Oracle® Cloud

Work With Dynamic Processes

19.3.1
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Module1 Ready to Use a Dynamic Process?

Learn Dynamic Process Basics

Many business processes don't follow a structured or sequential path. They might have many possible activities that experts could act on as needed, given the situation. You can model them as dynamic processes.

Using the example of a hospital emergency room (ER), let's explore the entire dynamic processes development life cycle – from creating a dynamic process, modeling its activities and properties, activating it on the server, and using it in runtime as a knowledge worker.

If you're in charge of an ER, then you'll need a way to automate the unpredictable processes of screening, treating, and discharging patients. Each case is different. Some steps need to happen in order, some depend on expert input or the situation, and others can be performed at any time. An ER is a perfect example for a dynamic process.

Let's break the example down:

- A nurse starts a new patient by entering information in a form.
- A nurse performs screening for the patient.
- A doctor diagnoses and treats the patient. If needed, the patient goes to surgery.
- A nurse discharges the patient.

Create a Dynamic Process

First, let’s create a process application (Emergency) to house your dynamic process, then create the dynamic process itself.

1. On the Oracle Integration Home page, click **Processes** in the navigation pane.
2. Select **Process Applications** from the Processes navigation pane. On the Process Applications page, click **Create**.
3. In the Create Process Applications page, select **Create an Application**, and then click **Create**.
4. Enter `Emergency` in the **Name** field, select a space from the **Space** drop-down list, leave **Open Immediately** selected, and click **Create**.

   The **Application Home** tab opens, with application components shown in the navigation pane.
5. On the **Application Home** tab, click **Create**, then **New Dynamic Process**.

6. In the Create Dynamic Process dialog box, enter `Emergency Process` in the **Name** field, optionally give a suitable description in the **Description** field, and click **Create**.

   A tab for your Emergency Process opens and the dynamic process introduction page appears.

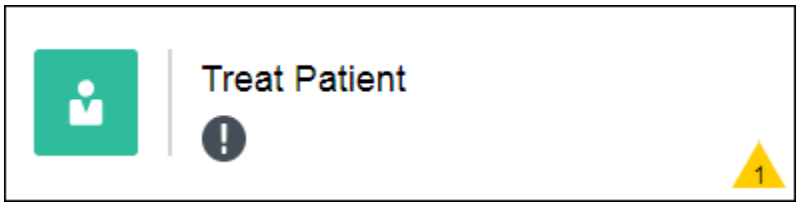
Add Human Task Activities and Stages

A process features activities that humans perform, such as completing and submitting information or approving documents.

Let's start by adding some human tasks that people typically perform in an emergency room. For simplicity, we'll keep this example brief. But keep in mind that a dynamic process can accommodate the complex scenarios of a real world situation such as an emergency room.

1. Add a human task activity.

   In the **Add Activity** field, enter `Treat Patient` and click **Add**. You'll see your new activity in the central editing canvas.

   Notice the icons:

   - The green icon indicates a human task.
   - The **Required** icon displays when the activity is required.
   - The warning icon displays when there are validation issues.

     The number in the icon indicates how many validation issues were found. These validation issues are useful as you get immediate feedback while configuring and you can fix the issues inline.

     For now, you can ignore these issues and proceed to the next activity.

2. Add three more human task activities and name them `Screen Patient`, `Discharge Patient`, and `Surgery`.
3. Add two stages.

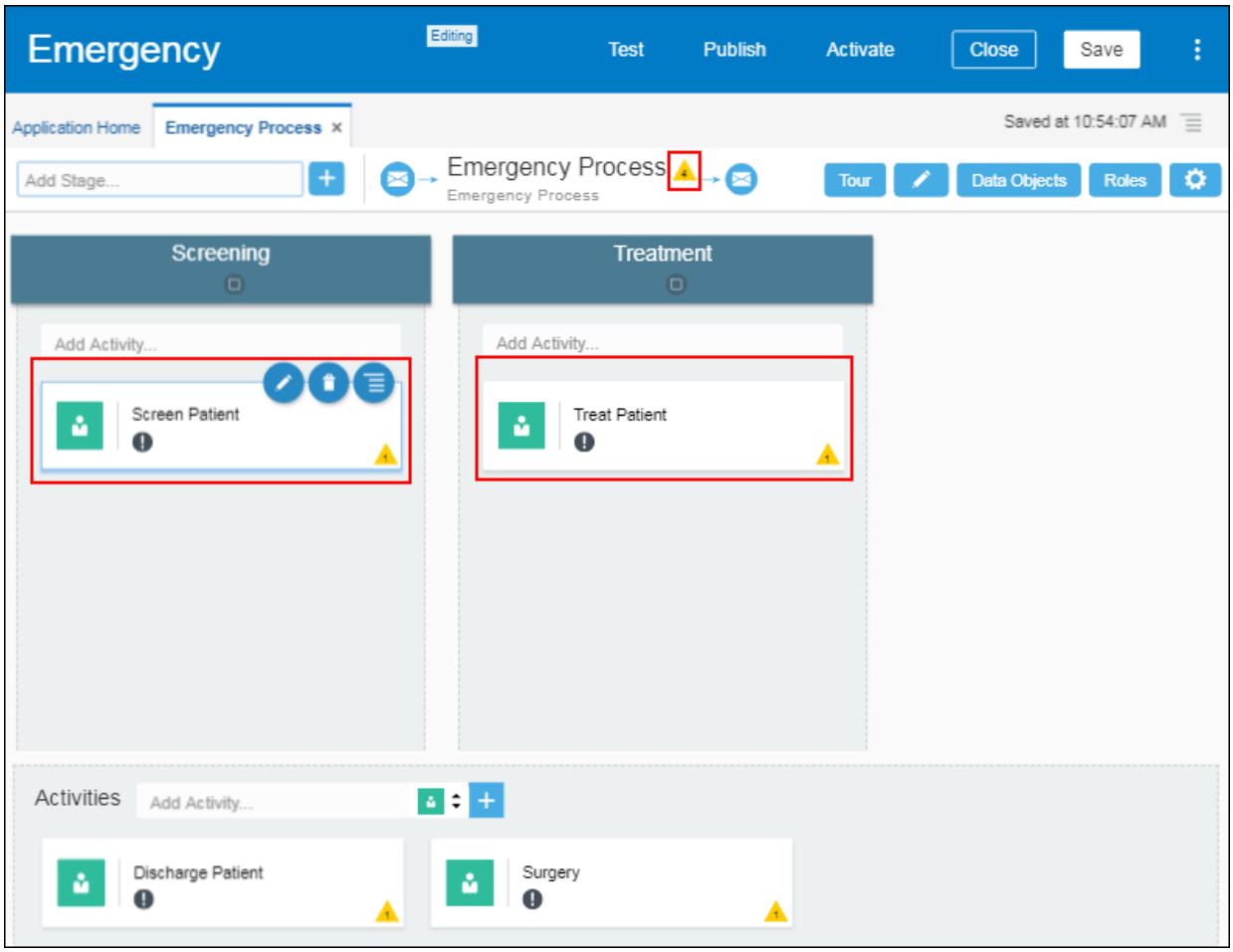
   In the **Add Stage** field, enter `Screening` and click **Add**. Enter `Treatment` and click **Add**. The two stages open on the central canvas.

   Stages enable you to organize activities into phases of a process. (This example is kept simple, but you can include many possible activities in each stage.) Stages can run at the same time or one after another.

4. Drag and drop the screen activity into the Screening stage and the treat activity into the Treatment stage. Leave the discharge and surgery activities where they are.

   The two stages are currently set to become available at the same time in runtime. By default, all stages and activities (referred to as *plan items*) become available at

the same time in runtime. The other two activities aren't in stages, which means they are available at any point.



Notice the validation icon next to *Emergency Process*. It shows the total number of validation issues in the process. Because you just started to create your dynamic process, and your dynamic process isn't complete, ignore these issues. To hide the validation issues, click **Edit Configuration** and change the settings for the inline validations.

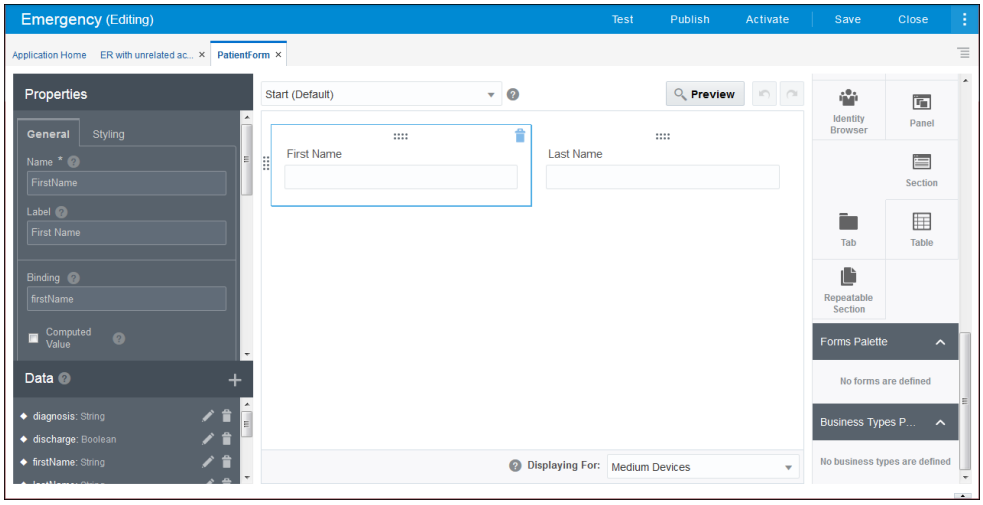
Important points about human tasks:

- A human task can be a submit or an approval activity.
- Each human task activity must be associated with a form. The form provides the interface for the task.
- Each human task activity needs an assignee, which could be a user, role, or group.
- Each human task activity has data values that flow in and out of it, referred to as its input and output. For example, a human task's form might display with some fields completed and its output might contain additional or changed fields.

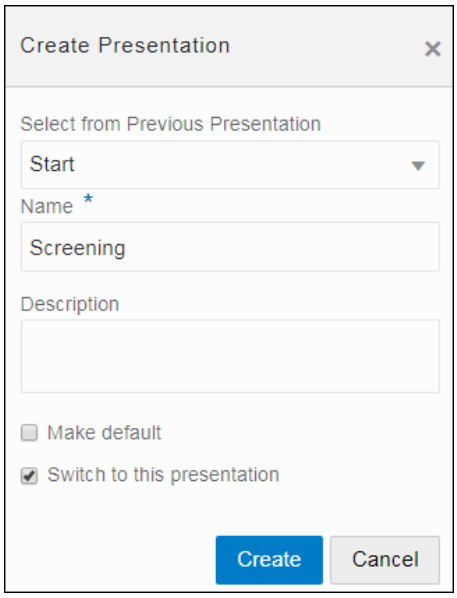
Create Web Form Presentations for the Dynamic Process

Let's create one form with multiple presentations to apply to the human tasks.

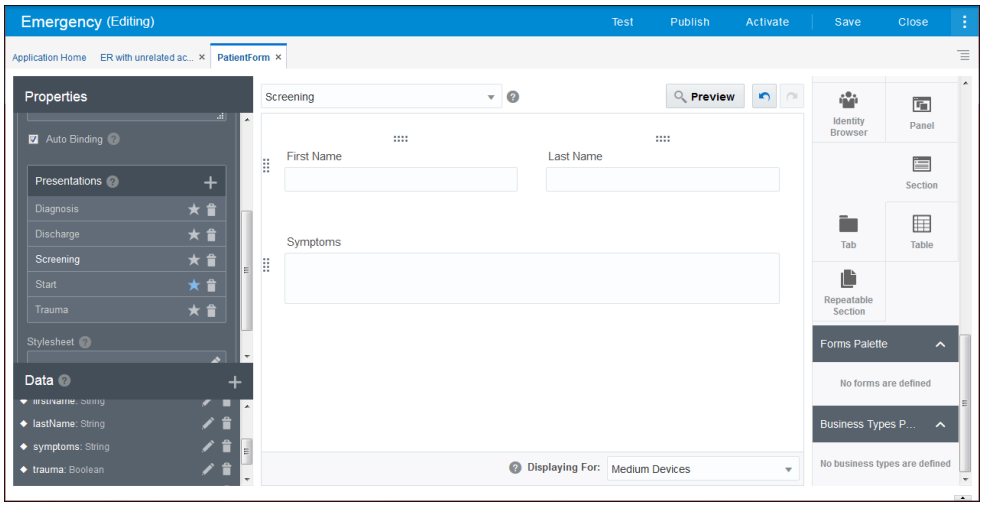
1. Create a web form.
   a. In the Application navigation pane, click **Forms**.
   b. On the **Application Home** tab, click **Create**, then **New Web Form**.
   c. In the Create New Web Form dialog box, enter `PatientForm` in the **Name** field, leave the **Open Immediately** check box selected, and click **Create**.
2. Create a Start presentation to capture patient name fields.
   a. Change the name of the default Main presentation to `Start`. In the Properties pane, click **Presentation** and change the **Name** field to `Start`.
   b. Drag and drop two Input Text controls from the Basic Palette onto the form's central canvas side by side. Select the first one and change its **Name** field to `FirstName` and its **Label** field to `First Name` on the **General** tab. Select the second control and change its **Name** field to `LastName` and its **Label** field to `Last Name`.



3. Create a Screening presentation.
   a. Click outside a form control, and select the **Form** tab on the Properties pane. Notice how the Properties palette tabs change depending on whether you've selected the form or a form control.
   b. Click **Add** in the Presentations table. In the Select Presentation Type dialog box, select **Clone**.
   c. In the Create Presentation dialog box, choose **Start** in the **Select from Previous Presentation** field, and enter `Screening` in the **Name** field. Leave the **Switch to this presentation** check box selected, and click **Create**.



d. Drag and drop a Text Area control to the form canvas. Select the control, and change its **Name** and **Label** fields to `Symptoms`.



4. Create a Treatment presentation.

   a. Click outside a form control, and select the **Form** tab.

   b. Click **Add** in the Presentations table. In the Select Presentation Type dialog box, select **Clone**.

   c. In the Create Presentation dialog box, choose **Screening** in the **Select from Previous Presentation** field, and enter `Treatment` in the **Name** field. Leave the **Switch to this presentation** check box selected, and click **Create**.

   d. Drag and drop a Text Area control to the form canvas. Select the control, and change its **Name** and **Label** fields to `Treatment`.

5. Create a Surgery presentation.

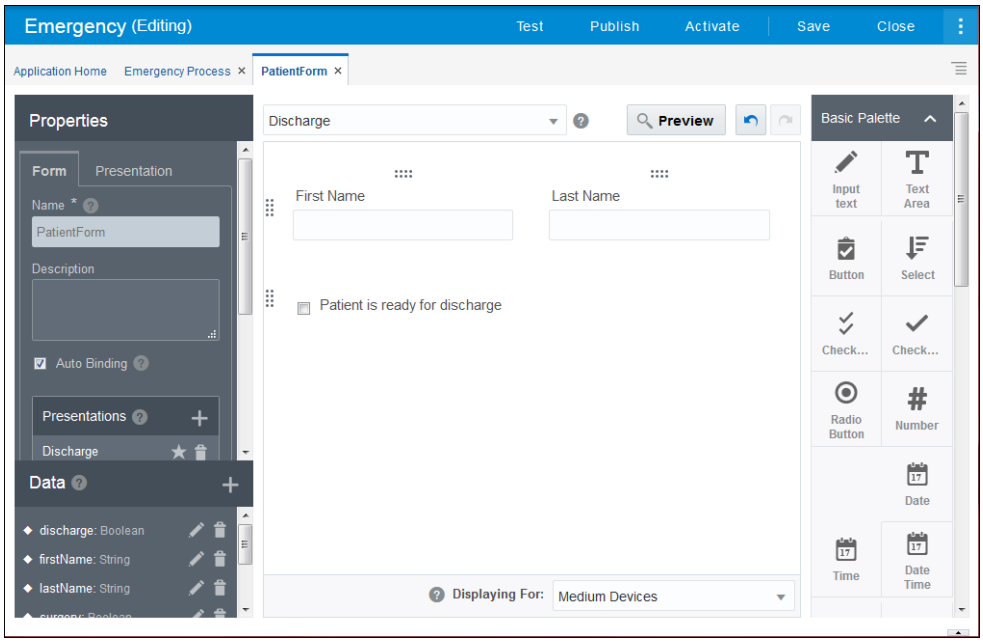
   a. Repeat the substeps from the previous step to clone a presentation, but this time name the presentation `Surgery` and base it on the Start presentation.

b. Drag and drop a Checkbox control to the form canvas. Select the control, and enter `Surgery` in its **Name** field. In its **Label** field, enter `Patient consents to surgery`.

6. Create a Discharge presentation.

   a. Repeat the substeps from the previous step to clone a presentation, but this time name the presentation `Discharge` and base it on the Start presentation.

   b. Drag and drop a Checkbox control to the form canvas. Select the control, and enter `Discharge` in its **Name** field. In its **Label** field, enter `Patient is ready for discharge`.



7. Click **Save**.

Set the Process Start

Each dynamic process starts with form or data input. Let's configure form and presentation input for the dynamic process.

1. Click the **Emergency Process** tab to display the dynamic process.

2. Click **Process Input**  next to the process name at the top of the dynamic process editor.

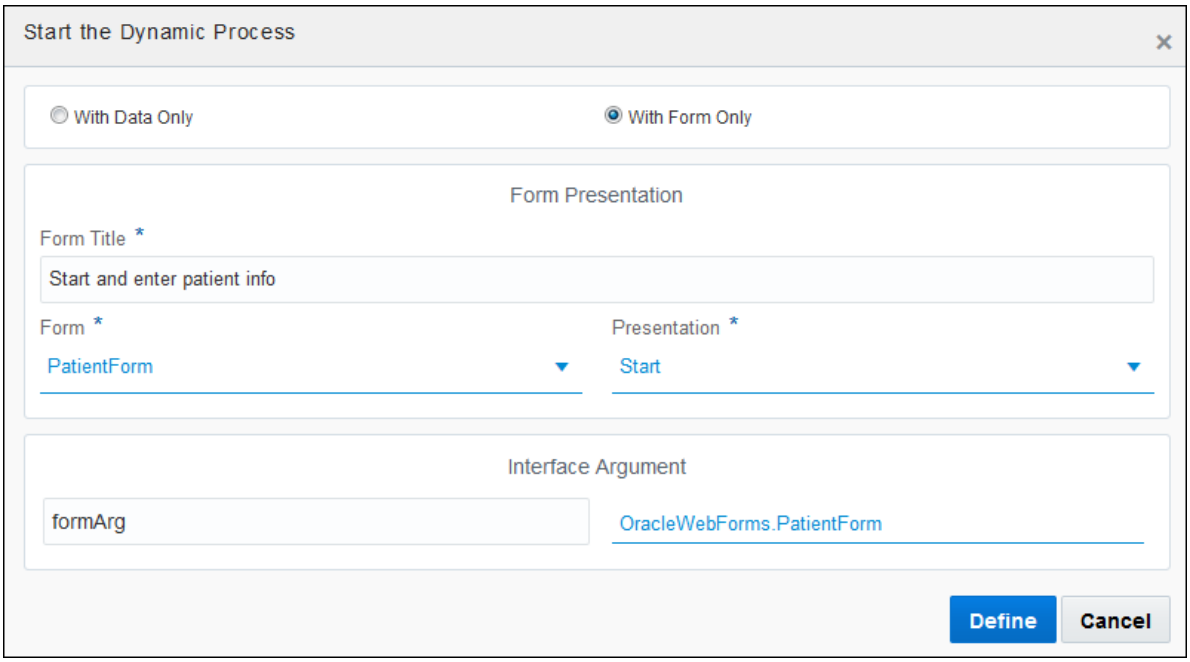
   Note that the similar icons apply to input on one side and output on the other side. The icons at the top of the page apply to the entire process.

3. Complete settings in the Start the Dynamic Process dialog box.

   a. Select **With Form Only**.

   b. In the **Form Title** field, enter `Start and enter patient info`.

   c. In the **Form** field, leave the form you created (PatientForm) selected. Select **Start** in the **Presentation** field, and click **Define**.



Notice **formArg** listed under Interface Argument. It refers to data objects automatically created for the form.

4. Click **Save**.

Set Presentations for the Human Task Activities

Next you'll implement each human task activity with a form presentation.

1. On the **Emergency Process** tab, select the Screen Patient activity and click **Edit Properties** .

   The activity's properties pane opens at the side.

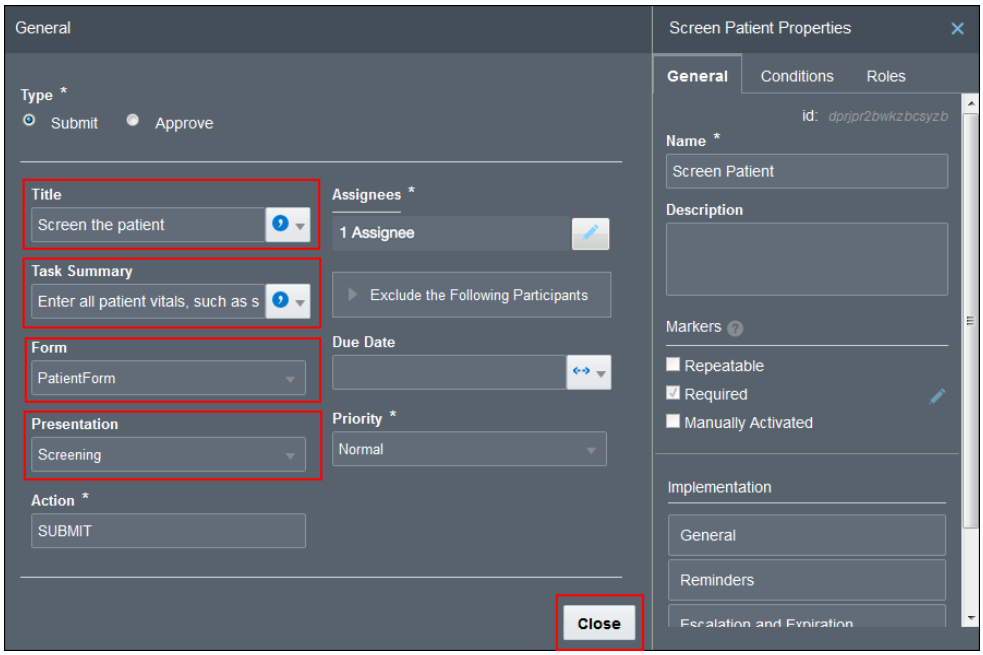
2. In the activity's properties pane, click **General** under implementation options.

   The properties pane expands.

3. Complete the General implementation fields.

   - By default, the title has the same name as the human task activity. Optionally, enter meaningful text in the **Title** and **Task Summary** fields. Entries you specify appear at the top of the form in runtime. You can enter literal values or expressions.
   - In the **Form** field, select `PatientForm`. In the **Presentation** field, select **Screening**.

4. Click **Close.**



5. Select the Treat Patient activity and implement the form and Treatment presentation.

   Click **General**, select **PatientForm** again in the **Form** field, but select **Treatment** this time in the **Presentation** field. Click **Close**.

6. Select the Discharge Patient activity and implement the form and Discharge presentation, then click **Close**.

7. Select the Surgery activity and implement the form and Surgery presentation, then click **Close**.

Configure Data Association for the Human Task Activities

Each human task activity needs data input and output defined through data association. Data associations define the information passed between flow elements.

1. Click **Data Objects**. In the Data Objects section, expand **Input**, then **formArg**.

   Notice the data objects for the form controls you added. These data objects were automatically added as you created the web form.

2. Select the Screen Patient activity, click **Menu**  , then **Data Association**, and then **Input**.

   The Data Association editor opens with the **Input** tab selected.

3. In the Data Association editor, click **Auto Mapping**  .

   Notice that formArg and PatientForm mapping automatically appears. This mapping indicates that values from the form (formArg) get passed to the PatientForm objects.

4. Click the **Output** tab, and then click **Auto Mapping**  .

Notice that the same PatientForm and formArg mapping appears, but switched. This mapping allows the data values to change if the user enters or changes values in the human task's web form before submitting.

5. Click **Apply**.
6. Select the Treat Patient activity and repeat the steps to auto map the human task's data association. Be sure to auto map on both **Input** and **Output** tabs, and click **Apply**.
7. Select the Discharge Patient activity and repeat the steps to auto map the human task's data association.
8. Select the Surgery activity and repeat the steps to auto map the human task's data association.

Auto mapping is making a best guess on data values to map, based on names and data types, and works well for this simple example. Keep in mind that you can map and even transform values, including arrays, during data association in complex ways. You can also map and use the outcome of an approval task to drive or affect the process.

Test Activate the Application

Test activating validates and deploys the application, and then makes it available in runtime test mode. You don't activate the application to the production environment until it's ready.

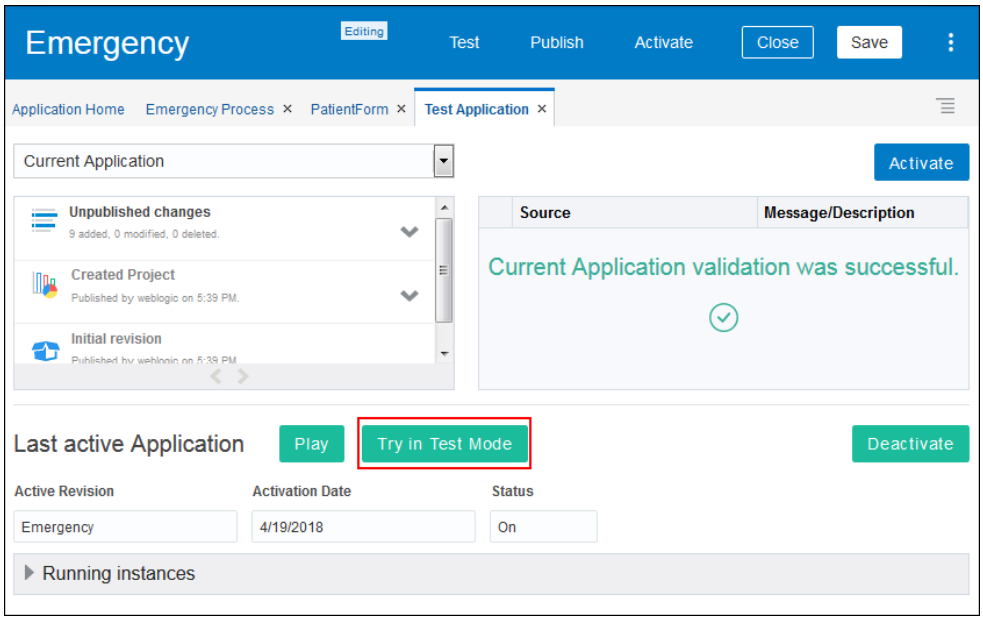
Before test activating the application, check one last time for any validation issues in your process. Use the configuration panel to display the validation issues. If you see any issues, click the validation icon to view details about the issue. Click **Fix** to open the properties panel related to the issue and easily fix the issue.

With your basic dynamic process configured, it's time now to validate, activate, and make the application available in runtime test mode.

1. Click **Test**.

   A **Test Application** tab opens. The upper portion indicates application validation results.

   - If the validation was successful, proceed to the next step.
   - If one or more validation issues are listed, click the **Emergency Process** tab to return to the dynamic process to correct the issues before clicking **Test** again.
2. On the **Test Application** tab, click **Activate**.
3. In the Activate to Test dialog box, leave **Add Me to All Roles** selected, and click **Activate**. A message displays that the application activated successfully.
4. Click **Try in Test Mode**.



A new test mode browser tab opens and the **My Tasks** navigation pane now displays runtime options. You can tell you're in test mode: there's an indicator set to **On** at the top of the screen.

Try Out the Dynamic Process Application in Runtime

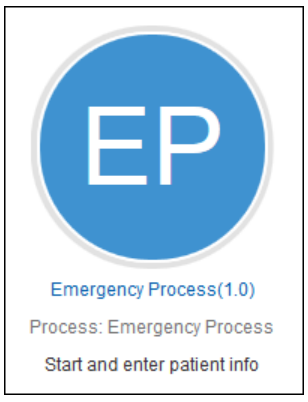
The last step in creating a basic dynamic process is to try out its activated process application by starting and running the dynamic process in runtime.

Now that you have created a simple dynamic process, and activated its process application, let's try the process as a knowledge worker would.

1. If needed, click **My Apps** from the runtime options in the navigation pane.

   The My Apps page displays automatically after you test activate your application.

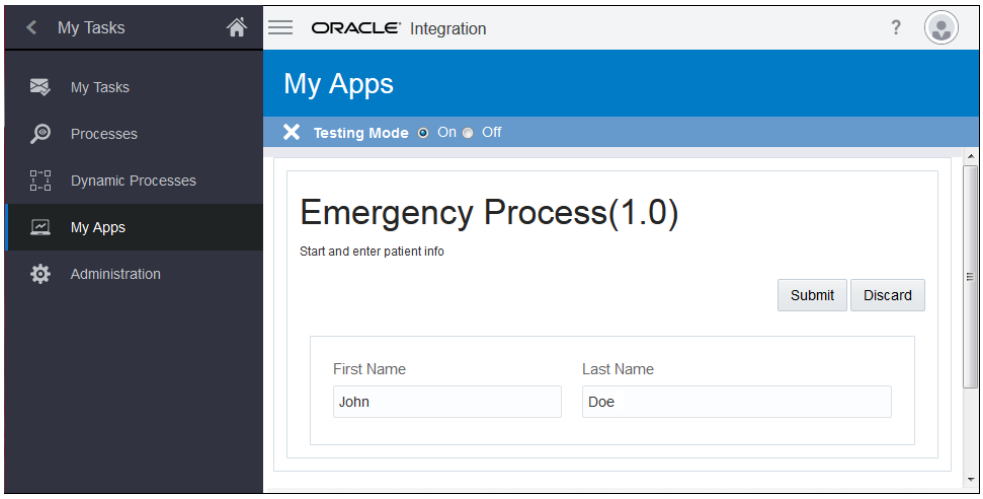
   Your activated application appears, showing its icon (with EP for emergency process), along with its revision number and the dynamic process name and start form text you entered during design time.



2. Click the dynamic process application.

   The start form you specified for the dynamic process (Start presentation) opens.

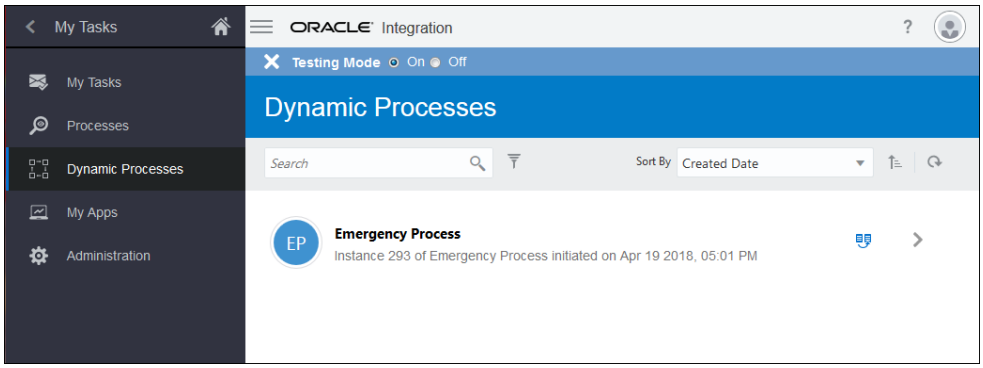
3. Complete the first and last name fields with sample values and click **Submit**.



A message briefly appears to let you know that an instance was created.

4. In the **My Tasks** navigation pane, click **Dynamic Processes**.

   The instance you just created is listed.

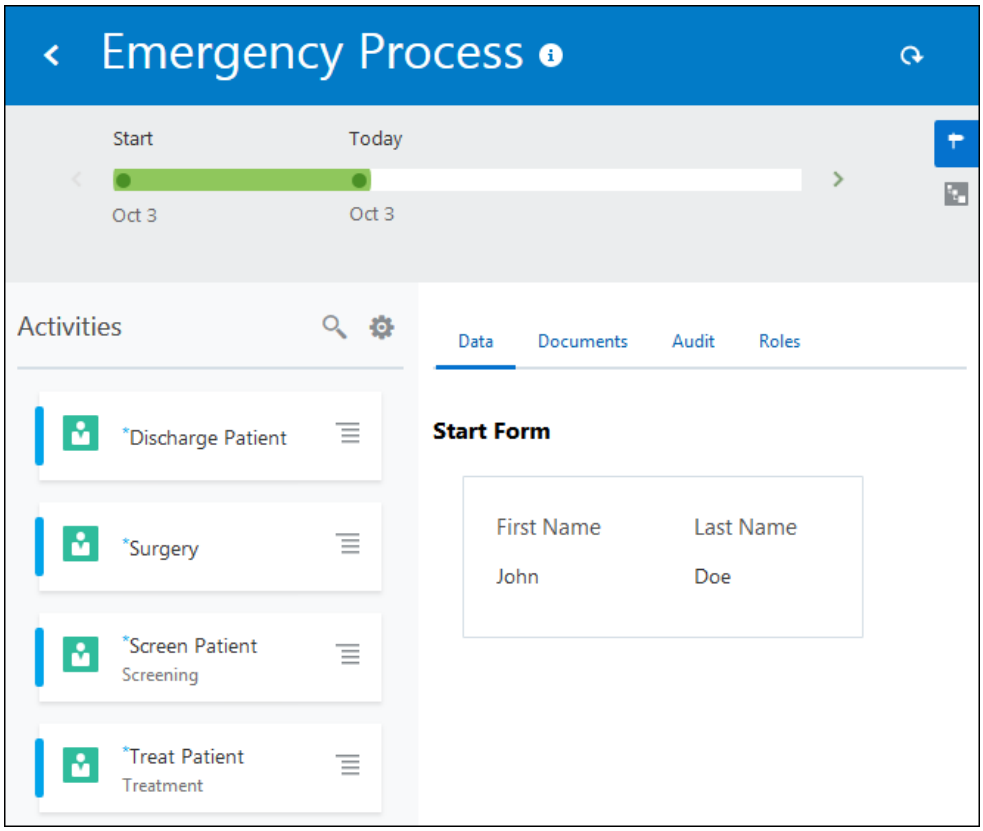


5. Click  to open your Emergency Process instance.

   The dynamic process runtime page opens. Take a moment to explore.

   - The activities you created are available under **Activities**, and show the same green human task icon as in design time. The surgery and discharge activities that aren't part of a stage are listed first and have no stage listed. An asterisk indicates required activities.
   - On the adjacent Details pane, the **Data** tab is selected. The start form includes the values you entered when you started the dynamic process.
   - The top bar lets you switch the instance progress view between milestones and stages. You can see that the instance started today. To view the two stages, click the **Stage** icon. Click a stage to see its number of available, active, and completed activities.
   - Notice the other tabs. The **Documents** tab displays documents related to the process instance. Oracle Integration must be integrated with Oracle Content and Experience to work with documents. Your assigned role's document permissions control the actions you can perform with documents.
   - The **Audit** tab lists what's happened to the process instance so far. Notice that all plan items (stages and activities) started.

- The **Roles** tab lists roles defined for the process instance, and provides an option to override the assigned role.



6. Select, complete, and submit the Screen Patient activity.
   a. Under **Activities**, select the activity to work on it (click its title or select **Open**) from its actions. The **Activity Details** tab opens and the screening presentation appears.
   b. Enter a sample value in the **Symptoms** field and click **Submit**. Notice that the Screening stage at the top turned green, indicating its completion.
7. Select, complete, and submit the Treat Patient activity.

   Notice the **Force Complete** option that knowledge workers can access by clicking **Menu** ☰. Selecting this option acts as a cancel for the activity. It withdraws the activity from the Activities list, but doesn't complete the human task or process. A doctor or nurse might force complete an activity that turns out not to be needed.

   Also notice that the text you entered in the **Symptom** field doesn't appear in the Treatment activity. That's because all of the activities started at the same time with the same form values (payload) available.
8. Select, complete, and submit the Surgery and Discharge Patient activities.

   After you complete the last activity, a message displays that no activities are available to act on. Because all required activities of the process are complete, the process is completed, and a **Close** option appears at the top.
9. Click **Close** and confirm to close the dynamic process and return to the dynamic processes list.

You can't reopen a closed instance. However, you can reopen completed instances to access any remaining open (non-required) activities.

10. Search for the dynamic process you just closed.
    a. In the **Search** field, enter the first or last name you entered when starting the application.
    b. Click **Filter**  . In the Filter dialog box, select **Closed** in the **State** field and click **OK**. The instance you just closed is listed, but now shows a Closed icon rather than an Active one. You can open it and view its details on the **Audit** tab.
    c. On the Dynamic Processes page, click **Clear** to clear the search filter.

       The searching and filtering options enable knowledge workers to locate and return to instances at any time by entering identifiable information such as name or ID.

2

Module2 Take Your Dynamic Process to the Next Level

Explore Advanced Dynamic Process Concepts

You've created an Emergency application that included a dynamic process. Learn how to improve the basic process by configuring advanced properties and customizing it to your requirements.

- Use milestones so that users get updated on what transpired in a running process instance.
- Use markers to control the behavior of plan items (activities, stages, and processes), such as whether they're required, repeatable, or manually activated.
- Define roles, set assignees for human task activities, and control the dynamic process' life cycle.

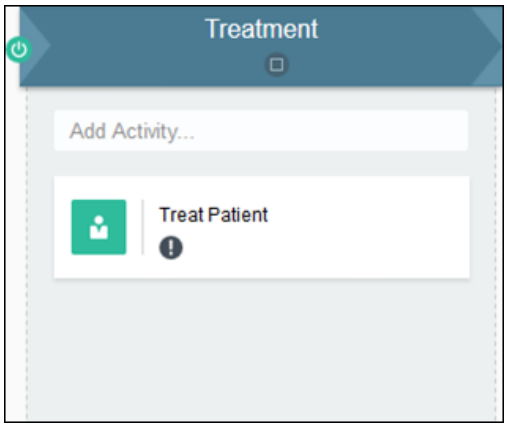
Set a Stage's Activation

By default, stages become available at the same time.

Let’s change it so that the Treatment stage isn’t available until the Screening stage is complete.

1. Close the test runtime tab, and return to the **Emergency Process** tab in design time.
2. Select the Treatment stage (click where it says “Treatment”) and open its properties for editing.
3. Select the **Conditions** tab. Click **Create Condition**  in the **Activation** table.
4. In the expanded Activation condition pane, complete settings.
   a. Enter `Treatment stage starts when` in the **Label** field.
   b. Click **Create Event**  in the **Events** table. Leave the default settings of **Previous Stage** and **Complete** selected, and click **Create**.

   Notice that the Treatment stage now displays an activation symbol indicating an activation condition.



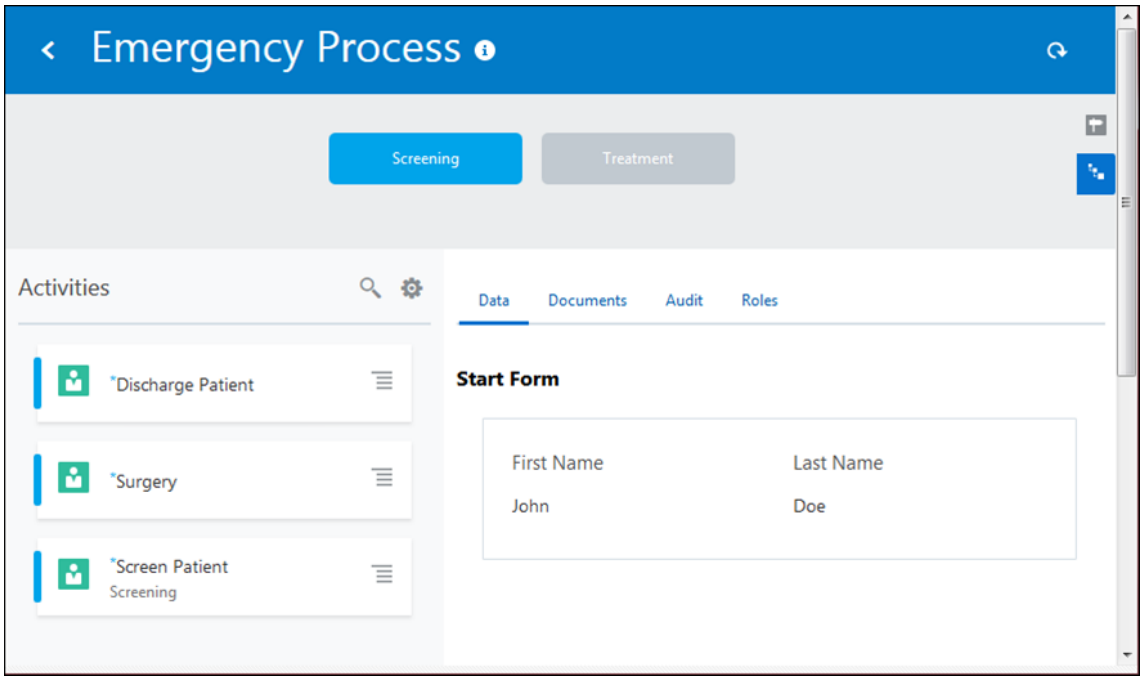
5. Test activate again.

   Click **Test**, then **Activate**. Leave **Add Me to All Roles** selected, and click **Activate**. You're test activating a new version, overriding the version you previously activated. After successful activation, click **Try in Test Mode**.

6. Try out your changes in runtime.

   a. From **My Apps**, start a new application, enter sample values, and submit. Select **Dynamic Process** in the navigation pane and open the new dynamic process instance.

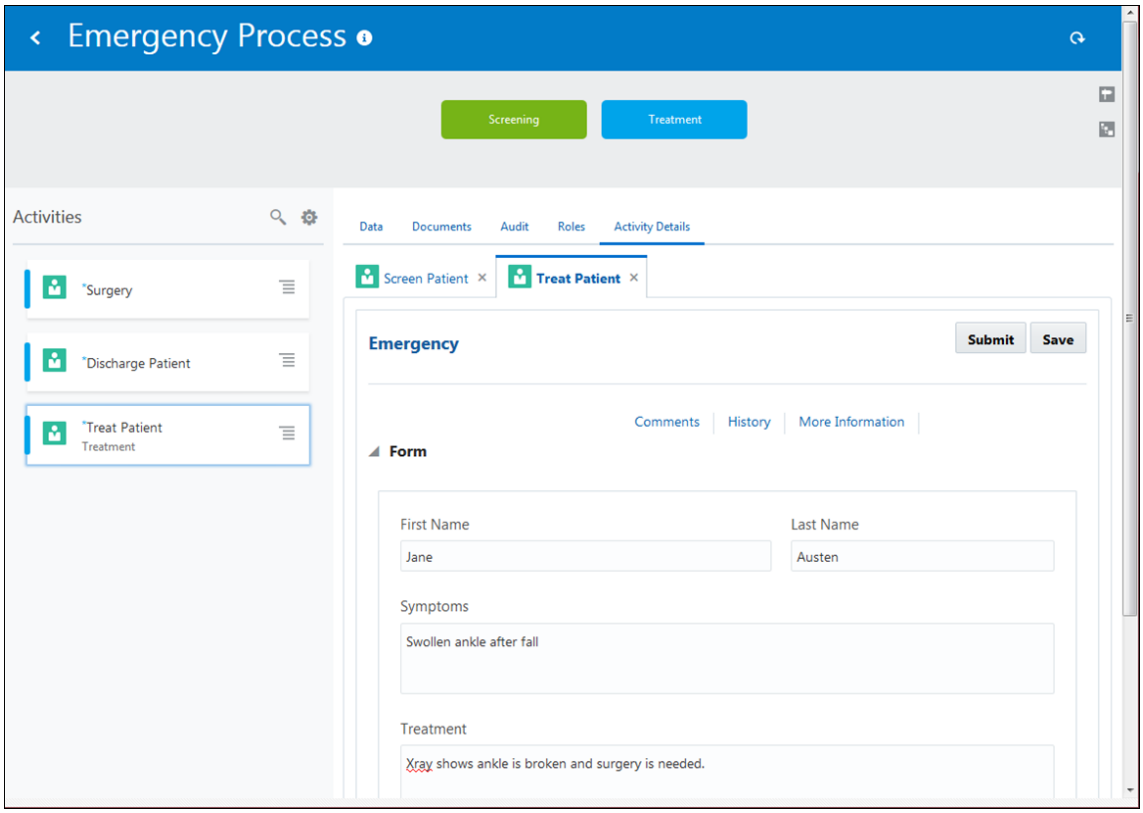
   b. Notice that the Treat Patient activity no longer displays, because it doesn't start until the Screening stage is done. Click **Stage** and notice that the Treatment stage is gray, indicating that it's inactive.



   c. Complete the Screen Patient activity, adding symptom text, and click **Submit**. Notice how the Treatment stage and activity become available.

   d. Complete the Treat Patient activity. Notice how the symptom text was retained. This is because the human task wasn't created until the activity be-

came available (Screening stage was complete), so the activity's data, or payload, included the symptom text you submitted.

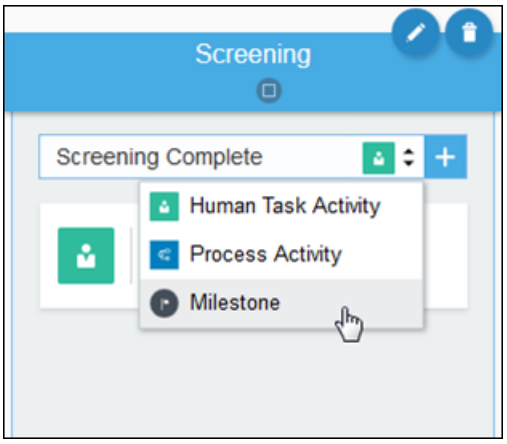


Each plan item has properties, and can have activation, termination, or completion conditions that control its state—for example, when it is active, available, or terminated.

Add a Milestone

Milestones indicate that something occurred or a condition was met. Use milestones so users get updated on what's transpired in a running process instance.

1. Close the test runtime tab, and return to the **Emergency Process** tab in design time.
2. Add a milestone in the Screening stage.
   a. In the **Add Activity** field, enter `Screening Complete`.
   b. Click the activity icon and choose **Milestone**, and click **Add Activity** .



3. Edit the milestone's properties.

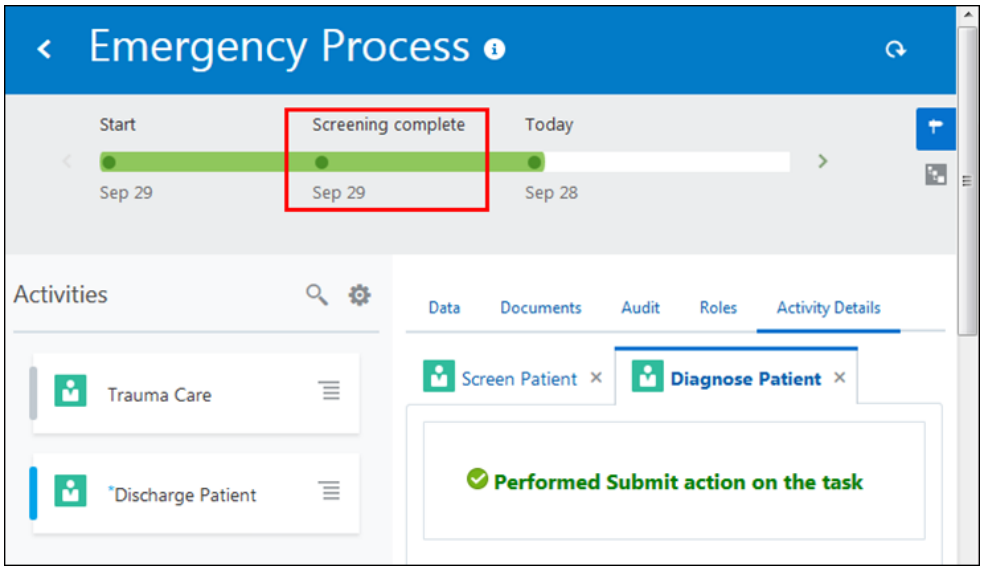
   a. Click the **Conditions** tab. Click **Create Condition** to create a Completion condition called `Screening complete when`.

   b. Click **Create Event** to add an event and select **Screen Patient** from **Activities** and **Complete**. Click **Create**. (Note that you can add multiple events to a condition and specify an AND or OR condition between them.)

      Notice that the milestone now displays an activation symbol indicating an activation condition.

4. Test activate and try out your changes in runtime.

   With the **Milestone** view displayed, submit the Screen Patient activity, and watch the milestone progress bar show the completed milestone.



Control Plan Item Behavior Using Markers

Markers control the behavior of plan items (activities, stages, and processes), such as whether they're required, repeatable, manually activated, and if they auto complete. Depending on the plan item, different markers are available.

By default when you create an activity, it becomes required (the Required marker is selected by default for the activity). You can deselect Required and make changes to the behavior of the activity, but you have to configure one of the following options. Otherwise, you'll get validation errors.

- The activity has one activation condition based on events.
- The activity uses a condition in its marker.
- The activity has a milestone added to it.

Right now, all activities in the Emergency Room example are required. Let's make some changes.

1. Make the Screen Patient activity not required.

   On the **Emergency Process** tab, select the Screen Patient activity and edit its properties. Under **Markers**, deselect **Required**. Notice that the activity no longer displays a **Required** icon.

   Note that the Screen Patient activity has a milestone (Screening Complete) added to it.

2. Make the Surgery human task activity repeatable, manually activated, and not required.

   Edit its properties, select **Repeatable**, deselect **Required**, and select **Manually Activated**.

3. Set conditions to the **Repeatable** and **Manually Activated** markers.

   a. Click **Edit** in the **Repeatable** marker. The Property pane opens.

   b. In the Property pane, click **Create Data Condition** on the Data Driven section.

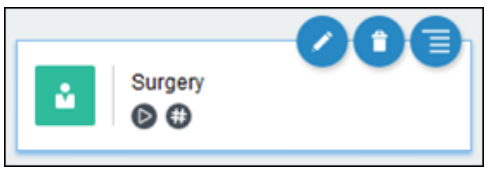
   c. In the Create Data Condition dialog box, select **Simple** as the condition type and enter `Surgery repeatable condition` in the **Name** field.

   d. Define condition as **formArg** is equal to **formArg** and click **Create**.

   e. In the Property pane, click **Save**.

   f. Repeat the steps above for the **Manually Activated** marker, only this time enter the condition name as `Surgery manually activated condition`.

   Notice that the Surgery activity's marker icons now reflect the new marker choices.

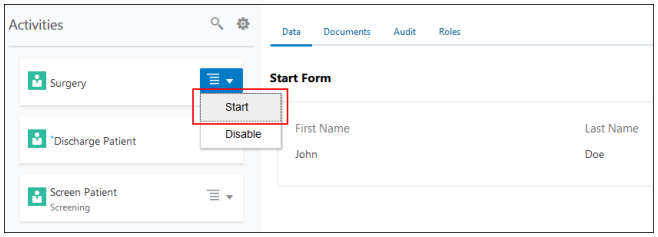


4. Test activate, try in test mode, and view your changes in runtime.

You'll notice that you cannot open the Surgery activity by selecting it in the Activities section of your dynamic process. This is because it is set to manually activated.

5. Start and complete the Surgery activity.
   a. Select its **Actions** menu, and choose **Start**. Click **OK** to confirm.

      Note that you can now select and open the Surgery activity.



   b. Select, complete, and submit the Surgery activity.

      After you submit, notice that Surgery activity displays again in the Activities list because it is set to repeatable.

   c. After completing all required activities, a **Close** option appears at the top of the page for completing the process. Click **Close**.

Define Roles and Their Permissions

Roles in dynamic processes provide maximum flexibility. You create roles and define the process elements they apply to and the permissions granted.

1. Click the **Roles** button.

   The **Roles** tab lists roles defined for the dynamic process. Two default roles, Process Owner and Process Viewer, are provided. Let's adapt these default roles for the dynamic process.

2. Click **Edit** for the Process Owner role. Change the **Name** field to `Doctor`.
3. Click the **Members** field and select the user you used to sign in to Oracle Integration.
4. Edit the existing permission for the doctor role.

   Notice that the existing permission allows the doctor role to perform all actions in the process. Change the permission's **Name** field to `Perform all actions in process`. Click the triangle to collapse the permission, and click **Save**.

5. Edit the Process Viewer permission for a nurse role.
   a. Click **Edit** for the Process Viewer role and change the **Name** field to `Nurse`.
   b. Click the **Members** field and select your sign-in user name. (Normally, the nurse and doctor roles would be assigned to different users.)
   c. Notice that the existing permission allows the nurse role to view all actions in the process. Change the permission's **Name** field to `View entire process` and collapse it.
6. Add a permission that lets the nurse edit the Screening stage. Click **Add** in the Permissions table to create a permission, expand it, and complete its settings.
   a. In the **Name** field, enter `Edit Screening stage`.

b. In the **Items** field, select **Screening** from Stages.

c. In the **Actions** field, select **Update** and **View**.

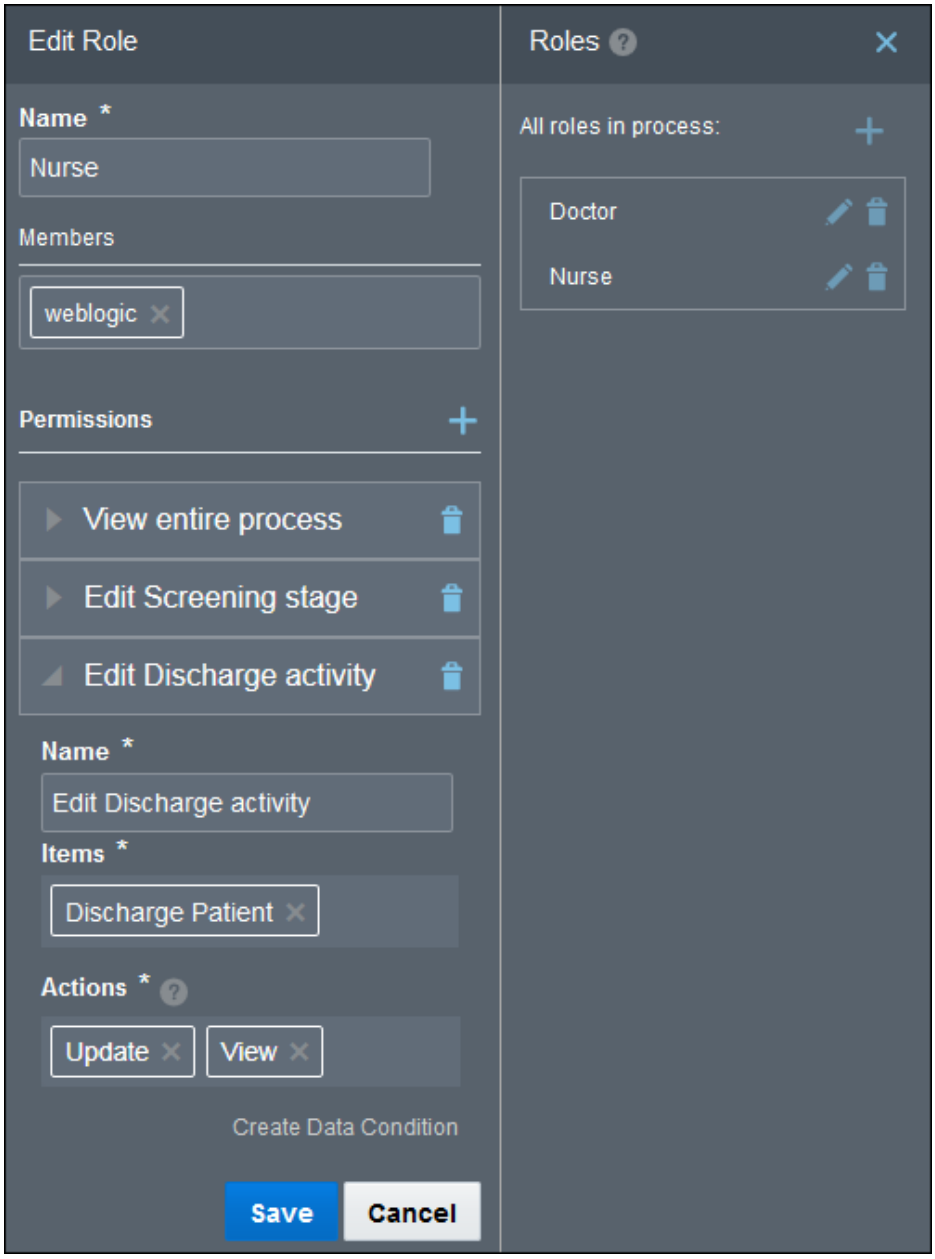
d. Collapse the new permission.

7. Add a permission that lets the nurse edit the Discharge activity. Click **Add** to create a permission, expand it, and complete its settings.

a. In the **Name** field, enter `Edit Discharge activity`.

b. In the **Items** field, select **Discharge Patient** from Activities.

c. In the **Actions** field, select **Update** and **View**.



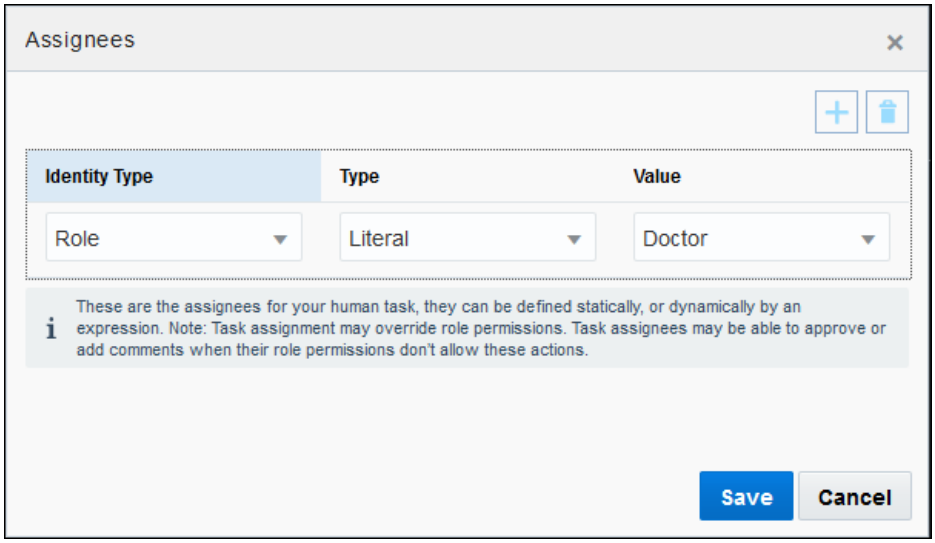
8. Click **Save**.

You can temporarily override roles at runtime. But setting roles and permissions in design time ensures they're retained for all deployments.

Set Assignees for Human Task Activities

Each human task needs one or more assignees. Let's assign the roles you created to the human task activities.

1. Assign the Doctor role to the Treat Patient activity.
   a. Select the activity, click **Edit Properties**, and choose **General** under **Implementation** options.
   b. In the **Assignees** field, click **Edit**.
   c. In the Assignees window, click **Add** . In the **Identity Type** field, select **Role**. In the **Value** field, select **Doctor**.
   d. Click **Save**, then **Close**.



2. Repeat the step above to assign the nurse role to the Screen Patient and Discharge activities, and the doctor role to the Surgery activity.

Set the Process to Complete or Close

Dynamic processes, like stages and activities, follow a lifecycle where they move through states such as active, completed, and closed. (Note that termination ends the plan item.)

When you start a process instance, the dynamic process is active. All stages and activities are started and available, unless a condition affects their activation. Whether you set the process to auto complete determines whether processes close or complete at the end of their lifecycle. Let's experiment to see the differences.

- By default, dynamic processes do not auto complete, which means that the **Complete** option appears when all stages and required activities contained within them are completed, terminated, or disabled.
- Setting a process to auto complete means that once all required activities are complete, the **Close** option appears and all non-required activities disappears and "No activities available to act on" appears. You can return to the instance, but can't work on any remaining non-required activities.

1. In runtime, create and run a dynamic process instance. On the Dynamic Processes list, notice the **Active** icon. Open and complete all required activities. (Note that a required activity might not be visible: If you complete the discharge activity but not the screen activity, no **Complete** option appears even with no required activities shown, because the required but not yet started treatment activity in the Treatment stage hasn't completed.)

   Notice that after completing all required activities, a **Complete** option appears at the top of the page for completing the process.

2. Instead of clicking **Complete**, click **Exit** to return to the dynamic processes list.

   Notice that the instance is still active, because there are non-required activities.

3. Open the instance again and click **Complete**.

   The instance is no longer in the list. If you search for it using the Completed filter, it displays . You can even open it and select **Close**, which changes its icon to .

   Now let's see the difference when the process is set to auto complete.

4. Switch to design time and open the process properties at the top of the page by clicking **Edit** .

5. In the process properties pane, select **Auto Complete** under **Markers**.

6. Change the title of the process that displays for instances on the Dynamic Processes page and at the top of instances.

   Optionally, enter a new title in the **Title** field to appear for all runtime instances, such as "`Emergency Room Process`". (Leave the quotation marks.)

7. Test activate and view your changes in runtime.

   a. Notice that the new title you entered appears in the Dynamic Processes instance list.

   b. Complete all required activities. Notice that the top link now shows **Close** instead of **Complete**, and the remaining non-required activity disappeared and was replaced with "No activities available to act on."

3

Module3 Mix and Match Dynamic and Structured Processes

Use a Structured Process in a Dynamic Process

You've created a dynamic process (Emergency Process) and configured advanced properties in it.

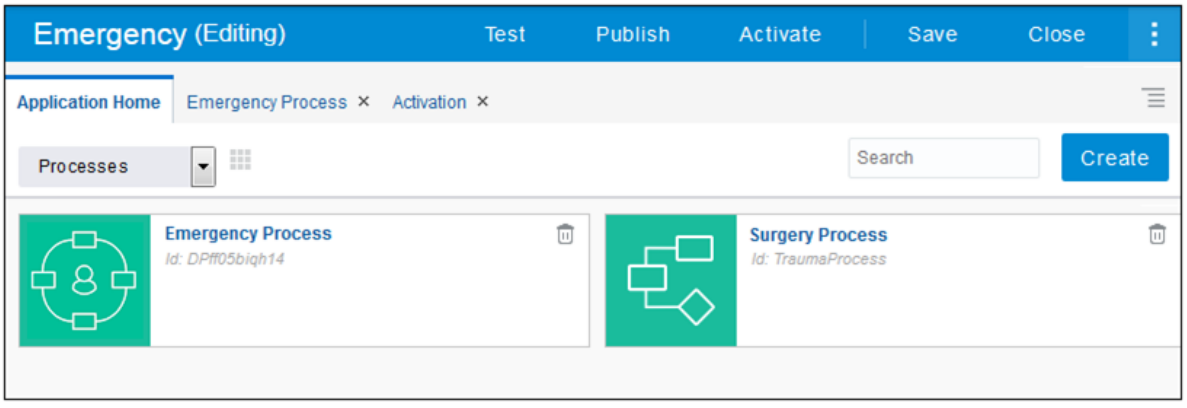
What if part of the Emergency Process follows a sequential and predictable path? You can model that part as a structured process which your dynamic process calls. In the emergency room example, suppose the surgery process follows a sequential process flow. You can model the surgery process as a structured process and call it from the Emergency dynamic process.

Create a Structured Process

Let's create a structured process.

1. In design time, click the **Application Home** tab.
2. Click **Create**, then **New Process**.
3. In the Create Process dialog box, enter `Surgery Process` in the **Name** field and select **Message** in the **Select a Pattern** field. Deselect **Create Immediately** and click **Create**.

   Notice how the two processes on the **Application Home** tab have different icons to indicate dynamic versus structured processes.



Note that structured processes must be asynchronous processes using the Message Start pattern.

Add Human Tasks

Let's add human tasks to the structured process we just created.

1. Open the Surgery Process.
2. Insert an Approve human task.

   Drag and drop an Approve human task from the Elements Palette onto the process flow. Position it where you want to add it.

   Double-click the task's name and enter `Patient Consent`.
3. Insert a Submit human task.

   Drag and drop a Submit human task from the Elements palette onto the process flow. Position it where you want to add it.

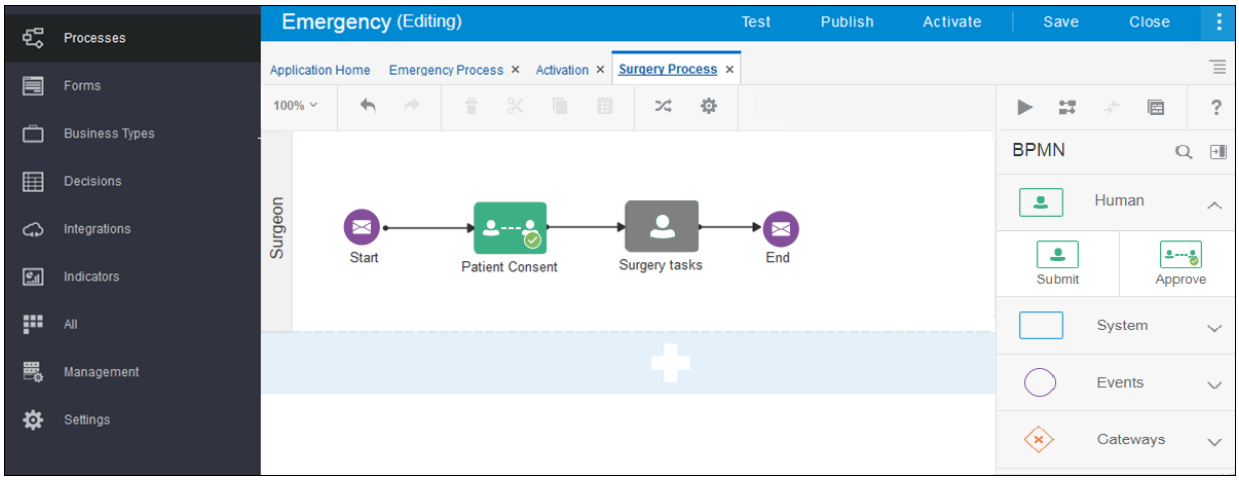
   Double click the task's name and enter `Surgery Tasks`.
4. Modify properties for the Submit human task.

   a. Select Surgery tasks, click **Menu** and then select **Open Properties**.

   b. In the Properties pane, select **Is Draft**.

      Notice that Surgery Tasks turns gray. This means that it is just a placeholder for the surgery tasks to be configured later.

   c. Click **Collapse Pane** to collapse the Properties pane.



Edit the Process' Swimlane

Edit the process' swimlane to assign a role responsible for performing each tasks within the process. In the Surgery Process, let us change the process' swimlane to a surgeon role.

1. Select **Process Owner** and click **Edit**.
2. In the implementation pane, click **Add Role** to add a role and enter `Surgeon`.

3. Click **Collapse Pane** to collapse the implementation pane.

Associate a Web Form with the Approve Human Task

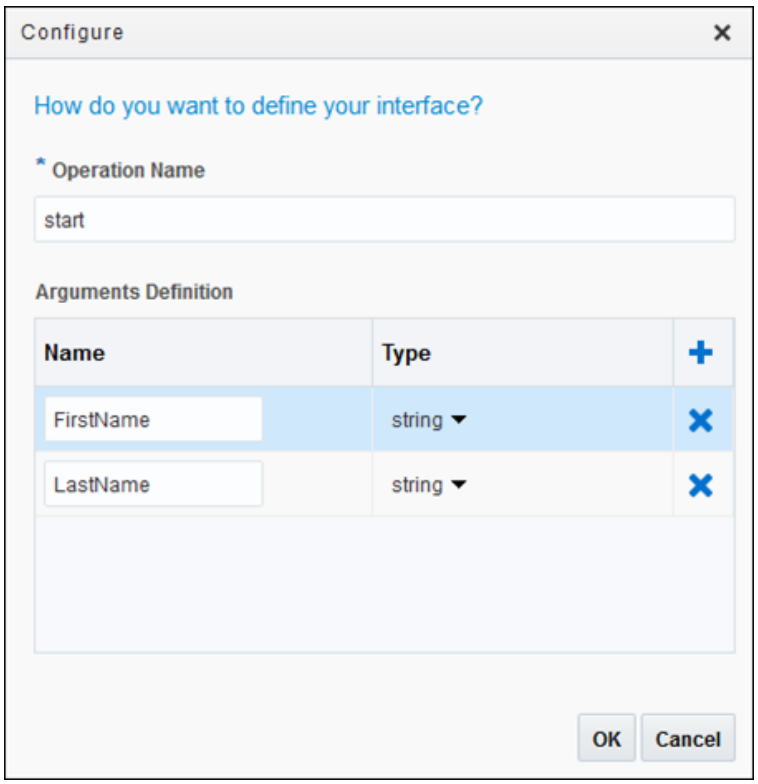
Let's associate a web form with the Patient Consent human task.

1. Select the Patient Consent human task, click **Menu** and choose **Open Properties**.
2. Click the browse icon next to the **Form** field to search for PatientForm.
3. Select **PatientForm** and click **OK**.
4. In the **Presentation** field, select **Surgery**. Collapse the implementation pane to save your changes.

Define the Process Start and End Events

Implement the process start and end events to input and output the name fields.

1. Select the Start Message event.
2. Choose **Open Properties**, then click **Edit** for Define Interface.
3. In the Arguments Definition table of the Configure dialog box, click **Add** and enter `FirstName` in the **Name** field. Click **Add** and enter `LastName` as a string type field, and click **OK**
4. Select the End Message event and repeat the steps from 1–3.



Configure Data Associations for Process Start and End Events

Define data associations for the Surgery Process' start and end events to define what payload passes onto the process start event and what data passes out of the process end event.

1. Select the Start Message event. Click **Menu** and choose **Open Data Association** to open the Data Association editor.
2. Map `FirstName` to `patientFormDataObject.firstName`, and `LastName` to `patientFormDataObject.lastName`. Click **Apply**.
3. Select the End Message event, open the Data Association editor, and repeat step 2.

Call the Structured Process in the Dynamic Process

Let's configure the dynamic process to call the structured process.

1. Return to the dynamic process by selecting the **Emergency Process** tab.
2. Select the Surgery activity and click **More**, then **Change Type**, and then **Process Activity**.

   Notice that its activity icon now shows a process rather than a human task.
3. Edit its properties (Implementation) and select **SurgeryProcess** in the **Process** field and **Start** in the **Start Event** field.

   Leave **Non-blocking** deselected, which means that the dynamic process will wait for the structured process instance to complete to continue.
4. Deselect the **Repeatable** and **Manually Activated** markers.

   Note that you can apply these markers to structured processes when they make sense.
5. Set data association now that the activity has changed type.

   Use auto mapping for input and output.
6. Click **Apply**.

Test Activate to Validate the Application

Test activate the Emergency application to validate and make it available in runtime.

1. Click **Test**.
   - If the validation was successful, proceed to the next step.
   - If any validation issues are listed, correct the issues and click **Test** again.
2. Click **Activate**.
3. In the Activate to Test dialog box, leave **Add Me to All Roles**, and click **Activate**.

   A message displays that the application activated successfully.
4. Click **Try in Test Mode**.

A new test mode browser tab opens. The navigation tab now displays runtime options.

Try the Structured Process in Runtime

Now that you've created a structured process in a dynamic process, and test activated the application, let's try out the Surgery process in runtime to see how it works.

1. Click **My Apps**, then create and open a dynamic process instance. Notice that the Surgery activity shows a structured process icon in the Activities list.
2. Select **Inbox** in the navigation pane. Typically, the surgeon would be accessing an assigned task from a structured process like the Surgery process from the Inbox rather than from within the dynamic process, although knowledge workers can open structured process tasks from either the Inbox or Dynamic Process.
3. Open the Emergency task whose process is SurgeryProcess. Click **Approve** and the task is completed. Notice that this Approval human task displayed **Reject** and **Approve** buttons rather than a **Submit** button.
4. Select **Dynamic Processes** in the navigation pane and reopen the topmost instance. The Surgery task no longer appears, since you completed it through the Inbox. Click the **Audit** tab and you can see (and open) the just completed Surgery process activity.

Use a Dynamic Process in a Structured Process

If your business process is mostly predictable (structured) but part is unpredictable and non-sequential, you can model that part as a dynamic process, and call it from your structured process.

In the same hospital emergency room scenario, let's imagine a different twist in our example: surgery (a structured process) followed by post surgery (a dynamic process).

What's dynamic about the post surgery process?

- The patient may need no additional action, except discharge and go home.
- Minor complications can develop that may require follow-up care or treatment.
- In rare cases, the patient may develop major complications and require extensive treatment.

We'll create a structured process for surgery tasks, model the unpredictable post surgery tasks using a dynamic process, and finally call this dynamic process from the structured process. For the purpose of our example, we'll imagine that the surgery involves additional steps not covered here.

Create a Structured and a Dynamic Process

We'll start a new simple process application (*Emergency2*) to house the structured and dynamic processes.

1. On the Process Applications page, click **Create**, then **New Application**.
2. In the Create Application dialog box, enter `Emergency2` in the **Name** field, and click **Create**.

   The **Application Home** tab opens with application components shown in the navigation pane.
3. Create a structured process.

a. Click **Create**, then **New Process**.

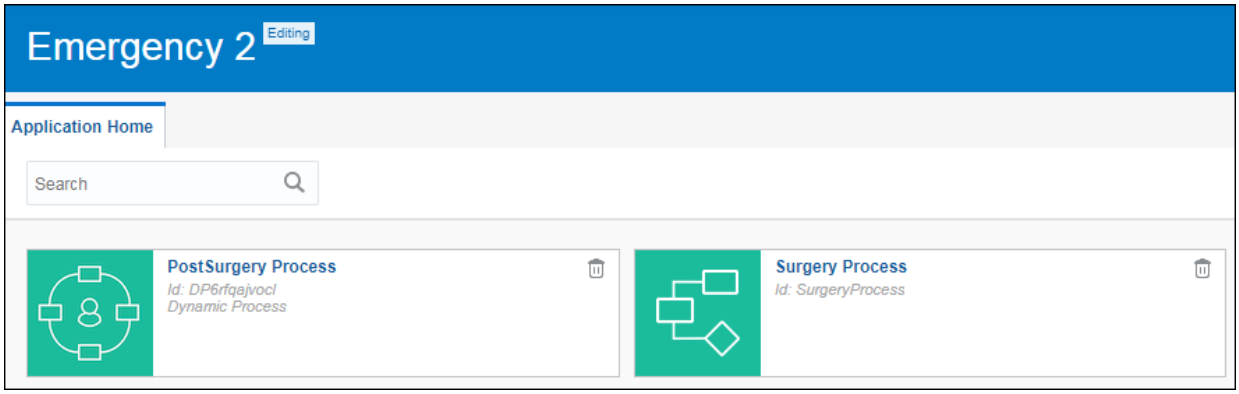
b. In the Create Process dialog box, enter `Surgery Process` in the **Name** field. Select **Form** in the **Select a Pattern** field. Deselect **Open Immediately** and click **Create**.

4. Create a dynamic process.

a. Click **Create**, then **New Dynamic Process**.

b. In the Create Process dialog box, enter `PostSurgery Process` in the **Name** field. Select **Todo List** in **Select a Pattern** field. Deselect **Open Immediately** and click **Create**.

Notice the two processes in the **Application Home** tab. The different icons indicate dynamic versus structured process.



Add Human Task Activities to the Structured Process

Let's add a couple of human task activities that we know will be typically performed in a simple surgery process.

1. Click the Surgery Process to open it.
2. Add an Approve human task.

a. Expand **Human** in the Elements palette.

b. Drag and drop an approve human task from the palette onto the process editor canvas. Position it in your process where you want to add it.

c. Double-click the task's name and enter `Patient Consent`.

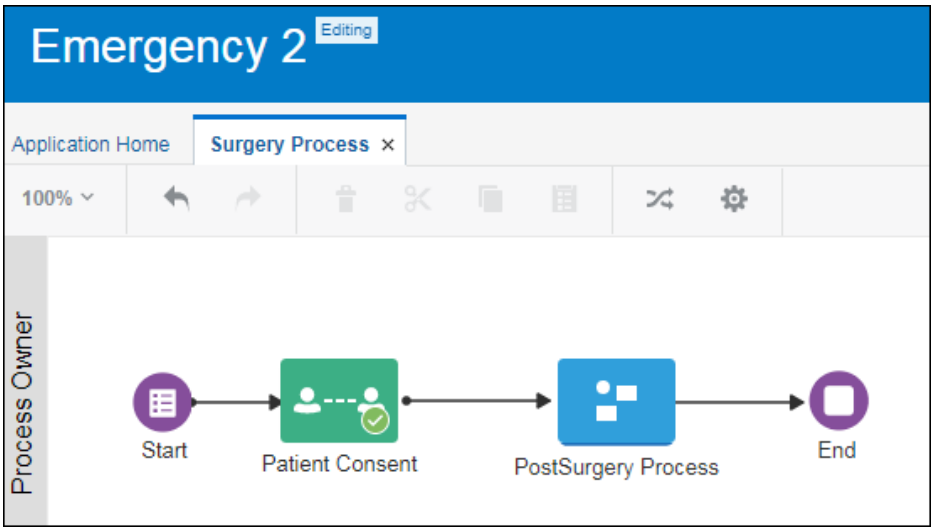
3. Add a Dynamic Process element.

This dynamic process element is presently empty, and is just a placeholder. But later, when we associate the PostSurgery dynamic process with this element, then it'll house all the activities of the PostSurgery dynamic process.

a. Expand **System** in the Elements palette.

b. Drag and drop a dynamic process element  from the palette onto the process.

c. Double-click the name and enter `PostSurgery Process`.

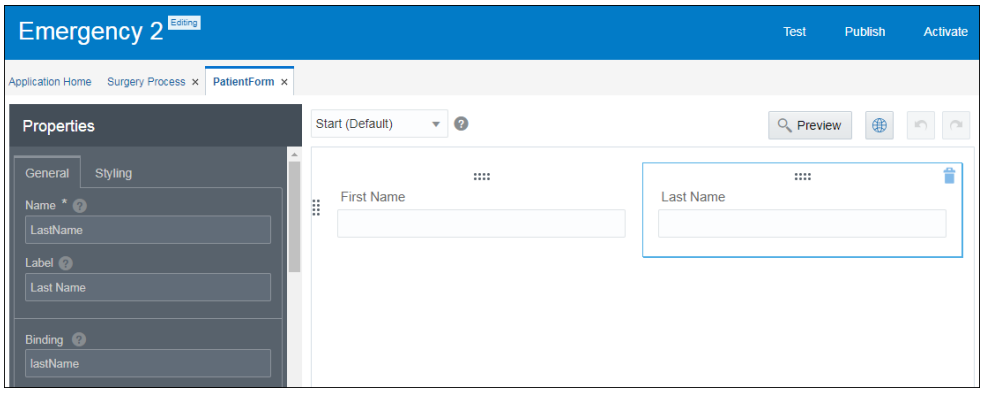


Create a Form and Its Presentations

Let's create a form with multiple presentations that you apply to the human task activities. We'll start by creating a form and a presentation for the structured process' start event. Then we'll create different presentations to customize the form for the various human task activities in our process application.

1. Click **Forms** in the navigation pane. On the Forms page, click **Create**.
2. In the Create New Web Form dialog box, enter `PatientForm` in the **Name** field, leave **Open Immediately** check box selected, and click **Create**.
3. Change the default presentation's name.
   a. Click the **Presentation** tab on the Properties pane.
   b. In the presentation table, change the name of the default Main presentation to `Start`.

      You'll use this presentation for the structured process' start event.
4. Add input text controls for the patient's first and last name.
   a. Drag and drop two Input Text controls from the Basic palette onto the form's central canvas side by side.
   b. Select the first one, and change its **Name** field to `FirstName` and **Label** field to `First Name`.
   c. Select the second control, and change its **Name** field to `LastName` and **Label** field to `Last Name`.



5. Create a presentation for the Approve human task.

   a. Click outside a form control and select the **Form** tab in the Properties pane.

   b. Click **Add** in the Presentation table. In the Select Presentation Type dialog box, select **Clone**.

   c. In the Create Presentation dialog box, select **Start** in the **Select from Previous Presentation** field, and enter `Consent` in the **Name** field. Leave **Switch to this presentation** check box selected, and click **Create**.

   d. Drag and drop a Text Area control onto the form's canvas. Select the control, and change its name and label to `Comment`.

6. Create a Discharge presentation

   Let's create presentations for the post-surgery tasks in the dynamic process. Start by creating the first presentation.

   a. Click **Add** in the Presentation table. In the Select Presentation Type dialog box, select **Clone**.

   b. In the Create Presentation dialog box, select **Start** in the **Select from Previous Presentation** field, and enter `Discharge` in the **Name** field. Leave **Switch to this presentation** check box selected, and click **Create**.

   c. Drag and drop a Text Area control onto the form's canvas, below the First Name and Last Name controls.

   d. Enter `DischargeSummary` in its **Name** field and `Discharge Summary` in its **Label** field.

7. Create a Minor presentation.

   Create the second presentation for the post surgery tasks.

   a. Click **Add** in the Presentation table. In the Select Presentation Type dialog box, select **Clone**.

   b. In the Create Presentation dialog box, select **Start** in the **Select from Previous Presentation** field, and enter `Minor` in the **Name** field. Leave **Switch to this presentation** check box selected, and click **Create**.

   c. Drag and drop a Text Area control onto the form's canvas. Enter `TestReports` in its **Name** field and `Test Reports` in its **Label** field .

   d. Drag and drop a Radio Button control below the text area control. Enter `TreatmentRequired` in its **Name** field and `Treatment Required` in its **Label** field.

e. Change the option names of the radio button control to `Yes` and `No` in the **Option Names** field.

8. Create a Major presentation.

   Create the third presentation for the post-surgery tasks.

   a. Click **Add** in the Presentation table. In the Select Presentation Type dialog box, select **Clone**.

   b. In the Create Presentation dialog box, enter `Major` in the **Name** field, and select **Start** in the **Select from Previous Presentation** field. Leave **Switch to this presentation** check box selected, and click **Create**.

   c. Drag and drop a Text Area control onto the form's canvas.

   d. Enter `Treatment` in its **Name** field, and `PostSurgery Treatment` in its **Label** field.

Configure the Dynamic Process Input and Tasks

Define the dynamic process' input to control what type of data starts the dynamic process. Also, implement each human task activity with a form presentation.

In our example, we have to set the input arguments such that the patient's first and last name can be the input data for the PostSurgery dynamic process.

1. In the navigation pane, click **Processes**.

   You can see the Surgery Process and the PostSurgery Process that you created in the **Application Home** tab.

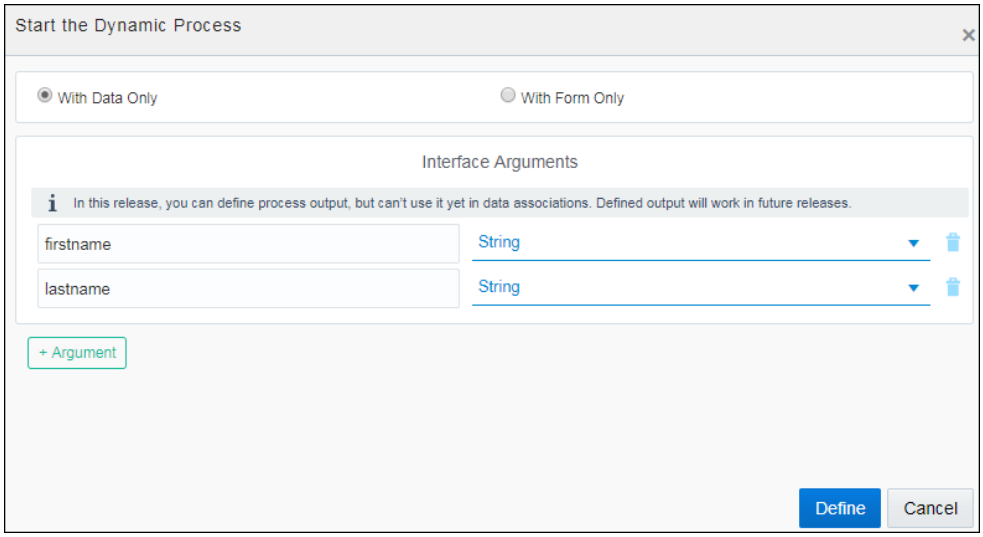
2. Click the PostSurgery Process to open it.

3. Select **Process Input** next to the process name at the top of the editor.

4. Configure settings in the Start the Dynamic Process dialog box.

   Leave **With Data Only** selected, define the interface arguments and click **Define**.

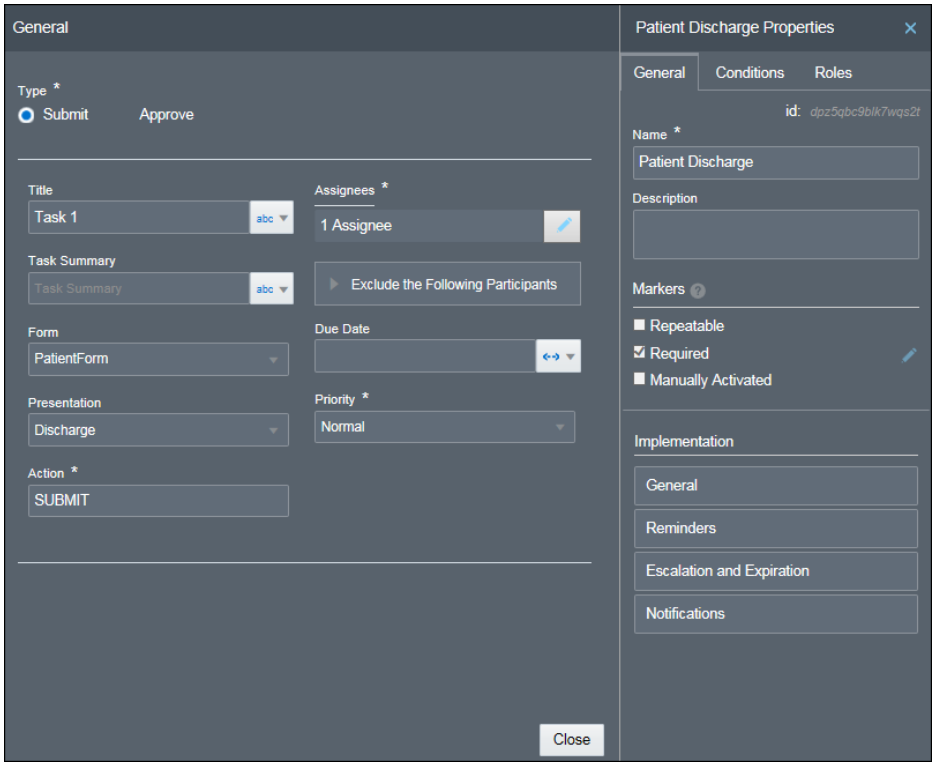
   Note that you cannot start a dynamic process used in a structured process with a form. Always start it with data.



5. Select a form and presentation for each human task activity in the To-Do List.

Click **Edit Properties** to open the related properties pane for the activity.

- Task 1: In the properties pane, enter `Patient Discharge` in the **Name** field. Click **General** under the implementation pane. In the general pane, select PatientForm in the **Form** field and select Discharge in the **Presentation** field. Click **Close**.



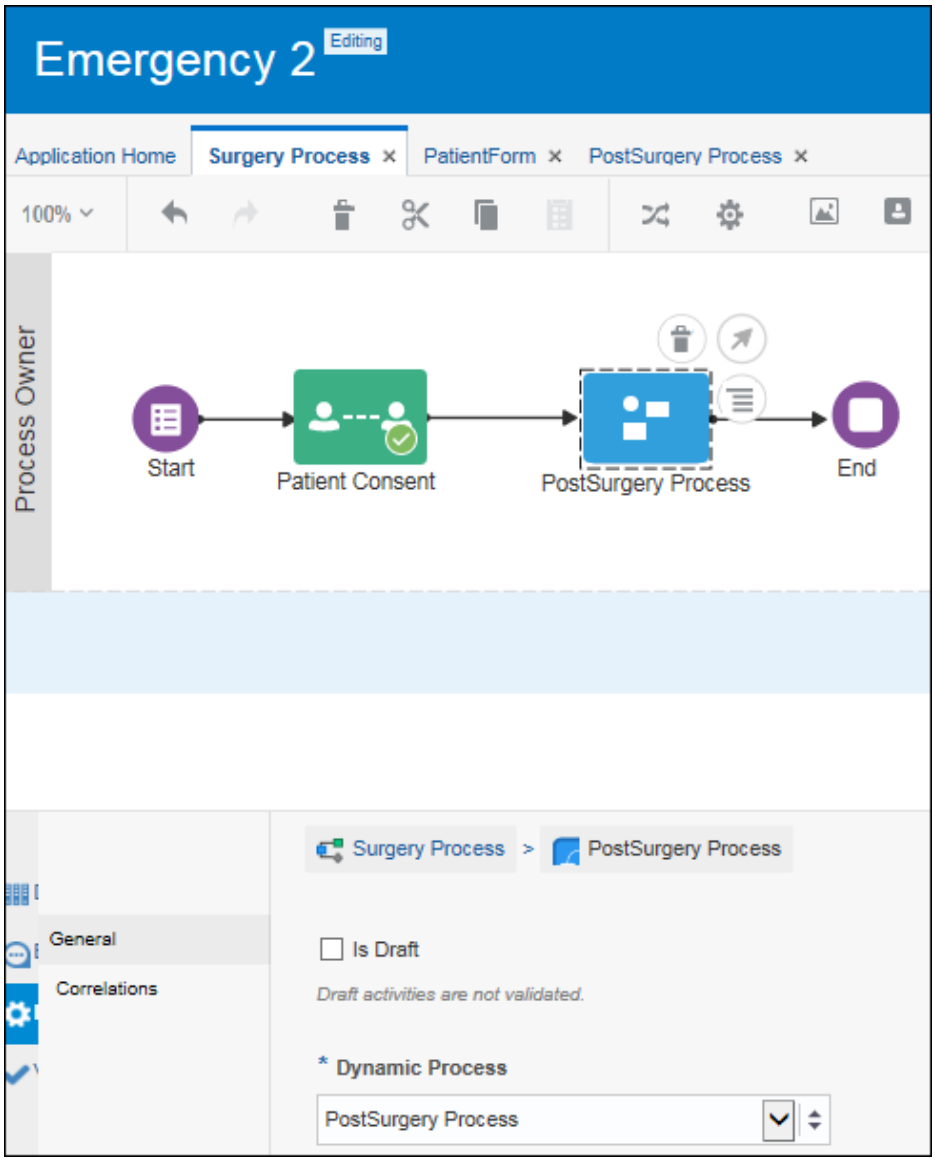
- Task 2: Repeat the steps of Task 1, only this time enter `Minor Complications` in the **Name** field and select Minor in the **Presentation** field.
- Task 3: Repeat the steps of Task 1, but enter `Major Complications` in the **Name** field and Major in the **Presentation** field.

6. Click **Save**.

Configure the Structured Process to Call the Dynamic Process

Now that you've created the processes and form presentations for users to perform tasks, and also defined the input data for the dynamic process, let's set up the structured process. This includes configuring the structured process to initiate the dynamic process, and configuring data association so that data flows from the structured process into the dynamic process.

1. Click the **Surgery Process** tab to open the structured process.
2. Associate the dynamic process with the dynamic process flow element.
   a. Select the dynamic process element, click **Menu** and then select **Open Properties**. The implementation pane opens at the bottom of the window.
   b. In the implementation pane, select **PostSurgery Process** in the **Dynamic Process** field.



c. Collapse the implementation pane to save your changes.

3. Configure the structured process' start event.

   Now let's configure the Surgery Process' start event.

   a. Select the Surgery Process' start event and open the related implementation pane.

   b. Enter `Start the Surgery Process` in the **Title** field.

      This title will appear at the process start in runtime.

   c. Browse and select PatientForm in the **Form** field.

   d. Select **Start** in the **Presentation** field.

   e. Collapse the implementation pane to save your changes.

4. Configure the Approve human task.

   a. Select the Patient Consent task and open the related implementation pane.

   b. Enter `Patient Consent` in the **Title** field.

c. Browse and select PatientForm in the **Form** field.

d. Select **Consent** in the **Presentation** field.

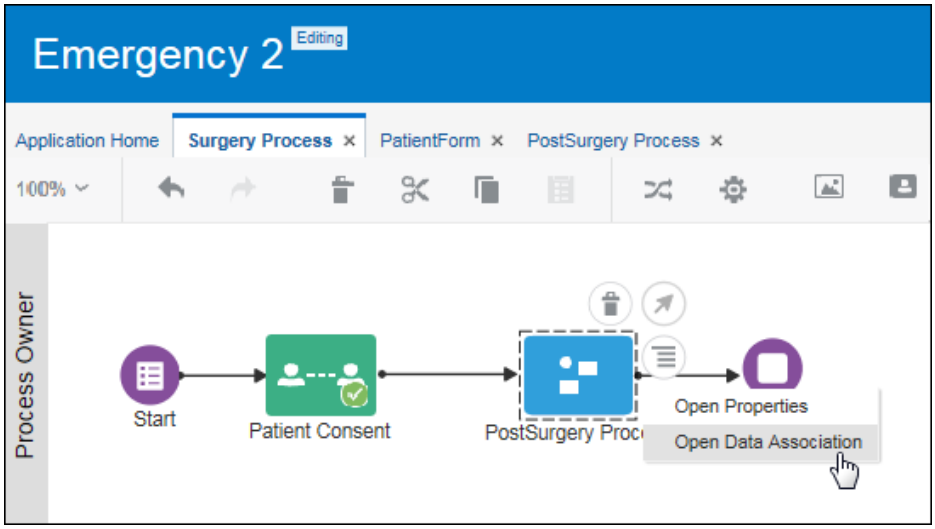
e. Collapse the implementation pane to save your changes.

5. Configure data association to ensure that input data from the structured process flows into the dynamic process.

   In our example, we want the PostSurgery dynamic process to receive the patient's first and last name as the input data from the previous activity of the Surgery Process.

   a. Select the dynamic process element.

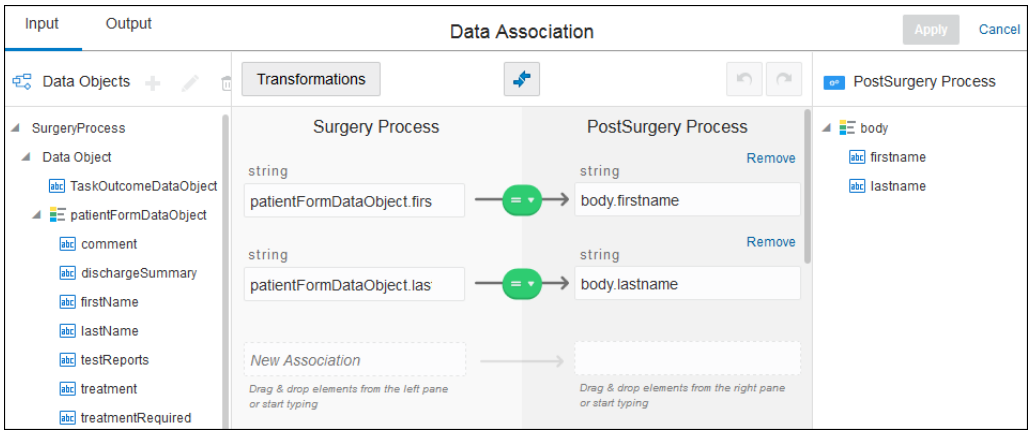
   b. Click **Menu** and then select **Open Data Association**.



   c. In the Data Association editor, map the data between the Surgery Process (structured process) and the PostSurgery Process (dynamic process).

      The left pane displays the source (data) objects from the Surgery Process. The right pane displays the payload the PostSurgery Process needs to perform its function.

      - Map `patientFormDataObject.firstName` from the Surgery Process to `body.firstname` in the PostSurgery Process.
      - Map `patientFormDataObject.lastName` in the Surgery Process to `body.lastname` in the PostSurgery Process.



d. Click **Apply**.

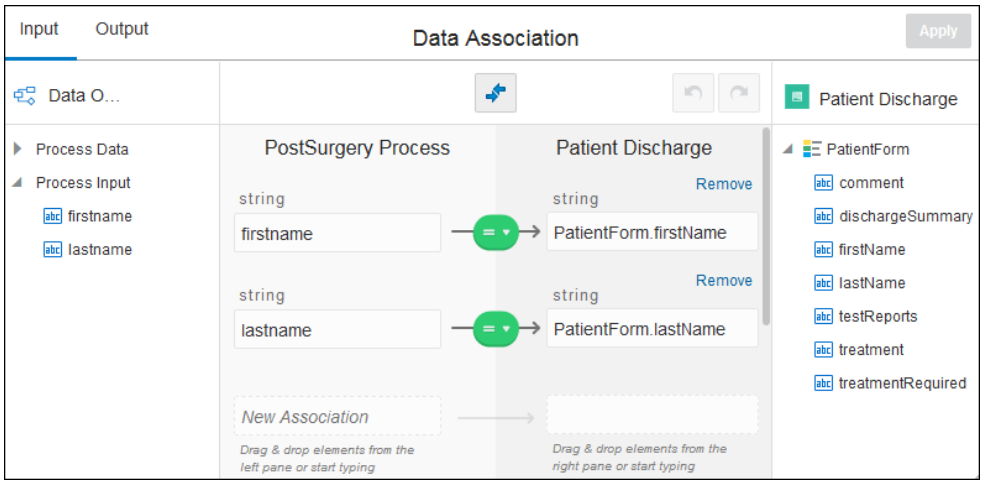
Configure Data Association for the Dynamic Process Activities

Define data input and output for the human task activities in your dynamic process by configuring data associations for them.

In the PostSurgery Process, set data associations for the Patient Discharge, Minor Complications and Major Complications human task activities, so that the patient's first and last name gets auto-populated when these activities are performed in runtime.

1. In the PostSurgery Process, select the Patient Discharge activity and click **More**.
2. In the menu, select **Data Association** and then **Input**.
3. In the Data Association editor, drag and drop data objects into the association fields.

   Associate `firstname` and `lastname` from Process Input in the left pane to `firstName` and `lastName` from PatientForm in the right pane.



4. Click the **Output** tab and configure the data association, only this time the mapping will be reverse.

   Associate `firstName` and `lastName` from PatientForm in the left pane to `firstname` and `lastname` from Process Input in the right pane.

5. Click **Apply**.

6. Repeat the steps above for the Minor Complications and Major Complications activities.

Try Out the Process Application in Test Mode

Now that you've set up the process application in design time, let's try out the process application in runtime, as users would.

- In the structured process, the patient receives an approve task to provide consent for the post surgery treatment phase, which initiates the post surgery dynamic process.
- A health worker uses the dynamic process to perform activities that fit the patient's post surgery status.

Begin by test activating.

1. Click **Test**.

   A **Test Application** tab opens. Notice that a caution is displayed. Output data association isn't currently supported for dynamic process output. But the application can still be activated.

2. Test activate the application.

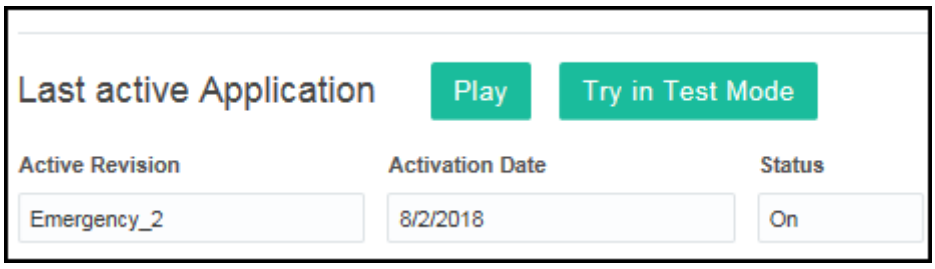
   a. Click **Activate**.

   b. In the Activate to Test dialog box that displays, leave **Add Me to All Roles** selected, and click **Activate**.

      When activating an application containing a structured process, you must map roles to users. Because you are test activating, you can skip mapping roles.

      Notice that the **Play** and **Try in Test Mode** buttons became green and active. The **Play** option doesn't apply to process applications that use dynamic processes. While you can initiate the player, it will stop when the dynamic process player is reached, so its use is not recommended with dynamic process applications.

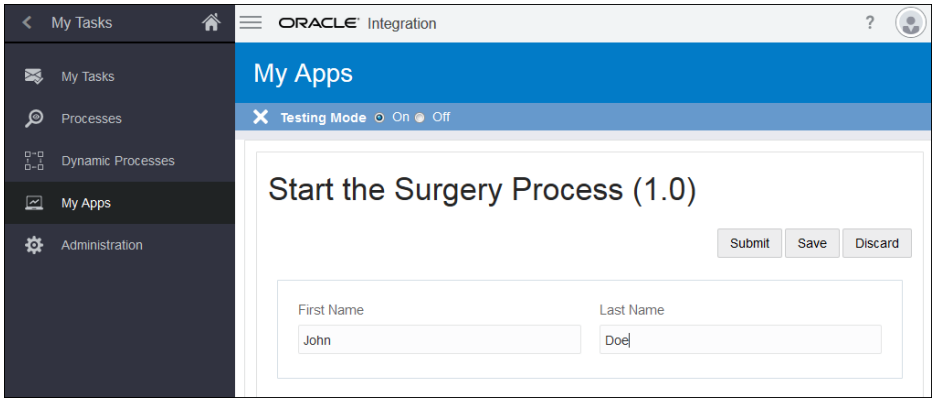
   c. Click **Try in Test Mode**.



3. As the doctor, start the structured process.

   a. From **My Tasks** (runtime), click your application on the My Apps page that displays after test activation starts.

b. In the start form that displays, enter the patient's first and last name, and click **Submit**.

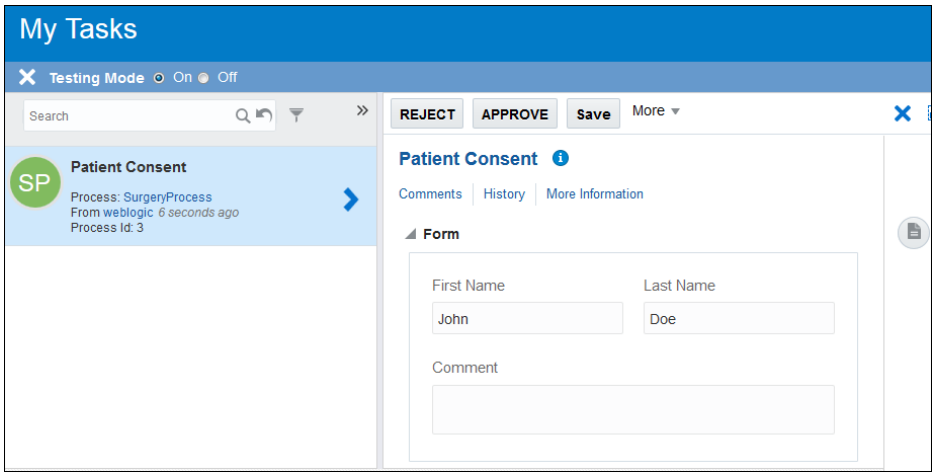


A message briefly displays that a process instance was created.

4. As the patient, open and approve your assigned consent task.

The structured process is running and the approve task generated an approval task for the patient.

a. Click **My Tasks** and open the Patient Consent task from the My Tasks page by clicking the >. Notice that the patient's first and last name is auto-populated in the form.



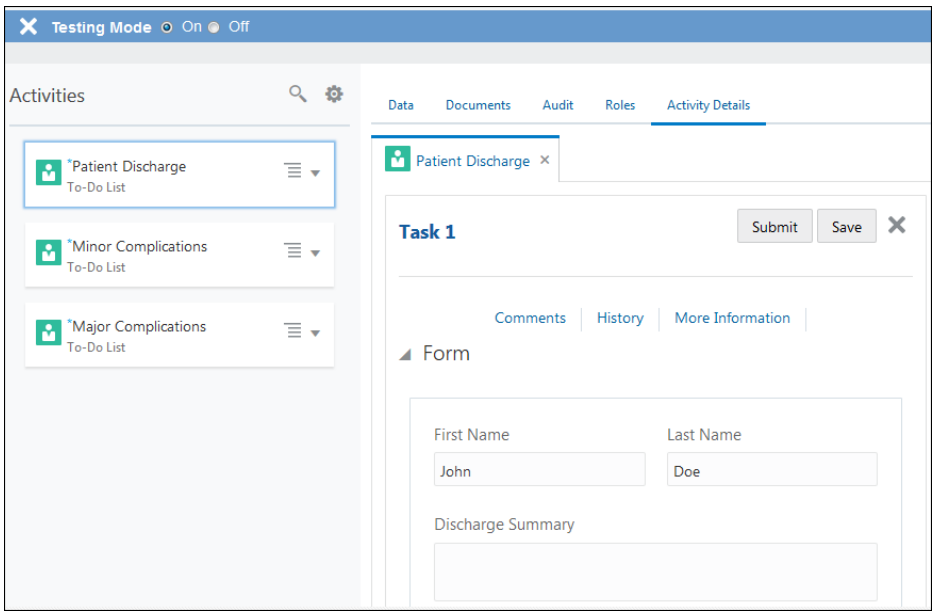
b. Click **Approve** to complete the task. A message displays that the action was processed successfully.

5. As a hospital worker, open and perform activities in the dynamic process.

   After the approval task completed, the dynamic process was called, starting the dynamic process.

   a. Click **Dynamic Processes** in the navigation pane.

   b. On the Dynamic Processes page, open the PostSurgery Process and click each activity.



   Notice that the patient's first name and last name was auto-populated and that the presentation you selected for each activity displays correctly.

   c. Complete one of the activities by entering information and clicking **Submit**.

      Suppose that the patient experienced minor complications only, then select the minor activity. When you submit the activity, it no longer appears in the Activities list indicating that it is completed.

   d. Click **Close** to complete the PostSurgery dynamic process.

Congratulations! You've just successfully configured a process application that calls a dynamic process from a structured process.