



watsonx.ai Bootcamp Guide

Expand your ODM & BAW Solutions with Generative AI
and watsonx Orchestrate

Introduction – Overview & use case

In this challenge you will extend an existing insurance claim processing automation with Generative AI and an AI assistant. You will orchestrate a set of skills in IBM watsonx Orchestrate (WxO) using services from IBM Business Automation, including Operational Decision Manager (ODM) and Business Automation Workflow (BAW), to achieve more with existing investments in the IBM Cloud Pak for Business Automation (CP4BA). These skills will perform core business functions including automated risk analysis, approval workflow, and discounting.

You will then create a conversational AI user experience and add new skills to extend the capabilities of the solution, delivering enterprise automation with employee productivity.

To complete the challenge, you will prepare a brief executive summary highlighting the components of your solution as well as the business value and innovation it brings to improve productivity. You will submit the executive summary at the end of the bootcamp challenge.



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Setup - IBM id & CP4BA Access Setup

Follow these steps to setup your id and access to watsonx Orchestrate. You will also be provided with credentials to access the Cloud Pak for Business Automation assets.

Ids and Credentials (instructor to provide <https://ibm.biz/3486-keys>)

WxO: mailinator id	
CP4BA: user name	
CP4BA: user password	
CP4BA: API Key	

Environments

WxO	https://dl.watson-orchestrate.ibm.com/
CP4BA Workplace	https://cpd-ibm-cp4ba.techxchange-amer-01-464887bc828751e1b00625ca9211fbca-0000.us-south.containers.appdomain.cloud/icn/navigator/?desktop=workplace

1. Copy/Paste the following URL into your browser:
<https://dl.watson-orchestrate.ibm.com/>
2. Enter the username provided by your instructor, following the format [3486-XY@mailinator.com](#) where XY is the number you were provided (for example, [3486-01@mailinator.com](#)).



3. When you first login, you will likely get a message to provide a code for two-factor authentication.



Enter code sent to your email

For added security, we sent a 6-digit code to use***@mailinator.com.
Please enter the code below within 20 minutes

Enter email code

5727-

[Verify](#)

4. Open another tab in your web browser and navigate to <https://www.mailinator.com>. Use the same username (email address) you used to login to Orchestrate and type it in to the input field at the **top left** corner of the screen. Click **GO**.



5. You should see a new email from IBM Security on the top of the received emails list. **Click it to open it** and notice **the second part of the verification code**.

Public Messages

From: IBM Security

Subject: Verify your identity

IBM verify code

Please use the following verification code:

5727 684724

You can only use it once and it will expire after 20min.

6. **Type it in to the verification** form still open in your other browser tab and click **Verify**.



Enter code sent to your email

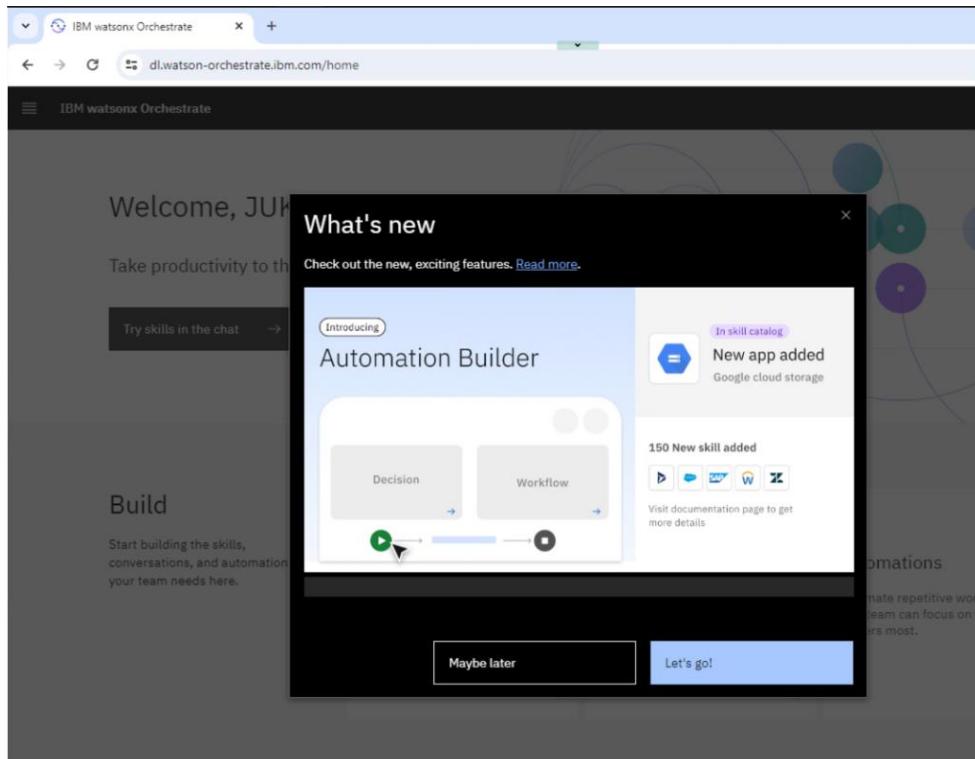
For added security, we sent a 6-digit code to use***@mailinator.com.
Please enter the code below within 20 minutes

Enter email code

5727

[Verify](#)

- Once logged in, the landing page of Orchestrate opens and a **What's new** guide may appear. If you want, you can see a little tour by clicking the **Let's go!** button, or you can close the pop up by clicking the **Maybe later** button.



You are now logged in to watsonx Orchestrate. You will also need to know an API key for the CloudPak for Business Automation (CP4BA) to be used later in the session.

- Open a new browser and navigate to the following URL: <https://ibm.biz/3486-keys>



9. Once there, use the same number given to you by your instructors (01-30) and used at the end of your watsonx Orchestrate login to find your API key. Keep this browser open for when you need it later.

Congratulations, you are now ready to start the watsonx exercises!

Setup - Build & Preview AI Assistant

Now that we have reviewed our assets, the next step is to show the basis for creating an integration between Watsonx Orchestrate and the Business Automation assets shown by the instructors in the introduction. In this step you will be creating an AI Assistant to demonstrate how you can interact with our existing workflow.

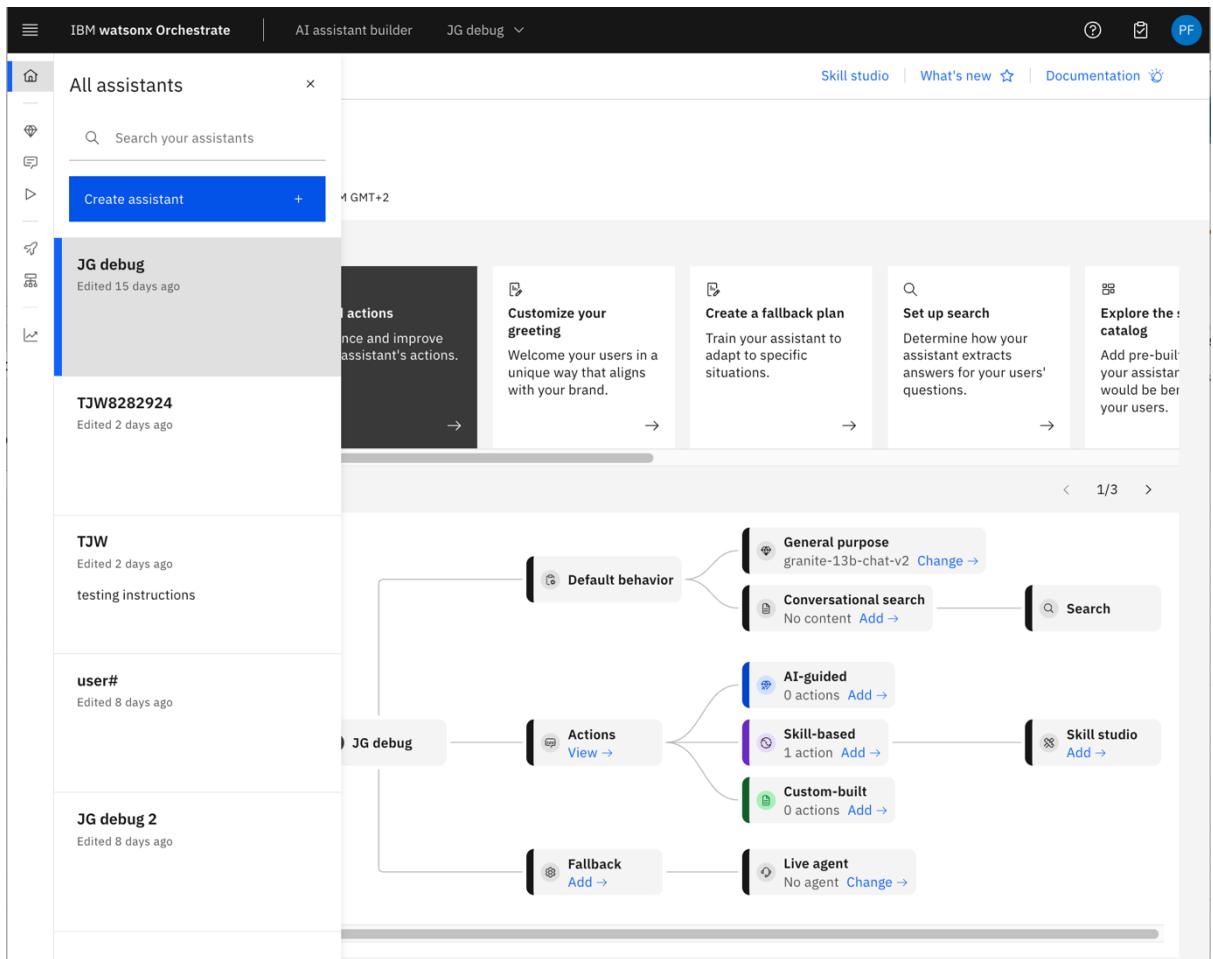
1. You should be logged in to Watsonx Orchestrate in a private/InCognito browser window as below. If not, please return to the previous section to ask your instructor for assistance.

The screenshot shows the IBM Watsonx Orchestrate interface. At the top, there's a banner with the text "Welcome, Pierre!" and "Take productivity to the next level." Below the banner is a button labeled "Try skills in the chat". To the right of the banner is a graphic of a hand pointing at a cluster of colored circles (purple, blue, teal) on a grid, with lines connecting them to form a network. The main area is divided into sections:

- Build**: Contains two tiles: "AI assistant builder" (with a speech bubble icon) and "Skill studio" (with a gear icon).
- Explore**: Contains several links:
 - "Intro to Watsonx Orchestrate" (5 min video)
 - "Take the tour" (Guided tour of Watsonx Orchestrate)
 - "Resources and Support" (External link)
 - "Documentation" (External link)
 - "Provide feedback" (External link)
 - "Community" (External link)

2. Optionally, take the tour of Watsonx Orchestrate. It will show on login, or you can access it from the Help menu ? under **Take a tour**.
3. Click the large **AI assistant builder** tile near the center of the screen.
4. On the top banner again, it will now show *IBM Watsonx Orchestrate / [a previously selected AI Assistant name]* and a down arrow, click the **down**

arrow v and select + Create New



5. On the *Create a new assistant* window that opens, enter the name for your assistant ‘usr<xxx>’ (where xxx is the number provided by your instructor in the user id for access to CP4BA) in the **Assistant name** field. Optionally,



enter a **Description** for your assistant.

Create a new assistant

X

Assistant name

user997

Your assistant name will be kept internally and not visible to your customers

Description (optional)

0/128

Add a description for this assistant

Assistant language

English (US)

v

This is the language your assistant will speak.

Cancel

Create assistant

Click Create assistant

Create a new assistant

X

Assistant name

user997

Your assistant name will be kept internally and not visible to your customers

Description (optional)

0/128

Add a description for this assistant

Assistant language

English (US)

v

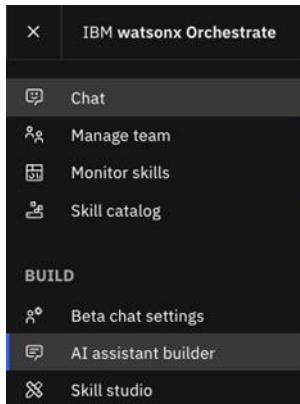
This is the language your assistant will speak.

Cancel

Create assistant



- Once your assistant is created, you will see the name of your assistant displayed in the top menu bar next to *AI Assistant builder*. This indicates the AI Assistant builder context is for your assistant and it is ready for you to add features to your assistant. You will now want to add the skills for the Business Automation assets to your assistant. Before you can add the Business Automation skills to your new assistant, however, you will need to setup the connection for these skills to the CloudPak for Business Automation (CP4BA) environment. To do this you will need to navigate to the *Skill catalog* page for this assistant; click the **sandwich icon** ☰ on the top left of the IBM watsonx Orchestrate screen and select **Chat**.



- In the title bar next to IBM watsonx Orchestrate, ensure that the name of your assistant followed by “draft” is shown. If it is not, then locate the name

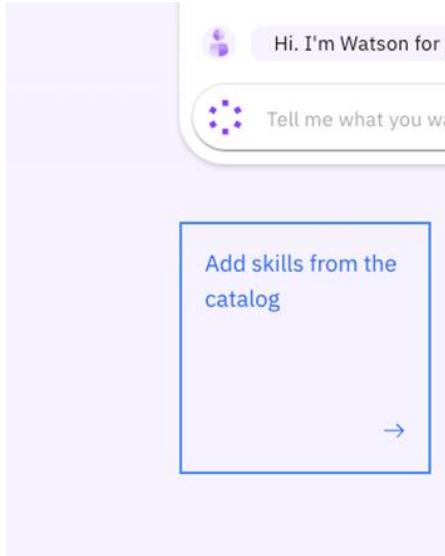
IBM TechXchange 2024 / © 2024 IBM Corporation

watsonx BA Bootcamp Guide

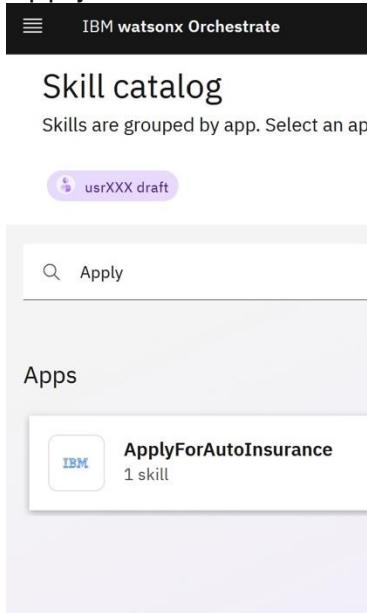


of your assistant in the dropdown list. You will see two entries, one with the suffix *draft* and another with the suffix *live*. Select the first entry with your assistant name and the suffix *draft*, e.g. “usrXXX draft”.

8. Once your assistant is selected, click **Add skills from the catalog** at the bottom left of the screen.



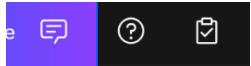
9. On the *Skill catalog* screen, enter “Apply” into the search to find the *ApplyForAutoInsurance* skill for the BAW workflow.



10. Locate the **ApplyForAutoInsurance** tile and click on it.



11. Click **Connect app** on the right.



12. Confirm the name of your assistant followed by “draft” is shown and selected in the dropdown and that you are on the *Connections* tab as shown. Here you can establish the connections to various applications and skills.



usrXXX draft

The screenshot shows the 'Skill sets' tab for a skill set named 'usrXXX draft'. The 'Connections' tab is selected under the 'Applications' section. A message states: 'These are the applications that are used by the skills in team skill set. Application connect level to enable skills to either use personal or team credentials.' There is a search bar at the top of the 'Applications' section.

13. Using the search bar by clicking the magnifying glass (🔍) start typing “**Apply**” and you will see *ApplyForAutoInsurance* as a choice in the list of Applications. This is the skill for the Business Automation Workflow example



that you were shown previously.

user997 draft

94 seats remain (94/100)

Application	Number of skills	Credential type	Connected by	Action
IBM ApplyForAutoInsurance	1	Not specified	-	⋮

14. The application will have to be connected. To do this, you will use the API Key for the CloudPak for Business Automation (CP4BA) provided by your instructor.

15. Click the **kebab dots** under the *Action* column and select **Connect app**.

usrXXX draft

Application	Number of skills	Credential type	Connected by	Action
IBM ApplyForAutoInsurance	1	Not specified	-	⋮

Connect app



usrXXX draft

Usage Skill sets Metrics

Skills Connections

These are the applications that are used by the skills to execute skills. Set preference at an application level.

Q Apply Application Number

IBM ApplyForAutoInsurance 1

Items per page: 5 1-1 of 1 items

Connect to ApplyForAutoInsurance

Member credentials
Each team member uses their own credentials to connect to this app and use its skills.

Team credentials
The admin sets the credentials each team member uses to connect to this app and use its skills.

You selected **Team credentials** for the credential type. Click **Connect app** to provide the credentials your team will use and to connect to the app.

Connect app

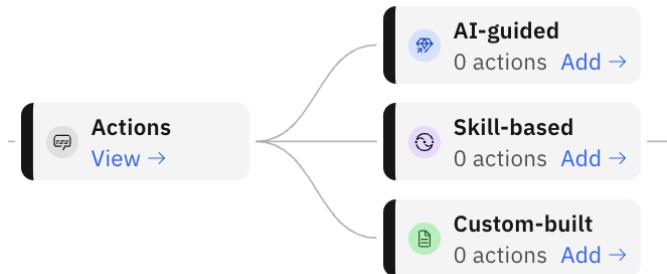
16. On the *Connect to ApplyForAutoInsurance* screen, select **Team Credentials** and click the blue **Connect app** button.
 17. In the **API key** field input your encoded API key, with case matching exactly as that provided by your instructor, prefixed by “ZenApiKey”. Your input should look similar to the example as follows:
ZenApiKey dZNyOTk3Onp3dElaMzJoZzJJNTlsMDNoekNVdFhwRkx1eVlvTGRsZOJPdVJ4ABs=
 18. Click **Connect app** to connect your skill to the Business Automation application. Note that you will see a green success message that the app is connected regardless of whether the API Key is correct or not, so be aware that capitalization on this input matters for all parts (both *ZenApiKey* and your encoded token).
- App connected**
The team is now connected to ApplyForAutoInsurance.

5:12:17 PM
19. After the connection is established, you are ready to add your actions. Click the **sandwich icon** at the top left of the screen and select **AI assistant builder** to navigate back to the builder page.
 20. Be sure that the assistant that you created is selected before proceeding to the next step to ensure you have the correct context for the assistant builder. You will see the name of your assistant without the *draft* or *live* suffix in the top of the dropdown next to *AI assistant builder*; if it is not there, use the dropdown to select your AI assistant.
 21. Click the **Build actions** tile on the *Assistant Builder Home* page. Note: If the tile is not available, use the menu on the left to navigate to **Actions**.



22.From here you will need to create an action; click the blue **Create action +** button to build your first action.

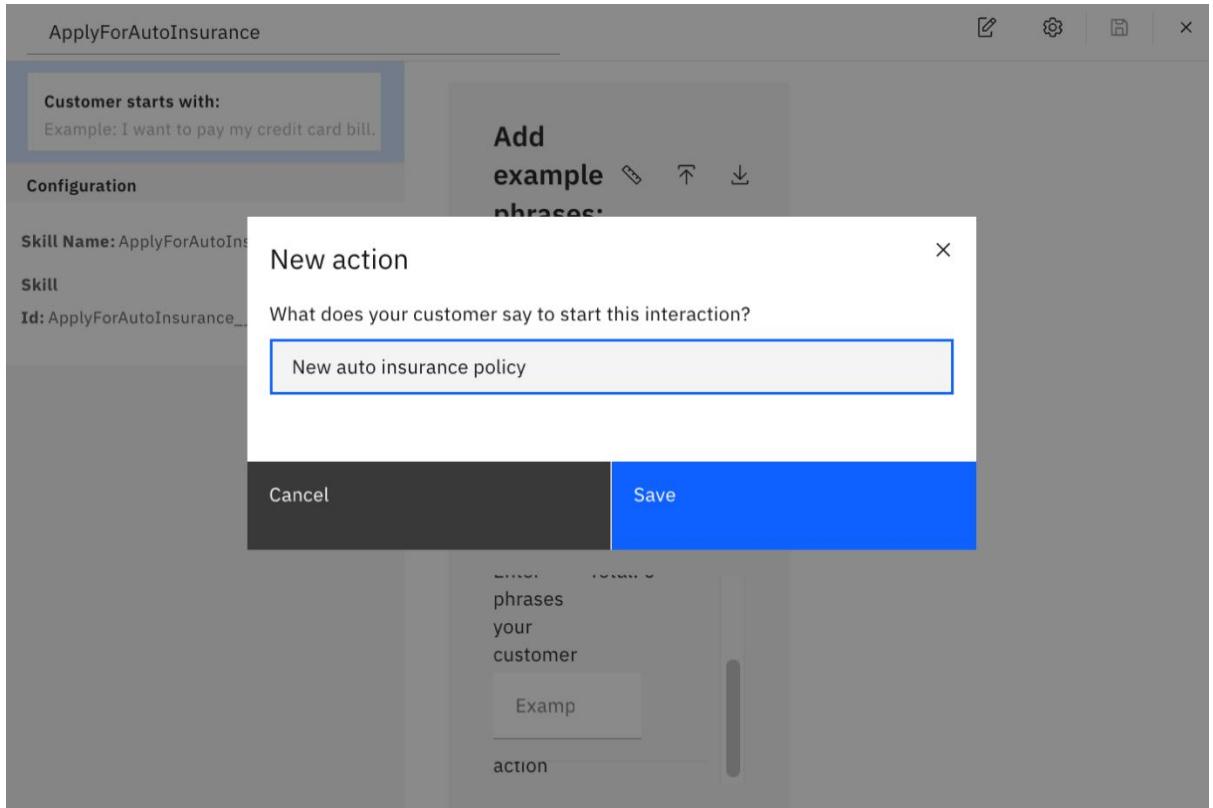
23.To integrate with CloudPak for Business Automation (CP4BA), we will be using the Skill-based action; click the **Skill-based action** tile.



24.When the next window loads, it may take up to 30 seconds to refresh as there's a potential for new skills to arrive from an existing cache. After that time has elapsed, start entering **ApplyForAutoInsurance** in the search bar; click the corresponding **ApplyForAutoInsurance** tile to select it once it appears, and then click **Next**.

The screenshot shows a dialog box titled "Build an action from a skill". At the top right are "Cancel" and "Next" buttons. The main area is titled "Select a skill" and contains the instruction "Choose a conversational skill published as a foundation of your action.". A search bar at the top of the list shows "ApplyForAutoInsurance". Below the search bar, a list item "ApplyForAutoInsurance" is selected, indicated by a blue border and a checked checkbox. The list item "Apply for Auto Insurance" is also visible. At the bottom of the list, the text "Last updated: 2024-10-10T17:53:53.605Z" is displayed.

25.After the skill is selected, you will get a *New action* prompt asking *What does your customer say to start this interaction?* Input a phrase you would like to use to trigger your assistant, such as “New auto insurance policy” and click **Save**.



26. On the *Add example phrases:* screen, you can add additional example phrases to trigger your assistant. You can enter whatever you would like, but some examples include:

- Apply for auto insurance
- I want to apply for auto insurance
- Car insurance

Add example phrases:

Enter phrases that a customer types or says to start the conversation about a specific topic. These phrases determine the task, problem, or question your customer has.

The more phrases you enter, the better your assistant can recognize what the customer wants.

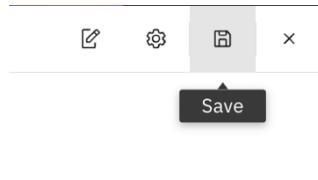
Enter phrases your customer might use to start this action Total: 3

Enter a phrase

I want to apply for auto insurance	
Apply for auto insurance	
New auto insurance policy	

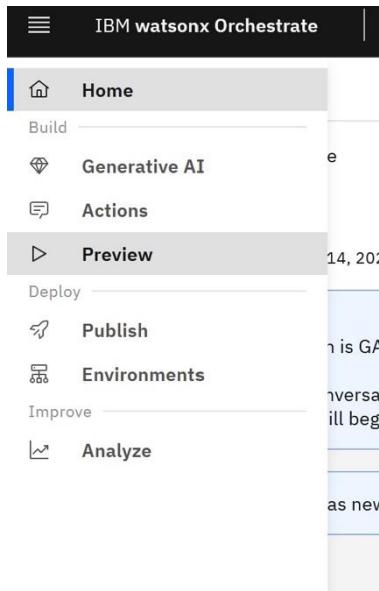


27. After you're satisfied with the triggers, click on the **Save** icon at the top right to save your example phrases.

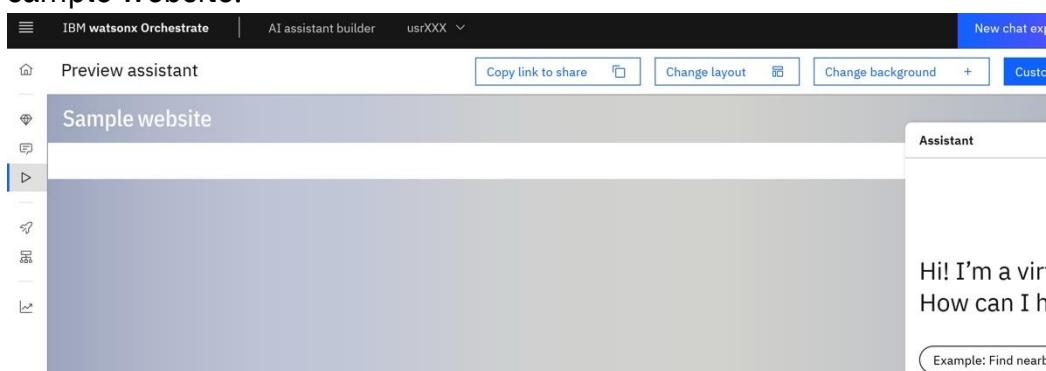


28. In the bottom right, your assistant will start getting created – you may see a message about it updating. Your assistant is now ready for testing.

29. In the menu on the left of the screen, click on **Preview** to open the *Preview assistant* screen.

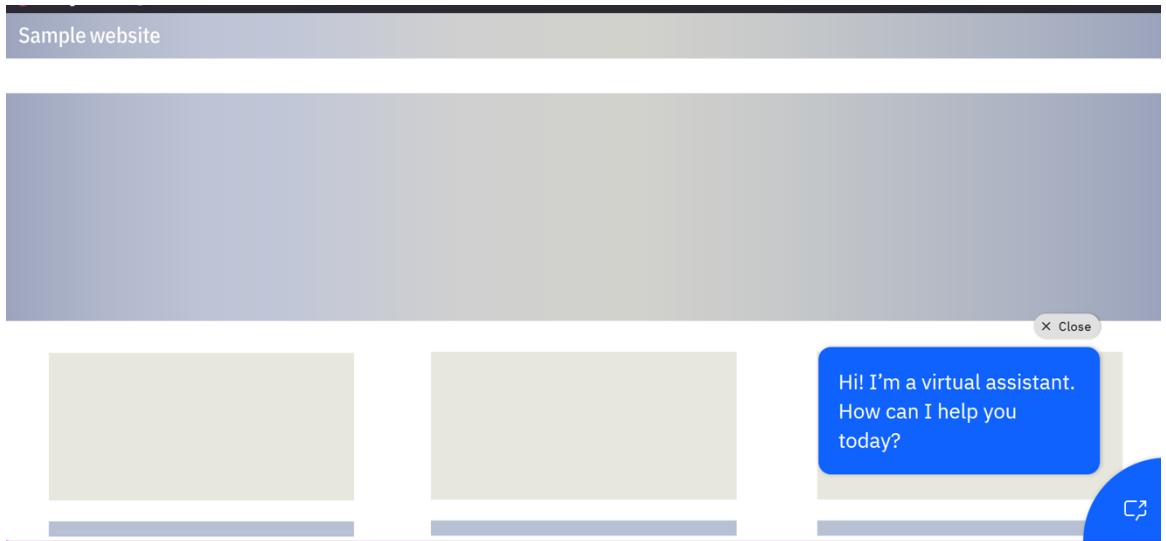


30. From the *Preview assistant* screen, select **Copy a link to share** and then open a new browser tab and paste that URL to open your assistant in a sample website.

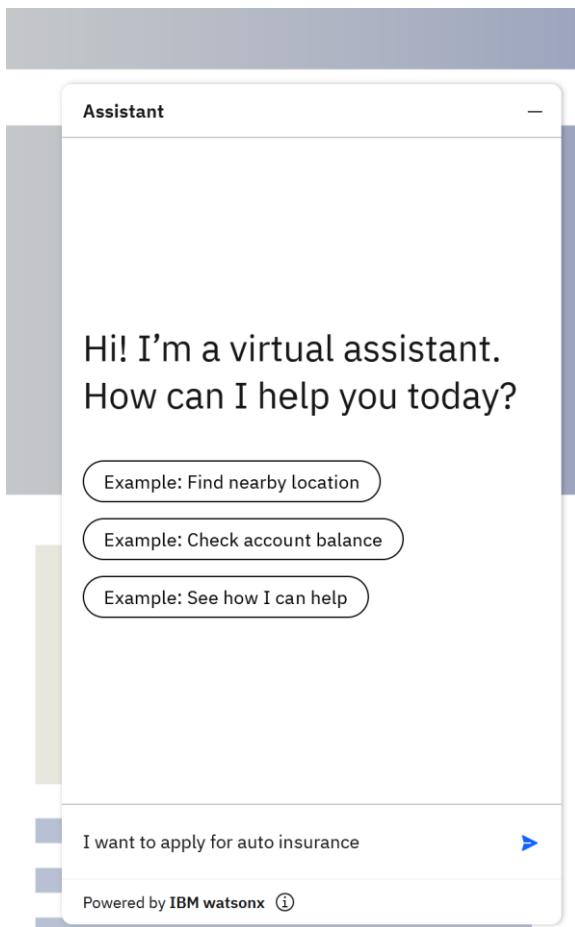




31. On the Sample website page, you will find your assistant in the bottom right of the screen.



Open the assistant and enter one of the expressions you set for the skill-based action in Steps 25&26, such as “I want to apply for auto insurance”.





If the phrase is recognized by the assistant as related to your new skill, *Conversational skill called* and *ApplyForAutoInsurance recognized* will appear. If it is not recognized, *General purpose answering called* will appear. You may be asked to rephrase your question.

32.In the form that appears for the *ApplyForAutoInsurance* action, input the following sample data, click **Apply**, and the workflow will be started.

- a. **Car.Brand:** Brand A
- b. **Car.Model:** choose one of the following two:
 - Model 1 (this triggers straight-through processing)
 - Model 2 (this requires additional approval, creating a task)
- c. **Driver.Name:** <any name>
- d. **Driver.Birthday:** < Any birthdate to create a driver who is 21 years or older >
- e. **All other fields:** <any values you wish to use for this exercise>



5:30 PM

Conversational skill called _____
ApplyForAutoInsurance recognized _____

IBM ApplyForAutoInsurance

Car.VIN

Car.Year
- | +

Car.Brand

Car.Model

Car.Price
- | +

Data.information

Data.discountRate
- | +

Driver.Name

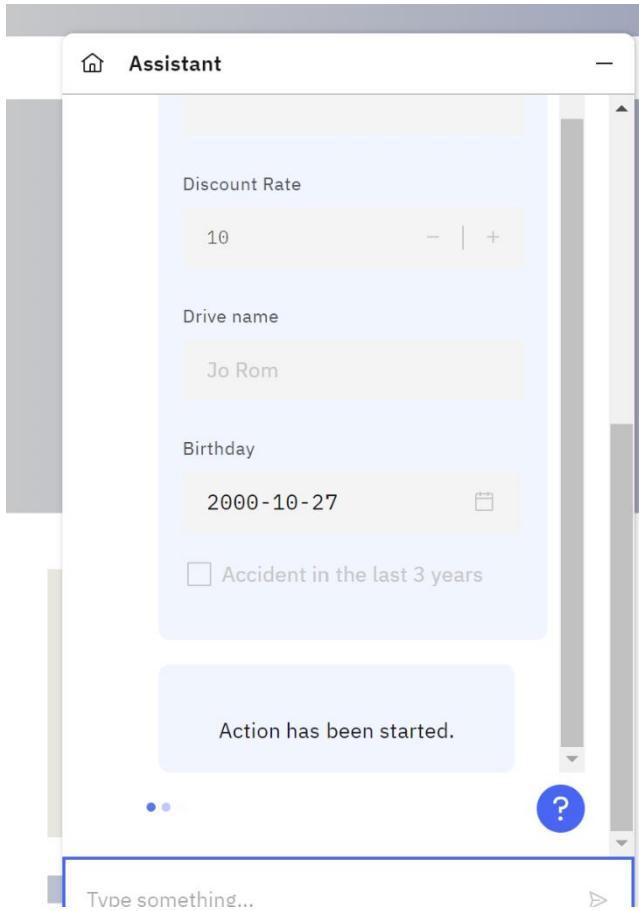
Driver.Birthday

Driver.AccidentInLast3Years

Cancel

Apply

33. Once the workflow is triggered, you will see the message “*Action has been started*” and the chat returns and is ready for additional prompts. The workflow was started asynchronously. Your action is now tested and ready to use.



34.[Optional] From the *Preview assistant* screen, experiment with the look and feel of your assistant and sample website by clicking the **Change layout** or **Change background** buttons at the top.

35. [Optional]: You can check the assets in the CloudPak for Business Automation (CP4BA). Open another browser window/tab. Using the username, password, and URL provided in IBM Id and CP4BA Access Setup section above, login to the CP4BA Workplace. You will see the Review and Approve task if you chose Model 2 (creates a review task).

Switch to **Workflows** from **Tasks** to see the workflows you started.



The screenshot shows the IBM Navigator Workplace interface. At the top, there's a summary bar with metrics: 'On track' (2), 'At risk' (0), 'Overdue' (0), and 'Total workflows' (2). Below this is a navigation bar with tabs for 'Tasks', 'Workflows' (which is selected), and 'Cases'. A search bar and a 'Start workflow' button are also present. The main area displays a table of workflows with columns for 'Status', 'Name', 'Created on', and 'Due on'. One row is visible, showing 'On track' status, name 'InsuranceApplication:462', creation date 'Oct 22, 2024', and due date 'Oct 23, 2024'.

Note that you may need to adjust the filters to show all instances of the Workflows.

This screenshot shows a modal or overlay titled 'Select the filters to use'. It contains a single filter entry: 'Instance status - is - All'. The 'is' and 'All' dropdowns are highlighted with a red box.

Change the filter to *Instance status - is - All* and click **Apply**.

Customize your view

Combine filters and select visible columns to customize your view

This screenshot shows the 'Select the filters to use' interface again. The 'Instance status' filter is shown with its dropdown open, revealing the 'is' and 'All' options, which are highlighted with a red box.

Congratulations, your AI Assistant is now ready to use and you are ready to start the challenge!



Challenge - Extend with more skills

THE BOOTCAMP CHALLENGE: Now augment your AI Assistant with additional skills to improve productivity. You have until the end of this session to add additional skills (including skill flows and automations) and summarize the business value and innovation of your solution in an executive summary. Refer to the Appendix sections for examples of how to create various types of skills in watsonx Orchestrate.

Final solution requirements

Your Executive Summary can be in any format you wish, such as a document or presentation, and must contain the following four (4) elements:

1. Screenshot of your *AI Assistant* completed from the Build & Preview AI Assistant section above (10 points)
2. List of the *Additional Skills* you created including the name and type of each: OpenAPI skill (2 points), GenAI skill (2 points), decision (2 points), skill flow (3 points), or workflow (3 points) (points will be awarded for a maximum of 2 skills of each type)
3. Statement of the *Business Value* your solution provides (5 points)
4. Statement of the *Innovation* demonstrated in your solution (5 points)

Your solution will be awarded points for each of these four mandatory sections, so be ensure to include all four in your executive summary. Any ties in points will be broken by the timestamp of the submission. Timestamps after 12:30 PDT Oct. 23 will not be evaluated.

Submit your final solution executive summary to the session instructor by 12:30 PDT Oct. 23 for a chance to win the award for this bootcamp. Submit your entry by *one* of the following methods:

1. At this link: <https://ibm.biz/3486-StudentSubmissions>
2. Via email to gvdb@ca.ibm.com Subject: Session 3486 - <Your Name>





Appendix – Skill Build How-to Examples

In this section there are examples of how to build the following types of skills in watsonX Orchestrate:

- Custom Skill from OpenAPI
- Skill Flow
- Decision
- GenAI
- Workflow

Example: Build a custom skill from OpenAPI in Skill studio

In this example you will learn how to create a custom skill by importing the OpenAPI Specification (OAS) for an external API into IBM watsonx Orchestrate. For example, you can create a skill to get information about employees, such as their first & last names, job roles, and email addresses.

Note: This tutorial provides a sample API that returns a list of employees in a table. The names, job roles, and email addresses that this API returns are for demonstration purposes only.

Refer to the [product documentation](#) for the sections (`info`, `servers`, `paths`, `components`) and properties (`openapi`) that an OpenAPI must have to be imported into watsonX Orchestrate.

1. Download the sample OpenAPI Specification from the following link:
https://www.ibm.com/docs/en/SSAVQO/getting_started/sample-employees.zip
2. Extract the downloaded zip file.
3. To successfully import this sample, you will need to change some attributes to make it unique in the tenant, otherwise you may see an error that this OpenAPI has already been imported. Steps 3-6 are to change the attributes to make this unique. Rename the folder by adding your initials/name and the date to the folder.
4. Inside the folder there will be two files: `sample-employees.json` and `sample-employees.yaml`. You can use the either file to import the *Retrieve employees* skill to watsonx Orchestrate. Open the `sample-employees.yaml` file to edit the following attributes:
in the `info` section



title
description
in the paths section
description
summary
OperationId (NOTE: this is if your OpenAPI spec has this field, the example does NOT)

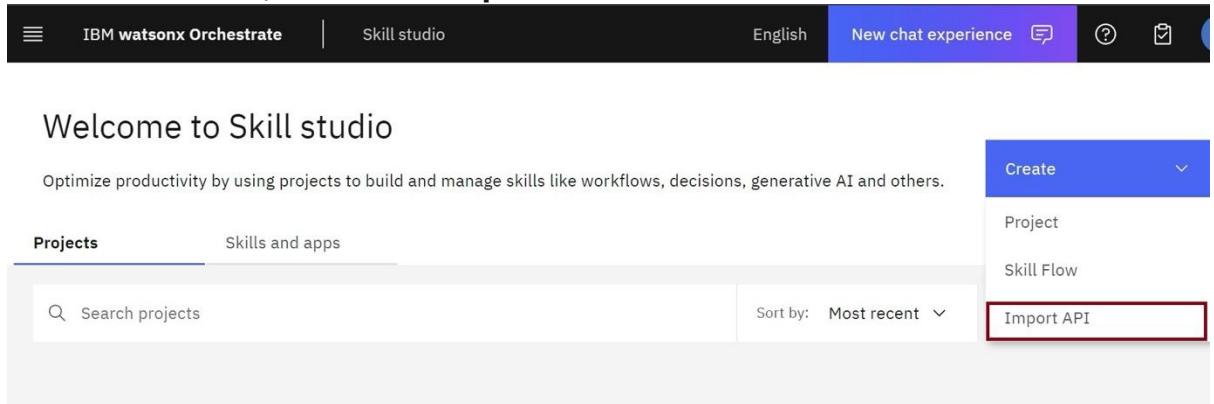
```
! sample-employees.yaml
1  openapi: 3.0.1
2  info:
3    title: Sample employee
4    description: List the name, email, and job name of sample employees
5    version: '1.0'
6    x-ibm-application-name: Sample employee
7    x-ibm-application-id: sample-employee
8    x-ibm-annotations: 'true'
9    x-ibm-skill-type: imported
10   x-ibm-application-icon: <svg width="44" height="44" xmlns="http://www.w3.org/2000/svg" xmlns:xlink="http://www.w3.org/1999/xlink"></svg>
11  servers:
12    - url: https://b25yxaezee.execute-api.us-east-2.amazonaws.com
13  security:
14    - bearerAuth: []
15  paths:
16    /demo/HelloTable:
17      get:
18        summary: Retrieve employees
19        description: Retrieve a table with name, role, and email for sample employees
20        responses:
21          '200':
22            description: Success to retrieve the data
```

5. Add your initials/uesrid and date to the end of each of the attributes. You can include a space between the original values and your initials/userid and date. The exception is the `operationId` field which can not contain spaces, so use a period “.” between the original value and your initials/userid and date values.

```
! sample-employees.yaml
1  openapi: 3.0.1
2  info:
3    title: Sample employee GvdB101524
4    description: List the name, email, and job name of sample employees GvdB101524
5    version: '1.0'
6    x-ibm-application-name: Sample employee
7    x-ibm-application-id: sample-employee
8    x-ibm-annotations: 'true'
9    x-ibm-skill-type: imported
10   x-ibm-application-icon: <svg width="44" height="44" xmlns="http://www.w3.org/2000/svg" xmlns:xlink="http://www.w3.org/1999/xlink"></svg>
11  servers:
12    - url: https://b25yxaezee.execute-api.us-east-2.amazonaws.com
13  security:
14    - bearerAuth: []
15  paths:
16    /demo/HelloTable:
17      get:
18        summary: Retrieve employees GvdB101524
19        description: Retrieve a table with name, role, and email for sample employees GvdB101524
20        responses:
21          '200':
22            description: Success to retrieve the data
            content:
```

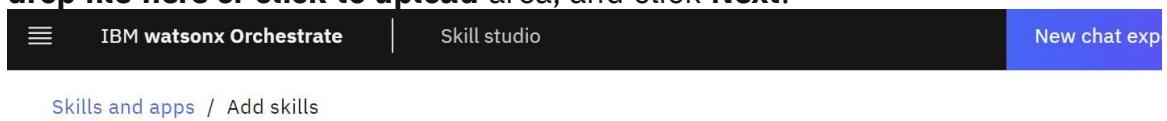


6. Save the updated file.
7. Open the menu from the **sandwich** icon  , and select **Skill studio**.
8. Click **Create Skill**, and select **Import API**.



The screenshot shows the Skill studio interface. At the top, there's a navigation bar with the IBM Watsonx Orchestrate logo, the Skill studio tab, language settings (English), and a New chat experience button. A sidebar on the right has a 'Create' dropdown menu with options: Project, Skill Flow, and Import API (which is highlighted with a red box). The main area is titled 'Welcome to Skill studio' and contains tabs for 'Projects' (selected) and 'Skills and apps'. Below these are search and sort filters.

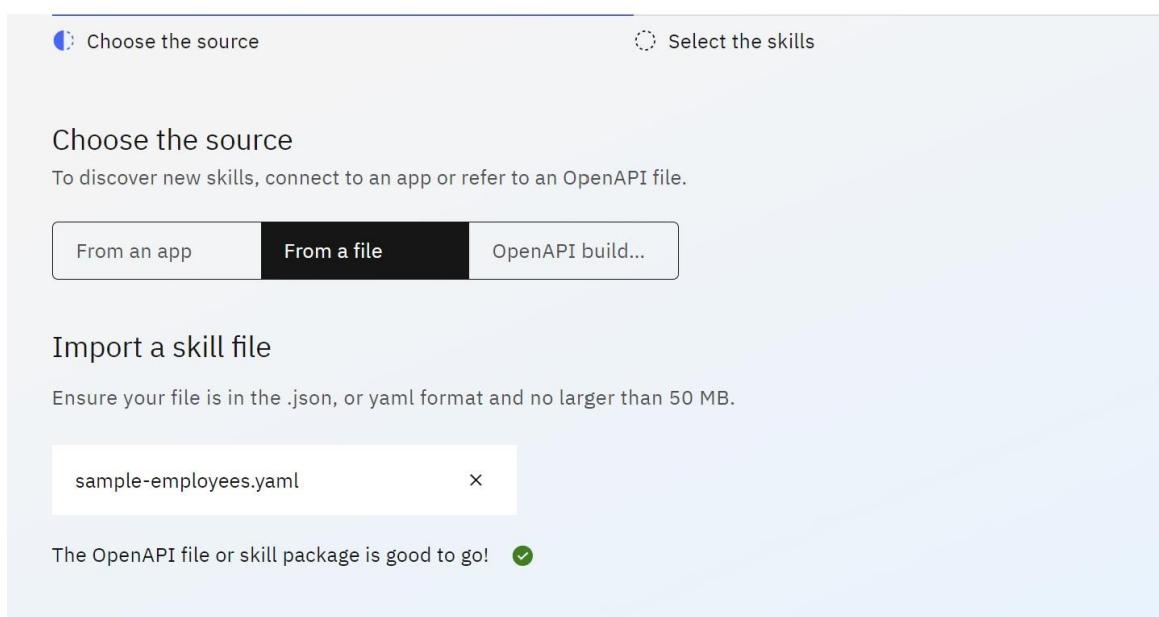
9. Choose **From a file** to import the OpenAPI file.
10. Drag your edited version of sample-employees.yaml file to the **Drag and drop file here or click to upload** area, and click **Next**.



The screenshot shows the 'Add skills' page. The navigation bar includes the IBM Watsonx Orchestrate logo, Skill studio, and a New chat exp button. The main content area is titled 'Skills and apps / Add skills'. It features two sections: 'Choose the source' (with 'From an app', 'From a file' selected, and 'OpenAPI build...') and 'Import a skill file' (with a file input field containing 'sample-employees.yaml' and a green checkmark indicating it's good to go).

Add skills

Choose how you want to add skills and then select the skills you want to refer to from that source.



The screenshot shows the 'Add skills' page. The 'Choose the source' section has 'From a file' selected. The 'Import a skill file' section shows a file input field with 'sample-employees.yaml' and a green checkmark. Below it, a message says 'The OpenAPI file or skill package is good to go!' with a green checkmark.

11. From the list of skills, select the tile **Retrieve employees<your initials/userid&date>**



12.Click Add

The screenshot shows the 'Skill studio' interface in the 'Skills and apps' section. At the top, there are two buttons: 'Choose the source' (with a checkmark) and 'Select the skills'. Below this, a heading says 'Choose skills' with the sub-instruction 'you can choose which skill to add here'. A search bar shows '1 out of 1 selected'. A table lists the selected skill:

Skill	Description	Status
Retrieve employees GvdB101524	Retrieve a table with name, ro...	Ready to add

13.You will now be able to see the skill available on the *Skill Studio – Skills and apps* page.

14.To make the skill available to users in watsonx Orchestrate you will need to enhance and publish it. Open the menu from the **sandwich icon** , and select **Skill studio**.

15.On the **Skills and apps > Skills** tab, click the **kebab** (vertical ellipsis) button next to the *Retrieve employees <your initials/userid & date>* skill.

16. Select **Enhance this skill**.

The screenshot shows the 'Skill studio' interface with the 'Skills' tab selected. At the top, there is a 'Create' button and a 'Configure prebuilt skills' link. Below is a search bar and a table of skills:

Name	Step in the process	Status	Skill type	Author	Last edited
Retrieve employees GvdB101524	Just 1 step away to be ready	Ready to publish	Imported	gvd@ca.ibm.com	October 16 2024
ApplyForAutoInsurance	Ready to use	Published	Imported	Valentin.Volchkov@ibm.com	October 1 Enhance this skill



17. From the *enhance* page, click the **Phrases** tab.
18. Enter the following phrases in the **Enter new train phrase** field to train and enhance your skill with example phrases to invoke it from the chat.

Retrieve employees.
I want to retrieve employees.
Can you retrieve the employees list?

The screenshot shows the 'Skills and apps / Enhance this skill' section of the IBM Watsonx Orchestrate interface. The 'Phrases' tab is active. A note says 'Phrases are the text your user types in the chat bar to find and use a skill.' Below are four input fields:

- 'Retrieve employees GvdB101524'
- 'Can you retrieve the GvdB101524 employees li'
- 'I want to retrieve employees GvdB101524'
- 'Auto-generate phrases (Experimental)' (button)

At the bottom are 'Cancel', 'Publish' (highlighted in blue), and 'Save as draft' buttons.

19. Click **Publish** to publish the newly enhanced skill. A *Published successful* green message box will appear to confirm it is published.
20. Now that the new skill is published, you will you can add it to your personal skill set and connect it to the sample employee app. Click the **sandwich icon** on the top left of the IBM watsonx Orchestrate screen and select **Chat**.

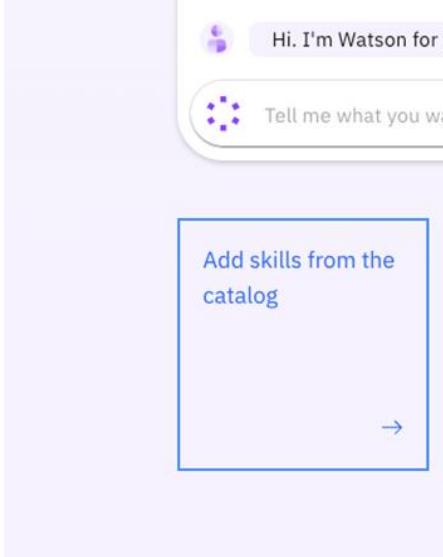
The screenshot shows the navigation menu of IBM Watsonx Orchestrate. The 'Chat' option is highlighted in blue. Other options include 'Manage team', 'Monitor skills', 'Skill catalog', 'Beta chat settings', 'AI assistant builder', and 'Skill studio'.

21. In the title bar next to IBM watsonx Orchestrate, ensure that “*Personal Skills*” is selected. If not, locate “*Personal skills*” in the dropdown.
Note: If you want to add the skill to your assistant, then ensure “the name of your assistant“ followed by “draft” is shown. If it is not, then locate the name of your assistant in the dropdown list. You will see two entries, one with the suffix *draft* and another with the suffix *live*. Select the first entry with your assistant name and the suffix *draft*, e.g. “usrXXX draft”. This will



make the skill available for use in your assistant. The steps to connect the skill to your assistant are the same as noted above in Section 2 Steps 7-18 to connect the ApplyForAutoInsurance skill.

22. Once your assistant is selected, click **Add skills from the catalog** at the bottom left of the screen.



23. On the *Skill catalog* screen, enter “Retrieve” into the search to find the sample employee app for the retrieve list of employees skill.

The screenshot shows the 'Skill catalog' interface of IBM WatsonX Orchestrate. At the top, there's a navigation bar with three horizontal lines and the text 'IBM WatsonX Orchestrate'. Below the navigation bar, the title 'Skill catalog' is displayed. A sub-header says 'Skills are grouped by app. Select an app to see'. There are two tabs: 'Personal skills' (which is selected) and another tab that is partially visible. A search bar contains the text 'Retrieve'. Under the heading 'Apps', there is a card for 'Sample employee', which features a small icon of a person, the text 'Sample employee', and '1 skill'.

24. Locate the **Sample employee** tile and click it to **Add skill**.



25. Click **Connect app** on the right.

Skill catalog /

Sample employee (1)

Personal skills

Q Search skills

Sample employee

Retrieve employees GvdB101524
Retrieve a table with name, role, and email for sample employees GvdB101524

Added ✓

Connect app

26. Enter any value into *API Key* , e.g. “123”, and click **Connect app**.

Connect to Sample employee

API Key

•••

If the service instance uses legacy credentials for authentication, provide the API key

Cancel Connect app

27. Now that it is connected, the new skill should be available to use in chat.

Click the **sandwich icon** ☰ on the top left of the IBM watsonx Orchestrate screen and select **Chat**.

X IBM watsonx Orchestrate

Chat

Manage team

Monitor skills

Skill catalog

BUILD

Beta chat settings

AI assistant builder

Skill studio



28. In the title bar next to IBM watsonx Orchestrate, ensure that “*Personal Skills*” is selected. If not, locate “*Personal skills*” in the dropdown.

29. You should see a tile for the “*Retrieve employees* “ <your initials/userid & date> skill.

If you do not see the *Retrieve employees* skill, you will need to add it. Click **Add skills from the catalog** at the bottom left of the screen. Enter “*Retrieve*” in the search field, press Enter and look for the **Sample employee** app tile. Click on the **Sample employee** app tile. In the *Retrieve employees* skill tile, click **Add skill +**. Now your new skill is ready to be used in the chat. On the home page, click **chat**.

30.

IBM watsonx Orchestrate | Personal skills ▾

Hi. I'm Watson. Check out the skills in the catalog to see how I can help you.

Tell me what you want to do

Add skills from the catalog →

Send an email

Retrieve employees
GvdB101524

31. In the chat, enter the following phrase and press **Enter** to invoke your new skill.

Note: As you type, you may see the phrase appear as a selection option; you can simply select it, rather than typing the full phrase.

Can you retrieve the <your initials/userid & date> employees list?

32. The skill will return a table of entries with the first & last name, job role and email for a list of sample employees. This completes the validation of the new sample skill.

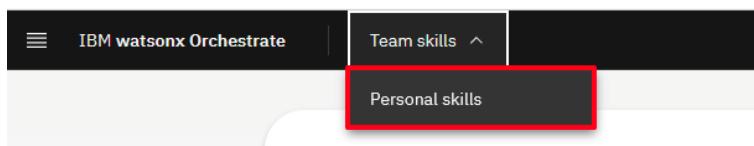
Example: Build a skill flow in Skill studio

In this example you will learn how to combine several skills into a skill flow to accomplish more complex multi-step tasks in IBM Watsonx Orchestrate. For example, you can combine a generative AI skill to generate an email with an Outlook skill to send it afterwards.

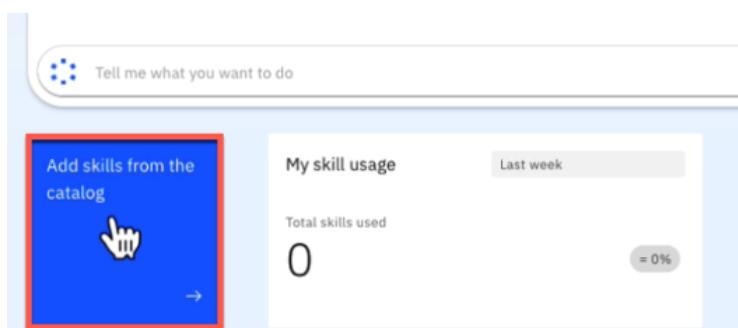
i. Adding custom skills to your personal skills

Before you can start building the skill flow, you need to add all the skills to your personal skills list. The skills we're using in this example are already available in the skills catalog, but to use them you need to connect them with credentials and add them to your personal skills list.

1. Make sure to select **Personal skills** at the top of the Chat view.



2. Click the **Add skills from the catalog** tile.



3. Search for **watsonx.ai** in the search panel and then click on **watsonx.ai(experimental)** tile.



IBM watsonx Orchestrate

Skill catalog

Skills are grouped by app. Select an app to see all the skills that use that app.

Personal skills

watsonx.ai

Apps

Webex 1 skill

watsonx.ai(experimental) 16 skills

4. Add skill **Generate and email** and then click **Connect app**.

IBM watsonx Orchestrate

Skill catalog / watsonx.ai(experimental) (16)

Personal skills

Search skills

watsonx.ai(experimental)

Summarize the Box content in watsonx.ai

Generate an email in watsonx.ai 1

Freshservice ticket sentiment in watsonx.ai

Freshservice ticket summarization in watsonx.ai

Outlook email summary in watsonx.ai

Salesforce case sentiment analyze in watsonx.ai

Github issue sentiment in watsonx.ai

Github issue summarization in watsonx.ai

Salesforce case summarization in watsonx.ai

Add skill +

Add skill +

Add skill +

Add skill +

Added ✓

Connect app

5. Enter a dummy **Bearer token** value **test** and click **Connect app**.



The screenshot shows the IBM WatsonX Orchestrate interface. A modal window titled "Connect to watsonx.ai(experimental)" is open. It contains a "Bearer Token" input field with the value "test" highlighted by a red box with the number "1". Below the input field is a note: "If the service uses Bearer Authentication please enter the token." At the bottom right of the modal is a blue "Connect app" button with a white outline, also highlighted by a red box with the number "2".

6. Notice the change in status as **Connected** as below.

The screenshot shows the IBM WatsonX Orchestrate interface with the "Skill catalog" link selected. In the main area, a skill card for "Generate an email" is highlighted with a red box. To the right of the skill card, the word "Added" is displayed next to a checkmark icon, indicating the skill has been added to the catalog. The top right corner of the screen shows a status indicator with a green dot and the word "Connected".

7. Let's add another skill from the catalog that we'll use in the skill flow later. Click on **Skill catalog** link to return back.

The screenshot shows the IBM WatsonX Orchestrate interface with the "Skill catalog" link highlighted by a red box. The link is located at the top left of the page, just below the navigation menu.

8. Search for **Outlook** and click on **Microsoft Outlook** tile.



IBM Watsonx Orchestrate

English

Skill catalog

Skills are grouped by app. Select an app to see all the skills that use that app.

Personal skills

Outlook

Apps

watsonx.ai(experimental) 1 skill

Microsoft Outlook 29 skills

Skill flows 1 skill

The screenshot shows the 'Skill catalog' page. A search bar at the top has 'Outlook' typed into it, with a red box highlighting the search term. Below the search bar, there's a section titled 'Apps' with three items: 'watsonx.ai(experimental)' (1 skill), 'Microsoft Outlook' (29 skills, highlighted with a red box), and 'Skill flows' (1 skill). The 'Microsoft Outlook' card shows its icon and the number of skills available.

9. Scroll to find **Send an email** skill, click **Add skill** link, and then connect it by clicking on **Connect app** button. Ask your instructor for credentials!

IBM Watsonx Orchestrate

English New chat experience

Skill catalog / Microsoft Outlook (29)

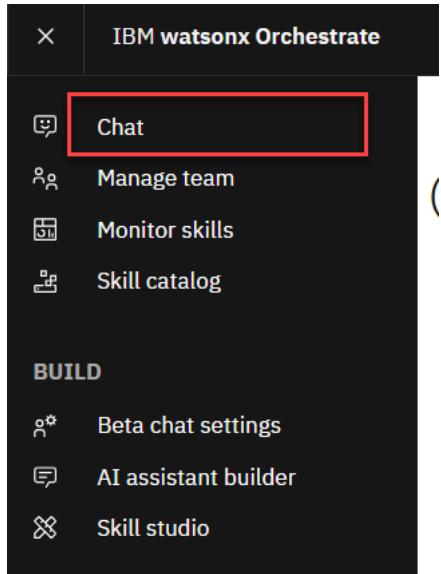
Connect app

Personal skills

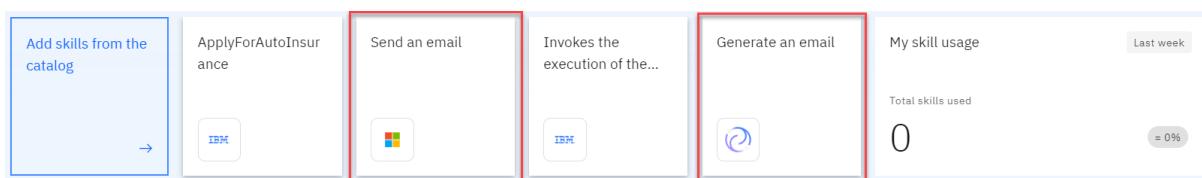
Get all contacts from Microsoft Exchange	Get all emails from Microsoft Exchange	Get all groups from Microsoft Exchange	Get all mail folders from Microsoft Exchange
Add skill +	Add skill +	Add skill +	Add skill +
Get all organizations from Microsoft Exchange	Reply to an email in Microsoft Exchange	Send an email using Outlook	Send email to candidates with Outlook Send an email to every candidate for a job.
Add skill +	Add skill +	Add skill +	Add skill +
Update a calendar event	Update a contact	Update a contact folder	Update a group

The screenshot shows the 'Microsoft Outlook (29)' skills catalog. It lists various skills such as 'Get all contacts from Microsoft Exchange', 'Get all emails from Microsoft Exchange', 'Get all groups from Microsoft Exchange', 'Get all mail folders from Microsoft Exchange', 'Get all organizations from Microsoft Exchange', 'Reply to an email in Microsoft Exchange', 'Send an email using Outlook', and 'Send email to candidates with Outlook'. Each skill card has an 'Add skill +' button. To the right of the grid, there is a vertical sidebar with a 'Connect app' button highlighted with a red box. The top navigation bar includes 'Skill catalog / Microsoft Outlook (29)', 'New chat experience', and other language and settings options.

10. Navigate back to the chat by clicking on the **sandwich icon** and selecting **Chat** from the dropdown.



11. Notice that the two new skills are available in the list of your Personal skills now.

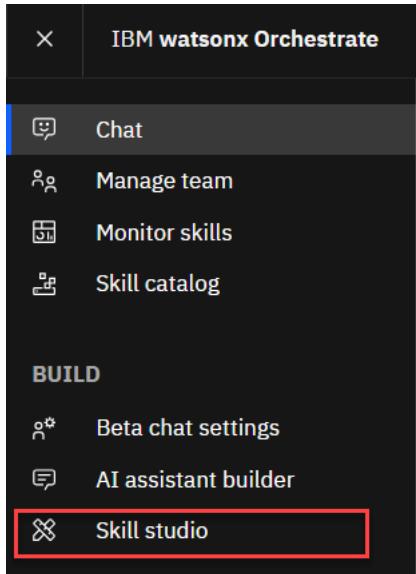


12. Feel free to test each skill individually to ensure that they work.

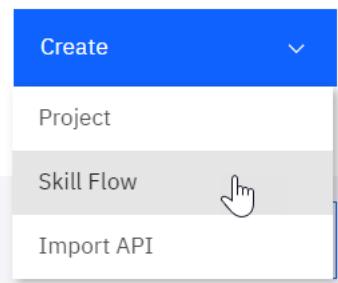
ii. Creating a skill flow by combining the two skills

So far, you have imported, added, and tested the individual skills. You can combine two or more skills to create a skill flow.

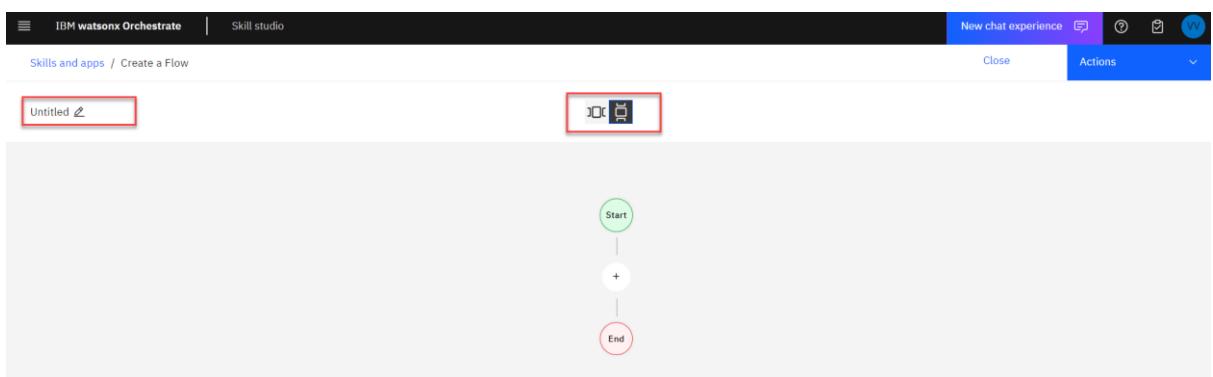
1. Click on the **sandwich icon** in the top left of the screen and select **Skill studio** from the dropdown menu.



2. Click on **Create** button and select **Skill Flow** from the menu.



3. You can switch between horizontal and vertical views for the skill flow, but first click on the **Pencil** icon besides Untitled to give your new skill flow a name.



4. Provide a name and a description for your skill flow (make sure to include your initials or your name in the Name so that you can find it faster later).

Edit Skill flow details

x

Preview

VV - Generate and send an email

Skill flow to generate and send an email



Name *

VV - Generate and send an email

Description

40/100

Skill flow to generate and send an email

Cancel

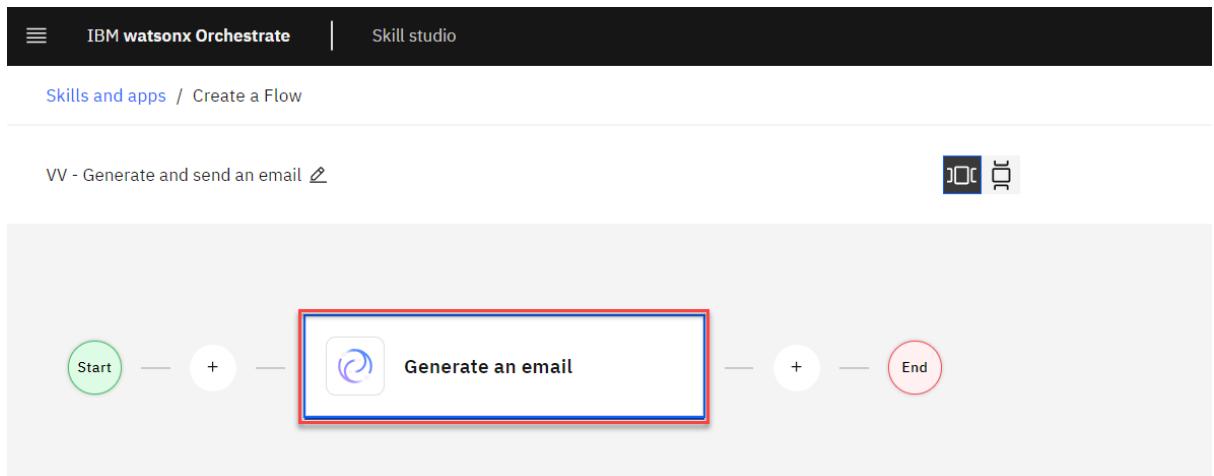
Save

- Click on the + sign to add a skill. Search for **Generate an email** and select **watsonx.ai(experimental)**, under this section the required skill flow **Generate an email** watsonx OOTB skill will show up.

The screenshot shows the 'Skill studio' interface in IBM Watsonx Orchestrate. On the left, there's a flow diagram with a green 'Start' node, a central square node with a plus sign, and a red 'End' node. A cursor is hovering over the plus sign. On the right, a modal window titled 'Add Skills' is open. It has a search bar and a list of skills under the heading 'watsonx.ai(experimental)'. The 'Generate an email' skill is highlighted with a red box. Other visible skills include 'Freshservice ticket summarization', 'Generate a summary', 'Github issue summarization', and 'Github issue sentiment'.



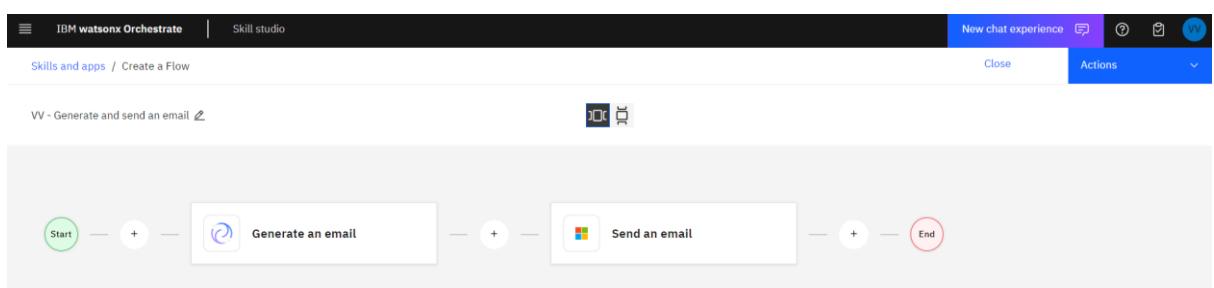
6. Click **Add skill**. The **Generate an email** skill gets added to the flow.



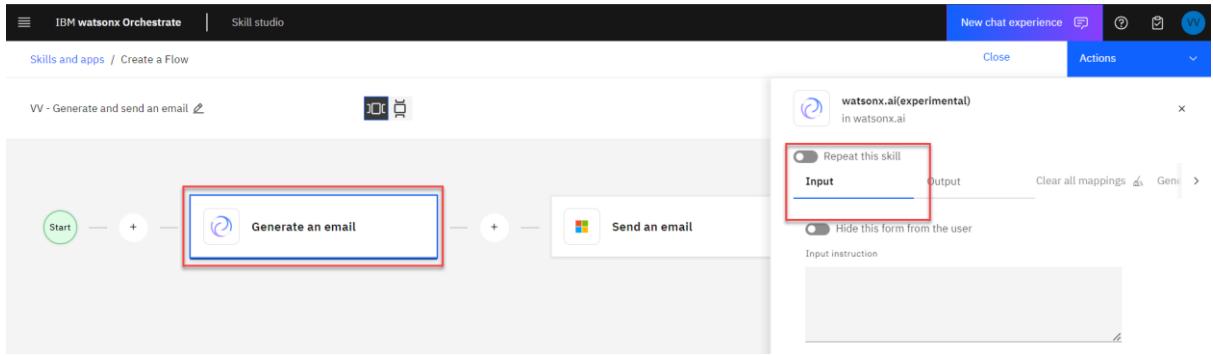
7. Click on **+** after the skill you added. Search for **Send an email**.

The screenshot shows the 'Add Skills' search results in the 'Skill studio'. A search bar at the top contains the text 'Send an email'. Below the search bar, a list of skill groups is shown: 'Microsoft Outlook' (6 skills), 'watsonx.ai(experimental)' (3 skills), 'Slack' (1 skill), and 'Salesforce Account Engageme...' (2 skills). The 'Microsoft Outlook' group is highlighted with a red border. The background shows the same flow diagram as the previous screenshot, with the 'Generate an email' skill highlighted.

8. Once you add **Send an email** skill from **Microsoft Outlook** group, your flow will be built and will look similar to the following.

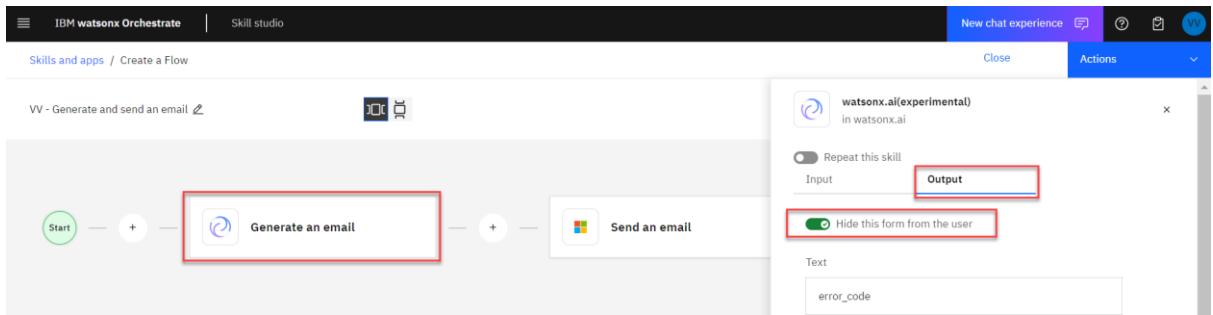


9. As we want to send the generated content to an email recipient, we will map the output of the first skill to the input of the second skill. To achieve this, click on **Generate an email** tile.

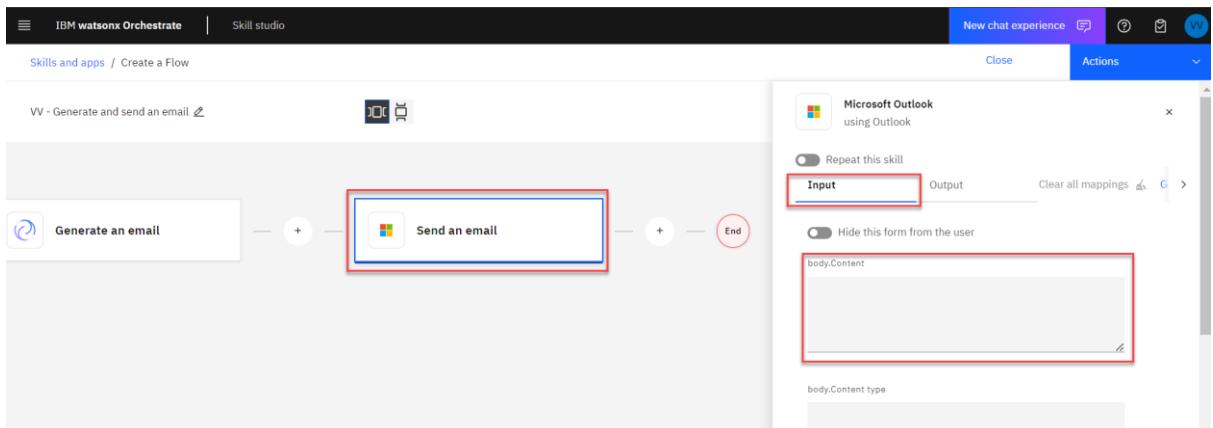


Check the Input parameters. You can map other skills' output to these parameters. You will see several output parameters, one of the output variable **generated_text** is the key parameter.

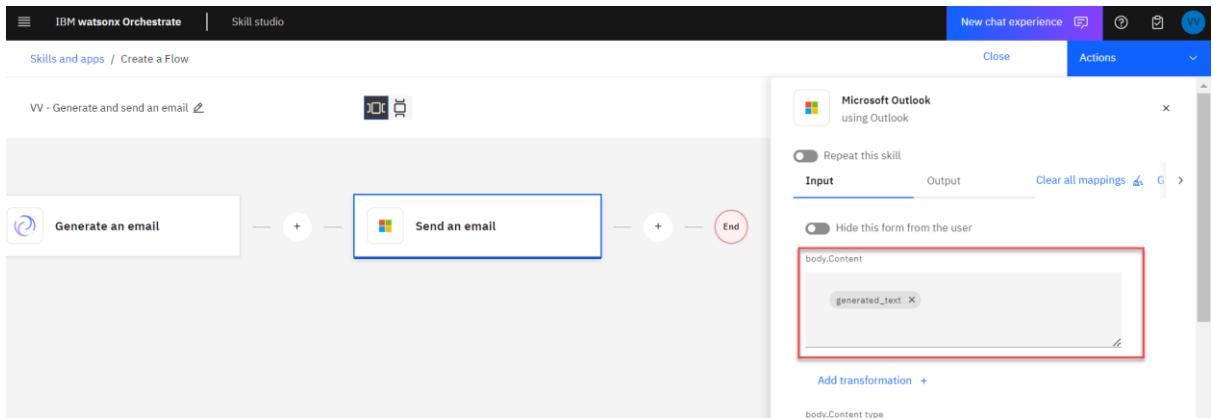
10. There is an option to hide the Output in UI from the user visibility. Toggle the sidebar and enable the option. This will ensure the output form is not shown in the UI.



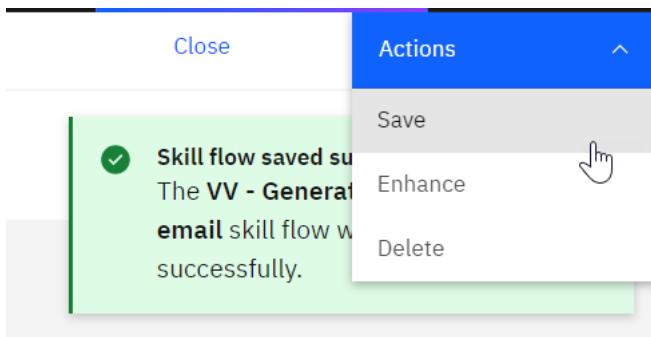
11. Now, click on skill **Send an email** to check the input/output parameters. Click on **Input** tab. Click in the field body.Content and the Available Mappings will be shown.



12. Click on **Generate an email**. This will open up a submenu showing a list of Skill Output. Select **generated_text** from the list.

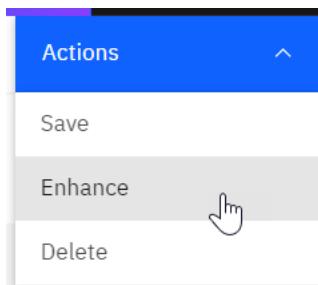


13. Click on **Actions** -> **Save** to save the skill flow. You will see it has been saved successfully.



iii. Enhancing and publishing the skill flow

1. Click **Actions** -> **Enhance** from the dropdown menu.



2. You need to train this skill flow with phrases which IBM Watsonx Orchestrate can use to identify the skill. Click on **Phrases** tab, provide a phrase, and then place the cursor in the empty field. You can use **Auto-generate phrases** option to generate additional phrases. Once you finished adding additional phrases, click on **Publish** button.



Name **Phrases** Next best skills

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

Generate and send an email

Enter new train phrase

Auto-generate phrases (Experimental)

Cancel Publish Save as draft

- Once you publish the skill flow, you will see a confirmation message the skill is published successfully.

Welcome to Skill studio

Optimize productivity by using projects to build and manage skills like workflows, decisions, generative AI and others.

Projects Skills and apps Skills Apps Configure prebuilt skills

Find a skill

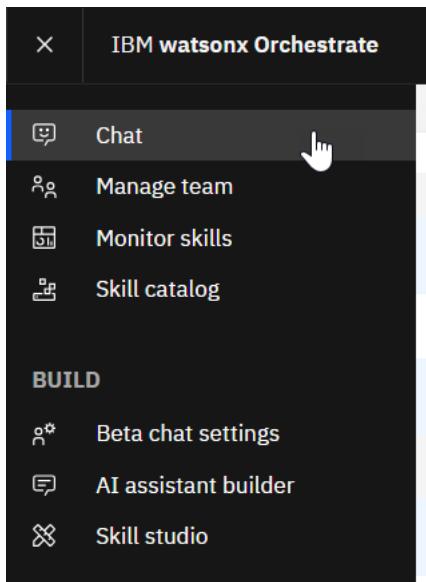
Skills

Name	Step in the process	Status	Skill type	Author	Last edited
VV - Generate and send an email	Ready to use	Published	Skill flow	Valentin.Volchkov@ibm.com	September 26 2024
ApplyForAutoInsurance	Ready to use	Published	Imported	Valentin.Volchkov@ibm.com	August 22 2024
Insurance Quote decision service	Ready to use	Published	Imported	jgoodhue@us.ibm.com	August 22 2024
Invokes the execution of the decision service operation q...	Ready to use	Published	Imported	jgoodhue@us.ibm.com	August 15 2024

iv. Testing the skill flow

Finally, you can now test the skill flow that you have configured.

- Click on the **sandwich** icon in the top left of the screen and select **Chat** from the dropdown menu.



2. The skill flow that was created earlier is available in the catalog and should be added to your available skill sets. For this click on the tile **Add skills from the catalog**.
3. In the search field, type your initials or name that you specified when configuring the skill.

The screenshot shows the 'Skill catalog' page. At the top, there is a search bar containing the letters 'vw'. Below the search bar, the word 'Skills' is followed by a link 'Personal skills'. Under the heading 'Apps', there is a section titled 'Skill flows' which contains a sub-section '1 skill'. This entire 'Skill flows' section is highlighted with a red box.

4. Once you click on **Skill flows**, enter your credentials or your name again. Your skill flow will be presented. Click **Add skill** and navigate back to the chat interface.

Skill flows (1)

Personal skills

Skill flows

VV - Generate and send an email
Skill flow to generate and send an email

Add skill +

5. You can either click on the tile of your skill or type the phrase that you used during skill enhancement to invoke the skill flow.

Add skills from the catalog →

ApplyForAutoInsurance

VV - Generate and send an email

Send an email

Invokes the execution of the...

Generate an email

My skill usage Last week Total skills used 0 = 0%

6. Provide an **Input instruction** of your choice and click **Apply** button.

VV - Generate and send an email

You just need to complete this form first.

VV - Generate and send an email

Input instruction *

Generate an email to a new employee welcoming them to the company

Cancel Apply

7. Provide your email in the **To** field to test the email skill. But also notice that email content has been populated automatically! You can edit the content in the email body as necessary. Click **Apply** button.



VV - Generate and send an email

To
A semi-colon (;) separated list of the recipients.

Cc
A semi-colon (;) separated list of the cc recipients.

Bcc
A semi-colon (;) separated list of the Bcc recipients.

Subject
The subject of the email.

Content
Subject: Welcome to the Team - [New Employee's Name]
Dear [New Employee's Name],
I am delighted to welcome you to [Company Name]! We are thrilled that you have chosen to join our team and contribute your skills and experience to our organization.

Tell me what you want to do

8. You will get a message once the email is sent.



The email was sent.

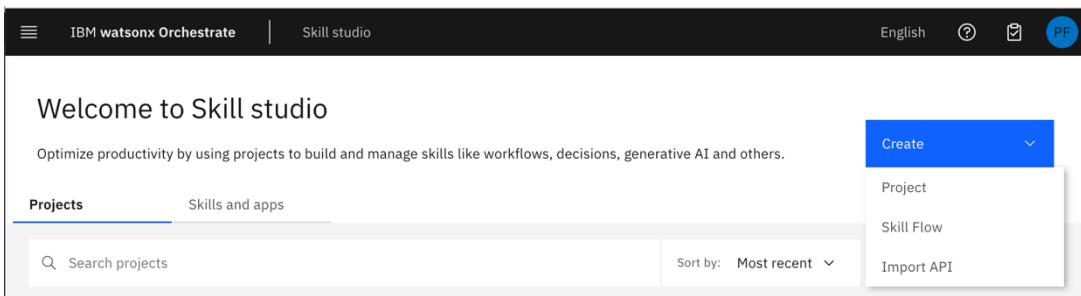
9. Now check your mailbox that you receive the email successfully!

Example: Build a decision in Skill studio

In this section we show how to develop, publish and consume a decision skill. Decision automation modeling that is at your fingertips can apply to any business domain. We choose here to show the steps on a simplified loan approval decision based on a few application parameters.

1. Initiate a decision skill project

From the sandwich menu, select **Skill studio** and click on the **Projects** tab.
In the *Create* dropdown menu select **Project**.



The screenshot shows the IBM Watsonx Orchestrate Skill studio interface. At the top, there's a navigation bar with the IBM logo, the text "IBM Watsonx Orchestrate", and "Skill studio". On the right side of the bar are language settings ("English"), help ("?"), download ("PDF"), and profile ("PF"). Below the bar, the main area has a title "Welcome to Skill studio" and a subtitle "Optimize productivity by using projects to build and manage skills like workflows, decisions, generative AI and others.". There are two tabs: "Projects" (which is selected and highlighted in blue) and "Skills and apps". Below the tabs is a search bar with the placeholder "Search projects" and a sorting option "Sort by: Most recent". To the right of the search bar is a "Create" button with a dropdown menu. The dropdown menu is open, showing four options: "Project" (which is highlighted in blue), "Skill Flow", and "Import API".

Set a name for this new project and possibly a description and click on the **Create** button. For the challenge choose a name that designates your intended automation over a business domain, or any code name. Be aware that the project name is unique across all challenge users.

New project

[Create project](#)

[Import project](#)

[Discovery tutorials](#)

[Industry samples](#)

Create project

Create an empty project and build it from scratch.

Name

Note: This is a symbolic name that must be unique and cannot be changed later.

Description (optional)

Describe your project

Cancel
Create

You see now a new dialog for choosing the type of skill that you will build in this project:

The screenshot shows the IBM WatsonX Orchestrate Skill studio interface. The top navigation bar includes 'IBM WatsonX Orchestrate', 'Skill studio', and various icons. The main area is titled 'OttoMatic' and has tabs for 'Build' (which is selected), 'Data', 'History', and 'Publish'. A sub-header says 'Get started by choosing a skill type'. Three cards are displayed:

- Decision**: Automate complex business decisions with rules and decision tables.
- Workflow**: Model your business process and publish it to use as a skill or to generate tasks.
- Generative AI**: Use generative AI to analyze or create contextual content.

Select **Decision** to automate a decision making.

The screenshot shows the IBM Watsonx Orchestrate Skill studio interface. At the top, there's a navigation bar with icons for help, settings, and a profile (PF). The main area has tabs for 'Build', 'Data', 'History', and 'Publish'. A sub-header says 'Get started by choosing a skill type'. Three cards are displayed:

- Decision**: Automate complex business decisions with rules and decision tables.
- Workflow**: Model your business process and publish it to use as a skill or to generate tasks.
- Generative AI**: Use generative AI to analyze or create contextual content.

You now dive into the different flavours of Decision:

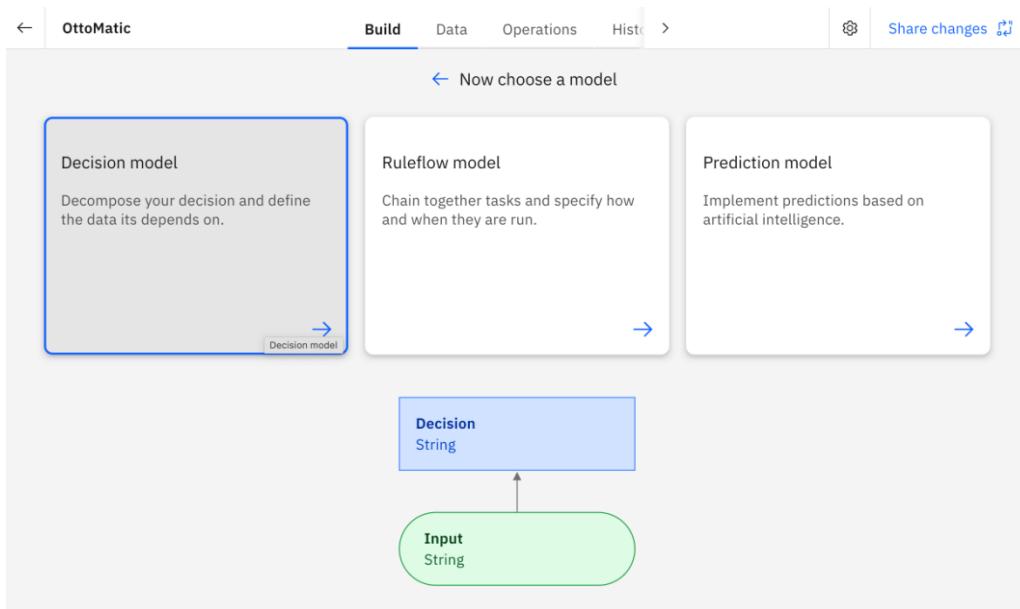
The screenshot shows the 'Decision' model selection screen. At the top, there's a navigation bar with icons for help, settings, and a profile (PF). The main area has tabs for 'Build', 'Data', 'History', and 'Publish'. A sub-header says 'Now choose a model'. Three cards are displayed:

- Decision model**: Decompose your decision and define the data its depends on.
- Ruleflow model**: Chain together tasks and specify how and when they are run.
- Prediction model**: Implement predictions based on artificial intelligence.

Skill Studio proposes 3 models for building your decision skill:

- decision model, inspired by the Decision Model Notation. It empowers you to model a functional flow of decisioning starting from data input nodes and ending with result data nodes, with rules and decision tables dealing with the logic for the reasoning.
- ruleflow model, coming from IBM Operational Decision Manager to organize the evaluation of rules selected by tasks. This approach is more procedural with the advantage of separating the library of rules from their selection to be evaluated in one or several rule tasks.
- predictive model, that aims to take benefit of an existing ML model hosted in wx.ai or imported as a PMML file. The motivation is to exploit a predictive model that classically measures a risk or an opportunity to automate a reasoning based on probabilistic elements.

Choose Decision Model.



You initialize the Decision model by setting a name, possibly a description and click on the Create button.

Create a decision model X

Name
Loan Approval

Note: This is a symbolic name that must be unique and cannot be changed later.

Description (optional)
Participants will build an automation system that decides whether a loan should be approved or rejected based on a predefined set of rules and possibly ML models.

Cancel Create

You now move to a view in which you see the list of skills by category on the left pane, and in the center a decision model diagram. You can start to shape your model to represent and automate a business logic.

In the toolbox you find all elements that you can create and assemble:

- Decision nodes, evaluating rule logic,
- Data nodes, representing input data of your decision service,
- Generative nodes, for invoking a generative AI
- Predictive nodes, for taking advantage of any classification or regression ML models.

The screenshot shows the IBM Watsonx Orchestrate interface. At the top, there's a navigation bar with 'IBM Watsonx Orchestrate' and 'Automations'. Below it, a sub-navigation bar shows 'OttoMatic' and 'Loan Approval' with tabs for 'Build', 'Data', 'Operations', 'History', 'Publish', and 'Diagram'. The 'Diagram' tab is selected. On the left, a sidebar shows 'Decisions' with 'Loan Approval' selected, and 'Workflows' and 'Generative AI' also listed. A search bar says 'Search for local components'. In the center, a diagram titled 'Loan Approval Decision model' shows a flow from 'Input string' (green rounded rectangle) to 'Decision string' (blue rounded rectangle). On the right, a panel for 'Loan Approval' has a 'Description (optional)' section: 'Participants will build an automation system that decides whether a loan should be approved or rejected based on a predefined set of rules and...'.

2. Define a Data model for your decisioning

You edit the input data node by setting its name and its type on the right side. You can work with primitive types. You can too use composite types to represent input or output data types.. Let 's see how to do this.

Go in the Data tab

The screenshot shows the 'Data' tab in the IBM Watsonx Orchestrate interface. The left pane is titled 'Data types' with the sub-instruction 'Define the data model vocabulary'. It features a '+ Add' button and a note: 'No data type'. The note explains: 'Create composite types with attributes, such as a Customer with a Name, an Address, and a Date of birth. You can also create choice lists with predefined values, such as a Category that can be Premium, Gold, Silver.' The right pane is titled 'Your data model is empty' with the sub-instruction 'Create data types to describe the real-life data you need to build your project.'

Create a Data type in the left pane by clicking on the + button, and select Composite.

Data types
Define the data model vocabulary

+
Composite
Choice list

No data type
 Create composite types with attributes, such as a Customer with a Name, an Address, and a Date of birth. You can also create choice lists with predefined values, such as a Category that can be Premium, Gold, Silver.

In the composite type editor set the name “Loan Application”. Start to create fields with amount of primitive type Number.

Data types
Define the data model vocabulary

+
Composite
Choice list

Q Search
Loan Application
amount

Loan Application /
 amount

Type
Number
 List

Documentation (optional) ①

JSON name ①
amount

You can see the default verbalization, expressions and actions that you can change if necessary. It will impact the way you will access to the information in the rules through a Controlled Natural Language.

The screenshot shows the IBM Data Types interface. On the left, there's a sidebar with a search bar and a tree view under 'Loan Application' with a node labeled 'amount'. The main panel is titled 'Loan Application / amount'. It has sections for 'Type' (set to 'Number'), 'Documentation (optional)', 'JSON name' (set to 'amount'), 'Vocabulary' (with singular and plural examples), 'Expressions' (with examples like 'the amount of a Loan Application'), and 'Actions' (with examples for 'Set', 'Add', and 'Subtract').

With this technology you will approach natural language while parsing and executing formally the business rules.

Repeat the creation for 2 fields, income, and debt to income ratio, of type Number. Your composite type looks at the end like:

The screenshot shows the 'Loan Application' composite data type with three attributes listed in a table:

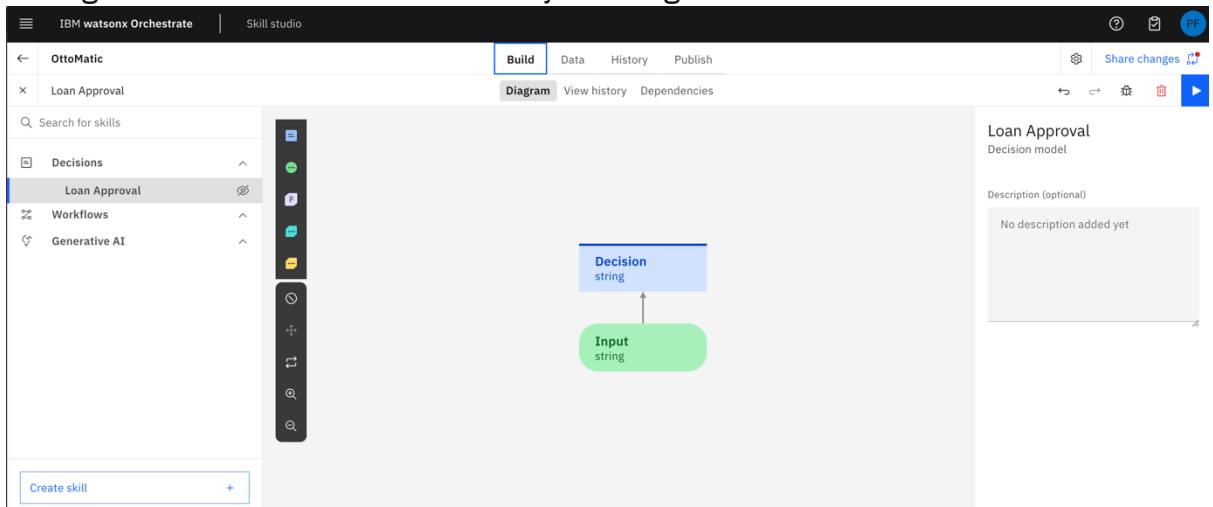
Name	Type	Action Buttons
debt-to-income ratio	Number	Add +
income	Number	Add +
amount	Number	Add +

In a

In a symmetrical approach the outcome of the decision should go in a composite type. Nevertheless, by simplicity, we will keep a String typed outcome in this sample.

3. Define your decision node interface

Now go back to the decision model by clicking on the Build tab.



Change the Input data node by renaming it into application and setting its type to Application.

application
Input node

Details	Default value
Node details	
Node name	
<input type="text" value="application"/>	
Output type	
<input type="text" value="Loan Application"/> <input type="button" value="▼"/>	
amount, debt-to-income ratio,...	
<input type="checkbox"/> Output is a list	

Change the Decision node. Set its name to Loan Approval. Keep the outcome as a String. Now let's manage the logic. Click on the Logic button.

Approval
Decision node

Details	Logic
Node details	
Node name	
Approval	
Output type	
String	
A string of characters	
<input type="checkbox"/> Output is a list	

4. Define the decision logic

Now let's manage the reasoning logic. Click on the Logic button and then on the + button.

Decision
Decision node

Details	Logic
No decision logic defined yet Create rules and decision tables to define how your decision is made.	

Decision
Decision node

Details	+ Business rule
<input type="checkbox"/> Decision table <input type="checkbox"/> Default rule	

You can choose between a single rule, a decision table that aggregates several conditions and actions, or a default rule. Depending on the input nodes connected the tool will propose rules with expected conditions and tests.



Approval

Create business rule

Name

Approve Loan

Select the criteria for your rule

Q

application

the amount of 'application' number

the debt-to-income ratio of 'application' number

the income of 'application' number

Preview your rule

```
if
    the amount of application is at least <min> and less than <max>
    and the income of application is at least <min> and less than <max>
    and the debt-to-income ratio of application is at least <min> and less than <max>
then
    set decision to <a string> ;
```

Cancel Create

The screenshot shows the 'Create business rule' dialog for an 'Approve Loan' rule. It includes fields for the rule name, criteria selection, a preview of the generated rule logic, and a final 'Create' button.

You can select all the proposed conditions covering all input fields. Click on Create.

You have now a business rule editor where you can type any test or action. The editor will propose completions of the statement when possible, and show a read sign when the rule statement can be parsed. In this example you have to instantiate the string value, that represents a simplistic outcome of the approval decision.

Back to the diagram →

Approve Loan ▾

Type your rule using the list below as reference

```

● 1 if
  2   the amount of application is at least <min> and less than <max>
  3   and the income of application is at least <min> and less than <max>
  4   and the debt-to-income ratio of application is at least <min> and less than <max>
  5 then
  6   set decision to <a string> ;

```

Inputs (1)

Name	Type
application	Loan Application

Output (1)

Approval
Decision node

Details Logic

Rules are applied in s... ▾

Search

Approve Loan

Your rule is ready for editing. Note that the red bullet notifies that its current state does not parse nor execute yet. You have to update the conditions to resolve the tests values for now shown with <name> placeholders.

You modify the rule by writing in the editor by taking advantage of the recommendations. Type Ctrl + Space to get the completion recommendations.

```

● 1 if
  2   the amount of application is less than 100000
  3   and the income of application is at least 50000
  4   and the debt-to-income ratio of application is less than 0.3
and <condition>
is <an object>
is defined
is not <an object>
is not null
is not one of <objects>
is null
is one of <objects>
is undefined
or <condition>
then <action> ;

```

Phrase:
`<condition> and <condition>: boolean`

Documentation:
 Returns whether both conditions are true

smart mode

Set threshold values in the conditions as proposed below:

Approve Loan ▾

Type your rule using the list below as reference

```

1 if
2   the amount of application is less than 100000
3   and the income of application is at least 50000
4   and the debt-to-income ratio of application is less than 0.3
5 then
6   set decision to "approved" ;
7 else
8   set decision to "rejected" ;

```

The red bullet disappeared. Your rule now parses and this simple decision model is ready to execute.

5. Test your decision

Click on the play blue button.

You are now in the Preview. Add a test data set. Set the values in the input parameters.

The screenshot shows the 'Test data' section of the preview interface. It has a dropdown menu 'dataset' with a 'Fill input fields with supported data' button. Below are four input fields with dropdown menus:

- application: debt-to-incomeRatio : 0.1
- amount : 10000
- income : 100000

Click on the Preview button to trigger the execution of your decision skill. The complete decision models and all rules are evaluated through this Preview execution. You then see the results.

The screenshot shows the IBM WatsonX Decision Modeler interface. On the left, there's a sidebar for 'dataset' with input fields for 'application' (debt-to-incomeRatio: 0.1, amount: 10000, income: 100000). The main pane displays 'Decision output' with a table:

Node Name	Result
Approval	"approved"

Below it is a 'Messages' section with a table:

Message	Node name	Rule name

At the bottom is a 'Preview history' section with a table:

Node	Rules	Rule Interaction	Output
Approval	1	Sequence	"approved"
application	1	Not applicable	{"amount": 10000, "debt-to-incomeRatio": 0.1, "income": 100000}

You can dive into the details of the data and rules evaluated rules, decision tables and predictive models. You can incrementally consolidate your decision model, and return to the preview to test the outcome.

6. Make visible your skill

Now change the visibility of the Decision skill. Go on the left pane, and click on the barred eye to make it public.

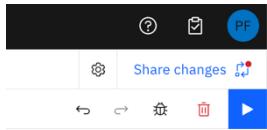
The screenshot shows the 'OttoMatic' skills list. The 'Loan Approval' skill is selected, and a context menu is open with the option 'Click to change the skill from private to public.' The skill card for 'Loan Approval' shows a lock icon, indicating it is currently private.

Icon changes as follows:

The screenshot shows the 'OttoMatic' skills list again. The 'Loan Approval' skill is now listed with a public icon (an eye), indicating it is now public.

7. Save your project

Share changes in the top right corner of the window.



Loan Approval
Decision model

Click on the Share button.

[← Back to OttoMatic](#)

Change log

	Skill name	Type	Kind	Details	Last updated
<input checked="" type="checkbox"/>	Loan Approval	Decision model	Skill updated	View details	10/5/2024, 5:01:40 PM

Your project is now saved on an underlying github repository, and supports collaborations with other team members.

8. Publish your decision.

Go to the Publish tap.

You have local changes in your project
If you want to publish a version that contains your latest changes, start by sharing your changes with your collaborators.

Create version from the last set of shared changes
No version is created from the last set of shared changes: 10/5/2024, 5:00:02 PM by PIERRE FEILLET.

[Create version](#)

Create a version of your work. Click on the Create Version button.

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?

This version will be based on the following set of shared changes:
10/5/2024, 5:00:02 PM by PIERRE FEILLET
No message

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

[Cancel](#) [Create](#)

You see now a version.



Publish

Build and publish your projects.

Filter versions

You have local changes in your project

If you want to publish a version that contains your latest changes, start by sharing your changes with your collaborators.

Version	Shared on	Shared by
1.0.0	10/5/2024, 5:07:47 PM	PIERRE FEILLET
Project	Publish status	
OttoMatic	Not published	Publish

Items per page: 20 | 1–1 of 1 items

1 of 1 pages

Click on the Publish link.

OttoMatic

Publish project

Publishing might take a while.
You can continue to work in the application while publishing runs in the background.

[Cancel](#) [Publish](#)

After few seconds your published endpoint is ready to serve.

Publish status

Published on 9/17/2024, 5:09:57 PM

[...](#)

9. Click on the [...](#) link. You navigate to a Swagger page tailored to test your decision service endpoint.



OttoMatic 1.0.1 OAS 3.0
<https://dl.watson-orchestrate.ibm.com:443/asb/ads/runtime/api/v1/deploymentSpaces/embedded/decisions/uab%2Fottomatic%2Fottomatic%2FottoMaticDecisionService%2F1.0.1-2024-10-05T15%3A13%3A26.410Z/openapi?outputFormat=JSON>

OttoMatic

Servers
<https://dl.watson-orchestrate.ibm.com/asb/ads/runtime/api/v1/deploymentSpaces/embedded/decisions/uab%2Fottomatic%2Fottomatic%2FottoMaticDecisionService%2F1.0.1-2024-10-05T15%3A13%3A26.410Z/openapi?outputFormat=JSON>

Authorize

OttoMatic/OttoMatic

POST /Loan_Approval/execute Loan_Approval

Execute Loan_Approval

Parameters

No parameters

Request body

```
{
  "application": {
    "amount": 10000,
    "debt-to-incomeRatio": 0.1,
    "income": 100000
  }
}
```

10. You set parameter values as you wish for the testing. You click on the execute button.

Execute Clear

Responses

Curl

```
curl -X 'POST' \
'https://dl.watson-orchestrate.ibm.com/asb/ads/runtime/api/v1/deploymentSpaces/embedded/decisions/uab%2Fottomatic%2Fottomatic%2FottoMaticDecisionService%2F1.0.1-2024-10-05T15%3A13%3A26.410Z/openapi?outputFormat=JSON'
-H 'accept: application/json'
-H 'Content-Type: application/json'
-d '{
  "application": {
    "amount": 10000,
    "debt-to-incomeRatio": 0.1,
    "income": 100000
  }
}'
```

Request URL
https://dl.watson-orchestrate.ibm.com/asb/ads/runtime/api/v1/deploymentSpaces/embedded/decisions/uab%2Fottomatic%2Fottomatic%2FottoMaticDecisionService%2F1.0.1-2024-10-05T15%3A13%3A26.410Z/operations/Loan_Approval/execute

Server response

Code	Details
200	Response body "approved"

Congratulations! You have successfully tested the decision skill exposed as REST API. The decision automation has been executed with the outcome showing in the response body.

11. Configure your skill project

This step allows to rename it, associate a specific icon and get the root url for your decision project.

Go back on your Automation project tab in your browser.



Go in the Skill Studio home, and in its App tab and search for your project name, here “OttoMatic”.

Welcome to Skill studio

Optimize productivity by using projects to build and manage skills like workflows, decisions, generative AI and others.

Create

Projects Skills and apps

Skills Apps Configure prebuilt skills

Q loan

Select an app to configure the settings for all the app's skills.

Name	Description	Configuration status
OttoMatic	Execute Loan_Approval	Not Configured

Click on the vertical ... and edit.

Skills and apps / Enhance this skill

Configure the “OttoMatic” app

Details Configuration

Change the app's name and icon to whatever makes more sense for your organization. Be sure to provide the connection information.

Name* OttoMatic

Description 0/100 Execute Loan_Approval

App icon

Preview

The app will look like this in the skill set.

OttoMatic 2 skills

The app will look like this in the skill set.

OttoMatic 2 skills

Cancel Save

Keep default configuration and Save.

Success
OttoMatic was configured successfully

17:26:55

Your project is now a configured app in the catalog of watsonxOrchestrate.



Name	Description	Configuration status
OttoMatic	Execute Loan_Approval	Configured

12. Navigate to the Skill tab. Search for the skill name that you developed, here “loan_approval”. It appears as “Ready to publish”. Click on the ... button and select “Enhance this skill”.

Name	Step in the process	Status	Skill type	Author	Last edited	Actions
approve_isan	Just 1 step away to be ready	Ready to publish	Automation	felien@ibm.com	September 17 2024	Edit
SVT_demo_loan1	Ready to use	Published	Automation	Donna.Joseph@ibm.com	August 08 2024	Enhance this skill
SVT_demo_loan	Just 1 step away to be ready	Ready to publish	Automation	Donna.Joseph@ibm.com	August 08 2024	Export this skill
Compute Interest	Ready to use	Published	Automation	felien@ibm.com	July 31 2024	Delete this skill

You now enter in the Skill enhancement editor.

Enhance the “Loan_Approval” skill
Add details that will make people want to use this skill.

Name	Input	Output	Phrases	Next best skills
Loan_Approval				

Preview
The skill will look like this in the catalog.

The skill will look like this in the skill set.

Cancel **Publish** **Save as draft**

The aim is to tune the conversational interface of your automation skill, by defining how the skill parameters surface in the chat and what utterances will trigger it. You can extend or modify the default proposals.

Keep the default skill enhancement. Click on Publish. You should get a pop up confirming the publishing.



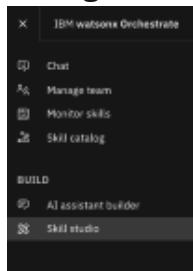
Your decision automation is now ready with a “Published” status in the Skill list.

The screenshot shows the 'Skills and apps' section of the WatsonX Orchestrate interface. The 'Skills' tab is selected. A search bar at the top has 'Find a skill' placeholder. Below it, there's a filter icon and a grid icon. The main table lists one skill:

Name	Step in the process	Status	Skill type	Author	Last edited
Loan_Approval	Ready to use	Published	Project	feillet@fr.ibm.com	October 06 2024

13. Pick your skill and add it to your chat.

Now go to the chat window.



You switch to the chat view.

Click on the Add skills from the catalog. Search for your published skill and add it. You can see your skill inside the App representing your project, here OttoMatic.



Skill catalog /

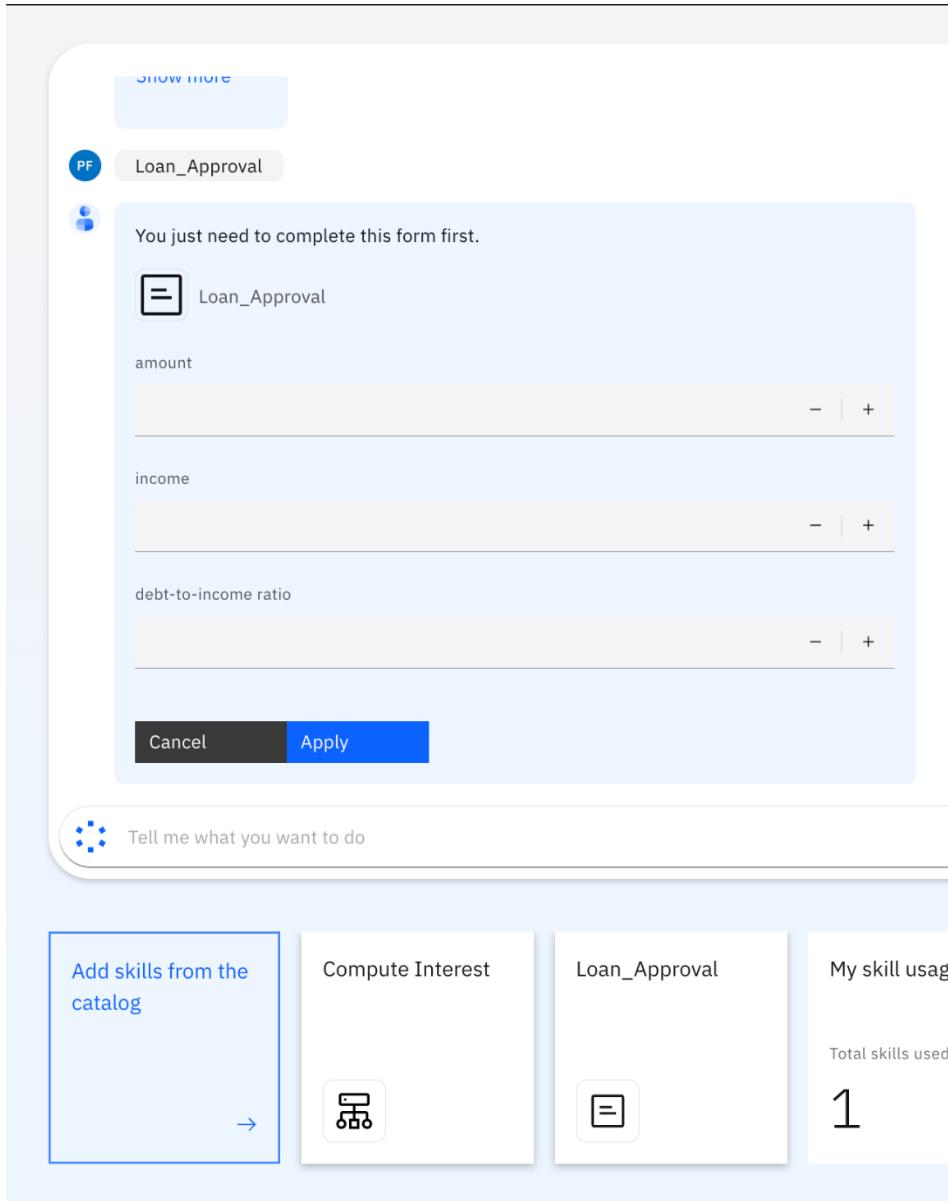
OttoMatic (1)

The screenshot shows a user interface for managing skills. At the top, there's a navigation bar with a search bar labeled "Search skills". Below it, a section titled "OttoMatic" contains a single skill card. The skill card has the name "approve_loan" and the description "Execute approve loan". To the right of the skill name is a small icon with a square and a circle, followed by the word "Added" and a dropdown arrow. The entire interface has a clean, modern design with a light blue header and a white main content area.

Go back to the chat view. You now see the new skill available at the bottom of the page, in this example “approve_loan”.

14. Invoke your skill in the chat

You can now invoke the decision skill by 2 ways. The first is by simply clicking on the button.



A form matching the signature of your decision skill pops up in the chat. Fill in values of the input parameters.



The screenshot shows the IBM Watsonx Orchestrate interface. At the top, there's a navigation bar with 'IBM Watsonx Orchestrate' and 'Personal skills'. Below it is a modal window titled 'Loan_Approval' with the sub-instruction 'You just need to complete this form first.' Inside the modal, there are three input fields: 'amount' (10000), 'income' (100000), and 'debt-to-income ratio' (0.1). Each field has minus and plus buttons for adjustment. At the bottom of the modal are 'Cancel' and 'Apply' buttons. Below the modal, a message bar says 'Tell me what you want to do' and contains four buttons: 'Add skills from the catalog' (highlighted with a blue border), 'Compute Interest', 'Loan_Approval', and 'My skill usage'. The 'My skill usage' button shows 'Total skills used: 1'.

Click on the Apply button in the form. It triggers the execution, and the display of the answer, with the output parameter(s).

The screenshot shows a message card with a blue icon and the text 'Skill completed'. Below it, the message 'Result: approved' is displayed. At the bottom of the card is a link 'Show less'.

Test your decision skill from a plain text instruction in the chat.

The other way to invoke your decision skill is through a plain text command. Type a phrase that will be classified as an utterance to trigger your skill. In this case “Approve a loan”. The same form appears to execute the same automation.



PF

Approve a loan



You just need to complete this form first.



Loan_Approval

amount

10000

- | +

income

100000

- | +

debt-to-income ratio

0 . 1

- | +



Skill completed

Result: approved

[Show less](#)

Tell me what you want to do

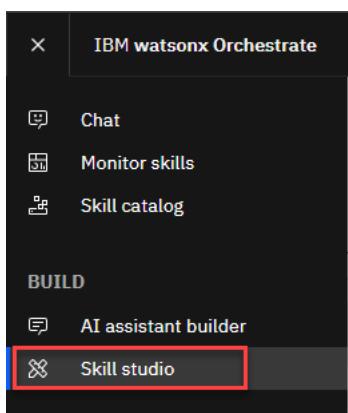
Congratulations! You have succeeded in making a decision automation in Skill Studio, promoted it as a skill, and consumed it in a conversational assistant.

Example: Build a genAI skill in Skill studio

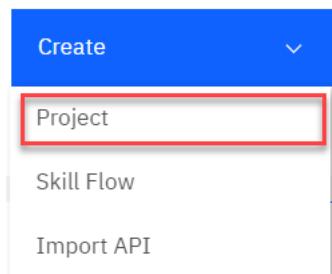
In this example you will learn how to use an out-of-the-box generative AI based automation in watsonx Orchestrate. For example, to create a summary of customer support tickets, you can leverage watsonx.ai with few-shot prompting. This can be configured as a generative AI automation skill in IBM watsonx Orchestrate.

v. Creating Generative AI Automation in watsonx Orchestrate

1. Click on the **sandwich** icon  in watsonx Orchestrate and select **Skill studio**.



2. Then click on **Create skill** and select **Project** from the drop-down menu.



3. Provide the **Name** for your project ("TicketSummarization") and an optional **Description**, then click **Create**.



New project

Create project
Create an empty project and build it from scratch.

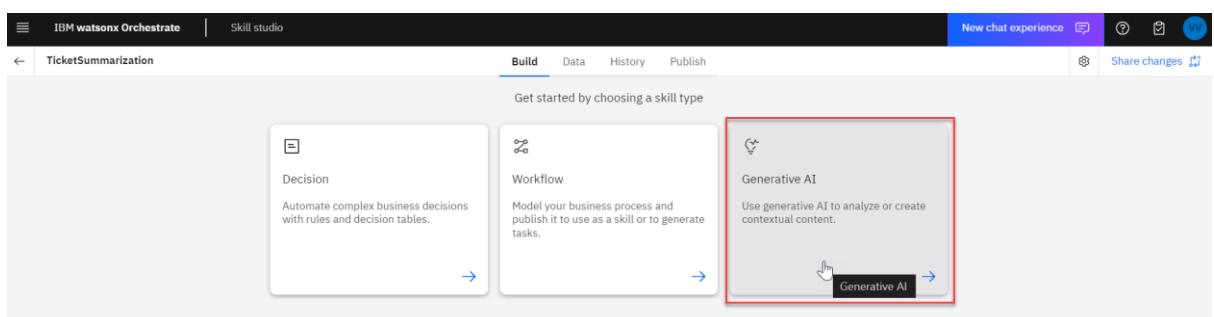
Name
TicketSummarization

Note: This is a symbolic name that must be unique and cannot be changed later.

Description (optional)
Gen AI project to summarize support tickets

Cancel Create

4. Select **Generative AI** component for your new automation in the next screen.



5. Provide the **Name** for your new component in the format "Your Initials - Ticket Summarization", optional **Description**, and click **Create** to create it.

Create a generative AI

Name
VV - Ticket Summarization

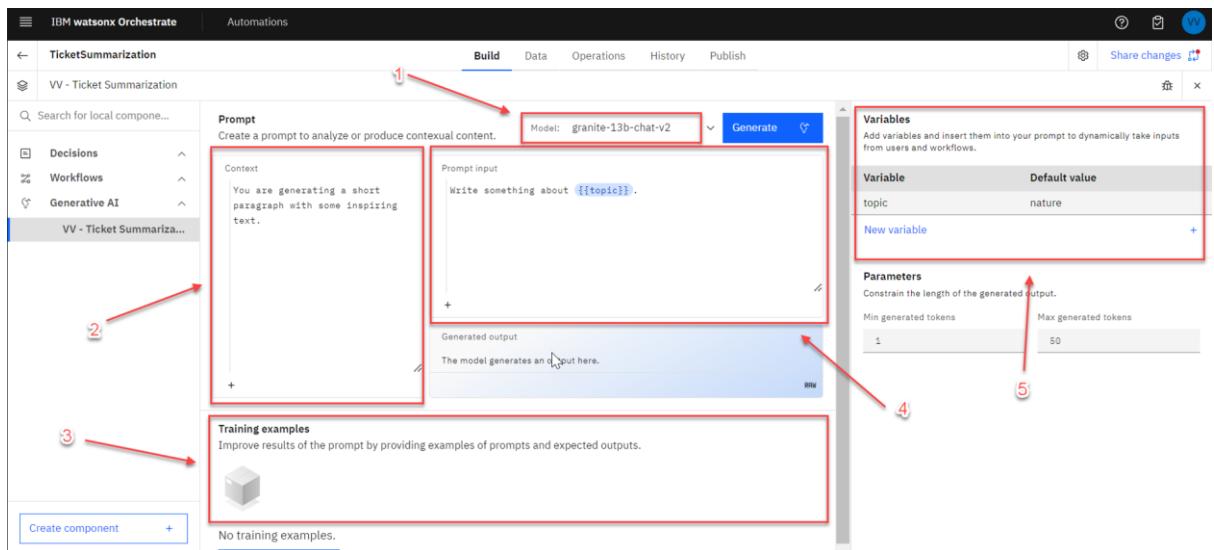
Note: This is a symbolic name that must be unique and cannot be changed later.

Description (optional)
Support ticket summarization

Cancel Create

vi. Implementing and Customizing Generative AI Automation

1. Once you create the Generative AI component, you will be presented with the default **Prompt Builder** layout where you can implement and customize your new Generative AI automation skill. Take a minute to study the layout which allows you to:
 - a. Select the **LLM Model** the skill will be using
 - b. Provide **Context**, i.e. instructions for summarization
 - c. Use **Training examples** to improve results
 - d. Experiment with **Prompt input**
 - e. Add **Variables** to be used as Input for the new skill
 - f. Tune the Min and Max generated tokens values to fit your needs
 - g. **Test** your new automation before publishing it as a skill



2. Start by creating the new variable that will be used as input to the new Generative AI automation skill. To do so, click on New variable button and define the following variable. Alternatively, you can rename the existing “topic” variable that was created automatically.
 - **Ticket** (no default value)

Variables

Add variables and insert them into your prompt to dynamically take inputs from users and workflows.

Variable	Default value
ticket	Default value
New variable	+

3. Update **Context** and **Prompt input** sections to leverage the new input variable. The variables are referenced using **{{variable}}** format. More specifically, enter the following values as shown in the screenshot below:

- "You are a summarization tool for customer support tickets. You receive Title and Description for a support ticket and write a concise summary. Be sure to include a person's name in the output." in **Context** section
- "Summarize the {{ticket}}" in **Prompt input** section

The screenshot shows the WatsonX AI Assistant interface. On the left, the 'Prompt' section contains a 'Context' box with the following text: "You are a summarization tool for customer support tickets. You receive Title and Description for a support ticket and write a concise summary. Be sure to include a person's name in the output." On the right, the 'Variables' panel shows a table with one row: 'ticket' and 'Default value'. Below the table, the 'Parameters' section has 'Min generated tokens' set to 1 and 'Max generated tokens' set to 50. A red arrow points from the 'ticket' variable in the table to the '{{ticket}}' placeholder in the 'Prompt input' box, which contains the text "Summarize the {{ticket}}".

4. Refer to the following table for training examples and enter them in the **Training examples** section.

Input	Output
Title: Bad Keyboard Description: Mary Williams said some of the keys on her laptop are sticking. When she types the H or K keys the output is multiple of the letter	Name: Mary Williams. Summary: Laptop keys are sticking possibly due to coffee spill. Issue with H and K keys

<p>Title: Battery loses charge after one hour Description: Bill Jones says his laptop battery dies after one hour of use. This makes it difficult for him to work while he is commuting. He would like a replacement battery.</p>	<p>Name: Bill Jones. Summary: Laptop battery dies after one hour.</p>
<p>Title: Laptop crashing Description: Susan Taylor says her laptop crashes every few hours. She has lost work because of this. She updated to the latest OS but its still happening. Its been going on for 1 week. She tried re-installing the OS but her laptop keeps crashing not just one instance of the letter. Mary spilled coffee on her laptop 3 days ago.</p>	<p>Name: Susan Taylor. Summary: Laptop crashes every few hours. Has re-installed OS but issue continues.</p>

5. Change LLM model to **granite-13b-instruct-v2** in the "Model" section. You can also explore other models that are available out-of-the-box.

The screenshot shows the IBM WatsonX Orchestrate Skill studio interface. On the left, there's a sidebar with 'Decisions' and 'Workflows'. A red box highlights the 'Workflows' section, which contains a link 'Click to change the skill from private to public.' Below this, another red box highlights the 'VV - Ticket Summarization' skill card. The main workspace is titled 'Prompt' and contains the following content:

- Model:** ibm/granite-13b-instruct-v2
- Prompt input:** Summarize the {{ticket}}.
- Generated output:** Name: James Miller. Summary: Printer not working. Urgent request.
- Variables:** A table with one row: 'ticket' (Default value: Title: Printer not working Des:).
- Parameters:** A table with two rows: 'Min generated tokens' (1) and 'Max generated tokens' (200).

At the bottom, it says '18 tokens generated in 1.366s. Stop sequence: eos_token'.

vii. Deploying and Publishing Generative AI Automation as a Skill

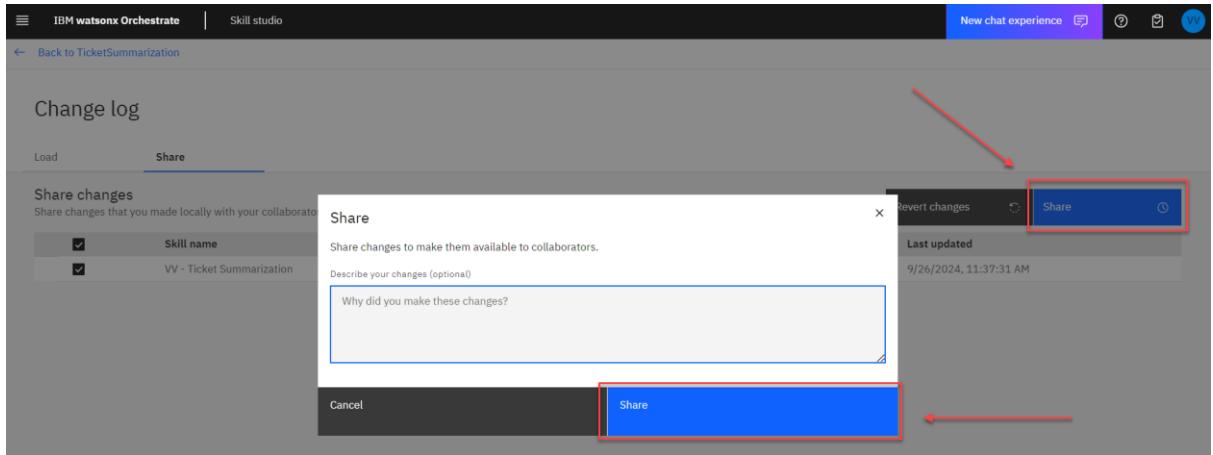
1. The first step is to change your new skill from private to public to be able to deploy it to the catalog later.

The screenshot shows the 'Workflows' section of the Skill studio interface. A red box highlights the 'Workflows' link, and another red arrow points to the 'Share changes' button in the top right corner of the main workspace.

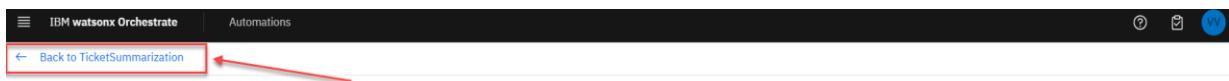
2. The next step during the deployment is to share the changes done to the Generative AI automation. Click on **Share changes** button in the top right corner of the screen:

The screenshot shows the same interface as the previous one, but the 'Share changes' button in the top right corner is now highlighted with a red box and an arrow pointing to it.

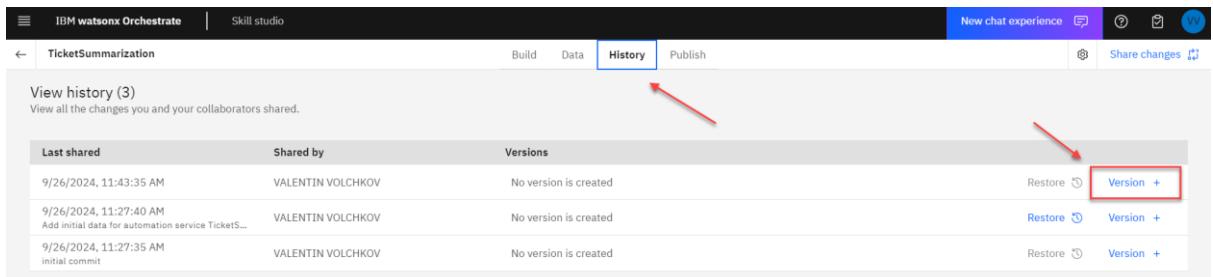
3. Review the changes and click on **Share** button, and then **Share** again.



- When the changes have been shared, click on **Back to TicketSummarization** link to return to the Build interface.



- Next, click on **History** tab and then on **Version +** link for the most recent version of your automation.



- Specify **1.0.0** as the new version number in the **Name** field, and then click **Create** button. A new version of the automation will be created.



Create a version

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

Name 1.0.0

Description (optional)

What changes were made in this version?

i This version will be based on the following set of shared changes:
6/10/2024, 1:12:38 PM by VALENTIN VOLCHKOV
No message

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

Cancel Create

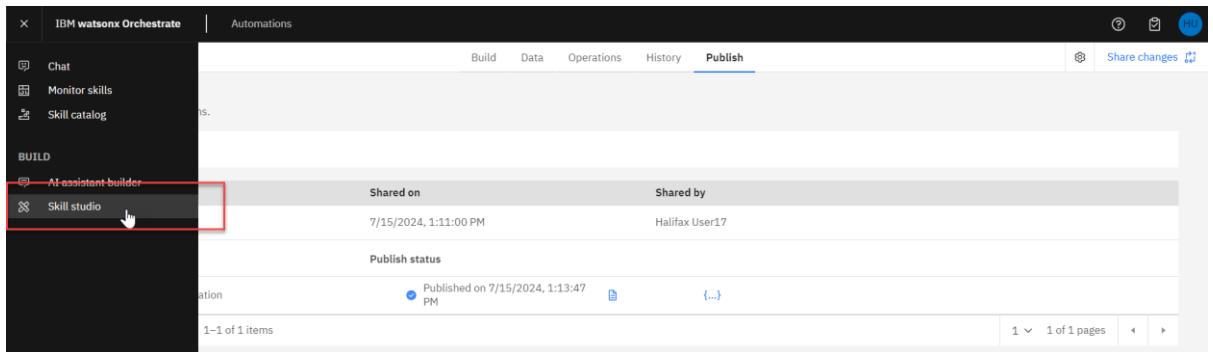
- Lastly, click on **Publish** tab, expand the section corresponding to the most recent Version that has just been created, click **Publish** link, and then Publish button in the new dialog box to confirm. Wait until publishing is complete.

Version	Shared on	Shared by
2.0.0	9/26/2024, 12:22:45 PM	VALENTIN VOLCHKOV
1.0.0	9/26/2024, 11:45:40 AM	VALENTIN VOLCHKOV

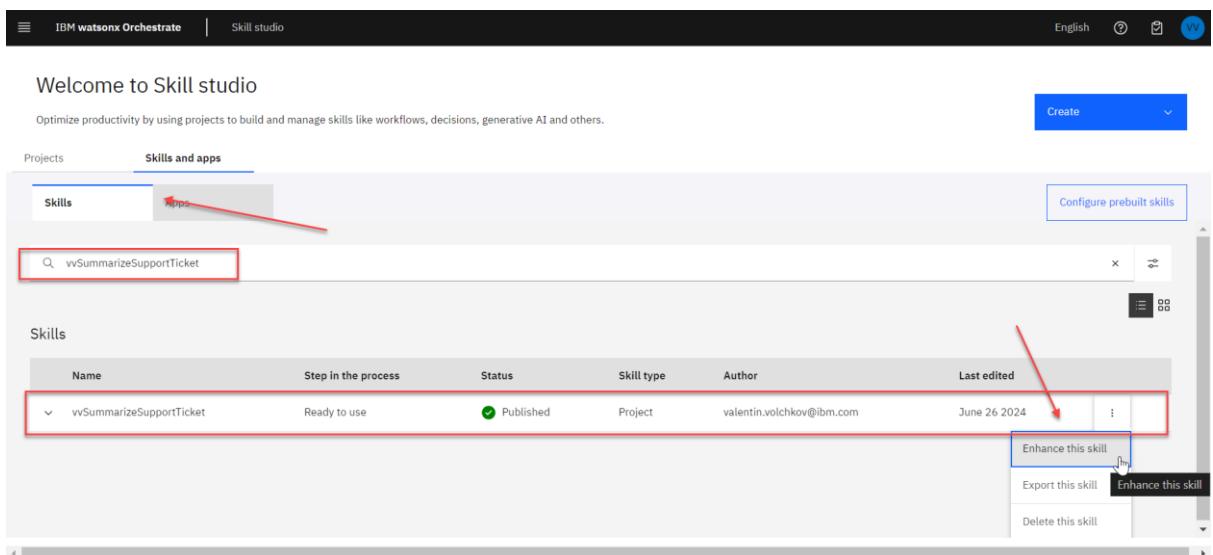
Items per page: 20 1–2 of 2 items

viii. Enhancing Generative AI Skill

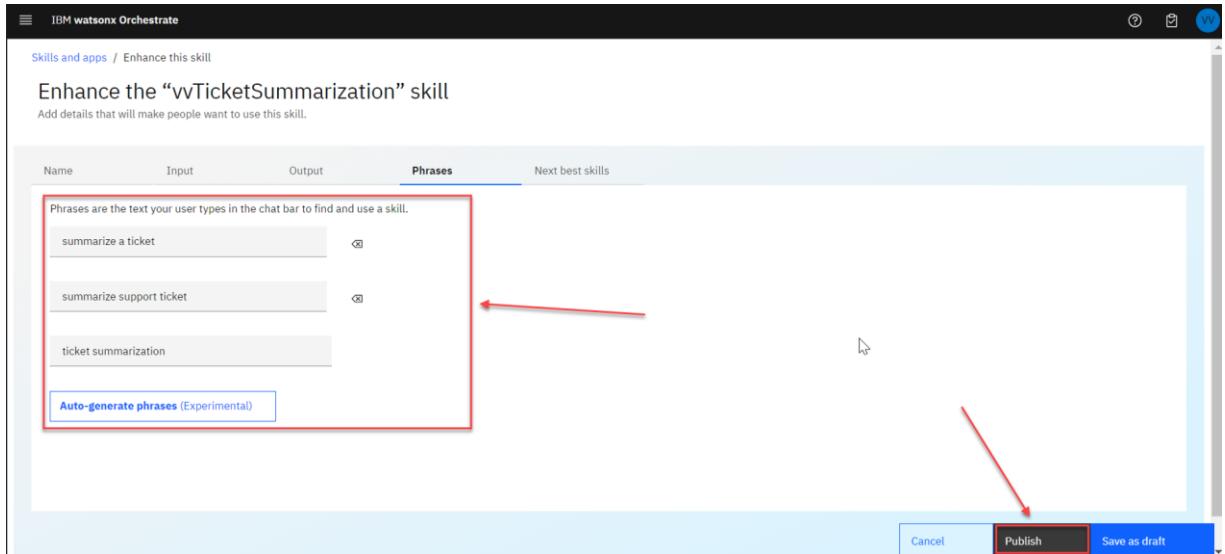
- Now that the new Generative AI automation has been added into the IBM Watsonx Orchestrate catalog, the next step is to enhance the skill with expected inputs, adjust outputs, and provide initial phrases to be used in conversational UI. Click on the **sandwich** icon in the top left corner of the screen and select **Skill studio** in the menu.



- Under **Skills and apps** tab (**Skills** subtab), locate the skill that you have just added to the catalog (note that its status is **Ready to publish**), click on three dots and select **Enhance this skill** from the dropdown menu. You can also search for your skill if it does not show up at the top of the list.



- In the **Phrases** tab make sure to provide a couple phrases that a user may type to invoke this skill, e.g. "summarize ticket" or "summarize support ticket", and click on **Publish** once done:

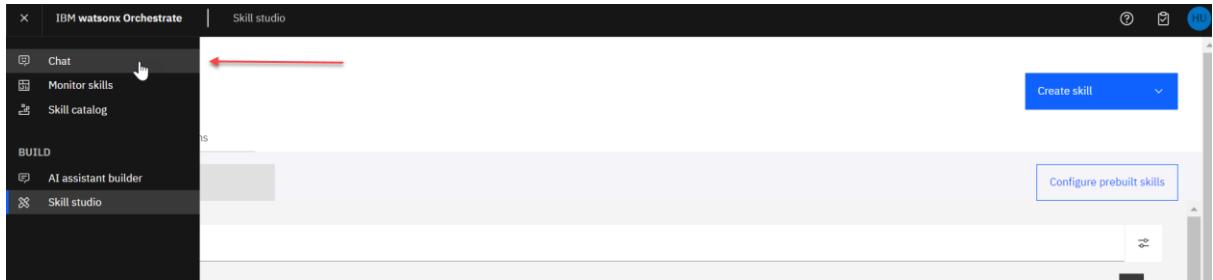


4. Note that when publishing is complete, the status of the skill changes to **Published** in the list.

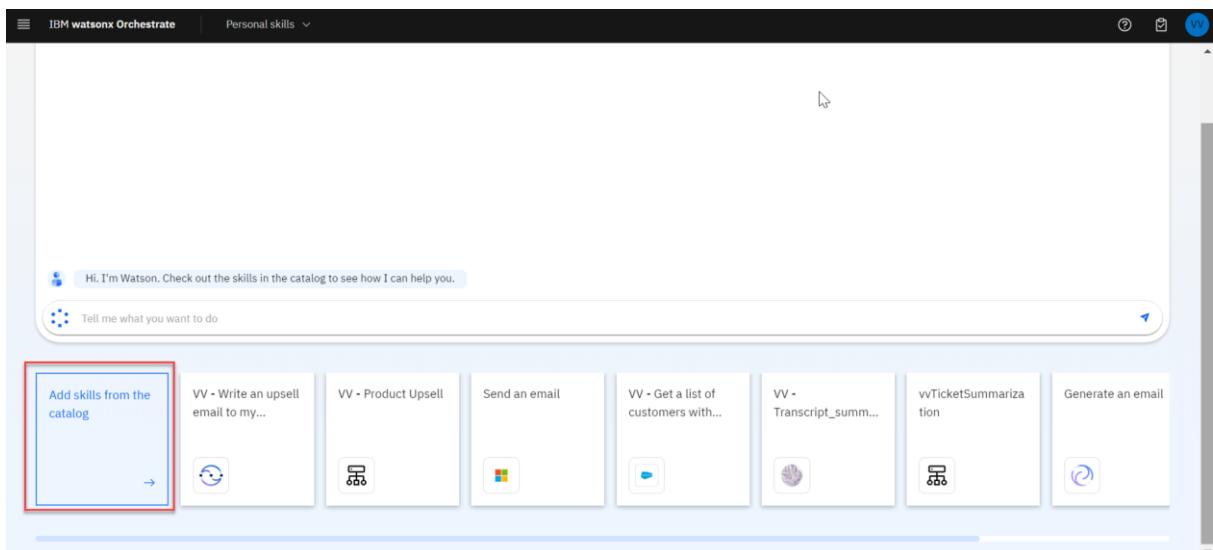
Name	Step in the process	Status	Skill type	Author	Last edited
vvTicketSummarization	Ready to use	Published	Automation	valentin.volchkov@ibm.com	June 10 2024
ProcessEmail	Just 1 step away to be ready	Ready to publish	Automation	Sami.Yusuf@ibm.com	June 10 2024
email	Just 1 step away to be ready	Ready to publish	Automation	Christina.Colley@ibm.com	June 10 2024
approvalWithTasks	Ready to use	Published	Automation	kpolovick@ibm.com	June 10 2024
Communication Flow	Ready to use	Published	Skill flow	kpolovick@ibm.com	June 10 2024

ix. Adding and Testing the Generative AI Skill

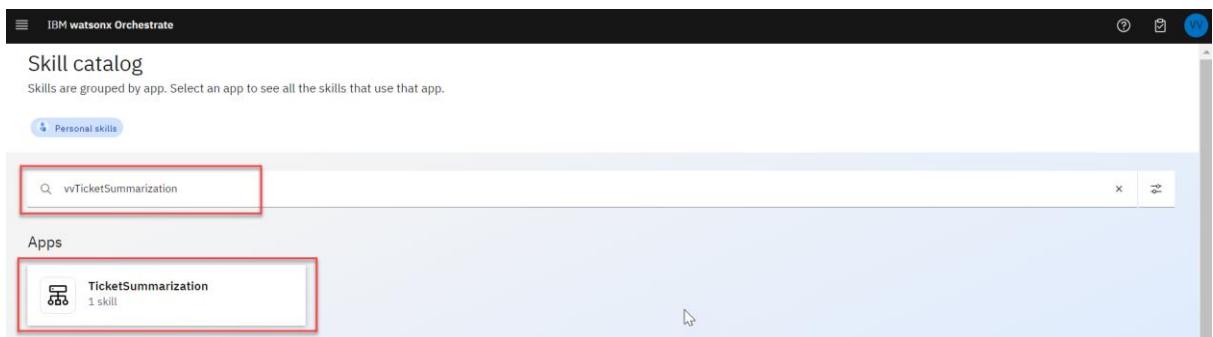
1. Now that the new Gen AI skill is published into the IBM Watsonx Orchestrate catalog, the next step is to add it to the list of **Personal Skills** and test it in conversational UI of Watsonx Orchestrate. Click on the **sandwich icon** in the top left corner of the screen and select **Chat** in the menu.



2. Click on **Add skills from the catalog** button.



3. Search and locate your new skill in the catalog.

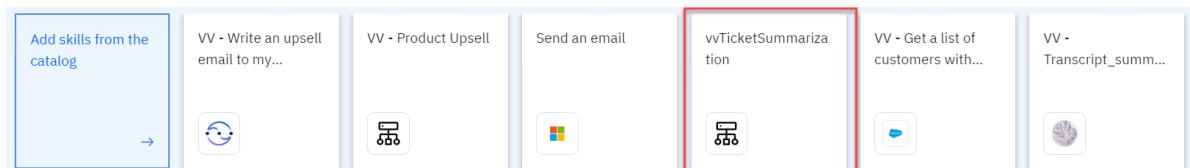


4. Click on "TicketSummarization" group and click on **Add skill** link to add it to the list of your Personal Skills.



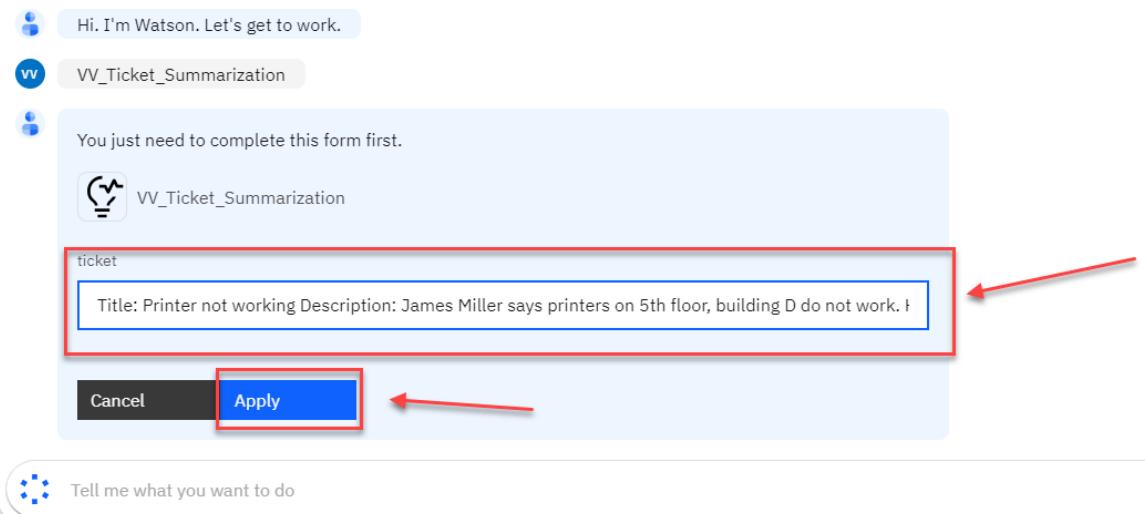
The screenshot shows the IBM Watsonx Orchestrate interface. At the top, it says "Skill catalog / TicketSummarization (1)". Below that, under "Personal skills", there is a search bar and a list of skills. One skill, "TicketSummarization", is highlighted with a red border around its "Add skill +" button.

5. Return back to the conversational UI by selecting **Chat** in the menu from the **sandwich** icon in the top left corner of the screen. Notice that the new skill is available now.

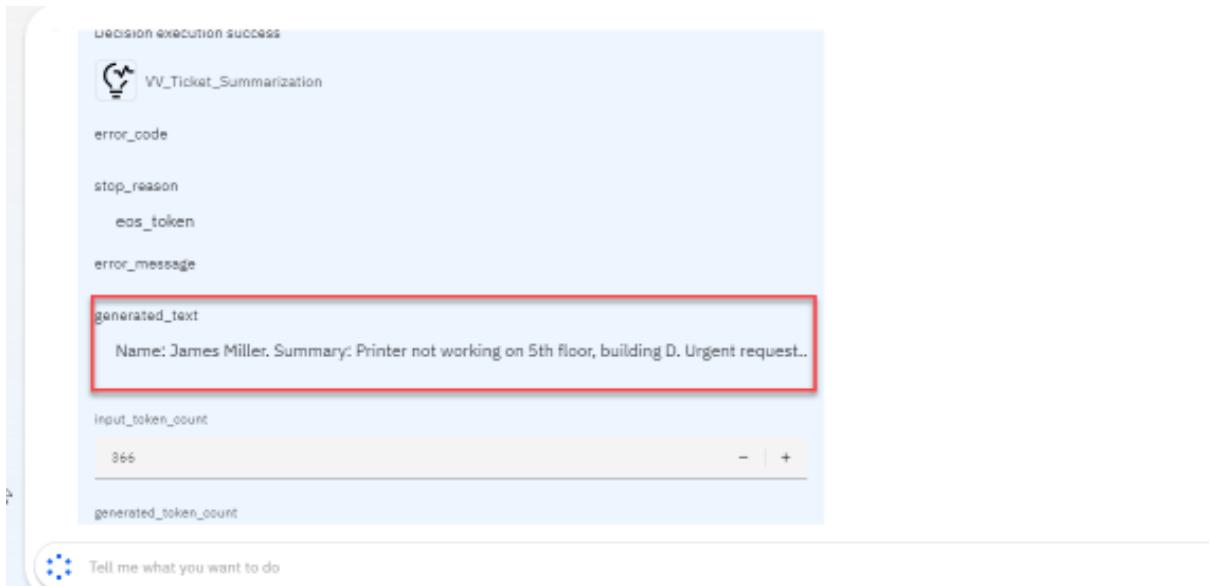


6. Click on the skill tile. Using the example below, provide the input data for the skill. Then click on **Apply**.

Ticket
Title: Printer not working Description: James Miller says printers on 5th floor, building D do not work. He has tried printing from all 3 printers on the floor and only one works but it prints in black and white only. James needs to print documents in color. This is an urgent request. James has client meeting in 4 days.



7. The new Generative AI automation will be executed. Validate the results.



Notice that the ticket summary has been generated using the format provided in the instructions, i.e.:

Name: James Miller **Summary:** Printer on 5th floor building D not working.

You have just successfully created and invoked a Generative AI based automation skill which takes input variables while context and instructions are encapsulated by the skill. The skill returns a summary of the input using the instructions. The Generative AI based automation implements a few-shot prompt to an LLM, using several examples of customer support ticket summarization.



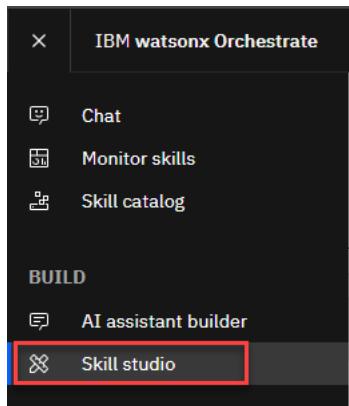
Example: Build a workflow in Skill studio

In this example you will learn how to build a simple workflow in the Skill studio in watsonx Orchestrate. This workflow will send an email and display the id (for the email that was sent) in a user task.

When you create a workflow, you start with a user activity, a start node, and an end node.

The order in which you create your workflow is up to you. If you know what data you need, you can go to the Variables tab and start adding variables. Some users prefer to add their activities to the diagram first, then create the variables as they are needed and map the variables to the activities.

1. Click on the **sandwich** icon  in watsonx Orchestrate and select **Skill studio**.

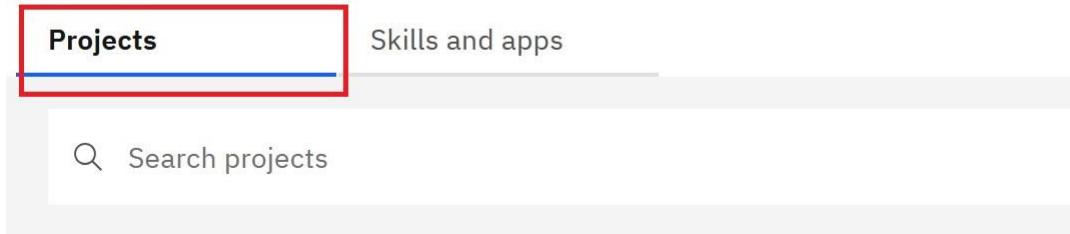


2. Ensure the **Projects** tab is selected.

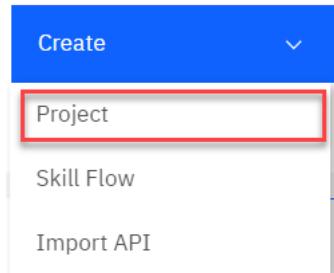


Welcome to Skill studio

Optimize productivity by using projects to build and manage skills like workflow



3. Then click on **Create** and select **Project** from the drop-down menu.



4. Provide the *Name* for your project including your user id as a suffix, e.g. ("SendEmail_<your user id>").
5. Optionally, enter a *Description* to identify the purpose of your automation.
6. Click **Create** to create the automation.
7. Select the **Workflow** component by clicking on the **Workflow** tile.
8. In the *Name* field, enter a name for your new workflow, including your user id as a suffix. E.g. Send Email Flow <your user id>
9. Optionally, enter a *Description* to identify the purpose of your workflow.
10. Click **Create** to create the workflow.
11. You will now see the workflow *Diagram* tab displayed. Click on the **Activity** task tile to open the *Activity properties* dialog. It will appear on the right.
12. Change the *Name* of the activity to “Send Email”.
13. For this activity, you will use a pre-existing skill from the skill catalog. In the *Implementation* field, select **Skill from catalog**. This opens a list of skills.
14. On the *Add a skill* screen, you will see *Send an email from Gmail* listed under *Most popular* skills. If you don’t see it, you can enter ‘email’ into the search skills field to find the *Send an email from Gmail* skill in the skill catalog. Click on the **Send an email from Gmail** tile to select it and click

Save.

Choose a skill from the list to invoke

Add a skill

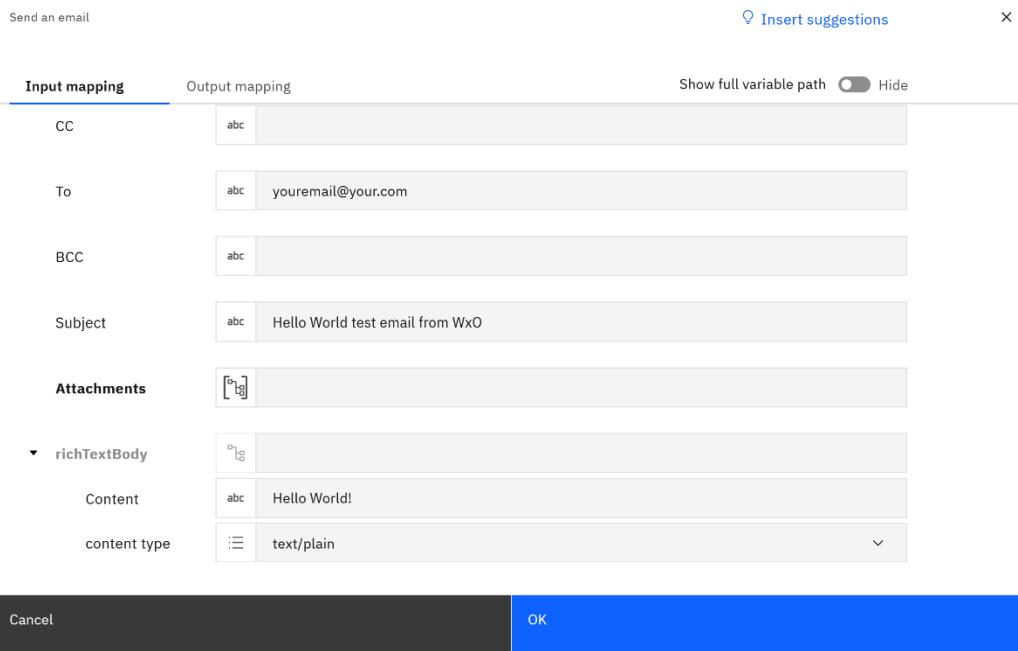
The screenshot shows a search bar at the top with the placeholder "Search skills". Below it is a section titled "Most popular" containing three cards: "Send an email using Outlook" (Skill signature), "Create a lead in Salesforce" (Skill signature), and "Send an email from Gmail" (Skill signature, which is selected). Below this is a section titled "All skills" with six cards: "HubSpot CRM" (33 skills), "Slack" (6 skills), "ServiceNow" (27 skills), "DnB Beneficial Ownership Structure" (1 skill), "Apptio Targetprocess" (24 skills), and "Anaplan" (20 skills). At the bottom right are "Cancel" and "Save" buttons, with "Save" being highlighted in blue.

15. Click on the **Send Email** tile. On the next screen when the skill loads, click on the *Send Email* tile and click **Save**.
16. Finally, you will need to define the inputs and what to do with any outputs for the Send Email activity. Click on **Define data mapping** to open the mapping dialog.

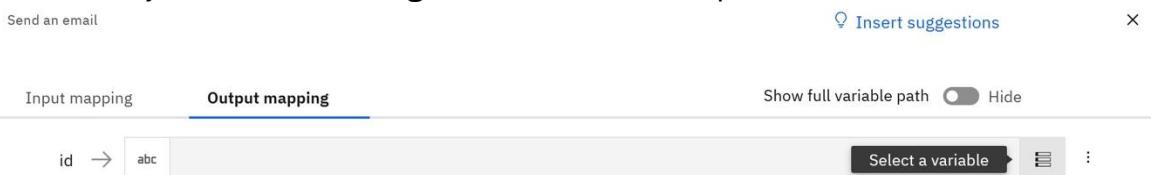
The screenshot shows the "Activity properties" dialog for a "Send an email" skill. It includes fields for "Name" (set to "Send an email") and "Implementation" (set to "Send an email"). At the bottom is a large blue button labeled "Define data mapping".

17. For the purpose of this example workflow, we will hard code the values for the Send Email skill input parameters to test the workflow. Enter values, such as the following, for your test email on the *Input mapping* tab:
To: <your email address>
Subject: Hello World test email from WxO
Content: Hello World!
content type: select **text/plain** from the dropdown

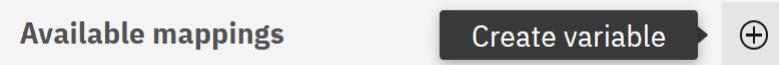
Note: You can create variables and use those for the values instead. Click on the symbol to the right of each field to open the dialog to select an existing variable or create a new one. For each variable you create, provide a *Name*, choose from the simple *Data type* options available (*Boolean, Document, Date, Date & time, Integer, Number, String, or User*) or a custom type if you already created, indicate if the variable is single value or a *List*, and if it is an *Input* and/or an *Output*.



18. Switch to the Output mapping tab. There is one output from the *Send email from Gmail* skill, an id. To capture this id, you will need to create a variable. You can create a new variable directly from this screen. Click on the **Select a variable** symbol to the right of the *id* field to open the list of variables.



19. Click on the **Create variable** symbol + at the top of the Available mapping dialog to open the new variable dialog.



20. Enter a *Name* for your new variable. E.g. `emailId` and click **Create**. Note that the *Type* of the new variable is already set for you based on the



type of the output field it is mapped to.

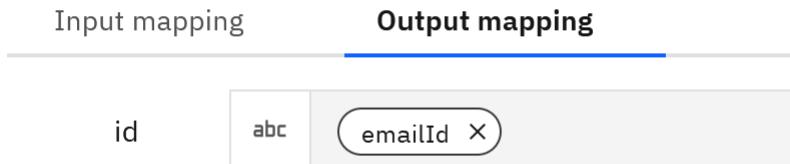
Create variable
Name the new variable. The new variable will be mapped to this data field.

Name

Type
 X

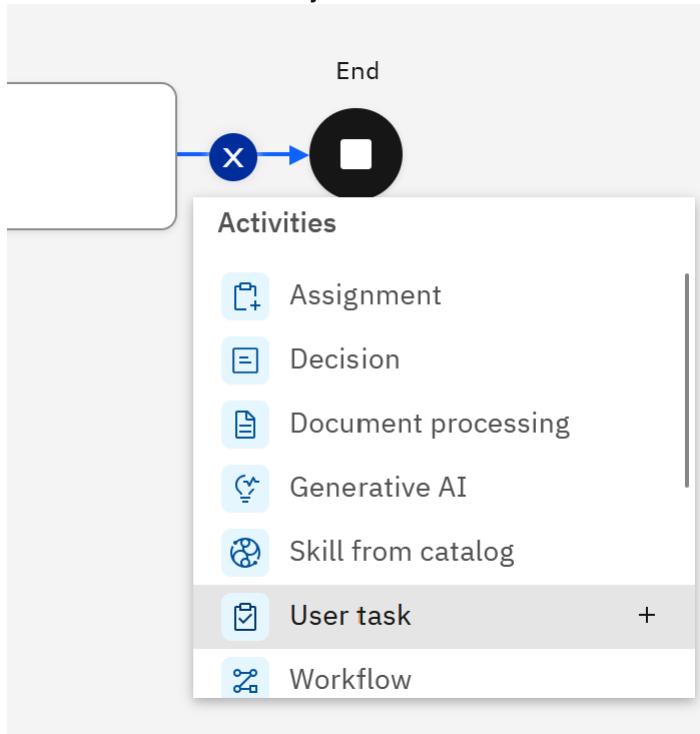
Cancel Create

- 21.The new variable is now shown in the *id* field. Click **Ok** to save the mappings.
Send an email



- 22.Now you will add another activity, a user task, to the workflow so you can interact with the workflow and see the emailId captured from the *Send an email* activity. In the workflow diagram, click on the arrow to the right of the *Send an email* activity. Click on the **+** that appears to open the Activities menu.

23. Scroll down in the **Activities** list to find *User task*. Click on **User task** to add a new User task activity to the workflow.



24. In the *Activity properties* dialog that opens on the right, set the *Name* to a value, such as “View email Id”.

Note: There are other properties you can set for the user task, but we will leave the default settings. Observe that the *User assignment* is set to **Workflow initiator**, so whichever user starts the workflow will get assigned this user task.

25. Click on **Edit user interface** to open the user task

The screenshot shows the 'Activity properties' dialog for a 'User task' named 'View email Id'. The 'Implementation' section shows 'User task' selected. The 'Edit user interface' button is highlighted with a blue box. Other sections include 'User assignment' (Workflow initiator) and 'Priority' (Medium).

26. The user interface builder opens.

The screenshot shows the User Interface Builder for the 'View email id' task. The canvas has a placeholder message: 'Drag variables here to start building your user interface.' A variable 'abc_emailId' is listed in the Variables panel.

27. Drag the **emailId** variable onto the user form canvas to create a field. Click on the properties icon above the new *Email id* field to set its properties.

The screenshot shows the User Interface Builder with a newly added 'Email id' input field to the canvas. The field has a placeholder 'Email id'.

28. The email id is the id returned by the Send an email from Gmail skill. The user of this task will only view it, so in the Field properties dialog that opens, set



Show this variable as to **Display text** in the drop down.

Field properties x

Field properties

Interactions

Associated variable

abc emailId X edit

Show this variable as

Input text ^

Input text ✓

Display text

Single select

Text area

29. Click on **Add instructions** above the *Email id* field to enter some guidance for the user, such as “This is the id of the email sent in the previous activity.”

View email id

Instructions

This is the id of the email sent in the previous activity.

Email id

30. Now the user interface is completed, you can click on **Back to <your workflow name>** at the top left to return to the workflow diagram.

[← Back to Send Email Flow usr193](#) :

The screenshot shows the 'Variables' tab of a workflow configuration. A single variable, 'abc emailId', is listed in the main area. There is a '+' button to add more variables. The 'Asset library' tab is also visible above the variable list.

31. To use a catalog skill in a workflow, it needs to be connected. If you have already connected the *Send an email from Gmail* skill, click on the **Send an email** activity to open its *Activity properties* and click on **Refresh connection** under *Implementation*. If the skill is not yet connected, you will need to connect it while running the workflow, or go to **Manage Teams** to connect the skill ahead of time. See [Connecting to apps - IBM Documentation](#) for details.

32. Now the workflow is ready for testing. Click the play button at the top right and select **New instance** to start the workflow.

The screenshot shows the workflow interface with a modal dialog. The 'New instance' button is highlighted in blue, indicating it is selected. Other options like 'View running instances (0)' and 'End' are also visible.

33. You should now receive the *Hello World* test email from WxO at the email address you entered in step 17.

34. Since the user task was set to be assigned to the *Workflow initiator*, you will also see a task list window open with the *View email id* task listed. Note that



the *Status* of the task is currently *On track*.

Preview mode

[Running workflow instances](#) /

Send Email Flow usr193

Active

Tasks

Search for instance tasks

Task name	Priority	Status	Due on
View email id	Medium	On track	

35. Click the **View email id** link to open the user task. You will see the id for the email displayed.

[View email id](#)

This is the id of the email sent in the previous activity.

Email id

192adaba181aa367

[Save](#) [Submit](#)



36. Click **Submit** to complete the user task. The task list is again displayed. Note that the *Status* of the task is now *Completed*. Close the task list window.

Preview mode

Running workflow instances /

Send Email Flow usr193

✓ Completed

Tasks

Q Search for instance tasks

Task name	Priority	Status	Due on
View email id	Medium	✓ Completed	

37. Congratulations! You have successfully completed and tested your example workflow.