

IBM Cloud Pak for Business Automation Demos and Labs 2024

Introduction to IBM watsonx Orchestrate.

V 1.0

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1 Introduction

1.1 IBM watsonx Orchestrate

IBM watsonx Orchestrate uses natural language processing to draw from a catalog of basic and advanced skills to execute your requests - in context and the correct order. No specialized training is needed. Get started in minutes using prebuilt skills designed for you and your needs. IT doesn't even have to get involved (unless they want to, of course).

To learn more about IBM watsonx Orchestrate, click [here](#). To see the technical documentation, click [here](#).

1.2 Lab Scenario

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 IBM watsonx Orchestrate Services 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.

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

Note: From now on, we will use the acronym "wxO" to refer to IBM watsonx Orchestrate and "BAW" for IBM Business Automation Workflow.

1.2.3 Solution Architecture

Before we discuss solution architecture, let's introduce some key wxO programming model concepts.

1.2.3.1 What are Skills, Skill Flow, and Apps?

Skill is a wrapper around Automation (such as BAW Service Flows exposed as REST API) that enables a non-technical user to invoke it through Natural Language. Skills are packaged in Apps.

Apps are collections of related skills with the same connection information and authorization. OpenAPI import files define Apps.

Skill Flow is the linear orchestration of skills from the same or different apps. It can also be "trained" to provide a Natural Language interface.

1.2.3.2 Solution Architecture

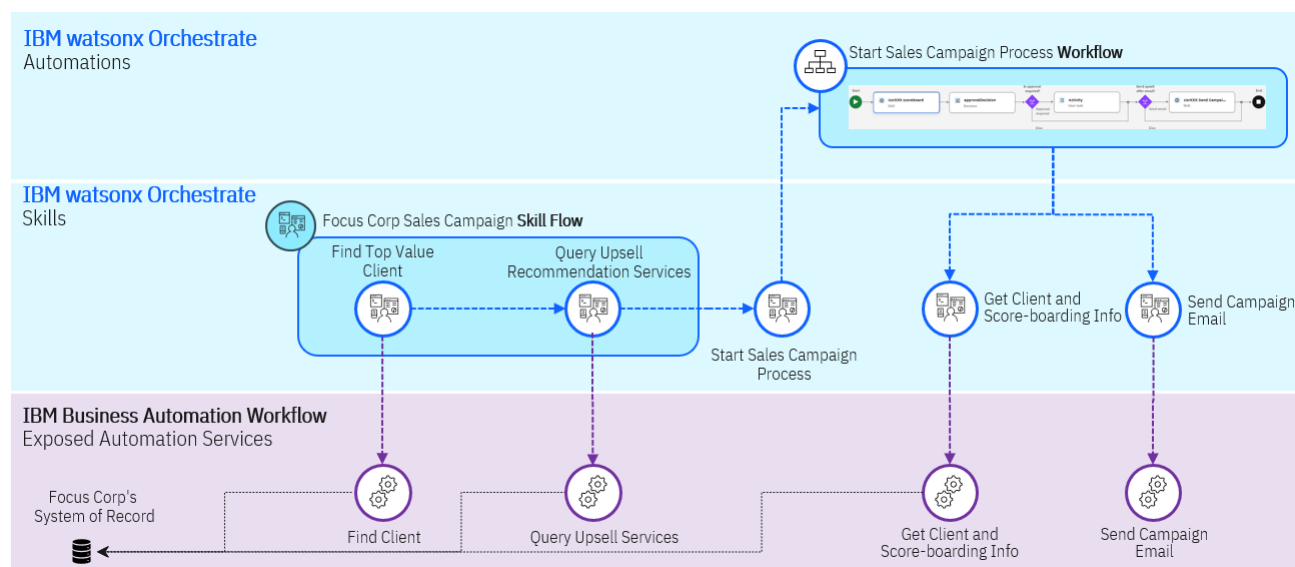


Figure 1. Upsell Campaign Solution Architecture

The user interaction starts when the sales specialist asks wxO to "start a sales campaign." This action invokes the Focus Corp Sales Campaign Skill Flow.

The first Skill in the Skill Flow retrieves a list of customers suitable for an upsell campaign from the System of Records. The second Skill suggests the appropriate upsell services. The user selects the client (from a list prepared by wxO) and specifies the upsell services (from a list prepared by wxO).

Next, the sales specialist user starts the Start Sales Campaign Process Skill based on wxO's suggestion (next best Skill). This Skill is implemented as a wxO automation (Workflow). The Workflow contains scoreboarding (which re-uses an existing automation). Based on the risk determined by the scoreboarding it will be auto-approved, auto-rejected, or a manual Sales Manager approval is required. In case of manual approval, the sales manager will be involved as part of the Workflow. The sales manager can use the wxO task list to look at the upsell offer, modify the upsell services, and decide to approve or reject it. Finally, the Workflow sends a customized email specific to the selected client and upsell services, but only if the sales offer is approved.

Note that the Automation was already prebuilt and exposed as a Skill in this lab. The second wxO lab contains step-by-step instructions on how to build this Automation.

1.2.3.3 Skill Implementation

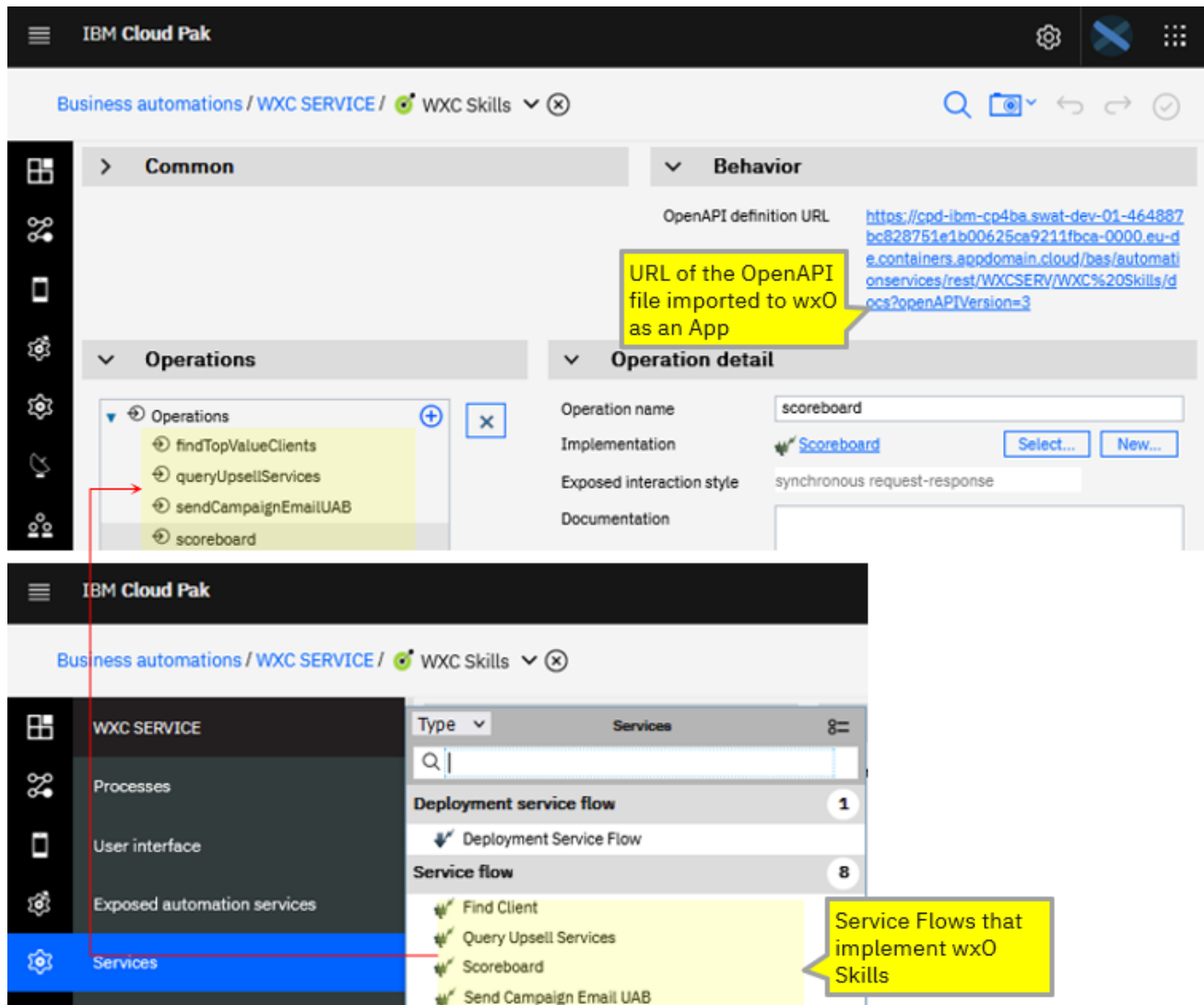


Figure 2. Service Flows that Implement wxO Skills

Skills are implemented using Service Flows authored using BAW and are exposed as operations in two OpenAPI files.

1.3 Lab Overview

This lab is structured around the three roles defined in wxO – see the details [here](#).

Role	Tasks Performed in this Lab
Builder	Import Skills Publish Skills to Skills Catalog Enhance User Experience with a Skill Flow
User	Add Skills from the Skills Catalog Test the Solution As Is Add Skill Flow (created by a Builder) from the Skills Catalog Test the Solution with Skill Flow
Administrator	Since we don't have an admin ID available to everyone, we would like to point you to Appendix A. Overview of the "Administrator" Role to familiarize yourself with this role.

Approximate Duration of this lab: 2-3 hours

1.4 Lab Setup Instructions

1.4.1 Systems, Lab Files, and Credentials

1.4.1.1 Tech Jam Event

If you are performing this lab as part of an IBM event, access the TechJam 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

1.4.1.2 Jam in a Box Event

You can also do this lab as part of [Jam-in-a-Box for Business Automation](#) (starting with V23.0.1). In this case, access to an IBM watsonx Orchestrate instance is required as a prerequisite. You need a Builder or Administrator role to do all parts of the lab. If you are an IBMer or IBM Business Partner, you can look at the wxO content on Seismic to learn how to access such a wxO instance. Otherwise, you can contact your IBM representative to get access. When doing the lab as part of Jam-in-a-Box, please also carefully read the section Lab Considerations in the Jam-in-a-Box Readme.md page to guide you on the necessary access.

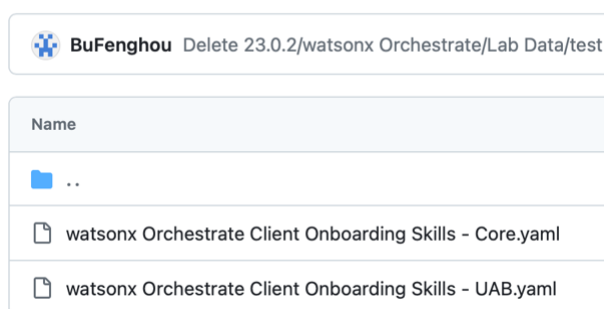
For this lab, you will need to access:

- IBM watsonx Orchestrate
- IBM Cloudpak Dashboard
- Local Mail Client

1.4.2 Customize the OpenAPI Files

Download the **watsonx Orchestrate Client Onboarding Skills—Core.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 - Core.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 where the Service Flows are running.

_1. Use a text editor of your choice to **Open** the *watsonx Orchestrate Client Onboarding Skills - Core.yaml* file (see [1.4.1 Systems, Lab Files, and Credentials](#))

_2. Replace all occurrences of **UsrXXX** with **the user id you received** when registering for your CP4BA Credentials., e.g., usr002.

```
openapi: 3.0.1
info:
  title: UsrXXX Client Onboarding App Core
  version: tipSnapshot
  description: UsrXXX Client Onboarding Skills Core
  x-ibm-application-id: CP4BACoreUsrXXX
  x-ibm-application-name: UsrXXX Client Onboarding App Core
  x-ibm-application-icon: >-
```

You must change the server URL if you are doing this lab as part of Jam-in-a-Box for Business Automation. **You can skip this step for the Tech Jam.**

Replace the placeholder **<IBM Cloudpak Dashboard URL>** with the URL of the **IBM Cloudpak Dashboard** (see [1.4.1 Systems, Lab Files, and Credentials](#)).

```
servers:
  - url: >-
    <IBM Cloudpak Dashboard URL> bas/automationservices/rest/WXCSErv/WXC%20Skills
security:
```

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

1.4.3 Login to wxO

_1. In your Web Browser, open **IBM watsonx 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?](#)

Continue →

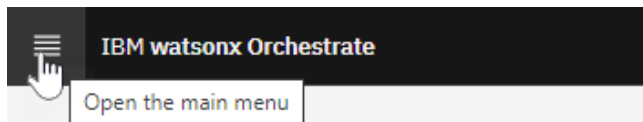
2 Exercise: Experience the Orchestrate "Builder" Role

The builder is responsible for providing and authoring the building blocks of wxO solutions. Based on the input from the end users of wxO solutions, the builder creates Skills from external services and adds them to the Skills Catalog.

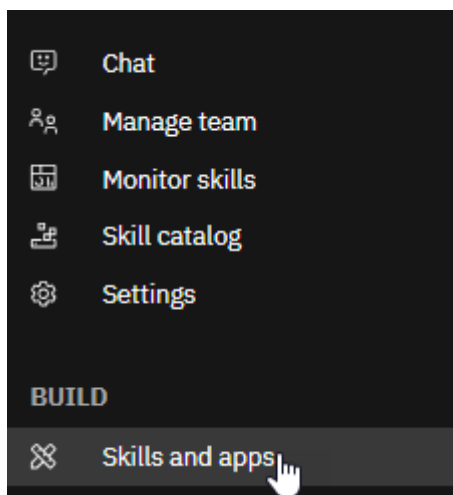
2.1 Import Skills

In this lab section, you will create Skills from the BAW services defined in the watsonx Orchestrate Client Onboarding Skills—Core.yaml file and add them to the Skill Catalog.

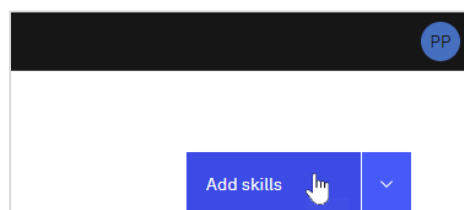
_1. Click the **Hamburger** menu.



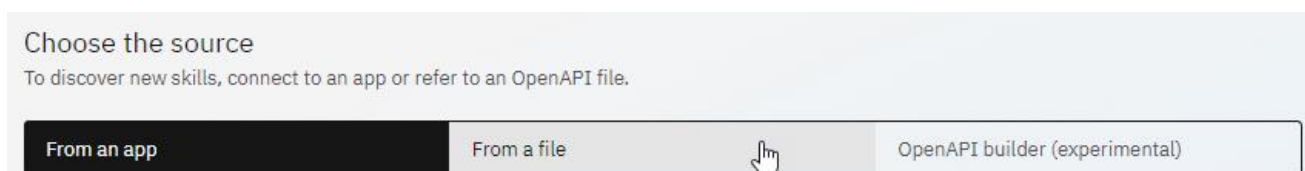
_2. Click **Skills and apps**.



_3. In the top-right, click **Add Skills**.



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




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

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 - Core.yaml

Make sure you see the "...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 Find Top Value Clients	Find top value clients based o...	✓ Ready to add
✓ <input checked="" type="checkbox"/>	UsrXXX Query Upsell Recommenda...	Query recommended upsell servi...	✓ Ready to add

Cancel

Add

You will now see a confirmation message.



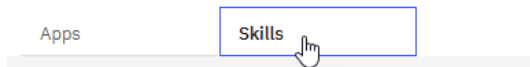
2 skills were added successfully.

17:31:03

_8. Click the **Skills** tab.

Skills and apps

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



_9. To see only your Skill, in the *search bar*, enter **UsrXXX** (where XXX are the digits of your CP4BA Credentials user id) and hit the **Enter** key.

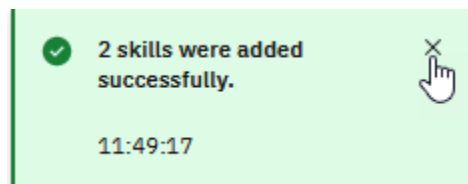


Notes:

- Your 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 Find Top Value Clients.

Name	Step in the process	Status	Skill type	Author	Last edited
UsrXXX Find Top Value Clients	Just 1 step away to be ready	Ready to publish	Imported	pacholsk@ca.ibm.com	March 26 2024
UsrXXX Query Upsell Recommendation Ser...	Just 1 step away to be ready	Ready to publish	Imported	pacholsk@ca.ibm.com	March 26 2024

_10. Click **X** to close the message.



2.2 Publish Skills to Skills Catalog

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

_1. On the row with *UsrXXX Find Top Value Clients*, select the **vertical ellipses (3 dots)**, and then click **Enhance the Skill**.

Name	Step in the process	Status	Skill type	Author	Last edited	
UsrXXX Find Top Value Clients	Just 1 step away to be ready	Ready to publish	Imported	pacholsk@ca.ibm.com	March 25 2024	⋮
UsrXXX Query Upsell Recommendation Ser...	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. Examine the tabs that we can use to enhance a Skill before publishing.

[Skills and apps](#) / Enhance this skill

Enhance the “UsrXXX Find Top Value Clients” 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.					

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 catalog.
Input	When running the Skill, wxO asks for the necessary input to get the most accurate results.
Output	wxO responds with information that corresponds to the provided input.
Security	Specify the authentication type required to use this Skill and test the connection.
Phrases	Phrases are the text your user types in the chat box to find and use a skill.
Next best Skill	Select the skills you want Watson to suggest as the next skills people could use after they use this Skill.

_3. In the bottom-right corner, click the **Publish** button.

Cancel	Publish	Save as draft
--------	---------	---------------

_4. Click **Skills** tab.

Skills and apps

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

Apps	Skills
------	--------

_5. **Rerun the Search** to see only your skills.

×

Note that the state has changed to Published.

Name	Step in the process	Status
<div> UsrXXX Find Top Value Clients </div>	Ready to use	<div> Published </div>
<div> UsrXXX Query Upsell Recommendation Ser... </div>	Just 1 step away to be ready	<div> Ready to publish </div>

_6. Click **X** to close the message.

Published successful
×

Published skill UsrXXX Find Top Value Clients.

12:09:02

_7. Repeat the steps above (1-6) to publish the *UsrXXX Query Upsell Recommendation Services Skill*.

<div> UsrXXX Query Upsell Recommendation Services </div>	Just 1 step away to be ready	Ready to publish
---	------------------------------	------------------

_8. Verify that all the skills you have imported have been published.

Name	Step in the process	Status
<div> UsrXXX Find Top Value Clients </div>	Ready to use	<div> Published </div>
<div> UsrXXX Query Upsell Recommendation Ser... </div>	Ready to use	<div> Published </div>

3 Exercise: Experience the Orchestrate "User" role

In this part of the lab, you will experience the "User" role:

1. Add Skills from the Skill Catalog
2. Test the Solution As Is
3. Enhance User Experience with a Skills Flow (requires "Builder" role)
4. Add Skill Flow from the Skill Catalog
5. Test the Solution with Skill Flow

3.1 Add Skills from the Skill Catalog

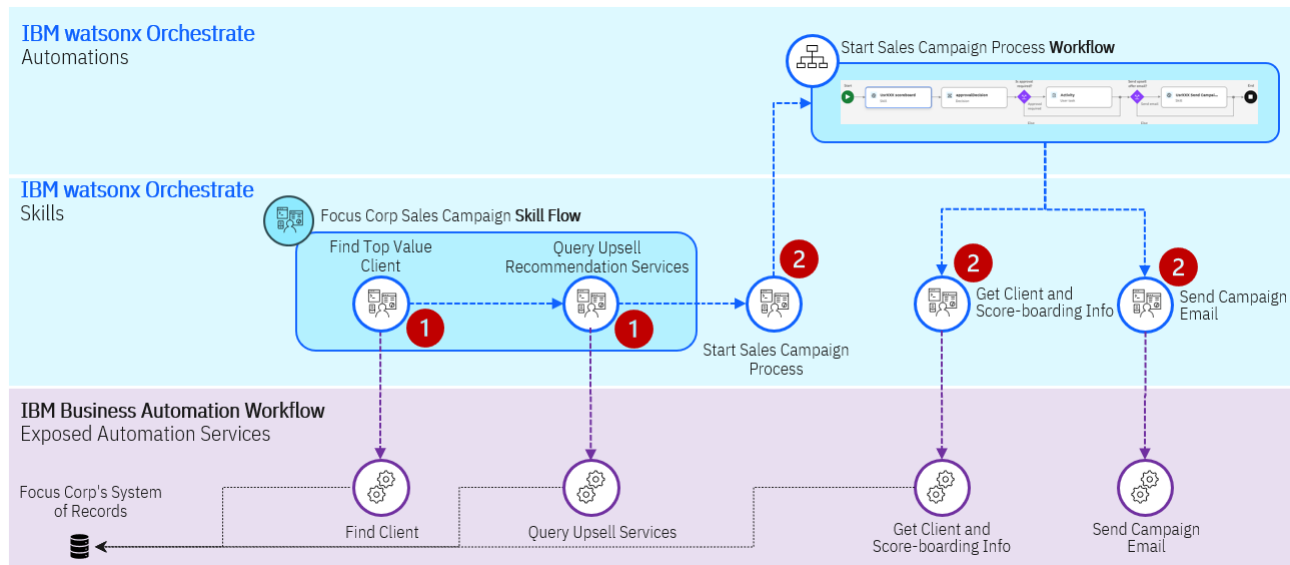
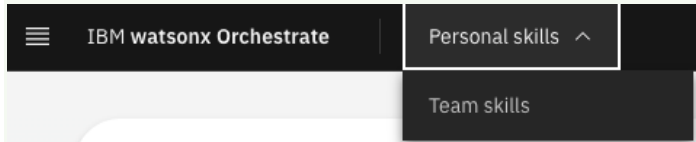


Figure 3. Skill Categories to be Added to Skills Catalog

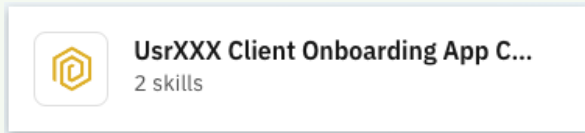
You will be adding two types of skills to your personal skill set:

- 1) The skills you just imported using the yaml file:
 - *UsrXXX Query Upsell Recommendation Services*
 - *UsrXXX Find Top Value Clients*
- 2) The skill **we built and imported to the Skill Catalog for you:**
 - *Start Sales Campaign Process*. This skill will launch the wxO workflow that includes the approval step and conditionally send email to customer steps. The decision to approve or reject is based on the scoreboard information and a wxO decision.
 - *Get Client and Scoreboarding Info*. This is the scoreboard skill used by the wxO Workflow. You must add it to the skills catalog so that the wxO workflow can determine whether the offer is auto-approved, auto-rejected, or requires the manager's approval.
 - *Send Campaign Email*. This is the email skill used by the wxO Workflow. You will need to add to the skills catalog so that the wxO workflow can use it to email the customer if the upsell offer was approved.

Note. The chat has two categories of skill sets: Personal skill set and Team skill set.

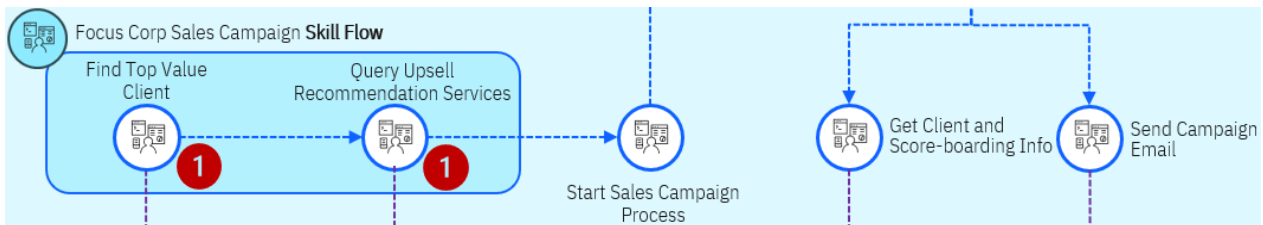


In the previous lab steps, you imported skills using the *watsonx Orchestrate Client Onboarding Skills - Core.yaml* and added them to the Skills Catalog as an App.

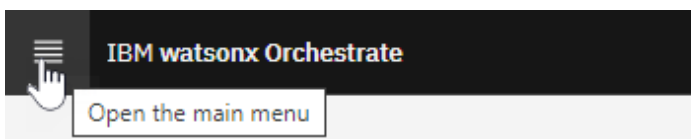


You will now add skills to Personal Skills from the Skill Catalog. Recall that you have added new Skills to the Skill Catalog in the previous part of the lab in the "Builder" role.

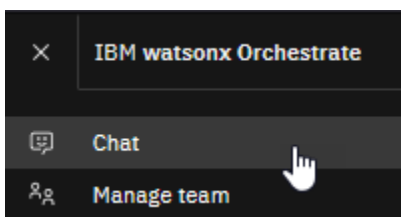
3.1.1 Add the Skill You Imported – Category 1



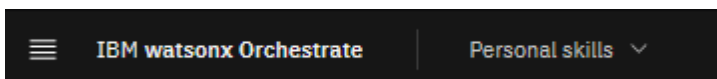
_1. Click the **Hamburger** menu.



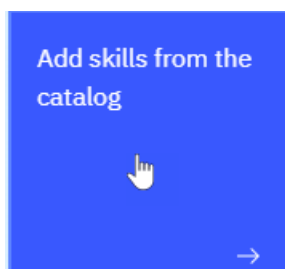
_2. Click **Chat**



_3. Ensure **Personal skills** is selected.

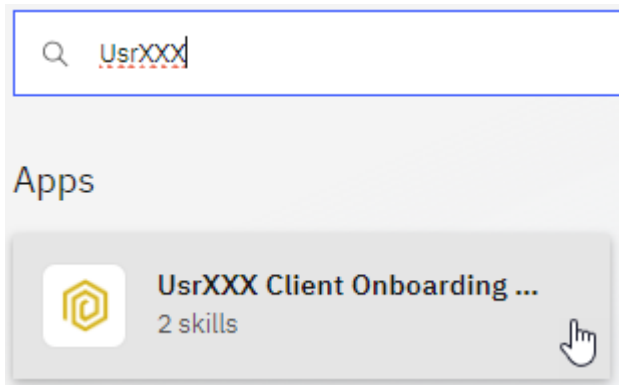


_4. Click **Add skills** from the catalog.

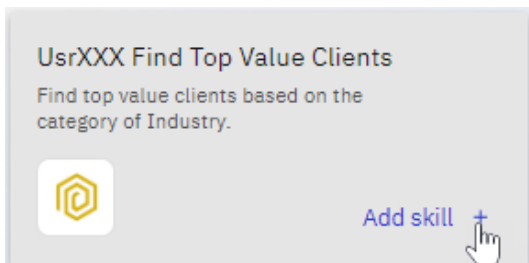


You should now see all the Apps available in the Skills Catalog.

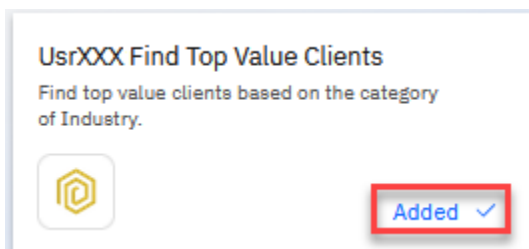
_5. Locate the **UsrXXX Client Onboarding App Core** (remember that XXX are the last three digits of your CP4BA Credentials user id) and **click on it** to open.



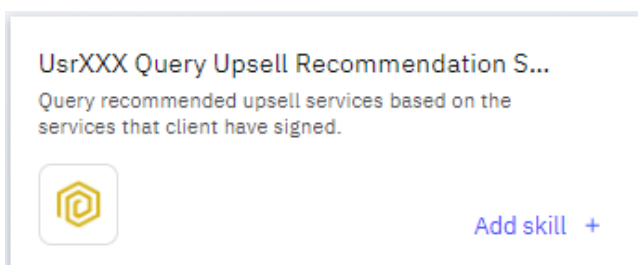
_6. Locate *UsrXXX Find Top Value Clients* Skill, and click **Add Skill +**



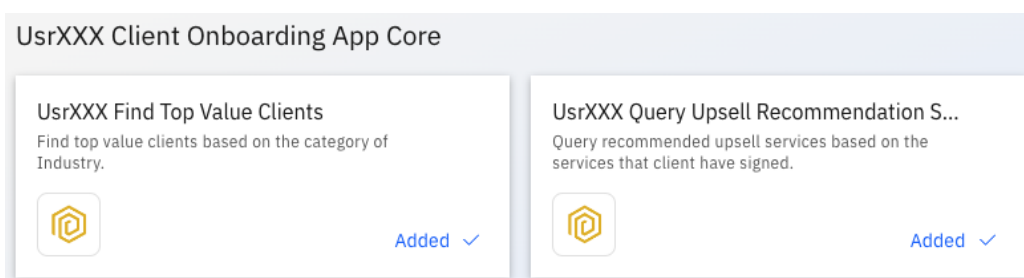
You should now see the *Added check mark* on your Skill.



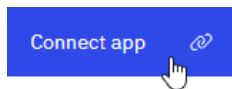
_7. Repeat the above step for the *UsrXXX Query Upsell Recommendation Services* Skill.



Make sure all Skills have the *Added check mark*.

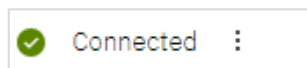


_8. In the top-right corner, click **Connect app** to specify the security credentials for your Skills.

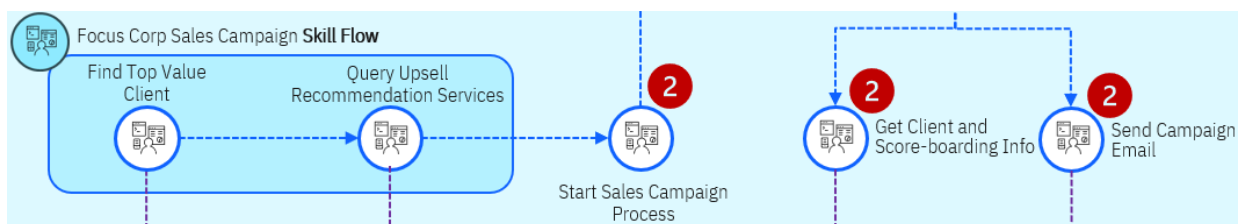


_9. For *username* and *password* enter your CP4BA Credentials (see [1.4.1 Systems, Lab Files, and Credentials](#)).

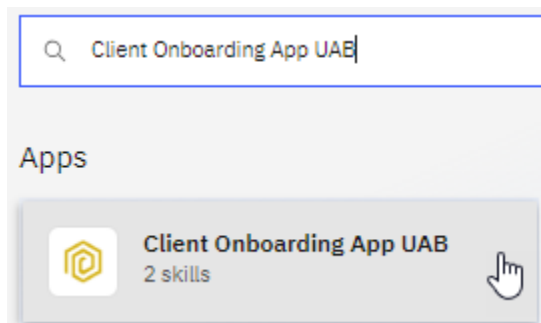
You should now see Connected in the top-right corner.



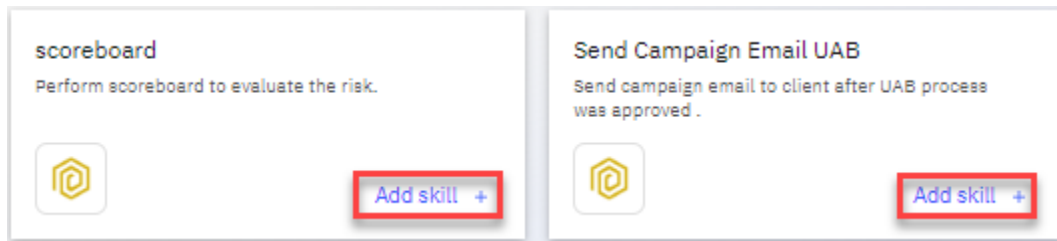
3.1.2 Add the Imported Skills – Category 2



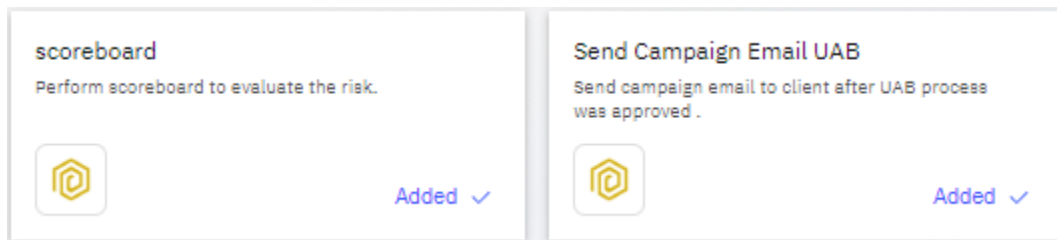
_1. Locate the **Client Onboarding App UAB** and **click on it** to open.



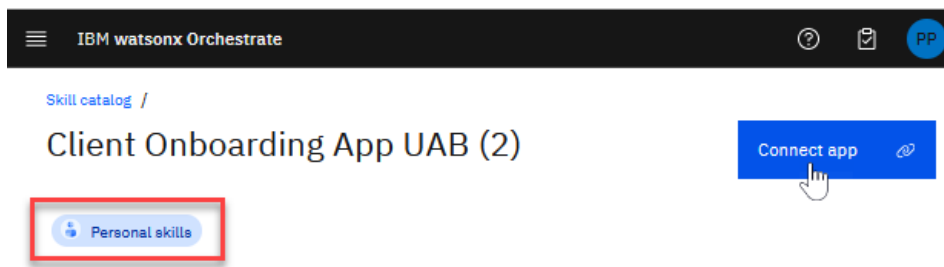
_2. Click **Add Skill +** on both skills



You should now see the *added checkmark* for both skills.

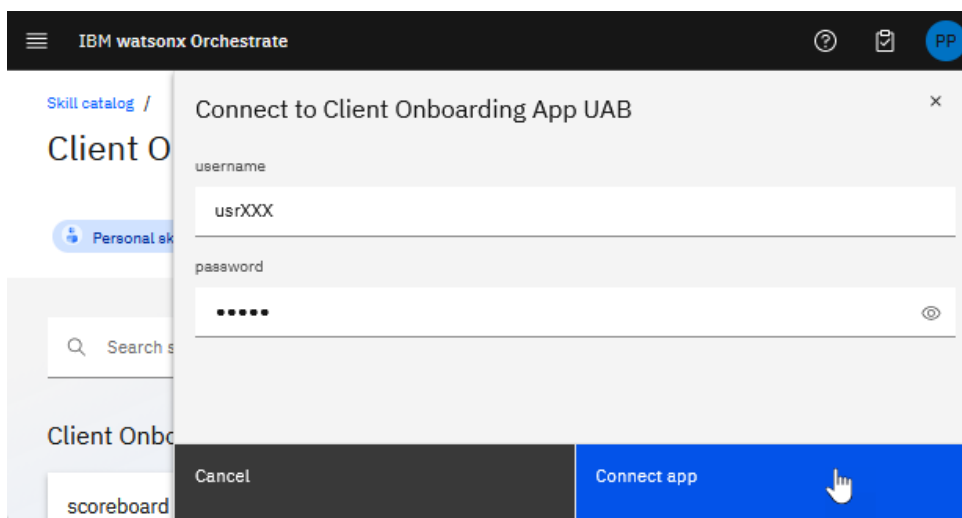


_3. In the top-right corner, click **Connect app** to specify the security credentials for your Skills.

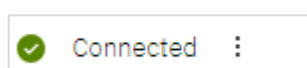


Note. In the screenshot above, note the red border outlining the Personal skills set. In the previous step, you added the two skills from the Client Onboarding App UAB to your personal skill set. Now, as they are part of your personal skill set, you will need to connect them using your own personal credentials.

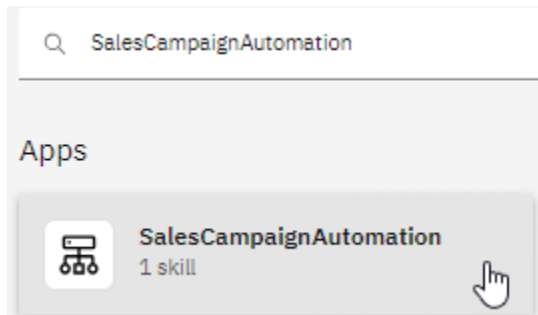
_4. For *username* and *password* enter your CP4BA Credentials (see [1.4.1 Systems, Lab Files, and Credentials](#)).



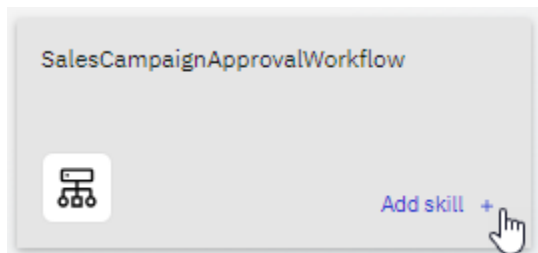
You should now see Connected in the top-right corner.



_5. Locate the **SalesCampaignAutomation** and **click on it** to open.



_6. Click **Add Skill +**

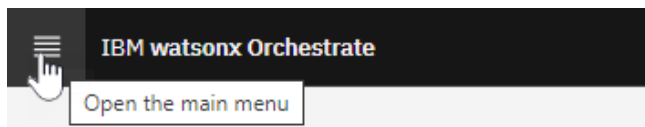


Make sure you see

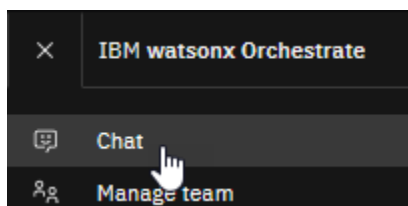
Added ✓

3.2 Test the Solution As Is

_1. Click the **Hamburger** menu.



_2. Click **Chat**




_3. Enter the phrase **Find top value clients** and click **Send**

Note that the *Find Top Value Client* Skill was activated and now requests your input!



_4. Select **Finance** for *industry*; for *number_of_customers_returned*, enter **2** and click **Apply**.

Sure. Just complete this form and I'll use the UstrXXX Find Top Value Clients skill for you.

 UstrXXX Find Top Value Clients

industry *

Finance

The industry could be Finance, Telecom, Healthcare, Federal or Insurance


number_of_customers_returned *

2

How many top value clients you want to retrieve

Cancel Apply

_5. In the output returned, select **Automation Elite**, right-click, and choose **Copy**.

 UstrXXX Find Top Value Clients

Top value client list that you can consider to have sales campaign

Search Download Filter

Client Name	Client Email	Country	Industry	Annual Revenue
Automation Elite		USA	Finance	50000000
Bank of Jakku		Australia	Finance	43892214

Items per page

Copy
Select All
Print Selection...
Take Screenshot
Search Google for "Automation Elit..."

Suggested Enhancement: Suppose you selected Automation Elite as the target customer. You must copy the customer's name to the clipboard and supply it to the *Query Upsell Recommendation Services*.

_6. Click the next best action **UsrXXX Query Upsell Recommendation Services**.

Select the next best action

UsrXXX Query Upsell Recommendation Services

Note. In case you wondered how wxO knew the next best action is... You can annotate the OpenAPI file to specify the next action.

```
"/queryUpsellServices" : {
  "summary" : "queryUpsellServices",
  "post" : {
    "operationId" : "queryUpsellServicesUsrXXX",
    "x-ibm-next-actions":
    [{"skill_id":"watsonx-Client-Onboarding-Skills-UsrXXX__tipSnapshot__startUpsellRequestUsrXXX",
    "utterance":"UsrXXX Start Upsell Approval Request"}],
```

Suggested Enhancement: It would be nice if the *Query Upsell Recommendation Services* Skill were invoked automatically since we always want to find out what upsell services apply to the top-value customer to whom we want to send the upsell offer!

_7. Paste **Automation Elite** for ClientName and click **Apply**.

Sure. Just complete this form and I'll use the UsrXXX Query Upsell Recommendation Services skill for you.



UsrXXX Query Upsell Recommendation Services

ClientName *

Automation Elite

Client name you want to query upsell services.


Cancel

Apply

Suggested Enhancement: The selected customer name should have been automatically passed to the *Query Upsell Recommendation Services* Skill, so we do not need to copy and paste!

_8. You will see the following response suggesting "Corporate Credit Card" and "Fraud Protection" as Upsell Services for the Client "Automation Elite."

OK


 UsrXXX Query Upsell Recommendation Services

ClientName
 Automation Elite

Industry
 Finance

UpsellServices ^

UpsellServices
 Corporate Credit Card 🗑️

UpsellServices
 Fraud Protection 🗑️

Add +

3.3 Enhance User Experience with a Skill Flow

Let's review the usability enhancements we have identified when testing the As-Is Solution:

Suggested Enhancement
Suppose you selected Automation Elite as the target customer. You must copy the customer's name to the clipboard and supply it to the <i>Query Upsell Recommendation Services</i> .
It would be nice if the <i>Query Upsell Recommendation Services</i> Skill was invoked automatically since we always want to find out what upsell services apply to the top-value customer to whom we want to send the upsell offer!
Start Upsell Approval Request should be started automatically since this would be the next logical action.

To address the user experience enhancements we have just identified, we will create a Skill Flow combining two Skills: *Find Top Value Clients* and *Query Upsell Recommendation Services*. After finding top-value clients, Focus Corp.'s sales professional preparing an upsell campaign would next look for upsell recommendations for the client he selects.

Also, after the completion, the Skill Flow will automatically invoke the next logical Skill (*Start Sales Campaign Process*) and pass the Client name as input.

Finally, Skill Flow provides parameter mapping capabilities that address the parameter copy-and-paste issues we have identified.

The Figure below illustrates how we implemented the usability enhancements by leveraging Skill Flow parameter passing and Skill orchestration capabilities.

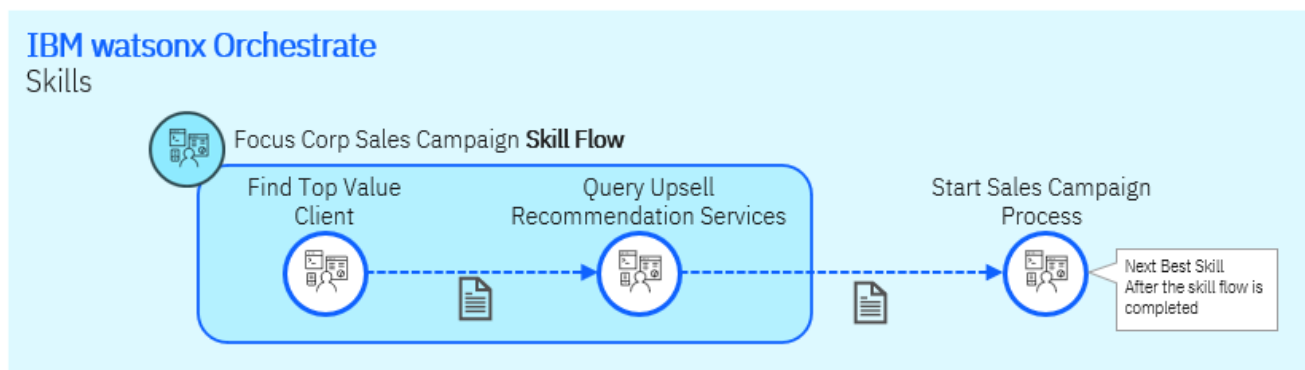
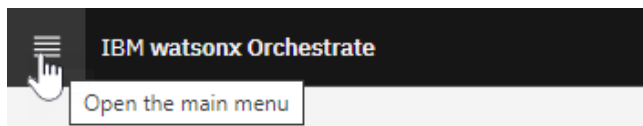


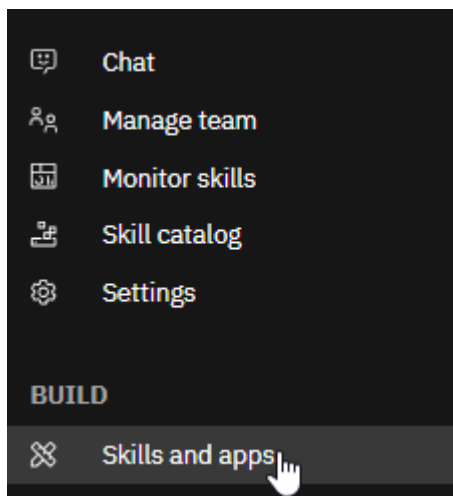
Figure 4. Skill Flow: Automated Skill orchestration and parameter passing

3.3.1 Create Skill Flow

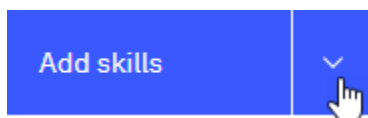
_1. Click the **Hamburger** menu.



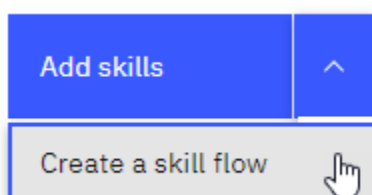
_2. Click **Skills and apps**.



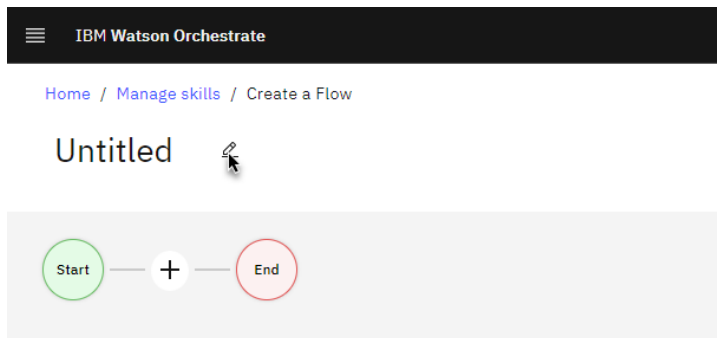
_3. In the top-right, click the **dropdown** in **Add Skills**.



_4. Click **Create a skill flow**.



_5. Click the **pencil icon**.



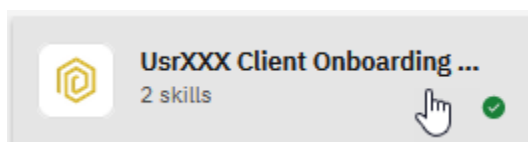
_6. For *Name*, enter **UsrXXX Focus Corp Sales Campaign Skill Flow** (remember to replace XXX with your CP4BA Credentials user id) and click **Save**.

 The screenshot shows a dialog box titled 'Edit Skill flow details' with a close button (X) in the top right. Inside the dialog, there's a 'Preview' section showing a card with the text 'UsrXXX Focus Corp Sales Campaign Skill Flow' and a small icon. Below the preview, there's a 'Name *' field containing 'UsrXXX Focus Corp Sales Campaign Skill Flow'. Underneath is a 'Description' field with a character count '0/100'. At the bottom, there are two buttons: 'Cancel' and 'Save'. A hand cursor is pointing at the 'Save' button.

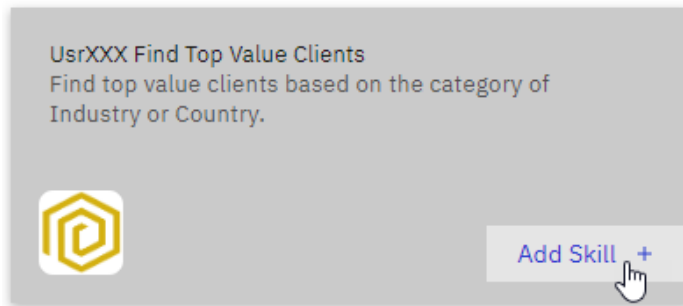
_7. Click the **+ icon**.



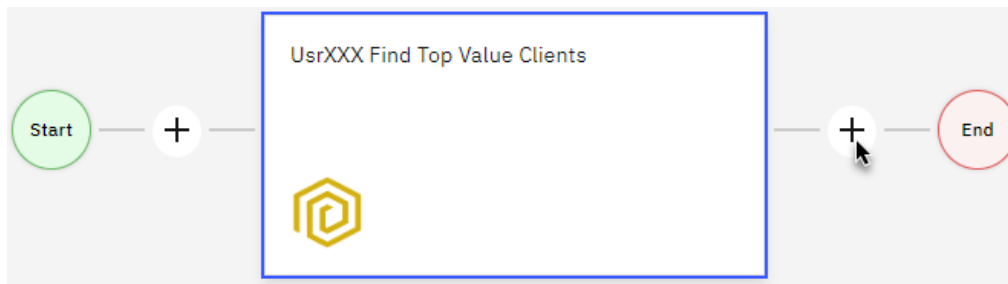
_8. Find the App you created (UsrXXX Client Onboarding App Core – remember XXX is your user id) and **click it**.



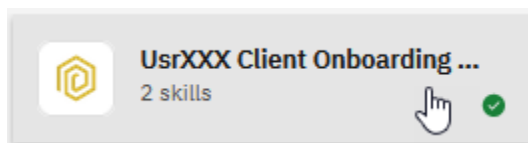
_9. On *UsrXXX Find Top Value Clients*, click **Add Skill +**



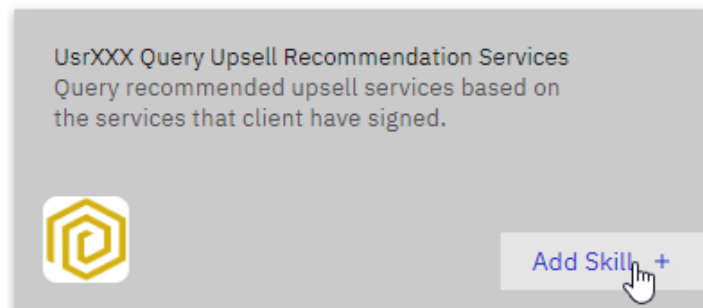
_10. Click the right **+** icon.



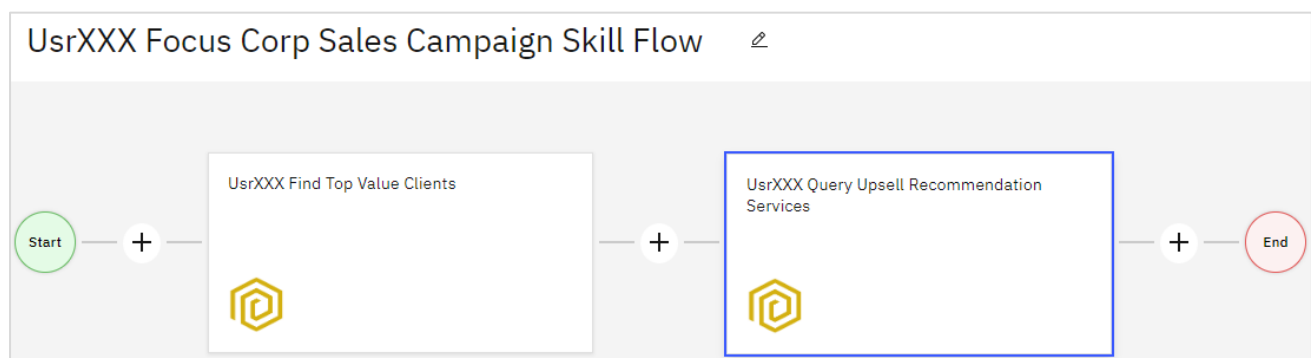
_11. Find the App you created (*UsrXXX Client Onboarding App Core* – remember XXX is your user id) and **click it**.



_12. On *UsrXXX Query Upsell Recommendation Services*, click **Add Skill +**



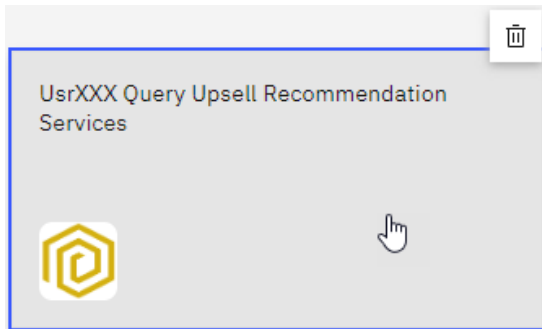
Your Skill Flow should look similar to this:




3.3.2 Configure Skill Flow

The *Find Top Value Clients* skill will return a list of top-value clients, including additional data for each client. However, the *Query Upsell Recommendation Services* skill requires only a Client Name as input. We will need to map the Client Name from the output of the *Find Top Value Clients* skill to the input of the *Query Upsell Recommendation Services* skill.


_1. Click the **UsrXXX Query Upsell Recommendation Services** Skill



_2. In the *Input* Tab, click on the **ClientName** entry field.




UsrXXX Client Onboarding App
 Query recommended upsell services based on the services that client have signed.

☐ Repeat this skill

☒ **Input** ☐ Output [Clear all mappings](#)  [Generate mapping suggestions](#)


☐ Hide this form from the user

ClientName


_3. Click **UsrXXX Find Top Value Clients**

ClientNme

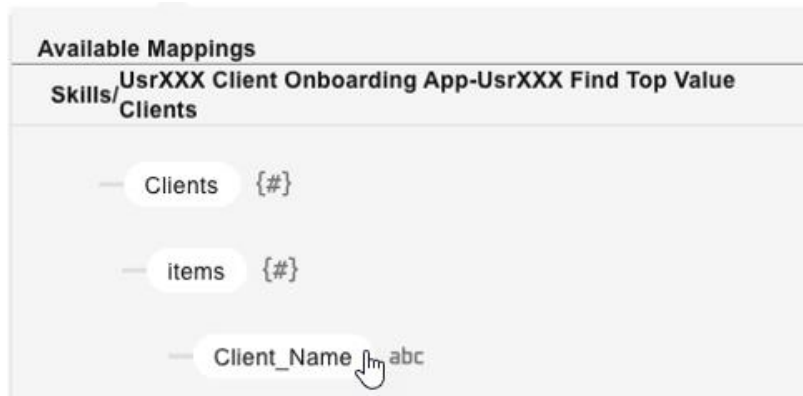


Available Mappings

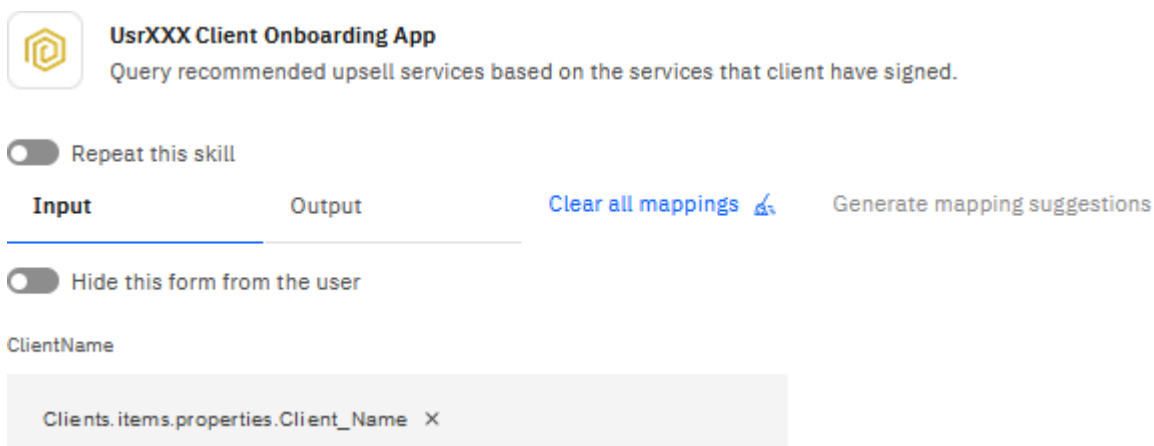
Skills/

UsrXXX Find Top Value Clients


_4. Please scroll down to find **Client_Name** and select it.



You should now see *Client_Name* from *Find Top Value Clients* Skill mapped as input to Query Upsell Recommendation Services.



Suggested Enhancement: Note that this will eliminate the issue we encountered: The need to copy and paste the client name.

Client Name	Client Email	Country	Industry	Annual Revenue
Automation Elite	june.marie@example.com	USA	Finance	50000000
Bank of Jakku	jim.high@example.com	Australia	Finance	43892214

The parameter mapping feature will automatically select the client name from the *Find Top Value Clients* Skill and pass it to the *Query Upsell Recommendation Services* Skill.

3.3.3 Enhance the Skill

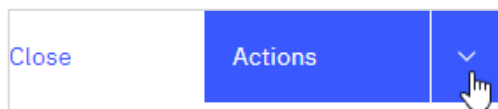
You will now provide natural language phrases to launch the skill flow and define the next best Skill.

For the next best Skill, you can select the Upsell Approval Workflow skill that we have already prebuilt for you. After this Skill is completed, the next best Skill (Approval Workflow) will appear as suggestions to the users.

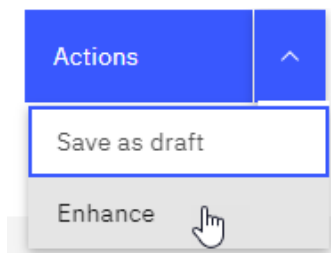
3.3.3.1 Add Phrase to Launch the Skill

_1. In the top-right, click the **dropdown** in **Actions**.

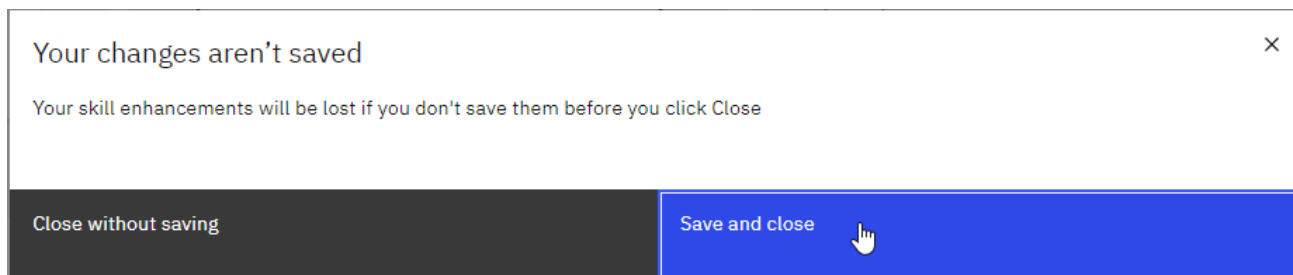
Note: You may have to scroll up to the top to see the Actions button



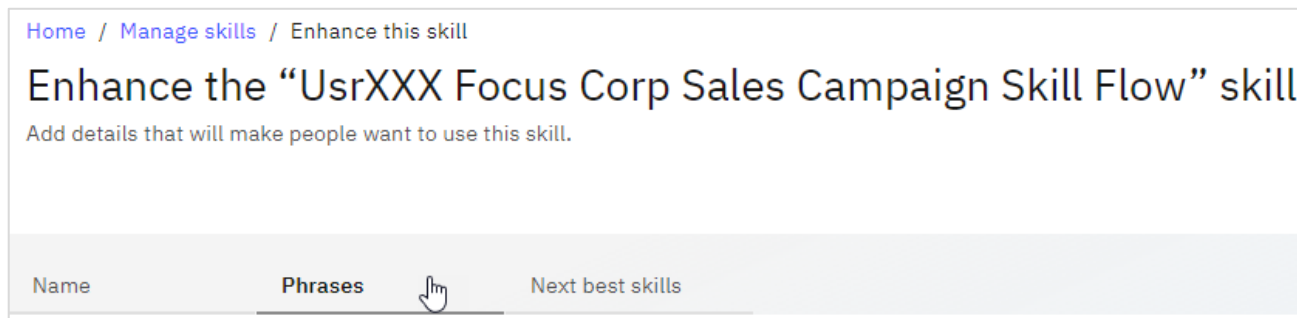
_2. Click **Enhance**.



_3. Click **Save and close**.



_4. Select **Phrases** tab



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

_5. Enter **start sales campaign** for phrase.

Note: If you want to enter multiple phrases, press enter after entering one phrase, then you can add another one.

Name	Phrases	Next best skills
Phrases are the text your user types in the chat bar to find and use a skill.		
	<div>UsrXXX Focus Corp Sales Campaign Skill Flow</div> <div>start sales campaign</div>	
<div>Auto-generate phrases (Experimental)</div>		

Note: Optionally, you can test the new experimental feature that auto-generates prompts for you! To do this, click **Auto-generate phrases (Experimental)** button.

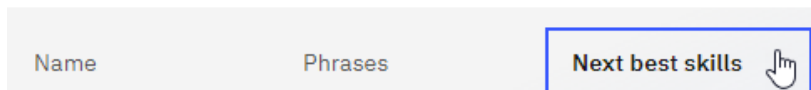
Name	Phrases	Next best skills
Phrases are the text your user types in the chat box to find and use a skill.		
	<div>UsrXXX Focus Corp Sales Campaign Skill Flow</div> <div>Sales Campaign</div>	
<div>Auto-generate phrases (Experimental)</div>		

In addition to the phrase you added, you should now see the autogenerated phrases!

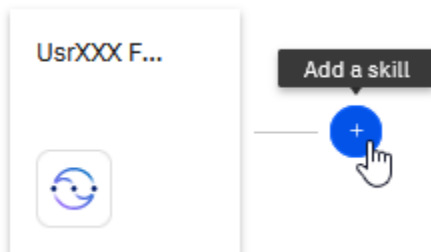
Name	Phrases	Next best skills
Phrases are the text your user types in the chat box to find and use a skill.		
	<div>UsrXXX Focus Corp Sales Campaign Skill Flow</div> <div>How to use the USRXXX Focus Corp Sales Campaign skill flow Usr</div> <div>How can I get the skill flow for UsrXXX Focus Corp Sales Campaign</div> <div>Can you help me build a flow to source talent for a sales campaign</div> <div>UsrXXX Focus Corp Sales Campaign Skill Flow This is an example</div> <div>usrXXX Focus Corp Sales Campaign Skill FlowusrXXX Focus Corp Sales Campaign Skill</div> <div>Please show USRXXX Focus Corp Skill Flow</div> <div>Sales Campaign</div>	

3.3.3.2 Add Next Best Skill

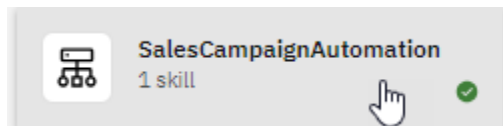
_1. Click the **Next best skills** tab.



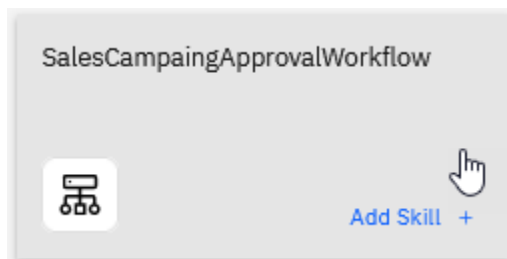
_2. Add a skill + icon



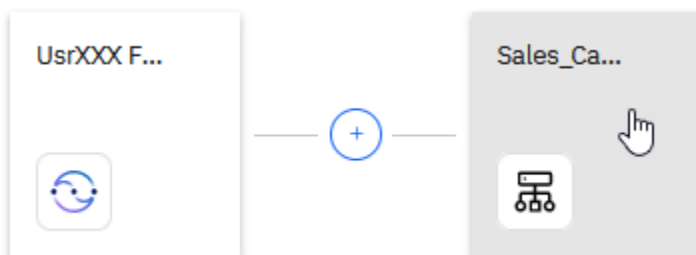
_3. Select **SalesCampaignAutomation**



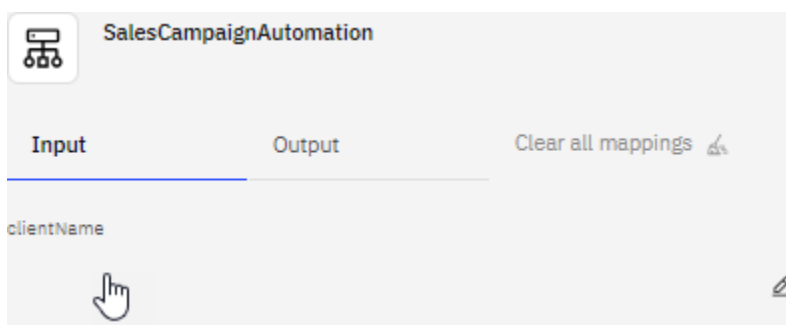
_4. Click **Add Skill +**



_5. Click **Sales_Ca...**



_6. Click under the **clientName** label.




_7. Click **UsrXXX Focus Corp Sales Campaign Skill Flow**


Available Mappings
Skills /
UsrXXX Focus Corp Sales Campaign Skill Flow

_8. Click **Client_Name**


Available Mappings
Skills/Skill flows-UsrXXX Focus Corp Sales Campaign Skill Flow
Skill Output {#} — Industry abc — Client_Name abc — UpsellServices {#}

Make sure the mapping is like this:


SalesCampaignAutomation

Input	Output	Clear all mappings 
clientName		
Client_Name x		

_9. Click **below UpsellServices**

Input	Output	Clear all mappings 
Client_Name		
Client_Name x		
UpsellServices		

_10. Click **UsrXXX Focus Corp Sales Campaign Skill Flow**

Available Mappings
Skills /
UsrXXX Focus Corp Sales Campaign Skill Flow

_11. Click **UpsellServices**

Available Mappings
Skills/Skill flows-UsrXXX Focus Corp Sales Campaign Skill Flow
Skill Output {#}
Industry abc
Client_Name abc
UpsellServices {#}


Make sure the mapping is like this:

SalesCampaignAutomation	
Input	Output
clientName	
Client_Name x	
upsellServices	
UpsellServices x	

_12. Click **Publish**

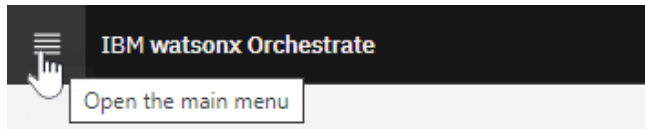
Cancel	Publish	Save as draft
--------	---------	---------------

You should see a confirmation message:

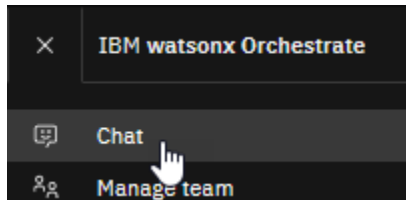
<div>  Published successful × </div> <div> Published skill UsrXXX Focus Corp Sales Campaign Skill Flow. </div> <div> 16:05:23 </div>

3.4 Add Skill Flow from the Skill Catalog

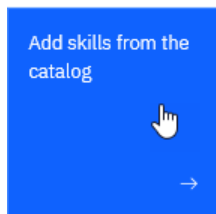
_1. Click the **Hamburger** menu.



_2. Click **Chat**

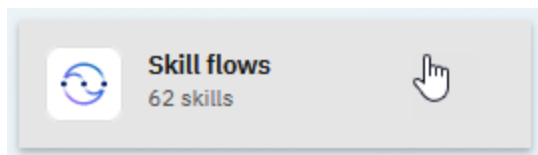


_3. Click **Add skills from the catalog**

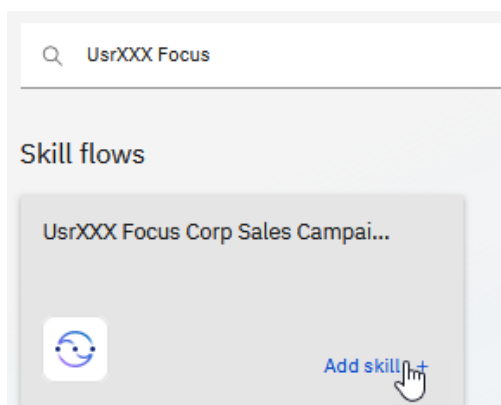


You should now see all the Apps and Skill Flows (Composite) available in the Skills Catalog.

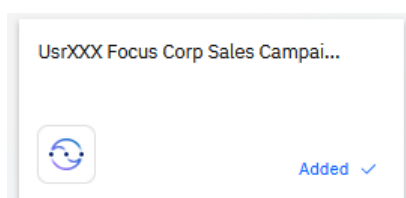
_4. Locate the **Skill flows** tile and **click on it** to open.



_5. Locate *UsrXXX Focus Corp Sales Campaign* Skill Flow and click **Add Skill +**



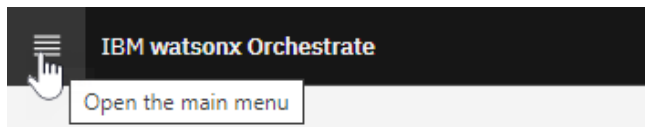
You should now see the *Added check mark* on your Skill.



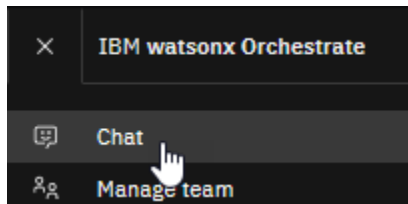
3.5 Test the Solution with Skill Flow

3.5.1 Test 1 - Upsell Offer is Auto-approved

_1. Click the **Hamburger** menu.



_2. Click **Chat**



_3. Enter the **start sales campaign** phrase and press **Enter**.




_4. Select **Finance** for *industry*; for *number_of_customers_returned*, enter **2** and click **Apply**.

 A screenshot of a form completion screen. At the top, it says "You just need to complete this form first." Below this is a header for "UsrXXX Focus Corp Sales Campaign Skill Flow" with a circular icon. The form has two sections: "industry" with a dropdown menu showing "Finance" and a note "The industry could be Finance, Telecom, Healthcare, Federal or Insurance"; and "number_of_customers_returned" with a numeric input field showing "2" and a note "How many top value clients you want to retrieve". At the bottom are "Cancel" and "Apply" buttons.

_5. Use the radio button to select **Automation Elite** and click **Apply**.

OK


 UsrXXX Focus Corp Sales Campaign Skill Flow

Top value client list that you can consider to have sales campaign

Search, Download, Print icons


Client Name	Client Email	Country	Industry	Annual Revenue	Services Requested
<input checked="" type="radio"/> Automation Elite	june.marie@example.com	USA	Finance	50000000	External Audit;Tax Consultation
<input type="radio"/> Legacy Consulting	werner.foss@example.com	Germany	Finance	45000000	External Audit;Tax Consultation;Fraud Protection


Items per page: 5 ▾ 1 – 2 of 2 items 1 ▾ of 1 < >

Cancel Apply 

Note: The action started the Skill Flow, which launched the *UsrXXX Query Upsell Recommendation Services* Skill. It will also use the parameter mapping we defined to prefill the ClientName field needed to launch the next Skill in the Skill Flow.

_6. Click **Apply** to confirm the parameter mapping.


 You just need to complete this form first.

 UsrXXX Focus Corp Sales Campaign Skill Flow

ClientName

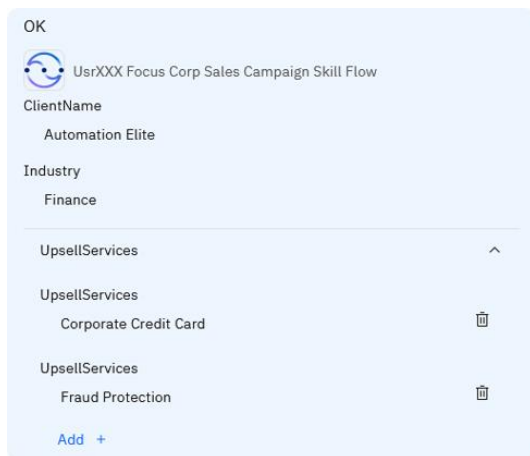
Automation Elite

Client name you want to query upsell services.

Cancel Apply 

_7. You should now see the recommended upsell Services.

Note: The ClientName was automatically copied to the next Skill in the Skill Flow. You did not need to copy and paste! Also, note the upsell services returned by the *Query Upsell Recommendation Services* skill: Corporate Credit Card and Fraud Protection.



OK

UsrXXX Focus Corp Sales Campaign Skill Flow

ClientName
Automation Elite

Industry
Finance

UpsellServices ^

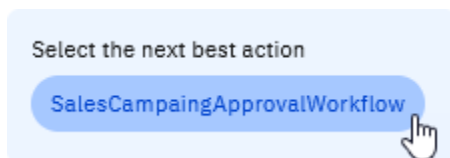
UpsellServices
Corporate Credit Card

UpsellServices
Fraud Protection

Add +

_8. Click the **SalesCampaignApprovalWorkflow** button.

Note: This is the Skill you selected as the recommended next best Skill after completing the Skill Flow.



Select the next best action


SalesCampaignApprovalWorkflow

_9. Click **Apply** to launch the Start Upsell Approval Request.

Note: The wxO automatically filled the output of the previous skill (Client name, recommended upsell services) into the input fields for this skill. wxO can do this automatically if the previous skill's output matches the next skill's input.

If you like, you could, at this step, also change (add or remove) the upsell Services that the Query Upsell Recommendations Skill recommends.

You just need to complete this form first.

 SalesCampaignApprovalWorkflow

clientName

Automation Elite

upsellServices

Corporate Credit Card

Fraud Protection

Add +

Cancel Apply


You should see a message that wxO is working on your request...



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

_10. **Wait** until the "Working..." message disappears and the "Here are the results..." pane appears.

Here are the results of the SalesCampaignApprovalWorkflow skill.

 SalesCampaignApprovalWorkflow

☒ approved **1**

☐ autoRejected



explanation **2**

Auto approved. Reason: There is a low risk of payment default, and the confidence level from the predictive score is above 95.

clientName

Automation Elite **3**

upsellServices **4**

upsellServices	
Corporate Credit Card	
Fraud Protection	

[Add +](#)

sendEmailStatus

Campaign email has been send to wodemmo@example.com successfully. **5**

Let's examine the information returned by the Workflow:

- 1) The upsell offer was auto approved.
- 2) The reason for the approval was that the Automation Elite customer is not at high risk of default, and the confidence that the risk is low is high (99.9557).
- 3) The client was Automation Elite.
- 4) The upsell services were approved.
- 5) Confirmation that the upsell offer email was sent to the customer.

3.5.2 Test 2 - Upsell Offer Requires Manager's Approval


_1. Enter the **start sales campaign** phrase and press **Enter**.



×
➤

_2. Select **Finance** for *industry*; for *number_of_customers_returned*, enter **3** and click **Apply**.

You just need to complete this form first.

 usr200 Focus Corp Sales Campaign Skill Flow

industry

Finance

The industry could be Finance, Telecom, Healthcare, Federal or Insurance

number_of_customers_returned

3

How many top value clients you want to retrieve

Cancel Apply

_3. Use the radio button to select **Legacy Consulting** and click **Apply**.

Top value client list that you can consider to have sales campaign

Search Download Filter

Client Name	Client Email	Country	Industry	Annual Revenue	Services Requested
<input type="radio"/> Automation Elite	june.marie@example.com	USA	Finance	50000000	External Audit;Tax Consultation
<input type="radio"/> Bank of Jakku	jim.high@example.com	Australia	Finance	43892214	Corporate Credit Card;External Audit;Tax Consultation
<input checked="" type="radio"/> Legacy Consulting	werner.foss@example.com	Germany	Finance	35000000	External Audit;Tax Consultation;Fraud Protection


Items per page: 5 1 – 3 of 3 items 1 of 1

Cancel Apply

Note: The action started the Skill Flow, which launched the *UsrXXX Query Upsell Recommendation Services* Skill. It will also use the parameter mapping we defined to prefill the ClientName field needed to launch the next Skill in the Skill Flow.

_4. Click **Apply** to confirm the parameter mapping.

You just need to complete this form first.

 UsrXXX Focus Corp Sales Campaign Skill Flow

ClientName

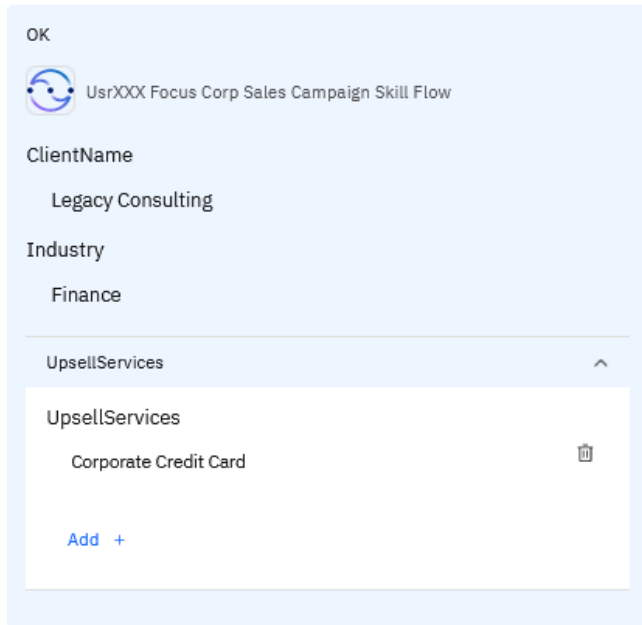
Legacy Consulting

Client name you want to query upsell services.

Cancel Apply

_5. You should now see the recommended upsell Services.

Note: The ClientName was automatically copied to the next Skill in the Skill Flow. You did not need to copy and paste! Also, note the upsell service returned by the *Query Upsell Recommendation Services* skill: Corporate Credit.



OK

UsrXXX Focus Corp Sales Campaign Skill Flow

ClientName
Legacy Consulting

Industry
Finance

UpsellServices ^

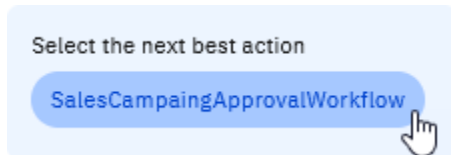
UpsellServices

Corporate Credit Card

Add +

_6. Click the **SalesCampaignApprovalWorkflow** button.

Note: This is the Skill you selected as the recommended next best Skill after completing the Skill Flow.



Select the next best action


SalesCampaignApprovalWorkflow

_7. Click **Apply** to launch the Start Upsell Approval Request.

Note: The wxO automatically filled the output of the previous Skill (Client Name, Recommended Upsell Services) into the input fields of this Skill. wxO can do this automatically if the previous Skill's output matches the next Skill's input.

If you like, you could, at this step, also change (add or remove) the upsell Services that the Query Upsell Recommendations Skill recommends.

You just need to complete this form first.

 SalesCampaignApprovalWorkflow

clientName

Legacy Consulting

upsellServices

Corporate Credit Card

Add +

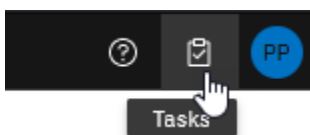
Cancel Apply

You should see a message that wxO is working on your request...



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

_8. Click **Tasks** icon



_9. Click **Manager Approval** to complete the approval task in the SalesCampaignApprovalWorkflow

IBM watsonx Orchestrate

Tasks Workflows

Search for tasks...

Filter by: On track (1) Completed (14) Claimed Unclaimed

Task name	Priority	Status	Due on	Created on	Owner
Manager Approval	Medium	On track		Mar 25, 2024, 11:18 a.m.	PP

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

_10. Select the **approved** checkbox in the form, then click the **+** icon to add **Fraud Protection** upsell service.

Activity

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

explanation

Manager approval is required. Reason: There is a low risk of payment default, but the confidence level from the predictive score is bel ...

upsellServices

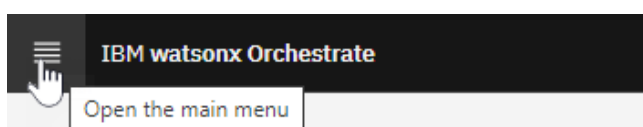
Corporate Credit Card	
Fraud Protection	

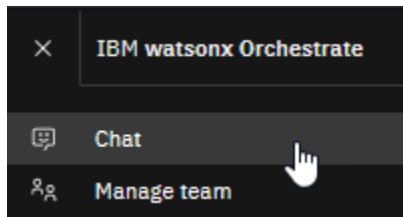
segment

_11. Scroll to the bottom of the form and click **Submit**.

Save Submit

_12. Click the **Hamburger** menu.



_13. Click **Chat**

You should now see the "Here are the results..." pane appears.

 A screenshot of the results pane for the 'SalesCampaignApprovalWorkflow' skill. The pane has a light blue background and contains the following information:

- Header: "Here are the results of the SalesCampaignApprovalWorkflow skill."
- Workflow icon and name: "SalesCampaignApprovalWorkflow"
- Approval status: A checked checkbox labeled "approved" (callout 1) and an unchecked checkbox labeled "autoRejected".
- Explanation: "explanation" (callout 2) followed by the text "Manager approval is required. Reason: There is a low risk of payment default, but the confidence level from the predictive score is below 95."
- Client name: "clientName" (callout 3) followed by "Legacy Consulting".
- Upsell services: A section titled "upsellServices" (callout 4) containing a list of services: "upsellServices" (with "Corporate Credit Card" below it) and "upsellServices" (with "Fraud Protection" below it). Each service has a trash icon to its right. At the bottom of the list is a blue "Add +" link.
- Email status: "sendEmailStatus" (callout 5) followed by the text "Campaign email has been send to wodemo@example.com successfully."

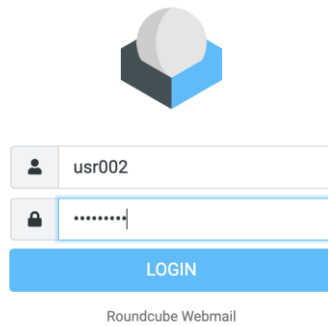
Let's examine the information returned by the Workflow:

- 1) A manager approved the upsell offer.
- 2) A manager's approval was required because although there was a low risk of payment default, the confidence level from the predictive score was low (below 95).
- 3) The client was Legacy Consulting.
- 4) The upsell services were approved.
- 5) Confirmation that the upsell offer email was sent to the customer.

3.5.3 Verify the Upsell Offer Email is in the Client's Mailbox.

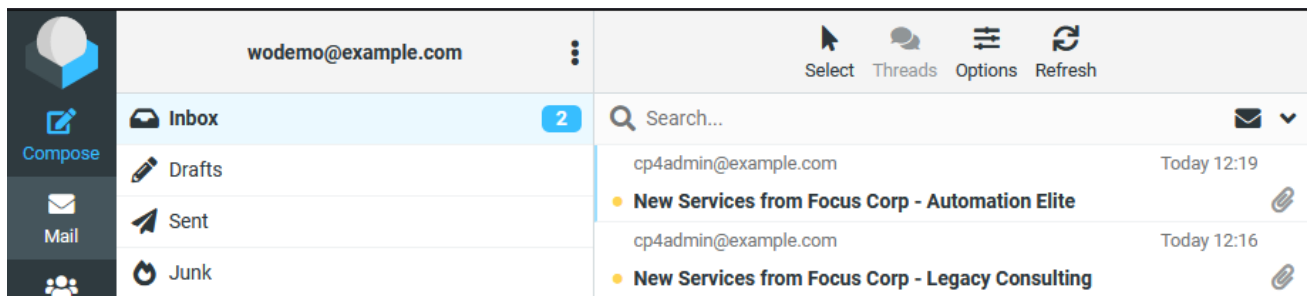
- _1. Open the **Local Mail Client** in your browser (see [1.4.1 Systems, Lab Files, and Credentials](#))

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

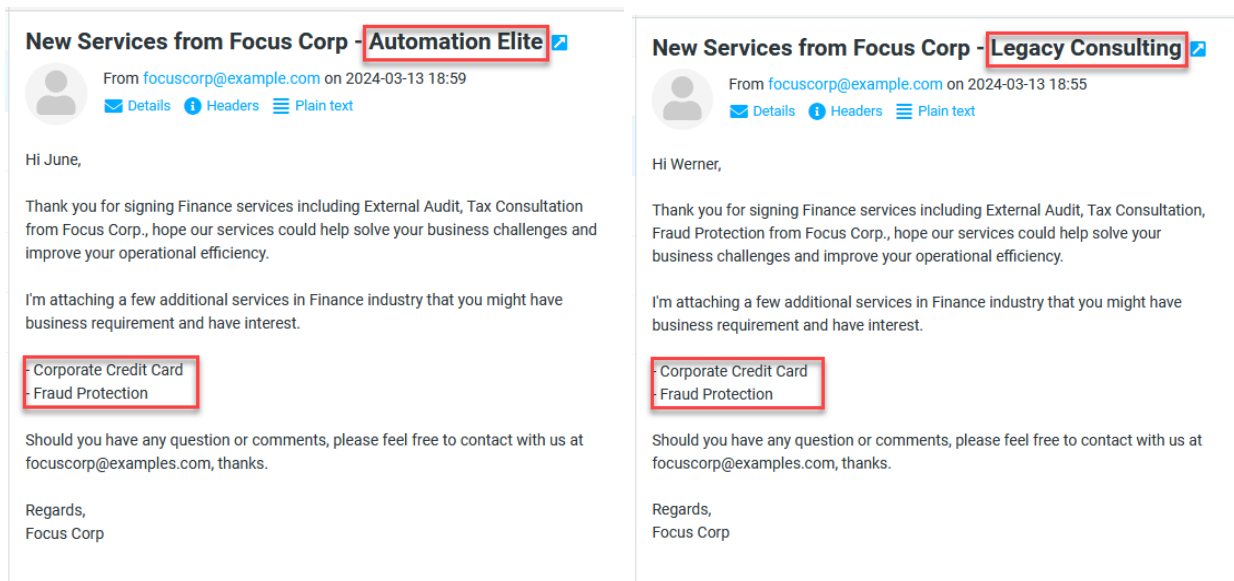


The login interface for Roundcube Webmail. It features a blue and grey logo at the top. Below it are two input fields: the first for the username 'usr002' and the second for a password represented by dots. A blue 'LOGIN' button is positioned below the password field. The text 'Roundcube Webmail' is centered at the bottom.

_3. You should now see two emails.



_4. Note that the emails are customized for each client.



Congratulations on completing the lab!

Appendix A. Overview of the "Administrator" Role

Managing teams

Teams are composed of roles: Admin, Builder, and User. Every team needs at least one Admin who first created the team.

By default, when you start using IBM watsonx Orchestrate™, you are the admin of your team of one. You need to invite a user into your team to create a team. You can invite as many team members as you have seats in your license. Of those seats, you can assign any user any of the three roles, but each role has a purpose that might limit what a user can see or do.

Three key activities:

1. Adding Users

IBM Watson Orchestrate

Team Skills

Usage Skill sets **Members**

Team members (12)
These members have access to all apps and skills added to the team.

Name
ThomasSchulze@de.ibm.com
JYOTSNA KARUNGANNI NARAYANAN karungan@us.ibm.com
PAUL PACHOLSKI pacholsk@ca.ibm.com
Wohackathon2023@ibm.com
Olaf.Hahn1@de.ibm.com

Add members

Add members who can work with this team.

1 seat remain (1/13)

Add one or more email addresses

valid@emial.com



Press Enter after each address.

Add member +

No members
Add members to your team by entering their email addresses.

Cancel Add

2. Removing users

 IBM Watson Orchestrate 


Team Skills



! 1 seat remain (1/13)

Usage Skill sets **Members**

Team members (12)

These members have access to all apps and skills added to the team.

 [Add members](#) +

Name	Role	Status	
 ThomasSchulze@de.ibm.com	Builder	Active	<div>Remove member </div>

3. Adding Roles to Users

The screenshot shows the IBM Watson Orchestrate interface. On the left, the 'Team Skills' page has tabs for 'Usage', 'Skill sets', and 'Members'. The 'Members' tab is active, showing a list of 12 team members. On the right, the 'Edit member' sidebar is open for ThomasSchulze@de.ibm.com. The sidebar shows the member's email, status (Active), and a role dropdown menu. The dropdown menu is open, showing three options: 'Builder' (Can build skills that perform tasks), 'Admin' (Can add or remove members who can use this team skill set), and 'User' (Can use this team skill set). A red box highlights the 'Builder' option, and a mouse cursor is pointing at the 'Admin' option.

Name	Email
ThomasSchulze@de.ibm.com	ThomasSchulze@de.ibm.com
JYOTSNA KARUNGANNI NARAYANAN	karungan@us.ibm.com
PAUL PACHOLSKI	pacholsk@ca.ibm.com
Mithun Katti	mithun.katti@ibm.com
ZHONG TAO GAO	gaozt@cn.ibm.com
Sundeep.Anne@ibm.com	Sundeep.Anne@ibm.com
focususr090@gmail.com	focususr090@gmail.com
marco.crepaldi@ibm.com	marco.crepaldi@ibm.com
Jürgen Lukas	jlukas@de.ibm.com
Olaf.Hahn@de.ibm.com	Olaf.Hahn@de.ibm.com

Team Skills

Usage Skill sets **Members**

Team members (12)
These members have access to all apps and skills added to the team.

Name

ThomasSchulze@de.ibm.com

JYOTSNA KARUNGANNI NARAYANAN
karungan@us.ibm.com

PAUL PACHOLSKI
pacholsk@ca.ibm.com

Mithun Katti
mithun.katti@ibm.com

ZHONG TAO GAO
gaozt@cn.ibm.com

Sundeep.Anne@ibm.com

focususr090@gmail.com

marco.crepaldi@ibm.com

Jürgen Lukas
jlukas@de.ibm.com

Olaf.Hahn@de.ibm.com

Edit member

ThomasSchulze@de.ibm.com

Email
ThomasSchulze@de.ibm.com

Status
Active

Role

Builder
Can build skills that perform tasks

Admin
Can add or remove members who can use this team skill set

User
Can use this team skill set

Cancel Save

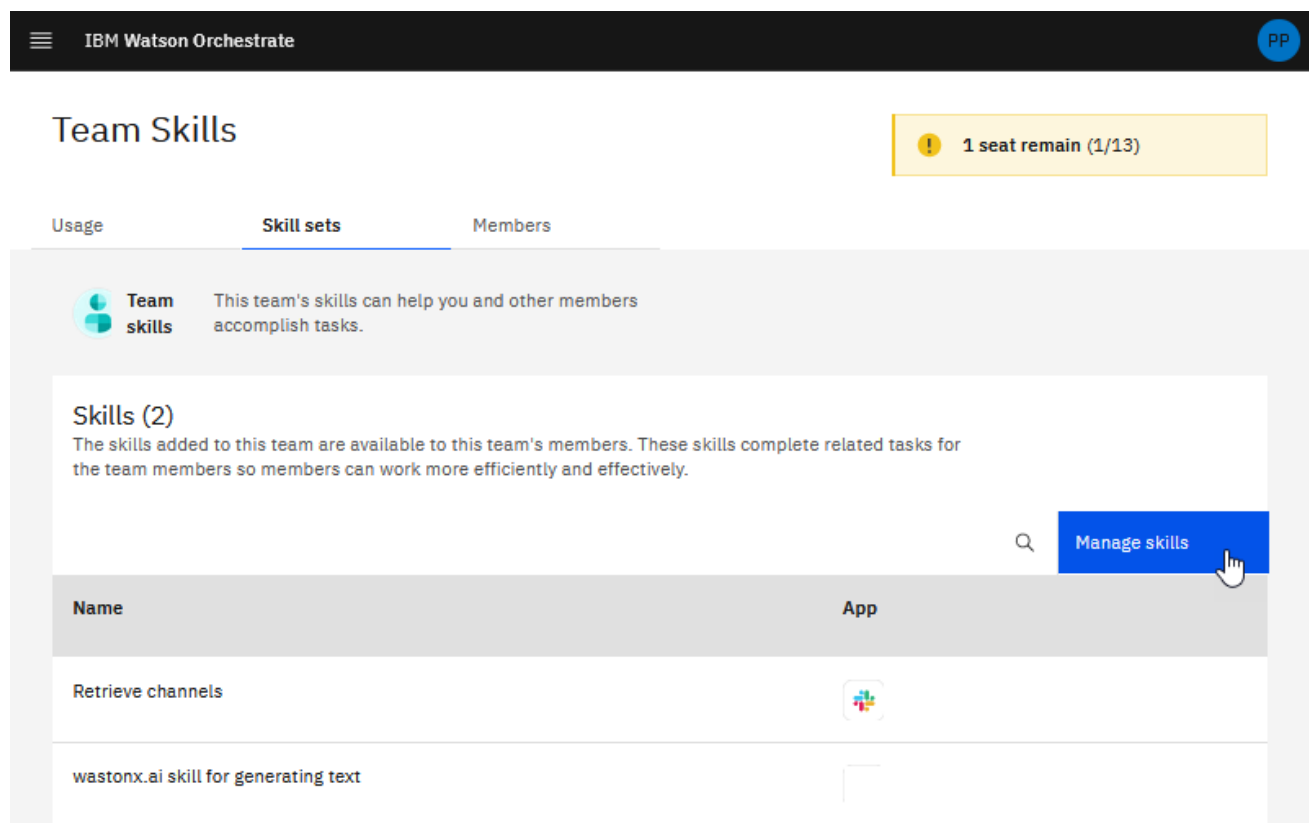
Managing team skill sets

Fundamentally, there isn't a big difference between your team skill set and your personal skill set. But only with the Admin role, you can add, use, and remove skills to the team skill set like you do with your personal skill set. For more information about roles and access, see [Adding team members and defining roles](#).

Once a skill is made available on the team skill set, anyone on a team can use this skill. To use a team skill set's Skill, the user must click the Team skill set tab on the IBM watsonx Orchestrate home page and invoke any available skills the same way as they would for any skill in any skill set.

Two key activities:

1. Adding skills to your team skill set



The screenshot shows the IBM Watson Orchestrator interface. At the top, there's a header with the IBM Watson Orchestrator logo and a user profile icon labeled 'PP'. Below the header, the 'Team Skills' section is visible. A yellow notification box indicates '1 seat remain (1/13)'. The 'Skill sets' tab is selected, showing a list of skills. A 'Manage skills' button is highlighted with a mouse cursor. The skills list includes 'Retrieve channels' and 'wastonx.ai skill for generating text'.

IBM Watson Orchestrator

Team Skills



1 seat remain (1/13)

Usage Skill sets Members

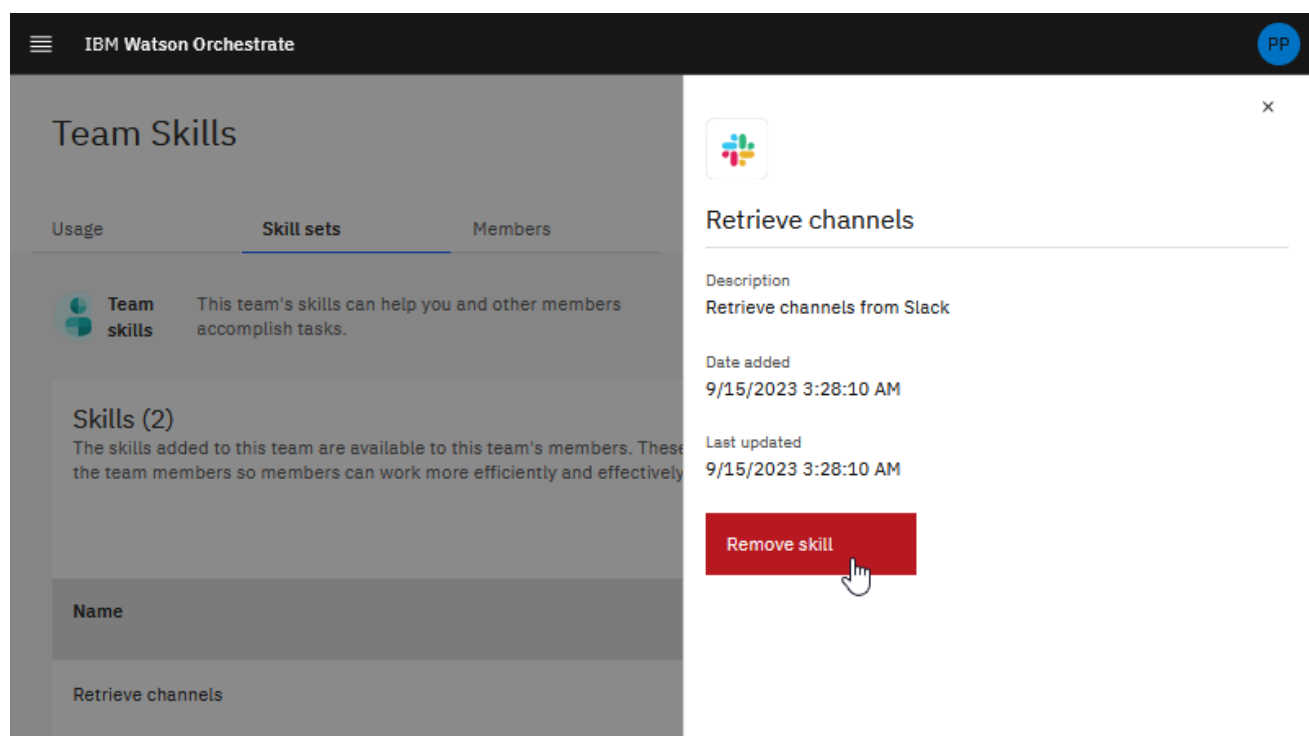
Team skills This team's skills can help you and other members accomplish tasks.

Skills (2)
The skills added to this team are available to this team's members. These skills complete related tasks for the team members so members can work more efficiently and effectively.

Manage skills

Name	App
Retrieve channels	
wastonx.ai skill for generating text	

2. Removing skills from your team skill set



The screenshot shows the IBM Watson Orchestrator interface with a modal open for removing a skill. The modal is titled 'Retrieve channels' and contains details about the skill, including its description, date added, and last updated. A 'Remove skill' button is highlighted with a mouse cursor.

IBM Watson Orchestrator

Team Skills

Usage Skill sets Members

Team skills This team's skills can help you and other members accomplish tasks.

Skills (2)
The skills added to this team are available to this team's members. These skills complete related tasks for the team members so members can work more efficiently and effectively.

Retrieve channels

Description
Retrieve channels from Slack



Date added
9/15/2023 3:28:10 AM

Last updated
9/15/2023 3:28:10 AM

Remove skill

Monitoring team skill sets

Admin roles can view statistics about how their teams use skills and skill sets to complete tasks. The Usage tab (and the team's dashboard) is not visible to the User or Builder role.

 IBM Watson Orchestrate 

Team Skills

1 seat remain (1/13)

Usage

Skill sets

Members

All skill sets

Today

Yesterday

Last week

Last month

Custom range

08/21/2023 - 09/21/2023

Total skills used

47

↓ -68.67%

Total skills that failed

0

= 0%

Estimated total time saved

47 minutes

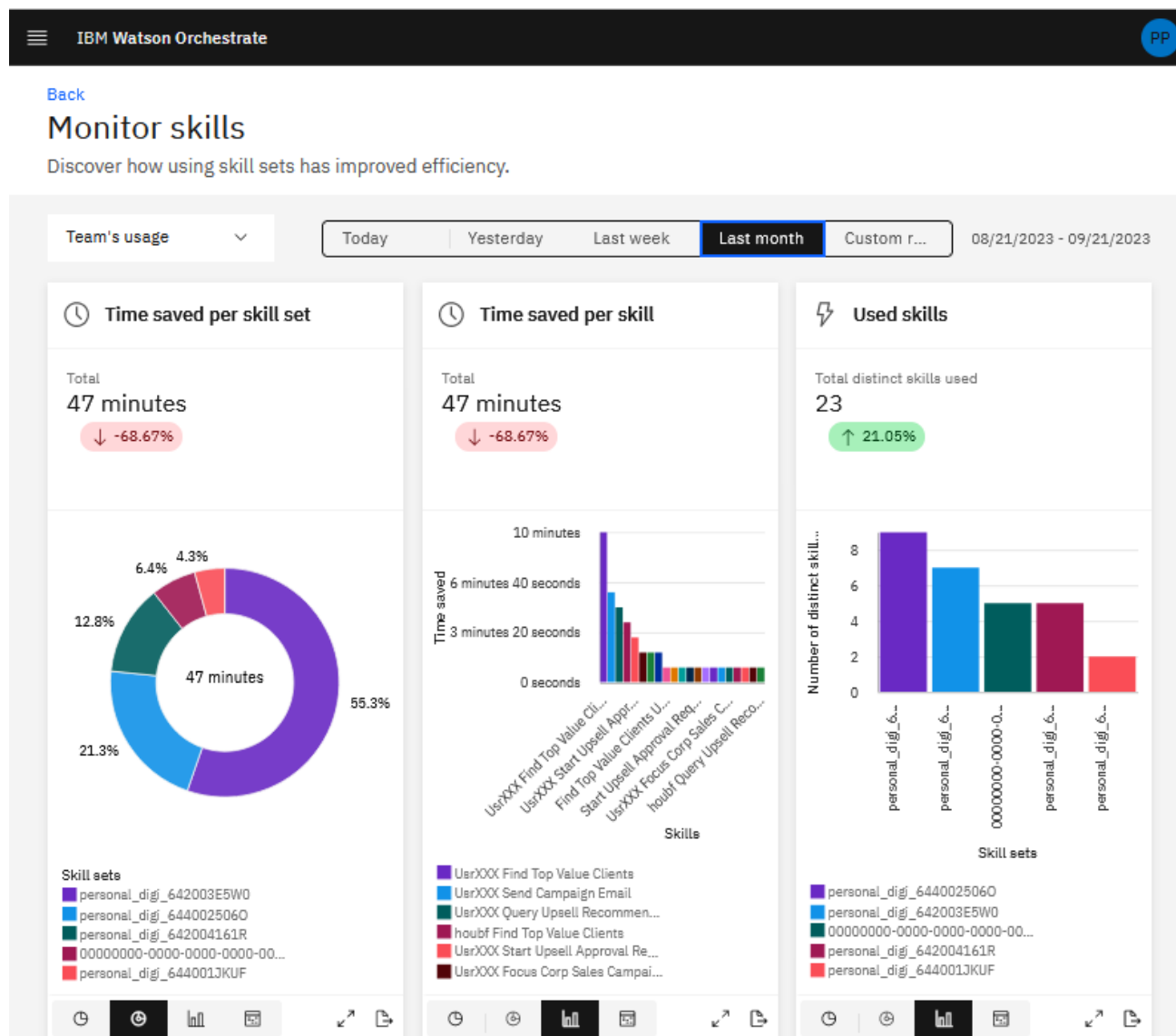
↓ -68.67%

Filter by: Skills

Skill	Number of times the skill was used	Member who uses this skill most	Member who uses this skill least
JL Find Top Value Clients	1	Personal skills	Personal skills
UsrXXX Find Top Value Clients	10	Personal skills	Personal skills
Focus Corp Sales Campaign	1	Team skills	Team skills
UsrXXX Start Upsell Approval Request	3	Personal skills	Personal skills

Monitor usage

You can monitor, evaluate, and assess the performance of your skills in IBM watsonx Orchestrate. The monitoring page includes prebuilt charts that were created from your data to highlight the skills usage and how your efficiency increased by using the skills from the skill sets. You can review and compare the details in the prebuilt charts to arrive at a factual business strategy.



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