IBM Business Automation and Digital Labor Demos and Labs

Author Automation with IBM watsonx Orchestrate Automation Builder.

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1 Introduction

1.1 IBM watsonx Orchestrate Automations

1.1.1 Automations

A watsonx Orchestrate (wxO) automation is a collection of components (Decisions and Workflows) that fulfill a business purpose. You create automations in the wxO Automation Builder and publish them to the wxO *Skills and Apps* page as a skill. Users can then invoke the skill by entering a phrase (that matches the added skill) in the wxO chat bar. Automations created in the automation builder can also be reused in other automations.

1.1.2 Automation Builder

You create your Automation and its logic in the wxO Automation Builder. Automation contains one or more automation components. An automation component fulfills a business purpose and contains business logic. The following are the types of automation components currently available:

1. **Decision**

   An automation component type that captures and automates repeatable intelligent business decisions. For example, a business decision to authorize a loan based on established rules and policies. A decision can be implemented with:

   - Decision models offer a straightforward and low-code approach to modeling business decisions through a structured, visual representation of a decision.
   - Ruleflow models offer a more advanced way to define decisions.
   - Prediction models offer insights from historical data to help you make more informed decisions.

2. **Workflow**

   An automation component type that models a business process. For example, a process to approve an upsell offer. A workflow is composed of a sequence of activities and tasks. Tasks include generated user interfaces required to complete tasks by users participating in a workflow. Activities can be other workflows, decisions, automations, or skills you can combine to create powerful automations.

3. **Generative AI**

   An automation component that can be used to analyze or generate contextual information. You can use the prompt editor in the component to specify what needs to be analyzed or produced. You can then use the content within a skill or a broader automation.

Automation Builder provides all the capabilities needed to develop (no-code editors), test (unit test playback environment), version, and share automations with other authors. It also includes the capability to create operations to publish automations and expose them as skills.

1.2 Lab Scenario and Lab Overview

1.2.1 Client Onboarding Use Case

Focus Corp is a business services provider that offers various services for different industries. Focus Corp uses a fully automated client onboarding solution to provide onboarding services to its clients. Watch this video to see how client onboarding requests are completed: https://ibm.box.com/v/CLIENT-ONBORDING-USE-CASE

1.2.2 Upsell Solution

The company's quarterly services upsell initiative is critical to demand generation; however, it is increasingly difficult to manage and execute. Quarterly sales campaigns are time-consuming and ineffective. Completing quarterly promotions takes over ten weeks. Due to time limitations, the sales team cannot include all eligible customers. Managers are looking for a faster and more effective way of launching upsell offers.

Two labs cover the Upsell Solution:

1. Building the User-Facing Solution

In this lab, you will build an IBM watsonx Orchestrate solution that re-imagines the quarterly services upsell initiative. You will be reusing the existing IT assets to author an intelligent, AI-driven solution that pulls customer data from the system of records and creates targeted emails.

2. Building the Sales Campaign Approval Workflow, which is a component of the user-facing solution

In this lab, you will use the Automation Builder to create an Automation used in the user-facing solution as a skill. This Automation automates the Sales Campaign Approval Process. It is composed of two components:

- A decision that considers the customer scoreboarding information and helps to decide if the upsell offer is to be auto-approved, auto-rejected, or has to be looked at by a sales manager.
- A workflow that orchestrates the Scoreboard skill, the approval decision component, the Manager Approval User Task, and the Send Campaign Email skill.

1.2.3 Sales Campaign Approval Workflow – Architecture and Implementation

1.2.3.1 Automation

In this lab, you will build the Sales Campaign Approval Workflow, a component of the user-facing solution.

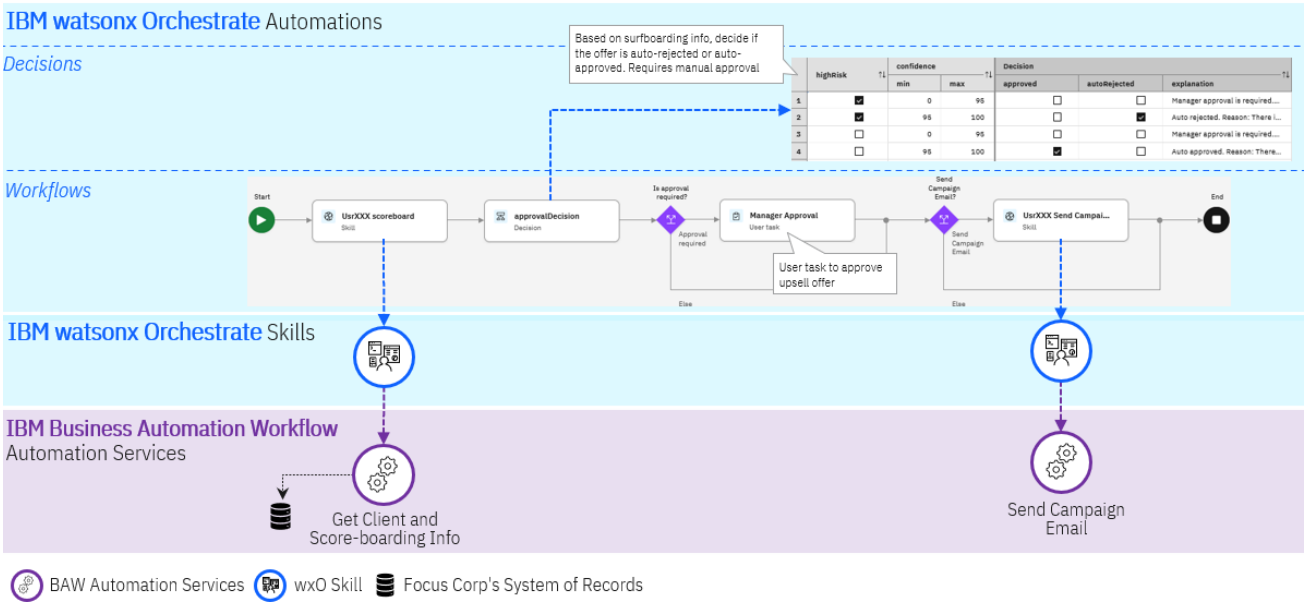


Figure 1. Sales Campaign Approval Workflow – Architecture

The wxO Automation includes two components: Workflow and Decision. The Workflow component invokes external services (wxO Skills) implemented as Service Flows in IBM Cloudpack for Business Automation. The Decision component is implemented solely in wxO.

1.2.3.2 Sales Campaign Approval WorkflowWorkflow

You will build the Workflow defined below in this lab.

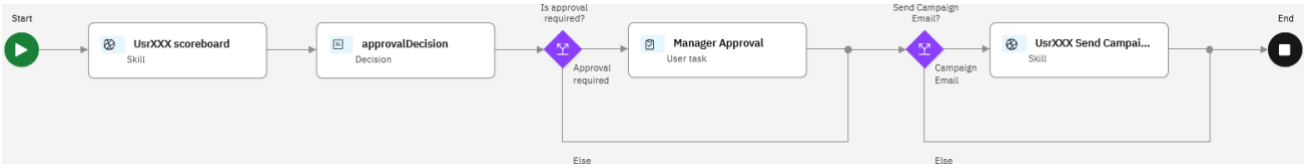


Figure 2. Sales Campaign Approval Workflow - Implementation

Let's examine the Activities in the above Workflow.

The Start node. The input parameters of the Workflow are client name and upsell services list.

Skill

The first Activity is a wxO skill that uses existing IT automation to retrieve customer data and the related scoreboarding information.

Decision

The second Activity is implemented in Automation Builder as Decision automation. It uses the scoreboarding information retrieved in the previous skill to determine if the sales campaign will be auto-approved, auto-rejected, or has to be looked at by a sales manager.

Branch

The third Activity is a Branch that decides based on the output of the second Activity if a sales manager's approval is required. If it is, the fourth Activity is called. Otherwise, it is skipped.

User task

The fourth Activity is a User Task that provides the user interface with information (client data, scoreboard information, list of upsell services) for the sales manager to use. The sales manager can change the upsell services and approve or reject the sales campaign.

Branch

The fifth Activity is a Branch that checks if the sales campaign has been approved (auto-approved by the Decision or manually approved by the Sales Manager). If approved, it will move to the path executing the sixth Activity. Otherwise, it will be skipped.

Skill

The sixth Activity is a wxO skill that uses an existing IT automation. The Automation uses the upsell information and customer details to compose a customized upsell offer email message and sends it out to the customer.

The Workflow output includes the client's name, a list of upsell services (possibly adjusted by the sales manager), the approval decision, and the email status (sent or not sent).

1.2.3.3 Skills

The wxO skills you will use in this lab are implemented by two Service Flows authored using Business Automation Workflow: scoreboard and sendCampaignEmailUAB. These Service flows are exposed as operations (scoreboard and sendCampaignEmailUAB) in a single OpenAPI file.

See the figures below showing the services in Business Automation Workflow:

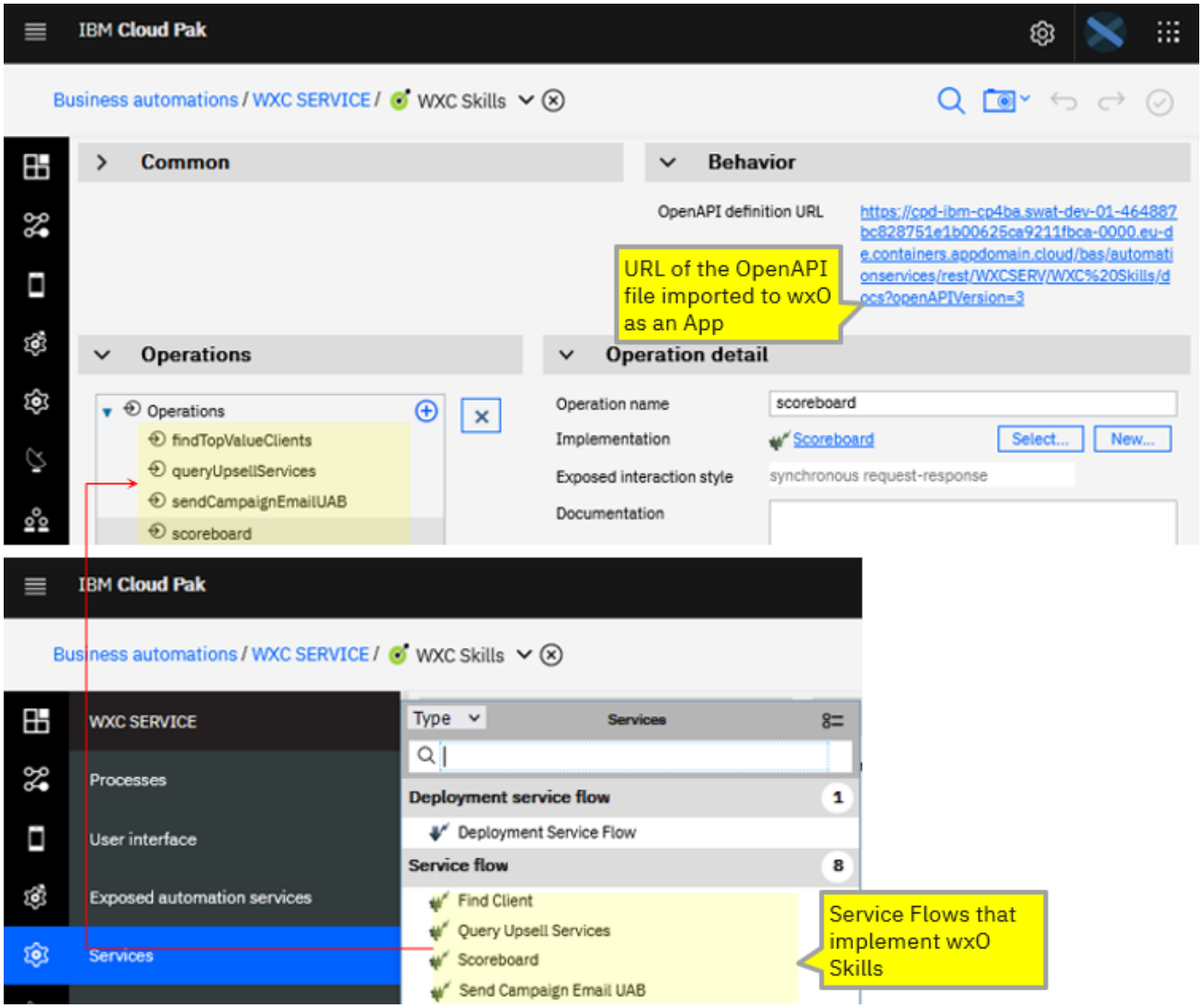


Figure 3. Service Flows that implement wxO skills

1.2.4 Lab Overview

In this lab, you will perform the following steps to author, test, and publish the Sales Campaign Automation:

- Import and publish Skills to the Skills Catalog
- Create the Automation and the Workflow
- Add and configure the wxO Scoreboard Skill
- Create and author the Decision
- Add and configure the Decision
- Configure the Manager Approval User Task
- Add and configure the wxO Send Campaign Email Skill
- Add and configure the Approval Branch and the Send Campaign Email Branch
- Unit test the Workflow Automation
- Expose Workflow as a wxO Skill (create a version, create an operation, and publish it as a Skill)
- Test the Workflow Skill in the Chat

Approximate Duration of this lab: 2-3 hours.

1.3 Lab Setup Instructions

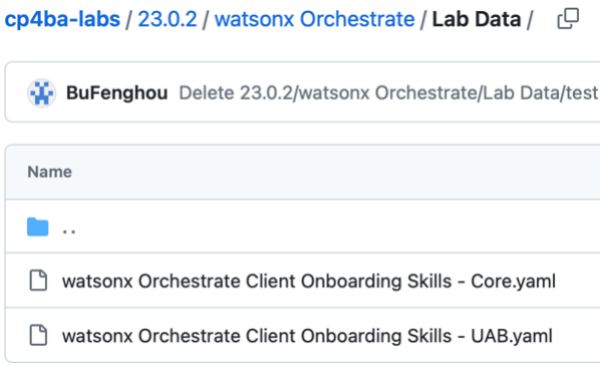
1.3.1 Systems, Lab Files, and Credentials

Access the Tech Jam GitHub page that lists the available systems, URLs, and login instructions. For this lab, you will need to access:

- **IBM watsonx Orchestrate**
- **Local Mail Client**

1.3.2 Customize the OpenAPI File

Download the **watsonx Orchestrate Client Onboarding Skills - UAB.yaml** file to your computer from the Lab Data folder.



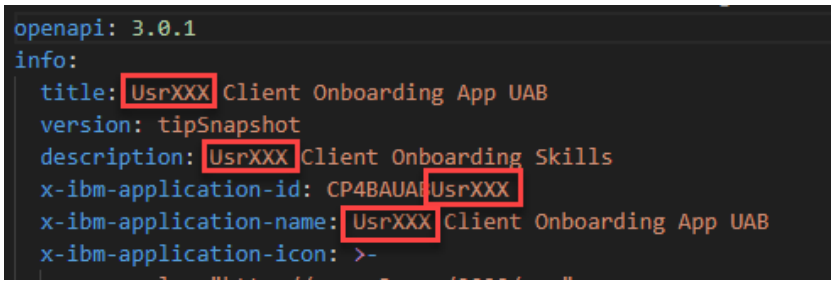
The OpenAPI file *watsonx Orchestrate Client Onboarding Skills - UAB.yaml* includes definitions of the REST call to invoke the two REST Services, which expose Service Flows authored in IBM Business Automation Workflow. You will use this file to create Skills in wxO.

Since we are using a shared wxO environment, you need to perform the steps below to ensure your Skills have unique names and to define the connection to the Server (using your **CP4BA Credentials**) where the Service Flows are running.

_1. Use a text editor of your choice to **Open** the *watsonx Orchestrate Client Onboarding Skills - UAB.yaml* file.

_2. Replace **all six** occurrences of **UsrXXX** with **the user id you received** when registering for your CP4BA Credentials., e.g., Usr002 (use Replace all in your editor of choice to ensure you don't miss one or multiple of the six occurrences).

Double-check that you replaced all six occurrences of UsrXXX.

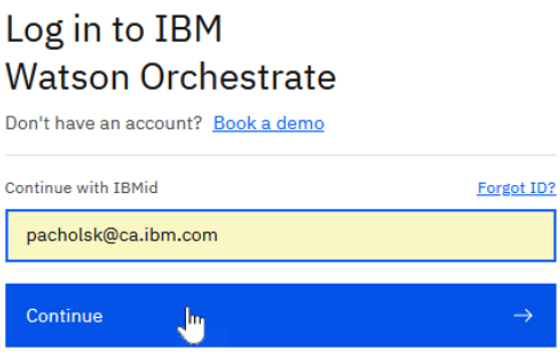


_3. **Save and close** *watsonx Orchestrate Client Onboarding Skills - UAB.yaml* file.

1.3.3 Login to wxO

_1. In your Web Browser, open **IBM wastsonx Orchestrate** (see 1.4.1 Systems, Lab Files, and Credentials)

_2. Enter your IBM ID and click **Continue to log in**.



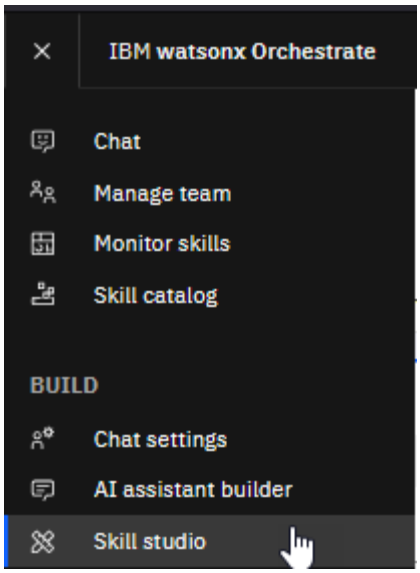
2 Exercise: Import and Publish Skills

Because you have a Builder role, you can create skills from OpenAPI specifications and add them to the Skill Catalog for reuse in wxO.

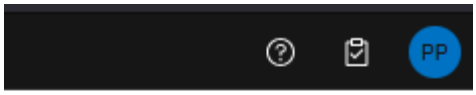
2.1 Import Skills

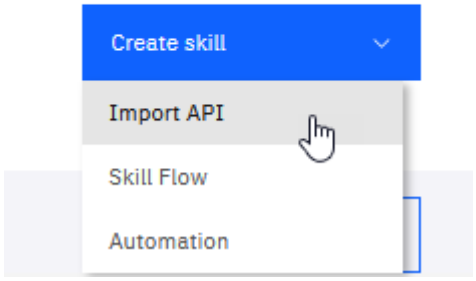
_1. Click the **Hamburger** menu.

_2. Click **Skill studio.**

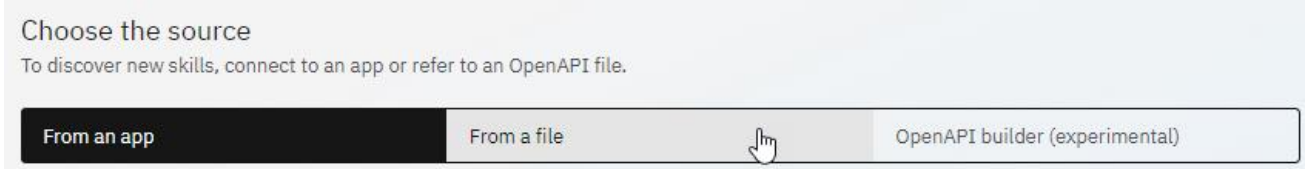


_3. In the top-right, click **Create Skill > Import API.**

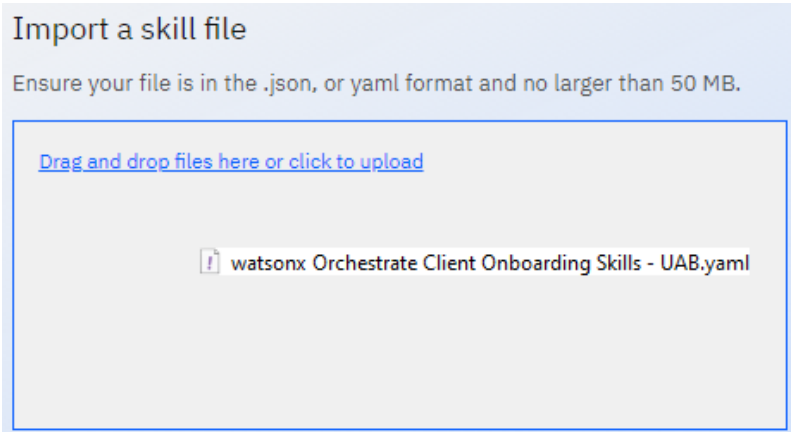




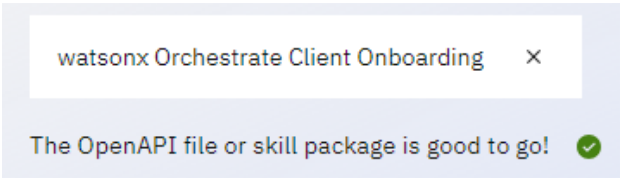
_4. From Choose the source, click **From a file.**



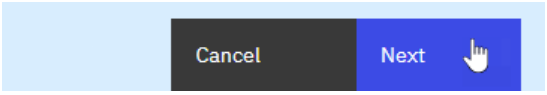
_5. From your file system, **drag and drop** the *watsonx Orchestrate Client Onboarding Skills - UAB.yaml* file to the upload box or click the blue link to upload the file.



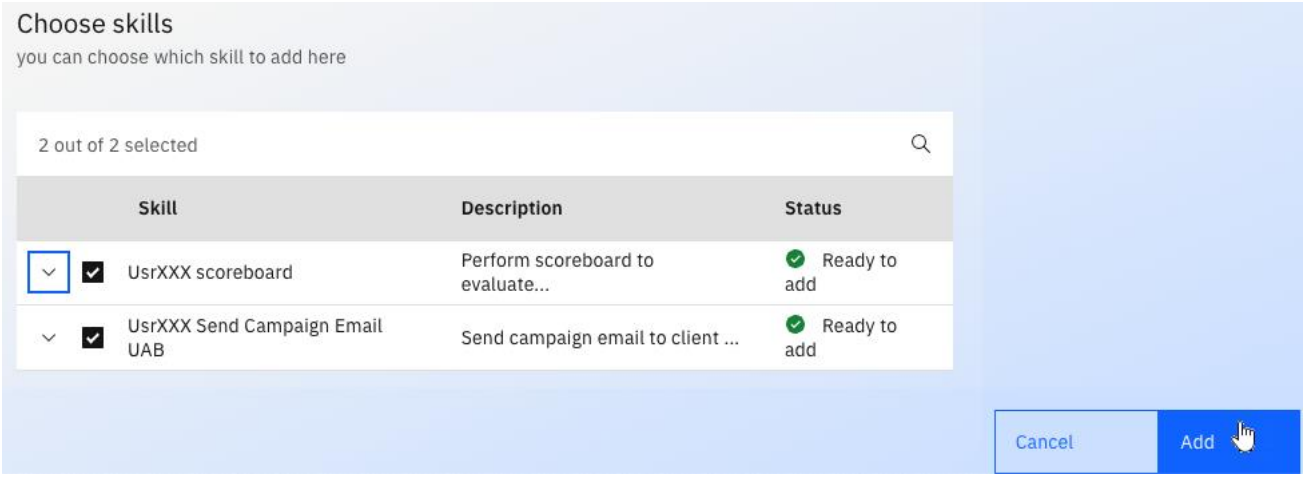
Make sure you see *"...good to go!"* message.



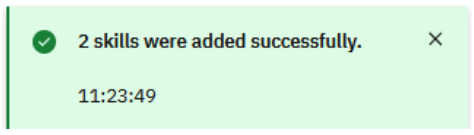
_6. In the bottom-right corner, click the **Next** button.



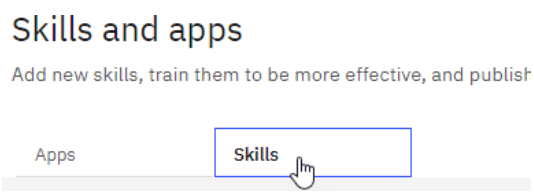
_7. **Select** all the skills you imported and click the **Add** button.



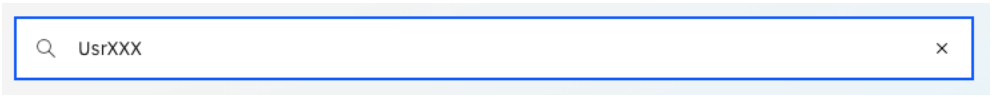
_8. Click **X** to close the message.



_9. Click the **Skills** tab.

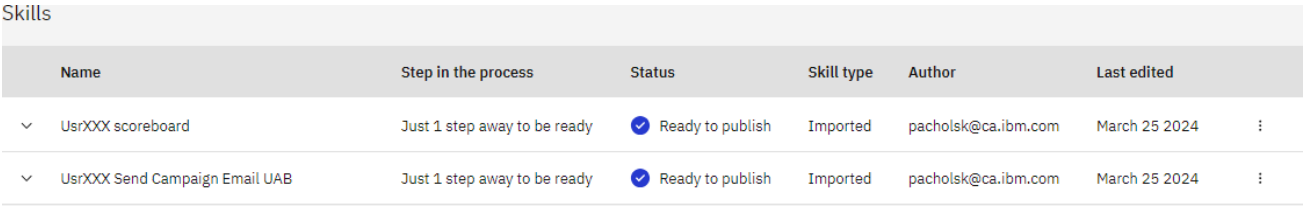


_10. To see your skill, in the *search bar,* enter **UsrXXX** (where XXX are the digits of your CP4BA Credentials user id) and hit the **Enter key**.



Notes:

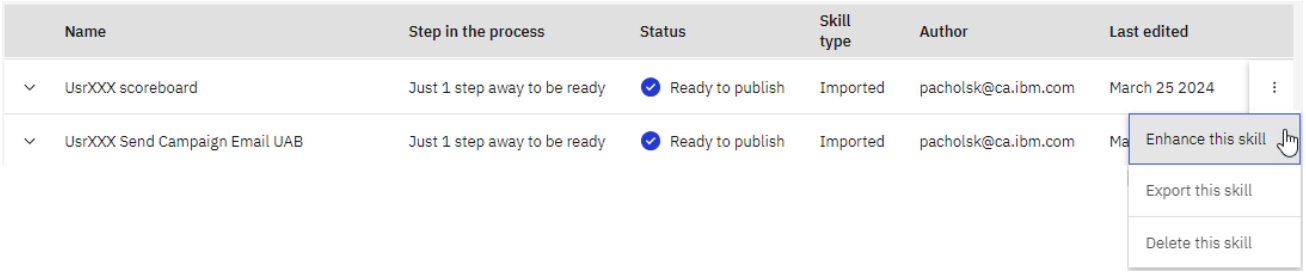
- Once published, skills will be prefixed with UsrXXX (where XXX is the user ID you used when you replaced the value in the yaml file). Also, note that the status of your skills is set to "Ready to publish."
- If you cannot find your skill using a partial name, try entering the full skill name, i.e., UsrXXX scoreboard.



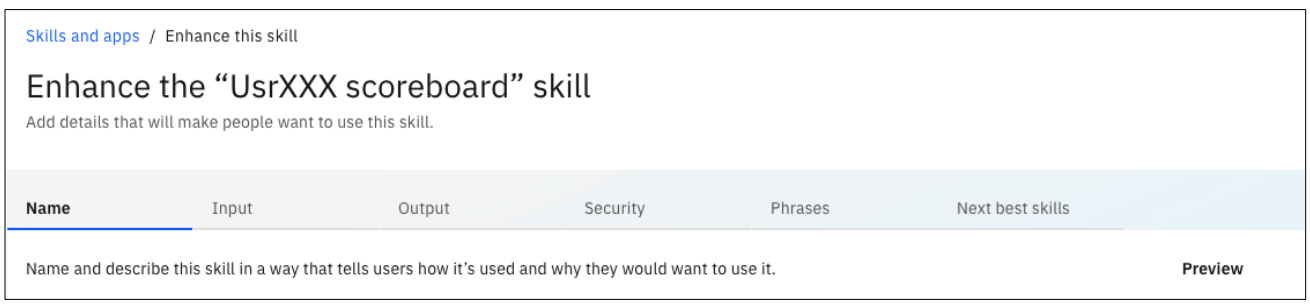
2.2 Publish Skills to the Skills Catalog

The skills in the "Ready to publish" state can be published to make them available in the Skills Catalog. Before publishing, we can make some changes and enhancements. Let's explore Skill enhancement and publishing.

_1. On the row with *UsrXXX scoreboard*, select the **vertical ellipses (3 dots),** then click **Enhance this Skill**.

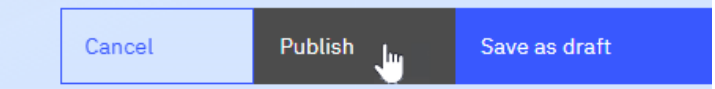


_2. Let's examine the tabs we can use to enhance a skill before publishing.

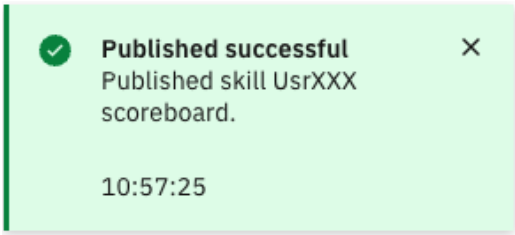


Tab	Enhancements
Name	Name and describe this skill in a way that tells users how it's used and why they would want to use it. The preview shows how a skill tile will appear in the Skill Set and the Skills Catalog.
Input	You can define how the requested inputs, inherited from the OpenAPI, are displayed to the skill users. The inputs are typically requested in a form format. For example, you can define the language that is used in the form that asks for user input on each parameter.
Output	You can configure how to display the output of the tasks to the users. Results are typically shown in table format. By default, the table headers are each output field name. You can rename any header, reorder the results, or hide fields that users are not interested in.
Security	You can review the authentication type and the server, which are inherited from the OpenAPI. For more information, see Configuring the API security scheme.
Phrases	Phrases are the texts you can use to find and use a skill in the chat bar. You can manually enter or generate new phrases based on IBM Granite Models (experimental).
Next best skill	The next best skills feature helps you find skills to complete tasks that naturally follow the current work. You can add up to five skills as the next best skills.

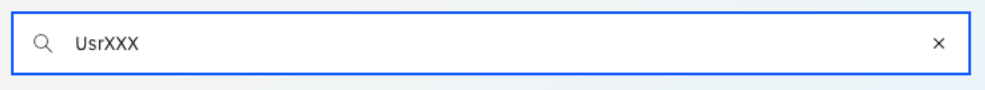
_3. Without making any changes, in the bottom-right corner, click the **Publish** button.



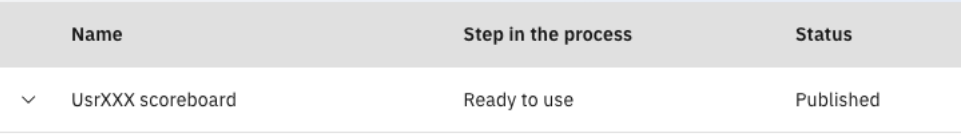
_4. Click **X** to close the message.



_5. To see your skill, in the *search bar,* enter **UsrXXX** (where XXX are the digits of your CP4BA Credentials user id) and hit the **Enter key**.



Note that the state has changed to Published.



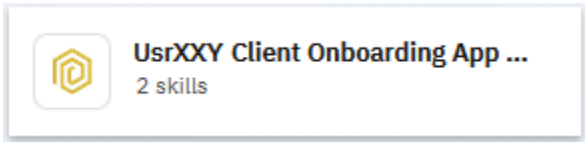
_6. Repeat the above five steps (1-5) to publish **UsrXXX Send Campaign Email UAB** skill.

_7. Verify that all the skills you have imported are published.

Name	Step in the process	Status
UsrXXX Send Campaign Email UAB	Ready to use	Published
UsrXXX scoreboard	Ready to use	Published

2.3 Add Skills from the Skill Catalog to Personal Skills

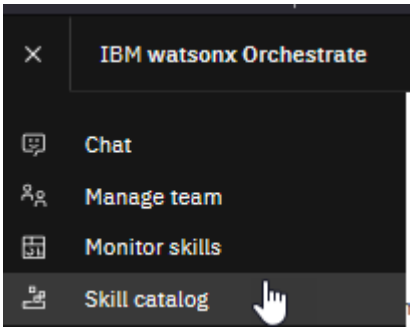
Previously, you imported skills using the *watsonx Orchestrate Client Onboarding Skills - UAB.yaml* and added them to the Skills Catalog as an App.



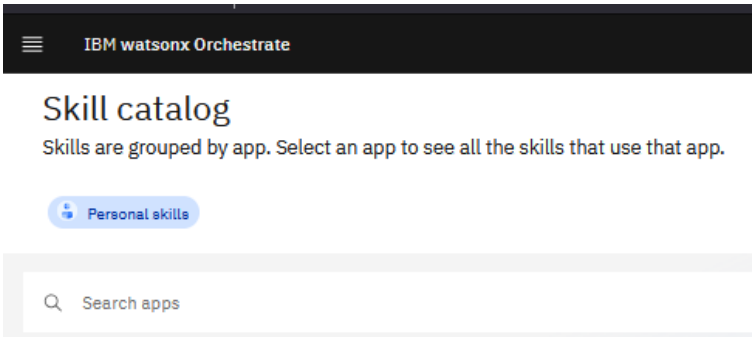
You will now add these skills to your Personal Skills from the Skills Catalog. to make them available to Workflow.

_1. Click the **Hamburger** menu.

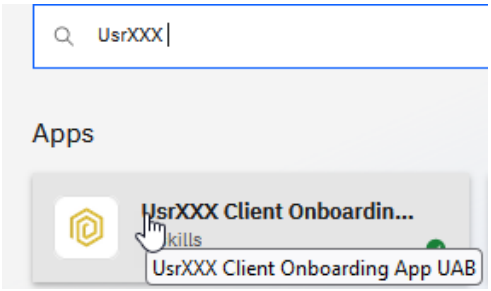
_2. Click **Skill catalog.**



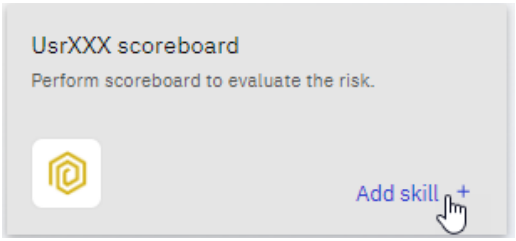
You should now see all the Apps available in the Skills Catalog.



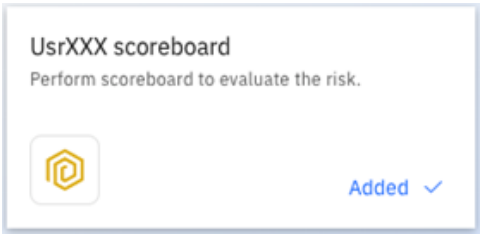
_3. Locate the **UsrXXX Client Onboarding App UAB** (remember that XXX are the last three digits of your CP4BA Credentials user id) by using the search and **click on the tile** to open.



_4. Locate the *UsrXXX scoreboard* skill and click the **Add skill +** button.

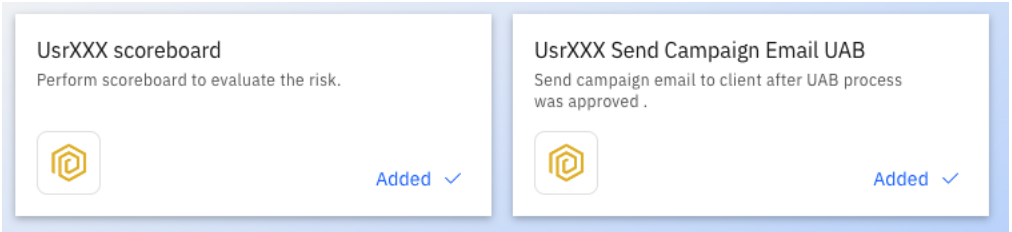


You should now see the *Added check mark for* your skill.

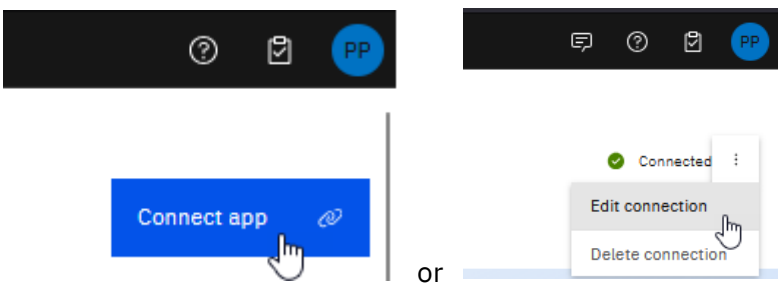


_5. Repeat the above step for the other skill.

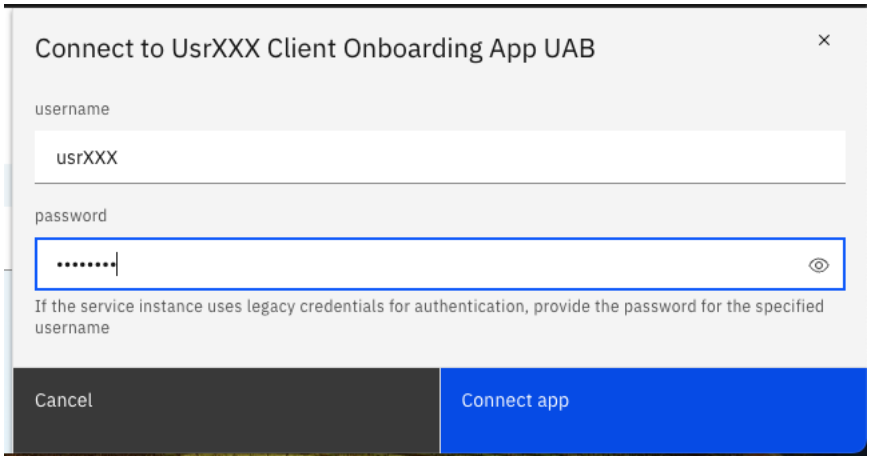
_6. Verify that all skills have the *Added check mark*.



_7. To specify the security credentials for your Skills, click the **Connect app** button or **Connected > Edit Connection**



_8. For *username* and *password,* enter your **CP4BA Credentials**.



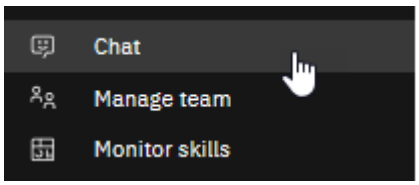
Note that wxO does not verify the login. If you enter an incorrect password or credentials, no error message will be displayed in this step.

2.4 Test the Skill Connectivity

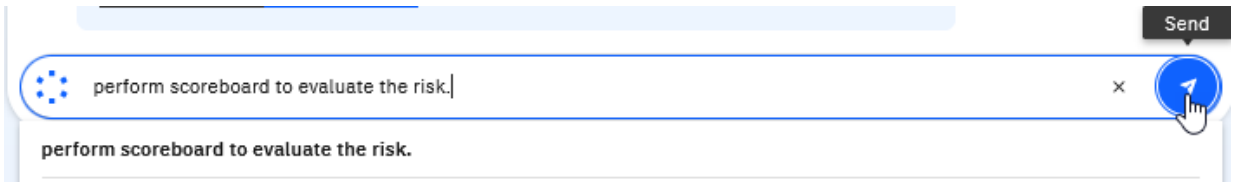
Since wxO does not verify the login when connecting your app, you can test the connectivity using the wxO Chat.

_1. Click the **Hamburger** menu in the top-left corner.

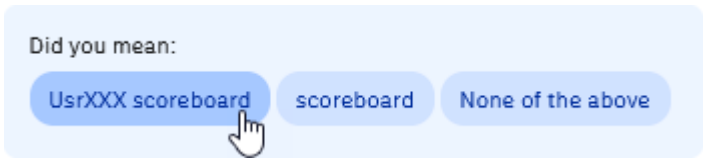
_2. Click **Chat.**



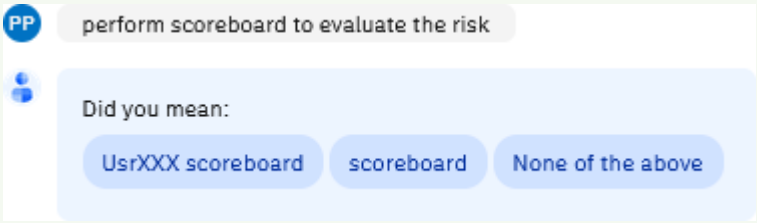
_3. Enter the **perform scoreboard to evaluate the risk** in the Chat entry field and click **Send.**



_4. If you see "Did you mean:", click **UsrXXX scoreboard** (where XX is your CP4BA user id)

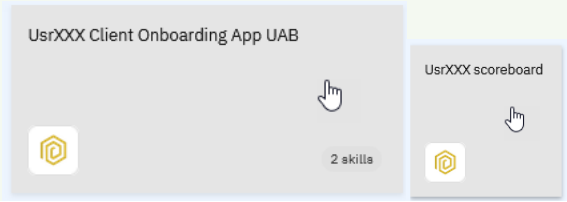


Note: Why do I see the "Did you mean:" prompt.

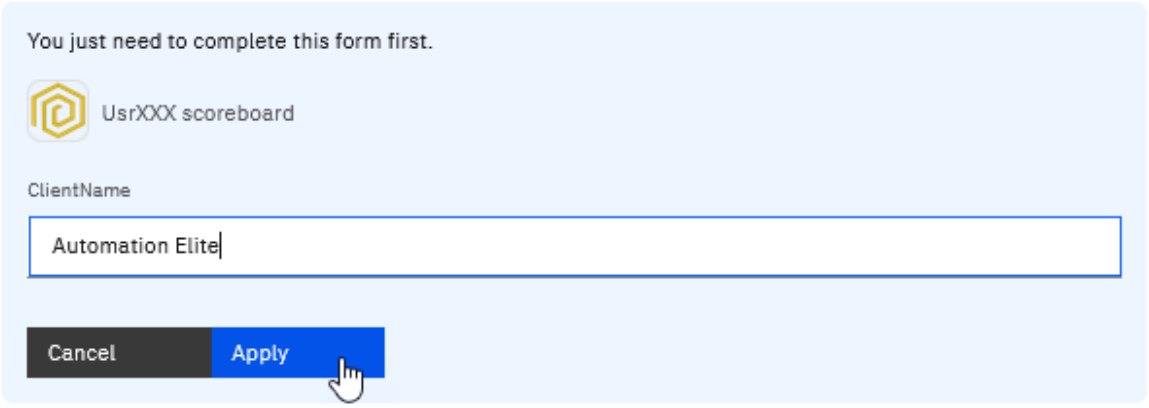


You will only see the prompt if you have completed the Introduction to watsonx Orchestrate lab first. You already loaded the scoreboard skill to your personal skill set as part of the other lab. When doing this lab and adding the UsrXXX scoreboard skill to your personal skill set, you will have two versions of the same skill. wxO needs to clarify which of the two versions you want to call. In this case, choose the one with UsrXXX in front that you created for this lab.

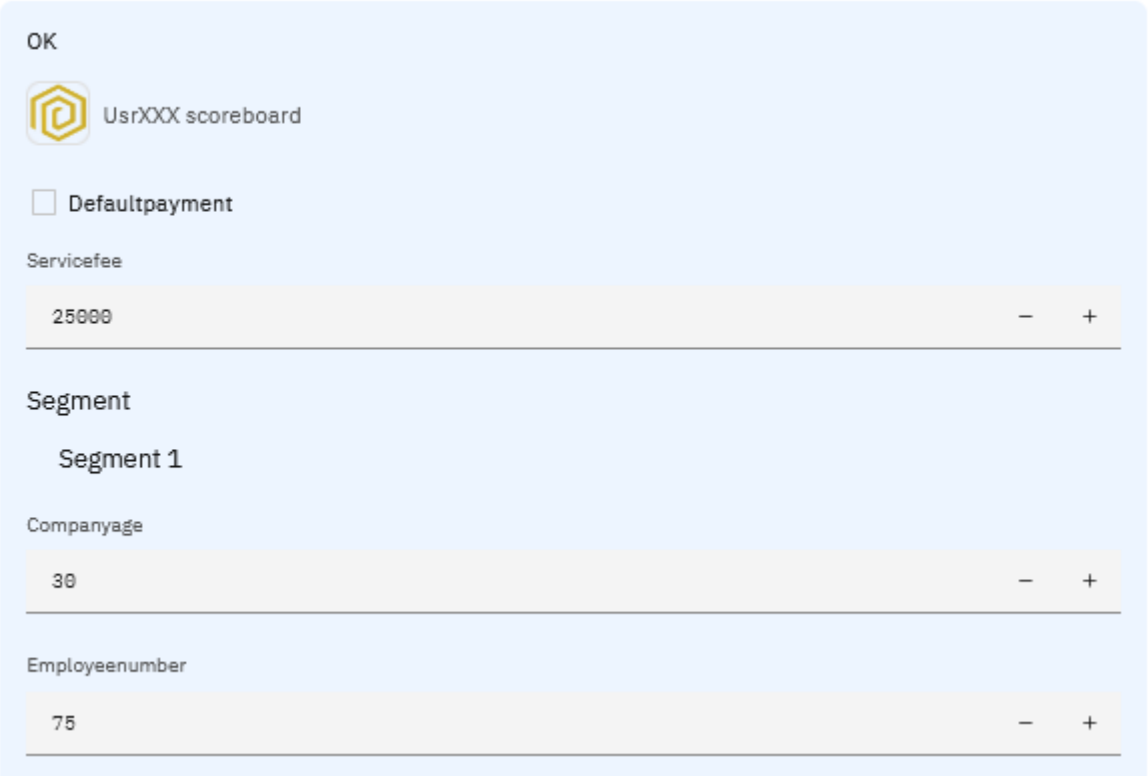
To avoid the prompt, you can use the keyboard interface: click **UsrXXX Client Onboarding App UAB** and then click **the UsrXXX scoreboard.**



_5. *For ClientName,* enter **Automation Elite** and then click **Apply**.



_6. If the connection credentials are correct, you should see a response as shown below:



If you do not see the response above the first time, try again several times.

If you do not see the response consistently, return to Skill Catalog and enter the correct credentials.

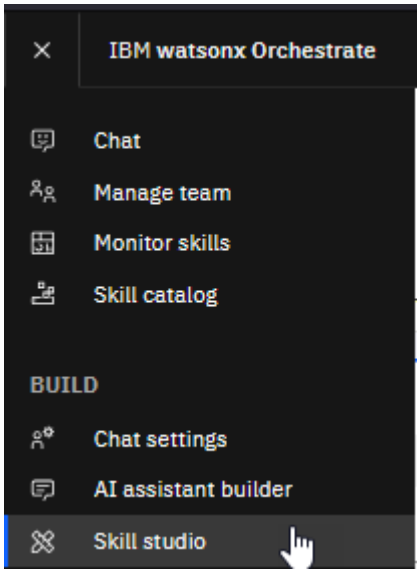
3 Exercise: Author the Sales Campaign Automation

3.1 Create the Automation and the Workflow

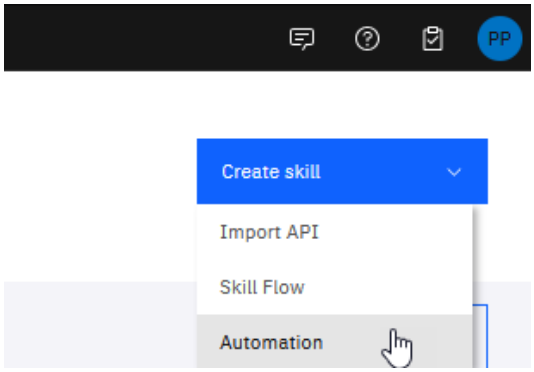
3.1.1 Create the Automation

_1. Click the **Hamburger** menu in the top-left corner.

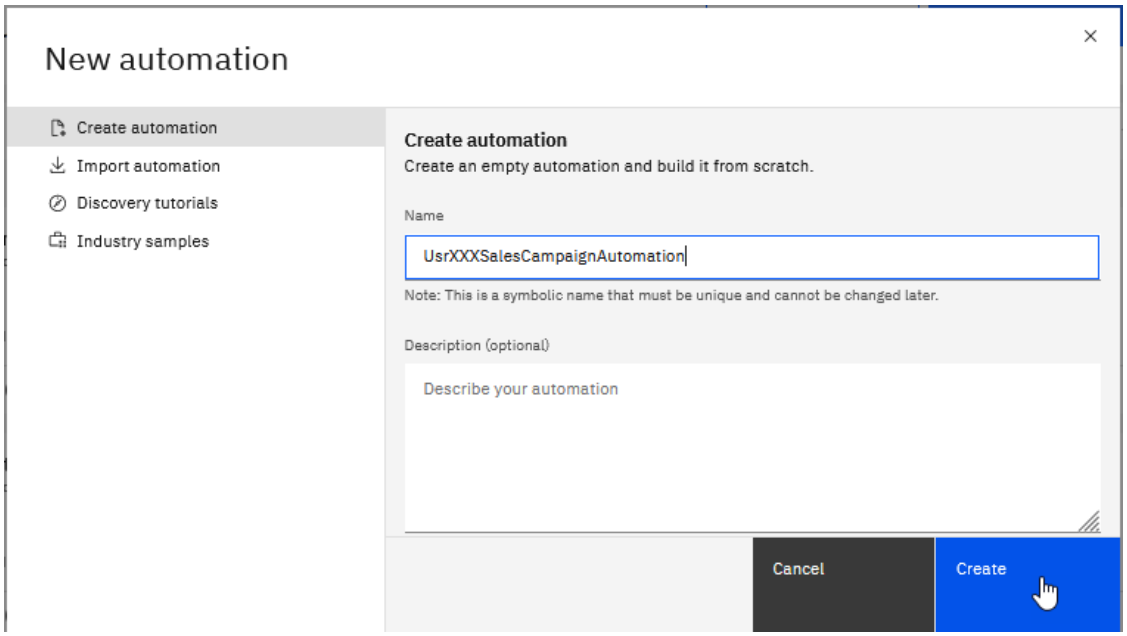
_2. Click **Skill studio.**



_3. On the top-right, click **Create Skill > Automation.**

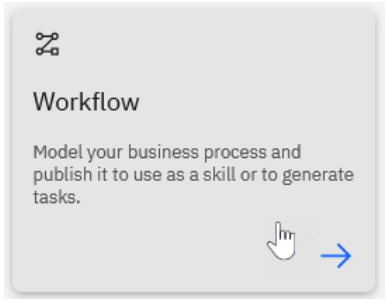


_4. For *Name*, enter **UsrXXXSalesCampaignAutomation** (remember to replace XXX with your CP4BA Credentials user id) and click **Create**.

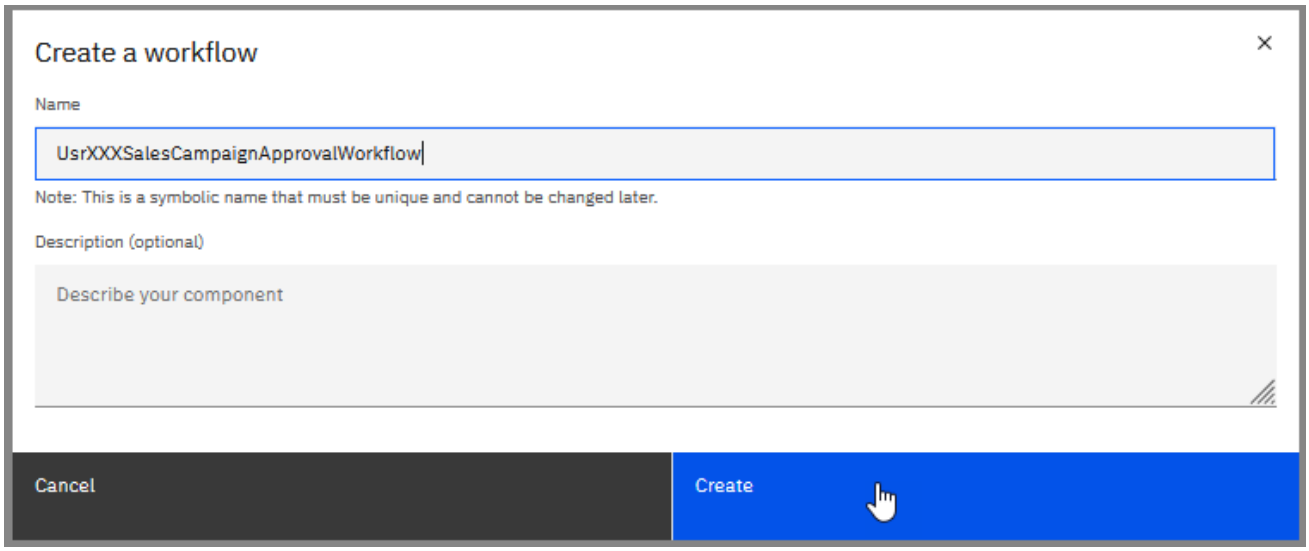


3.1.2 Create the Workflow

_1. Click the **Workflow** tile.



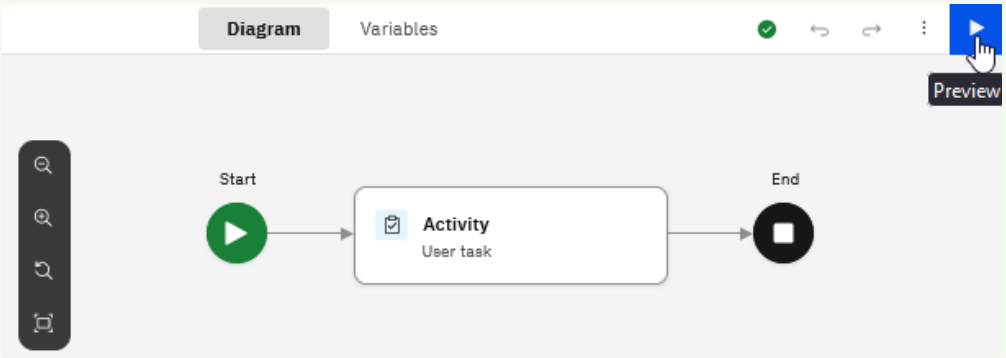
_2. For *Name,* enter **UsrXXXSalesCampaignApprovalWorkflow** and click **Create**.



3.2 Testing your Workflow as you develop

You should now see the Workflow Editor with a single User Task activity.

Note the Blue Preview button on the top right corner. You can use this button to test your Workflow anytime you make a significant change and want to test your work. When you preview your Workflow, a test instance is created, where you can ensure that the Workflow runs correctly.

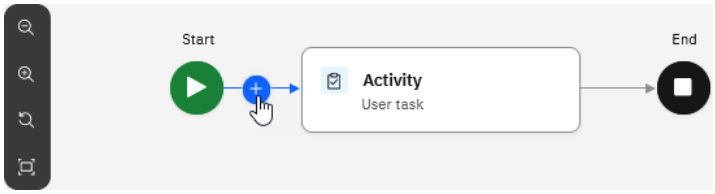


In section 3.10 Test the Workflow Automation, you will find a detailed description of the steps required to test your Workflow.

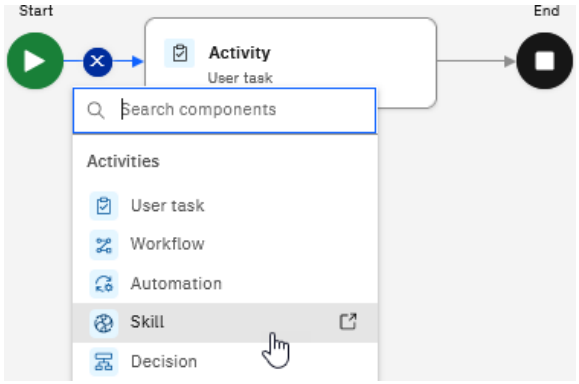
3.3 Add and configure the wxO Scoreboard Skill

3.3.1 Add Scoreboard Skill

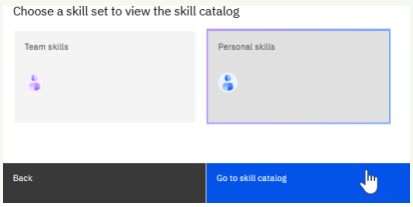
_1. Position the mouse cursor between *Start* and *Activity* and click the **+ icon.**



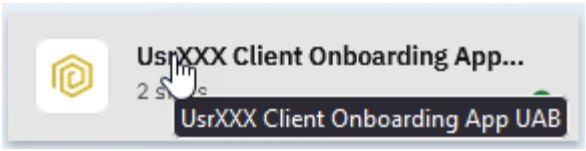
_2. Click **Skill.**



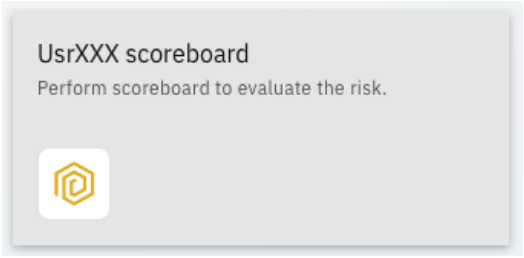
Note, If you see Choose a skill set to view the skill catalog window, select the **Personal skills** tile, and click **Go to Skill catalog.**



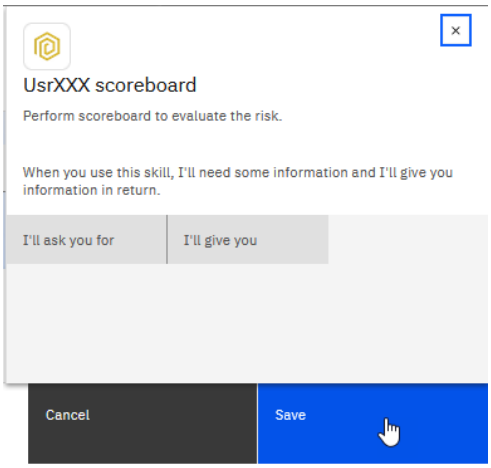
_3. Click the **UsrXXX Client Onboarding App UAB** tile (remember that XXX is your CP4BA Credentials user id)



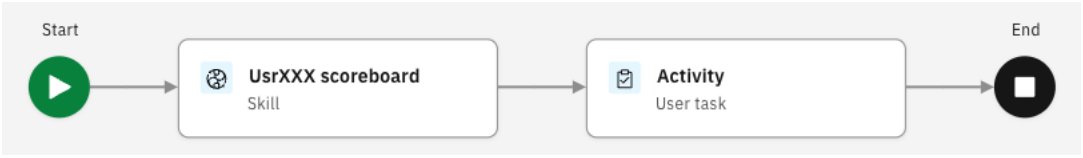
_4. Select the **UsrXXX scoreboard** skill.



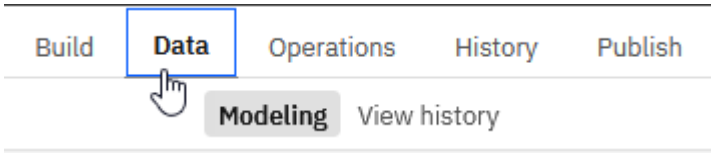
_5. Click **Save.**



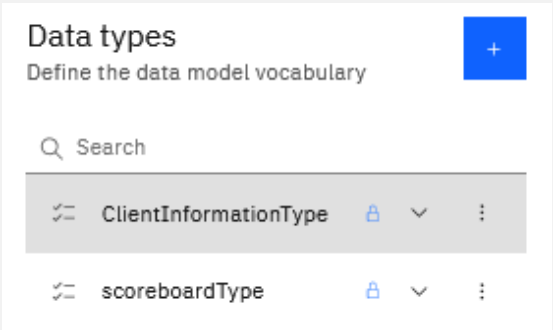
_6. You should now see the skill added to the Workflow.



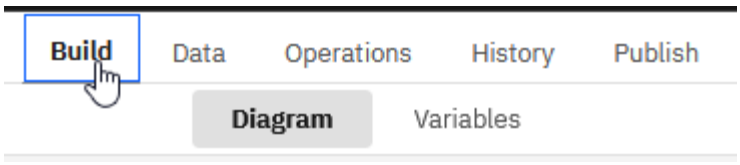
_7. Click the **Data** tab.



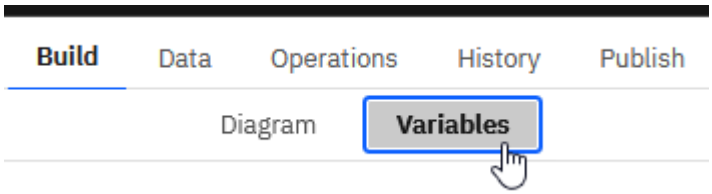
> Note: When you added the scoreboard skill, wxO automatically created two data types based on the information about the skill for you: ClientInformationType and scoreboardType. These data types are part of the scoreboard's skill interface. You will use these data types to create new variables.



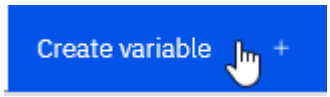
_1. Click the **Build** tab.



_2. Click the **Variables** tab.



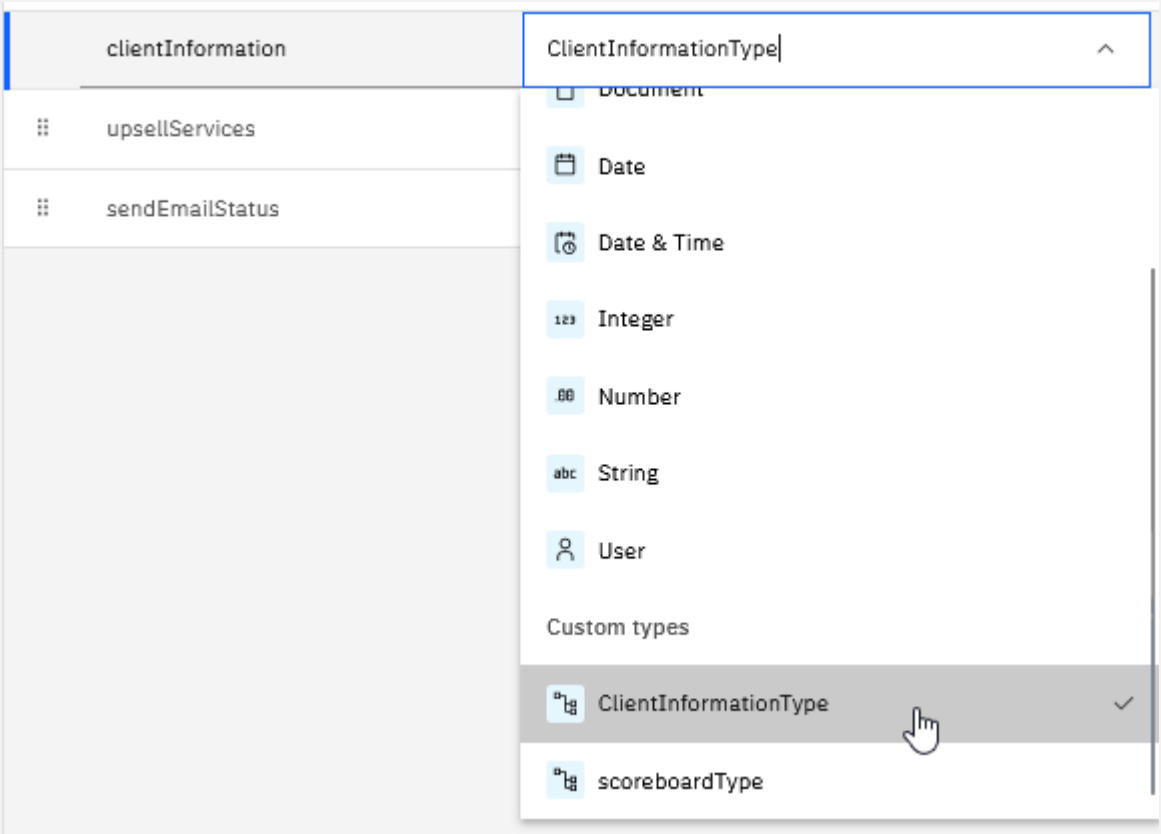
_3. Click the **Create variable +** button **five times** to create five new workflow variables.



_4. Configure each variable according to the table below

Name	Data Type	List	Input	Output
clientName	String	Single value	Yes	Yes
scoreboard	scoreboardType	Single value	No	No
clientInformation	clientInformationType	Single value	No	No
upsellServices	String	Multiple values	Yes	Yes
sendEmailStatus	String	Single value	No	Yes

Hint: to change the data type, position the cursor in the Data type column and select a data type from the dropdown.

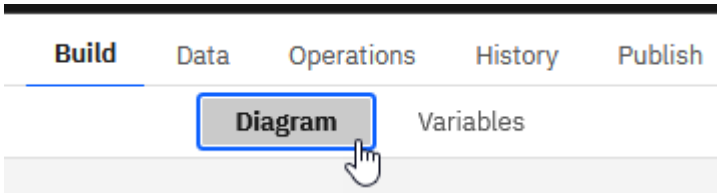


The Variables should look as shown below.

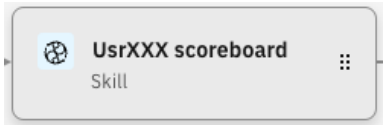
	Name	Data type	List	Input	Output
⠿	clientName	String	Single value	Yes	Yes
⠿	scoreboard	scoreboardType	Single value	No	No
⠿	clientInformation	ClientInformationType	Single value	No	No
⠿	upsellServices	String	Multiple values	Yes	Yes
⠿	sendEmailStatus	String	Single value	No	Yes

3.3.2 Define Input and Output Data mapping for the Scoreboard skill

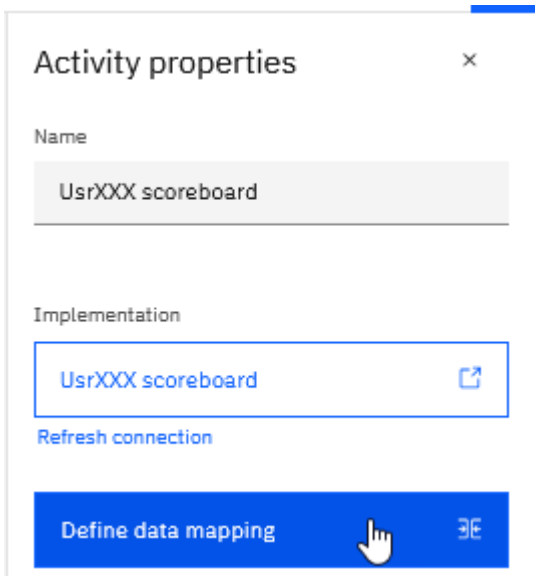
_1. Click the **Diagram** tab.



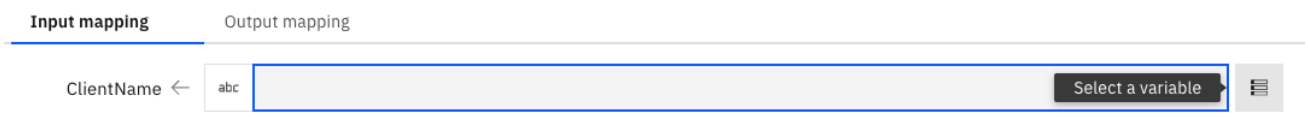
_2. Click **UsrXXX scoreboard** skill.



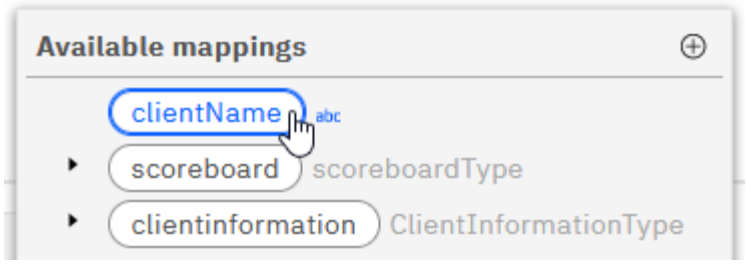
_3. Click the **Define data mapping** button on the right side.



_4. In the input mapping section, click on **Select a variable** (Input mapping).



_5. Select the **clientName** variable.

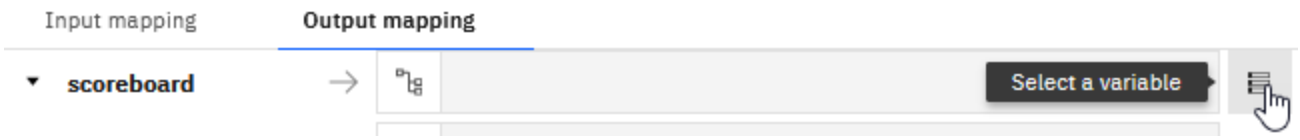


The Input mapping should look as shown below.

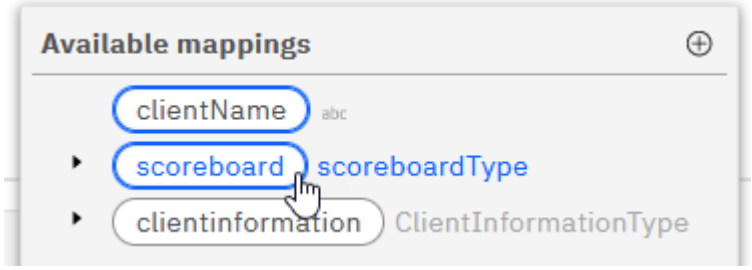
Note: You can also click on Insert suggestions in the top right corner and see which mapping wxO suggests to make your life easier!

_6. Click the **Output mapping** tab.

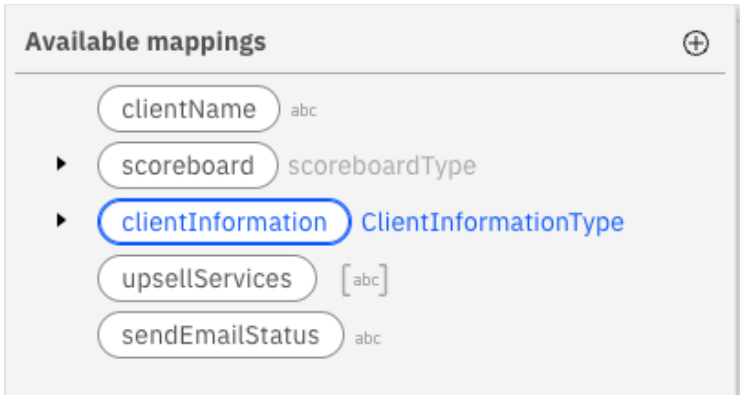
_7. For the *scoreboard* variable, click **Select a variable.**



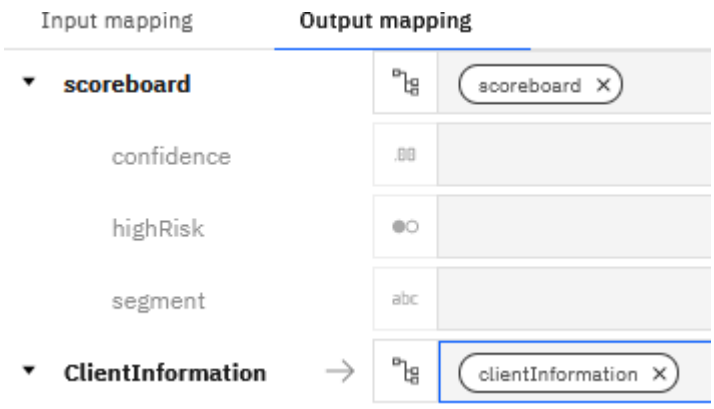
_8. Select the **scoreboard** variable.



_9. For *ClientInformation,* click the **Select a variable** button and then select **clientInformation.**



The Output mapping should look as shown below.

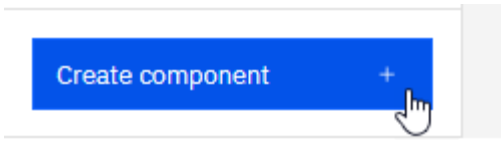


_10. Click the **OK** button to save your variable mapping.

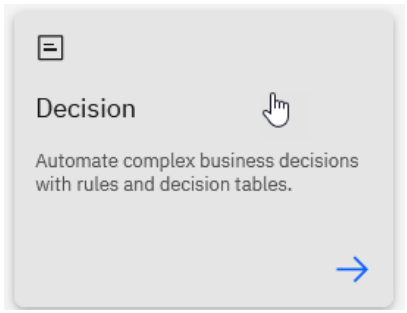
3.4 Create and Author the Decision

3.4.1 Create the Decision

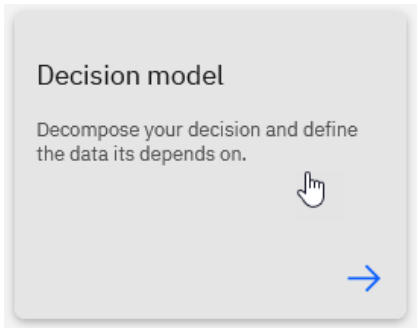
_1. In the bottom left corner, click **Create component +.**



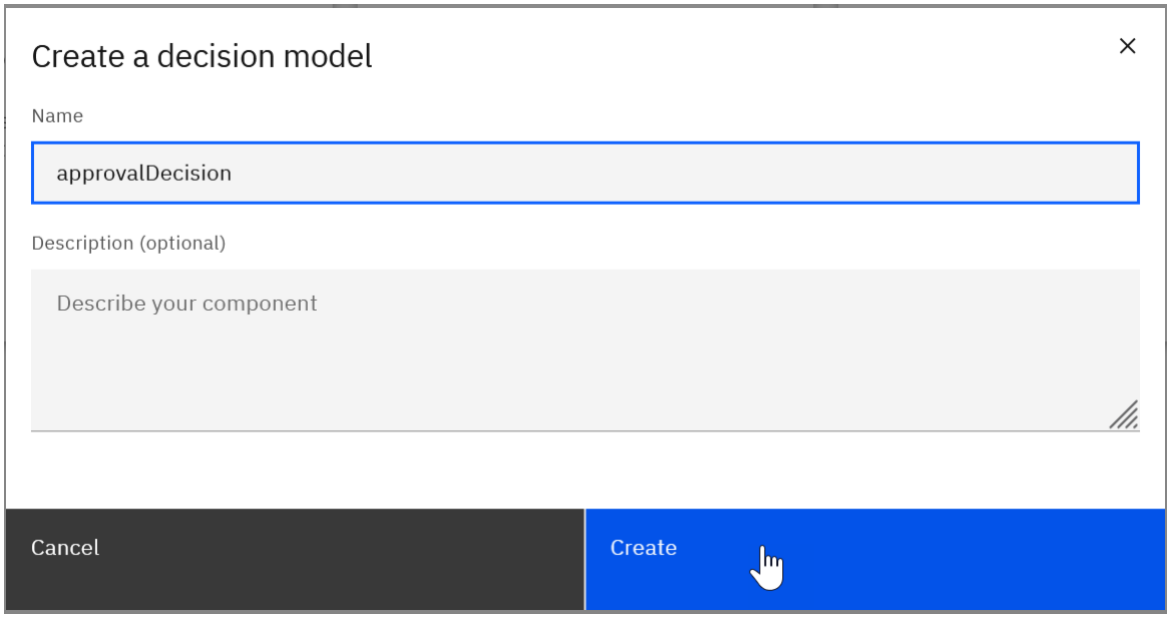
_2. Click the **Decision** tile.



_3. Click the **Decision model** tile.

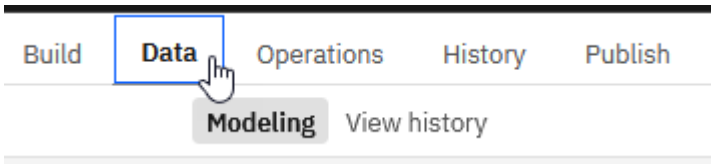


_4. For *Name,* enter **approvalDecision** and click **Create**.

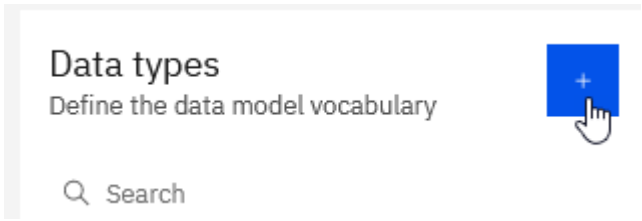


3.4.2 Create Data Types for the Decision

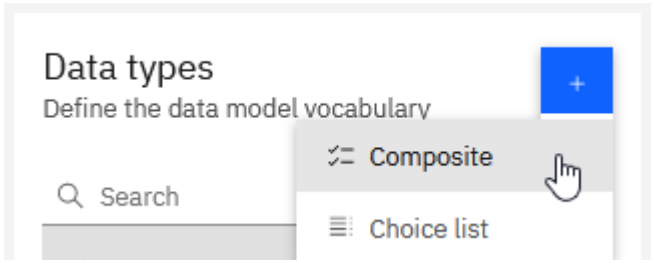
_1. Click the **Data** tab.



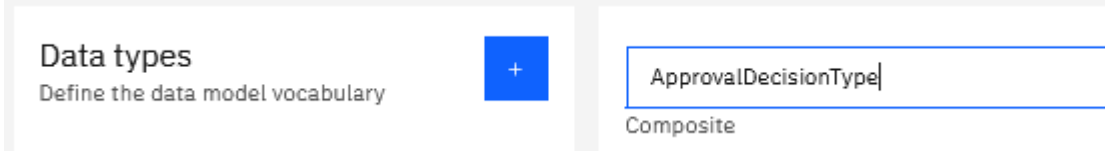
_2. Click the **+ button** to create a new Data Type.



_3. Select **Composite.**



_4. Change the *Composite* from *new type* to **ApprovalDecisionType**.

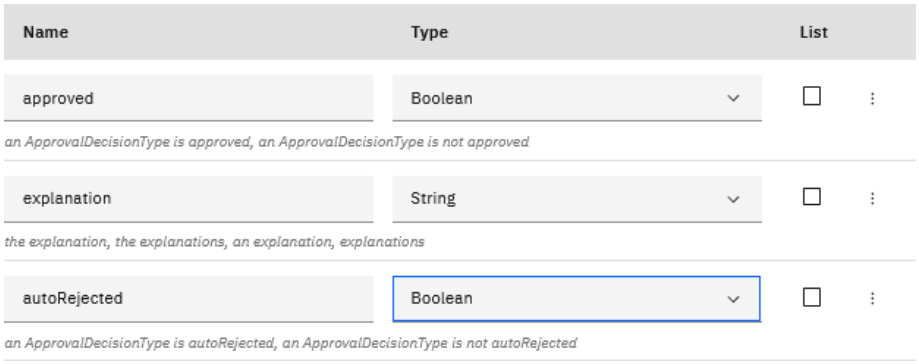


_5. In the lower right area, click the **Add +** button **three times** to add three Attributes.

_6. Configure each Attribute according to the table below:

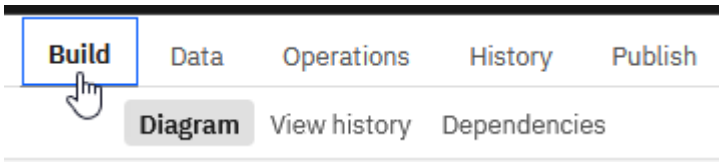
Name	Type	List
approved	Boolean	No
explanation	String	No
autoRejected	Boolean	No

The Attributes should look as shown below:

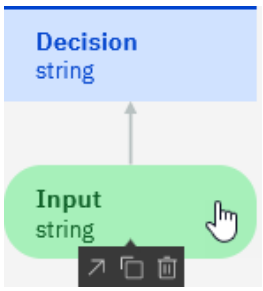


3.4.3 Define the Desion Input and Output

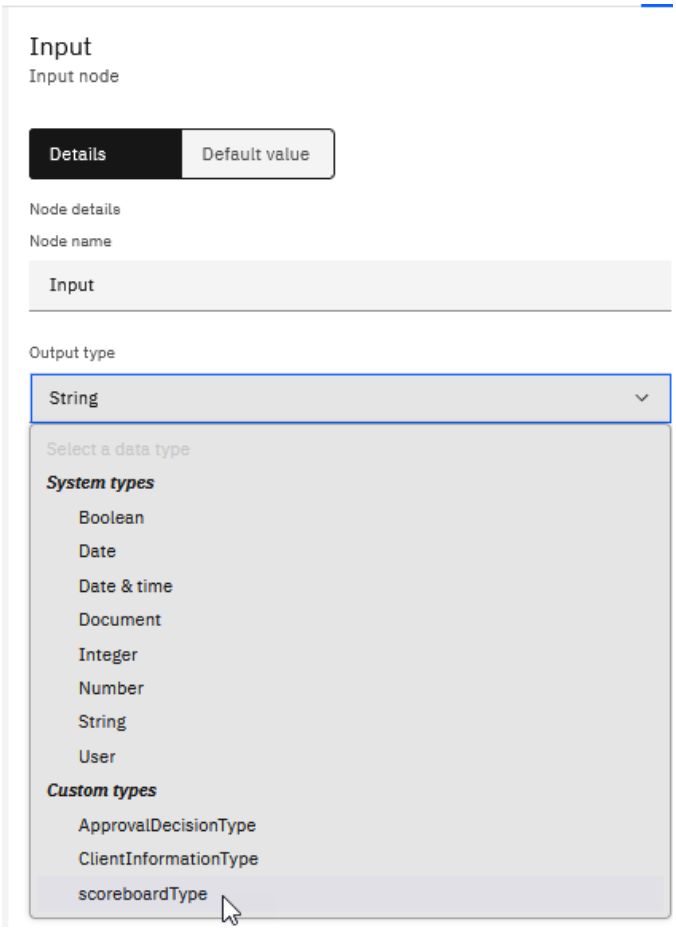
_1. Click the **Build** tab.



_2. Click the **Input node.**

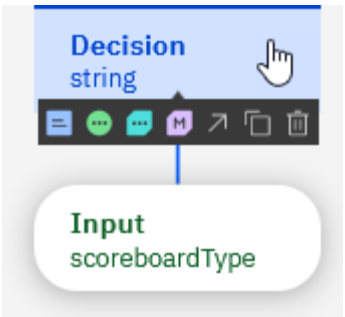


_3. Select **scoreboardType** for the *Output type*.

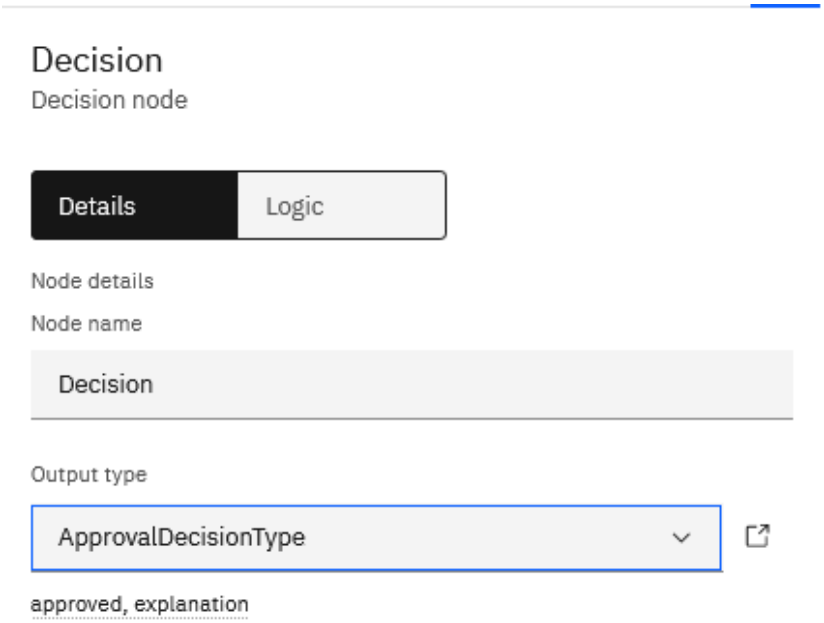


The Output type should look as shown below.

_4. Click the **Decision** node in the diagram.



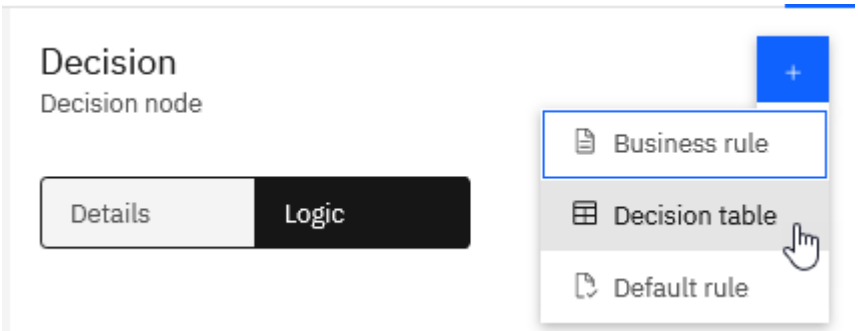
_5. For *Output type,* select **ApprovalDecisionType.**



3.4.4 Create the Decision Table

_1. In the right section, click the **Logic** button.

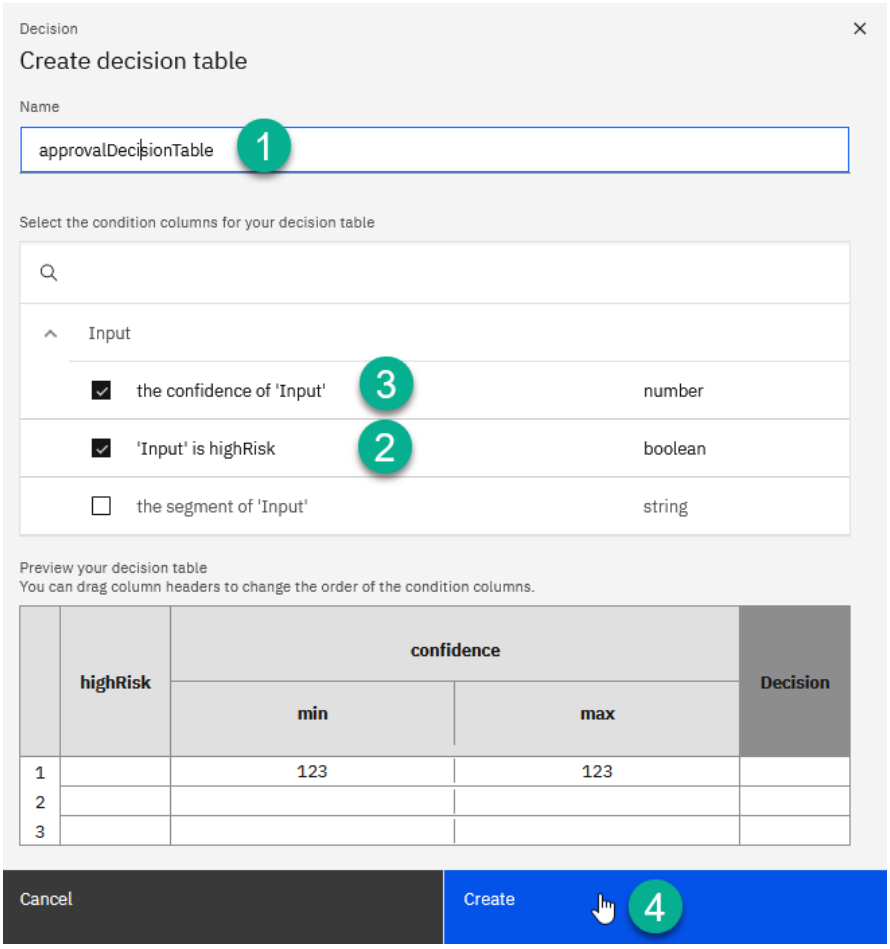
_2. Click the **+ button** and select the **Decision table.**



_3. Enter the *Create decision table* parameters **precisely in the order specified** below and as shown in the screenshot:

> The exact order is essential because it determines how the decision table is built. We need the "High Risk" column before the "Confidence" column for grouping purposes.

1) Name: **approvalDecisionTable**
2) Input, select: **'Input' is highRisk**
3) Input, select: **the confidence of 'input'**
4) Click **Create**



_4. Expand the Decision column to make the data entry easier.

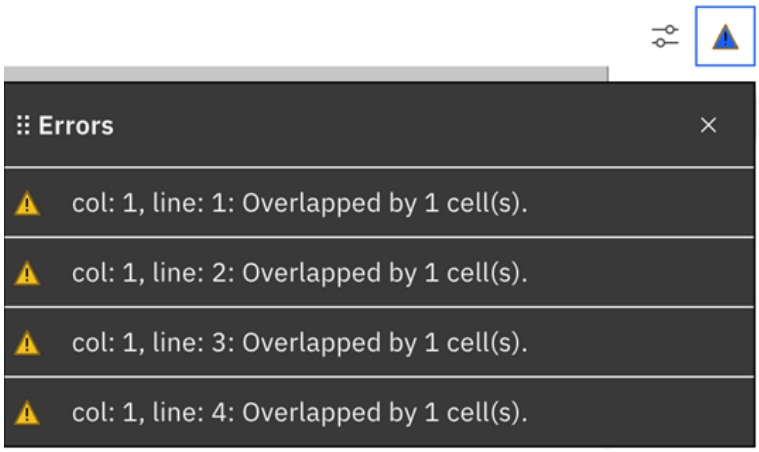
_5. Configure each variable according to the table below.

Row	high Risk	Confidence min	Confidence max	approved	autoRejected	explanation
1	true	0	95	false	false	Manager approval is required. Reason: There is a high risk of payment default, and the confidence level from the predictive score is below 95.
2	true	95	100	false	true	Auto rejected. Reason: There is a high risk of payment default, and the confidence level from the predictive score is above 95.
3	false	0	95	false	false	Manager approval is required. Reason: There is a low risk of payment default, but the confidence level from the predictive score is below 95.
4	false	95	100	true	false	Auto approved. Reason: There is a low risk of payment default, and the confidence level from the predictive score is above 95.

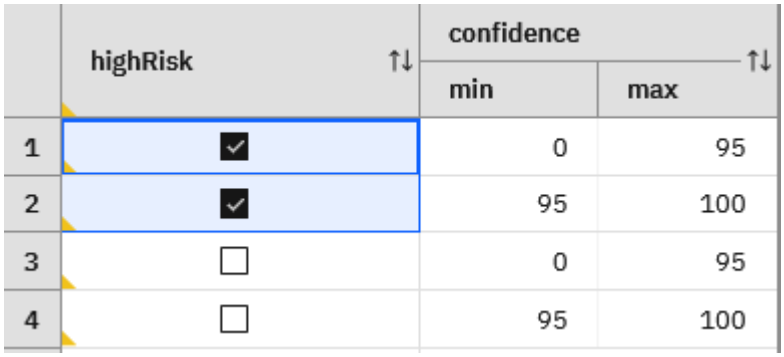
The Variables should look as shown below:

	highRisk	confidence		Decision		
		min	max	approved	autoRejected	explanation
1	☑	0	95	☐	☐	Manager approv...
2	☑	95	100	☐	☑	Auto rejected....
3	☐	0	95	☐	☐	Manager approv...
4	☐	95	100	☑	☐	Auto approved....

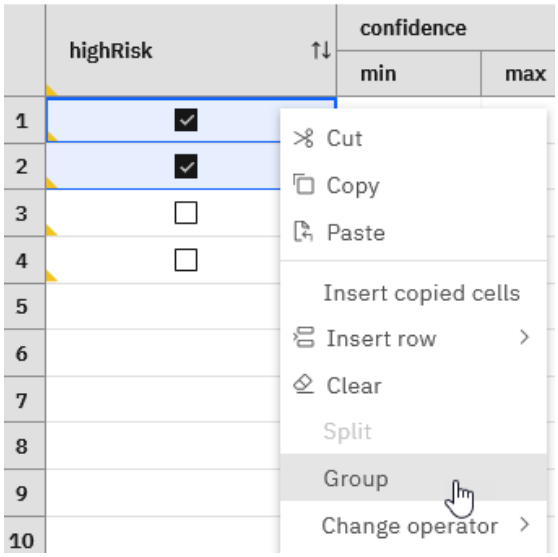
Note that there are some warnings that we need to fix!



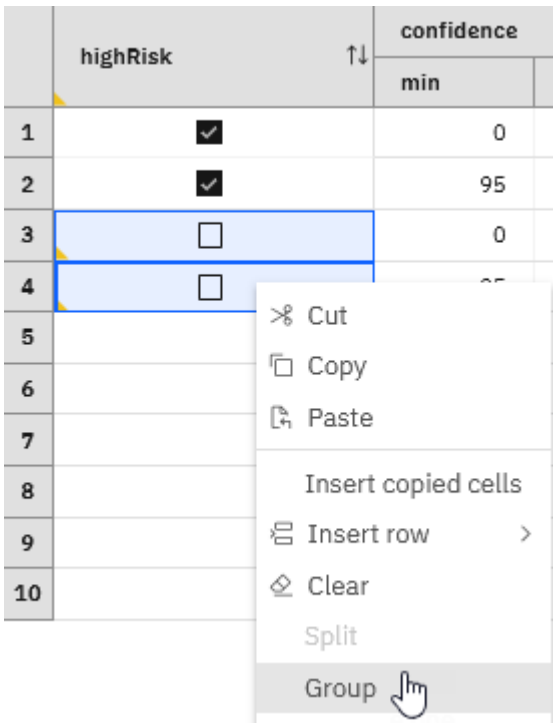
_6. Use **Ctrl – Mouse Click** to select **cell 1 and 2** in the **highRisk** column.



_7. With the two cells selected, right-mouse click and choose **Group.**



_8. Use the above steps to group **highRisk** cells in rows **3 and 4**.



_9. The table should now look as shown below with no error markers in the editor.

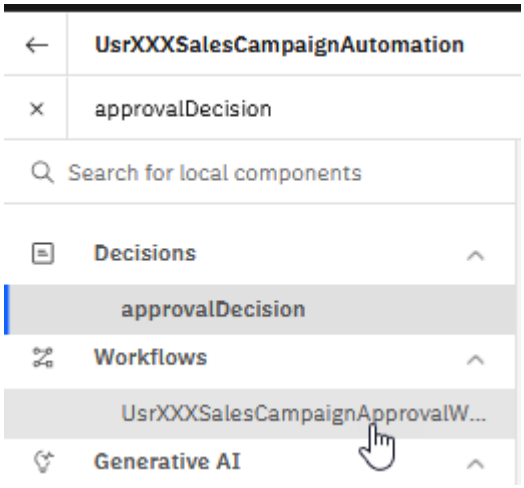
	highRisk	confidence	
		min	max
1	☑	0	95
2	☑	95	100
3	☐	0	95
4	☐	95	100

> Note: The separator line between cells 1 and 2 and cells 3 and 4 in the highRisk row is lighter. Also, note that no more warnings are displayed.

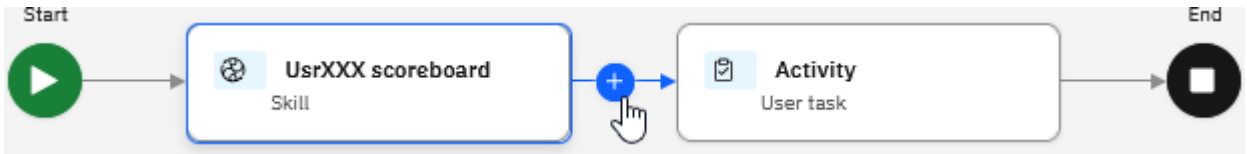
3.5 Add Decision to Workflow

3.5.1 Add the Decision Node to the Workflow

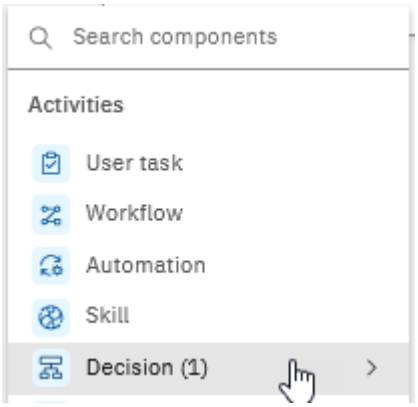
_1. Select **UsrXXXSalesCampaignApprovalWorkflow.**



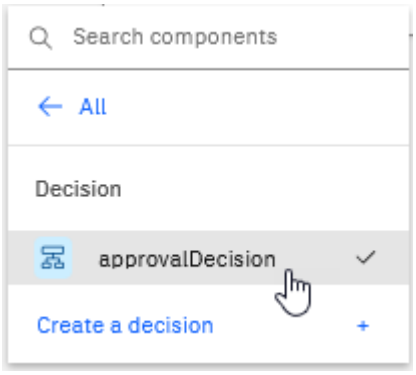
_2. Click the **+ icon** between the *UsrXXX scoreboard* and *Activity.*



_3. Select **Decision (1).**



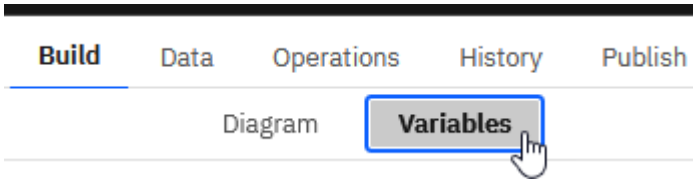
_4. Select **approvalDecision.**



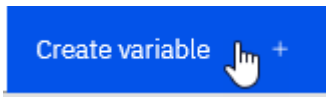
You should now see approvalDecision added as part of the Workflow.

3.5.2 Create a new variable for the Decision Output

_1. Click the **Variables** tab.



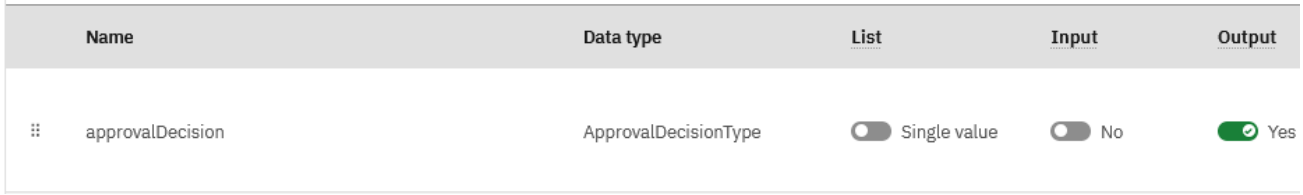
_2. Click **Create variable +** to create the output variable.



_3. Configure the new variable according to the table below.

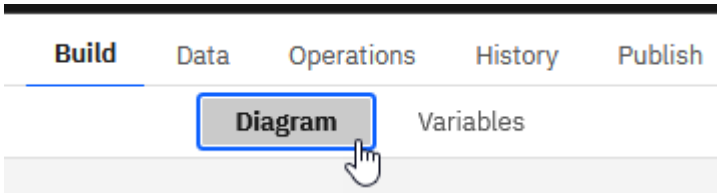
Name	Data Type	List	Input	Output
approvalDecision	ApprovalDecisionType	Single value	No	Yes

The variable should look as shown below.



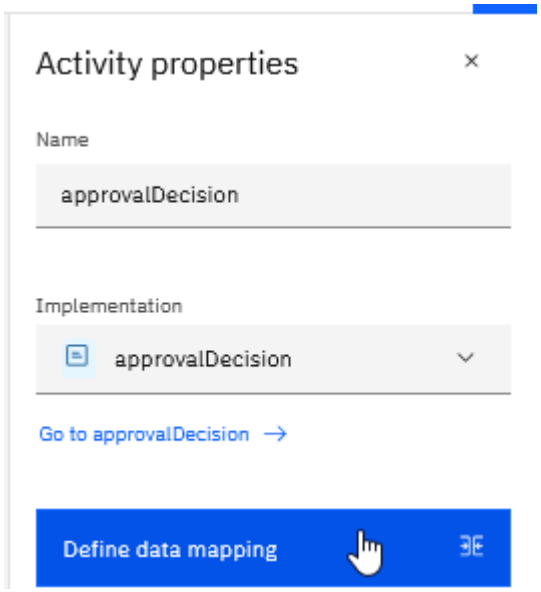
3.5.3 Define the Input and Output Data Mapping

_1. Click the **Diagram** tab.

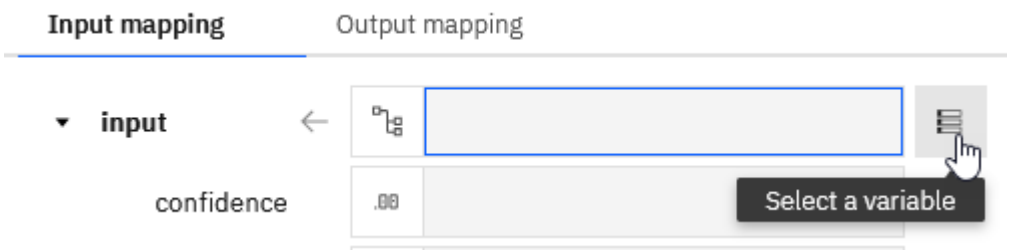


_2. Select the **approvalDecision** Decision.

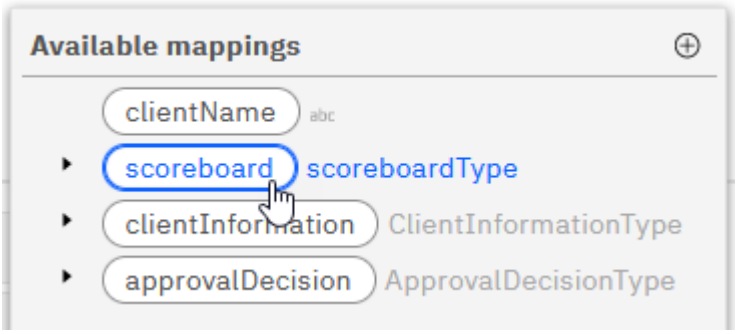
_3. Click **Define data mapping.**



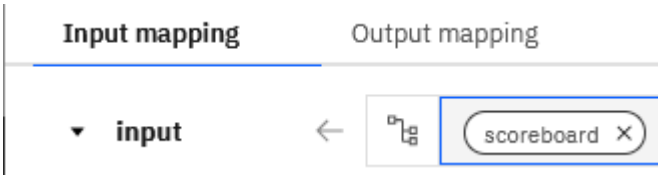
_4. In the input mapping section, click on **Select a variable** (Input mapping tab).



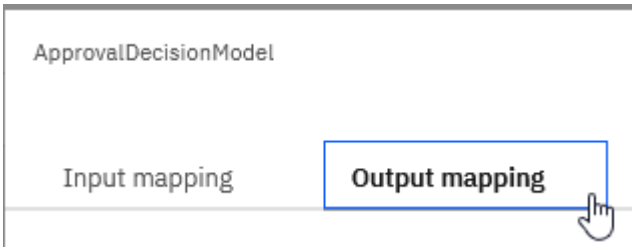
_5. Select the **scoreboard** variable.



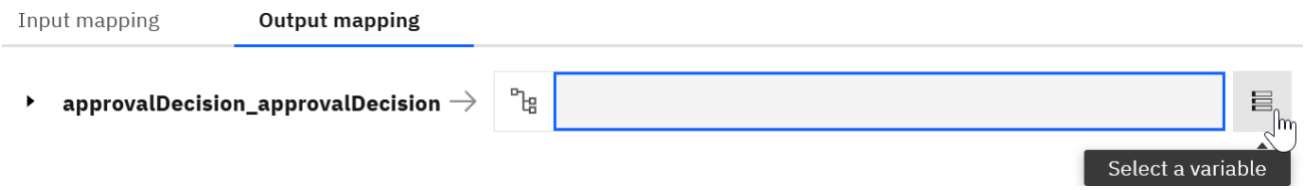
The Input mapping should look exactly like this.



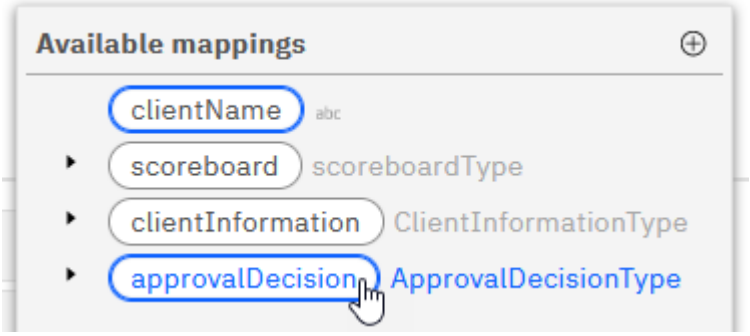
_6. Click the **Output mapping** tab.



_7. For the *ApprovalDecision_ApprovalDecision* variable, click **Select a variable.**



_8. Select the **approvalDecision** variable.



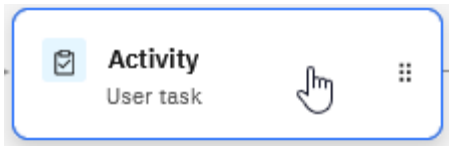
The Output mapping should look exactly like this.

_9. Click the **OK** button to save your variable data mapping.

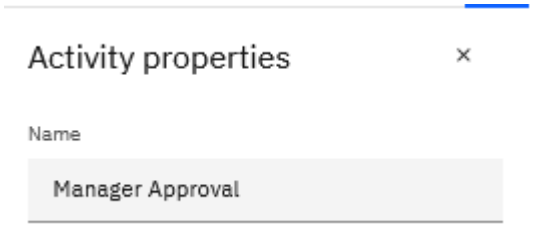
3.6 Configure the Manager Approval User Task

3.6.1 Rename the User task

_1. Click the **Activity** User task.

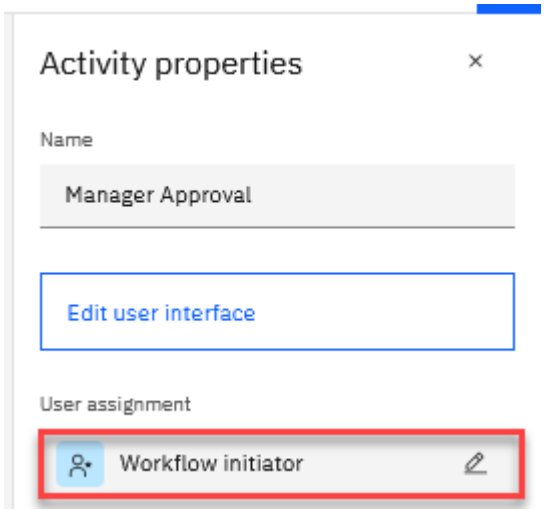


_2. For *Name*, enter **Manager Approval.**



3.6.2 Assign User

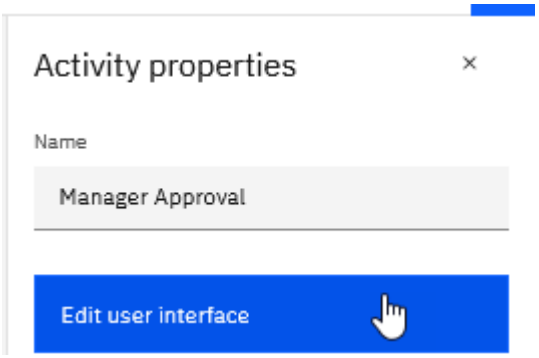
_1. Ensure the *User assignment* is set to **Workflow initiator.**



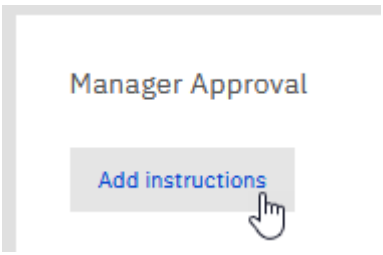
> Note that you typically select specific users authorized to see and complete a task. In this case, you selected the Workflow Initiator since you will be the only user to run and test this Workflow and User task.

3.6.3 Author User Interface

_1. Click **Edit user interface**.

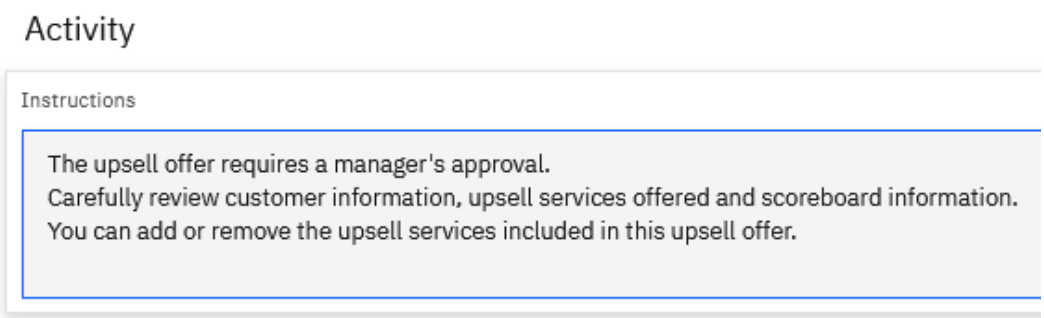


_2. Click **Add instructions.**



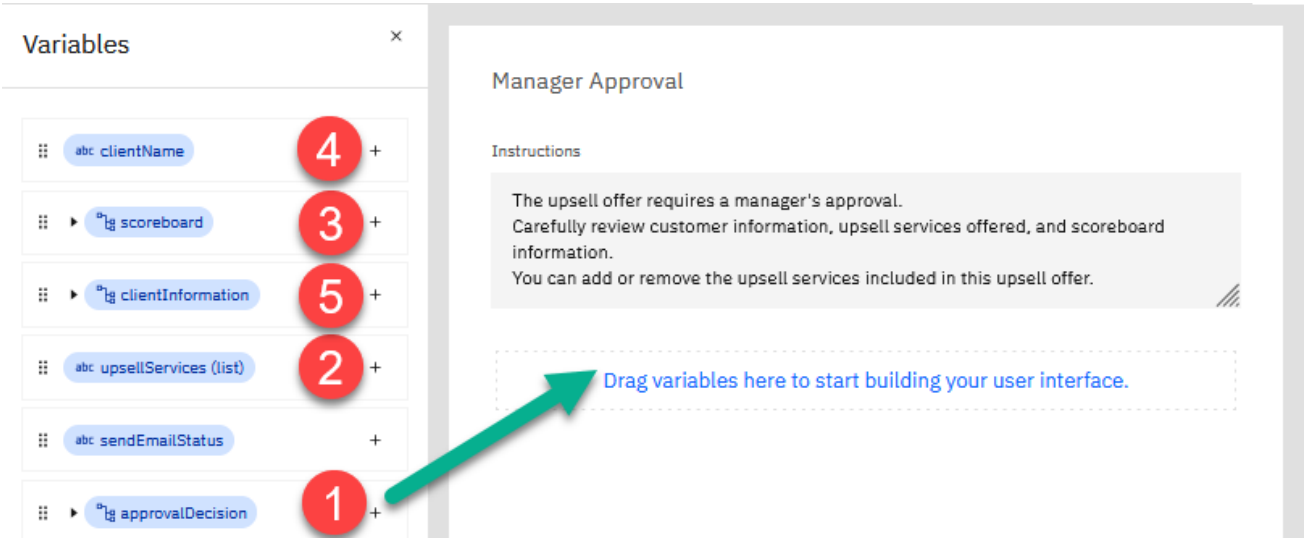
_3. In the *Instructions section*, replace the *Placeholder text* with the following text:

The upsell offer requires a manager's approval.
Carefully review customer information, upsell services offered, and scoreboard information.
You can add or remove the upsell services included in this upsell offer.

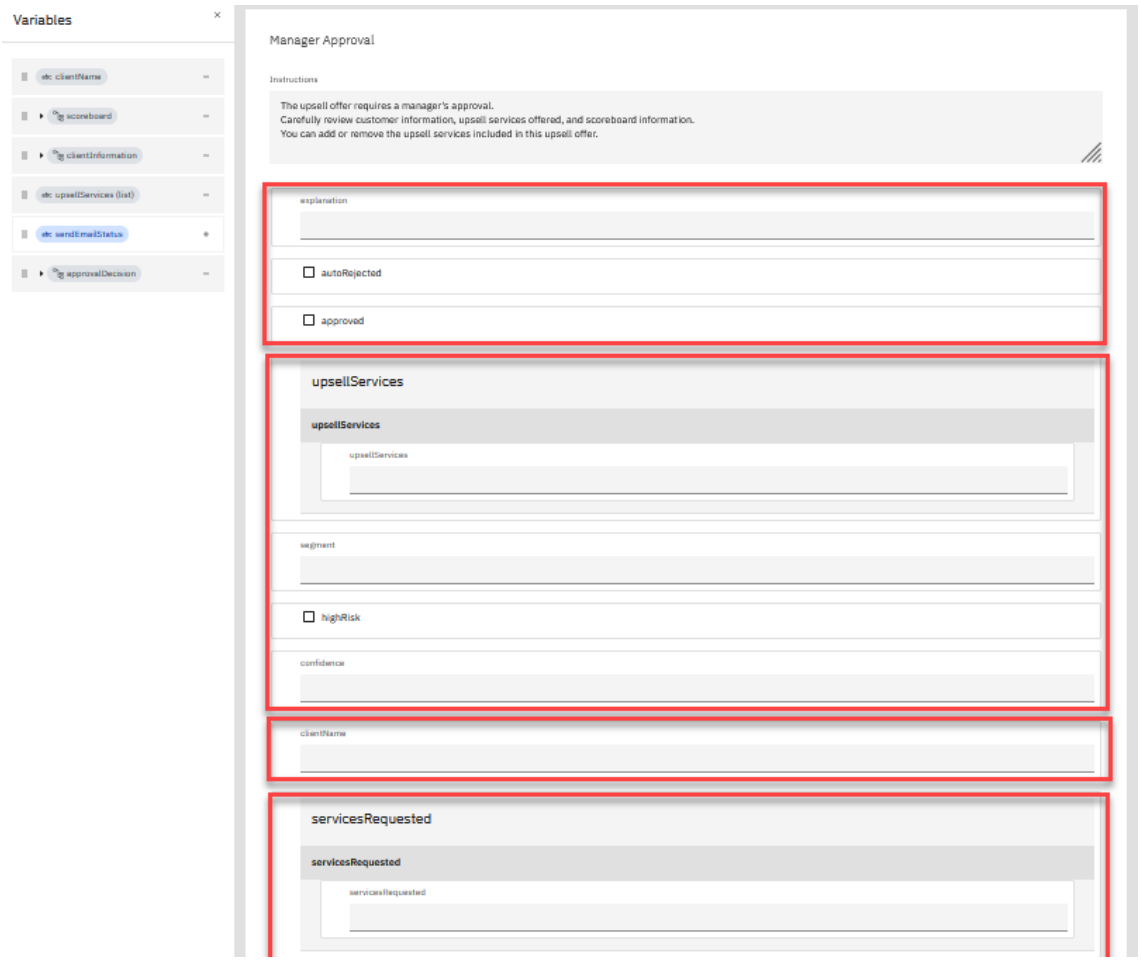


_4. **Drag and drop** all the variables from the Variables section to the **Drag variables here to start building your user interface** section.

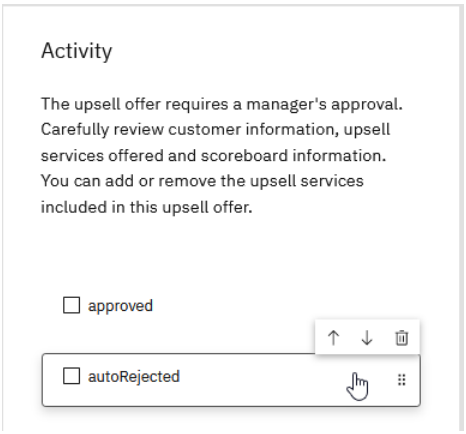
Please follow the order shown in the screenshot below. Drop the next variable below the last one you added (the bottom of the already added variables).



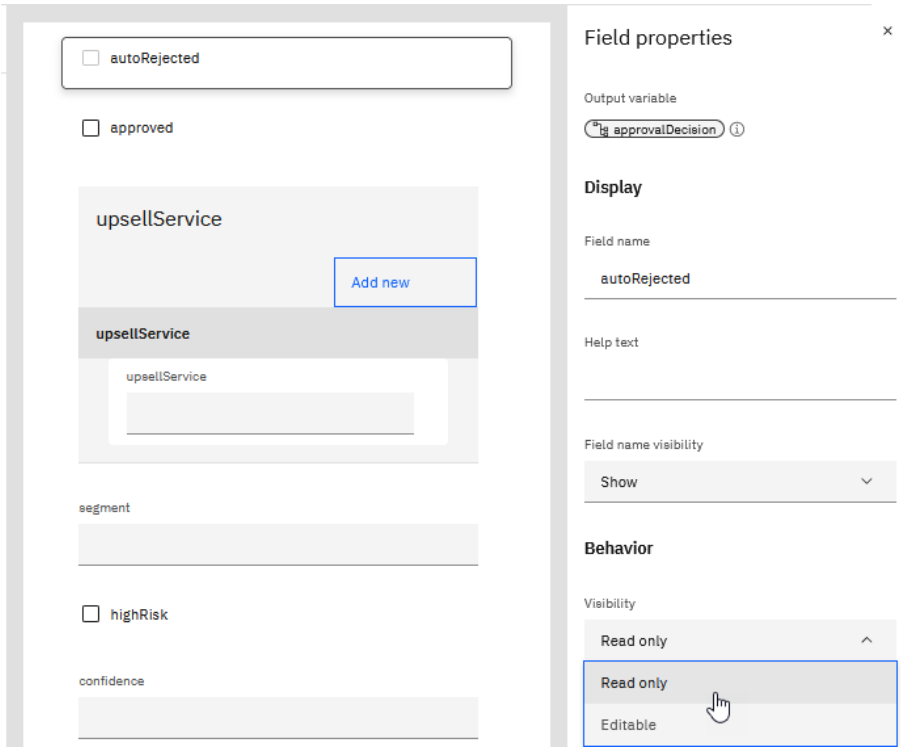
The completed UI form should look as shown in the red rectangle in the figure below:



_5. Click the **autoRejected** checkbox element.



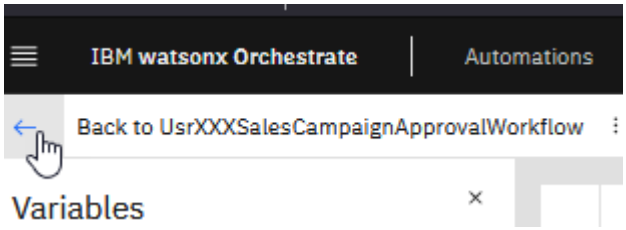
_6. Set the *Field properties* to **Read only.**



_7. Follow the steps above to set all fields to **Read-only** except the ones listed in the table below.

Filed Name	Visibility	Explanation
approved	Editable	The Approval Decision initially sets the approval. However, when a manager's approval is required, the manager must be able to edit the approved field after reviewing the upsell offer information.
upsellServices	Editable	The manager reviewing the upsell offer can modify the offer by adding or removing the upsell services.

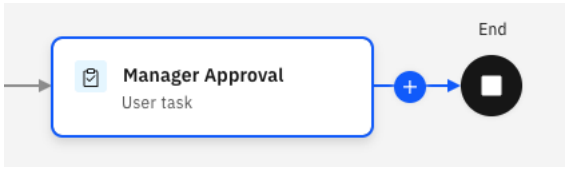
_8. In the top left, click the **Back to UsrXXXSalesCampaignWorkflow** link.



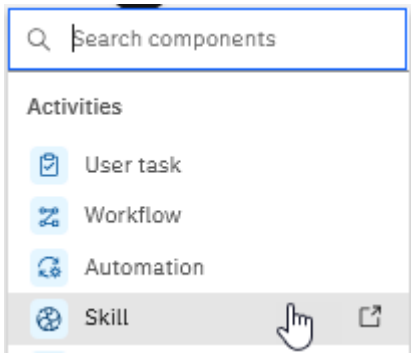
3.7 Add the "Send Campaign Email" Skill to the Workflow

3.7.1 Add the Send Campaign Email Skill to the Workflow

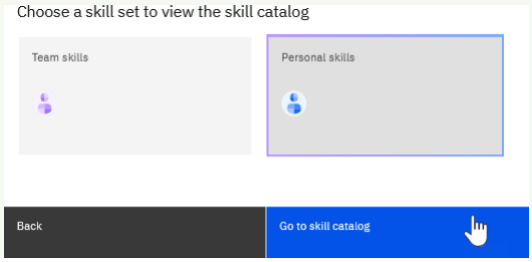
_1. Position the mouse cursor between *Manager Approval* and *End* and click the **+ icon.**



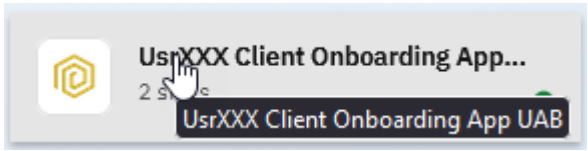
_2. Click **Skill.**



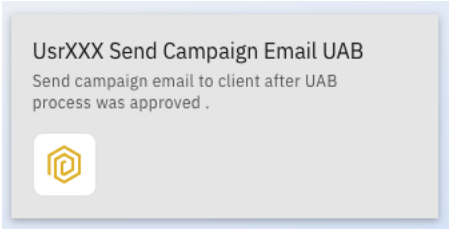
Note if you see this pop-up, select **Personal skills**.



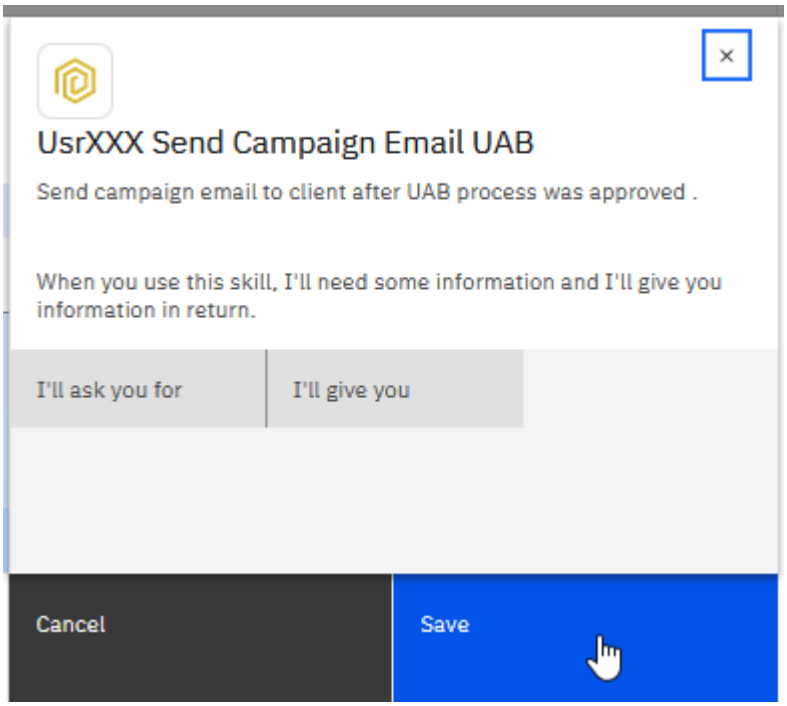
_3. Click the **UsrXXX Client Onboarding App UAB** tile (remember that XXX is your CP4BA Credentials user id).



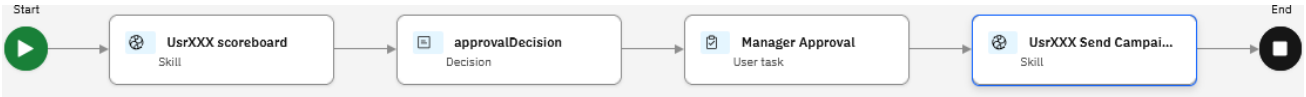
_4. Select the **UsrXXX Send Campaign Email UAB** skill.



_5. Click **Save.**

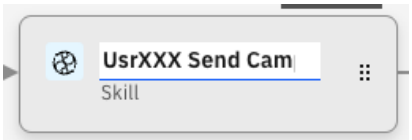


You should now see the skill added to the Workflow.

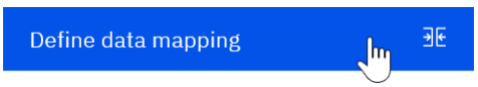


3.7.2 Define the Input and Output Data Mapping

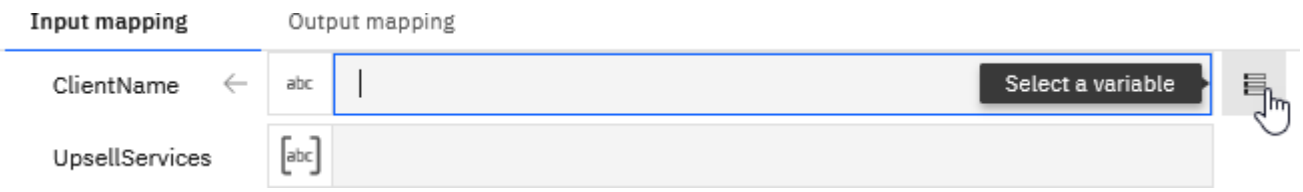
_1. Click the **UsrXXX Send Campai...** Skill.



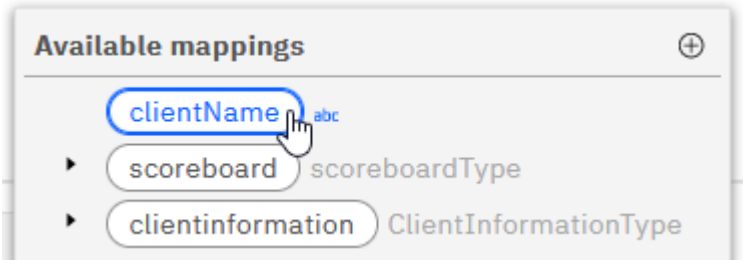
_2. Click the **Define data mapping** button.



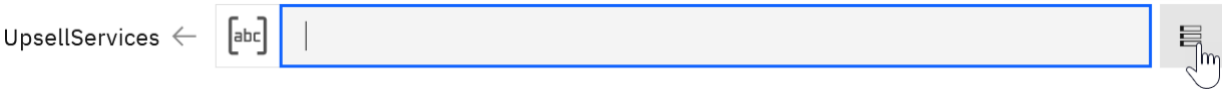
_3. In the Input mapping section for ClientName, click on **Select a variable**.



_4. Select the **clientName** variable.

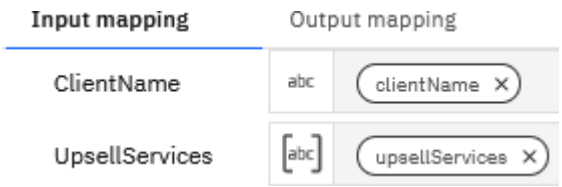


_5. In the input mapping section for UpsellServices, click on **Select a variable.**



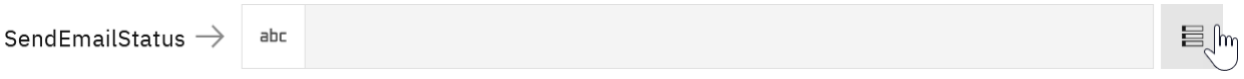
_6. Select **upsellServices.**

The Input mapping should look as shown below.

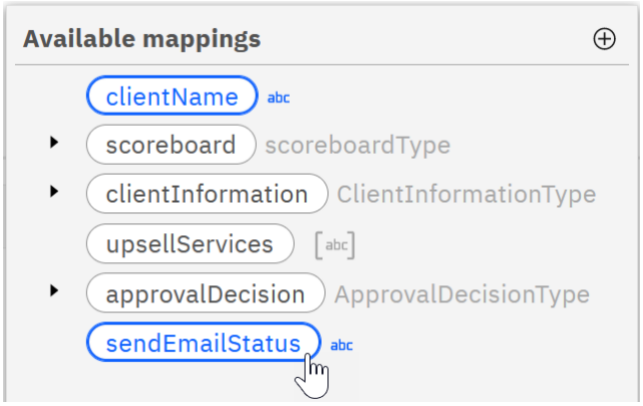


_7. Click the **Output mapping** tab.

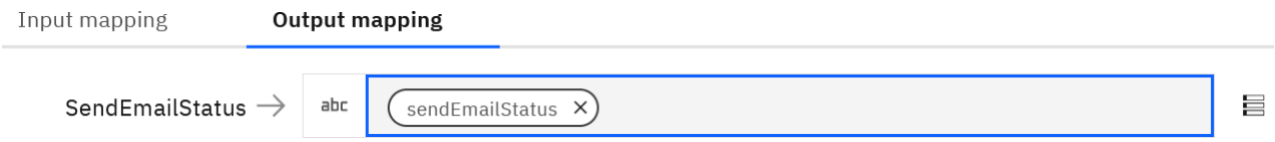
_8. For SendEmailStatus variable, click **Select a variable.**



_9. Select the **sendEmailStatus** variable.



The Output mapping should look exactly like this.

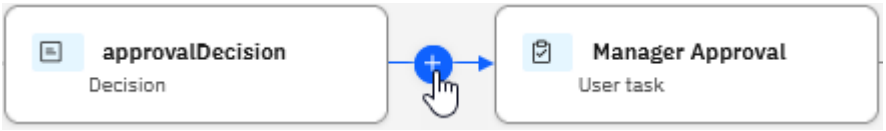


_10. Click the **OK** button to save your variable mapping.

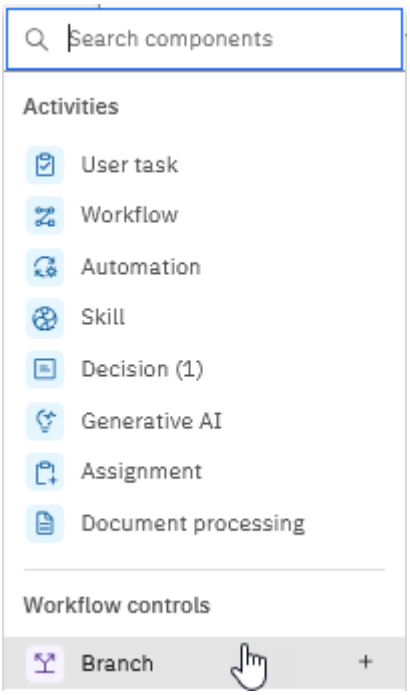
3.8 Add and Configure the Approval Branch

3.8.1 Add the Approval Branch

_1. Click the **+ icon** between *approvalDecision* and *Manager Approval nodes.*

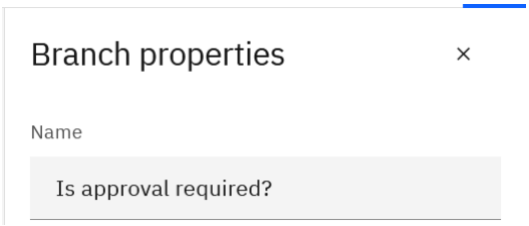


_2. Select **Branch.**

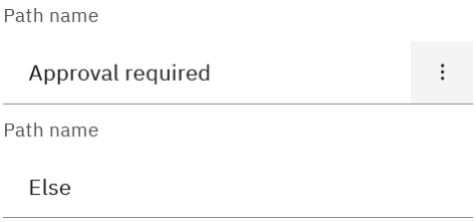


3.8.2 Configure the Approval Branch

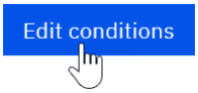
_1. In *Branch Properties*, change the *Name* from *Branch* to **Is approval required?**



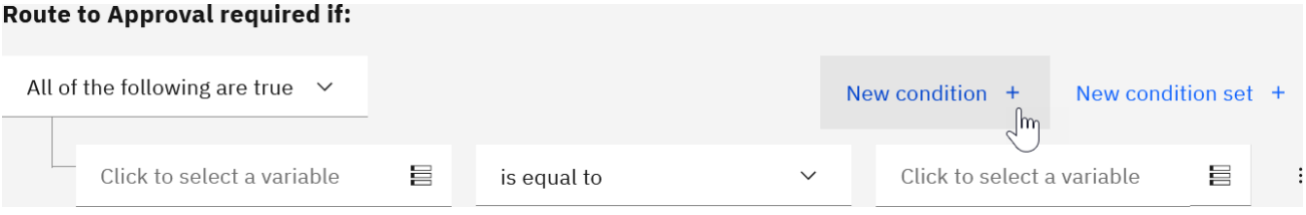
_2. Change the first *Path name* from *Path 1* to **Approval required**.



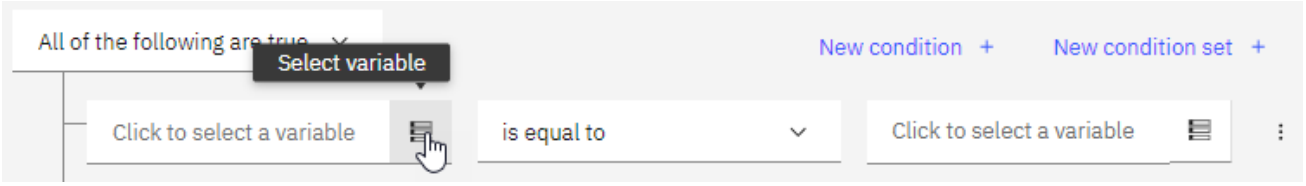
_3. Click the **Edit conditions** button.



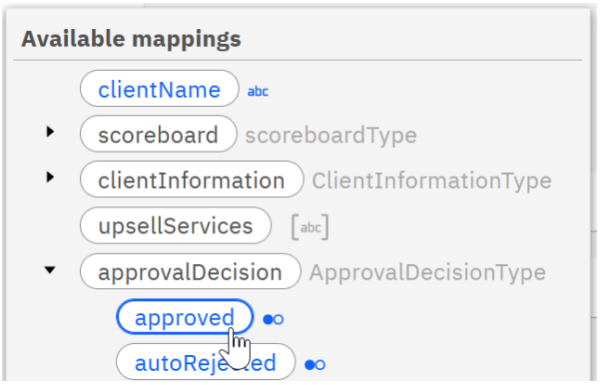
_4. Click **New condition +** to add a second row.



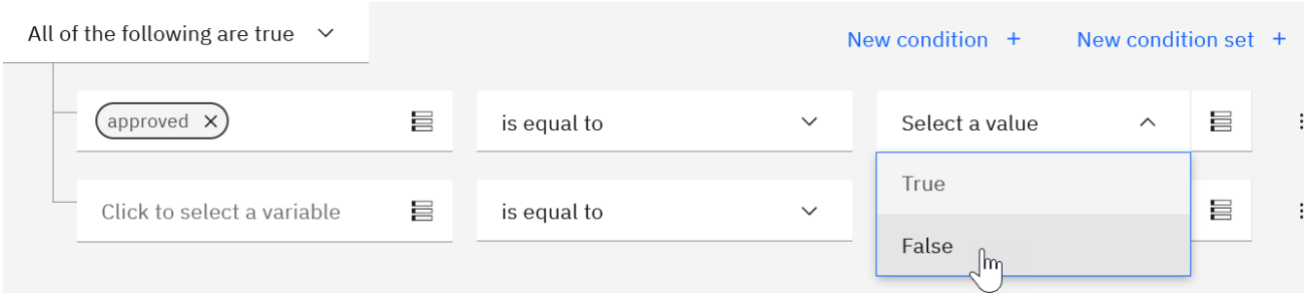
_5. In the *first condition row*, click **Select variable.**



_6. Select **approvalDecision > approved**.



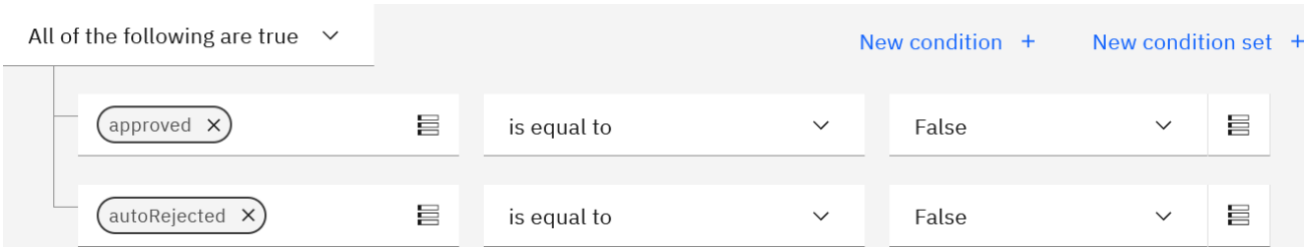
_7. For *Select a value* from the dropdown menu, select **False**.



_8. In the second condition variable, click the **Select variable** button, and for the variable, select **approvalDecision > autoRejected**

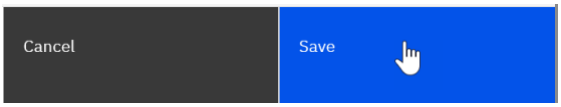
_9. For *Select a value* from the dropdown menu, select **False**.

The condition set should look as shown below.



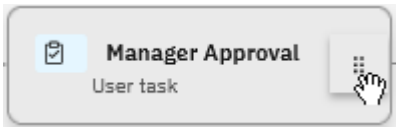
> Note that "All of the following are true" is selected at the top, i.e., this path is only taken if the upsell offer is neither auto-approved nor auto-rejected based on the output of the decision service.

_10. Click **Save** to save the conditions.



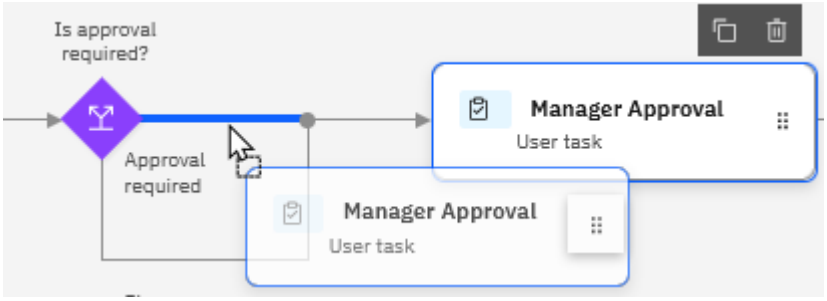
3.8.3 Move the Manager Approval Task to the Approval Required Path

_1. In *Manager Approval*, select the **User task handle** (the area with dots on the right side within the activity box)**.**

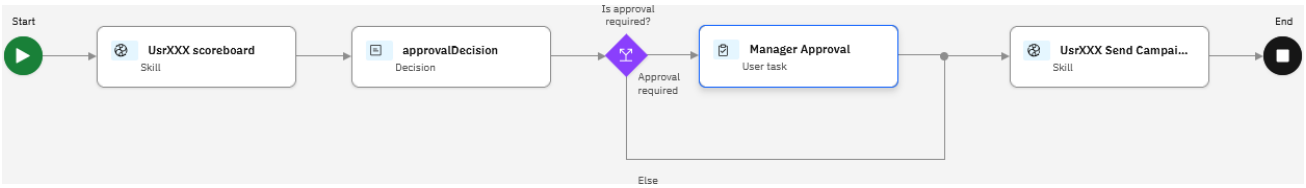


_2. Click and hold the left mouse button and move the **Manager Approval** User task to the **Approval required** branch.

> You can release the mouse button when the Approval required line becomes blue. If needed, you can also use the zoom-in function of the diagram to position the Activity better.



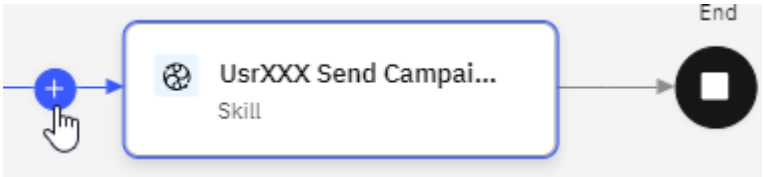
The flow should now look as shown below.



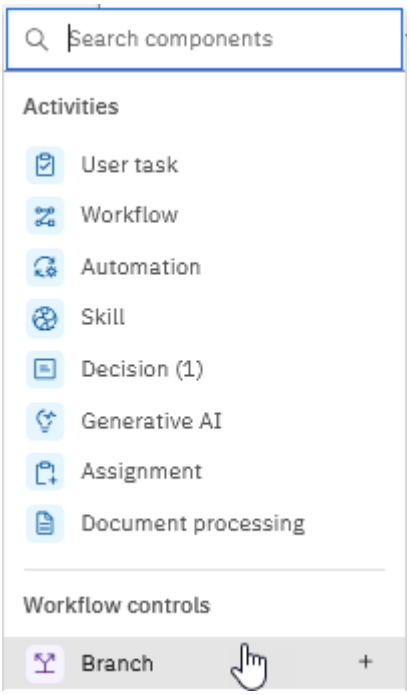
3.9 Add and Configure the Send Campaign Email Branch

3.9.1 Add the Send Campaign Email Branch

_1. Click the **+ icon** to the left of **UsrXXX Send Campai...** *Activity.*

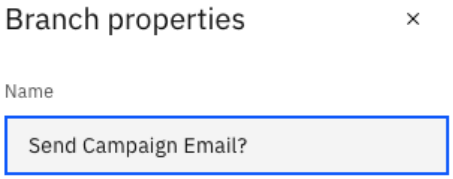


_2. Select **Branch.**

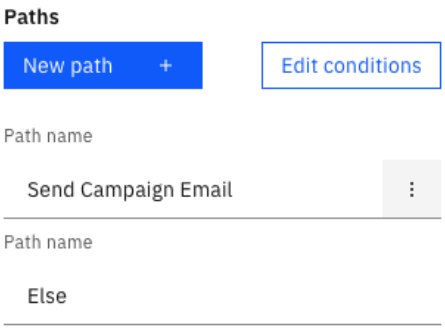


3.9.2 Configure the Send Campaign Email Branch

_1. In *Branch Properties*, set *Name* to **Send Campaign Email?**

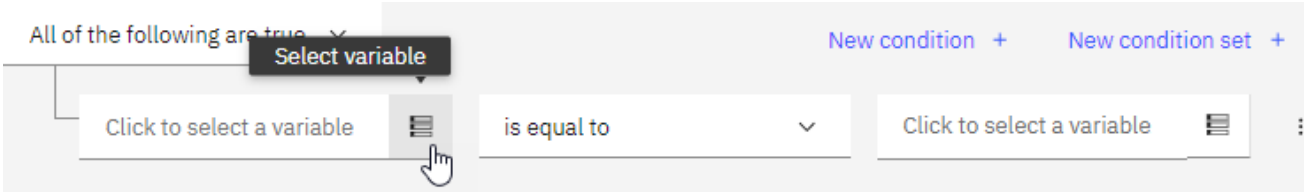


_2. Change the first *Path name* to **Send Campaign Email**.

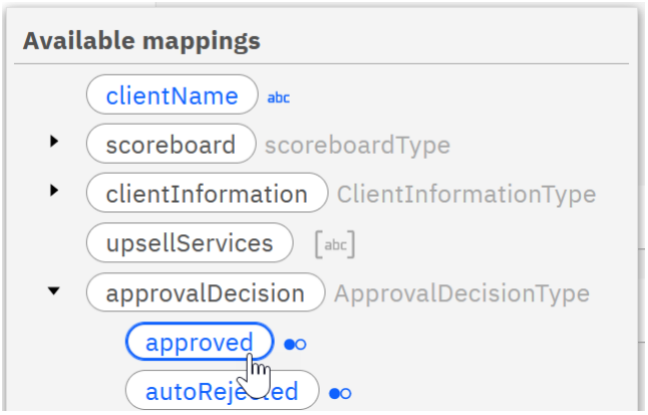


_3. Click the **Edit Conditions** button.

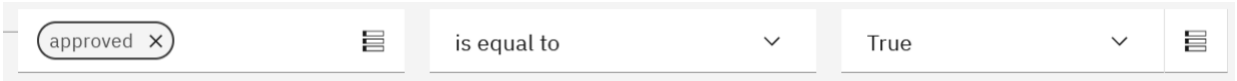
_4. In the condition variable, click **Select variable.**



_5. Select **approvalDecision > approved.**



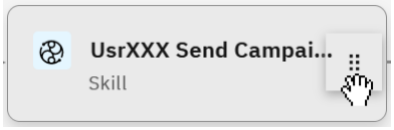
_6. For *Select a value* from the dropdown menu, select **True**.



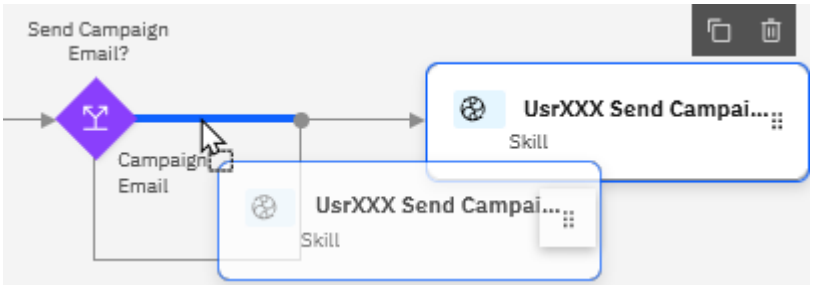
_7. Clock **Save** to save the conditions.

3.9.3 Move the Send Campaign Email task to Send Campaign Email Path

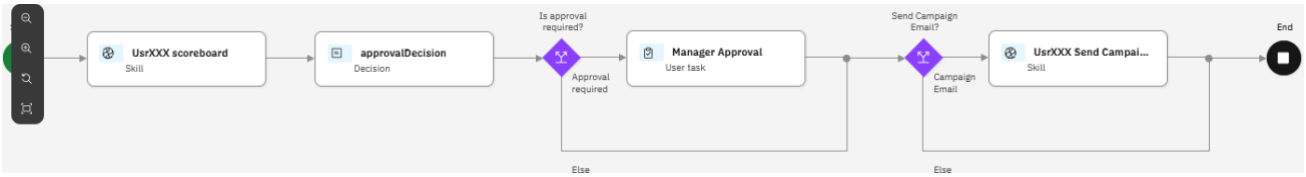
_1. Select Skill UsrXXX Send Campai... **handle.**



_2. Click and hold the left mouse button and move **Skill UsrXXX Send Campai...** to the **Send Campaign Email** branch.



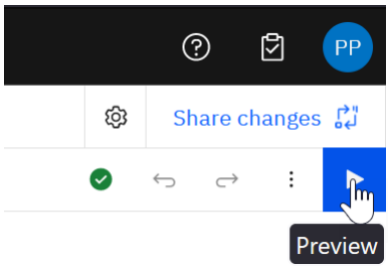
The flow should now look as shown below.



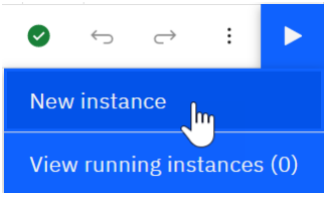
3.10 Test the Workflow Automation

3.10.1 Test 1 – Approval Required Case

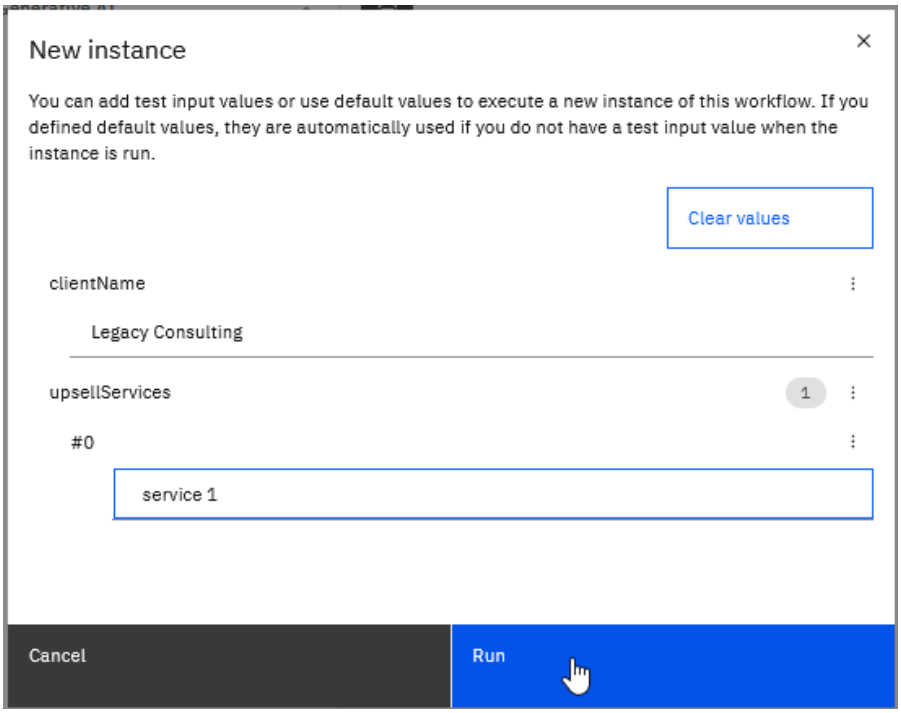
_1. Click the **Preview** button (top right corner).



_2. Select **New instance.**

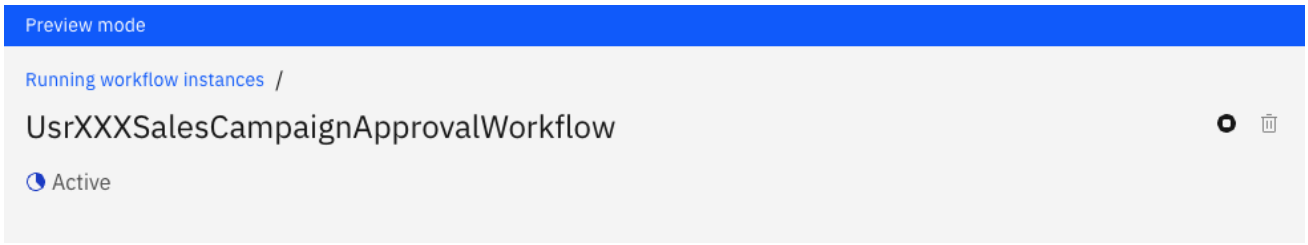


_3. In the *New Instance* window, for *clientName,* enter **Legacy Consulting,** and for *upsellServices,* enter **service 1** and click the **Run** button.

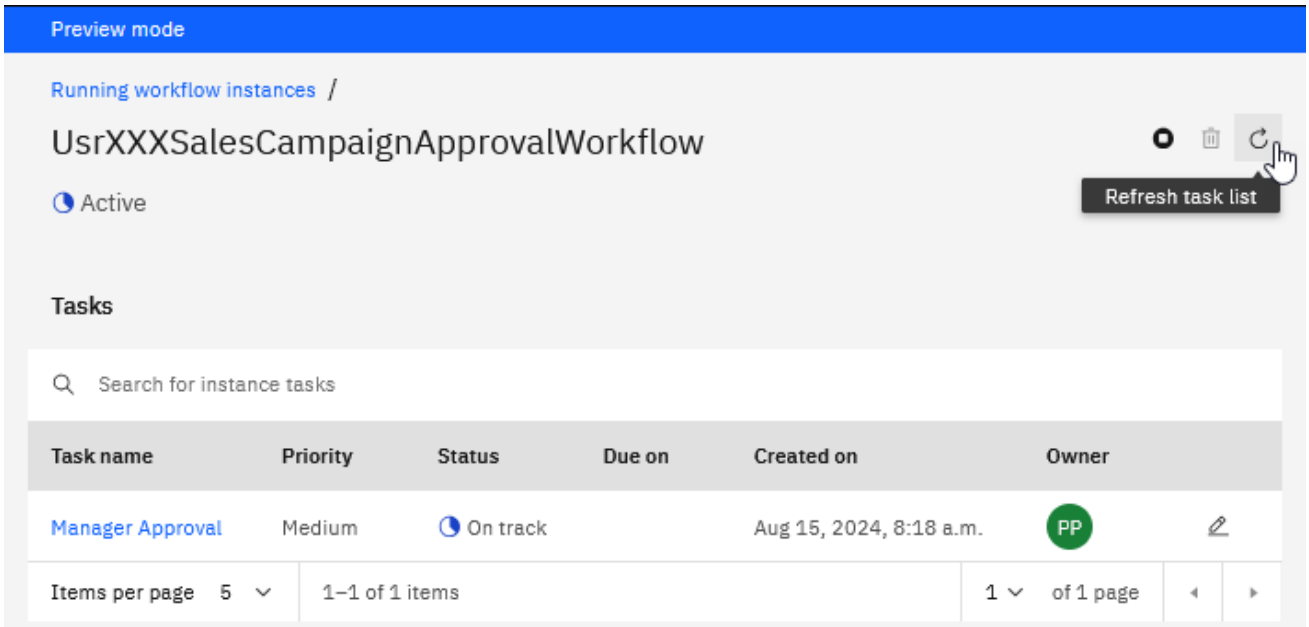


_4. You should shortly see a *Preview mode* Web Browser window with an **Active** status, but there are probably no tasks.

> If you cannot see this window, check if this pop-up window is blocked in your browser. If so, change your browser setting to allow pop-ups from wxO.



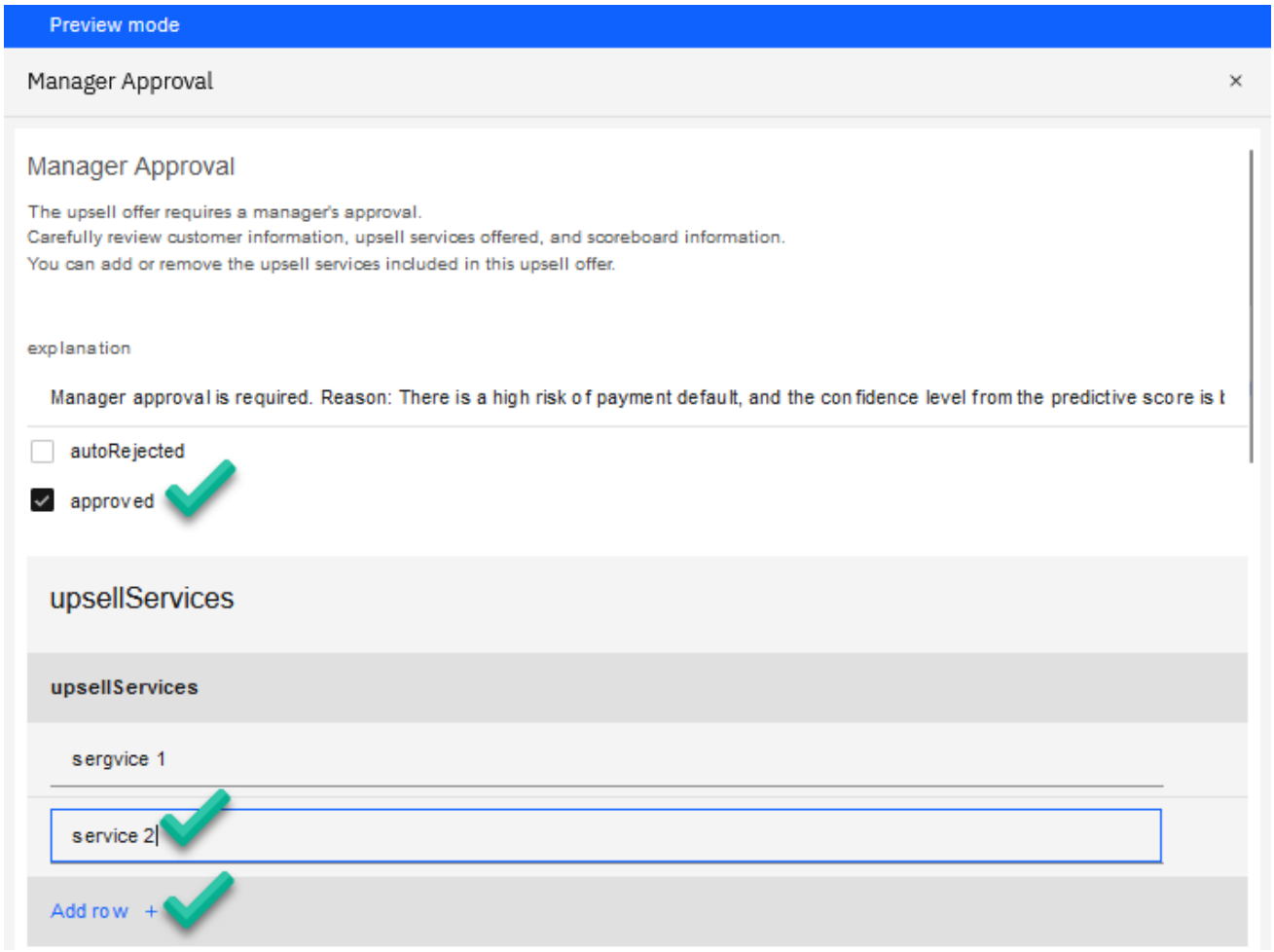
_5. Click **Refresh task list,** or wait until you see a task.



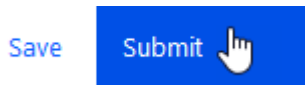
Recall that approval is required because Legacy Consulting is a low-risk customer, but it has a low confidence (of being low-risk) score.

_6. Click **Manager Approval** (the task name) to claim it and open the task UI

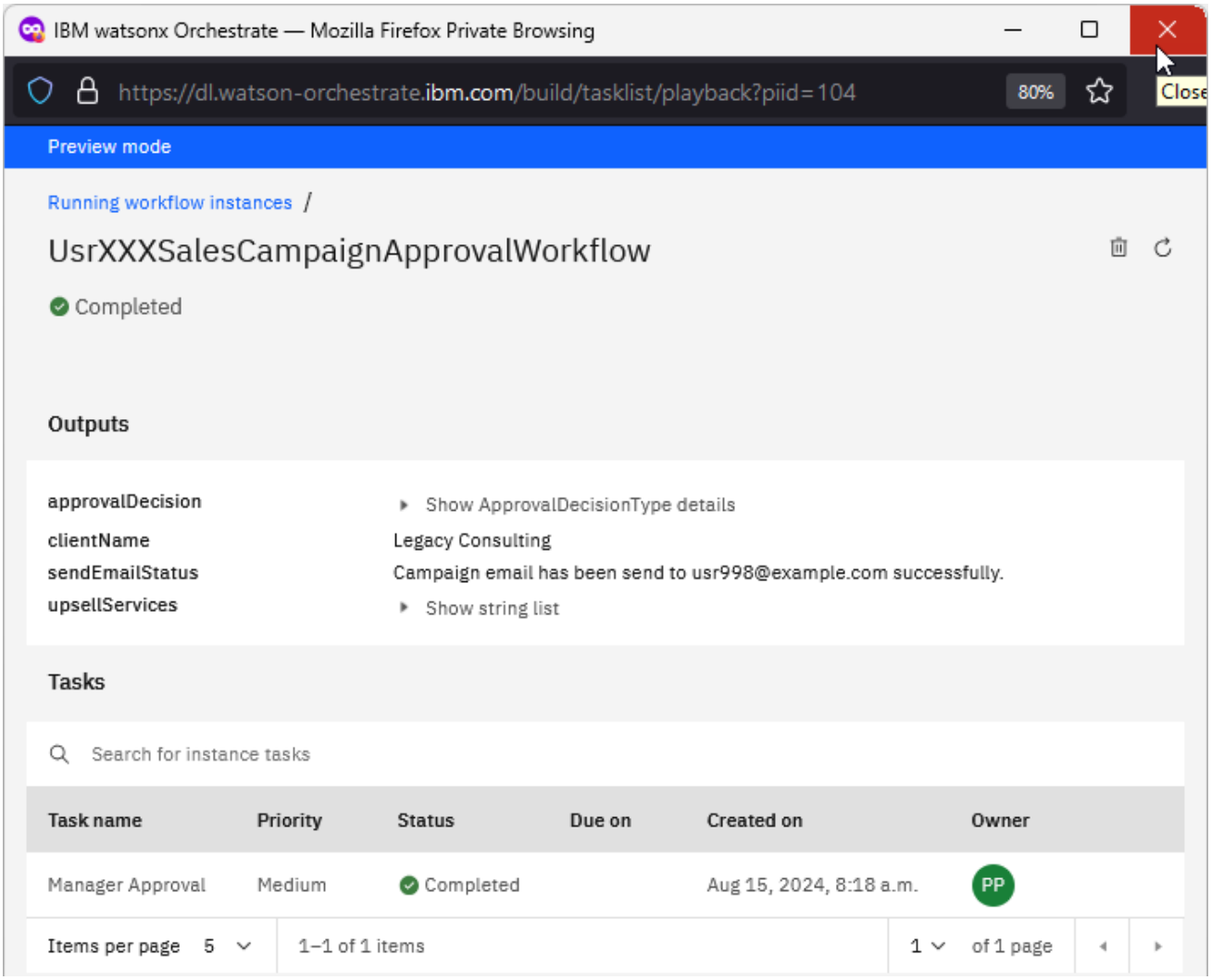
_7. Scroll up to the top of the form, check the **approved** check box, click **Add new** in *upsellServices*, then add **service 2.**



_8. Scroll to the bottom of the form and click **Submit.**

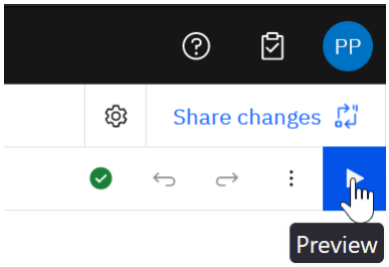


_9. **Close** the *Preview mode* Web Browser window.

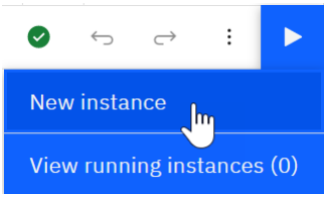


3.10.2 Test 2 – Auto Approved Case

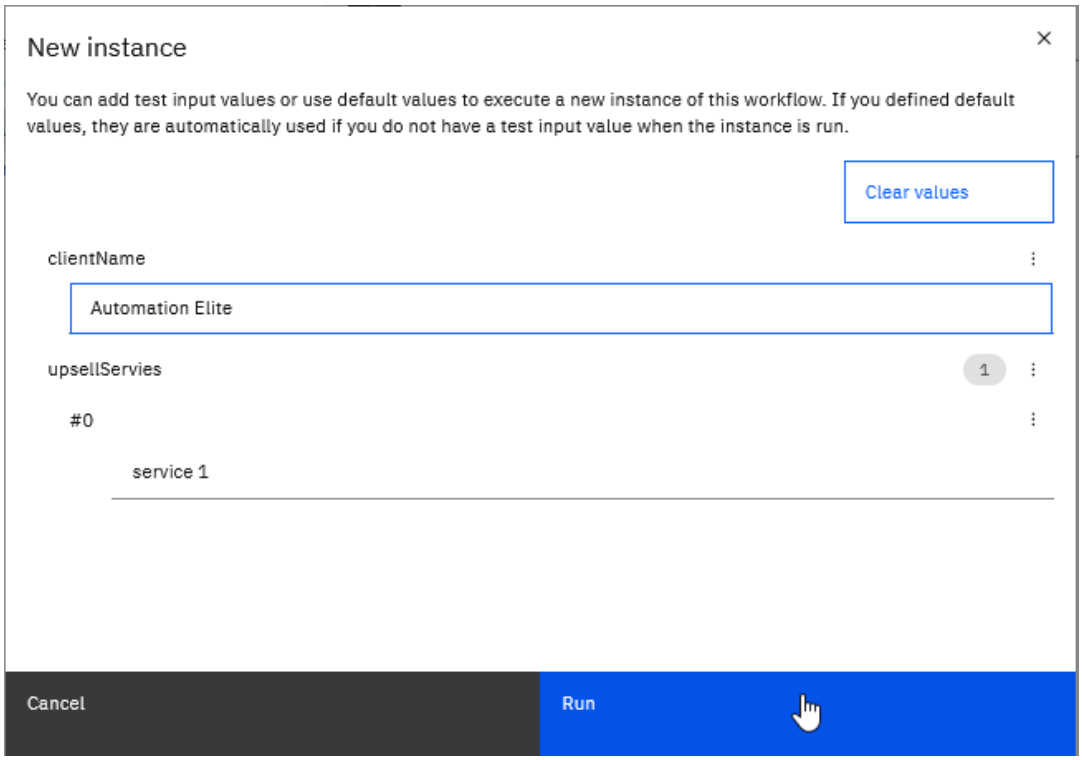
_1. Click the **Preview** button (top right corner).



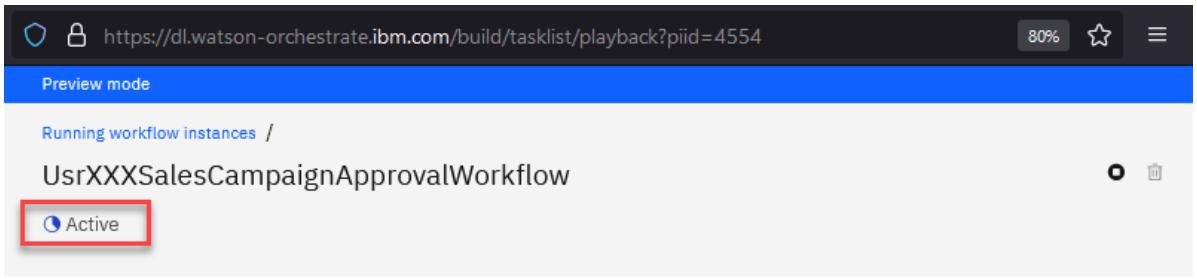
_2. Select **New instance.**



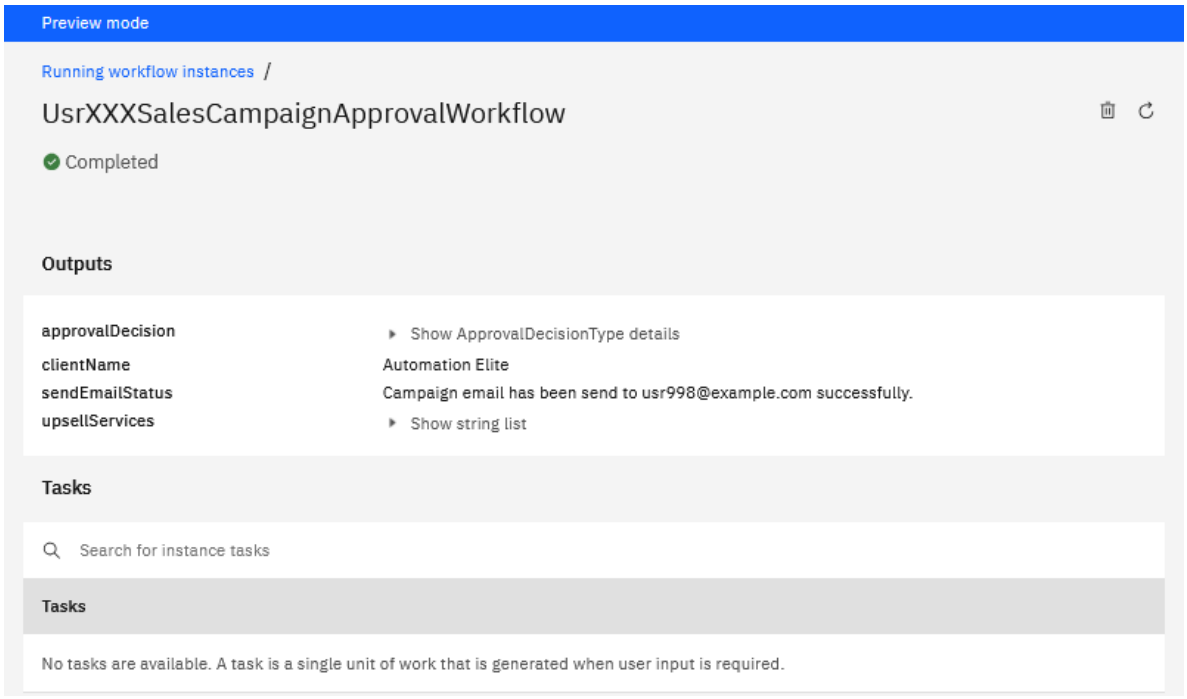
_3. In the *New Instance* window, change the *clientName* to **Automation Elite,** and for *upsellServices* keep **service 1** and then click **Run.**



When the Run button stops spinning, you should see the Preview mode window with the instance's state set to *Active*.

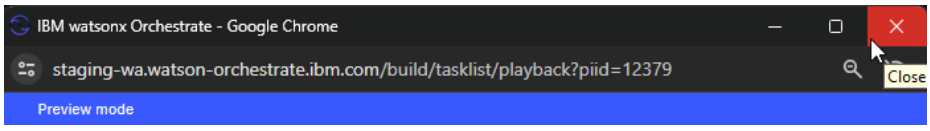


_4. Wait. You should shortly see a *Preview mode* Web Browser window with a **Completed** status for the Workflow.



Since Automation Elite is a low-risk customer with a high confidence (of being low-risk) score, the upsell offer is auto-approved. Hence, we do not see a user task.

_5. **Close** the *Preview mode* Web Browser window.

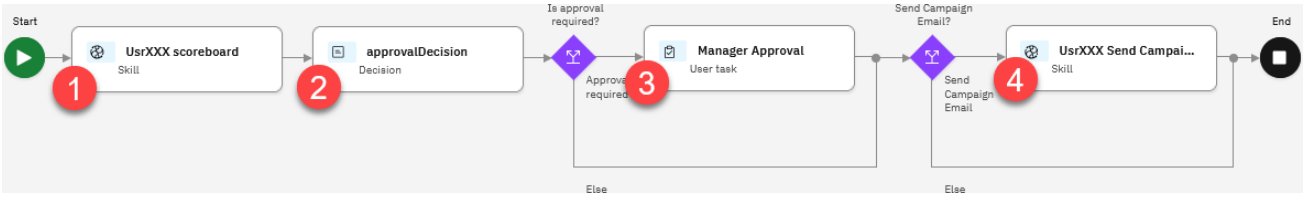


3.10.3 Examining Completed Instances in the Process Admin Console

To use Inspector in the Porcess Admin Console, you must have an Admin role. The steps that show how to use the Inspector to examine completed instances, and inflight instances (possibly debugging) are included in Appendix A. Using Proces Admin Console to Debug Workflows.

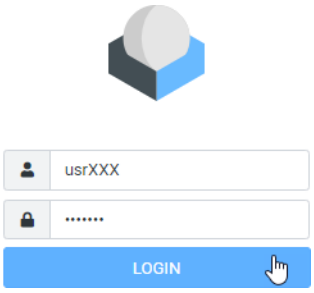
3.10.4 Verify the Upsell Offer Email

You will see two emails—one from the auto-approved (1,2,4) path and one from the manager-approval (1,2,3,4) path.

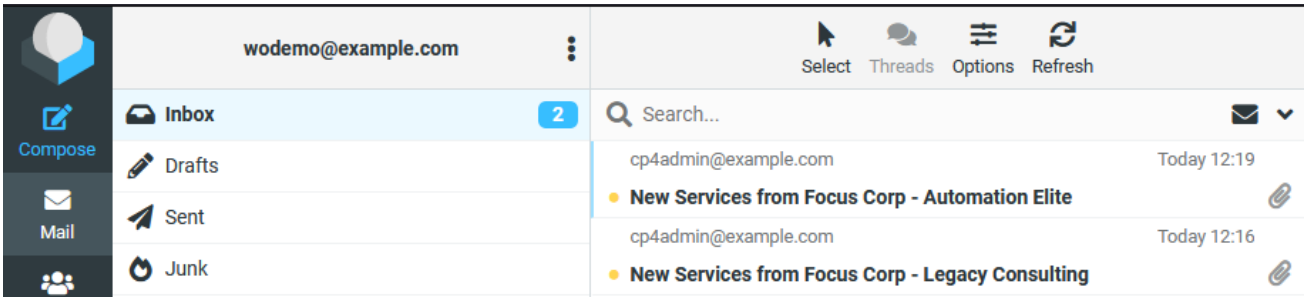


_1. Open the **Local Mail Client** in your browser (see 1.4.1 Systems, Lab Files, and Credentials)

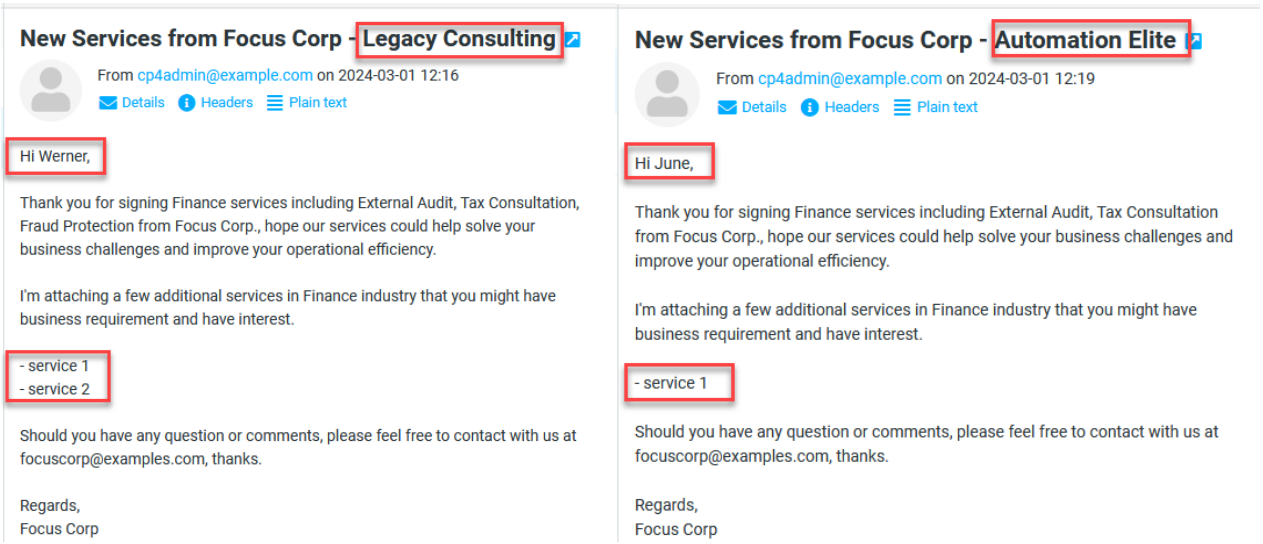
_2. Enter your **CP4BA Credentials** and click the **LOGIN** button.



_3. You should now see two emails.



Note that the emails are customized for each client:



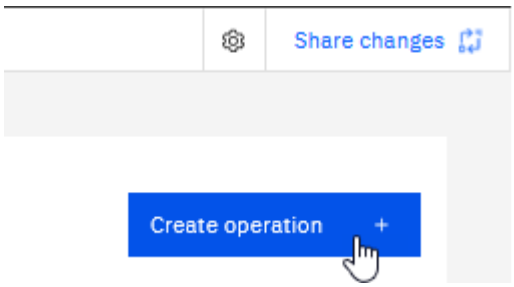
4 Exercise: Expose Workflow as a wxO Skill

4.1 Create an Operation

In this part of the lab, you will create an operation to expose the workflow component in your Automation as a wxO skill so others can use it directly in their automations, chats, skill flows, or other Automations.

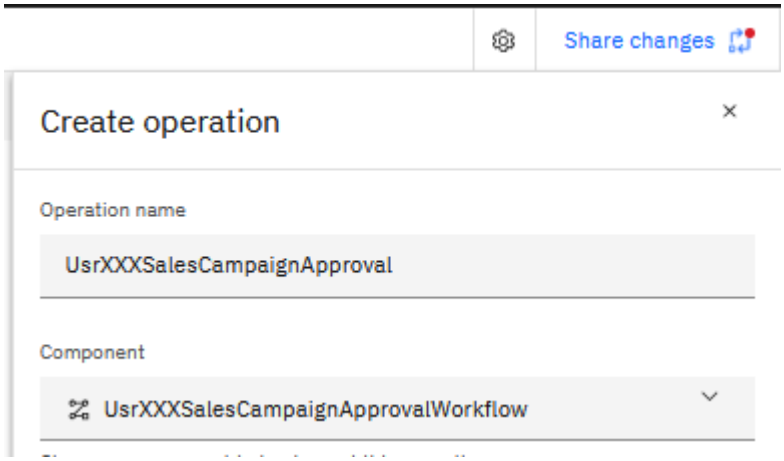
_1. Click the **Operations** tab.

_2. Click **Create operation +.**

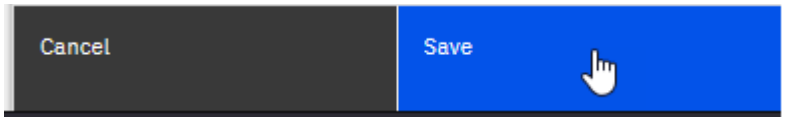


_3. For the *Operation name,* enter **UsrXXXSalesCampaignApproval**. For the *Component*, select **UsrXXXSalesCampaignApprovalWorkflow**.

Please replace XXX are the digits of your CP4BA Credentials user id.



_4. Click **Save**.

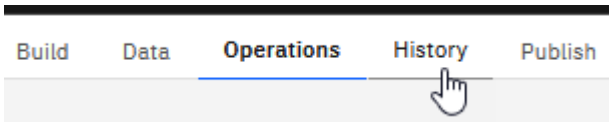


You should now see a new operation.

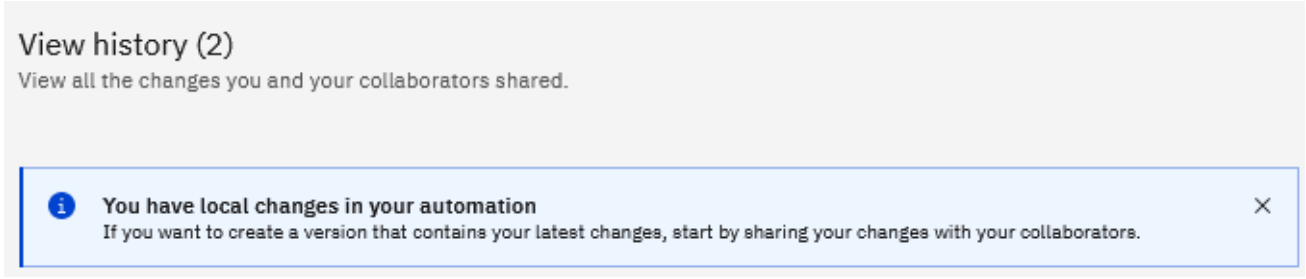
Name	Component	Description	Created on
UsrXXXSalesCampaignApproval	UsrXXXSalesCampaignApprovalWorkflow		3/18/2024, 9:57:16 PM

4.2 Create a New Version of the Automation

_1. Click the **History** tab.

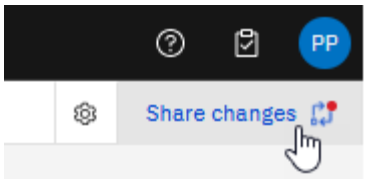


Note that you will see a message that you have local changes in your Automation.



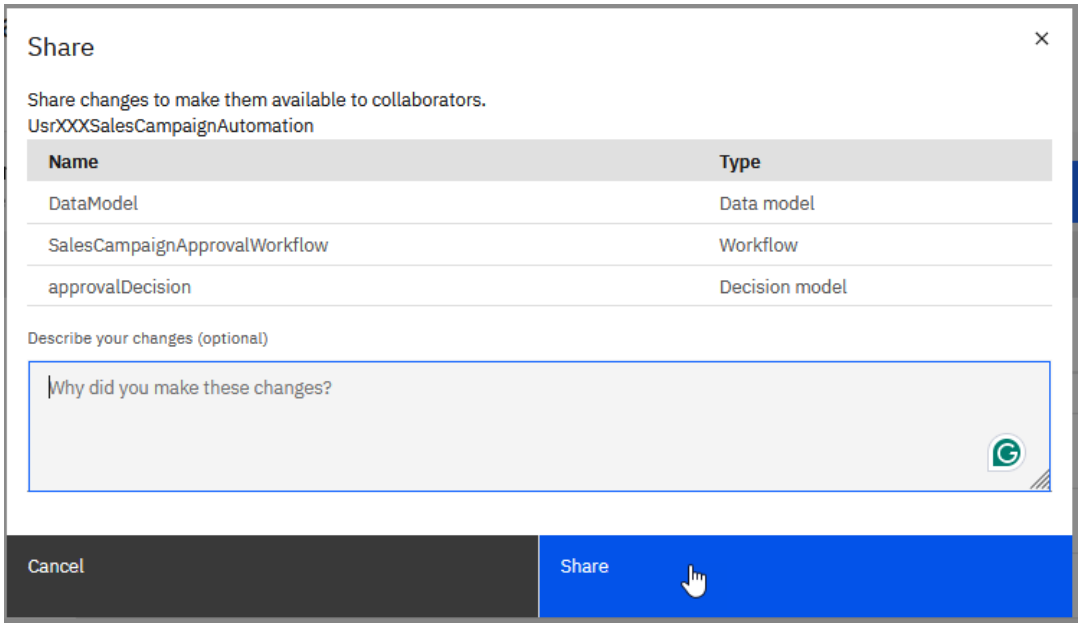
You will need to share your changes to create the latest version that contains your latest changes.

_2. Click **Share changes.**

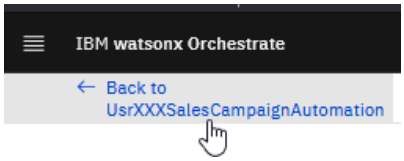


_3. Click the **Share** button.

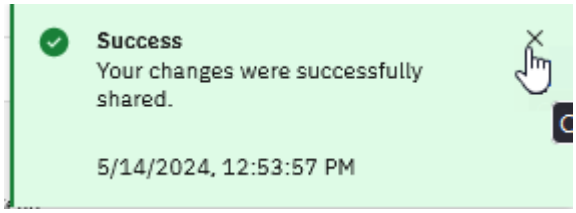
_4. In the *Share pop-up* Window, click **Share** again.



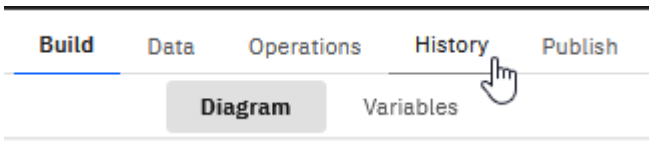
_5. Click the **Back to UsrXXXSalesCampaignAutomation** link.



_6. Click **X** to close the Success pop-up window.

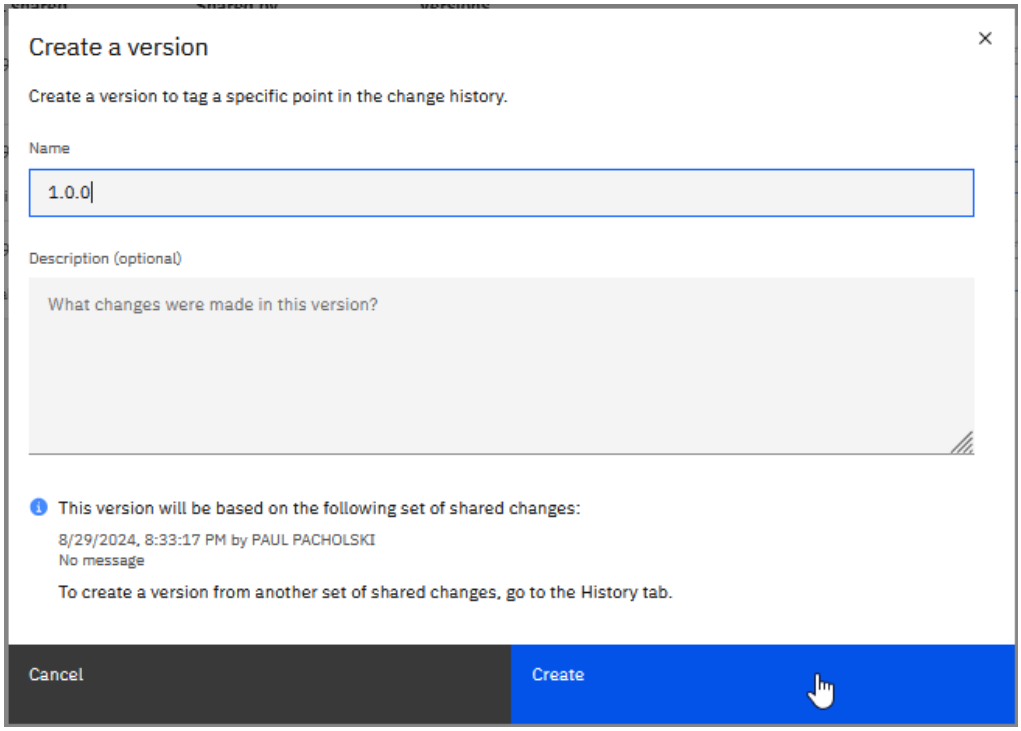


_7. Click the **History** tab.

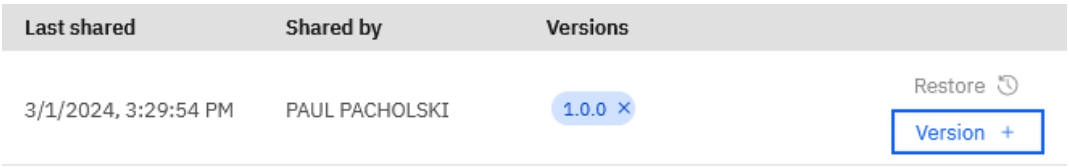


_8. Click **Version +** on the topmost entry to ensure you will use the version with the latest changes!

_9. For *Name,* enter **1.0.0** (if you wonder why this form (see semantic versioning format) and click **Create**.

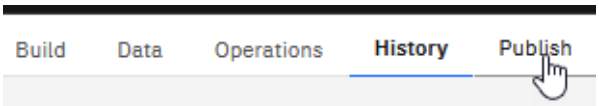


_10. You should now see that your latest set of shared changes has been versioned.



4.3 Publish the Automation as a wxO Skill

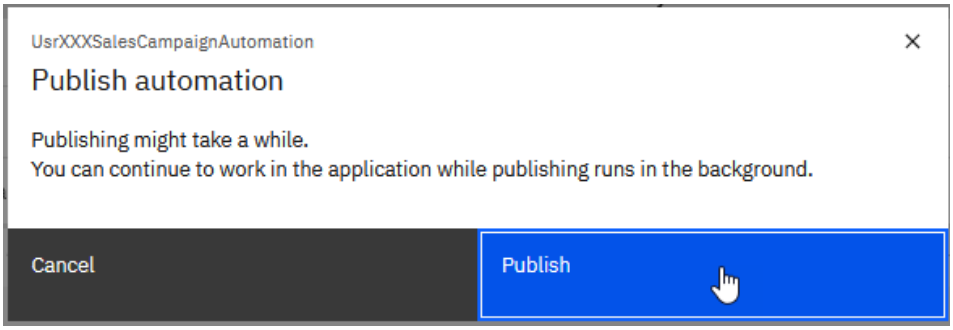
_1. Click the **Publish** tab.



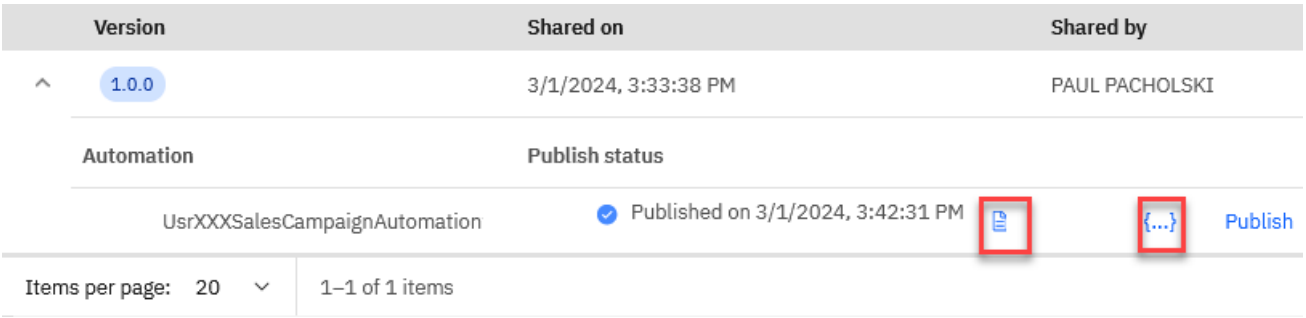
_2. Click the Version **Twisty.**

_3. Click **Publish.**

_4. Click the **Publish** button to start publishing the Automation.



_5. Wait until the *Publish status* changes from "**Publish in progress**" to "**Published on...**".

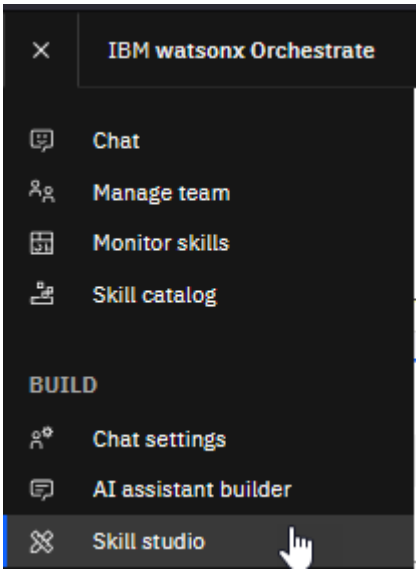


Note: the **"document"** link shows the publishing logs, and the "**{...}**" link points to the Swagger UI for the OpenAPI file

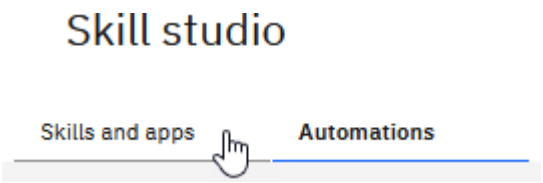
4.4 Enhance and Publish the Workflow Skill

_1. Click the **Hamburger** menu.

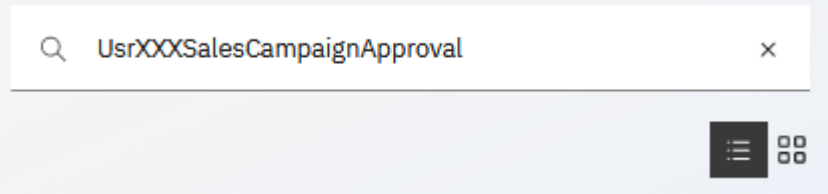
_2. Click **Skill studio.**



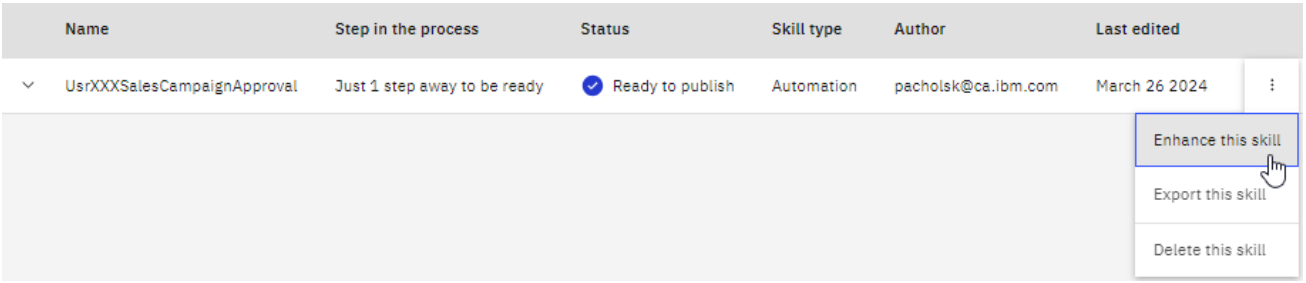
_3. Click the **Skills and apps** tab.



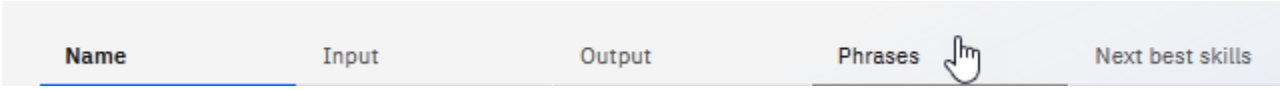
_4. In the Search, enter **UsrXXXSalesCampaignApproval** (remember XXX is your user id) and press **Enter**.



_5. Click the **vertical ellipses (3 dots) ...** and then select **Enhance this Skill.**

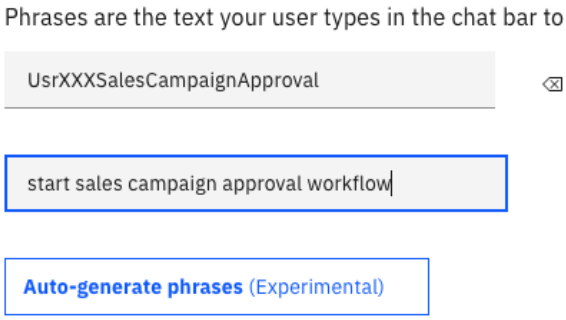


_6. Click the **Phrases** tab.

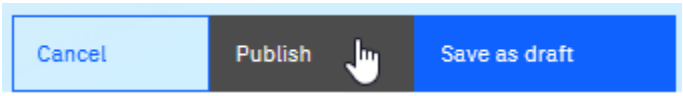


> You might want to add a phrase in your local language to make access to this Automation skill easier within the chat.

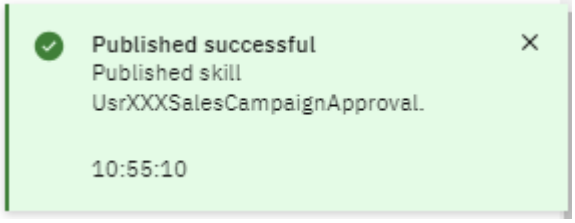
_7. Enter the **start sales campaign approval workflow** phrase.



_8. Click **Publish.**



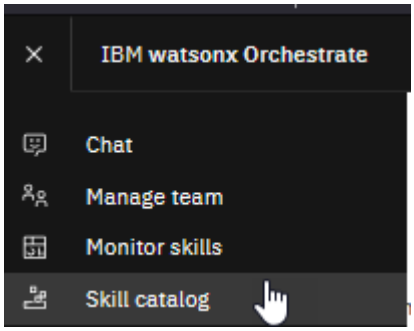
You should see a Published successful message.



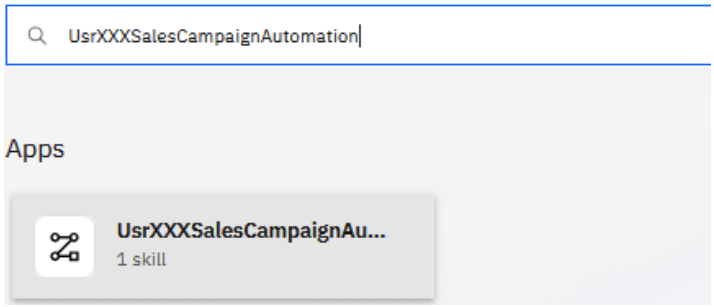
4.5 Add the Automation Skill to Personal Skills

_1. Click the **Hamburger** menu.

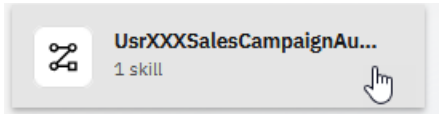
_2. Click **Skill catalog.**



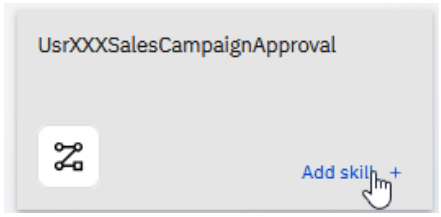
_3. To find the Sill in the Skill Calaog, type **UsrXXXSalesCampaignAutomation** (remember XXX is your user id) in the *search bar* and hit **enter key**.



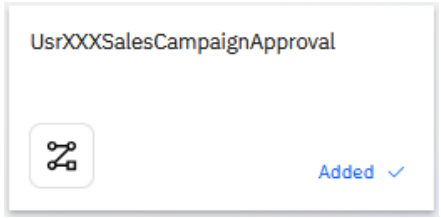
_4. Click the **UsrXXXSalesCampaignAutomation** App (remember XXX is your user id).



_5. Click **Add skill +**



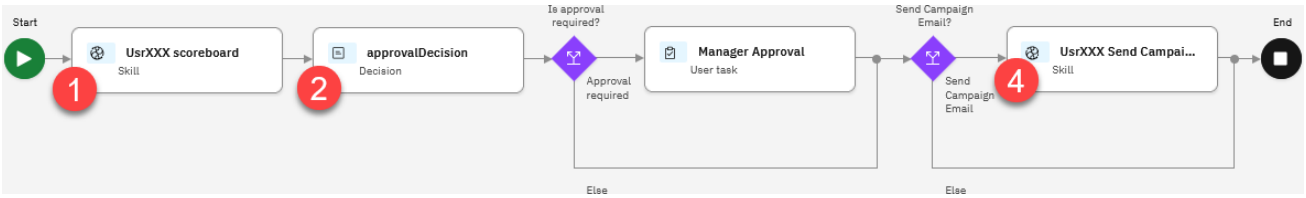
You should now see the **"Added"** status.



5 Exercise: Test the Workflow Skill in the Chat

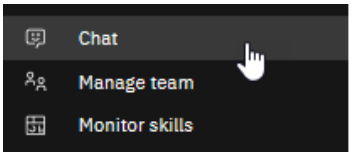
5.1 Test the Auto Approval Case

The auto-approved path is **1, 2, 4.**

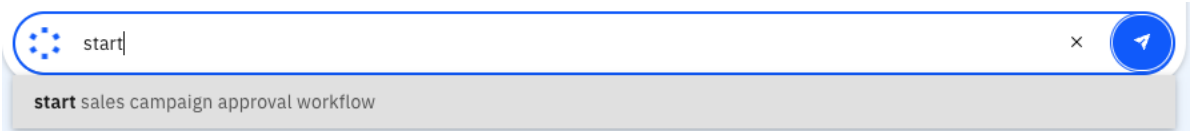


_1. Click the **Hamburger** menu in the top-left corner.

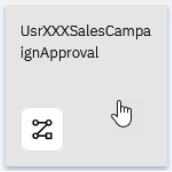
_2. Click **Chat**



_3. In the *Chat*, type "**start"** and select the suggestion "**start sales campaign approval workflow".**

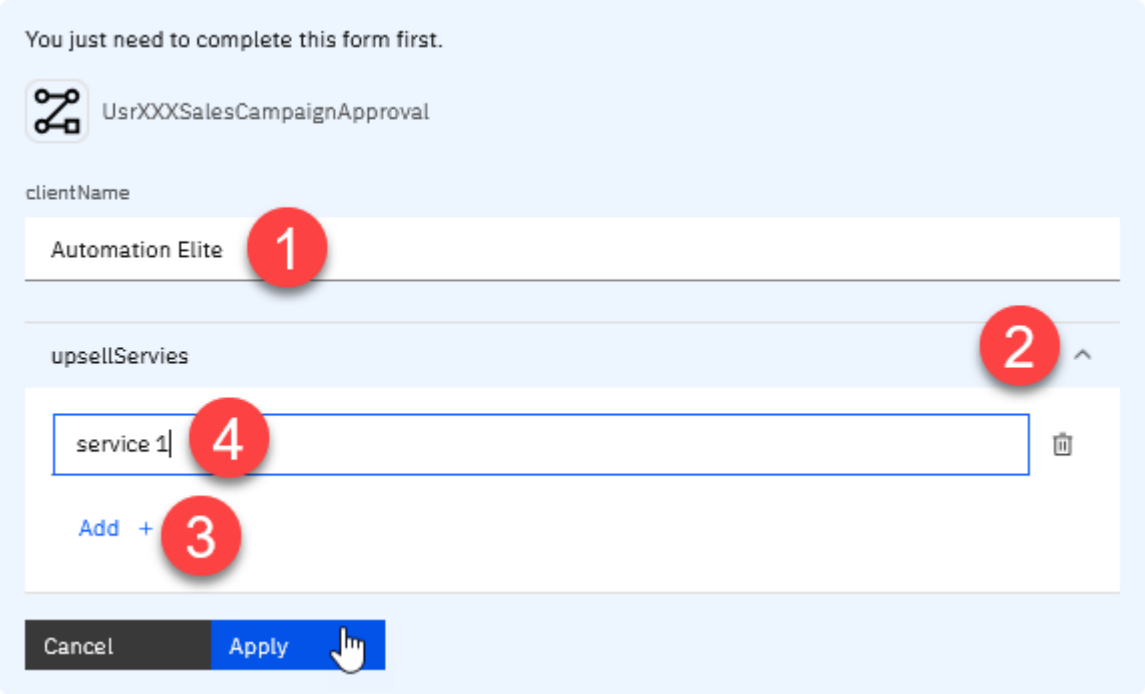


_4. Click the **Send** button to start the Workflow.

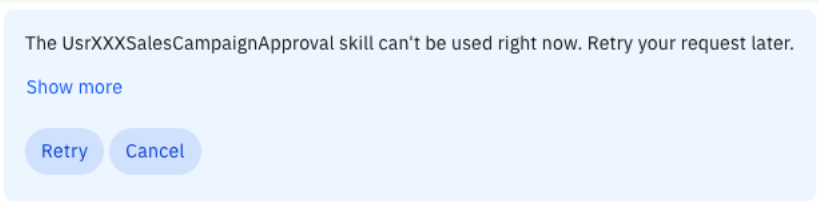
> Note that we are using a natural language interface to start the Workflow. Alternatively, we could click the Workflow.
>
> 
>

_5. Enter input data and start the Workflow skill:

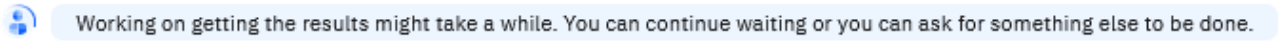
1) For *clientName* enter **Automation Elite**
2) Click the *upsellServices* **Twistie**
3) Click **Add +**
4) For *upsellService enter* **service 1,**
5) Click **Apply**



Note: if you see this retry message, click the **Retry** button.

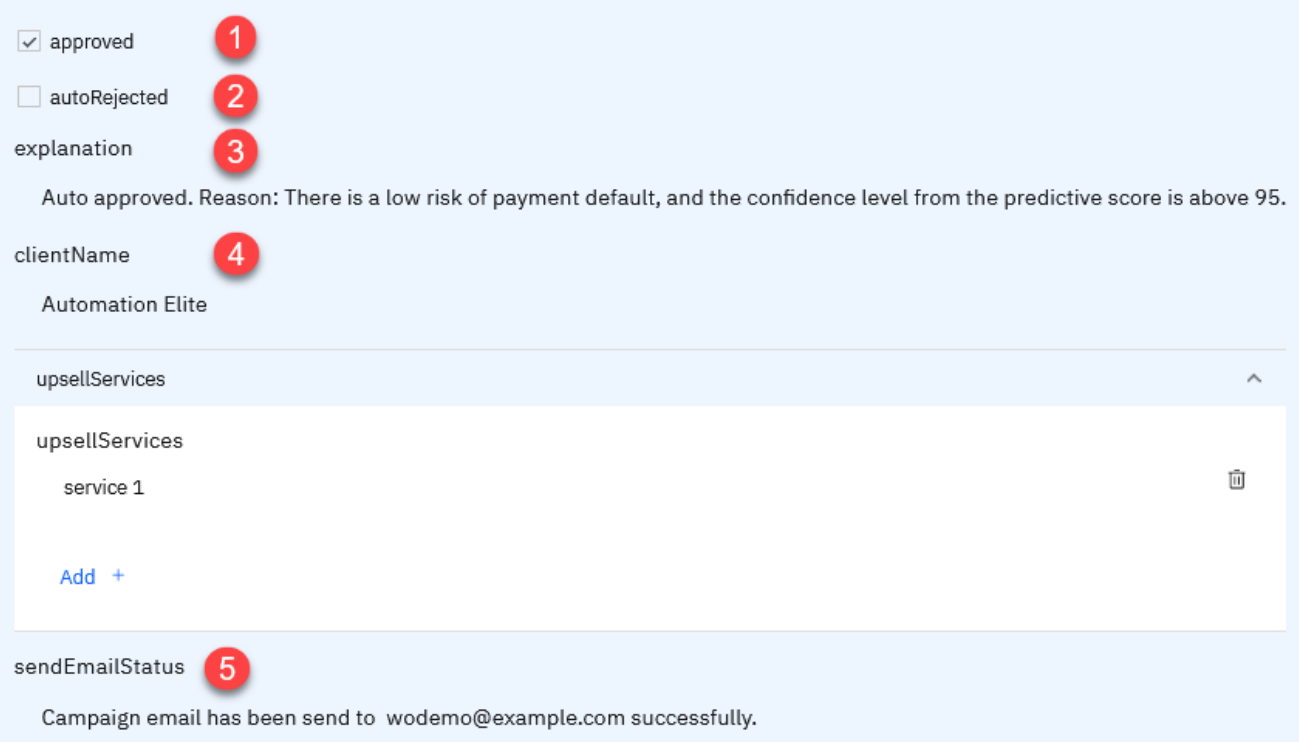


You should see a confirmation message.



_6. Wait until the Workflow is completed.

_7. You will see the workflow skill output message when the Workflow is complete.

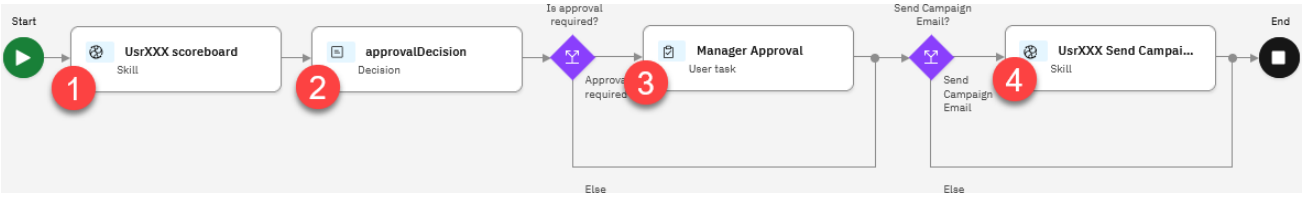


Let's examine the information returned by the Workflow:

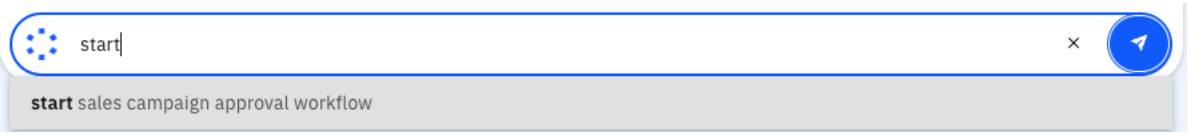
1) The sales campaign upsell offer was approved by the decision service.
2) It was not auto-rejected by the decision service.
3) Note the explanation provided by the decision service telling us why the upsell offer was auto-approved
4) The customer's name
5) It shows the confirmation from the email service in the Workflow that an upsell email was sent to the customer.

5.2 Test the Approval Required Case

The manual-approval path is **1, 2, 3, 4.**

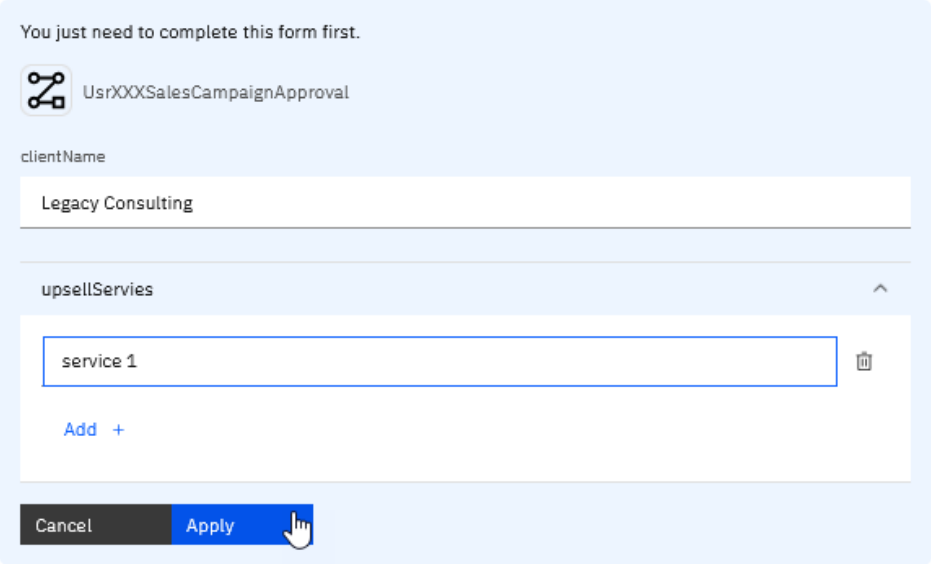


_1. In the *Chat*, type "**start"** and select the suggestion "**start sales campaign approval workflow".**

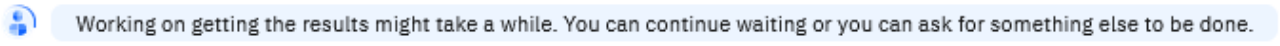


_2. Click the **Send** button to start the Workflow.

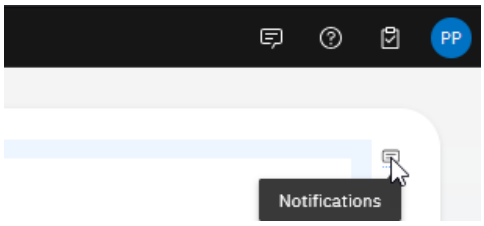
_3. For *clientName,* enter **Legacy Consulting**, add *upsellService* **service 1,** and then click **Apply.**



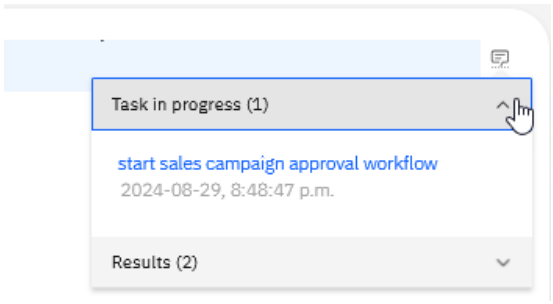
You should see a confirmation message.



_4. Click the **Notifications** in the top right corner of the chat window.

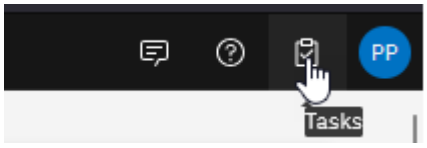


_5. Expand **Task in progress (1).**

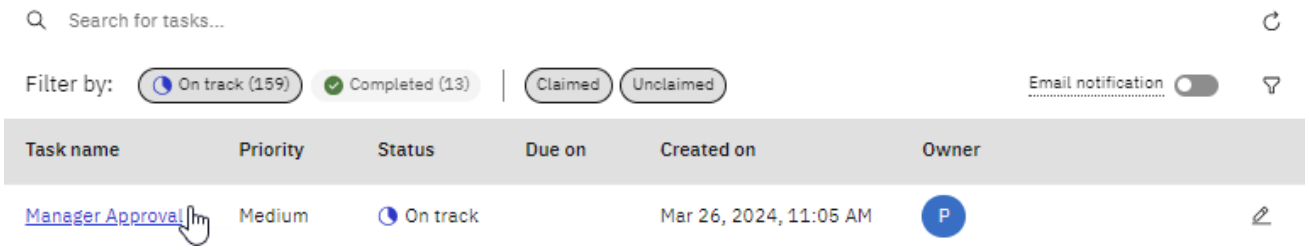


> Note that the message indicates that the Skill is in progress. This status will persist until we complete the Workflow that implements this Skill. Specifically, we need to complete the Manager Approval task created for this customer.

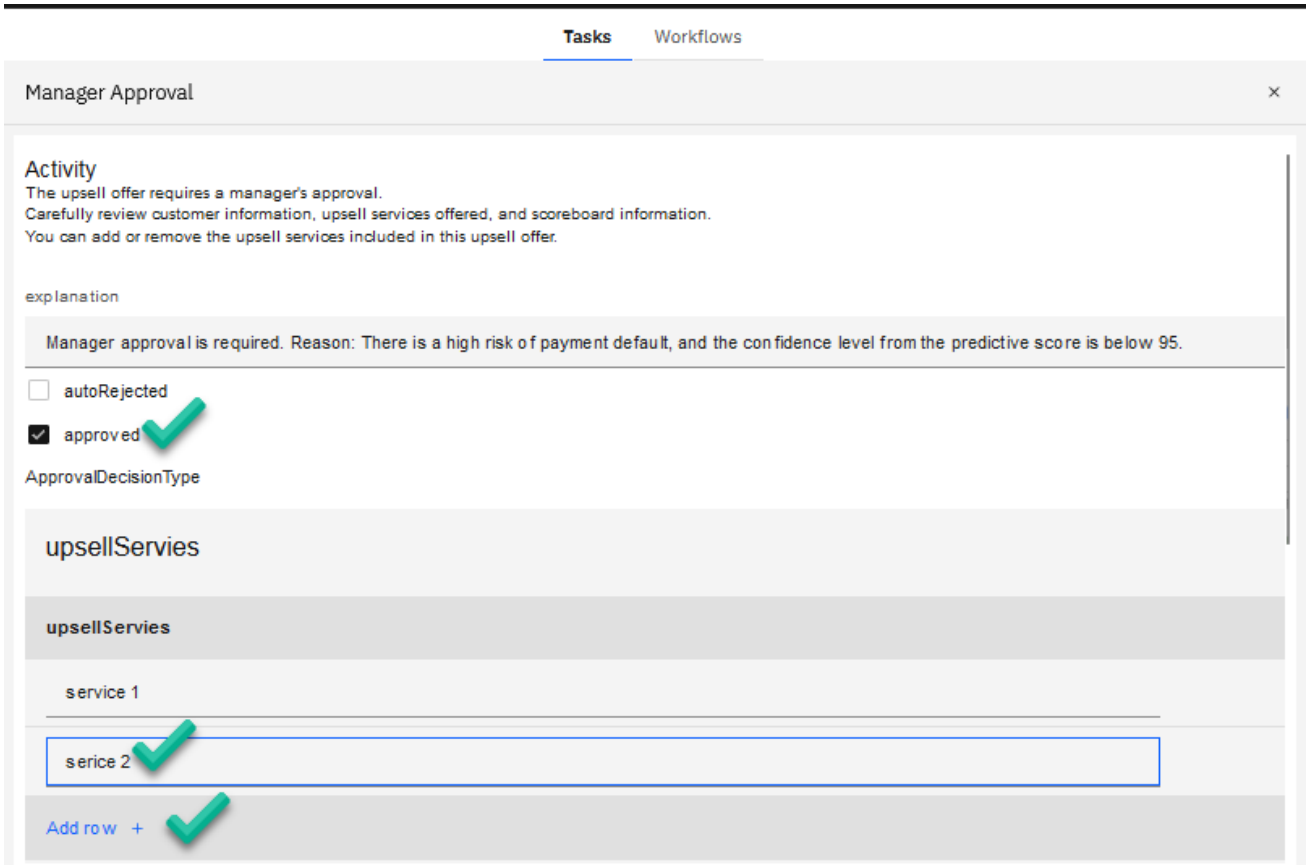
_6. Click the **Tasks icon** in the top-right corner.



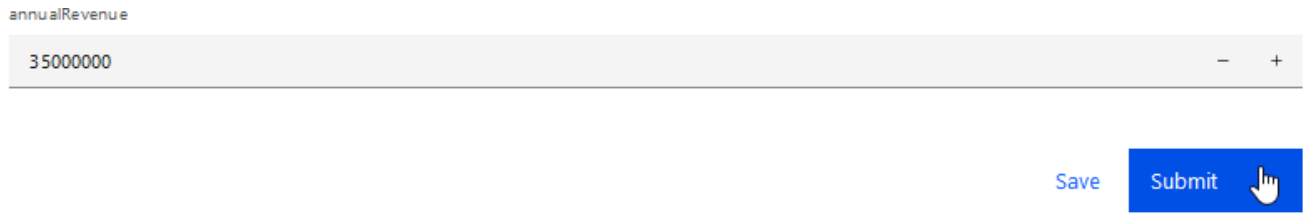
_7. To complete the Task, click **Manager Approval** in the Task name column.



_8. Select the **approved checkbox** and add to the *upsellServices* **service 2.**

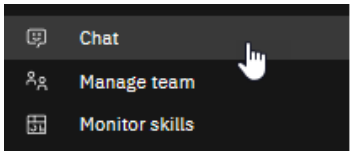


_9. Scroll to the bottom of the form and click **Submit.**



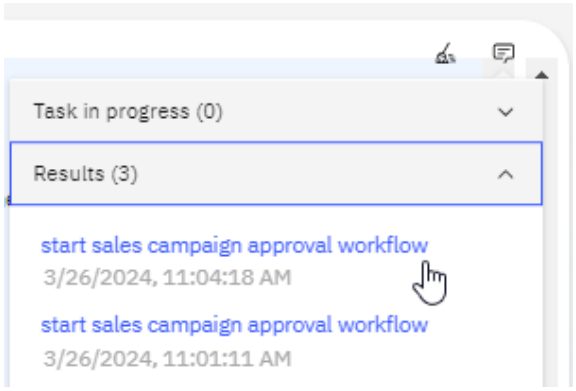
_10. Click the **Hamburger** menu in the top-left corner.

_11. Click **Chat.**

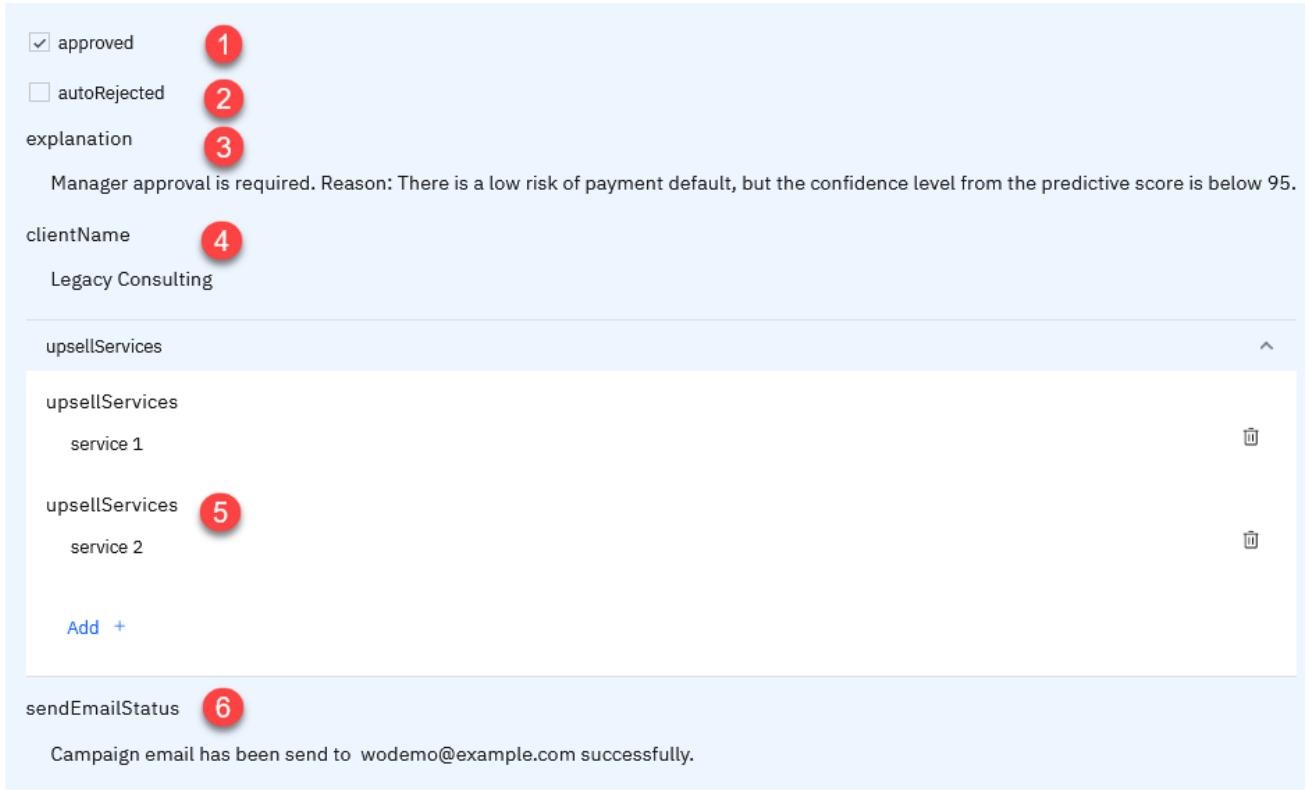


_12. Click the **Messages Icon** in the top right corner of the chat window and expand **Results (X),** then click the latest **start sales campaign approval workflow** task.

> Note: Result (X) means you may see any number of completed workflows.



In the Chat, note the output of the approval process, including **service 2** added by the approver.



Let's examine the information returned by the Workflow:

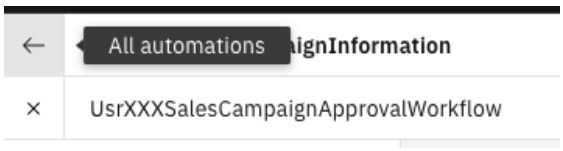
1) The sales manager approved the upsell offer.
2) It was not auto-rejected by the decision service.
3) Note the explanation provided by the decision service telling us why the upsell offer was not auto-approved or auto-rejected but required a manager's approval.
4) The customer's name

5) The sales manager added the upsell service "service 2".
6) Shows the confirmation from the email service in the Workflow that an email upsell email was sent to the customer.

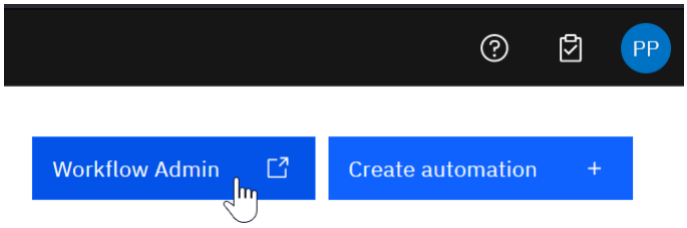
Congratulations on completing the lab!

Appendix A. Using Proces Admin Console to Debug Workflows

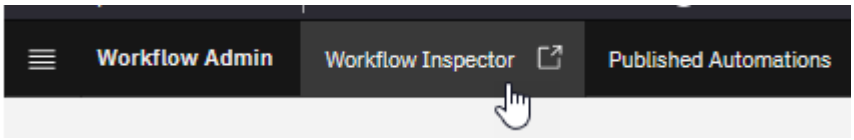
_1. Click the left arrow in the top left corner.



_2. Click Workflow Admin.



_3. Click Workflow Inspector.

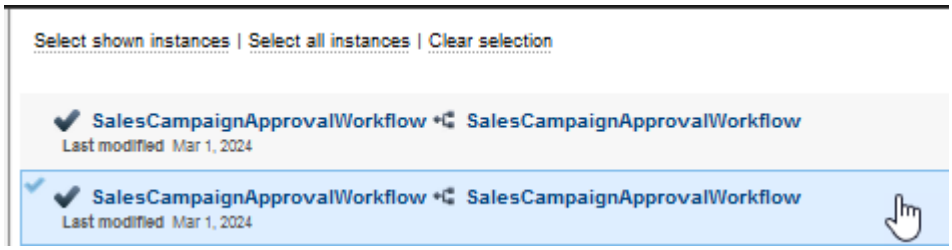


_4. Expand *Workflow automations and versions*

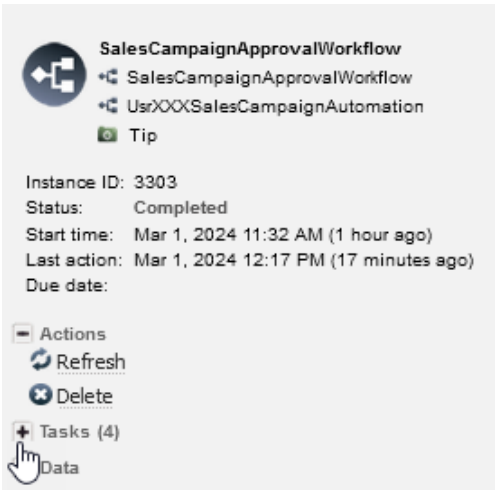
_5. Find and select your Workflow automation - UsrXXXSalesCampaignAutomation (UXXXSCA)

> Note that UsrXXX is your ID, and the acronym in the brackets may differ.

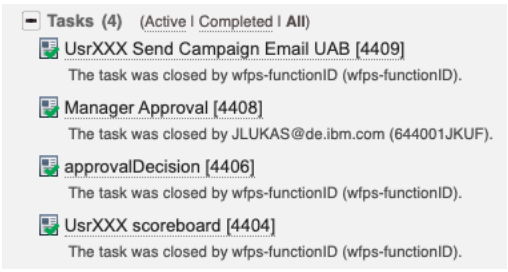
_6. Click the second instance (that corresponds to the first run, with Legacy Consulting as input).

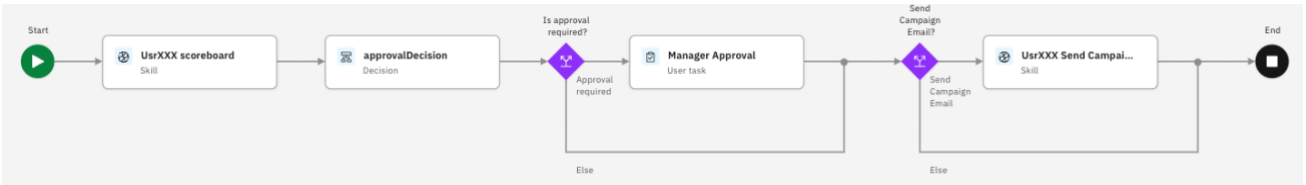


_7. Expand Tasks (4).

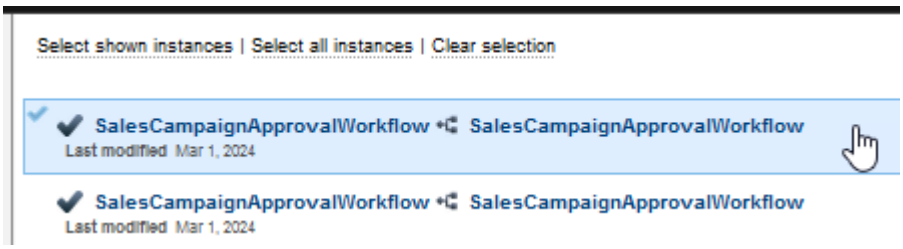


> Note the execution path you need to read bottom up and compare it with the Workflow. It includes the manual approval step.



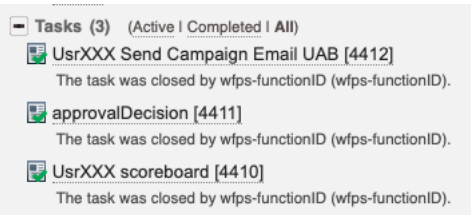


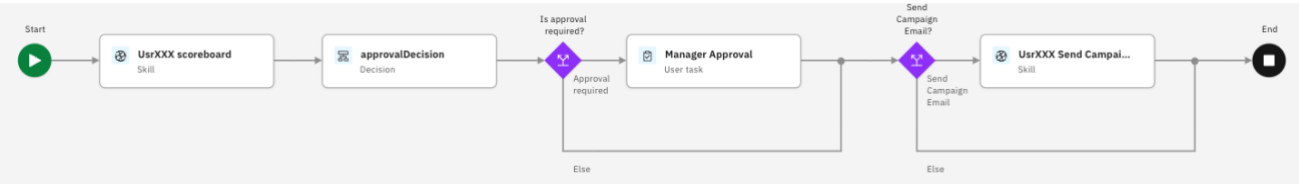
_8. Select the first instance (that corresponds to the first run, with Automation Elite as input).



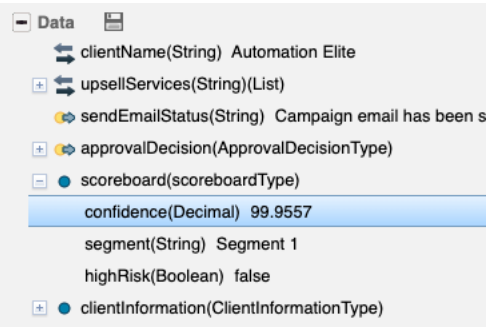
_9. Expand Tasks (3).

> Note the execution path and compare it with the Workflow. It does not include a manual approval activity.





_10. Expand Data > scoreboard(scoreboardType).



_11. Note that the upsell offer was auto approved because the Automation Elite customer is not at high risk of default, and the confidence that the risk is low is high (99.9557).

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