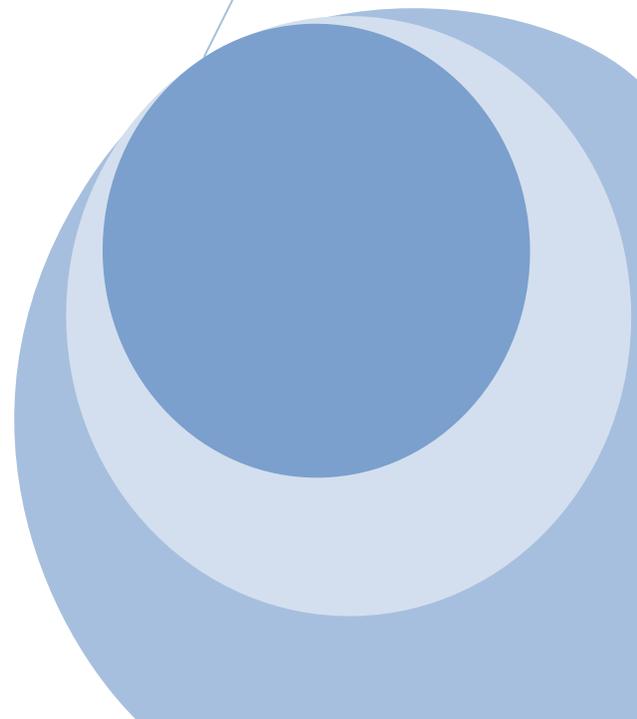


MAX 2009

LiveCycle Developer Lab:
*Developing Applications
using Adobe LiveCycle
Workbench ES*





Developing Applications using Adobe LiveCycle Workbench ES Next

Valerie Snider-Lynch

Technical Marketing Manager

Adobe Systems, Inc.



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Exercise Overview

The following table provides a high-level overview of the activity and exercises, including estimated time to complete, contained in this guide.

Activity / Exercise	Summary	Estimated Time
Exercise #1	Team-based Development Experiences. Students will be exposed to the built-in capabilities supporting team-based development, including checking in/out assets, synchronizing applications, and an overview of permissions.	20 mins
Exercise #2	Component-based Development. Students will use various services and assets to create a simple application, which will be accessible in LiveCycle Workspace ES2.	20 mins
Exercise #3	Pre-populating forms with data. Students will use built-in capabilities and preconfigured service and database to pre-populate a form.	15 mins
Exercise #4	Validation Reports and Record / Playback functionality. Students will use built-in capabilities to validate, debug and troubleshoot their application.	10 mins
Exercise #5	Invoking LiveCycle Services. Students will create an AIR application, using service discovery to invoke a LiveCycle service. Invoking the same service via the REST API will also be included.	10 mins
Exercise #6	Creating a LiveCycle archive to take with you.	5 mins

Exercise 1: Team Development

In this exercise you will begin by creating a LiveCycle application in LiveCycle Workbench, create folders in the application and add assets to those folders. You will experience the visual indicators associated with team development and asset status's (check-in/check-out) and version history.

Objectives:

By the end of this exercise you will be able to;

- Use the wizards to create a new application, including a folder structure
- Use the form and process wizard to create simple assets
- Understand how check-in/check-out functions
- Visualize team development

Assets Provided:

In addition to creating new assets, the following assets have been preconfigured for use in this exercise:

1. Employee_Input_Form.pdf
 - a. /MAX/Developing_Applications_Assets/1.0/forms/

Tasks:

Task 1: Log into the vmware image

In this task, you will log into the vmware image using a dedicated account representing a member of a development team.

1. Select **Start->Shut Down**.
2. Select **log off administrator** and click **ok**.
3. Press **ctrl+alt+ins** to invoke the windows login dialog.
4. Log into the vmware image using the following credentials:
 - Username = "**kbowman**"
 - Password = "**password**"

Task 2: Log into and configure the development environment

In this task, you will log into Adobe LiveCycle Workbench ES2 as a member of a development team and configure your IDE to communicate with the LiveCycle server deployment.

1. Double-click the **Adobe LiveCycle Workbench** short-cut on the desktop.
2. Select **File->Login**.

Note: Kara Bowman has not configured her login information yet. The following steps identify how to configure your installation of Workbench with the back end LiveCycle deployment.

3. Select the **Configure** button to be directed to the **Manage Configured Servers** dialog box.
4. Select the  button, which will trigger the display of the **Adding New Server** dialog box.
5. Enter "**localhost**" into the Server Title field. You'll notice the value you enter will be automatically replicated in the Host Name field.



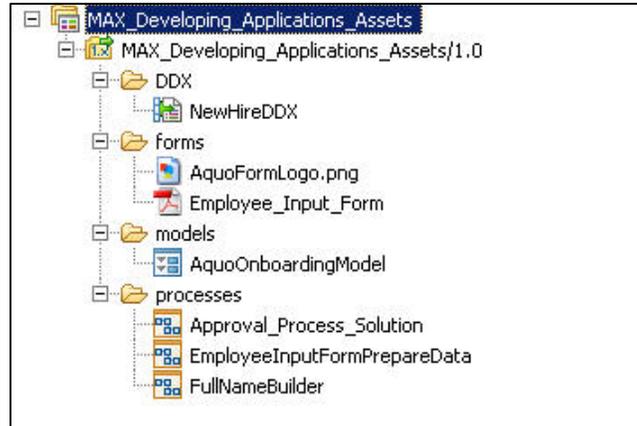
6. Click **OK** to return to the Workbench login dialog.
7. Provide the following credentials to log into Workbench:
 - Username: = "**kbowman**"
 - Password: = "**password**"
 - Log on to: = "**localhost**"

Note: You will be presented with a dialog indicating that a connection is being made to the server, localhost. This is essentially retrieving the available services and their configurations.

Task 3: Get the Application Assets

In this task, you will retrieve application assets from the server.

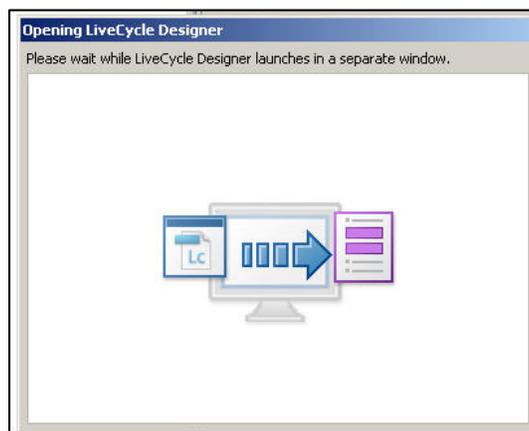
1. In Workbench, select **File->Get Applications**. This will display the Get Applications dialog listing all available applications.
2. Select "**MAX_Developing_Applications_Assets**", expanding the folder.
3. Select "**MAX_Developing_Applications_Assets/1.0**" and click **OK**. This will retrieve a local copy of the application.
4. Expand the various folders in the application structure. Your view should be similar to the following diagram.



Task 4: Check out a form for modifications

In this task, you will check out a form from the application you acquired in the previous task.

1. In the Applications view, expand the "MAX_Developing_Applications_Assets" folder structure to view the asset in the **forms** folder.
2. Highlight the "Employee_Input_Form" file, right-click and select "Check Out".
3. Double-click the "Employee_Input_Form" file. You will be presented with a dialog similar to the image below, indicating the launch of Adobe LiveCycle Designer ES2.



Task 5: Modify, save, and check in the form

In this task, you will modify and save the "Employee Information form".

1. Select the "**Dependents**" text box, located in the "Employee Information" section in the top left-hand side of the form.
2. Double-click the text label and add a colon to the end of the text. The updated text should read "**Dependents:**".
3. Select the "**Gender**" text label, located to the right of the Dependents text.
4. Double-click the text label and add a colon to the end of the text. The updated text should read "**Gender:**".
5. Select "**File->Save**".

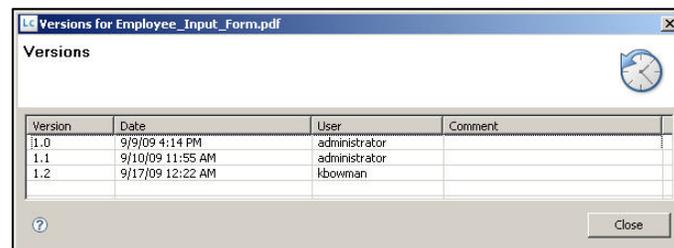
Note: You will be presented with the Save As dialog if you haven't check out the file.

6. Select "**File->Exit**". This will close Adobe LiveCycle Designer ES2 and return you to Adobe LiveCycle Workbench ES2.
7. In the Applications view, highlight the "**Employee_Input_Form**" file, right-click and select "**Check In**".

Task 6: Review the form versions

In this task, you will review the version history for the "Employee Information form".

1. In the Applications view, highlight the "**Employee_Input_Form**" file, right-click and select "**History...**"
2. Review the version history for this form. The Administrator user created the initial file and Kara Bowman has modified the latest version.



Version	Date	User	Comment
1.0	9/9/09 4:14 PM	administrator	
1.1	9/10/09 11:55 AM	administrator	
1.2	9/17/09 12:22 AM	kbowman	

3. Click the **Close** button.

Exercise 2: Component-base Development

In this exercise you will create a simple application, including a form and a process, which will be accessible via the Workspace interface.

Objectives:

By the end of this exercise you will be able to;

- Use the wizards to create a new form.
- Use the wizard to create a new process accessible via the Workspace interface.
- Understand how the check-in/check-out functionality works.

Assets Provided:

No assets will be provided for this exercise, you will create the required assets.

Tasks:

Task 1: Create a new LiveCycle application structure

In this task, you will create a new LiveCycle application and the appropriate structure.

1. In Workbench, select **File->New-> Application** to display the wizard selection screen.
2. Set the Application Name to "**MAX_Developing_Applications**" and click **Finish**.

Note: This will create a new application version in the Application view of the Process Design

3. Expand the "**MAX_Developing_Applications**" application, right-click on **MAX_Developing_Applications/1.0**" and select **New -> Folder**.
4. Add a folder called **forms**.

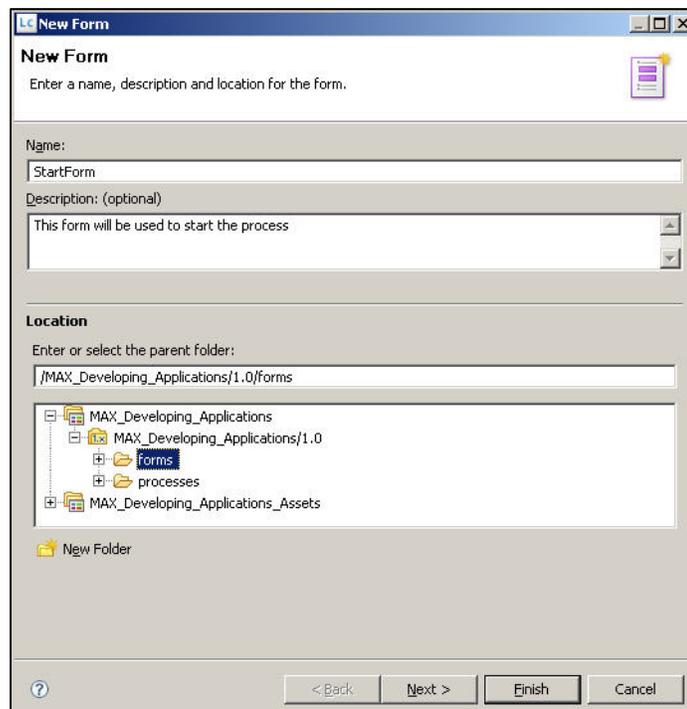
5. Add a folder called **processes**. At this point we have a basic application structure that contains two folders to store assets.



Task 2: Create a new LiveCycle form template

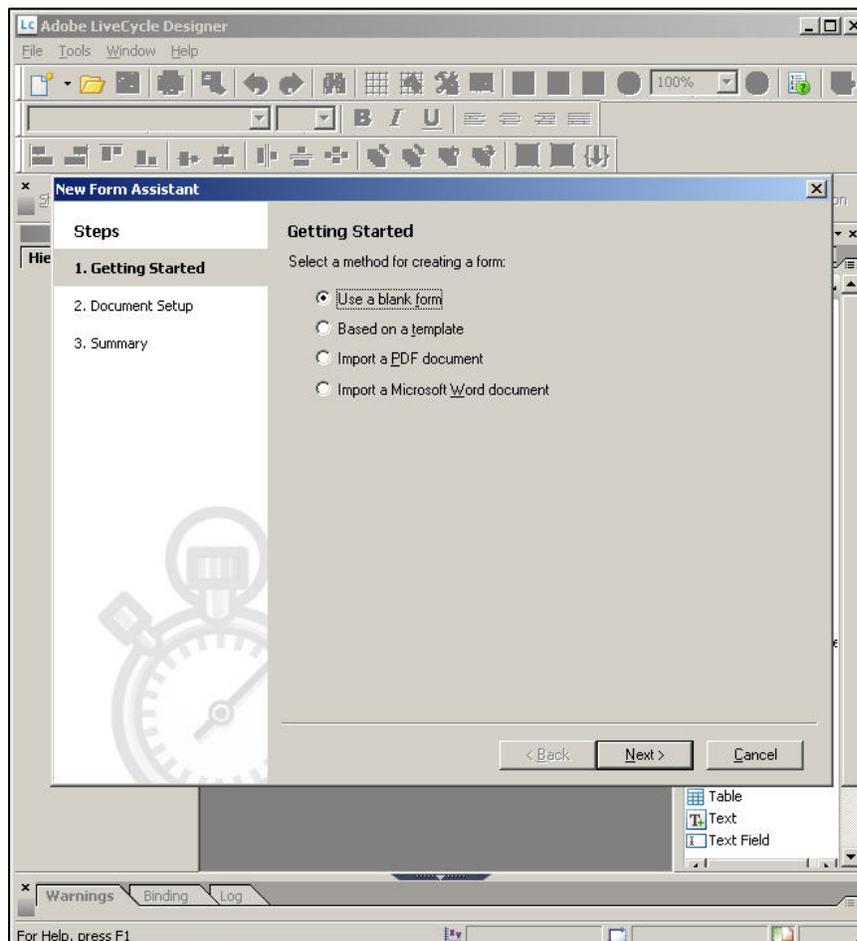
In this task, you will create a new LiveCycle form template using the wizard.

1. Right-click on the **forms** folder and select **New -> Form...** to display the wizard selection screen.
2. On the New Form dialog, set the **Name** to "StartForm".



3. Click **Next**.
4. On the **Specify form data model** dialog, select the "**No data model**" radio button and click **Next**.
5. On the **Form usage** dialog, in the Form Submission section, select the "**From LiveCycle Workspace ES**" check box and click **Next**.

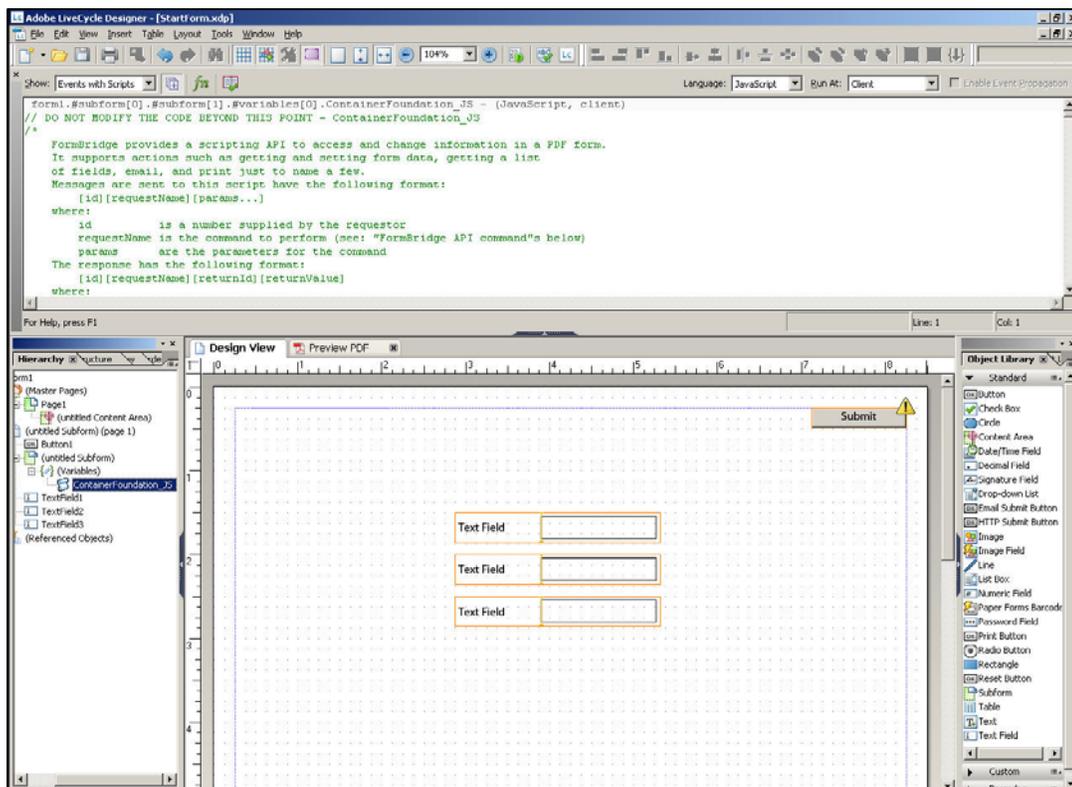
Note: This will launch Adobe LiveCycle Designer ES2. You will be presented with the new form assistant wizard, which will guide you through the initial setup of your new form.



6. Select all the defaults.

Note: As you selected "From LiveCycle Workspace ES" as the Form Submission type, a submit button and script have been inserted to handle the form bridge functionality between the form and the browse

7. From the **Object Library** view, click and drag a **text field** object to the top center of the form layout.
8. Add 2 additional text boxes below the previous one. Your form template should reflect the following image.



9. Save the form by selecting **File->Save**.



10. Select **File->Close**.
11. Select **File->Exit** to close Designer. You will return to Workbench.

Task 3: Check in the newly created form template

In this task, you will check in the newly created form template.

1. In the Applications view, right-click on the "**StartForm**" file and select "**Check In**". This will upload the asset to the server.

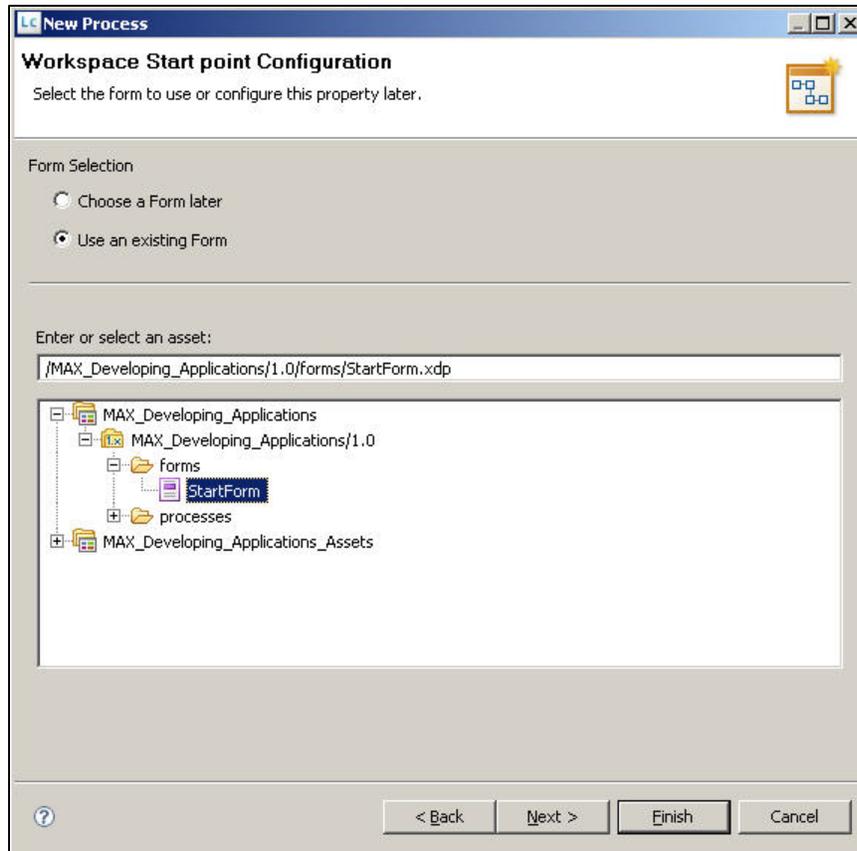
Task 4: Create a new LiveCycle process

In this task, you will create a new LiveCycle process using the wizard. You'll also be leveraging the form you created in the previous task to initiate the application from Adobe LiveCycle Workspace ES.

1. Right-click on the **processes** folder and select **New->Process...** to display the New Process wizard.
2. Set the name to "**SimpleProcess**" and click **Next**.
3. On the **Configure a start point** dialog, select the "**When a user submits a task in Workspace**" radio button and click **Next**.

Note: This option will allow you to initiate this simple process using the Workspace interface.

4. On the **Workspace Start point Configuration** dialog, select "**Use an Existing Form**". Select "**StartForm**" from the **MAX_Developing_Applications/1.0/forms** folder. Your dialog should reflect the following image.



5. Click **Next**.
6. In the **Workspace Category** section, select **"Create a New Workspace Category"** and enter **"Developing Applications"**.
7. Set the **Workspace Process Name** to **"Initiate the Simple Process"**.
8. Enter a meaningful description in the **Description** section. Your dialog should reflect the following image.

LC New Process

Workspace Start point Configuration

Configure Workspace start point

Workspace Category

Choose a Workspace Category:

Samples

Create a New Workspace Category:

Developing Applications

Define how the process will appear in the Workspace Start Process Section

Workspace Process Name:

Initiate the Simple Process

Description:

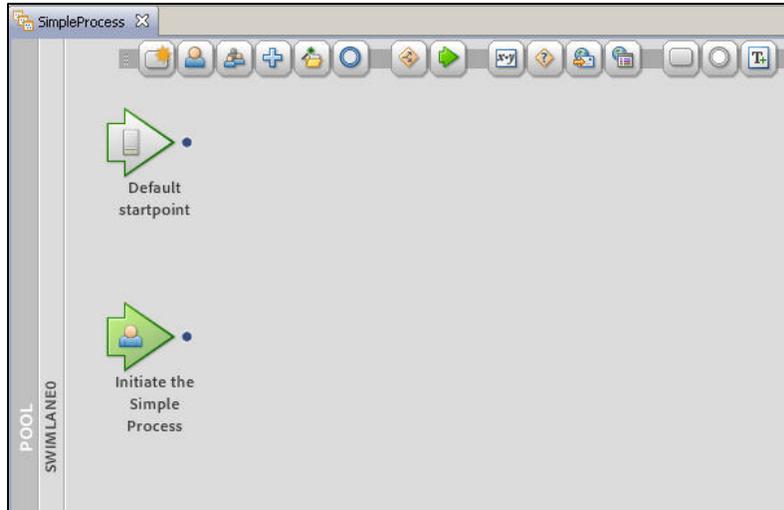
Initiate the Simple Process in the Developing Applications category.

Icon:

< Back Next > Finish Cancel

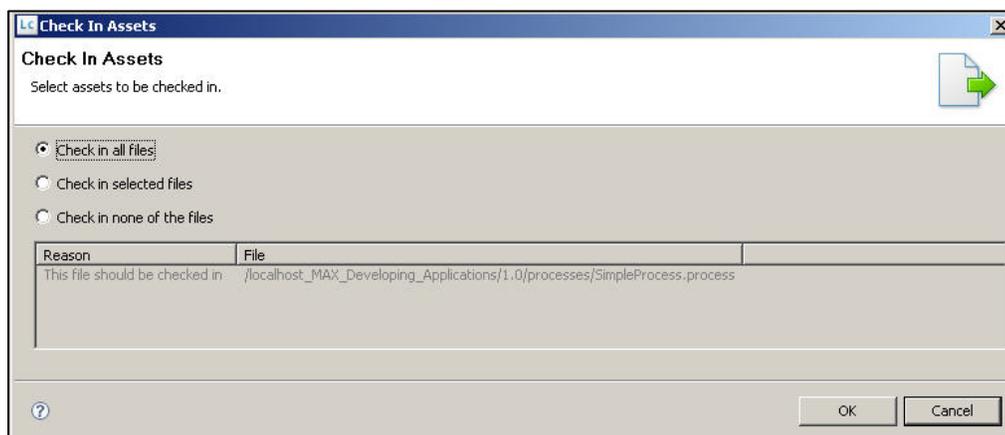
Note: The values you enter in the description and in the Workspace process name fields will be presented to the end user in the Workspace interface.

9. Click the **Next** button to review the configuration summary and click **Finish**. If you are not in the **Process Design** perspective, you will be presented with a dialog to determine if you'd like to open an associated perspective. Select **Yes**.
10. The wizard will create a new LiveCycle process, including the Workspace endpoint.



11. Double-click on the "Initiate the Simple Process" icon, setting focus to the Process Properties view. Notice the options selected in the wizard have been preconfigured. A variable, **formData**, has also been created for the process.
12. In the Application view, right-click on **MAX_Developing_Applications/1.0** and select **Deploy**.

Note: You will be presented with a dialog to determine if you want to check in the files before continuing.



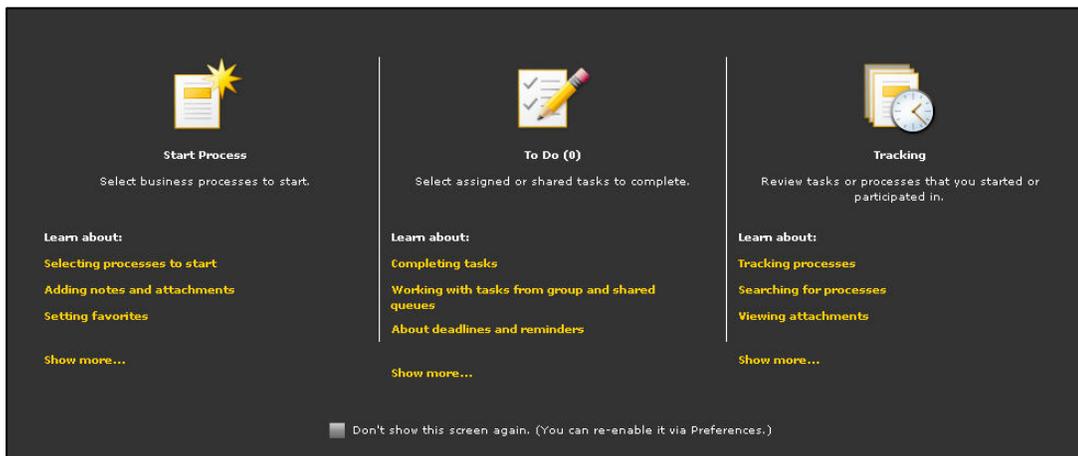
13. Select the "Check in all files" radio button and click **OK**.

Note: This will check-in and deploy the application to the server. Now, you can initiate the form from Workspace and submit it to LiveCycle.

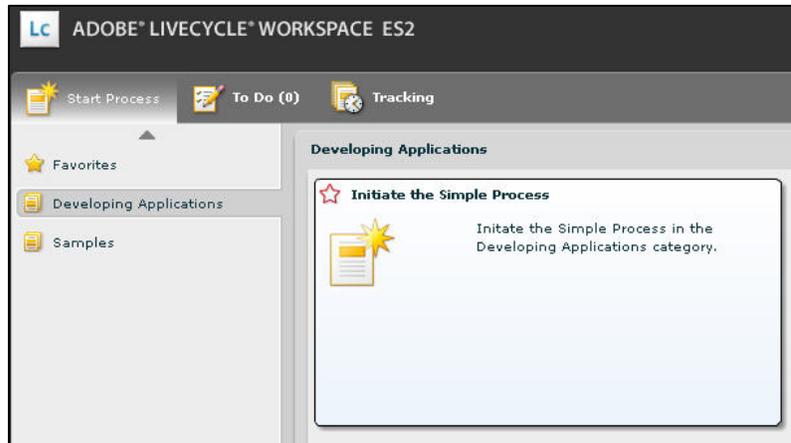
Task 5: Test your simple application

In this task, you will use the Workspace interface to initiate your simple process. This simple process will render the form you created earlier in this exercise.

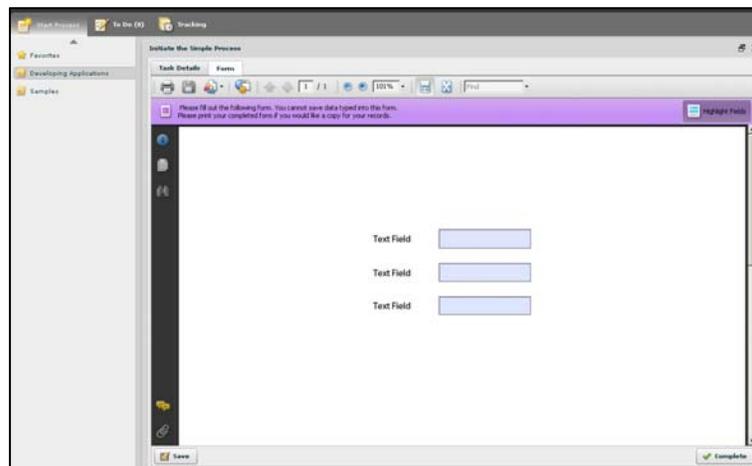
1. In a browser, navigate to the Workspace interface located at <http://localhost:8080/workspace>.
2. Log in using the following credentials:
 - User ID = "kbowman"
 - Password = "password"
3. Select the "Start Process" icon located on the Workspace landing page.



4. Selecting the **Developing Applications** category will display the Simple Process in the right hand window.



5. Click on the **card**.



6. Enter some information in the available text fields and click the **Complete** button. This will submit the form back to LiveCycle and return you to the Start Process area of Workspace.

Note: As Adobe Reader is the default PDF viewer on this image, the Reader Save Data Warning dialog will be displayed when you begin entering data.

Exercise 3: Workspace Form Pre-population

In this exercise you will modify the simple process you created in the previous exercise to use an existing form, integrate with a pre-configured LiveCycle Service to pre-populate with employee data before being displayed to the end user in Workspace.

Objectives:

By the end of this exercise you will be able to;

- Modify an existing process to use a different form
- Create an action profile
- Describe how to invoke an existing LiveCycle service from your process
- Describe how to use assets from multiple applications
- Deploy the application to the server
- Test your modifications via the Workspace interface.

Assets Provided:

In addition to creating new assets, the following assets have been preconfigured for use in this exercise:

1. aquo-ds.xml (*database containing employee data*)
 - a. C:\Adobe\Adobe LiveCycle ES2\jboss\server\lc_turnkey\deploy
2. Employee_Input_Form.pdf
 - a. /MAX_Developing_Applications_Assets/1.0/forms/
3. Simple Process
 - a. /MAX_Developing_Applications/1.0/processes/
4. EmployeeInputFormPrepareData
 - a. /MAX_Developing_Applications_Assets/1.0/processes/

Tasks:

Task 1: Check out the required assets

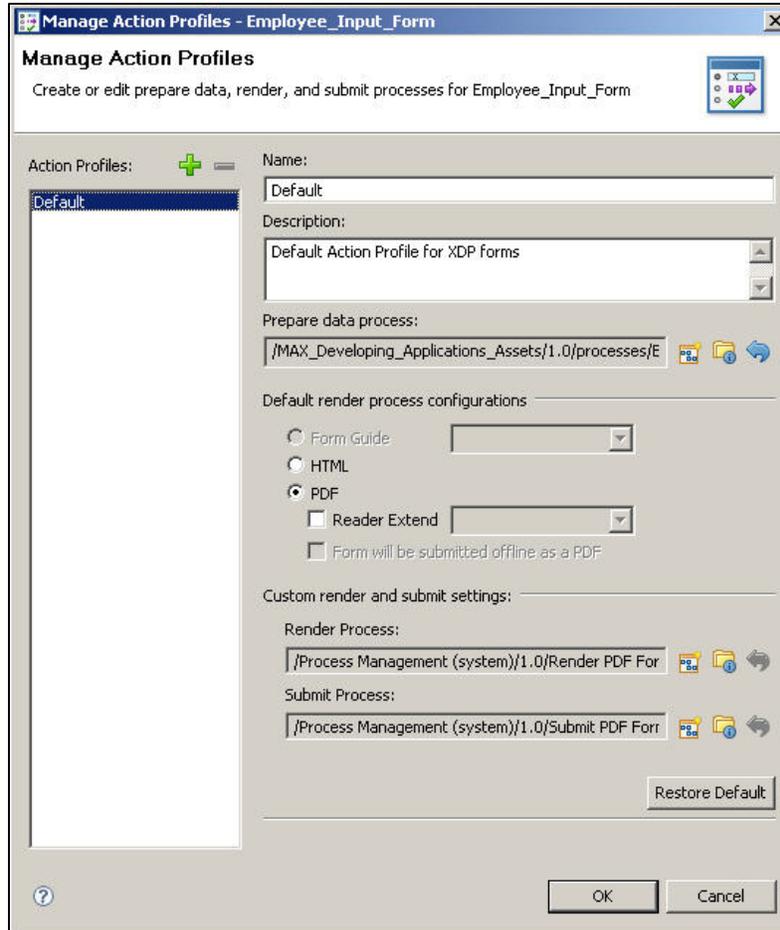
In this task, you will check out the assets required for this exercise.

1. In Workbench, select the **Applications** view.
2. Navigate to **MAX_Developing_Applications_Assets** -> **MAX_Developing_Applications_Assets/1.0/forms**, select the "Employee_Input_form" form, right-click and select "Check Out".
3. Navigate to **MAX_Developing_Applications** -> **MAX_Developing_Applications /1.0**, right-click and select "Check Out".

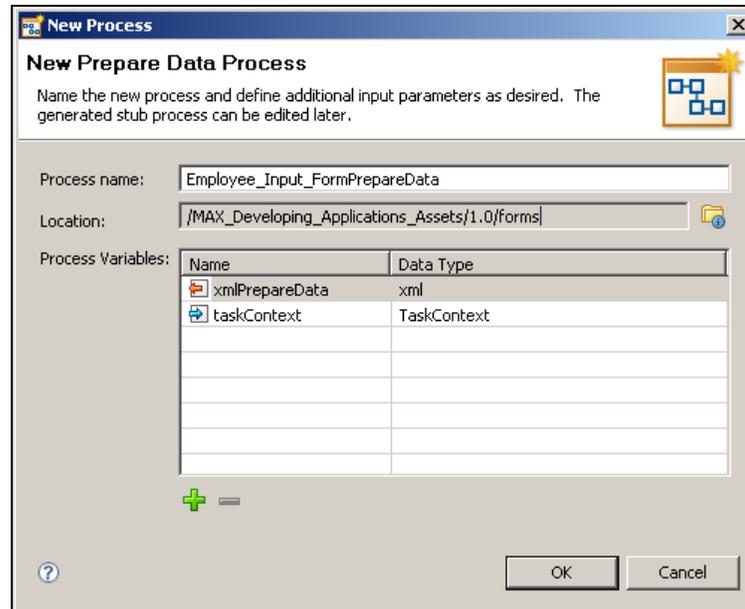
Task 2: Modify the Presentation & Data properties

In this task, you will modify the form used by and existing process and create a new action profile for the form.

1. Navigate to **MAX_Developing_Applications** -> **MAX_Developing_Applications/1.0/processes**, select "SimpleProcess", right-click and select "Open".
2. Double-click the "Initiate the Simple Process" icon in the design canvas, and navigate to the Process Properties view.
3. If not already expanded, select the arrow associated with the **Presentation & Data** property page to expand and display the available settings.
4. Select the ellipses "..." button to the right of the **Asset:** property.
5. In the dialog, navigate to **MAX_Developing_Applications_Assets** -> **MAX_Developing_Applications_Assets/1.0/forms**, highlight "Employee_Input_Form" and click **OK**.
6. Select the  icon to the right of the **Action Profile** property. This will display the Action Profile dialog box.



7. Select the  icon to create a new Prepare data process.
8. Review the properties on this dialog. The following image reflect the dialog you will be presented.



9. Click **Cancel** to return to the Action Profile dialog.
10. Click the  icon to create a new Action Profile.
11. Set the **Name** to "Pre-population", the **Description** to "Pre-populates the form...".
12. Click the  icon associated with the Prepare data process property.
13. Navigate to **MAX_Developing_Applications_Assets -> MAX_Developing_Applications_Assets/1.0/processes**, select "EmployeeInputFormPrepareData" and click **OK**.
14. In the Default render process configurations section, click the box for "**Reader Extend**".

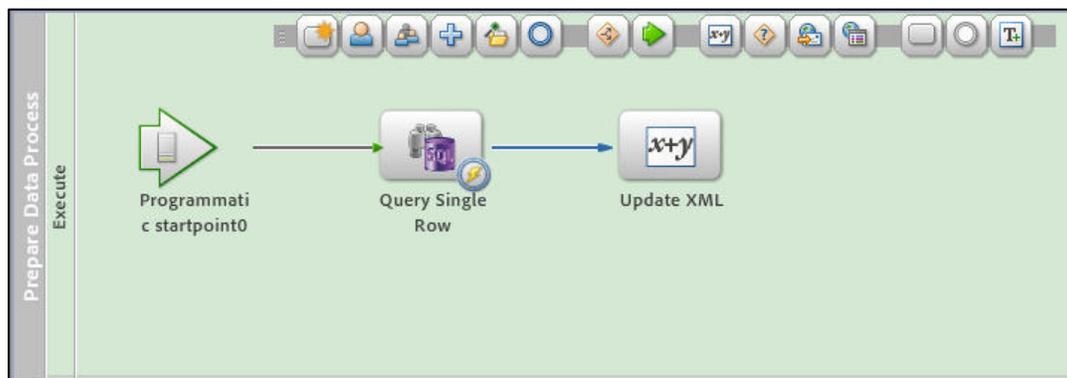
Note: All Reader Extensions credentials available on your LiveCycle ES server will be populated in the dropdown box.

15. Click **OK**.
16. Save the SimpleProcess by selecting **File -> Save**.

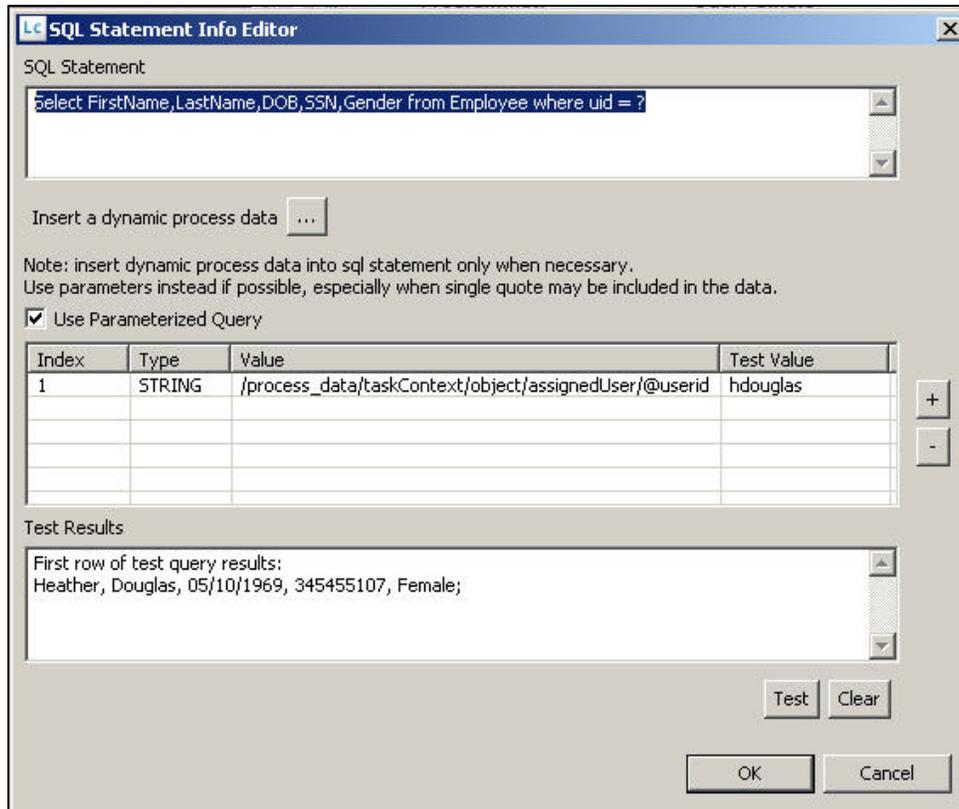
Task 3: Review the EmployeeInputFormPrepareData process

In this task, you will review the LiveCycle process that you associated with the action profile in the previous task.

1. Navigate to **MAX_Developing_Applications_Assets** -> **MAX_Developing_Applications_Assets/1.0/processes** and open **"EmployeeInputFormPrepareData"**.



2. Double-click the **Programmatic startpoint0** icon. Notice the endpoint is configured for SOAP as opposed to the process you created earlier, which was configured for Workspace.
3. Double-click the **Query Single Row** activity.
4. In the Properties view, click the arrow beside the **Input** section to expand and display the properties.
5. Select the ellipse "..." button associated with the ***SQL Statement** property. This will launch the **SQL Statement Info Editor** dialog.

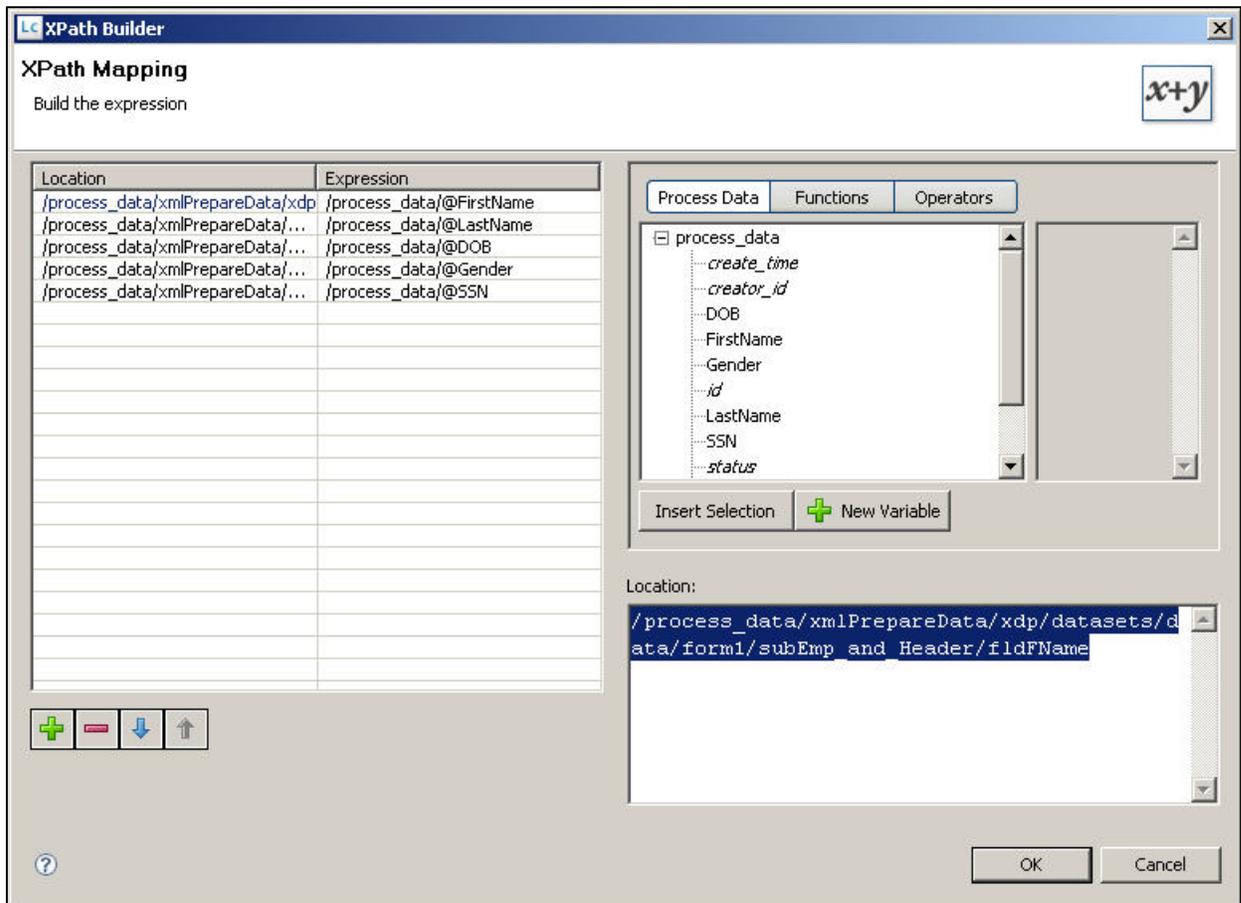


- Click in the cell directly under the **Test Value** header, enter "**hdouglas**" and click the **Test** button.

Note: Query Single Row has been configured to query a local employee database. The info editor is a great way to validate your query statements.

- Click **Cancel**.
- Click the arrow beside the **Output** section to expand and display the properties.
- Select the ellipse "..." button associated with the ***Data Mapping** property. This will launch the **SQL Results Mapping Editor** dialog. Process variables have been associated with database column names.
- In the process, click the **Update XML** activity.
- Expand the **Mapping** property page by selecting the arrow to the left of the text **Mapping**.

12. Select the  icon to display the **XPath Builder** dialog.



13. Click **Cancel**.

14. Close the "EmployeeInputFormPrepareData" process.



Task 4: Check in the modified assets and deploying the application

In this task, you will check in the modified assets and deploy the application.

1. Navigate to **MAX_Developing_Applications_Assets** -> **MAX_Developing_Applications_Assets/1.0/forms**, right-click on "Employee_Input_Form", and select "Check In".
2. In the Applications view, navigate to **MAX_Developing_Applications** -> **MAX_Developing_Applications/1.0**, right-click and select "Check In".
3. In the dialog, select the "Check in all files" radio button and click OK.
4. Expand **MAX_Developing_Applications**, select **MAX_Developing_Applications/1.0**, right-click and select "Deploy".

Task 5: Test the application

In this task, you will use the Workspace interface to initiate your modified process, using a different form and an existing LiveCycle service to prepopulate the form with employee data from a database.

1. In a browser, navigate to the Workspace interface located at <http://localhost:8080/workspace>.
2. Log in using the following credentials:
 - User ID = "kbowman"
 - Password = "password"
3. Select the **Start Process** icon located on the Workspace landing page.
4. Selecting the **Developing Applications** category will display the Simple Process in the right hand window.
5. Click on the **card**. This will load the "Employee Information form", pre- populated with employee information.

Initiate the Simple Process

Task Details Form

Please fill out the following form. You can save data typed into this form. Highlight Fields

AQUO
NATURAL ENERGY

Employee Information Form

Confidential

Employee Information Notice of Hire

First Name: Kara Last Name: Bowman

Date of Birth: 12/09/1965 SSN: 234768234

Dependents: Gender:

Yes Male

No Female

Dependents Information

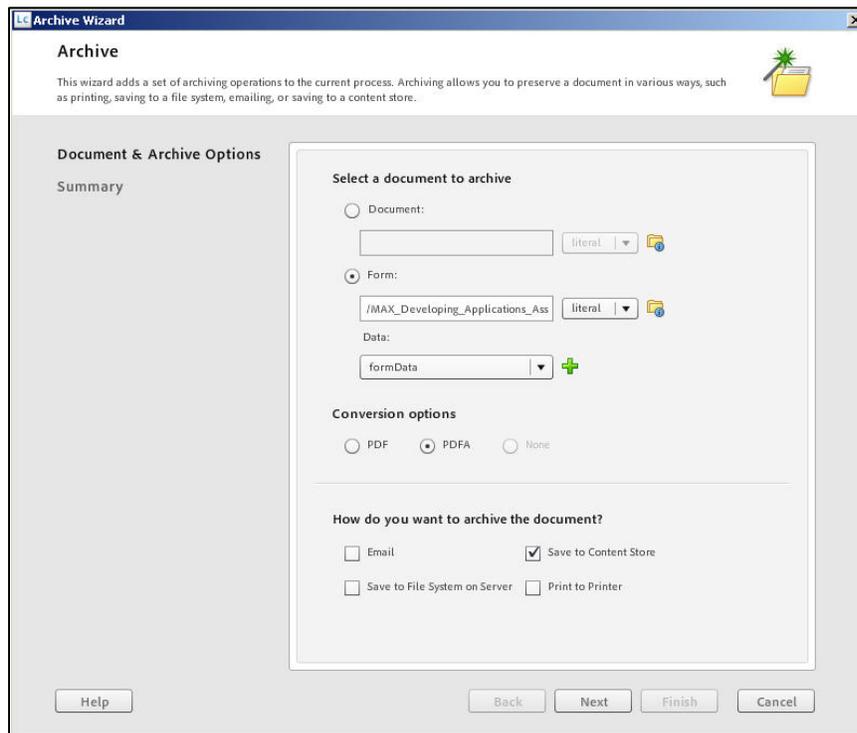
Save Complete

6. Click the **Complete** button. This will submit the form back to LiveCycle, returning you to the **Start Process** area of Workspace.

Task 6: Use the Archive Wizard

In this task, you will use the Archive Wizard functionality to merge data submitted by the user with the Employee_Input_Form, creating a PDF/A version of the document that will be saved to the Content Store.

1. In the Applications view, navigate to **MAX_Developing_Applications -> MAX_Developing_Applications/1.0/processes**, highlight "SimpleProcess", right-click and select "Check Out".
2. Double-click the "SimpleProcess" process to display in the design editor.
3. In the toolbar located across the top of the design canvas, select the  icon and drag onto the design canvas. This will display the **Archive Wizard** dialog to you.



Archive Wizard

Archive

This wizard adds a set of archiving operations to the current process. Archiving allows you to preserve a document in various ways, such as printing, saving to a file system, emailing, or saving to a content store.

Document & Archive Options

Summary

Select a document to archive

Document:

literal

Form:

/MAX_Developing_Applications_Ass literal

Data:

formData

Conversion options

PDF PDF/A None

How do you want to archive the document?

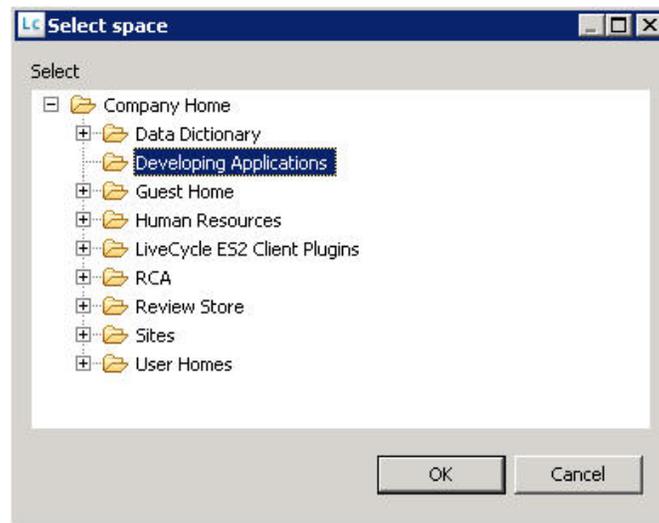
Email Save to Content Store

Save to File System on Server Print to Printer

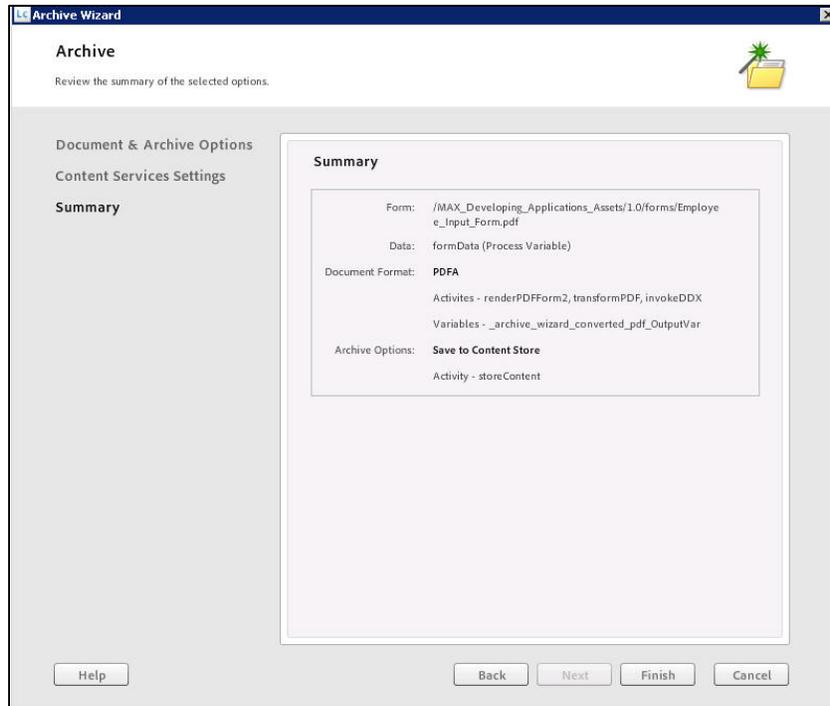
Help Back Next Finish Cancel

4. Select the **Form:** radio button and click the associated  icon.

5. Navigate to **MAX_Developing_Applications_Assets** -> **MAX_Developing_Applications_Assets/1.0/forms**, highlight "**Employee_Input_Form**", and click **OK**.
6. In the Conversion options section, select the **PDF/A** radio button.
7. Select the "**Save to Content Store**" checkbox and click **Next**.
8. On the Content Services Settings panel of the Archive Wizard dialog, click the  icon associated with the **Space Path** option.
9. In the **Select space** dialog, highlight the **Developing Applications** entry and click **OK**.



10. Enter "**Employee_Input_Form_Data.pdf**" in the node name field and click **Next**. The summary dialog should be similar to the image below.



11. Review the summary information and click **Finish**.

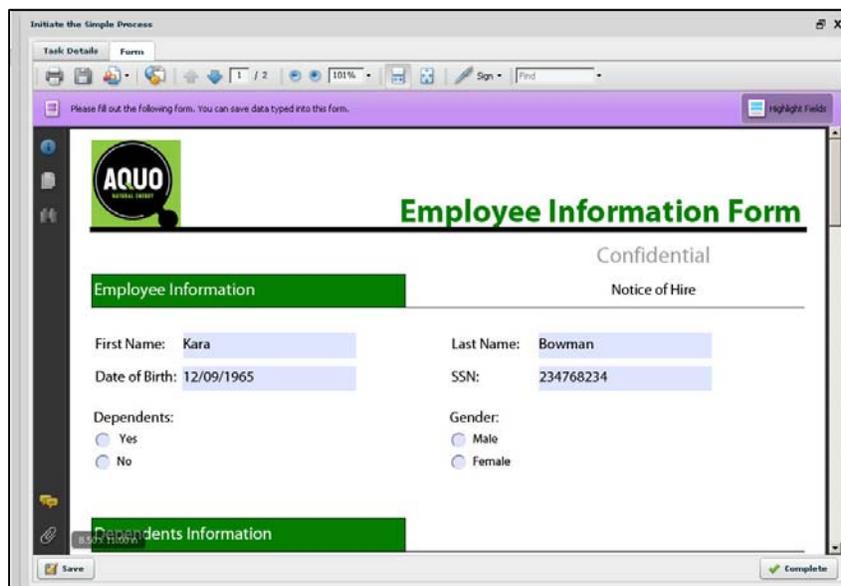
Note: Once you click Finish, all of the required services will be added to the design canvas, preconfigured based on the options provided in the Archive Wizard dialog.

12. **Save, Check In** and **Deploy** the application.

Task 7: Test the application and validating the asset in ContentSpace

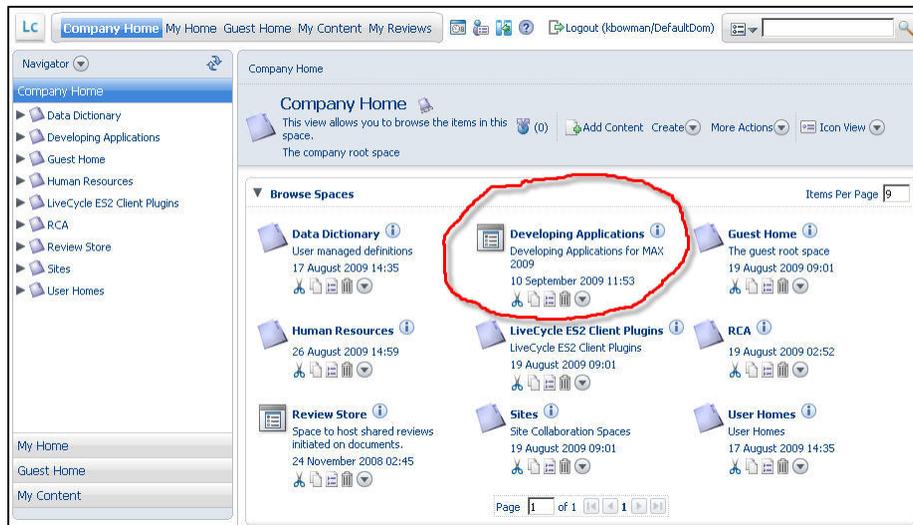
In this task, you will use the Workspace interface to initiate your modified process and upon submission, you'll add the submitted form to ContentSpace.

1. In a browser, navigate to the Workspace interface located at <http://localhost:8080/workspace>.
2. Log in using the following credentials:
 - User ID = "kbowman"
 - Password = "password"
3. Select the "Start Process" icon located on the Workspace landing page.
4. Selecting the **Developing Applications** category will display the Simple Process in the right hand window.
5. Click on the card. This will load the "Employee Information form", pre-populated with employee data.



6. Click the **Complete** button. This will submit the form back to LiveCycle, returning you to the **Start Process** area of Workspace.

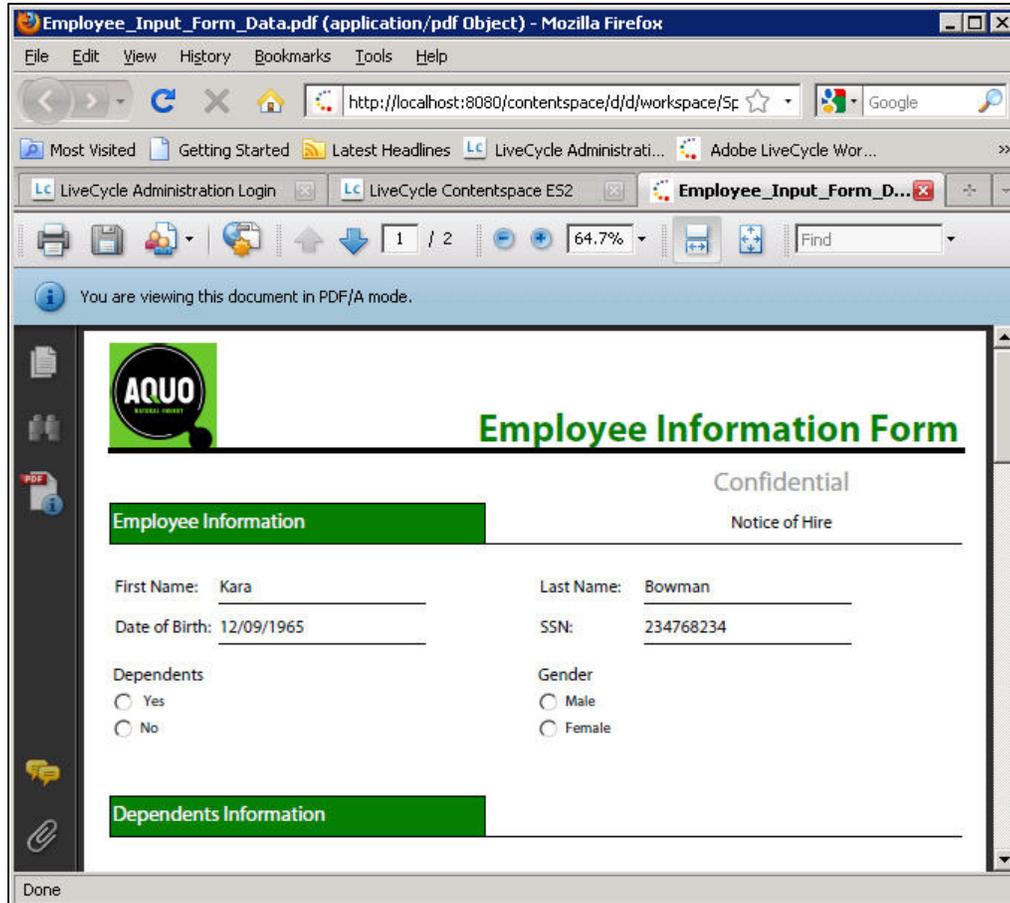
7. In the browser, navigate to the Contentspace interface located at <http://localhost:8080/contentspace>.
8. Log in using the following credentials:
 - User Name: = "kbowman"
 - Password: = "password"
9. From the left-hand navigation, click on **Company Home**.



10. Select the hyperlink associated with the **Developing Applications** space. The result of merging the submitted data with the "Employee Information form", converted to PDF/A will be added to the Deploying Applications space.



11. Click Employee_Input_Form_Data.pdf.
12. Validate the form contains the submitted data and the information banner states "You are viewing this document in PDF/A mode. Similar to the following image.



13. Close the browser.

Exercise 4: Validation Reports and Record / Playback Functionality

In this exercise you will review the built in functionality to quickly identify, resolve and test your applications and assets. Validation reports, and record & playback functionality provide you with a wide range of debugging capabilities.

Objectives:

By the end of this exercise you will be able to;

- Describe the value of the validation report
- Configure a process to record
- Execute the playback of a recording

Assets Provided:

In addition to creating new assets, the following assets have been preconfigured for use in this exercise:

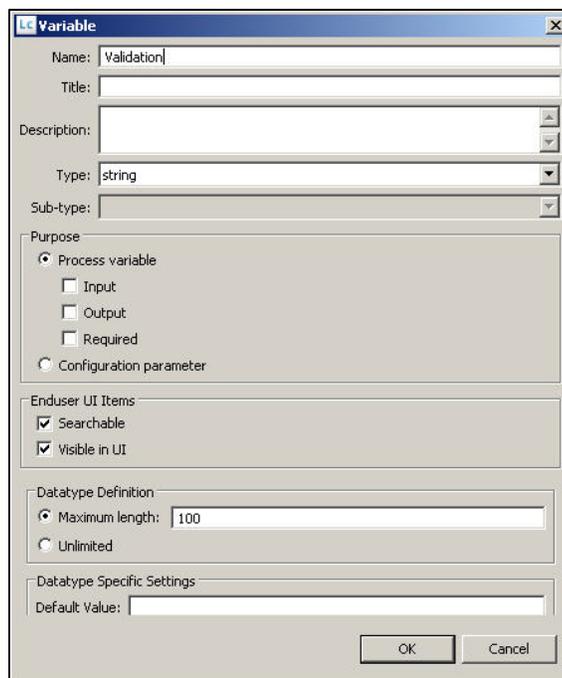
1. Employee_Input_Form.pdf
 - a. MAX_Developing_Applications_Assets ->
MAX_Developing_Applications_Assets/1.0/forms
2. FullNameBuilder
 - a. MAX_Developing_Applications_Assets ->
MAX_Developing_Applications_Assets/1.0/processes

Tasks:

Task 1: Modify a process to generate a warning when validated

In this task, you will modify SimpleProcess to include a variable, which will not be assigned in order to generate an entry in the Validation Report view. The validation report will identify any warnings or errors for the applications you have in your Applications view.

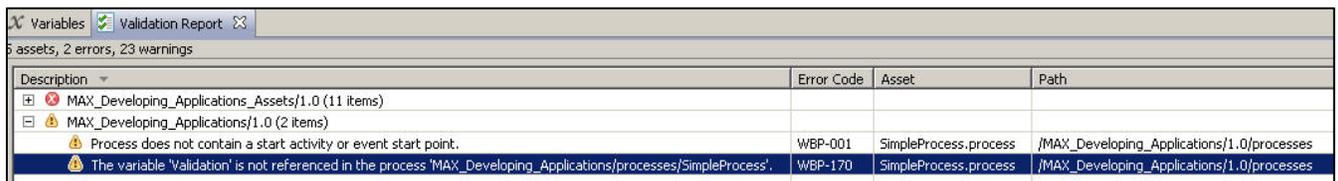
1. In the Applications view, navigate to **MAX_Developing_Applications** -> **MAX_Developing_Applications/1.0/processes**, select **"SimpleProcess"**, right-click and select **"Check Out"**.
2. Double-click the **"SimpleProcess"**. This will launch the process design in the canvas.
3. Select the **Variables** view, click the  icon. This will display the **Variable** dialog box.
4. Set the Name to **"Validation"**, the Type to **"string"**. Your variable settings should reflect the following diagram.



5. Click **OK** to return to the editor.
6. **Save** the modified process.
7. In the Applications view, highlight the "**SimpleProcess**" process, right-click and select "**Validate**".

Note: This will trigger a validation of all assets in all the local application folders. The results will be displayed in the Validation Report view.

8. Double-click on the "**Validation Report**" tab to maximize the view.

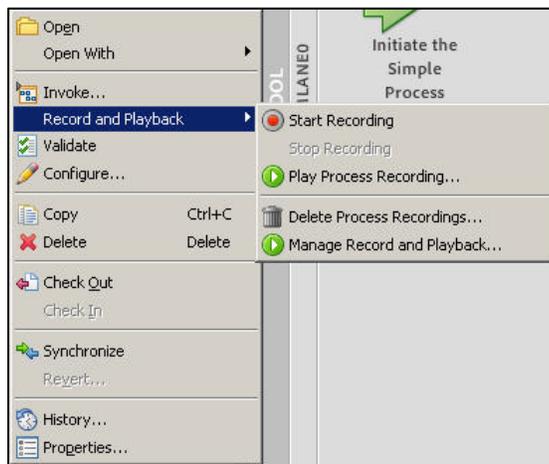
Description	Error Code	Asset	Path
MAX_Developing_Applications_Assets/1.0 (11 items)			
MAX_Developing_Applications/1.0 (2 items)			
Process does not contain a start activity or event start point.	WBP-001	SimpleProcess.process	/MAX_Developing_Applications/1.0/processes
The variable 'Validation' is not referenced in the process 'MAX_Developing_Applications/processes/SimpleProcess'.	WBP-170	SimpleProcess.process	/MAX_Developing_Applications/1.0/processes

9. Double-click on the "**The variable 'Validation' is not referenced in the process 'MAX_Developing_Applications/processes/SimpleProcess'**" entry. This will direct you to the process where the warning has been identified. Alternatively, pressing F1 while the message is highlighted will launch the help to the specific topic.
10. With focus on the "SimpleProcess", highlight the "Validation" variable in the Variables view, right click and select "**Delete Variable**".
11. In the Applications view, navigate to **MAX_Developing_Applications -> MAX_Developing_Applications/1.0/processes**, select "**SimpleProcess**", right-click and select "**Check In**".
12. Validate again and you'll notice the previous warning has been removed from the Validation Report view.

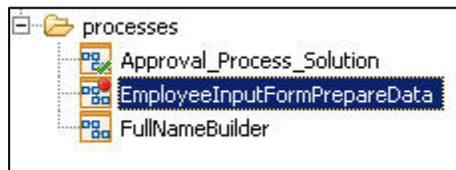
Task 2: Enable Record functionality

In this task, you will configure the EmployeeInputFormPrepareData process to record the next time the process is invoked.

1. Navigate to **MAX_Developing_Applications_Assets -> MAX_Developing_Applications_Assets/1.0/processes**
2. Select the **"EmployeeInputFormPrepareData"** process, right-click on **"Record and Playback"** and select **"Start Recording"**.



Note: This will apply a visual indicator on the process name and record all activities, including all values of the variables utilized in this service.



Task 3: Test the application to trigger the recording

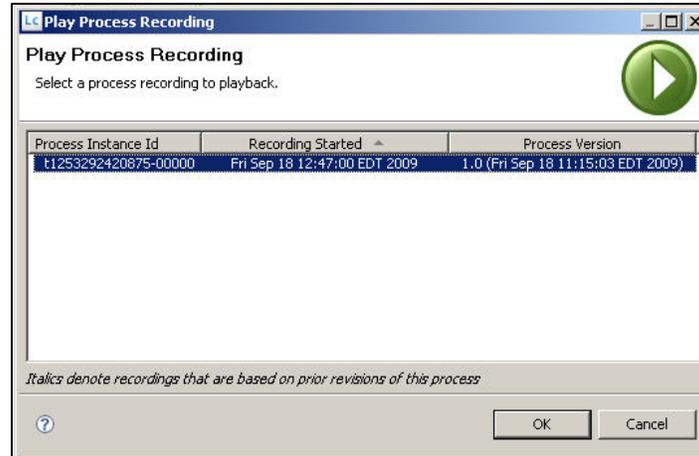
In this task, you will use the Workspace interface to initiate the SimpleProcess, which will invoke the EmployeeInputFormPrepareData service that has been configured to be recorded.

1. In a browser, navigate to the Workspace interface located at <http://localhost:8080/workspace>.
2. Log in using the following credentials:
 - User ID = "kbowman"
 - Password = "password"
3. Select the "Start Process" icon located on the Workspace landing page.
4. Selecting the **Developing Applications** category will display the Simple Process in the right hand window.
5. Click on the card. This will load the "Employee Information form", pre-populated with employee information.
6. Click on the **Complete** button to submit the request to LiveCycle for processing.

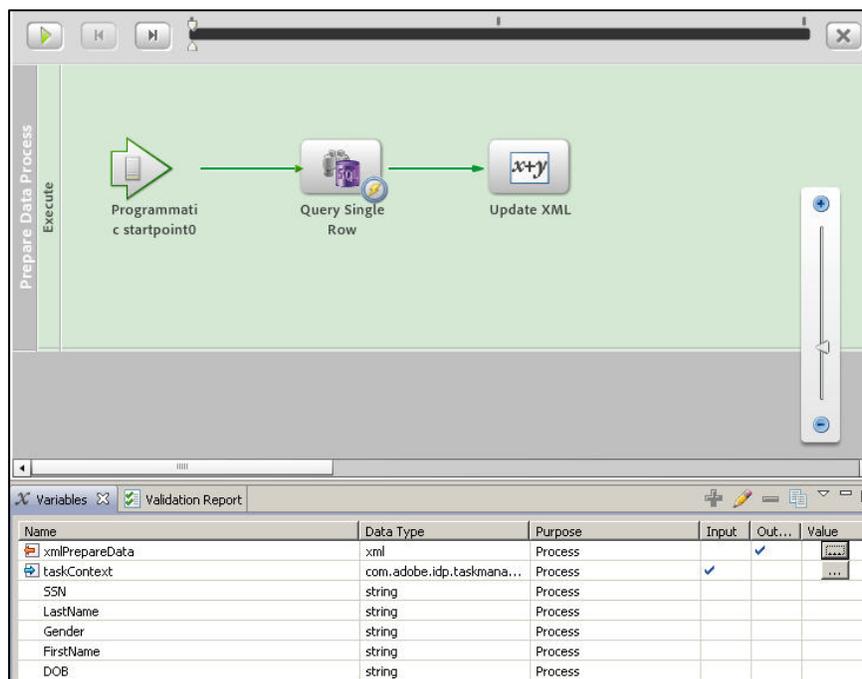
Task 4: Review the recording

In this task, you will review the recording that was created for the EmployeeInputFormPrepareData service.

1. In Workbench, navigate to **MAX_Developing_Applications_Assets -> MAX_Developing_Applications_Assets/1.0/processes**
2. Select the "EmployeeInputFormPrepareData" process, right-click on "Record and Playback" and select "Stop Recording".
3. Select the "EmployeeInputFormPrepareData" process, right-click on "Record and Playback" and select "Playback". You will be presented with the Play Process Recording dialog similar to the following image.



4. Highlight the latest entry in the dialog box and select **OK**. The **EmployeeInputFormPrepareData** process will be displayed in the design canvas with a few more options than in the regular design canvas.



Note: In the following steps you will play the recording. The playback will execute quickly, therefore additional steps have been included to play the entire recording first, providing you with a visual representation of what to expect. This step will be followed by instructions to pause the recording and view variable values.

5. Click the **play** button, , and simply watch the progression.
6. Once the playback has completed, use the slider to return to the beginning of the recording.

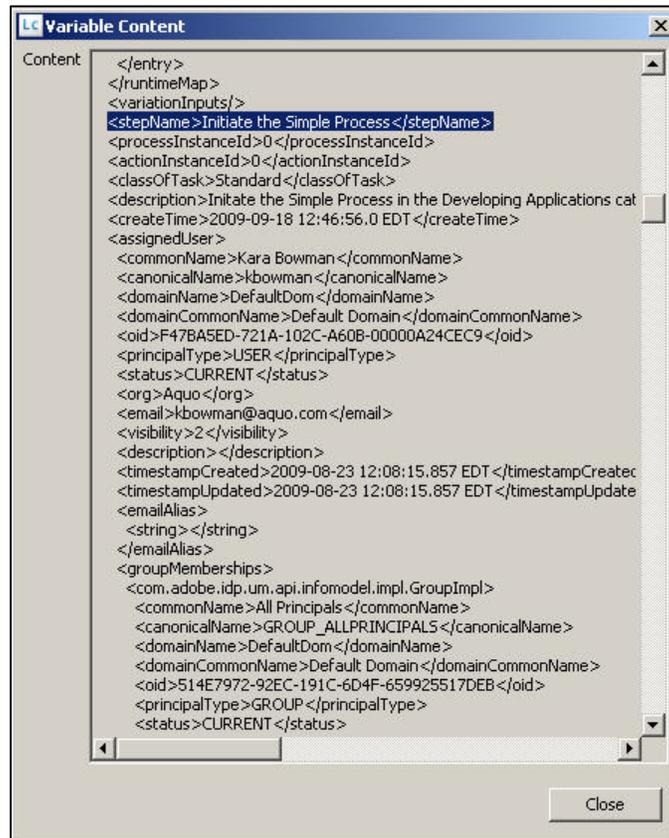


7. Click the  button, to move the execution to the next step. The Query Simple Row activity should be highlighted. In the Variables view, notice that all the variables are also highlighted and contain values or an ellipse button.

The screenshot shows the 'Prepare Data Process' workflow with three activities: 'Programmatic startpoint0', 'Query Single Row', and 'Update XML'. The 'Query Single Row' activity is highlighted. Below the workflow is a 'Variables' table with the following data:

Name	Data Type	Purpose	Input	Out...	Value
xmlPrepareData	xml	Process		✓	...
taskContext	com.adobe.idp.taskmanager.form.TaskContext	Process	✓		...
SSN	string	Process			234768234
LastName	string	Process			Bowman
Gender	string	Process			Female
FirstName	string	Process			Kara
DOB	string	Process			12/09/1965

- In the Variables view, click the <ellipses> icon associated with the **taskContext** variable. You will be presented with a dialog similar to the following image, which contains the content currently assigned to the variable.



- Click the **Close** button.
- Close the canvas by selecting the  located in the top right-hand corner of the canvas.

Exercise 5: Invoking LiveCycle Services

In exercise 2, you created a simple application using the Workspace interface to invoke the process. In this exercise you, will review the pre-configured process, which you will invoke using the Remoting and REST programmatic start points. You will create an AIR desktop application using Flash Builder to invoke the service using the Remoting endpoint and you will create a custom query string in the browser to invoke the same service using the REST invocation method.

Objectives:

By the end of this exercise you will be able to;

- Describe how service discovery works
- Configure a Flex project to invoke a LiveCycle service
- Test the AIR desktop application
- Describe the query string parameters to invoke a LiveCycle service using the REST programmatic start point

Assets Provided:

In addition to creating new assets, the following assets have been preconfigured for use in this exercise:

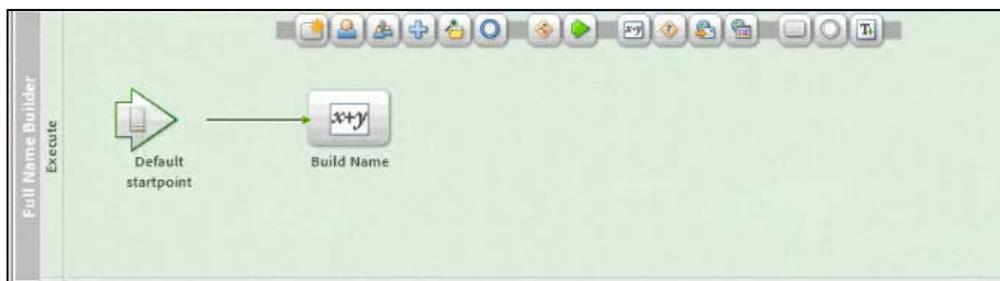
1. FullNameBuilder process
 - a. MAX_Developing_Applications_Assets ->
MAX_Developing_Applications_Assets/1.0/processes
2. Data Services client libraries
 - a. C:\Adobe\Adobe LiveCycle ES2\LiveCycle_ES_SDK\misc\DataServices

Tasks:

Task 1: Review the FullNameBuilder process

In this first task, you will review the pre-configured FullNameBuilder process, which will be used for both Remoting and REST programmatic start point later in this exercise.

1. In the Applications view, navigate to **MAX_Developing_Applications_Assets -> MAX_Developing_Applications_Assets/1.0/processes**
2. Double-click the the **FullNameBuilder** process. This will open the process in the design canvas.



Note: This process is configured with 2 input variables; first name and last name. The process will concatenate these values. The output of the service will be the concatenated value.

3. Log out of Workbench by selecting **File -> Logout**. You will be presented with the log out dialog.
4. Click **OK**.
5. Close Workbench by selecting **File -> Exit**.

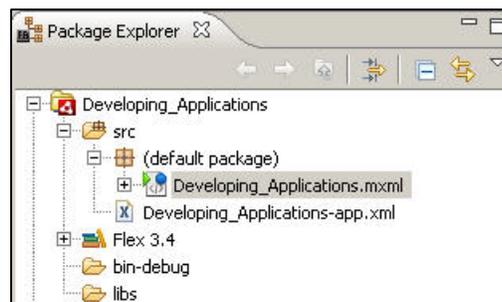
Task 2: Create a new Flex application

In this task, you will create a new Flex application using the Flash Builder plug-in for eclipse.

1. Double-click the **Adobe Flash Builder Plug-in Beta Eclipse Launcher** shortcut located on the desktop.
2. You will be presented with the **Eclipse Workspace Launcher** dialog box, requesting you Select a workspace. Click **OK** to accept the default location.



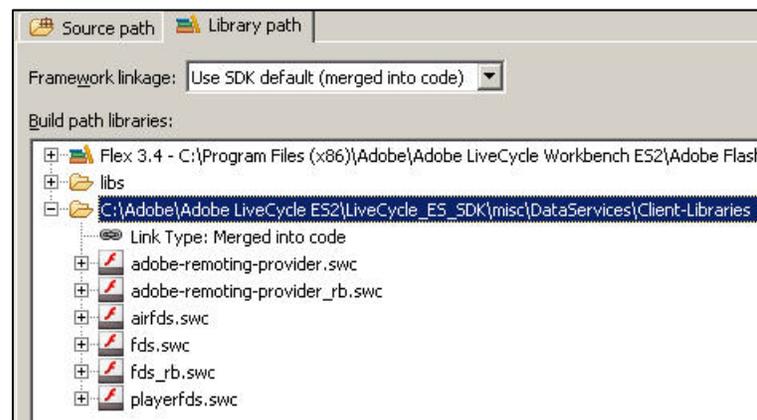
3. Once Flash Builder is loaded, select **File -> New -> New Flex Project**.
4. Set the **Project name** to "**Developing_Applications**".
5. In the **Application type** section, select the **Desktop (runs in Adobe AIR)** radio button and click **Finish**. The new application will be displayed in the **Package Explorer** view.



Task 3: Configure the Flex Build Path properties

In this task, you will configure the Flex Build Path properties for the Developing_Applications project you created.

1. Highlight the **Developing_Applications** project, right-click and select **Properties**.
2. In the left-hand side of the dialog, highlight **Flex Build Path**. This will display the Flex Build Path information in the right-hand side of the dialog.
3. Click the **Library Path** tab.
4. Click the **Add SWC Folder** button.
5. Navigate to **C:\Adobe\Adobe LiveCycle ES2\LiveCycle_ES_SDK\misc\DataServices**, highlight the **Client-Libraries** folder and click **OK**. You will be returned to the Library path tab, your properties should resemble the following image.

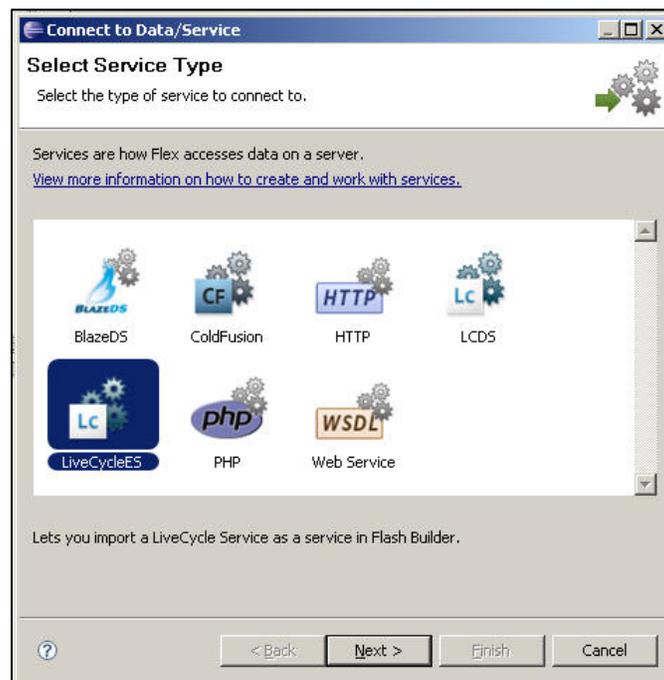


6. Click **OK** to close the **Properties** dialog.

Task 4: Configure the Data/Service properties

In this task, you will use the new service discovery capability in Flash Builder to connect to LiveCycle ES server.

1. In the right hand window, select the **Design** tab associated with the **Developing_Applications.mxml** window.
2. Select the **Data/Services** tab, located directly below the Design layout.
3. Click the **Connect to Data/Service...** hyperlink. The dialog presented resembles the following image.



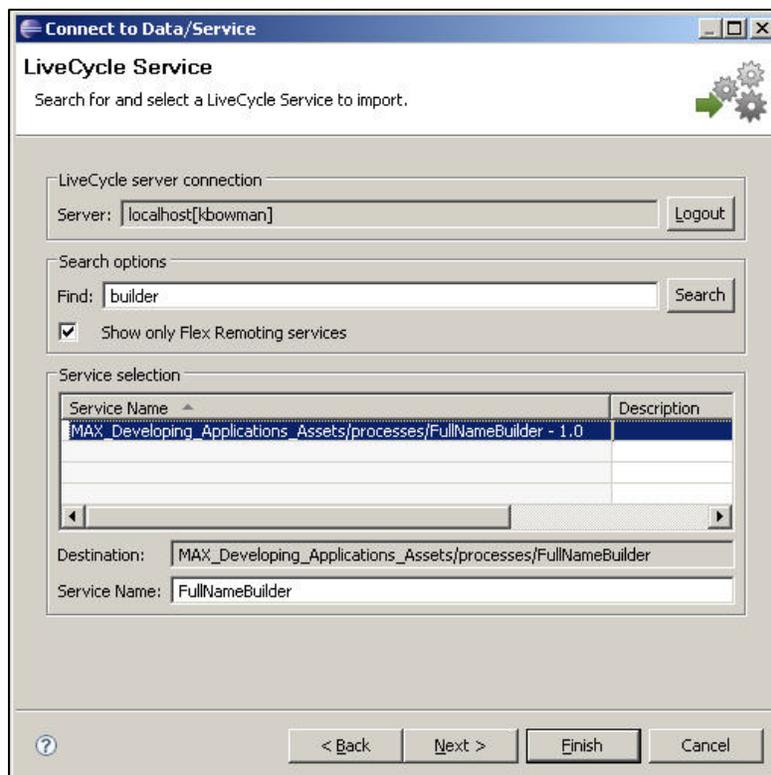
4. Select **LiveCycleES** and click **Next**. A dialog indicating the requirement to connect to a LiveCycle Server will be displayed.
5. Click the **Click here to login** hyperlink to display the login dialog for LiveCycle ES2.
6. Click the **Configure...** button.
7. **Add** a new server, setting the **Server Title:** and **Hostname:** properties to **"localhost"**.
8. Click **OK** to return to the **Manage Configured Servers** dialog.

9. Click **OK** to return to the login dialog.
10. Log in using the following credentials:
 - Username: "kbowman"
 - Password: "password"
 - Log onto: "localhost"

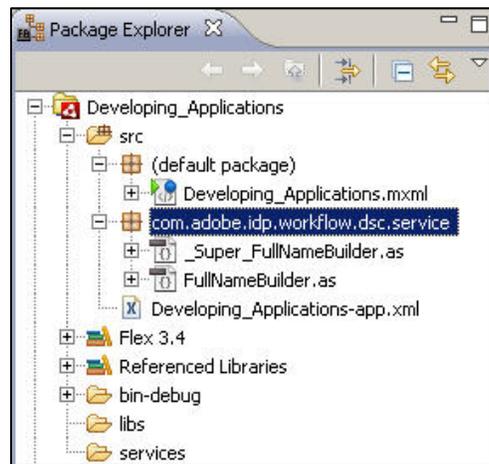
11. Click the **Login** button.

Note: To reduce the amount of results, the next step will identify a specific keyword for the service we want. If no key word is identified and "Show only Flex Remoting services" check box is deselected all available services will be returned in the Service selection section.

12. In the **Search options** section, enter "builder" in the **Find** field and click the **Search** button. You will be returned a single result in the Service selection section, similar to the following image.



13. Click the **Next** button. In the LiveCycle Service Operations section, the invoke operation information, for the **FullNameBuilder** service, which identifies 2 input variables; **FirstName** and **LastName**, both of type String will be displayed.
14. Click the **Finish** button. This action will create a new package called **com.adobe.idp.workflow.dsc.service** in the **Developing_Applications** project, which contains the auto generated code to communicate with LiveCycle ES.



Task 5: Generating and modifying the form for the desktop application

In this task, you will generate and modify the form that is associated with your desktop application.

1. In the **Data/Services** tab, right-click on the **invoke** operation and select **Generate Form**.
2. Accept the defaults in the **Generate Form** dialog and click **Next**.
3. Accept the defaults in the **Property Control Mapping** dialog and click **Finish**.

Note: The following instructions have been included to make the form more esthetically pleasing.

4. In the **Source** view, find the **layout** property on line 2. Change the value from "**absolute**" to "**vertical**".
5. Select **File -> Save**.

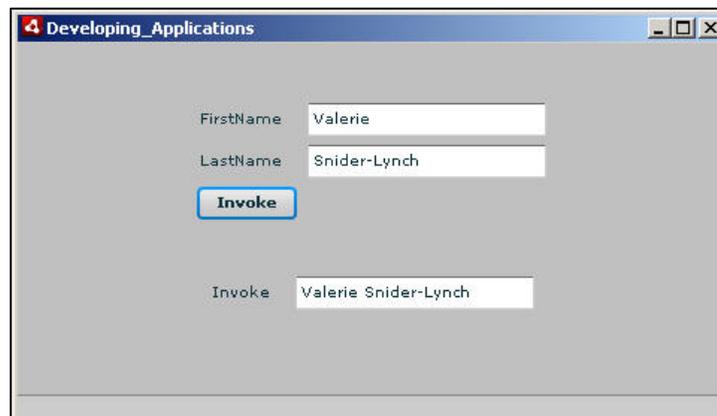
Task 6: Test the desktop application

In this task, you will test your desktop application that was created in the previous task.

1. In the Package Explorer view, highlight the **Developing_Applications** project, right-click and select **Run As -> Desktop Application**.
2. In the application, enter your **first** and **last** name to the available fields and click the **Invoke** button.

Note: As we did not configure any authentication in the application, you will be displayed a **Connect to localhost** dialog.

3. Use the following credentials to authenticate:
 - User name: "**kbowman**"
 - Password: "**password**"
4. Click **OK**. The values you entered in the FirstName and LastName fields have been concatenated and displayed in the Invoke field, similar to the following image.

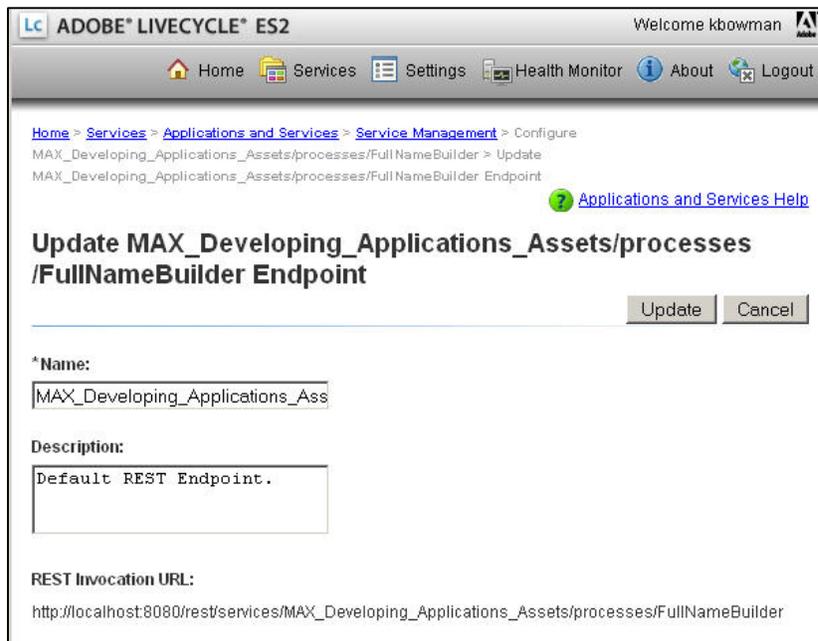


5. Close the Desktop Application by selecting the **X** located in the top right-hand side.
6. Close Flash Builder by selecting **File -> Exit**.

Task 7: Identify the REST Invocation URL for the FullNameBuilder service

In this task, you will review the format to invoke the FullNameBuilder service using the REST start point.

1. Launch and minimize notepad. You will use this in step 9 to paste the REST Invocation URL.
2. In the browser, navigate to the LiveCycle Administration Console, <http://localhost:8080/adminui>.
3. Log in with the following credentials:
 - User ID: "kbowman"
 - Password: "password"
4. Click the **Login** button.
5. Navigate to **Services -> Applications and Services -> Service Management**.
6. In the **Name:** field enter "builder" and click the **Filter** button.
7. **MAX_Developing_Applications_Assets/processes/FullNameBuilder:1.0..** This will direct you to the Endpoints tab listing all available invocation methods for this service.
8. Select the hyperlink associated with the **Default REST Endpoint**. You will be directed to the property page.



ADOBE® LIVECYCLE® ES2 Welcome kbowman

Home Services Settings Health Monitor About Logout

Home > Services > Applications and Services > Service Management > Configure
 MAX_Developing_Applications_Assets/processes/Full NameBuilder > Update
 MAX_Developing_Applications_Assets/processes/Full NameBuilder Endpoint

[Applications and Services Help](#)

Update MAX_Developing_Applications_Assets/processes/FullNameBuilder Endpoint

*Name:

Description:

REST Invocation URL:

9. Copy the REST Invocation URL,
http://localhost:8080/rest/services/MAX_Developing_Applications_Assets/processes/FullNameBuilder to notepad.
10. Return to adminui and click the Close button on the Endpoint page.

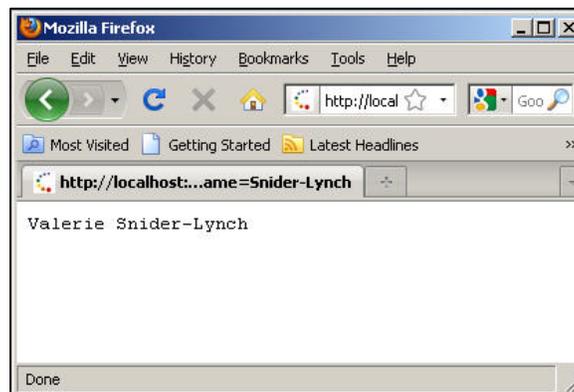
Task 8: Test the REST Invocation Endpoint

In this task, you will create a custom query to test the REST invocation endpoint for the FullNameBuilder service.

1. With the REST Invocation URL in Notepad, add the following text to the end of the URL:
 - **"?FirstName=EnterYourFirstName&LastName=EnterYourLastName"**

Note: Replace EnterYourFirstName and EnterYourLastName with your information.

2. Copy the entire URL, paste in the browser address field and hit the Enter key.
3. Enter the following credentials in the authentication dialog:
 - User Name: **"kbowman"**
 - Password: **"password"**
4. Click the OK button. You should be displayed the FirstName and LastName concatenated.



5. Close the all applications.

Exercise 6: Create a LiveCycle Archive file

In this exercise you will create a LiveCycle Archive file that you can export from the pre-configured environment and take with you.

Objectives:

By the end of this exercise you will be able to;

- Create a LiveCycle Archive file.

Tasks:

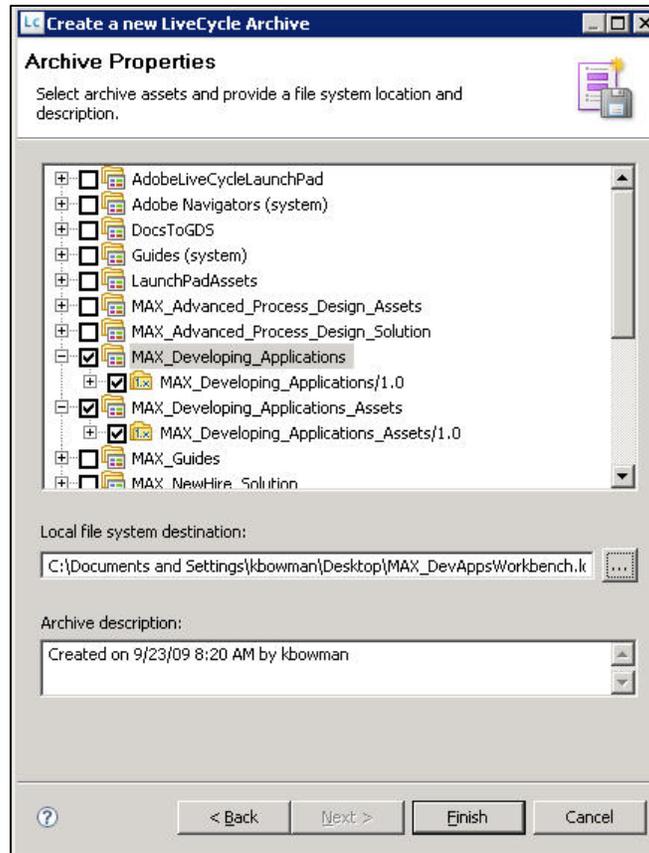
Task 1: Create a LiveCycle Archive file

In this task, you will create a LiveCycle Archive file, containing all the preconfigured and newly created/modified assets covered in this lab.

1. Log into Workbench using kbowman's credentials.
2. In the Applications view, expand MAX_Developing_Applications_Assets, highlight MAX_Developing_Applications_Assets/1.0, right-click and select **Create LiveCycle Archive**.
3. Ensure Create a new archive file. Is selected and click Next.
4. In the Archive Properties panel, select the check boxes associated with MAX_Developing_Applications and the MAX_Developing_Applications_Assets options.

Note: Selecting the main folder will automatically select the subfolders.

5. Click the ellipse button associated with the Local file system destination.
6. Provide a meaningful name, MAX_DevAppsWorkbench, and save to the desktop.
7. Click the Save button. Your configuration should resemble the following image.



8. Click the Finish button.
9. Click OK in the Export Success dialog.
10. Using Windows Explorer, navigate to the desktop and copy the MAX_DevAppsWorkbench.lca file.
11. Navigate to My Network Places -> Entire Network -> VMware Shared Folders -> .host -> Shared Folders -> share and paste the file.

Note: The lca file containing the pre-configured assets and the assets you created during this lab is now available on the host machine. The employee database and the datasource file, **aquo-ds.xml**, in C:\Adobe\Adobe LiveCycle ES2\jboss\server\lc_turnkey\deploy folder, are the only assets not included in the lca.