

**Modeling BPEL extension for People
(BPEL4People)
With eClarus Business Process Modeler**

eClarus Software, September 2008

Contents

Contents	2
1.0 Introduction	3
2.0 People Activity	3
2.1 Modeling People Activity	5
3.0 Human Task and Notification	7
3.1 Modeling Human Task	8
3.2 Generic Human Roles	9
3.3 People Assignment	9
3.3.1 Overriding People Assignment	9
3.3.2 Modeling People Assignment	10
3.4 Presentation Elements	11
3.4.1 Modeling Presentation Elements	11
3.5 Rendering Elements	12
3.6 Timeouts and Escalations	12
3.6.1 Modeling Timeouts and Escalations	13
4.0 Summary	14
5.0 References	15

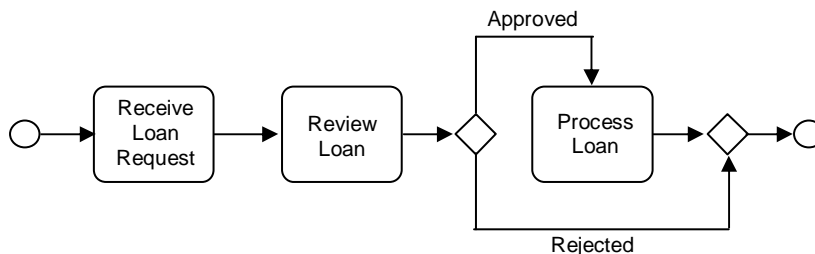
1.0 Introduction

eClarus Business Process Modeler offers full support for BPEL extension for People (BPEL4People). The purpose of this paper is to help get people started with incorporating BPEL4People, one of the most critical BPEL extensions for all real world business processes, in their business process models. This paper will provide an introduction to BPEL4People and explain how business process models can leverage BPEL4People with eClarus Business Process Modeler. Although this paper will discuss the key areas of BPEL4People and WS-Human Task, readers are encouraged to read the specifications of these topics to gain more in depth understanding. In addition to BPEL4People and WS-Human Task, readers should also be familiar with BPEL and BPMN to get the most benefits from this paper

BPEL introduces a model for business processes which orchestrates activities and interactions of Web services. This model would be sufficient if all business processes can be automated with only Web services. In practice, however, people often take part in business processes and influence the process execution. A comprehensive model then must also support the interaction between people and process. BPEL4People was introduced to address this. It incorporates people as another type of participants and introduces people activity as a new type of basic activity which enables the specification of human interaction in processes. The implementation of a people activity could be an inline task or a standalone human task defined in the WS-HumanTask specification.

2.0 People Activity

People activity is a basic activity used to integrate human interactions within BPEL processes. From the user's perspective, the people activity is a task that is assigned to a user and requires the user to perform some action. Suppose a loan approval process where the review loan activity must be performed by a person. In this case, the review loan activity would be a people activity.



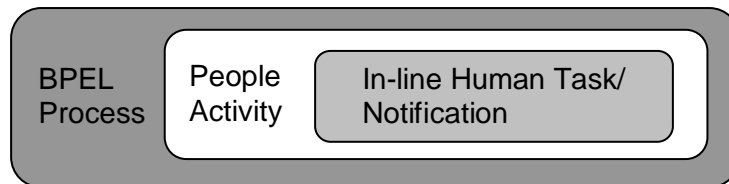
A people activity has scheduling properties used for specifying when the activity must change state. The **defer activation** property specifies when the activity may begin. The **expiration** property specifies when an activity becomes obsolete. In the loan approval process example, a financial institute may have a policy to expire any loan request that

has not been reviewed after six months, as information pertaining to the loan can become obsolete.

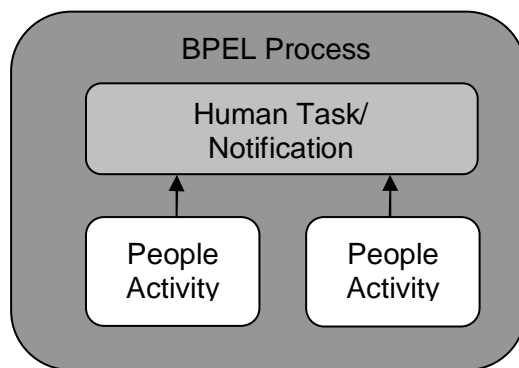
The **attachment propagation** property is used to describe the propagation behavior of ad-hoc attachments to and from the people activity--either all, none or newly created attachments from the process should be propagated to the people activity, so they become available to the corresponding task and vice versa.

There are different ways in which human interactions (including human tasks and notifications) can be integrated with the BPEL process in a people activity:

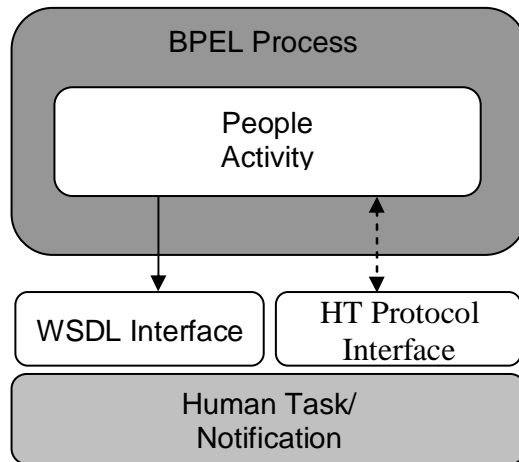
1. In-line Human Task or Notification – task or notification is defined as part of a people activity. Usage is limited to the containing activity. This may be applicable to very specialized task that is only specific to a people activity.



2. Local Human Task or Notification - task or notification defined within a BPEL process or scope accessible to all people activities defined in the process. This may be applicable when a task or notification is common to more than one people activity in a process.



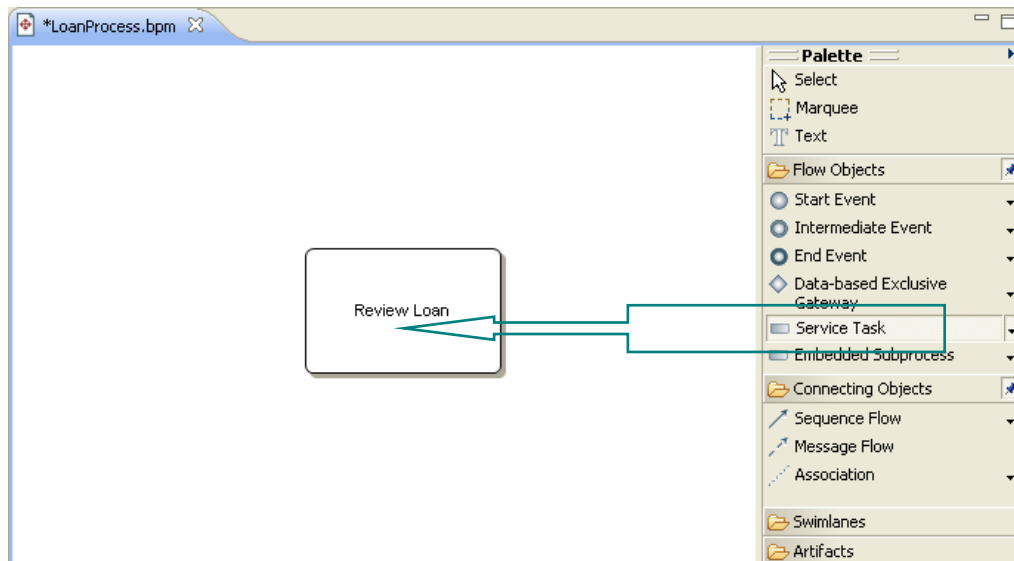
3. Remote Human Task or Notification - the remote task or notification is invoked using Web service protocols. Process can perform life cycle operations on it. This may be applicable to very common tasks that can be reuse in many business scenarios.



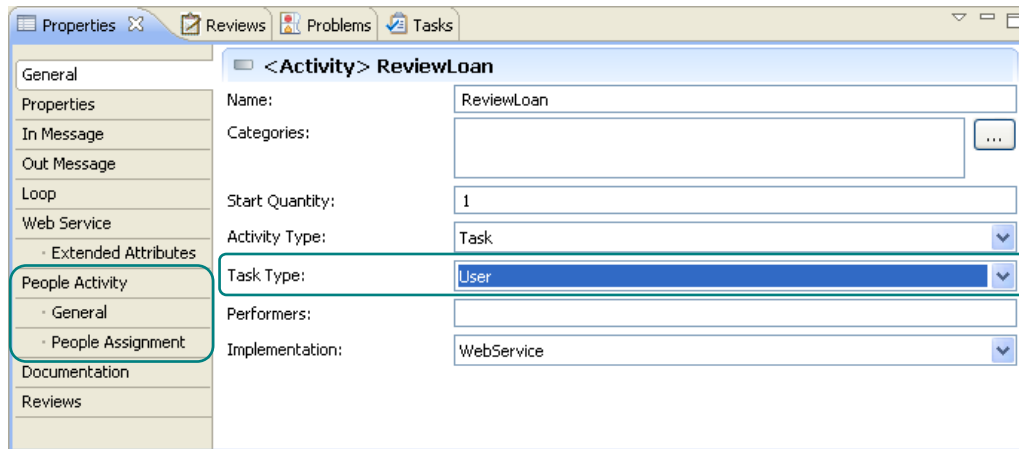
2.1 Modeling People Activity

To create a people activity in eClarus Business Process Modeler:

1. Create a service task in your process model:



- In the General Property tab, set the Task Type to “User” to turn the task into a People Activity, and the People Activity property tabs will become visible.

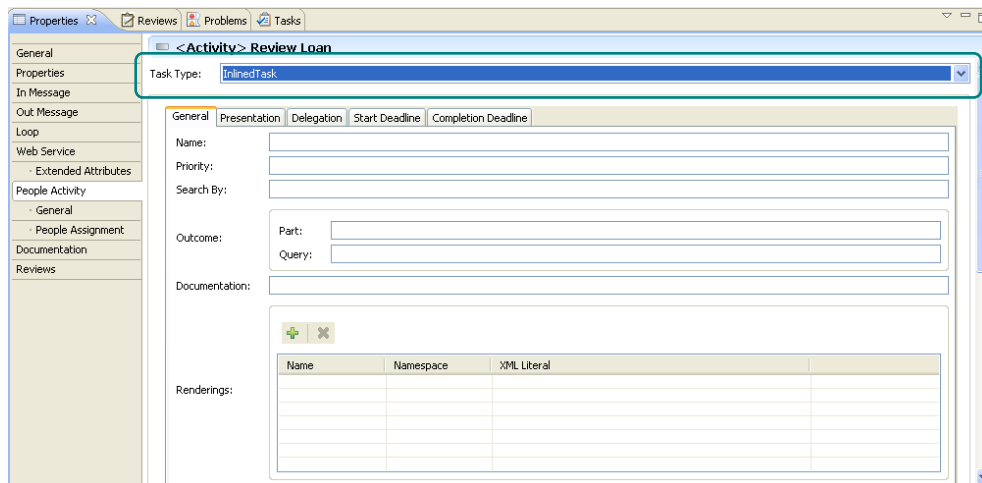


- In the People Activity Property Tab, specify how people interactions should be integrated with the BPEL Process—in-lined task, in-lined notification, local task, local notification, remote task or remote notification—by selecting a value from the task type drop down list. The rest of the tab will be populated based on the task type selection.

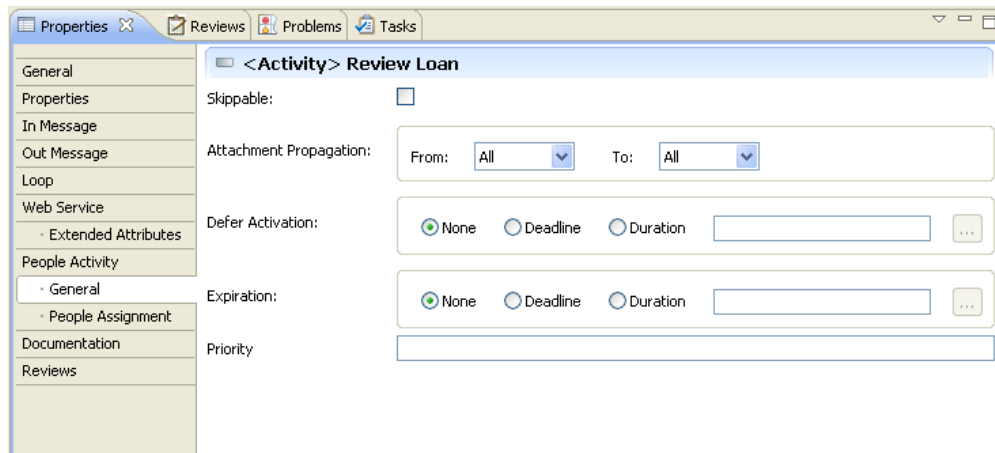
If remote task or remote notification is selected, the WebService for the remote task or notification must be defined in the Web Service property tab.

If local task or notification is selected, a human task or notification defined in the containing BPEL process must be selected for the people activity.

If in-line task or notification is selected, a new human task or notification must be defined.



4. In the People Activity General Property tab, fill in the properties for the people activity as needed.



5. Modeling of people assignment for people activity will be explained in the next section when people assignment is discussed.

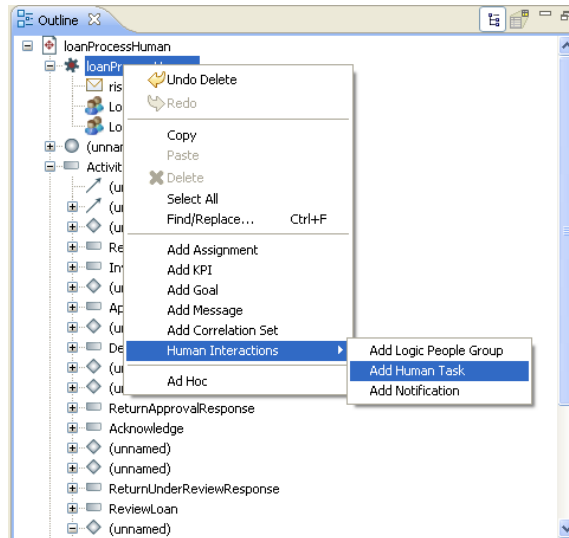
3.0 Human Task and Notification

Human tasks enable the integration of human beings in service oriented applications as defined by the Web Services Human Task specification. Since a human task is a unit of work performed by human, it has people assigned to it. These assignments define who should be allowed to play a certain role on that task. Human tasks may also specify how task metadata should be rendered on different devices or applications making them portable and interoperable with different types of software. Human tasks can be defined to react on timeouts, triggering an appropriate escalation action. This also holds true for notifications. Notifications are a special type of human task that allows the sending of information about noteworthy business events to people. Notifications are always one-way. The sender of a notification never waits for an acknowledgment of receipt. Notifications are often used in escalation actions to notify a user that a task is overdue or a task has not been started yet.

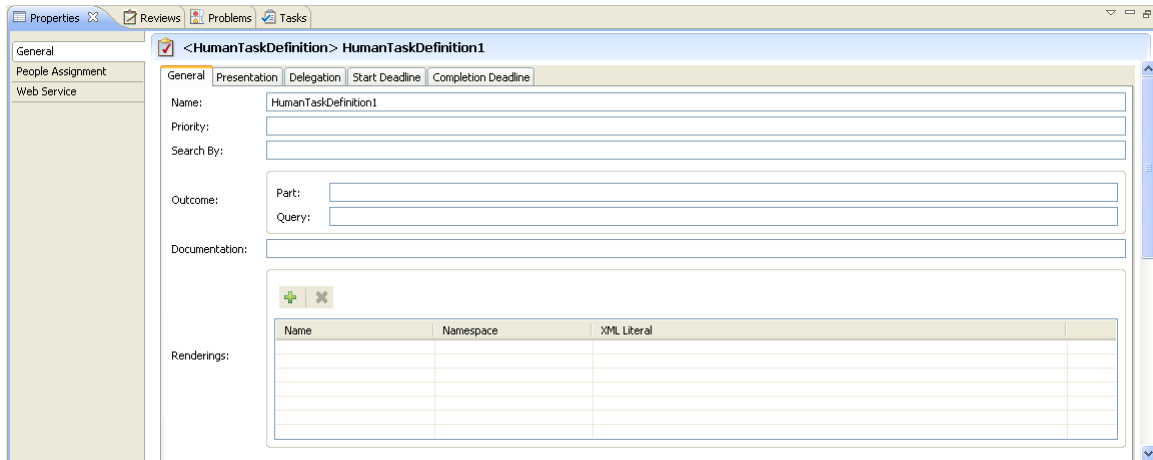
In a loan approval process, the review loan activity can be implemented by a review loan task. The invocation of the activity creates an instance of the review loan task that pops up on a loan representative's task list. The representative reviews the loan application and sets the status of the application to under review. The task is completed when the representative completes the evaluation the loan application and either approves or rejects it. The output message of the task will indicate whether the loan has been approved or not.

3.1 Modeling Human Task

In the Outline view of eClarus Business Process Modeler, right-click on the business process that you wish to add a human task to. Select “Human Interactions” from the context menu. You can choose to create a logical people group, human task or human notification from the cascaded menu.



After a new Human Task is created, the Human Task property page will be displayed. The same Human Task property page is used when defining an in-line task for a people activity.



3.2 Generic Human Roles

Generic human roles define what a person or a group of people can do with tasks and notifications. The following generic human roles are defined:

- **Task initiator** - the person who creates the task instance. Depending on how the task has been instantiated the task initiator may or may not be defined.
- **Task stakeholders** - the people ultimately responsible for the oversight and outcome of the task instance.
- **Potential owners** - persons who receive the task so that they can claim and complete it. A potential owner becomes the *actual owner* of a task by explicitly claiming it.
- **Actual owner** - the person actually performing the task. A task has exactly one actual owner.
- **Excluded owners** - may not become an actual or potential owner and thus they may not reserve or start the task.
- **Business administrators** - play the same role as task stakeholders but at task type level.
- **Notification recipients** - persons who receive the notification, such as happens when a deadline is missed or when a milestone is reached.

In the loan approval process, the loan representative can be the potential owners and the loan managers can be the task stakeholders for the Review Loan activity.

3.3 People Assignment

To determine who is responsible for acting on a human task in a certain generic human role or who will receive a notification, people need to be assigned. People assignment can be achieved via different ways:

- **Logical People Groups** - define which person or set of people may interact with a human task or a notification of a people activity. A logical people group is bound to a people query against a people directory at deployment time.
- **Literals** - specify the user identifier(s) or the name(s) of groups directly
- **Expressions** - use an expression that returns either an instance of the organizational entity data type or the user data type

In the loan approval process, a logical people groups can be created for loan representatives and loan managers. These groups can be used when assigning people to the generic human roles of the Review Loan activity.

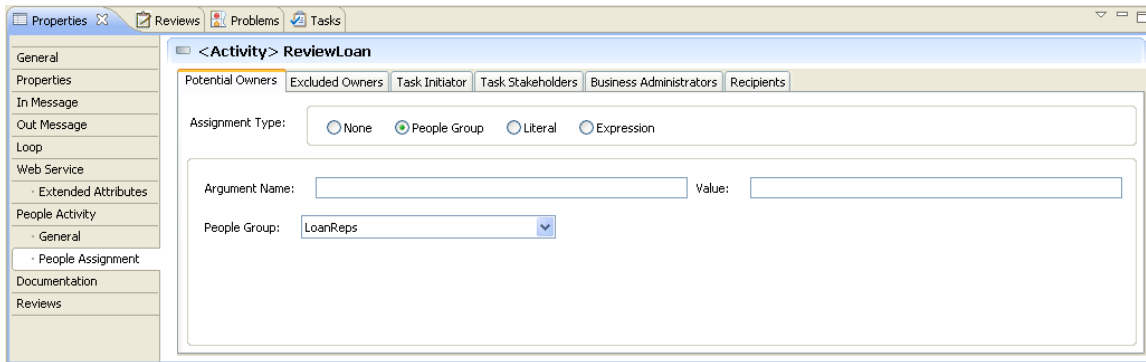
3.3.1 Overriding People Assignment

By default when a people activity uses a local or remote human task or notification, it inherits the people assignments specified by the local or remote human task or notification. In order to promote reuse of tasks and notifications, the people activity may

override the people assignments. Of course the overriding result must be understandable in the context of the task or notification.

3.3.2 Modeling People Assignment

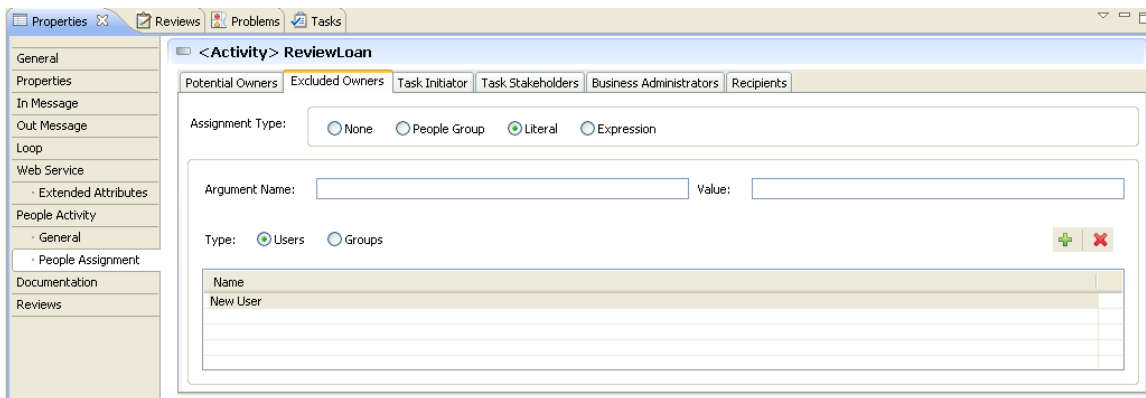
In the eClarus Business Process Modeler, use the People Assignment property page under People Activity to specify the people assignment for an in-line task or notification of a people activity or to override the people assignment of a local/remote task or notification used by the people activity:



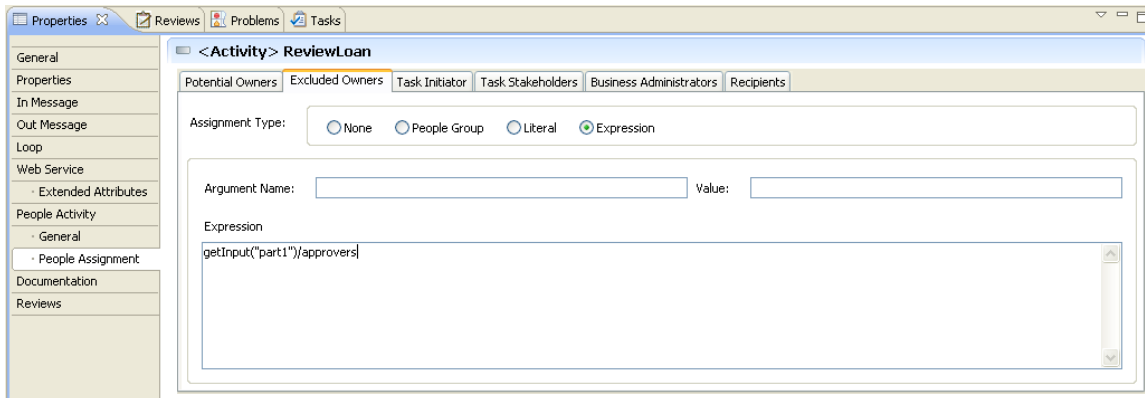
The People Assignment property page is also available when defining a human task or notification in a business process.

The People Assignment property page contains a tab for each generic human role. Select the tab for the role that you wish to assign people to. On each generic human role tab, you can specify the type of assignment: people group, literal or expression. For people group assignment, you must select a people group from a list of people groups that are defined in the process.

For literal assignment, you may choose to enter a list of user identifiers or group names:



For expression assignment, you may enter an expression in the expression text box:



3.4 Presentation Elements

It is important that information of human tasks or notifications be presentable in a wide range of user interfaces, languages and technology platforms in order to support a diverse group of users. User may look up information about a task or notification from a Web browser, Java clients, .NET clients or emails. The user group may also be from different countries of different languages and regional protocols. The Presentation Elements of a human task or notification will allow the specification of how the same information, such as name or descriptions, should be expressed in different languages and contexts.

3.4.1 Modeling Presentation Elements

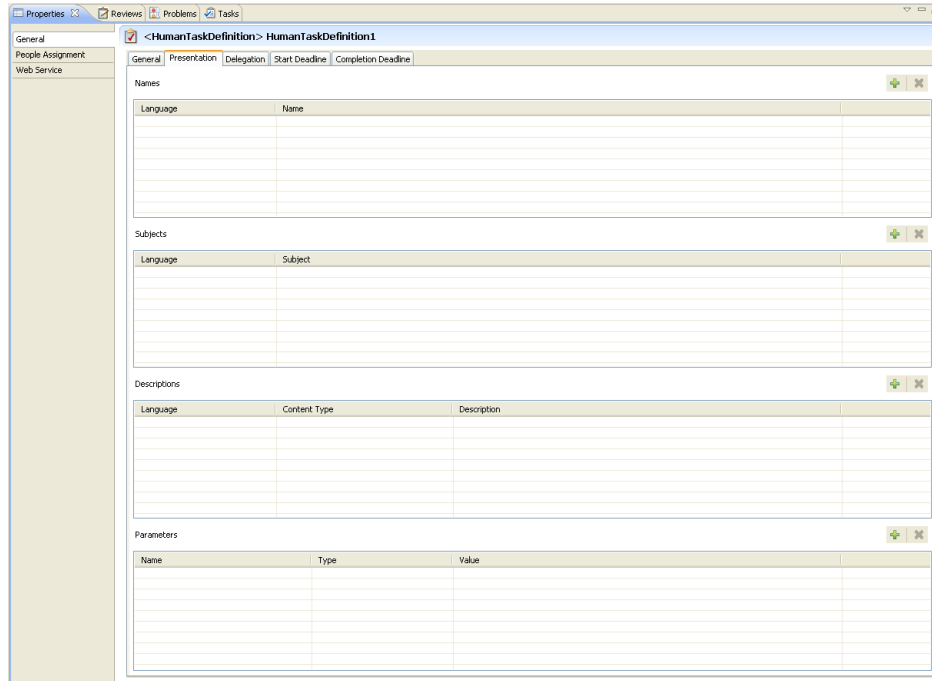
In the Human Task General Property Tab, there is a Presentation Tab for specifying presentation elements. The name and subject of the task may be expressed in multiple languages. A drop down list is available to ease entry for languages. You can also enter a language that is not available in this list. The language entered must be in accordance with RFC 1766. In addition to languages, context types can also be specified for the task description. Again a drop down list is available for context types. You can also enter a context type that is not in the list. The context type entered must be in accordance to RFC 2046. You can also specify parameters to be used for the subject or description of a task. The parameter must be of XSD simple types, and there is a drop down list for parameter type to assist entry. When a parameter is used in a subject or description, the syntax is $\{ \$parameter_name \}$. For example:

Subjects + X

Language	Subject
English,US	Approve the loan for \$ {loan_amount} on behalf of {first_name} {last_name}

Parameters + X

Name	Type	Value
first_name	string	getInput("ReviewLoanRequest")/cust/firstname
last_name	string	getInput("ReviewLoanRequest")/cust/lastname
loan_amount	string	getInput("ReviewLoanRequest")/amount



The screenshot shows the 'HumanTaskDefinition1' configuration window in the eClarus Business Process Modeler. The window has a sidebar on the left with 'General', 'People Assignment', and 'Web Service' options. The main area has tabs for 'General', 'Presentation', 'Delegation', 'Start Deadline', and 'Completion Deadline'. The 'General' tab is selected and contains four tables:

- Names:** A table with columns 'Language' and 'Name'.
- Subjects:** A table with columns 'Language' and 'Subject'.
- Descriptions:** A table with columns 'Language', 'Content Type', and 'Description'.
- Parameters:** A table with columns 'Name', 'Type', and 'Value'.

3.5 Rendering Elements

In addition to Presentation elements, the Rendering element provides an extensible mechanism for specifying UI renderings for human tasks and notifications, user interfaces such as forms clients, portlets, e-mail clients, etc. In eClarus Business Process Modeler, the rendering elements information for a task or notification is maintained on the General property tab.

3.6 Timeouts and Escalations

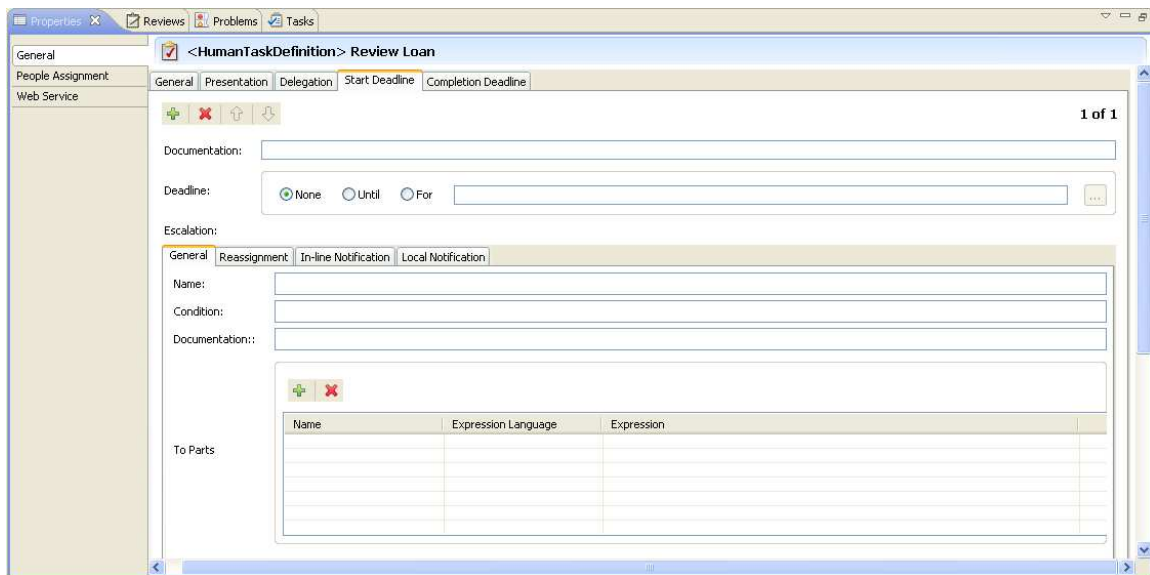
Timeouts and escalations allow the specification of a date or time before which the task must reach a specific state. If the timeout occurs a set of actions is performed as the response. The start deadline specifies the time until a task must start, and a completion deadline specifies the time until a task is due. Multiple deadlines can be specified for a task or notification. For all deadlines if a status is not reached within a certain time then an escalation action can be triggered. When the task reaches a final state, all its deadlines becomes obsolete.

When defining an escalation, you can setup a notification to inform people about the status of a task or have the task reassigned to another person or group. When specifying a notification, you can use an existing local notification defined in the business process or defined a new one inline. Reassignments are used to replace the potential owners of a task when an escalation is triggered.

Suppose a loan approval process has a policy that all loan applications must be reviewed within 48 hours of submission. The policy can be enforced by setting up a completion deadline in the review loan task with a time period of 48 hours and an escalation action to notify the loan manager.

3.6.1 Modeling Timeouts and Escalations

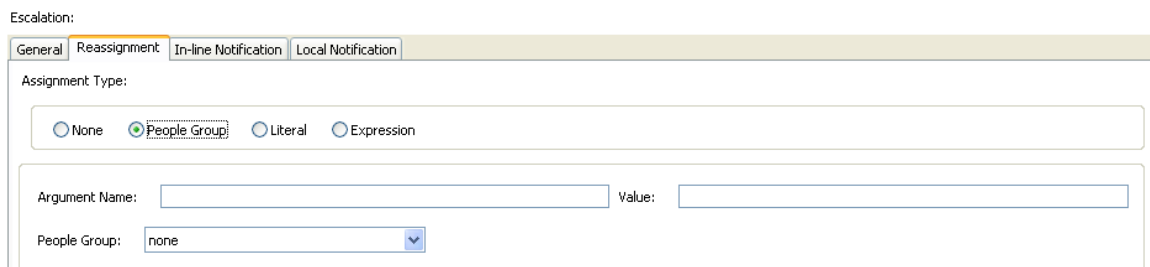
On the Human Task property page, there is a Start Deadline and Completion Deadline tab. You can define multiple start or completion deadlines on each tab.



Each deadline must have an escalation action. The escalation section of the deadline property page contains four tabs:

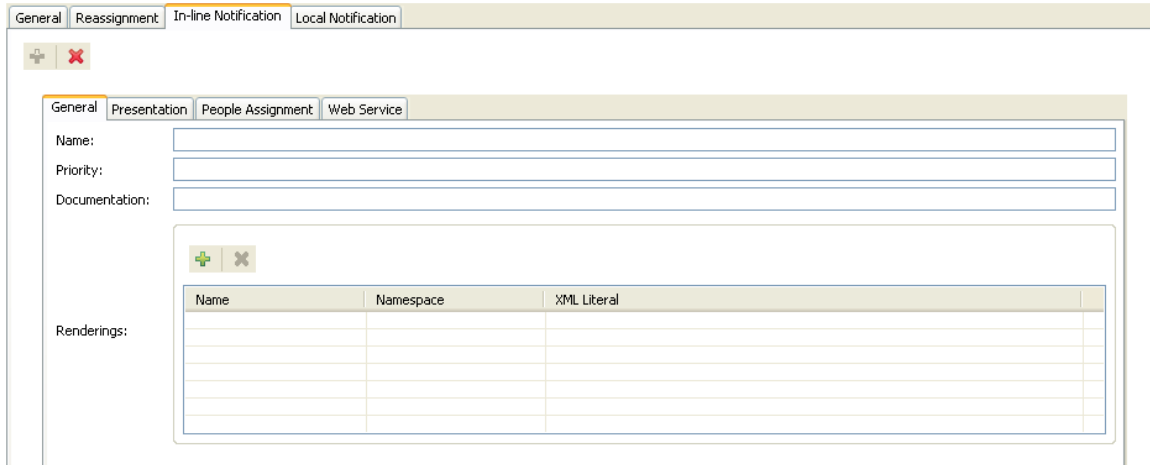
1. General – define general information such as name and condition for the escalation here.
2. Reassignment – specify the person or group whom the task should be reassigned to when the deadline is reached.
3. In-line Notification – define a notification for the escalation here.
4. Local Notification – specify the notification defined in the process that should be used when the deadline is reached.

The reassignment tab looks identical to the people assignment property tab. You define the reassignment in the same fashion as a people assignment.



The in-line notification tab for escalation is the same as that for business process level notification or people activity in-line notification.

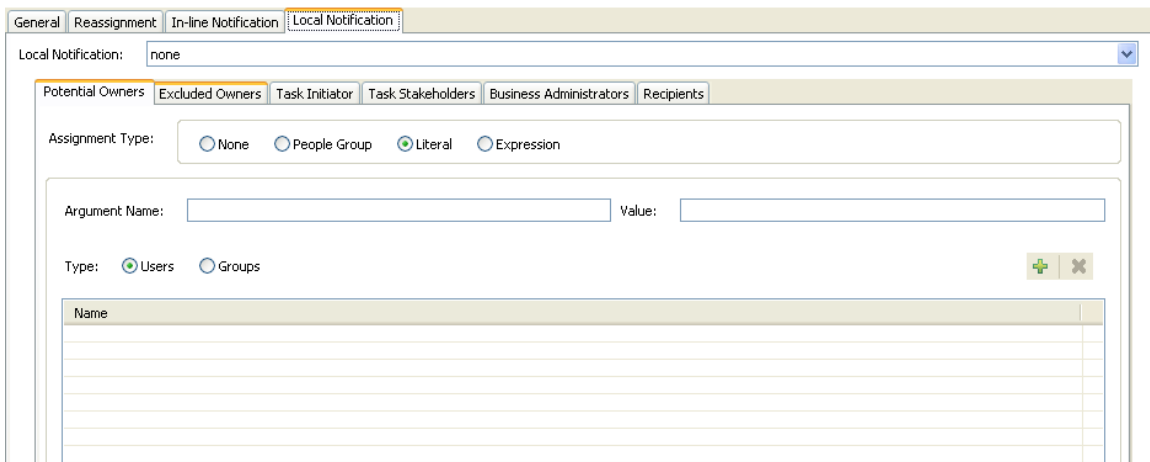
Escalation:



The screenshot shows the 'Escalation' configuration window with the 'In-line Notification' tab selected. The window has a main header with tabs: 'General', 'Reassignment', 'In-line Notification', and 'Local Notification'. Below this is a sub-panel with tabs: 'General', 'Presentation', 'People Assignment', and 'Web Service'. The 'General' sub-tab is active, showing fields for 'Name', 'Priority', and 'Documentation'. Below these is a 'Renderings' section with a table that has columns for 'Name', 'Namespace', and 'XML Literal'. There are also '+' and 'x' icons for adding and removing renderings.

When you specify a local notification for the escalation, you select one of the process level notifications from a drop-down list. You also have an option to override the people assignment defined for the notification.

Escalation:



The screenshot shows the 'Escalation' configuration window with the 'Local Notification' tab selected. The 'Local Notification' dropdown menu is set to 'none'. Below this is a sub-panel with tabs: 'Potential Owners', 'Excluded Owners', 'Task Initiator', 'Task Stakeholders', 'Business Administrators', and 'Recipients'. The 'Task Initiator' sub-tab is active, showing an 'Assignment Type' section with radio buttons for 'None', 'People Group', 'Literal', and 'Expression'. Below this are fields for 'Argument Name' and 'Value', and a 'Type' section with radio buttons for 'Users' and 'Groups'. There is also a '+' and 'x' icon for adding and removing entries. At the bottom is a table with a 'Name' column.

4.0 Summary

eClarus Business Process Modeler offers full support for BPEL4People. This paper provided an introduction to BPEL4People and WS-Human Task and demonstrated how they can be integrated into your business process models with eClarus Business Process Modeler. If you would like to read more about BPEL4People or WS-Human Task, you will find great resources at the eClarus website (<http://www.eclarus.com/resources.html>).

If you would like hands on experience on business process modeling with BPEL4People, you can download eClarus Business Process Modeler and a trial license from the eClarus website (<http://www.eclarus.com/downloads.html>). If you have any questions on any topics in business process modeling or eClarus's business process modeling products, please feel free to contact eClarus (<http://www.eclarus.com/company.html>).

5.0 References

Web Service Business Process Execution Language, Version 2.0

OASIS Standard, April 2007, OASIS Technical Committee
<http://docs.oasis-open.org/wsbpel/2.0/wsbpel-v2.0.html>

WS-BPEL Extension for People (BPEL4People), Version 1.0

Active Endpoints Inc., Adobe Systems Inc., BEA Systems Inc., International Business Machines Corporation, Oracle Inc., and SAP AG, June 2007
<https://www.sdn.sap.com/irj/sdn/go/portal/prtroot/docs/library/uuid/30c6f5b5-ef02-2a10-c8b5-cc1147f4d58c>

Web Services Human Task (WS-HumanTask), Version 1.0

Active Endpoints Inc., Adobe Systems Inc., BEA Systems Inc., International Business Machines Corporation, Oracle Inc., and SAP AG, June 2007
<https://www.sdn.sap.com/irj/sdn/go/portal/prtroot/docs/library/uuid/a0c9ce4c-ee02-2a10-4b96-cb205464aa02>

Business Process Modeling Notation, Version 1.1

Object Management Group, February 2006
<http://www.bpmn.org/Documents/OMG%20Final%20Adopted%20BPMN%201-0%20Spec%2006-02-01.pdf>

WS-BPEL Extension for People – BPEL4People

IBM and SAP, July 2005
<https://www.sdn.sap.com/irj/servlet/prt/portal/prtroot/docs/library/uuid/cfab6fdd-0501-0010-bc82-f5c2414080ed>