

# WatsonX-Orchestrator Tool Setup Guide

This guide walks you through setting up the Google Search Tool in Watsonx Orchestrate (WXO) using the Application Development Kit (ADK) and configuring a Programmable Search Engine. Please contact Shrinath Thube if you have any questions.

## 🔧 Prerequisites

Before you begin, ensure the following are installed and available:

- Git
- Python 3.11 and pip
- WXO Service URL and API Token
- WXO ADK (Application Development Kit) installed and configured
- Programmable Search Engine set up via Google Custom Search

## 🔒 Step 1: Get WXO Service URL and Token

### Go to WXO Portal:

Access your WXO portal at <https://dl.watson-orchestrate.ibm.com/>

### Navigate to Settings → API Details:

The screenshot shows the 'IBM Watson Orchestrate' settings page for a 'Student Concierge Agent'. The 'Preview' tab is selected, displaying a preview of the agent's responses. A chat window on the right shows a conversation with the agent, providing information about SJSU housing requirements and application deadlines. The 'API Details' section on the left shows configuration options for the agent's profile, knowledge, toolset, behavior, and channels.

### Copy the Service Instance URL:

This URL is used in the `orchestrator` command to connect and activate the environment using ADK.

### Click Generate API Key:

**⚠ You have 9 chances to generate a key.** Save it securely.

The screenshot shows the 'API details' tab selected in the navigation bar. Below it, there's a section titled 'Generate API keys' with a note about their purpose. A prominent blue button labeled 'Generate API key' is centered. Below the button, a service instance URL is displayed: <https://api.d1.watson-orchestrate.ibm.com/instances/20250922-1742-4794-7056-3871358f773d>. At the bottom left, there's a 'Your privacy choices' link.

## 🚀 Step 2: Install and Configure WOX ADK

### Verify Python and pip versions:

```
python --version  
pip --version
```

### Install the ADK:

```
pip install --upgrade ibm-watsonx-orchestrate
```

The screenshot shows the 'Welcome to IBM Watson Orchestrate Agent Development Kit' page. On the left, there's a sidebar with sections like 'Release Notes', 'Get Started' (with 'Welcome' highlighted), 'Build' (with 'Agents', 'Tools', 'Connections', 'Knowledge Bases', 'Large Language Models (LLMs)', and 'Voice' listed), and 'Cookie preferences and do not sell or share my personal information' at the bottom. The main content area has several cards: 'Installing the ADK' (with a brief description), 'Environments' (with a brief description), 'Agents' (with a brief description), 'Tools and Connections' (with a brief description), 'Knowledge Bases' (with a brief description), and 'Managing' (with a brief description). A 'Get Started' button is located at the top right.

### Configure your environment:

```
orchestrate env add -n <environment-name> -u <service-instance-url> --  
activate
```

Example: wxo-sjsu-hackathon

You'll need the Service Instance URL and Wxo Token from the Step 1.  
Your trial instance will be deployed on AWS.

### Activate your environment:

```
orchestrate env activate -n <environment-name>
```

## 🔍 Step 3: Set Up Google Programmable Search Engine

**Prerequisite:** Gmail account

### Go to Google Custom Search:

Visit <https://developers.google.com/custom-search/v1/introduction>

The screenshot shows a web browser displaying the 'Custom Search JSON API: Introduction' page from the Google Developers documentation. The URL in the address bar is <https://developers.google.com/custom-search/v1/introduction>. The page has a blue header with the title 'Programmable Search Engine'. On the left, there's a sidebar with navigation links for 'Home', 'Guides' (which is selected), 'Reference', and 'Support'. The main content area starts with a section titled 'Custom Search JSON API: Introduction'. Below it, there's a 'Before you start' section with a 'Create Programmable Search Engine' link. Further down, there's a 'Identify your application to Google with API key' section with a 'Get a key' button. To the right of the main content, there's a 'Page info' sidebar with sections for 'On this page' (including 'Before you start', 'Create Programmable Search Engine', 'Identify your application to Google with API key', 'API overview', 'API operations', and 'API data model') and 'Try it'.

## Click Control Panel:

The screenshot shows the 'Create a new search engine' page. On the left, there's a sidebar with links to Help Center, Help Forum, Blog, and Send feedback. The main area has a title 'Create a new search engine' and a sub-instruction: 'Get started by providing some basic information about your engine. You'll be able to customize the engine's configs (Languages, regions, etc.) further after it is created.' Below this is a 'Name your search engine' field with a placeholder 'Search engine name'. Under 'What to search?' is a radio button for 'Search specific sites or pages' (selected) and another for 'Search the entire web'. A dropdown menu shows options like 'Individual pages: www.example.com/page.html' and 'Entire domain: \*.example.com'. There's a text input field 'Enter a site or pages' with an 'Add' button. Below these are 'Search settings' for 'Image search' and 'SafeSearch'. At the bottom, there's a CAPTCHA section with two checkboxes: 'I'm not a robot' and 'reCAPTCHA'. A note says 'By clicking "Create", you agree with the [Terms of Service](#)'. A 'Create' button is at the very bottom.

### Create a new search engine:

- Add a name
- Choose between:
  - Search specific sites/pages
  - Search the entire web
- ⚠ Avoid enabling Image Search (not compatible with WSO)

Complete CAPTCHA and click Create.

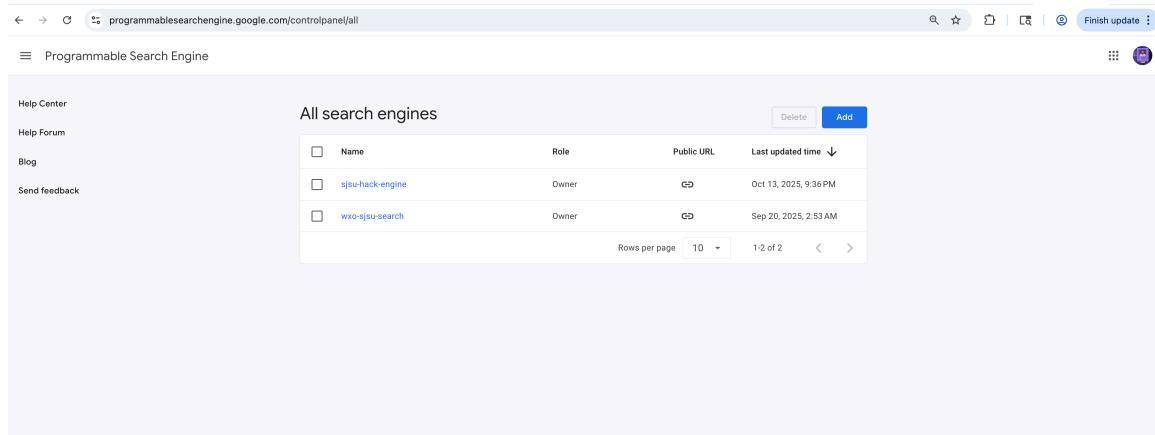
The screenshot shows a confirmation message: 'Your new search engine has been created'. It includes a large green checkmark icon. Below the message is a note: 'Copy the following code and paste it into your site's <body> section, where you want the search box and the search results to render.' A code block follows: 

```
<script async src="https://cse.google.com/cse.js?cx=c60a02c13914a426d">
</script>
<div class="gse-search"></div>
```

 At the bottom are 'Preview' and 'Customize' buttons.

### Go back to All Engines:

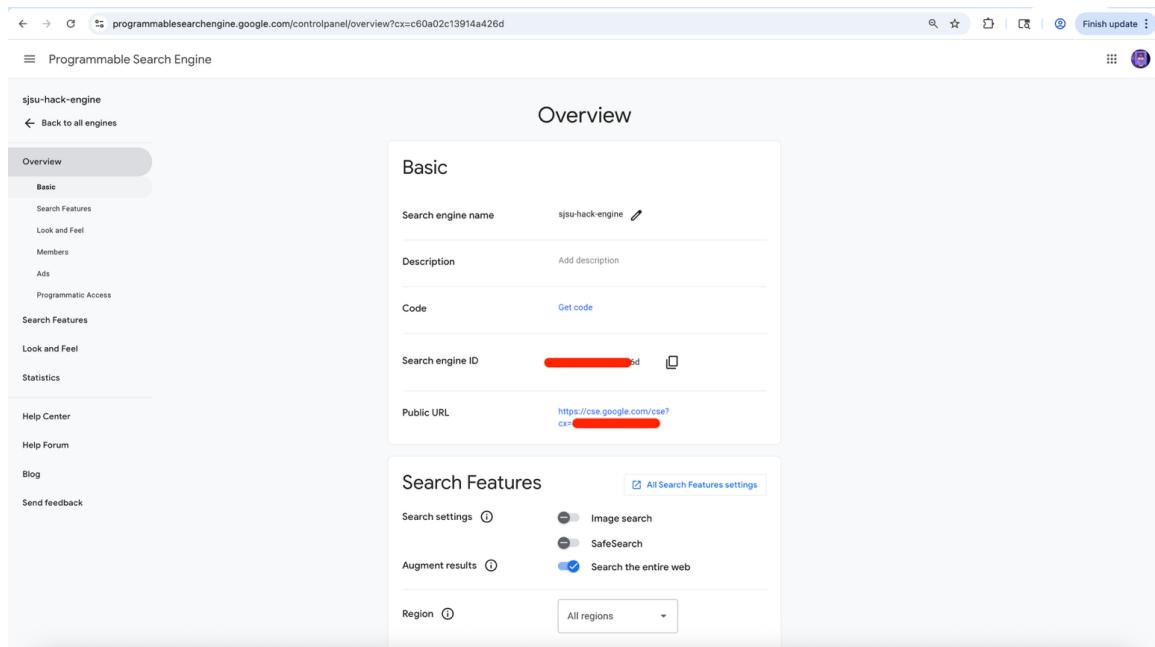
Click "Back to all engines" to see your created engine. You can create multiple engines as per your use case.



The screenshot shows the 'All search engines' page. On the left, there's a sidebar with links to Help Center, Help Forum, Blog, and Send feedback. The main area has a table titled 'All search engines' with columns for Name, Role, Public URL, and Last updated time. Two entries are listed: 'sjsu-hack-engine' (Owner, Oct 13, 2025) and 'wxo-sjsu-search' (Owner, Sep 20, 2025). There are buttons for 'Delete' and 'Add' at the top right of the table. Below the table are buttons for 'Rows per page' (set to 10), '1-2 of 2', and navigation arrows.

### Select your engine and Copy the Search Engine ID:

Click on the engine name to view basic information. Here you will find the Search Engine ID needed for WXO to connect to it.



The screenshot shows the 'Overview' page for the 'sjsu-hack-engine'. On the left, there's a sidebar with links to Overview, Basic, Search Features, Look and Feel, Members, Ads, Programmatic Access, and more. The main area has two sections: 'Basic' and 'Search Features'. The 'Basic' section includes fields for Search engine name (sjsu-hack-engine), Description (Add description), Code (Get code), Search engine ID (redacted), and Public URL (https://cse.google.com/cse?cx=redacted). The 'Search Features' section includes options for Search settings (Image search, SafeSearch), Augment results (Search the entire web), and Region (All regions).

## Go to Google Custom Search:

Visit <https://developers.google.com/custom-search/v1/introduction>

### Click Get a Key:

Create a project and follow the steps.

The screenshot shows the 'Custom Search JSON API: Introduction' page. On the left, there's a sidebar with various API documentation links. The main content area has a heading 'Custom Search JSON API: Introduction'. Below it, a section titled 'Before you start' contains text about creating a Programmable Search Engine. A prominent blue button labeled 'Get a key' is located in the middle of the page. To the right, there's a 'Page info' panel with sections like 'On this page' and 'Before you start'.

This screenshot is similar to the previous one, but it includes a modal dialog box titled 'Enable Custom Search API'. The dialog has a text input field with 'My Project' typed into it. At the bottom of the dialog are 'CANCEL' and 'NEXT' buttons. The rest of the page content, including the 'Get a key' button, is visible behind the modal.

The screenshot shows a web browser window with the URL [developers.google.com/custom-search/v1/introduction](https://developers.google.com/custom-search/v1/introduction). The main content area displays the 'Custom Search JSON API: Introduction' guide. A modal dialog box titled 'Confirm API Enablement' is open in the center. The dialog contains the message: 'The following APIs will be enabled for project: **My Project**' followed by a list item 'Custom Search API'. At the bottom of the dialog are two buttons: 'CANCEL' on the left and 'CONFIRM AND CONTINUE' on the right. The rest of the page includes sections like 'Before you start', 'Create Programmable Search Engine', 'Identify your application to Google with API key', and 'API overview'.

Click "Show key" and save your API Key securely.

This screenshot shows the same web browser window after the API key has been generated. The 'CONFIRM AND CONTINUE' button was clicked in the previous step. A new modal dialog box appears with the message 'You're all set!' and 'You're ready to start developing with Custom Search API'. It features a large blue 'SHOW KEY' button. Below the button, there is a note: 'To improve your app's security, restrict this key's usage in the [API Console](#)'. At the bottom right of the dialog is a 'DONE' button. The rest of the page remains the same as the first screenshot.

## Step 4: Clone and Import the Google Search Tool

### Clone the repository:

```
git clone https://github.com/shrinaththube/watson-orchestrate-search-toolkit  
cd watson-orchestrate-search-tool/google-search-tool/
```

### Add Your Google Search Engine Credentials:

Edit `google_search_tool.py` - Replace these lines:

```
GOOGLE_API_KEY = "your-api-key-here"           # ← Put your API key here
SEARCH_ENGINE_ID = "your-search-engine-id"    # ← Put your Search Engine
ID here
```

### Import the tool into WKO:

```
orchestrate tools import -k python -f google_search_tool.py -r
requirements.txt
```

### Verify the tool is imported in CLI:

```
orchestrate tools list
```

### Verify the tool is imported in WKO portal:

### Go to Agent Builder in WKO:

#### Click All Tools:

You can find it under Agent Builder → Click on all tools.

The screenshot shows the IBM Watson Orchestrate build management interface. At the top, there's a navigation bar with links for Chat, Discover, Build, Agent Builder, Assistant Builder, and Manage. The main dashboard displays metrics: Failed messages (2, up 100% from the previous day), Latency average (2237 ms, down 100% from the previous day), and a search bar for tools. Below these are three tool cards: 'google\_search' (Premium web search using Google Custom Search), 'Get flow status' (We can use the flow instance id to get the status of a flow), and 'Untitled' (No description).

### Locate Google Search Tool:

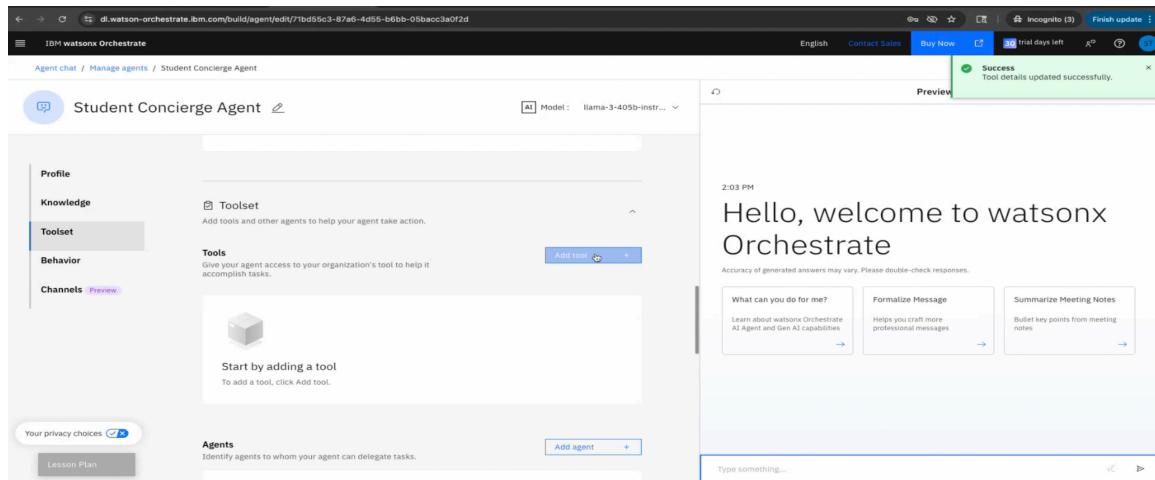
The Google search tool will appear in the list.

This screenshot shows the same IBM Watson Orchestrate interface as above, but with a different view. The left sidebar shows 'Agent chat /' and 'Build agents and tools'. The main area shows metrics and a list of tools. The 'All tools' section is currently selected, displaying the same three tools as the previous screenshot: 'google\_search', 'Get flow status', and 'Untitled'.

## Step 5: Add the Tool to Your Agent

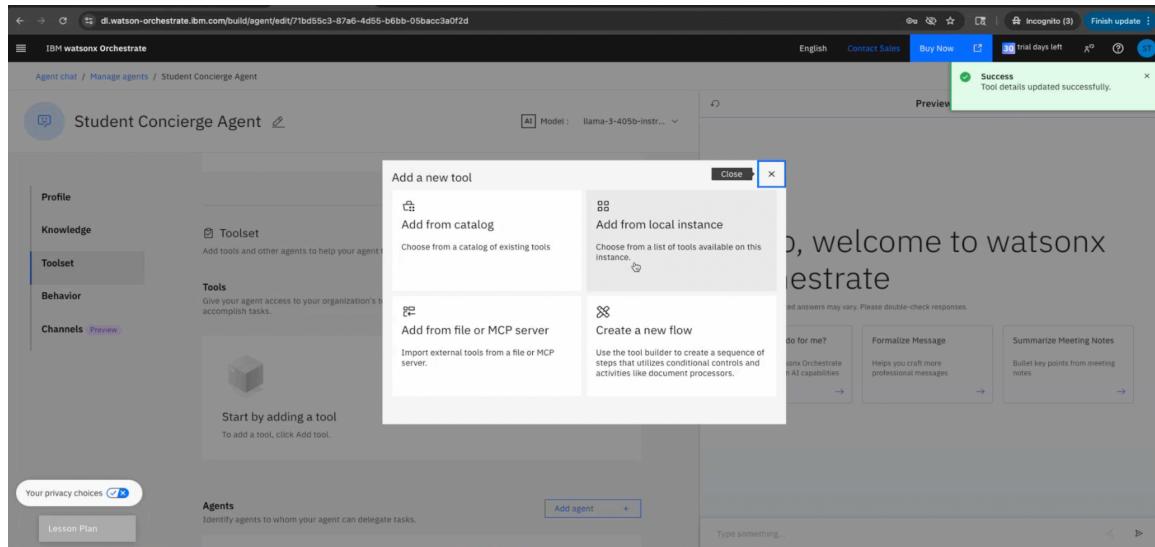
Go to Agent Builder and select your agent:

Click Add Tool:



The screenshot shows the IBM Watsonx Orchestrate Agent Builder interface. The 'Toolset' tab is selected in the sidebar. A modal window titled 'Add tool' is open, displaying three options: 'Add from catalog', 'Add from local instance', and 'Create a new flow'. The background shows a preview of the agent's welcome message, which reads: 'Hello, welcome to watsonx Orchestrate'. The interface includes sections for Profile, Knowledge, Toolset, Behavior, and Channels (with a 'Preview' link).

Choose Add from Local Instance:



The screenshot shows the IBM Watsonx Orchestrate Agent Builder interface. The 'Toolset' tab is selected in the sidebar. A modal window titled 'Add a new tool' is open, displaying three options: 'Add from catalog', 'Add from local instance', and 'Create a new flow'. The background shows a preview of the agent's welcome message, which reads: 'Hello, welcome to watsonx Orchestrate'. The interface includes sections for Profile, Knowledge, Toolset, Behavior, and Channels (with a 'Preview' link).

## Select google\_search\_tool:

The screenshot shows the 'Add tools to Student Concierge Agent' dialog. At the top, there's a search bar labeled 'Search for tools'. Below it, a section titled 'Selected tool (1) Clear selection' shows a single item: 'google\_search'. This item has a checked checkbox and a brief description: 'Premium web search using Google Custom Search. Ready to use with pre-configured credentials.' To the right of this section is a 'Sort by: Alphabetically A-Z' dropdown. At the bottom right of the dialog are two buttons: 'Cancel' and 'Add to agent'.

## Your agent now has search capabilities!

The screenshot shows the 'Student Concierge Agent' profile page. On the left, there's a sidebar with tabs: Profile, Knowledge, Toolset (which is selected), Behavior, and Channels (with a 'Preview' link). The main area shows sections for 'Toolset' (with a 'Tools' sub-section containing the 'google\_search' tool), 'Agents' (with a placeholder 'Start by adding an agent'), and a 'Lesson Plan' button. On the right, there's a preview pane with a message: 'Hello, welcome to watsonx Orchestrate'. Below this are three cards: 'What can you do for me?', 'Formalize Message', and 'Summarize Meeting Notes'. At the bottom of the preview pane is a text input field with placeholder text 'Type something...'. A green notification bar on the right says 'Tools updated'.

## Additional Resources

- WOX ADK Documentation: <https://developer.watson-orchestrate.ibm.com/>
- Google Custom Search API Docs: <https://developers.google.com/custom-search/v1/introduction>
- WOX Search Tool GitHub Repo:  
<https://github.com/shrinaththube/watson-orchestrate-search-toolkit>