

# IBM Business Automation and Digital Labor Demos and Labs

Author Automation with IBM watsonx Orchestrate  
Automation Builder.

V 3.1

wxO 2024.08.29

Bu Feng Hou - [houbf@cn.ibm.com](mailto:houbf@cn.ibm.com)  
Juergen Lukas - [jlukas@de.ibm.com](mailto:jlukas@de.ibm.com)  
Paul Pacholski - [pacholsk@ca.ibm.com](mailto:pacholsk@ca.ibm.com)  
Zhong Tao Gao - [gaozt@cn.ibm.com](mailto:gaozt@cn.ibm.com)

## Table of Contents

<b>1 Introduction .....</b>	<b>3</b>
1.1 IBM watsonx Orchestrate Automations .....	3
1.1.1 Automations .....	3
1.1.2 Automation Builder.....	3
1.2 Lab Scenario and Lab Overview.....	4
1.2.1 Client Onboarding Use Case .....	4
1.2.2 Upsell Solution.....	4
1.2.3 Sales Campaign Approval Workflow – Architecture and Implementation .....	5
1.2.4 Lab Overview .....	8
1.3 Lab Setup Instructions .....	8
1.3.1 Download Lab Files.....	8
1.3.2 Get your CP4BA Credentials.....	8
1.3.3 Get your wxO Credentials .....	8
1.3.4 Customize the OpenAPI File.....	8
1.3.5 Login to wxO .....	9
<b>2 Exercise: Import and Publish Skills .....</b>	<b>10</b>
2.1 Import Skills.....	10
2.2 Publish Skills to the Skills Catalog .....	12
2.3 Add Skills from the Skill Catalog to Personal Skills .....	14
2.4 Test the Skill Connectivity.....	16
<b>3 Exercise: Author the Sales Campaign Automation.....</b>	<b>19</b>
3.1 Create the Automation and the Workflow .....	19
3.1.1 Create the Automation .....	19
3.1.2 Create the Workflow .....	20
3.2 Testing your Workflow as you develop .....	21
3.3 Add and configure the wxO Scoreboard Skill .....	21
3.3.1 Add Scoreboard Skill .....	21
3.3.2 Define Input and Output Data mapping for the Scoreboard skill .....	25
3.4 Create and Author the Decision.....	27
3.4.1 Create the Decision .....	27
3.4.2 Create Data Types for the Decision .....	28
3.4.3 Define the Design Input and Output .....	29
3.4.4 Create the Decision Table .....	31
3.5 Add Decision to Workflow .....	35
3.5.1 Add the Decision Node to the Workflow .....	35
3.5.2 Create a new variable for the Decision Output .....	36
3.5.3 Define the Input and Output Data Mapping .....	37
3.6 Configure the Manager Approval User Task .....	39
3.6.1 Rename the User task .....	39
3.6.2 Assign User .....	39
3.6.3 Author User Interface.....	40
3.7 Add the "Send Campaign Email" Skill to the Workflow .....	43
3.7.1 Add the Send Campaign Email Skill to the Workflow .....	43
3.7.2 Define the Input and Output Data Mapping .....	44
3.8 Add and Configure the Approval Branch .....	46
3.8.1 Add the Approval Branch.....	46

3.8.2 Configure the Approval Branch .....	47
3.8.3 Move the Manager Approval Task to the Approval Required Path .....	49
3.9 Add and Configure the Send Campaign Email Branch .....	49
3.9.1 Add the Send Campaign Email Branch .....	49
3.9.2 Configure the Send Campaign Email Branch.....	50
3.9.3 Move the Send Campaign Email task to Send Campaign Email Path .....	51
3.10 Test the Workflow Automation .....	52
3.10.1 Test 1 – Approval Required Case .....	52
3.10.2 Test 2 – Auto Approved Case .....	55
3.10.3 Examining Completed Instances in the Process Admin Console .....	57
3.10.4 Verify the Upsell Offer Email .....	58
<b>4 Exercise: Expose Workflow as a wxO Skill .....</b>	<b>59</b>
4.1 Create an Operation .....	59
4.2 Create a New Version of the Automation .....	60
4.3 Publish the Automation as a wxO Skill .....	62
4.4 Enhance and Publish the Workflow Skill .....	63
4.5 Add the Automation Skill to Personal Skills .....	65
<b>5 Exercise: Test the Workflow Skill in the Chat .....</b>	<b>66</b>
5.1 Test the Auto Approval Case .....	66
5.2 Test the Approval Required Case .....	68
<b>Appendix A. Using Proces Admin Console to Debug Workflows.....</b>	<b>73</b>

# 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-ONBOARDING-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

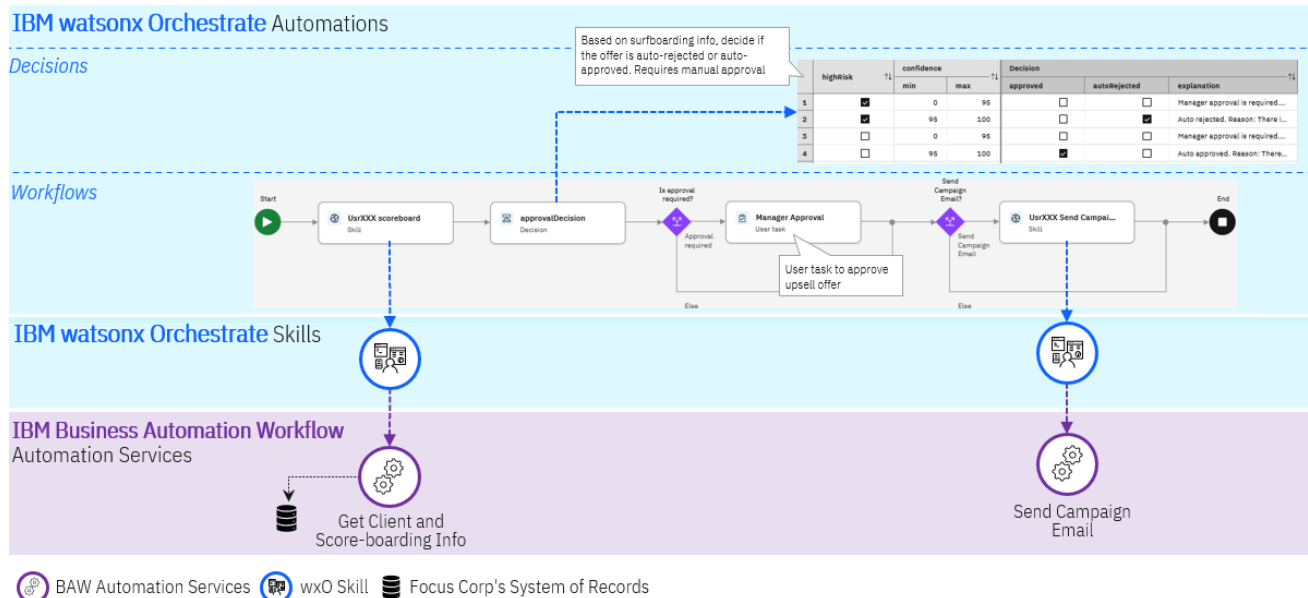
In this lab, you will use the Automation Builder to create an Automation used in the user-facing solution as a skill. This Automation automates the Sales Campaign Approval Process. It is composed of two components:

- 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 Workflow

You will build the Workflow defined below in this lab.

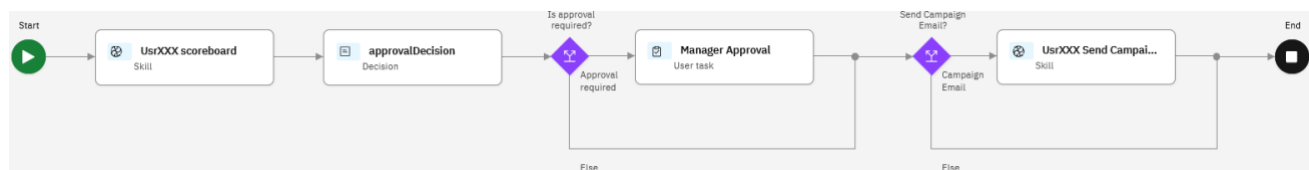


Figure 2. Sales Campaign Approval Workflow - Implementation

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:

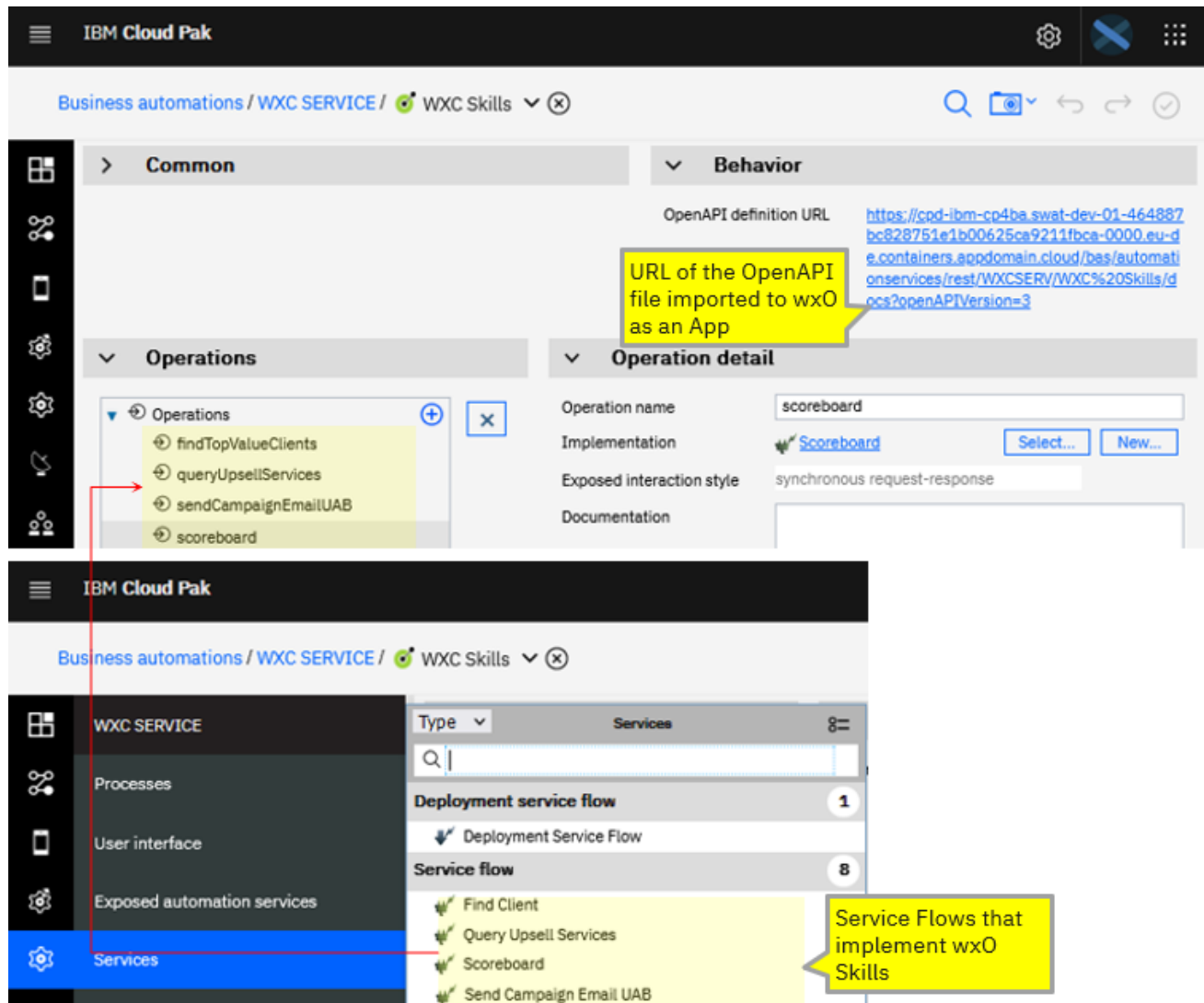


Figure 3. Service Flows that implement wxO skills



## 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

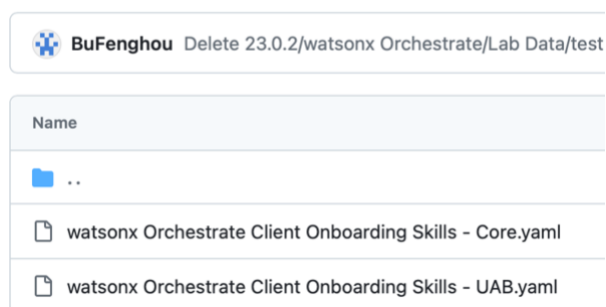
Access the Tech Jam GitHub page that lists the available systems, URLs, and login instructions. For this lab, you will need to access:

- **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.

[cp4ba-labs / 23.0.2 / watsonx Orchestrate / Lab Data /](#) 



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.

```
openapi: 3.0.1
info:
  title: UsrXXX Client Onboarding App UAB
  version: tipSnapshot
  description: UsrXXX Client Onboarding Skills
  x-ibm-application-id: CP4BAUABUsrXXX
  x-ibm-application-name: UsrXXX Client Onboarding App UAB
  x-ibm-application-icon: >-
```

\_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**.

## Log in to IBM Watson Orchestrate

Don't have an account? [Book a demo](#)

Continue with IBMid

[Forgot ID?](#)

pacholsk@ca.ibm.com

Continue

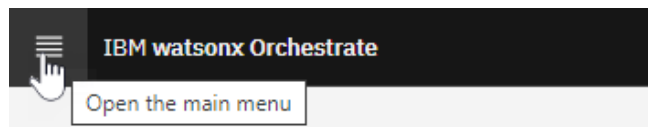


## 2 Exercise: Import and Publish Skills

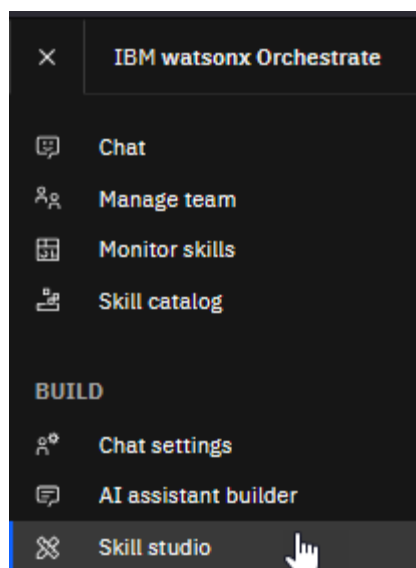
Because you have a Builder role, you can create skills from OpenAPI specifications and add them to the Skill Catalog for reuse in wxO.

### 2.1 Import Skills

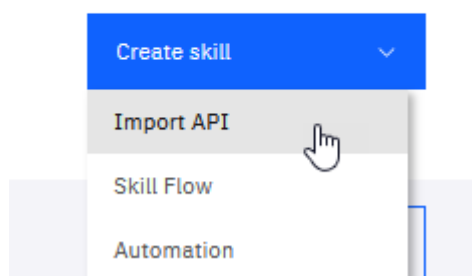
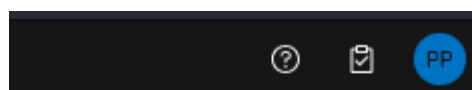
\_1. Click the **Hamburger** menu.



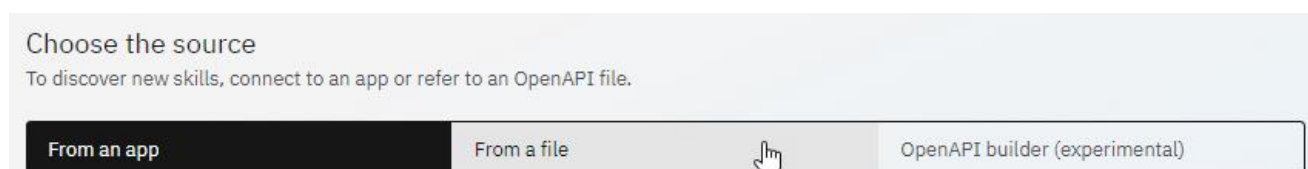
\_2. Click **Skill studio**.



\_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.

### Import a skill file


Ensure your file is in the .json, or yaml format and no larger than 50 MB.

[Drag and drop files here or click to upload](#)

 watsonx Orchestrate Client Onboarding Skills - UAB.yaml

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

watsonx Orchestrate Client Onboarding ×

The OpenAPI file or skill package is good to go! 

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

Cancel

Next 





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

### Choose skills

you can choose which skill to add here

2 out of 2 selected




Skill	Description	Status
<input checked="" type="checkbox"/>  UsrXXX scoreboard	Perform scoreboard to evaluate...	 Ready to add
<input checked="" type="checkbox"/>  UsrXXX Send Campaign Email UAB	Send campaign email to client ...	 Ready to add

Cancel

Add 

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

 2 skills were added successfully. ×

11:23:49

\_9. Click the **Skills** tab.

## Skills and apps

Add new skills, train them to be more effective, and publish

Apps

Skills

\_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**.

UsrXXX

### 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.

### Skills

Name	Step in the process	Status	Skill type	Author	Last edited	
UsrXXX scoreboard	Just 1 step away to be ready	Ready to publish	Imported	pacholsk@ca.ibm.com	March 25 2024	:
UsrXXX Send Campaign Email UAB	Just 1 step away to be ready	Ready to publish	Imported	pacholsk@ca.ibm.com	March 25 2024	:

## 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**.

Name	Step in the process	Status	Skill type	Author	Last edited	
UsrXXX scoreboard	Just 1 step away to be ready	Ready to publish	Imported	pacholsk@ca.ibm.com	March 25 2024	:
UsrXXX Send Campaign Email UAB	Just 1 step away to be ready	Ready to publish	Imported	pacholsk@ca.ibm.com	Ma	Enhance this skill Export this skill Delete this skill

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

Skills and apps / Enhance this skill

### Enhance the "UsrXXX scoreboard" skill

Add details that will make people want to use this skill.

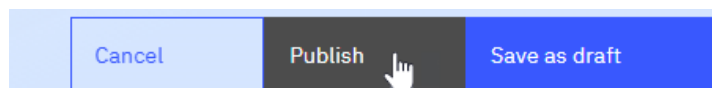
Name Input Output Security Phrases Next best skills

Name and describe this skill in a way that tells users how it's used and why they would want to use it.

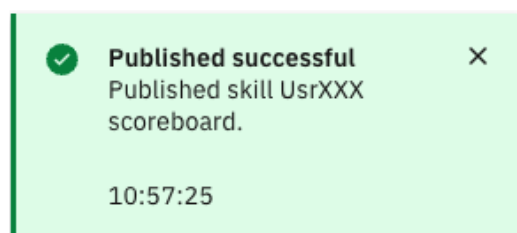
Preview

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 <a href="#">Configuring the API security scheme</a> .
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.



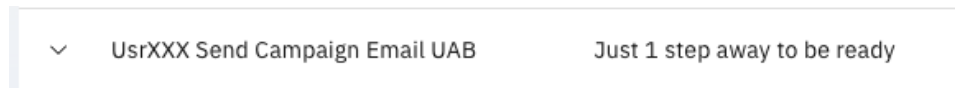
\_5. To see your skill, in the *search bar*, enter **UsrXXX** (where XXX are the digits of your CP4BA Credentials user id) and hit the **Enter key**.



Note that the state has changed to Published.

Name	Step in the process	Status
UsrXXX scoreboard	Ready to use	Published

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

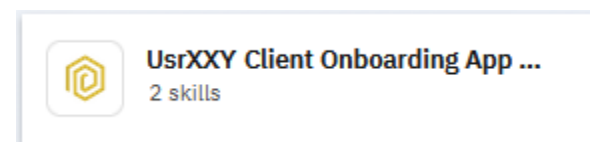


\_7. Verify that all the skills you have imported are published.

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

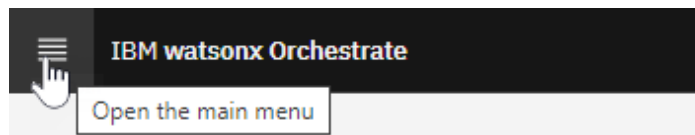
## 2.3 Add Skills from the Skill Catalog to Personal Skills

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

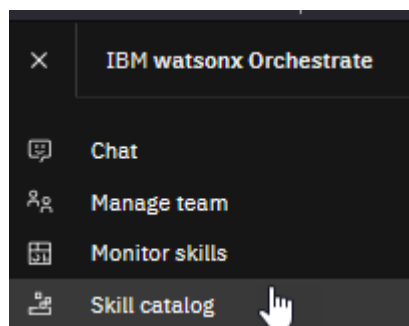


You will now add these skills to your Personal Skills from the Skills Catalog, to make them available to Workflow.

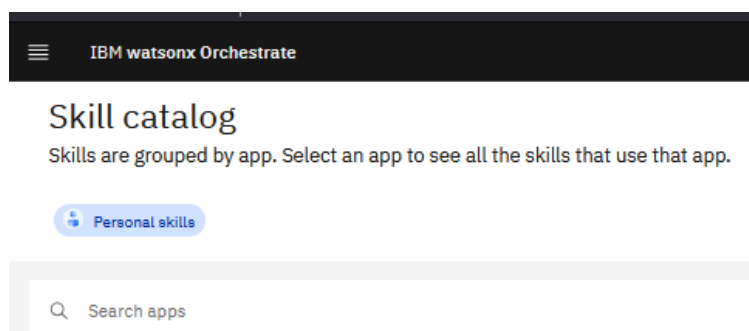
\_1. Click the **Hamburger** menu.



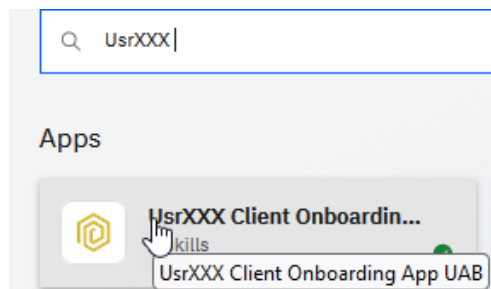
\_2. Click **Skill catalog**.



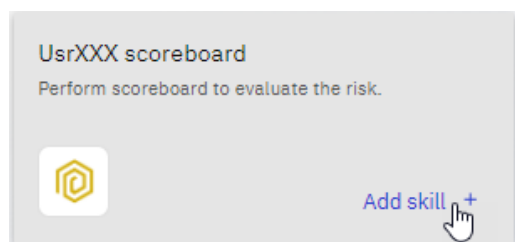
You should now see all the Apps available in the Skills Catalog.



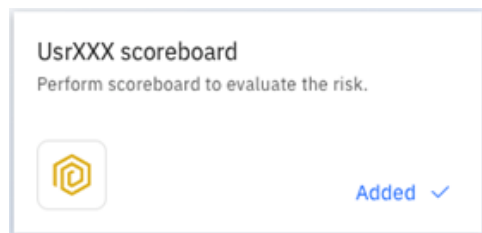
\_3. Locate the **UsrXXX Client Onboarding App UAB** (remember that XXX are the last three digits of your CP4BA Credentials user id) by using the search and **click on the tile** to open.



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

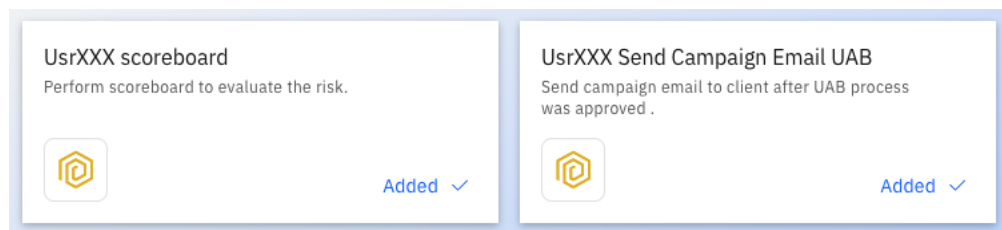


You should now see the *Added check mark* for your skill.

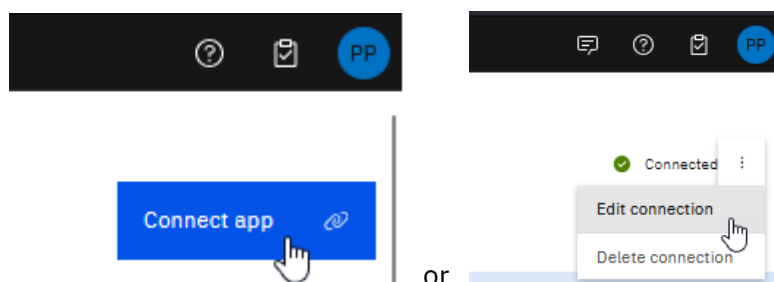


\_5. Repeat the above step for the other skill.

\_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**





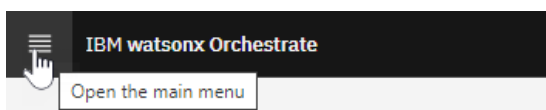
\_8. For *username* and *password*, enter your **CP4BA Credentials**.

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.

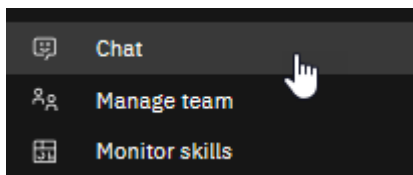
## 2.4 Test the Skill Connectivity

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

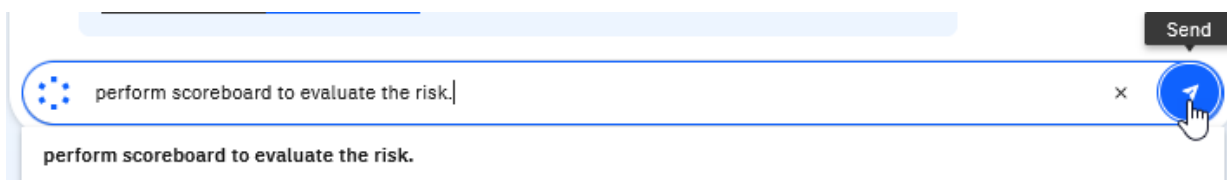
\_1. Click the **Hamburger** menu in the top-left corner.



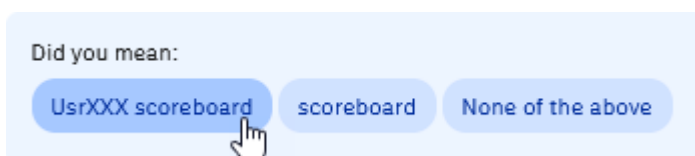
\_2. Click **Chat**.



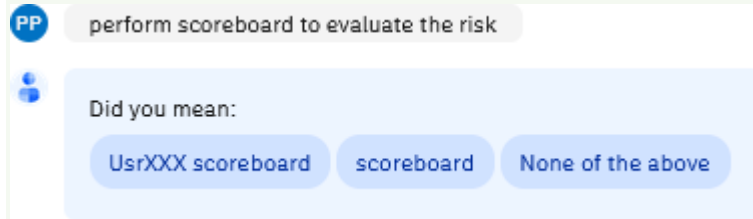
\_3. Enter the **perform scoreboard to evaluate the risk** in the Chat entry field and click **Send**.



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

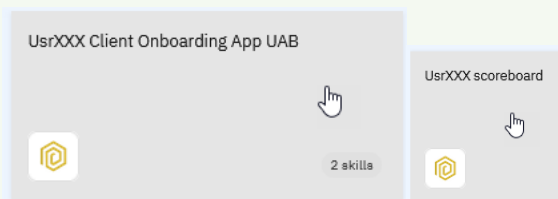


Note: Why do I see the "Did you mean:" prompt.




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**.

You just need to complete this form first.

 UsrXXX scoreboard


ClientName

Automation Elite

Cancel Apply

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

OK

 UstrXXX scoreboard

☐ Defaultpayment

Servicefee

25000	-	+
-------	---	---

Segment

Segment 1

Companyage

30	-	+
----	---	---

Employeenumber

75	-	+
----	---	---

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

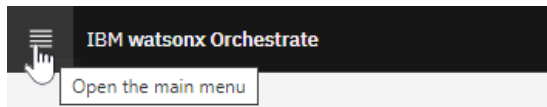
If you do not see the response consistently, return to Skill Catalog and enter the correct credentials.

## 3 Exercise: Author the Sales Campaign Automation

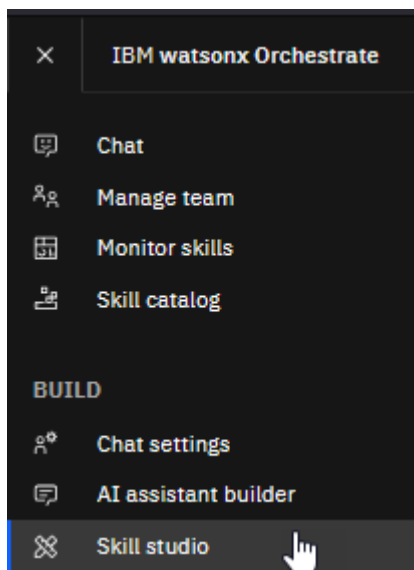
### 3.1 Create the Automation and the Workflow

#### 3.1.1 Create the Automation

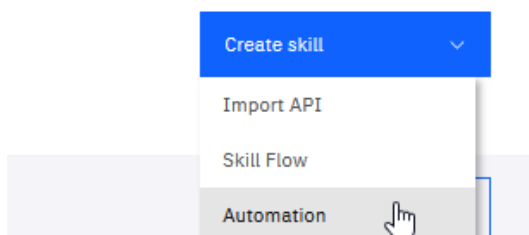
\_1. Click the **Hamburger** menu in the top-left corner.



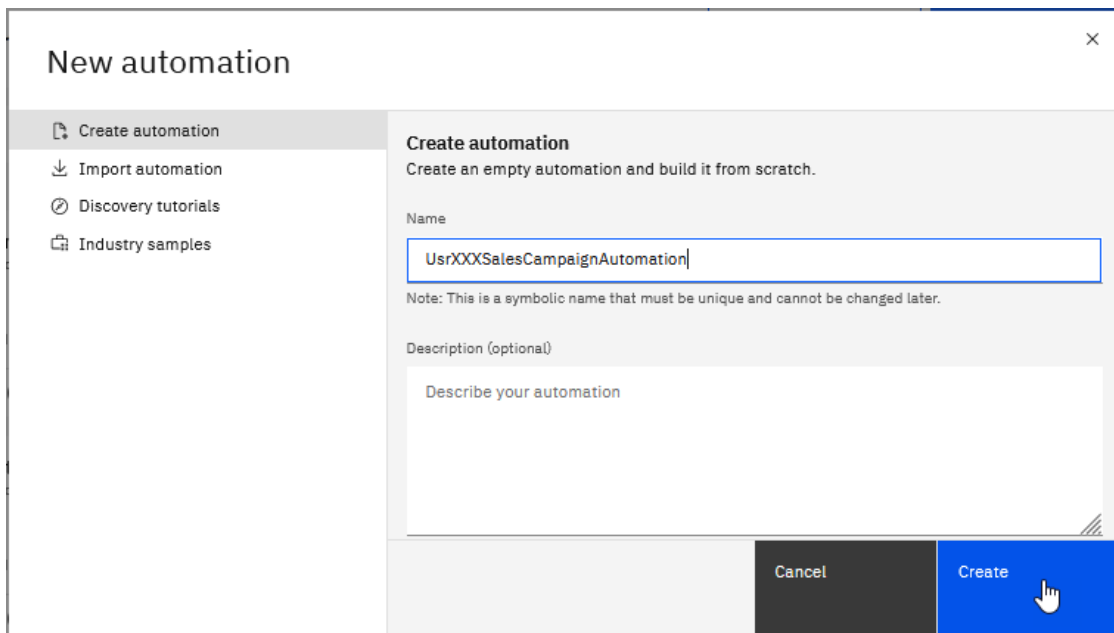
\_2. Click **Skill studio**.



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



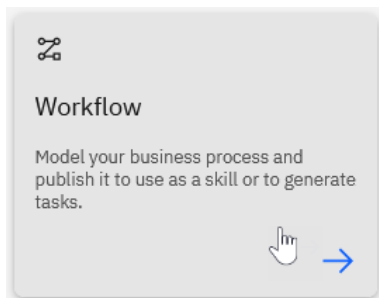
\_4. For *Name*, enter **UsrXXXSalesCampaignAutomation** (remember to replace XXX with your CP4BA Credentials user id) and click **Create**.



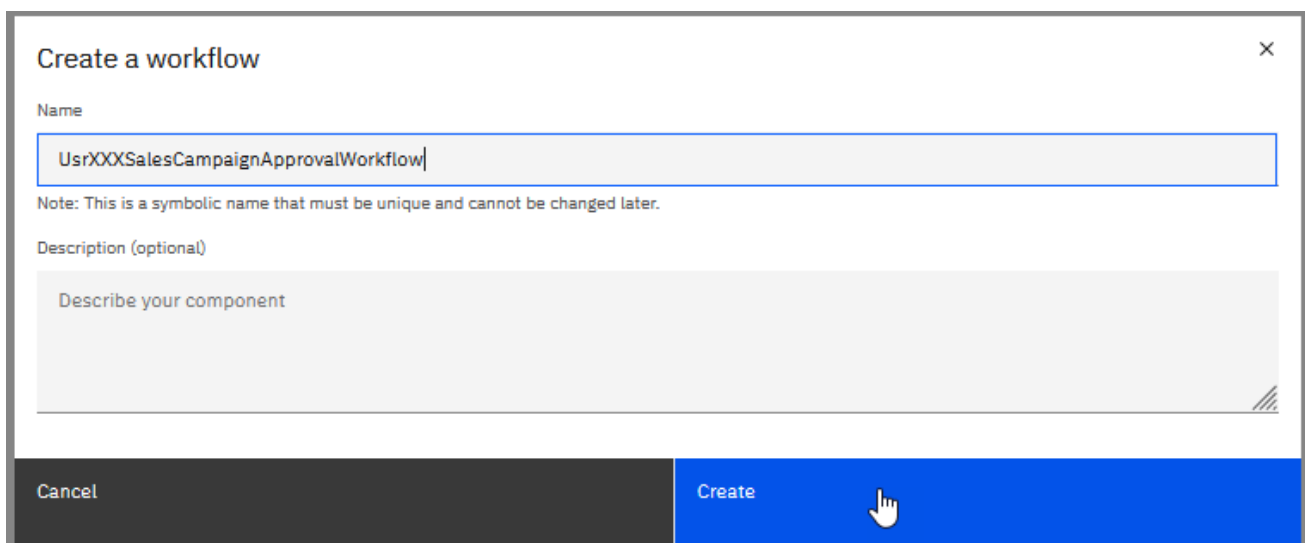
The 'New automation' dialog box is shown. On the left is a sidebar with four options: 'Create automation' (selected), 'Import automation', 'Discovery tutorials', and 'Industry samples'. The main area is titled 'Create automation' with the instruction 'Create an empty automation and build it from scratch.' Below this is a 'Name' field containing 'UsrXXXSalesCampaignAutomation'. A note below the field states: 'Note: This is a symbolic name that must be unique and cannot be changed later.' There is also a 'Description (optional)' text area with the placeholder 'Describe your automation'. At the bottom right are 'Cancel' and 'Create' buttons, with a hand cursor pointing at the 'Create' button.

### 3.1.2 Create the Workflow

\_1. Click the **Workflow** tile.



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

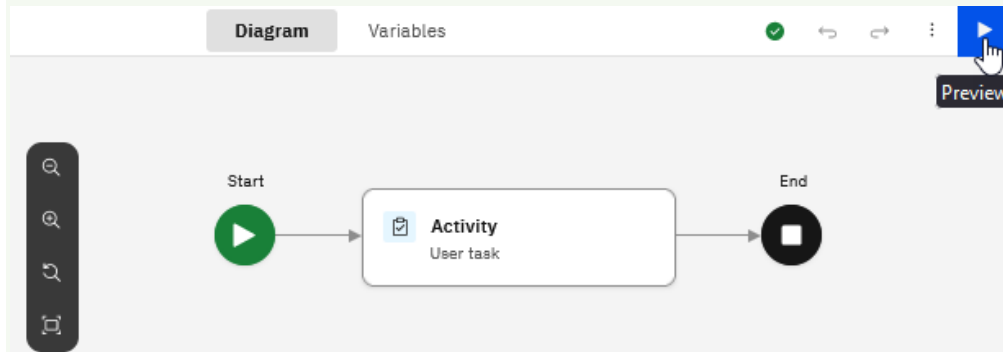


The 'Create a workflow' dialog box is shown. It has a 'Name' field containing 'UsrXXXSalesCampaignApprovalWorkflow'. A note below the field states: 'Note: This is a symbolic name that must be unique and cannot be changed later.' There is also a 'Description (optional)' text area with the placeholder 'Describe your component'. At the bottom are 'Cancel' and 'Create' buttons, with a hand cursor pointing at the 'Create' button.

## 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.

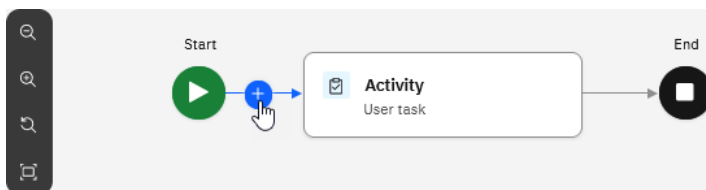


In section [3.10 Test the Workflow Automation](#), you will find a detailed description of the steps required to test your Workflow.

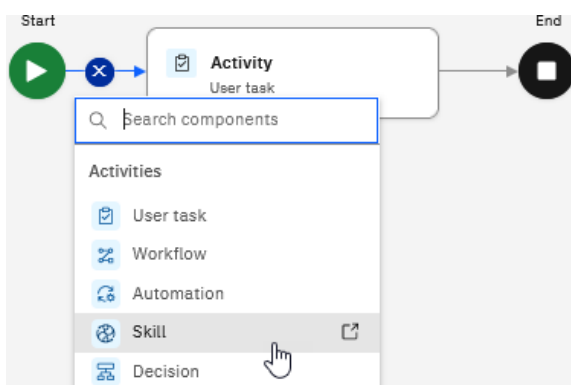
## 3.3 Add and configure the wxO Scoreboard Skill

### 3.3.1 Add Scoreboard Skill

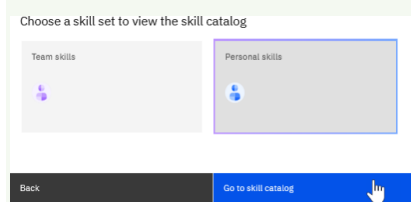
\_1. Position the mouse cursor between *Start* and *Activity* and click the **+** icon.



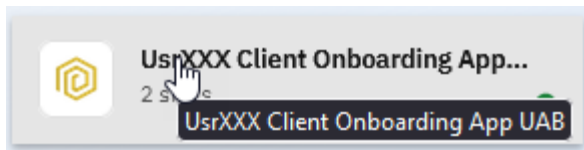
\_2. Click **Skill**.



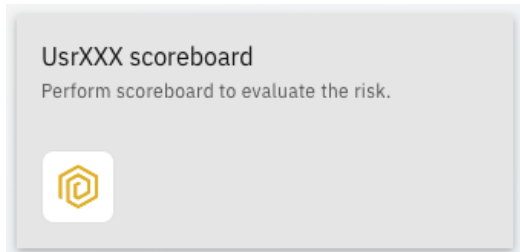
Note, If you see Choose a skill set to view the skill catalog window, select the **Personal skills** tile, and click **Go to Skill catalog**.



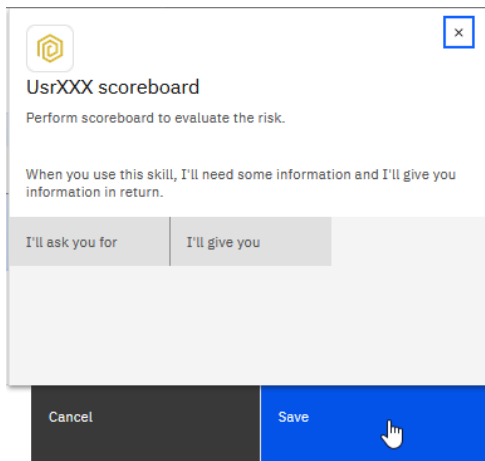
\_3. Click the **UsrXXX Client Onboarding App UAB** tile (remember that XXX is your CP4BA Credentials user id)



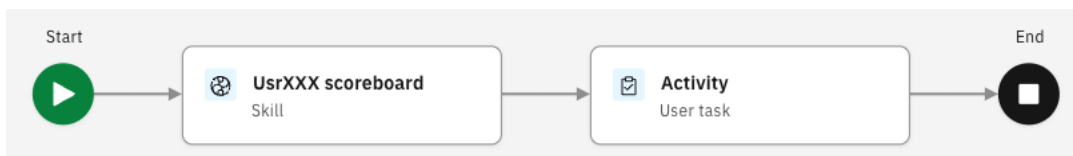
\_4. Select the **UsrXXX scoreboard** skill.



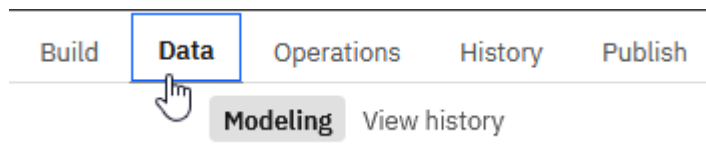
\_5. Click **Save**.



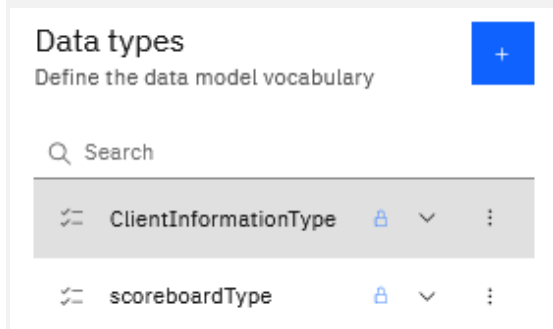
\_6. You should now see the skill added to the Workflow.



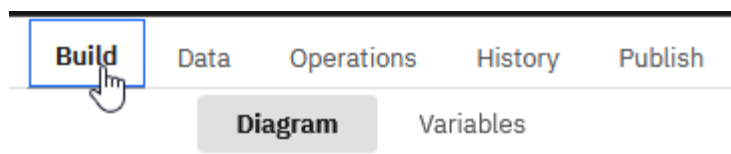
\_7. Click the **Data** tab.



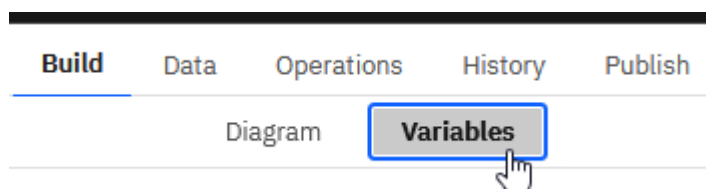
Note: When you added the scoreboard skill, wxO automatically created two data types based on the information about the skill for you: ClientInformationType and scoreboardType. These data types are part of the scoreboard's skill interface. You will use these data types to create new variables.



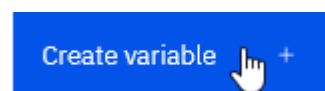
\_1. Click the **Build** tab.



\_2. Click the **Variables** tab.



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

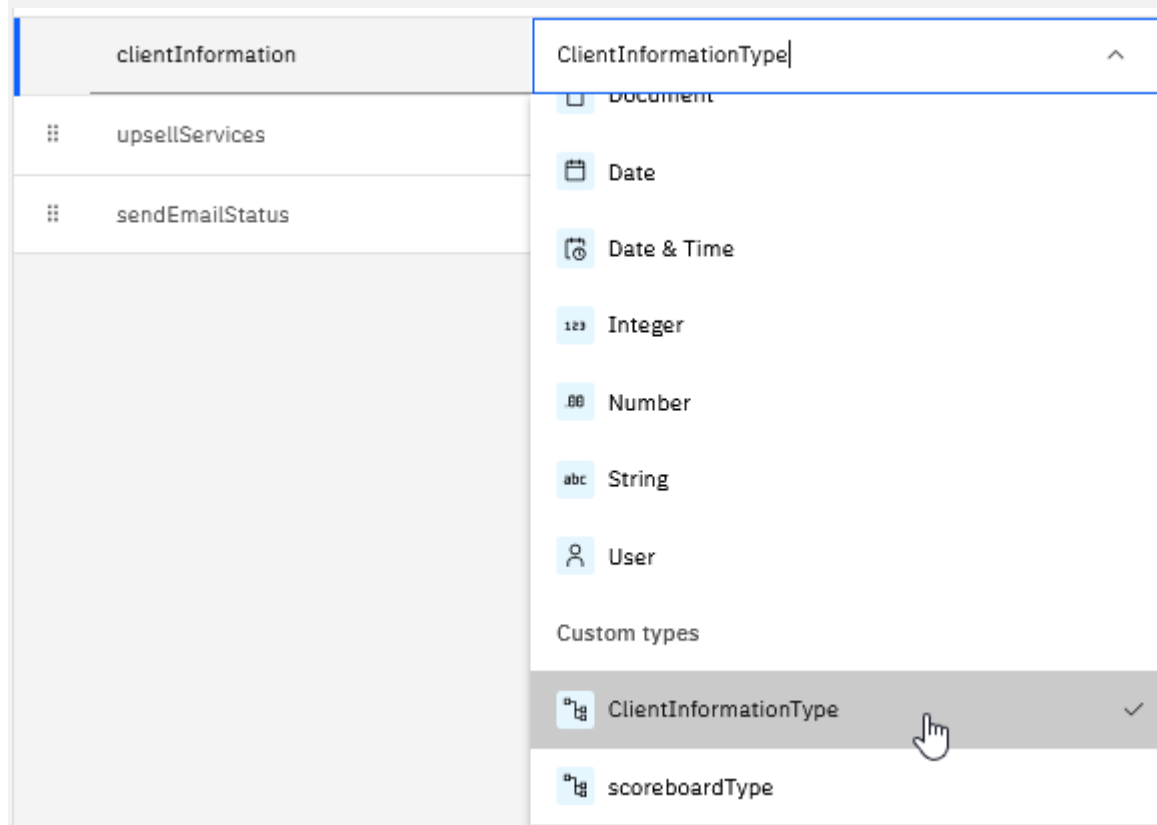




\_4. Configure each variable according to the table below

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.

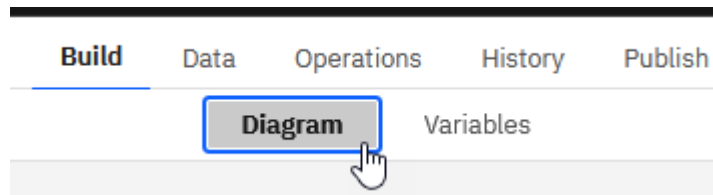


The Variables should look as shown below.

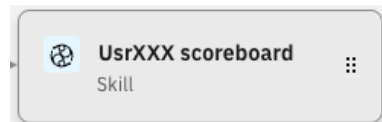
Name	Data type	List	Input	Output
clientName	String	<input type="radio"/> Single value	<input checked="" type="radio"/> Yes	<input checked="" type="radio"/> Yes
scoreboard	scoreboardType	<input type="radio"/> Single value	<input type="radio"/> No	<input type="radio"/> No
clientInformation	ClientInformationType	<input type="radio"/> Single value	<input type="radio"/> No	<input type="radio"/> No
upsellServices	String	<input checked="" type="radio"/> Multiple values	<input checked="" type="radio"/> Yes	<input checked="" type="radio"/> Yes
sendEmailStatus	String	<input type="radio"/> Single value	<input type="radio"/> No	<input checked="" type="radio"/> Yes

### 3.3.2 Define Input and Output Data mapping for the Scoreboard skill

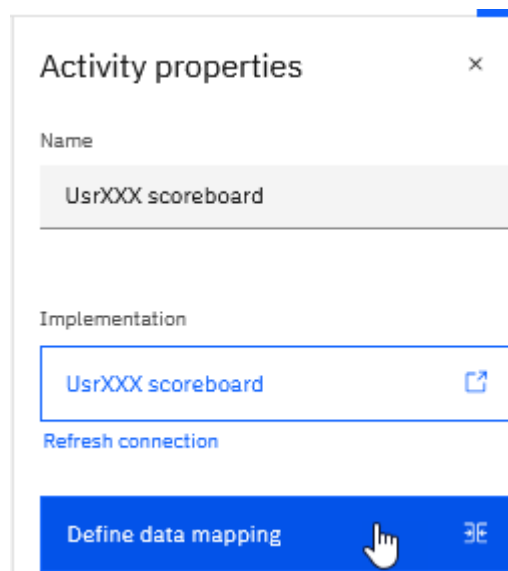
\_1. Click the **Diagram** tab.



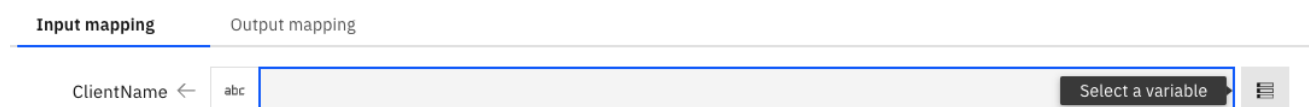
\_2. Click **UsrXXX scoreboard** skill.



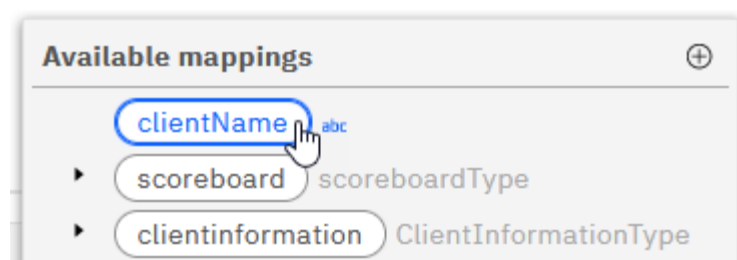
\_3. Click the **Define data mapping** button on the right side.



\_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.

Input mapping	Output mapping
ClientName ←	abc <span>clientName X</span>

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.

Input mapping	Output mapping
	<span>Output mapping</span>

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

Input mapping	Output mapping
▼ <b>scoreboard</b>	→ <span>lg</span> <span>Select a variable</span>

\_8. Select the **scoreboard** variable.

**Available mappings**
+

- clientName abc
- ▶ scoreboard scoreboardType
- ▶ clientinformation ClientInformationType

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

**Available mappings**
+

- clientName abc
- ▶ scoreboard scoreboardType
- ▶ clientInformation ClientInformationType
- upsellServices [abc]
- sendEmailStatus abc

The Output mapping should look as shown below.

Input mapping	Output mapping
▼ <b>scoreboard</b>	→ <span>lg</span> <span>scoreboard X</span>
confidence	<span>.00</span>
highRisk	<span>●O</span>
segment	abc
▼ <b>ClientInformation</b>	→ <span>lg</span> <span>clientInformation X</span>

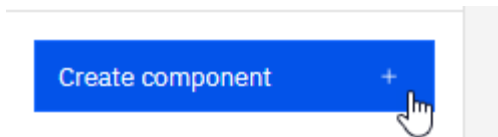
\_10. Click the **OK** button to save your variable mapping.



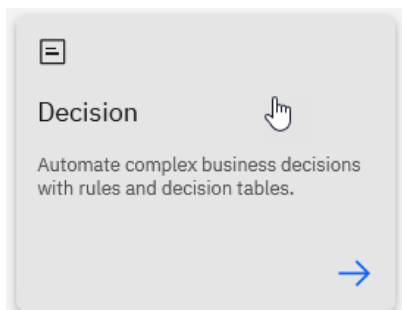
## 3.4 Create and Author the Decision

### 3.4.1 Create the Decision

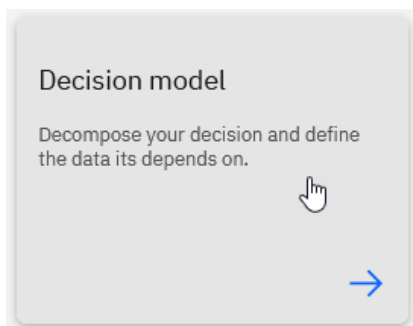
\_1. In the bottom left corner, click **Create component +**.



\_2. Click the **Decision** tile.



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



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

Create a decision model

Name

approvalDecision

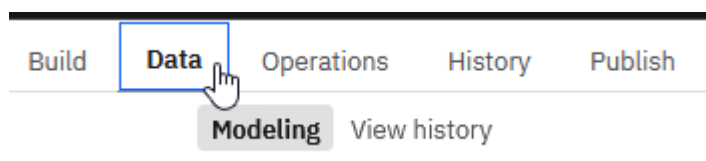
Description (optional)

Describe your component

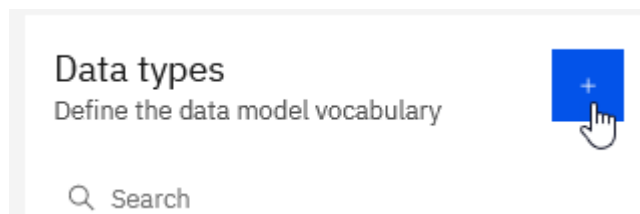
Cancel Create

### 3.4.2 Create Data Types for the Decision

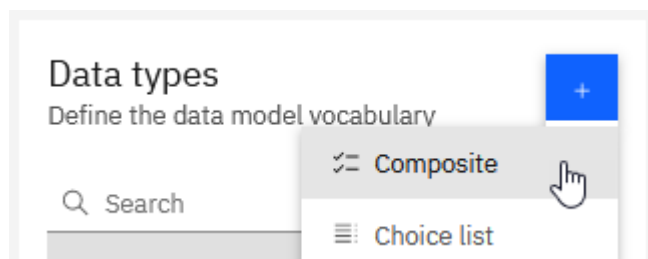
\_1. Click the **Data** tab.



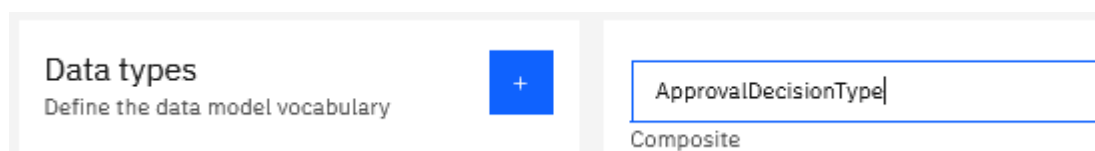
\_2. Click the **+** button to create a new Data Type.



\_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:

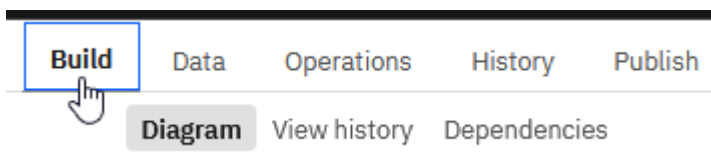
Name	Type	List
approved	Boolean	No
explanation	String	No
autoRejected	Boolean	No

The Attributes should look as shown below:

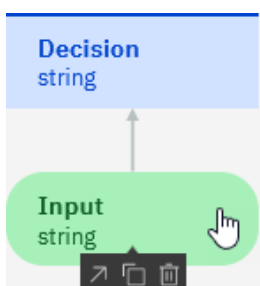
Name	Type	List
approved	Boolean	<input type="checkbox"/> ⋮
<i>an ApprovalDecisionType is approved, an ApprovalDecisionType is not approved</i>		
explanation	String	<input type="checkbox"/> ⋮
<i>the explanation, the explanations, an explanation, explanations</i>		
autoRejected	Boolean	<input type="checkbox"/> ⋮
<i>an ApprovalDecisionType is autoRejected, an ApprovalDecisionType is not autoRejected</i>		

### 3.4.3 Define the Design Input and Output

\_1. Click the **Build** tab.



\_2. Click the **Input node**.



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

**Input**  
Input node

Details Default value

Node details  
Node name

Input

Output type

String

Select a data type

**System types**

- Boolean
- Date
- Date & time
- Document
- Integer
- Number
- String
- User

**Custom types**

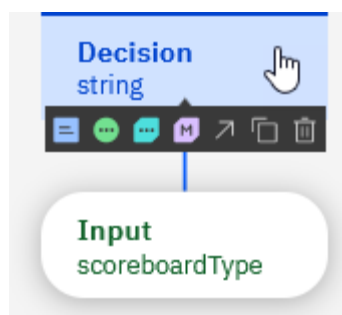
- ApprovalDecisionType
- ClientInformationType
- scoreboardType

The Output type should look as shown below.

Output type

scoreboardType

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



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

## Decision

Decision node

Details

Logic

Node details

Node name

Decision

Output type

ApprovalDecisionType



approved, explanation

### 3.4.4 Create the Decision Table

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

## Decision

Decision node

Details

Logic



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

## Decision

Decision node

Details

Logic



Business rule

Decision table

Default rule





\_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**

Decision ×

### Create decision table

Name

approvalDecisionTable 1

Select the condition columns for your decision table

Q

Input

<input checked="" type="checkbox"/>	the confidence of 'Input'	3	number
<input checked="" type="checkbox"/>	'Input' is highRisk	2	boolean
<input type="checkbox"/>	the segment of 'Input'		string

Preview your decision table  
You can drag column headers to change the order of the condition columns.

	highRisk	confidence		Decision
		min	max	
1		123	123	
2				
3				

Cancel
Create 4

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

Decision		
approved	autoRejected	explanation

← →  
↑ ↓
→

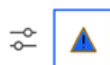
\_5. Configure each variable according to the table below.

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	<input checked="" type="checkbox"/>	0	95	<input type="checkbox"/>	<input type="checkbox"/>	Manager approv...
2	<input checked="" type="checkbox"/>	95	100	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Auto rejected....
3	<input type="checkbox"/>	0	95	<input type="checkbox"/>	<input type="checkbox"/>	Manager approv...
4	<input type="checkbox"/>	95	100	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Auto approved....

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




⌵

Errors

×

 col: 1, line: 1: Overlapped by 1 cell(s).

 col: 1, line: 2: Overlapped by 1 cell(s).

 col: 1, line: 3: Overlapped by 1 cell(s).

 col: 1, line: 4: Overlapped by 1 cell(s).

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

	highRisk	↑↓	confidence		↑↓
			min	max	
1	<input checked="" type="checkbox"/>		0	95	
2	<input checked="" type="checkbox"/>		95	100	
3	<input type="checkbox"/>		0	95	
4	<input type="checkbox"/>		95	100	

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

	highRisk	↑↓	confidence	
			min	max
1	<input checked="" type="checkbox"/>			
2	<input checked="" type="checkbox"/>			
3	<input type="checkbox"/>			
4	<input type="checkbox"/>			
5				
6				
7				
8				
9				
10				

✂ Cut  
 📄 Copy  
 📄 Paste  
 Insert copied cells  
 📄 Insert row >  
 🗑 Clear  
 Split  
**Group**  
 Change operator >

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

	highRisk	↑↓	confidence	
			min	
1	<input checked="" type="checkbox"/>		0	
2	<input checked="" type="checkbox"/>		95	
3	<input type="checkbox"/>		0	
4	<input type="checkbox"/>			
5				
6				
7				
8				
9				
10				

✂ Cut  
 📄 Copy  
 📄 Paste  
 Insert copied cells  
 📄 Insert row >  
 🗑 Clear  
 Split  
**Group**

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

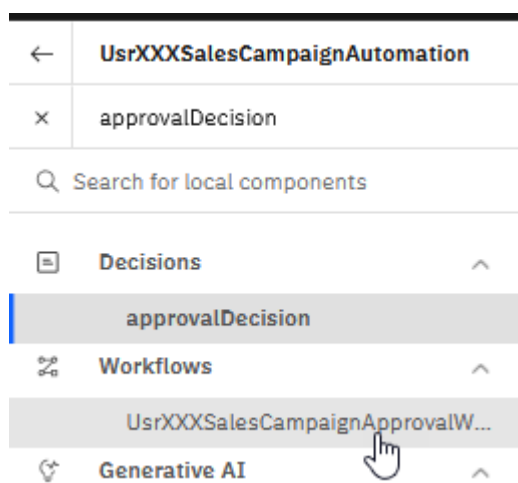
	highRisk	confidence	
		min	max
1	<input checked="" type="checkbox"/>	0	95
2	<input checked="" type="checkbox"/>	95	100
3	<input type="checkbox"/>	0	95
4	<input type="checkbox"/>	95	100

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.

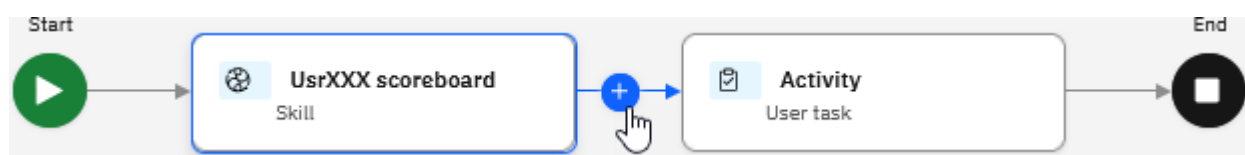
## 3.5 Add Decision to Workflow

### 3.5.1 Add the Decision Node to the Workflow

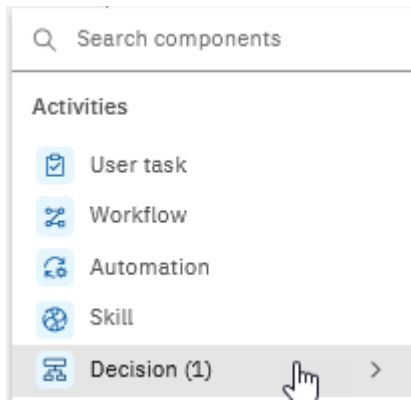
\_1. Select **UsrXXXSalesCampaignApprovalWorkflow**.



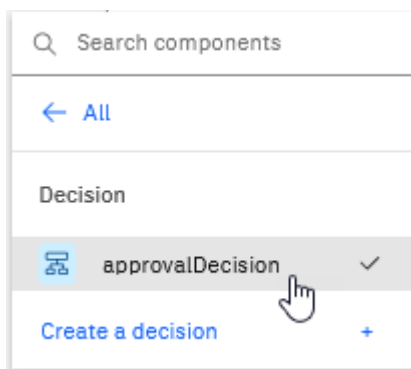
\_2. Click the **+** icon between the *UsrXXX scoreboard* and *Activity*.



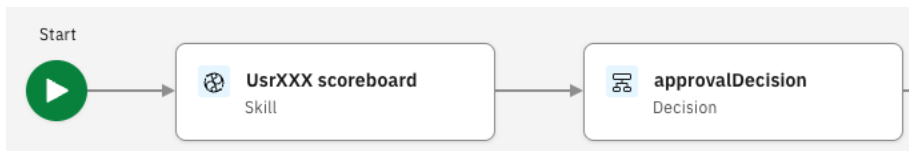
\_3. Select **Decision (1)**.



\_4. Select **approvalDecision**.

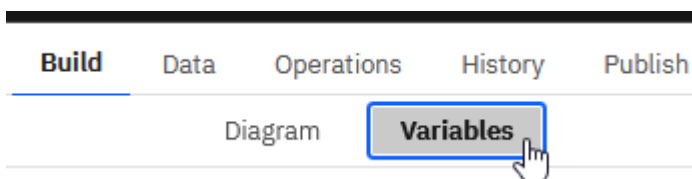


You should now see approvalDecision added as part of the Workflow.

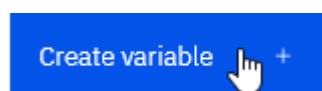


### 3.5.2 Create a new variable for the Decision Output

\_1. Click the **Variables** tab.



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



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

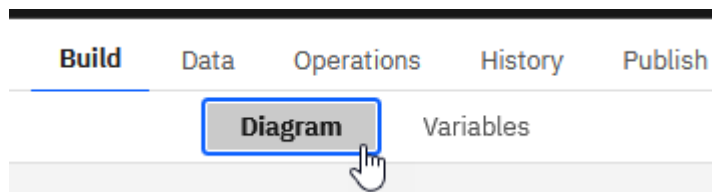
Name	Data Type	List	Input	Output
approvalDecision	ApprovalDecisionType	Single value	No	Yes

The variable should look as shown below.

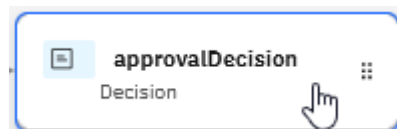
Name	Data type	List	Input	Output
approvalDecision	ApprovalDecisionType	<input type="radio"/> Single value	<input type="radio"/> No	<input checked="" type="radio"/> Yes

### 3.5.3 Define the Input and Output Data Mapping

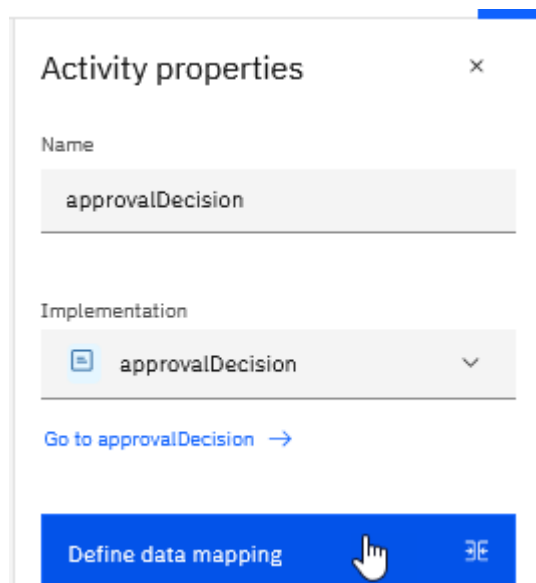
\_1. Click the **Diagram** tab.



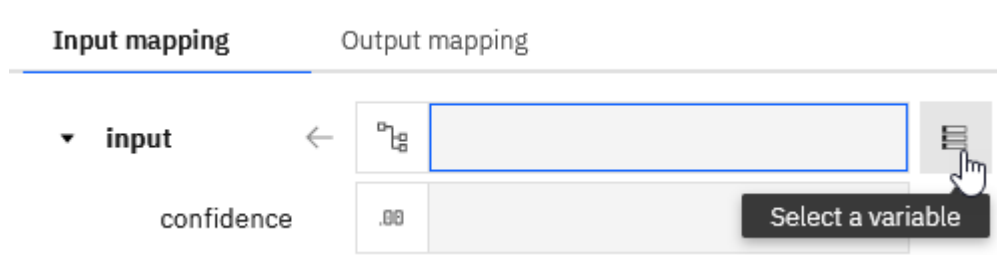
\_2. Select the **approvalDecision** Decision.



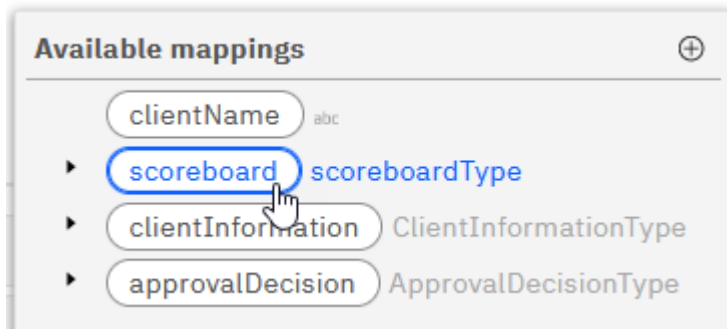
\_3. Click **Define data mapping**.



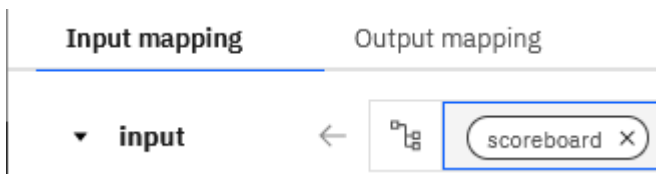
\_4. In the input mapping section, click on **Select a variable** (Input mapping tab).



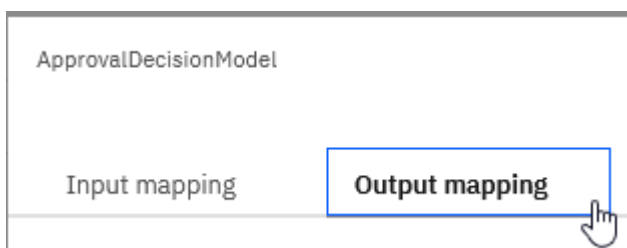
\_5. Select the **scoreboard** variable.



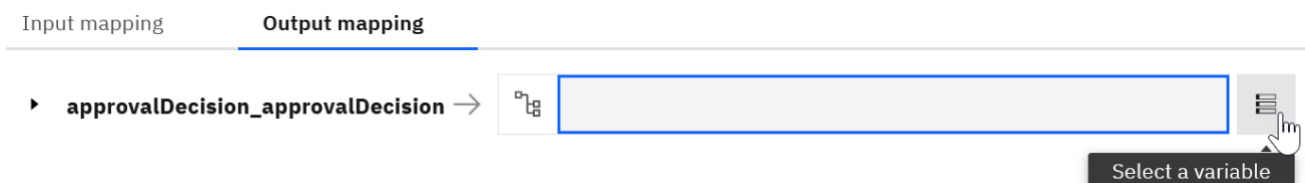
The Input mapping should look exactly like this.



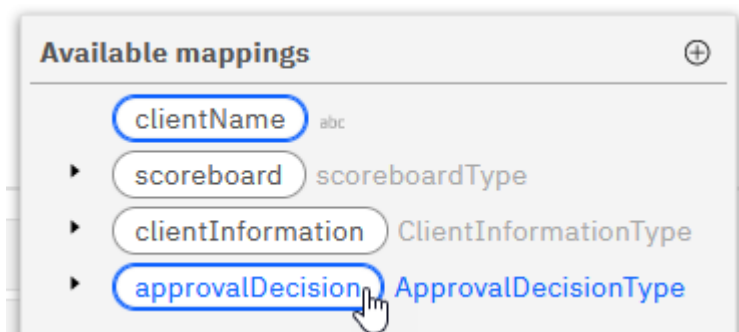
\_6. Click the **Output mapping** tab.



\_7. For the *ApprovalDecision\_ApprovalDecision* variable, click **Select a variable**.



\_8. Select the **approvalDecision** variable.



The Output mapping should look exactly like this.



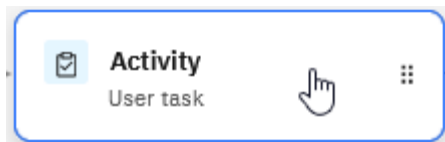
\_9. Click the **OK** button to save your variable data mapping.



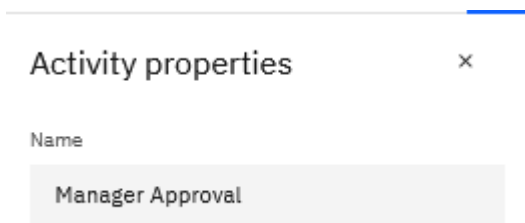
## 3.6 Configure the Manager Approval User Task

### 3.6.1 Rename the User task

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

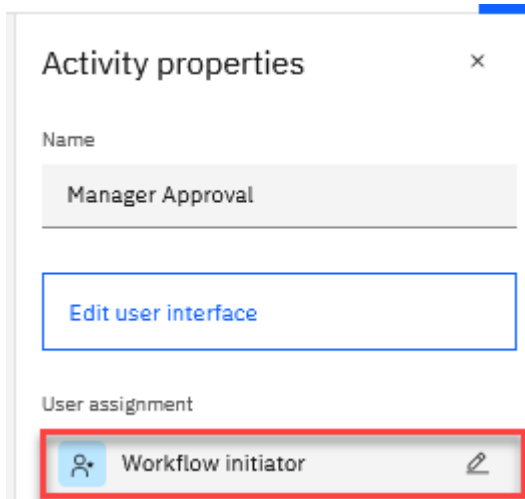


\_2. For *Name*, enter **Manager Approval**.



### 3.6.2 Assign User

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

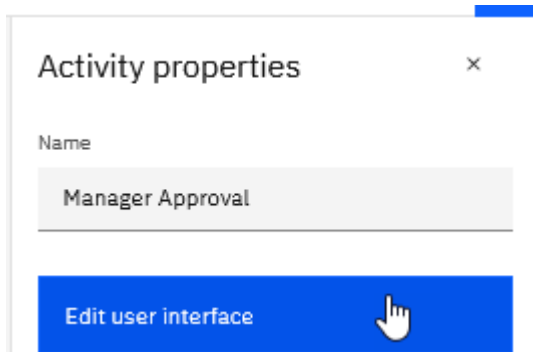


Note that you typically select specific users authorized to see and complete a task. In this case, you selected the Workflow Initiator since you will be the only user to run and test this Workflow and User task.

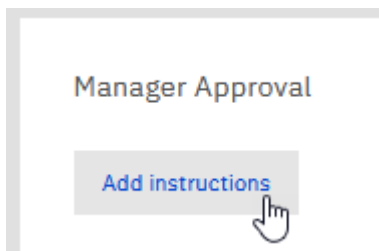


### 3.6.3 Author User Interface

\_1. Click **Edit user interface**.



\_2. Click **Add instructions**.

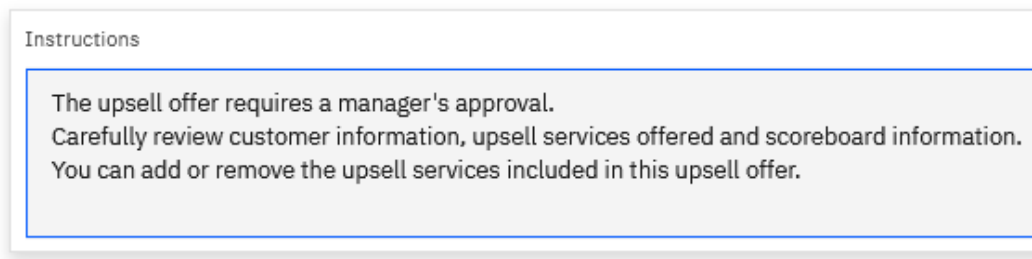


\_3. In the *Instructions* section, replace the *Placeholder text* with the following text:

**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.**

#### Activity



\_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).

**Variables**

- abc clientName (4)
- abc scoreboard (3)
- abc clientInformation (5)
- abc upsellServices (list) (2)
- abc sendEmailStatus
- abc approvalDecision (1)

**Manager Approval**

Instructions

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.

Drag variables here to start building your user interface.

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

**Variables**

- abc clientName
- abc scoreboard
- abc clientInformation
- abc upsellServices (list)
- abc sendEmailStatus
- abc approvalDecision

**Manager Approval**

Instructions

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.

explanation

autoRejected

approved

upsellServices

upsellServices

segment

highRisk

confidence

clientName

servicesRequested

servicesRequested

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

Activity

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.

☐ approved

☐ autoRejected

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

☐ autoRejected

☐ approved

upsellService

Add new

upsellService

upsellService

segment

☐ highRisk

confidence

Field properties

Output variable

approvalDecision

Display

Field name

autoRejected

Help text

Field name visibility

Show

Behavior

Visibility

Read only

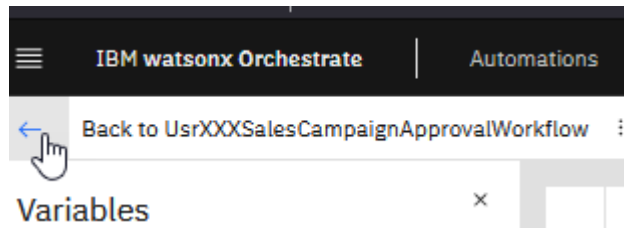
Read only

Editable

\_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.

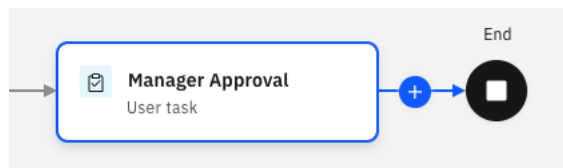
\_8. In the top left, click the **Back to UsrXXXSalesCampaignWorkflow** link.



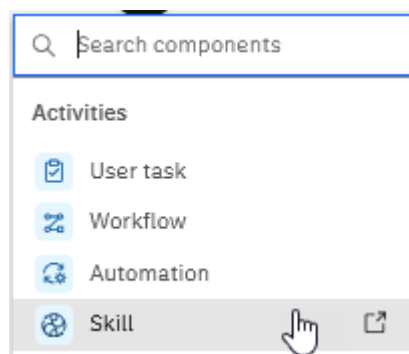
## 3.7 Add the "Send Campaign Email" Skill to the Workflow

### 3.7.1 Add the Send Campaign Email Skill to the Workflow

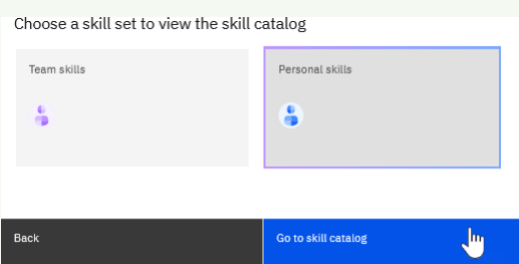
\_1. Position the mouse cursor between *Manager Approval* and *End* and click the **+** icon.



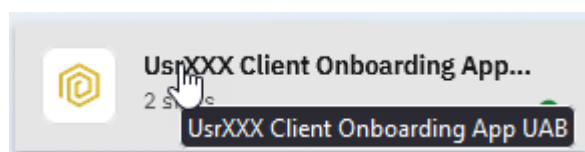
\_2. Click **Skill**.



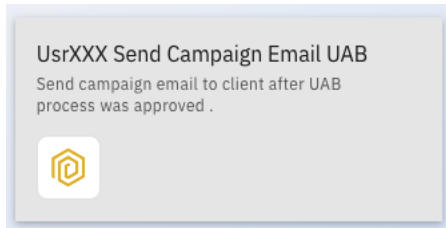
Note if you see this pop-up, select **Personal skills**.



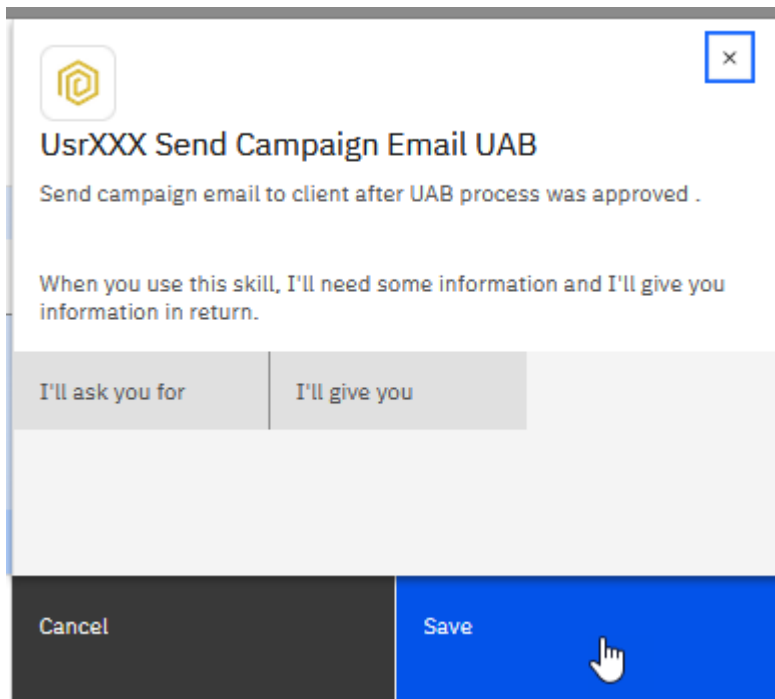
\_3. Click the **UsrXXX Client Onboarding App UAB** tile (remember that XXX is your CP4BA Credentials user id).



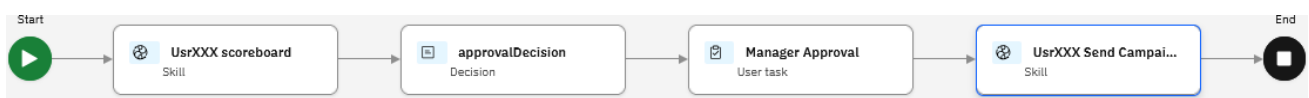
\_4. Select the **UsrXXX Send Campaign Email UAB** skill.



\_5. Click **Save**.

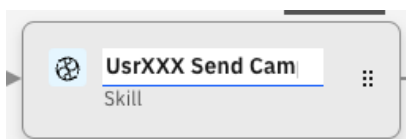


You should now see the skill added to the Workflow.

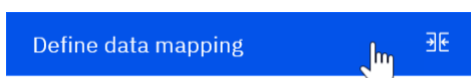


### 3.7.2 Define the Input and Output Data Mapping

\_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**.

Input mapping	Output mapping
ClientName ←	abc   <span>Select a variable</span>
UpsellServices	[abc]

\_4. Select the **clientName** variable.

**Available mappings**

- clientName abc
- scoreboard scoreboardType
- clientinformation ClientInformationType

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

UpsellServices ←	[abc]   <span>Select a variable</span>
------------------	--

\_6. Select **upsellServices**.

**Available mappings**

- clientName abc
- scoreboard scoreboardType
- clientinformation ClientInformationType
- upsellServices [abc]
- approvalDecision ApprovalDecisionType

The Input mapping should look as shown below.

Input mapping	Output mapping
ClientName	abc clientName X
UpsellServices	[abc] upsellServices X

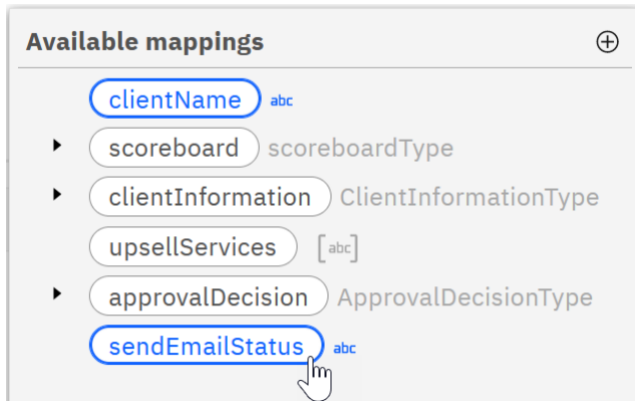
\_7. Click the **Output mapping** tab.

Input mapping	Output mapping

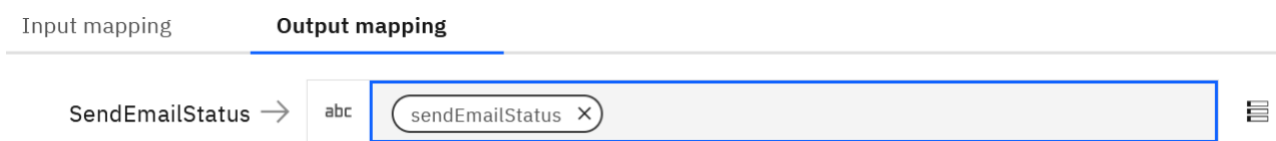
\_8. For SendEmailStatus variable, click **Select a variable**.

SendEmailStatus →	abc   <span>Select a variable</span>
-------------------	--------------------------------------

\_9. Select the **sendEmailStatus** variable.



The Output mapping should look exactly like this.



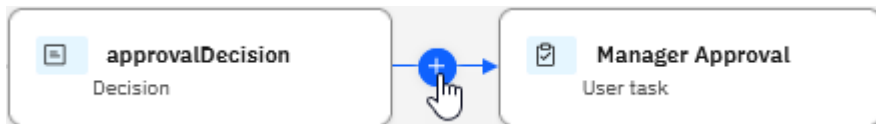
\_10. Click the **OK** button to save your variable mapping.



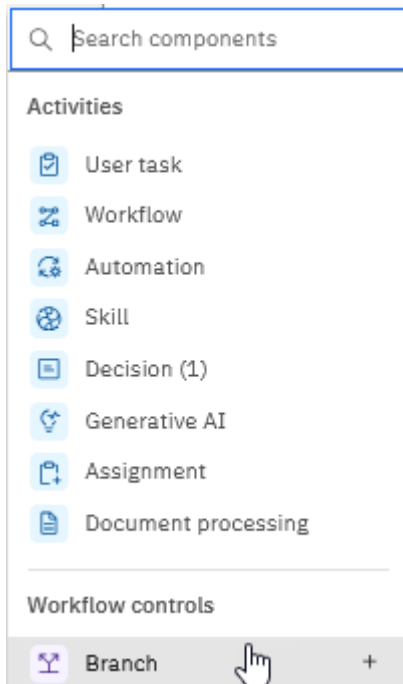
## 3.8 Add and Configure the Approval Branch

### 3.8.1 Add the Approval Branch

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

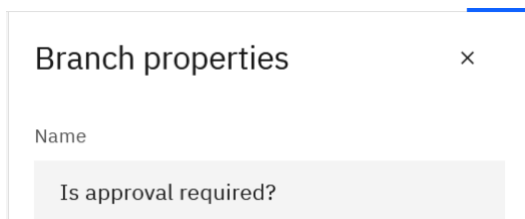


\_2. Select **Branch**.

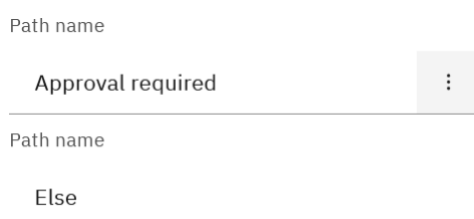


### 3.8.2 Configure the Approval Branch

\_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**.

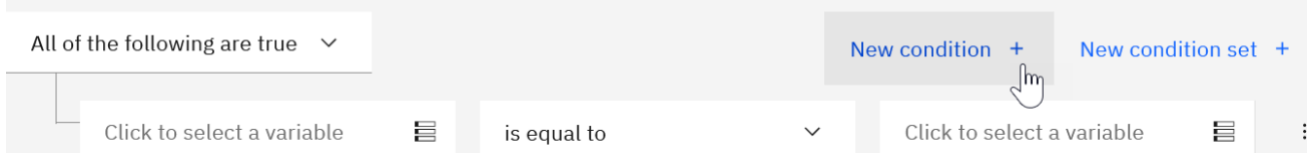


\_3. Click the **Edit conditions** button.



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

**Route to Approval required if:**





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

\_6. Select **approvalDecision > approved**.

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

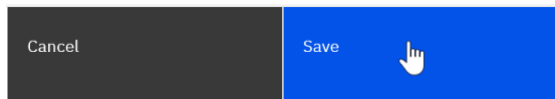
\_8. In the second condition variable, click the **Select variable** button, and for the variable, select **approvalDecision > autoRejected**

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

The condition set should look as shown below.

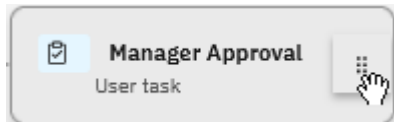
Note that "All of the following are true" is selected at the top, i.e., this path is only taken if the upsell offer is neither auto-approved nor auto-rejected based on the output of the decision service.

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



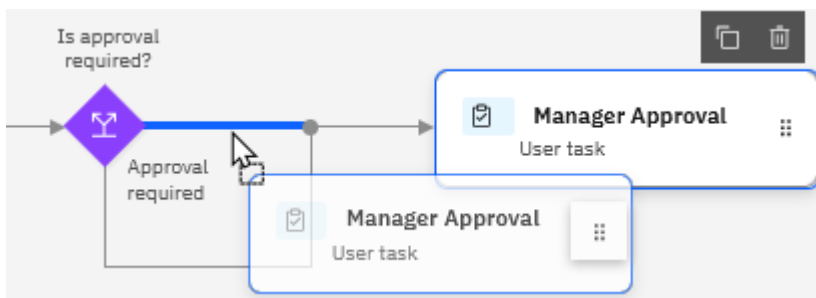
### 3.8.3 Move the Manager Approval Task to the Approval Required Path

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

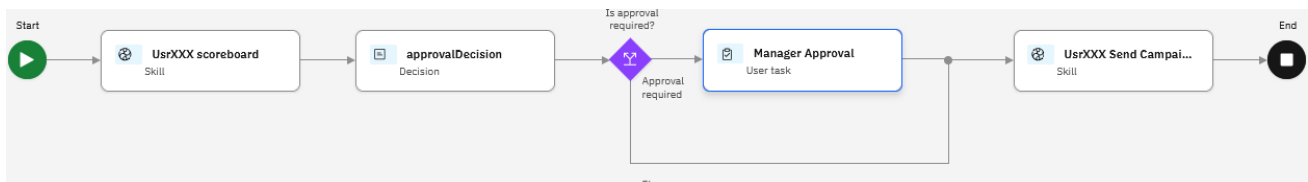


\_2. Click and hold the left mouse button and move the **Manager Approval** User task to the **Approval required** branch.

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.



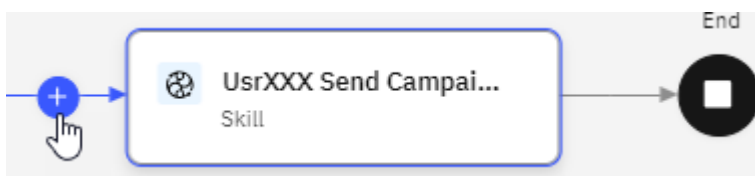
The flow should now look as shown below.



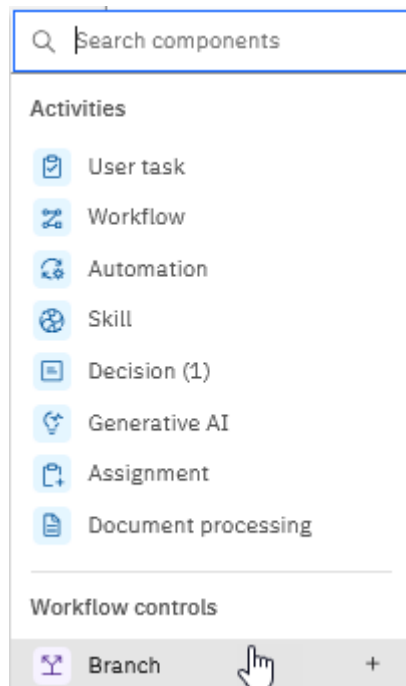
## 3.9 Add and Configure the Send Campaign Email Branch

### 3.9.1 Add the Send Campaign Email Branch

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



\_2. Select **Branch**.

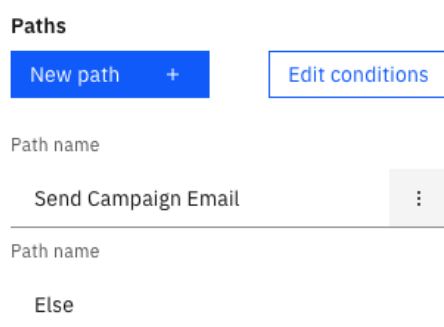


### 3.9.2 Configure the Send Campaign Email Branch

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



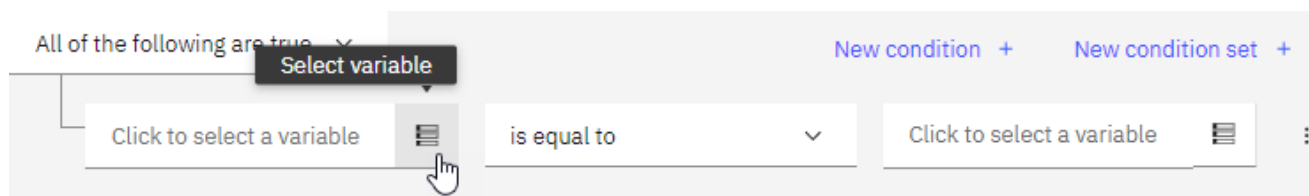
\_2. Change the first *Path name* to **Send Campaign Email**.



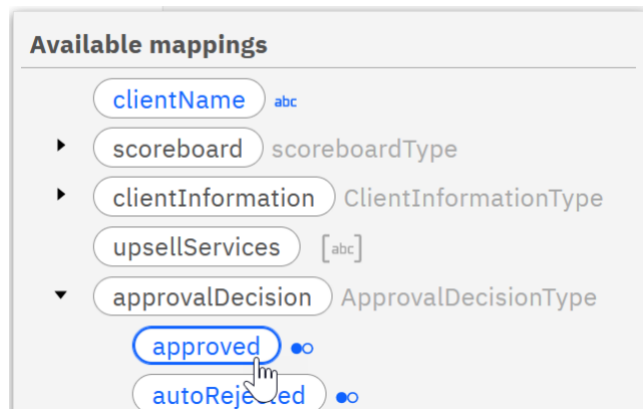
\_3. Click the **Edit Conditions** button.



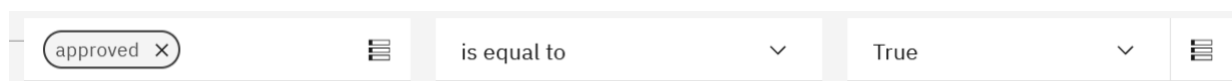
\_4. In the condition variable, click **Select variable**.



\_5. Select **approvalDecision** > **approved**.



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

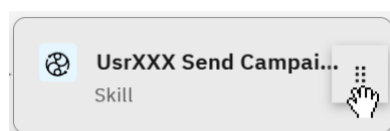


\_7. Click **Save** to save the conditions.

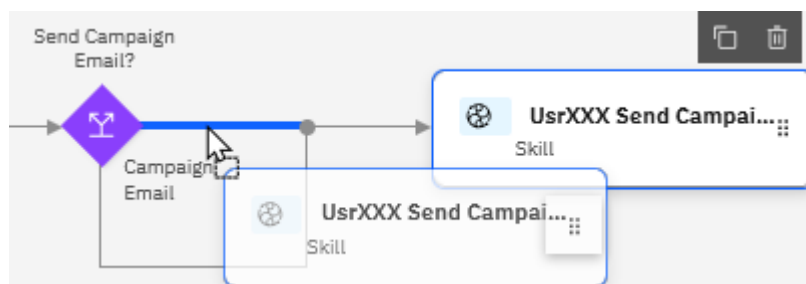


### 3.9.3 Move the Send Campaign Email task to Send Campaign Email Path

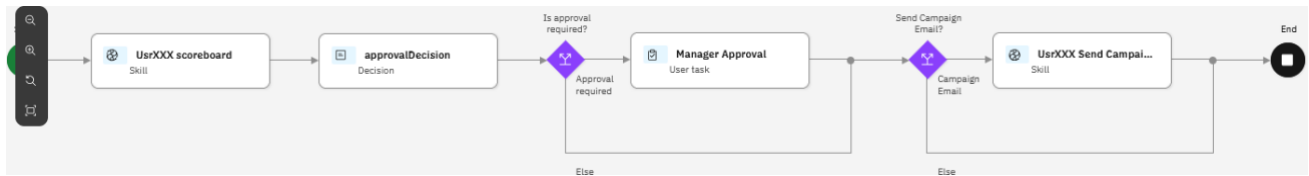
\_1. Select Skill **UsrXXX Send Campai...** **handle**.



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



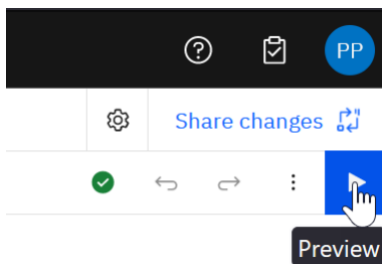
The flow should now look as shown below.



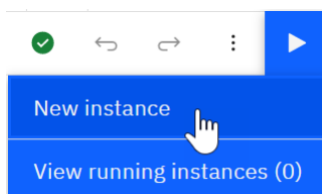
## 3.10 Test the Workflow Automation

### 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.

New instance

You can add test input values or use default values to execute a new instance of this workflow. If you defined default values, they are automatically used if you do not have a test input value when the instance is run.

Clear values

clientName

Legacy Consulting

upsellServices

1

#0

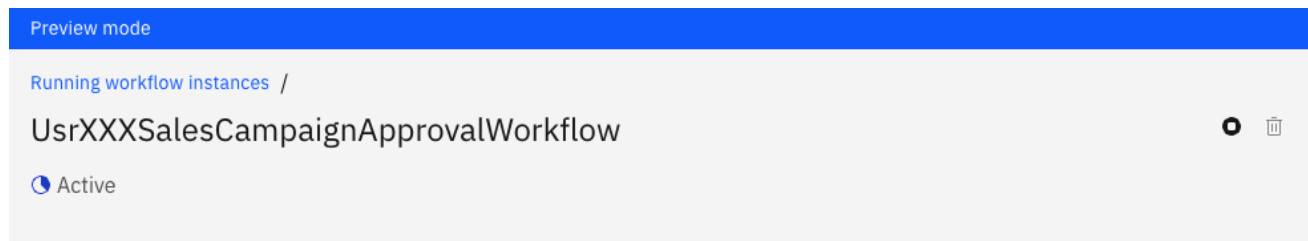
service 1

Cancel

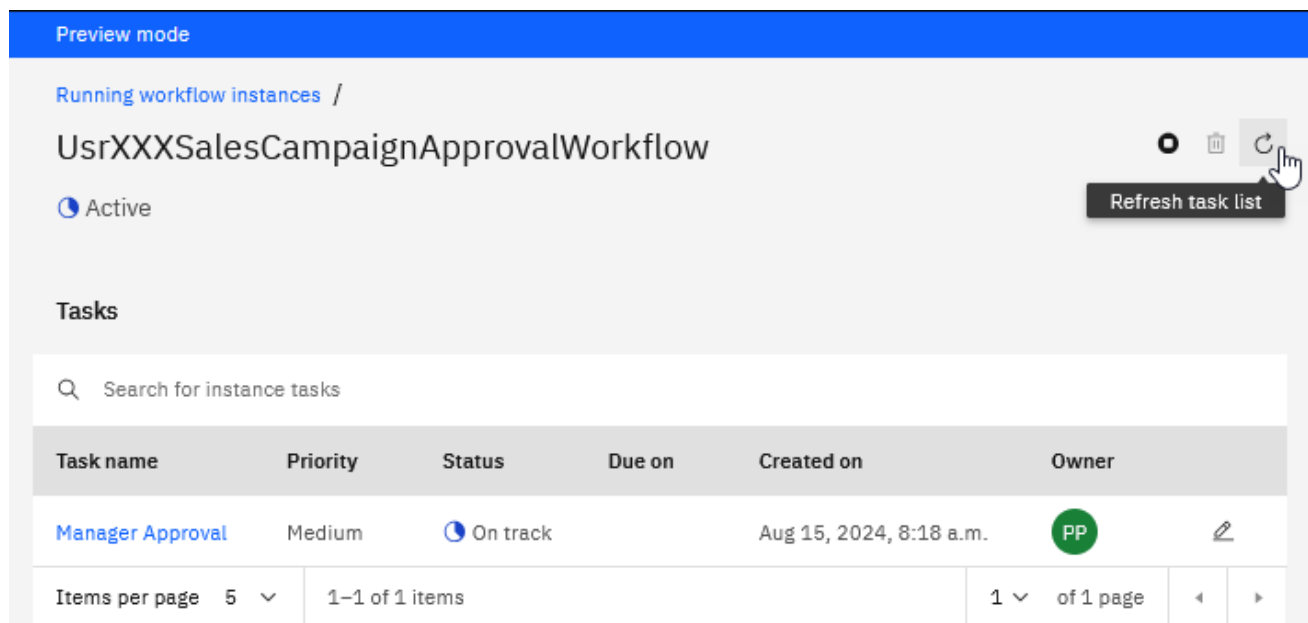
Run

\_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.

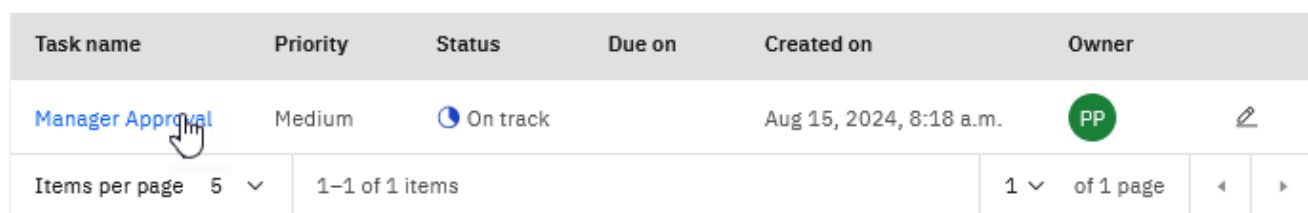


\_5. Click **Refresh task list**, or wait until you see a task.



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**.

Preview mode

Manager Approval


Manager Approval

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.

explanation

Manager approval is required. Reason: There is a high risk of payment default, and the confidence level from the predictive score is t


☐ autoRejected


☒ approved 

upsellServices

upsellServices

service 1

service 2 

Add row + 

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

Save

Submit



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

IBM watsonx Orchestrate — Mozilla Firefox Private Browsing

https://dl.watson-orchestrate.ibm.com/build/tasklist/playback?piid=104

Preview mode

Running workflow instances /

## UsrXXSalesCampaignApprovalWorkflow

Completed

### Outputs

- approvalDecision ▶ Show ApprovalDecisionType details
- clientName Legacy Consulting
- sendEmailStatus Campaign email has been send to usr998@example.com successfully.
- upsellServices ▶ Show string list

### Tasks

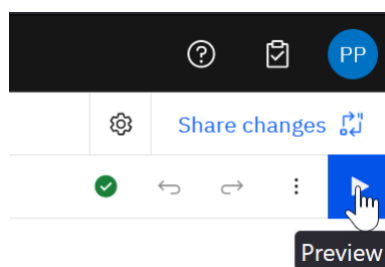
Search for instance tasks

Task name	Priority	Status	Due on	Created on	Owner
Manager Approval	Medium	Completed		Aug 15, 2024, 8:18 a.m.	PP

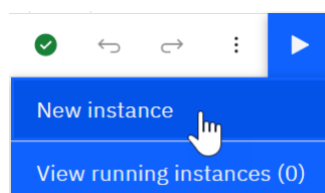
Items per page 5 1-1 of 1 items 1 of 1 page

### 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**.

New instance

×

You can add test input values or use default values to execute a new instance of this workflow. If you defined default values, they are automatically used if you do not have a test input value when the instance is run.

Clear values

clientName

Automation Elite

upsellServices

1

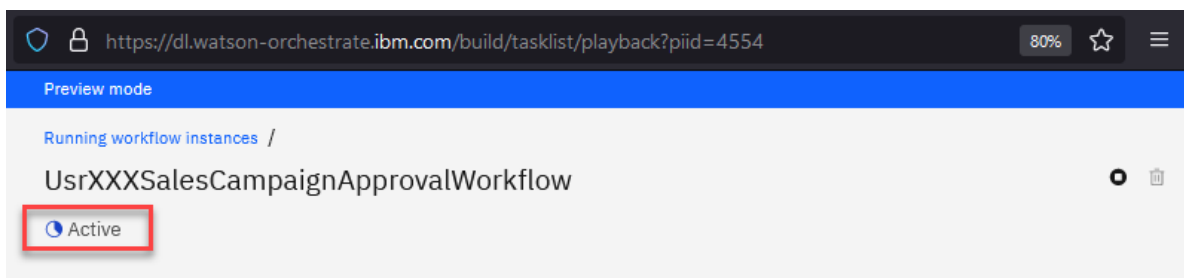
#0

service 1

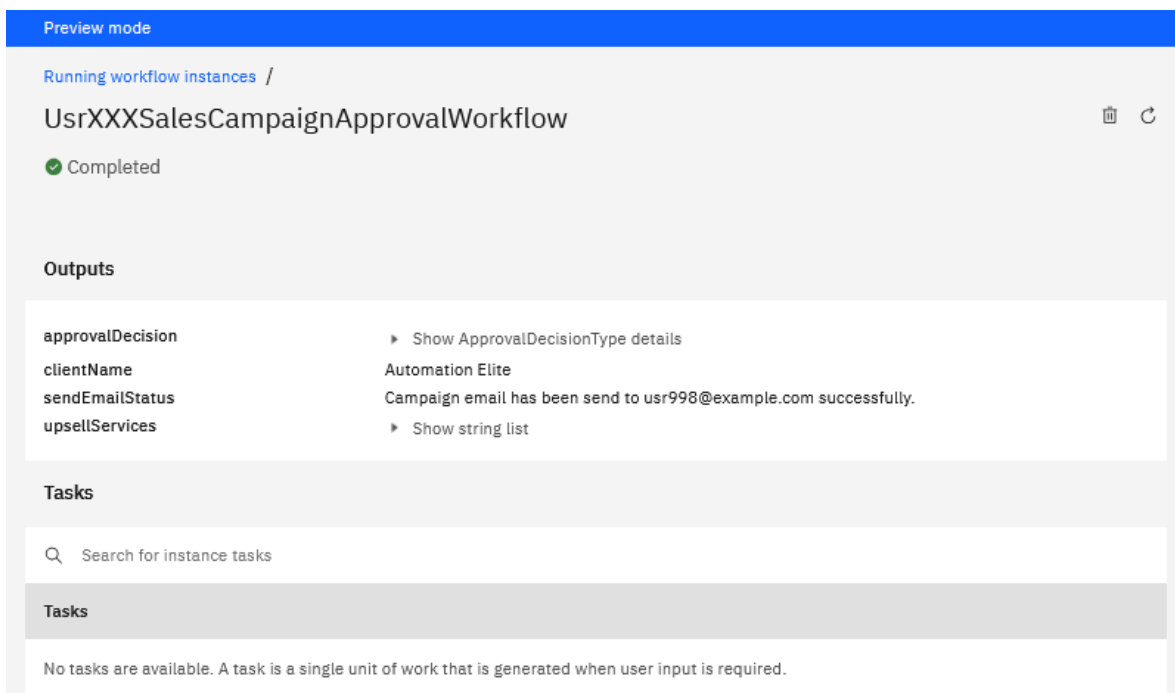
Cancel

Run

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

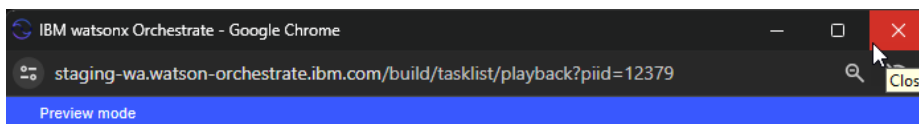


\_4. Wait. You should shortly see a *Preview mode* Web Browser window with a **Completed** status for the Workflow.



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.

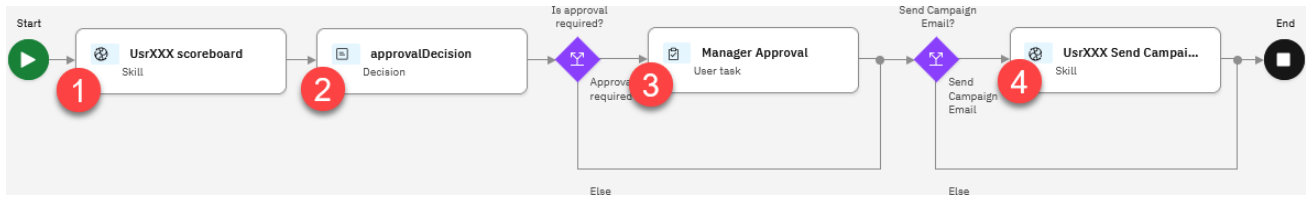


### 3.10.3 Examining Completed Instances in the Process Admin Console

To use Inspector in the Process 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 Process 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.

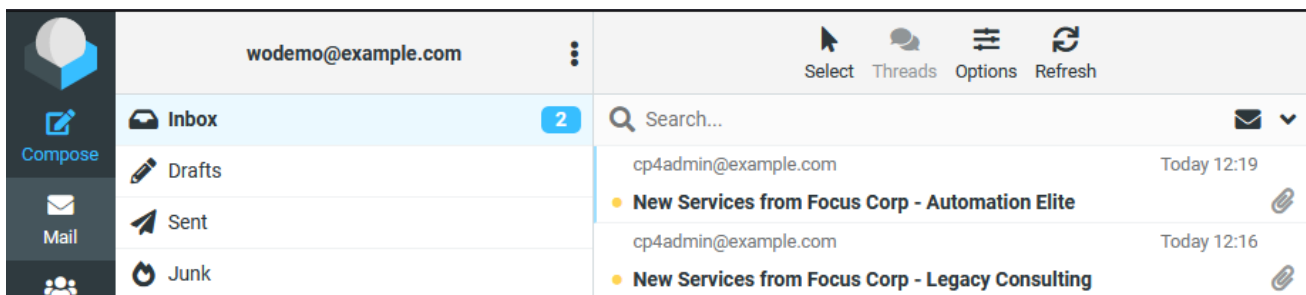


\_1. Open the **Local Mail Client** in your browser (see [1.4.1 Systems, Lab Files, and Credentials](#))

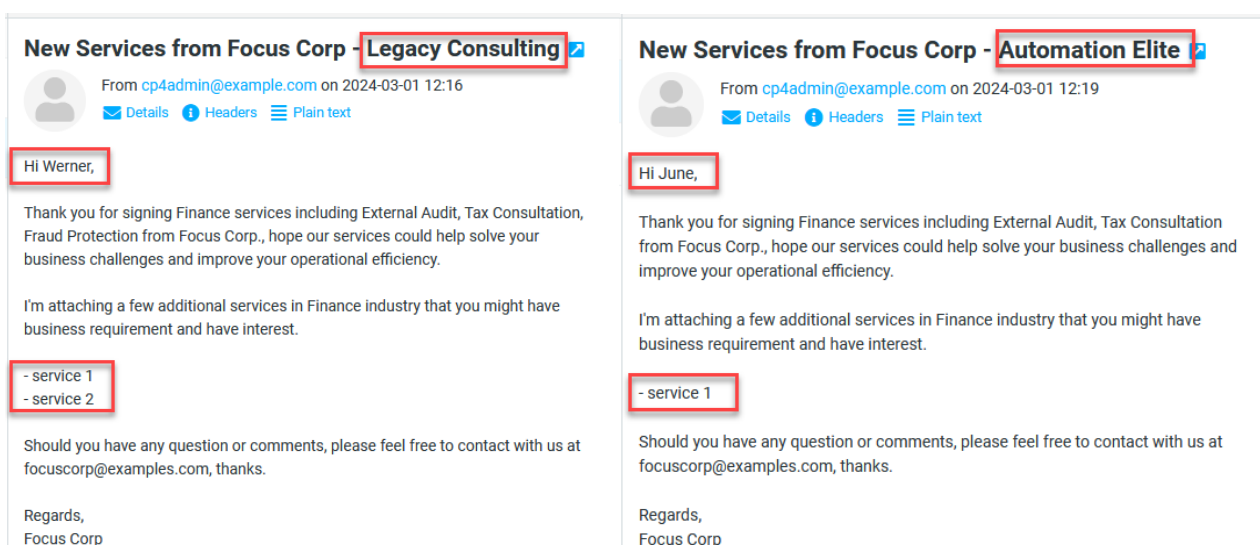
\_2. Enter your **CP4BA Credentials** and click the **LOGIN** button.



\_3. You should now see two emails.



Note that the emails are customized for each client:

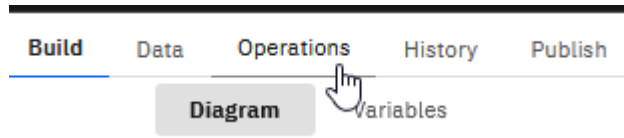


## 4 Exercise: Expose Workflow as a wxO Skill

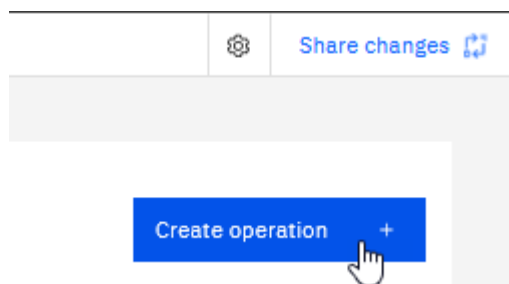
### 4.1 Create an Operation

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**.

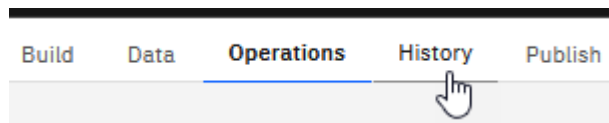


You should now see a new operation.

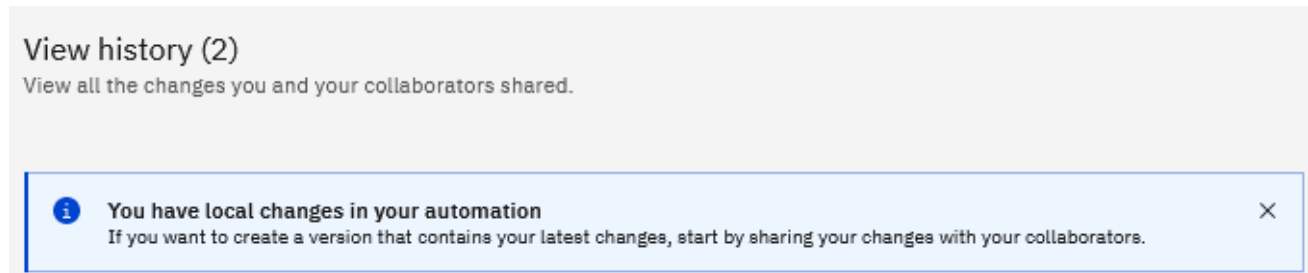
Name	Component	Description	Created on
UsrXXXSalesCampaignApproval	<a href="#">UsrXXXSalesCampaignApprovalWorkflow</a>		3/18/2024, 9:57:16 PM

## 4.2 Create a New Version of the Automation

\_1. Click the **History** tab.

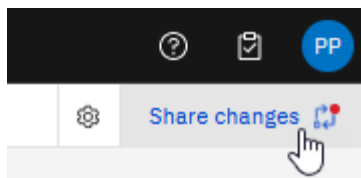


Note that you will see a message that you have local changes in your Automation.



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

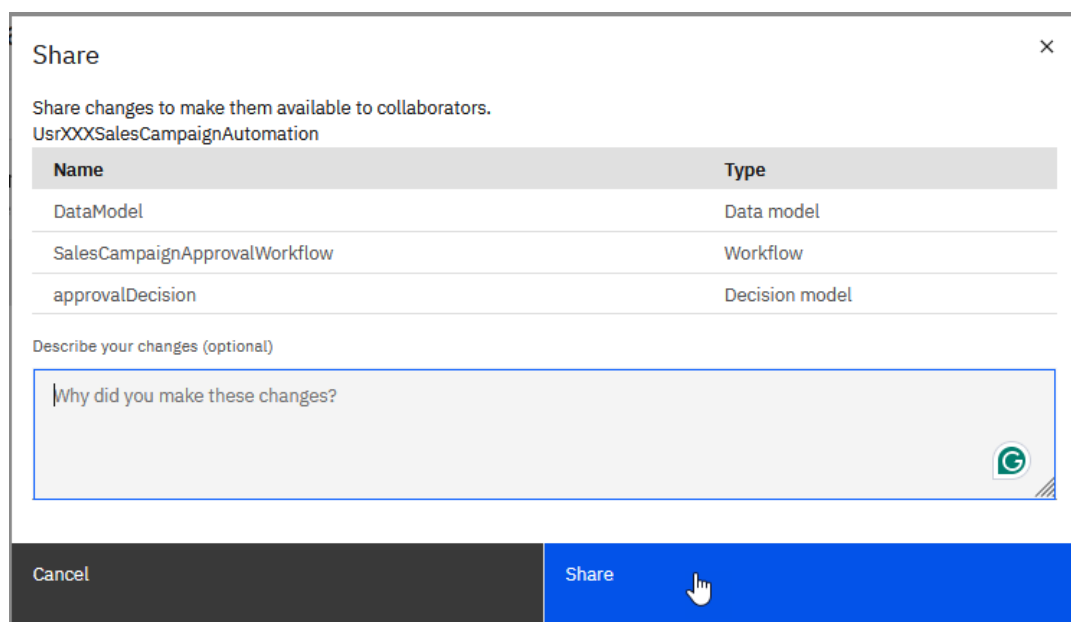
\_2. Click **Share changes**.



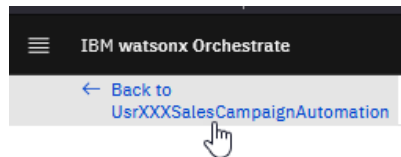
\_3. Click the **Share** button.



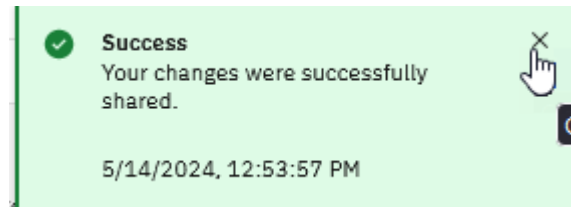
\_4. In the *Share pop-up* Window, click **Share** again.



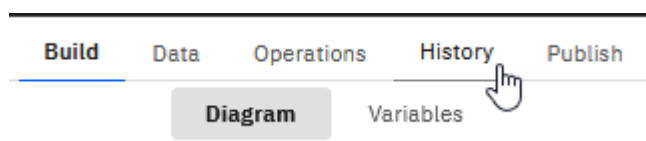
\_5. Click the **Back to UstrXXXSalesCampaignAutomation** link.



\_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!

Last shared	Shared by	Versions	
1/29/2024, 9:42:57 AM	PAUL PACHOLSKI	No version is created	Restore Version +

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

Create a version

×

Create a version to tag a specific point in the change history.

Name

Description (optional)

What changes were made in this version?

**i** This version will be based on the following set of shared changes:

8/29/2024, 8:33:17 PM by PAUL PACHOLSKI  
No message

To create a version from another set of shared changes, go to the History tab.

Cancel

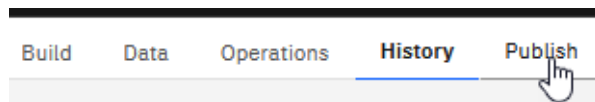
Create

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

Last shared	Shared by	Versions	
3/1/2024, 3:29:54 PM	PAUL PACHOLSKI	1.0.0	<div>Restore </div> <div>Version +</div>

## 4.3 Publish the Automation as a wxO Skill

\_1. Click the **Publish** tab.



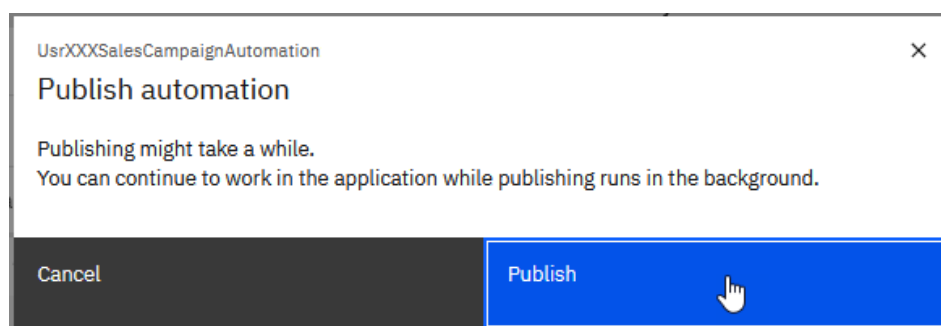
\_2. Click the Version **Twisty**.



\_3. Click **Publish**.

Version	Shared on	Shared by
<div>  1.0.0 </div>	8/15/2024, 12:05:54 PM	PAUL PACHOLSKI
Automation	Publish status	
UsrXXXSalesCampaignAutomation	Not published	<div>Publish</div>

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



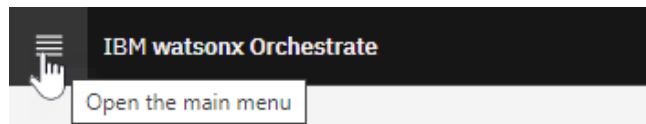
\_5. Wait until the *Publish status* changes from "**Publish in progress**" to "**Published on...**".

Version	Shared on	Shared by
^ 1.0.0	3/1/2024, 3:33:38 PM	PAUL PACHOLSKI
Automation	Publish status	
UsrXXXSalesCampaignAutomation	Published on 3/1/2024, 3:42:31 PM	<a href="#">document</a> <a href="#">{...}</a> <a href="#">Publish</a>
Items per page: 20	1–1 of 1 items	

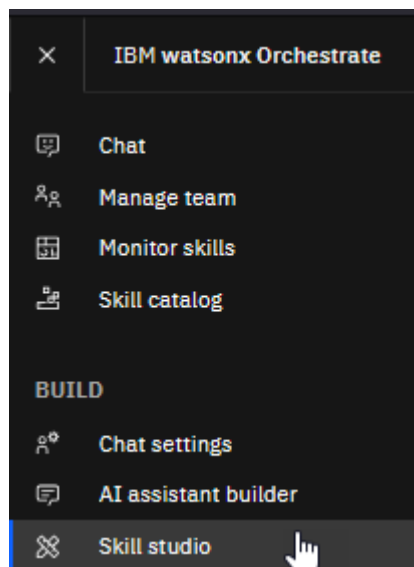
Note: the "**document**" link shows the publishing logs, and the "{...}" link points to the Swagger UI for the OpenAPI file

## 4.4 Enhance and Publish the Workflow Skill

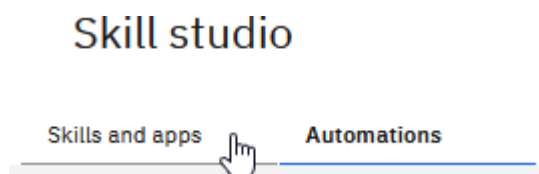
\_1. Click the **Hamburger** menu.



\_2. Click **Skill studio**.

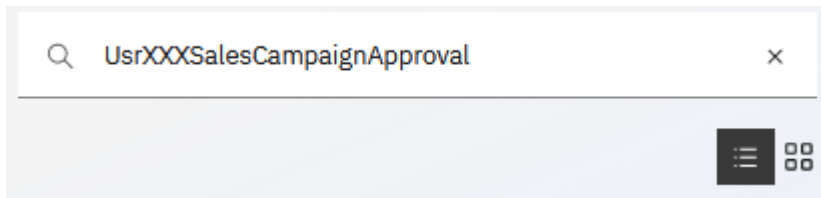


\_3. Click the **Skills and apps** tab.





\_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**.

Name	Step in the process	Status	Skill type	Author	Last edited	
UsrXXXSalesCampaignApproval	Just 1 step away to be ready	Ready to publish	Automation	pacholsk@ca.ibm.com	March 26 2024	⋮
						Enhance this skill Export this skill Delete this skill

\_6. Click the **Phrases** tab.

Name	Input	Output	Phrases	Next best skills
------	-------	--------	---------	------------------

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.

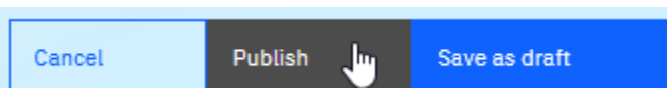
Phrases are the text your user types in the chat bar to find and use a skill.

UsrXXXSalesCampaignApproval

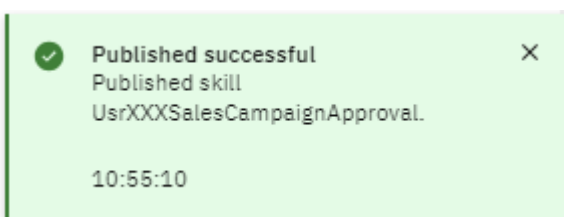
start sales campaign approval workflow

[Auto-generate phrases \(Experimental\)](#)

\_8. Click **Publish**.

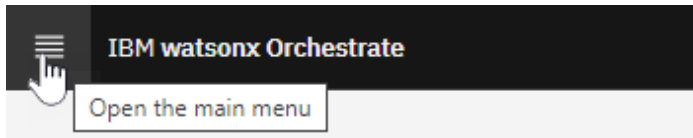


You should see a Published successful message.

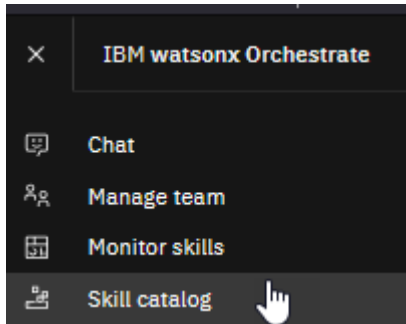


## 4.5 Add the Automation Skill to Personal Skills

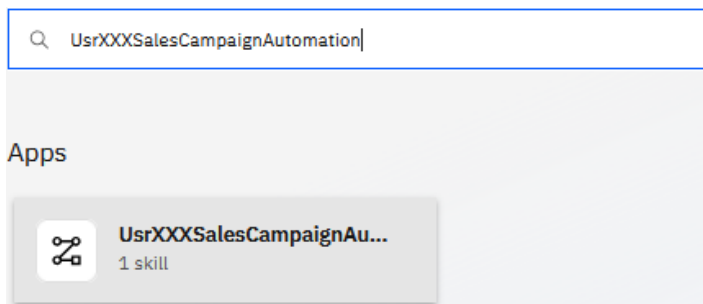
\_1. Click the **Hamburger** menu.



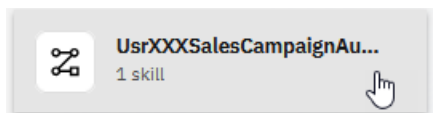
\_2. Click **Skill catalog**.



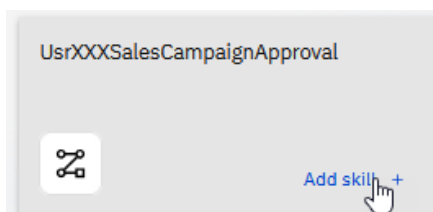
\_3. To find the Skill in the Skill Catalog, type **UsrXXXSalesCampaignAutomation** (remember XXX is your user id) in the *search bar* and hit **enter key**.



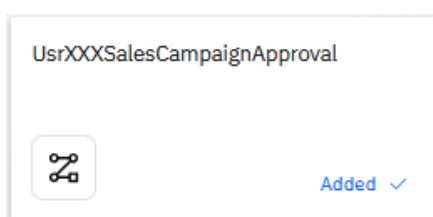
\_4. Click the **UsrXXXSalesCampaignAutomation** App (remember XXX is your user id).



\_5. Click **Add skill +**



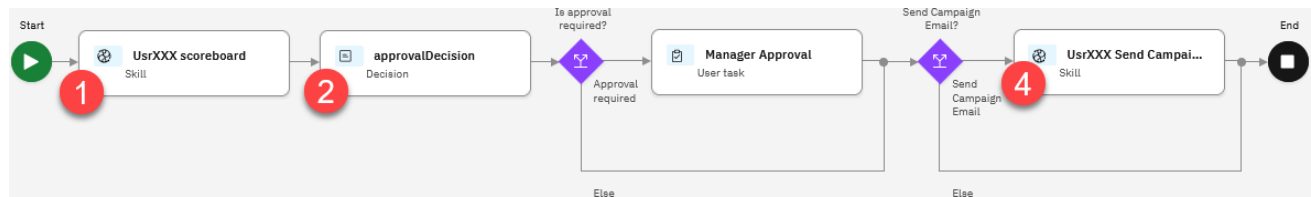
You should now see the **"Added"** status.



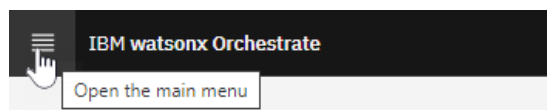
## 5 Exercise: Test the Workflow Skill in the Chat

### 5.1 Test the Auto Approval Case

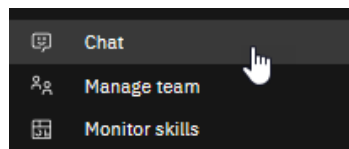
The auto-approved path is **1, 2, 4**.



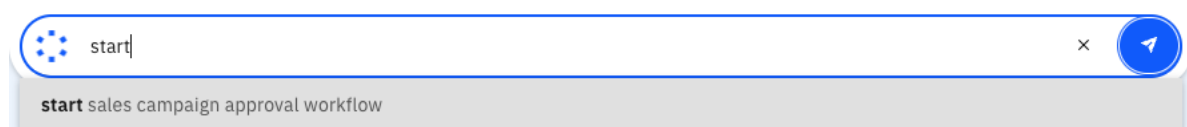
\_1. Click the **Hamburger** menu in the top-left corner.



\_2. Click **Chat**



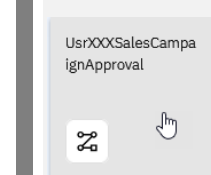
\_3. In the *Chat*, type "**start**" and select the suggestion "**start sales campaign approval workflow**".



\_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**


You just need to complete this form first.

 UstrXXXSalesCampaignApproval


clientName

Automation Elite **1**

upsellServices **2** ^

service 1 **4** 

Add + **3**

Cancel Apply 

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

The UstrXXXSalesCampaignApproval skill can't be used right now. Retry your request later.

[Show more](#)

Retry

Cancel

You should see a confirmation message.



Working on getting the results might take a while. You can continue waiting or you can ask for something else to be done.

\_6. Wait until the Workflow is completed.

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

Workflow output message details:

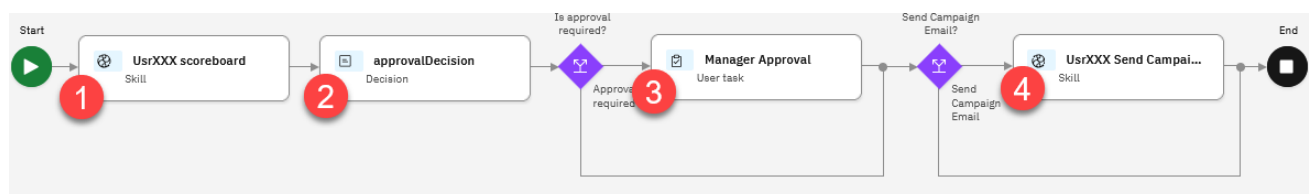
- 1** ☒ approved
- 2** ☐ autoRejected
- 3** explanation: Auto approved. Reason: There is a low risk of payment default, and the confidence level from the predictive score is above 95.
- 4** clientName: Automation Elite
- upsellServices:
  - upsellServices
  - service 1
  - Add +
- 5** sendEmailStatus: Campaign email has been send to wodemo@example.com successfully.

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**".

Chat input: start

Suggestion: start sales campaign approval workflow

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

Chat input: start sales campaign approval workflow

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

You just need to complete this form first.

UsrXXXSalesCampaignApproval

clientName

Legacy Consulting

upsellServices

service 1

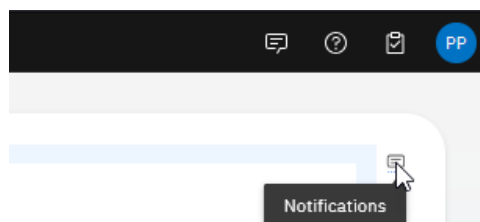
Add +

Cancel Apply

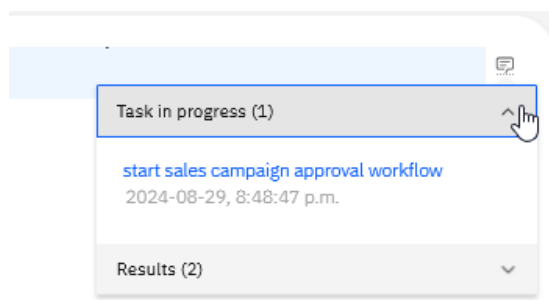
You should see a confirmation message.

Working on getting the results might take a while. You can continue waiting or you can ask for something else to be done.

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

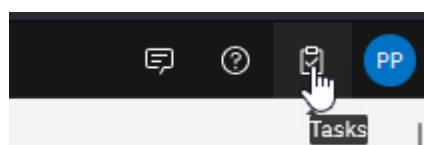


\_5. Expand **Task in progress (1)**.



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.

Search for tasks...

Filter by: On track (159) Completed (13) Claimed Unclaimed Email notification

Task name	Priority	Status	Due on	Created on	Owner
<a href="#">Manager Approval</a>	Medium	On track		Mar 26, 2024, 11:05 AM	P

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

Tasks Workflows

Manager Approval

**Activity**  
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.

explanation

Manager approval is required. Reason: There is a high risk of payment default, and the confidence level from the predictive score is below 95.

☐ autoRejected

☒ approved

ApprovalDecisionType

upsellServices

upsellServices

service 1

service 2

Add row +

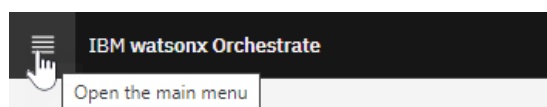
\_9. Scroll to the bottom of the form and click **Submit**.

annualRevenue

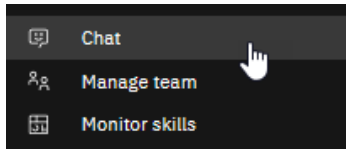
3 5000000

Save Submit

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

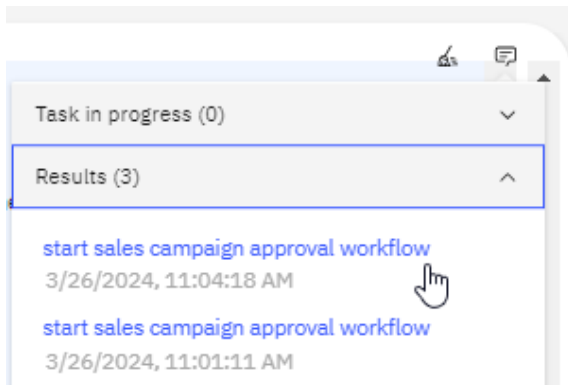


\_11. Click **Chat**.



\_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

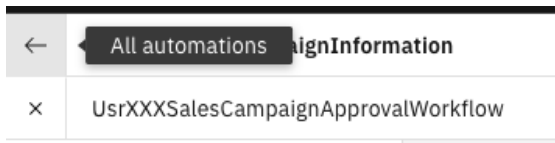


- 5) The sales manager added the upsell service "service 2".
- 6) Shows the confirmation from the email service in the Workflow that an email upsell email was sent to the customer.

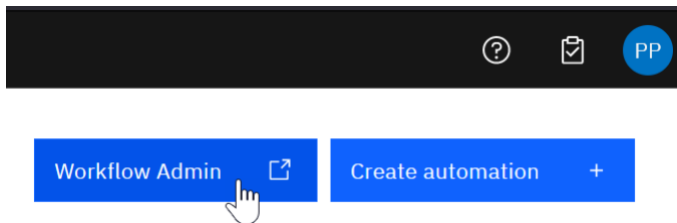
**Congratulations on completing the lab!**

## Appendix A. Using Proces Admin Console to Debug Workflows

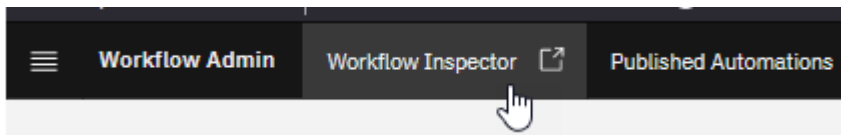
\_1. Click the left arrow in the top left corner.



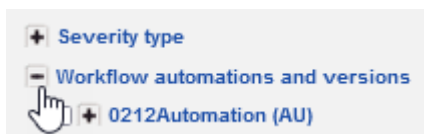
\_2. Click Workflow Admin.



\_3. Click Workflow Inspector.



\_4. Expand *Workflow automations and versions*

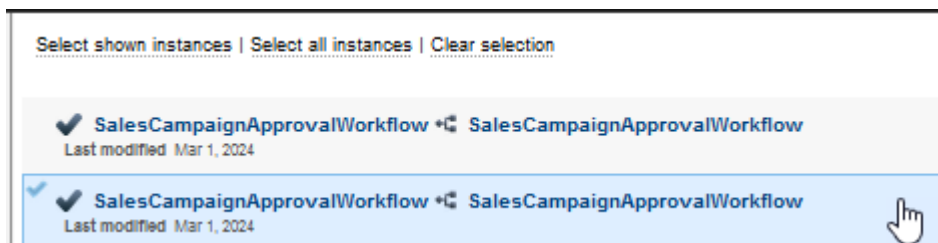


\_5. Find and select your Workflow automation - UsrXXXSalesCampaignAutomation (UXXXSCA)



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).

**SalesCampaignApprovalWorkflow**

- SalesCampaignApprovalWorkflow
- UsrXXXSalesCampaignAutomation

Tip

Instance ID: 3303  
 Status: Completed  
 Start time: Mar 1, 2024 11:32 AM (1 hour ago)  
 Last action: Mar 1, 2024 12:17 PM (17 minutes ago)  
 Due date:

Actions

- Refresh
- Delete

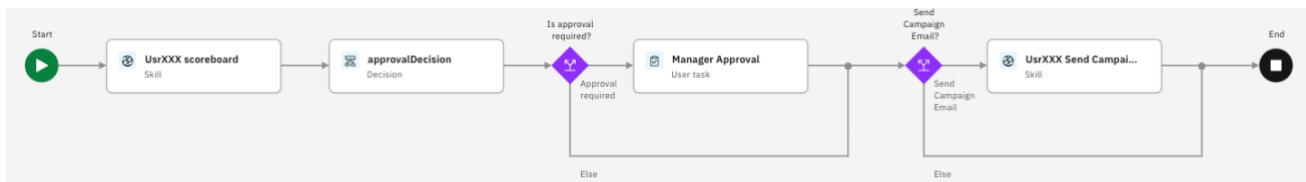
Tasks (4)

Data

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

Tasks (4) (Active | Completed | All)

- UsrXXX Send Campaign Email UAB [4409]**  
The task was closed by wfps-functionID (wfps-functionID).
- Manager Approval [4408]**  
The task was closed by JLUKAS@de.ibm.com (644001JKUF).
- approvalDecision [4406]**  
The task was closed by wfps-functionID (wfps-functionID).
- UsrXXX scoreboard [4404]**  
The task was closed by wfps-functionID (wfps-functionID).



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

Select shown instances | Select all instances | Clear selection

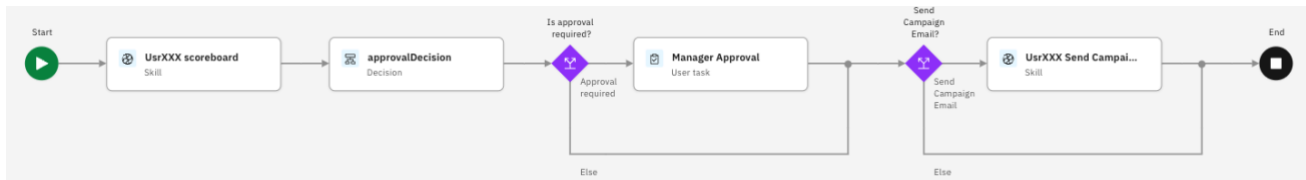
- ☒ **SalesCampaignApprovalWorkflow** \* SalesCampaignApprovalWorkflow  
Last modified Mar 1, 2024
- ☒ **SalesCampaignApprovalWorkflow** \* SalesCampaignApprovalWorkflow  
Last modified Mar 1, 2024

## \_9. Expand Tasks (3).

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

**Tasks (3)** (Active | Completed | All)

- UsrXXX Send Campaign Email UAB [4412]**  
The task was closed by wfps-functionID (wfps-functionID).
- approvalDecision [4411]**  
The task was closed by wfps-functionID (wfps-functionID).
- UsrXXX scoreboard [4410]**  
The task was closed by wfps-functionID (wfps-functionID).



## \_10. Expand Data &gt; scoreboard(scoreboardType).

**Data**

- clientName(String) Automation Elite
- upsellServices(String)(List)
- sendEmailStatus(String) Campaign email has been s
- approvalDecision(ApprovalDecisionType)
- scoreboard(scoreboardType)
  - confidence(Decimal) 99.9557
  - segment(String) Segment 1
  - highRisk(Boolean) false
- clientInformation(ClientInformationType)

\_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).

**Notices and disclaimers**

© 2024 International Business Machines Corporation. No part of this document may be reproduced or transmitted in any form without written permission from IBM.

**U.S. Government Users Restricted Rights — use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM.**

This document is current as of the initial date of publication and may be changed by IBM at any time. Not all offerings are available in every country in which IBM operates.

Information in these presentations (including information relating to products that have not yet been announced by IBM) has been reviewed for accuracy as of the date of initial publication and could include unintentional technical or typographical errors. IBM shall have no responsibility to update this information.

**This document is distributed "as is" without any warranty, either express or implied. In no event, shall IBM be liable for any damage arising from the use of this information, including but not limited to, loss of data, business interruption, loss of profit or loss of opportunity.** IBM products and services are warranted per the terms and conditions of the agreements under which they are provided. The performance data and client examples cited are presented for illustrative purposes only. Actual performance results may vary depending on specific configurations and operating conditions.

IBM products are manufactured from new parts or new and used parts.

In some cases, a product may not be new and may have been previously installed. Regardless, our warranty terms apply."

**Any statements regarding IBM's future direction, intent or product plans are subject to change or withdrawal without notice.**

Performance data contained herein was generally obtained in a controlled, isolated environments. Customer examples are presented as illustrations of how those customers have used IBM products and the results they may have achieved. Actual performance, cost, savings or other results in other operating environments may vary.

References in this document to IBM products, programs, or services does not imply that IBM intends to make such products, programs or services available in all countries in which IBM operates or does business.

Workshops, sessions and associated materials may have been prepared by independent session speakers, and do not necessarily reflect the views of IBM. All materials and discussions are provided for informational purposes only, and are neither intended to, nor shall constitute legal or other guidance or advice to any individual participant or their specific situation.

It is the customer's responsibility to ensure its own compliance with legal requirements and to obtain advice of competent legal counsel as to the identification and interpretation of any relevant laws and regulatory requirements that may affect the customer's business and any actions the customer may need to take to comply with such laws. IBM does not provide legal advice or represent or warrant that its services or products will ensure that the customer follows any law.

**Notices and disclaimers (Continued)**

Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products. IBM does not warrant the quality of any third-party products, or the ability of any such third-party products to interoperate with IBM's products. **IBM expressly disclaims all warranties, expressed or implied, including but not limited to, the implied warranties of merchantability and fitness for a purpose.**

The provision of the information contained herein is not intended to, and does not, grant any right or license under any IBM patents, copyrights, trademarks or other intellectual property right.

IBM, the IBM logo, and ibm.com are trademarks of International Business Machines Corporation, registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at: [www.ibm.com/legal/copytrade.shtml](http://www.ibm.com/legal/copytrade.shtml).