

## Introduction

Welcome to part two of the Deloitte watsonx.governance hands-on lab. In this lab, you will explore the watsonx.governance solution from the perspective of an administrator, customizing the solution to fit a particular client.

In this lab, you will:

- Create business entities
- Customize object views
- Create questionnaires
- Modify existing approval workflows
- Configure model monitoring and metrics gathering
- Evaluate generative AI and machine learning models

### A note on the environment

To complete this lab, you will use a Cloud Pak for Data software environment provisioned on IBM TechZone, with the watsonx.governance software installed. Your lab instructor will provide you with credentials to log into this environment.

### Customization

It is important to understand that **all** of the pieces of watsonx.governance that you will use in the following lab are fully configurable. AI use cases can be customized to include any level of detail the client requires. Workflows can be modified or built from scratch to reflect the client's approval processes. Relevant risks and the questionnaires that associate them with use cases can also be completely configured to meet a client's needs.

### Troubleshooting

The environment you are using for this lab has been provisioned on IBM TechZone. Due to infrastructure constraints, you may experience some delay or slow performance. This frequently appears as error messages when saving changes to artefacts such as use cases or workflows. **The vast majority of the time, the save was actually successful.** Refreshing the screen will fix most of the issues; if this does not work, try the action again. If the action continues to fail, contact your lab instructor for more help.

### Customize views

IBM OpenPages is an AI-driven, highly scalable governance, risk and compliance (GRC) solution that runs on any cloud with IBM Cloud Pak for Data. Its full capabilities are well beyond the scope of this lab. Instead, the lab will focus on the features that relate to governing models: customizable workflows and alerts, integration with Factsheets, and the ability to get an enterprise-wide view of the status of AI and machine learning initiatives. In the context of watsonx.governance, the OpenPages solution is referred to as the **governance console**. However, in many locations in the user interface, you will see it being referred to as OpenPages.

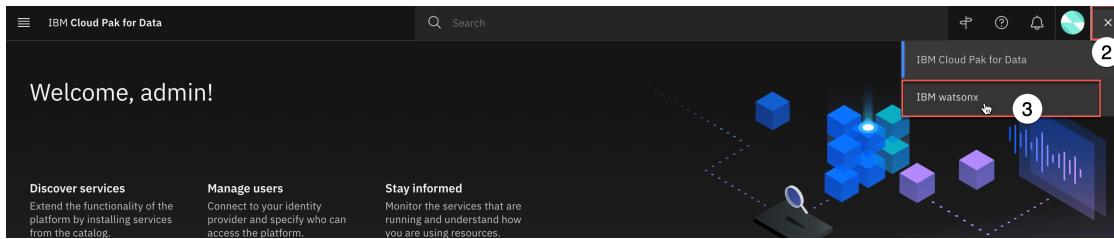
The watsonx governance console can be fully customized to fit an individual organization. Your lab instructors have loaded sample user and organization data to more fully flesh out the business. For the first several sections of the lab, you will customize business entities and modify views and workflows to see how the solution can be customized to meet an

organization's requirements. These customizations would be performed by an administrator persona, responsible for configuring the watsonx.governance solution for the organization.

## 1. Switch contexts

The **IBM watsonx** context offers an improved user interface and better integration for AI governance than the Cloud Pak for Data context, and offers expanded functionality such as monitoring for detached prompt templates. Some operations, such as creating a database, currently require using the **Cloud Pak for Data context**. However, for the remainder of the lab, you will use the **IBM watsonx** context.

1. Log into the Cloud Pak for Data home page using the credentials from your reservation.
2. Click on the **grid icon** in the upper right to open the context menu.
3. Click on the **IBM watsonx** menu item to change the context. A **Welcome to watsonx** popup window may open.



4. Close the popup window, or click the **Take a tour** button if you wish.

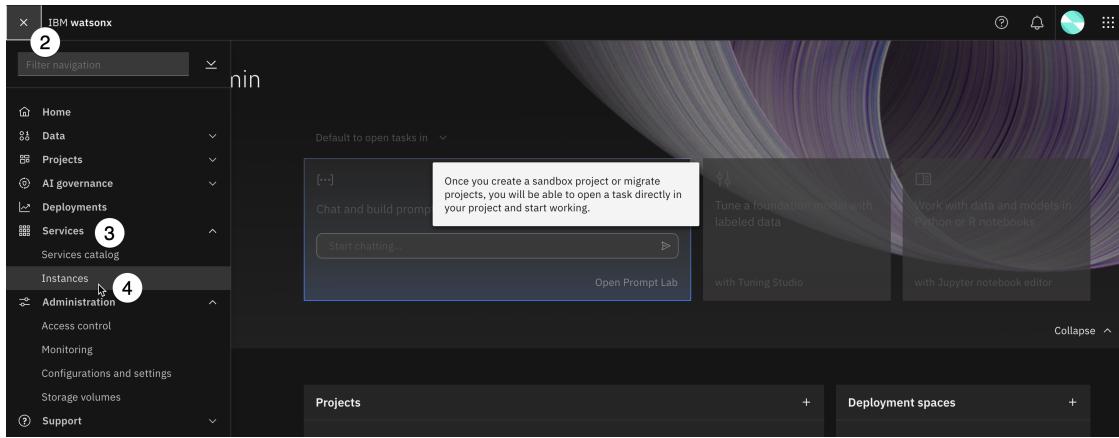
Your screen should now show IBM watsonx branding. This screen will be referred to throughout the lab as the watsonx home screen.

**① Note:** You will likely need to switch to the watsonx context every time you sign in to your environment.

## 2. Launch the governance console

In this section, you will launch the OpenPages service.

1. If necessary, return to the watsonx home page by clicking the **IBM watsonx** link in the upper left.
2. Click on the **hamburger menu** in the upper left.
3. Click on the **Services** item from the menu to expand it.
4. Click on **Instances** to open the **Instances** screen.



- Locate the instance of OpenPages in the table and click on the link in the **Name** column to open the instance details screen.

Instances									Last updated: 10/11/2024 10:07 PM
Filter by:		Type	Created by	vCPU requests	Memory requests (GiB)	Data plane	Physical location	Status	Created on
<input type="text"/> Find instances									
<a href="#">cpd-database</a> Service instance for db2oltp-17...	db2oltp	admin	2.10	4.25 Gi	—	—	—	Green	Oct 11, 2024
<a href="#">openscale-defaultinstance</a> IBM Watson OpenScale	aios	admin	0.00	0.00 Gi	—	—	—	Green	Oct 8, 2024
<a href="#">openpagesinstance-cr</a> OpenPages Instance	openpages	admin	4.45	12.40 Gi	—	—	—	Green	Oct 8, 2024

- Scroll down to the **Access information** section, and click the **launch icon** to launch the service.

openpagesinstance-cr

Status	Running	Database configuration		
Access information		Database type	Internal database	
URL	<a href="https://cpd-cpd.apps.ocp-110000b3qc-p09m.cloud.techzone.ibm.com/openpages-openpagesinstance-cr/">https://cpd-cpd.apps.ocp-110000b3qc-p09m.cloud.techzone.ibm.com/openpages-openpagesinstance-cr/</a>	 Launch OpenPages	Use dedicated nodes	False
Size		Data storage class	ocs-storagecluster-ceph-rbd	

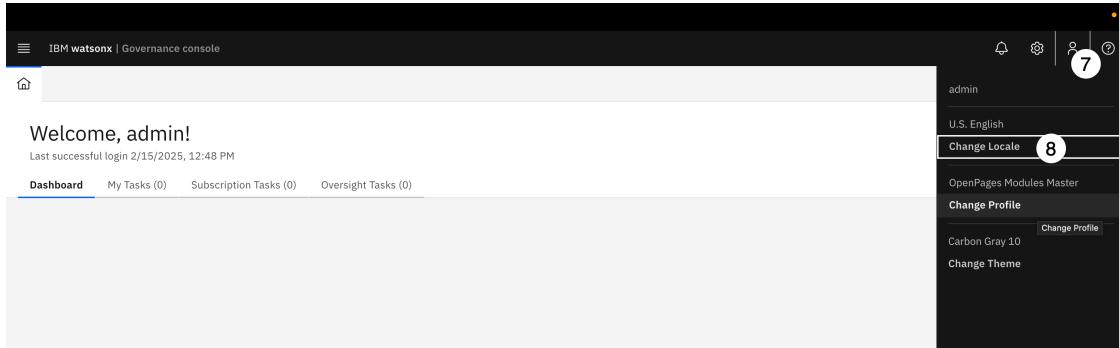
The OpenPages service launches in a new browser tab.

The governance console determines what a user sees based on that user's current profile. Users can have multiple profiles assigned to them, and can switch between them based on what task they are trying to accomplish. Like all things in the governance console,

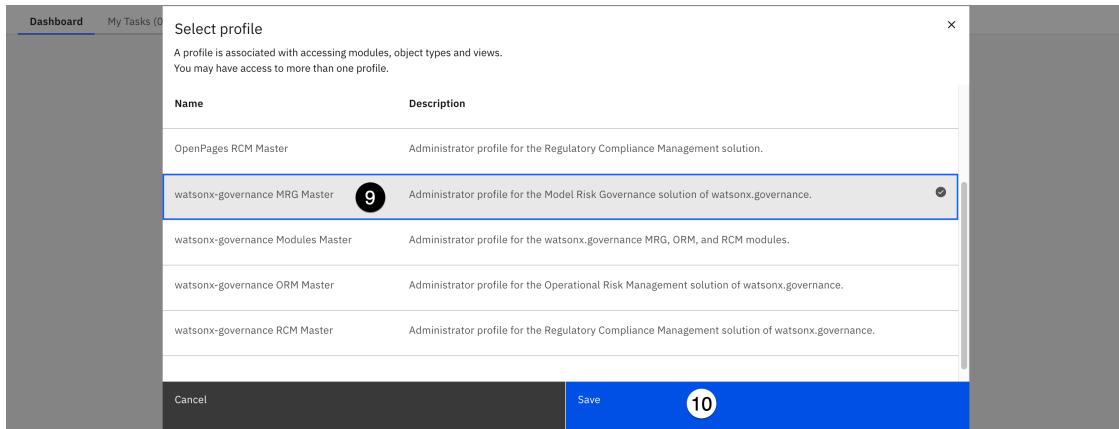
administrators can customize the views that each profile sees, or even create new profiles with entirely bespoke views.

For the rest of this lab, you will use the *watsonx-governance MRG Master* profile, which will allow you to view all information related to model risk governance (MRG).

7. Click on the **avatar icon** in the upper left to open the user menu.
8. Click on the **Change Profile** menu item. The **Select profile** dialog box opens.



9. Click on the **watsonx-governance MRG Master** profile from the list to select it.
10. Click on the **Save** button to save your selection.

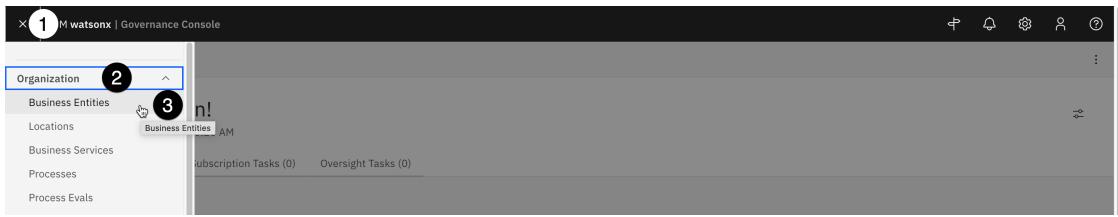


Your home screen should change, showing a variety of graphs on your dashboard.

### 3. Create a business entity

Next, you will create a **business entity**, which is an abstract representation of a business structure. During the setup for this lab, your lab instructor loaded a FastMap file into the governance console. That file contained the structure for the High Oaks bank organization, including a Human Resources department. In the steps below, you will create a *Regulatory Compliance* entity beneath the *Human Resources* organization.

1. From the watsonx governance console home screen, click the **hamburger menu** in the upper left.
2. Click the **Organization** menu item to expand it.
3. Click on **Business Entities**. The **Business Entities** tab opens.



4. Type **High Oaks** in the **Search** field and press the **Return** key to narrow the list of business entities.
5. Click on the link for **High Oaks Bank** in the table to open the entity.

Business Entities (1)

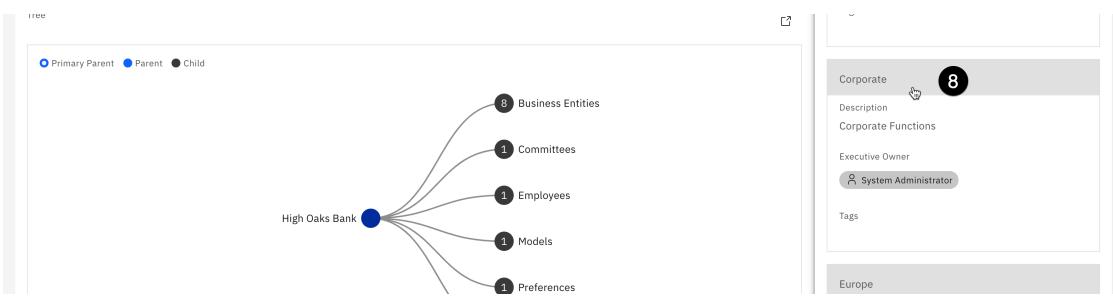
The screenshot shows a table titled 'Business Entities (1)'. At the top, there's a search bar with 'High Oaks' typed in (labeled 4). To the right of the search bar are filters for 'Active Only' (checked), 'New', and a '+' button. The table has columns: Name, Description, Executive Owner, Risk Appetite, In Scope, and Tags. One row is visible, representing 'High Oaks Bank' (labeled 5). The 'Name' column shows 'High Oaks Bank'. The 'Description' column contains a detailed description of the bank. The 'Executive Owner' column shows 'admin'. The 'Risk Appetite' column has a 'No' button. The 'In Scope' column has a checkbox which is unchecked. The 'Tags' column has a '+' button.

Name	Description	Executive Owner	Risk Appetite	In Scope	Tags
High Oaks Bank	A global financial institution with operations across every continent, offering a broad range of financial services, including personal banking, credit cards, mortgages, auto financing, investment advice, small business loans, and payment processing.	admin	No	<input type="checkbox"/>	<input type="button" value="+"/>

6. Scroll down to the **Business Entity Map** section of the page, which shows a tree view of the different entities beneath the High Oaks bank entity. Note that the High Oaks Bank parent entity contains a variety of children, including other business entities, employees, models, and use cases. This view is a convenient way to quickly see all the different items associated with a part of an organization.
7. Click on the **Business Entities** item in the tree view. The **Children of High Oaks Bank** view opens in a new pane on the right of the screen.



- Each of the child entities is represented by a tile in the view. Scroll down to the **Corporate** entity tile and click on it. A new tab opens to display the information for the **Corporate** business entity.



- Scroll down to the **Child Business Entity** table in the **General** section of the screen and click on **Human Resources** to open a new tab for that entity.

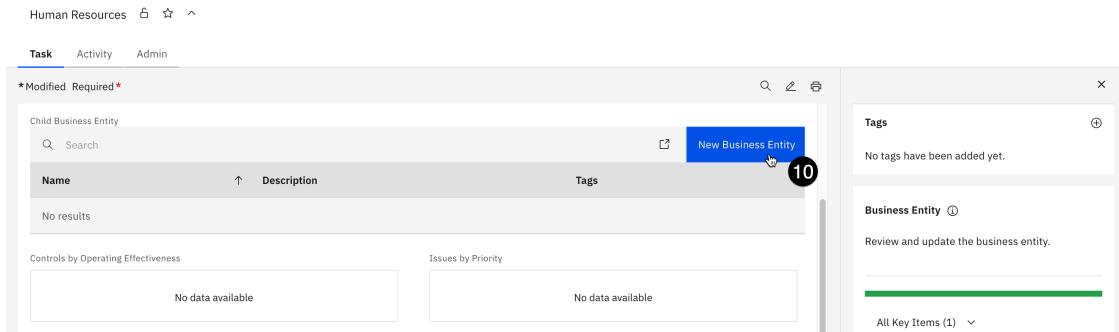
Name	Description	Tags
<a href="#">Finance</a> High Oaks Bank > Corporate > Finance	Worldwide corporate finance business unit	
<a href="#">Human Resources</a> High Oaks Bank > Corporate > Human Resources <b>Human Resources</b>	Worldwide human resources business unit	

Controls by Operating Effectiveness      Issues by Priority

No data available      No data available

Note that the **Human Resources** entity does not have any child business entities. If you scroll down to the **Business Entity Map**, you will see that it does contain models and use cases that are unique to this business entity. These sample models and use cases were loaded during the environment configuration step, when you loaded the Fastmap spreadsheet file.

- Scroll back to the **Child Business Entity** table and click the **New Business Entity** button.



## 11. Enter Regulatory Compliance in the Name field.

## 12. Enter admin in the Executive Owner field.

Note that the **Primary Business Entity** has been pre-populated with the **Human Resources** entity, though you can change it if you wish. Also note that the **Create new Business Entity** progress bar on the right shows that the one required field has been completed, turning the status bar green and enabling the **Save** button.

## 13. Click Save to save the business entity.

The *Regulatory Compliance* business entity has been created in the governance console, and will appear as a child of the **Human Resources** entity.

When customizing the governance console for clients, you can create business entities manually in this fashion. You can also create formatted spreadsheets, which can be uploaded to create the entire organizational structure more quickly. Creation of these FastMap spreadsheets is beyond the scope of this lab.

## 4. Create a custom field for the use case view

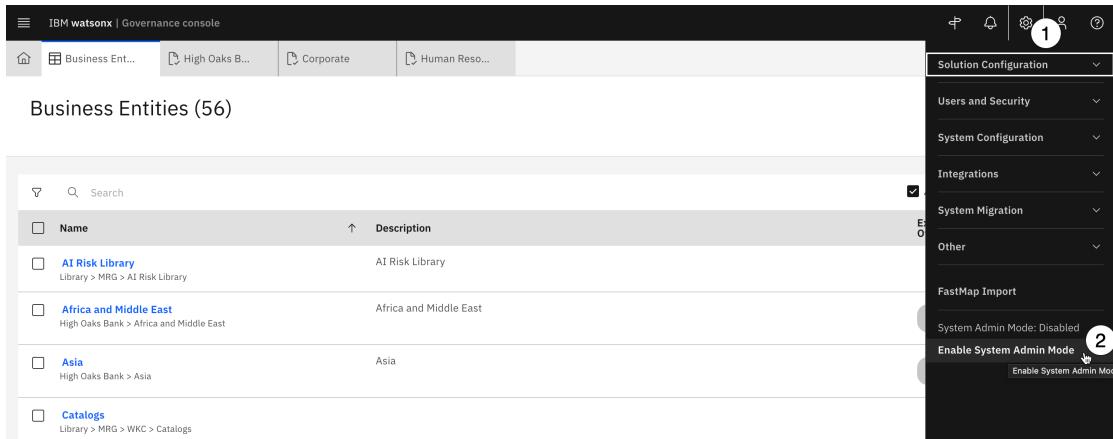
Watsonx.governance uses the concept of model use cases to organize machine learning and AI solutions to business problems. A model use case represents a single problem an organization is attempting to address with AI or machine learning. Many different models can be associated with a use case, whether they are in development, testing, or production phases.

There are no defined global standards for information that must be included in a use case; while there is a minimum set of information such as model metadata and performance metrics that should be present, specifics will vary widely between different industries and different organizations. The watsonx governance console is fully customizable to allow clients to tailor the forms and processes to their exact needs.

In this step, you will add a new field to the use case view. This particular example adds the **Secondary EU AI Review** field; however, when performing the exercise, think about clients you have worked with in the past and any specific requirements for information gathering that they presented.

To add a field to the internal database, you must first enable changes to the system.

1. Click the **gear icon** in the upper right to open the **Administration** menu.
2. Click **Enable System Admin Mode** to enable changes.



3. A popup window will open, prompting you to confirm your choice, and notifying you that while the mode is enabled, the system will be unavailable to other users. Click the **Enable** button to confirm.
4. Click on the **gear icon** again to open the **Administration** menu.
5. Click on the **Solution Configuration** menu item to expand it.
6. Click on the **Object Types** menu item. The **Object Types** tab opens.

IBM Watsonx | Governance console

Business Entities (56) [ View Name : SysView-Grid-SOXBusEntity ]

Search

Name	Description
AI Risk Library	AI Risk Library Library > MRG > AI Risk Library
Africa and Middle East	Africa and Middle East High Oaks Bank > Africa and Middle East

Solution Configuration 5

- 4
- 5
- 6 Object Types

Dashboards  
Views  
Workflows  
Calculations  
Scheduler  
**Object Types**  
Profiles  
Solutions  
Tags  
Themes  
Regulatory Event Rules

7. Enter **use case** in the search field to narrow the list of object types.
8. Locate and click on **Use Case** from the table to open the **Use Case** object.

Object Types (128)

use case 7

Show profiles

Label	Name	Description
Use Case	Register	Unified Object Type
Use Case	UseCaseReview	Unified Object Type

9. Click on the **Fields** section to expand it. All the fields currently associated with model use cases are listed in their existing groups.
10. Click on **New Field** to open the **New Field** panel.

Use Case

False

Field Groups

Fields 9

Integration

Name	Label	Description	Data Type	Required	Global Search
Additional Information	Additional Information	Additional Information	Long String	x	v
Application	Application	The name of the external service being integrated with.	Enumerated String	x	v

New Field + 10 6

11. You will place the field in a new grouping. Click the **New** button above the **Field Group** dropdown. The **New Field Group** panel opens.

## Use Case

The screenshot shows the 'New Field' panel with the 'General' tab active. On the left, there's a sidebar with various settings like 'Name', 'Description', 'Label', etc. On the right, under 'General', there are fields for 'Name' and 'Label'. A callout bubble labeled '11' points to the 'Field Group' dropdown, which is currently set to 'New'.

12. Enter **EU Compliance** in the **Name** field and click the **Create** button to create the grouping. The **New Field** panel updates, showing that the field is now contained in the **EU Compliance** group. Note that there is already a **Compliance** field group in the use case, and, strictly speaking, the field you are creating could go there. In this lab you are creating a new group to see how it could be done for other fields the client may want to create.

**(i) Note:** If network conditions are slow, or if computing resources in the environment are limited, you may receive an error message when saving the new field group. The vast majority of the time, the field group has actually been saved. Refreshing the page, creating a new field, and selecting the **EU Compliance** group from the **Field Group** dropdown will fix the issue.

13. Enter **Secondary EU AI Review** in the **Name** field.
14. Click the **Data Type** dropdown and select **Enumerated String**. This data type will appear as a dropdown in the form. Note the other data types, including strings, integers, booleans (true/false), dates, currencies, and more.

The screenshot shows the 'New Field' panel with the 'Fields' tab active. On the left, there's a sidebar with various settings. On the right, under 'Fields', there's a 'General' section with a 'Name' field containing 'Secondary EU AI Review' (labeled '13'). Below it is a 'Data Type' dropdown set to 'Enumerated String' (labeled '14').

Note that you have the option to set the field to **Required** using the toggle. However, **DO NOT** set the field to required at this time, as it will prevent approval actions from being taken. You can also set default values and descriptions.

15. Scroll to the **Enumerated String Values** section and click the **New Value** button.  
The **New Enum Value** panel opens.

The screenshot shows the 'EU Compliance / New Field' configuration screen. On the left, there's a sidebar with 'General' settings like Name (Register), Description (Unified Object Type), Label (Use Case), Plural Label (Use Cases), and Global Search. The main area has a toggle switch for 'False'. Under 'Data Type', it says 'None' and '15' (circled). Below that is a 'Color Palette' dropdown and a 'Color Values' section with three items: 'Approved' (green), 'Denied' (red), and 'N/A' (yellow). A 'Default Value' dropdown is also present.

16. Enter **Approved** into both the **Name** and **Label** fields and click **Create**.

17. Repeat steps 15 and 16 to add **Denied** and **N/A** values.

Note that you can set colors for the different values, which will show on the icon badges when the form is completed.

18. Assign colors to the values using the dropdowns.

Note that you can also select which object profiles (such as the watsonx profiles you assigned to users in previous steps) are allowed to interact with the field

19. Click **Create** to add the new field to the object.

The screenshot shows the 'New Field' configuration screen again. The 'Color Values' section is highlighted with a red box, showing 'Approved' (green), 'Denied' (red), and 'N/A' (yellow). The 'Object Profiles' section shows a dropdown with 'selected items' and a count of '8'. The bottom right corner shows the 'Create' button with a blue circle labeled '19'.

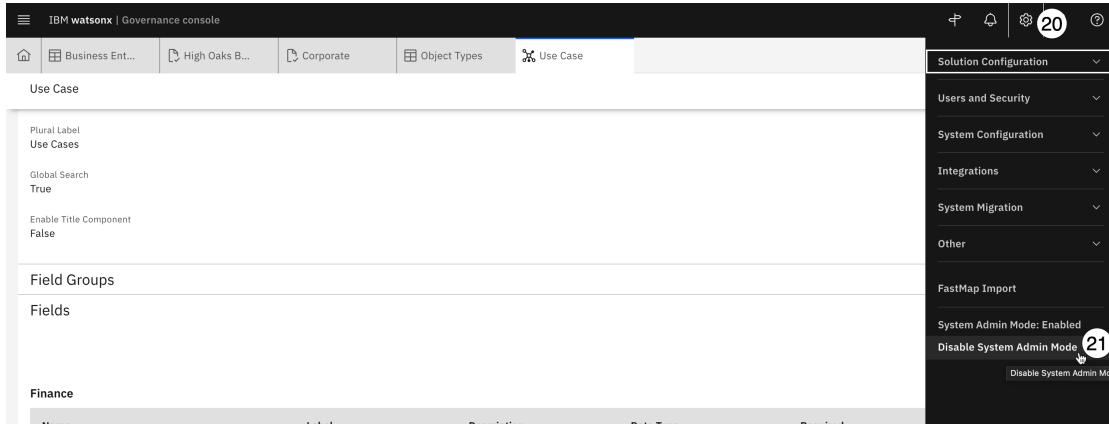
Note that, occasionally, saving the field can take longer than expected and results in a **Network error** or the error message below:

The screenshot shows the IBM Watsonx Governance console with an error message. The message is: 'Error: Field Definition 'Secondary EU AI Review' already exists'. It includes a timestamp: '2024-05-17 18:07:55.384'. The background shows the 'EU Compliance / New Field' configuration screen.

If you get this message, try and save the field again. If you receive an error that the field already exists, then most likely the changes were saved successfully. Close the **New Field** panel and refresh the page, and you should see the field listed in the **Fields** section.

To allow other users to access the governance console again, you will need to disable system admin mode.

20. Click on the **gear icon** to open the **Administration** menu.
21. Click on **Disable System Admin Mode** to return the console to its normal state.



Once again, you will be prompted to confirm your choice. Click **Disable** to confirm.

## 5. Add the custom field to the use case view

In the previous section, you created a custom field. In this section, you will add that field to the view for use cases so that it can be included. Note that the system views cannot be modified; instead, you will copy the existing view, make changes to the copy, and then set your modified view as the new default.

To create a copy of a system view, you could locate the view from the inventory. However, there are hundreds of views included in the console, and it is not always clear which view corresponds with the object you wish to edit. Fortunately, there is a shortcut built into the system to identify which view is being shown.

1. Click on the **hamburger menu** in the upper left.
2. Click on the **Inventory** menu item to expand it.
3. Click on the **Use Cases** menu item. A new tab opens listing all existing use cases.

4. Click on any use case from the list to open it.
5. Click on the **gear icon** in the upper right to open the **Administration** menu.
6. Click on the **Other** menu item to expand it.
7. Click on the **Display Debug Info** menu item.

A link will appear beneath the name of the use case, identifying the view as **watsonx-governance-Task-Register**.

**① Note:** If the default view name shows as **SysView-Task-Register**, then the admin user is not using the correct profile. Follow instructions on changing your profile from the [2. Launch the governance console](#) section above to ensure that the watsonx profiles are assigned, and that the admin user has changed to one of those profiles.

The *Display Debug Info* option is extremely useful for determining the view that is showing on a given screen, making it easier to find and customize that view.

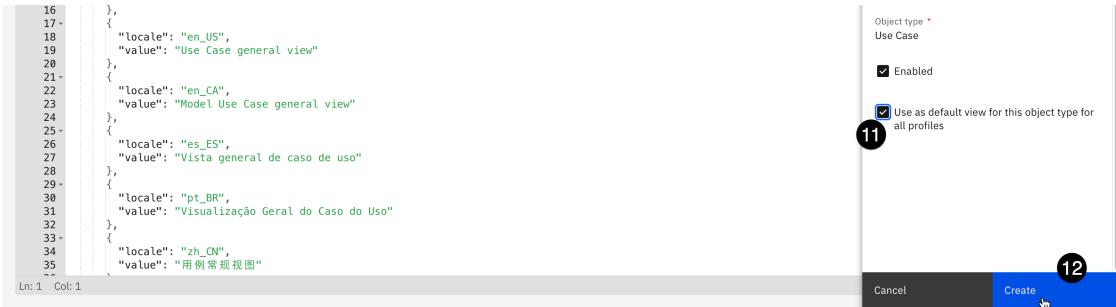
8. Click the link for **watsonx-governance-Task-Register** to open the view in a new tab.

A warning message appears in the top right of the new tab, informing you that this is a read-only system view and cannot be changed.

- Click the **Copy view** button just below the warning message. The **New View** panel opens.

- Enter a name for your view in the **Name** field. Staying consistent with the watsonx views will make it easier to locate later, so choose a name like **custom-watsonx-Task-Register**. Your text entry will be automatically mirrored in the **Label** field.

- Scroll to the bottom of the **New View** panel and check the box next to **Use as default view for this object type for all profiles**.
- Click **Create** to create the view.



When the view has finished saving, note that there is now a **Design** tab that allows you to change the design of the form in the view. Available fields that are not already included in the view are located in the left panel. The center panel shows the current layout of the view, divided into sections such as **Header**, **General**, and **Use Case Details**.

From this view, you can create new sections of the form by scrolling to the bottom of the screen and clicking the **New section** button. However, since the field you will be adding is related to government regulations, you will use the existing **Regulatory Information** section.

13. Scroll to the **Regulatory Information** section of the center panel.
14. Scroll to the **Object Fields** section of the left panel. Click and drag the **Secondary EU AI Act Review** object into the **Regulatory Information** section in the center panel beneath the **Applicability Assessment Completion Date** item.

View - Use Case  
custom-watsonx-Task-Register

Type Task State Draft

Copy view Discard Draft Publish

Design JSON Preview

Documentation External ID Inventory Name LMID Last Update Stakeholder Approval Completion Date WK Creation Date WKC Document

Regulatory Information 13

EU AI Risk Category

Applicability Assessment Completion Date

Grid 14

EU Compliance:Secondary EU AI Review

Tab Group-0002

Applicability Assessments

Next, you will need to add the **Use Case Review** fields to the view.

15. Scroll the main window to the **Use Case Details** section.
16. Scroll the left panel to the **Relationship Fields** section.
17. Click and drag the **Grid** item from the left panel into the **Use Case Details** section. The **Relationship** panel opens on the right side of the screen.



18. Enter **Use Case Reviews** in the **Label** field.
19. Click on the **Relationship Type** dropdown and select **Children**.
20. Click on the **Object Type** dropdown and select **Use Case Review**.

custom-watsonx-Task-Register

Relationship Grid-0012
* Label * <b>Use Case Reviews</b> (18)
Edit
* Relationship Type * <b>Children</b> (19)
* Object Type * <b>Use Case Review</b> (20)
Public Filter

The pending use case reviews will now show in this section of the view; however, it would be even more helpful to show their status, and the department responsible for reviewing them.

21. Scroll down to the **Fields** section and click the **Add** button. The **Fields** panel opens, showing all of the available fields for use case reviews.

Fields
Name

22. From the list of fields, check the box to the left of the **Approval Status** item.
23. From the list of fields, check the box to the left of the **Stakeholder Departments** item.

24. Click the **Done** button to add the new fields to the grid. The **Fields** panel closes.

The screenshot shows the 'Fields' panel open on the right side of the interface. It lists numerous system fields such as Approval Date, Approval Status, Assignees, Created By, etc. Two specific fields are checked: 'Approval Status' (marked with a circled '22') and 'Stakeholder Departments' (marked with a circled '23'). At the bottom of the panel, there are 'Cancel', 'Done', and a 'Help' icon. The 'Done' button is highlighted with a blue border.

25. Click the **Done** button to finalize your changes to the grid and close the **Relationship** panel.

26. Click **Publish** in the upper right to publish your changes to the view.

The screenshot shows the 'View - Use Case' page in the IBM Watsonx Governance console. The view title is 'custom-watsonx-Task-Register'. The top navigation bar includes 'Object Types', 'Use Case', 'Use Cases', 'Agency Base...', and 'custom-watsonx-Task-Register'. On the right, there are buttons for 'Copy view', 'Discard Draft', and 'Publish' (which is highlighted with a blue border). A circled '26' is located near the top right of the interface. The main content area displays a grid with columns for 'EU AI Risk Category', 'Regulatory Applicability Assessment Completion Date', and 'Secondary EU AI Review'. The left sidebar contains a list of object fields: Data Gathering Completion Date, Documentation, External ID, Funding Approved, LMID, Last Update, and Stakeholder Approval.

## 6. Disable the old view

You have successfully updated the use case view to include your new custom field. However, the new view may not show for all model use cases. In this section, you will disable the default system view, which will cause your changes to appear for all use cases.

1. Click on the **gear icon** to open the **Administration** menu.

2. Click on the **Solution Configuration** menu item.
3. Click on the **Views** menu item to open a new tab listing all the views.

The screenshot shows the IBM Watsonx Governance console interface. At the top, there's a navigation bar with various icons and links. Below it, a main content area displays a view titled "custom-watsonx-Task-Register". On the right side, a vertical sidebar is open under the heading "Solution Configuration". The "Views" option is highlighted and circled with a number "2". A sub-menu for "Views" is open, showing options like Dashboards, Views (which is circled with a number "3"), Worklist Views, Calculations, Scheduler, Object Types, Profiles, and Collections.

4. Ensure that the **Include system views** box is checked.
5. Enter **watsonx** in the search field to narrow down the results.
6. Click on the **Filter by Object type** dropdown and select **Use Case** to further narrow the search results.

The screenshot shows the "Views (4)" page. At the top, there's a search bar with "watsonx" typed in, circled with a number "5". To its right is a "Selected" button with a number "6". Below the search bar is a "Filter by View type" dropdown with "Use Case" selected, circled with a number "4". The main area contains a table with columns: Label, Description, Object Type, Published, Enabled, Default, and System. The table lists several views, including "watsonx-governance-Task-Register", "watsonx-governance-Admin-Register", "watsonx-governance-New-Register", and "custom-watsonx-Task-Register". The "watsonx-governance-Task-Register" row has a context menu open over it.

7. Click the box next to the **watsonx-governance-Task-Register** system view.
8. Click **Disable** from the context menu above the table.

Views (4)

The screenshot shows the "Views (4)" page again, but now with a context menu open over the "watsonx-governance-Task-Register" row. The menu has a blue header "1 item selected" and includes options: Delete, Enable, Disable (which is circled with a number "8"), and Cancel. The "Disable" option is highlighted.

You have successfully disabled the system view, ensuring that the new view with the custom field (*custom-watsonx-Task-Register*) will now appear for all use cases as long as the user has the **watsonx** profiles enabled for their account. You can open an existing use case to see the new field if you wish.

## Create a questionnaire template and custom workflow

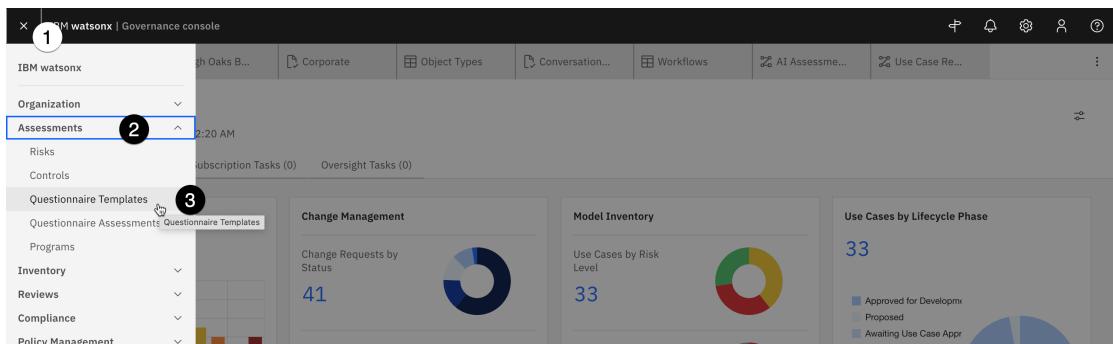
The watsonx governance console provides the ability to create and employ [questionnaires](#) to assist in the governance process. As with all elements of the governance console, questionnaires are fully customizable, and can be configured to automatically trigger further actions such as use case reviews, audits, communications, alerts, and more.

In this section of the lab, you will see how the questionnaire editor works by creating a form to edit the custom field you created in the previous step, allowing the compliance officer to fill out a form for their secondary review.

Finally, you will add the questionnaire as a part of the built-in AI assessment workflow, which will then allow you to integrate the questionnaire into the workflow for approving model use cases.

### 1. Create the questionnaire template

1. From the governance console, click the **hamburger menu** in the upper left.
2. Click on the **Assessments** menu item to expand it.
3. Click on the **Questionnaire Templates** menu item. Note that, depending on the current profile for your user, you may have more items listed in your menu. A new tab listing available templates opens.



4. Click the **New** button in the upper right.

The screenshot shows the IBM Watsonx Governance console interface. At the top, there's a navigation bar with links for Object Types, Use Case, Use Cases, Agency Base..., and Questionnaire... The 'Questionnaire...' link is underlined, indicating it's the active page. Below the navigation is a search bar and a table titled 'Questionnaire Templates (1)'. The table has columns for Name, Description, Primary Owner, Type, Completion Required, and Tags. One row is visible, labeled 'AI Risk Identification Questionnaire' with 'System Administrator' as the primary owner and 'Classification Questionnaire' as the type. A blue 'New' button is located in the top right corner of the table area, with a circled number 4 above it.

5. In the **Name** field, enter **Secondary EU AI Act Review**.

6. Enter a description in the **Description** field.

This screenshot shows the 'New Questionnaire Template' dialog. On the left, there's a form with fields for Name (containing 'Secondary EU AI Act Review' with a circled 5), Description (containing 'Second-level review to determine if the use case violates the EU AI Act.' with a circled 6), and Rationale. On the right, a validation dialog box shows a green progress bar at the top, followed by a message '2 items require attention.', a dropdown menu 'All Key Items (5)', and a list of items with status indicators: Name (green circle), Description (green circle), Questionnaire Scoring Method (yellow circle), Primary Owner (yellow circle), and Folder (yellow circle).

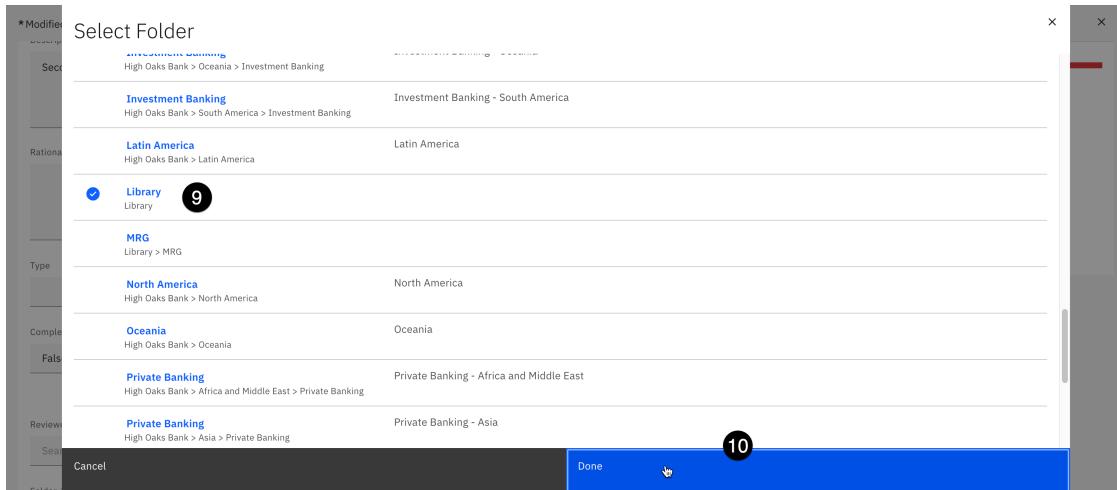
7. Enter the **admin** user in the **Primary Owner** field.

8. Click the **Select Folder** button. The folder selection dialog opens.

This screenshot shows the 'Select Folder' dialog. On the left, there are input fields for Type (dropdown), Completion Required (dropdown with 'False'), Reviewer (button), and Folder (button). On the right, there are dropdowns for Questionnaire Scoring Method ('Simple') and Primary Owner ('admin'). A search bar 'Search users' is also present. A blue 'Select Folder' button is located at the bottom right. A circled 7 is over the 'admin' radio button in the Primary Owner section, and a circled 8 is over the 'Select Folder' button.

9. Scroll down in the table of folders and click on the **Library** folder.

10. Click the **Done** button. The dialog closes.

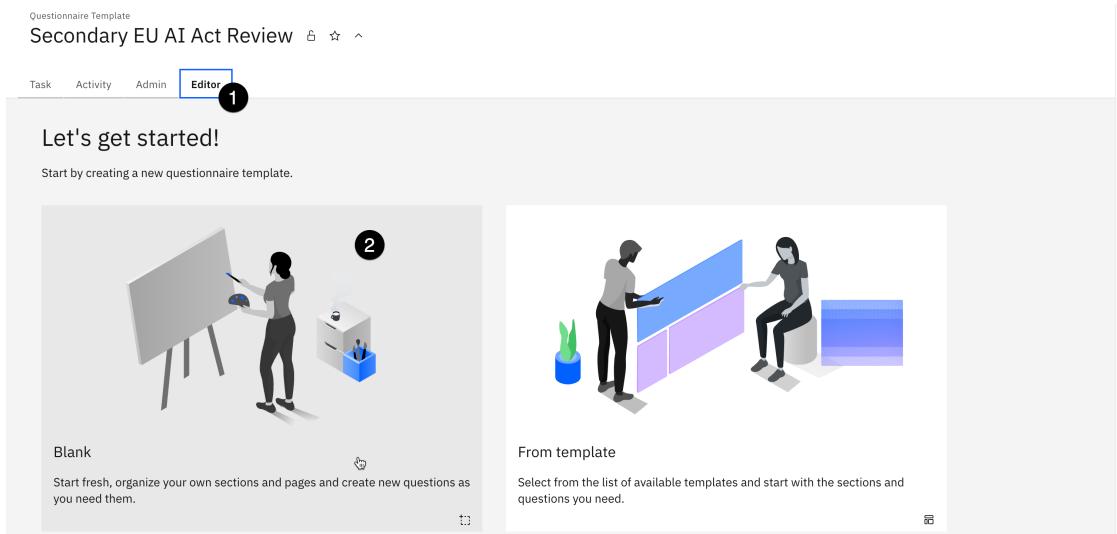


11. Click the **Save** button in the upper right to save the new questionnaire template. The **Task** view opens.

## 2. Add questions

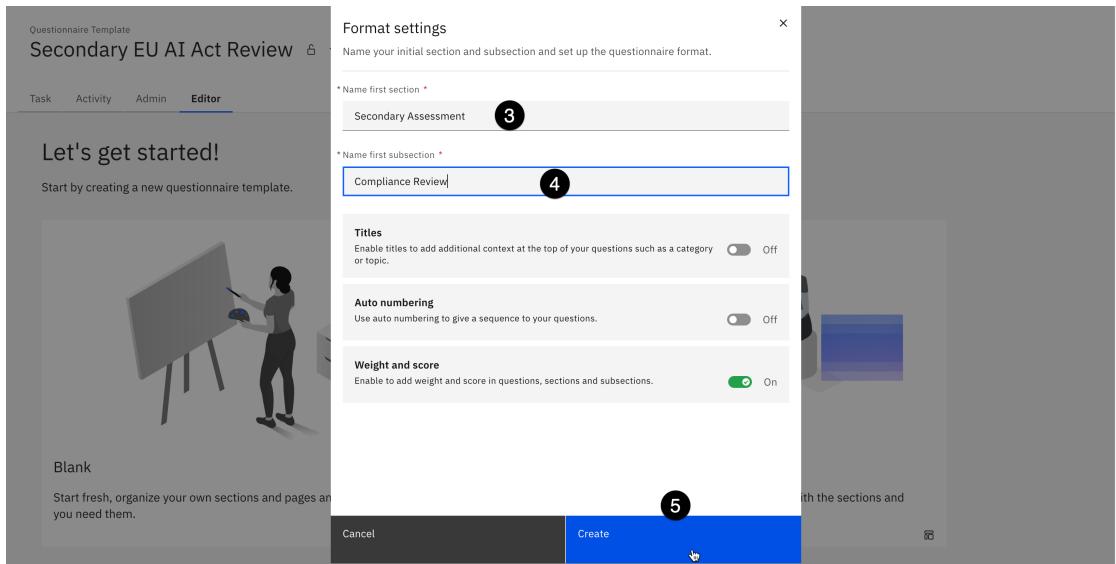
Now that the questionnaire template has been created, you may add questions to it. In this example, you will create a very simple set of questions to reflect a larger review, but when performing a Proof of Experience (PoX), it can be valuable to allow the client to create their own questions that are relevant to their organization's requirements.

1. From the questionnaire template **Task** view, click on the **Editor** tab.
2. Click on the **Blank** tile to create questions from scratch. The **Format settings** dialog opens.



3. Enter **Secondary Assessment** in the **Name first section** field.

4. Enter **Compliance Review** in the **Name first subsection** field.
5. Click the **Create** button. Note that if you receive a **Network error** message, you may need to close the current tab, return to the **Questionnaire Templates** tab, and refresh the page. From this point, the new template should appear in the list. You can click on it and switch to the **Editor** tab on the template screen.



6. The template has been pre-populated with a default question. Click the question tile to edit it. The **Configure question** form opens.

The screenshot shows the 'Secondary EU AI Act Review' template in the 'Editor' tab. The left sidebar lists sections: 'Introduction', 'Secondary Assessment', and 'Compliance Review'. The 'Compliance Review' section is expanded, showing a question titled 'default description \*'. The 'Not applicable' option is selected (radio button checked). A black circle containing the number 6 is placed over the 'Not applicable' radio button.

7. Copy and paste the following text in the **Question** field, replacing the existing text:  
After a secondary review, is this use case acceptable under the EU AI Act?
8. Click the **Remove** icon to the right of the **Not applicable** choice.

The screenshot shows a questionnaire configuration interface. On the left, there's a sidebar with 'Total sections' (1) and 'Total questions' (1). Below this are sections for 'Introduction', 'Sections' (with 'New section +'), and 'Secondary Assessment' (with 'Compliance Review' selected, showing '1' question). The main area is titled 'Configure question' for a 'Single choice' type question. The question text is 'After a secondary review, is this use case acceptable under the EU AI Act?'. Below the question, there are three answer options: 'Yes' (Score: 10), 'No' (Score: 0, with a 'Remove' button), and 'Not applicable' (Score: -1, with a 'Remove' button). A blue box highlights the question text, and a circled number '7' is placed above it. Another circled number '8' is placed near the 'Remove' button for the 'Not applicable' answer.

9. Take a moment to review the other possible actions you can take on this question. You have the ability to build display logic to determine when this question appears. You can add additional context, set up multiple choice questions, and more. Creating full in-depth questionnaires is beyond the scope of this lab, but familiarizing yourself with some of the options and allowing the client to build their own questionnaires can be helpful in a PoX.
10. When you are finished exploring, click the gray area beneath the **Configure question** panel to save your changes. At this point, you may add additional questions as you wish. When you are satisfied with the questionnaire, you may proceed with the lab.

### 3. Add the questionnaire to the existing AI assessments

You have just created a new type of assessment for AI models. In order to incorporate it into AI-related workflows, you will need to make further configuration changes to add it to the list of existing AI assessments.

1. Click the **gear icon** in the upper right to open the **Administration** menu.
2. Click **Enable System Admin Mode** to enable changes.

Business Entities (56)

Name	Description
AI Risk Library	AI Risk Library
Africa and Middle East	Africa and Middle East
Asia	Asia
Catalogs	Library > MRG > WKC > Catalogs

Solution Configuration

- Users and Security
- System Configuration
- Integrations
- System Migration
- Other
- FastMap Import
- System Admin Mode: Disabled
- Enable System Admin Mode** (highlighted with a callout bubble labeled '2')

3. A popup window will open, prompting you to confirm your choice, and notifying you that while the mode is enabled, the system will be unavailable to other users. Click the **Enable** button to confirm.
4. Click on the **gear icon** again to open the **Administration** menu.
5. Click on the **Solution Configuration** menu item to expand it.
6. Click on the **Object Types** menu item. The **Object Types** tab opens.

Business Entities (56) [ View Name : SysView-Grid-SOXBusEntity ]

Name	Description
AI Risk Library	AI Risk Library
Africa and Middle East	Africa and Middle East

Solution Configuration

- Dashboards
- Views
- Workflows
- Calculations
- Scheduler
- Object Types** (highlighted with a callout bubble labeled '6')
- Profiles
- Solutions
- Tags
- Themes
- Regulatory Event Rules

7. Enter **Questionnaire Assessment** in the search field to narrow the results of the table, then click on **Questionnaire Assessment** in the table.

Object Types (128)

Label	Name	Description
Questionnaire Assessment	QuestionnaireAssessment	OpenPages GRC Object Type

8. Click on the **Fields** section to expand it.
9. Scroll down to the **watsonx-QAssessment** section and click on the entry for **AI Assessment Type**. The field information panel opens.

The screenshot shows the 'Questionnaire Assessment' interface. The 'Fields' section is expanded, showing two entries: 'RiskScore' (Risk Score) and 'Score' (Score). The 'watsonx-QAssessment' section is also expanded, showing one entry: 'AI Assessment Type'. A mouse cursor is hovering over the 'AI Assessment Type' entry, which is highlighted with a blue border and has a circled number '9' above it. The right side of the screen displays the detailed information panel for 'AI Assessment Type', which includes fields for Name, Label, Description, Data Type, Required, and Global Search.

10. In the information panel on the right, scroll down to the **Enumerated String Values** section and click on the **New Value** button.

The screenshot shows the same interface as before, but now the 'AI Assessment Type' entry in the 'watsonx-QAssessment' section is selected, indicated by a blue border and a circled number '9' above it. The right panel shows the detailed information for 'AI Assessment Type', with the 'Enumerated String Values' section expanded. A 'New Value' button is highlighted with a blue border and a circled number '10' above it.

11. Enter **Secondary EU Assessment** in both the **Name** and **Label** fields.

The screenshot shows the same interface with the 'AI Assessment Type' entry selected. The right panel shows the 'New Enum Value' dialog box. The 'Name' field contains 'Secondary EU Assessment' and the 'Label' field also contains 'Secondary EU Assessment', both highlighted with a red border and circled with a number '11'.

12. Click the **Create** button at the bottom right.
13. Click the **Done** button to save your change to the AI Assessment object.
14. Once the changes have saved, you can turn off System Admin mode. Click the **gear icon** in the upper right to open the **Administration** menu.

15. Click **Disable System Admin Mode** menu item, then click the **Disable** button in the confirmation dialog box that opens to confirm your choice.

## 4. Update the AI assessment workflow

Now that you have created a new type of AI assessment, you will need to associate your assessment into the built-in workflow for AI use cases.

1. From the watsonx governance console, click the **gear icon** in the upper right to open the **Administration** window.
2. Click on the **Solution Configuration** menu item to expand it.
3. Click on the **Workflows** menu item. A new tab listing all the existing workflows opens. Note that you may receive a warning message about not having access to all of the items in the workflow; this can be ignored.

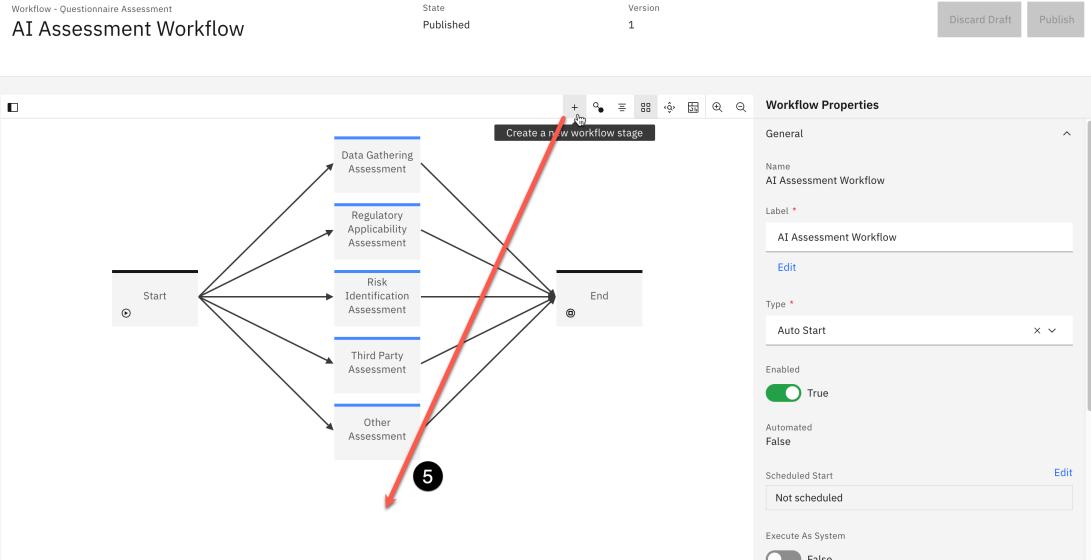
Label	Name	Object Type	Version Number	Type	Automated	Published	Enabled
<input type="checkbox"/> AI Assessment Workflow	AI Assessment Workflow	Questionnaire Assessment	1	Auto Start	X	✓	✓
<input type="checkbox"/> Action Item Approval Workflow	Action Item Approval Workflow	Action Item	1	Auto Start	X	✓	✓
<input type="checkbox"/> FCM Certification - Business Level	Business Level SOX Certification	Business Entity	1	Manual Start	X	✓	✓
<input type="checkbox"/> Challenge	Challenge	Challenge	1	Auto Start	X	✓	✓

4. Click on the **AI Assessment Workflow** from the table. The editor palette opens, showing the different stages of the workflow.

Stage	Description	Type	Start	End
Initial	Start of the workflow	Initial	Approved for Development	Approved for Development
Assessment	AI Assessment	Activity	Approved for Development	Approved for Development
Review	Review and Approve	Activity	Approved for Development	Approved for Development
Final	End of the workflow	Final	Approved for Development	Approved for Development

You will explore the editor in more detail in the next section, when you customize the **Use Case Request** workflow.

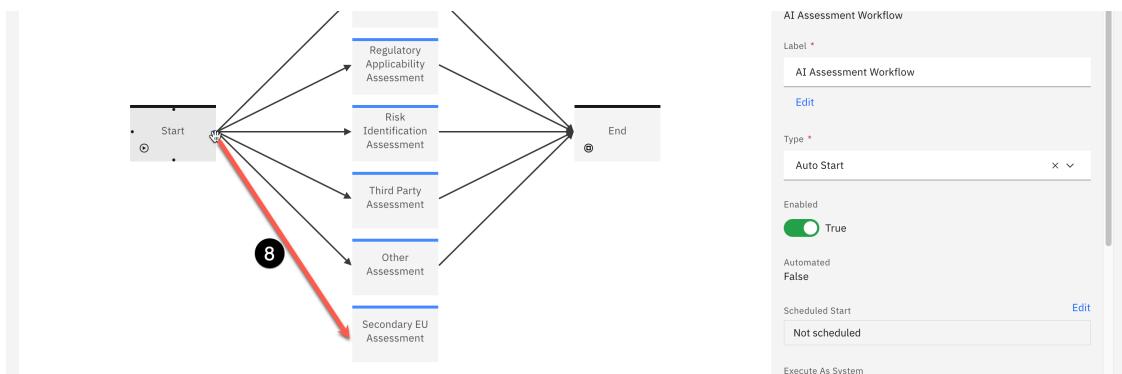
5. Locate the **+** icon in the upper right of the palette window. Click and drag it to beneath the **Other Assessment** box to create a new workflow stage. The **New Stage** dialog opens.



6. Enter **Secondary EU Assessment** in the **Name** field.
7. Click the **Create** button to create the stage, which will now appear on the palette.

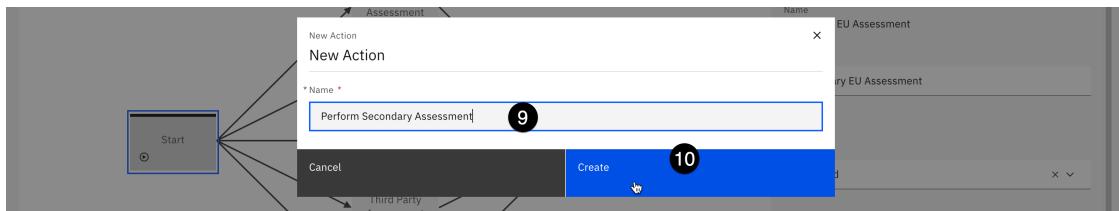


8. Hover your mouse pointer over the **Start** workflow stage to make four black boxes appear on the stage border. Click and drag one of the boxes to the new **Secondary EU Assessment** stage box to create an action linking the two stages. The **New Action** dialog opens.



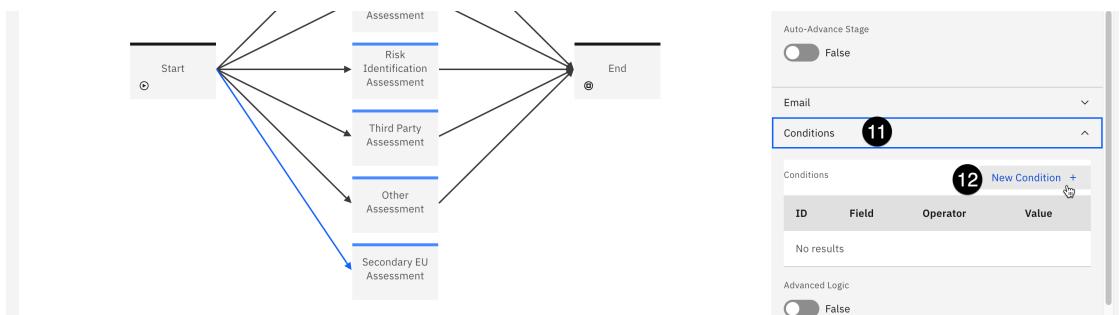
9. Enter **Perform Secondary Assessment** in the **Name** field.

- Click the **Create** button to create the action and close the dialog.

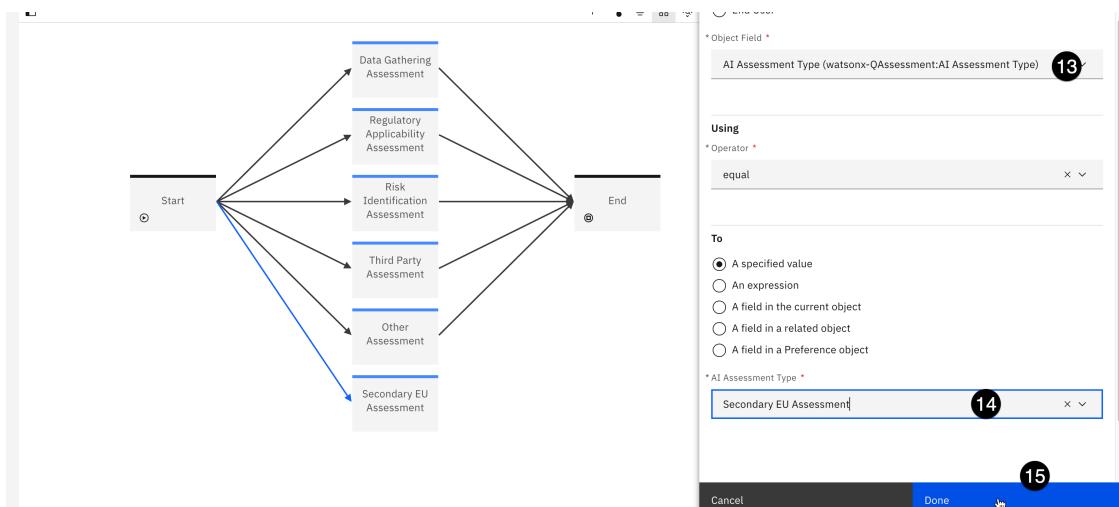


- In the **Action Properties** panel on the right, scroll down and click on the **Conditions** section to expand it.

- Click on the **New Condition** button. The **Conditions** panel opens.



- Click on the **Object Field** dropdown and select **AI Assessment Type...** from the list.
- Click on the **AI Assessment Type** dropdown and select **Secondary EU Assessment** from the list. This value appears in this list because you added it as an *Enumerated String Value* for AI Assessment Types in the previous step.
- Click the **Done** button to save the condition. The **Condition** panel closes.



16. In the **Action Properties** panel on the right, scroll down and click on the **Validations and Operations** section to expand it.

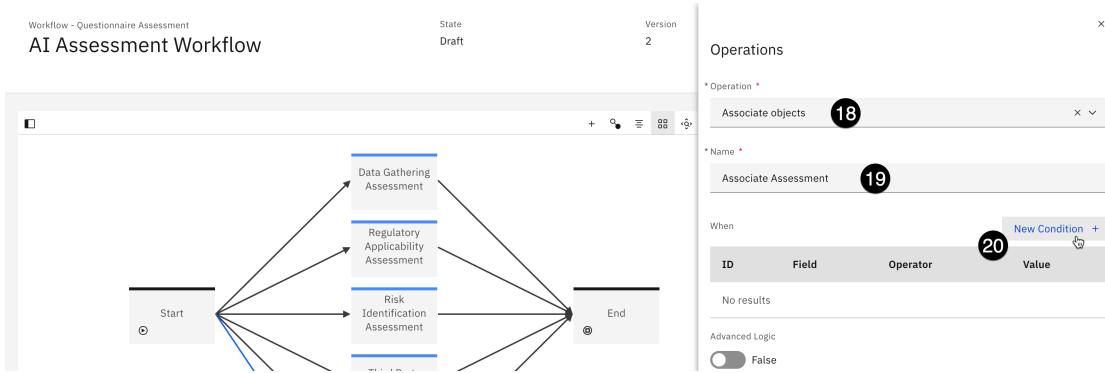
17. Click on the **New Operation** button. The **Operations** panel opens.



18. Click on the **Operation** dropdown and select **Associate objects** from the list.

19. Enter **Associate Assessment** in the **Name** field.

20. Click on the **New Condition** button. The **When** condition panel opens.



21. Click on the **Object Field** dropdown and select **AI Assessment Type....**

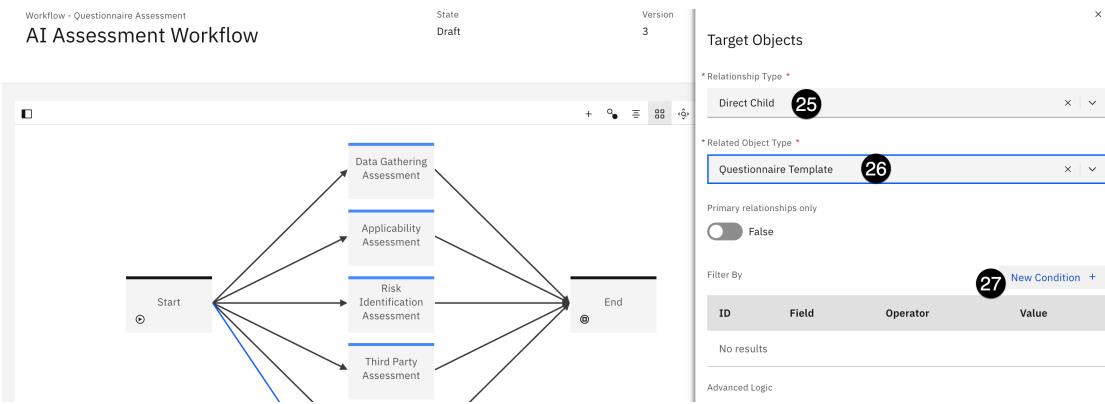
22. Click on the **AI Assessment Type** dropdown and select **Secondary EU Assessment**.

23. Click the **Done** button to close the **When** panel.

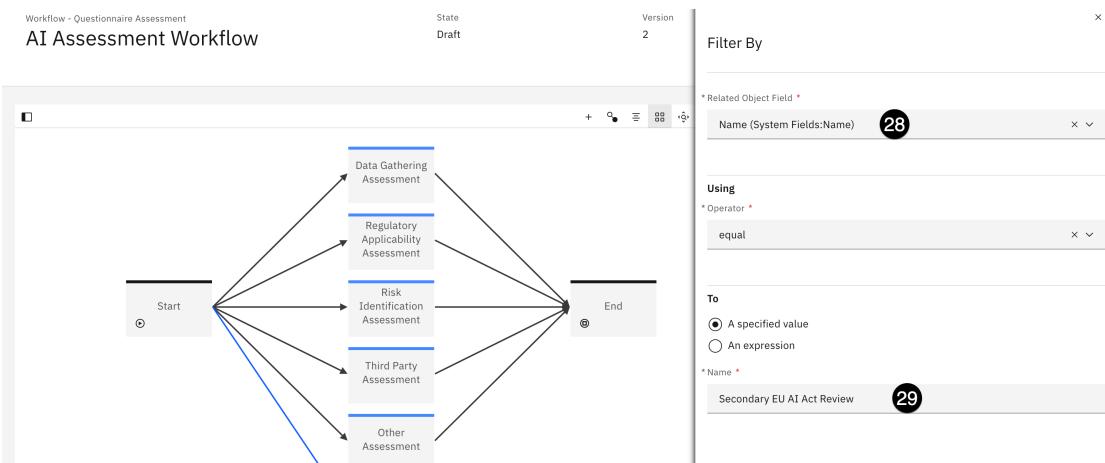
24. Click the **Edit** button to the right of **Target Objects**. The **Target Objects** panel opens.



25. Click on the **Relationship Type** dropdown and select **Direct Child** from the list.
26. Click on the **Related Object Type** dropdown and select **Questionnaire Template** from the list.
27. Click on the **New Condition** button. The **Filter By** panel opens.



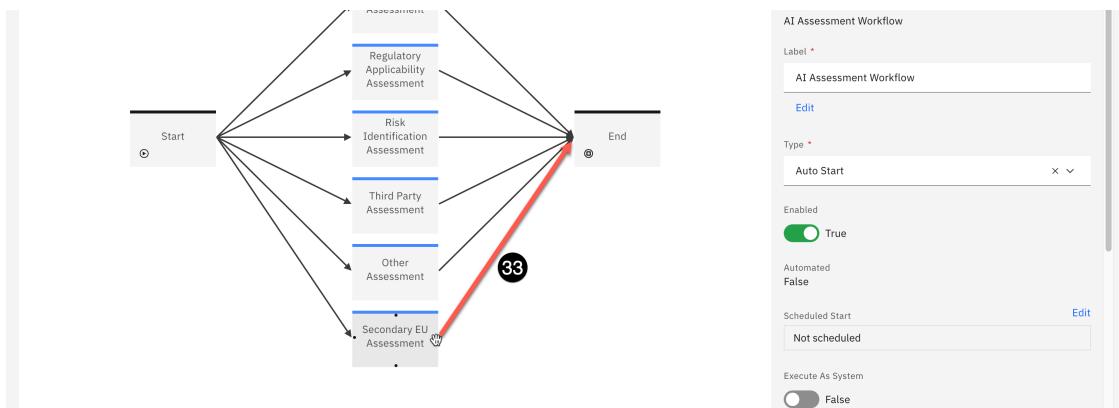
28. Click on the **Related Object Field** dropdown and select **Name...** from the list.
29. Enter the exact name of the questionnaire template you created in a previous step in the **Name** field. If you have been following the instructions, you named it **Secondary EU AI Act Review**.



30. Click **Done** to close the **Filter By** panel.
31. Click **Done** to close the **Object to associate** panel.
32. Click **Done** to close the **Operations** panel.

You have now linked the **Start** stage and the **Secondary EU Assessment** stage using an action. To complete the process, you must link the **Secondary EU Assessment** stage to the **End** stage.

33. Hover your mouse pointer over the **Secondary EU Assessment** stage box to make four black boxes appear on the stage border. Click and drag one of the boxes to **End** stage box to create an action linking the two stages. The **New Action** dialog opens.



34. Enter **Assessment complete** in the **Name** field and click the **Create** button to close the dialog.
35. Click the **Publish** button in the upper right of the screen to save your updates. Your new questionnaire has been added to the AI assessment workflow, and can now be integrated into the workflow for use case approval.

Every organization will have their own requirements and preferences when it comes to governance processes. In the governance console, a workflow represents a business process and describes the tasks involved in the process. The ability to fully configure and customize an automated workflow is one of the main differentiators for watsonx.governance. Many clients will be relying on manual processes that involve email approval chains between developers, risk assessors, and other stakeholders. Others will have attempted to awkwardly fit their existing organizational structure into pre-set approval workflows offered by some of our competitors.

In this section of the lab, you will examine the workflow for a model use case request, and customize it. In this example, if the risk assessment questionnaire from the previous section results in a use case that is prohibited under the EU AI Act, the workflow will be configured to trigger a second-level audit by the compliance officer user you created earlier in the lab. As with all aspects of this lab, engaging with your client to alter the customization to fit their particular needs is a great way to demonstrate the flexibility of the solution.

## 5. Create workflow stages and actions

1. From the watsonx governance console, click the **gear icon** in the upper right to open the **Administration** window.
2. Click on the **Solution Configuration** menu item to expand it.

- Click on the **Workflows** menu item. A new tab listing all the existing workflows opens. Note that you may receive a warning message about not having access to all of the items in the workflow; this can be ignored.

The screenshot shows the IBM Watsonx Governance console interface. At the top, there's a navigation bar with tabs like 'Business Ent...', 'High Oaks B...', 'Corporate', 'Object Types', and 'Conversation...'. On the right side, there's a 'Solution Configuration' section with a 'Workflows' tab highlighted. A sidebar on the right lists various options: Dashboards, Views, Workflows (highlighted), Calculations, Scheduler, Object Types, Profiles, Solutions, and Tags. The main content area shows a 'Use Case' named 'Conversational AI' with status 'Approved for Development' and risk level 'High'. Below this, there's a table with columns for Task, Activity, Admin, and Status. The 'Workflows' section is circled with number 3.

- Locate **Use Case Request** in the table and click on it. The editor palette opens, showing the different stages of the workflow.

The screenshot shows a list of workflow stages. The 'Use Case Request' stage is selected and highlighted with a red circle containing the number 4. Other stages listed include Signature Revoke, Use Case Deployment Approval, Use Case Development and Validation, Use Case Stakeholder Review, and Vendor Identified Global Issue. The 'Items per page' dropdown is set to 40, and the current view is 1-40 of 41 items. The 'Workflow Properties' panel on the right is visible but mostly empty.

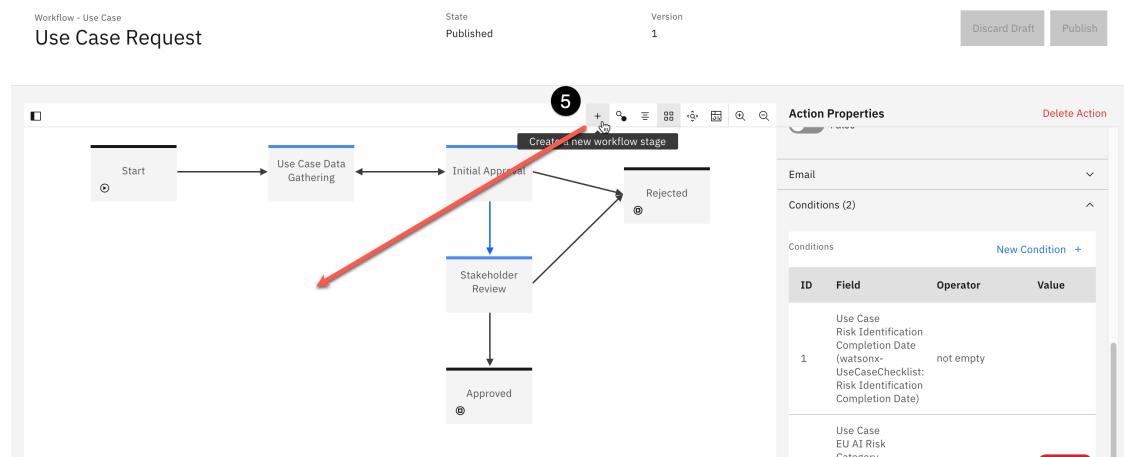
Take a moment to explore the items in the palette by clicking on them and observing the **Workflow Properties** panel on the right of the screen. For example, click on the **Initial Approval** box. Boxes represent stages of the workflow. In the properties panel, you can see that the due date of the action is set to five days after the stage start date. If you click on the **Assignees and Subscribers** section to expand it, you can see that the stage gets assigned to the use case owner.

The screenshot shows the 'Workflow - Use Case Request' editor for the 'Use Case Request' stage. The stage properties panel on the right shows the 'Initial Approval' stage selected. It displays the 'Due Date' as 'Stage Start Date + 5 day(s)' and the 'Assignees and Subscribers' section, which is expanded to show the 'Owner (MRG-ModelUseCase:Owner)' assigned to the 'Use Case' object. The workflow diagram shows the flow from 'Start' to 'Use Case Data Gathering', then to 'Initial Approval', then to 'Stakeholder Review', and finally to 'Approved'. There are also 'Rejected' and 'Rejected' nodes connected to the 'Initial Approval' stage.

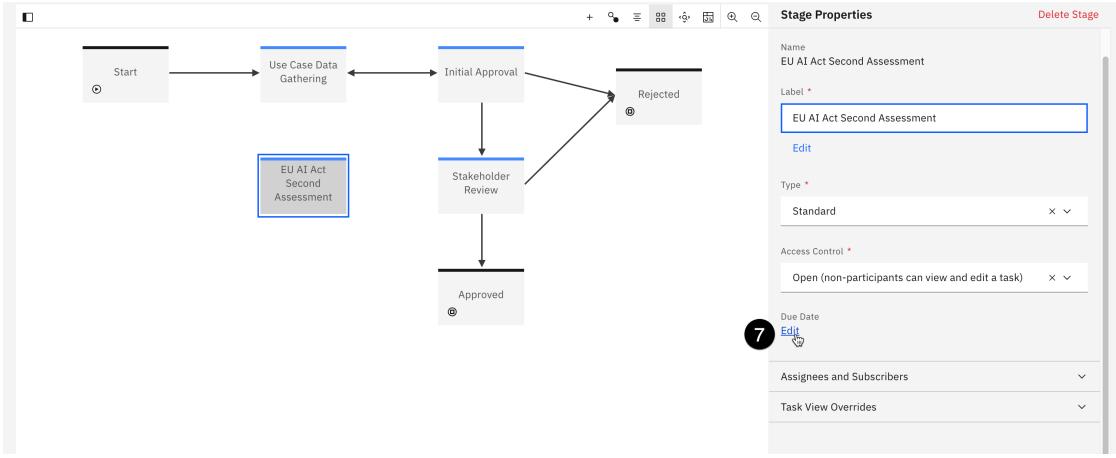
Next, click on the arrow joining the **Initial Approval** stage and the **Stakeholder Review** stage. Arrows represent actions that transition the use case between stages. Click on the **Conditions** section of the properties panel to expand it, and note that the two conditions here are being to bring about this action. First, that the **Use Case Risk Identification** assessment has been completed. And second, that the **Use Case EU AI Risk Category** property generated by that questionnaire's results was not *Prohibited*. In plain language, after the use case passes initial approval, the owner would fill out the questionnaire to determine risk. If the use case is not deemed prohibited by the EU AI Act, then it can proceed to the individual stakeholder review.

However, what if the organization wanted a second assessment in the case of a *Prohibited* result? In the steps below you will configure that as part of the workflow.

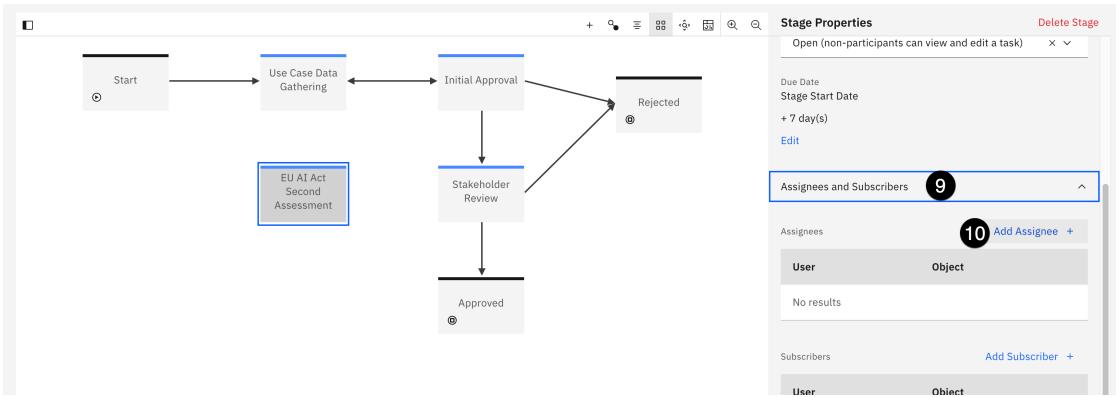
5. Locate the **+** icon on the palette toolbar, then click and drag it to the area on the palette shown below to create a new workflow stage. The **New Stage** dialog opens.



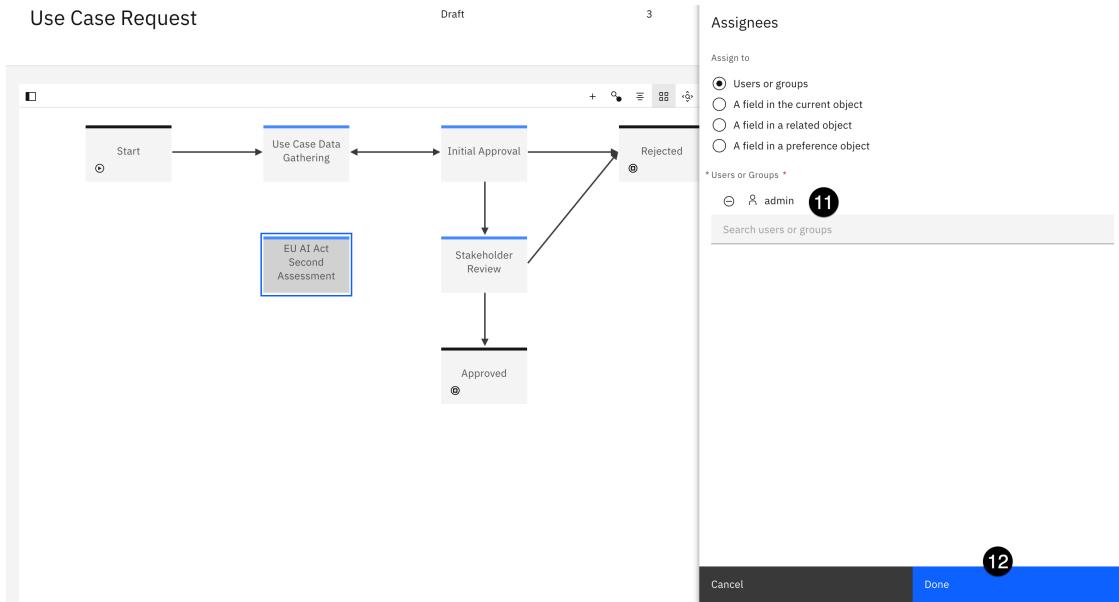
6. Enter **EU AI Act Second Assessment** in the **Name** field and click **Create**. The stage now appears on the palette.
7. In the **Stage Properties** panel, click the **Edit** button below the **Due Date**.



8. Note the different options for setting the due date, and the flexibility provided by the governance console. Set the **Number Of Days** field to **7** to give the reviewer one week to perform the action, and click **Done**.
9. In the **Stage Properties** panel, click on the **Assignees and Subscribers** section to expand it.
10. Click on the **Add Assignee** button. The **Assignees** panel opens.

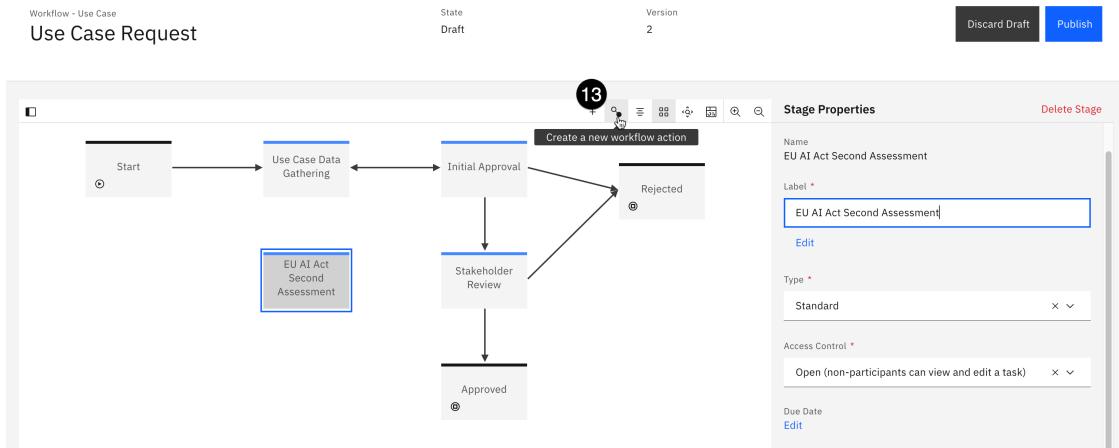


11. In the **Users or Groups** field, enter **admin** and select the admin user to assign them to this task. Note that in a real-world example, you would likely have created a group of compliance officers and assigned this task to them, as opposed to one specific user.
12. Click **Done**.

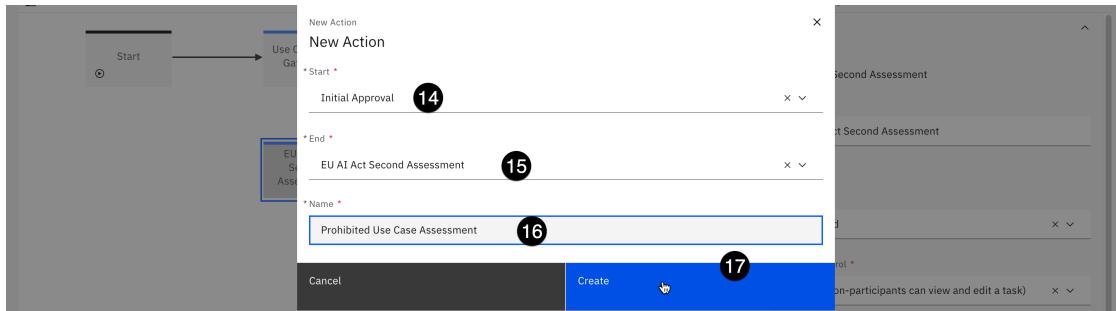


The workflow stage has been created. Next, you will add actions to trigger it.

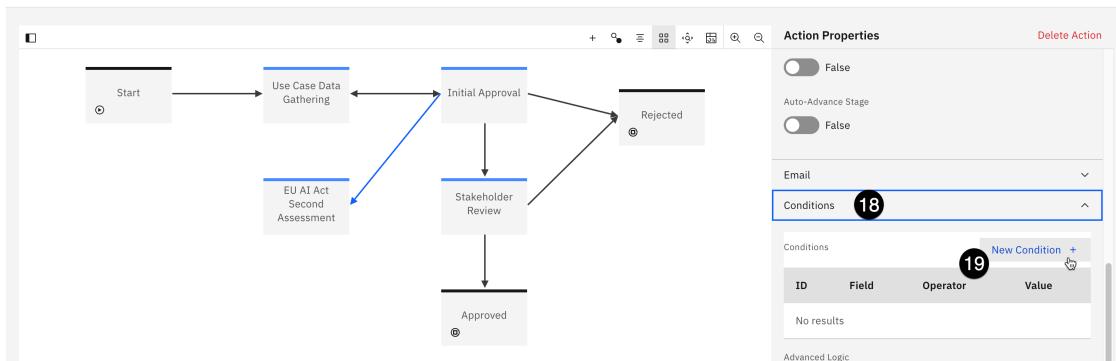
- Locate the **Create a new workflow action** button on the palette toolbar to the right of the + icon and click it. The **New Action** dialog opens.



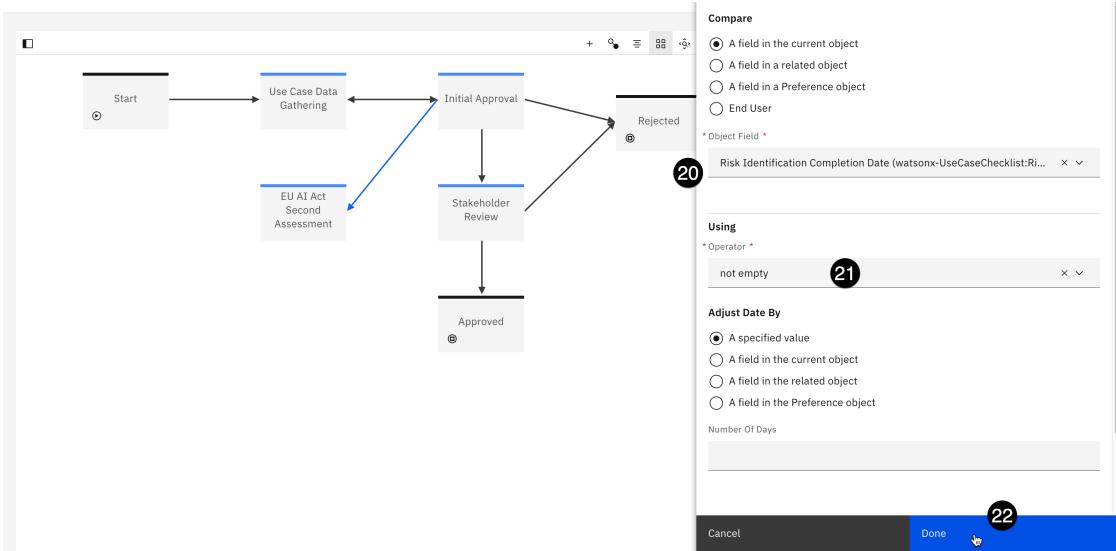
- Click the **Start** dropdown and select the **Initial Approval** stage.
- Click the **End** dropdown and select the **EU AI Act Second Assessment** stage you just created.
- Enter **Prohibited Use Case Assessment** in the **Name** field. The text you enter into this field will appear as an available action in the **Actions** menu in the model use case view when the use case is in this stage.
- Click **Create**. The action now appears as an arrow linking the **Initial Approval** stage with the **EU AI Act Second Assessment** stage.



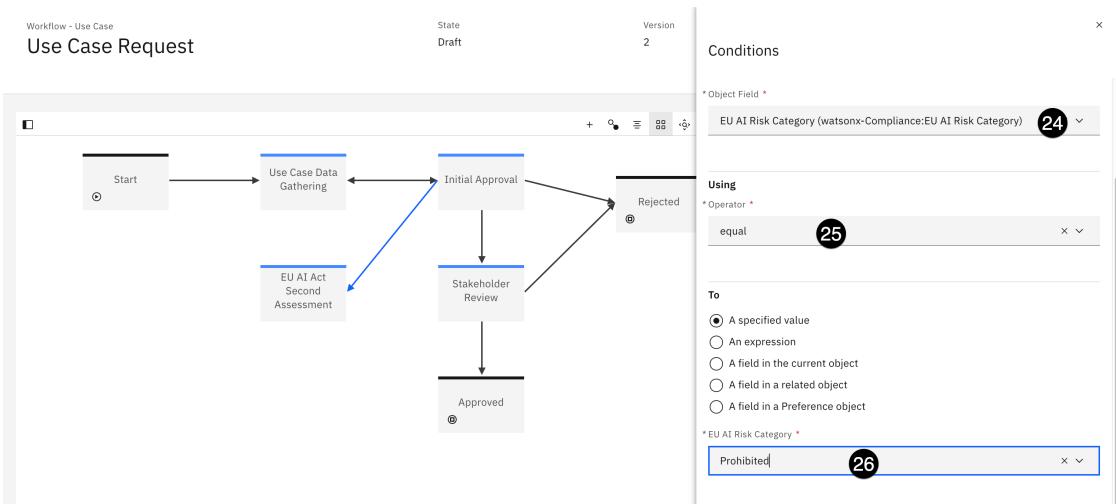
18. In the **Action Properties** panel on the right, scroll down to the **Conditions** section and click on it to expand it.
19. Click on the **New Condition** button. The **Conditions** panel opens.



20. Click on the **Object Field** dropdown and select **Risk Identification Completion Date....**
21. Click on the **Operator** field and select **not empty** to designate that the completion date of the Risk Identification assessment has a value, meaning that the questionnaire has been filled out.
22. Click **Done** to add the condition.



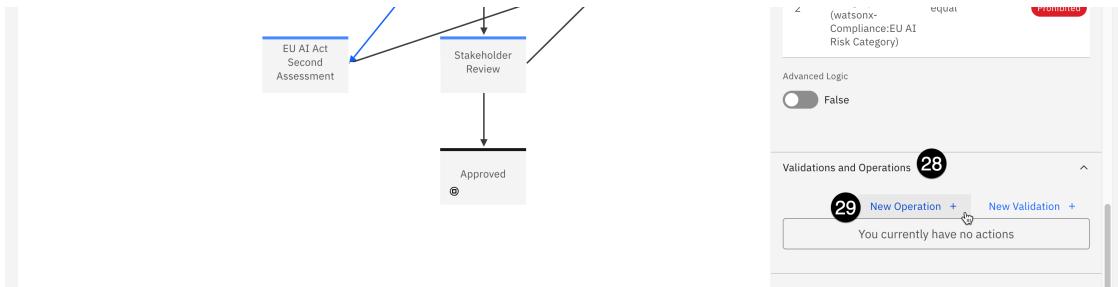
23. Click the **New Condition** button again to add a second condition.
24. Click on the **Object Field** dropdown and select **EU AI Risk Category....**
25. Click on the **Operator** dropdown and select **equal**.
26. Click on the **EU AI Risk Category** and select **Prohibited**.
27. Click **Done** to add the condition.



The conditions for the action have been set so that it will trigger correctly. Next, you will need the action to automatically create the questionnaire for the secondary reviewer to fill out. In previous steps, you drafted questions for the form, and added the questionnaire to the AI assessment workflow. Taking those steps allows you to insert the new questionnaire into the current use case request workflow as operations that your action can take.

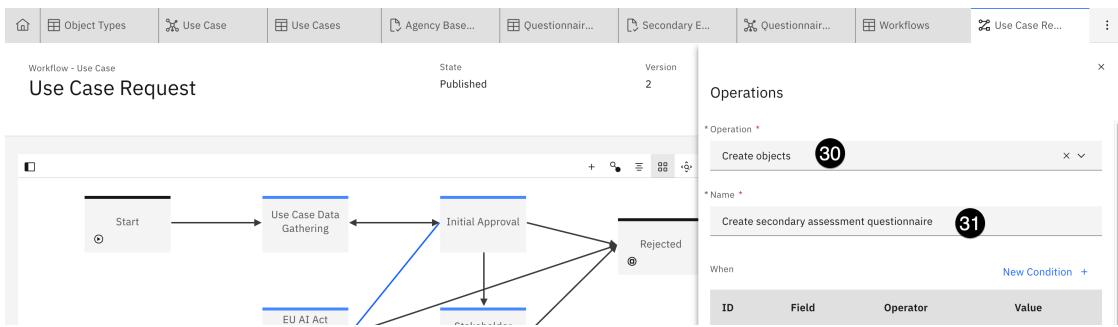
28. In the **Action Properties** panel, click on the **Validations and Operations** section to expand it.

29. Click on the **New Operation** button. The **Operations** panel opens.



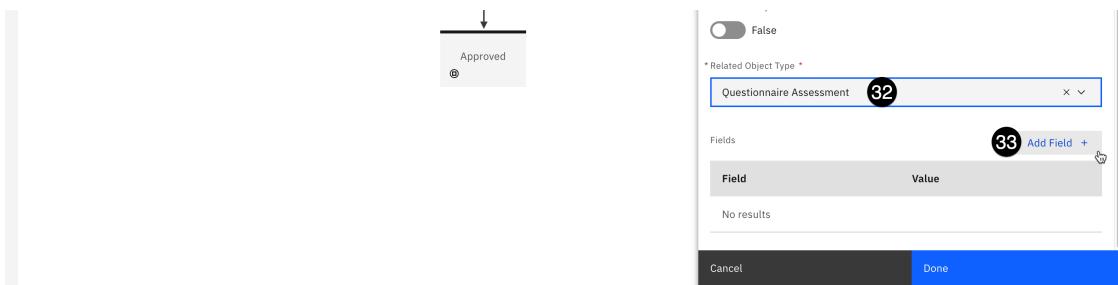
30. Click on the **Operation** dropdown and select **Create objects**.

31. Enter a description like **Create secondary assessment questionnaire** in the **Name** field.



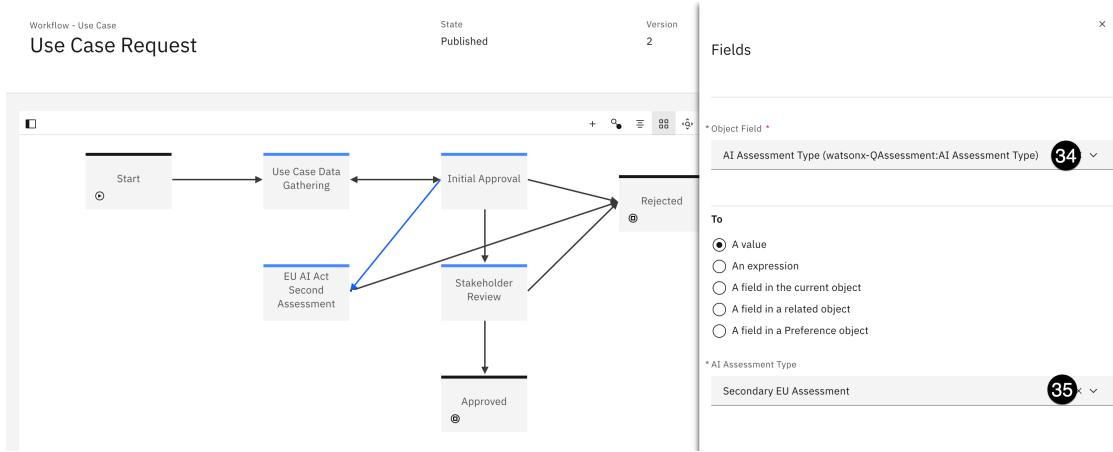
32. Scroll to the bottom of the **Operations** panel. Click on the **Related Object Type** dropdown and select **Questionnaire Assessment**.

33. Click the **Add Field** button. The **Fields** panel opens.



34. Click on the **Object Field** dropdown and select **AI Assessment Type....**

35. Click on the **AI Assessment Type** dropdown and select **Secondary EU Assessment**. This assessment type is visible because you added it to the AI assessment workflow in the previous step.



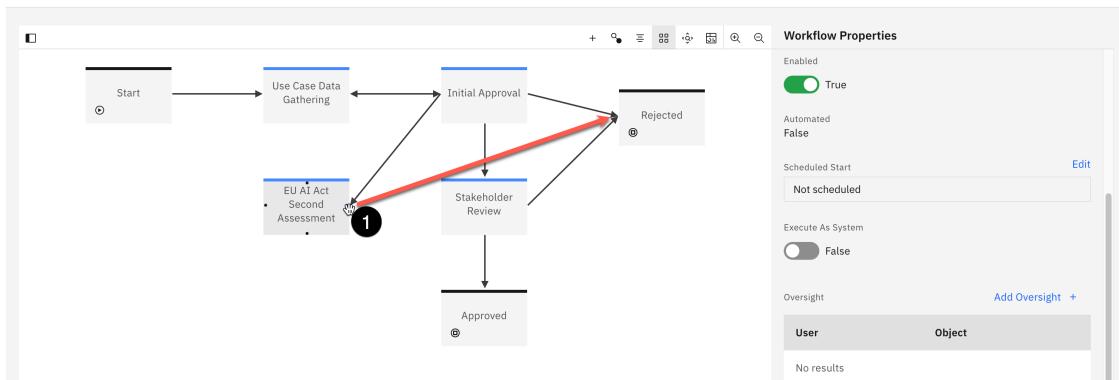
36. Click the **Done** button in the lower right to close the **Fields** panel.

37. Click the **Done** button to close the **Operations** panel.

At this point, you have created a new workflow stage, an automated action to trigger that stage, and an action to prompt a stakeholder with your newly-created questionnaire. However, the stage also needs resolution actions. The secondary reviewer must be able to either confirm the questionnaire assessment that the use case is prohibited under the EU AI Act and reject it, or overrule the questionnaire assessment and send it to the next stage of the workflow (**Stakeholder Review**).

## 6. Add resolution actions

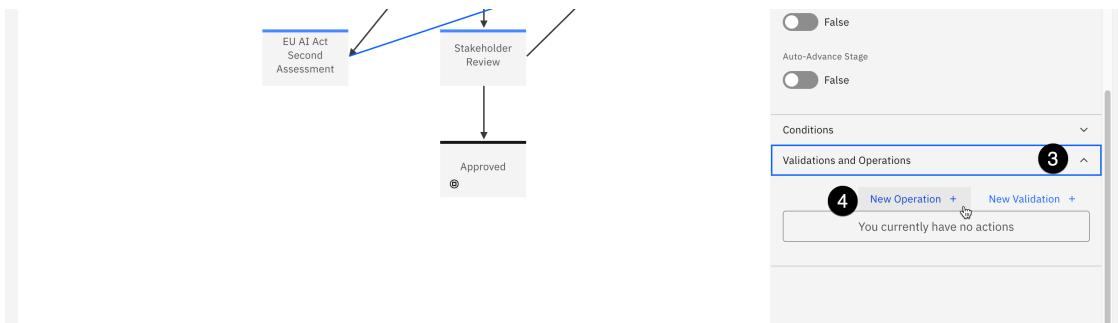
1. Hover your mouse over the **EU AI Act Second Assessment** stage; four black dots appear on the borders of the stage box. Click and drag one of the dots from the stage over to the **Rejected** stage on the palette to create an action linking the two. The **New Action** dialog appears.



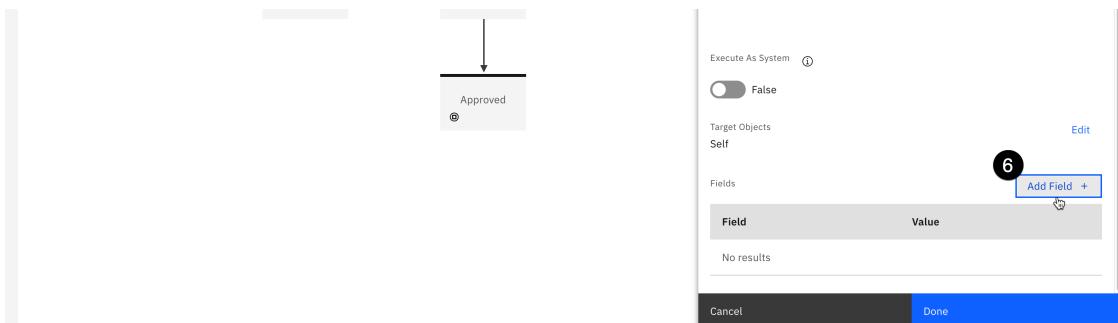
2. Enter **Reject Use Case** in the **Name** field and click **Create**. This value is what will appear in the user interface for the stage owner for them to reject the use case.

In addition to conditions, actions can also have operations assigned to them. In this example, you will set the use case status to **Rejected**.

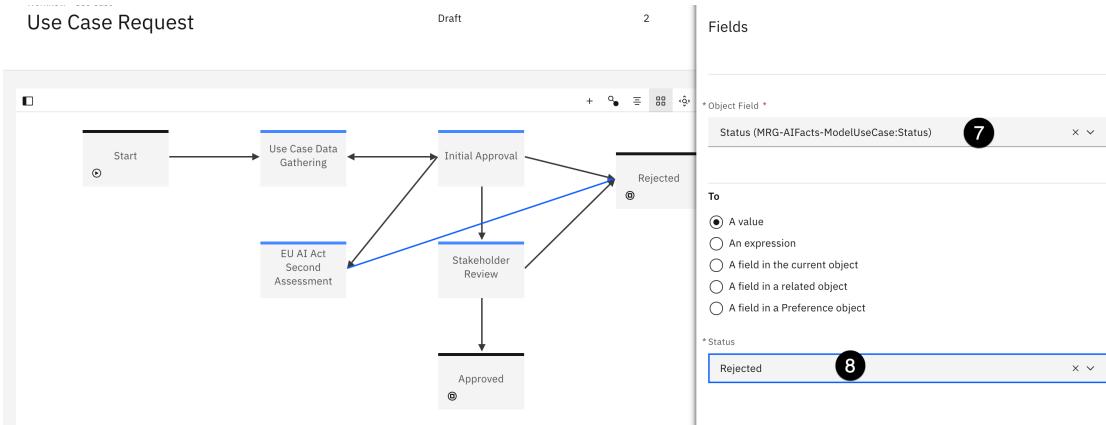
3. In the **Action Properties** panel, scroll down the bottom and click on the **Validations and Operations** section to expand it.
4. Click on **New Operation**. The **Operations** panel opens.



5. Enter **Set status as rejected** in the **Name** field.
6. Scroll to the bottom of the panel and click the **Add Field** button.



7. Click on the **Object Field** dropdown and select **Status (MRG-AIFacts-ModelUseCase>Status)**.
8. Click on the **Status** dropdown and select **Rejected**.

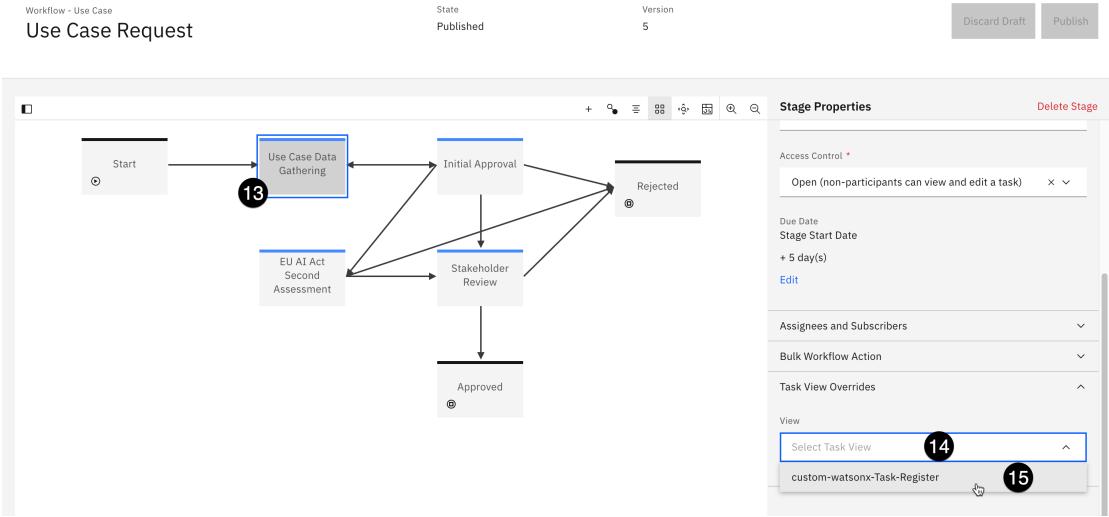


9. Click **Done** to create the field on the operation.
10. Click **Done** again to set the operation on the action. Performing the action will now update the model status.
11. Repeat step 1 above, clicking and dragging from the **EU AI Act Second Assessment** stage to the **Stakeholder Review** stage to create an action linking the two.
12. Enter **Approve to Stakeholder Review** in the **Name** field and click **Create**.

Note that the action linking the **Initial Approval** and **Stakeholder Review** stages has seven operations it performs, which you can see by clicking on it and expanding the **Validations and Operations** section of the properties panel. These operations prompt use case reviews from different departments before the final use case is approved. In a real-world example, you would duplicate these operations on the action you just created to link the **EU AI Act Second Assessment** and **Stakeholder Review** stages, since this represents the same level of approval. However, for the sake of brevity, this lab will not go over adding the operations to the new action. You may do so if you wish.

Finally, because you made changes to the default use case view, you will need to update the workflow stages, since they reference the view. Failure to update the stages will cause errors when a use case request goes through the workflow.

13. Click on the **Use Case Data Gathering** stage in the workflow. The **Stage Properties** panel opens.
14. Scroll to the bottom of the **Stage Properties** panel and click on the **Task View Overrides** section to expand it.
15. Click on the **Select Task View** dropdown and select the customized view you modified in previous steps from the list.



16. Repeat steps 13-15 for the three other stages intermediate stages in the workflow (it is not necessary for the **Start**, **Rejected**, or **Approved** stages).
17. When you are finished, click the blue **Publish** button in the upper right to publish your changes to the workflow.

Now that the use case request workflow has been modified, you will need to make one further customization to be able to approve a use case request for development.

## 7. Update the stakeholder review workflow

In the current workflow, the final stage before a use case request is approved for development is the **Stakeholder Review**. In a real world situation, an organization would assign this review to members of the business entity that requested the use case, risk managers, or other stakeholders. For the sake of this lab, you will assign the stakeholder review to the use case owner.

1. From the watsonx governance console, click the **gear icon** in the upper right to open the **Administration** window.
2. Click on the **Solution Configuration** menu item to expand it.
3. Click on the **Workflows** menu item. A new tab listing all the existing workflows opens. Note that you may receive a warning message about not having access to all of the items in the workflow; this can be ignored.

The screenshot shows the IBM Watsonx Governance console interface. At the top, there's a navigation bar with links like 'Business Ent...', 'High Oaks B...', 'Corporate', 'Object Types', and 'Conversation...'. Below the navigation is a card for a 'Use Case' named 'Conversational AI'. The card displays 'Status: Approved for Development' and 'Risk Level: High'. To the right of the card is a sidebar titled 'Solution Configuration' with a dropdown menu. The 'Workflows' option is highlighted and circled with a number '3'. Other options in the sidebar include 'Dashboards', 'Views', 'Calculations', 'Scheduler', 'Object Types', 'Profiles', 'Solutions', and 'Tags'.

- Locate and click on the **Use Case Stakeholder Review** link from the table. The workflow editor opens.

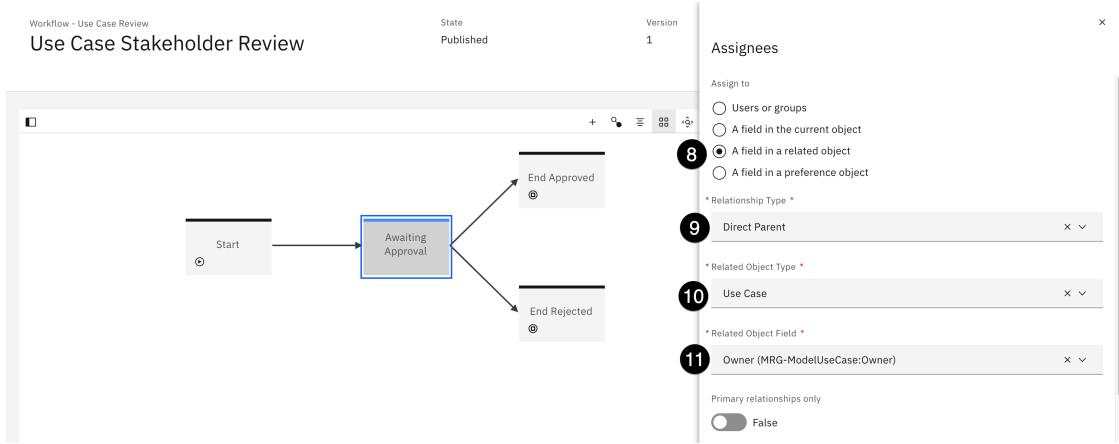
The screenshot shows the 'Workflows (1)' section of the IBM Watsonx Governance console. It displays a table of workflows with columns: Label, Name, Object Type, Version Number, Type, Automated, Published, and Enabled. One row in the table is highlighted and circled with a number '4', corresponding to the 'Use Case Stakeholder Review' entry. The table also includes a search bar and a 'New Workflow' button.

- Click on the **Awaiting Approval** stage of the workflow. The **Stage Properties** panel opens on the right side of the screen.
- Scroll to the bottom of the panel and click on the **Assignees and Subscribers** item to expand it.
- Click on the **Add Assignee** button. The **Assignees** panel opens.

The screenshot shows the 'Stage Properties' panel for the 'Awaiting Approval' stage of the workflow. The panel has tabs for 'Edit', 'Delete Stage', and 'Discard Draft' (which is grayed out). On the left, there's a diagram of the workflow stages: 'Start' leads to 'Awaiting Approval', which then branches to 'End Approved' and 'End Rejected'. The 'Awaiting Approval' stage is circled with a number '5'. On the right, the 'Assignees and Subscribers' section is expanded, showing 'Assignees' and 'Subscribers' tables. The 'Add Assignee' button is circled with a number '7'.

- Click on the **A field in a related object** item to select it.
- Click on the **Relationship Type** dropdown and select **Direct Parent**.

10. Click on the **Related Object Type** dropdown and select **Use Case**.
11. Click on the **Related Object Field** dropdown and select **Owner (MRG-ModelUseCaseOwner)**.



12. Click the **Done** button to close the **Assignees** panel.
13. Click the **Publish** button to publish the changes to the workflow.

At this point in the lab, you have performed several customizations of the governance console. You have worked with user profiles, created business entities, set up custom fields, added those fields to views, experimented with questionnaires, and altered use case workflows.

The depth and configurability of the governance console is one of the major differentiators for watsonx.governance, and a successful proof of experience (PoX) should spend time highlighting these capabilities and encouraging the client to perform their own customizations based on their organization's requirements.

From this point on, the lab will focus on governing models using the workflows and processes you created and customized in the previous steps.

### Choose a lab to focus on

The next two sections of the lab cover the governance of generative AI models and predictive machine learning models. You do not need to complete them in order; if your clients are more interested in predictive machine learning models, you can skip directly to that section and return to the generative AI section if you have time.

For these portions of the lab, you will continue to be signed in as the **admin** user for the sake of simplicity. Many of the actions that you will perform, such as configuring monitors, would be performed by platform administrators in a real-world situation. Other tasks, such as creating use case requests, would fall to business stakeholders. The user personas will be called out as you complete steps in the lab. Keep that separation in mind as you progress.

## Govern generative models

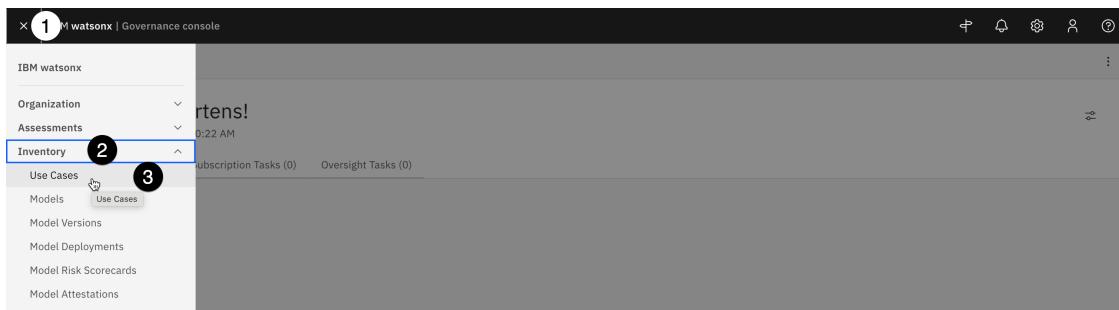
In this section of the lab, you will go through the steps of the approval workflow you customized during the governance console configuration steps. The human resources department has received a large number of applications for open positions, and would like to use AI to summarize them to help save time for the hiring department, and process the applications more efficiently to improve the experience for the applicants.

Most use cases for generative models involve interacting with prompts and prompt templates, which help users provide clear input to a Large Language Model (LLM) by giving them a structured framework to follow, which in turn helps the model generate accurate responses.

### 1. Create a model use case

In the [day 1 lab](#) you created a sample use case and tracked the request through the approval process, including the risk and applicability assessment questionnaires. For this lab, you will once again create a use case request, but will skip several of the steps you completed previously.

1. Click on the **hamburger menu** in the upper left.
2. Click on the **Inventory** menu item to expand it.
3. Click on the **Use Cases** menu item. The **Use Cases** tab opens. Note that several sample uses cases were loaded by the lab administrator.



4. Click the blue **New** button. The **New Use Case** tab opens.

Name	Purpose	Description	Owner	Status	Risk Level	Tags
Agency Based LGD Estimation High Oaks Bank > North America > Corporate Banking		Uses internal and external recovery data, adjusted for macro-economic impact. Uses statistical regression	Bob Eldridge	Approved for Development	Low	
Banking book HTM corporate bond - income High Oaks Bank > Europe > Corporate Banking		ALM based income forecast for the HTM portfolio, initially for the CCAR 2013 stress-test. Vendor solution using conditional scenarios and core ALM system.	Bob Eldridge	Approved for Development	Medium	
Black model for TD derivatives		Black I linear-Nonlinear model on TR process				

Note that the **Model Use Case creation** information panel on the right of the screen offers helpful information about model use cases, as well as a list of required fields. Clicking on any of the fields in that panel will scroll the screen directly to that portion of the form, helping you quickly rectify any items needing attention.

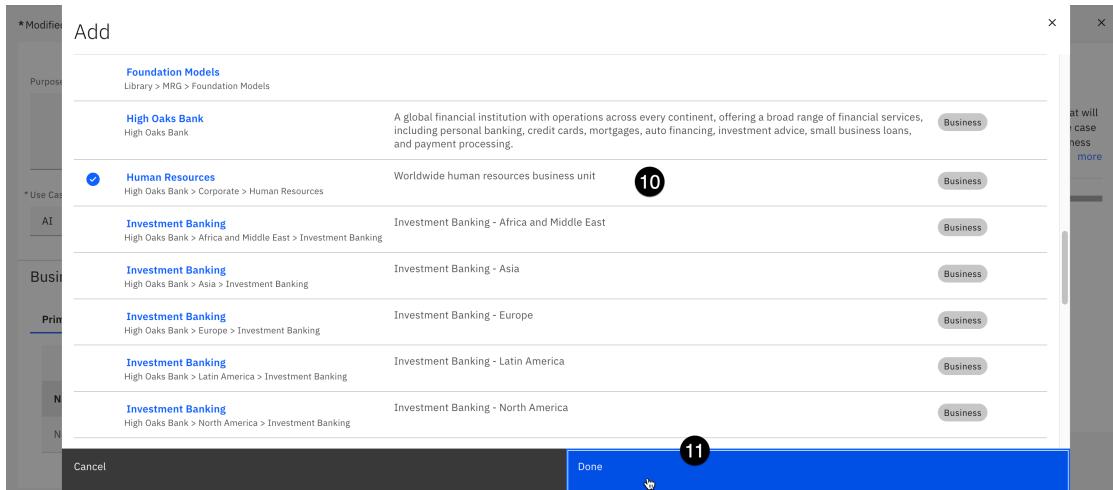
5. In the **General** section of the form, enter **Resume summarization** in the **Name** field. Note that when you enter a value in the field, the progress bar in the **Model Use Case creation** information panel updates.
6. Click the **Owner** field and enter the **admin** user into this field. **DO NOT** select any of the sample users that were loaded during the system configuration import step, as they will not have associated Cloud Pak for Data accounts and will not be able to log in and work with the use case.
7. Enter a description in the **Description** field.
8. Click on the **Use Case Type** dropdown and select **AI**.

The screenshot shows the 'General' section of the 'Model Use Case creation' form. Step 5 is highlighted in the 'Name' field with the value 'Resume summarization'. Step 6 is highlighted in the 'Owner' field, which shows 'admin' selected from a dropdown menu. Step 7 is highlighted in the 'Description' field with the text 'Summarize resumes from job applicants'. Step 8 is highlighted in the 'Use Case Type' dropdown menu, which is set to 'AI'. To the right, an 'Information' panel titled 'Use Case creation' provides details about what a use case is and lists required items, with 'Name' and 'Owner' marked as required.

9. All model use cases are owned by business entities, representing the part of the organization responsible for requesting the use case. In the **Business Entities** section of the form, click the **Add** button. The **Add** window opens with a list of business entities defined for the organization.

The screenshot shows the 'Business Entities' section of the form. Step 9 is highlighted in the 'Add' button within the table header. The table has columns for 'Name', 'Description', 'Entity Type', and 'Tags'. A callout box on the right shows the 'Add' window, which contains fields for 'Name', 'Owner', 'Purpose', 'Description', 'Use Case Type', and 'Primary Business Entity', with 'Name' and 'Owner' marked as required.

10. Locate the **Human Resources** entity from the list and click on it to select it.
11. Click **Done** to add the business entity to the use case. The **Add** window closes.



## 12. Click the **Save** button in the upper right to save the use case.

When the use case has finished saving, the screen will reload with the view you customized in previous steps; you should see the **Secondary EU AI Review** field in the **Regulatory Information** section of the use case. At this point, the use case has been created and is now governed by the **Use Case Request** workflow that you modified. Specifically, it is in the **Use Case Data Gathering** stage of the workflow.

To progress the use case through the workflow, you will now need to perform the actions specified in the **Action** items in the workflow.

## 2. Progress the use case to the next phase

The use case request has progressed to the data gathering stage of the workflow, and has been assigned as an action for the appropriate owner. Recall that owners of each stage of the workflow can be configured, and alerts assigned.

In the [day 1 lab](#) you progressed a use case through the approval process, filling out the risk assessment questionnaire to identify possible risks. For the sake of time, in this lab you will use your administrator's authority to manually attach risks to the use case and then advance it to the proper lifecycle phase.

In an earlier section of the lab, you updated the model use case review to hold a new field (Secondary EU AI Review). When performing a PoX for your client, you may wish to add other fields to this view, which may contain other required information to be filled out in this stage. Information could include things like billing codes, additional documentation or justification, or more. In this case, you will only edit required fields specified in the information panel on the right before progressing to the next stage of the workflow.

1. Scroll to the **Use Case Details** section of the view and click on the **pencil icon** that appears when you hover your mouse over the **Uses Foundation Models** field.

The screenshot shows the 'Use Case Details' form. In the 'Risk' section, there is a 'Risk Level' field with a pencil icon (circled 1) next to it. Other fields in this section include 'Externally Facing' and 'Additional Details'. To the right of the main form is a sidebar titled 'Use Case Data Gathering' with instructions: 'Please capture all relevant information to this AI use case proposal an then submit using the Action button'. At the bottom of the sidebar is a dropdown menu labeled 'Select an action to validate'.

## 2. Use the dropdown to set the field to Yes.

**Risk Level** represents the risk to the organization should issues arise with the models used to address the requirements laid out by the use case. A full risk assessment is beyond the scope of this lab; however, because hiring and employment violations can lead to expensive litigation damage to an organization's reputation, this use case will be marked as high risk.

## 3. In the **Risk** section of the form, click on the **pencil icon** next to the **Risk Level** field to edit it.

The screenshot shows the 'Use Case Details' form with the 'Risk' section edited. The 'Risk Level' dropdown now displays 'Yes' (circled 3). The 'Tags' section indicates 'No tags have been added yet'. The sidebar remains the same as in the previous screenshot.

## 4. Select **High** from the dropdown.

## 5. Scroll down to the **Risks** table in the same section and click on the **Copy from Library** button. The **Copy from Library** dialog window opens, listing all the available risks currently in the library.

The screenshot shows the 'Risks' table in the 'Risks' section. The 'Copy from Library' button is highlighted (circled 5). The 'Tags' section indicates 'No tags have been added yet'. The sidebar remains the same as in the previous screenshots.

## 6. Scroll down to the **Confidential data in prompt** risk and click on it to select it.

## 7. Click on the **Done** button to add this risk to your use case.

The screenshot shows a 'Copy from Library' dialog box. On the left, there's a sidebar with tabs for Task, Risks, and Requirements. The main area lists several risks from the 'AI Risk Library':

- Confidential data in prompt** (MOD\_0000000\_RIS\_0000018): Inclusion of confidential data as a part of a generative model's prompt, either through the system prompt design or through the inclusion of end user input, might later result in unintended reuse.
- Evasion attack** (MOD\_0000000\_RIS\_0000019): Evasion attacks attempt to make a model output incorrect results by perturbing the data sent to the trained model.
- Extraction Attack** (MOD\_0000000\_RIS\_0000020): An attack that attempts to copy or steal the AI model by appropriately sampling the input space, observing outputs, and building a surrogate model, is known as an extraction attack.
- Prompt injection** (MOD\_0000000\_RIS\_0000021): A prompt injection attack forces a model to produce unexpected output due to the structure or information contained in prompts.
- Prompt leaking** (MOD\_0000000\_RIS\_0000022): A prompt leak attack attempts to extract a model's system prompt (also known as the system message).
- Prompt priming** (MOD\_0000000\_RIS\_0000023): Because generative models tend to produce output like the input provided, the model can be prompted to reveal specific kinds of information.

At the bottom right of the dialog box is a 'Done' button with a circled number '7' over it.

8. Repeat steps 5-7 for any other risks you wish to attach to your use case.
9. Click on the **Save** button in the upper right to save your use case. Note that if you see an error message saying that the use case has recently been updated by another user, you may need to refresh the page and verify that the information added to the form in previous steps has been saved, then click on the **Save** button again.
10. From the top of the view, click on the **Admin** tab.
11. Click on the **pencil icon** that appears when you hover your mouse over the **Status** field in the **General** section.

The screenshot shows the 'Resume summarization' use case details page. At the top, there are tabs for Task, Activity, and Admin (which is selected). The Admin tab has a status indicator showing '10'. Below the tabs, there are sections for General, Activity, and Task.

**General:**

- Name: Resume summarization
- Owner: admin
- Use Case Type: AI
- Purpose: Summarize resumes from job applicants.
- Status: Proposed (with a circled number '11' over it)

12. Use the dropdown to set the **Status** field to **Approved for Development**.
13. Click on the **Save** button to save your changes.
14. Click on the **Task** tab to return to the **Task** view of the use case.

Although you skipped many of the steps you performed in the day 1 lab, at this point in the lifecycle, the model use case has been created, reviewed for risks, and approved by the various stakeholders. Personas involved in these steps would be mostly non-technical,

from the business user who requested the model to the risk and compliance officer who evaluated it. Next, the model would be developed by teams of data scientists and AI engineers. The following steps of the lab will take actions from the point of view of those personas.

### 3. Create the prompt template

In this case, the AI engineers have elected to work with the Azure OpenAI service on a prompt template to summarize the resumes.

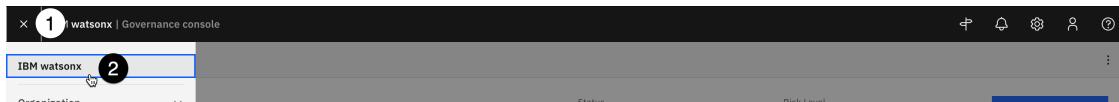
**THESE EVALUATIONS ARE NOT INTENDED TO SHOW THE RELATIVE STRENGTHS OF THE OPENAI OR AZURE PLATFORMS, AND SHOULD NOT BE PRESENTED AS SUCH.** The prompt used in this lab is fairly simple, and in a real-world scenario would be tuned and optimized for the individual use case. The evaluations here are presented to show how the watsonx.governance platform can collect facts and metrics for hybrid environments with models deployed on any platform.

Watsonx.governance supports the evaluation of third-party generative models via a method known as **detached prompt templates**, which are generative AI models not hosted on the same platform as the watsonx.governance service. At the time of writing, working with detached prompt templates is done through the use of Jupyter notebooks.

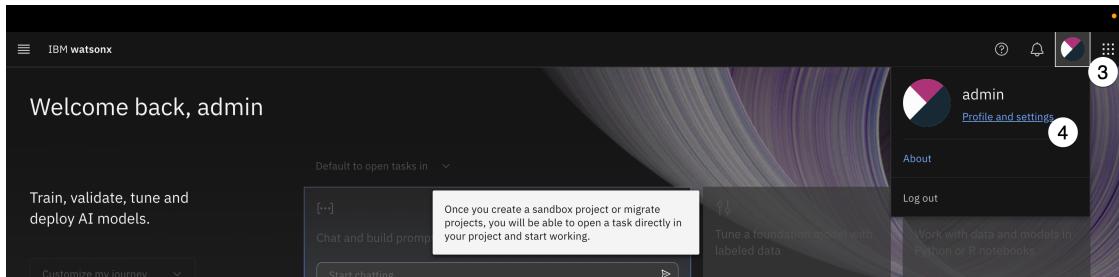
To begin, you will need to gather credentials used by the notebook. From watsonx, you will need the base Cloud Pak for Data URL, as well as the username and password of the created user. You will also create an API key for the user.

For Azure, you will need the API Endpoint, API key, name of the deployed model, Client ID, and Client Secret. Your lab instructor will provide these credentials for you.

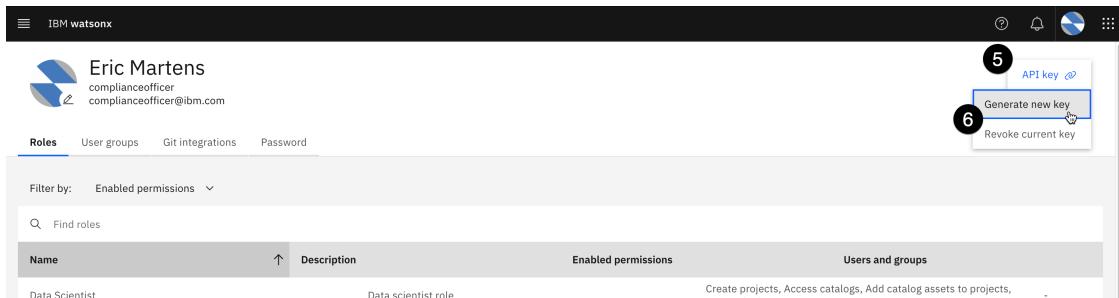
1. From the watsonx governance console, click on the **hamburger menu** in the upper left.
2. Click on the **IBM watsonx** menu item. The watsonx home page opens in the watsonx context (as opposed to the Cloud Pak for Data context).



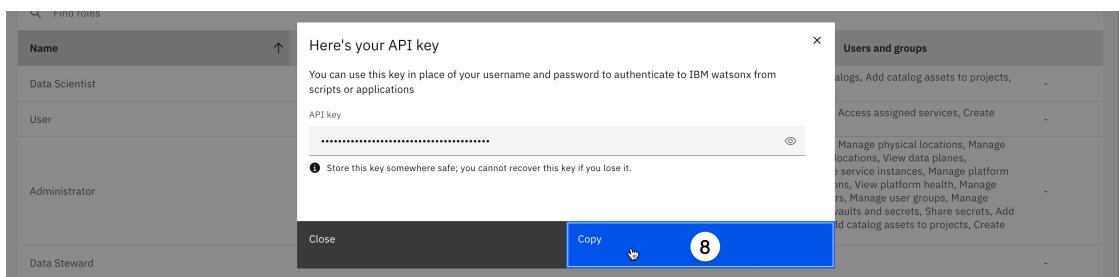
3. Click on the **avatar icon** in the upper right to open the user menu.
4. Click on the **Profile and settings** item from the menu. The user profile screen opens.



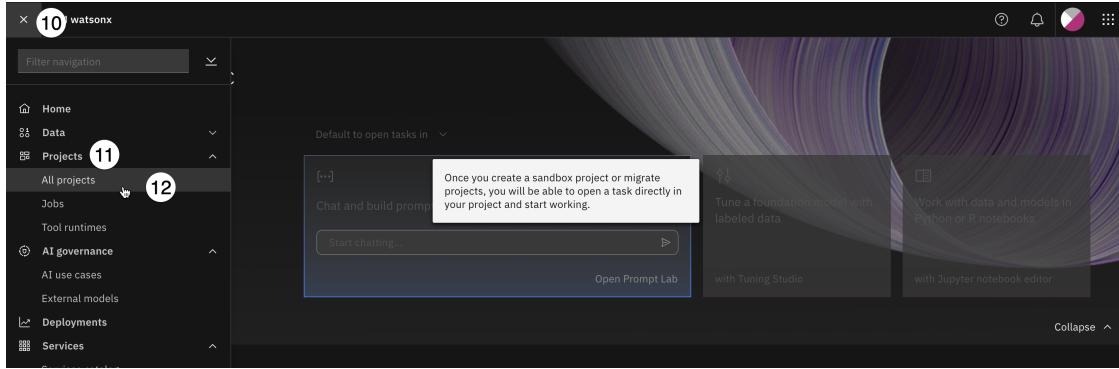
5. Click on the **API key** button in the upper right. The API key menu opens.
6. Click on the **Generate new key** menu item. The **Generate new API key?** dialog window opens.



7. Click the red **Generate** button to confirm API key creation. Note that, as the warning states, generating a new key will invalidate any existing keys you have.
8. Click the **Copy** button to copy your new key to the clipboard. Paste it into a text file for later use in the notebook, where it will represent the **CPD\_API\_KEY** value.

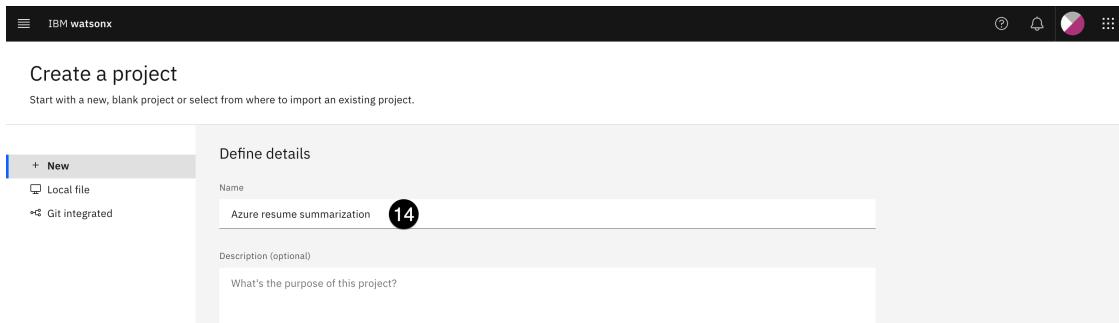


9. Once you have pasted the key into a text file, click the **Close** button to close the window.
10. Click on the **hamburger menu** in the upper left.
11. Click on the **Projects** menu item to expand it.
12. Click on the **All projects** menu item. The **Projects** screen opens.



13. Click on the **New project** button. The **Create a project** screen opens.

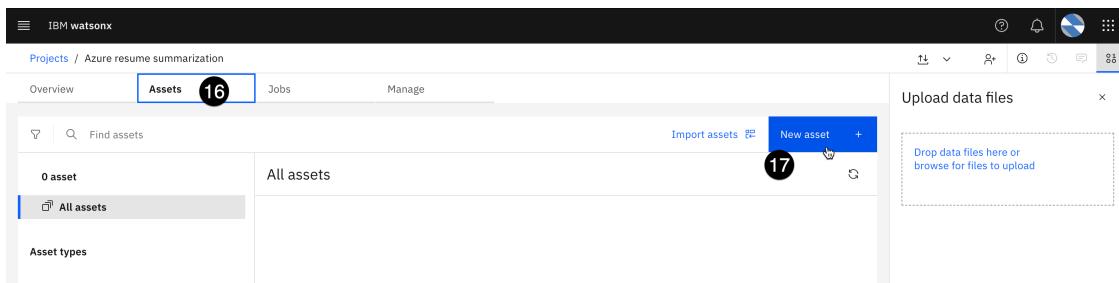
14. Give your project a **Name**.



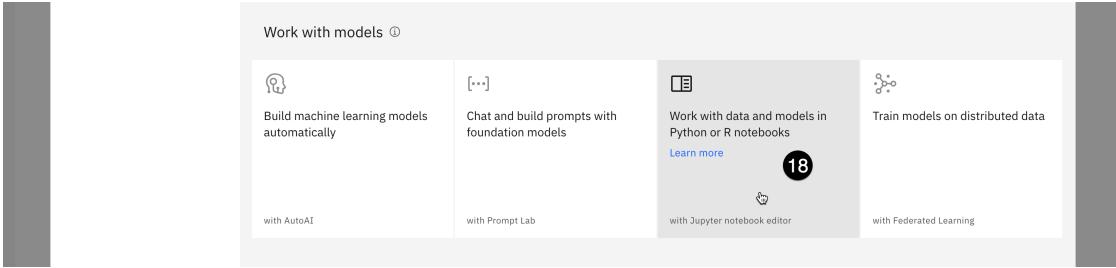
15. Click the **Create** button. Your project will be created.

16. Click on the **Assets** tab.

17. Click on the **New asset** button. The **What do you want to do?** window opens.

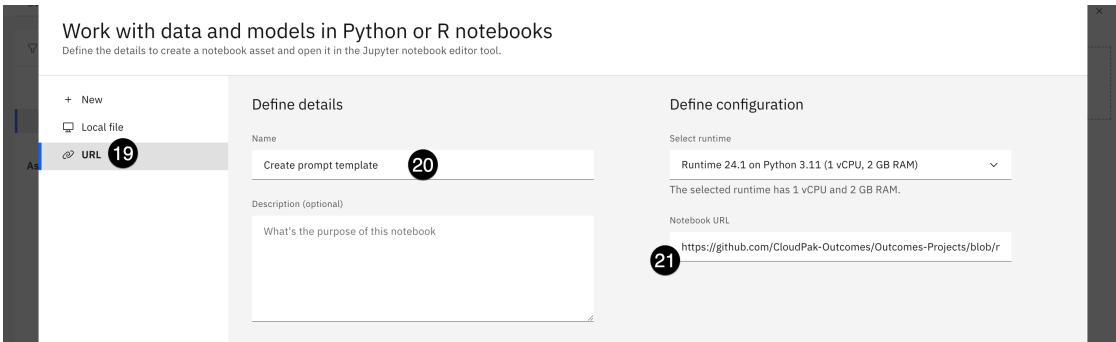


18. Locate and click on the **Work with data and models in Python or R notebooks** tile.



19. Click on the **URL** option.
20. Give your notebook a **Name**.
21. Copy and paste the following URL into the **Notebook URL** field:

[https://github.com/CloudPak-Outcomes/Outcomes-Projects/blob/main/watsonx-governance-14/notebooks/create\\_prompt\\_template.ipynb](https://github.com/CloudPak-Outcomes/Outcomes-Projects/blob/main/watsonx-governance-14/notebooks/create_prompt_template.ipynb)



22. Click the **Create** button. Your notebook will be created.
23. Scroll down to the code cell that contains the platform and Azure credential variables, and edit the string values. Your **CPD\_URL** will be the base URL for the environment you are using, in the format specified by the notebook. Be sure to replace the entire string variable with the URL you have been given, but include the trailing / character. Your **CPD\_USERNAME** will be **admin**. The **CPD\_API\_KEY** is the API key you generated in a previous step for the created user.

The Azure credentials will be provided by your lab instructor.

Fill-in your platform and Azure credentials:

```
[1]: import os
from rich import print
from IPython.display import display, Markdown

CPD_URL = "https://cpd-cpd.apps.67af07431b420a234ba2acca.am1.techzone.ibm.com/"
CPD_USERNAME = "admin"
CPD_API_KEY = "<EDIT THIS>"

AZURE_OPENAI_ENDPOINT = "<EDIT THIS>"
AZURE_OPENAI_DEPLOYMENT_NAME = "<EDIT THIS>"
AZURE_CLIENT_ID = "<EDIT THIS>"
AZURE_CLIENT_SECRET = "<EDIT THIS>"
AZURE_TENANT_ID = "<EDIT THIS>"

PROJECT_ID = os.environ.get("PROJECT_ID", "<YOUR_PROJECT_ID>")
print(f"Your project id is '{PROJECT_ID}'")
```

23

Function to create the access token

24. Run through the code cells in the notebook one at a time. The notebook will connect to the OpenAI model, use it to perform resume summarization on sample resumes, and finally save the prompt template to your project. It will also save the summaries to a CSV file in your project that you will use to evaluate the template's performance.
25. Click on the link to navigate to the newly-created factsheet for the prompt template.

```
prompt_details=prompt_template,
detached_information=detached_information
)
project_pra_id = pta_details.to_dict()["asset_id"]
print(f"Detached Prompt template ID: '{project_pra_id}'")

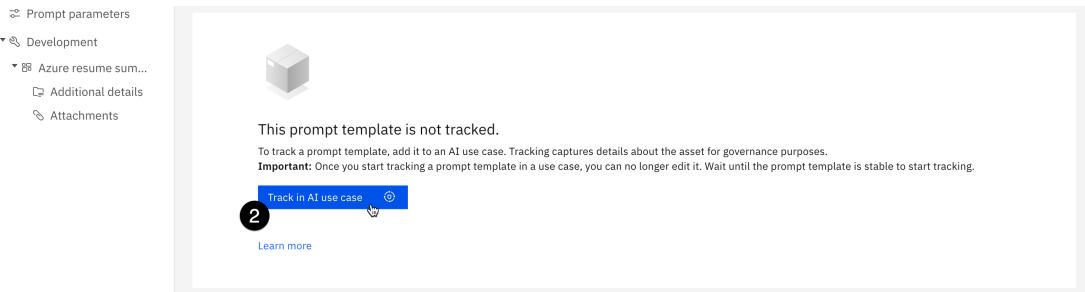
2024/10/16 04:56:22 INFO: Detached Prompt Creation Started _____
2024/10/16 04:56:23 INFO: CPD : The detached prompt with ID 49b467aa-fed6-4c6f-8436-8840050fb5f was created successfully in container_id e3e72d81-22f8-4029-8729-a2d511de97ae.
Detached Prompt template ID: '49b467aa-fed6-4c6f-8436-8840050fb5f'

[12]: factsheets_url = f"{CPD_URL.strip('/')}wx/prompt-details/{project_pra_id}/factsheet?context=wx&project_id={PROJECT_ID}"
display(Markdown(f"[Click here to navigate to the published factsheet in the project]({factsheets_url})"))
Click here to navigate to the published factsheet in the project 25
Click the link above to go to the newly published factsheet in your watsonx project
```

## 4. Track the prompt in the use case

Next, you will associate the prompt template with the use case that you took through the approval process.

1. Close the **Learn about your AI asset** window that appears.
2. Click on the **Track in AI use case** button. A warning dialog appears, notifying you that your project is not associated with an AI use case.



3. Click on the **Go to AI use cases** button. A new browser tab opens with a table of AI use cases has been populated from the watsonx governance console, including the **Resume summarization** use case you created.

- Click on the name of the **Resume summarization** use case to open the use case.

Name	Status	Owner	Inventory	Tags	Risk level	Alerts in
<a href="#">Resume summarization</a> 4	Approved	AD admin	High Oaks Bank Model Inventory		None	None
<a href="#">Finance News Analysis</a>	Approved	AD admin	High Oaks Bank Model Inventory		Low	None
<a href="#">Executive summary generation</a>	Approved	AD admin	High Oaks Bank Model Inventory		Low	None
<a href="#">Customer Attrition</a>	Approved	AD admin	High Oaks Bank Model Inventory		Medium	None

Note that this view of the use case differs from the one in the governance console. It is aimed more at model developers and AI engineers. However, the data in this view is automatically synchronized with the governance console, ensuring that all stakeholders have immediate access to the most up-to-date information.

- Scroll down to the **Associated workspaces** section of the use case. Note that there are three model lifecycle sections here: *Development*, *Validation*, and *Operation*. Each section can be associated with workspaces. Workspaces refer to places for data scientists, AI engineers, data engineers, subject matter experts, and others to collaborate on machine learning and AI tasks. Workspaces include projects, such as the one you created to work with the notebook, as well as deployment spaces, which are used to manage testing and production environments for models and prompts.
- Click on the **Associate workspaces** button in the **Development** section. The **Associate workspaces** window opens.

Name	Description	Owner	Status	Risk level	Inventory
Resume summarization	Summarize resumes from job applicants.	AD admin	Approved (System, Feb 16, 2025)	None	High Oaks Bank Model Inventory

- Scroll down to the **Projects** section of the window and check the box next to the **Azure resume summarization** project you created. This associates the project and its assets with the **Development** phase of the **Resume summarization** use case.
- Click on the **Save** button to save the association. The window closes.

Projects

A project can only be associated to one lifecycle phase in an AI use case.

Find projects

Name	Created	Your role	Tracked AI assets	Associates
Azure resume summarization	02/16/2025	Admin	0	0

Cancel Save

For the sake of time, at this point you will also create the deployment space for the next phase of the lifecycle, and associate it with the use case.

- Click on the **Associate workspaces** button in the **Validation** section. The **Associate workspaces** window opens again.

Development

Azure resume summarization

Validation

In this phase your validators can evaluate models in pre-production deployment spaces and prompt templates in projects.

Associate workspaces +

Operation

In this phase your development team will evaluate models in pre-production deployment spaces.

Workspaces for Develop

AI use case

Workspaces for Operate

Workspaces for Validate

Status Approved (System, Feb 16, 2025)

Risk level None

Inventory High Oaks Bank Model Inventory

Tags Add tags to this AI use case.

Created by System, Feb 16, 2025

Modified by System, Feb 16, 2025

- Scroll down to the **Space** section of the window and click on the **New space** button. The **Create a deployment space** window opens.

Space

A space can be associated to multiple AI use cases.

Find spaces

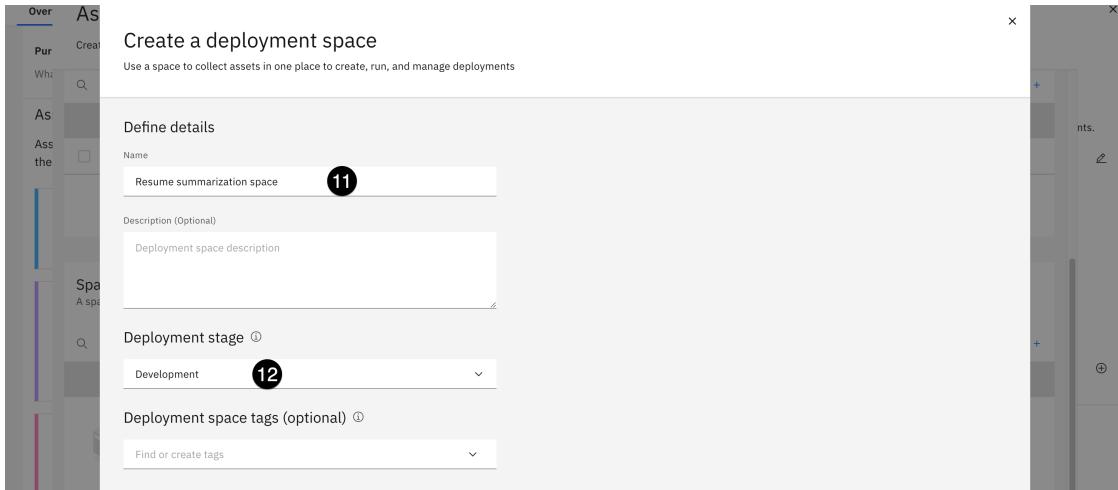
Name	Created	Your role	Tracked AI assets	Stage	Associates

Spaces will display here with information about associations with use cases.

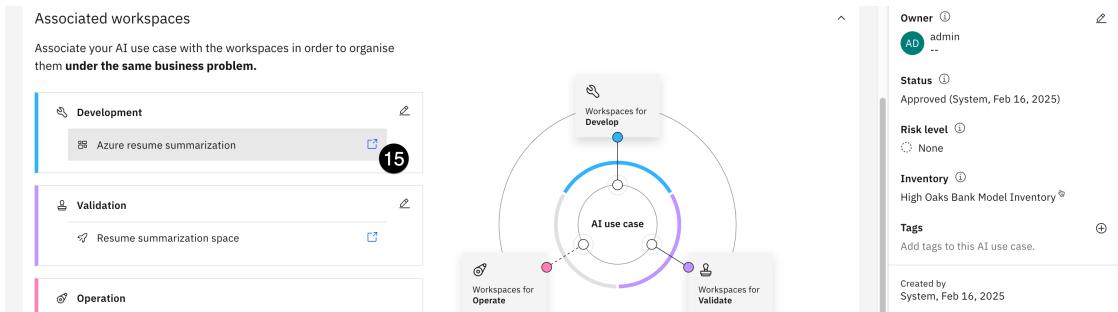
New space +

- Give your space a **Name**.

- Click on the **Deployment stage** dropdown and select **Development**.



13. Click on the **Create** button to create the space. When creation is completed, close the notification window to return to the **Assign workspaces** window.
14. Click on the **Save** button to save the association and close the **Associate workspaces** window.
15. Return to the project by clicking on the link in the **Development** section of the **Associated workspaces**. A new browser tab opens for the project.



16. Click on the **Assets** tab of the project.
17. Locate the **Detached prompt for Azure...** asset from the table, and click on the **three vertical dots** to open the context menu.
18. Click on the **Go to AI factsheet** menu item. A new browser tab with the factsheet opens.

The screenshot shows the 'Assets' tab selected in the navigation bar. The main area displays a list of assets under 'All assets'. One asset, 'Detached prompt for Azure OpenAI GPT-3.5-turbo', has its details expanded. A context menu is open next to this asset, with the 'Evaluate' option highlighted. Other options in the menu include 'Go to AI factsheet', 'Track in AI use case', 'Promote to space', 'Publish to catalog', and 'Delete'.

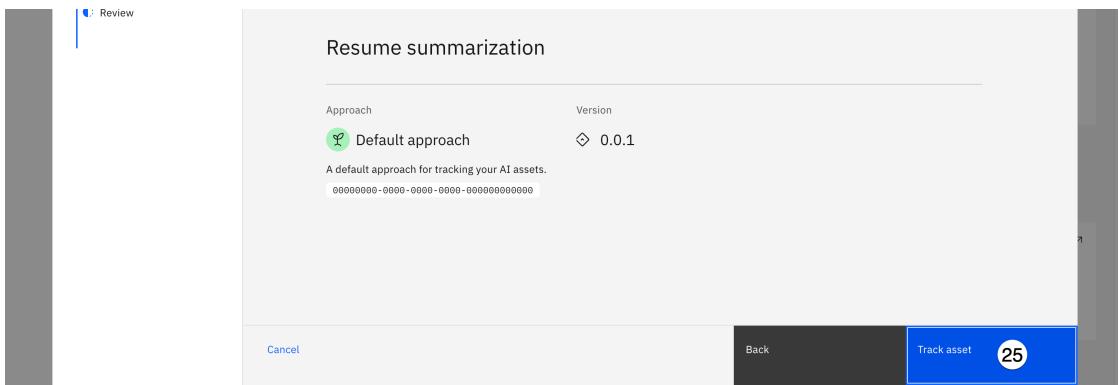
19. Click on the **Track in AI use case** button once again. The **Track in AI use case** window opens to the **Define approach** panel.
20. Click on the **Next** button to accept the default approach. The **Define asset record** screen opens.
21. Click on the **New asset record** tile to specify that you would like to create a new model in the governance console inventory.

The screenshot shows the 'Track in AI use case' window. On the left, a sidebar lists steps: 'Define approach' (selected), 'Define asset record' (highlighted with a blue border), 'Assign version', and 'Review'. The main panel shows the 'Define asset record' step. It includes a sub-section for 'Approach: Default approach | Use case: Resume summarization' and a note about associating the trained model with an existing model record or creating a new one. At the bottom, there are two buttons: '+ Existing asset record' and '+ New asset record' (highlighted with a blue border).

22. Click on the **Next** button. The **Assign version** screen opens. This screen allows you to set a version number for your model based on its progress in development.
23. Click on the **Next** button. The **Review** screen opens.

Note the **Important** warning at the top of the screen; once you begin tracking the template in an AI use case, you can no longer edit it. This limitation may seem inconvenient. However, changes to the prompt template would invalidate any metrics gathered for it, so any revisions should be treated as separate models in the inventory for tracking purposes. Remember that a use case can have multiple models and prompts associated with it, including not only the production models, but also candidate models being tested as possible replacements.

- Click on the **Track asset** button to enable tracking for the model.



**① Note:** Occasionally, slow network conditions may result in an error message at this point telling you that the model is already being tracked. In this case, the tracking request has typically succeeded. Clicking the **Cancel** button to return to the Factsheet and then refreshing the page will show the model as being tracked within the use case.

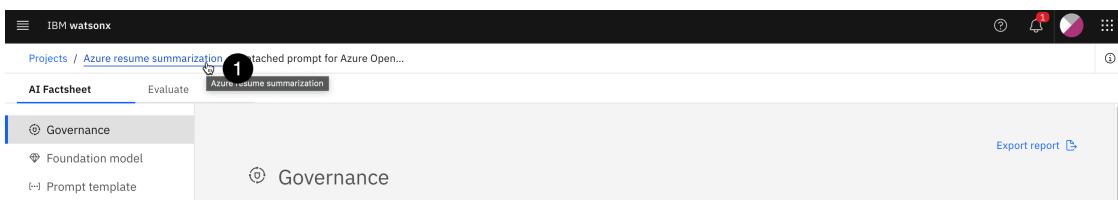
- Take a moment to review the factsheet. Note that it contains metadata on the type of model, provider, task, and prompt.

The model has been created in the project, and is being tracked as part of a use case. Next, you will deploy the model to a space for evaluation.

## 5. Deploy the model to a space

The model is now listed as an asset in your project. In this step, you will download the output to use in an evaluation, and promote the model to a space.

- Click on your **project name** from the breadcrumb trail at the top of the Factsheet. The project screen opens.



- From the **Assets** tab, click on the **three vertical dots** to the right of the **resume\_summarization\_eval\_data.csv** file to open the context menu.
- Click on the **Download** menu item to download the file to your machine.

The screenshot shows the IBM Watsonx interface with the 'Assets' tab selected. On the left, there's a sidebar with '3 assets' and 'Asset types' sections. The main area shows a table of 'All assets' with columns for 'Name' and 'Last modified'. A context menu is open over a row labeled 'Detached prompt for Azure OpenAI GPT-3.5-turbo'. The menu items include 'Promote to space' (circled in black), 'Prepare data', 'Download' (circled in black), and 'Delete'.

4. From the **Assets** tab, click on the **three vertical dots** to the right of the **Detached prompt template**... to open the context menu.
5. Click on the **Promote to space** menu item. The **Promote to space** window opens.

The screenshot shows the 'Promote to space' window. It has tabs for 'Overview' and 'Assets'. Under 'Assets', it says 'Selected assets (1)'. The asset listed is 'Detached prompt for Azure OpenAI GPT-3.5-turbo'. To the right of the asset table, there's a dropdown labeled 'Target space' (circled in black) with the value 'Resume summarization space'. Below the dropdown, there's a checkbox 'Go to the prompt template in the space after promoting it' (circled in black). A note says 'Description of assets'.

6. Click on the **Target space** dropdown and select the deployment space you created in a previous step.
7. Check the box to the left of **Go to the space after promoting the assets**.

The screenshot shows the 'Promote to space' window again. The 'Target space' dropdown is now set to 'Resume summarization space' (circled in black). The checkbox 'Go to the prompt template in the space after promoting it' is checked (circled in black). The note 'Description of assets' is visible at the bottom.

- Click on the **Promote** button to promote the model. The model will be created in the new space, and the deployment space screen opens.
- Click on the **New deployment** button. The **Create a deployment** screen opens.

The screenshot shows the IBM Watsonx interface with the title 'Deployments / Resume summarization space / Detached prompt for Azure OpenAI GPT-3.5-turbo'. On the left, there's a navigation bar with 'Deployments' and 'AI Factsheet'. The main area has a table with columns: Name, Type, Status, Tags, and Last modified. A row for 'OpenAI Resume Summarization' is selected, indicated by a circled number 9 over the 'New deployment' button. To the right, there's a panel titled 'About this asset' with fields for Name, Description, Asset Details, and Tags.

- Give your deployment a **Name**.

The screenshot shows the 'Create a deployment' form. It includes sections for 'Detached' (with a note about monitoring), 'Name' (containing 'OpenAI Resume Summarization' with a circled number 10), 'Description' (containing 'Deployment description'), and other optional fields like 'Tags'.

- Click on the **Create** button to create the deployment.

The prompt is now available as a REST endpoint. It can also be evaluated.

## 6. Evaluate the model

In this step, you will evaluate the model for quality.

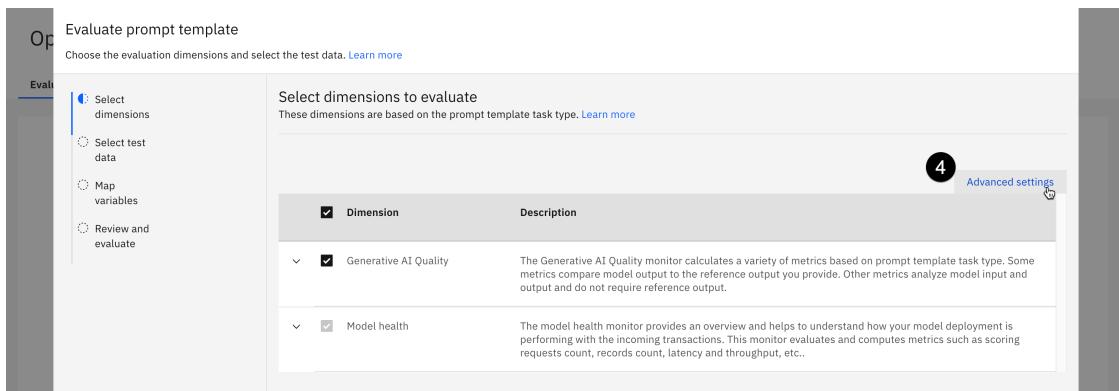
- Click on the link for your newly-created deployment. The deployment summary screen opens.

The screenshot shows the deployment summary screen. It lists the deployment 'OpenAI Resume Summarization' with a circled number 1. The status is 'Deployed' with a green checkmark. Other details include 'Last modified' (41 seconds ago) and 'Tags' (Add tags +). To the right, there's a panel titled 'About this asset' with fields for Name, Description, Asset Details, and Tags.

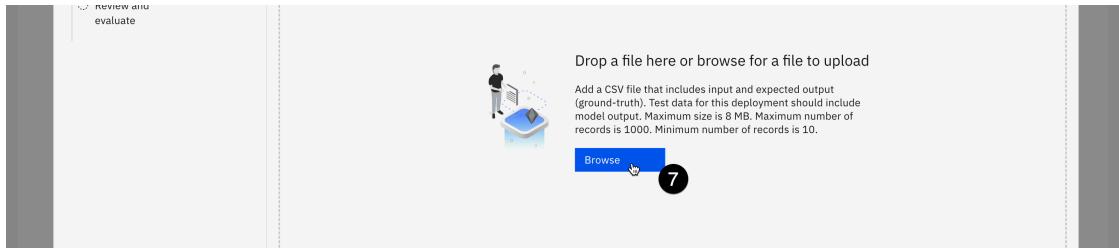
- From the **Evaluations** tab, click on the **Evaluate** button. The **Associate a service instance** popup appears.



- Click on the **Associate a service instance** button to associate a machine learning service with the space. The **Evaluate a prompt template** window opens. By default, the prompt will be evaluated for generative AI quality and model health. However, you can configure the acceptable thresholds for these metrics.
- Click on the **Advanced settings** button. The configuration window for the evaluation metrics opens.



- Take a moment to review the different thresholds for quality and model health on this screen. The model will be evaluated on metrics including **ROUGE**, **SARI**, **METEOR**, and others. The thresholds have been pre-set to reflect industry standards for acceptability in these metrics. However, they can be customized to meet any specific thresholds set forth by government or industry regulations in the region in which the prompt will be used. When you are finished, click the **Save** button if you made any changes, or click the **Cancel** button to return to the **Select dimensions to evaluate** screen.
- Click on the **Next** button to advance to the **Select test data** screen.
- Drag and drop the *resume\_summarization\_eval\_test\_data.csv* file you downloaded from your project in the previous step into the appropriate area on the screen, or click the **Browse** button and browse to the file. If you were unable to generate the file, you can [download a version of it from GitHub](#). The **Map prompt variables to columns** window opens when the file finishes uploading.



8. Click on the **text** dropdown in the **Input** section and select **Resume**.
9. Click on the **Reference output** dropdown and select **Summarization**.

Evaluate prompt template  
Choose the evaluation dimensions and select the test data. [Learn more](#)

Op

Eval

Select dimensions  
Select test data  
**Map variables**  
Review and evaluate

Map prompt variables to columns  
For each prompt variable, select the associated column. [Learn more](#)

Field separation ⓘ  
Select delimiter  
Comma (,)

**Input**  
text  
Resume **8**

**Reference output**  
Reference output  
Summarization **9**

10. Click on the **Next** button. The **Review** window opens.
11. Click on the **Evaluate** button to run the evaluation, which can take several minutes to complete. Note that the evaluation may fail due to slow network conditions. These failures can frequently be fixed by re-running the evaluation with the same file.
12. Click on the **arrow** icon to open an expanded view of the metrics.

OpenAI Resume Summarization Deployed Detached

Evaluations AI Factsheet

Generative AI Quality - Text summarization

Alerts triggered

Alerts **14**

Metric	Score	Violation
Rouge	44.54	35.46
SARI		

Feedback **12**

13. Take a moment to review the metrics that have been calculated. For more information on the individual metrics, see the [watsonx.governance documentation](#).
14. Click on the **AI Factsheet** tab, and note that the model's Factsheet now contains the model's metadata as well as the evaluation results.

## 7. View the metrics in the governance console

Now that the metrics have been calculated, they can be viewed in the governance console. The watsonx service automatically updates the model's records in the governance console with the metrics information, allowing stakeholders to be sure that they are viewing the latest data.

1. Scroll to the bottom of the factsheet and click on the **More details** button. A more detailed version of the AI factsheet opens, showing the model's position in the lifecycle, links to the development project, deployment spaces, and more.

The screenshot shows the IBM WatsonX interface. At the top, there is a navigation bar with icons for help, notifications, and account. Below the navigation bar, the URL is displayed as 'Deployments / Resume summarization space / Detached prompt for Azure Open... /'. The main content area has tabs for 'Evaluations' and 'AI Factsheet', with 'AI Factsheet' currently selected. On the left, there is a sidebar with sections like 'Governance', 'Development', 'Validation', and 'OpenAI Resum...'. The main content area displays a summary card for 'Resume summarization' with fields for 'Approved', 'System', 'High Oaks Bank Model Use Cases', 'High', and a unique identifier '791410a8-1e62-4547-aa11-00f4fb10ca9f'. Below this card is a 'Description' section with the text 'Summarize resumes from job applicants.' To the right of the summary card, there is a 'View details' button. A callout box with the number '1' points to this button. Further down the page, there is a section titled 'Interested in more details?' with a note: 'This information is part of AI factsheet. Click here to view the more details.' Another callout box with the number '2' points to this link.

2. From the **Governance** section, click on the **View details** button. The AI use case screen opens.

The screenshot shows the IBM WatsonX interface. At the top, there is a navigation bar with icons for help, notifications, and account. Below the navigation bar, the URL is displayed as 'Deployments / Resume summarization space / Detached prompt for Azure OpenAI GPT-3.5-turbo'. The main content area has tabs for 'Deployments' and 'AI Factsheet', with 'AI Factsheet' currently selected. On the left, there is a sidebar with sections like 'Governance', 'Development', 'Validation', and 'OpenAI Resum...'. The main content area displays a summary card for a 'Detached prompt for Azure OpenAI GPT-3.5-turbo' with a 'View details' button. A callout box with the number '2' points to this button. To the right of the summary card, there is a panel titled 'About this asset' containing sections for 'Name' (set to 'Detached prompt for Azure OpenAI GPT-3.5-turbo'), 'Description' (set to 'A detached prompt for summarization using Azure OpenAI's GPT-3.5-turbo model'), 'Asset Details' (listing 'Prompt template ID: 8878da04-7e0e-42...'), 'Tags' (with a note 'Add tags to make assets easier to find.'), and 'Source asset details'. A callout box with the number '1' points to the 'About this asset' panel.

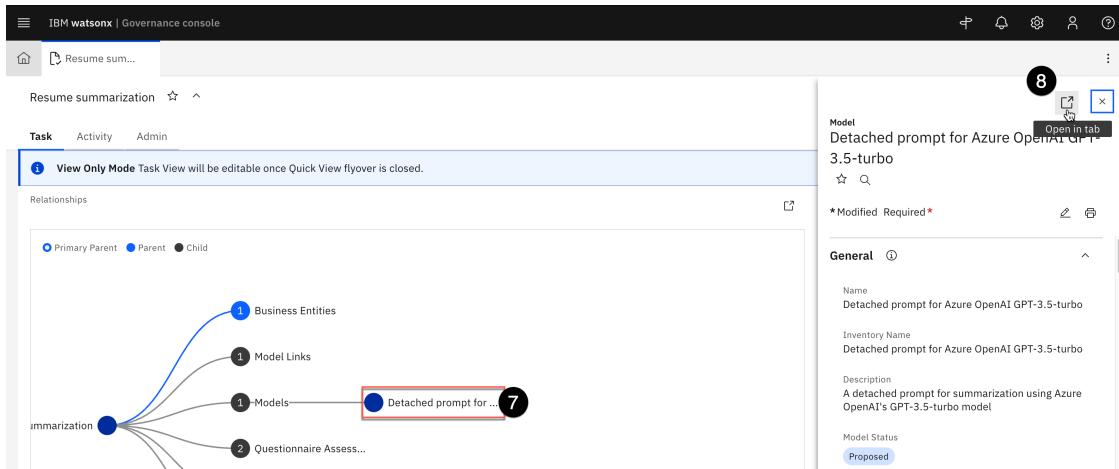
3. Scroll down to the **General information** section and click on the **Open in Governance Console** link. The watsonx governance console opens in a new tab and loads the model use case entry.

The screenshot shows the 'AI use cases / Resume summarization' page. The 'Overview' tab is selected. On the left, there's a 'General information' panel with fields like Name (Resume summarization), Status (Approved, Oct 14, 2024), Risk level (High), and Inventory (High Oaks Bank Model Use Cases). Below it is a 'Tags' section with a plus sign and a note to add tags. At the bottom of this panel is a link: 'Open in Governance Console' (circled with '3'). To the right is a larger panel titled 'About this AI use case' containing detailed information: Name (Resume summarization), Description (Summarize resumes from job applicants), Owner (admin), Status (Approved, Oct 14, 2024), Risk level (High), Inventory (High Oaks Bank Model Use Cases), and Tags.

4. Scroll down to the **Performance Monitoring** section of the page. This section contains an overview of the metrics generated by the evaluation you ran in the previous step. The **Metrics in Breach** table shows all of the metrics whose values fell below the minimum acceptable thresholds.
5. Scroll down to the **Relationships** section of the screen. Note that the **Resume summarization** parent node has one listed **Model** as child nodes.
6. Click on the circle for the **Models** node to expand it.



7. The resume summarization model you created and assigned to the use case is listed here. Click on it. The **Model** information panel opens on the right, showing the model details.
8. Click on the **Open in tab** button at the top right of the panel. The model will open in a new tab in the governance console.



9. Scroll down to the **Associations** section of the window and click on the **Deployments** tab. Note that the tab contains a link to the deployment of the model that you created in a previous step.

At this point in the lab, you have created a questionnaire and customized a governance workflow. Acting as a stakeholder, you have proposed a model for development, and gone through the governance process. You have then deployed and evaluated a third-party model. Throughout the entire process, you have seen how the model metrics and metadata are automatically tracked and surfaced in a variety of locations, allowing risk managers, AI engineers, and other business stakeholders to collaborate on implementing generative AI projects.

Next, you will use that same governance model for predictive AI projects.

## Govern predictive models

While much of the industry focus has been on ChatGPT and generative AI, the vast majority of models solving real-world business problems in production are traditional predictive machine learning models. Most organizations would significantly benefit from a governance solution for their predictive models, particularly given the increased regulatory environment.

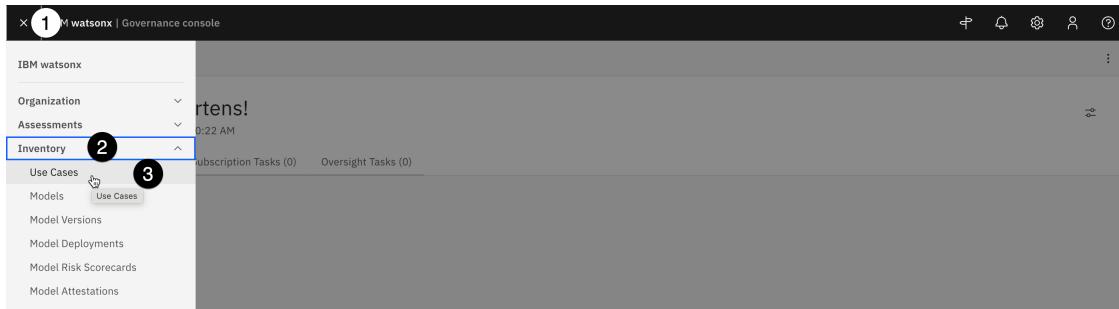
In this section of the lab, you will evaluate a model that makes hiring recommendations for the HR department, which is running on Amazon SageMaker.

### 1. Create a predictive model use case

In the [day 1 lab](#) you created a sample use case and tracked the request through the approval process, including the risk and applicability assessment questionnaires. For this lab, you will once again create a use case request, but will skip several of the steps you completed previously.

1. Click on the **hamburger menu** in the upper left.

2. Click on the **Inventory** menu item to expand it.
3. Click on the **Use Cases** menu item. The **Use Cases** tab opens. Note that several sample uses cases were loaded by the lab administrator.



4. Click the blue **New** button. The **New Use Case** tab opens.

<input type="checkbox"/>	Name	Purpose	Description	Owner	Status	Risk Level	Tags
<input type="checkbox"/>	<a href="#">Agency Based LGD Estimation</a> High Oaks Bank > North America > Corporate Banking		Uses internal and external recovery data, adjusted for macro-economic impact. Uses statistical regression	Bob Eldridge	<span>Approved for Development</span>	<span>Low</span>	<input type="checkbox"/>
<input type="checkbox"/>	<a href="#">Banking book HTM corporate bond - income</a> High Oaks Bank > Europe > Corporate Banking		ALM based income forecast for the HTM portfolio, initially for the CCAR 2013 stress-test. Vendor solution using conditional scenarios and core ALM system.	Bob Eldridge	<span>Approved for Development</span>	<span>Medium</span>	<input type="checkbox"/>
<input type="checkbox"/>	<a href="#">Blank model for TD derivatives</a>		Blank I input-Nonlinear model on IR process				

Note that the **Model Use Case creation** information panel on the right of the screen offers helpful information about model use cases, as well as a list of required fields. Clicking on any of the fields in that panel will scroll the screen directly to that portion of the form, helping you quickly rectify any items needing attention.

5. In the **General** section of the form, enter **Application screening** in the **Name** field. Note that when you enter a value in the field, the progress bar in the **Model Use Case creation** information panel updates.
6. Click the **Owner** field and enter the **admin** user into this field. **DO NOT** select any of the sample users that were loaded during the system configuration import step, as they will not have associated Cloud Pak for Data accounts and will not be able to log in and work with the use case.
7. Enter a description in the **Description** field.
8. Click on the **Use Case Type** dropdown and select **AI**.

The screenshot shows the 'Use Case creation' form. The fields are numbered as follows:

- 5**: \* Name \* Application screening
- 6**: \* Owner \* admin
- 7**: \* Description \* Screen applicants for positions
- 8**: \* Use Case Type AI

9. All model use cases are owned by business entities, representing the part of the organization responsible for requesting the use case. In the **Business Entities** section of the form, click the **Add** button. The **Add** window opens with a list of business entities defined for the organization.

The screenshot shows the 'Business Entities' list. The 'Add' button is highlighted with a blue circle containing the number **9**.

10. Locate the **Human Resources** entity from the list and click on it to select it.
11. Click **Done** to add the business entity to the use case. The **Add** window closes.

The screenshot shows the 'Add' dialog box. The 'Human Resources' entity is selected, indicated by a checked checkbox. The 'Done' button at the bottom is highlighted with a blue circle containing the number **11**.

12. Click the **Save** button in the upper right to save the use case.

When the use case has finished saving, the screen will reload with the view you customized in previous steps; you should see the **Secondary EU AI Review** field in the **Regulatory**

**Information** section of the use case. At this point, the use case has been created and is now governed by the **Use Case Request** workflow that you modified. Specifically, it is in the **Use Case Data Gathering** stage of the workflow.

To progress the use case through the workflow, you will now need to perform the actions specified in the **Action** items in the workflow.

## 2. Progress the predictive model use case to the next phase

The use case request has progressed to the data gathering stage of the workflow, and has been assigned as an action for the appropriate owner. Recall that owners of each stage of the workflow can be configured, and alerts assigned.

In the [day 1 lab](#) you progressed a use case through the approval process, filling out the risk assessment questionnaire to identify possible risks. For the sake of time, in this lab you will use your administrator's authority to manually attach risks to the use case and then advance it to the proper lifecycle phase.

In an earlier section of the lab, you updated the model use case review to hold a new field (Secondary EU AI Review). When performing a PoX for your client, you may wish to add other fields to this view, which may contain other required information to be filled out in this stage. Information could include things like billing codes, additional documentation or justification, or more. In this case, you will only edit required fields specified in the information panel on the right before progressing to the next stage of the workflow.

1. Scroll to the **Use Case Details** section of the view and click on the **pencil icon** that appears when you hover your mouse over the **Uses Foundation Models** field.



2. Use the dropdown to set the field to **No**.

**Risk Level** represents the risk to the organization should issues arise with the models used to address the requirements laid out by the use case. A full risk assessment is beyond the scope of this lab; however, because hiring and employment violations can lead to expensive litigation damage to an organization's reputation, this use case will be marked as high risk.

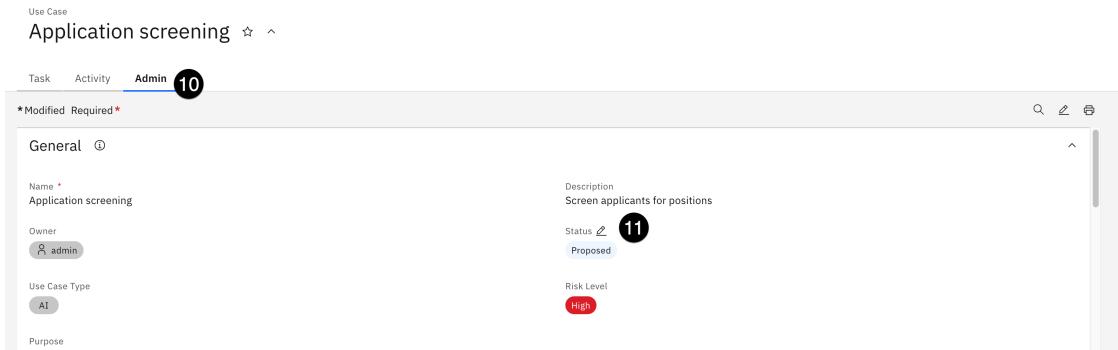
3. In the **Risk** section of the form, click on the **pencil icon** next to the **Risk Level** field to edit it.

4. Select **High** from the dropdown.
5. Scroll down to the **Risks** table in the same section and click on the **Copy from Library** button. The **Copy from Library** dialog window opens, listing all the available risks currently in the library.

6. Scroll down to the **Confidential data in prompt** risk and click on it to select it.
7. Click on the **Done** button to add this risk to your use case.

8. Repeat steps 5-7 for any other risks you wish to attach to your use case.
9. Click on the **Save** button in the upper right to save your use case. Note that if you see an error message saying that the use case has recently been updated by another user, you may need to refresh the page and verify that the information added to the form in previous steps has been saved, then click on the **Save** button again.

10. From the top of the view, click on the **Admin** tab.
11. Click on the **pencil icon** that appears when you hover your mouse over the **Status** field in the **General** section.



12. Use the dropdown to set the **Status** field to **Approved for Development**.
13. Click on the **Save** button to save your changes.
14. Click on the **Task** tab to return to the **Task** view of the use case.

At this point in the lifecycle, the model use case has been created, reviewed for risks, and approved by the various stakeholders. Personas involved are mostly non-technical, from the business user who requested the model to the risk and compliance officer who evaluated it. Next, the model would be developed by teams of data scientists and AI engineers. In this case, the model has been developed by a team using the Amazon SageMaker development platform, and deployed there as a candidate model for the use case.

In the next steps of the lab, you will connect watsonx.governance to this model and configure it for evaluations.

### 3. Open the watsonx monitoring dashboard

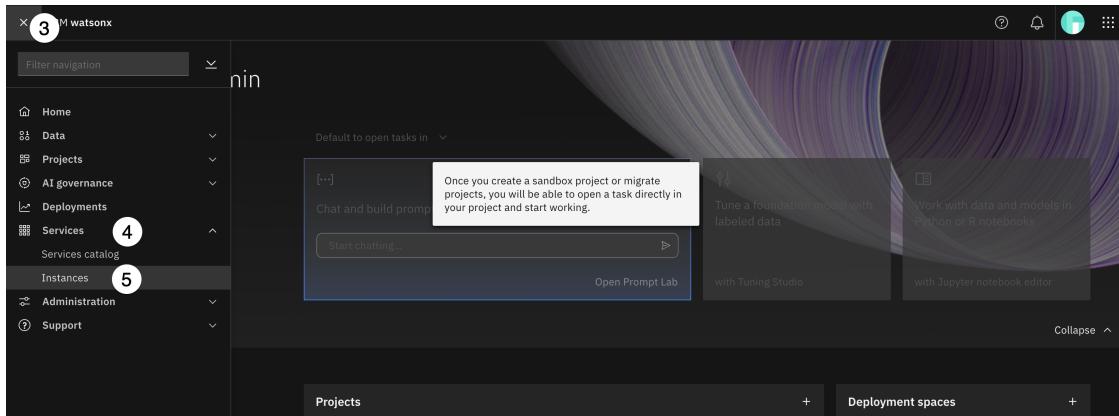
You can add Amazon SageMaker as a model provider from the watsonx monitoring (OpenScale) dashboard.

1. From the governance console, click on the **hamburger menu** in the upper left.
2. Click on the **IBM watsonx** menu item. The watsonx home screen opens.



3. Click on the **hamburger menu** in the upper left.
4. Click on the **Services** menu item to expand it.

- Click on the **Instances** menu item. The **Instances** screen opens.



- Locate the **openscale-defaultinstance** item in the table, and click on the **three vertical dots** to the right of it to open the context menu.
- Click on the **Open** menu item. The watsonx monitoring dashboard opens.

The screenshot shows the 'Instances' table in the watsonx monitoring dashboard. The table has columns: Name, Type, Created by, vCPU requests, Memory requests (GiB), Data plane, Physical location, Status, and Created on. There are three rows: 'cpd-database' (db2oltp), 'openscale-defaultinstance' (aios), and 'openpagesinstance-cr' (openpages). To the right of the table, there is a context menu for the 'openscale-defaultinstance' row, with the 'Open' item highlighted with a red circle labeled 7. Other options in the menu include 'View details', 'Manage access', and 'Delete'.

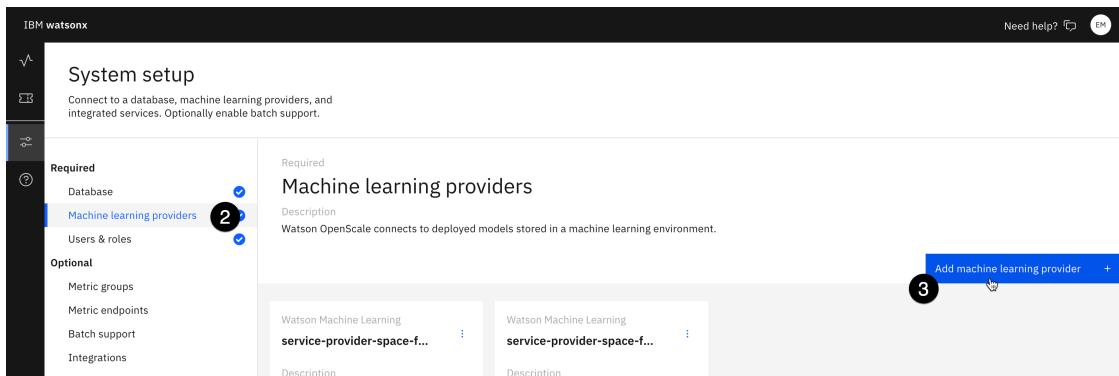
## 4. Add the SageMaker model to the dashboard

- From the watsonx monitoring (OpenScale) Insights dashboard, click on the **Configure** button. The **System setup** screen opens.

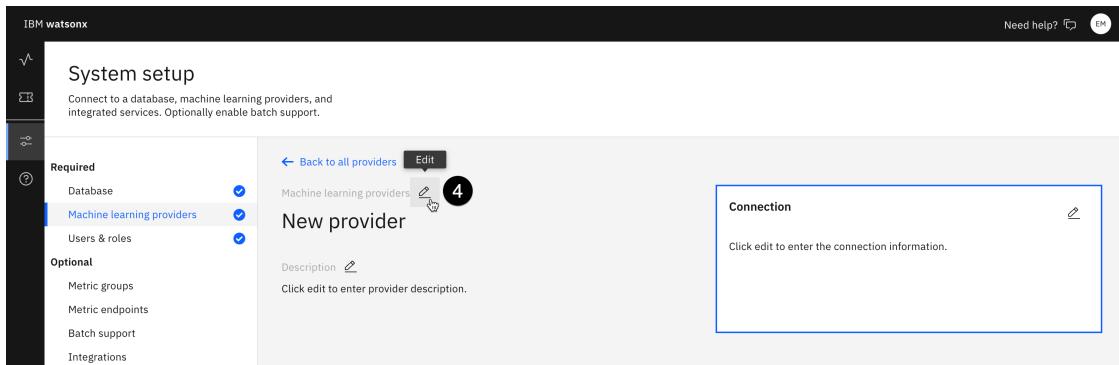
The screenshot shows the 'Insights dashboard' page. In the top-left corner, there is a 'Deployments' section with a 'Monitored' status (3 deployments), 'Quality Alerts' (3 alerts), 'Fairness Alerts' (1 alert), 'Drift v2 Alerts' (3 alerts), 'Drift Alerts' (-- alerts), 'Global explanation Alerts' (-- alerts), and 'Custom Alerts' (-- alerts). Below this, there are filters for 'Tags', 'Alert type', and 'Machine learning provider', and a search bar 'Which deployment are you looking for?'. A 'Configure' button is highlighted with a red circle labeled 1. At the top right, there are 'Refresh' and 'Add to dashboard' buttons.

- From the **Required** section in the left panel, click on **Machine learning providers**.

3. Click on the **Add machine learning provider** button.



4. Click the **Edit** button for the **Machine learning providers** to edit the provider name.



5. Enter **SageMaker development** in the text field and click the **Apply** button.
6. Click on the **Edit** button in the **Connection** tile. The **Connection** panel opens.
7. Click on the **Service provider** dropdown. Note the different pre-built connectors available, including Microsoft Azure ML Studio and Microsoft Azure ML Service. Select **Amazon SageMaker** from the list.

The screenshot shows the 'System setup' page under the 'Machine learning providers' section. On the left, there's a sidebar with 'Required' and 'Optional' sections. Under 'Required', 'Database' and 'Machine learning providers' are selected. Under 'Optional', 'Users & roles' is selected. The main area shows a 'Connection' section for 'SageMaker development'. It includes a 'Description' field, 'Pre-production environments' (with a note about test models), and 'Production environments' (with a note about monitoring). To the right, a 'Service provider' dropdown is open, listing 'Watson Machine Learning (V2)', 'IBM SPSS Collaboration & Deployment Services', 'Custom Environment', 'Amazon SageMaker' (which is highlighted with a circled '7'), 'Microsoft Azure ML Studio', and 'Microsoft Azure ML Service'. A 'Choose an option' button is at the top of the dropdown.

Enter your SageMaker credentials, which will be provided by your lab instructor.

8. In the **Access key ID** field, enter the **AWS\_ACCESS\_KEY\_ID** value.
9. In the **Secret access key** field, enter the **AWS\_SECRET\_ACCESS\_KEY** value.
10. In the **Region** field, enter the **Region** value.

The screenshot shows the 'SageMaker development' configuration page. On the left, there's a sidebar with 'Machine learning providers' and 'Users & roles' selected. The main area has a 'Description' field, 'Pre-production environments', and 'Production environments'. To the right, there are fields for 'Access key ID' (containing 'AKIA4MTWG6TWGVEFZGWJ' with circled '8'), 'Credential values' (set to 'Enter manually'), 'Secret access key' (containing '.....' with circled '9'), 'Region' (set to 'us-west-1' with circled '10'), and 'Environment type' (radio buttons for 'Pre-production' and 'Production').

11. Click on the **Save** button to save the SageMaker service as a machine learning provider for watsonx.governance.
12. Click on the **Insights dashboard** button to return to the dashboard.

The screenshot shows the Watson OpenScale System setup interface. On the left, there's a sidebar with sections like 'Required' (Database, Machine learning providers, Users & roles) and 'Optional' (Metric groups, Metric endpoints, Batch support, Integrations). The 'Machine learning providers' section is selected. It displays three providers: 'SageMaker development' (Amazon SageMaker), 'service-provider-space-f...' (Watson Machine Learning), and another 'service-provider-space-f...' entry. A blue button at the bottom right says 'Add machine learning provider'.

13. Click on the **Add to dashboard** button. The **Select a model deployment** window opens.
14. In the **Select model location** section, click on the **Machine learning Providers** button. A list of providers appears.
15. Click on the **SageMaker development** provider from the list.

The screenshot shows the 'Select model deployment' window. Under 'Select model location', the 'Machine learning Providers' tab is selected. A table lists deployment spaces and their details:

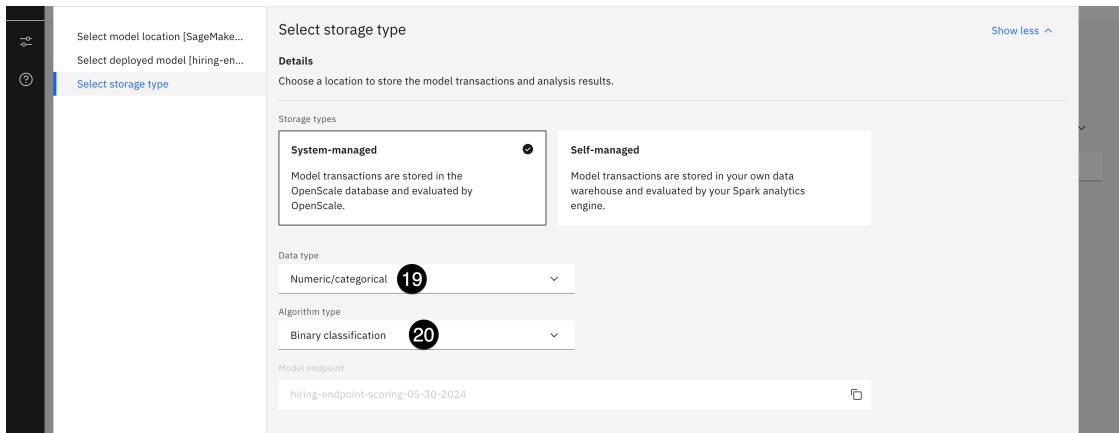
Name	Machine learning Provider	Space name	Environment type
SageMaker development	Amazon SageMaker	-	Pre-production
service-provider-space-fbd60854-e251-4d63-b72d-64813e985452	Watson Machine Learning	application screening development	Pre-production
service-provider-space-fbd60854-e251-4d63-b72d-64813e985452	Watson Machine Learning	application screening development	Pre-production

16. Click on the **Next** button. The monitoring service will query the SageMaker service using the credentials you provided to get a list of deployed model endpoints.
17. Click on the **hiring-endpoint-scoring...** deployment from the list.

The screenshot shows the 'Select a deployed model' window. Under 'Deployment', the table lists two entries:

Deployment	Description	Created	Added
credit-risk-endpoint-scoring-05-30-2024		Thu, May 30, 2024, 11:56 AM MDT	
hiring-endpoint-scoring-05-30-2024		Thu, May 30, 2024, 11:54 AM MDT	

18. Click on the **Next** button. The **Select storage type** window opens.
19. Click on the **Data type** dropdown and select **Numeric/categorical** from the list.
20. Click on the **Algorithm type** dropdown and select **Binary classification** from the list.



21. Click on the **View summary** button.
22. Click on the **Save and continue** button to add the deployed model to the dashboard. The **Configure hiring-endpoint...** screen opens.

## 5. Configure the SageMaker monitors

Next, you will configure the SageMaker model information and monitors.

1. Leave the **Configuration method** set to **Manual setup** and click on the **Next** button. The **Specify training data** window opens.
2. Right-click the link to download the [hiring\\_training\\_data.csv](#) file to your machine, then drag and drop it into the upload section on the screen, or browse to it.

**① Note:** When downloading the file, your browser may change the file extension from *csv* to *txt*. If it does so, you will need to change the extension back to *csv*.

3. Click on the **Select delimiter** dropdown and select the **Comma (,)** option from the list.
4. Click the **Next** button. The monitoring service reads the CSV file. The **Select the feature columns and label column** screen opens.
5. Check the **Label / Target** box for the **Hired** column.
6. Check the box in the table header row to select the remaining columns as features.

Select the feature columns			
	Type	Categorical <sup>①</sup>	Label / Target
<input type="checkbox"/> HIRED	8:6	<input type="checkbox"/>	<input checked="" type="checkbox"/> 5
<input checked="" type="checkbox"/> Age	8:6	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> BusinessTravel	8:6	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Education	8:6	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> RelevantEducationLevel	8:6	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> JobLevel	8:6	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> MaritalStatus	8:6	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> NumCompaniesWorked	8:6	<input type="checkbox"/>	<input type="checkbox"/>

Items per page: 25 1 - 19 of 19 items 1 of 1 page < >

7. Scroll to the bottom of the table and check the **Categorical** box for the **IsFemale** feature.
8. Click on the **Next** button. The monitoring service queries the model to determine the structure of its output. The **Select model output** screen opens.

YearsAtCurrentCompany	8:6	<input type="checkbox"/>	<input type="checkbox"/>
RelevantExperience	8:6	<input type="checkbox"/>	<input type="checkbox"/>
JobType	8:6	<input type="checkbox"/>	<input type="checkbox"/>
SalaryExpectation	8:6	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> IsFemale	8:6	<input checked="" type="checkbox"/> 7	<input type="checkbox"/>

Items per page: 25 1 - 19 of 19 items 1 of 1 page < >

Cancel Back Next 8

9. Check the **Prediction** box for the **predicted\_label** field.
10. Check the **Probability** box for the **score** field.

Select model output															
Show less ^															
Details															
From the model output data, select the column that contains the prediction generated by the deployed model. Select the prediction probability column which contains the model's confidence in the prediction.															
Select the prediction and probability column(s)															
<table border="1"> <thead> <tr> <th>Features (2)</th> <th>Type</th> <th>Prediction</th> <th>Probability</th> </tr> </thead> <tbody> <tr> <td>score</td> <td>8:6</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/> 10</td> </tr> <tr> <td>predicted_label</td> <td>8:6</td> <td><input checked="" type="checkbox"/> 9</td> <td><input type="checkbox"/></td> </tr> </tbody> </table>				Features (2)	Type	Prediction	Probability	score	8:6	<input type="checkbox"/>	<input checked="" type="checkbox"/> 10	predicted_label	8:6	<input checked="" type="checkbox"/> 9	<input type="checkbox"/>
Features (2)	Type	Prediction	Probability												
score	8:6	<input type="checkbox"/>	<input checked="" type="checkbox"/> 10												
predicted_label	8:6	<input checked="" type="checkbox"/> 9	<input type="checkbox"/>												

11. Click on the **View summary** button.
12. Click on the **Finish** button to finalize your configuration.

In the next steps, you will configure individual model monitors.

## 6. Configure explainability and fairness

Next, you will configure the explainability service and the fairness monitor.

1. In the **Explainability** section, click **General settings**.

The screenshot shows the 'application screening - dev' interface. On the left, a sidebar lists 'Model info', 'Endpoints', 'Explainability' (with 'General settings' highlighted), 'SHAP', 'LIME (enhanced)', 'Evaluations', 'Fairness', and 'Quality'. The main panel displays 'Model details' with a description: 'Provide information about the training data and deployed model output to prepare watsonx for monitoring and providing explanations for model transactions.' Below this is a 'Reconfigure model' button. To the right, there are two sections: 'Configuration package' (with a note '(File name is not available)') and 'Training data label' (set to 'HIRED'). A circled '1' is placed over the 'General settings' link in the sidebar.

2. Click the **Edit** button in the **Explanation method** tile. Watsonx.governance offers two different algorithms to explain predictions: LIME (Local Interpretable Model-Agnostic explanations), and SHAP (SHapley Additive exPlanations).
3. Click the **Next** button to use the LIME method. The **Controllable features** panel opens.
4. You can designate certain features of the model as controllable, and can subsequently choose to include or exclude features that you cannot control when running an analysis. Use the switches to adjust controllable features as you wish, then click the **Save** button to save your choices.
5. From the **Evaluations** section in the left panel, click on **Fairness**.
6. Click on the **Edit** button in the **Configuration** tile.

The screenshot shows the 'Configure OpenScale evaluation settings' interface for 'application screening - dev'. The left sidebar has 'Eva view' selected. Under 'Evaluations', 'Fairness' is selected (circled with '5') and 'Quality', 'Drift v2', 'Drift', 'Generative AI Quality', and 'Model health' are listed below it. The main panel shows the 'Fairness' configuration with a description: 'The Fairness monitor checks your deployments for biases. It tracks when the model shows a tendency to provide a favorable (preferable) outcome more often for one group over another. You will specify which values represent favorable outcomes, select the features to monitor for bias (for example, Age or Sex), and specify the groups to monitor for each selected feature.' To the right, three configuration tiles are shown: 'Configuration' (with an 'Edit' button circled with '6'), 'Favorable outcomes' (with an 'Edit' button), and 'Sample size' (with an 'Edit' button). A large blue box highlights the 'Configuration' tile.

- The **Configure manually** configuration type has been selected. Click on the **Next** button.

To monitor fairness, you need to identify favorable and unfavorable outcomes, as well as monitored and reference groups. In this particular model, **1** represents a hiring recommendation, and is a favorable outcome. **0** represents a no-hire recommendation, and is unfavorable.

- Use the checkboxes to mark **0** as **Unfavorable** and **1** as **Favorable**.

Values	Favorable	Unfavorable
0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Click on the **Next** button. The **Sample size** screen opens.
  - Enter **100** in the **Minimum sample size** field. This will allow you to calculate evaluations without needing more than 100 rows of data.
  - Click on the **Next** button. The **Metrics** screen opens.
- Multiple metrics are available for measuring fairness. Two of them (**Disparate impact** and **Statistical parity difference**) can be calculated at runtime strictly from data being submitted to the model. The others require feedback (ground truth) data. More information on the metrics can be found in the [watsonx.governance documentation](#).
- Click on the **Next** button.
  - The **standard threshold for disparate impact** is 80%, though it can be adjusted to meet specific requirements. Click on the **Next** button. The **Select the fields to monitor** screen opens.
  - IBM watsonx has analyzed the data and recommended different fields to monitor, including **Age**, **TotalWorkingYears**, and **YearsAtCurrentCompany**. For the purposes of this lab, uncheck each of those fields.
  - Scroll down in the table on the right and check the box to the left of the **IsFemale** item.

## 16. Click on the **Next** button.

In this model, females are denoted with a **1** in the IsFemale feature column, while males are denoted with a **0**. Note that in a real-world example, you would use the indirect bias detection feature.

## 17. Click the checkboxes to designate the **0** value (0-0 range, males) as **Reference** group and the **1** value (1-1 range, females) as the **Monitored** group.

## 18. Click the on **Next** button.

## 19. Note that you have the option to set different thresholds for each fairness monitor. Click on the **Save** button to save your fairness configuration.

## 7. Configure quality and drift

Next, you will configure the quality and drift monitors. Drift refers to the degradation of model performance due to changes in data or changes in relationships between input and output.

- From the **Evaluations** section on the left, click on the **Quality** item.
- Click on the **Edit** icon in the **Quality thresholds** tile.

The screenshot shows the 'application screening - dev' interface. On the left, a sidebar lists various monitors: Model info, Endpoints, Explainability, General settings, SHAP, LIME (enhanced), Evaluations, Fairness, Quality (highlighted with a blue border and circled with a black number 1), Drift v2, Drift, Generative AI Quality, and Model health. The main panel displays the 'Quality' monitor configuration. It includes a 'Description' section stating: 'The Quality monitor evaluates how well your model predicts accurate outcomes. It identifies when model quality declines, so you can retrain your model appropriately.' Below this is a note: 'Note: The Quality metric measures the model's ability to correctly predict outcomes that match labeled data (ground truth) provided by humans. The quality metrics evaluated are standard data science statistics based on model type. [Learn more.](#)' To the right, a detailed configuration panel for 'Quality thresholds' is shown, featuring a 'Lower thresholds' section with several metrics like Area under ROC, Area under PR, Accuracy, True positive rate (TPR), and Recall, each with an 'Edit' icon (circled with a black number 2).

3. Over a dozen quality metrics are automatically calculated by watsonx.governance. You can find more information on each of them in the [documentation](#). Click on the **Next** button to accept the default thresholds.
4. Enter **100** in the **Minimum sample size** field.
5. Click on the **Save** button to save your configuration.
6. From the **Evaluations** section on the left, click on the **Drift v2** item.
7. Click on the **Edit** icon in the **Compute the drift archive** tile.

The screenshot shows the 'application screening - dev' interface. The sidebar now highlights the 'Drift v2' item (circled with a black number 6). The main panel displays the 'Drift v2' monitor configuration. It includes a 'Description' section stating: 'The Drift monitor checks if your deployments are up-to-date and behaving consistently. Model input/output data is analyzed in relation to the training/baseline data.' To the right, three configuration tiles are shown: 'Compute the drift archive' (with an 'Edit' icon circled with a black number 7), 'Drift thresholds' (with an edit icon), and 'Important features' (with an edit icon).

8. Because you uploaded the training data earlier when configuring the monitors, you now have the option to let Watson OpenScale compute the necessary statistics to measure drift. Click on the **Next** button.
9. Leave the default drift thresholds set to their default values. Click on the **Next** button. The **Important features** screen opens.

- When developing the model, data scientists will perform tests to see which features impact the model the most. For this model, those features are **InterviewScore**, **YearsAtCurrentCompany**, and **SalaryExpectation**. Locate those features in the list and check the boxes to the left of them to mark them as important.
- Once all the important features have been identified, click on the **Next** button to continue. The **Most important features** screen opens.

	Type
<input type="checkbox"/> Age	81
<input type="checkbox"/> BusinessTravel	81
<input type="checkbox"/> Education	81
<input checked="" type="checkbox"/> InterviewScore	81
<input type="checkbox"/> IsFemale	81
<input type="checkbox"/> JobLevel	81
<input type="checkbox"/> JobType	81
<input type="checkbox"/> MaritalStatus	81
<input type="checkbox"/> NumCompaniesWorked	81

- Check the box to the left of the most important feature (**InterviewScore**) to identify it.
- Click on the **Next** button to continue.
- Leave the **Minimum sample size** value set to its default and click the **Save** button. Watson OpenScale begins training the drift model in the background. This process can take up to five minutes. Once it has finished, the monitors will be fully configured and the model can be evaluated.
- Click on the **X** button in the upper right to close the evaluation settings window.
- Return to the **Insights dashboard** by clicking on the icon in the top left.

- Locate the tile for the SageMaker model on the dashboard and click on it. The model information screen opens.

No current evaluations have been run on the model. In the next step, you will run one.

## 8. Evaluate the SageMaker model

Evaluation methods in watsonx.governance differ depending on whether the models are deployed to production spaces or pre-production spaces. Production models hosted in the same environment as watsonx.governance automatically register their input and output into the watsonx.governance datamart. Third-party production models can use a REST API to write their input and output into the datamart. Pre-production models are evaluated by uploading data in comma-separated value (CSV) files.

1. Right-click on the link for the [hiring\\_evaluation\\_data.csv](#) file and download it to your machine.
2. Click on the **Actions** button. The **Actions** menu opens.
3. Click on the **Evaluate now** menu item. The **Import test data** panel opens.

4. Click on the **Import** dropdown and select **from CSV file**.
5. Click the link to browse to the *hiring\_evaluation\_data.csv* file you downloaded in step 1.

The screenshot shows the watsonx / Cloud Pak for Data home screen. The 'Evaluations' tab is active. On the left, there's a summary card with 'Last evaluation: --', 'Test data set: --', and 'Number of explanations: 0'. A circular icon indicates '0 Tests run'. To the right, a modal window titled 'Import test data' is open. It contains a 'Description' section with text about watsonx:governance evaluating production models for fairness and drift. Below this is an 'Import' section with a dropdown labeled 'from CSV file' (4) and a text input field containing 'hiring\_evaluation\_data.csv' (5). There's also a checkbox for 'Test data includes model output'.

6. Click on the **Upload and evaluate** button to begin the evaluation. Note that the evaluation can take up to five minutes to complete.
7. When the evaluation has finished, take a moment to review the results. The model has likely failed several tests. Clicking on the individual monitors provides further details.

## 9. Link the SageMaker model to the use case

Now that the SageMaker model has been evaluated, it will appear in the **External models** page found in the **AI governance** menu.

1. In your browser, return to the watsonx / Cloud Pak for Data home screen. You can use the link provided by your lab instructor, or edit the URL in your browser's address bar to remove everything starting with *aiopenscale*.
2. Click on the **hamburger menu** in the upper left.
3. Click on the **AI governance** menu item to expand it.
4. Click on the **External models** menu item. The **External models** screen opens.

The screenshot shows the 'External models' screen within the AI governance menu. The left sidebar has a tree view with nodes like 'Home', 'Data', 'Projects', 'Jobs', 'Tool runtimes', 'Catalogs', 'AI governance' (3), 'External models' (4), 'Deployments', 'Services', and 'Instances'. The main area displays a dashboard with sections for 'Alerts', 'Recent projects', and 'Requests'. The 'Alerts' section says 'No alerts to display.' The 'Recent projects' section lists 'factsheet experiments' (Today at 10:32 PM) and 'hiring model development' (Yesterday at 11:33 PM). The 'Requests' section says 'No data available.'

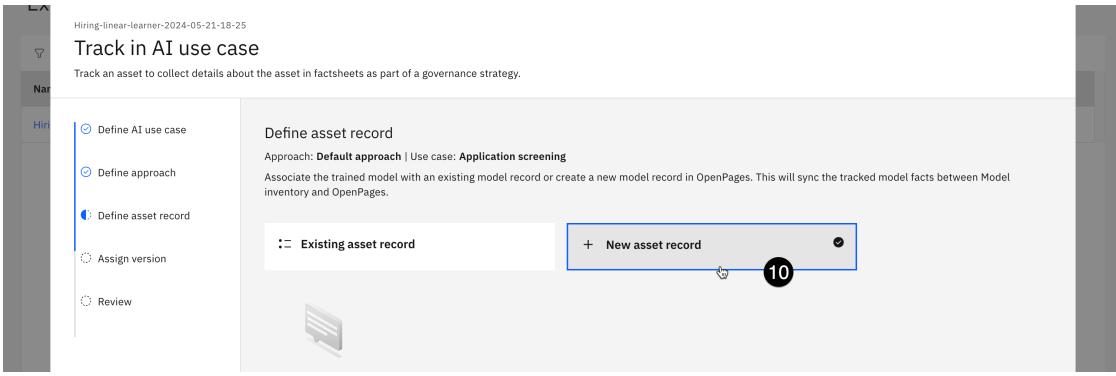
- Locate the external hiring model in the list and click on the **three vertical dots** to the right of the model. The context menu opens.
- Click on the **Track in AI use case** menu item from the context menu. The **Track in AI use case** window opens.

The screenshot shows the 'External models' section of the IBM Cloud Pak for Data interface. A context menu is open over the first row, which contains the name 'Hiring-linear-learner-2024-05-21-18-25'. The menu items are: Validate (circled 5), Track in AI use case (circled 6, highlighted with a blue box), and Delete.

- Locate the **Application screening** use case in the list and check the circle to the left of the use case name to select it.

The screenshot shows the 'Track in AI use case' window. The left sidebar has tiles for 'Define AI use case', 'Define approach', 'Define asset record', 'Assign version', and 'Review'. The main area is titled 'Define AI use case' and shows a table of AI use cases. The row for 'Application screening' is selected (circled 7). The table columns are: Name, Status, Owner, Inventory, and Risk level. The 'Application screening' row shows: Approved, System, Platform assets catalog, and High risk.

- Click on the **Next** button. The **Define approach** window opens.
- Click on the **Next** button to accept the default approach. The **Define asset record** window opens.
- Click on the **New asset record** tile to create a new record for the model in the inventory and the governance console.



11. Click on the **Next** button. The **Assign version** window opens. This screen allows you to set a version number for your model based on its progress in development.
12. Click on the **Next** button. The **Review** window opens.
13. Click on the **Track asset** button to begin tracking the asset in the use case. When the model has been successfully added to the use case, the external models table will update to reflect the new association.

## 10. View the model metrics in the use case

Next, you will view the use case and the gathered metrics in the governance console.

1. Click on the link for the **Application screening** use case. The use case will open.

External models						
Name	Provider	Owner	Inventory	AI use case	Phase	
Hiring-linear-learner-2024-05-21-18-25	--	admin	High Oaks Bank Model Inventory	<a href="#">Application screening</a>	Validate	

This view of the use case is focused more on technical users, and looks different than the one in the governance console. However, all the information here is automatically synchronized with the governance console, to ensure that all stakeholders have the most up-to-date metrics and metadata.

2. Click on the **Open in Governance Console** link in the **General information** section of the use case view. The governance console opens and loads the view of the use case.

The screenshot shows a detailed view of a model use case in the WatsonX Governance console. The left panel contains sections for General information, Name, Description, Owner, Tags, and a note about adding tags. The right panel shows detailed information: Status (Approved), Risk level (High), Inventory (High Oaks Bank Model Inventory), and Tags. A note at the bottom says 'Add tags to this AI use case.' with a '2' badge, and a link to 'Open in Governance Console'.

3. Scroll down to the **Performance Monitoring** section. Note that the metrics for both models are combined here, organized into breach status for major categories such as quality, fairness and more. You can explore the metrics in detail, clicking into each to find more information.

Note that you can also view the model metrics, and the updates made to the model lifecycle, in the model factsheet. The factsheet can be found in the **AI use cases** page of the **AI governance** section of Cloud Pak for Data.

Metrics data is generated by the watsonx.governance monitoring service (OpenScale), and automatically written to the factsheet, then automatically updated in the governance console. In this way, data is always kept in sync and stakeholders automatically receive the most current information in the format that is most useful for them.

## Conclusion

Congratulations, you have completed the watsonx.governance hands-on lab. In this extensive lab, you saw how the governance console could be configured to meet the individual needs of an organization, and how it helps define, automate, and enforce best practices in approval workflows.

You saw how to create questionnaires, and how those questionnaires can be used to perform actions like associating risks with model use cases or prompting additional reviews.

You then created a pair of model use cases, and took them through the approval process.

Next, you oversaw the model lifecycle, including metrics gathering, for a generative models on Microsoft Azure. You then did the same for predictive models on Amazon SageMaker. You saw how the metrics evaluations of those models were automatically updated in multiple platforms, from factsheets to the governance console, to provide the right information to the right stakeholder at the right time without any additional effort from data science teams, or any reliance on manual processes.