

Lab 4: Build a RAG skill flow

In this lab, you will create a RAG Skill Flow, integrating search with Watson Discovery and Gen AI platform watsonx.ai. Using this, you will be able to build a Q&A assistant for procurement guidelines.

[screenshot procurement scenario with highlight]

Build a skill flow

In order to build a skill flow, you need to do the following:

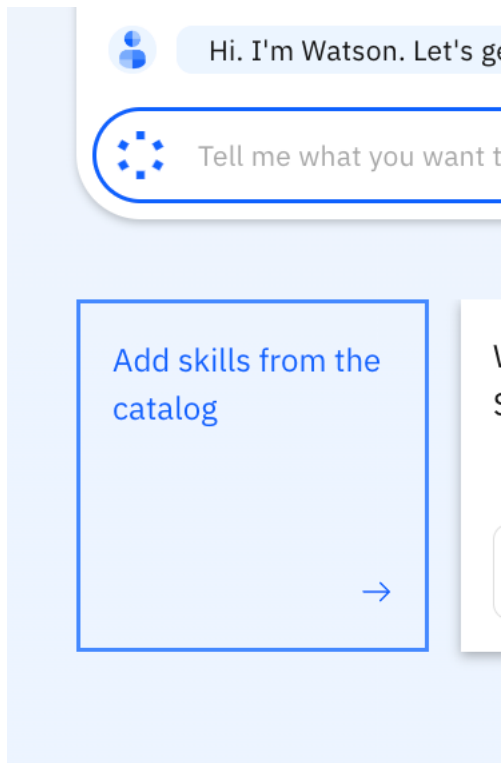
1. Add skills in personal skills
2. Create the skill flow
3. Add skills to the skill flow
4. Connect the input and output of skills
5. Enhance and Publish the skill flow

Follow the steps below for detailed instructions.

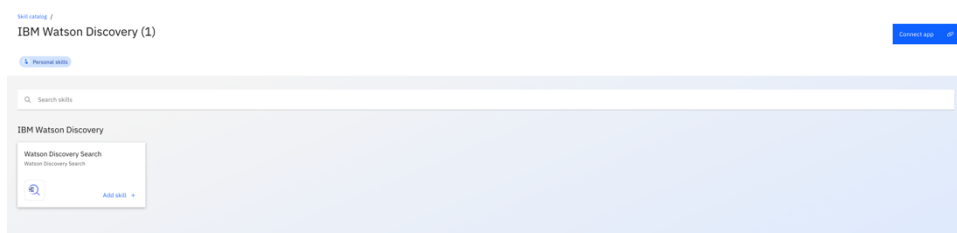
1.Add skills in personal skills

1.1 Add “Watson Discovery” search skill as personal skill

1.1.1 In the Chat Menu click on “Add Skills from the catalog”



1.1.2 Select “Watson Discovery Search” and click on “Add Skill”

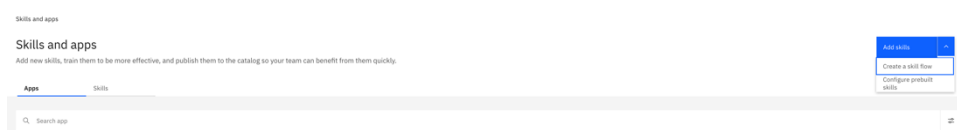


1.1.3 To connect to the Skill, click on “Connect app” and provide the following API details provided in the Skill Connection Details.docx file.

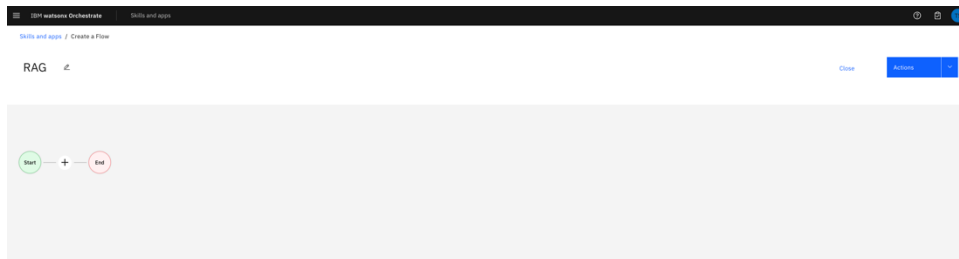
1.2 Add “Content Generation (Async)” watsonx.ai skill as personal skill [skip this if you have completed lab 3]

2. Create skill flow

2.1 Select “Create Skill Flow”



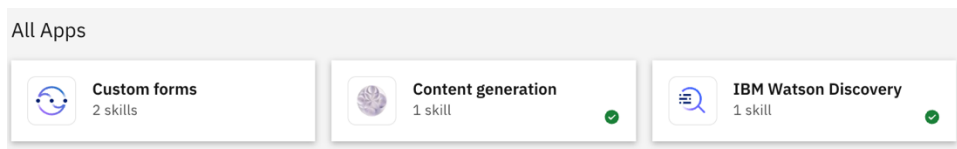
2.2 Name the Skill Flow as “[Your Name] RAG”



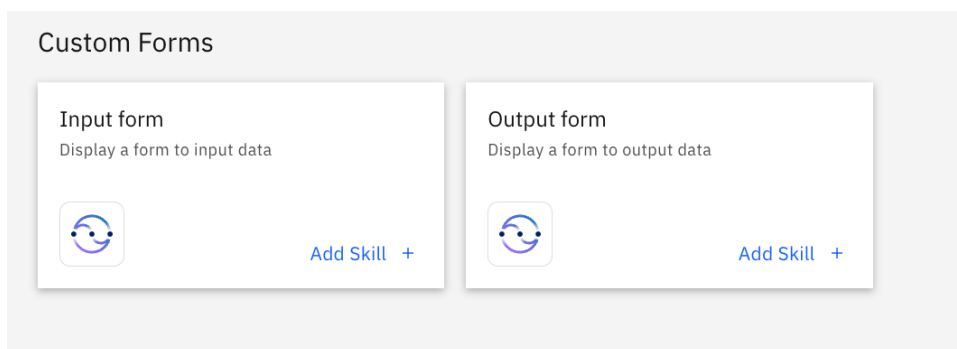
3. Add skills to the skill flow

3.1 Add input form as first skill.

3.1.1 Select “Custom Forms” from All apps menu

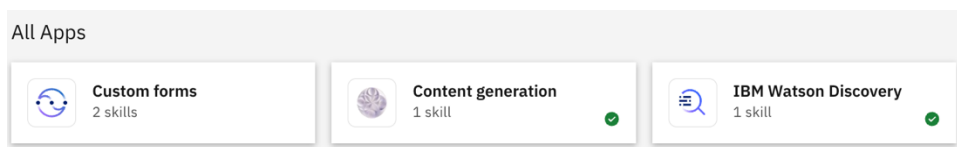


3.1.2 Select “Input Form” from Custom Skills and click on “Add Skill”

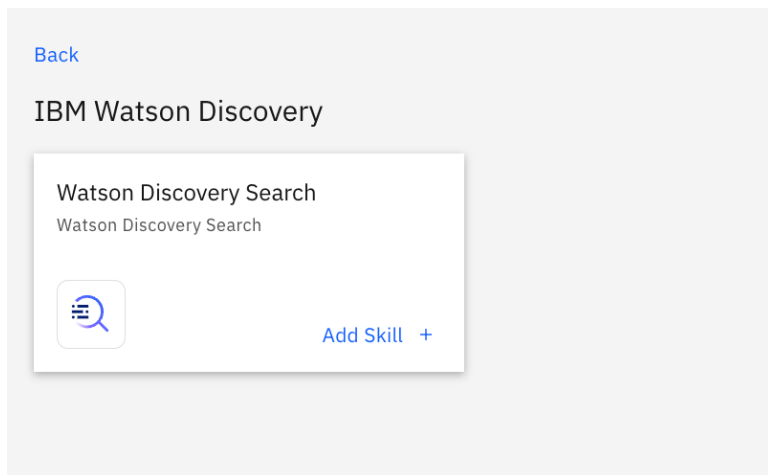


3.2 Add "IBM Watson Discovery" as the second skill

3.2.1 Select IBM Watson Discovery from All apps menu

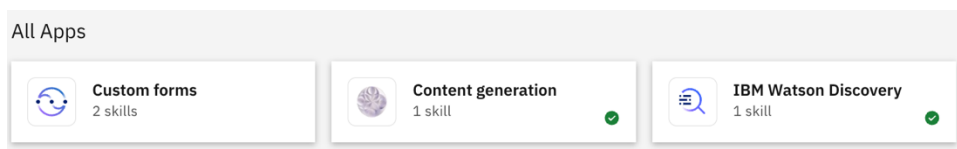


3.2.1 Select “Watson Discovery Search” and click on “Add Skill”

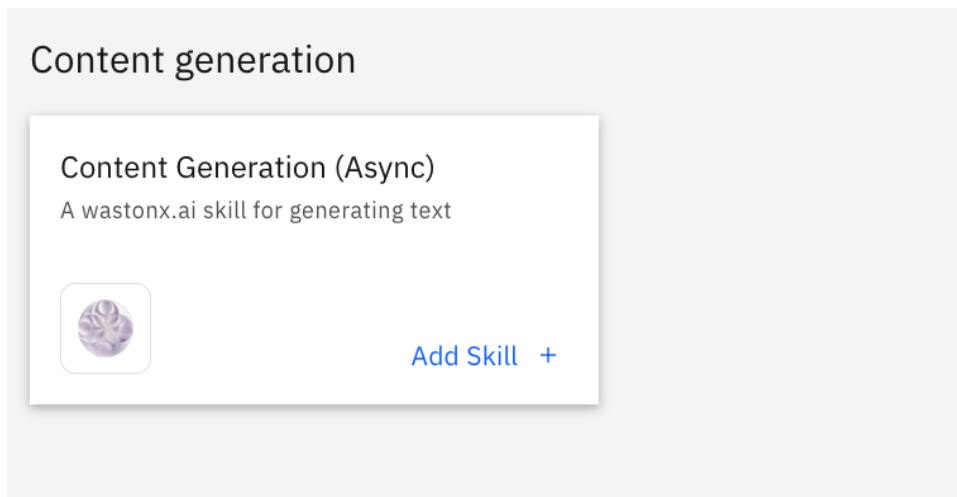


3.3 Add Content Generation as third skill

3.3.1 Select Content Generation from All apps menu



3.3.2 Select “Content Generation” and click on “Add Skill”



4. Connect the input and output of skills


4.1 Configure the Input field

4.1.1 In the Input Form, select “Add Input field”



Custom forms

Display a form to input data

Clear all mappings 

Generate mapping suggestions

Form title

Optional title for the form



Hide this form from the user

Add input field



4.1.2 Select “Single-line Text” as Input type and Display label as “User Question”.
Select Apply

Add input field



Input type



Configuration

Skill flow saved successfully



Single line text



Paragraph text



Date



Decimal number



Number



Confirmation

Add input field

✓ Input type


⚙ Configuration

Display label

User Question

4.2 Configure “Watson Discovery Search”


4.2.1 In the Input section of Watson Discovery Search, select natural language query as User Question from Input form

 **IBM Watson Discovery**
Watson Discovery Search

☐ Repeat this skill

Input

Output


Clear all mappings 

Generate mapping suggestions

☐ Hide this form from the user


version

natural_language_query

User Question 

4.3 Configure “Content Generation”

4.3.1 In the Input section of Content Generation, select input and write a simple prompt.




Content generation
A wastonx.ai skill for generating text

☐ Repeat this skill

Input

Output

Clear all mappings 

Generate mapping suggestions

☐ Hide this form from the user

input

Based on the below content, generate an answer for the user question.
Content:
User Question: |

Define Transformations

4.3.2 Attach the discovery response in the Content. Select the document_passages
-> passage_text option from Watson Discovery Search

Based on the below content, generate an answer for the user question.
Content:
User Question:

Available Mappings

Skills/

Input form

Watson Discovery Search

Based on the below content, generate an answer for the user question.
Content:
User Question:

Available Mappings

Skills/IBM Watson Discovery-Watson Discovery Search

- document_passages {#}
- items {#}
- passage_text abc
- results {#}
- items {#}

4.3.3 Attach the User Question from Input Form.

Available Mappings

Skills/Custom forms-Input form

- Skill Output {#}
- User Question abc

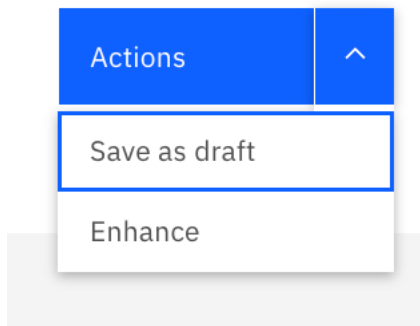
input

Based on the below content, generate an answer for the user question.
Content:
results.items.properties.document_passages.items.properties.passage_text ×
User Question: User Question × |

4.3.4 Add watsonx.ai project id provided in the Skill Connection Details.docx file as default value in “project_id”.

4.4 Save and Publish the skill flow

4.4.1 Select “Actions” and save the skill flow as draft.



4.4.2 Select Enhance from Actions menu to Publish the skill flow and click on Publish.

Skills and apps / Enhance this skill

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

Name	Phrases	Next best skills
Name and describe this skill in a way that tells users how it's used and why they would want to use it.		
Name*		
RAG		
Description		
Enter the description		
API version*		
1.0.0		
Categories		
Add categories		
App		
Select flows		

Preview

The skill will look like this in the catalog.

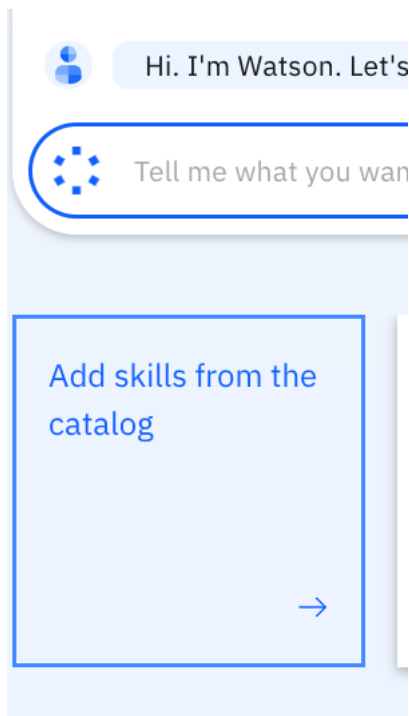
RAG

The skill will look like this in the skill set.

RAG

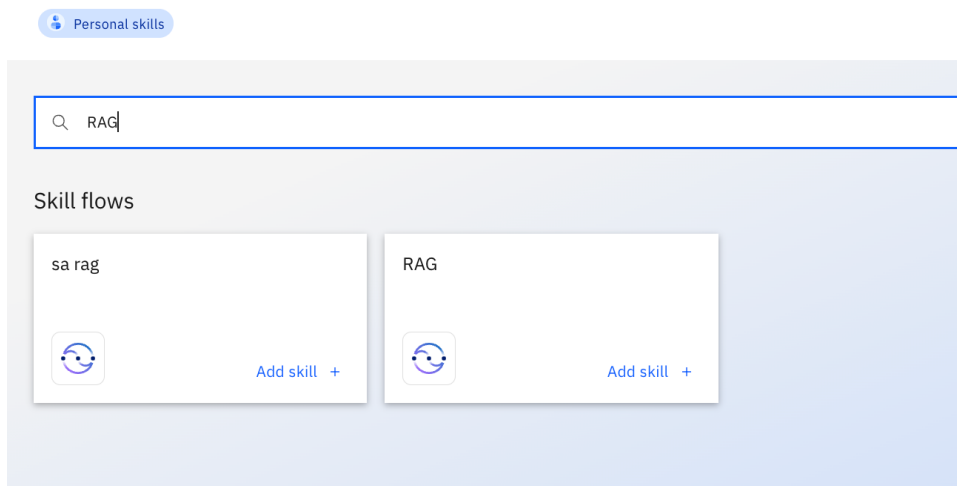
Cancel Publish Save as draft

4.5 Add Skill flow to Chat Menu from “Add Skill flow to Catalog”



4.5.1 Search for RAG and select Skill Flows. Select RAG and click on “Add Skill”

Skill flows (2)



5. Use a Skill flow

5.1 Select RAG skill flow for using the skill flow. Add a user question “What are Procurement Requisition (PR) rules ?” and select Apply.

Hi. I'm Watson. Let's get to work.

RAG

Provide the following inputs

User Question

Cancel Apply

Tell me what you want to do

Add skills from the catalog

RAG

Content Generation (Async)

Watson Discovery Search

My skill usage

Last week

Total skills used

42

↑

5.2 Watson Discovery skill is triggered and some of the parameters are pre filled in the form. Click on Apply.

You just need to complete this form first.

RAG

version *

2020-08-30

project_id *

f71cf419-982c-4603-ac85-e7ebc6cf0ce4

natural_language_query

What are the Procurement Requisition rules ?

A natural language query that returns relevant documents by using training data and natural language understanding.

Show all fields

Cancel Apply

Tell me what you want to do

Add skills from the catalog

RAG

Content Generation (Async)

Watson Discovery Search

My skill usage

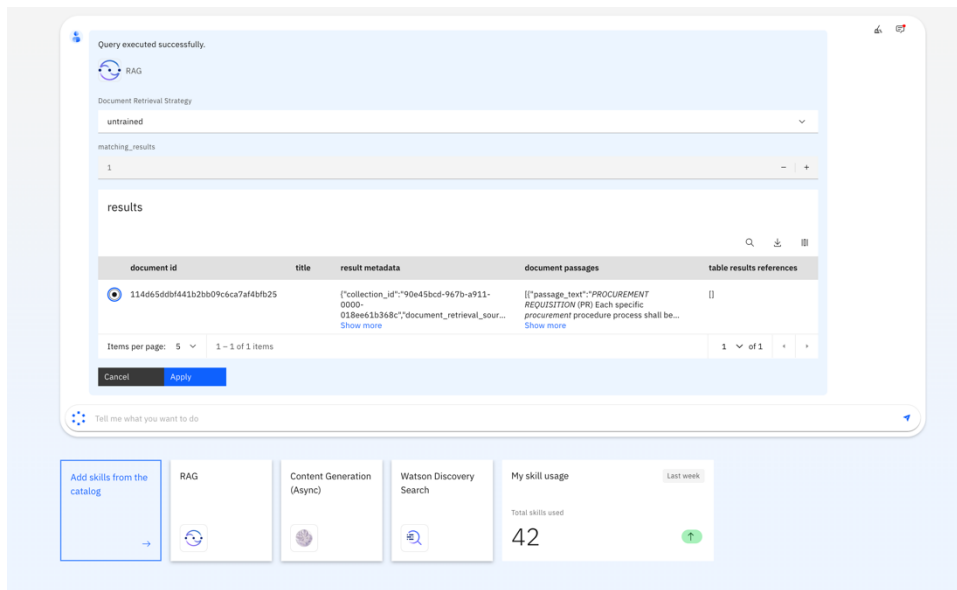
Last week

Total skills used

42

↑

5.3 Watson Discovery returns relevant passages for the User Question. Select the option and click on Apply.



5.4 Content Generation flow is triggered and based on the relevant chunk, the prompt gets populated. Select Apply.

You just need to complete this form first.

RAG

input *

Based on the below content, answer the user question. The answer should be returned as bullet points and use line break wherever required.

Content: PROCUREMENT REQUISITION (PR) Each specific procurement procedure process shall be initiated by procurement requisitions to the procurement officer from the requesting department and should show detailed specifications and requirements for the item(s) being requested. They should also indicate that the item is budgeted for. The PRs allows the departments flexibility within the overall annual plans regarding specifications, exact quantities, delivery dates, etc. They are also used to cater for un-planned or emergency procurement. The PR form will show the following: i) Item required ii) Quantity iii) Delivery dates Some donors do prescribe some conditions or restrictions required to be observed during procurement pertaining to the project they fund. It is the responsibility of the procurement committee to ensure that such donor requirements and restrictions are observed in the procurement of goods and services but within the framework of Watson's Wonder Emporium procurement guidelines. All requisitions must be signed by the departmental heads or designate, who should ensure that the item(s) are in APP or should seek authority to procure as per policy. Any persons designated to authorize requisitions in acting capacity must have the authority given in writing clearly.

callbackurl

5.4 An answer will be generated based on the provided paramters and the user question.

Here are the results of the Content Generation (Async) skill.



Generated content

Answer: Procurement Requisition (PR) rules in Watson's Wonder Emporium include the following:

1. PRs should be initiated by the requesting department to the procurement officer, indicating detailed specifications and requirements for the item(s) being requested.
2. PRs should show that the item is budgeted for and allow departments flexibility within the overall annual plans regarding specifications, exact quantities, delivery dates, etc.
3. PRs are used to cater for un-planned or emergency procurement.
4. The PR form will show the item required, quantity, and delivery dates.
5. Donors may prescribe conditions or restrictions required to be observed during procurement, and it is the responsibility of the procurement committee to ensure that such donor requirements and restrictions are observed.
6. All requisitions must be signed by the departmental heads or designate, who should ensure that the item(s) are in APP or should seek authority to procure as per policy.
7. Any persons designated to authorize requisitions in acting capacity must have the authority given in writing clearly stating the period authorized.