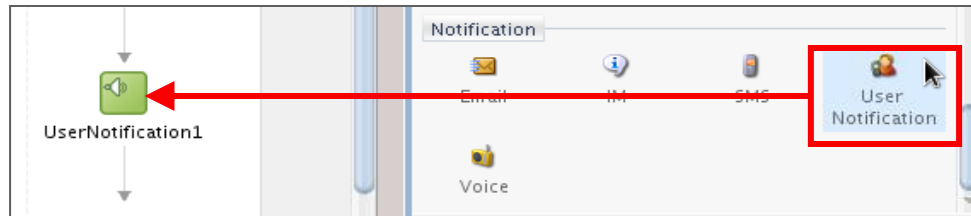
Response

Send Cancel

Sending Email Notification from BPEL



Sending a Notification to a User's Preferred Channel



The 'Edit User Notification' dialog box is shown with the 'General' tab selected. It contains the following fields and options:

- Name:** UserNotification2
- To:** (empty field) with a search icon and the text 'Use commas to separate multiple names'.
- Subject:** <%Order Status'%>
- Notification Message:** <%concat('Your order status is: ', \$inputVariable.payload/ns1:status)%>
- Applies to:** Voice, SMS, Email and IM.
- Buttons:** Help, Apply, OK, Cancel.

The user notification activity:

- Sends a message to a user's preferred channel
- Enables additional properties to be sent with the message

Quiz



Which of the following provide support for notification?
(Select all that apply.)

- a. User notification activity
- b. An `OnMessage` branch in a Scope or Pick activity
- c. Mediator routing rules
- d. Human task component
- e. Email activity



Summary

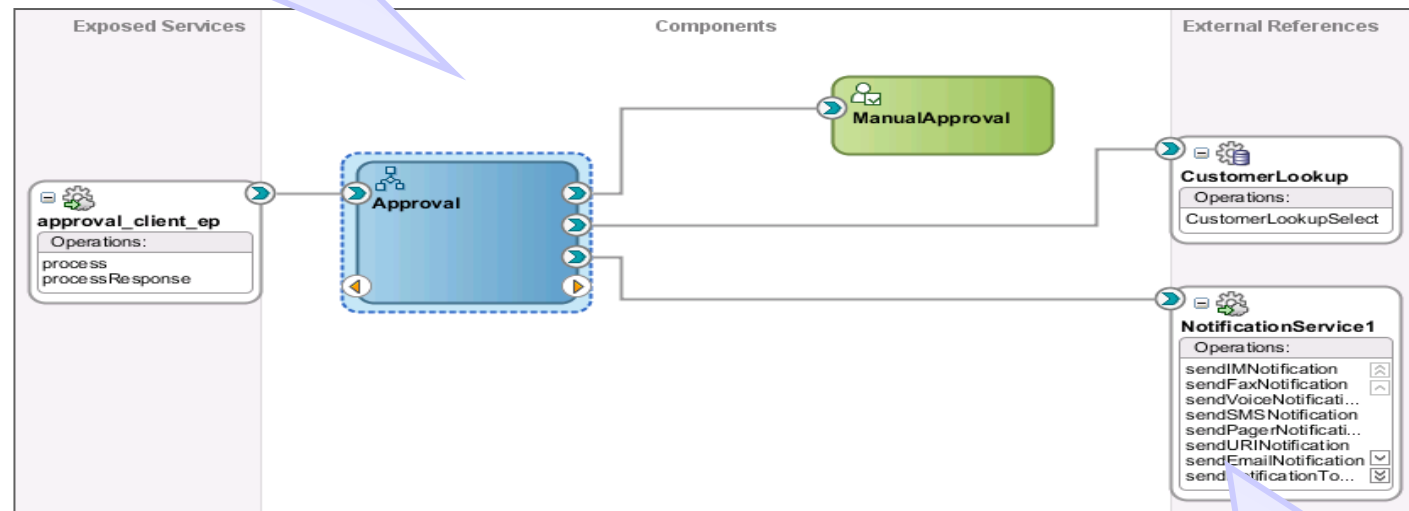
In this lesson, you should have learned how to:

- Describe human task concepts
- Explain the human task component
- Design a human task
- Invoke a human task from a BPEL process
- Interact with the Worklist application to act on tasks
- Add email notification to a BPEL process



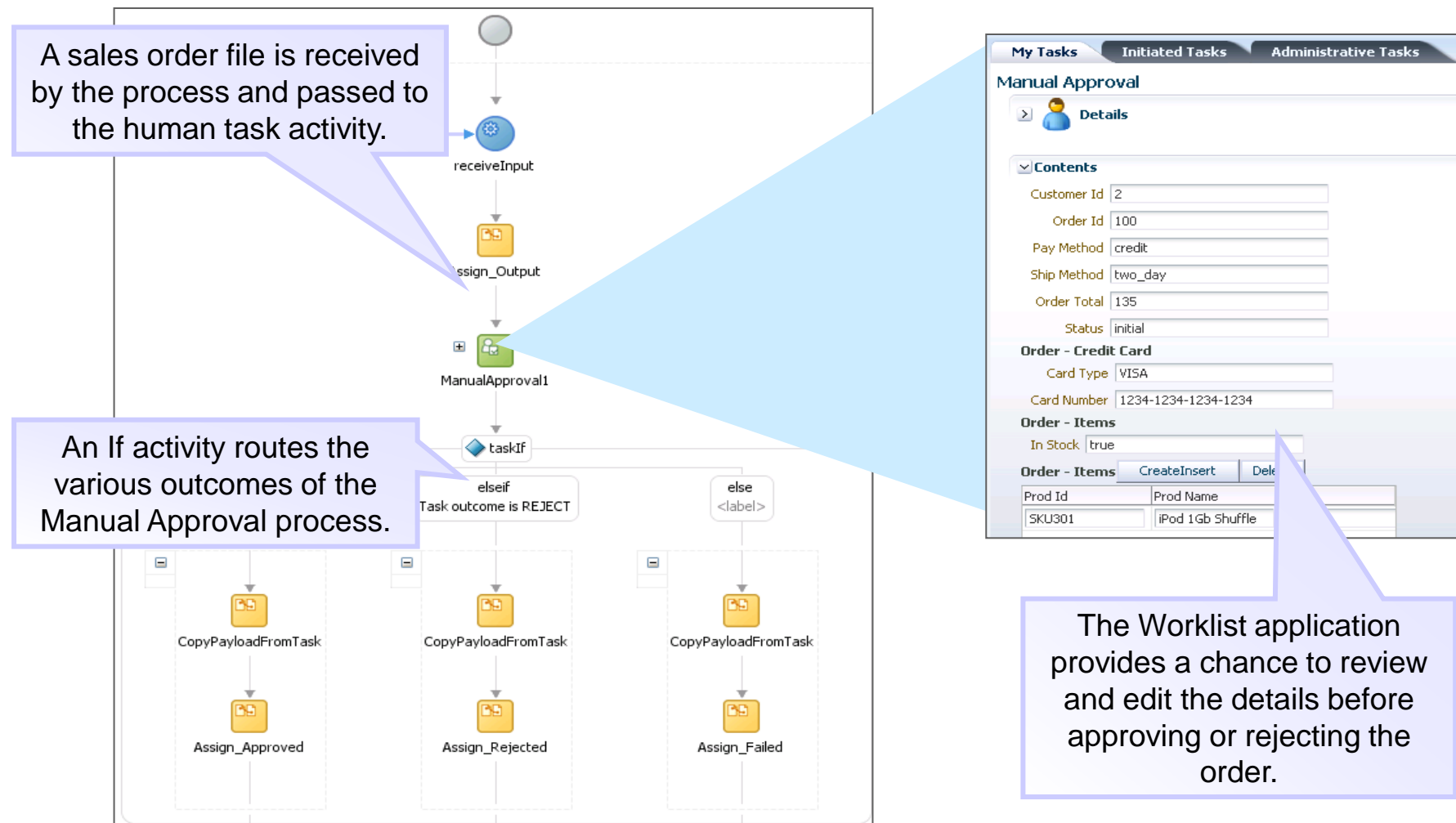
Practice 9 Overview

A composite application is built that includes a BPEL process component and a human task component.



Database and notification external references provide customer lookup and email capabilities.

Practice 9 Overview



Practice 9 Overview

