

Digital Business Automation Blue Demos 2018

Lab instructions for

3. Workflow sub-scenario

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Version: 2.0

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0 Introduction

In this scenario you will implement the complete Workflow sub-scenario of the Digital Business Automation Blue Demos 2018 end-to-end scenario. To do this you will primarily work with IBM Business Automation Workflow (BAW or Workflow).

As part of this sub-scenario, you will:

- Learn new features of Workflow 18.0.0.1
- Create a new Case solution
- Work with a Process Application
- Integrate the Case solution with the Process Application
- Integrate Workflow and RPA
- Integrate Workflow and ODM
- Execute the end-to-end scenario while your own implemented Case solution and Process Application is used

Duration: ~12 hours.

Note: In case you started with **Template 7** to implement the entire end-to-end scenario by yourself, make sure to have the ECM sub-scenario and the ODM sub-scenario already implemented.

0.1 Audience

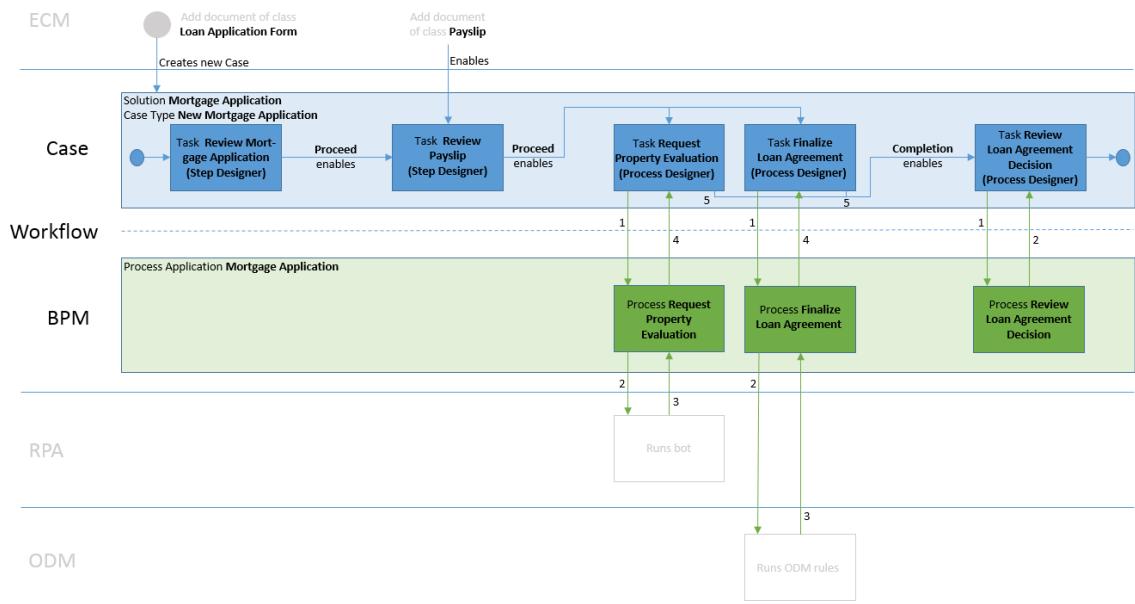
Everyone interested in the Digital Business Automation (DBA) space, especially technical people with IBM Business Process Manager and IBM Case Manager background, but also people without any background but interested in IBM Business Automation Workflow.

0.2 Prerequisites

- Access to <https://bluedemos.com> with your IBM ID.
- Link to the **shared box folder** <https://ibm.box.com/s/aiwhfcfs7ms9spnrijwg8bzmk7ad6lsf>.
- You **either** started already with **Template 7** and have the ECM and ODM sub-scenarios already implemented,
or
you want to work only with **Template 3 - Implement Workflow sub-scenario only**.
- Some experience in IBM Business Process Manager or IBM Case Manager would be useful.

0.3 Objectives

1. Get familiar with IBM Business Automation Workflow V18.0.0.1 CF2018.06.
2. Get familiar with new features introduced in the last three CFs of BAW.
3. Integrate Workflow with RPA and ODM.
4. Implement the Workflow sub-scenario that is structured as follows:



- A new **Case** is created automatically when a document of class **Loan Application Form** is added to ECM (Exercise 2).
- Case task **Review Mortgage Application** is started automatically when a new case is created (Exercise 2). This task is used by the Mortgage Officer to initially review the new request. As part of this task, the Mortgage Officer can involve the Customer Representative to request missing information from the customer.
- Case task **Review Payslip** is started automatically after task Review Mortgage Application is completed and a Payslip document is added to the case folder (Exercise 3). This task is used by the Mortgage Officer to review the request after all required information about the customer is available.

- Case task **Request Property Evaluation** is started automatically after task Review Payslip is completed. Process **Request Property Evaluation** is started that integrates with RPA (Exercise 4, 5 and 7).
- Case task **Finalize Loan Agreement** is started automatically after task Review Payslip is completed. Process **Finalize Loan Agreement** is started that integrates with ODM (Exercise 6 and 8).
- Case task **Loan Agreement Decision** is started automatically after tasks Request Property Evaluation and Finalize Loan Agreement are completed. Process **Loan Agreement Decision** is started (Exercise 9).
As part of this process, the Lead Mortgage Officer gets a task to finally review the entire request, review the results from checking the mortgage, review the recommendation given by ODM on how to decide in this case and finally can approve or disapprove the request.

0.4 About this Lab

This lab is subdivided into multiple exercises. Each exercise consists of the following sections:

- 1) **Exercise Introduction**
Describes what you will learn & complete in this exercise, but also lists all needed data for the exercise so that experienced attendees can complete the exercise by only using this introduction section.
- 2) **Step by Step Instructions**
Guides you in easy to understand steps through the whole exercise. To be used by less experienced attendees.
- 3) **Verification Instructions**
Guides you through how to test & verify your implementation.
- 4) **Exercise Summary**
Summarizes what you have completed & learned.

1 Exercise: Getting Started

1.1 Getting Started – Introduction

In this exercise you will complete the required steps to get started with the Workflow sub-scenario. You will:

1. Either continue to work with your existing environment you started with **Template 7**,
or
start working with your new environment based on **Template 3** to perform the exercise.
2. Connect to and start your environment.
3. Get introduced into the UIs and tools needed later in this lab.

High-level steps: (Detailed steps in section 1.2)

You either continue to work with your existing environment based on **Template 7**, or start working with your new environment based on **Template 3 – Implement Workflow sub-scenario only** to perform the exercise.

In your environment, ensure that you only start **VM 1 – ECM** and **VM 3 – Workflow**. **Start VM 1 – ECM first** and make sure it is connected correctly to the network. **Next, start VM 3 – Workflow** and make sure it is connected correctly to the network. Make sure to **keep the other VMs suspended**. VM 1 – ECM is only needed up and running. It's not required to access this VM during this exercise. You will work with VM 3 – Workflow only.

In this Exercise you will get introduced to the UIs and tools needed during the Workflow sub-scenario by accessing them in your environment:

Tool	Location (Firefox Bookmarks Toolbar) / URL
Content Navigator – Mortgage Application Desktop	CPE → Mortgage Application Desktop / https://vm-1.example.com:9444/navigator/?desktop=MA
WAS Console	Workflow → WAS Workflow / https://vm-34.example.com:9043(ibm/console
Process Admin Console	Workflow → Process Admin Console / https://vm-34.example.com:9443/ProcessAdmin/login.jsp

Workflow Center	Workflow → IBM Workflow Center / https://vm-34.example.com:9443/ProcessCenter/login.jsp
Process Designer	Launch Process Designer from within Workflow Center.
Process Portal	Firefox: Workflow → Process Portal / Google Chrome: Process Portal / https://vm-34.example.com:9443/ProcessPortal/login.jsp
Case Builder	Workflow → Case Builder / https://vm-34.example.com:9443/CaseBuilder/designer/DesignerHome.jsp
Case Client	Workflow → Case Client / https://vm-34.example.com:9443/navigator/?desktop=baw

Note: For your convenience we have prepared bookmarks in Firefox for all of the tools mentioned above.

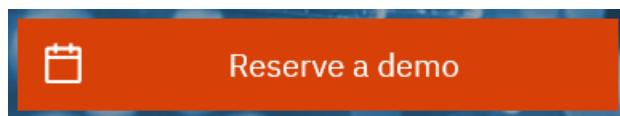
To work with these tools, you will require the following IDs and passwords:

Tool	User ID	Password
Windows	Administrator	passw0rd
LDAP User, used for - Mortgage Application Desktop - WAS Workflow console - Process Admin Console - Workflow Center - Process Portal (Firefox) - Case Builder - Case Client	P8Admin	Think4me
Process Portal (Google Chrome)	bot1	passw0rd

The exercise is completed, when you have successfully accessed all of those tools.

1.2 Getting Started – Step by Step Instructions

1. If you started with **Template 7**, and want to implement the Workflow sub-scenario now, make sure you already have **completed the ECM sub-scenario and the ODM sub-scenario**. You have already registered for a session based on **Template 7**, therefore resume your existing demo environment and continue with step 11 below.
2. To start with **Template 3**, open <https://bluedemos.com> and login with your IBM ID.
3. Search for **IBM Digital Business Automation Blue Demos 2018** and select **IBM Digital Business Automation Blue Demos 2018 - Template 3 - Implement Workflow sub-scenario only**.
4. Click **Reserve a demo**.



5. Provide the necessary information and click **Reserve demo**.

Start date:^{*} Start time:^{*} End date:^{*} End time:^{*}

Timezone:^{*} Region:^{*}

User email address:^{*}
Additional email:

Demo purpose:^{*} Customer name:^{*} Sales Connect ID:

Comments:

This demo can be reserved for a maximum of 1500 hours and has an approximate duration of 30+ minutes

- After you click **Reserve demo** you'll get two emails, the second one once your reservation is **active** according to the information provided in step 5. This second email does also contain the link and password to access your demo environment.

Reservation Confirmation

IBM Blue Demos

<your_email> (<your_email>)

Demo: IBM Digital Business Automation Blue Demos 2018 - Template 3 - Implement Workflow sub-scenario only [EMEA]
07/26/2018 - 07/27/2018 01:00 PM CEST - 06:00 PM CEST

Your reserved demo has started. Use your web browser to access the demo at the following link.

<https://cloud.skytap.com/vms/726cfb96f785cae502fb4f918669efd/desktops>

Password: <your_password>

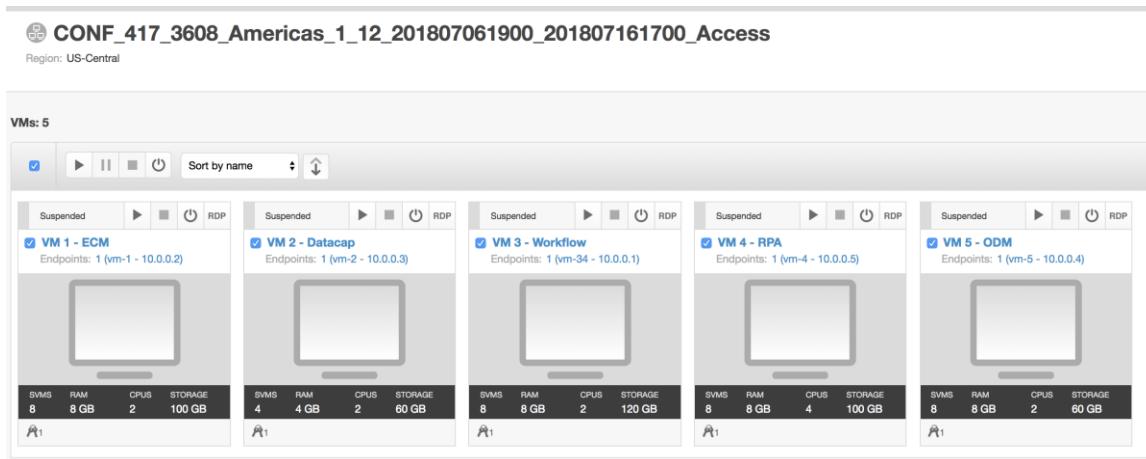
- Open the link and enter your password to access your environment. Click **Submit**.

Virtual machine access

Please enter the supplied password to access this virtual machine. If you need the password, contact your session administrator.

Enter password	Submit
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- Your demo lab environment opens. It will look similar to the following screen:



- It consists of **five VMs**:

VM 1 – ECM: On this VM an IBM Filenet Content Repository and LDAP are installed. In addition, an IBM Content Navigator is installed.

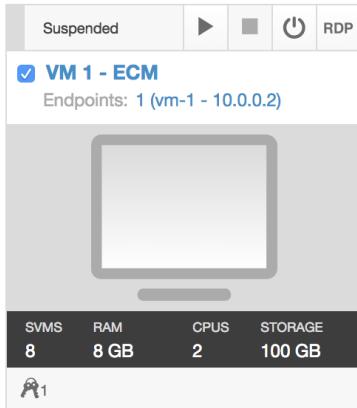
VM 2 – Datacap: Here all Datacap tools are installed.

VM 3 – Workflow: This VM hosts IBM Business Automation Workflow.

VM4 – RPA: This VM hosts the RPA Bot Designer and RPA Bot Runner.

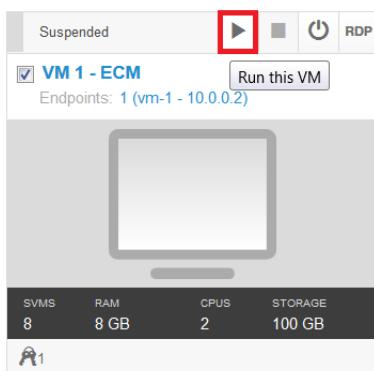
VM 5 – ODM: On this VM ODM is installed.

10. At this moment all VMs are in suspended state:

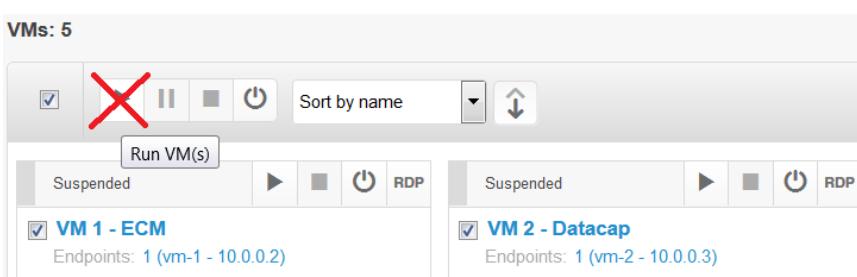


11. For the **Workflow sub-scenario**, you require **VM 1 - ECM** and **VM 3 - Workflow** running, the other VMs can stay in suspended state.

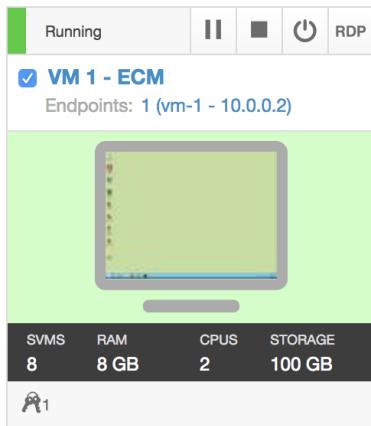
To start **VM 1 – ECM** only, click the **Run this VM** button besides Suspended:



Important: DO NOT use the Run VM(s) button.



12. Wait until **VM 1 - ECM** is started and the VM looks like this (starting should not take longer than 5 minutes):



Hint: If the icons are not shown or resuming / suspending of a VM takes too long, refresh your Browser window.

13. To later on **resume or suspend a single VM**, click the **Play** icon or the **Pause** icon next to **Suspended or Running of the mentioned VM**, here for example **VM 1 – ECM**.



Resume:



Suspend:

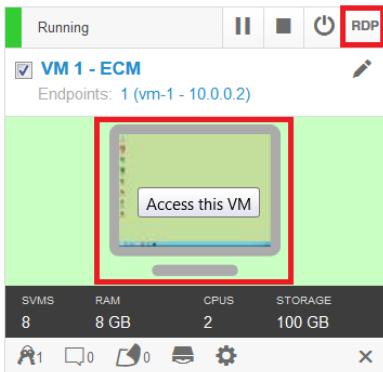
Note: To save resources, we kindly ask you to **suspend your entire environment when you are not using it for a longer period**, for example at the end of your day.

Note: You can also close the Browser tab / window on your local machine and even turn off your computer and **still resume and continue** your demo at a later time.

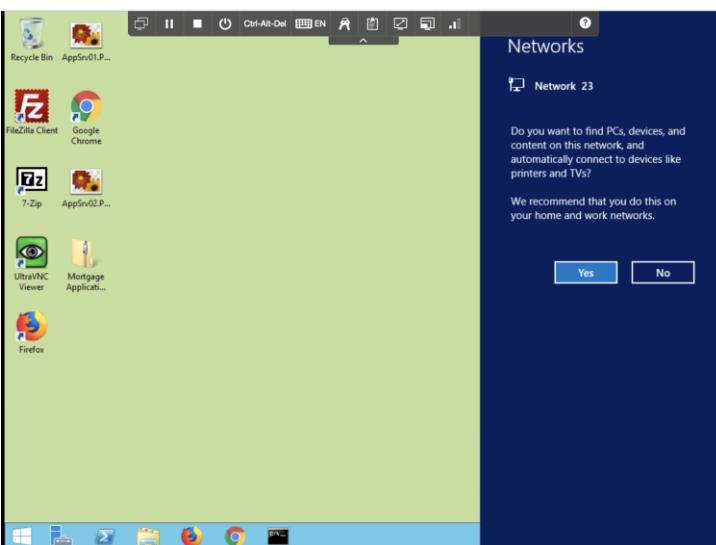
14. After you resume a suspended VM, **always open the VM's Desktop** after it is reported as **Running**. Access the Desktop

- either through the **Browser in the same tab** by clicking the image of the monitor (**Access this VM**),
- or through the **Browser in a new tab** by right-clicking the image of the monitor and opening the link in a new tab,
- or by clicking **RDP** to connect to it using a Remote Desktop Connection tool. This downloads a RDP file to your local machine that can be opened directly to view the environment.

Note: Depending on the security settings of your local machine you will be able to use RDP. In case this does not work, use your Browser to access the Desktop.

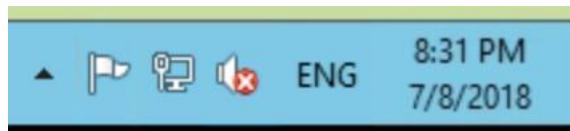


15. Access the Desktop of VM 1 - ECM.



16. If there is the blue bar on the right-hand side as shown in the screen above, click there **No**.

17. Next, make sure the VM is **correctly connected to the network** before you proceed using it or starting any other VM. Check that the network icon at the bottom of the desktop shows connected.

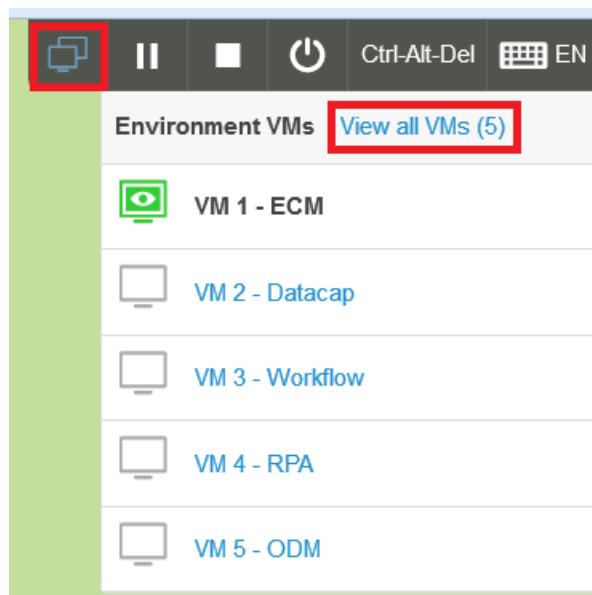


Connected: (Not connected:)

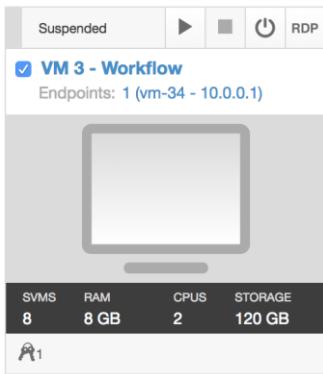
18. Once the network is successfully connected, you can **disconnect from VM 1 - ECM**.

When you opened the Desktop

- through RDP, simply close the Remote Desktop Connection tool.
- through your Browser in a new tab, simply close the new tab.
- through your Browser in the same tab, click the **Environment VMs** icon on the top, and select **View all VMs (5)**.

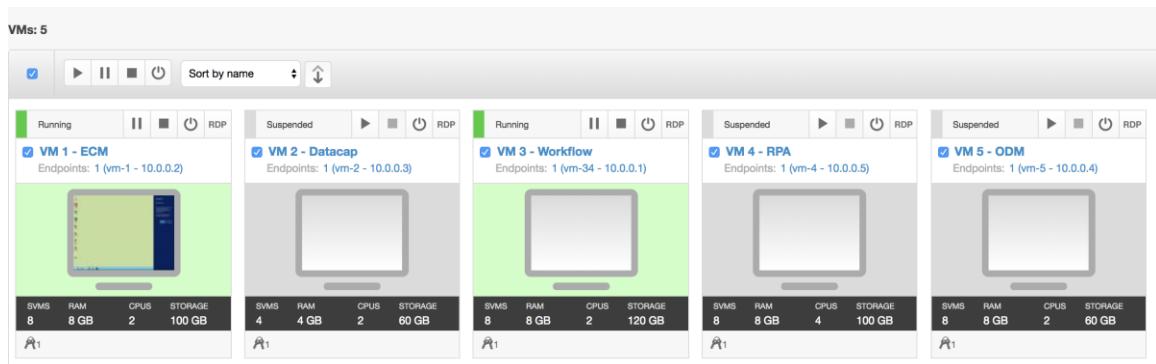


19. Back on the screen showing your demo lab environment, **resume VM3 – Workflow**:



Wait until VM3 is also running.

20. After that your demo environment should look like this:

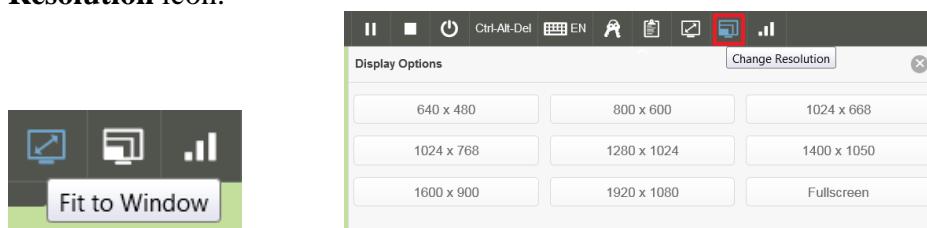


21. Repeat steps 15 – 17 for VM – 3 Workflow.

In this exercise you will only work with **VM 3 – Workflow**.

The **Windows username / password** for the environment is **Administrator / passw0rd**. Enter it in case you get prompted for it.

To change the resolution of the **RDP Desktop** to your liking, **right click on the Desktop**, select **Screen resolution** and update the resolution accordingly, or when you accessed the Desktop by Browner, click the **Fit to Window** icon or the **Change Resolution** icon.



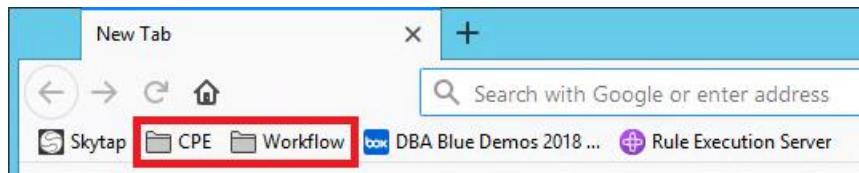
To change the keyboard to your liking, click the **ENG** icon at the bottom of the desktop and select your preferred keyboard.



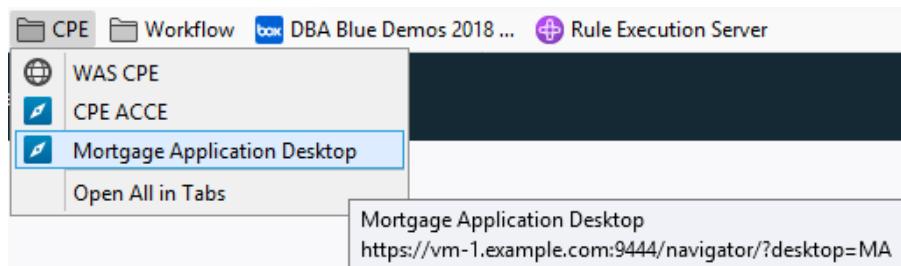
You are now ready to run through a quick walk through of the UIs you will require during this entire sub-scenario. This will also introduce you to some of the Workflow specific terms.

22. Steps to get introduced into the UIs and tools needed later in this lab

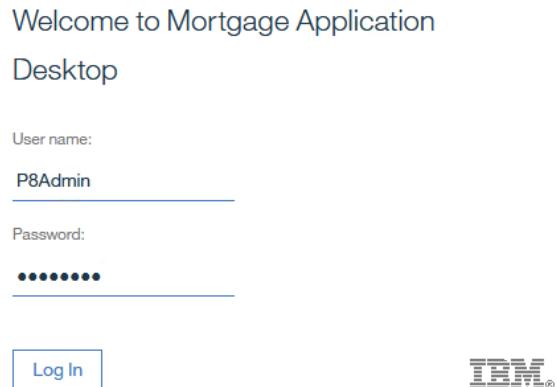
- Firefox** in this VM has prepared bookmarks in the **Bookmarks Toolbar**. As part of the remaining lab instructions, we'll use Firefox and these bookmarks to access the various tools. Start the **Firefox** browser.



- First, we'll explore the CPE tools. The CPE folder contains bookmarks to UIs from VM 1 – ECM. During this scenario we'll only work with **Mortgage Application Desktop**. Click folder **CPE** and open the link **Mortgage Application Desktop**.

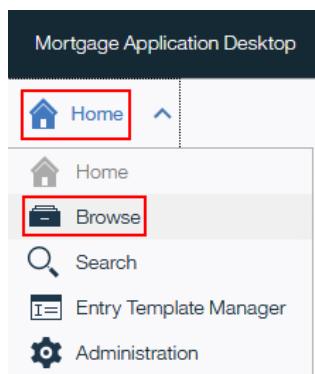


- c. On the log-in screen enter User name **P8Admin** and Password **Think4me** if not filled out. Click **Log In**.



Note: User P8Admin with Password Think4me can be used for almost all UIs of this scenario. It is a user from the LDAP.

- d. Expand the dropdown menu where it says **Home** and select **Browse**.



- e. In the Target store, ensure that the folder **Incoming Mortgage Application Documents** exists. Then open it by double-clicking it.

Target			
	Name	Modified By	Modified On
<input type="checkbox"/>	Incoming Mortgage Application Documents	P8Admin	7/2/2018, 8:15 AM

- f. In the top toolbar, select **Add Document**.



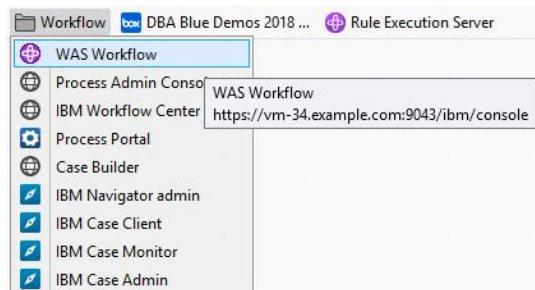
Ensure that the **Entry Template** field contains 2 templates:

1. Loan Application Form Entry Template
2. Payment Slip Entry Template

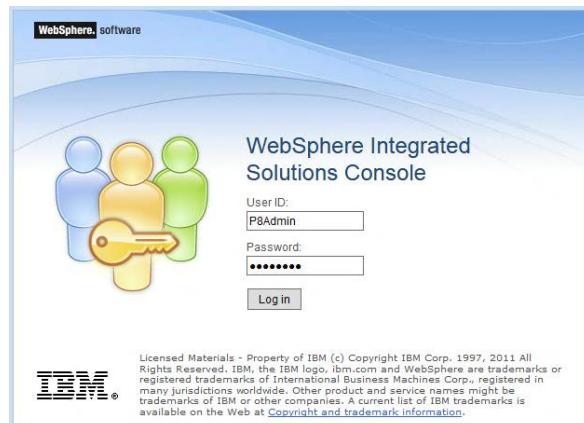
- g. Click **Cancel** to cancel the document upload.
h. Log Out from Mortgage Application Desktop.



- i. Second, we'll explore the Workflow tools. The Workflow folder contains bookmarks to UIs from VM 3. During this scenario we'll mainly work with these UIs. As a first step let's explore the WAS Workflow console (WebSphere Integrated Solutions Console). Click the Firefox **Workflow** bookmark folder and open the bookmark link **WAS Workflow**.



- j. On the log-in screen enter User ID **P8Admin** and Password **Think4me** if not filled out. Click **Log in**.



- k. Review the information on the screen.

The screenshot shows the WebSphere Integrated Solutions Console interface. The left sidebar has a 'View: All tasks' dropdown and a list of administrative categories. The main content area is titled 'Welcome' and contains a table of product suites with their names and versions. The right side has a 'About this Integrated Solutions Console' panel with license details.

Suite Name	Version
WebSphere Application Server	8.5.5.13
IBM Business Automation Workflow	8.6.1.18001

The WAS console is primarily used to administrate WAS and parts of Workflow. In this scenario we'll rarely use it.

Note that **WAS 8.5.5.13** is installed. In addition, **BAW 8.6.1.18001 (Workflow 18.0.0.1)** is installed.

1. Expand **System administration** and click **Cell**. Switch to the **Local Topology** tab, expand **PCCell1** and everything under **Nodes**.

The screenshot shows the 'Cell' configuration page. The left sidebar is the same as before. The main panel has tabs for 'Configuration' and 'Local Topology'. The 'Local Topology' tab is selected and shows a hierarchical tree of nodes under 'PCCell1', specifically detailing the 'Nodes' section.

Review the topology. Note that we are using here a **Workflow Center** environment. It's a **typical install** with one deployment manager (**Dmgr**), one nodeagent (**Node1**) and one server (**SingleClusterMember1**).

In this environment Workflow Center after installation has been configured to connect to the external ECM system running on VM 1. This connection is now used for all document attachments as well as for all Case Management feature related artefacts on this environment.

m. Logout from the WAS console.



n. As the next step let's explore the **Process Admin Console**. Click folder **Workflow** and open link **Process Admin Console**.



o. On the log-in screen enter User name **P8Admin** and Password **Think4me** if not filled out. Click **Log In**.

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p. The Process Admin console provides configuration and management tools for the Workflow Servers in the BAW environment.

The Process Admin console provides configuration and management tools for the Workflow Servers in your IBM Business Automation Workflow environment.

The Process Admin console enables you to manage IBM Business Automation Workflow users, as well as the queues and caches for particular servers. The console also provides tools to help you configure the process applications installed on the servers in your runtime environments.

To work with the Process Admin console:

- Use this Server Admin page to perform server administration tasks and view status information for process instances and applications.
- Use the Process Inspector page to view and manage process instances for process applications.
- Use the Installed Apps page to view and manage snapshots of installed process applications.
- Use the System Maintenance Status page to monitor the number of key system artifacts that can impact performance and to determine whether maintenance is required.

Process Status Summary

Today	Week	Month	Year	All-time
Active	Completed	Failed	Suspended	Terminated

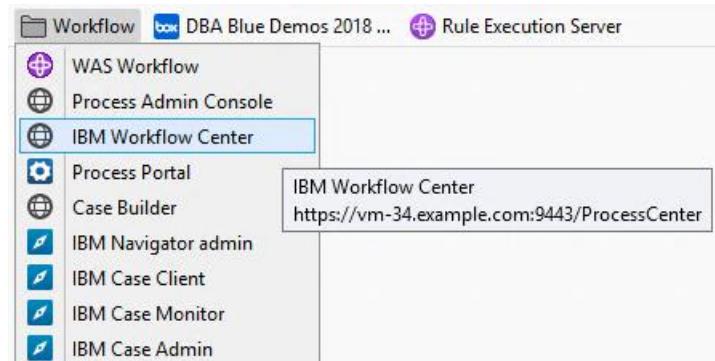
Process Applications

- Heritage Process Portal (deprecated) (TWP)
- Process Portal (SYSPRP)
- Performance (SYSPERFDB)
- Hiring Sample (HSS)
- Discover BPM UI Sample (DBPMUIS)
- Hiring Sample Advanced (HSV1)
- Procurement Sample (STPPS1)
- Test PA (TPA)

- q. Logout from Process Admin Console.



- r. Next let's explore the **IBM Workflow Center**. Click folder **Workflow** and open link **IBM Workflow Center**.



- s. On the log-in screen enter User name **P8Admin** and Password **Think4me** if not filled out. Click **Log In**.

- t. Close the **Getting Started** page in case it appears.

- u. The Workflow Center includes a repository for all processes, services, and other assets created in Process Designer and Integration Designer. The Workflow Center can be used to manage and maintain the Workflow Center repository.

The screenshot shows the IBM Workflow Center interface. At the top, there are tabs for 'Process Apps', 'Toolkits', 'Servers', and 'Admin'. The 'Process Apps' tab is selected. In the top right, it says 'Logged in as P8Admin (P8Admin) | Preferences | Logout'. Below the tabs, there's a search bar with a magnifying glass icon and a dropdown menu labeled 'Sort By: Recently Updated' with options 'All', 'Favorites', and 'Archived'.

Process Application / Toolkit	Last updated by	Action
Test PA (TPA)	P8Admin	Open in Designer
Procurement Sample (STPPS1)	cadmin	Open in Designer
Hiring Sample Advanced (HSAV1)	cadmin	Open in Designer
Discover BPM UI Sample (DBPMUIS)	cadmin	Open in Designer
Hiring Sample (HSS)	cadmin	Open in Designer
Performance (SYSPERFDB)	cadmin	Open in Designer
Process Portal (SYSRP)	cadmin	Open in Designer
Heritage Process Portal (deprecated) (TWP)	cadmin	Open in Designer

On the right side, there's a sidebar with the following options:

- Create New Process App**
- Import Process App**
- Download desktop Process Designer (deprecated)** [Learn more](#)
- Launch Getting Started**
- Process Applications**

Under 'Process Applications', there's a detailed description: 'Process applications are containers in the Workflow Center repository for the process models and supporting implementations created in IBM Process Designer. Ordinarily, a process application includes process models, the services to handle implementation of activities and integration with other systems, and any other assets required to run the processes.' Below this is a link '[Managing process applications](#)'.

In the bottom right corner of the interface, it says 'IBM | Workflow Center'.

From the Workflow Center, you can create process applications and toolkits and grant other users access to those process applications and toolkits.

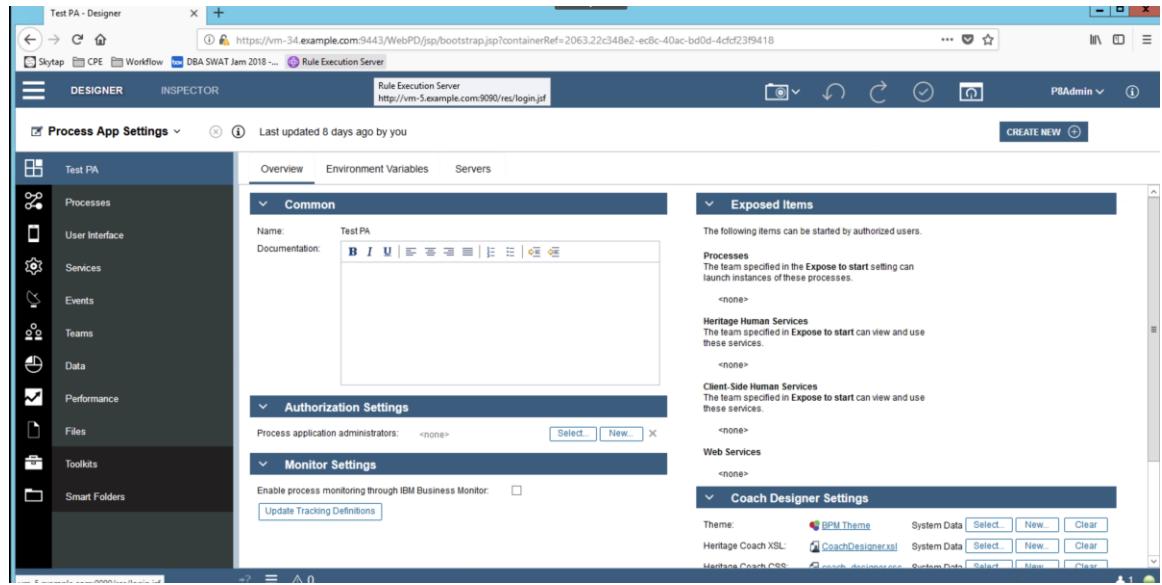
Administrators can also use it to install process applications that are ready for testing or production on the Workflow Servers in those environments.

- v. From Workflow Center you can open a Process App in the Process Designer. To do this click **Open in Designer** for the following Process App:

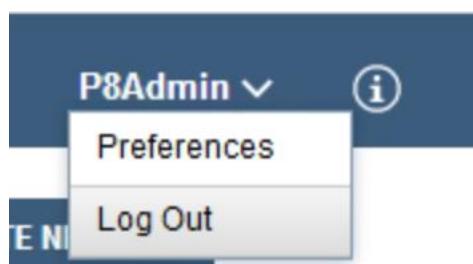
This is a zoomed-in view of the 'Test PA (TPA)' entry from the previous screenshot. It shows the icon, name, and last update information. On the right, there is a large blue button with the text 'Open in Designer'.

Process Application / Toolkit	Last updated by	Action
Test PA (TPA)	P8Admin	Open in Designer

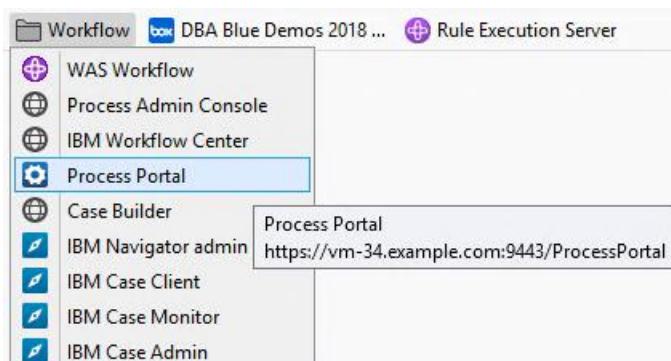
w. This opens up Process Designer:



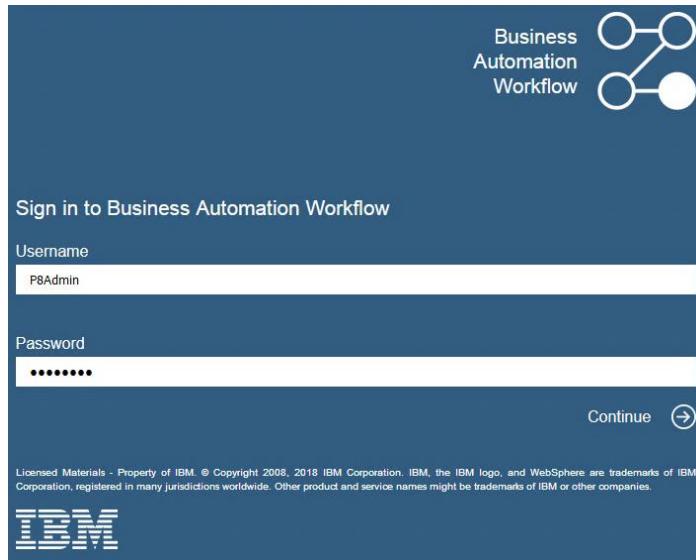
- x. Process Designer is used to implement and to modify your process logic. This includes modifying the processes, user interfaces, services, events, teams, ... We will use it in the later exercises.
- y. Logout from Process Designer (upper right corner):



- z. As the next step let's explore the **Process Portal**. Click folder **Workflow** and open link **Process Portal**.



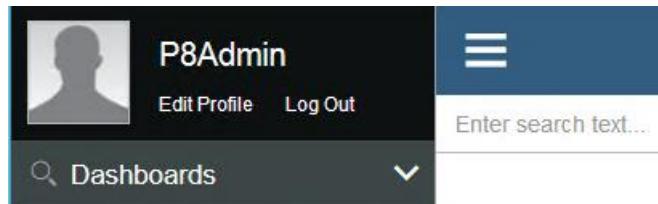
aa. On the log-in screen enter Username **P8Admin** and Password **Think4me** if not filled out. Click **Continue**.



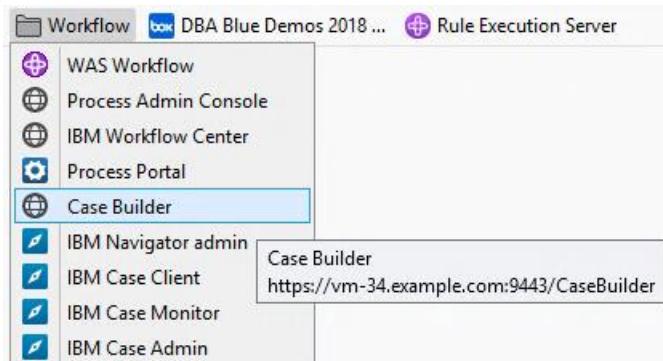
bb. Process Portal is the user interface for participating in processes. From Process Portal, users can launch processes, dashboards, and startable services, and work on their tasks.



cc. Log Out from Process Portal.



dd. Now, let's explore the **Case Builder**. Click folder **Workflow** and open link **Case Builder**.

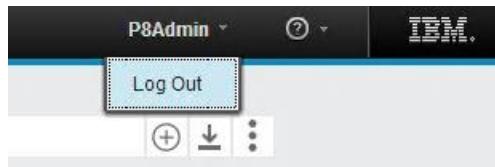


ee. On the log-in screen enter User name **P8Admin** and Password **Think4me** if not filled out. Click **Log In**.

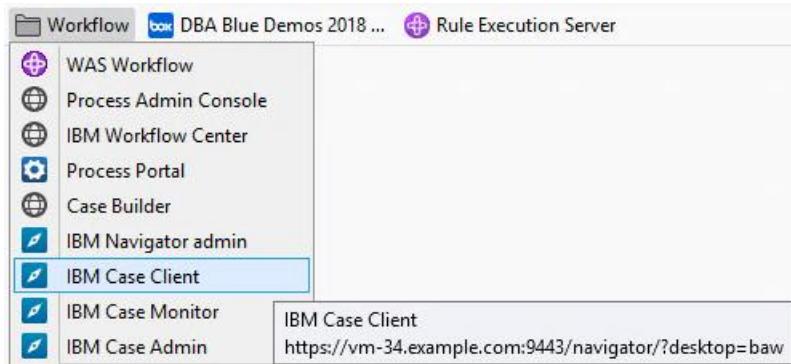
A screenshot of the 'Welcome to IBM Business Automation Workflow Case Builder' login page. It features two input fields: one for 'User name' containing 'P8Admin' and one for 'Password' containing a series of asterisks. Below the password field is a 'Log In' button. To the right of the password field is the IBM logo. At the bottom of the page, there is a small legal notice: 'Licensed Materials - Property of IBM. Copyright 2010, 2018 IBM Corp. IBM and the IBM logo are trademarks of IBM Corporation, registered in many jurisdictions worldwide. Other product and services names might be trademarks of IBM or other companies.'

ff. Case Builder is a web-based tool for business analysts to design and develop a solution and the artifacts that make up cases in that solution. We will use it in the later Exercises to create a case solution.

gg. Log Out from Case Builder.



hh. Last, but not least, let's explore the **IBM Case Client**. Click folder **Workflow** and open link **IBM Case Client**.



- ii. Case Client is a web-based application for case workers to complete their work for each case.
- jj. On the log-in screen enter User name **P8Admin** and Password **Think4me** if not filled out. Click **Login**.

A screenshot of the IBM Content Navigator login page. The title 'Welcome to IBM Content Navigator' is at the top. Below it are two input fields: 'User name:' containing 'P8Admin' and 'Password:' containing a series of dots. At the bottom is a 'Login' button.

kk. Log Out from IBM Case Client.



After you have successfully completed all of those steps in VM 3, verify your work by reading through the next chapter, named **Getting Started – Verification Instructions**.

1.3 Getting Started – Verification Instructions

To verify successful completion of this exercise, verify that you have been able to open the following UIs / tools on VM 3 – Workflow without any issues:

1. Content Navigator – Mortgage Application Desktop
2. WAS Console
3. Process Admin Console
4. IBM Workflow Center
5. Process Designer
6. Process Portal
7. Case Builder
8. Case Client

1.4 Getting Started – Summary

In this exercise you have completed the following:

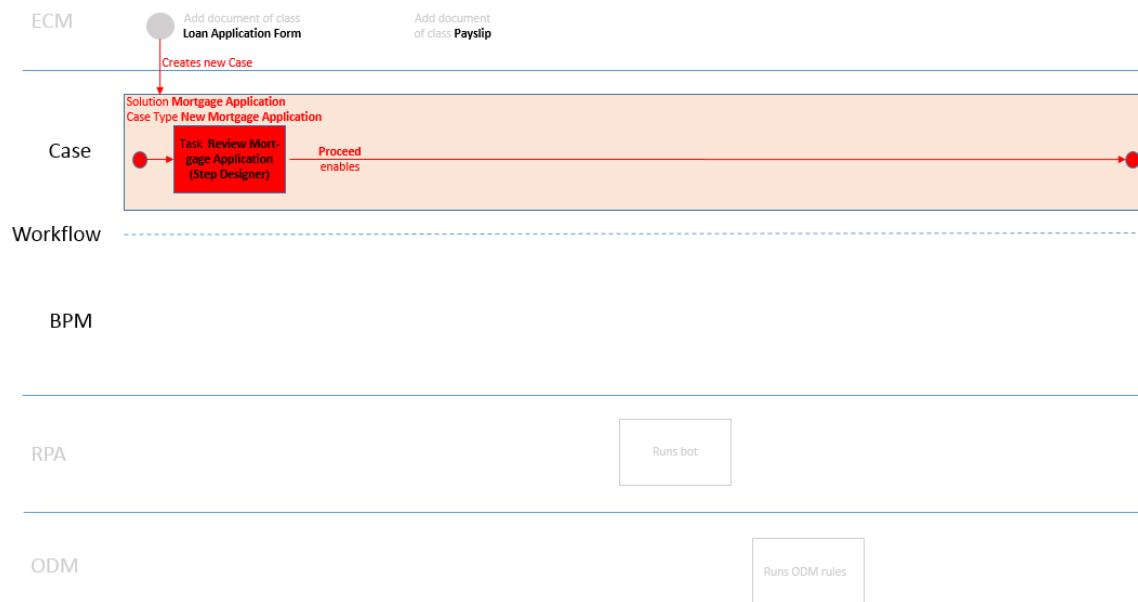
1. Reserved a demo and accessed the demo lab environment on Blue Demos needed to perform the Workflow sub-scenario.
2. Connected to and started VMs in your environment.
3. Learned how to work with your environment and the VMs.
4. Get introduced into the Workflow UIs and tools needed later in this lab.

2 Exercise: Create the Mortgage Application Solution

2.1 Create the Mortgage Application Solution – Introduction

In this exercise, you will create the initial framework for the Mortgage Application Solution using IBM Business Automation Workflow. This exercise will focus on the Case capability (in the Case capability a [Solution](#) is an application that case workers use to work on cases) and later exercises will guide you through integrating this Case Solution with a BPM Process Application to get to a complete Business Automation Workflow solution.

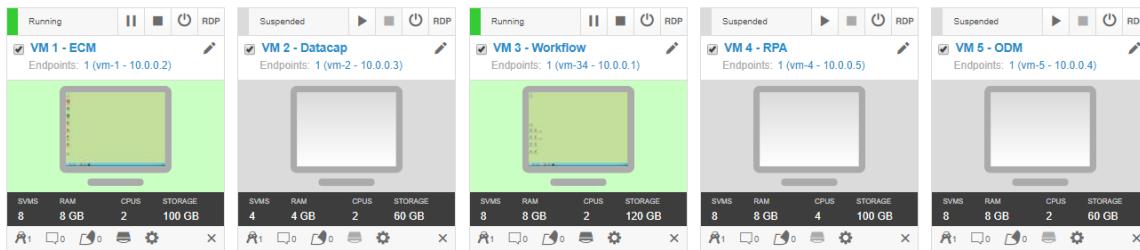
From the complete Business Automation Workflow solution, you will implement the parts in red in this exercise:



As a part of this exercise you will get introduced into the following components of the Case capability in Workflow:

- Case Builder**
A web-based tool for business analysts to design and develop a Solution and the artifacts that make up cases in that Solution.
- Case Client**
A web-based application for case workers to complete their work for each case.

For this exercise, make sure that in your environment **VM 1 – ECM** and **VM 3 – Workflow** are running. If this is not the case, click the **Run** button to start them (start VM 1 first, VM 3 second). All other VMs must be suspended. If one of them is running, please suspend them now.



You can access the VMs through the **Browser** or by clicking **RDP** to connect to it using a Remote Desktop Connection.

You are now ready to start this exercise. As for every exercise, you have two options:

- If you are new to Workflow or prefer to follow the step by step instructions continue with the next chapter named [Create the Mortgage Application Solution – Step by Step Instructions](#).
- If you are an experienced Case / Workflow person you can use the information from this introduction chapter to complete the exercise. Continue to read the chapter named [Create the Mortgage Application Solution - High-level Instructions](#) for completing this exercise.

In this exercise you will work with the following tools on VM 3 – Workflow:

Tool	Location (Firefox Bookmarks Toolbar) / URL
Case Builder	Workflow → Case Builder / https://vm-34.example.com:9443/CaseBuilder/designer/DesignerHome.jsp
Case Client	Workflow → Case Client / https://vm-34.example.com:9443/navigator/?desktop=baw
Content Navigator – Mortgage Application Desktop	CPE → Mortgage Application Desktop / https://vm-1.example.com:9444/navigator/?desktop=MA

For these tools, you will require the following IDs and passwords:

Tool	User ID	Password
Windows	Administrator	passw0rd
Case Builder, Case Client, Content Navigator – Mortgage Application Desktop	P8Admin	Think4me

2.2 Create the Mortgage Application Solution – High-Level Instructions

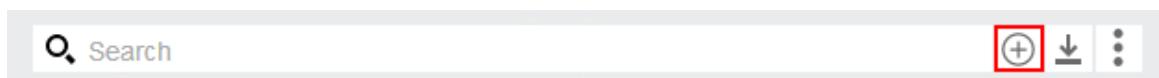
1. Log-in to the Case Builder.
2. Create a new Solution **Mortgage Application**.
3. Add all existing properties with prefix **MA_** to the Solution.
4. Add the existing document classes **Loan Application Form** and **Payslip** to the Solution.
5. Add two roles to the Solution – **Customer Representative & Mortgage Officer**.
6. Configure the in-basket for role **Mortgage Officer** to show the **Loan Amount** property.
7. Create a new case type **New Mortgage Application** that is automatically started when a document of the type **Loan Application Form** is added to the ECM repository.
8. Add all the Solution properties to the case.
9. Within the case type, create a new FileNet P8 Process Task **Review Mortgage Application** that is required and starts on launching the case.
10. In the task steps, ensure that the **Mortgage Officer** can read all the properties from the case and then either complete the task or send it to the **Customer Representative** to collect additional information. After collecting additional information, the **Customer Representative** can send the task back to the **Mortgage Officer**.
11. Create a Boolean flag, **Is Application Reviewed**, that is set to **true** when the task completes. This flag will be used in later exercises as a precondition to other tasks.
12. Deploy the Solution to a test environment.
13. In the Case Client, add the P8Admin user to the **Mortgage Officer** and **Customer Representative** roles.

After you have successfully completed all the steps in VM 3 – Workflow, verify your work by reading through the chapter named [Create the Mortgage Application Solution – Verification Instructions](#).

2.3 Create the Mortgage Application Solution – Step by Step Instructions

Follow these step by step instructions to prepare the case implementation:

1. Connect to **VM 3 – Workflow** as described in the introduction.
2. Open **Firefox**, expand the **Workflow** folder and open the **Case Builder** link.
3. Enter User Name **P8Admin** and Password **Think4me** if not filled out. Click **Log In**.
4. Create a new Solution by clicking the **Add Solution** button.



5. Enter **Mortgage Application** under the **Name** field and **MA** as the **Solution prefix**. Provide an optional **Description**. Press **OK**.

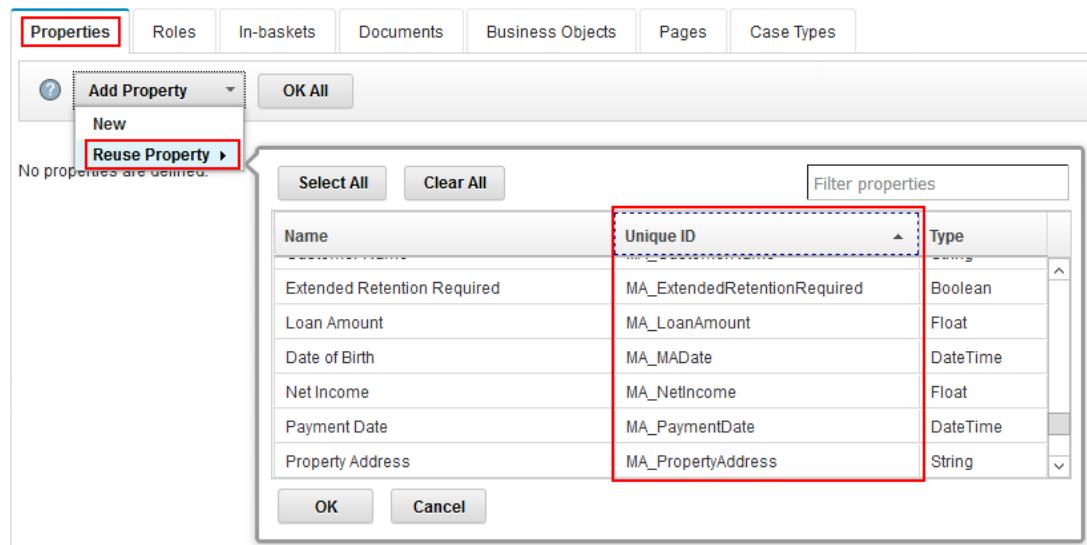
The dialog box has a title "Add a solution". It contains the following fields:

- * Solution template: No template
- Use the wizard to define the solution
- * Name: Mortgage Application
- * Solution prefix: MA
- Description:
This solution helps case workers in completing new mortgage applications.

At the bottom are "OK" and "Cancel" buttons.

On clicking **OK**, the Solution opens.

6. In the **Properties** tab, click on **Add Property** → **Reuse Property** and select all properties with the prefix **MA_** for the **Unique ID**.
 These have been defined as part of the ECM sub-scenario and can be reused.

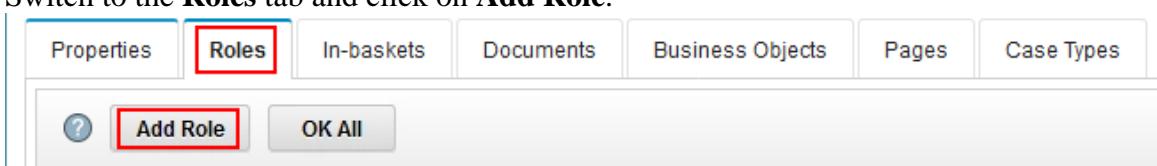


7. Click **OK** then **OK All**.
8. Add another property by clicking on **Add Property** → **New**. Provide the following details for the property:
- Name:** Is Application Reviewed
 - Type:** Boolean
 - Default value:** False
 - Description:** Flag to check if the application has been reviewed

This flag will be used in later exercises as a precondition to other tasks.

* Name: Is Application Reviewed
 Type: Boolean
 Description: Flag to check if the application has been reviewed
 Default value: True False
 Unique Identifier: MA_IsApplicationReviewed

9. Click **OK**.
10. Switch to the **Roles** tab and click on **Add Role**.



11. Add two roles with the following details:

* Role: Mortgage Officer	Description: Reviews the Mortgage Application & Payslip
* Role: Customer Representative	Description: Collects information

12. Within both the roles, switch to the **Pages** tab and move up the **Work** page.

The screenshot shows a 'Role Settings' interface with a 'Pages' tab selected. Below it is a 'Assign Page' dropdown. A table lists pages with their names and descriptions. The 'Work' page, which has a red box around its 'View and work with wor...' description, is at the bottom of the list. To its right are edit and delete icons.

Name	Description
Cases	Search for cases, view...
Work	View and work with wor...

These pages are shown at runtime as specified for each role. By default, each role includes the **Work** and **Cases** pages.

You should now have 2 roles – Customer Representative and Mortgage Officer:

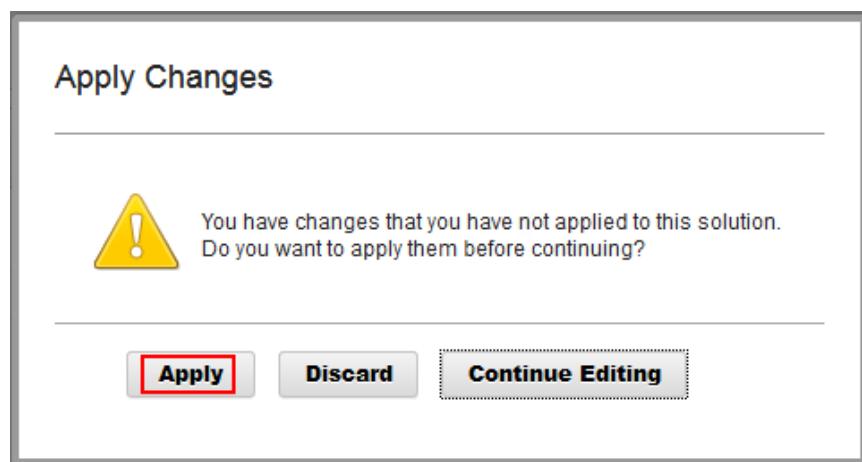
Customer Representative Collects information

Mortgage Officer Reviews the Mortgage Application & Payslip

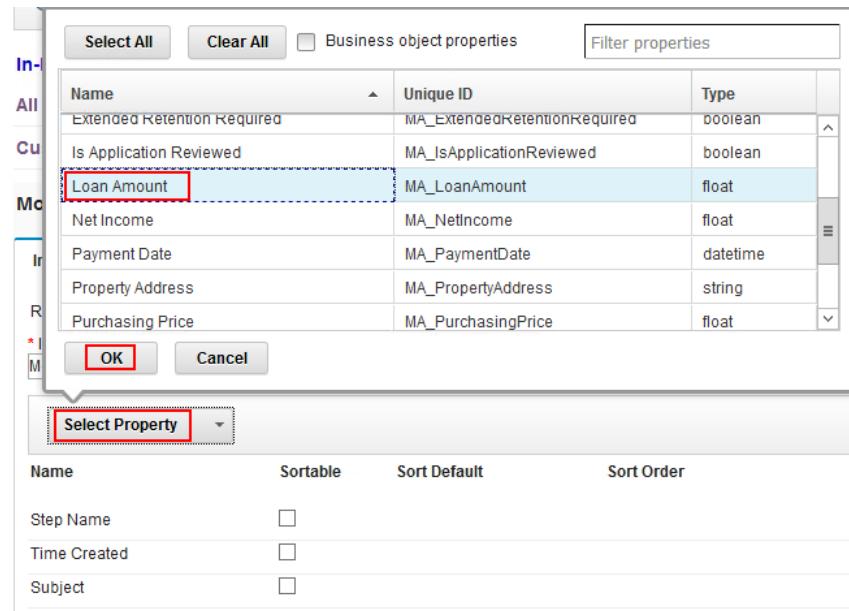
13. Switch to the **In-baskets** tab and select the **Mortgage Officer** role.

In-baskets are customizable and display the IBM Case Manager work items.

14. When the dialog to **Apply Changes** pops-up, select **Apply**.



15. In the **In-basket General** tab, click on **Select Property**, add the **Loan Amount** property and click **OK**



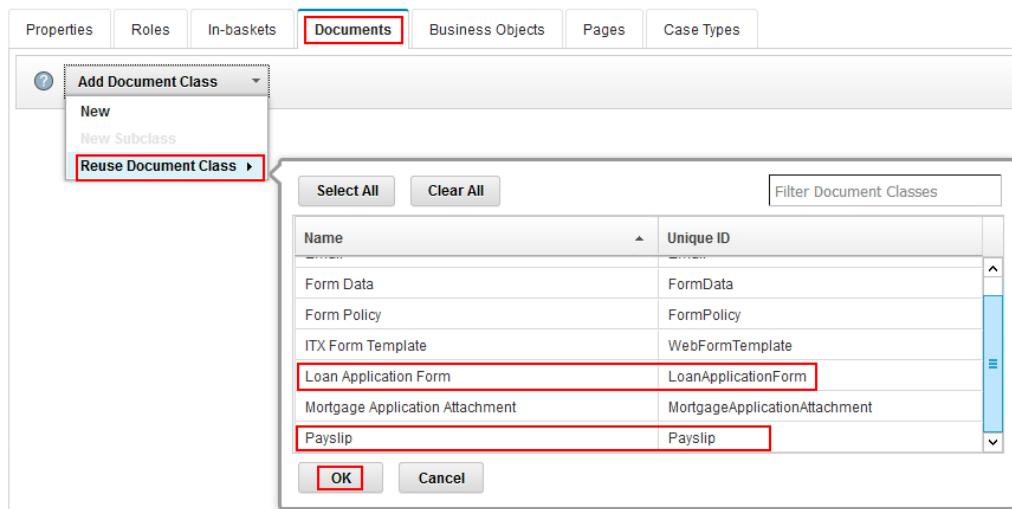
16. Click on the **Sortable** checkbox.

Name	Sortable
Step Name	<input type="checkbox"/>
Time Created	<input type="checkbox"/>
Subject	<input type="checkbox"/>
Loan Amount	<input checked="" type="checkbox"/>

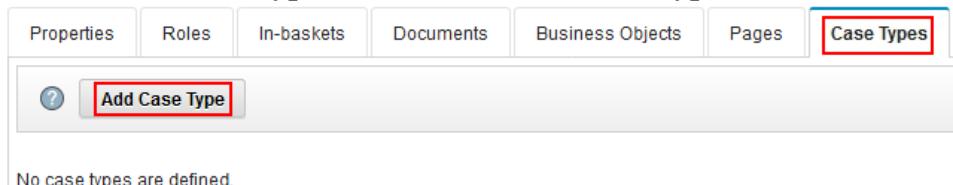
This allows the Mortgage Officer to sort tasks by the Loan Amount.

17. Click on **OK** and then click **Save** in the top-right corner.

18. Switch to the **Documents** tab and click on **Add Document Clas → Reuse Document Class** and select the **Loan Application Form** and **Payslip** classes. Click **OK** and **Save**.



19. Switch to the **Case Types** tab and click **Add Case Type**.

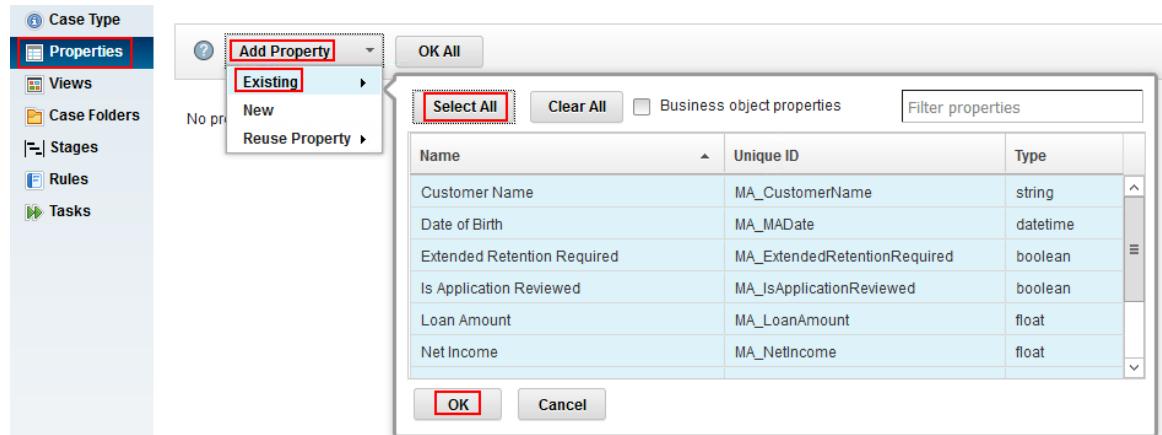


20. Provide the following details for the new case type (leaving all other fields at their defaults):

- **Case type name:** New Mortgage Application
- **Case type description:** Handle a new mortgage application
- **Starting document class:** Loan Application Form
- **Map document class properties:** Checked

* Case type name: New Mortgage Application	
* Case type unique identifier: MA_NewMortgageApplication	
Case type description: Handle a new mortgage application	
Starting document class: Loan Application Form	<input checked="" type="checkbox"/> Map document class properties

21. Within the case type, switch to the **Properties** tab on the left and select **Add Property** → **Existing** → **Select All**. Click **OK**.

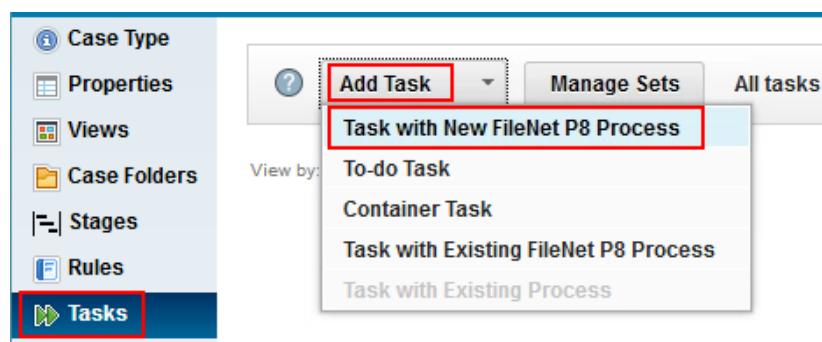


22. For the **Is Application Reviewed** property, check the **Hidden** checkbox as this will be used for internal preconditions only.

Name	Type	Attributes	Description
* Name: Is Application Reviewed	Type: Boolean	Description: Flag to check if the app	<input checked="" type="checkbox"/> Hidden
Default value: <input type="checkbox"/> True <input checked="" type="checkbox"/> False		<input type="checkbox"/> Required	<input type="button"/> OK <input type="button"/> Cancel

23. Click **OK All** and **Save**.

24. Switch to the **Tasks** tab and select **Add Task** → **Task with New FileNet P8 Process**.



Note: The option **Task with Existing Process** allows you to add a task that references a Process in the Workflow Center. This is currently grayed out because there are no associated Process Applications with the Mortgage Application Solution. This will be done in later exercises.

25. Provide the following details for the **Add a task** dialog (leaving all other fields at their defaults):

- **Name:** Review Mortgage Application
- **Description:** Review the information provided in the application
- **This task is:** Required

Add a task

General Preconditions Task Properties Design Comment

* Name:
Review Mortgage Application

* Unique Identifier
MA_ReviewMortgageApplication

Description:
Review the information provided in the application

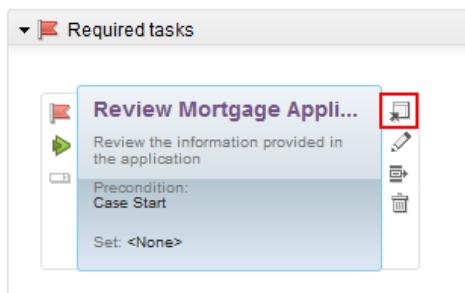
This task starts:
 Automatically Manually Discretionally

This task is:
 Hidden
 Required
 Stopped when the case completes and does not affect case completion

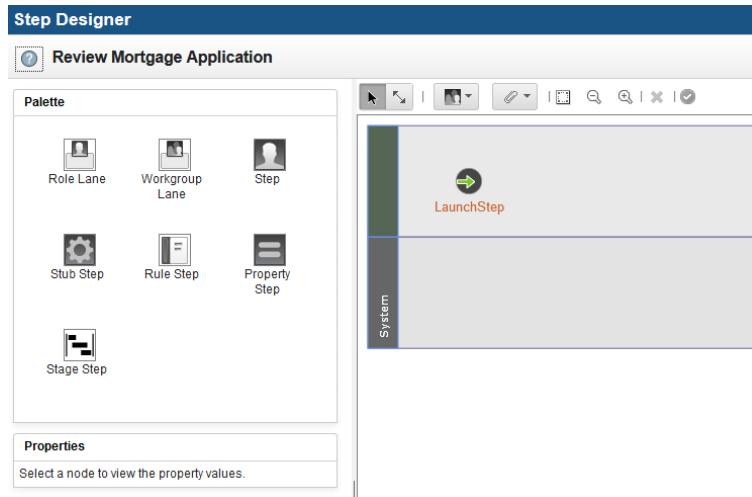
Assign to set:
<None>

26. Click **OK** and **Save**.

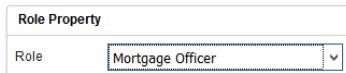
27. Hover over the newly added **Review Mortgage Application** task and click on the **Edit Steps** icon.



This opens up the Step Designer window with two default lanes and the step **LaunchStep**.



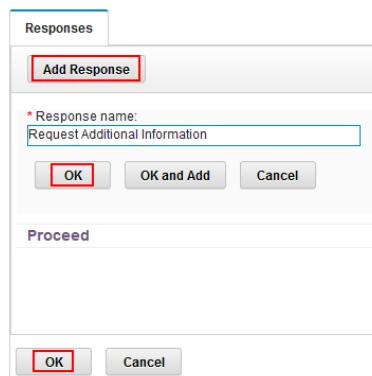
28. Drag and drop a **Role Lane** onto the workspace. Select the role **Mortgage Officer** for the Role Property if not selected automatically.



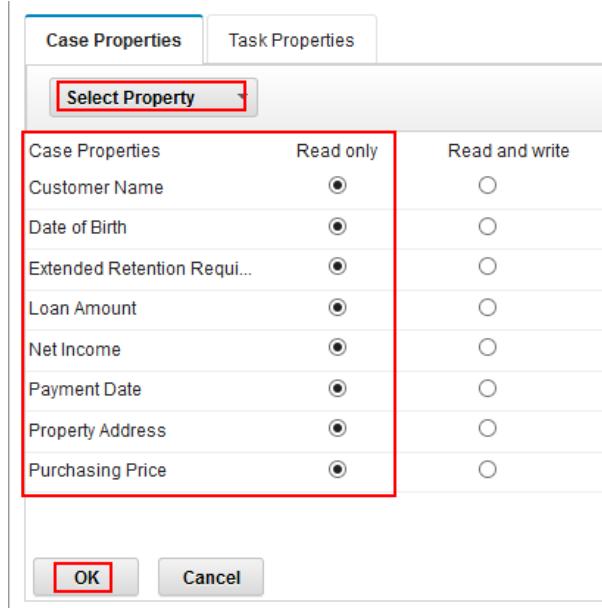
29. Repeat step 27 for role **Customer Representative**.

30. In the Mortgage Officer lane, drag and drop a **Step**. Provide the following step properties (for the field with 3 dots, click on the dots to enter the value):

- **Name:** Review Mortgage Application
- **Instruction:** Check for missing information
- **Responses:**
 - Proceed
 - Request Additional Information



- **Properties:** All except for **Is Application Reviewed** – Read only



31. Add another step onto the **Customer Representative** lane and provide the following step properties:

- **Name:** Collect Mortgage Information
- **Instruction:** Review comments and collect requested information
- **Properties:** All except for **Is Application Reviewed** – Read and write

32. Add a **Property Step** onto the **System** lane and provide the following details:

- **Name:** Set Reviewed
- **Property:** Is Application Reviewed
- **Set to:** Specific value – True

Name	Set reviewed
Description	
Property	Is Application Reviewed (Boolean)
Set to	<input checked="" type="radio"/> Specific value <input type="radio"/> True <input type="radio"/> False <input type="radio"/> Value of another property
Is Application Reviewed (Boolean) {Case}	

33. On top of the workspace, there is a toolbar with a line icon. This icon allows you to connect two steps. Click on this icon.



34. Connect the steps as follows:

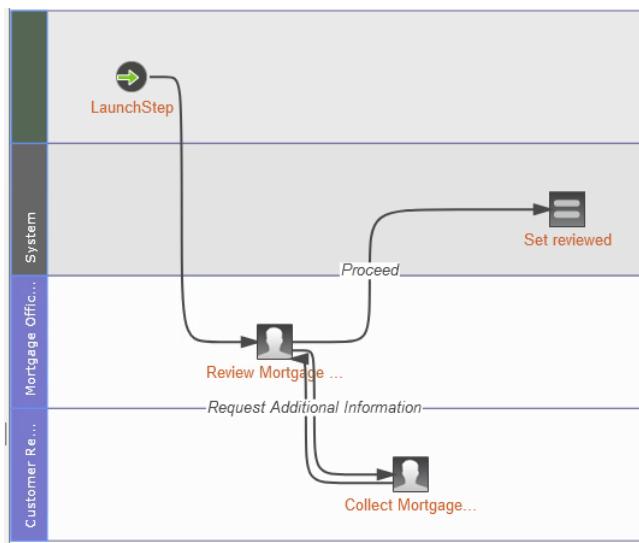
- LaunchStep → Review Mortgage Application
- Review Mortgage Application → Set reviewed
- Review Mortgage Application → Collect Mortgage Information
- Collect Mortgage Information → Review Mortgage Application

35. Click back on the mouse pointer in the toolbar and then click on the connector between **Review Mortgage Application** and **Set reviewed**.

36. Under the connector properties, select **Proceed** as the response.



37. Similarly, for the connector between **Review Mortgage Application** and **Collect Mortgage Information**, select **Request Additional Information** as the response. Your workspace should now look as follows:

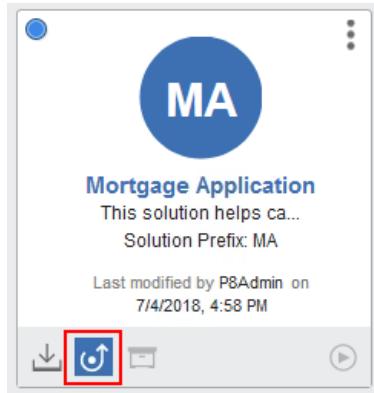


38. Click on **Save** and then click on the **Validate** button in the toolbar.



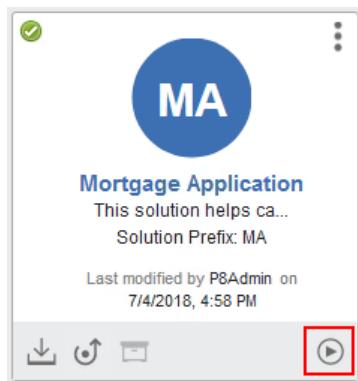
39. Upon successful validation (check messages on the bottom left of the screen), click **Close** and then click on **Save and Close**.

40. Deploy the Solution by clicking on the **Deploy** button.



A successful deploy will update the icon on the Solution to a green checkbox: ✓

41. To test the Solution, start the Case Client.

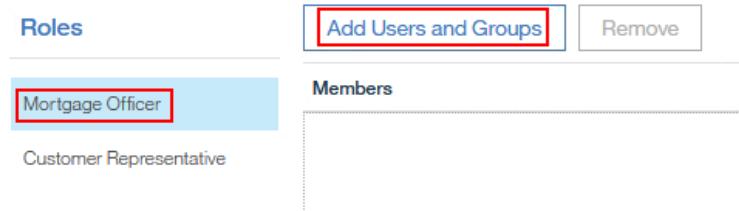


Clicking this button should open a new window with the Case Client.

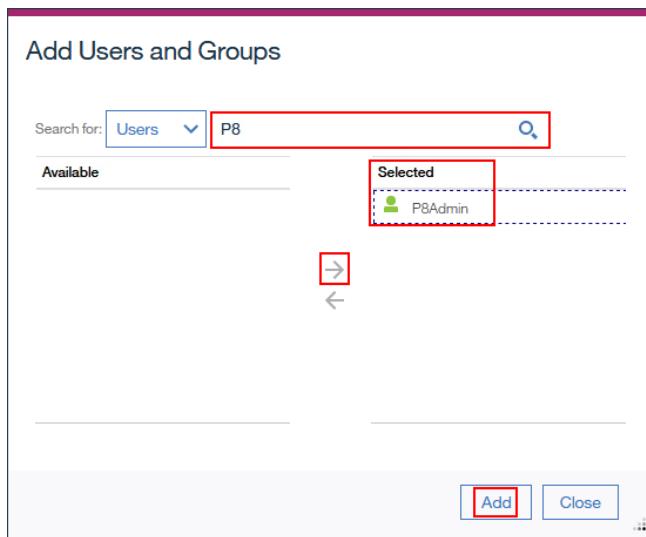
42. In the top right corner, select the **Mortgage Application** dropdown and select **Manage Roles**.



43. Select the **Mortgage Officer** role and select **Add Users and Groups**



44. In the **Add Users and Groups** dialog, enter **P8** in the search field and press **Enter**. Then select the **P8Admin** user and move it to the **Selected** column and click on **Add**



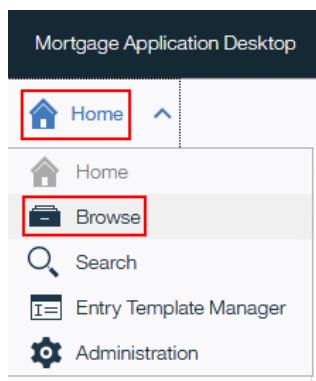
45. Repeat Step 43 for the role **Customer Representative** and save.

After you have successfully completed all the steps in **VM 3 – Workflow**, verify your work by completing the steps in the next chapter, named [Create the Mortgage Application Solution – Verification Instructions](#).

2.4 Create the Mortgage Application Solution – Verification Instructions

To verify successful completion of this exercise, complete the following steps:

1. Go to the **Mortgage Application Desktop** by clicking on the **CPE → Mortgage Application Desktop** bookmark.
2. If not logged in, login via username **P8Admin** and password **Think4me**.
3. Expand the dropdown menu where it says **Home** and select **Browse**.



4. In the Target store, select the folder **Incoming Mortgage Application Documents** by double-clicking it.

Target			
	Name	Modified By	Modified On
<input type="checkbox"/>	<input type="checkbox"/> Incoming Mortgage Application Documents	P8Admin	7/2/2018, 8:15 AM

5. In the top toolbar, select **Add Document**.



6. In the **General** section, enter the following values:
 - a. **Entry Template: Loan Application Form Entry Template**
 - b. **File name:** Any file on the system eg: 100Custom.xml

General

* Entry template: **Loan Application Form Entry Template**

* Save in: **Incoming Mortgage Application Docu...**

What do you want to save? **Local document**

* File name: **Browse... 100Custom.xml**

Major version [\(i\)](#)

7. In the Properties section, enter the following properties:

- a. **Document Title:** Application 01
- b. **Customer Name:** Customer 01
- c. **Date of Birth:** 7/4/1983
- d. **Loan Amount:** 10000
- e. **Property Address:** Address 01
- f. **Purchasing Price:** 15000

Properties

* Class: Loan Application Form

Document Title (i)	Application 01		
Customer Name (i)	Customer 01		
Date of Birth (i)	7/4/1983	(i) 12:00 AM	(i)
Loan Amount (i)	10,000		
Property Address (i)	Address 01		
Purchasing Price (i)	15,000		

8. Click on **Add** in the panel on the right.

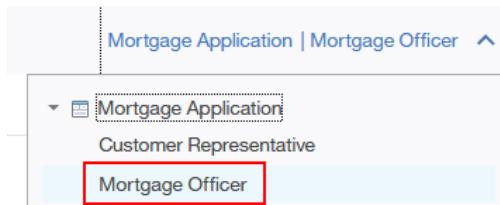
Add Document

The values that you enter for the document properties can be used to find the document later.

Add

Cancel

9. Switch back to the Case Client and ensure that the role is set to **Mortgage Officer**.



10. Click on **Mortgage Officer (0)**. This refreshes the Work page and you should see a new Step **Review Mortgage Application** with a loan amount of **10,000**.

Step Name	Time Created	Subject	Loan Amount
Review Mortgage Application	7/4/2018, 6:56 PM	Review Mortgage Application	10,000

11. Click on the step name **Review Mortgage Application** to open it. In the task, you can see the details added in Steps 8 & 10.

Explore the task by viewing the **Tasks** and **History** tabs. You can also add comments by clicking on the **Comment** button in the top-left corner.

12. Click on the **Request Additional Information** button.



13. In the Case Client, the Mortgage Officer should now have no tasks. Switch to the **Customer Representative** role in the top-right corner.



14. Under this role, you should see a new step **Collect Mortgage Information**. Click on the step name.

15. As a Customer Representative, you can now enter/modify data into the task. You can also view the comments made by the Mortgage Officer. Make a change in any of the fields.
16. Complete the step by clicking on the **Complete** button in the top-right corner.
17. Switch back to the **Mortgage Officer** role. You should now see the **Review Mortgage Application** step again.
18. Click on the step name and verify that the change made in step 18 is visible.
19. Click on the **Proceed** button in the top-right corner to complete the Task & the Case.
20. Switch to the **Cases** tab and click on **Search**.

The screenshot shows a user interface for managing cases. At the top, there are two tabs: 'Work' and 'Cases'. The 'Cases' tab is highlighted with a red box. Below the tabs is a blue 'Add Case' button with a dropdown arrow. Underneath is a search bar labeled 'Search:' with a placeholder 'Added On'. A dropdown menu is open, showing '7/4/2018' and a calendar icon. At the bottom of the search area are two buttons: a red-bordered 'Search' button and a blue 'Advanced Search' link.

21. In the search results, the Case you just worked on shows in the **Complete** state which completes the verification. You can click on the title of the Case to view the information added in the tasks.

2.5 Create the Mortgage Application Solution – Summary

In this exercise, you have:

1. Created an initial version of the **Mortgage Application** Case Solution and explored features of the Solution such as:
 - a. Creation and reuse of Properties, Document Classes, Roles, Case Types
 - b. Starting case types with a document
 - c. Designing a task with the Step Designer by creating a **Review Mortgage Application** task using two roles.
2. Deployed the Case Solution to the Target Object Store.
3. Added users to the **Mortgage Officer** and **Customer Representative** roles in the Case Client.
4. Created a **New Mortgage Application** case in the Case Client with a starting **Loan Application Form** document and completed the case using the two roles.

In the next exercise, you will update the Solution to add another task **Review Payslip** that is started when a document of type **Payslip** is added to the Case.

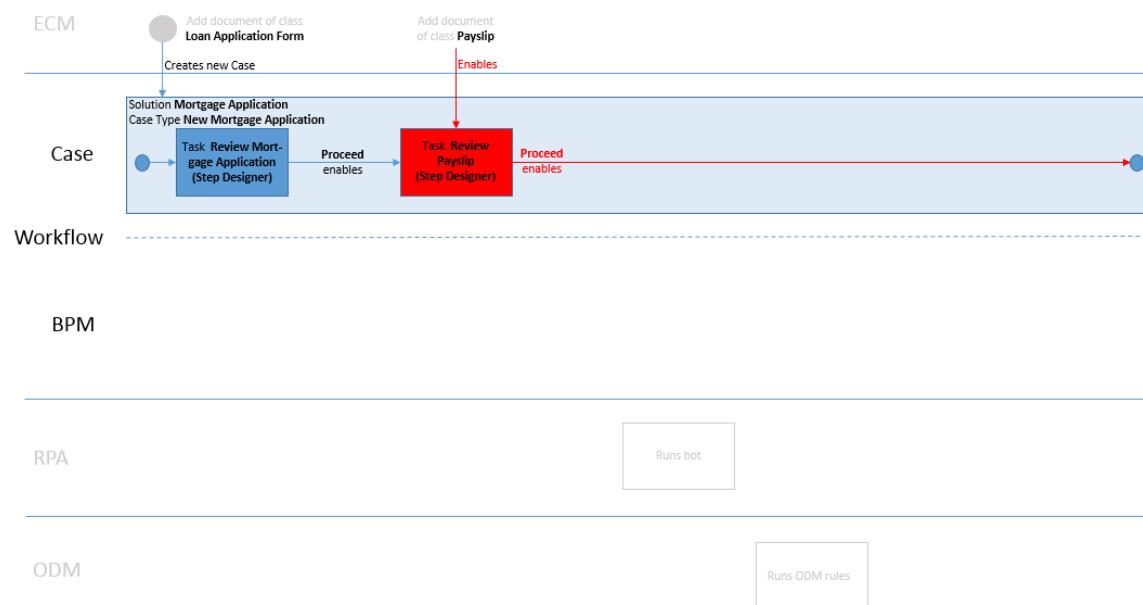
3 Exercise: Complete the Request Payslip implementation

3.1 Complete the Request Payslip implementation – Introduction

In this exercise, you will build on top of the Solution created in exercise 2 to create a new task **Request Payslip** that is started when a document of type **Payslip** is added to the Case. Please make sure that exercise 2 is completed before proceeding with this exercise.

Note: For the simplicity of the lab, custom code has been added to the ECM system where the Payslip is associated to an existing Case using the customer's name. When a Payslip is added to the ECM system, the custom code looks at the **Customer Name** property of the document and then finds an existing case to associate the document and its properties to (e.g.: **Net Income**). Therefore, in this lab only, customer names needs to be unique and cannot be re-used between different cases. For details about the custom code added to the ECM system, pls. have a look into the ECM sub-scenario, exercise 6.

From the complete Business Automation Workflow solution, you will implement the parts in red in this exercise:



As a part of this exercise you will get introduced into the following features of IBM Business Automation Workflow Case capability:

a. **Starting Case tasks based on new documents**

New documents added to a case can trigger the start of a new Case task.

This can be done using preconditions of the Case task which will be explored as a part of this exercise.

b. **Re-deploying a Case Solution**

You will learn how to modify an existing Case Solution, re-deploy it and verify the re-deployed Solution at the end of this exercise.

For this exercise, make sure that in your environment **VM 1 – ECM** and **VM 3 – Workflow** are running. If this is not the case, click the **Run** button to start them (start VM 1 first, VM 3 second). All other VMs must be suspended. If one of them is running, please suspend them now.



You can access the VMs through the **Browser** or by clicking **RDP** to connect to it using a Remote Desktop Connection.

You are now ready to start this exercise. As for every exercise, you have two options:

- If you are new to Workflow or prefer to follow the step by step instructions continue with the next chapter named [Complete the Request Payslip implementation – Step by Step Instructions](#).
- If you are an experienced Case / Workflow person you can use the information from this introduction chapter to complete the exercise. Continue to read the chapter named [Complete the Request Payslip implementation - High-level Instructions](#) for completing this exercise.

In this Exercise you will work with the following tools on VM 3:

Tool	Location (Firefox Bookmarks Toolbar) / URL
Case Builder	Workflow → Case Builder / https://vm-34.example.com:9443/CaseBuilder/designer/DesignerHome.jsp
Case Client	Workflow → Case Client / https://vm-34.example.com:9443/navigator/?desktop=baw
Content Navigator – Mortgage Application Desktop	CPE → Mortgage Application Desktop / https://vm-1.example.com:9444/navigator/?desktop=MA

For these tools, you will require the following IDs and passwords:

Tool	User ID	Password
Windows	Administrator	passw0rd
Case Builder, Case Client, Content Navigator – Mortgage Application Desktop	P8Admin	Think4me

3.2 Complete the Request Payslip implementation – High-Level Instructions

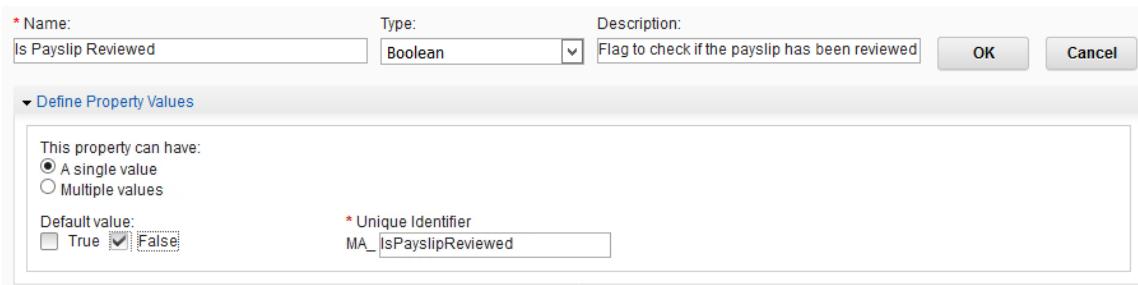
1. Log-in to the Case Builder.
2. Open the existing Solution **Mortgage Application**.
3. In the Case Type **New Mortgage Application**, add a FileNet P8 Process Task **Review Payslip** that is required and starts when a document of type **Payslip** is added to the Case.
4. In the task steps, ensure that the **Mortgage Officer** can read all the properties from the case and then either complete the task or send it to the **Customer Representative** to collect additional information. After collecting additional information, the **Customer Representative** can send the task back to the **Mortgage Officer**.
5. Create a Boolean flag, **Is Payslip Reviewed**, that is set to **true** when the task completes. This flag will be used in later exercises as a precondition to other tasks.
6. Re-deploy the Solution to a test environment.
7. Run the Solution using the **Case Client**.

After you have successfully completed all the steps in **VM 3 – Workflow**, verify your work by completing the work as described in chapter [Complete the Request Payslip implementation – Verification Instructions](#).

3.3 Complete the Request Payslip implementation – Step by Step Instructions

Follow these step by step instructions to prepare the process implementation (note that these instructions assume that exercise 2 has been completed):

1. Connect to **VM 3 – Workflow** as described in the introduction.
2. Open **Firefox**, expand the **Workflow** folder and open the **Case Builder** link.
3. Enter User Name **P8Admin** and Password **Think4me** if not filled out. Click **Log In**.
4. Open the existing Solution **Mortgage Application**.
5. In the **Properties** tab, add a new property **Is Payslip Reviewed** of type **Boolean** with a default value of **False** and a description of **Flag to check if the payslip has been reviewed**.



6. In the **Case Types** tab, open the case type **New Mortgage Application**.
7. In the **Properties** tab, select **Add Property** → **Existing** → **Is Payslip Reviewed**. Mark the property hidden as it is only required for internal preconditions in future exercises. Click **OK** and **Save**.
8. In the **Tasks** tab, add a **New FileNet P8 Process Task**.
9. Provide the following details for the task:
 - **Name:** Review Payslip
 - **Description:** Review the Payslip received
 - **This task is:** Required

Add a task

General	Preconditions	Task Properties	Design Comment
* Name: Review Payslip			
* Unique Identifier MA_ReviewPayslip			
Description: Review the Payslip received			
This task starts:			
<input checked="" type="radio"/> Automatically <input type="radio"/> Manually <input type="radio"/> Discretionally			
This task is:			
<input type="checkbox"/> Hidden <input checked="" type="checkbox"/> Required <input type="checkbox"/> Stopped when the case completes and does not affect case completion			
Assign to set: <None> <input type="button" value="Manage Sets"/>			

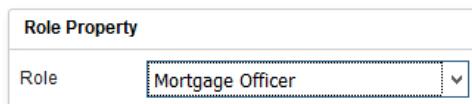
10. In the **Preconditions** tab, under **What preconditions must be met for this task to start?** select **A document is filed in the case**.
11. Uncheck **Any document class** and select the class **Payslip**. Then click **OK** and **Save**.

General	Preconditions	Task Properties	Design Comment						
What preconditions must be met for this task to start?									
<input checked="" type="checkbox"/> A document is filed in the case <input type="button" value="▼"/> <input type="checkbox"/> Any document class									
Document Classes:									
Loan Application Form Payslip									
The above precondition and the following conditions:									
<input type="button" value="Add Condition"/> <input type="button" value="Delete All Conditions"/>									
<table border="1"> <thead> <tr> <th>Property</th> <th>Operator</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>				Property	Operator	Value			
Property	Operator	Value							
<input type="button" value="OK"/> <input type="button" value="Cancel"/>									

12. Hover over the **Review Payslip** task and click on the **Edit steps** icon to open the **Step Designer**.



13. Drag and drop a **Role Lane** onto the workspace. Select the role **Mortgage Officer** for the Role Property if not done so already.



14. Repeat Step 13 for role **Customer Representative**.

15. In the Mortgage Officer lane, drag and drop a **Step**. Provide the following step properties (For the field with 3 dots, click on the dots to enter the value):

- **Name:** Review Payslip
- **Instruction:** Check for missing information
- **Responses:**
 - Proceed
 - Request Additional Information
- **Properties:** All except for **Is Application Reviewed & Is Payslip Reviewed** – Read only

16. Add another step onto the **Customer Representative** lane and provide the following step properties:

- **Name:** Collect Payslip Information
- **Instruction:** Review comments and collect requested information
- **Properties:** All except for **Is Application Reviewed & Is Payslip Reviewed** – Read and write

17. Add a **Property Step** onto the **System** lane and provide the following details:

- **Name:** Set Reviewed
- **Property:** Is Payslip Reviewed
- **Set to:** Specific value – True

18. On top of the workspace, there is a toolbar with a line icon. This icon allows you to connect two steps. Click on this icon.



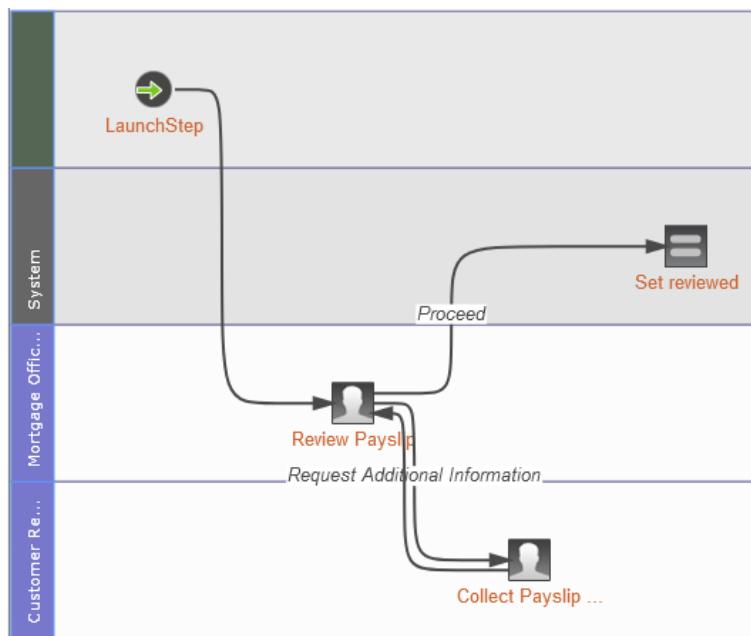
19. Connect the steps as follows:

- LaunchStep → Review Payslip
- Review Payslip → Set reviewed
- Review Payslip → Collect Payslip Information
- Collect Payslip Information → Review Payslip

20. Click back on the mouse pointer in the toolbar and then click on the connector between **Review Payslip** and **Set reviewed**.

21. Under the connector properties, select **Proceed** as the response.

22. Similarly, for the connector between **Review Payslip** and **Collect Payslip Information**, select **Request Additional Information** as the response. Your workspace should now look as follows:

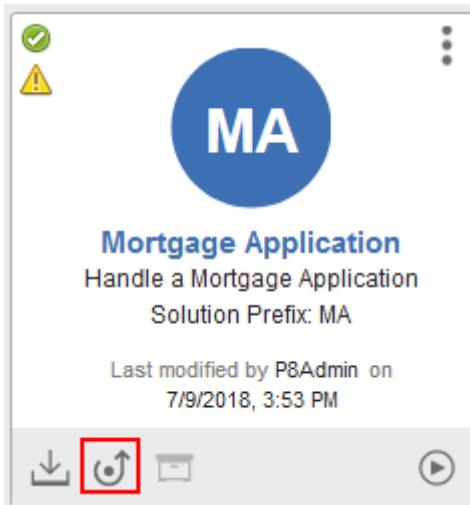


23. Click on **Save** and then click on the **Validate** button in the toolbar.



24. Upon successful validation (check messages on the bottom left of the screen), click **Close** and then click on **Save and Close**.

25. In the Case Builder homepage, you now see a yellow exclamation icon that warns you about changes made to the Solution after the previous deploy. To re-deploy, click on the **Deploy** button again. A dialog pops up with the list of changes made. Click on **Deploy** again.



26. Run the Solution to view the **Case Client**.

After you have successfully completed all the steps in **VM 3 – Workflow**, verify your work by completing the steps the next chapter, named [Complete the Request Payslip implementation – Verification Instructions](#).

3.4 Complete the Request Payslip implementation – Verification Instructions

To verify successful completion of this exercise, complete the following steps:

1. Go to the **Mortgage Application Desktop** by clicking on the **CPE → Mortgage Application Desktop** bookmark.
2. If not logged in, login via username **P8Admin** and password **Think4me**
3. Expand the dropdown menu where it says **Home** and select **Browse**.
4. In the Target store, select the folder **Incoming Mortgage Application Documents** by double-clicking it.
5. In the top toolbar, select **Add Document**.
6. In the **General** section, enter the following values:
 - a. **Entry Template: Loan Application Form Entry Template**
 - b. **File name:** Any file on the system eg: 100Custom.xml
7. In the Properties section, enter the following properties:
 - a. **Document Title:** Application 02
 - b. **Customer Name:** Customer 02
 - c. **Date of Birth:** 7/4/1983
 - d. **Loan Amount:** 10000
 - e. **Property Address:** Address 02
 - f. **Purchasing Price:** 15000
8. Click on **Add** in the panel on the right.
9. Switch back to the Case Client and ensure that the role is set to **Mortgage Officer**.
10. Click on the **Mortgage Officer (0)** in-basket. This refreshes the list of tasks and you should see a new step **Review Mortgage Application** with a loan amount of **10,000**
11. Click on the step name **Review Mortgage Application** to open it. In the task, you can see the details added in Steps **Error! Reference source not found.** & **Error! Reference source not found..**
12. Click on the **Proceed** button.
13. In the Case Client, the Mortgage Officer should now have no tasks.

14. Switch to the **Cases** tab and click on **Search**.

15. In the search results, the Case you just worked on shows in the **Working** state. Click on the title of the Case and switch to the **Tasks** tab. In this tab, you can see that the **Review Mortgage Application** task is complete and that the **Review Payslip** task is in the **Waiting...** state as it is waiting for a document of type **Payslip** to be added.

The screenshot shows the Case Details page for a case titled "MA_NewMortgageApplication_000000100002". The page includes tabs for Comments, Add Task, Add Custom Task, Split Case, Documents, Tasks (which is selected and highlighted with a red box), and History. The Tasks section shows two items: "Review Mortgage Application" (Completed on 7/4/2018, 8:52 PM) and "Review Payslip" (Waiting...). To the right of the tasks, there are fields for Customer Name (Customer 02), Extended Retention Required (unchecked), Loan Amount (10,000), Date of Birth (7/4/1983), and a timestamp (8:51 PM). A blue exclamation mark icon is also present.

1. Switch back to **Mortgage Application Desktop** and add a document using the entry template **Payment Slip Entry Template** with the following properties:

- a. **Document Title:** Payslip 01
- b. **File Name:** Any file eg: 100Custom.xml
- c. **Properties:**
 - i. **Customer Name:** Customer 02
 - ii. **Net Income:** 7500

Note: For the simplicity of the lab, custom code has been added to the ECM system where the Payslip is associated to an existing Case using the customer's name. When a Payslip is added to the ECM system, the custom code looks at the **Customer Name** property of the document and then finds an existing case to associate the document and its properties to (e.g.: **Net Income**). Therefore, in this lab only, customer names need to be unique and cannot be re-used between different cases.

16. Switch back to the **Case Client** and refresh the **Mortgage Officer**'s task list. You should now see a new **Review Payslip** task.

17. Click on the step name **Review Payslip**.

18. In the task, you should see two documents - **Application 02 & Payslip 01** along with the other properties added during document creation.

19. Click on **Request Additional Information**.
20. Switch to the **Customer Representative** role and verify that you can see the **Collect Payslip Information** step. Open the step.
21. Make a small change to one of the fields and click on the **Complete** button.
22. Switch back to the **Mortgage Officer** role and verify that you can view the **Review Payslip** step again.
23. Open the step, verify that the changes made in step 25 are shown and click on the **Proceed** button.
24. Switch to the **Cases** tab and run a **Search**. In the search results, the Case you just worked on shows in the **Complete** state which completes the verification. You can click on the title of the Case to view the information added in the tasks.

3.5 Complete the Request Payslip implementation – Summary

In this exercise, you have:

1. Updated the **Mortgage Application** Case Solution and explored features of the Solution such as creating a task **Review Payslip** with a precondition where the task starts with creation of a **Payslip** document in the Case
2. Re-deployed the Case Solution to the Target Object Store.
3. Created a **New Mortgage Application** case in the Case Client with a starting document, started the **Review Payslip** task by adding a **Payslip** document to the case and completed the case using the two roles.

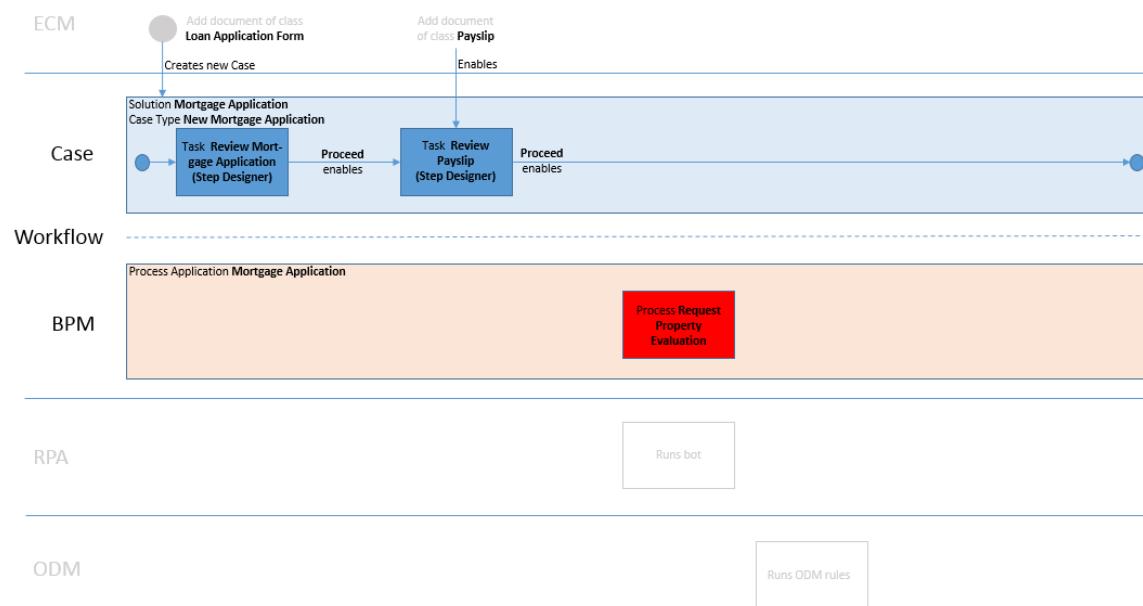
In the next exercise, you will use the process capability of IBM Business Automation Workflow to prepare the Process implementation of the Workflow solution.

4 Exercise: Prepare the process implementation

4.1 Prepare the process implementation – Introduction

In this exercise you will prepare the process implementation. While in the previous exercises you worked only with the Case Management feature of Workflow, you will now work with the Business Process Management feature of Workflow. In later exercises you will finalize the process implementation and integrate it within the Case Management feature.

From the complete Business Automation Workflow solution, you will implement the parts in red in this exercise:



As part of this exercise you will get introduced into the Business Process Management related UIs of Workflow, namely:

- Workflow Center**
The heart of your Business Process Management development environment in Workflow. Here you can create, import, manage, deploy archive, delete, ... Process Applications and Toolkits. From here you also open Process Designer to modify your process logic.
- Process Admin Console**
The tool of your Business Process Management environment in Workflow to administrate your server, process instances, Process Applications, ...

c. Process Designer

Modelling tool to modify your process logic. This includes modifying the processes, user interfaces, services, events, teams, ...

In addition, you will get introduced into some of the new features of the Business Process Management feature of Workflow, namely:

a. The System Maintenance feature

Helps the administrators of the Business Process Management feature of a Workflow system to identify when administrative actions are needed to optimize the system for performance.

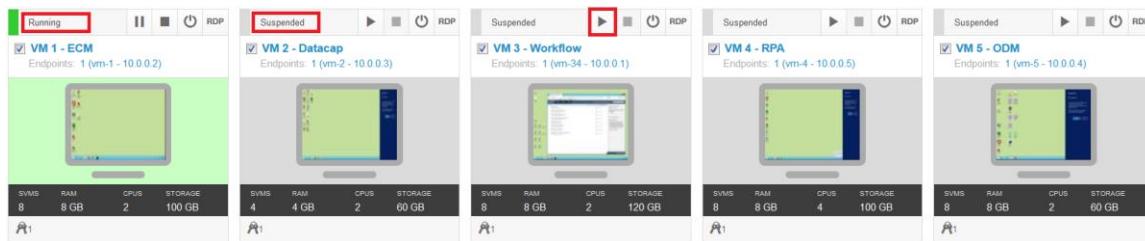
b. The Performance Dashboard feature

Helps the administrators of the Business Process Management feature of a Workflow system to optimize the system for performance.

c. The enhanced Validation feature

Helps the developers using the Business Process Management feature of Workflow to identify problems in the process logic they implement earlier so they contain less issues when executed.

For this exercise you will require to have the previous exercises of the Workflow sub-scenario successfully completed. Make sure that in your environment **VM 1 – ECM** and **VM 3 – Workflow** are running. If this is not the case, click the **Run this VM** button to start them (start VM 1 first, VM 3 second, make sure VM 1 is successfully connected to the network before starting VM 3). All other VMs must be suspended. If one of them is running, pls. suspend them now.



While this exercise you will only work with **VM 3 – Workflow**. Access this VM through the **Browser** or by clicking **RDP** to connect to it using a Remote Desktop Connection.

You are now ready to start this exercise. As for every exercise, you have two options:

- If you are new to Workflow or prefer to follow the step by step instructions continue with the next chapter [Step by Step Instructions](#).
- If you are an experienced BPM / Workflow person you can use the information from this introduction chapter to complete the exercise. Continue to read the following high-level instructions for completing this exercise.

In this exercise you will work with the following tools on VM 3 – Workflow:

Tool	Location (Firefox Bookmarks Toolbar) / URL
Workflow Center	Workflow → IBM Workflow Center / https://vm-34.example.com:9443/ProcessCenter
Process Admin Console	Workflow → Process Admin Console / https://vm-34.example.com:9443/ProcessAdmin
WAS Console	Workflow → WAS Workflow / https://vm-34.example.com:9043/ibm/console
Process Designer	Launch Process Designer from within Workflow Center

For these tools, you will require the following IDs and passwords:

Tool	User ID	Password
Windows	Administrator	passw0rd
Workflow Center, Process Admin Console, WAS Console, Process Designer	P8Admin	Think4me

Follow these high-level steps to complete this exercise:

- Import file **Mortgage_Application - v0.1.twx** into Workflow Center. You can find it on the **shared box folder** (see bookmark in Firefox), there in sub-folder **3. Workflow sub-scenario**.
- If an error occurs while import, read through the error details and **evaluate the potential corrective actions**.

Note: For demo purposes the Workflow Center default configuration was adapted to only allow 17 snapshots as a maximum number to force this error. We'll later on restore and review the default configuration.

- Also review the **SystemOut.log** and the **System Maintenance Status** page in Process Admin Console.
- One potential corrective action is to **reduce the amount of snapshots**. Use the **Performance Dashboard** to identify a snapshot that could be removed from the system. Do not delete any system snapshots or sample applications installed with Workflow.
- Use Workflow Center to archive and delete **one custom Process Application (TPA)**.

- Use the **Performance Dashboard** to identify another snapshot that could be removed from the system. Do not delete any system snapshots or sample applications installed with Workflow.
- Use Workflow Center to archive and delete **one custom Toolkit (TKK)**.
- Import the **Mortgage Application** again.
- The other potential corrective action is to **tune the system to be able to cope with a higher number of artifacts and then increase the thresholds of the monitors**. Here, we'll only restore the default Workflow Center configuration by changing **100Custom.xml**.

Note: Only comment out the system-maintenance-monitor element.

Tuning the system would include **regular monitoring and tuning of the system resources like CPU and memory, regular monitoring and tuning of the JVMs, regular monitoring of the Instrumentations page in Process Admin Console and tuning of the Workflow caches like the branch-, snapshot-, and the PO caches, regular monitoring and tuning of the Database**, and so on. Since tuning is a very broad topic, we will not further dive into this.

- Review again the **System Maintenance Status** page in Process Admin Console to understand the defaults.

Note: The default values for Workflow Server are different: For **Snapshots** the **Maximum number of snapshots allowed is 128, the warning threshold is 100**. The Unnamed Snapshots monitor does not apply to Workflow Server, therefore is not available there.

On Workflow Server the **deployment of a snapshot from Workflow Center will fail** when the error threshold of the **Snapshots** monitor is exceeded. For Workflow Server the same two options are available to resolve the issue: Either **perform housekeeping** to reduce the number of artefacts on the server, or **tune Workflow Server and increase the thresholds**.

Note: In **upgrade or migration scenarios of an already tuned system from previous versions of BPM or Workflow**, as part of the upgrade the error- and warning thresholds might need to be adapted to the current tuning and needs of the system. If this is not done, **import or deployment of snapshots might fail** afterwards as seen previously. If the to be upgraded or migrated system is not or only partly tuned, it is recommended to either **tune it better or to run housekeeping activities before the upgrade or migration**. Housekeeping will also speed up the migration process.

- Use **Workflow Center** to see all found validation errors and warnings for **Mortgage Application**.

- Use Process **Designer** to fix all validation errors and warnings in the **Mortgage Application** Process Application.
- Review process **Request Property Evaluation** carefully, resolve all remaining issues and make sure the process can be executed successfully.

Note: Don't change the **input** and **output** variables of the Process. Don't change the name of the **GetDataFromLandChargeRegister** activity.

Hints:

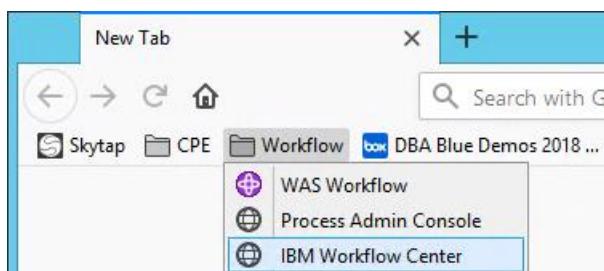
- In activity **setPropertyAddress** pay attention to lines 1 and 3.
- The **Review Result** activity is no longer needed, you can delete it.
- When you create a team, name it **Robots**, add User Group **Robot** as Member.
- Move activity **GetDataFromLandChargeRegister** into the Robots lane.
- Fix the warnings in activity **Enter Property Address** on the **Data Mapping** tab.

After you have successfully completed all the steps in VM 3 – Workflow, verify your work by following the instructions in the following chapter named [Prepare the process implementation – Verification Instructions](#).

4.2 Prepare the process implementation – Step by Step Instructions

Follow these step by step instructions to prepare the process implementation:

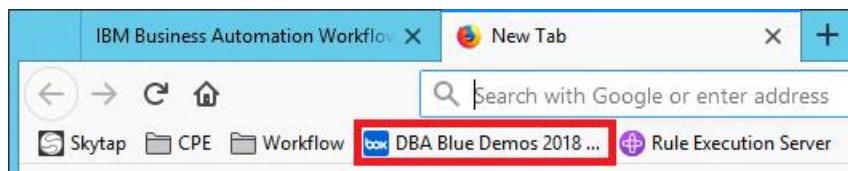
1. Connect to **VM 3 – Workflow** as described in the introduction.
2. Open **Firefox**, expand the **Workflow** folder and open the **IBM Workflow Center** link.



3. Enter User Name **P8Admin** and Password **Think4me** if not filled out. Click **Log In**.
4. Close the **Getting Started** page in case it appears.

Workflow Center is the heart of your Business Process Management development environment in Workflow. Here you can create, import, manage, deploy archive, delete, ... Process Applications and Toolkits. From here you also open Process Designer to modify your process logic.

5. As a first topic of this exercise we will explore the **System Maintenance** feature. For this we need to import file **Mortgage_Application - v0.1.twx**. You can find it on the **shared box folder** (see bookmark in Firefox), there in sub-folder **3. Workflow sub-scenario**.
 - Open a second tab in Firefox and click the link **DBA Blue Demos 2018 - Material for Participants**.



- Open folder named **3. Workflow sub-scenario**.

DBA Blue Demos 2018 - Material for Participants > 3. Workflow sub-scenario

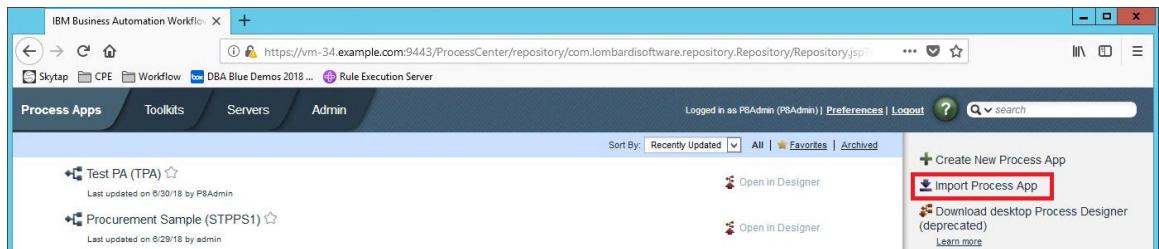
Name	Updated
Land_Property_Register_Simulator - v1.0.twx	Today by Thomas Schulze
Mortgage_Application - v0.1.twx	Today by Thomas Schulze

- Right-click file **Mortgage_Application - v0.1.twx** and select **Download**.



- Select **Save File** and click **OK**.
- Select **Desktop** and click **Save**.
- Close the second Browser tab.

6. Back in Workflow Center click **Import Process App**.

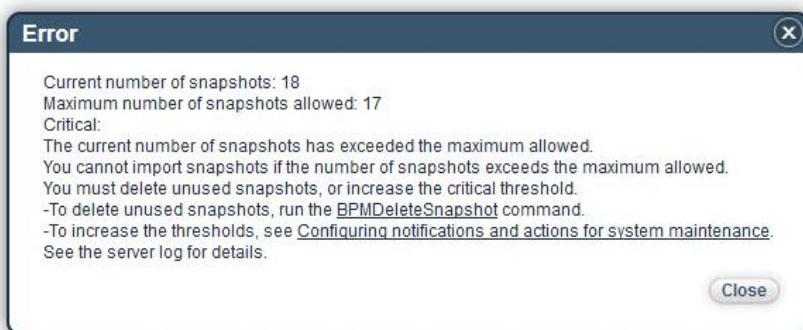


7. In the Import Process App dialog click **Browse....**

8. Select file **Mortgage_Application - v0.1.twx** from the Desktop.



9. In the **Import Process App** dialog click **OK**.
10. The next dialog shows what will be imported. Note that only **one snapshot** (means no toolkit snapshots) needs to be imported. Click **Import**.
11. The import fails with the following **expected error message**:



Carefully review the error message.

- Note:** For demo purposes the Workflow Center default configuration was adapted to only allow 17 snapshots as a maximum number to force this error. Later, we'll restore and review the default configuration.
12. Right-click the links and select **Open Link in New Tab** to evaluate the potential actions to resolve the issue.

Note: The error message refers to BPMDeleteSnapshot command. For Workflow Center this should be BPMSnapshotCleanup command. A defect for that issue got already opened. Use the page for [BPMSnapshotCleanup command](#) instead.

Note: The second link will not work at all. Use [this link](#) instead. A defect for that issue got already opened.

13. Open the **SystemOut.log** for review. For this you can find the shortcut **logs Node** on the Windows Desktop. Open **SystemOut.log** in subfolder **SingleClusterMember1**. Search for **system maintenance monitor**.

Note: The System Maintenance Monitor regularly logs the status of all monitors into SystemOut.log. By default, this is after server start and then every 24 hours.

14. Click **Close** to close the error dialog in Workflow Center.
15. To further understand the issue reported by the System Maintenance Monitor we will use the Process Admin Console. In the Bookmarks Toolbar expand the **Workflow** folder and open the **Process Admin Console** link.
16. If prompted to log in, enter User Name **P8Admin** and Password **Think4me** if not filled out. Click **Log In**.

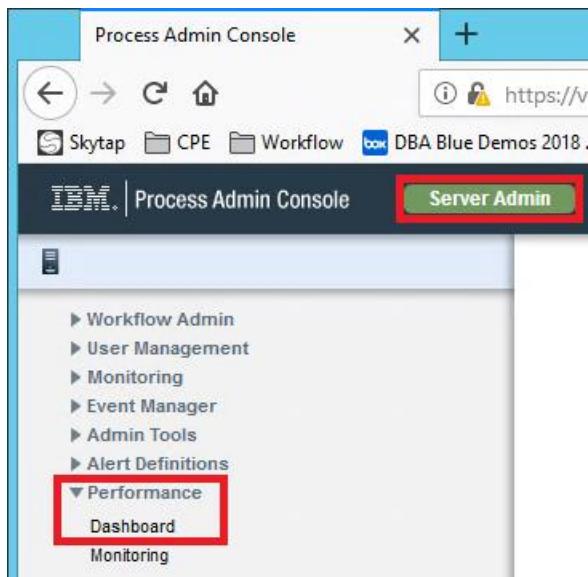
Process Admin Console is the tool of the Business Process Management environment of Workflow to administrate your server, process instances, Process Applications, ...

17. Note the red sign besides **System Maintenance Status**. Click on it.



18. Review the information on the System Maintenance Status page. Note that besides the already known error information the **status of all maintenance monitors** is listed, same as in the SystemOut.log file that you have reviewed earlier.
19. To determine which actions you can take **to delete unused snapshots** in Workflow Center, we will as the next topic of this exercise explore the **Performance Dashboard** feature.

20. Click Server Admin → Performance → Dashboard.



21. Click Load Data.

22. Because the error was related to the number of snapshots, expand the **Snapshot Data** section.

Snapshot Data		
Performance indicator	Count	
Number of process application snapshots (named) without active process instances	8	
Number of process application snapshots (unnamed)	4	
Number of toolkit snapshots (unnamed)	11	
Number of process application snapshots (named)	8	
Number of toolkit snapshots (named)	10	
Number of orphaned toolkit snapshots	1	

At the bottom of the table, there are two buttons: 'Show Snapshot Data' (in a blue box) and 'Housekeeping' (in a light blue box).

23. To see potentially unused Process Application snapshots, select the first row **Number of process application snapshots (named) without active process instances** and click **Show Snapshot Data**.

24. Scroll to the bottom of the second list and take a note of snapshot with acronym **PAV1** and container acronym **TPA**. The other seven snapshots are either System snapshots or Samples. We will not delete them.

<input type="radio"/>	02c3b702-6542-4c91-8f75-d76c9212869b	PAV1	TPA
-----------------------	--------------------------------------	------	-----

25. Select this row and note that the wsadmin commands are generated to archive and cleanup this snapshot.

AdminTask.BPMArchive(['-containerSnapshotAcronym PAV1 -containerAcronym TPA -containerTrackAcronym Main'])
AdminTask.BPMSSnapshotCleanup(['-containerSnapshotAcronyms PAV1 -containerAcronym TPA -containerTrackAcronym Main'])

26. To see potential unused Toolkit snapshots scroll up to the first table and select the last row **Number of orphaned toolkit snapshots**.

Note: Toolkit snapshots that are not referenced by any other snapshot are unused and called orphaned toolkit snapshots.

27. Click again **Show Snapshot Data**.

28. Select the entry in the second table and take a note of the recommendation to not delete this snapshot.

<input type="radio"/>	Number of orphaned toolkit snapshots	1	
Show Snapshot Data		Housekeeping	
Per page: <input type="text" value="10"/>			
Snapshot ID	Snapshot acronym	Container acronym	
<input type="radio"/> ba5fb0e2-9022-4c83-b2c5-0ae352967e37	8.6.0.0	SGW	
Previous 1 Next			
This is an IBM Business Automation Workflow system snapshot. Do not delete the snapshot.			

Using the **Performance Dashboard**, you have as of now identified one snapshot with acronym **PAV1** and container acronym **TPA** that could be removed from the system. Let's move on and further investigate this snapshot on **Workflow Center**.

29. In Workflow Center on the Process Apps page identify the Process Application with container acronym **TPA**.

The screenshot shows the 'Process Apps' tab selected in the top navigation bar. Below it, there is a single entry for 'Test PA (TPA)'. The entry includes a small icon, the name 'Test PA (TPA)', a star icon, and the text 'Last updated on 6/22/18 by P8Admin'.

30. Click **Test PA (TPA)** to see all snapshots of this Process Application.

The screenshot shows the details for the 'Test PA (TPA)' process application. It lists two snapshots: 'Current' and 'PAVersion1 (PAV1)'. The 'Current' snapshot was last changed on 6/22/18 by P8Admin. The 'PAVersion1 (PAV1)' snapshot was created on 6/22/18 by P8Admin and is described as 'Not Yet Installed to Workflow Server'.

The previously identified snapshot with acronym **PAV1** is the only named snapshot for this Process Application in addition to the Current snapshot. We assume that you know that this snapshot and Process Application was for test purposes only, is no longer required and can be deleted.

Note: In reality, please check with your other Workflow developers to make sure the Process Application is no longer needed. Optionally export the still needed snapshots and archive them outside of Workflow Center.

31. To delete the entire Process Application from Workflow Center you first have to archive it. Click **Manage** and then **Archive Process App**.

The screenshot shows the 'Manage' tab selected for the 'Test PA (TPA)' process application. On the right side, there is a red box highlighting the 'Archive Process App' button.

32. In the confirmation dialog click **Archive**.

33. Click **Snapshots** and then **Delete Process App**.

The screenshot shows the 'Snapshots' tab selected for the 'Test PA (TPA)' process application. On the right side, there is a red box highlighting the 'Delete Process App' button.

34. In the confirmation dialog click **Delete**.

You have successfully removed the first snapshot from the system. To be able to import the Mortgage Application, **you have to delete one more snapshot**. Let's go back to the **Performance Dashboard** to identify another snapshot for deletion.

35. In the Performance Dashboard load the new data and expand again **Snapshot Data**. Review the changes in the table.

Performance indicator	Count
Number of process application snapshots (named) without active process instances	7
Number of process application snapshots (unnamed)	4
Number of toolkit snapshots (unnamed)	11
Number of process application snapshots (named)	7
Number of toolkit snapshots (named)	10
Number of orphaned toolkit snapshots	2

Note that for the first and fourth row the Count has decreased from 8 to 7 due to deleting the Process Application, while the **Count for the last row increased from 1 to 2**.

36. To see again the potential orphaned toolkit snapshots select the last row **Number of orphaned toolkit snapshots**.

37. Click **Show Snapshot Data**.

38. Select the new row and note that the wsadmin commands are generated to archive and cleanup this toolkit snapshot. Take a note of the snapshot acronym **TKV1** and container acronym **TTK**.

60bbeccd-1633-4dac-a930-a6328f80ab31	TKV1	TTK
--------------------------------------	------	-----

1

```
AdminTask.BPMArchive(['-containerSnapshotAcronym TKV1 -containerAcronym TTK -containerTrackAcronym Main'])
```

```
AdminTask.BPMSnapshotCleanup(['-containerSnapshotAcronyms TKV1 -containerAcronym TTK -containerTrackAcronym Main'])
```

Using the **Performance Dashboard**, you have identified the toolkit snapshot with acronym **TKV1** and container acronym **TTK** that could also be removed from the system. Let's again move on and further investigate this snapshot on **Workflow Center**.

Note: More information about the various features of Performance Dashboard can be found in Knowledge Center [here](#).

In Workflow Center on the **Toolkits** page identify the Toolkit with container acronym **TTK**.

39. Click **Test Toolkit (TTK)** to see all snapshots of this Toolkit.

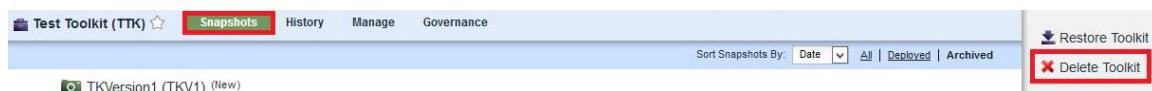
Previously identified snapshot with acronym **TKV1** is the only named snapshot for this Toolkit in addition to the Current snapshot. We again assume that you know that this snapshot and Toolkit was for test purposes only, is no longer required and can be deleted.

Note: In reality, please check with your other Workflow developers to make sure the Toolkit is no longer needed. Optionally export the still needed snapshots and archive them outside of Workflow Center.

40. To delete the entire Toolkit from Workflow Center you first have to archive it.
Click **Manage** and then **Archive Toolkit**.

41. In the confirmation dialog click **Archive**.

42. Click **Snapshots** and then **Delete Toolkit**.



43. In the confirmation dialog click **Delete**.

You have successfully removed the second snapshot from the system. Therefore it's time to import the Mortgage Application again.

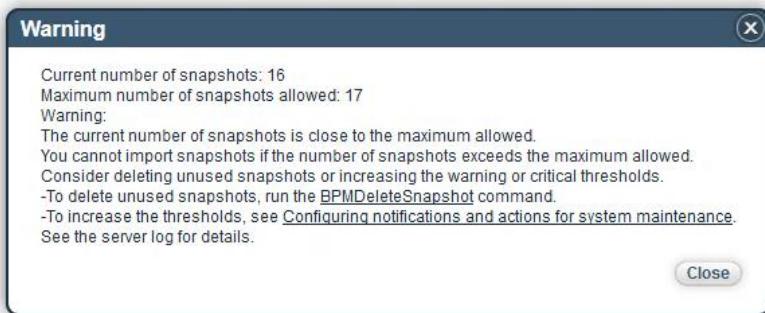
44. Click **Process Apps → Import Process App**.

45. Click **Browse...** and select **Mortgage_Application - v0.1.twx** for import.

46. Click **OK**.

47. Click **Import**.

48. The import is successful this time, but the following **expected warning message** appears:



49. Click **Close**.

50. Switch to **Process Admin Console** and open again the **System Maintenance Status** page. Note that there is now a yellow warning sign indicating that the warning threshold of a monitor has been reached.



51. Click **Refresh**.

Note that besides deleting unused artefacts from Workflow Center the **other option to resolve errors and warnings from the System Maintenance Monitors is to tune the System to be able to cope with a higher number of artifacts and then increase the error and warning thresholds** of the monitors.

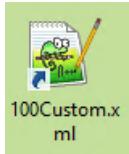
Tuning the system would include **regular monitoring and tuning of the system resources like CPU and memory, regular monitoring and tuning of the JVMs, regular monitoring of the Instrumentations page in Process Admin Console and tuning of the Workflow caches like the branch-, snapshot-, and the PO caches, regular monitoring and tuning of the Database**, and so on. Since tuning is a very broad topic, we will not further dive into this, instead we will as a next step **restore the default values of the monitors**.

Note: The System Maintenance feature is also available on **Workflow Server**. There for example the **deployment of a snapshot from Workflow Center will fail** when the error threshold of the Snapshots monitor is exceeded. For Workflow Server the same two options are available to resolve the issue: Either perform housekeeping to reduce the number of artefacts on the server, or tune Workflow Server and increase the thresholds.

Note: In upgrade or migration scenarios of an already tuned system from previous versions of BPM or Workflow, as part of the upgrade the error- and warning thresholds might need to be adapted to the current tuning and needs of

the system. If this is not done, **import or deployment of snapshots might fail** afterwards as seen previously. If the to be upgraded or migrated system is not or only partly tuned, it is recommended to either **tune it better or to run housekeeping activities before the upgrade or migration**. Housekeeping will also speed up the migration process.

52. To restore the default values of the monitors, double-click the shortcut to **100Custom.xml** on the Windows desktop to open it with an editor.



53. Scroll to the bottom of the file and comment out the system-maintenance-monitor element by adding **<!-- before it and --> after it**.

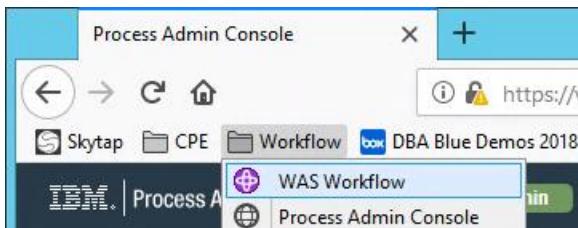
```

63 <server>
64   <javascript-serverside-semantic-validation-enabled merge="replace">true</javascript-serverside-semantic-validation-enabled>
65   <!--<system-maintenance-monitor enabled="true">
66     <monitor merge="replace" type="NAMED_SNAPSHOTS" enabled="true" servertype="PC">
67       <critical-threshold>17</critical-threshold>
68       <warning-threshold>10</warning-threshold>
69       <prevent-lifecycle-action>INSTALL</prevent-lifecycle-action>
70     </monitor>
71   </system-maintenance-monitor>-->
72 </server>

```

54. **Save** your changes and **close** the editor.

55. In **Firefox** click **Workflow → WAS Workflow**.



56. If a log-in screen is presented, enter User Name **P8Admin** and Password **Think4me** if not filled out and click **Log In**.

57. Expand **System administration** and click **Nodes**.

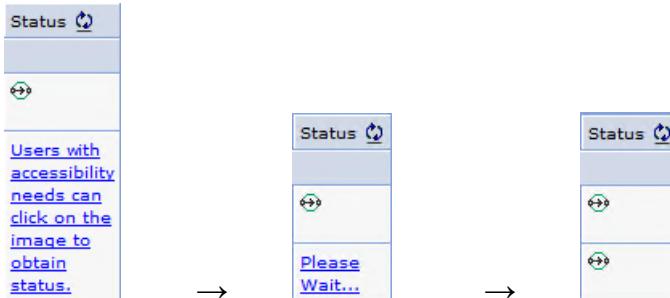


58. Check the check box besides **Node1** and click **Full Resynchronize** to copy the previously changed 100Custom.xml to the appropriate places in the system.

A screenshot of the node management interface. The 'Full Resynchronize' button is highlighted with a red box. The 'Node1' row has a checked checkbox in the first column. The table shows two nodes: Dmgr and Node1.

Select	Name	Host Name	Version	Discovery Protocol	Status
	Dmgr	vm-34.example.com	ND 8.5.5.13 BPMSServer 8.6.1.18001	TCP	
<input checked="" type="checkbox"/>	Node1	vm-34.example.com	ND 8.5.5.13 BPMSServer 8.6.1.18001	TCP	

59. Note the changes in the **Status** column. **Hover over** the text or click the **Refresh** icon besides Status to update it.

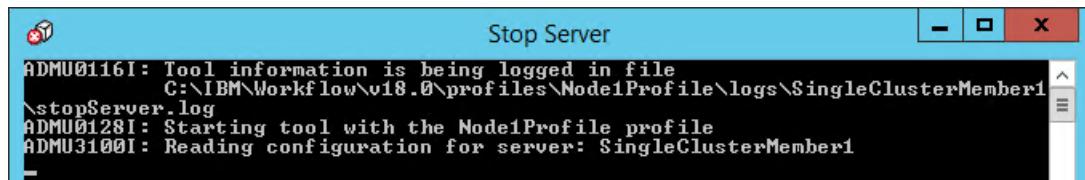


60. Once the **Synchronized** icon is shown again, log-out from the console and close Firefox.

61. On the Windows Desktop double-click the shortcut **Stop Server**.



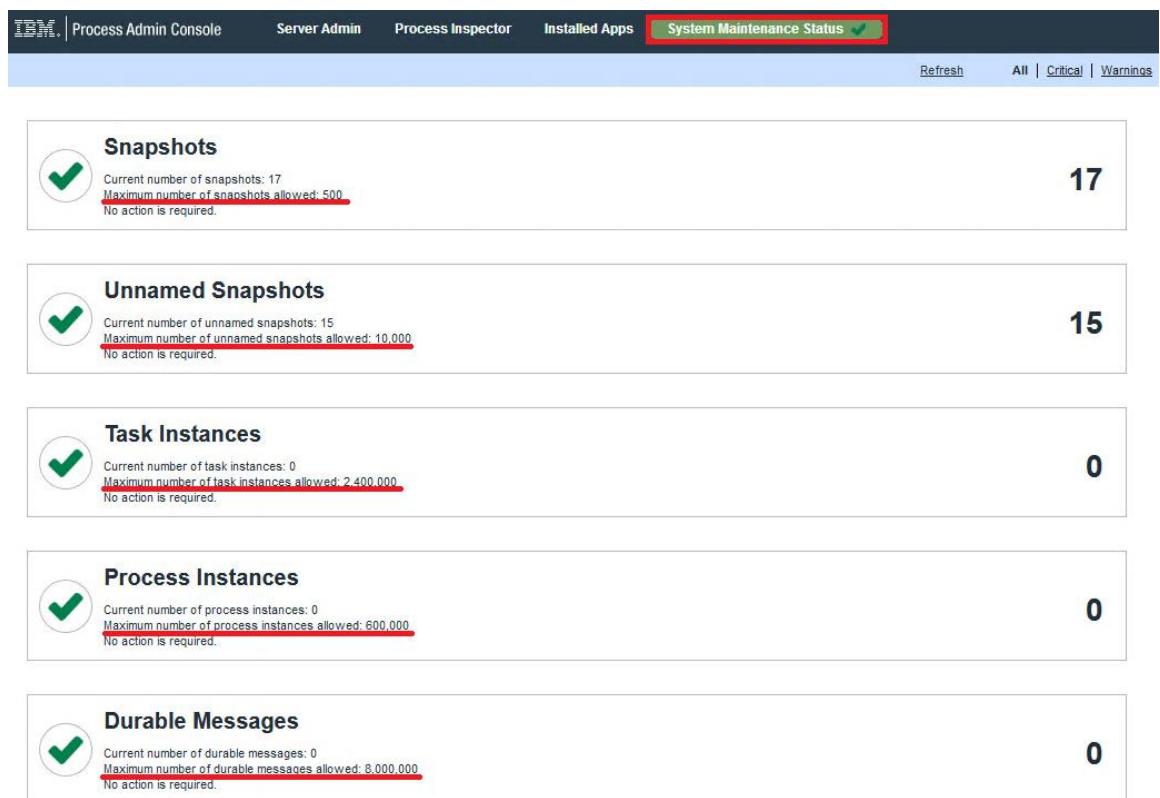
62. The **Stop Server** command window appears. Wait until it automatically disappears.



```

Stop Server
ADMU0116I: Tool information is being logged in file
          C:\IBM\Workflow\v18.0\profiles\Node1Profile\logs\SingleClusterMember1
\stopServer.log
ADMU0128I: Starting tool with the Node1Profile profile
ADMU3100I: Reading configuration for server: SingleClusterMember1
  
```

63. On the Windows Desktop double-click the shortcut **Start Server**.
64. The **Start Server** command window appears. Wait until it automatically disappears.
65. In Firefox open the **Process Admin Console** and note the green sign besides **System Maintenance Status**. Open this page again.
66. Review the default values for the monitors on **Workflow Center**.



Monitor	Current Value	Maximum Allowed	Status
Snapshots	17	500	Green (OK)
Unnamed Snapshots	15	10,000	Green (OK)
Task Instances	0	2,400,000	Green (OK)
Process Instances	0	600,000	Green (OK)
Durable Messages	0	8,000,000	Green (OK)

Note: The default values for Workflow Server are different: For Snapshots the **Maximum number of snapshots allowed** is **128**, the **warning threshold** is **100**. The Unnamed Snapshots monitor does not apply to Workflow Server, therefore is not available there.

This completes the introduction into the **System Maintenance** feature and the **Performance Dashboard** feature.

Next, we will explore the enhanced **Validation** feature.

67. In Firefox open the **IBM Workflow Center** link.

68. Close the **Getting Started** page in case it appears.

69. Click **Mortgage Application (MA)**.



70. Under **Current** expand all elements to see the validation errors in the imported Process Application.

A screenshot of the "Validation Errors and Warnings By Type" section. It shows a tree view with "Processes (3 errors)" expanded, revealing three specific validation errors under "Request Property Evaluation":

- Attached service is unreachable.
- setPropertyAddress contains one or more JavaScript syntax errors.
- Service is unreachable: [attachedActivityId:0dbd0b9-5fce-4df5-8c10-cc8fcd90d8af]. Make sure it exists in the process application or toolkit. If it exists in another toolkit, ensure that the toolkit is included in the dependency.

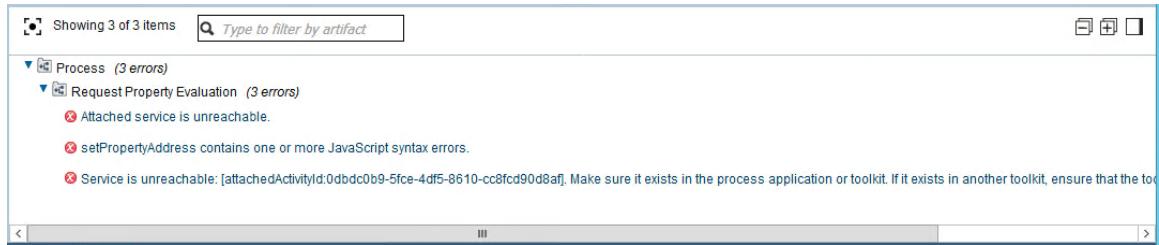
A red box highlights the "Open in Designer" button located on the right side of the screen.

71. Click **Open in Designer** to open the **Request Property Evaluation** process containing these errors.

72. In Designer take a note of the validation icon at the bottom of the page.



73. Click it to see all validation errors and warnings.



74. Click the "+" sign in the upper right corner to expand all.

75. Click the **Dock right** icon.



76. Click the **Dock bottom** icon.



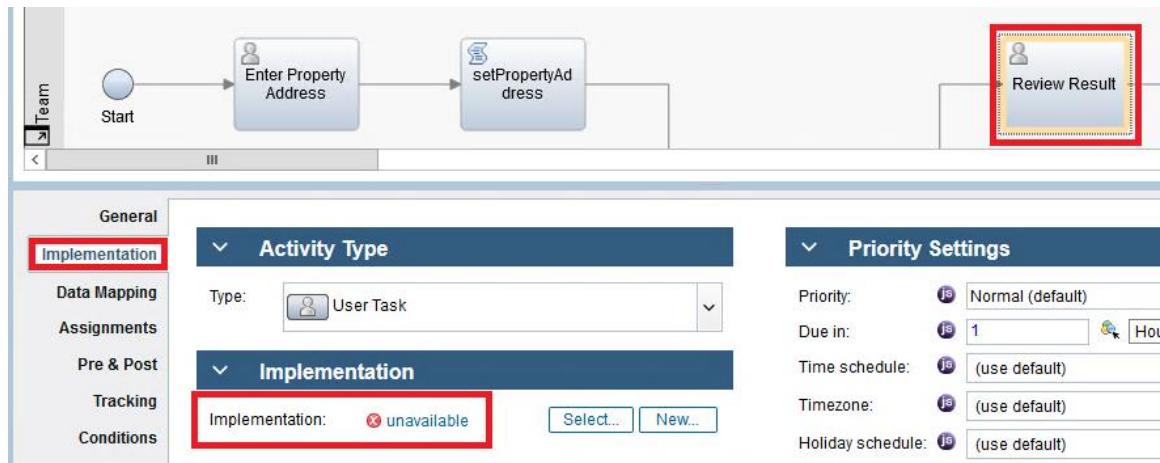
Using the **Dock right** and **Dock bottom** icons you can position the validation errors and warnings according to your preferences.

77. As a next step, you have to find and **resolve all validation errors and warnings** in this process.

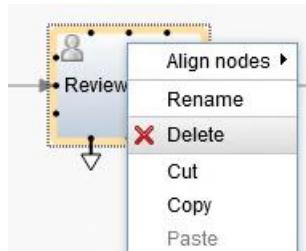
Note: Clicking on the errors does not yet get you to the activity containing the issue.

78. Click the **Review Result** activity in the Definition to resolve the first reported error.

79. Note that on the **Implementation** tab the implementation of this User Task is missing.



80. We will not need this activity in the final implementation of the process, you can delete it. Right-click this activity and select **Delete**.

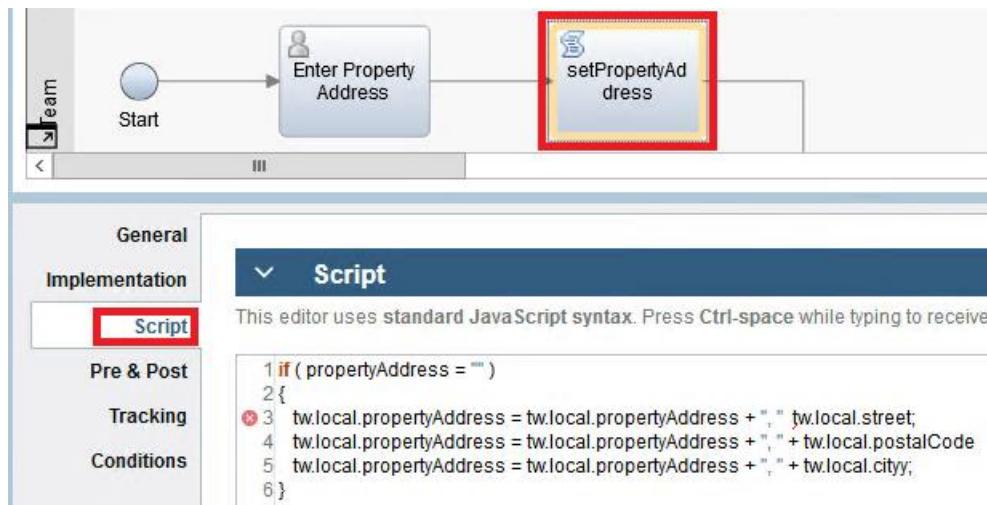


81. Click the **Finish Editing** button and verify that the amount of validation errors has decreased.



82. Click the **setPropertyAddress** activity to resolve the remaining reported error.

83. Open the **Script** tab to see the implementation.



The red X marks the line with the error. Within the line the error is underlined in red.

| 3 | tw.local.propertyAddress = tw.local.propertyAddress + ", " + tw.local.street;

84. Add the missing + in line 3 between ", " and **tw.local.street**;

```
1 if ( propertyAddress == "" )
2{
3  tw.local.propertyAddress = tw.local.propertyAddress + ", " + tw.local.street;
4  tw.local.propertyAddress = tw.local.propertyAddress + ", " + tw.local.postalCode
5  tw.local.propertyAddress = tw.local.propertyAddress + ", " + tw.local.city;
6}
```

85. Note that this error is resolved now, but there are two other lines marked now, line 1 with another error and line 5 with a warning.

86. Fix those new errors and proceed until all issues in this script are resolved.

2 {
3 tw.local.propertyAddress = tw.local.propertyAddress + "," + tw.local.street;
4 tw.local.propertyAddress = tw.local.propertyAddress + "," + tw.local.postalCode;
5 tw.local.propertyAddress = tw.local.propertyAddress + "," + tw.local.city;
6 }Below the code, there are filtering and search controls: 'Showing 0 of 0 items' and 'Type to filter by artifact'. A message at the bottom says 'The current project has 0 validation errors or warnings.' The footer has icons for help, list, and search, followed by '0'." data-bbox="202 123 814 384"/>

General

Implementation

Script

Pre & Post

Tracking

Conditions

Script

This editor uses standard JavaScript syntax. Press Ctrl-space while typing to receive a

```
1 if (tw.local.propertyAddress == "")  
2 {  
3   tw.local.propertyAddress = tw.local.propertyAddress + "," + tw.local.street;  
4   tw.local.propertyAddress = tw.local.propertyAddress + "," + tw.local.postalCode;  
5   tw.local.propertyAddress = tw.local.propertyAddress + "," + tw.local.city;  
6 }
```

Showing 0 of 0 items

Type to filter by artifact

The current project has 0 validation errors or warnings.

+? ≡ △ 0

Note that there are no other validation errors found by the validation, but the Script will still not work as intended. Therefore, perform the following changes:

- Edit line 1 to become

```
if ( tw.local.propertyAddress == null | tw.local.propertyAddress == "" )
```

- Edit line 3 to become

```
tw.local.propertyAddress = tw.local.street;
```

2 {
3 tw.local.propertyAddress = tw.local.street;
4 tw.local.propertyAddress = tw.local.propertyAddress + "," + tw.local.postalCode;
5 tw.local.propertyAddress = tw.local.propertyAddress + "," + tw.local.city;
6 }" data-bbox="261 550 738 678"/>

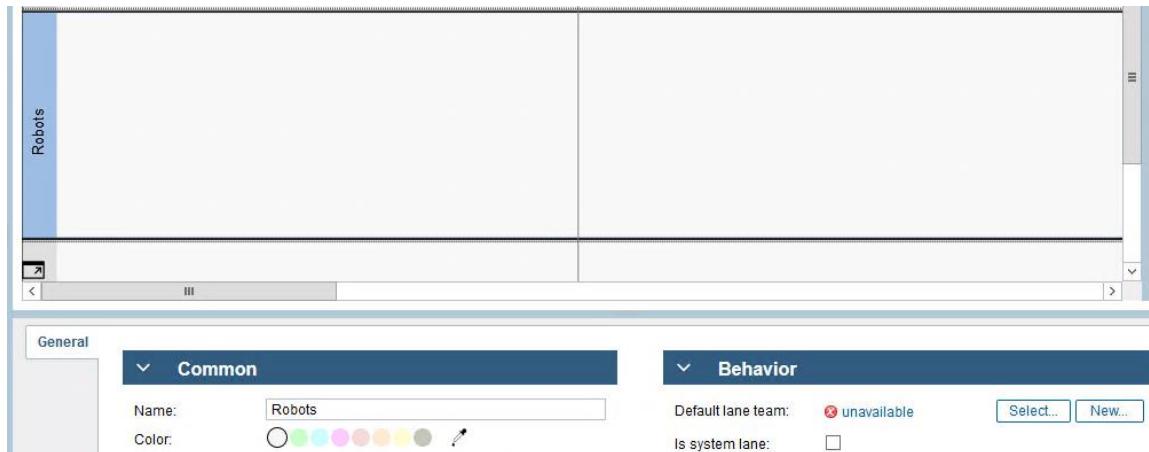
Script

This editor uses standard JavaScript syntax. Press Ctrl-space while typing to receive a

```
1 if (tw.local.propertyAddress == null | tw.local.propertyAddress == "")  
2 {  
3   tw.local.propertyAddress = tw.local.street;  
4   tw.local.propertyAddress = tw.local.propertyAddress + "," + tw.local.postalCode;  
5   tw.local.propertyAddress = tw.local.propertyAddress + "," + tw.local.city;  
6 }
```

Check the entire process if you can find any other issues.

87. Select the Robots lane and note that the Default lane team is not set.



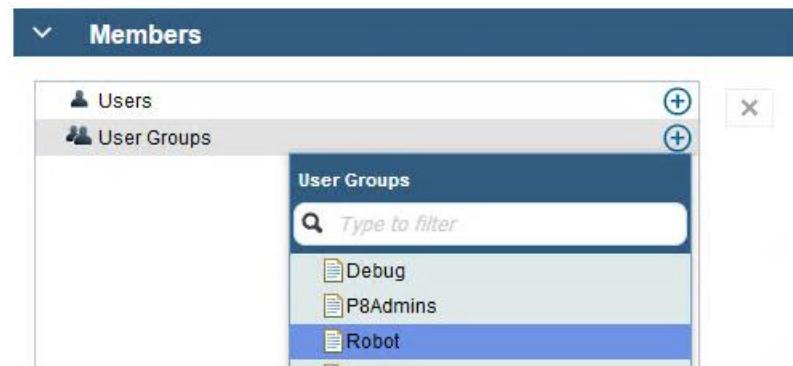
88. Click **New...** to create a new Team.

89. Enter the name **Robots** and click **Finish**.

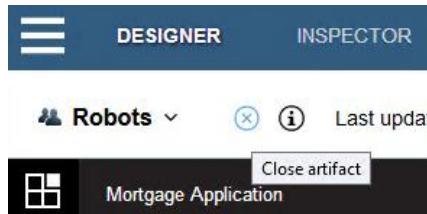
90. Under **Members** click the "+" sign next to **User Groups**.



91. Select **Robot**.



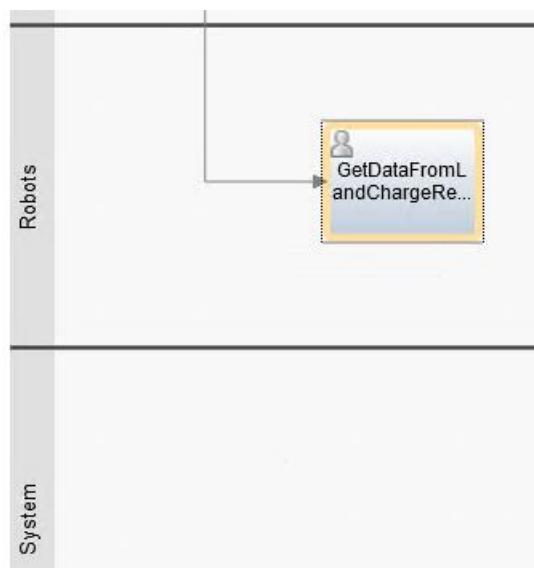
92. Save your work by clicking **Finish Editing** and close the Robots Team by clicking the x.



93. Back in the **Request Property Evaluation** process verify that lane **Robots** now does have Team **Robots** assigned.



94. The next issue to resolve is that activity **GetDataFromLandChargeRegister** is in the **System** lane. **Move it up** into the **Robots** lane by using **Drag & Drop**.

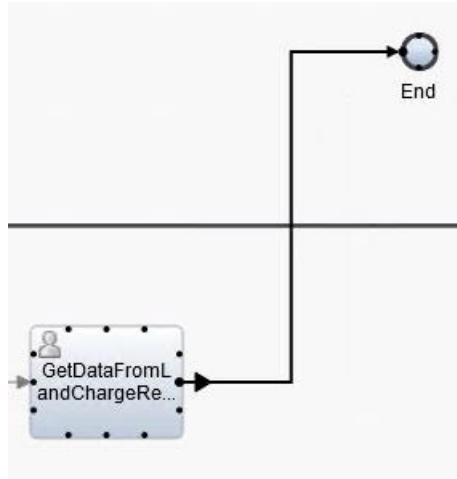


95. Connect activity **GetDataFromLandChargeRegister** with the **End** event.

- Hover over the right side of activity **GetDataFromLandChargeRegister** and grab the **arrow** that appears.



- Keep the **left mouse button pushed** and move the mouse over the **End** event.

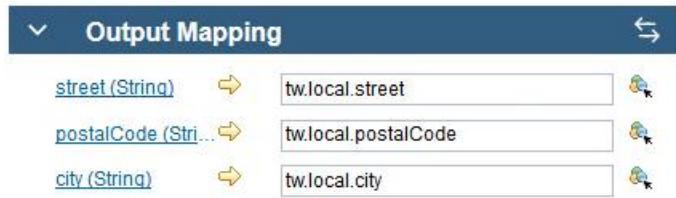


- Release the left mouse button and verify that activity **GetDataFromLandChargeRegister** is connected with the **End** event.

96. Select activity **Enter Property Address** and open the **Data Mapping** tab. Notice that there are warnings in the **Output Mapping** section.



97. Fix those warnings.



98. Click **Finish Editing** to finally save your work.

After you have successfully completed all of these steps in VM 3 – Workflow, verify your work by completing the steps in the next chapter, named [Prepare the process implementation – Verification Instructions](#).

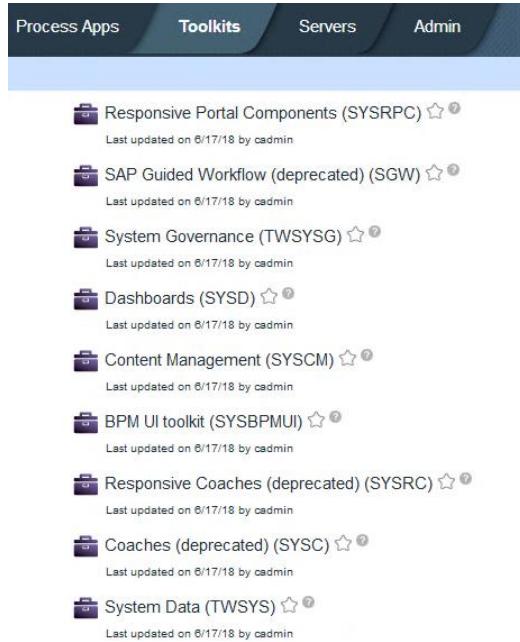
4.3 Prepare the process implementation – Verification Instructions

To verify successful completion of this exercise, verify that you have completed the following steps:

1. You have successfully imported the **Mortgage_Application - v0.1.twx** into **Workflow Center** by resolving the **System Maintenance Monitor** errors and warnings by:
 - a. Reviewing the relevant information in **Process Admin Console** on the **System Maintenance Status** page and in **SystemOut.log**.
 - b. Used the **Performance Dashboard** to identify two snapshots that can be removed from system.
 - c. Deleted Process Application **Test PA** and all its snapshots from Workflow Center. Verify that the result looks as follows:

Process Application	Last updated	Updates
Mortgage Application (MA)	6/22/18	1
Procurement Sample (STPPS1)	6/17/18	1
Hiring Sample Advanced (HSAV1)	6/17/18	1
Discover BPM UI Sample (DBPMUIS)	6/17/18	1
Hiring Sample (HSS)	6/17/18	1
Performance (SYSPERFDB)	6/17/18	1
Process Portal (SYSRP)	6/17/18	1
Heritage Process Portal (deprecated) (TWP)	6/17/18	1

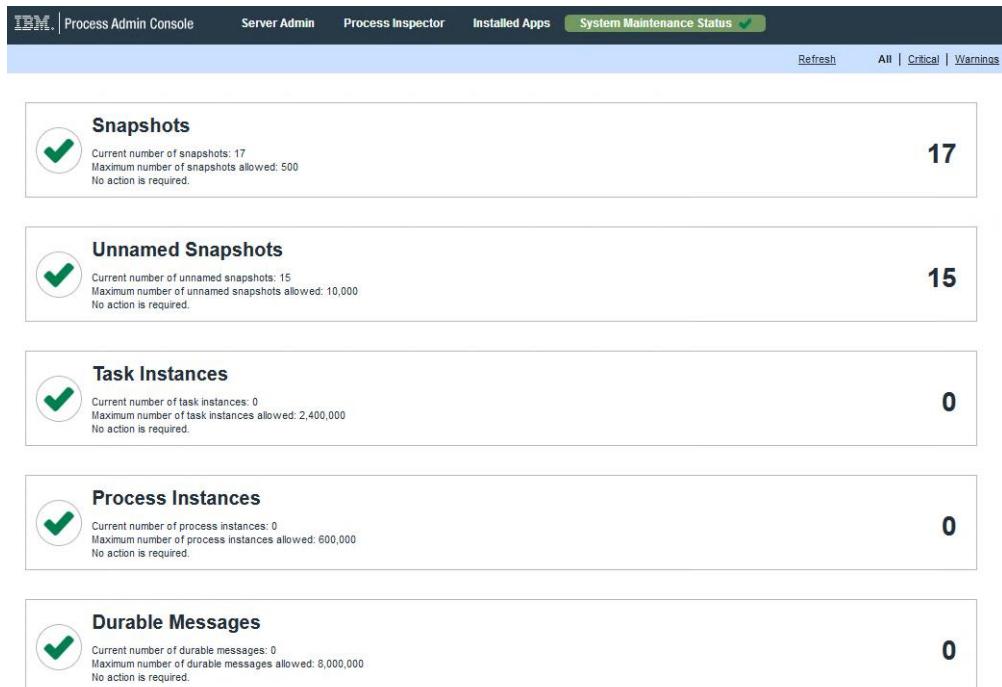
- d. Deleted Toolkit **Test Toolkit** and all its snapshots from Workflow Center.
 Verify that the result looks as follows:



The screenshot shows the SAP Workflow Center interface with the 'Toolkits' tab selected. A list of deleted toolkits is displayed, each with a trash icon, a name, a star rating, and a refresh icon. All entries were last updated on 8/17/18 by cadmin.

- Responsive Portal Components (SYRPC) ★ ⓘ
- SAP Guided Workflow (deprecated) (SGW) ★ ⓘ
- System Governance (TWSYSG) ★ ⓘ
- Dashboards (SYSD) ★ ⓘ
- Content Management (SYSCM) ★ ⓘ
- BPM UI toolkit (SYSBPMUI) ★ ⓘ
- Responsive Coaches (deprecated) (SYSRC) ★ ⓘ
- Coaches (deprecated) (SYSC) ★ ⓘ
- System Data (TWSYS) ★ ⓘ

2. Restored the default values for the **System Maintenance Monitors**, restarted the server and reviewed the default values. Verify the result looks as follows:



The screenshot shows the System Maintenance Status page with several monitors listed. Each monitor has a green checkmark icon, current value, maximum allowed, and a note indicating no action is required.

Monitor Type	Current Value	Max Allowed	Status
Snapshots	17	500	✓
Unnamed Snapshots	15	10,000	✓
Task Instances	0	2,400,000	✓
Process Instances	0	600,000	✓
Durable Messages	0	8,000,000	✓

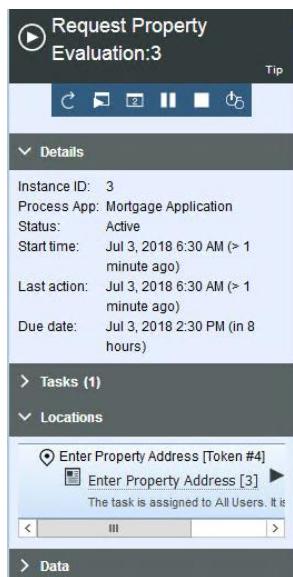
3. Reviewed and resolved all validation errors in the imported **Mortgage Application**.
4. Prepared the **Mortgage Application** for further implementation. Verify that Designer does not report any validation errors or warnings, and that you have resolved all validation errors that are not yet covered by the Validation feature. Also verify that you have adapted the activity **setPropertyAddress** so that it can work.
5. To verify the **Request Property Evaluation** process can be successfully executed as intended, follow these steps:
 - a. Open process **Request Property Evaluation** with Designer.
 - b. Click the **Run** button.



- c. Note that Designer automatically switches into the **Inspector** view.

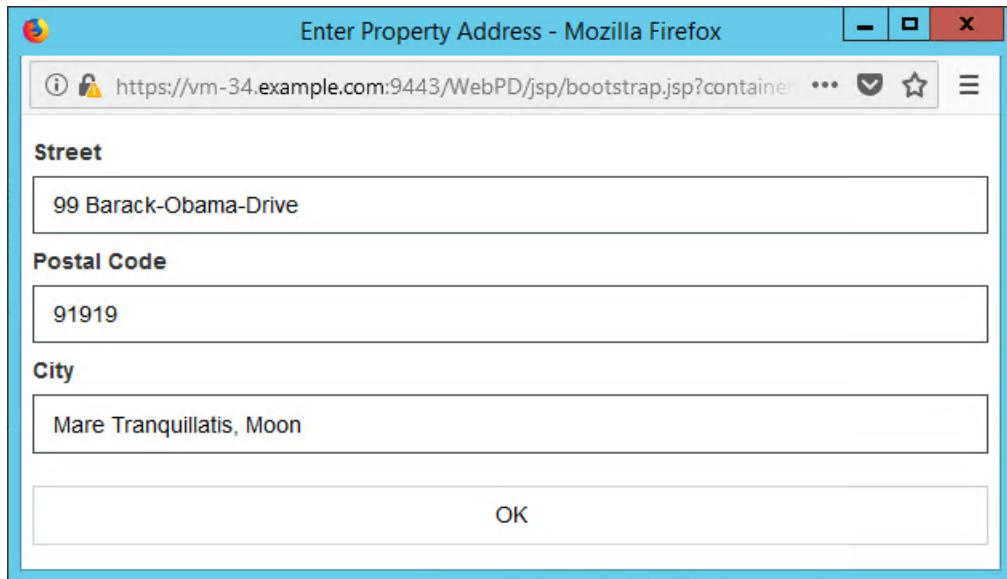


- d. On the **right-hand side** you can now find details about the active process instance.



- e. In the **Locations** section click the **arrow** to start the User Task **Enter Property Address**.
- f. The **Enter Property Address** pop-up opens after a while. Enter there the following data:

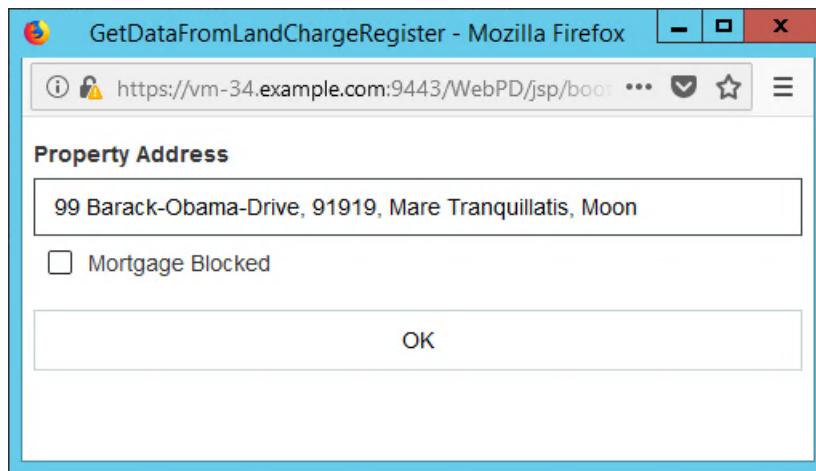
Street: **99 Barack-Obama-Drive**
 Postal Code: **91919**
 City: **Mare Tranquillatis, Moon**



- g. Click **OK**, the message **The service has finished** appears. Close the pop-up window.
- h. By closing the pop-up window, the instance details in Inspector are refreshed and on the diagram the instance navigates to activity **GetDataFromLandChargeRegister**. In the instance details pane in section **Locations** click the arrow to start the User Task **GetDataFromLandChargeRegister**.



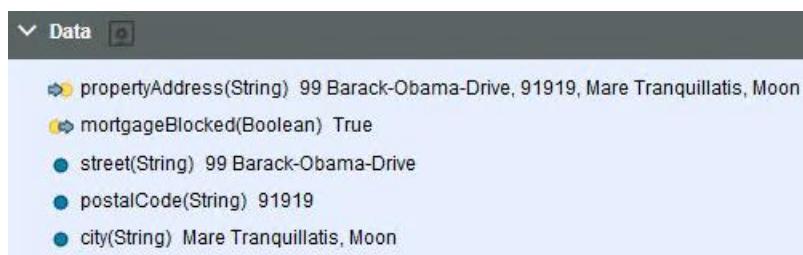
- i. The **GetDataFromLandChargeRegister** pop-up opens.



- j. Check the **Mortgage Blocked** check box and click **OK**.

Mortgage Blocked

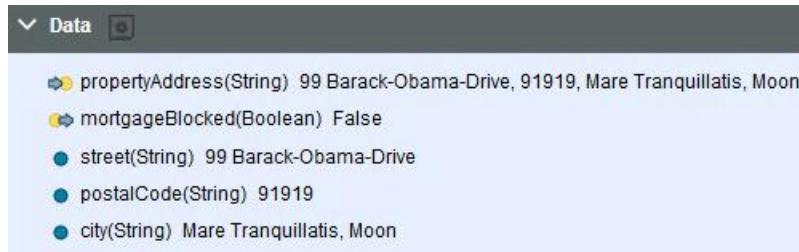
- k. Close the pop-up window after the message **The service has finished**. appeared.
- l. The instance continues to navigate to the **End** node and **completes**. The details about the completed process instance are updated, too. Expand section **Data** and verify that you got the following results.



Variable	Type	Value
propertyAddress(String)		99 Barack-Obama-Drive, 91919, Mare Tranquillatis, Moon
mortgageBlocked(Boolean)		True
street(String)		99 Barack-Obama-Drive
postalCode(String)		91919
city(String)		Mare Tranquillatis, Moon

If you get different results, carefully review the steps in the step-by-step instructions again to find which step you might have missed. Especially take a look at steps 84-87.

6. Repeat the steps in 5) again. In step j. leave the check box Mortgage Blocked unchecked. Verify that you get the following results.



The screenshot shows a software interface with a dark header bar containing a dropdown arrow, the word "Data", and a small square icon. Below this is a light blue panel listing five items, each preceded by a colored circular icon:

- yellow circle: propertyAddress(String) 99 Barack-Obama-Drive, 91919, Mare Tranquillatis, Moon
- blue circle: mortgageBlocked(Boolean) False
- teal circle: street(String) 99 Barack-Obama-Drive
- teal circle: postalCode(String) 91919
- teal circle: city(String) Mare Tranquillatis, Moon

If you get different results, carefully review the steps in the step-by-step instructions again to find which step you might have missed. Especially take a look at steps 84-87.

With this you have successfully completed the verification of your process.

4.4 Prepare the process implementation – Summary

In this exercise you have:

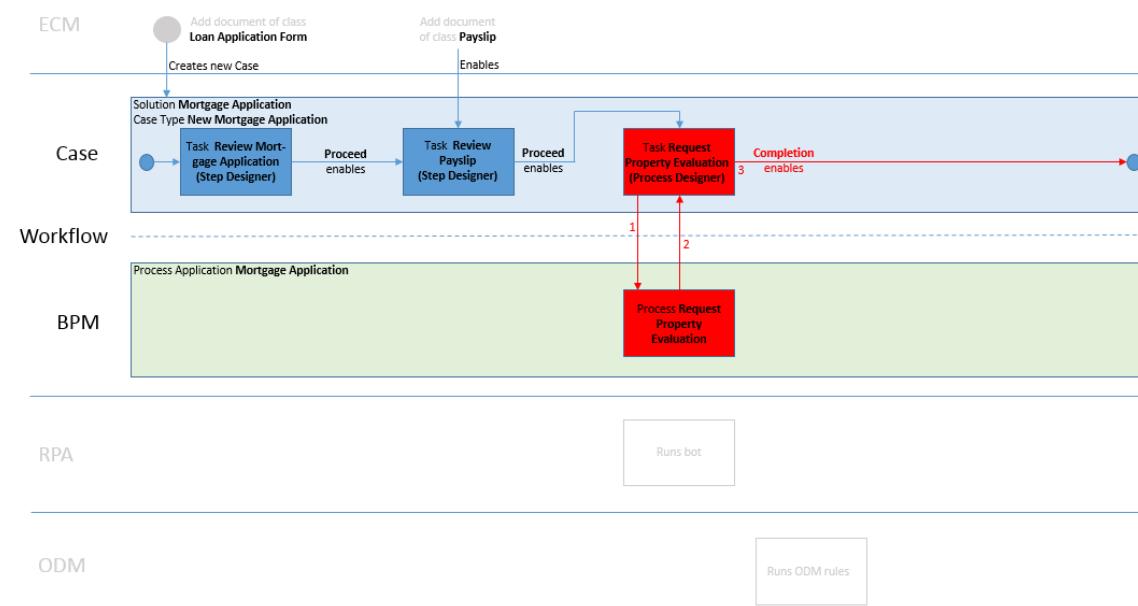
1. Started to explore the Business Process Management feature of IBM Business Automation Workflow. More to come in the next exercises.
2. Worked with some of the tools of the BPM capability in Workflow, namely:
 - a. **Workflow Center**
 - b. **Process Admin Console**
 - c. **Process Designer**
3. Learned about new features of the BPM capability in Workflow, namely:
 - a. The **System Maintenance** feature
 - b. The **Performance Dashboard** feature
 - c. The enhanced **Validation** feature
4. Started to implement your Process Application **Mortgage Application**

5 Exercise: Complete the "Request Property Evaluation" implementation

5.1 Complete the "Request Property Evaluation" implementation – Introduction

In this exercise you will complete the implementation of the **Request Property Evaluation** process that you have started in exercise 4. Then you will further extend the Case solution **Mortgage Application** that you have started in exercises 2 and 3 by integrating the **Request Property Evaluation** process into your Case solution.

From the complete Business Automation Workflow solution, you will implement / modify the parts in red in this exercise:



As part of this exercise you will get introduced into the following features of Workflow:

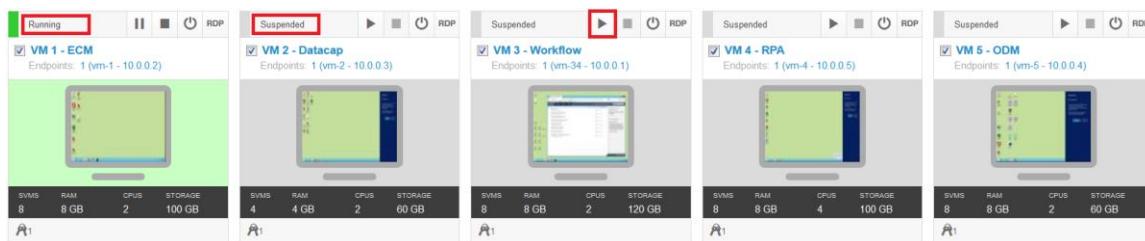
- Modeling of simple **Processes**, **Client-Side Human Services** and **Coaches** in the BPM feature of Workflow
Processes contain your business logic. Client-Side Human Services (CSHS) do implement the logic to execute when a user works on a User Task that is contained in a process.
Coaches are the forms / UIs you can create for business end users to view data, input new data and change existing data.

b. Integrating Processes and Case solutions

You will learn how to re-use Processes created with the Business Process Management feature inside a Case solution and how to map data between them.

Note: You only can re-use a process from a Case solution when the **name of the Case solution and the name of the Process Application are identical**. In addition, the **snapshot** from where you want to take the process **must be active**.

For this exercise you will require to have the previous exercises of the Workflow sub-scenario successfully completed. Make sure that in your environment **VM 1 – ECM** and **VM 3 – Workflow** are running. If this is not the case, click the **Run this VM** button to start them (start VM 1 first, VM 3 second, make sure VM 1 is successfully connected to the network before starting VM 3). All other VMs must be suspended. If one of them is running, pls. suspend them now.



While this exercise you will only work with **VM 3 – Workflow**. Access this VM through the **Browser** or by clicking **RDP** to connect to it using a Remote Desktop Connection.

You are now ready to start this exercise. As for every exercise, you have two options:

- If you are new to Workflow or prefer to follow the step by step instructions continue with the next chapter [Step by Step Instructions](#).
- If you are an experienced BPM / Workflow person you can use the information from this introduction chapter to complete the exercise. Continue to read the following high-level instructions for completing this exercise.

In this exercise you will work with the following tools on VM 3 - Workflow:

Tool	Location (Firefox/Chrome Bookmarks Toolbar) / URL
Workflow Center	Workflow → IBM Workflow Center / https://vm-34.example.com:9443/ProcessCenter
Process Admin Console	Workflow → Process Admin Console / https://vm-34.example.com:9443/ProcessAdmin
Process Designer	Launch Process Designer from within Workflow Center
Case Builder	Workflow → Case Builder / https://vm-34.example.com:9443/CaseBuilder
Content Navigator – Mortgage Application	CPE → Mortgage Application Desktop / https://vm-

Desktop	1.example.com:9444/navigator/?desktop=MA
Case Client	Workflow → IBM Case Client / https://vm-34.example.com:9443/navigator/?desktop=baw
Process Portal	Firefox: Workflow → Process Portal / Google Chrome: Process Portal / https://vm-34.example.com:9443/ProcessPortal

For these tools, you will require the following IDs and passwords:

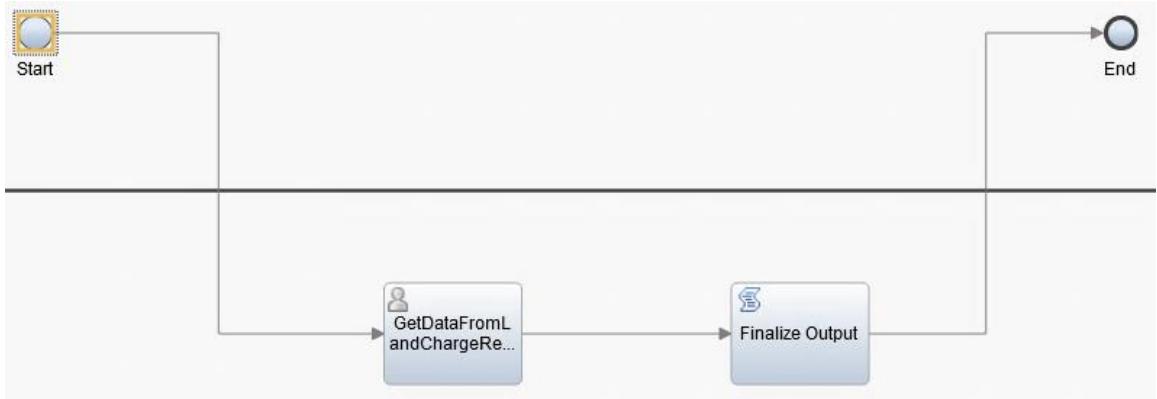
Tool	User ID	Password
Windows	Administrator	passw0rd
Workflow Center, Process Admin Console, Process Designer, Case Builder, Content Navigator – Mortgage Application Desktop, Case Client, Process Portal (Firefox)	P8Admin	Think4me
Process Portal (Google Chrome)	bot1	passw0rd

Follow these high-level steps to complete this exercise:

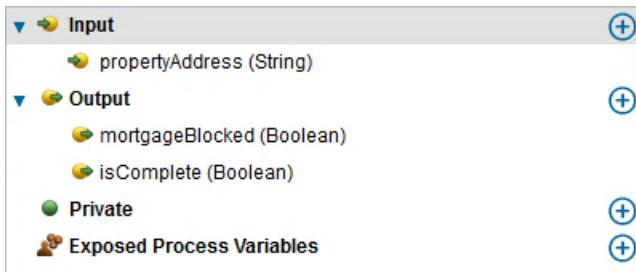
- Open process **Request Property Evaluation** in Process Designer

This process is not yet ready for the intended use in the context of the Case solution **Mortgage Application**. The **property address** will be provided as **input data** from the Case solution. The Case solution will expect as **output data** of this process a **Boolean** indicating if for the given property address there are already entries in the land charge register and another **Boolean** indicating that this process has run. The land charge register is an external application. For the purpose of this scenario we assume that it has no API, only a UI, means we can't integrate that service programmatically at the moment, a human has to complete that work.

Therefore, restructure the process to implement the following process logic:



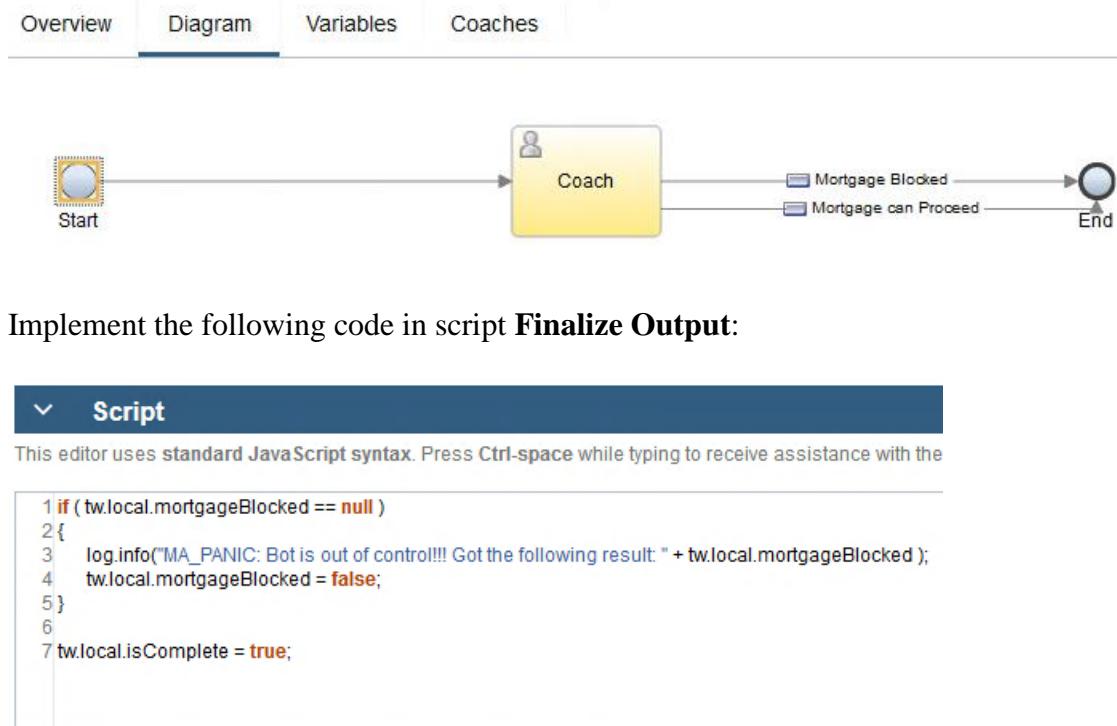
- Refine the **process variables** as follows:



- Remove CSHS Enter Property Address from the PA.
- Add a default launch UI with name **launch Request Property Evaluation process** to enter the **propertyAddress**.
- Modify the CSHS **GetDataFromLandChargeRegister** to look as follows:



Set variable **mortgageBlocked** to **true** when the button **Mortgage Blocked** is clicked.



- Implement the following code in script **Finalize Output**:

Script

This editor uses standard JavaScript syntax. Press Ctrl-space while typing to receive assistance with the

```

1 if (tw.local.mortgageBlocked == null)
2 {
3     log.info("MA_PANIC: Bot is out of control!!! Got the following result: " + tw.local.mortgageBlocked );
4     tw.local.mortgageBlocked = false;
5 }
6
7 tw.local.isComplete = true;

```

- Save your work, create a new snapshot, activate it and make it default.

You have now completed the implementation of the process, activated it and made it the default snapshot. You are now ready to use your process from within the Case solution.

Note: You only can re-use a process from a Case solution when the **name of the Case solution and the name of the Process Application are identical**. In addition, the **snapshot** from where you want to take the process **must be active**.

- Open the Case Solution **Mortgage Application** and add two new properties named **Is Mortgage Blocked** and **Is Property Evaluation Complete**. Select for both Type **Boolean**. Default value for the first one is **True**, for the second **False**.
- Add these two new properties to case type **New Mortgage Application**. Select **Hidden** for both new properties.
- Add a new case task of type **Task with Existing Process**. Name it **Request Property Evaluation** and make it **Required**.

The option **Task with Existing Process** is enabled because in the previous exercise you have imported a Process Application **with the same name** as the

Case solution and because in this exercise you have previously created and **activated a snapshot** of this Process Application. Therefore, you are now able to select an existing process from **that active snapshot** of Process Application **Mortgage Application**.

- Define the following **preconditions** for this task:

Preconditions

What preconditions must be met for this task to start?

A property condition is met

Add Condition Delete All Conditions			Match: All <input type="button" value="▼"/>
Property	Operator	Value	
Is Application Reviewed	is equal	True	<input type="button" value="▼"/> AND
Is Payslip Reviewed	is equal	True	<input type="button" value="▼"/>

- Select process **Request Property Evaluation** for this task.
- Map the properties as follows:

Property map:

```
propertyAddress = Property Address (string, input)
mortgageBlocked = Is Mortgage Blocked (boolean, output)
isComplete = Is Property Evaluation Complete (boolean, output)
```

- Finish the creation of this task.

Note the **process icon** on the top right side when **hovering over the task**. Click the process icon to open the process with **Process Designer**.

Best Practice: For future edits to a Process that is linked to a Case Task, open Process Designer from the Case task instead of going through Workflow Center.

- From the **shared box folder** (see bookmark in Firefox) in sub-folder **3. Workflow sub-scenario** download **Land_Property_Register_Simulator - v1.0.twx** and import it into Workflow Center.

After you have successfully completed all these steps in VM 3 - Workflow, verify your work completing the steps in the chapter named [Complete the "Request Property Evaluation" implementation – Verification Instructions](#).

5.2 Complete the "Request Property Evaluation" implementation – Step by Step Instructions

Follow these step by step instructions to prepare the process implementation:

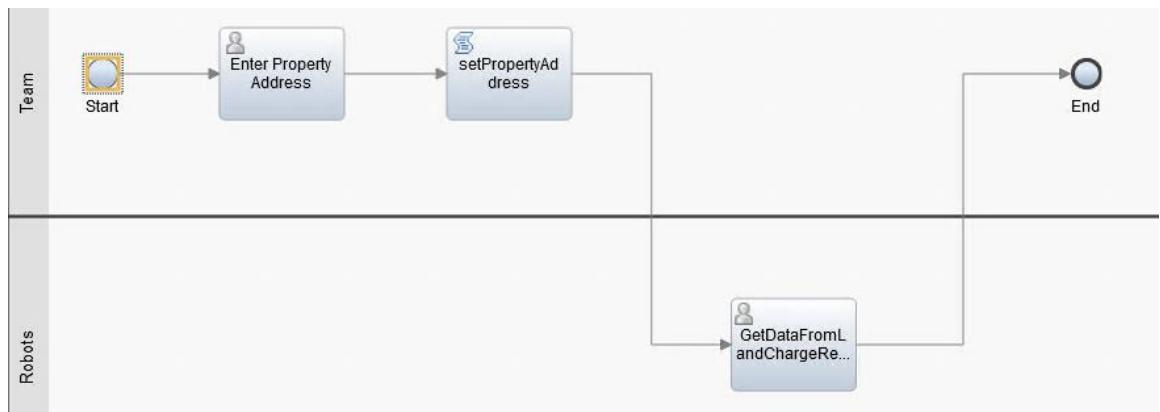
1. Connect to **VM 3 – Workflow** as described in the introduction.
2. Open **Firefox**, expand the **Workflow** folder and open the **IBM Workflow Center** link.
3. Enter User Name **P8Admin** and Password **Think4me** if not filled out. Click **Log In**.
4. Close the **Getting Started** page in case it appears.
5. Open Process Application **Mortgage Application (MA)** in Designer.



6. Under **Exposed Items** click on process **Request Property Evaluation** to open it.

A screenshot of the 'Exposed Items' section in the process designer. At the top, there's a dark blue header bar with a white downward arrow icon and the text 'Exposed Items'. Below the header, a message says 'The following items can be started by authorized users.' Under the heading 'Processes', it says 'The team specified in the Expose to start setting can launch instances of these processes.' Below this, there's a link labeled 'Request Property Evaluation' with a small icon to its left. The entire screenshot is framed by a red border.

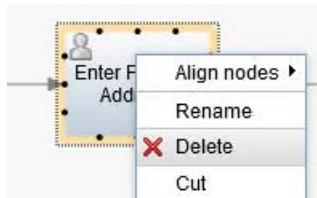
7. The current **definition** of this process opens.



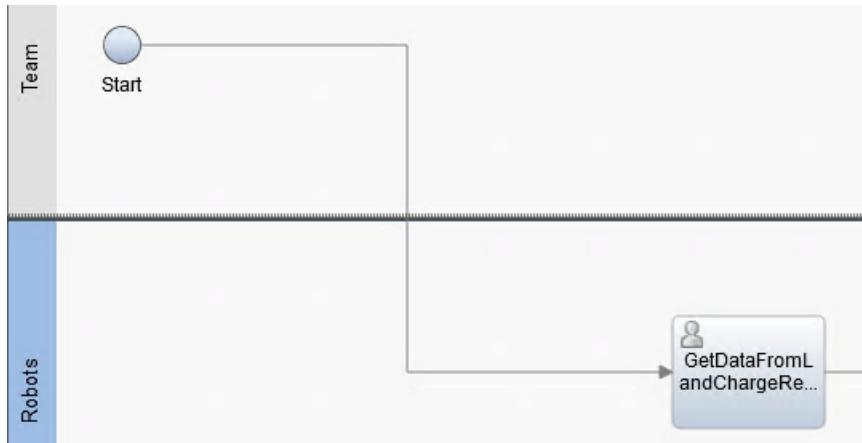
This process is not yet ready for the intended use in the context of the Case solution **Mortgage Application**. The **property address** will be provided as **input data** from the Case solution. The Case solution will expect as **output data** of this process a **Boolean** indicating if for the given property address there are already entries in the land charge register and another **Boolean** indicating that this process has run. The land charge register is an external application. For the purpose of this scenario we assume that it has no API, only an UI, means we can't integrate with that service programmatically at the moment, a human has to complete that work.

We therefore have to restructure this process. First delete no longer needed pieces of the Process Application.

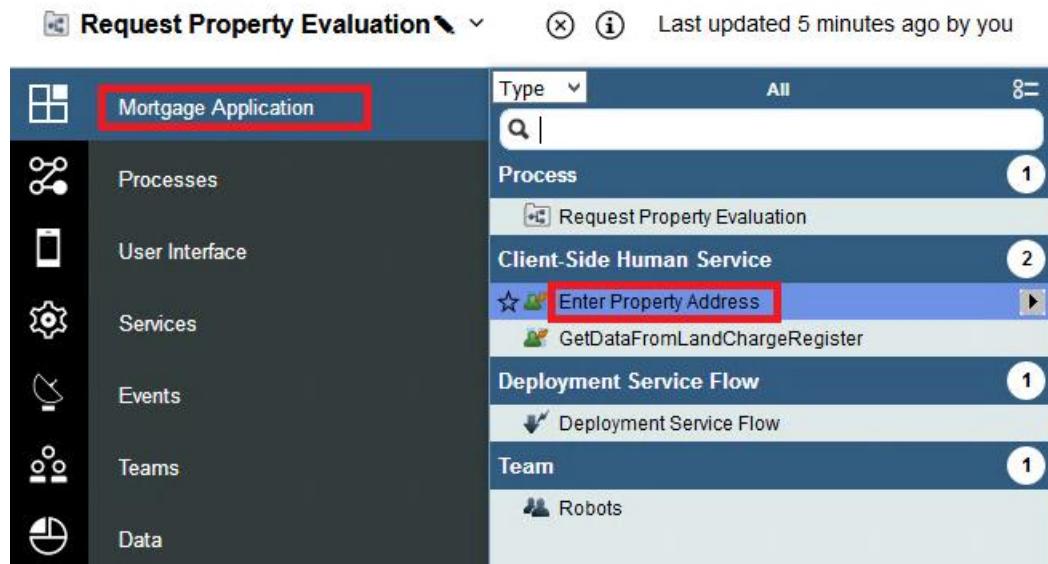
8. Right-click the **Enter Property Address** activity and select **Delete**.



9. Right-click the **setPropertyAddress** activity and select **Delete**.
10. Connect the **Start** event and the **GetDataFromLandChargeRegister** activity.



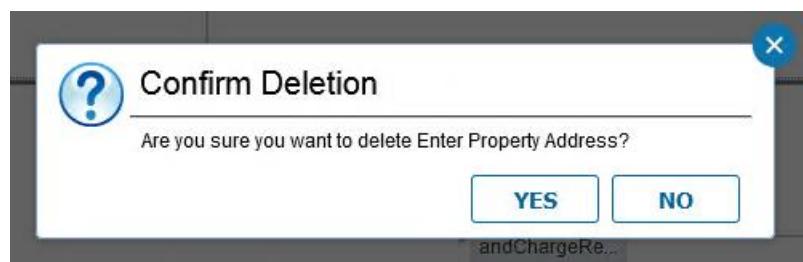
11. On the left-hand side click on **Mortgage Application** to see all artefacts of this Process Application. Right-click on **Enter Property Address**.



12. Click **Delete**.



13. The **Confirm Deletion** dialog opens. Check that you selected the correct artefact **Enter Property Address** for deletion and click **YES**.



14. Click on **Variables** to open this tab. Select variable **street** and click the **X** to delete this variable.

The screenshot shows the 'Variables' tab selected in the top navigation bar. The main area displays a list of variables under categories: Input, Output, Private, and Exposed Process Variables. The 'street (String)' variable under the Private category is highlighted with a red box. To its right, there are four icons: a plus sign (+), an upward arrow (↑), a downward arrow (↓), and a red-bordered 'X' icon. A search bar at the top right says 'Type to filter'.

15. Also delete the other private variables **postalCode** and **city**.

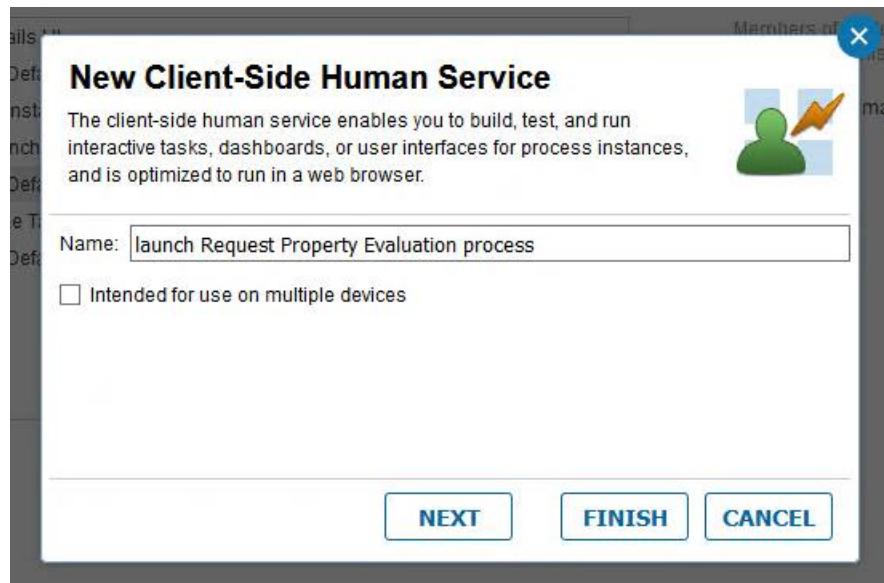
This screenshot shows the same 'Variables' tab after the 'street' variable has been deleted. The 'street (String)' entry is no longer present in the Private category. The other variables ('postalCode (String)' and 'city (String)') have also been removed from the list.

You now have removed all artefacts that are no longer needed for the intended use in the context of the Case solution **Mortgage Application**. For usability of the process, next step is to add new artefacts and modify the automatically generated Coaches.

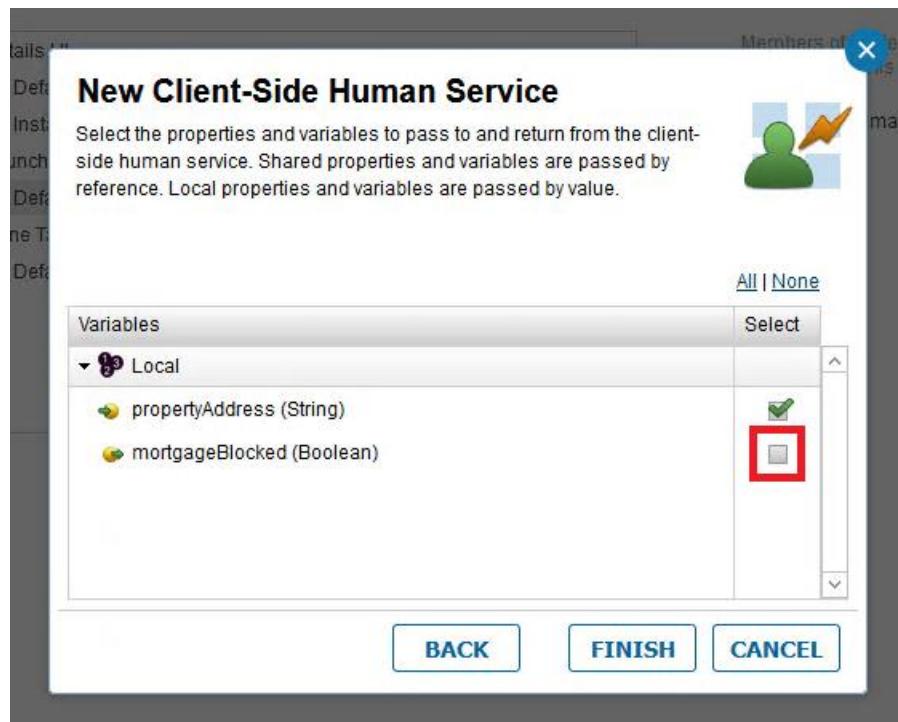
16. Open the **Views** tab. Click under **Launch UI** on **Default**, then on **New....**

The screenshot shows the 'Views' tab selected in the top navigation bar. The left panel displays a tree structure of views: Details UI, Launch UI (which is expanded to show Default and Instance Owners), and Inline Tasks. The 'Default' view under Launch UI is highlighted with a red box. The right panel, titled 'User Interface: Launch UI', contains a description: 'Members of the team associated with the expose to start option in the Overview page will see this user interface in Process Portal after a process is launched.' It includes fields for 'Client-Side Human Service' (set to '<none>'), 'Update...', and a red-bordered 'New...' button. Below these fields is a 'Select...' button and a 'X' button.

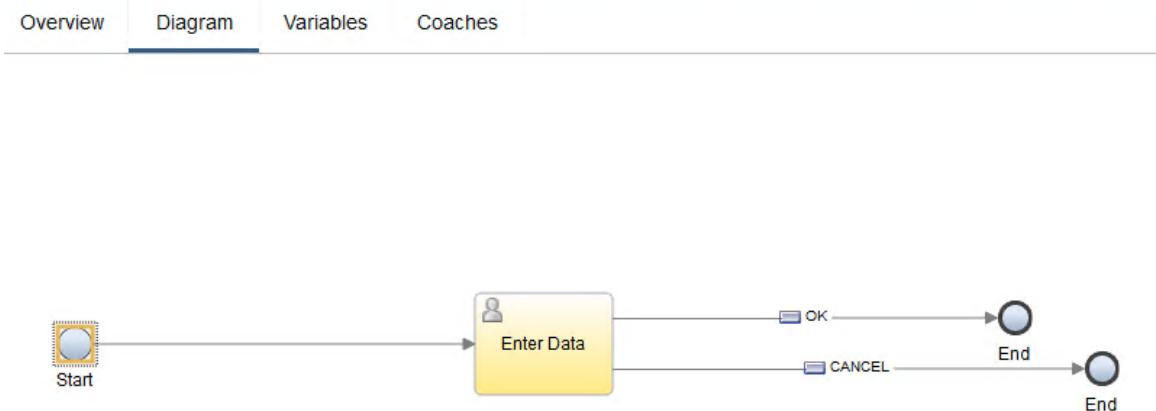
17. In the **New Client-Side Human Service** dialog enter name **launch Request Property Evaluation process** and click **NEXT**.



18. De-select **mortgageBlocked** and click **FINISH**.



19. The **Diagram** of the new Client-Side Human Service (CSHS) opens.



20. Click **Coaches** to open this tab. Click on the **Enter Data** Coach to view the automatically generated UI.

The screenshot shows the 'Coaches' tab selected in the top navigation bar. On the left, there is a sidebar with a list item 'Enter Data' highlighted with a red box. The main area is titled 'Property Address' and contains three input fields: 'OK' (top), 'OK' (middle), and 'CANCEL' (bottom). The 'OK' middle field has a faint watermark 'OK' over it. To the right of the fields are 'OK' and 'CANCEL' buttons.

Because you will use this UI only for testing purposes, no further changes are needed here.

21. Click **Finish Editing** to save your work.



22. Click the **x** to close the CSHS.



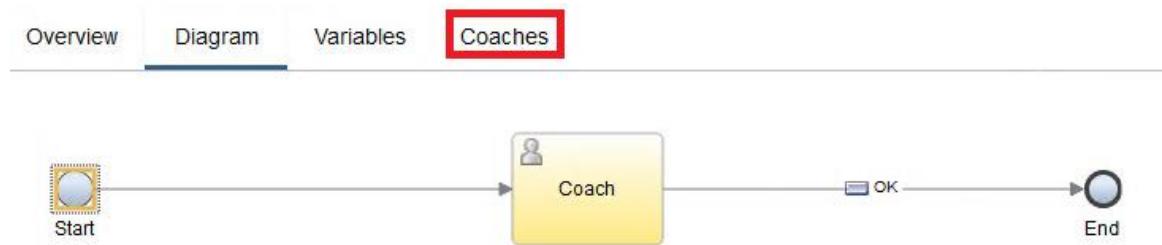
23. Back in the process editor, verify that the new CSHS is used as default launch UI.

24. Switch back to the **Definition** tab and select activity

GetDataFromLandChargeRegister. In the properties pane select the **Implementation** tab.

25. In the **Implementation** section click on **GetDataFromLandChargeRegister** to open this CSHS.

26. The **Diagram** tab of this CSHS opens. Click on **Coaches** to modify the UI the business user will see.

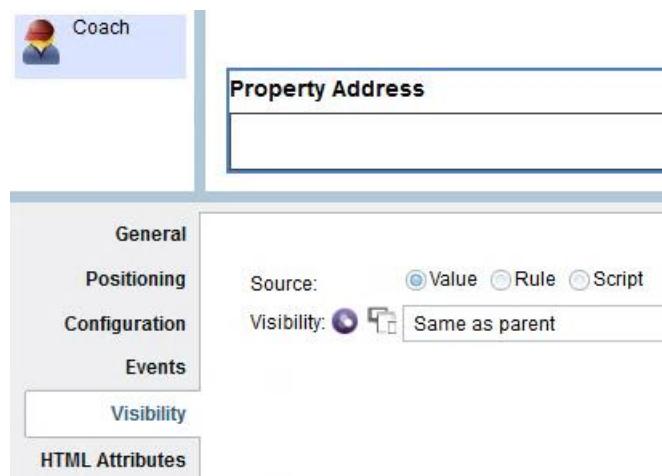


27. Click on **Coach** to see the current implementation of this UI.

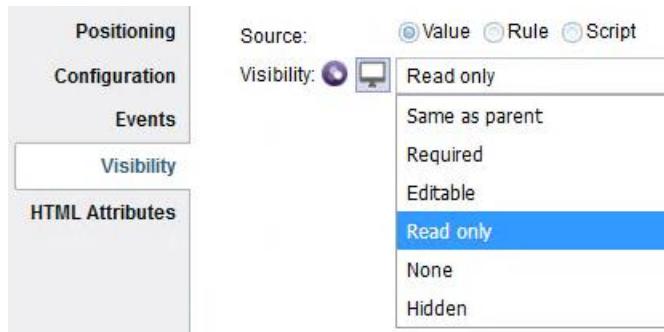


Note that the **Property Address** field is editable. The business user should not be able to modify the Property Address, it is required to make it read-only. In addition, the requirement is to have two buttons in this UI so that the user can select between **Mortgage Blocked** and **Mortgage can Proceed**.

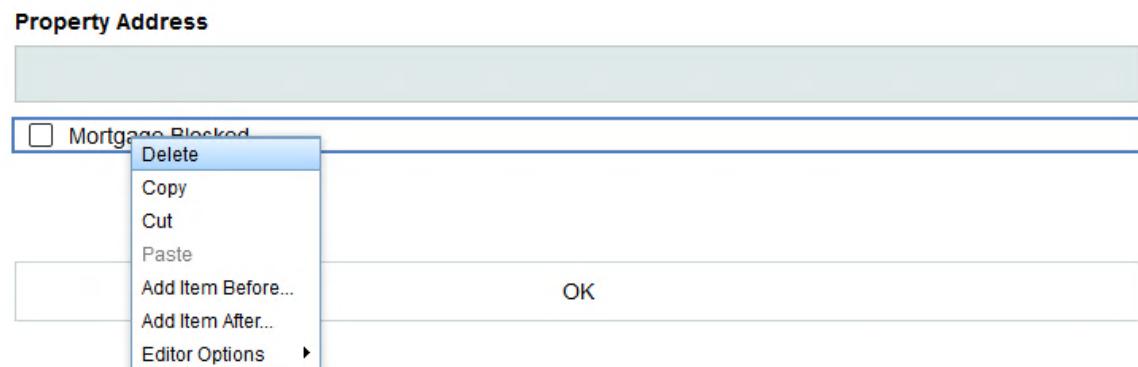
28. Click on field **Property Address**. In the properties pane select tab **Visibility**.



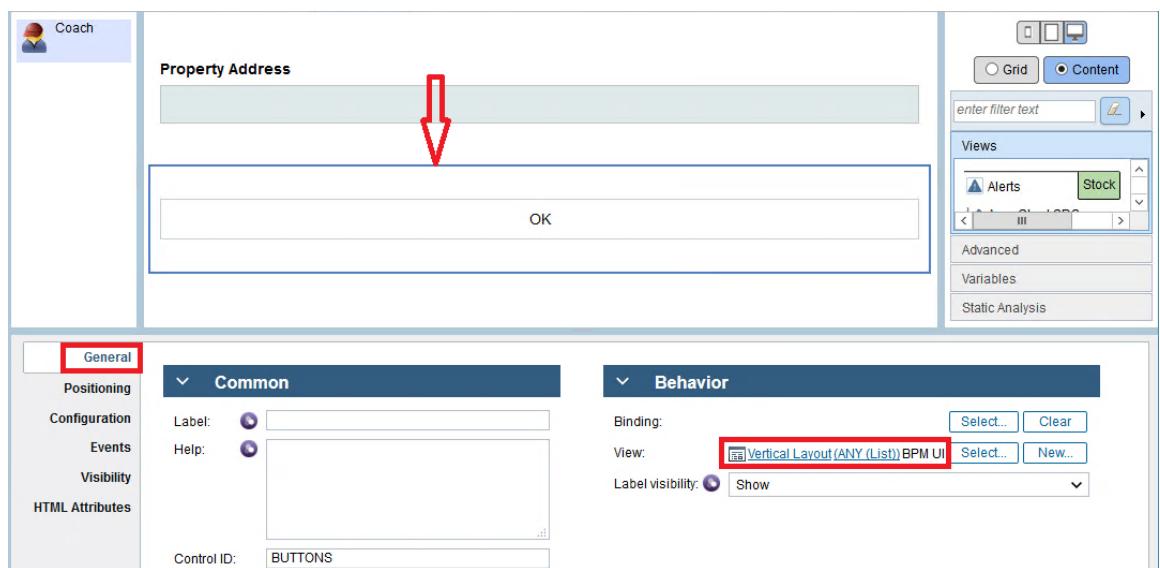
29. In the drop-down box for **Visibility** select **Read only**.



30. Note that the **Property Address** field is greyed out now. Right-click on the **Mortgage Blocked** field and select **Delete**.



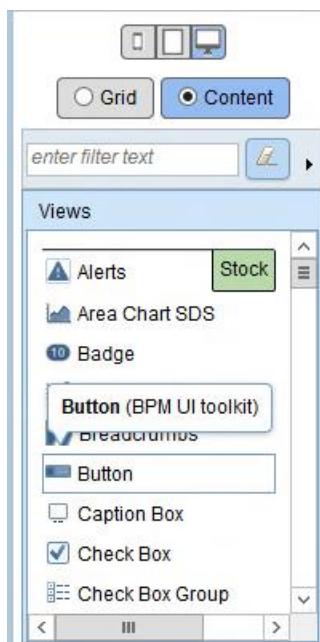
31. Select the Layout control around the **OK** button. On the **General** tab verify that View is **Vertical Layout**.



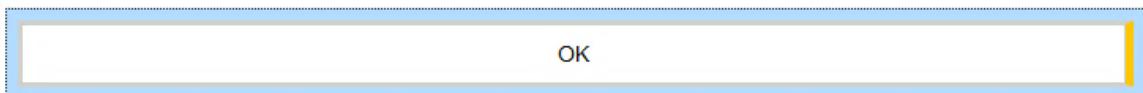
32. Click **Select...** next to **Vertical Layout**. In the **Select Library Item** box type **hor** and then select **Horizontal Layout**.



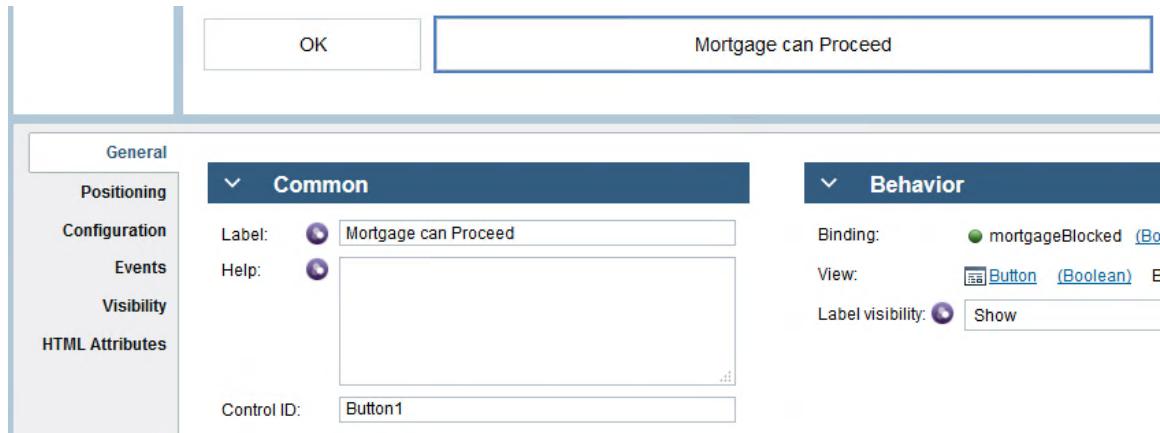
33. On the right-hand side a palette with all available **Views** is shown. Drag **Button**.



34. Drop the new Button on the right-hand side of the **OK** Button. The **yellow line** shows where the new control will be added.



35. In the properties pane enter as Label **Mortgage can Proceed**.



36. In the **Behavior** section click **Clear** for the **Binding** row to remove the binding.



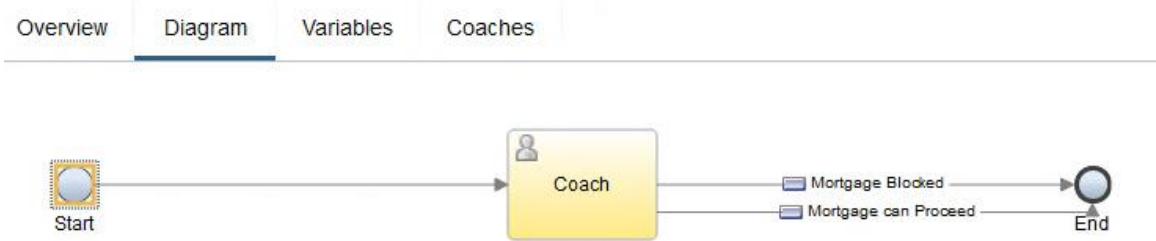
37. Select the **OK** button and change the label to **Mortgage Blocked**.



38. Select for this button the binding **mortgageBlocked**.



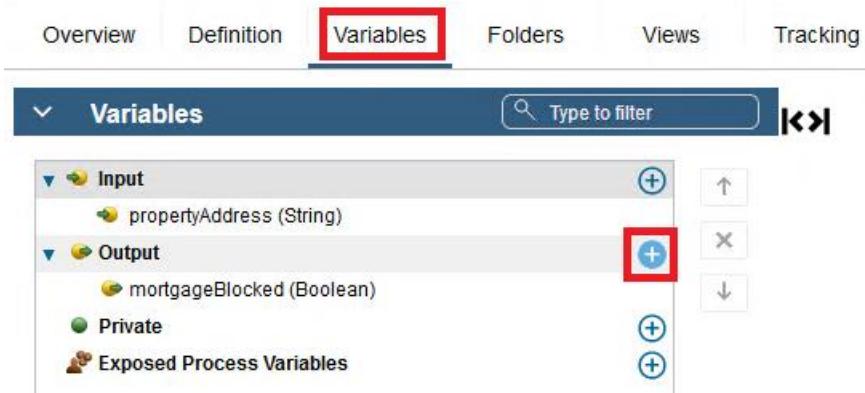
39. Switch to the **Diagram** tab and connect the Coach again with the End node. Make sure the label of the new connector is **Mortgage can Proceed**.



40. Click **Finish Editing** to save your work.

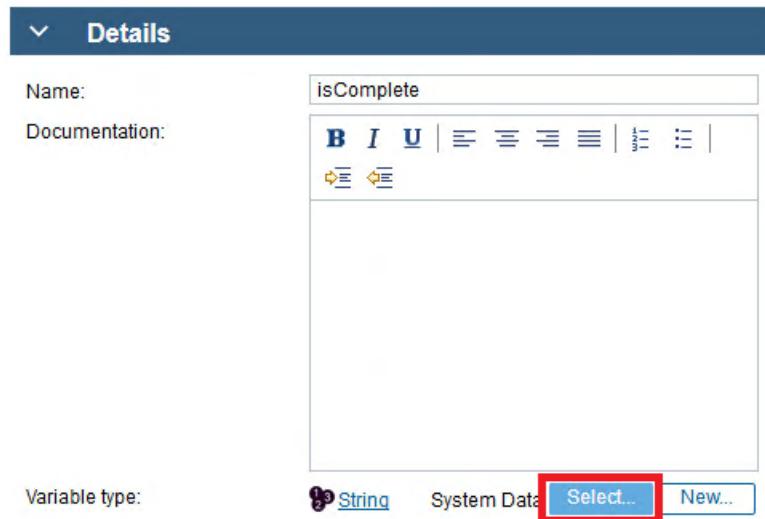
41. Click the **x** to close the CSHS **GetDataFromLandChargeRegister**.

42. In process **Request Property Evaluation** switch to the **Variables** tab and click the + next to **Output** to create a new Output variable.



43. Enter name **isComplete**.

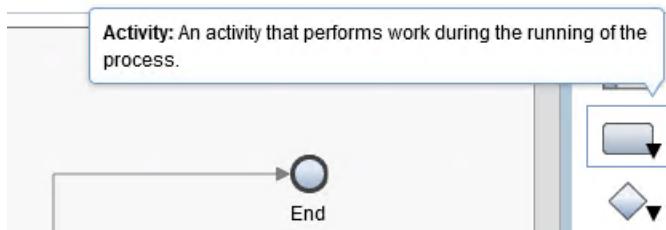
44. Click **Select...** to change the variable type.



45. Select **Boolean**.

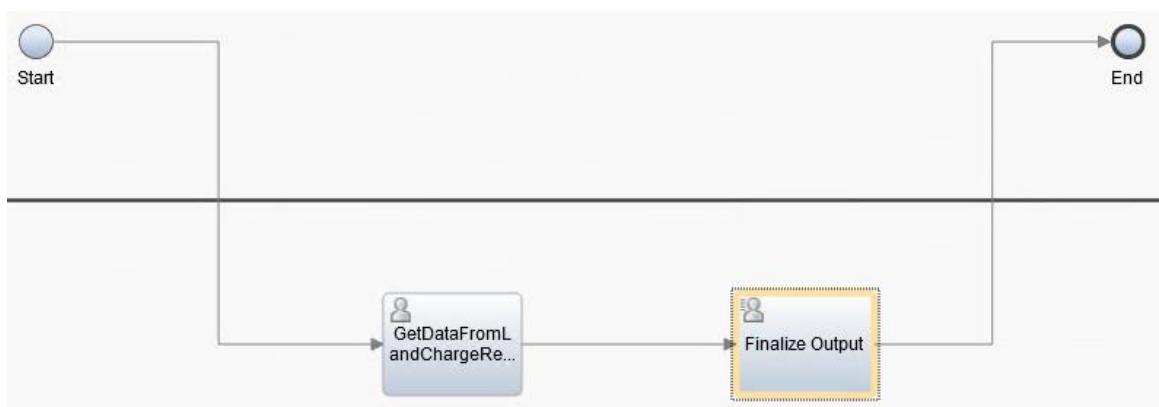


46. Switch to the **Definition** tab and Drag **Activity** to add a new one to the flow.



47. Drop the activity onto the **Robots** lane. Name the new activity **Finalize Output**.

48. **Connect** the Activities and events as shown in the next picture.



49. In the properties pane of **Finalize Output** open the **Implementation** tab and change the activity type to **Script**.



50. The **Script** tab appears under the **Implementation** tab, open the **Script** tab.

51. Copy paste the following code to set the isComplete variable and to establish a safeguard in case the robot does not return a valid result:

```
if ( tw.local.mortgageBlocked == null )
{
    log.info("MA_PANIC: Bot is out of control!!! Got the following result: " +
tw.local.mortgageBlocked );
    tw.local.mortgageBlocked = false;
}

tw.local.isComplete = true;
```

This screenshot shows the Script editor window. At the top, it says 'Script'. Below that, a message reads: 'This editor uses standard JavaScript syntax. Press Ctrl-space while typing to receive assistance with the'. The code area contains the following JavaScript code:

```
1 if (tw.local.mortgageBlocked == null)
2 {
3     log.info("MA_PANIC: Bot is out of control!!! Got the following result: " + tw.local.mortgageBlocked );
4     tw.local.mortgageBlocked = false;
5 }
6
7 tw.local.isComplete = true;
```

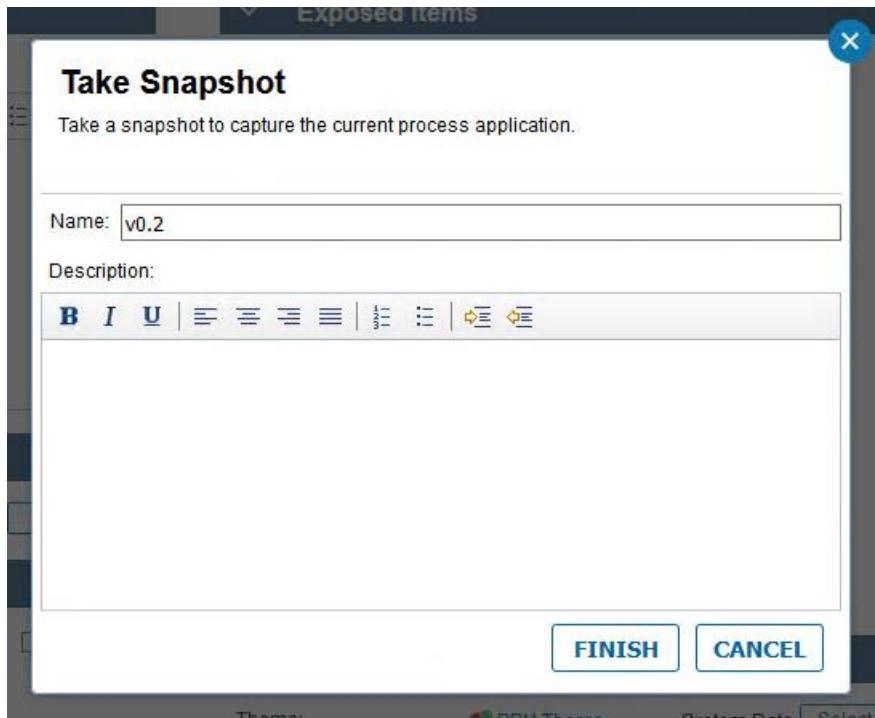
52. Click **Finish Editing**.

53. Click the **x** to close the process **Request Property Evaluation**.

54. Click the arrow besides the **Snapshots** icon and select **Create a new snapshot**.

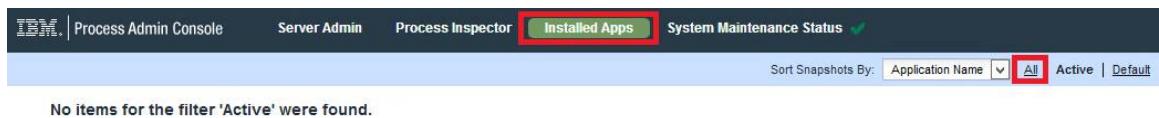


55. In the **Take Snapshot** dialog enter the name of the new snapshot, for example **v0.2**. Click **FINISH**.



56. In the Snapshot Created dialog take a note of the name and click **OK**.

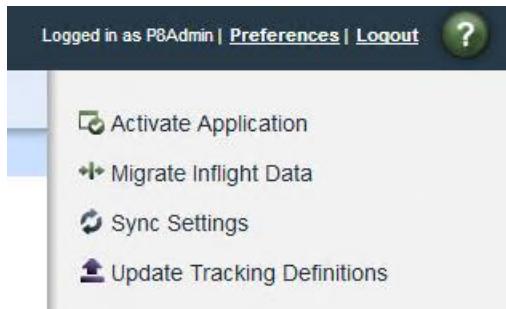
57. Open **Process Admin Console** and open the **Installed Apps** page. Switch to the **All** view.



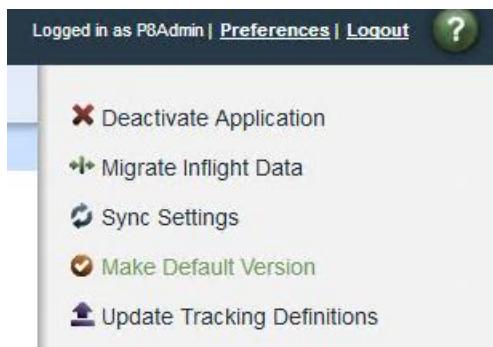
58. Click on the newly created snapshot **Mortgage Application (MA) – v0.2**.



59. On the right-hand side click **Activate Application**.



60. Click in the dialog that appears **OK**. Click **Make Default Version** on the right-hand side and confirm the dialog again with **OK**.



61. Open the **Installed Apps** page again. Verify the snapshot is Active and Default.



You have now completed the implementation of the process, activated it and made it the default snapshot. You are now ready to use your process from within the Case solution.

Note: You only can re-use a process from a Case solution when the **name of the Case solution and the name of the Process Application is identical**. In addition, the **snapshot** from where you want to take the process **must be active**.

62. Open **Case Builder**, there open the **Mortgage Application**.

63. On the **Properties** tab click **Add Property** → **New**.

64. Enter name **Is Mortgage Blocked**. Select Type **Boolean** and enter a meaningful description, for example **Flag to check if the mortgage was blocked from the task 'Request Property Evaluation'**. Select **True** as default value.

* Name: Is Mortgage Blocked Type: Boolean Description: Flag to check if the mortgage was blocked from the task 'Request Property Evaluation'

This property can have:
 A single value
 Multiple values

Default value: True False Unique Identifier: MA_IsMortgageBlocked

65. Click **OK** to save the new property. Click again **Add Property → New**.
66. Enter name **Is Property Evaluation Complete**. Select Type **Boolean** and enter a meaningful description, for example **Flag to check if the property has been evaluated**. Select **False** as default value. Click **OK**.
67. Open tab **Case Types**, open **New Mortgage Application** and switch to the **Properties** tab. Select **Add Property → Existing → Select All**. Click **OK** to add the two new properties to the Case Type.
68. Select **Hidden** for both new properties and click **OK All**.

Name	Type	Attributes
Is Property Evaluation...	Boolean	<input type="checkbox"/> <input checked="" type="checkbox"/>
Is Mortgage Blocked	Boolean	<input type="checkbox"/> <input checked="" type="checkbox"/>

69. Switch to the **Tasks** tab, select **Add Task**.

Add Task

View by:

- Task with New FileNet P8 Process
- To-do Task
- Container Task
- Task with Existing FileNet P8 Process
- Task with Existing Process

Task with Existing Process

Review Mortgage Appl...
Precondition: Case Start
Set: <None>

Create a task that reuses an IBM Business Process Manager workflow.

Review the Payslip received
Precondition: Documents: Payslip
Set: <None>

Note that now the option **Task with Existing Process** is enabled. This is because in the previous exercise you have imported a Process Application **with the same name** as the Case solution and because in this exercise you have previously

created and **activated snapshot v0.2** of this Process Application. You now will able to select an existing process from **snapshot v0.2** of Process Application **Mortgage Application**.

70. Click **Task with Existing Process**.

71. In the **Add Task** dialog enter name **Request Property Evaluation**. Provide a meaningful description, for example **Request property evaluation to check if the mortgage was blocked**. Check the **Required** check box.

The screenshot shows the 'Add Task' dialog box. It has a title bar with 'Add Task' and a 'General' tab selected. The 'Name' field contains 'Request Property Evaluation'. The 'Unique Identifier' field contains 'MA_RequestPropertyEvaluation'. The 'Description' field contains 'Request property evaluation to check if the mortgage was blocked'. Under 'This task starts:', the 'Automatically' radio button is selected. Under 'This task is:', the 'Required' checkbox is checked. Under 'Assign to set:', there is a dropdown menu showing '<None>' and a 'Manage Sets' button.

72. Click **Next**.

73. On the Preconditions page select in the drop-down box **A property condition is met**. Add **two conditions**, select properties **Is Application Reviewed** and **Is Payslip Reviewed**.

The screenshot shows the 'Add Task' interface with the 'Preconditions' section selected. A dropdown menu shows 'A property condition is met'. Below it, there are two rows for conditions. Each row has 'Property' (e.g., 'Is Application Reviewed'), 'Operator' (e.g., 'is equal'), and 'Value' (e.g., 'True'). An 'AND' connector is between the two rows. Buttons for 'Add Condition' and 'Delete All Conditions' are at the top, and a 'Match' dropdown is set to 'All'.

Property	Operator	Value
Is Application Reviewed	is equal	True
Is Payslip Reviewed	is equal	True

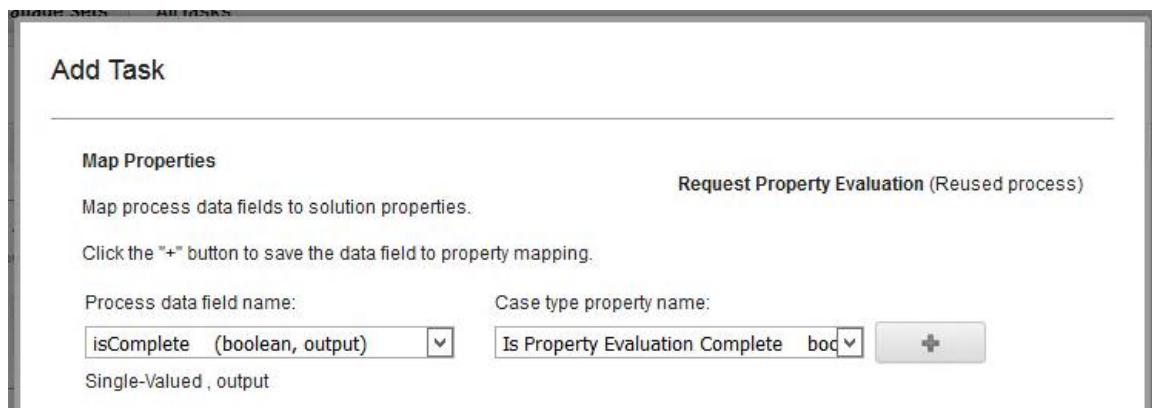
74. Click **Next**. On the Select Process page select **Request Property Evaluation**.

The screenshot shows the 'Add Task' interface with the 'Select Process' section selected. A 'Refresh' button and an 'Open Web Process Designer' button are available. A table lists processes by name and description. The row for 'Request Property Evaluation' is highlighted.

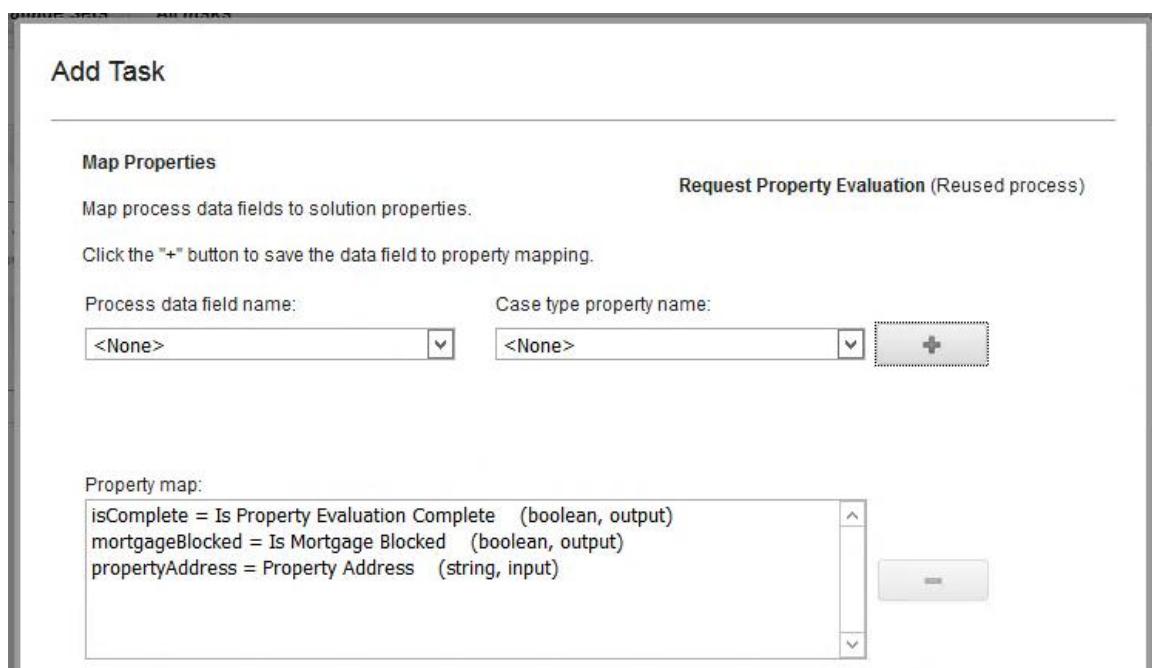
Process Name	Description
Request Property Evaluation	Request Property Evaluation

75. Click **Next**.

76. On the Map Properties page in the left drop-down box select **isComplete** and in the right drop down box **Is Property Evaluation Complete**. Click the "+" button to add this property mapping.



77. Using the same procedure, map the remaining process properties.



Click **Finish**. The new task is added to the Case Type. Note the **process icon** on the top right side when **hovering over the task**. Click the process icon to open the process with **Process Designer**.



Best Practice: For future edits to a Process that is linked to a Case Task, open Process Designer from the Case task instead of going through Workflow Center.

78. In the dialog click **Save Changes**. Process Designer opens in a new window and displays the **Request Property Evaluation** process. Close the Process Designer window.

This completes the modifications needed to the Case solution for this exercise. Finally **validate** your solution again, **save and close** it. **Commit** your changes and **deploy** your solution. Verify that no errors occur while one of these steps.

79. To be able to successfully test your solution the **application simulating the land property register** is still required. For demo purposes this is a simple Process Application that you only have to import. For this, **log out from Case Builder** and open the **shared box folder** (see bookmark in Firefox), there in sub-folder **3. Workflow sub-scenario** download **Land_Property_Register_Simulator - v1.0.twx** to the Desktop.
80. Open IBM Workflow Center and import **Land_Property_Register_Simulator - v1.0.twx** from the Desktop.

After you have successfully completed all these steps in VM 3 - Workflow, verify your work by completing the steps in the next chapter, named [Complete the "Request Property Evaluation" implementation – Verification Instructions](#).

5.3 Complete the "Request Property Evaluation" implementation – Verification Instructions

To verify successful completion of this exercise, test your solution as follows:

1. Go to the **Mortgage Application Desktop** by clicking on the **CPE → Mortgage Application Desktop** bookmark.
2. If not logged in, login via username **P8Admin** and password **Think4me**
3. Expand the dropdown menu where it says **Home** and select **Browse**.
4. In the Target store, select the folder **Incoming Mortgage Application Documents** by double-clicking it.
5. In the top toolbar, select **Add Document**.
6. In the **General** section, enter the following values:
 - a. **Entry Template: Loan Application Form Entry Template**
 - b. **File name:** Any file on the system eg: 100Custom.xml
7. In the Properties section, enter the following properties:
 - a. **Document Title:** Application 03
 - b. **Customer Name:** Customer 03
 - c. **Date of Birth:** 7/4/1983
 - d. **Loan Amount:** 10000
 - e. **Property Address:** Address 03
 - f. **Purchasing Price:** 15000
8. Click on **Add** in the panel on the right.
9. Go to Case Client by clicking on the **Workflow → IBM Case Client** bookmark. Ensure that the role is set to **Mortgage Officer**.
10. Click on **Mortgage Officer (0)**. This refreshes the Work page and you should see a new Step **Review Mortgage Application** with a loan amount of **10,000**.
11. Click on the step name **Review Mortgage Application** to open it. In the task, you can see the details added in Steps **Error! Reference source not found.** & **Error! Reference source not found.** above.
12. Click on the **Proceed** button.

2. Switch back to **Mortgage Application Desktop** and add a document using the entry template **Payment Slip Entry Template** with the following properties:

- a. **Document Title:** Payslip 03
- b. **File Name:** Any file eg: 100Custom.xml
- c. **Properties:**
 - i. **Customer Name:** Customer 03
 - ii. **Net Income:** 7500

Hint: The VM-1 – ECM contains custom code as an action handler that maps the document and its properties to the right case based on the name of the customer. Therefore, make sure to use the same customer name as in Step 10.

13. Switch back to the **Case Client** and refresh the **Mortgage Officer**'s task list. You should now see the **Review Payslip** task.

14. Click on the step name **Review Payslip**.

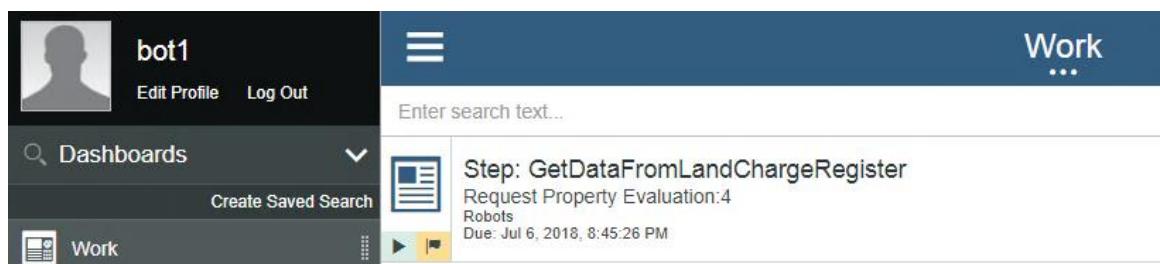
15. In the task, you should see two documents - **Application 03 & Payslip 03** along with the other properties added during document creation.

16. Click on the **Proceed** button.

17. Leave the Firefox window as is, open **Google Chrome** and click the **Process Portal** bookmark.

18. Log in via username **bot1** and password **passw0rd**.

19. The Work page of Process Portal opens. There is one task available named **Step: GetDataFromLandChargeRegister**.



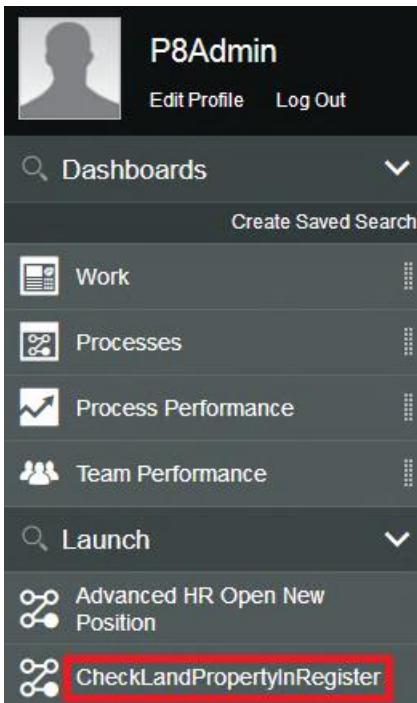
20. Click on this task and **claim** it.

21. Copy the value **Address 03** in field Property Address.



22. Switch back to the **Firefox** window and open bookmark **Workflow → Process Portal**.

23. Note that here you are still logged in as **P8Admin**. Click **CheckLandPropertyInRegister**.



24. A new task **Step: Input PropertyInformation** automatically appears. Click on it and **claim** it.



25. Paste the address into the **Property Address** field and click **Query**.

Property Address

Address 03|

Query

26. Above the **Query** button the result of the query appears.

Mortgage Blocked

Take a note that for the given address the mortgage is not blocked and therefore can proceed.

Note: The query will only return true (Mortgage Blocked checkbox is checked), when the property address is **62 Redwood Lane, Enceladus, Jupiter**.

27. Click **Exit** to complete this task.

28. Switch back to the Google Chrome window and click button **Mortgage can Proceed**.

29. Log out user **bot1** and close the Google Chrome window.

30. Back in Firefox, open the **Case Client** again. Click **Cases**, click **Search** and note that the latest created Case is Complete now.

Title	Added On	Case State
MA_NewMortgageApplication_000000100001	7/6/2018, 7:33 PM	Complete

31. Click on the title **MA_NewMortgageApplication_...** to view the case.
32. Click on **Tasks** and verify that the **Request Property Evaluation** task is in the list and is **Completed** (Icon showing fully filled with a check mark).

Task Description	Completion Date
Request Property Evaluation	Completed on 7/6/2018, 8:08 PM
Review Mortgage Application	Completed on 7/6/2018, 7:42 PM
Review Payslip	Completed on 7/6/2018, 7:45 PM

With this you have successfully completed the verification of your case solution and process.

5.4 Complete the "Request Property Evaluation" implementation – Summary

In this exercise you have:

1. Modified process **Request Property Evaluation** to match the expected process logic. For that you have added new **activities** and **variables** to the process, created a **launch UI** and modified a **CSHS** and its **Coach** to be ready for business users by modifying the **visibility settings** of a field, changing the **layout** and adding a **button**.
2. Learned how to create a **new snapshot**, how to **activate** it and how to **mark it as default**.
3. Further enhanced the Case solution by adding **new properties** and a **Case task that is implemented by a process**.
4. Learned the **prerequisites** for being able to **use a process from a Case task**. These are:
 - a. The **name** of the **Case Solution** and the **Process Application** must be **identical**.
 - b. The process must be contained in an **active snapshot** of the Process Application.

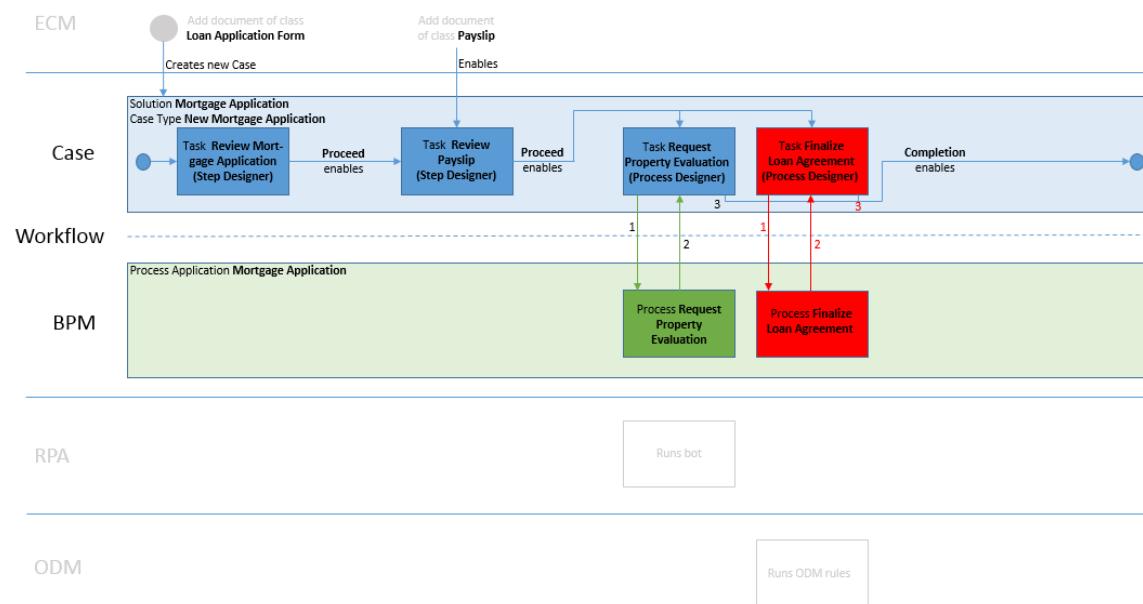
6 Exercise: Prepare the Finalize Loan Agreement implementation

6.1 Prepare the Finalize Loan Agreement implementation – Introduction

In this exercise, you will build on top of the Solution & Process Application created in the previous exercises. You will create in your Case solution a new task **Finalize Loan Agreement** that is started when the existing tasks **Review Mortgage Application** and **Review Payslip** are complete.

The new task will contain its implementation in the Process Designer and it will use [Decisions embedded within the Process Designer](#) to approve or reject the Mortgage. Exercise 8 will allow you to integrate with a pre-implemented ODM system. To work with ODM, please follow the instructions in the ODM scenario. Please make sure that the previous exercises are completed before proceeding with this exercise.

From the complete Business Automation Workflow solution, you will implement the parts in red in this exercise:

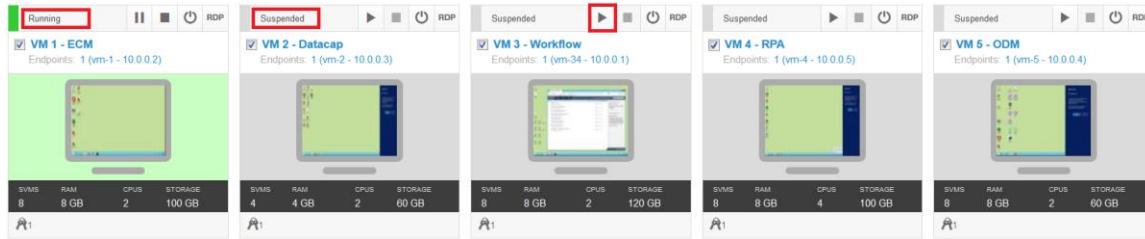


As a part of this exercise you will get introduced into the following feature of IBM Workflow:

a. **Modeling of [Decisions in Process Designer](#)**

Within Process Designer you can create decisions using [Action Rules](#) and [Decision Tables](#). These can also be exported to be used in IBM ODM.

For this exercise you will require to have the previous exercises of the Workflow sub-scenario successfully completed. Make sure that in your environment **VM 1 – ECM** and **VM 3 – Workflow** are running. If this is not the case, click the **Run this VM** button to start them (start VM 1 first, VM 3 second, make sure VM 1 is successfully connected to the network before starting VM 3). All other VMs must be suspended. If one of them is running, pls. suspend them now.



During this exercise you will only work with **VM 3 – Workflow**. Access this VM through the **Browser** or by clicking **RDP** to connect to it using a Remote Desktop Connection.

You are now ready to start this exercise. As for every exercise, you have two options:

- If you are new to Workflow or prefer to follow the step by step instructions continue with the chapter named [Prepare the Finalize Loan Agreement implementation – Step by Step Instructions](#).
- If you are an experienced Case / BPM / Workflow person you can use the information from chapter named [Prepare the Finalize Loan Agreement implementation - High-level Instructions](#) for completing this exercise.

In this exercise you will work with the following tools on VM 3 - Workflow:

Tool	Location (Firefox Bookmarks Toolbar) / URL
Case Builder	Workflow → Case Builder / https://vm-34.example.com:9443/CaseBuilder/designer/DesignerHome.jsp
Workflow Center	Workflow → IBM Workflow Center / https://vm-34.example.com:9443/ProcessCenter
Process Designer	Launch Process Designer from within Workflow Center.
Process Portal	Workflow → Process Portal / https://vm-34.example.com:9443/ProcessPortal
Process Admin Console	Workflow → Process Admin Console / https://vm-34.example.com:9443/ProcessAdmin

For these tools, you will require the following IDs and passwords:

Tool	User ID	Password
Windows	Administrator	passw0rd
Case Builder, Workflow Center, Process Designer, Process Portal, Process Admin Console	P8Admin	Think4me

6.2 Prepare the Finalize Loan Agreement implementation – High-Level Instructions

1. Log-in to the Workflow Center.
2. Open the existing Process Application **Mortgage Application**.
3. Create a new Process **Finalize Loan Agreement** with the following signature:
 - **Inputs:**
 - Customer Name (String)
 - Date of Birth (Date)
 - Monthly Income (Decimal)
 - Loan Amount (Decimal)
 - Purchasing Price (Decimal)
 - Property Address (String)
 - **Outputs:**
 - Evaluation Result (Boolean)
 - Decision Service Message (String)
 - Is Complete (Boolean - always set to **true**)
4. In the process, add a Decision service with the following criteria:
 - **Action Rules:**
 - If the **age is less than 18**, the **evaluation result** is **false** and the **decision service message** is **The borrower's age is not valid**.
 - If the **loan amount is more than 25 times the monthly income**, the **evaluation result** is **false** and the **decision service message** is **The loan to income ratio is too high**.
 - **Decision Table:**
 - If the **address is Blocked Address 01**, the **evaluation result** is **false** and the **decision service message** is **This address is blocked from being mortgaged**.
 - If the **address is Outer Address 01**, the **evaluation result** is **false** and the **decision service message** is **This address is out of the service area**.

For any other combination of inputs, the **evaluation result** is **true** and the **decision service message** is **Congratulations! Your loan has been approved**.

Note: The age can be calculated using the birth date.

5. Create a Launch UI for the Process to test it later.
 6. In the Workflow Center, create a new snapshot of the Process Application and activate the snapshot. Deactivate any previous active snapshots.
 7. In the Process Admin Console, set the latest snapshot version as the default snapshot.
 8. In the Case Builder, add a new required task **Finalize Loan Agreement** that is started when the tasks **Review Mortgage Application** and **Review Payslip** are complete. You can use the two variables created in previous exercises, **Is Application Reviewed** and **Is Payslip Reviewed** as preconditions to achieve this.
 9. Point the new task to the **Finalize Loan Agreement** process created in the Process Designer and map the Case properties to the Process Input and Output variables.
10. Re-deploy the case Solution.
11. Run the Process in Process Portal and enter the values using the Launch UI created in step 5.

After you have successfully completed all the steps in VM 3 - Workflow, verify your work by completing the steps in the chapter named [Prepare the Finalize Loan Agreement implementation – Verification Instructions](#).

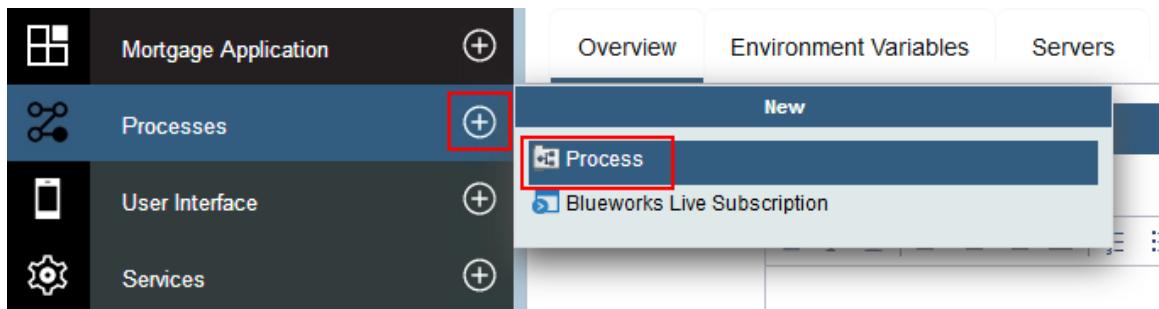
6.3 Prepare the Finalize Loan Agreement implementation – Step by Step Instructions

Follow these step by step instructions to prepare the Finalize Loan Agreement implementation (note that these instructions assume that previous exercises have been completed):

1. Connect to **VM 3 – Workflow** as described in the introduction.
2. Open **Firefox**, expand the **Workflow** folder and open the **Workflow Center** link.
3. Open the existing Process Application, **Mortgage Application**, by clicking on the link **Open in Designer**.



4. In the Library pane on the left-hand side, create a new Process by clicking on the "+" button on the **Processes** section and selecting **Process**.



5. In the New Process dialog, enter the name **Finalize Loan Agreement** and click **Finish**.

New Process

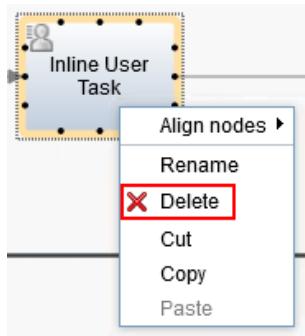
A process captures a set of activities and the data and content to support the activities. These activities can be part of a structured flow, ad-hoc activities that are not part of a structured flow, or a combination of the two.



Name: Finalize Loan Agreement

FINISH CANCEL

6. Click on the existing task **Inline User Task** and delete the task by either right clicking and selecting **Delete** or pressing the **Delete** button on the keyboard.



7. In the Library pane, create a new Service Flow by clicking on the "+" button on the **Services** section and selecting **Service Flow**.
8. Name the Service Flow **Loan Decision Service**.
9. Switch to the **Variables** tab and add the following variables:
 - **Inputs:**
 - customerName (String)
 - dateOfBirth (Date)
 - monthlyIncome (Decimal)
 - loanAmount (Decimal)
 - purchasingPrice (Decimal)
 - propertyAddress (String)
 - **Outputs:**
 - evaluationResult (Boolean)
 - decisionServiceMessage (String)
 - isComplete (Boolean – steps to always set this to **true** will be shown in a later step)
 - **Private:**
 - age (Integer)

The screenshot shows the Variables pane with the following structure:

- Input** section:
 - customerName (String)
 - dateOfBirth (Date)
 - monthlyIncome (Decimal)
 - loanAmount (Decimal)
 - purchasingPrice (Decimal) - This variable is selected and highlighted.
 - propertyAddress (String)
- Output** section:
 - evaluationResult (Boolean)
 - decisionServiceMessage (String)
 - isComplete (Boolean)
- Private** section:
 - age (Integer)

On the right side of the pane, there are four buttons: an upward arrow, a delete (X), a downward arrow, and a plus sign (+).

10. Switch back to the **Diagram** tab.
11. Drag and drop the **Script task** onto the canvas. Name the task **Prepare Data**.
12. In the properties pane of the Script task, switch to the **Script** tab.

The screenshot shows the properties pane for the Script task. The **Script** tab is selected, indicated by a red border around its title. The Common tab is active. The properties shown are:

- Name:** Prepare Data
- Color:** A color palette with several colored circles.
- Documentation:** A rich text editor toolbar with icons for bold, italic, underline, and alignment.

13. In the script, we need to get the **age** from the value of the **dateOfBirth** variable. To do that, enter the following script:

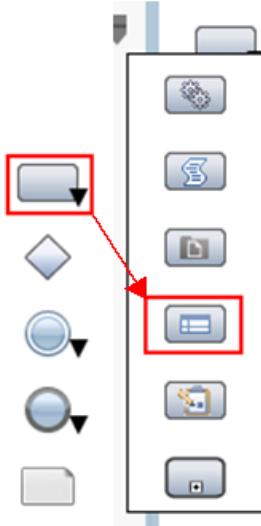
```

var birth = tw.local.dateOfBirth;
var today = new Date();
tw.local.age = today.getFullYear() - birth.getFullYear() + ((today.getMonth() >
birth.getMonth() || (today.getMonth() == birth.getMonth() && today.getDate() >
birth.getDate())) ? 1 : 0);

// set default value for the evaluation result
tw.local.evaluationResult = true;
tw.local.decisionServiceMessage = "Congratulations! Your loan has been
approved.";

```

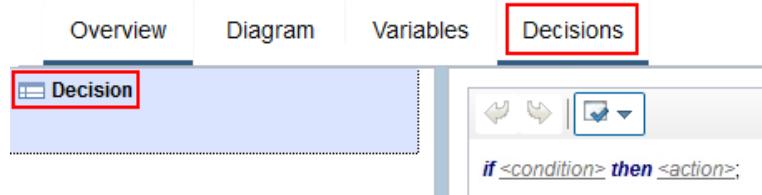
14. In the palette on the right, expand the **Activity** node and select the **Decision activity**. Drag and drop this activity onto the canvas in the center of the editor.



15. Drag the end of the connector from the Start and End node so it connects the **Start** node to the **Prepare Data** node. Then, connect the **Prepare Data** node to the **Decision** node. Lastly, connect the **Decision** node to the **End** node.



16. Switch to the **Decisions** tab and click on the **Decision** node.



The Decision editor opens up with a default action rule **if <condition> then <action>;**

Pressing **Ctrl + Space** in this editor shows auto-complete options.

We want to add the following decisions:

- If the **age** is **less than 18**, the **evaluation result** is **false** and the **decision service message** is **The borrower's age is not valid.**
- If the **loan amount** is **more than 25 times** the **monthly income**, the **evaluation result** is **false** and the **decision service message** is **The loan to income ratio is too high.**

- If the **address** is **Blocked Address 01**, the **evaluation result** is **false** and the **decision service message** is **This address is blocked from being mortgaged.**
- If the **address** is **Outer Address 01**, the **evaluation result** is **false** and the **decision service message** is **This address is out of the service area.**

17. In the action rule editor, enter the following rule:

```
definitions
    set 'minimum age' to 18 ;
if
    age is less than 'minimum age'
then
    set evaluationResult to false ;
    set decisionServiceMessage to "The borrower's age is not valid." ;
```

18. Add another action rule to the editor by clicking on the **Add action rule** button



19. In the new action rule editor, add the following rule:

```
if
    loanAmount is more than monthlyIncome * 25
then
    set evaluationResult to false ;
    set decisionServiceMessage to "The loan to income ratio is too high." ;
```

20. Next, we want to reject mortgages for specific addresses. To do this, we will work with a Decision table to see how that works. In a decision table, we can author decision logic. This table can also be exported for use in IBM ODM.

Click on the **Add decision table** button.



This adds a table with 2 columns – C0 and A0.

21. Double-click on the column titled **C0** and change the name to **Address**.
22. Similarly, double-click on the column titled **A0** and change the name to **Approval**.
23. Right click on the **Approval** column header and select **Insert Column → Action after**. Change the name of this column to **Message**. Your table should now look as follows:

	Address	Approval	Message
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

24. Right click on the **Address** column header and select **Define column**. This should open up a dialog with a text editor to enter a condition for the column.
25. Enter the following text:

```
propertyAddress is <a string>
```

26. Click **Define**

Define Condition Column

Use this editor to write a condition for the column.

propertyAddress is <a string>

Severity	Line	Message

Define

This definition sets the text in each row of the **Address** column to the **propertyAddress** input variable defined in the Service Flow.

27. Similarly, enter the following definition for the **Approval** column:

```
set evaluationResult to <a boolean>
```

This sets the **evaluationResult** output variable to the Boolean set in the **Approval** column.

28. Similarly, enter the following definition for the **Message** column:

```
set decisionServiceMessage to <a string>
```

This sets the **decisionServiceMessage** output variable to the string set in the **Message** column.

29. Double-click on the first row in the **Address** column to edit it.

30. Enter the first address **Blocked Address 01**

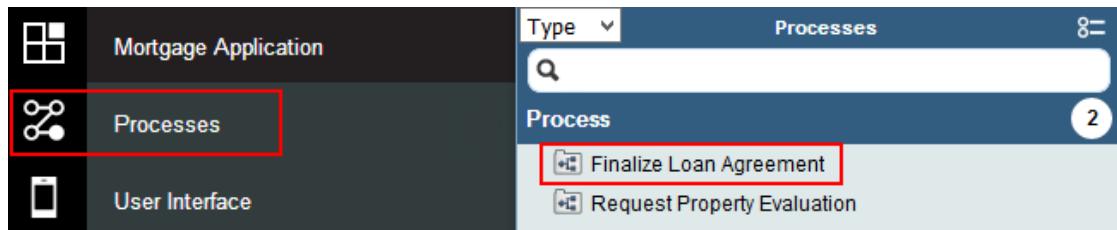
31. Similarly, in the 1st row for the 2nd and 3rd column, add the values **false** and **This address is blocked from being mortgaged**, respectively.

32. Repeat the steps 29-31 for address **Outer Address 01**, approval set to **false** and message set to **This address is out of the service area**.

	Address	Approval	Message
1	Blocked Address 01	false	This address is blocked from being mortgaged.
2	Outer Address 01	false	This address is out of the service area.

33. In the **Diagram** tab, select the **Decision** node and switch to the **Pre & Post** tab. In the **Post-Execution Script**, enter `tw.local.isComplete = true;`

34. Go back to the Process **Finalize Loan Agreement** by clicking the Processes section in the Library pane and selecting the process.



35. Open the Library pane again, go to the **Services** section and drag and drop the **Loan Decision Service** to the System lane in the Process.

36. Connect the nodes on the flow as follows: **Start** → **Loan Decision Service** → **End**.

37. Click on the **Loan Decision Service** node and switch to the **Data Mapping** tab.

38. In the **Input Mapping** section, click on the **Auto-map** button.

⚠	<input type="text"/>	customerName (String)
⚠	<input type="text"/>	dateOfBirth (Date)
⚠	<input type="text"/>	monthlyIncome (Decimal)
⚠	<input type="text"/>	loanAmount (Decimal)
⚠	<input type="text"/>	purchasingPrice (Decimal)
⚠	<input type="text"/>	propertyAddress (String)

39. In the **Variable Creation** dialog, click on all the **Input** checkboxes to create input variables for each of the variables. Then click **Finish**.

Variable Name	Variable Type	Input	Output
customerName	String	<input checked="" type="checkbox"/>	<input type="checkbox"/>
dateOfBirth	Date	<input checked="" type="checkbox"/>	<input type="checkbox"/>
loanAmount	Decimal	<input checked="" type="checkbox"/>	<input type="checkbox"/>
monthlyIncome	Decimal	<input checked="" type="checkbox"/>	<input type="checkbox"/>
propertyAddress	String	<input checked="" type="checkbox"/>	<input type="checkbox"/>
purchasingPrice	Decimal	<input checked="" type="checkbox"/>	<input type="checkbox"/>

40. Similarly, auto-map the variables in the **Output Mapping** section and select the **Output** checkboxes in the **Variable Creation** section.

41. Switch to the **Views** tab. Click under **Launch UI on Default**, then on **New...**

The screenshot shows the 'Views' tab selected in the navigation bar. Below it, the 'User Interface: Launch UI' section is visible. A red box highlights the 'New...' button in the toolbar of this section.

42. In the **New Client-Side Human Service** dialog, enter the name **Launch Finalize Loan Agreement Process** and click **Next**.

43. Uncheck the checkboxes for the properties **decisionServiceMessage**, **evaluationResult** & **isComplete**.

44. Click **Finish** and close the Client-Side Human Service editor that opens.

45. Finally, switch to the **Overview** section of the Process and for the **Expose to start** field, select the team **All Users**.

The screenshot shows the 'Exposing' section of the process configuration. The 'Expose to start' dropdown is set to 'All Users', which is highlighted with a red box. Other options like 'System Data' and 'Select...' are also visible.

46. Click on **Finish Editing** or press **Ctrl + S** to unlock the editor.

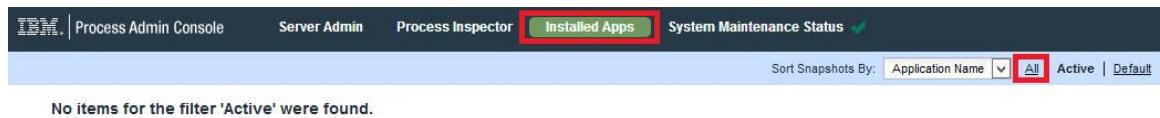
47. Click the arrow besides the **Snapshots** icon and select **Create a new snapshot**.



48. In the **Take Snapshot** dialog enter the name of the new snapshot, for example **v0.3**. Click **Finish**.

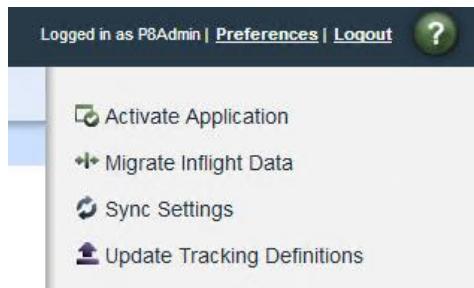
49. In the Snapshot Created dialog, take a note of the new name and click **OK**.

50. Open the **Process Admin Console** and open the **Installed Apps** page. Switch to the **All** view.

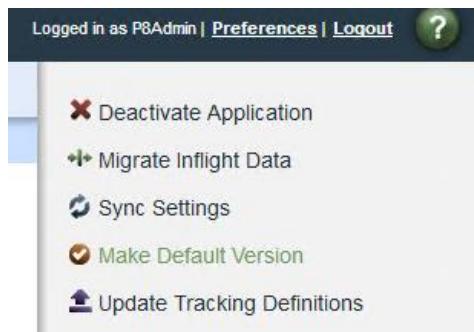


51. Click the newly created snapshot **Mortgage Application (MA) – v0.3**.

52. On the right-hand side click **Activate Application**.



53. Click **OK** in the dialog that appears and then click **Make Default Version** on the right-hand side and confirm the dialog again by clicking **OK**.



You have now completed the implementation of the process and activated it. You are now ready to use your process from within the Case Solution.

54. In the **Case Builder**, open the Case Solution **Mortgage Application**.

55. In the **Properties** tab, add the following new properties:

- Decision Service Message - String
- Is Mortgage Approved – Boolean (Default value – False)
- Is Loan Agreement Finalized – Boolean (Default value – False)

56. Click **Save**.

57. In the **Case Types** tab, select the **New Mortgage Application** case type.

58. In the Case Type, switch to the **Properties** tab.

59. Select **Add Property** → **Existing** → **Select All** and click **OK**.

60. For the **Is Loan Agreement Finalized** property, select the **Hidden** checkbox.

61. Click **OK All**.

62. In the Case Type, switch to the **Tasks** tab.

63. Click on **Add Task** and select **Task With Existing Process**.

64. In the Add Task dialog, enter the following details:

- **Name:** Finalize Loan Agreement
- **Description:** Invoke a BPM Process to get a decision regarding approval of the Mortgage
- **This task is:** Required

Add Task

General

* Name:
Finalize Loan Agreement

* Unique Identifier
MA_FinalizeLoanAgreement

Description:
Invoke a BPM Process to get a decision regarding approval of the Mortgage

This task starts:
 Automatically Manually Discretionally

This task is:
 Hidden Required

Assign to set:
<None>

65. Click **Next**.

66. On the **Preconditions** page, select **A property condition is met**.

67. Click on **Add Condition**.

68. In the **Property** column, select the property **Is Application Reviewed**.

69. In the **Value** column, select the value **True**.

Preconditions

What preconditions must be met for this task to start?

A property condition is met

Add Condition

| Delete All Conditions

Match: All

Property	Operator	Value
Is Application Reviewed	is equal	True

70. Repeat the last 3 steps for condition: **Is Payslip Reviewed is equal to True**.
71. Click **Next**.
72. Select the Process **Finalize Loan Agreement**. Click **Next**.
73. In the **Map Properties** page, under the **Process data field name**, select a field. Select the corresponding **Case type property name**. Click on the + button after.

At the end, your Property map should look as follows:

Property map:

```
customerName = Customer Name (string, input)
dateOfBirth = Date of Birth (datetime, input)
decisionServiceMessage = Decision Service Message (string, output)
evaluationResult = Is Mortgage Approved (boolean, output)
isComplete = Is Loan Agreement Finalized (boolean, output)
loanAmount = Loan Amount (float, input)
monthlyIncome = Net Income (float, input)
propertyAddress = Property Address (string, input)
purchasingPrice = Purchasing Price (float, input)
```

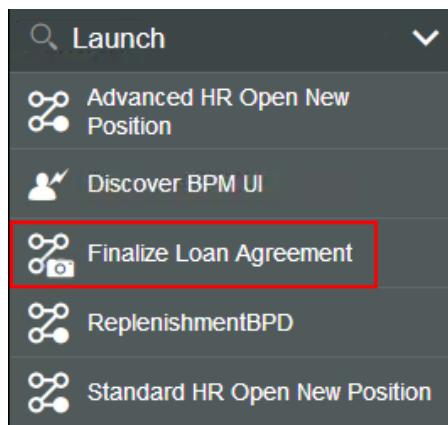
74. Click **Next** then click **Finish** to close the dialog.
75. Click on **Save and Close**.
76. Re-deploy the Solution.

After you have successfully completed all the steps in VM 3 - Workflow, verify your work by completing the steps in the next chapter, named [Prepare the Finalize Loan Agreement implementation – Verification Instructions](#).

6.4 Prepare the Finalize Loan Agreement implementation – Verification Instructions

To verify successful completion of this exercise, complete the following steps:

1. In Firefox, go to the **Workflow** folder and select **Process Portal**.
2. If not already logged in, log-in as user **P8Admin** and password **Think4me**.
3. In the **Launch** section on the left, select **Finalize Loan Agreement**.



This opens a page with the fields defined during creation of the Launch UI.

4. Enter the following information in the fields:
 - a. **Customer Name:** John Doe
 - b. **Date of Birth:** <today's date>
 - c. **Loan Amount:** 10000
 - d. **Monthly Income:** 10000
 - e. **Purchasing Price:** 14200
 - f. **Property Address:** Address 01
5. Click **OK**.
6. In a new Firefox tab, open the **Workflow Center** bookmark in the **Workflow** folder.
7. Click on the name of the **Mortgage Application** Process Application.
8. For the latest snapshot, e.g. v0.3, click on **Open in Designer**.

9. Switch to the **Inspector** view.



10. Click on the **Search** icon.



11. Click on the **Search** button.

Severity type

Person

Name or user name

Last modified date

From Date Time

To Date Time

Search

12. Click on the latest Process Instance.



This opens up the details of that instance in the right-hand side pane.

13. Verify that the **Status** is **Completed** and expand the **Data** section.

Finalize Loan Agreement:9

C X

Details

Instance ID: 9
Process App: Mortgage Application
Status: **Completed**

Start time: Jul 6, 2018 3:06 AM (7 minutes ago)
Last action: Jul 6, 2018 3:09 AM (5 minutes ago)
Due date: Jul 6, 2018 11:06 AM (in 8 hours)

Tasks (1)

Locations

No locations were found.

Data

14. In the **Data** section, verify the following properties:

- a. `customerName` (String): John Doe
- b. `dateOfBirth` (Date): <today's date>
- c. `loanAmount` (Decimal): 10,000
- d. `monthlyIncome` (Decimal): 10,000
- e. `purchasingPrice` (Decimal): 14,200
- f. `propertyAddress` (String): Address 01
- g. `decisionServiceMessage` (String): The borrower's age is not valid.
- h. `evaluationResult` (Boolean): False
- i. `isComplete` (Boolean): True

As today's date was entered, we can see that the **evaluationResult** is **false** and the **decisionServiceMessage** is **The borrower's age is not valid**.

15. Launch the **Finalize Loan Agreement** process again and enter different values to test all the decisions. Verify the results in the **Inspector** view of the Process Designer. For example, for address **Blocked Address 01**, the **evaluationResult** must be **false** and the **decisionServiceMessage** must be **This address is blocked from being mortgaged**.

Note: The complete verification for the end-to-end scenario including testing the Case integration with BPM will be done after exercise 9 when the Workflow implementation is complete.

6.5 Prepare the Finalize Loan Agreement implementation – Summary

In this exercise, you have:

1. Created a new Process **Finalize Loan Agreement** from the BPM feature of Workflow that utilizes action rules and decision tables embedded within the Process Designer to approve or reject a mortgage application.
2. Integrated the Process within the **Mortgage Application** Case Solution.
3. Tested the decisions created by providing several data sets.

In the next exercise, you will integrate the Process created in exercise 5 with IBM Robotic Process Automation.

7 Exercise: Integrate with RPA

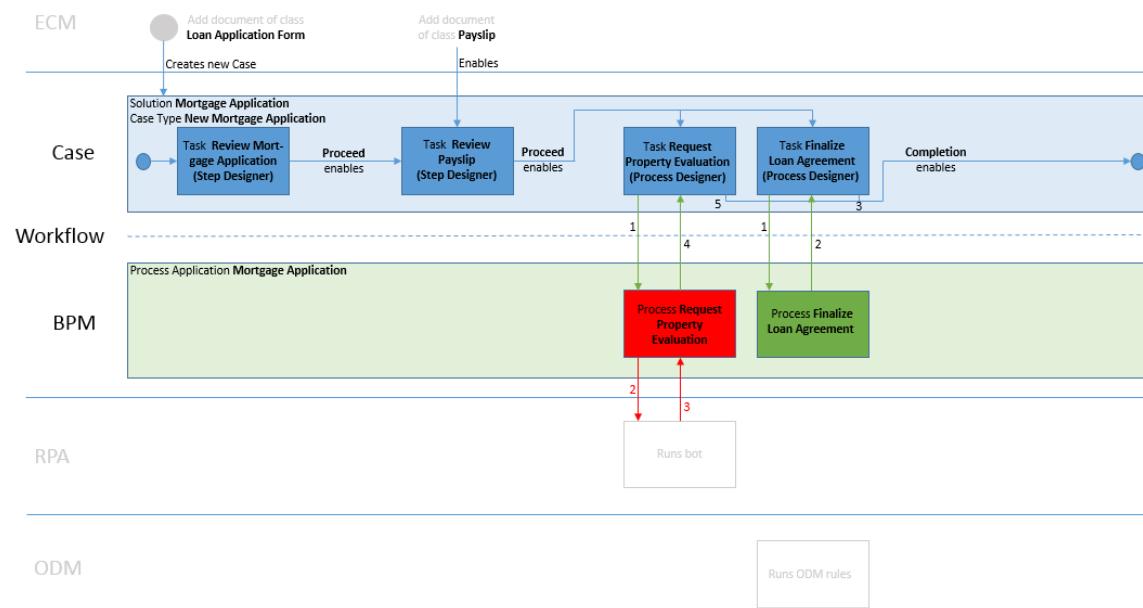
7.1 Integrate with RPA – Introduction

In this exercise you will automate the implementation of the **Request Property Evaluation** process that you have implemented in exercises 4 and 5 using IBM RPA.

Note: When you are using **Template 7** you can skip this exercise and continue with Exercise 8. The instructions in the RPA sub-scenario will at the beginning also cover the integration between Workflow and RPA.

Proceed with this exercise when you used **Template 3** to implement the Workflow sub-scenario only.

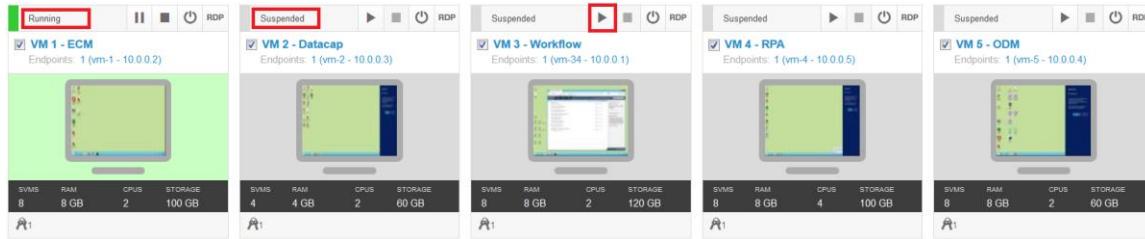
From the complete Business Automation Workflow solution, you will implement / modify the parts in red in this exercise:



As part of this exercise you will get introduced into the following features of the Business Process Management feature of Workflow:

- Using a **Robot task** to automate User Tasks.
- Execute** the Robot task and see how **RPA** completes this activity.

For this exercise you will require to have the previous exercises of the Workflow sub-scenario successfully completed. Make sure that in your environment **VM 1 – ECM** and **VM 3 – Workflow** are running. If this is not the case, click the **Run this VM** button to start them (start VM 1 first, VM 3 second, make sure VM 1 is successfully connected to the network before starting VM 3). All other VMs must be suspended. If one of them is running, pls. suspend them now.



During this exercise you will work with **VM 3 – Workflow and VM 4 - RPA**. You will **start VM 4 later** and access it. To start, access VM 3 – Workflow through the **Browser** or by clicking **RDP** to connect to it using a Remote Desktop Connection.

You are now ready to start this exercise. Use the step-by-step instructions to make sure to correctly modify the process, resume VM 4 – RPA and re-start the bot.

In this exercise you will work with the following tools on VM 3 – Workflow and VM 4 - RPA:

Tool	Location (Firefox/Chrome Bookmarks Toolbar) / URL
Case Builder	Workflow → Case Builder / https://vm-34.example.com:9443/CaseBuilder
Process Designer	Launch Process Designer from within Case Builder
Process Admin Console	Workflow → Process Admin Console / https://vm-34.example.com:9443/ProcessAdmin
Automation Anywhere Client	Icon on the desktop of VM 4 – RPA

For these tools, you will require the following IDs and passwords:

Tool	User ID	Password
Windows (VM 3 and VM 4)	Administrator	passw0rd
Case Builder, Process Designer, Process Admin Console	P8Admin	Think4me
Automation Anywhere Client	botrunner	passw0rd

7.2 Integrate with RPA – Step by Step Instructions

Follow these step by step instructions to prepare the process implementation:

1. Connect to **VM 3 – Workflow** as described in the introduction.
2. Open **Firefox**, expand the **Workflow** folder and open **Case Builder**.
3. Enter User Name **P8Admin** and Password **Think4me** if not filled out. Click **Log In** and open solution **Mortgage Application**.
4. Open the tab **Case Types** and open **New Mortgage Application**.
5. Open the tab **Tasks**, hover over Task **Request Property Evaluation** and click the process icon to open process **Request Property Evaluation** in Process Designer.



6. Select activity **GetDataFromLandChargeRegister** and open the **Implementation** tab in the properties pane.
7. Change the Activity Type from User Task to **Robot Task**.
8. Open the tab **Data Mapping**.
9. Click the "+" besides **Input Mapping** and select variable **propertyAddress**.
10. Click the "+" besides **Output Mapping** and select variable **mortgageBlocked**.



11. Open the tab **Implementation** again. Read the text in the Implementation section.

The screenshot shows the 'Implementation' tab selected in the left sidebar. The main area displays the 'Activity Type' section with 'Robot Task' selected. Below it is the 'Implementation' section containing descriptive text and a 'Generate bot ...' button.

Type: Robot Task

A robot task is performed by a bot. Its interface is automatically defined by the data that is exposed to it. The bot must be implemented in IBM RPA with Automation Anywhere or in other robotic process automation tools. [Learn More](#)

Generate bot ...

Note: To finally integrate with RPA as a next step it would be required to click **Generate bot...**, import the generated file into RPA and implement the bot in RPA. These steps are covered in the RPA sub-scenario. For your convenience this has been already completed using the same signature as you just created using **Template 3** only implementing the Workflow sub-scenario.

Hint: The signature is defined by the following attributes:

- **Name of the activity.** Verify the name **GetDataFromLandChargeRegister** is used for the **Robot Task**.
- **Input** and **output variable** mapping as defined in step 9 and 10 above.
- **User** to which the Robot Task will be assigned. Verify that the Robot Task is placed in **Lane Robots**, Lane Robots uses Team **Robots** as default lane team and the pre-defined group **Robot** is a member of team Robots. The pre-defined group Robot has one member, **bot1**. You used this user already in exercise 5 to verify your results.

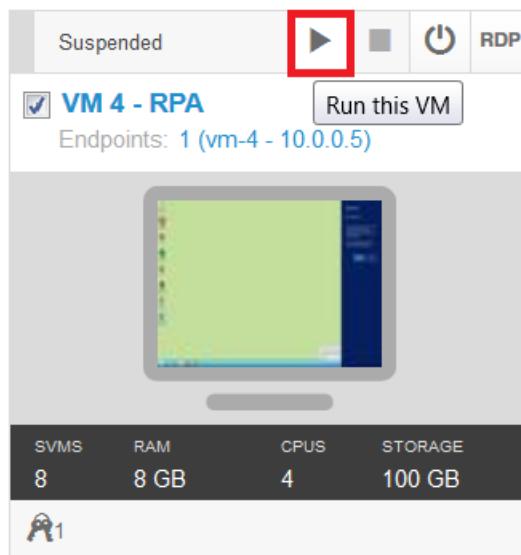
This means, once you have generated the bot avoid changing these parameters, or make sure the generated bot is adapted accordingly.

With that you have completed the required changes to integrate between Workflow and RPA. Remaining steps are to create a new snapshot of the Process Application, activate it, save and deploy the Case solution, start VM 4 – RPA and re-start the bot running on VM 4 – RPA to be ready for testing your work.

12. Click **Finish Editing**, then **Create a new snapshot** and name it **v0.4**.

13. Close the **Process Designer** window and open a **new tab** in Firefox.

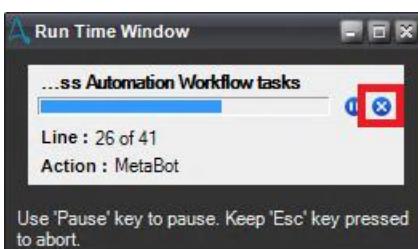
14. In the new Browser tab open **Process Admin Console**, go to **Installed Apps**, view **All**, activate **snapshot v0.4**, make it default and deactivate any other snapshot of Mortgage Application. Switch to the **Active** view to verify that only the newest snapshot is active. **Close the Browser tab**.
15. Back in Case Builder click **Validate**, **Save and Close** to save the changes made. **Commit** your changes and **Deploy** the solution.
16. On your local machine switch back to your Blue Demos environment and click above **VM 4 – RPA** the **Play** button to **resume VM 4**.



17. Once the VM is running, access **VM 4 – RPA** through the **Browser** or by clicking **RDP** to connect to it using a Remote Desktop Connection.
18. In case you see on the right-hand side a blue bar, click **No**. Verify that VM 4 – RPA is **correctly connected to the network**.



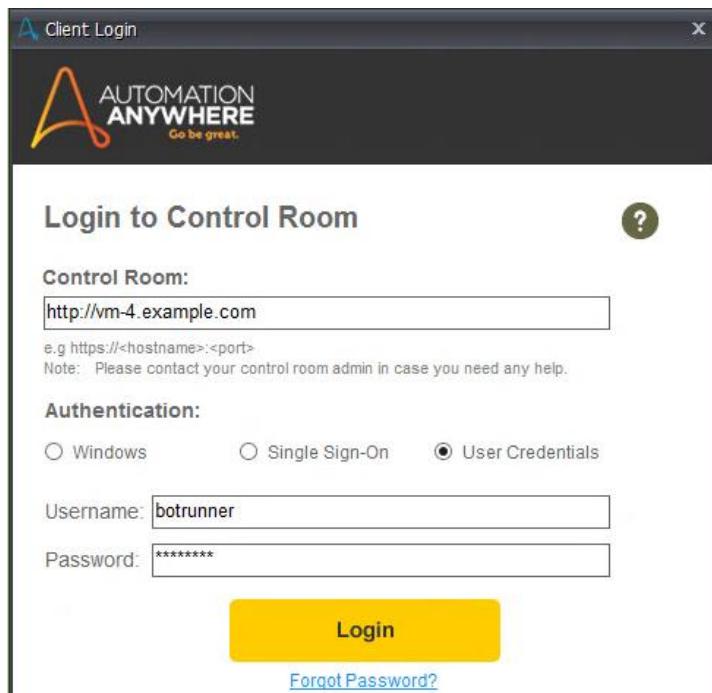
19. In the **Run Time Window** of Automation Anywhere click the **X** to stop the running bot.



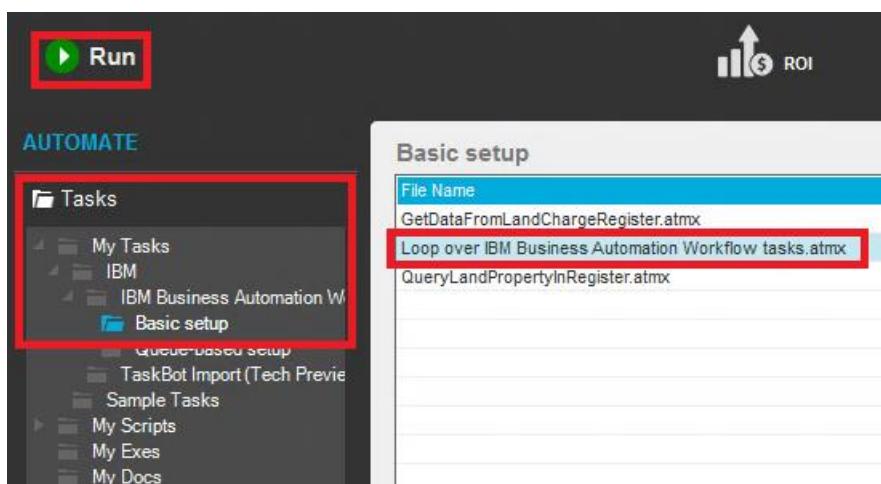
20. Open the Automation Anywhere (AA) Enterprise Client.



21. Login with username **botrunner** and password **passw0rd**.



22. Once logged in, under **Tasks** expand **My Tasks** → **IBM** → **IBM Business Automation Workflow** and click **Basic setup**. Select **Loop over IBM Business Automation Workflow tasks.atmx** and click **Run**.



23. The **Run Time Window** appears again on the bottom right-hand side.

Note: A re-start of the bot is recommended to avoid issues due to the VM having been suspended.

24. Minimize the **Automation Anywhere Client** window.

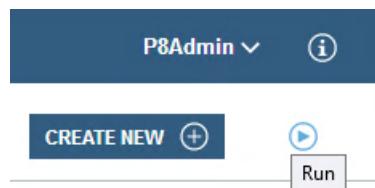
You are now ready to test your process. Switch back to the VM 3 – Workflow desktop.

After you have successfully completed these steps in VM 3 – Workflow and VM 4 – RPA, verify your work by completing the steps in the next chapter, named [Integrate with RPA – Verification Instructions](#).

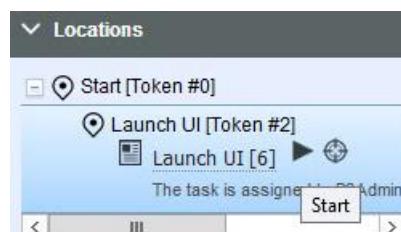
7.3 Integrate with RPA – Verification Instructions

To verify successful completion of this exercise, test your solution as follows:

1. Open **Firefox**, expand the **Workflow** folder and open **Case Builder**.
2. Enter User Name **P8Admin** and Password **Think4me** if not filled out. Click **Log In** and open solution **Mortgage Application**.
3. Open the tab **Case Types** and open **New Mortgage Application**.
4. Open the tab **Tasks**, hover over Task **Request Property Evaluation** and click the process icon to open process **Request Property Evaluation** in Designer.
5. In the top-right corner click **Run**.



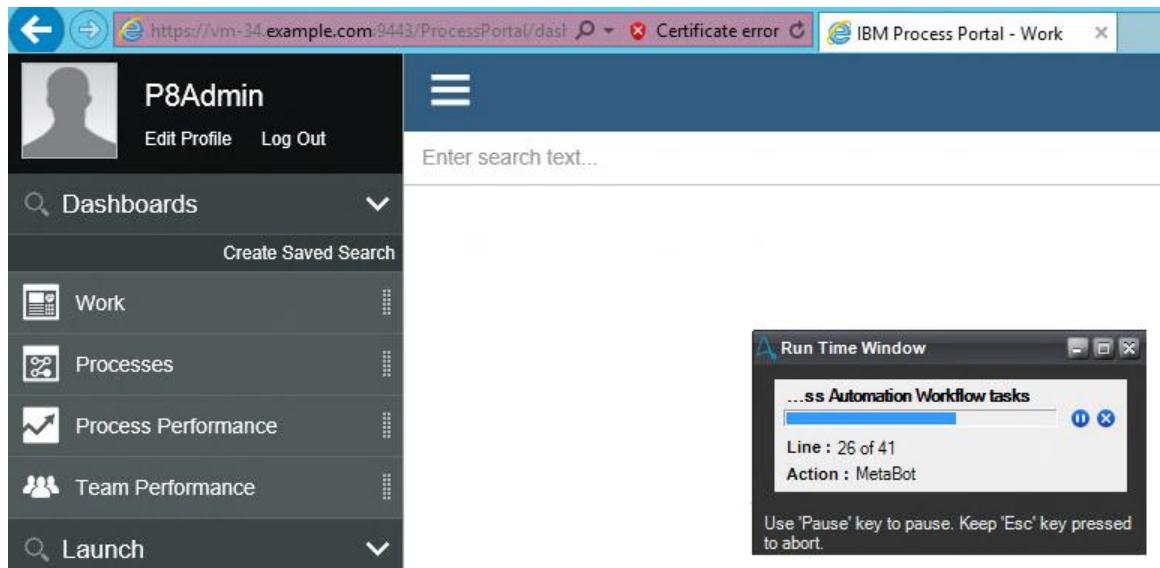
6. On the **right-hand side** you can now find details about the active process instance. Under **Locations** click the **arrow** to start the **Launch UI**.



7. In the **Launch UI** pop-up enter any value into field **Property Address**, for example **Address 07**, and click **OK**. Close the pop-up window.
8. Switch to the **Desktop of VM 4 - RPA**, don't click anything only watch how the robot is doing his work.

Note: It might take up to 80 seconds until the robot starts.

9. The **bot** has finished his work when Process Portal does no longer contain a task to work on and the Run Time Window waits on **Line 26 of 41**.



10. Switch back to the **Desktop of VM 3 - Workflow** and click the **Refresh** icon.



11. The details of the process instance are updated. Verify that the status of the instance is **Completed**. Expand the **Data** section. Verify that the mortgage can proceed, means variable **mortgageBlocked** is set to **False**.

The screenshot shows the process instance details. The 'Details' section lists the following information:

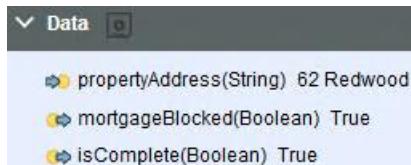
- Instance ID: 7
- Process App: Mortgage Application
- Status: Completed
- Start time: Jul 8, 2018 5:10 PM (13 minutes ago)
- Last action: Jul 8, 2018 5:17 PM (6 minutes ago)
- Due date: Jul 9, 2018 1:10 AM (in 8 hours)

The 'Tasks (2)' section shows two tasks. The 'Locations' section indicates 'No locations were found.' The 'Data' section shows the following variables:

- propertyAddress(String) Address 07
- mortgageBlocked(Boolean) False
- isComplete(Boolean) True

12. Repeat steps 5 to 10 with property address **62 Redwood Lane, Enceladus, Jupiter**. Expected result this time is that variable **mortgageBlocked** is set to **True**.

Note: In case the bot logs in to Process Portal using a wrong ID, stop it again and re-start it. Terminate the process instance and re-try the test.



Important: During the next exercise you will not require **VM 4 –RPA** running. You'll require it again at the end of exercise 9. To save resources, please **suspend VM 4 – RPA now**.

With this you have successfully completed the verification of your integration with RPA.

7.4 Integrate with RPA – Summary

In this exercise you have:

1. Used a **Robot task** to automate a User Task within a Process of the BPM feature of Workflow.
2. **Created** a Robot task as part of starting the Process it is contained within and seen how **RPA** completed this activity.
3. Learned that the signature of a **Robot Task** is defined by the following attributes:
 - **Name of the activity.**
 - **Input** and **output variable** mapping of the Robot Task.
 - **User** to which the Robot Task will be assigned.

This means, once you have generated the bot avoid changing these parameters, or make sure the generated bot is adapted accordingly.

8 Exercise: Integrate Finalize Loan Agreement with ODM

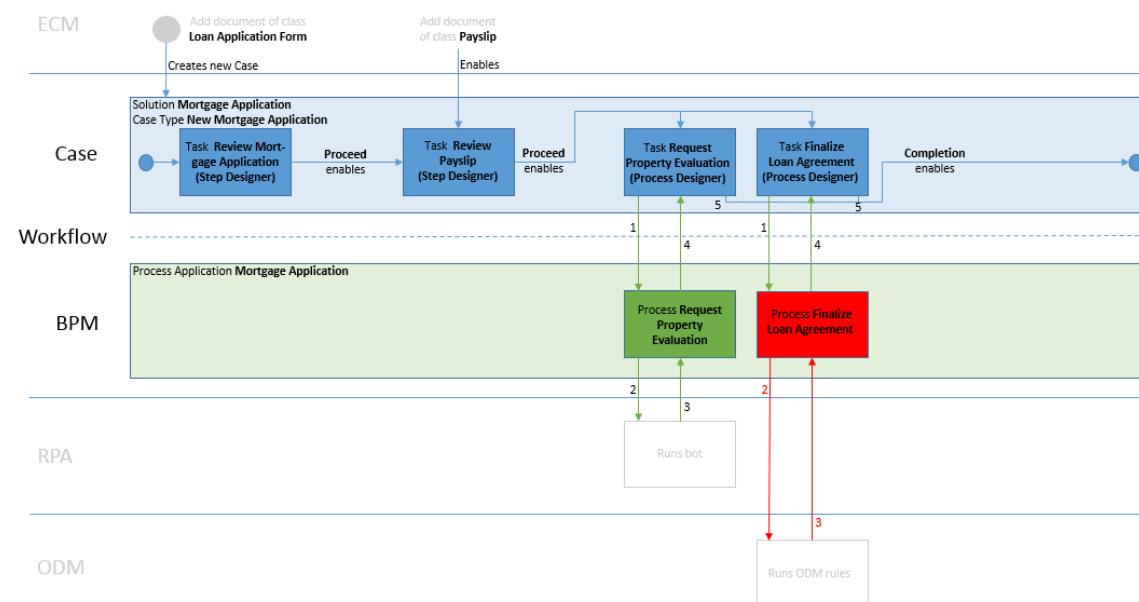
8.1 Integrate Finalize Loan Agreement with ODM – Introduction

In this exercise, you will update the **Finalize Loan Agreement** Process created in exercise 6 to use an external IBM ODM instead of the built-in rules and decision tables.

Note: If you are using **Template 7** and **not Template 3**, please complete the ODM sub-scenario before continuing with this exercise.

Note: The names of the Rule Apps, Rule Sets and Business Object structures are based on the pre-implemented ODM scenario in **Template 3**. If you created your own ODM implementation in **Template 7**, you must adapt these instructions to match your implementation.

From the complete Business Automation Workflow solution, you will implement / modify the parts in red in this exercise:



As a part of this exercise you will get introduced into the following features:

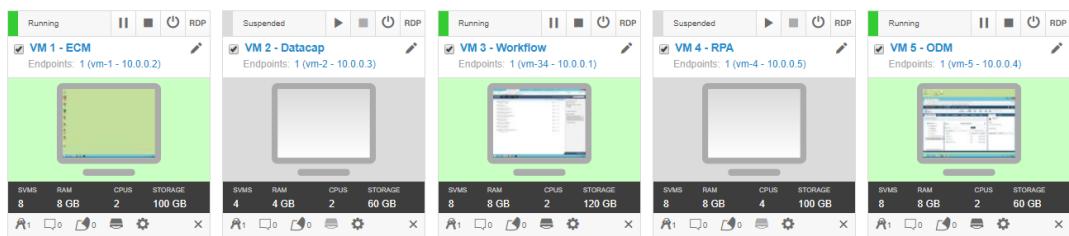
a. Generating Open API / Swagger files from IBM ODM

ODM exposes a REST API which can be described using the Open API / Swagger specification. This exercise will show you how you can generate these files from the Rule Execution Server of ODM.

b. **External Services in the BPM feature of Workflow**

External Services have REST, Web Service and Java bindings. For REST services, you can use an OpenAPI / Swagger file to create a low-code interface to integrate with systems exposing REST API such as ODM, Watson, etc.

For this exercise you will require to have the previous exercises of the Workflow sub-scenario successfully completed. Make sure that in your environment **VM 1 – ECM**, **VM 3 – Workflow & VM 5 – ODM** are running. If this is not the case, click the **Run** button to start them (start VM 1 – ECM first, VM 3 – Workflow second and then VM 5 – ODM, make sure a resumed VM is successfully connected to the network before starting the next VM). All other VMs must be suspended. If one of them is running, please suspend them now.



You can access the VMs through the **Browser** or by clicking **RDP** to connect to it using a Remote Desktop Connection.

You are now ready to start this exercise. As for every exercise, you have two options:

- If you are new to Workflow or prefer to follow the step by step instructions continue with the chapter named [Integrate Finalize Loan Agreement with ODM – Step by Step Instructions](#).
- If you are an experienced Case / BPM / Workflow / ODM person you can use the information from chapter named [Integrate Finalize Loan Agreement with ODM - High-level Instructions](#) for completing this exercise.

In this exercise you will work with the following tools on VM 3 – Workflow:

Tool	Location (Firefox Bookmarks Toolbar) / URL
Case Builder	Workflow → Case Builder / https://vm-34.example.com:9443/CaseBuilder/designer/DesignerHome.jsp
Workflow Center	Workflow → IBM Workflow Center / https://vm-34.example.com:9443/ProcessCenter
Process Designer	Launch Process Designer from within Workflow Center.
Process Portal	Workflow → Process Portal / https://vm-34.example.com:9443/ProcessPortal
Process Admin Console	Workflow → Process Admin Console / https://vm-34.example.com:9443/ProcessAdmin
ODM Rule Execution Server	Rule Execution Server http://vm-5.example.com:9090/res/login.jsf

For these tools, you will require the following IDs and passwords:

Tool	User ID	Password
Windows	Administrator	passw0rd
Case Builder, Workflow Center, Process Designer, Process Portal, Process Admin Console	P8Admin	Think4me
ODM Rule Execution Server	resAdmin	resAdmin

8.2 Integrate Finalize Loan Agreement with ODM – High-Level Instructions

1. From VM 3 – Workflow, access the IBM ODM Rule Execution Server console by clicking on the **Rule Execution Server** bookmark.
2. Login using the username **resAdmin** and password **resAdmin**.

Note: If the login does not work:

- a. Check the language of the Keyboard and ensure that it is set to English.
- b. Use Chrome instead.
- c. Close all Browser windows and open the **Rule Execution Server** bookmark in a new window.

3. Download the OpenAPI / Swagger JSON files for the two RuleApps defined in the console. The two RuleApps defined are as follows:

- **DBA_Jam_1**

This rule app takes in the customer name, age, yearly income, number of monthly payments, loan amount and the loan to value ratio to provide credit scores, corporate scores and monthly payment values. The corporate score and monthly payment values will be used as input to the 2nd rule app to determine if the mortgage application should be approved or rejected.

- **DBAJam2_RuleApp**

This rule app takes in the customer name, corporate score, yearly income, age, property zip code, loan amount and the monthly repayment values to determine if the mortgage should be approved or rejected. If rejected, it also provides an explanation message.

Note: If you are using **Template 7**, the names might be different based on what you have implemented in the ODM scenario.

4. In the Case Builder, open the **Mortgage Application** Solution, edit the **Finalize Loan Agreement** task in the Process Designer and create 2 External Services using the JSON files downloaded.
5. Update the server created for the External Services by providing the username **resAdmin** and password **resAdmin**.
6. Update the existing Service Flow **Loan Decision Service** by removing the existing Decision Service and invoking the two External Services created.

7. Create a new snapshot of the updated Process Application, activate the snapshot, set it as the default in the Process Admin Console and deactivate all older snapshots.
8. Verify that the properties for the task **Finalize Loan Agreement** in the Case Solution are still valid.
9. Save and re-deploy the Case Solution.

After you have successfully completed all the steps in VM 3 - Workflow, verify your work by completing the steps in the chapter named [Integrate Finalize Loan Agreement with ODM – Verification Instructions.](#)

8.3 Integrate Finalize Loan Agreement with ODM – Step by Step Instructions

Follow these step by step instructions to create the integration between Workflow and ODM:

1. Connect to **VM 3 – Workflow** as described in the introduction.
2. Open **Firefox**, click on the **Rule Execution Server** bookmark.
3. Login with username **resAdmin** and password **resAdmin**.

Note: If the login does not work:

- a. Check the language of the Keyboard and ensure that it is set to English.
- b. Use Chrome instead.
- c. Close all Browser windows and open the **Rule Execution Server** bookmark in a new window.

4. In the Rule Execution Server Console, click on the **Explorer** tab.



The explorer shows two RuleApps:

2 RuleApp(s)		
	Select All	Name
<input type="checkbox"/>	 DBA_Jam_1	
<input type="checkbox"/>	 DBAJam2_RuleApp	

Note: If you are using **Template 7**, the names might be different based on what you have implemented in the ODM scenario.

- **DBA_Jam_1**

This rule app takes in the customer name, age, yearly income, number of monthly payments, loan amount and the loan to value ratio to provide credit scores, corporate scores and monthly payment values. The corporate score and monthly payment values will be used as input to the 2nd rule app to determine if the mortgage application should be approved or rejected..

- **DBAJam2_RuleApp**

This rule app takes in the customer name, corporate score, yearly income, age, property zip code, loan amount and the monthly repayment values to

determine if the mortgage should be approved or rejected. If rejected, it also provides an explanation message.

5. Click on the 1st RuleApp **DBA_Jam_1**. This opens up the **RuleApp View** containing one Ruleset **computeLoanRequestParameters**.
6. Click on the ruleset **computeLoanRequestParameters**. This opens up the Ruleset View.

The screenshot shows a table titled '1 Ruleset(s)'. A single row is selected, indicated by a green checkmark icon. The row contains a gear icon, a checkbox labeled 'Select All', and the name 'computeLoanRequestParameters'. Below the table, a status bar indicates 'Ruleset 1 - 1 of 1'.

7. In the Ruleset View, click on the link **Retrieve HTDS Description file**.

The screenshot shows the 'Ruleset View' interface with a toolbar at the top. One of the buttons, 'Retrieve HTDS Description File', is highlighted with a red box.

8. In the wizard that opens, select the following options:
 - **Service protocol type:** REST
 - **Format:** OpenAPI – JSON
 - **Latest ruleset version** – Checked
 - **Latest RuleApp version** - Checked
9. Click on **Download** and save the json file anywhere on the file system.

The screenshot shows the 'Retrieve HTDS Description File' wizard. It has the following settings:

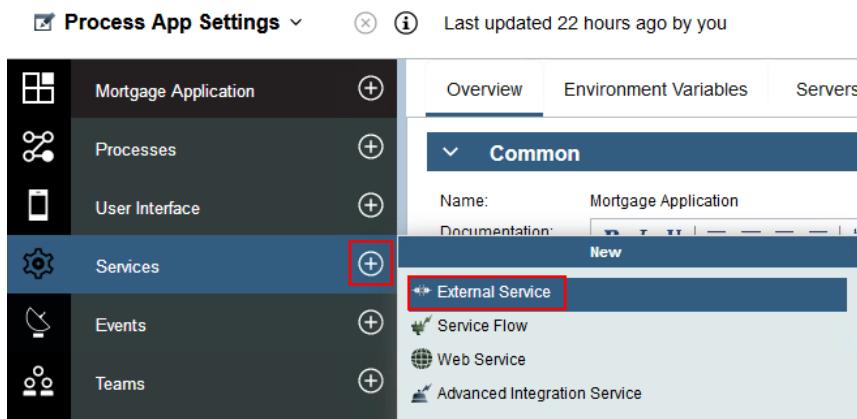
- Service protocol type:** REST (radio button selected)
- Format:** OpenAPI - JSON (dropdown selected)
- Latest ruleset version:** Checked (checkbox checked)
- Latest RuleApp version:** Checked (checkbox checked)
- Decision trace information:** Unchecked (checkbox unselected)
- Proxy for API Connect:** Unchecked (checkbox unselected)

 At the bottom are buttons for **Cancel**, **View**, **Download** (highlighted), and **Test**.

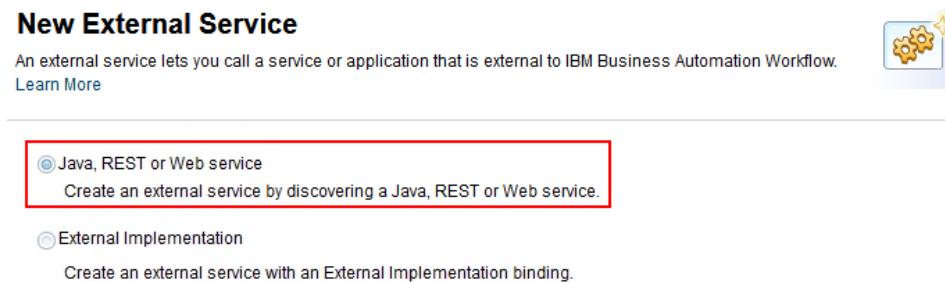
10. Repeat the previous steps to download the OpenAPI JSON file for the 2nd RuleApp **DBAJam2_RuleApp**.

11. Close the tab for the **Rule Execution Server**.

12. Go to the **Workflow** bookmark folder and select **Case Builder**.
13. Enter User Name **P8Admin** and Password **Think4me** if not filled out. Click **Log In** and open solution **Mortgage Application**.
14. Open the tab **Case Types** and open **New Mortgage Application**.
15. Open the tab **Tasks**, hover over Task **Finalize Loan Agreement** and click the process icon to open process **Finalize Loan Agreement** in Process Designer.
16. In the Library pane, hover over the **Services** section and click on the "+" button and select **External Service**.

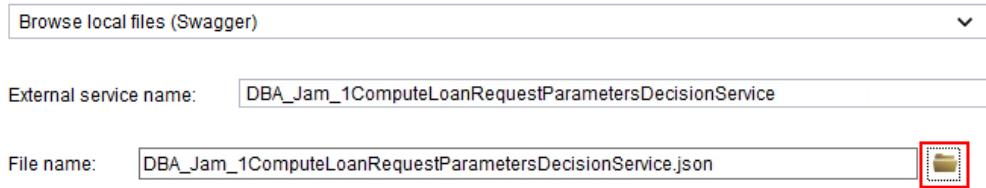


17. In the **New External Service** dialog, select the option **Java, REST or Web Service** and click **Next >**.



This opens up the next page for the next step **Select a method to discover the service**.

18. Click on the browse icon and select the JSON file downloaded for the 1st RuleApp **DBA_Jam_1ComputeLoanRequestParametersDecisionService.json**.



Selecting the file auto-populates the **External service name**.

19. Click **Next >**.

This page shows the operations included in the file. As the RuleApp contains one RuleSet, we see a single operation in the list.

Select the operations to include in the generated external service.

<input checked="" type="checkbox"/> Operation Name
<input checked="" type="checkbox"/> callcomputeLoanRequestParametersDecisionServiceOperation

20. Click **Next >** again.

This page shows the options to create a server that contains the information such as the hostname, username, password, etc. Since there is no existing server, the wizard gives us the option of creating a new server with a default name **DBA_Jam_1ComputeLoanRequestParametersDecisionServiceServer**.

21. Click **Finish**.

Finishing the wizard opens the **External Service** editor. Expanding the operation in the editor shows the inputs and outputs defined for the operation.

22. The Business Objects for the inputs and outputs are created automatically on creation of the External Service. Explore these Business Objects by opening them up from the Library pane category **Data**.



23. Switch back to the **External Service** and click on the title **DBA_Jam_1ComputeLoanRequestParametersDecisionService** in the External Service section.

The screenshot shows the External Service configuration. The service is named "DBA_Jam_1ComputeLoanRequestParametersDecisionService". It has one operation: "callcomputeLoanRequestParametersDecisionServiceOperation". This operation has two parts: "Input" (Request (Request)) and "Output" (callcomputeLoanRequestParametersDecisionServiceOperation_200 (Response), callcomputeLoanRequestParametersDecisionServiceOperation_default (Error)).

24. Switch to **Binding** tab in the column on the right.

The Binding tab settings show "Binding type: REST" and a "Server:" dropdown containing "DBA_Jam_1ComputeLoanRequestParametersDecisionServiceServer" with a "Select..." button.

The Binding tab shows the Binding type as REST because we created the external service using an OPEN API file describing a REST interface.

The tab also lists the server created during the creation of the External Service.

25. Click on the link to the Server **DBA_Jam_1ComputeLoanRequestParametersDecisionServiceServer**.

This opens the **Process App Settings** editor with the server selected and the details of the server shown in the column on the right.

The screenshot shows the Servers list interface with the server "DBA_Jam_1ComputeLoanRequestParametersDecisionServiceServer" selected.

26. For the **Authentication** section, enter the following details:

- **Authentication:** Username and password (basic authentication).
- **User name:** resAdmin
- **Password:** resAdmin

Host name:	vm-5.example.com
Port:	9090
Secure server:	<input type="checkbox"/>
SSL configuration:	
▼ Authentication	
Authentication:	Username and password (basic authentication)
User name:	resAdmin
Password:	*****

27. Click on **Finish Editing**.

28. Repeat the steps used to create the external service for the 1st RuleApp again for the 2nd RuleApp using the 2nd JSON file downloaded – **DBAJam2_RuleAppDBAJam2DecisionService.json**.

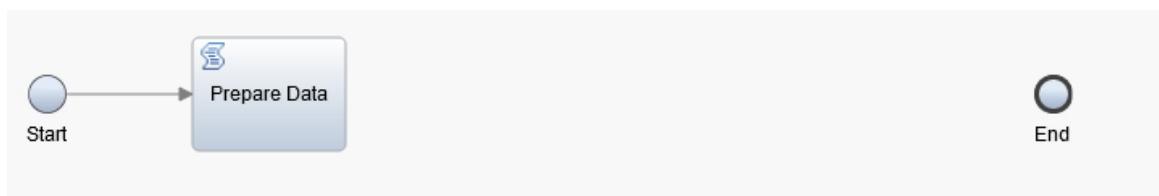
During this creation, you can **select the existing server in the last step of the External Service creation wizard**.

You should now have two External Services in your library and 13 discovered Business Objects. The Business Objects are tied to the External Services and will be deleted when the External Service is deleted.

29. From the Library pane, open the Service Flow **Loan Decision Service** that was implemented in exercise 6.

30. Rename the existing **Prepare Data** Script node to **Invoke RuleApp 1**.

31. Delete the existing node **Decision** that invokes decisions embedded within Process Designer.



32. From the Library pane, drag and drop the two external services created previously onto the canvas.



33. From the palette on the right, drag and drop two additional Script nodes. Rename them to **Invoke RuleApp 2** and **Prepare Output**.

34. Connect the nodes on the canvas as follows:

Start → Invoke RuleApp 1 → DBA_Jam_1ComputeLoanRequestParametersDecisionService → Invoke RuleApp 2 → DBAJam2_RuleAppDBAJam2DecisionService → Prepare Output



35. Click on the **DBA_Jam_1ComputeLoanRequestParametersDecisionService** node.

36. Switch to the **Implementation** tab.

37. Select the operation
callcomputeLoanRequestParametersDecisionServiceOperation.

General	Activity Type	
Implementation	Type:	Service Task
Data Mapping	Implementation	
Pre & Post	Implementation:	DBA_Jam_1ComputeLoanRequestParametersDecisionService
	Operation:	callcomputeLoanRequestParametersDecisionServiceOperation

38. Switch to the **Data Mapping** tab.

39. Click on **auto-map** for the **Input Mapping** section.

The screenshot shows the 'Input Mapping' tab with a red box highlighting the 'auto-map' button (indicated by a double-headed arrow icon) in the top right corner.

This opens the **Variable Creation** dialog that allows you to create variables automatically.

Variable Creation

Create variables where no matching variable exists. The new variables are automatically mapped. Existing mappings are not overwritten. Existing variables with the same name but different types are omitted.



Select the variables to be created and auto-mapped. By default, the variables are created as private variables. To create them as input, output, or input and output variables, select the check box beside the variable.

Variable Name	Variable Type	Input	Output
<input checked="" type="checkbox"/> Request	Request	<input type="checkbox"/>	<input type="checkbox"/>

40. Click **Finish**.

41. Repeat the auto-mapping steps for the **Output Mapping** section.

42. Similarly, set the operation in the **DBAJam2_RuleAppDBAJam2DecisionService** node to **callDBAJam2DecisionServiceOperation**.

Note: The input for the 2nd RuleApp cannot be auto-mapped as the name **Request** conflicts with the 1st RuleApp. Please create a private variable **Request_1** and **Variable type Request_1** and map it manually.

43. Repeat the auto-mapping steps for the data mapping for this node.

44. Click on the **Invoke RuleApp 1** node.

45. Switch to the **Script** tab and replace the existing script with the following script:

```
var birth = tw.local.dateOfBirth;
var today = new Date();
tw.local.age = today.getFullYear() - birth.getFullYear() + ((today.getMonth() >
birth.getMonth() || (today.getMonth() == birth.getMonth() && today.getDate() >
birth.getDate())) ? 1 : 0);

// create the request for the 1st ODM RuleApp
tw.local.Request = new tw.object.Request();
tw.local.Request.__DecisionID__ = "";
tw.local.Request.borrower = new tw.object.Borrower();
tw.local.Request.borrower.name = tw.local.customerName;
tw.local.Request.borrower.age = tw.local.age;
tw.local.Request.borrower.yearlyIncome = 12 * tw.local.monthlyIncome;
tw.local.Request.borrower.latestBankruptcy = undefined;
tw.local.Request.loan = new tw.object.Loan();
// we are currently only offering loans with a duration of 10 years
tw.local.Request.loan.numberOfMonthlyPayments = 120;
```

```

tw.local.Request.loan.startDate = new TWDate();
tw.local.Request.loan.amount = tw.local.loanAmount;
tw.local.Request.loan.toValue = tw.local.loanAmount /
tw.local.purchasingPrice;

```

Note: Again, if you are using **Template 7**, the script may have to be updated based on your implementation. i.e. if the Business Object structures are different, you will have to modify the script. Pasting this script will show you validation errors that you can use to correct this.

46. Similarly, for the **Invoke RuleApp2**, use the following script:

```

var result;
var zipCode = (result = tw.local.propertyAddress.match(/[^ ]{0-9}{5}[^ ]/), result
!= null) ? result[0].trim() : null;

tw.local.Request_1 = new tw.object.Request_1();
tw.local.Request_1.__DecisionID__ = "";
tw.local.Request_1.Borrower = new tw.object.Borrower_1();
tw.local.Request_1.Borrower.name = tw.local.customerName;
tw.local.Request_1.Borrower.corporateScore =
tw.local.callComputeLoanRequestParametersDecisionServiceOperation_200.borrower.c
orporateScore;
tw.local.Request_1.Borrower.yearlyIncome = 12 * tw.local.monthlyIncome;
tw.local.Request_1.Borrower.age = tw.local.age;
tw.local.Request_1.Borrower.zipCode = zipCode;
tw.local.Request_1.Loan = new tw.object.Loan_1();
tw.local.Request_1.Loan.amount = tw.local.loanAmount;
tw.local.Request_1.Loan.monthlyRepayment =
tw.local.callComputeLoanRequestParametersDecisionServiceOperation_200.loan.mouth
lyRepayment;

```

47. Similarly, for the **Prepare Output** node, use the following script:

```

tw.local.evaluationResult =
tw.local.callDBAJam2DecisionServiceOperation_200.Approval.approved;
tw.local.decisionServiceMessage =
tw.local.callDBAJam2DecisionServiceOperation_200.Approval.message;
tw.local.isComplete = true;

```

48. Click on **Finish Editing** or press **Ctrl + S** to unlock the editor.

49. Click the arrow besides the **Snapshots** icon and select **Create a new snapshot**.



50. In the **Take Snapshot** dialog enter the name of the new snapshot, for example **v0.5**. Click **Finish**.

51. In the Snapshot Created dialog, take a note of the new name and click **OK**.
52. Open the **Process Admin Console** and open the **Installed Apps** page. Switch to the **All** view.

53. Click the newly created snapshot **Mortgage Application (MA) – v0.5**.
54. On the right-hand side click **Activate Application**.

55. Click **OK** in the dialog that appears and then click **Make Default Version** on the right-hand side and confirm the dialog again by clicking **OK**.

You have now completed the implementation of the process and activated it. You are now ready to use your process from within the Case solution.

56. In the **Case Builder**, open the Case solution **Mortgage Application**.
57. In the **Case Types** tab, select the **New Mortgage Application** case type.
58. In the **Tasks** tab, edit the existing **Finalize Loan Agreement** task by clicking on the Edit icon.

Add Task | Manage Sets | All tasks

View by: Priority | Set | Name

Required tasks

- Review Mortgage Appli...**
Review the information provided in the application
Precondition: Case Start
Set: <None>
- Finalize Loan Agreement**
Invoke a BPM Process to get a decision regarding approval of the
Precondition: Property expression: Is Application Approved
Set: <None>
- Review Payslip**
Review the Payslip received
Precondition: Documents: Payslip
Set: <None>

59. Confirm that the property map is as follows:

Property map:

```

customerName = Customer Name (string, input)
dateOfBirth = Date of Birth (datetime, input)
decisionServiceMessage = Decision Service Message (string, output)
evaluationResult = Is Mortgage Approved (boolean, output)
isComplete = Is Loan Agreement Finalized (boolean, output)
loanAmount = Loan Amount (float, input)
monthlyIncome = Net Income (float, input)
propertyAddress = Property Address (string, input)
purchasingPrice = Purchasing Price (float, input)

```

60. Click **OK** then **Save and Close**.

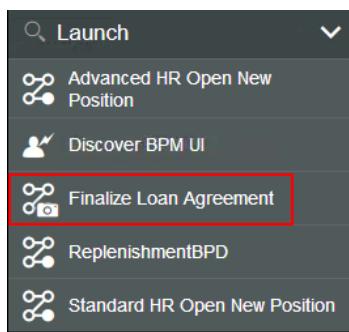
61. Re-deploy the solution.

After you have successfully completed all the steps in VM 3 - Workflow, verify your work by completing the steps in the next chapter, named [Integrate Finalize Loan Agreement with ODM – Verification Instructions](#).

8.4 Integrate Finalize Loan Agreement with ODM – Verification Instructions

To verify successful completion of this exercise, complete the following steps:

1. In Firefox, go to the **Workflow** folder and select **Process Portal**.
2. If not already logged in, log-in as user **P8Admin** and password **Think4me**.
If logged in, refresh the page.
3. In the **Launch** section on the left, select **Finalize Loan Agreement**.



This opens a page with the fields defined during creation of the Launch UI.

4. Enter the following information in the fields:
 - a. **Customer Name:** Jane Doe
 - b. **Date of Birth:** 04/07/1979
 - c. **Loan Amount:** 100000
 - d. **Monthly Income:** 8334
 - e. **Purchasing Price:** 143000
 - f. **Property Address:** 304 East 10th Street, 45202 Cincinnati, OH
5. Click **OK**.
6. In a new Firefox tab, go to the bookmark **Workflow** folder and select **Workflow Center**.
7. Click on the name of the **Mortgage Application** Process Application.
8. For the latest snapshot, e.g. v0.5., click on **Open in Designer**.
9. Switch to the **Inspector** view.



10. Click on the **Search** icon.



11. Click on the **Search** button.

+

Severity type

Person

Name or user name

Last modified date

From Date Time

To Date Time

Search

12. Click on the latest Process Instance.



This opens up the details of that instance in the right-hand side pane.

13. Verify that the **Status** is **Completed** and expand the **Data** section.

14. In the **Data** section, verify the following properties:

- a. Customer Name (String): Jane Doe
- b. Date of Birth (Date): 04/07/1979
- c. Loan Amount (Decimal): 100000
- d. Monthly Income (Decimal): 8334
- e. Property Address (String): 304 East 10th Street, 45202 Cincinnati, OH
- f. Purchasing Price (Decimal): 143000
- g. decisionServiceMessage (String): Congratulations! Your loan has been approved.
- h. evaluationResult (Boolean): True
- i. isComplete (Boolean): True

We can see that the **evaluationResult** is **true** and the **decisionServiceMessage** is **Congratulations! Your loan has been approved.**

Note: When you work with **Template 7** and your own ODM implementation has other rules than the default ODM implementation, verify that the result corresponds to your implementation.

15. Launch the **Finalize Loan Agreement** process again and enter different values to test all the decisions. Verify the results in the **Inspector** view of the Process Designer. You can use the table below to provide sample values to the Process and compare the results:

Customer Name	Date of Birth	Loan Amount	Monthly Income	Purchasing Price	Property Address	Result	Message
Jane Doe	04/07/1979	100000	8334	143000	304 East 10th Street, 45202 Cincinnati, OH	true	Congratulations! Your loan has been approved
Paul Smith	09/12/1973	150000	15000	215000	Lundweg 1, 24941 Flensburg	true	Congratulations! Your loan has been approved
Betty Weber	12/28/2001	50000	16668	720000	14 Rue Crespin du Gast, 75011 Paris	false	The borrower's age is not valid
John Moore	06/06/1972	150000	4167	215000	80 Trinity St, 07860 Newton, NJ	false	Too big Debt/Income ratio: 0.3853632

Note: The complete verification for the solution and process application working together will be done after exercise 9 when the implementation for the Workflow sub-scenario will be complete.

8.5 Integrate Finalize Loan Agreement with ODM – Summary

In this exercise, you have:

1. Generated the OpenAPI / Swagger definition file from IBM ODM to create External Services in the **Mortgage Application** Process Application.
2. Used the External Services to replace the existing decision service in the **Finalize Loan Agreement** Process.
3. Tested the decisions created in IBM ODM using several data sets from within IBM Workflow.

In the next exercise, you will create a final task **Review Loan Agreement Decision** that is started when the RPA and ODM tasks created in exercises 5-8 are completed.

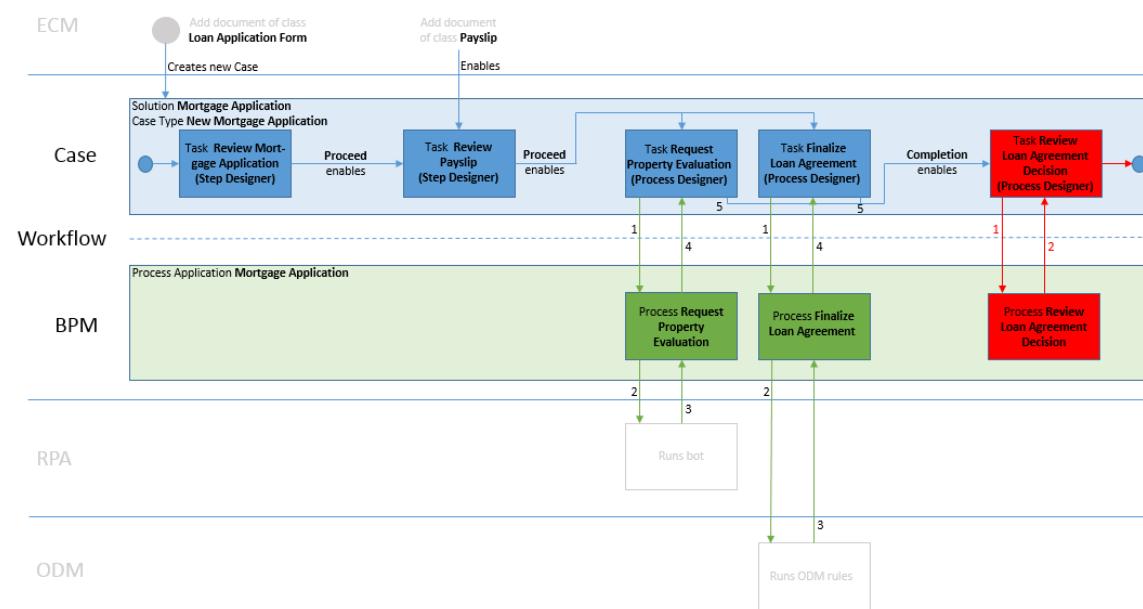
At the end of the next exercise, you will verify the solution and process application working together as the implementation for the Workflow sub-scenario will be complete.

9 Exercise: Complete the Review Loan Agreement Decision implementation

9.1 Complete the Review Loan Agreement Decision implementation – Introduction

In this exercise, you will build on top of the Solution & Process Application created in the previous exercises. You will create a new task **Review Loan Agreement Decision** that is started when the existing tasks **Request Property Evaluation & Finalize Loan Agreement** are completed. The new task will contain its implementation in the Process Designer and will use the Coaches to display data from the completed Case tasks and allow the user to override the decisions made in those Case tasks.

From the complete Business Automation Workflow solution, you will implement the parts in red in this exercise:



As a part of this exercise you will get introduced into the following features of IBM Workflow:

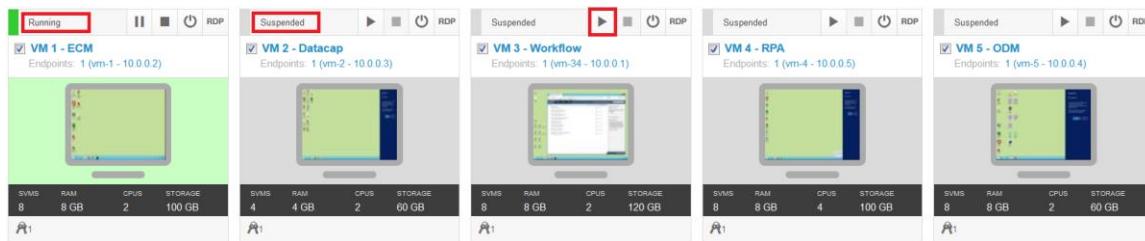
a. BPM UI Toolkit

The controls in the BPM UI Toolkit allow low-code access to other controls on the same page. This feature will be used to help the Lead Mortgage Officer decide on the approval of the mortgage by calculating ratios in the mortgage application.

b. Work Dashboard in the Case Client

The task list from the IBM BPM Process Portal is now integrated with the Case Client allowing users to have access to both their Case tasks and BPM tasks from the same client.

For this exercise you will require to have the previous exercises of the Workflow sub-scenario successfully completed. Make sure that in your environment **VM 1 – ECM** and **VM 3 – Workflow** are running. If this is not the case, click the **Run this VM** button to start them (start VM 1 first, VM 3 second, make sure VM 1 is successfully connected to the network before starting VM 3). All other VMs must be suspended. If one of them is running, pls. suspend them now.



While this exercise you will only work with **VM 3 – Workflow**. Access this VM through the **Browser** or by clicking **RDP** to connect to it using a Remote Desktop Connection.

You are now ready to start this exercise. As for every exercise, you have two options:

- If you are new to Workflow or prefer to follow the step by step instructions continue with the chapter named [Complete the Review Loan Agreement Decision implementation – Step by Step Instructions](#).
- If you are an experienced Case / BPM / Workflow person you can use the information from chapter named [Complete the Review Loan Agreement Decision implementation - High-level Instructions](#) for completing this exercise.

In this exercise you will work with the following tools on VM 3:

Tool	Location (Firefox Bookmarks Toolbar) / URL
Case Builder	Workflow → Case Builder / https://vm-34.example.com:9443/CaseBuilder/designer/DesignerHome.jsp
Workflow Center	Workflow → IBM Workflow Center / https://vm-34.example.com:9443/ProcessCenter
Process Designer	Launch Process Designer from within Workflow Center
Process Portal	Workflow → Process Portal / https://vm-34.example.com:9443/ProcessPortal
Process Admin Console	Workflow → Process Admin Console / https://vm-34.example.com:9443/ProcessAdmin

Content Navigator – Mortgage Application Desktop	CPE → Mortgage Application Desktop / https://vm-1.example.com:9444/navigator/?desktop=MA
--	---

For these tools, you will require the following IDs and passwords:

Tool	User ID	Password
Windows	Administrator	passw0rd
Case Builder, Workflow Center, Process Designer, Process Portal, Process Admin Console, Content Navigator – Mortgage Application Desktop	P8Admin	Think4me

9.2 Complete the Review Loan Agreement Decision implementation – High-Level Instructions

1. In the **Mortgage Application** Process Application, add a new Process **Review Loan Agreement Decision** with the following signature:
 - **Input**
 - customerName – String
 - decisionServiceMessage – String
 - propertyAddress – String
 - loanAmount – Decimal
 - netIncome – Decimal
 - purchasingPrice – Decimal
 - dateOfBirth – Date
 - finalizeLoanAgreementDecision – Boolean
 - propertyEvaluationBlock – Boolean
 - **Output**
 - evaluationResult – Boolean
2. Within the Process, include a Client-Side Human Service **Review Loan Agreement Decision** that shows the inputs, outputs and shows text boxes for the **Loan Amount to Purchasing Price** ratio and **Loan Amount to Yearly Income** ratio. Note that the yearly income is 12 times the net income.
3. In the Case Builder, modify the **Mortgage Application** Solution to add a new task **Review Loan Agreement Decision** that invokes the BPM Process created previously.
4. Add pre-conditions to the task so that it is started only when the **Request Property Evaluation** and **Finalize Loan Agreement** tasks are completed.

After you have successfully completed all the steps in VM 3, verify your work by completing the steps in the chapter named [Complete the Review Loan Agreement Decision implementation – Verification Instructions](#).

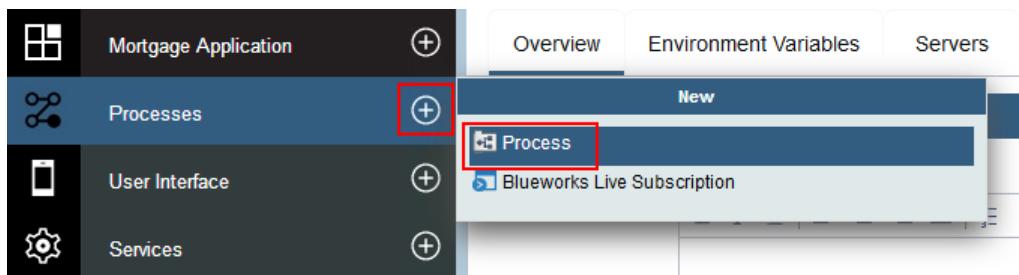
9.3 Complete the Review Loan Agreement Decision implementation – Step by Step Instructions

Follow these step by step instructions to enhance your Process Application and Solution:

1. Connect to **VM 3 – Workflow** as described in the introduction.
2. Open **Firefox**, expand the **Workflow** folder and open the **Workflow Center** link.
3. Open the existing Process Application, **Mortgage Application**, by clicking on the link **Open in Designer**.



4. In the Library pane on the left, create a new Process by clicking on the "+" button on the **Processes** section and selecting **Process**.



5. In the New Process dialog, enter the name **Review Loan Agreement Decision** and click **Finish**.
6. Switch to the **Overview** section of the Process and for the **Expose to start** field, select the team **All Users**.



7. Switch to the **Variables** tab and add the following variables:

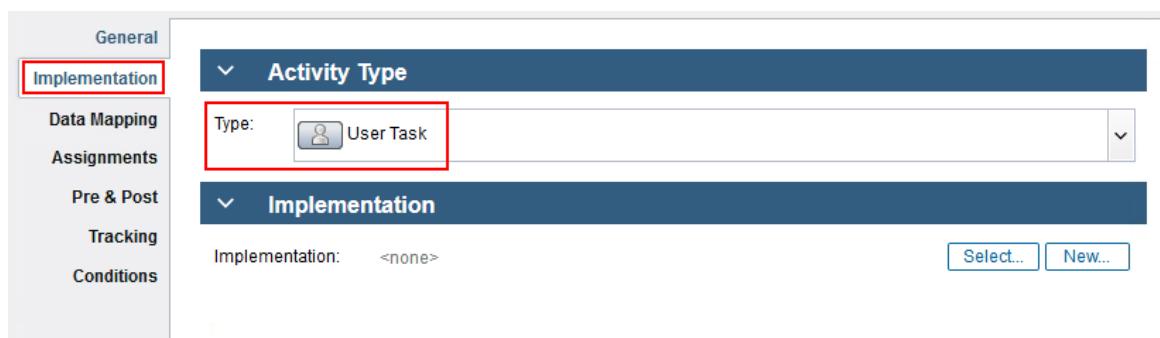
- **Input**
 - i. customerName – String
 - ii. decisionServiceMessage – String
 - iii. propertyAddress – String
 - iv. loanAmount – Decimal
 - v. netIncome – Decimal
 - vi. purchasingPrice – Decimal

- vii. dateOfBirth – Date
- viii. finalizeLoanAgreementDecision – Boolean
- ix. propertyEvaluationBlock – Boolean

- **Output**

- i. evaluationResult – Boolean

8. Switch to the **Definition** tab, click on the existing task **Inline User Task** and switch to the **General** tab.
9. Update the name of the task to **Review Loan Agreement Decision**.
10. Switch to the **Implementation** tab.
11. Switch the type from **Inline User Task** to **User Task**.

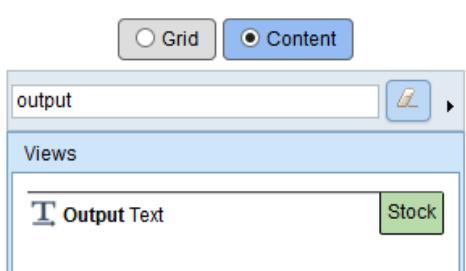


12. In the Implementation section, click **New...**

This opens a new dialog with the task's name **Review Loan Agreement Decision** filled in.

13. Click **Next**.
 14. Select **evaluationResult** as the output and all the other variables as the input to the Client-Side Human Service.
 15. Click **Finish**.
- This opens the Client-Side Human Service with a default Coach.
16. Open the **Coaches** tab and select the **Coach**.

17. Select the **Output Text** view from the right palette and drop it onto the bottom of the canvas.



18. Change the label of the view to **Loan To Purchase Price Ratio**.

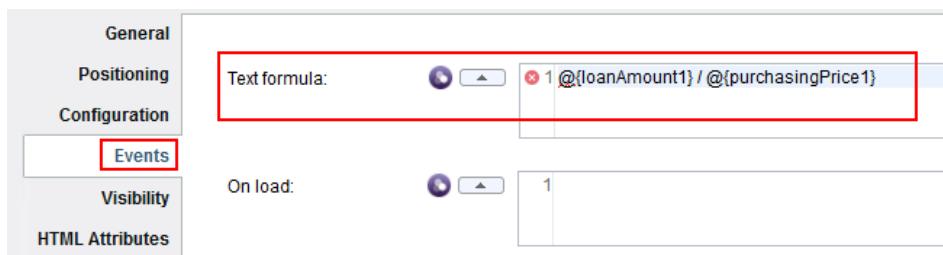
19. Switch to the **Events** tab.

20. In the **Text Formula** field, enter the following:

```
@{loanAmount1} / @{purchasingPrice1}
```

loanAmount1 is the Control ID for the **Loan Amount** field, this can be seen in the **General** tab for the field. Similarly, **purchasingPrice1** is the Control ID for the **Purchasing Price** field. Using `@{controlID}` gives us the value for that field.

Note: The validation error is a defect and will be fixed in the next release.

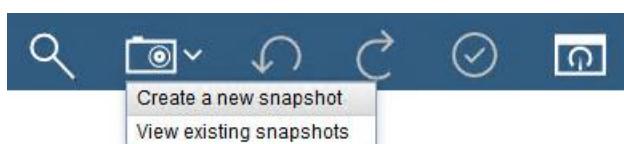


21. Add another **Output Text** view to the canvas with name **Loan To Yearly Income Ration** and the formula:

```
@{loanAmount1} / (@{netIncome1} * 12)
```

22. Click on **Finish Editing** or **Ctrl + S** to unlock the editor.

23. Click the arrow besides the **Snapshots** icon and select **Create a new snapshot**.



24. In the **Take Snapshot** dialog enter the name of the new snapshot, for example **v0.6**. Click **Finish**.
25. In the Snapshot Created dialog, take a note of the new name and click **OK**.
26. Open the **Process Admin Console** and open the **Installed Apps** page. Switch to the **All** view.

No items for the filter 'Active' were found.

27. Click the newly created snapshot **Mortgage Application (MA) – v0.6**.
28. On the right-hand side click **Activate Application**.

- Activate Application
- Migrate Inflight Data
- Sync Settings
- Update Tracking Definitions

29. Click **OK** in the dialog that appears and then click **Make Default Version** on the right-hand side and confirm the dialog again by clicking **OK**.

- Deactivate Application
- Migrate Inflight Data
- Sync Settings
- Make Default Version
- Update Tracking Definitions

You have now completed the implementation of the process and activated it. You are now ready to use your process from within the Case solution.

30. In the **Case Builder**, open the Case Solution **Mortgage Application**.
31. In the **Case Types** tab, select the **New Mortgage Application** case type.

32. In the Case Type, switch to the **Tasks** tab.
33. Click on **Add Task** and select **Task with Existing Process**.
34. In the Add Task dialog, enter the following details:
 - **Name:** Review Loan Agreement Decision
 - **Description:** Review decisions made by RPA and ODM. Override if necessary.
 - **This task is:** Required
35. Click **Next**.
36. On the **Preconditions** page, select **A property condition is met**.
37. Click on **Add Condition**.
38. In the **Property** column, select the property **Is Loan Agreement Finalized**.
39. In the **Value** column, select the value **True**.
40. Repeat the last 3 steps for condition: **Is Property Evaluation Complete** is equal to **True**.
41. Click **Next**.
42. Select the Process **Review Property Evaluation Decision**.
43. Click **Next**.
44. In the Map Properties page, under the **Process data field name**, select a field. Select the corresponding **Case type property name**. Click on the "+" button after.

At the end, your Property map should look as follows:

```
Property map:
customerName = Customer Name (string, input)
dateOfBirth = Date of Birth (datetime, input)
decisionServiceMessage = Decision Service Message (string, input)
evaluationResult = Is Mortgage Approved (boolean, output)
finalizeLoanAgreementDecision = Is Mortgage Approved (boolean, input)
loanAmount = Loan Amount (float, input)
netIncome = Net Income (float, input)
propertyAddress = Property Address (string, input)
propertyEvaluationBlock = Is Mortgage Blocked (boolean, input)
purchasingPrice = Purchasing Price (float, input)
```

45. Click **Next** then click **Finish** to close the dialog.

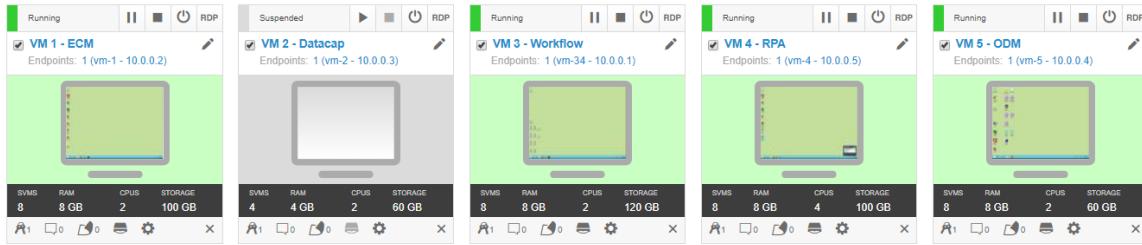
46. Click on **Save and Close**.

47. Re-deploy the solution.

After you have successfully completed all the steps in VM 3, verify your work by completing the steps in the next chapter, named [Complete the Review Loan Agreement Decision implementation – Verification Instructions](#).

9.4 Complete the Review Loan Agreement Decision implementation – Verification Instructions

To verify successful completion of this exercise, **resume VM 4 – RPA** and **VM 5 – ODM**. Ensure that the VM 1, VM 3, VM 4 and VM 5 machines are running.



Then, complete the following steps:

3. In VM 3, Go to the **Mortgage Application Desktop** by clicking on the **CPE → Mortgage Application Desktop** bookmark.
4. If not logged in, login via username **P8Admin** and password **Think4me**.
5. Expand the dropdown menu where it says **Home** and select **Browse**.
6. In the Target store, select the folder **Incoming Mortgage Application Documents** by double-clicking it.
7. In the top toolbar, select **Add Document**.
8. In the **General** section, enter the following values:
 - a. **Entry Template: Loan Application Form Entry Template**
 - b. **File name:** Any file on the system eg: 100Custom.xml
9. In the Properties section, enter the following properties:
 - a. **Document Title:** Application Jane Doe
 - b. **Customer Name:** Jane Doe
 - c. **Date of Birth:** 7/4/1979 (click on the drop-down button and select **Edit Value**)
 - d. **Loan Amount:** 100000
 - e. **Property Address:** 304 East 10nd Street, 45202 Cincinnati, OH
 - f. **Purchasing Price:** 143000
10. Click on **Add** in the panel on the right.

11. Go to Case Client by clicking on the **Workflow → IBM Case Client** bookmark. Ensure that the role is set to **Mortgage Officer**.
12. Click on **Mortgage Officer (0)**. This refreshes the Work page and you should see a new Step **Review Mortgage Application** with a loan amount of **100,000**.
13. Click on the step name **Review Mortgage Application** to open it. In the task, you can see the details added in Steps **Error! Reference source not found.** & **Error! Reference source not found.** above.
14. Click on the **Proceed** button.
15. Switch back to **Mortgage Application Desktop** and add a document using the entry template **Payment Slip Entry Template** with the following properties:
 - a. **Document Title:** Payslip Jane Doe
 - b. **File name:** Any file eg: 100Custom.xml
 - c. **Properties:**
 - i. **Customer Name:** Jane Doe
 - ii. **Net Income:** 8334

Hint: The VM-1 ECM contains custom code using an Action Handler that maps the document and its properties to the right case based on the name of the customer. Therefore, make sure to use the same customer name as in Step 10.
16. Switch back to the **Case Client** and refresh the **Mortgage Officer**'s task list. You should now see the **Review Payslip** task.
17. Click on the step name **Review Payslip**.
18. In the task, you should see 2 documents – **Application Jane Doe & Payslip Jane Doe** along with the other properties added during document creation.
19. Click on the **Proceed** button.
20. Click on the **Cases** tab, click on **Search** and look for the latest Case you worked on. It should show the **Working** state.

Title	Added On	Case State	Modified By	Modified On
MA_NewMortgageApplication_000000100001	7/8/2018, 11:17 PM	Working	P8Admin	7/8/2018, 11:18 PM

21. Click on the title for your case.
22. In the Case Details, switch to the **Tasks** tab. You will notice the following:
 - a. The **Is Mortgage Approved** field is **checked**.
 - b. The **Finalize Loan Agreement**, **Review Mortgage Application** and **Review Payslip** tasks are in complete state.
 - c. The **Request Property Evaluation** task is either in **Started** or **Completed** state.

If you started with **Template 3** and the task is in the **Started** state, wait for a few seconds and click on the **Tasks** tab again to refresh until the task moves to the **Completed** state. In case this does not happen within 80 seconds, connect to **VM 4 – RPA** and re-start the bot as described in Exercise 5.

If you started with **Template 7**, the **Request Property Evaluation** task **will not complete automatically**, because the RPA sub-scenario is not yet implemented. Use Google Chrome to open Process Portal, login via username **bot1** and password **passw0rd**, open and claim **Step: GetDataFromLandChargeRegister**, click button **Mortgage can Proceed**, logout from Process Portal and close Google Chrome. Back in Case Client click the **Tasks** tab again. The **Request Property Evaluation** task should be **Completed** now.
 - d. The **Review Loan Agreement Decision** task is in the **Started** state.

The screenshot shows the Case Details page. At the top, there are buttons for Comments, Add Task, Add Custom Task, and Split Case. Below this, there are tabs for Documents, Tasks (which is selected), and History. A section titled 'Required (5)' lists five tasks:

- Review Loan Agreement Decision (Completed on 7/8/2018, 11:30 PM)
- Finalize Loan Agreement (Completed on 7/8/2018, 11:29 PM)
- Request Property Evaluation (Completed on 7/8/2018, 11:30 PM)
- Review Mortgage Application (Completed on 7/8/2018, 11:29 PM)
- Review Payslip (Completed on 7/8/2018, 11:29 PM)

On the right side, there are fields for Customer Name (Jane Doe), Extended Retention Required (unchecked), Is Mortgage Approved (checked), Loan Amount (100,000), Date of Birth (7/4/1978), Net Income (8,334), Payment Date (7/8/2018), and Property Address (304 East 10nd Street, 45202).

Note: In case the **Review Loan Agreement Decision** task is in the **Failed** state, re-try the entire verification steps with slightly modified data, especially the Customer Name. This sometimes happens due to yet unknown reasons. Further investigation on that intermittent issue will be done.

23. Click **Close** in the top-right corner to close the Case Details.
24. In the top-left corner, switch the **Cases** dropdown to **Work Dashboard**. This dashboard shows the User Task created in the BPM Process.

The screenshot shows the Work Dashboard. The 'Work Dashboard' tab is highlighted with a red box. Below it, there is a search bar with placeholder text 'Enter search text...'. A list of tasks is displayed:

- Step: Review Loan Agreement Decision**
Review Loan Agreement Decision:61
All Users
Due: Jul 9, 2018, 12:30:37 AM

25. Click on **Step: Review Loan Agreement Decision** then click on **Claim Task**.
This opens up the interface you defined during the creation of your Client-Side Human Service.
26. Verify that the **Loan to Purchase Price** and the **Loan to Yearly Income** ratios are match the formula you used. i.e. ~0.7 and 1 respectively.

27. To override the decision made by the **Finalize Loan Agreement** task, leave the **Approve Mortgage** checkbox unchecked and click **Submit**.
28. Switch back to **Cases** in the top-left drop down menu, go to the **Cases** tab and click on **Search**.
29. The Case you finished working on should show the **Complete** state. Open the Case Details by clicking on the title. Verify the following:
- In the **Tasks** tab, The **Finalize Loan Agreement** task should be in the **Completed** state.
 - The **Is Mortgage Approved** field is now unchecked.

The screenshot shows a software interface with a header containing 'Documents', 'Tasks' (which is highlighted with a red box), and 'History'. Below this, a section titled 'Required (5)' lists five tasks:

- Finalize Loan Agreement** (Completed on 7/8/2018, 11:29 PM) - This task is highlighted with a red box.
- Request Property Evaluation** (Completed on 7/8/2018, 11:30 PM)
- Review Loan Agreement Decision** (Completed on 7/8/2018, 11:34 PM)
- Review Mortgage Application** (Completed on 7/8/2018, 11:29 PM)
- Review Payslip** (Completed on 7/8/2018, 11:29 PM)

To the right of the tasks, there are several input fields with their current values:

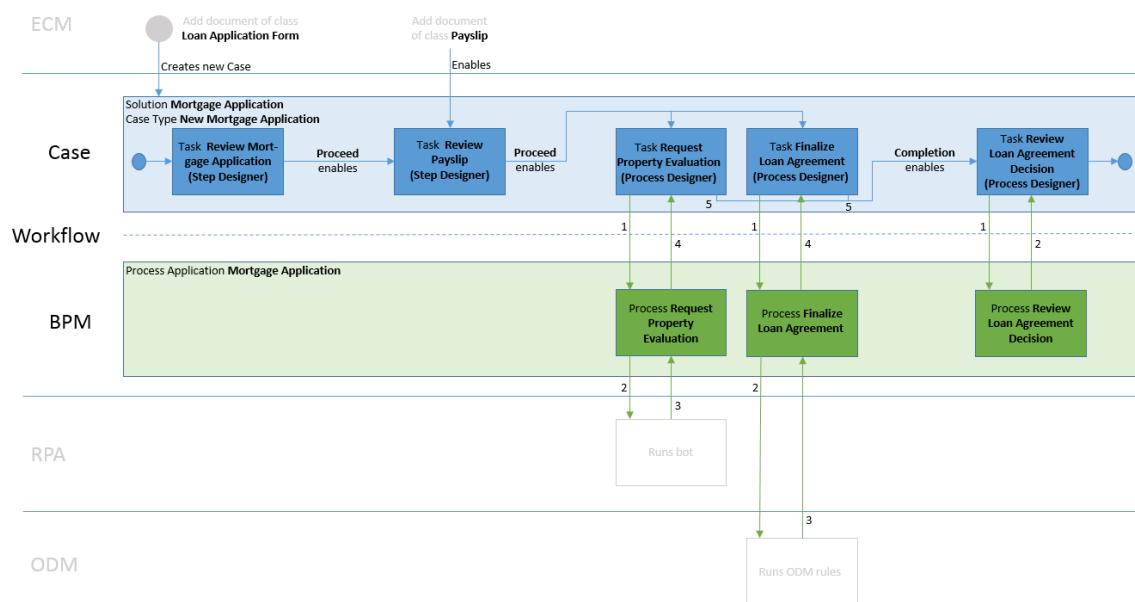
Customer Name	Jane Doe
Extended Retention Required	<input type="checkbox"/>
Is Mortgage Approved	<input type="checkbox"/> (This field is highlighted with a red box)
Loan Amount	100,000
Date of Birth	7/4/1978
Net Income	8,334
Payment Date	7/8/2018
Property Address	304 East 10nd Street, 45202

9.5 Complete the Review Loan Agreement Decision implementation – Summary

In this exercise, you have:

1. Completed the implementation of the **Mortgage Application** Solution and Process Application in IBM Workflow by adding a **Review Finalize Loan Agreement** task.
2. Completed a User Task created in BPM using the Work Dashboard in the Case Client.
3. Tested the Case by executing all the tasks in the Solution and verifying the results.

With that you have finished the implementation of the Workflow sub-scenario.



When you started with **Template 7**, continue with implementing the RPA sub-scenario.

When you started with **Template 3**, you may next want to run the Platform end-to-end scenario. For this, access the [shared box folder](#) from your local machine. In the shared box folder navigate to **DBA Blue Demos 2018 - Material for Participants > 6.**

Platform end-to-end scenario. Follow the instructions found there to run through the entire end-to-end scenario. For that, you require all VMs in your environment running.