

i Note that you may be able to access a GPU-enabled environment through IBM, or use a client environment before the instructions have been updated. In that case, the interfaces and capabilities are similar enough that adapting the lab should be relatively straightforward.

Customize the governance console

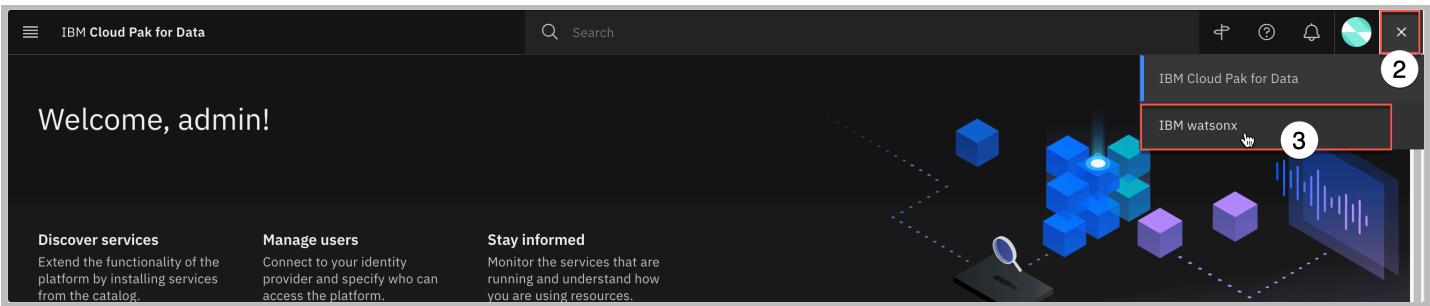
IBM OpenPages is an AI-driven, highly scalable governance, risk and compliance (GRC) solution that runs on any cloud with IBM Cloud Pak for Data. Its full capabilities are well beyond the scope of this lab. Instead, the lab will focus on the features that relate to governing models: customizable workflows 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. In the [configuration](#) pre-requisite for this lab, you 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, create users, 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.

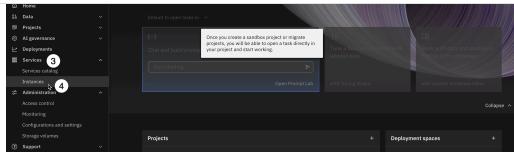
Your screen should now show IBM watsonx branding. This screen will be referred to throughout the lab as the watsonx home screen.

i 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.



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

Name	Type	Created by	vCPU requests	Memory requests (GiB)	Data plane	Physical location	Status	Created on
cpd-database Service instance for db2oltp-17...	db2oltp	admin	2.10	4.25 Gi	—	—	Green	Oct 11, 2024
openscale-defaultinstance IBM Watson OpenScale	aios	admin	0.00	0.00 Gi	—	—	Green	Oct 8, 2024
openpagesinstance-cr OpenPages Instance	openpages	admin	4.45	12.40 Gi	—	—	Green	Oct 8, 2024

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

Status	Running
Database configuration	
Access information	Database type
URL	https://cpd-cpd.apps.ocp-110000b3qc-p09m.cloud.techzone.ibm.com/ openpages-openpagesinstance-cr/ (6)
	Use dedicated nodes
	Node label
Size	Data storage class
	ocs-storagecluster-ceph-rbd

The OpenPages service launches.

3. Update the user profile

In the [environment setup](#) portion of the lab, you created a Cloud Pak for Data user, and provided them access to the governance console. In this step, you will give them access to the roles and permissions they need to perform required tasks.

i Note that in this example, you will provide the created user with multiple profiles that will allow them to perform all actions, in order to streamline the instructions and avoid repetitive login/logout actions to switch between user profiles. However, the sample users you configured earlier have been created with separate profiles if you would prefer to actually switch users to perform different actions.

1. Click the **gear icon** in the upper right to open the Administration view.
2. Click on the **Users and Security** menu option to expand it.
3. Click on **Users**.

The screenshot shows the 'Business Entities (14)' page. A context menu is open over the user 'Eric'. The menu items are: 'Users and Security' (2), 'Users' (3), 'Domains & Groups', 'Role Templates', 'Security Rules', 'User LDAP Configuration', and 'Encryption Keystore'. The 'Users' item is highlighted.

- Locate the created user in the table, which is alphabetized by first name. Click on the link for the created user.

Note: If the user does not appear in the table, then the list of governance console users has likely not updated yet from the previous step, in which you granted the new user access to the OpenPages service. It can take up to 20 minutes for the created user to appear.

The screenshot shows the 'Users (22)' page in the IBM WatsonX Governance console. The user 'Eric' is selected, indicated by a hand cursor icon and a circled number 4. The table columns are: First Name, Last Name, User Name, Email, and Enabled. The user 'Eric' has a last name of Martens, a user name of ComplianceOfficer, and an email of complianceofficer@ibm.com.

- Click on the **Locale and Profiles** menu item from the menu on the left to scroll down to the **Locale and profiles** section.
- Click the **pencil** icon next to **Allowed user profiles**.

The screenshot shows the user profile for 'complianceofficer'. The 'Locale and Profiles' section is expanded. The 'Locale' dropdown is set to 'U.S. English'. The 'Allowed user profiles' dropdown is set to 'OpenPages Modules Master'. A circled number 5 is over the 'Locale and Profiles' menu item, and a circled number 6 is over the 'Allowed user profiles' dropdown.

- Enter **watsonx** in the **Allowed user profiles** text entry to narrow down the list of profiles.
- Check the boxes next to all four **watsonx.governance** profiles.

9. Scroll down to the **Role Assignments** section and click on the arrow to expand it.
10. Click on **Assign Roles**. The **Role Assignments** pane opens.

11. In the **Role Template** field, enter the text **mrg** to narrow down the search fields. In this context, **mrg** stands for Model Risk Governance, as you will be assigning related roles to your created user.
12. Check the box next to **MRG - All Permissions**.

13. Click on the **Choose** link to the right of **Security Domain**. A new panel opens with the organizational hierarchy.

A screenshot of the IBM Governance Console's user profile management screen. On the left, a sidebar lists navigation options like User Information, Disable, Lock User, Reset Password, Force Password Change, Locale and Profiles, and Access Information. The main panel shows a user profile for 'complianceofficer' (Active). It includes sections for Current profile (set to 'watsonx-governance Modules Master'), Allowed user profiles ('OpenPages Modules Master', 'watsonx-governance Modules Master', 'watsonx-governance MRG Master'), and Allowed group profiles ('This user is not part of any group profiles'). Below these are Group Memberships and Role Assignments sections. A tooltip in the top right corner explains that users can expand the hierarchy to view all business units.

i Note that you can expand the hierarchy to view all the different business units in the organization, which were created when you uploaded the FastMap configuration file as you set up your environment. In this way, the governance console allows for fine-grained control over which users are allowed to access which data; you could assign your user access to only models and metrics information for specific parts of the business, for example.

14. Check the top-level box **above** the **High Oaks Bank** box to provide access to all of the relevant model risk governance data for the organization. **NOTE** that you must click the box **one level ABOVE High Oaks Bank** as shown in the screenshot.
15. Click **Done** to close the **Security Domain** panel.

A screenshot of the IBM Governance Console showing the 'Role Assignments' panel. The 'Business Entity' section has a checked checkbox labeled 'High Oaks Bank'. The 'Security Domain' section has a red error message 'This value is required.' The bottom right corner shows a 'Done' button highlighted with a blue circle.

16. Click the **Add** button to add the role assignments to the user.
17. Click the **Save** button in the upper right to save the user profile changes.

4. Create a business entity

Next, you will create a **business entity**, which is an abstract representation of a business structure. In the previous step, when assigning the security domain for the created user's roles, you saw some of the organizational structure created in the setup for this lab, when you 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. However, when performing your Proof of Experience (PoX), allowing the client to create their own entities to mimic the structure of their organization can be a good way to engage with the client and allow them a sense of ownership over the solution you are building. Feel free to customize the steps to match their requirements.

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)

<input type="checkbox"/> Name	Description	Executive Owner	Risk Appetite	In Scope	In RCSCA Scope	Tags
<input type="checkbox"/> 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		

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.

The screenshot shows a tree view of entities under 'High Oaks Bank'. The root node is 'High Oaks Bank' (Parent). It has several children: 'Business Entities' (Child), 'Committees' (Child), 'Employees' (Child), 'Models' (Child), 'Preferences' (Child), and 'Use Cases' (Child). A callout bubble labeled '7' points to the 'Business Entities' node. To the right of the tree, there is a sidebar titled 'Business Entity' with fields for 'Name' and a note stating 'No tags have been added yet.'

8. 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.

The screenshot shows the same tree view as before, but now the 'Corporate' entity tile is selected, indicated by a callout bubble labeled '8'. The right-hand sidebar displays detailed information for the 'Corporate' entity, including its description, executive owner (System Administrator), and tags (Europe).

9. 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.

The screenshot shows the IBM SkillZone interface. On the left, there is a table titled "Child Business Entity" with two rows: "Finance" and "Human Resources". The "Human Resources" row has a circled number "9" next to it. The right side of the screen features a sidebar titled "Business Entity" with sections for "Review and update the business entity" and "All Key Items (1)".

- ⓘ** 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.

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

The screenshot shows the "Child Business Entity" table. A blue button labeled "New Business Entity" is highlighted with a circled number "10". To the right, a sidebar titled "Business Entity" shows a status bar indicating "All Key Items (1)".

11. Enter **Regulatory Compliance** in the **Name** field.
 12. Enter **complianceofficer** 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 screenshot shows the "New Business Entity" dialog box. The "Name" field contains "Regulatory Compliance" (circled with "11"). The "Executive Owner" field contains "complianceofficer" (circled with "12"). The top right corner shows a "Save" button (circled with "13") and a "Cancel" button.

5. 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, though again you should engage with the client to allow them to choose fields or information that is relevant to them. Again, allowing the client to customize the solution can give them a sense of ownership and demonstrate value.

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.

The screenshot shows the IBM Watsonx Governance console interface. On the left, a list of 'Business Entities (56)' is displayed, including items like 'AI Risk Library', 'Africa and Middle East', 'Asia', and 'Catalogs'. On the right, a vertical navigation menu is open under 'Solution Configuration'. Step 1 points to the gear icon at the top of this menu. Step 2 points to the 'Enable System Admin Mode' button, which is currently disabled (indicated by a grey background).

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.

The screenshot shows the IBM Watsonx Governance console interface. The 'Solution Configuration' menu is now fully expanded, showing options like Dashboards, Views, Workflows, Calculations, Scheduler, Object Types, Profiles, Solutions, Tags, Themes, and Regulatory Event Rules. Step 4 points to the gear icon. Step 5 points to the 'Object Types' menu item. Step 6 points to the 'Object Types' tab in the main content area, which is currently active.

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)

Label	Name	Description
Use Case	Register	Unified Object Type
Use Case Review	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.

Field Groups																							
Fields																							
<table border="1"> <thead> <tr> <th>Name</th> <th>Label</th> <th>Description</th> <th>Data Type</th> <th>Required</th> <th>Global Search</th> </tr> </thead> <tbody> <tr> <td>Additional Information</td> <td>Additional Information</td> <td>Additional Information</td> <td>Long String</td> <td>X</td> <td>✓</td> </tr> <tr> <td>Application</td> <td>Application</td> <td>The name of the external service being integrated with.</td> <td>Enumerated String</td> <td>X</td> <td>✓</td> </tr> </tbody> </table>						Name	Label	Description	Data Type	Required	Global Search	Additional Information	Additional Information	Additional Information	Long String	X	✓	Application	Application	The name of the external service being integrated with.	Enumerated String	X	✓
Name	Label	Description	Data Type	Required	Global Search																		
Additional Information	Additional Information	Additional Information	Long String	X	✓																		
Application	Application	The name of the external service being integrated with.	Enumerated String	X	✓																		

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

General

Name
Register

Description
Unified Object Type

Label
Use Case

Plural Label
Use Cases

Global Search

New Field

General

Field Group *

Name *

Label

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.
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 configuration of a new field. In the 'Data Type' dropdown, '14' is highlighted. Below it, there is a list of other options: 'String', 'Text', 'Text Area', 'Email', 'URL', 'Number', 'Date', 'Time', 'Boolean', 'List', 'Object', and 'File'.

- Tip:** 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 'Use Case' object configuration. The 'General' tab is active. On the right, a modal window titled 'New Field' is open. It shows the 'None' value under the 'Enumerated String Values' section. A button labeled 'New Value' (15) is highlighted with a black circle.

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.

- Tip:** 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.

- Tip:** 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 'Fields' tab of the 'Use Case' configuration. On the right, the 'New Field' panel is open. The 'Color Values' section contains three entries: 'Approved' (green), 'Denied' (red), and 'N/A' (yellow). A red box highlights the color dropdowns. The 'Profiles' section shows 'selected items' (18). At the bottom, the 'Create' button (19) is highlighted with a black circle.

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

Error
Field Definition 'Secondary EU AI Review' already exists
2024-05-17 18:07:55.384
EU Compliance /
New Field

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.

Solution Configuration

- Users and Security
- System Configuration
- Integrations
- System Migration
- Other

FastMap Import

System Admin Mode: Enabled

Disable System Admin Mode 21

Disable System Admin Mode

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

6. 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.

Purpose	Description	Owner	Status	Risk Level	Tags
on > Corporate Banking	Uses internal and external recovery data, adjusted for macro-economic impact. Uses statistical regression	Bob Eldridge	Approved for Development	Low	
ate bond - income	ALM based income forecast for the HTM portfolio, initially for the CCAR 2013 stress-test. Vendor solution	Bob Eldridge	Approved for Development	Medium	

6. Click on the **Other** menu item to expand it.
7. Click on the **Display Debug Info** menu item.

The screenshot shows the 'Use Case' view for 'Agency Based LGD Estimation'. The 'Task' tab is active. On the right, a context menu is open under the 'Other' category, with a circled '5' above it. The 'Display Debug Info' option is listed in the menu, with a circled '7' next to it.

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

Note: If the default view name shows as **SysView-Task-Register**, then the admin user is not using the correct profile. Follow the 5. *Enable on the watsonx profiles for the admin user* instructions from the [configuration hands-on lab](#) 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.

The screenshot shows the 'watsonx-governance-Task-Register' view. A warning message 'No tags have been added yet.' is displayed. A circled '8' is above the warning message.

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.

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

The screenshot shows the 'New View' panel for 'watsonx-governance-Task-Register'. The 'Copy view' button is highlighted with a circled '9'.

10. 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.

The screenshot shows the Watsonx governance Task Register interface. On the left, the JSON tab displays the following JSON code:

```

1- {
2-   "guidance": {
3-     "nameLabels": [],
4-     "helpTopicLabels": [
5-       {
6-         "locale": "it_IT",
7-         "value": "Vista generale del caso di utilizzo"
8-       },
9-       {
10-        "locale": "en_GB",
11-        "value": "Use Case general view"
12-      }
13-    ]
14-  }
15- }

```

In the center, the Task status is "Published". To the right, the "New View" panel is open, showing the "Overview" tab selected. It contains fields for "Name" (custom-watsonx-Task-Register) and "Label" (custom-watsonx-Task-Register). A circled number "10" is next to the Name field.

11. 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**.
12. Click **Create** to create the view.

The screenshot shows a JSON editor with the following code:

```

16-   },
17-   {
18-     "locale": "en_US",
19-     "value": "Use Case general view"
20-   },
21-   {
22-     "locale": "en_CA",
23-     "value": "Model Use Case general view"
24-   },
25-   {
26-     "locale": "es_ES",
27-     "value": "Vista general de caso de uso"
28-   },
29-   {
30-     "locale": "pt_BR",
31-     "value": "Visualização Geral do Caso do Uso"
32-   },
33-   {
34-     "locale": "zh_CN",
35-     "value": "用例常规视图"

```

To the right, the "New View" panel is shown again. A circled number "11" is next to the checkbox labeled "Use as default view for this object type for all profiles". A circled number "12" is next to the "Create" button.

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.

The screenshot shows the "Design" tab of the view. The left panel lists fields: Documentation, External ID, Inventory Name, LMID, Last Update, Secondary EU AI Review, Stakeholder Approval Completion Date, WKC Creation Date, and WKC Description. A circled number "14" points to the "Secondary EU AI Review" field. The center panel shows the "Regulatory Information" section, which contains a "Columns-0004" table with rows for "EU AI Risk Category" and "Applicability Assessment Completion Date". A circled number "13" is next to the "Regulatory Information" section header. A red arrow points from the "Secondary EU AI Review" field in the left panel to the "Regulatory Information" section in the center panel.

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.

17. Click on the 'Grid' button in the left sidebar.

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**.

18. Use Case Reviews

19. Children

20. Use Case Review

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.

21. Add +

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.

Relationship Fields

- Card
- Chart
- Count
- Grid
- Tree

Object Fields

- Additional Information
- Application
- Data Gathering Completion Date
- Documentation
- External ID
- LMID

Group Fields

- Metrics in Breach

Section Fields

- Use Case Approvals

Associations

- All Models

Approval Status Stakeholder Departments

Cancel Done **Publish** 24

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.

View - Use Case

custom-watsonx-Task-Register

Type Task State Draft

Design JSON Preview

Compliance

Group Fields

Publish 26

7. 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.

IBM watsonx | Governance console

Business E... High Oaks ... Object Ty... Use C... Conversatio... Use Ca... Agency Bas... watsonx-s...

View - Use Case

custom-watsonx-Task-Register

Type Task State Published

Design JSON Preview

Search Header

Solution Configuration 3

- Dashboards
- Views
- Workflows
- Calculations
- Scheduler
- Object Types
- Profiles
- Solutions

6. Click on the **Filter by Object type** dropdown and select **Use Case** to further narrow the search results.

Label	Description	Object Type	Published	Enabled	Default	System
watsonx-governance-Task-Register	Use Case (Register)		✓	✓	✗	✓
watsonx-governance-Admin-Register	Use Case (Register)		✓	✓	✗	✓
watsonx-governance-New-Register	Use Case (Register)		✓	✓	✗	✓
custom-watsonx-Task-Register	Use Case (Register)	Task	✓	✓	✓	✗

7. Click the box next to the **watsonx-governance-Task-Register** system view.

8. Click **Disable** from the context menu above the table.

Label	Description	Object Type	View Type	Priority	Published	Enabled	Default	System
watsonx-governance-Task-Register	Use Case (Register)	Task		3	✓	✓	✗	✓
watsonx-governance-Admin-Register	Use Case (Register)	Admin		2	✓	✓	✗	✓
watsonx-governance-New-Register	Use Case (Register)	Creation		3	✓	✓	✗	✓
custom-watsonx-Task-Register	Use Case (Register)	Task		1	✓	✓	✓	✗

You have successfully disabled the system view, ensuring that the new view with the custom field 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

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

- From the governance console, click the **hamburger menu** in the upper left.
- Click on the **Assessments** menu item to expand it.
- 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.

The screenshot shows the IBM WatsonX Governance console dashboard. At the top, there's a navigation bar with links like 'Corporate', 'Object Types', 'Conversations...', 'Workflows', 'AI Assessments...', and 'Use Case Re...'. Below the navigation bar, there's a sidebar with sections for 'Assessments' (highlighted with a red box and circled '2'), 'Risks', 'Controls', 'Questionnaire Templates' (highlighted with a red box and circled '3'), 'Programs', 'Inventory', 'Reviews', 'Compliance', and 'Policy Management'. To the right of the sidebar are four cards: 'Change Management' (41 Change Requests by Status), 'Model Inventory' (33 Use Cases by Risk Level), and 'Use Cases by Lifecycle Phase' (33 cases, with a legend for 'Approved for Development', 'Proposed', and 'Awaiting Use Case Appr').

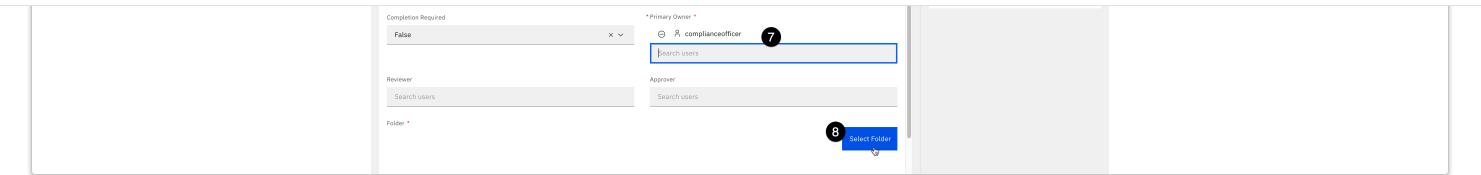
- Click the **New** button in the upper right.

The screenshot shows the 'Questionnaire Templates' list view. The header includes a search bar and a 'New' button (circled '4'). The table columns are 'Name', 'Description', 'Primary Owner', 'Type', 'Completion Required', and 'Tags'. One template is listed: 'AI Risk Identification Questionnaire' (Description: AI Risk Identification Questionnaire, Primary Owner: System Administrator, Type: Classification Questionnaire, Completion Required: False). The 'Questionnaire Templates' tab is highlighted in blue.

- In the **Name** field, enter **Secondary EU AI Act Review**.
- Enter a description in the **Description** field.

The screenshot shows the 'New Questionnaire Template' dialog. The title is 'New Questionnaire Template'. The 'General' section contains fields for 'Name' (circled '5') and 'Description' (circled '6'). The 'Description' field has the value 'Second-level review to determine if the use case violates the EU AI Act.' A sidebar on the right lists validation errors: '2 items require attention.', 'All Key Items (5)', and 'Name *' (highlighted with a red box).

- Enter the created **complianceofficer** user in the **Primary Owner** field.
- Click the **Select Folder** button. The folder selection dialog opens.



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

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

The screenshot shows a 'Select Folder' dialog with a sidebar on the left containing filter options like 'Modified by', 'Secondary owner', 'Reviewer', 'Approver', 'Type', 'Completeness', 'Completion required', 'Reviewer', 'Secondary owner', 'Approver', and 'Folder'. The main area lists various folders with their paths and descriptions. The 'Library' folder is selected, indicated by a checked checkbox and circled with a number 9. At the bottom right of the dialog is a blue 'Done' button with a cursor icon pointing to it, circled with a number 10.

Path	Description
High Oaks Bank > Oceania > Investment Banking	Investment Banking - South America
High Oaks Bank > South America > Investment Banking	Investment Banking - South America
High Oaks Bank > Latin America	Latin America
Library	Library
High Oaks Bank > MRG	MRG
High Oaks Bank > North America	North America
High Oaks Bank > Oceania	Oceania
High Oaks Bank > Africa and Middle East > Private Banking	Private Banking - Africa and Middle East
High Oaks Bank > Asia > Private Banking	Private Banking - Asia

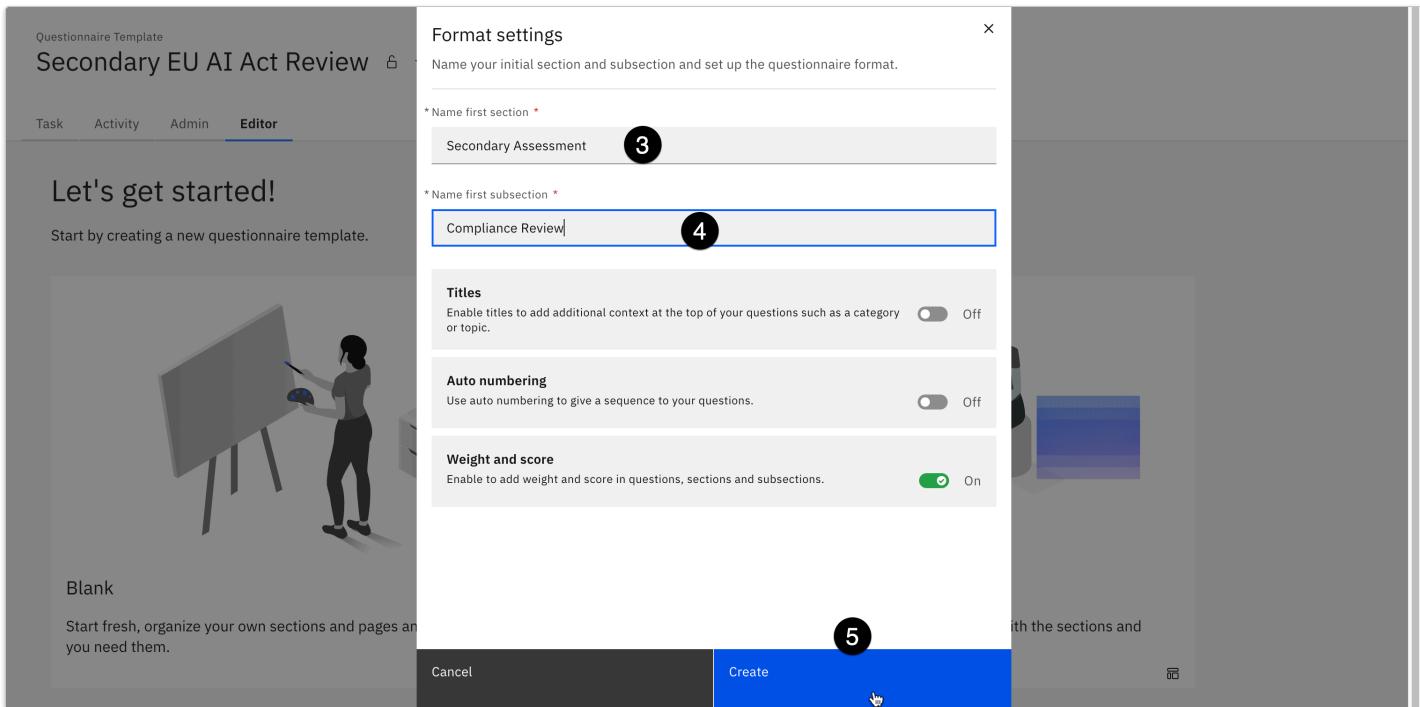
11. Click the **Save** button in the upper right to save the new questionnaire template. The **Task** view opens.

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.

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.

Type *
Single choice
Required
Weight *
1

Question *
After a secondary review, is this use case acceptable under the EU AI Act?

Answers *
Yes Score 10
No Remove Score 0
Not applicable Score -1

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.

IBM watsonx | Governance console

Business Ent... High Oaks B... Corporate Human Reso...

Solution Configuration

Users and Security

System Configuration

Integrations

System Migration

Other

FastMap Import

System Admin Mode: Disabled

Enable System Admin Mode

Business Entities (56)

<input type="checkbox"/> Name	Description
<input type="checkbox"/> AI Risk Library	AI Risk Library Library > MRG > AI Risk Library
<input type="checkbox"/> Africa and Middle East	Africa and Middle East High Oaks Bank > Africa and Middle East
<input type="checkbox"/> Asia	Asia High Oaks Bank > Asia
<input type="checkbox"/> Catalogs	Catalogs Library > MRG > WKC > Catalogs

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.



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

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.

Name	Label	Description	Data Type	Required	Global Search
AI Assessment Type	AI Assessment Type	AI Assessment Type	Enumarated String	x	✓

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

AI Assessment Type

Global Search: True

Multi Valued: False

Hierarchical: False

Enumerated String Values: Not Determined, Data Gathering

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

Name	Label	Description	Data Type	Required
AI Assessment Type	AI Assessment Type	AI Assessment Type	Enumerated String	x

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.

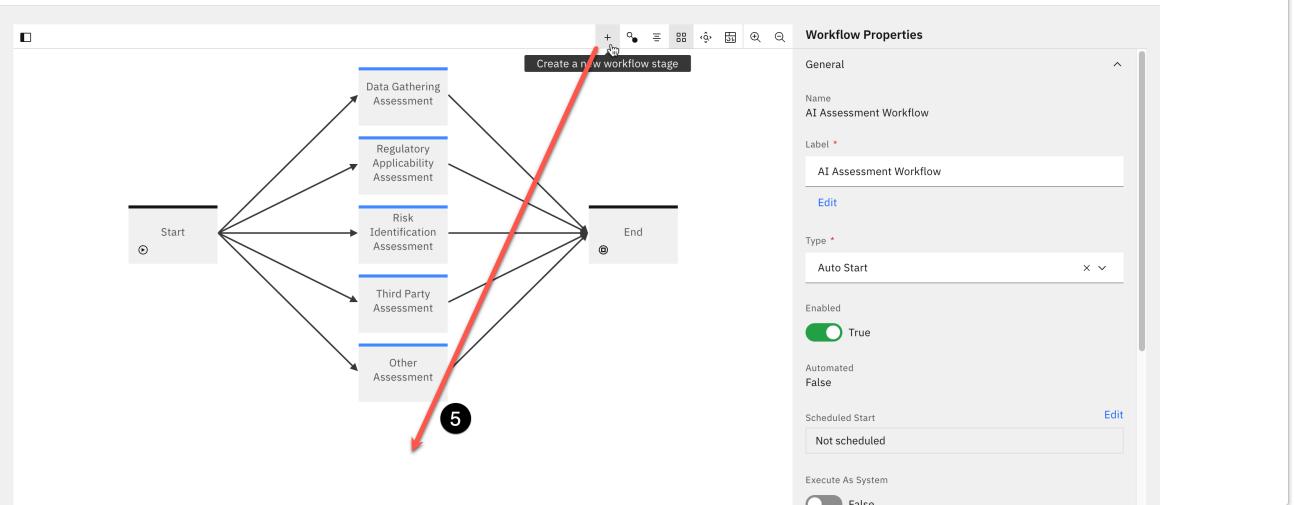
Task	Activity	Admin
Modified Required		
General ⓘ Name * Conversational AI Use Case Type AT Status Approved for Development		
Risk Level High Tags No tags have been assigned yet		

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

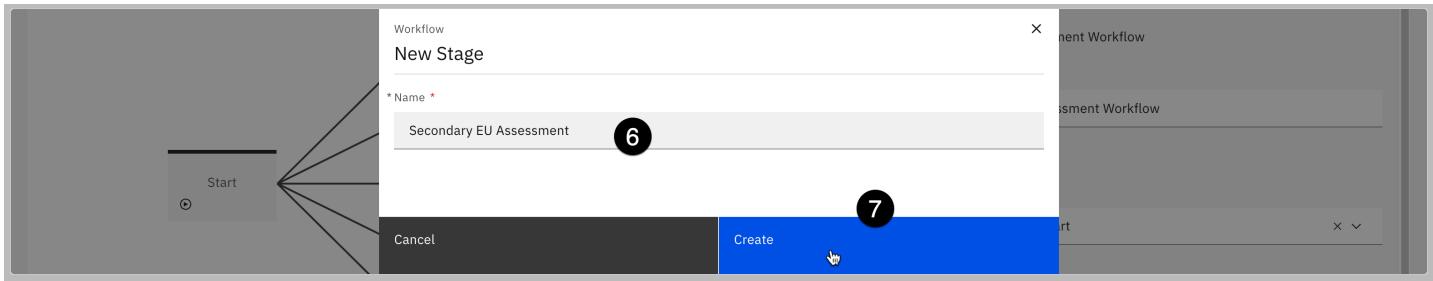
Label	Name	Object Type	Version Number	Type	Automated	Published	Enabled
AI Assessment Workflow	AI Assessment Workflow	Questionnaire Assessment	1	Auto Start	x	✓	✓
Action Item Approval Workflow	Action Item Approval Workflow	Action Item	1	Auto Start	x	✓	✓
FCM Certification - Business Level	Business Level SOX Certification	Business Entity	1	Manual Start	x	✓	✓
Challenge	Challenge	Challenge	1	Auto Start	x	✓	✓

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

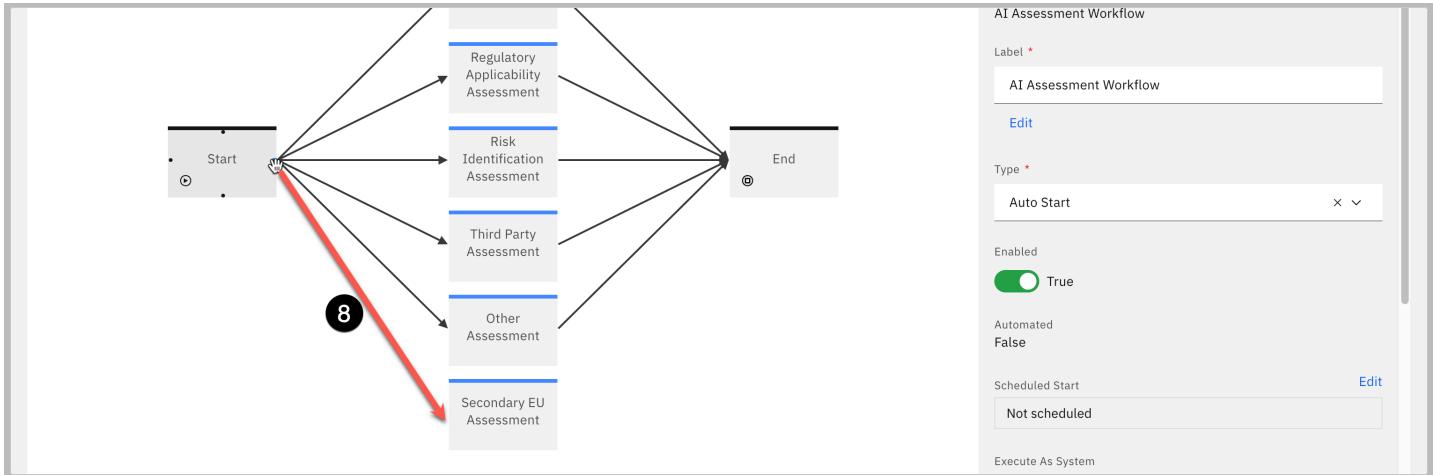
5. Locate the **+** icon in the upper right of the palette window. Click and drag it to beneath the **Other Assessment** box to create a new workflow stage. The **New Stage** dialog opens.



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.

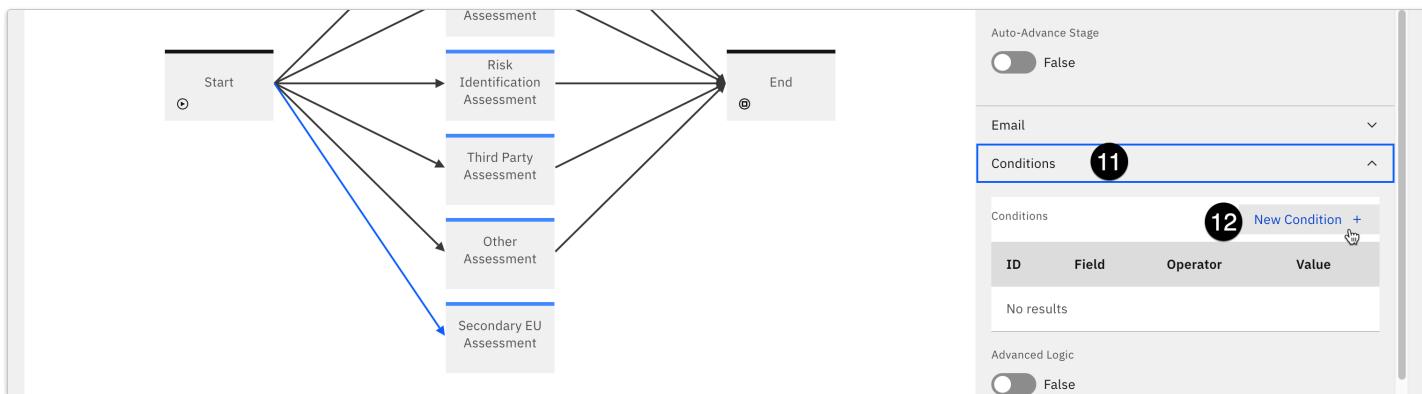


8. Hover your mouse pointer over the **Start** workflow stage to make four black boxes appear on the stage border. Click and drag one of the boxes to the new **Secondary EU Assessment** stage box to create an action linking the two stages. The **New Action** dialog opens.

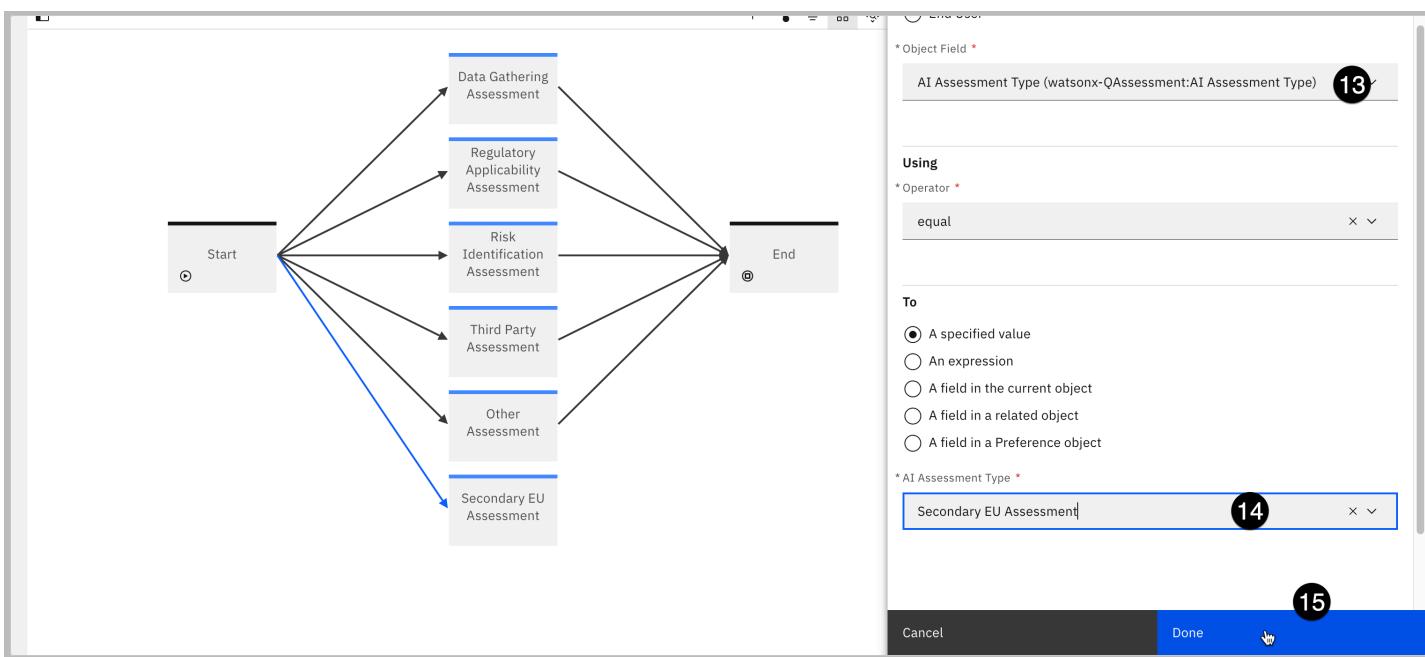


9. Enter **Perform Secondary Assessment** in the **Name** field.
10. Click the **Create** button to create the action and close the dialog.

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



13. Click on the **Object Field** dropdown and select **AI Assessment Type...** from the list.
14. 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.
15. 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.

Workflow - Questionnaire Assessment
AI Assessment Workflow

State Draft Version 2

Operations

* Operation *
Associate objects 18

* Name *
Associate Assessment 19

When

ID	Field	Operator	Value
No results			

Advanced Logic
 False

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 **Object to associate**. The **Object to associate** panel opens.

ID	Field	Operator	Value
1	Questionnaire Assessment AI Assessment Type (watsonx-QAssessment:AI Assessment Type)	* equal	* Secondary EU Assessment

* Advanced Logic
 False

Execute As System
 False

Object to associate *

24 Edit

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.

Workflow - Questionnaire Assessment
AI Assessment Workflow

State Draft Version 2

Object to associate

* Relationship Type *
25 Direct Child

* Related Object Type *
26 Questionnaire Template

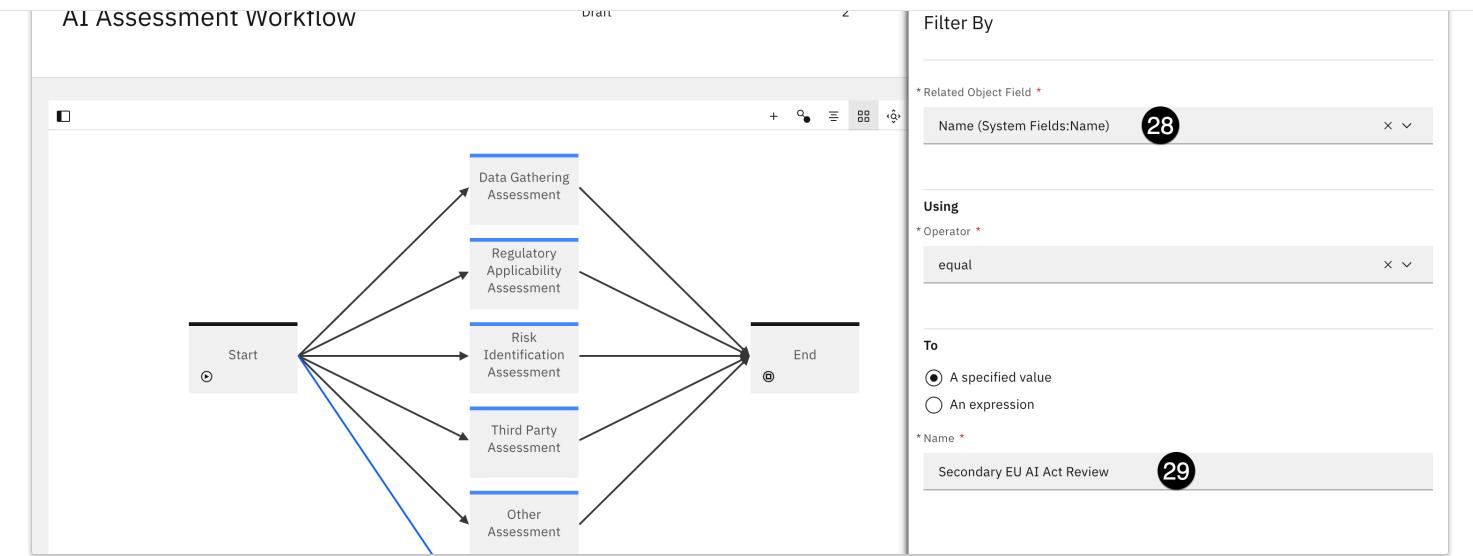
Reassign primary parent
 False

Filter By

ID	Field	Operator	Value
No results			

Advanced Logic

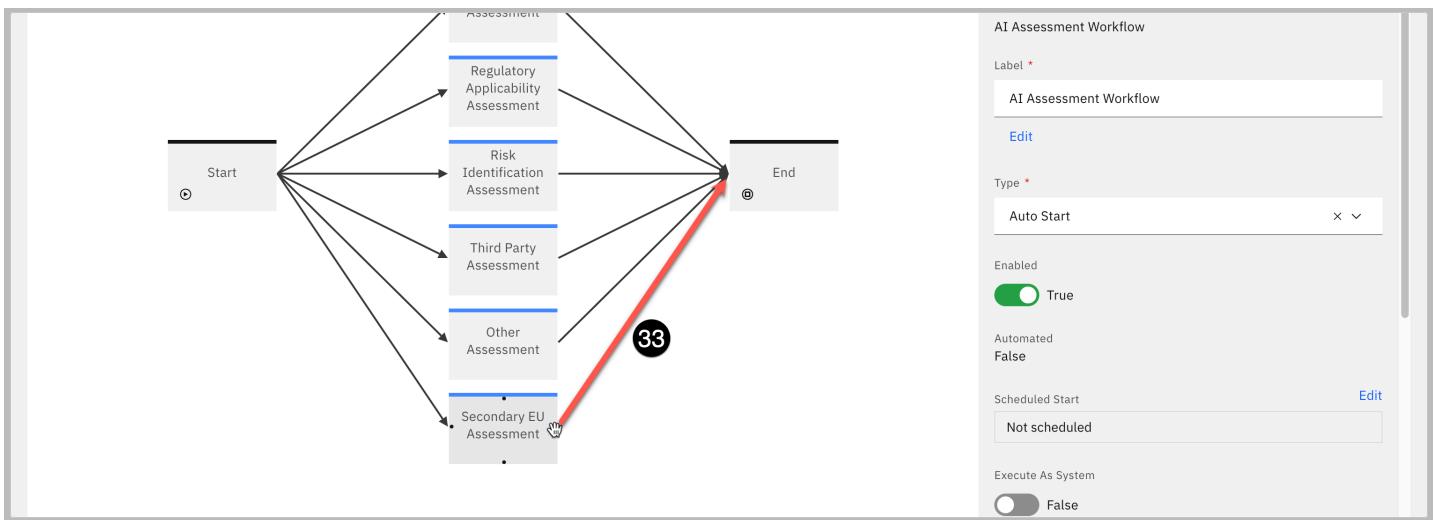
28. Click on the **Related Object Field** dropdown and select **Name...** from the list.
29. Enter the exact name of the questionnaire template you created in a previous step in the **Name** field. If you have been following the instructions, you named it **Secondary EU AI Act Review**.



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.

Customize the use case approval workflow

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.

1. Create workflow stages and actions

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. The top navigation bar includes tabs for Business Ent..., High Oaks B..., Corporate, Object Types, Conversation..., and a search bar. On the right, a sidebar titled "Solution Configuration" contains links for Dashboards, Views, Workflows (which is highlighted with a red circle labeled '3'), Calculations, Workflows, Scheduler, Object Types, Profiles, Solutions, and Tags. The main content area displays a table of workflows. One row, "Conversational AI", is selected and highlighted with a red circle labeled '4'. The "Workflow Properties" panel on the right shows details for this workflow, including its status as "Approved for Development" and risk level as "High".

4. 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 table of workflow stages. The "Use Case Request" stage is selected and highlighted with a red circle labeled '4'. The "Workflow Properties" panel on the right shows the stages and their properties, including "Signature Revoke", "Use Case Deployment Approval", "Use Case Development and Validation", "Use Case Request", "Use Case Stakeholder Review", and "Vendor Identified Global Issue". The "Use Case Request" stage is highlighted with a red box. The "Workflow Properties" panel shows the stage's name as "Use Case Request", type as "Use Case", and start type as "Auto Start".

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 "Use Case Request" workflow editor. The workflow diagram consists of several stages: "Start", "Use Case Data Gathering", "Initial Approval", "Stakeholder Review", and "Approved". The "Initial Approval" stage is selected and highlighted with a red box. The "Stage Properties" panel on the right shows the stage's properties, including "Due Date", "Stage Start Date", and "+ 5 day(s)". The "Assignees and Subscribers" panel shows the assignee "Owner (MRG-ModelUseCase:Owner)" and object "Use Case".

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.

Workflow - Use Case Request

State: Published Version: 1

Action Properties

Create a new workflow stage

Rejected

Approved

Conditions (2)

ID	Field	Operator	Value
1	Use Case Risk Identification Completion Date (watsonx-UseCaseChecklist: Risk Identification Completion Date)	not empty	
	Use Case EU AI Risk Category		

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**.

EU AI Act Second Assessment

Rejected

Approved

Stage Properties

Name: EU AI Act Second Assessment

Label: EU AI Act Second Assessment

Type: Standard

Access Control: Open (non-participants can view and edit a task)

Due Date: **Edit**

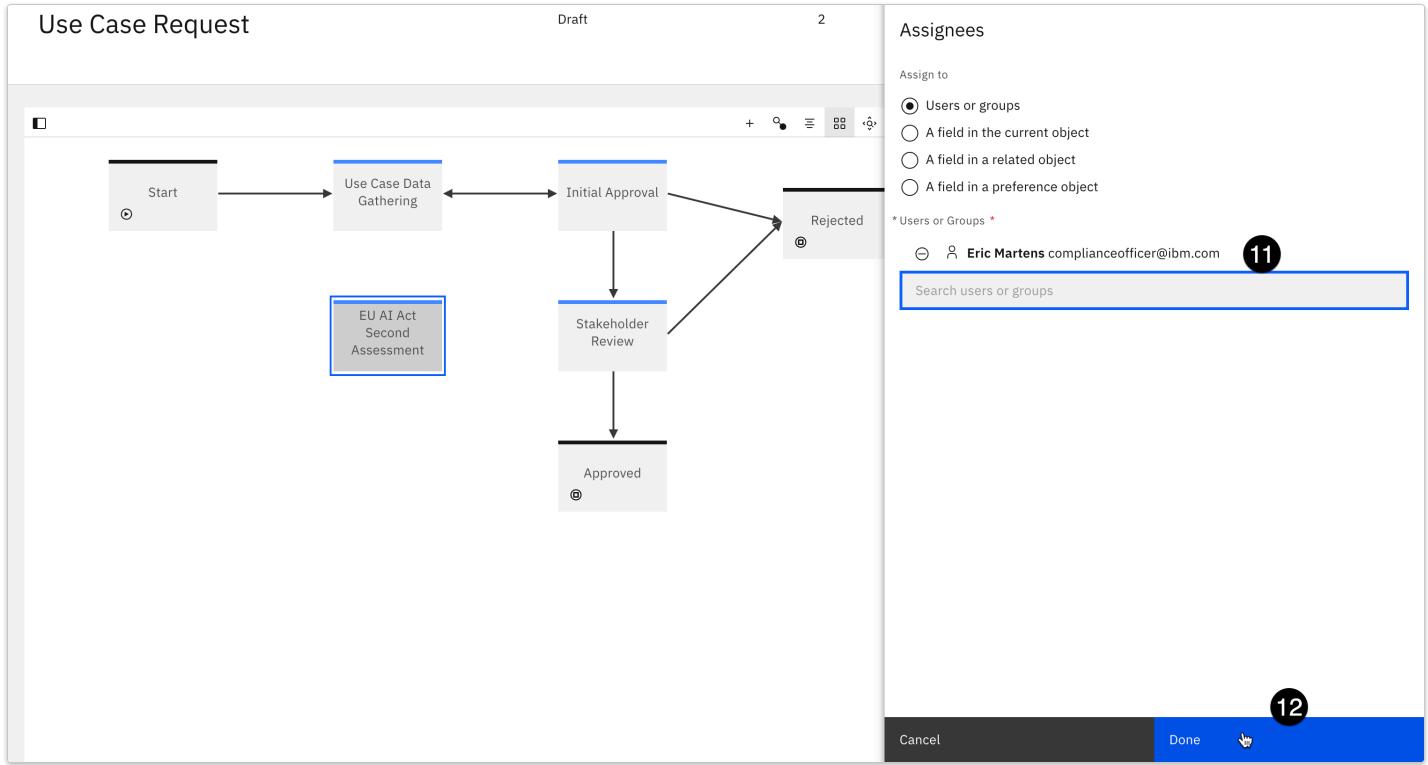
Assignees and Subscribers

Task View Overrides

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.

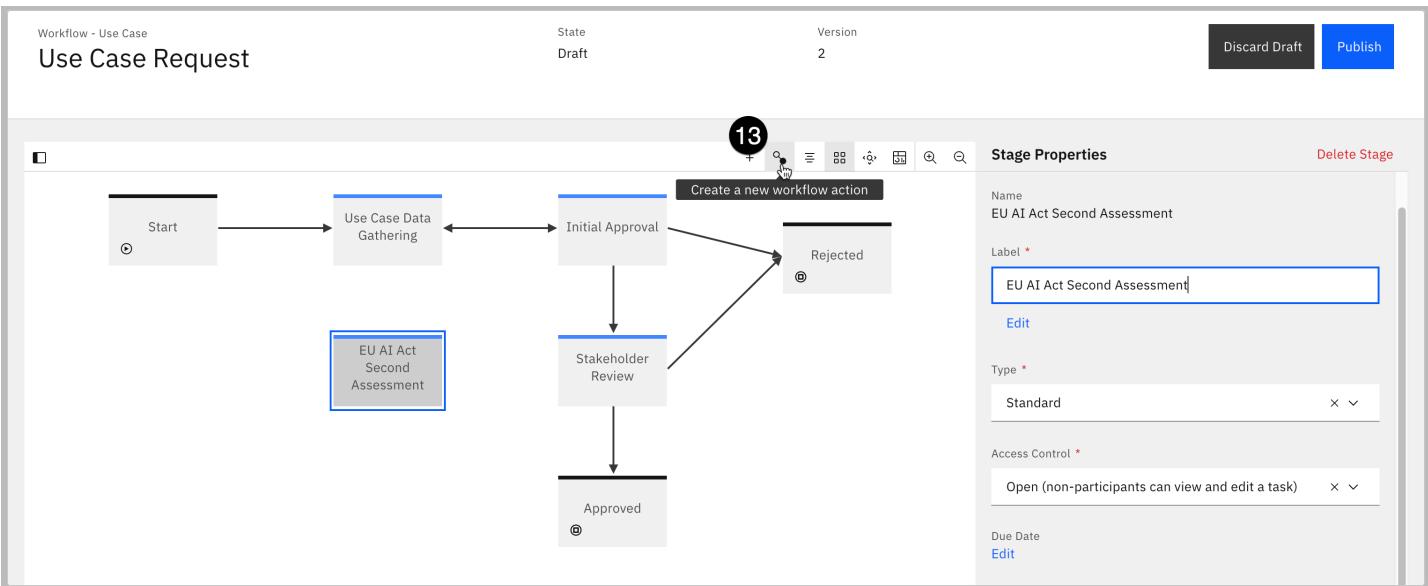


11. In the **Users or Groups** field, enter **complianceofficer** and select the user you created earlier in the lab to assign them to this task. Note that in a real-world example, you would likely have created a group of compliance officers and assigned this task to them, as opposed to one specific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

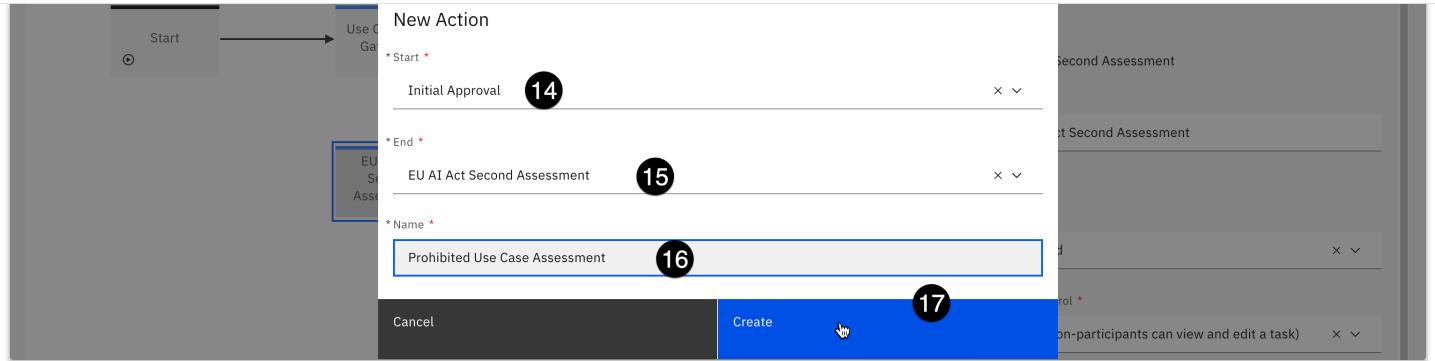


The workflow stage has been created. Next, you will add actions to trigger it.

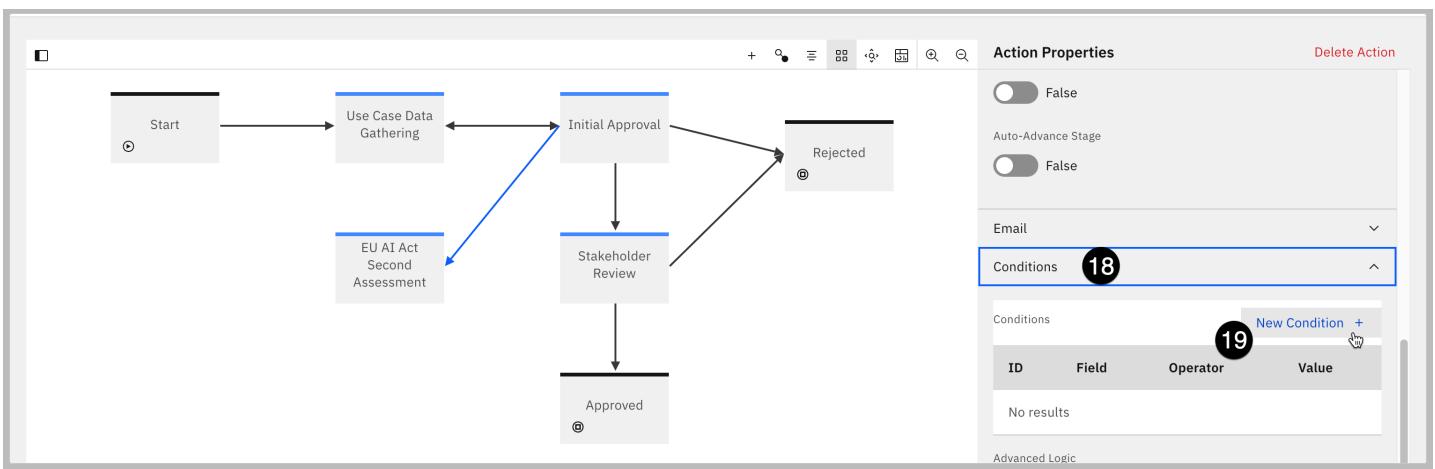
13. Locate the **Create a new workflow action** button on the palette toolbar to the right of the + icon and click it. The **New Action** dialog opens.



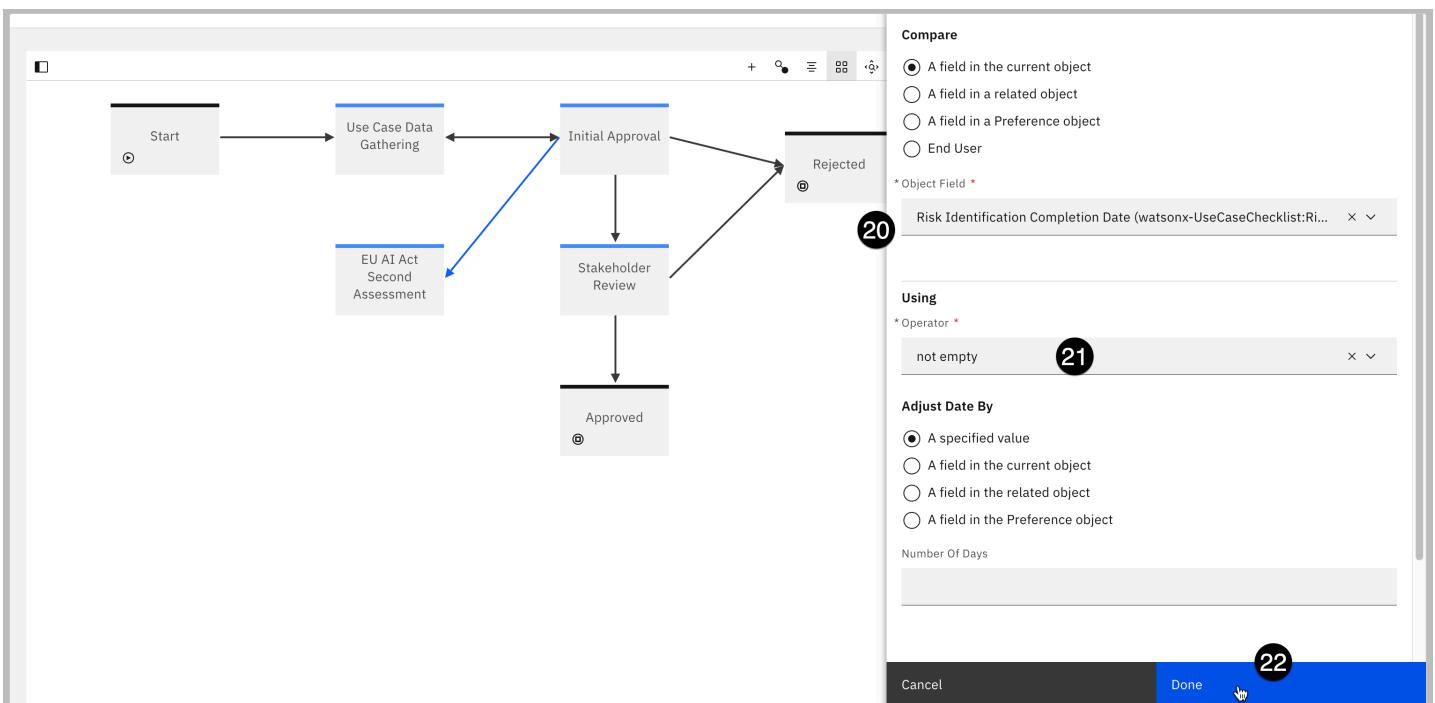
14. Click the **Start** dropdown and select the **Initial Approval** stage.
15. Click the **End** dropdown and select the **EU AI Act Second Assessment** stage you just created.
16. Enter **Prohibited Use Case Assessment** in the **Name** field. The text you enter into this field will appear as an available action in the **Actions** menu in the model use case view when the use case is in this stage.
17. 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....**

27. Click **Done** to add the condition.

The screenshot shows the 'Workflow - Use Case' editor for a 'Use Case Request' workflow. The workflow diagram includes states: Start, Use Case Data Gathering, Initial Approval, Stakeholder Review, and Approved. Transitions include 'EU AI Act Second Assessment' from 'Initial Approval' to 'Stakeholder Review', and 'Rejected' from 'Initial Approval'. A 'Conditions' panel is open on the right, showing a condition for 'EU AI Risk Category' set to 'Prohibited'.

* Object Field *	EU AI Risk Category (watsonx-Compliance:EU AI Risk Category)	24
Using	equal	25
To	<input checked="" type="radio"/> A specified value	
	<input type="radio"/> An expression	
	<input type="radio"/> A field in the current object	
	<input type="radio"/> A field in a related object	
	<input type="radio"/> A field in a Preference object	
* EU AI Risk Category *	Prohibited	26

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.

The screenshot shows the 'Operations' panel in the 'Validations and Operations' section. It displays a condition for 'EU AI Risk Category' set to 'Prohibited' and a note that no actions are currently present.

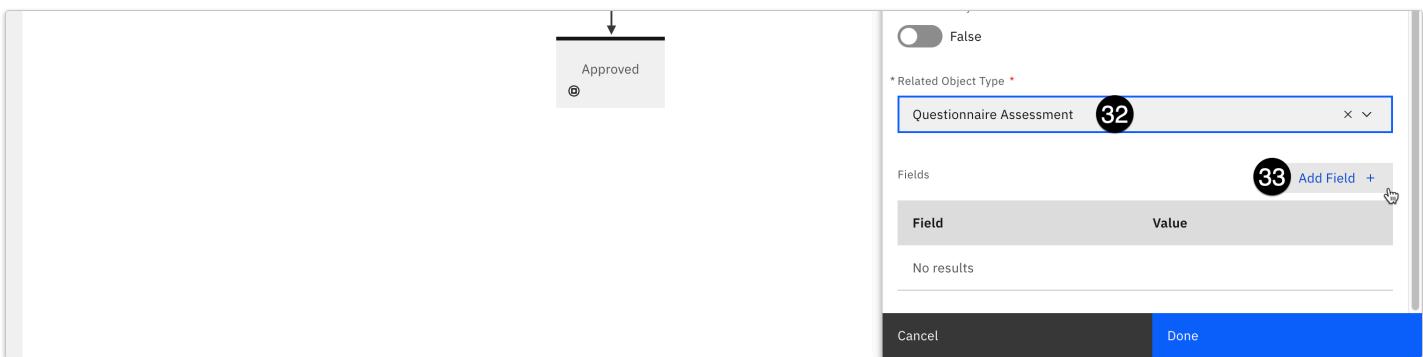
(watsonx-Compliance:EU AI Risk Category)	equal	Prohibited
Advanced Logic		
<input type="checkbox"/> False		
Validations and Operations		
29	New Operation +	New Validation +
You currently have no actions		

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

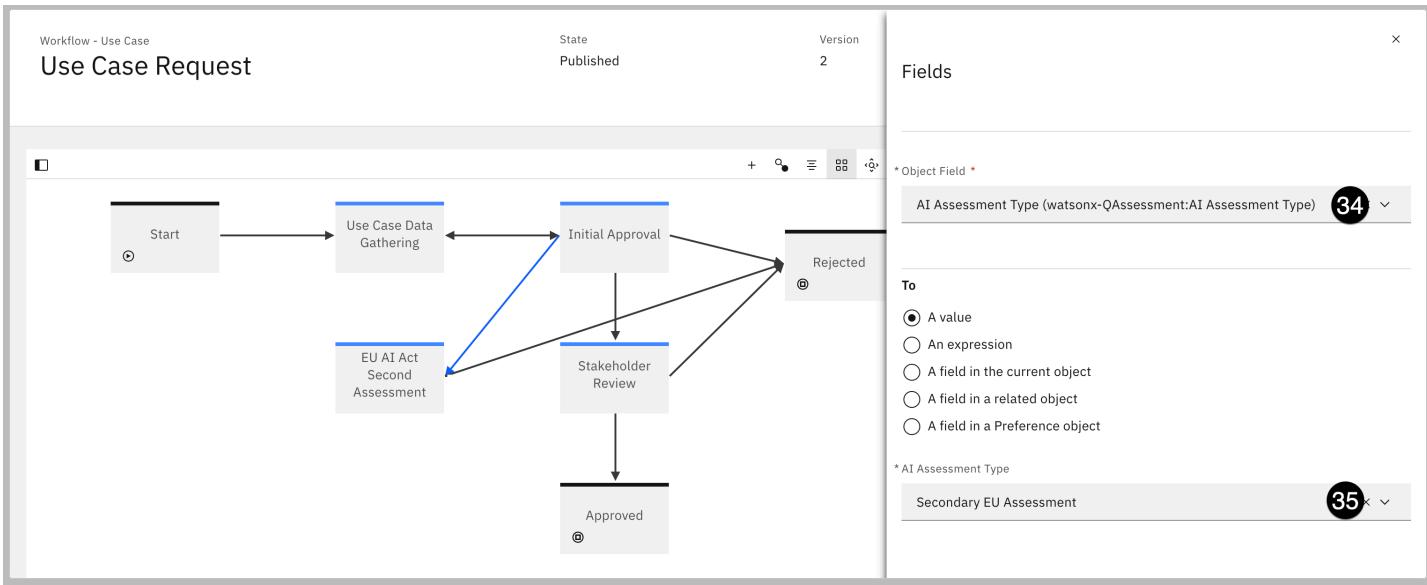
31. Enter a description like **Create secondary assessment questionnaire** in the **Name** field.

The screenshot shows the 'Operations' panel with a new operation named 'Create secondary assessment questionnaire' selected. The table below lists the operation details.

* Operation *	Create objects	30	
* Name *	Create secondary assessment questionnaire	31	
When	New Condition +		
ID	Field	Operator	Value



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**).

2. Add resolution actions

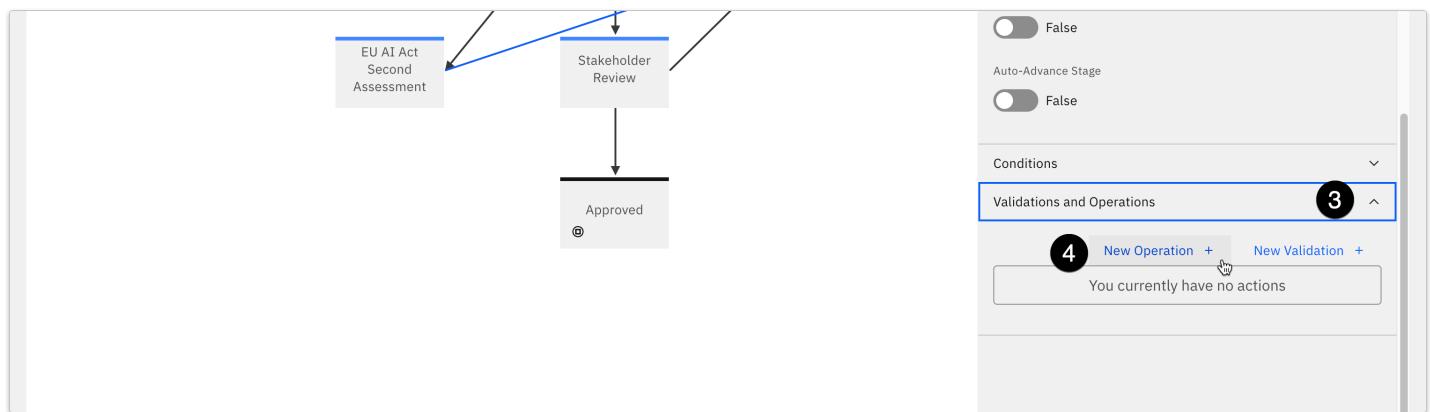
1. Hover your mouse over the **EU AI Act Second Assessment** stage; four black dots appear on the borders of the stage box. Click and drag one of the dots from the stage over to the **Rejected** stage on the palette to create an action linking the two. The **New Action** dialog appears.



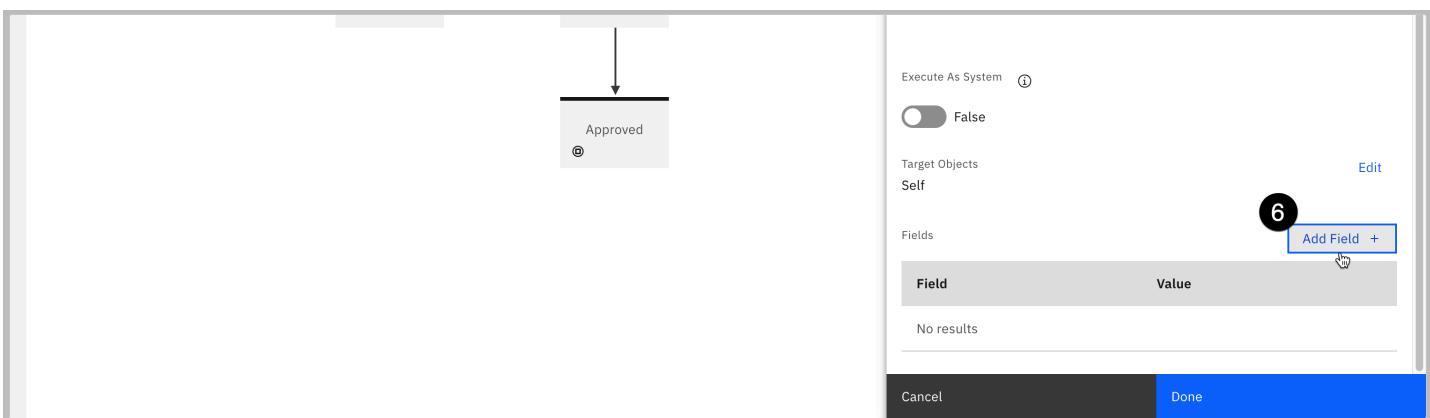
2. Enter **Reject Use Case** in the **Name** field and click **Create**. This value is what will appear in the user interface for the stage owner for them to reject the use case.

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.



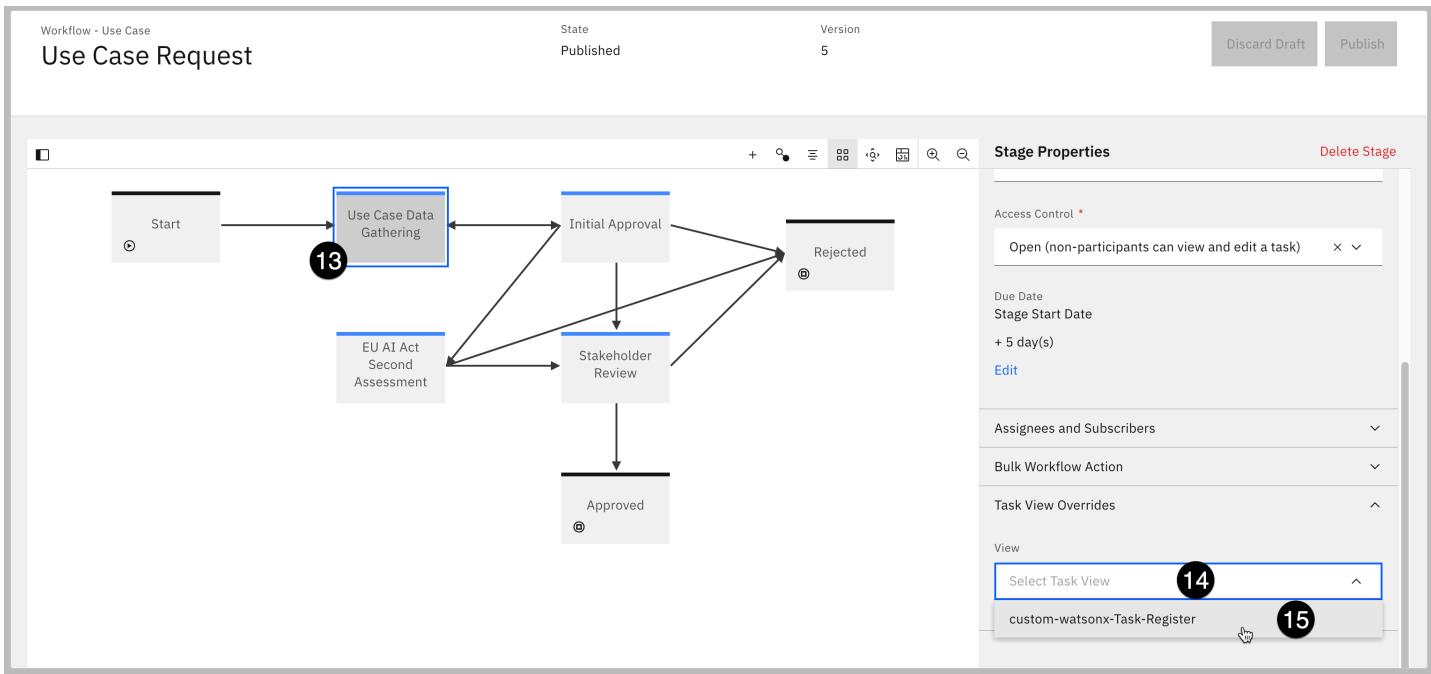
7. Click on the **Object Field** dropdown and select **Status (MRG-AIFacts-ModelUseCase>Status)**.
8. Click on the **Status** dropdown and select **Rejected**.

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**.

Tip: 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.

3. 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.

4. 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 Watson Governance console. The table lists one workflow:

Label	Name	Object Type	Version Number	Type	Automated	Published	Enabled
<input type="checkbox"/> Use Case Stakeholder Review	Use Case Stakeholder Review	Use Case Review	1	Auto Start	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

5. Click on the **Awaiting Approval** stage of the workflow. The **Stage Properties** panel opens on the right side of the screen.

6. Scroll to the bottom of the panel and click on the **Assignees and Subscribers** item to expand it.

7. Click on the **Add Assignee** button. The **Assignees** panel opens.

The screenshot shows the 'Workflow - Use Case Review' editor for the 'Use Case Stakeholder Review' workflow. The workflow diagram shows a 'Start' node leading to an 'Awaiting Approval' stage (circled with number 5). From the 'Awaiting Approval' stage, two arrows lead to 'End Approved' and 'End Rejected' nodes. On the right, the 'Stage Properties' panel is open, showing the 'Assignees and Subscribers' section expanded (circled with number 6). The 'Assignees' tab is active, showing the 'Add Assignee' button highlighted (circled with number 7).

8. Click on the **A field in a related object** item to select it.

9. 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.

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.

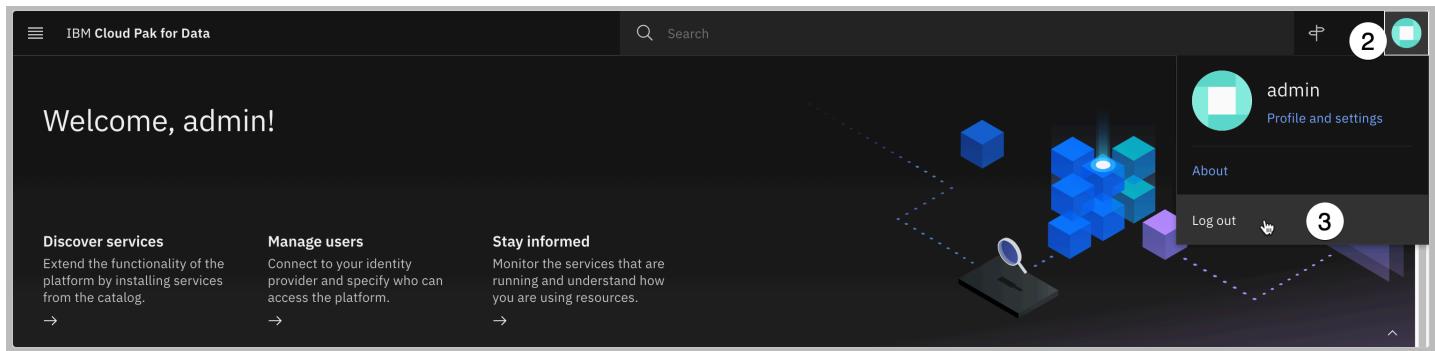
1. Switch user personas

For this portion of the lab, you will switch to the user you created in the configuration portion, and have been granting access permissions. Recall that, for the sake of simplicity, you were instructed to create a single user with access to multiple pre-defined **roles** in Cloud Pak for Data and watsonx. While creating and managing multiple user personas and groups is beyond the scope of this lab, doing so can provide a more realistic PoX for your client, particularly if they are unfamiliar with Cloud Pak for Data, watsonx, and the level of access control and collaboration provided.

While the instructions did have you assign multiple roles to the Compliance Officer user, one role that you did **not** assign was that of administrator of the watsonx governance console (OpenPages) service. For this reason, when you log in as this user, the governance console view will have changed slightly, and you will not be able to modify views, workflows, or other aspects of the service.

Finally, it is **HIGHLY RECOMMENDED** that when logging in as the created user, you use a different browser or your browser's private/incognito mode. Previous session login information may persist and cause repeated errors when attempting to save your work or fill out questionnaires.

1. In a private/incognito browser window, navigate to the watsonx home page. If you are asked to log in, skip ahead to step 4. If you opened the home page and are signed in, you will need to log out.
2. Click on the **avatar icon** in the upper right to open the user menu.
3. Click on the **Log out** link. When given the option to confirm, click the **Log out** button. You will be returned to the login page.



4. Enter the username of the created user in the configuration portion of the lab. If you followed those instructions exactly, the username will be **complianceofficer**.
5. Enter the password of the created user in the configuration portion of the lab. If you followed those instructions exactly, the password will be **passw0rd**.
6. Click the **Log in** button to log into Cloud Pak for Data. Close any tutorial or welcome windows that open.



7. Click on the **grid icon** in the upper right to open the context menu.
8. Click on the **IBM watsonx** menu item to change the context. A **Welcome to watsonx** popup window may open. Close the popup window, or click the **Take a tour** button if you wish.

9. Click on the **hamburger menu** in the upper left to open it.
10. Click on the **Services** menu item to expand it.
11. Click on the **Instances** menu item. The **Instances** screen opens.

12. From the **Instances** list, locate and click on the **OpenPages** instance.

13. Scroll down to the **Access information** section of the screen and click on the **Launch** icon to launch the watsonx governance console (OpenPages).

Access information		Use dedicated nodes	False
URL	https://cpd-cpd.apps.670c7f8b9c48c677246af646.ocp.techzone.ibm.com/open/s-openpagesinstance-cr/	Node label	
		Data storage class	ocs-storagecluster-ceph-rbd
		Metadata storage class	ocs-storagecluster-cephfs
Size		Backup storage class	ocs-storagecluster-cephfs
Size	Small - 8 vCPUs - supports up to 75 concurrent users	Database secret name	
		Database	Db2

14. Once the governance console opens, you will need to switch to the correct profile to see all of the applicable fields. Click the **avatar icon** in the upper right. The **User** menu opens.
 15. Click the **Change Profile** menu item. The **Select profile** dialog opens.

Welcome, Eric Martens!

Last successful login 10/14/2024, 3:19 PM

Dashboard My Tasks (0) Subscription Tasks (0) Oversight Tasks (0)

complianceofficer
U.S. English
Change Locale
OpenPages Modules Master
Change Profile 15 Change Profile
Carbon Gray 10
Change Theme

Take a moment to review the different profile roles and descriptions available. Each of these can be customized, or new profiles created, to fit the structure and requirements of the organization. While this lab will deal primarily with the **watsonx-governance MRG Master** for governing models, pre-defined profiles also exist for regulatory compliance officers (**watsonx-governance RCM Master**) and for risk managers (**watsonx-governance ORM Master**).

16. Click on the **watsonx-governance MRG Master** profile from the list to select it.
 17. Click **Save** to finalize your choice.

i Note that when you return to the dashboard, it is populated with several charts displaying metrics for the sample models and use cases you loaded in the configuration step. The pre-defined roles have been created to display the information most useful for that role in their dashboards. Like all aspects of the governance console, the dashboard charts can be customized per role, or per individual user.

2. Create a model use case

The model governance process begins with the creation of a model use case. A use case is meant to track and capture information about a collection of models and prompts that will be built to serve a particular purpose. A use case should be created whenever there is a business need requiring the use of a model (AI or non-AI) to be built. Model records should then be added as a child of the use case.

To ensure that model use cases are tracked across the entire solution, they should be created using the watsonx governance console. In the configuration lab, you turned on integration between the governance console (OpenPages) and watsonx, so any actions related to model use cases should now redirect you to the governance console interface.

Only the models that you add to use cases are tracked with AI Factsheets. You can control which models to track for an organization without tracking samples and other models that are not significant to the organization.

In a real-world scenario, this action would be performed by an organizational stakeholder who would like to request the development and implementation of a model; in this case, the manager of the human resources department, who is unable to keep up with the volume of resumes submitted for employment opportunities and would like help from an AI solution.

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 during the FastMap import step you performed in the configuration lab.

The screenshot shows the IBM watsonx Governance console interface. At the top, there's a header with a user icon, the title 'watsonx | Governance console', and various system icons. Below the header is a dark sidebar with a tree view. The 'Inventory' node is expanded, and its child 'Use Cases' is selected, highlighted with a blue border. A callout bubble with the number '2' points to the 'Inventory' node. Another callout bubble with the number '3' points to the 'Use Cases' link in the sidebar. The main content area shows a message 'It's time to start building!' and some task counts: 'Subscription Tasks (0)' and 'Oversight Tasks (0)'. The overall theme is dark with light-colored text and icons.

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

The screenshot shows a list of 'Use Cases (33)' in the IBM watsonx Governance console. The table has columns for Name, Purpose, Description, Owner, Status, Risk Level, and Tags. Three rows are visible:

- Agency Based LGD Estimation**: High Oaks Bank > North America > Corporate Banking. Owner: Bob Eldridge. Status: Approved for Development. Risk Level: Low.
- Banking book HTM corporate bond - income**: High Oaks Bank > Europe > Corporate Banking. Owner: Bob Eldridge. Status: Approved for Development. Risk Level: Medium.
- Black model for TD derivatives**: Description: Black Linear-Nonlinear model on TD process. Owner: [empty]. Status: [empty]. Risk Level: [empty].

 The top right of the table has a 'New' button with a plus sign, which is circled with the number '4'. The overall interface is clean with a white background and light gray grid lines.

Note: 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 **complianceofficer** created user into this field. Note that if you created multiple user personas in the environment configuration lab, you could choose a different user here. **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.

General

* Name * **5**
Resume summarization

* Owner * **6**
 complianceofficer
Search users

Purpose

* Description * **7**
Summarize resumes from job applicants.

* Use Case Type **8**
AI

Use Case creation

A use case is meant to track and capture information about a collection of models that will be built to serve a particular purpose. A use case should be created whenever there is a business

- Click on the **Use Case Type** dropdown and select **AI**.

* Use Case Type **8**
AI

Business Entities

Name	Description	Entity Type	Tags
No results			

All Key Items (6) ▾

Name * **9**

Owner * **10**

Purpose **11**

- 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.

Business Entities

Primary Business Entity * **9** Other Business Entities

Name	Description	Entity Type	Tags
No results			

Name * **10**

Owner * **11**

Purpose

Description * **12**

Use Case Type **13**

Primary Business Entity *14

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

Add

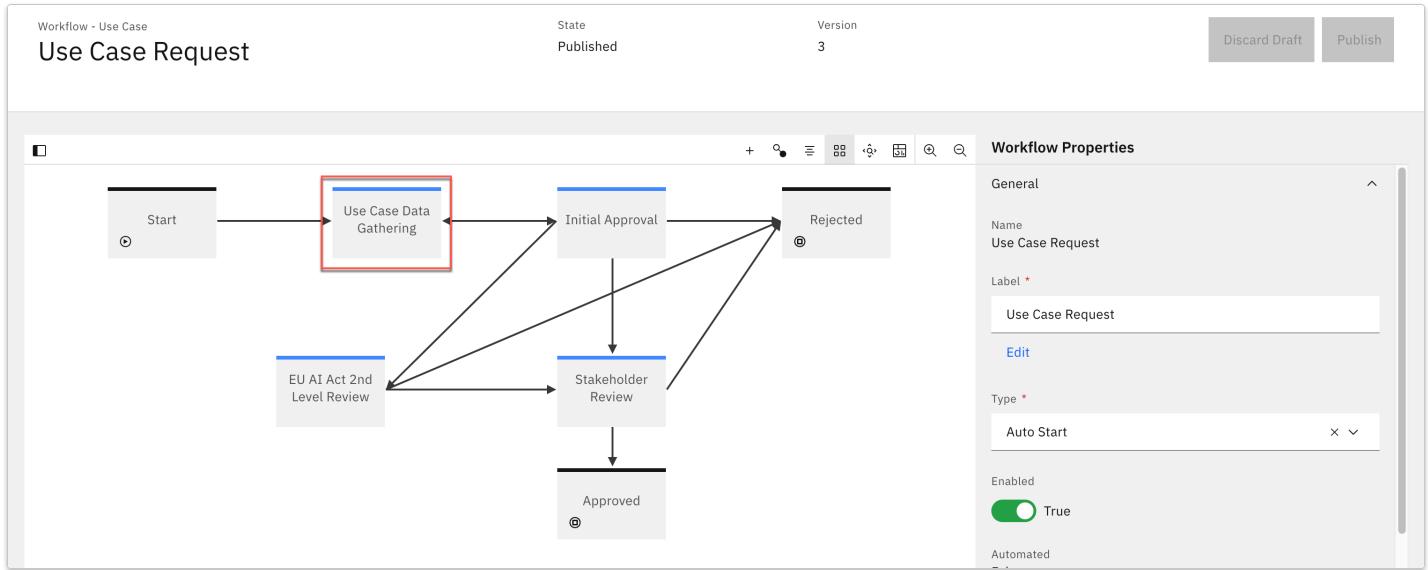
Foundation Models
Library > MRG > Foundation Models

<input checked="" type="checkbox"/> Human Resources High Oaks Bank > Corporate > Human Resources	Worldwide human resources business unit 10	<input type="radio"/> Business
Investment Banking High Oaks Bank > Africa and Middle East > Investment Banking	Investment Banking - Africa and Middle East	<input type="radio"/> Business
Investment Banking High Oaks Bank > Asia > Investment Banking	Investment Banking - Asia	<input type="radio"/> Business
Investment Banking High Oaks Bank > Europe > Investment Banking	Investment Banking - Europe	<input type="radio"/> Business
Investment Banking High Oaks Bank > Latin America > Investment Banking	Investment Banking - Latin America	<input type="radio"/> Business
Investment Banking High Oaks Bank > North America > Investment Banking	Investment Banking - North America	<input type="radio"/> Business

Cancel **11** Done

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

as shown in the screenshot below. Note that this screen is for informational purposes, and your screen will not look like this.



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

3. 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.

1. Click on the **Home** icon in the upper left to return to the user's home tab.

The screenshot shows the 'IBM Watsonx | Governance console' interface. The top navigation bar includes icons for Home, Use Cases, and Resume sum... The 'Use Cases' tab is selected. Below the navigation is a search bar and filter options for Status (Proposed) and Risk Level. The main area displays a table for 'Resume summarization' tasks. The first row shows a task for 'General' with a due date of 5/29/2024. The table columns include Stage, Task Name, Description, Due Date, and Action. The 'Action' column contains a link to 'View' or 'Edit' the task.

2. Note that the **My Tasks** tab now shows a new entry. Click on the tab to open it.

The screenshot shows the 'IBM Watsonx | Governance console' interface with the 'My Tasks' tab selected. The top navigation bar includes icons for Home, Use Cases, and Resume sum... The 'My Tasks' tab is highlighted with a blue underline. Below the navigation is a search bar and filter options for Dashboard, My Tasks (1), Subscription Tasks (0), and Oversight Tasks (0). The main area displays a table for tasks assigned to the user 'Eric Martens'. The table columns include Task Name, Description, Due Date, and Action. The 'Action' column contains a link to 'View' or 'Edit' the task. A large number '2' is overlaid on the bottom left of the screenshot.

The **My Tasks** tab shows a list of all the current tasks assigned to the user. It can be filtered by a variety of fields. At the moment, it only contains a single task, showing that the use case request is in the data gathering stage and is in need of action, along with the stage due date.

Welcome, Eric Martens!

Last successful login 5/24/2024, 10:22 AM

Dashboard My Tasks (1) Subscription Tasks (0) Oversight Tasks (0)

My Tasks

1

Filter By: Criticality ▾ Workflow Name ▾ Stage ▾ Type ▾ Stack By: Type ▾ View By: Week ▾

Now wk of 5/20 wk of 5/27

Upcoming

Name	Type	Workflow Name	Stage (Status)	Criticality	Stage Due Date
Resume summarization	3 Use Case	Use Case Request	Use Case Data Gathering (Data gathering)	Medium	5/29/2024

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.

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.

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

Risk ④

Risk Level 

Risk Identification Completion Date Risk Assessment Completion Date

Please capture all relevant information to this AI use case proposal and then submit using the Action button

Risk ID Assessments

Search Add New

Name	Description	Progress (%)	Workflow Status	Tags
No results				

Compliance

Select an action to validate

1 item requires attention.

All Key Items (4) ▾

Purpose
 Risk Level
 Use Case Type
 Uses Foundation Models *

5. Select **High** from the dropdown.
6. Click on **Uses Foundation Models** in the information panel on the right to locate it in the form. The **Uses Foundation Models** dropdown opens.
7. Select **Yes** in the **Uses Foundation Models** dropdown, as you will optionally use IBM Foundation models and compare them to Azure OpenAI models.
8. Scroll to the **General** section, click on the **Stakeholder Departments** dropdown, and select **Model Risk** from the list. As the model progresses through the workflow, this will require a stakeholder review from the **Model Risk** department. Recall that you added use case reviews to the use case view in previous steps.

General ⑧

Name *
Resume summarization

Use Case Type 

Status 

Description
Summarize resumes from job applicants.

Owner 

Purpose

* Stakeholder Departments 

Technical Owner

Third Party Link
<https://cpd-cpd.apps.670c7f8b9c48c677246af646.ocp.techzone.ibm.com/aigov/modelinventory/inventories/1f0d2335-ca91-42a1-907a-e67ad4b264c0/aiuseca>

Tags 

No tags have been added yet.

Use Case Data Gathering ④

Please capture all relevant information to this AI use case proposal and then submit using the Action button

9. Click the **Save** button in the upper right to save your changes.

Approval stage in the workflow. The **Submit for initial approval** confirmation dialog opens.

Use Case
Resume summarization

Status: Proposed | Risk Level: High

Task Activity Admin

Modified Required

General

Name: Resume summarization | Use Case Type: AI | Status: Proposed

Action

Submit for initial approval

12. Click the black **Continue** button to confirm your action, but keep the use case tab open.

Note: If you receive an error message saying *The Use Case view referenced in the workflow stage Initial Approval does not exist or has been deleted...*, your changes to the workflow (particularly the **Task View Override**) may not have been published. You will need to log back in as the **admin** user and ensure that the **Task View Override** field is set on each intermediate stage, and that the workflow changes are published.

If you receive a **Network error** message, your change may have been recorded, but network issues may have prevented the screen from refreshing. Try submitting again; if the error persists, click the **Refresh workflow info** button to the right of the **Stage** field in the information panel on the right. The **Stage** should progress to **Initial Approval (Awaiting use case approval)**.

Use Case
Resume summarization

Status: Awaiting Use Case Approval | Risk Level: High

Actions

Modified Required

General

Name: Resume summarization | Use Case Type: AI | Status: Awaiting Use Case Approval

Description: Summarize resumes from job applicants. | Owner: complianceofficer

Purpose

Tags

Refresh workflow info

13. When the action completes, note that the **Stage** field in the information panel on the right has updated once again to **Initial Approval**. Once again, the screen below is provided for informational purposes. The information will not appear on your screen.

Recall that, in order to progress the use case to the next stage (**Stakeholder Review**) the action in the workflow requires the risk identification questionnaire to be filled out. As that questionnaire has yet to be completed, clicking on the **Actions** menu for the use case only shows two available actions: rejecting the use case (moving it to the **Rejected** stage, or returning it to the owner (moving it back to the **Use Case Data Gathering** stage). In order to continue forward, the questionnaire must be filled out.

4. Identify use case risks

In this section, you will fill out the default risk assessment questionnaire included in the governance console. This questionnaire, which can be modified using the same method you used to create a questionnaire in earlier sections of the lab, has been configured to automatically associate relevant risks from IBM's AI risk atlas based on answers to the questions.

The [AI risk atlas](#) is an open source tool to help clients understand some of the risks of working with generative AI, foundation models, and machine learning models.

Note: As mentioned when you switched user personas to the created user, if you receive frequent error messages stating that *The requested operation could not be completed*, you are likely encountering an issue with persistent session information in your browser. A browser cache clear may fix this issue, but the best way to avoid these errors is to use your browser's private/incognito mode when signed in as the created user.

1. Click on the **Home** tab.
2. Click on the **My Tasks** tab from the home screen to reopen the view of assigned tasks.
3. Click on the **Risk Identification (Resume summarization)** task from the task list. The **Risk Identification** questionnaire assessment for the use case opens.

Name	Type	Workflow Name	Stage (Status)	Criticality	Stage Due Date
Resume summarization	Use Case	Use Case Request	Initial Approval (Awaiting use case approval)	Medium	10/20/2024
Risk Identification (Resume summarization)	Questionnaire Assessment	AI Assessment Workflow	Risk Identification Assessment (Information gathering)	Medium	
Applicability Assessment (Resume summarization)	Questionnaire Assessment	AI Assessment Workflow	Applicability Assessment	Medium	

4. Fill out the questionnaire for a model that will perform summarization of resumes provided by human applicants. Your answers should reflect that content will be provided by humans, and that the output will be reviewed by humans. Also specify that the model and the model training data are hosted internally, and have been screened for bias and hateful, aggressive, and profane speech (HAP). Note that the idea of this questionnaire is to identify potential risks in the model use case. Feel free to use generic answers when filling out the form, and evaluating how that changes the risks identified at later steps.

This questionnaire has been provided by IBM as a general use form for AI use cases. Many clients will want to build their own questionnaires to satisfy different legal and organizational requirements. As you saw while creating your custom questionnaire, they can easily modify existing forms, or build new ones from scratch using the editor.

Note: The progress panel on the left side of the screen will show any required questions that have not been answered, and you can use it to jump between sections of the questionnaire. Your progress will also be automatically saved as you progress.

5. When you have finished filling out the survey, click the **Action** button in the upper right. The **Actions** menu opens.
6. Click the **Risk identification complete** button. A confirmation dialog opens.

Risk Identification (Resume summarization)

Stage Name: Risk Identification Assessment **Draft**

Action: Risk identification complete **6**

- Click **Submit** to submit the risk identification questionnaire.

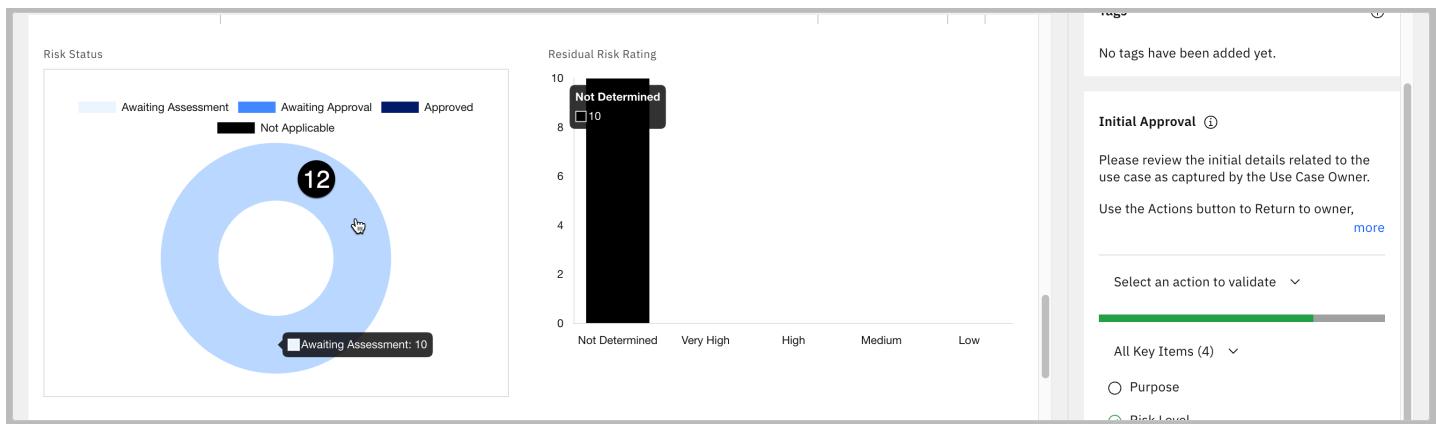
Risk identification complete

Are you sure you want to perform this action?

Progress: 100% (47 of 47)
Flagged: 0

7

- Based on the questionnaire answers, the governance console now calculates and assigns certain risks to the use case. You can view these by clicking on the **Home** tab.
- Click on the **My Tasks** tab of the **Home** tab. The use case appears in the list of tasks, with the stage set to **Initial Approval**.
- Click on the use case from the task list. The use case opens in a new tab.
- Scroll down to the **Risk** section of the page. Note that the **Risk Identification Completion Date** now has a value.
- Scroll down to the **Risk Status** and **Residual Risk Rating** graphs. Based on your questionnaire answers, your charts may look different than the screen shot. Click on the **Risk Status** graph. The **Risks** tab opens.



- Examine the table of risks. Note that each has a description, and a reference URL for more information. These risks have been populated from the [AI risk atlas](#). They also have a **Status** of **Awaiting assessment**, indicating that a risk assessor must decide if they are relevant to the use case or not.
- When you are finished examining the risks, close the tab and return to the use case tab.

Next, you must perform an applicability assessment of the use case.

5. Assess applicability for the use case

In this step, fill out the applicability assessment questionnaire. As with the previous questionnaire, this form is provided by IBM, but can be fully customized by clients to fit their own needs. It is modeled after some of the requirements set forth in legislation around AI in the European Union.

- Click on the **Home** tab to switch to it. The tab should still be showing the **My Tasks** view.
- Locate and click on the **Applicability Assessment** link from the tasks table. The **Applicability Assessment Questionnaire** opens in a new tab.

1

Welcome, Eric Martens!

Last successful login 10/14/2024, 7:18 PM

Dashboard My Tasks (2) Subscription Tasks (0) Oversight Tasks (0)

My Tasks

Filter By: Criticality Workflow Name Stage Type Stack By: Type View By: Week

2

Questionnaire Assessment
Use Case

wk of 10/14 Now Upcoming No Due Date

Name	Type	Workflow Name	Stage (Status)	Criticality	Stage Due Date
Resume summarization	Use Case	Use Case Request	Initial Approval (Awaiting use case approval)	Medium	10/20/2024
Applicability Assessment (Resume summarization)	Questionnaire Assessment	AI Assessment Workflow	Applicability Assessment	Medium	

ID: Resume summarization_QA_0000002
Title: Applicability Assessment (Resume summarization)

2

Take a moment to skim the text for each of the questions, and understand how potentially clients might answer them and how it affects their risk profile for adopting AI tools.

3. Click on the dropdown for the first question, and check the box next to the **A deployer of AI systems that have their place of establishment or who are located within the Union**.

Questionnaire Assessment

Applicability Assessment (Resume summarization) ☆ ↗ ^

Assignee

Stage Name: Applicability Assessment Save draft Action

Task Activity Admin Questionnaire

View all questions

Questions completed: 1/3

Sections

Applicability Assessment Scope and Prohibited AI Systems

on the Union market

"authorised representative" means: any natural or legal person located or established in the Union who has received and accepted a written mandate from a provider of an AI system or a general-purpose AI model to, respectively, perform and carry out on its behalf the obligations and procedures established by this Regulation.

How would you classify your organization? Review each statement and check all classifications that apply.

3

A provider placing on the market or putting into service AI systems or placing on the market general-purpose AI models in the Union, irrespectiv

A deployer of AI systems that have their place of establishment or who are located within the Union

A provider and deployer of AI systems that have their place of establishment or who are located in a third country, where the output produced by

An importer of an AI system

A distributor of an AI system

Placed on the market, put into service, or used with or without notification exclusively for military, defense or national security purposes, regardless of the type of entity carrying out those activities

Not placed on the market or put into service in the Union, where the output is used in the Union exclusively for military, defence or national security purposes

An AI system or AI model, including their output, specifically developed and put into service for the sole purpose of scientific research and development

4. In the second question tile, check the box next to the **None of the above** option.

Applicability Assessment (Resume summariza... ☆ □ ^

Task Activity Admin Questionnaire

View all questions

Questions completed 2/3

Sections Applicability Assessment

Scope and Prohibited AI Systems

4

1.1.1.1. Excluded AI Systems

The AI System has been developed or will be used for the following purposes:

Review each statement and check all answers that apply. *

Placed on the market, put into service, or used with or without modification exclusively for military, defense or national security purposes, regardless of the type of entity carrying out those activities

Not placed on the market or put into service in the Union, where the output is used in the Union exclusively for military, defence or national security purposes

An AI system or AI model, including their output, specifically developed and put into service for the sole purpose of scientific research and development

Deployers who are natural persons using AI systems in the course of a purely personal non-professional activity

AI systems released under free and open source licences unless they are placed on the market or put into service as high-risk AI systems, or an AI system that falls under Prohibited AI Practices (Article 5) or Transparency Obligations (Article 50)

Research, testing and development activity regarding AI systems or models prior to being placed on the market or put into service

None of the above

Attachment □ Activity ▲

- In the third question tile, select the **No** option.

At this point, the questionnaire will add extra questions based on your answers. Continue to fill out the questions for the resume summarization use case, taking into account that the model will not perform classification, facial or image recognition, biometric data, individual risk assessments, or other potentially harmful acts.

When you have completed the questions, the **Category Assessment** section of the form will populate.

- Click on the **Category Assessment** section to view it.

Questionnaire Assessment

Applicability Assessment (Resume summariza... ☆ □ ^

Assignee

Stage Name Applicability Assessment Save draft Action

Task Activity Admin Questionnaire

View all questions

Questions completed 9/21

Sections Applicability Assessment

Scope and Prohibited AI Systems

Category Assessment

6

1.1.8. Exploitative Techniques

Does the AI System include the placing on the market, putting into service or use of an AI system that:

exploits any of the vulnerabilities of a person or a specific group of persons due to their age, disability or a specific social or economic situation, with the objective, or the effect, of materially distorting the behaviour of that person or a person belonging to that group in a manner that causes or is reasonably likely to cause that person or another person significant harm? *

Yes

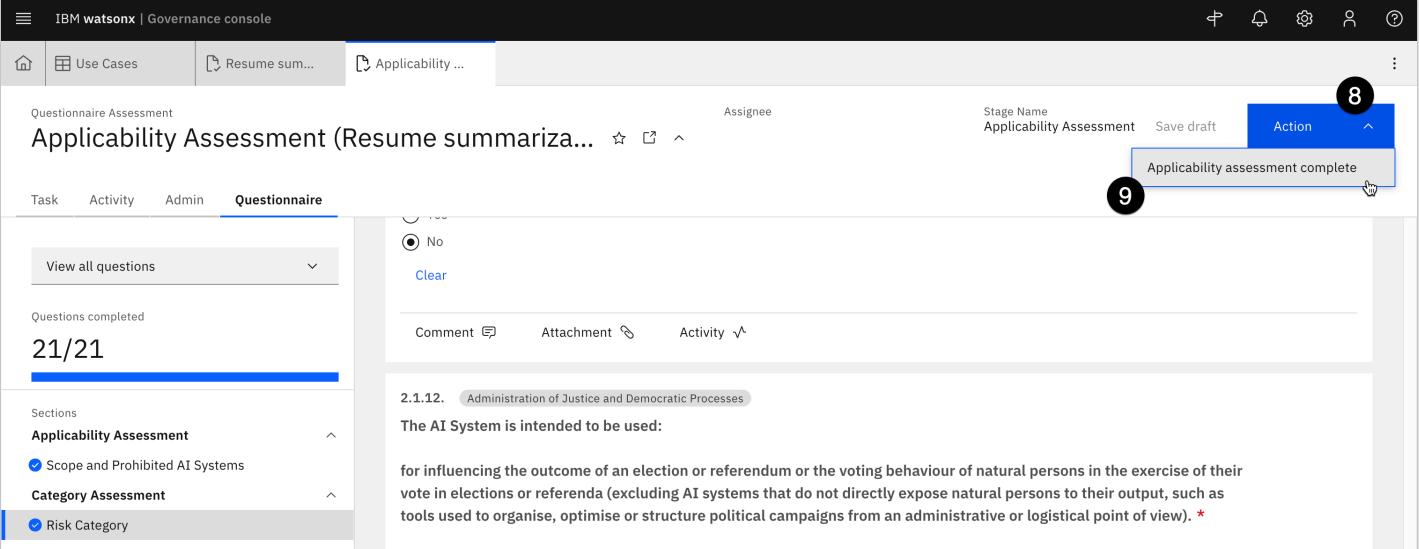
No

Clear

- Most of the assessments will not apply; however, for question 2.1.5, select **Yes** to reflect that the AI system will be used to analyze and filter job applications.

8. When you have finished answering all the questions, click on the **Action** button to open the actions menu.

9. Click on the **Applicability assessment complete** menu item.



10. Click on the **Submit** button to confirm your choice. Your action may take a few moments to save, and the screen may not update. However, you may proceed with the lab.

You have now completed two assessments regarding the model use case, which have been used to both automatically identify possible risks associated with using AI and helped insure regulatory compliance. Next, you will individually assess the risks identified by the questionnaires, which have been automatically added to the use case.

6. Assess individual risks

The questionnaires you completed have been constructed to automatically add various risks to the use case, based on the answers provided. Clients looking to use a similar process can use this questionnaire template as a model for creating their own, customized to their individual use cases.

In this section, you will assess individual risks. For the sake of time, you will only perform a single in-depth assessment, to see how this is handled in the governance console.

1. Click on the **Home** tab. The **My Tasks** tab should still be open on the page, showing a single task remaining.
2. Click on the **Resume summarization** link from the task list. The use case request opens.

3. Scroll down to the **Risk** section of the use case and click on an entry from the **Risks** table to open it.

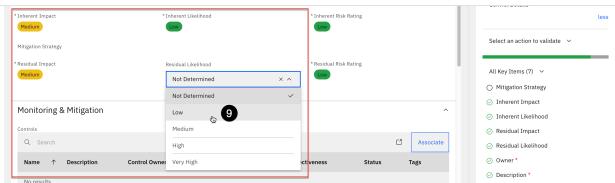
Name	Description	Inherent Risk Rating	Residual Risk Rating	Status	Tags
Data bias (MOD_0000000_RIS_0000001)	Historical, representational, and societal biases present in the data used to train and fine tune more High Oaks Bank > Corporate > Human Resources ID: MOD_0000000_RIS_0000001 Title: Data bias	Not Determined	Not Determined	Awaiting Assessment	
Data poisoning (MOD_0000000_RIS_0000002)	Data poisoning is a type of adversarial attack where an adversary or malicious insider more High Oaks Bank > Corporate > Human Resources	Not Determined	Not Determined	Awaiting Assessment	
Data usage (MOD_0000000_RIS_0000006)	Laws and other restrictions can limit or prohibit the use of some data for specific AI use cases.	Not Determined	Not Determined	Awaiting Assessment	

4. Scroll down to the **Related Content** section of the page, and note that the risk can be associated with mitigating controls, processes, or other issues. Take a moment to inspect some of the other sections on the page, including **Internal Audit Risk Rating**, and note how risks can be customized based on the threat they pose to a client's business.
 5. Click on the **Action** button in the upper right to open the actions menu.
 6. Click on the **Start model risk assessment** button to begin assessing the risk. The risk assessment form opens. If you look at the task list on your home tab, you will also see the assessment there.

7. Scroll down to the **Risk Assessment** portion of the page and click on the **information** icon next to the session header to open the **Field Guidance** window. Take a moment to read the descriptions of what each field represents.

Domain	Assessment Method	Reference URL
Model governance	Qualitative	Risk Atlas (Data acquisition)

8. Close the **Field Guidance** window by clicking the X button in the upper right corner of the popup.
 9. Click on the **edit** icon for each field and assign a rating.



10. Click on the **edit icon** for the **Mitigation strategy** field and enter text representing how the organization could mitigate this particular risk.

following data:

- Inherent Impact and Likelihood
- Residual Impact and Likelihood
- Control Details

Select an action to validate

All Key Items (7) ▾

- Mitigation Strategy
- Inherent Impact
- Inherent Likelihood

11. Click the **Save** button to save your changes.

Cancel Save

Perform Risk assessment by updating the following data:

- Inherent Impact and Likelihood
- Residual Impact and Likelihood
- Control Details

Select an action to validate

All Key Items (7) ▾

- Mitigation Strategy

12. Click on the **Action** button in the upper right to open the actions menu.
13. Click on the **Assessment Complete** button to finish the risk assessment.

Action

Assessment Complete

Perform Risk assessment by updating the following data:

- Inherent Impact and Likelihood
- Residual Impact and Likelihood
- Control Details

14. When asked to confirm your choice, click on the **Continue and close tab** button.
15. Return to the use case view, either by clicking on the tab or locating it from the **My tasks** section of your **Home** tab.
16. Scroll down to the **Risks** section, and note that the **Inherent Risk Rating**, **Residual Risk Rating**, and **Status** have been updated in the table.

You may repeat this process for as many of the risks as you wish before proceeding. For the sake of brevity, the next steps show you how to change the status of multiple risks at once.

Risks

Search

Name	Description	Inherent Risk Rating	Residual Risk Rating	Launch Grid page	Tags
Data bias (MOD_0000000_RIS_0000001)	Historical, representational, and societal biases present in the data used to train and fine tune more	Not Determined	Not Determined	Awaiting Assessment	<input type="checkbox"/>
Data poisoning (MOD_0000000_RIS_0000002)	Data poisoning is a type of adversarial attack where an adversary or malicious insider more	Not Determined	Not Determined	Awaiting Assessment	<input type="checkbox"/>
Data usage (MOD_0000000_RIS_0000006)	Laws and other restrictions can limit or prohibit the use of some data for specific AI use cases.	Not Determined	Not Determined	Awaiting Assessment	<input type="checkbox"/>
Data acquisition (MOD_0000000_RIS_0000007)	Laws and other regulations might limit the collection of certain types of data for specific more	Low	Low	Approved	<input type="checkbox"/>
Data usage rights (MOD_0000000_RIS_0000008)	Terms of service, copyright laws, or other rules restrict the ability to use certain data for more	Not Determined	Not Determined	Awaiting Assessment	<input type="checkbox"/>
Output bias (MOD_0000000_RIS_0000025)	Generated model content might unfairly represent certain	Not Determined	Not Determined	Awaiting Assessment	<input type="checkbox"/>

Please review the initial details related to the use case as captured by the Use Case Owner.
Use the Actions button to Return to owner, [more](#)

Submit for stakeholder review [▼](#)

1 item requires attention.

All Key Items (5) [▼](#)

- Purpose
- Risk Level
- Use Case Type
- Uses Foundation Models *

Key Items for this Action

Risks

18. Check the box to the left of all the risks still marked with the **Awaiting Assessment** status. Note that you may need to scroll the window to check them all.

19. Click the **Bulk Update** button at the top of the table. The **Bulk Update** panel opens.

9 items selected

Name		Description	Owner	Domain	Inherent Risk Rating	Residual Risk Rating	Status	Reference URL	Tags
<input type="checkbox"/>	Data acquisition (MOD_0000000_RIS_0000007)	Laws and other regulations might limit the collection of certain types of data for more	compliance officer	Model governance	Low	Low	Approved	Risk Atlas (Data acquisition)	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Data bias (MOD_0000000_RIS_0000001)	Historical, representational, and societal biases present in the data used to train and fine tune more	System Administrator	Model governance	Not Determined	Not Determined	Awaiting Assessment	Risk Atlas (Data bias)	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Data poisoning (MOD_0000000_RIS_0000002)	Data poisoning is a type of adversarial attack where an adversary or malicious insider more	System Administrator	Model governance	Not Determined	Not Determined	Awaiting Assessment	Risk Atlas (Data poisoning)	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Data usage rights (MOD_0000000_RIS_0000008)	Terms of service, copyright laws, or other rules restrict the ability to use certain more	System Administrator	Model governance	Not Determined	Not Determined	Awaiting Assessment	Risk Atlas (Data usage rights)	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Data usage (MOD_0000000_RIS_0000006)	Laws and other restrictions can limit or prohibit the use of some data for specific AI more	System Administrator	Model governance	Not Determined	Not Determined	Awaiting Assessment	Risk Atlas (Data usage)	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Decision bias (MOD_0000000_RIS_0000026)	Decision bias occurs when one group is unfairly advantaged over another more	System Administrator	Model governance	Not Determined	Not Determined	Awaiting Assessment	Risk Atlas (Decision bias)	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Hallucination (MOD_0000000_RIS_0000028)	Hallucinations occur when models produce factually inaccurate or untruthful more	System Administrator	Model governance	Not Determined	Not Determined	Awaiting Assessment	Risk Atlas (Hallucination)	<input type="checkbox"/>

20. Click on the **Add a field** dropdown and select the **Inherent Risk Rating** item from the list. A dropdown for **Inherent Risk Rating** appears in the panel.



21. Repeat the previous step to add **Residual Risk Rating** and **Status** to the panel.
22. Click on the dropdowns and select risk ratings and a status. Note that to progress the use case, you **must** select either **Approved** or **Not Applicable** in the **Status** dropdown.

Bulk Update

Add a field

* Inherent Risk Rating

Medium

Clear values

* Residual Risk Rating

Low

Clear values

* Status

Approved

Clear values

23. Click the **Update** button at the bottom of the panel.
24. When asked to confirm your bulk update, click the **Confirm** button. The update will run, and may take a few minutes to complete depending on how many risks were updated.
25. When the update completes, click the **X** button to close the **Bulk Update Report** popup. The **Risks** table will refresh, showing the new values.

Bulk Update Report

Bulk update is complete. You can visit the [Notifications](#) page to find the same information.

Updated	Failed
9	0

The risk assessments are now complete. You can progress the use case to the next phase.

7. Approve the use case for development

Now that the risks have been identified and assessed, the use case can be approved for the next stage of the lifecycle.

1. Return to the use case view, either by clicking on the tab or locating it from the **My tasks** section of your **Home** tab.
2. The use case is now ready to be progressed to the next stage of the workflow. Click on the **Actions** button in the upper right. The **Actions** menu opens.
3. Click on the **Submit for stakeholder review** menu option. A confirmation dialog opens.

Use Case

Resume summarization

Status: Awaiting Use Case Approval

Risk Level: High

Actions

- Reject use case
- Submit for stakeholder review
- Return to owner

Task **Activity** **Admin**

Modified Required

General

Name *: Resume summarization

Use Case Type: AI

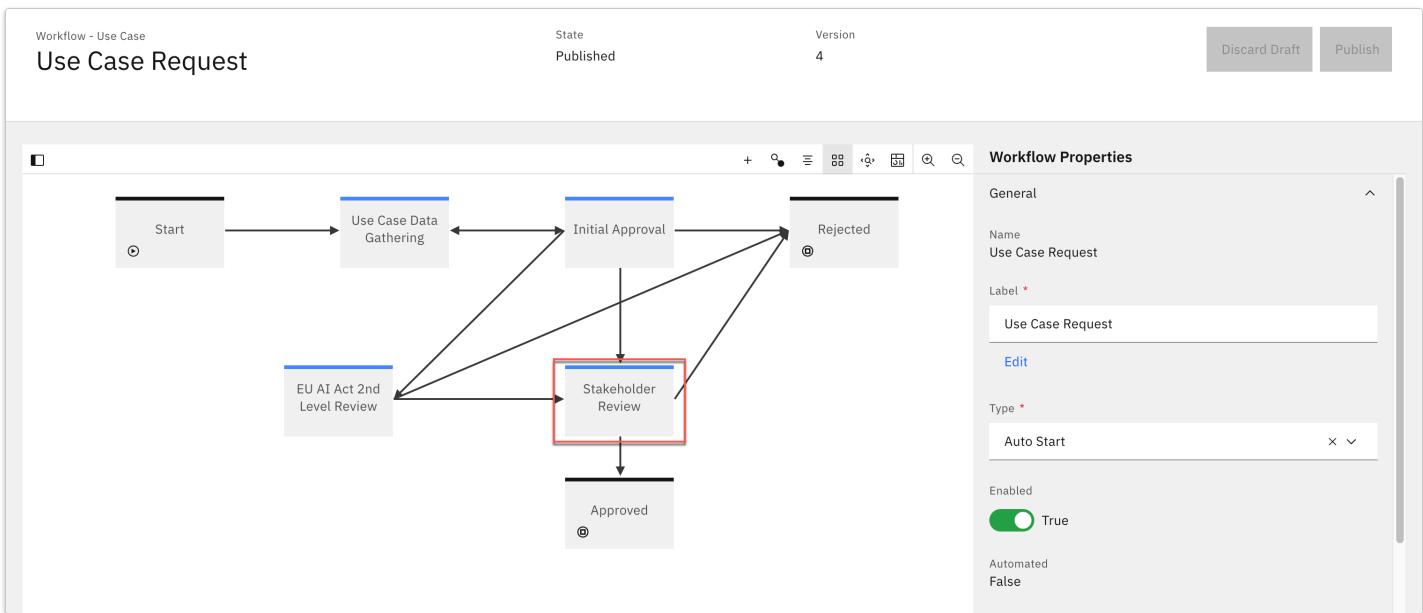
Status: Awaiting Use Case Approval

Description: Purpose

Stage: Initial Approval (Awaiting use case approval)

Due Date: 10/20/2024

Tags



- Once the use case view refreshes, scroll to the **Use Case Details** section of the page. The view has been updated to show that the stakeholder departments you identified in the **Use Case Data Gathering** stage have been assigned a use case review; the status shows as **Awaiting Approval**.
- Click on the name of the required review. The **Use Case Review** tab opens.

Use Case Details

Use Case Reviews

Search

Name	Approval Status	Stakeholder Departments	Tags
Resume summarization-Review-00004 High Oaks Bank > Corporate > Human Resources	6 Awaiting Approval	Model Risk	

ID: Resume summarization-Review-00004

Uses Foundation Models: Yes

Externally Facing

Target Implementation Date

Proposed Solution

Additional Details

(Stakeholder Review)

Due Date: 10/20/2024

Tags: No tags have been added yet.

Stakeholder Review: Any relevant stakeholder departments that were selected in the data gathering stage have been sent a **Use Case Review** task to obtain their approval for this use case. Once all of the [more](#)

At this point in the process, the model risk department would review the use case, including the answers provided in the risk identification questionnaire. Note that links to the questionnaires have been provided in the **Use Case Assessments** section of the page, for easy access.

- Click on the **edit icon** for the **Approval Status** field and set it to **Approved**.

Stakeholder Departments: Model Risk

Reviewer

Review Comment: Please review the use case, and provide your approval or rejection. In order to approve the use case, the following fields must be completed:

* Approval Status: 7 Approved

Approval Date: Not Determined

Risk Rating: Not Determined

Use Case Assessments

Search

AI Assessment Progress Compliance Risk

Please review the use case, and provide your approval or rejection. In order to approve the use case, the following fields must be completed:

All Key Items (3) more

Reviewer

Review Comment

Note that you can also identify the review, and add comments as necessary.

- Click on the **Save** button to save the status change.
- Return to the **Resume summarization** use case by clicking on its tab. Note that the **Approval Status** of the use case review by the Model Risk department has been updated. If you assigned any other stakeholder departments to the use case, perform those reviews now.
- Click on the **Actions** button once more. The **Actions** menu opens.
- Click on the **Approve for development** menu item to approve the use case. A confirmation dialog opens.

The screenshot shows the 'Resume summarization' use case details. The status is 'Awaiting Use Case Approval' and the risk level is 'High'. A context menu is open at the top right, with the 'Approve for development' option selected (numbered 11). Other options like 'Reject use case' are also visible.

- Click the **Continue** button to confirm your choice. The **Status** field changes to **Approved for Development**.

If you click on the **Action** button again to progress the use case to the next stage of its lifecycle, you will receive an error stating that the use case view for the relevant workflow stage has been removed; because you disabled the default system use case view, to clear this error you would need to also set the **Task View Override** on the stages of the **Use Case Development and Validation** workflow to use the new, updated view. However, for the purposes of this lab, the focus will shift away from progressing the use case view to the development and monitoring of models. Feel free to update the workflow and continue progressing the use case through the different phases if your client would like to see the entire process.

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. The following steps of the lab will take actions from the point of view of those personas.

8. 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. Instructions on finding these are in the **Getting Microsoft Azure credentials** section of the [configuration hands-on lab](#).

- From the watsonx governance console, click on the **hamburger menu** in the upper left.
- 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).

The screenshot shows the navigation bar of the IBM Watson Governance console. The 'IBM watsonx' menu item is highlighted (numbered 2). Other items like 'Organization', 'Status', and 'Risk Level' are also visible.

- Click on the **avatar icon** in the upper right to open the user menu.
- 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.

The screenshot shows the IBM Watsonx interface with the 'Roles' tab selected. The user profile 'Eric Martens' is at the top. The 'API key' button in the header is highlighted with a blue border. A dropdown menu is open, showing 'API key' and 'Generate new key' (which is also highlighted with a blue border), and 'Revoke current key'.

Name	Description	Enabled permissions	Users and groups
Data Scientist	Data scientist role	Create projects, Access catalogs, Add catalog assets to projects, Create deployment scenarios	

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.

The screenshot shows a modal dialog titled 'Here's your API key'. It contains instructions: 'You can use this key in place of your username and password to authenticate to IBM Watsonx from scripts or applications'. Below this is a text area labeled 'API key' containing a long string of characters, followed by a note: 'Store this key somewhere safe; you cannot recover this key if you lose it.' At the bottom are 'Close' and 'Copy' buttons, with the 'Copy' button highlighted with a blue border.

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.

The screenshot shows the 'Projects' screen. The left sidebar is expanded, showing 'Home', 'Data', 'Projects' (with a notification badge '11'), 'Jobs', 'Tool runtimes', 'AI governance' (with a notification badge '12'), 'External models', 'Deployments', and 'Services'. A central panel has a 'Default to open tasks in' dropdown set to 'All projects'. There are several cards: one about Chat and build prompts, one about Tuning Studio, and one about working with Python or R notebooks. A 'Start chatting...' button is visible in the prompt lab card.

13. Click on the **New project** button. The **Create a project** screen opens.
14. Give your project a **Name**.

Create a project

Start with a new, blank project or select from where to import an existing project.

- + New
- Local file
- Git integrated

Define details

Name

Azure resume summarization **14**

Description (optional)

What's the purpose of this project?

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.

The screenshot shows the IBM WatsonX interface with the 'Assets' tab selected. On the right side, there is a sidebar titled 'Upload data files' with a dashed box for dropping files. The main content area shows 0 assets and an 'All assets' button.

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

The screenshot shows the 'Work with models' section with four tiles:

- Build machine learning models automatically with AutoAI
- Chat and build prompts with foundation models with Prompt Lab
- Work with data and models in Python or R notebooks with Jupyter notebook editor** (this tile is highlighted with a cursor icon)
- Train models on distributed data with Federated Learning

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
```

WORK WITH DATA AND MODELS IN PYTHON OR R NOTEBOOKS

Define the details to create a notebook asset and open it in the Jupyter notebook editor tool.

+ New
Local file
URL 19

Define details

Name
Create prompt template 20

Description (optional)
What's the purpose of this notebook

Define configuration

Select runtime
Runtime 24.1 on Python 3.11 (1 vCPU, 2 GB RAM)

The selected runtime has 1 vCPU and 2 GB RAM.

Notebook URL
21 https://github.com/CloudPak-Outcomes/Outcomes-Projects/blob/r

22. Click the **Create** button. Your notebook will be created.
23. Scroll down to the first code cell 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. Your **CPD_USERNAME** will be the name of the created user (**complianceofficer** if you have followed the lab instructions exactly). The **CPD_API_KEY** is the API key you generated in a previous step for the created user.

The Azure credentials can all be found in your [TechZone reservation](#) for the Azure service that you created in the environment setup portion of the lab.

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

CPD_URL = "https://cpd-cpd.apps._____ocp.techzone.ibm.com/"
CPD_USERNAME = "complianceofficer"
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

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_pta_id = pta_details.to_dict()["asset_id"]
print(f"Detached Prompt template ID: '{project_pta_id}'")
2024/10/16 04:56:22 INFO : ----- Detached Prompt Creation Started -----
2024/10/16 04:56:23 INFO : The detached prompt with ID 49b467aa-fed6-4c6f-8436-8840050f1b5f was created successfully in container_id e3e72d81-22f0-4029-8729-a2d511de97ae.
Detached Prompt template ID: '49b467aa-fed6-4c6f-8436-8840050f1b5f'
```

[12]: factsheets_url = f'{CPD_URL.strip("/")}/wx/prompt-details/{project_pta_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

[]:

9. 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. The **Track in AI use case** window opens. The table of AI use cases has been populated from the watsonx governance console, including the **Resume summarization** use case you created.

This prompt template is not tracked.
To track a prompt template, add it to an AI use case. Tracking captures details about the asset for governance purposes.
Important: Once you start tracking a prompt template in a use case, you can no longer edit it. Wait until the prompt template is stable to start tracking.

Track in AI use case

- Select the **Resume summarization** use case from the list.

Define AI use case
Choose an existing AI use case or create a new one for tracking facts about an asset

Name	Status	Owner	Inventory	Risk level
3 Resume summarization	Approved	AD admin	High Oaks Bank Model Use Cases	▲ High
Finance News Analysis	Approved	AD admin	High Oaks Bank Model Use Cases	■ Low
Executive summary generation	Approved	AD admin	High Oaks Bank Model Use Cases	■ Low
Customer Attrition	Approved	AD admin	High Oaks Bank Model Use Cases	◆ Medium

- Click on the **Next** button. The **Define approach** screen opens.
- Click on the **Next** button to accept the default approach. The **Define asset record** screen opens.
- Click on the **New asset record** tile to specify that you would like to create a new model in the governance console inventory.

Define asset record
Approach: Default approach | Use case: **Resume summarization**
Associate the trained model with an existing model record or create a new model record in OpenPages. This will sync the tracked model facts between Model inventory and OpenPages.

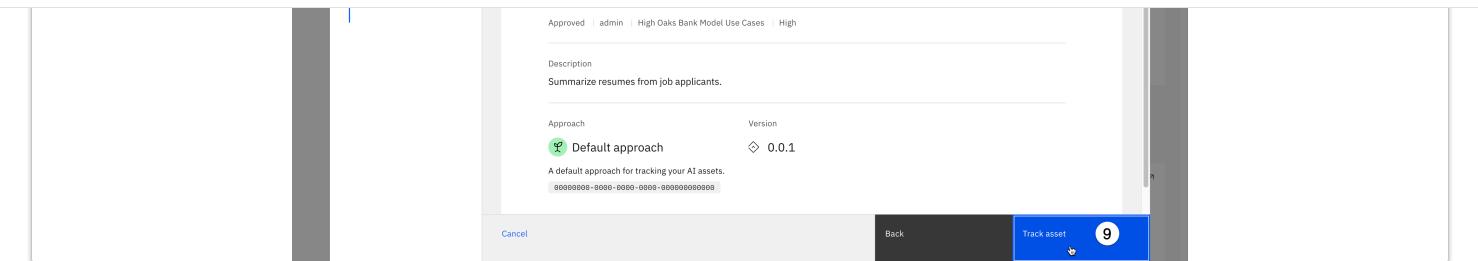
Existing asset record **+ New asset record** **6**

Create record automatically
A new asset record will be created in OpenPages when model tracking is initiated.

- Click on the **Next** button. The **Assign version** screen opens.
- Click on the **Next** button. The **Review** screen opens.

Note: Note the warning at the top of the screen; once you begin tracking the template in an AI use case, you can no longer edit it.

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



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.

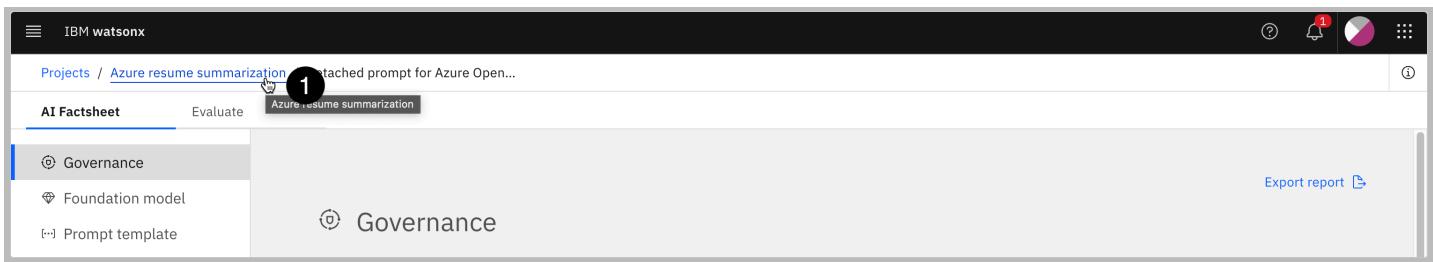
- Take a moment to review the Factsheet. Note that it contains metadata on the type of model, provider, task, and prompt.

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.

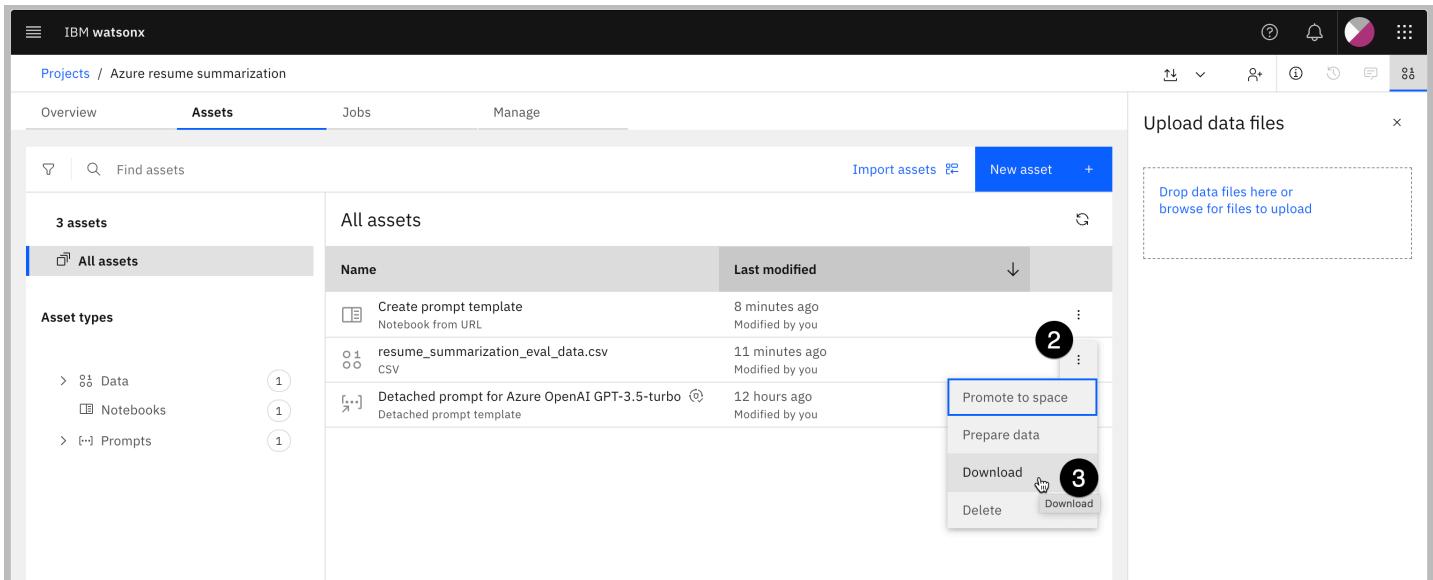
10. Deploy the model to a space

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.



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

The screenshot shows the 'Assets' tab in the IBM SkillZone interface. On the left, there's a sidebar with sections like Overview, Assets, Jobs, and Manage. The main area displays a table of assets under the heading 'All assets'. The first asset is 'Detached prompt for Azure OpenAI GPT-3.5-turbo' (Last modified 7 minutes ago) and the second is 'Create prompt template' (Last modified 27 minutes ago). A context menu is open over the second asset, with the 'Promote to space' option highlighted (marked with a black circle 5). Other options in the menu include Evaluate, Go to AI factsheet, Untrack, Delete, and Promote to space.

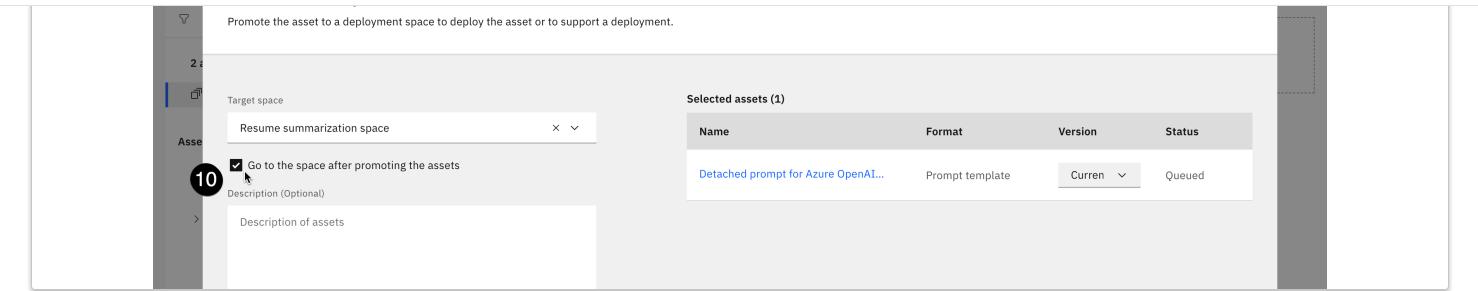
- Click on the Target space dropdown and select **Create a new deployment space**. The **Create a deployment space** window opens.

This screenshot shows the 'Promote to space' window. On the left, there's a sidebar with sections like Overview, Assets, Jobs, and Manage. The main area has a heading 'Promote to space' and a sub-instruction 'Promote the asset to a deployment space to deploy the asset or to support a deployment.' Below this is a 'Target space' section with a dropdown labeled 'Select or create a space' containing the option 'Create a new deployment space' (marked with a black circle 6). To the right is a table titled 'Selected assets (1)' showing one asset: 'Detached prompt for Azure OpenAI...' (Format: Prompt template, Version: Current, Status: Queued).

- Give your space a **Name**.
- Click on the **Deployment stage** dropdown and select **Development**.

This screenshot shows the 'Create a deployment space' window. On the left, there's a sidebar with sections like Overview, Assets, Jobs, and Manage. The main area has a heading 'Create a deployment space' and a sub-instruction 'Use a space to collect assets in one place to create, run, and manage deployments'. Below this is a 'Define details' section with a 'Name' field containing 'Resume summarization space' (marked with a black circle 7). There's also a 'Description (Optional)' field with the placeholder 'Deployment space description'. Under 'Deployment stage' (marked with a black circle 8), the dropdown is set to 'Development'. At the bottom is a 'Deployment space tags (optional)' section with a 'Add a tag' input field.

- Click on the **Create** button to create the space. When creation is completed, close the notification window to return to the **Promote to space** window.
- Check the box to the left of **Go to the space after promoting the assets**.



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

The screenshot shows the IBM WatsonX interface with the navigation bar "IBM watsonx". Below it, the URL is "Deployments / Resume summarization space / Detached prompt for Azure OpenAI GPT-3.5-turbo". The main area displays a table of deployments with columns: Name, Type, Status, Tags, and Last modified. A blue button labeled "New deployment" is highlighted with a circled number 12. To the right, there's a sidebar titled "About this asset" with sections for Name, Description, and Asset Details.

13. Give your deployment a **Name**.

The screenshot shows the "Create a deployment" dialog. It includes fields for "Associated asset" (selected), "Deployment type" (set to "Detached"), "Name" (entered as "OpenAI Resume Summarization" with a circled number 13), and "Description" (entered as "Deployment description").

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

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

11. Evaluate the model

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

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

Deployments AI Factsheet

Name	Type	Status	Tags	Last modified
OpenAI Resume Summarization	Detached	Deployed	Add tags +	41 seconds ago Eric Martens (You)

About this asset

Name
Detached prompt for Azure OpenAI GPT-3.5-turbo

Description
A detached prompt for summarization using Azure OpenAI's GPT-3.5-turbo model

Asset Details
Prompt template ID: 8870da04-7e0e-42...

Tags
Add tags to make assets easier to find.

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

Run an evaluation job

Click Evaluate to choose dimensions to evaluate and select test data.

Evaluate 2

- 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.

Op

Evaluate prompt template

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

Select dimensions 4

Select dimensions to evaluate

These dimensions are based on the prompt template task type. [Learn more](#)

Dimension	Description
<input checked="" type="checkbox"/> Generative AI Quality	The Generative AI Quality monitor calculates a variety of metrics based on prompt template task type. Some metrics compare model output to the reference output you provide. Other metrics analyze model input and output and do not require reference output.
<input checked="" type="checkbox"/> Model health	The model health monitor provides an overview and helps to understand how your model deployment is performing with the incoming transactions. This monitor evaluates and computes metrics such as scoring requests count, records count, latency and throughput, etc..

- Take a moment to review the different thresholds for quality and model health on this screen. 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.

Review and evaluate

Drop a file here or browse for a file to upload

Add a CSV file that includes input and expected output (ground-truth). Test data for this deployment should include model output. Maximum size is 8 MB. Maximum number of records is 1000. Minimum number of records is 10.

Browse 7

- Click on the **text** dropdown in the **Input** section and select **Resume**.

Evaluate prompt template

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

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 ①

Select delimiter

Comma (,)

Input

text

Resume 8 x ▾

Reference output

Reference output

Summarization 9 x ▾

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

Feedback ▼

Metric	Score	Violation
Rouge	44.54	35.46
SARI	35.46	

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.

12. 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.

OpenAI Resume Summarization • Deployed 

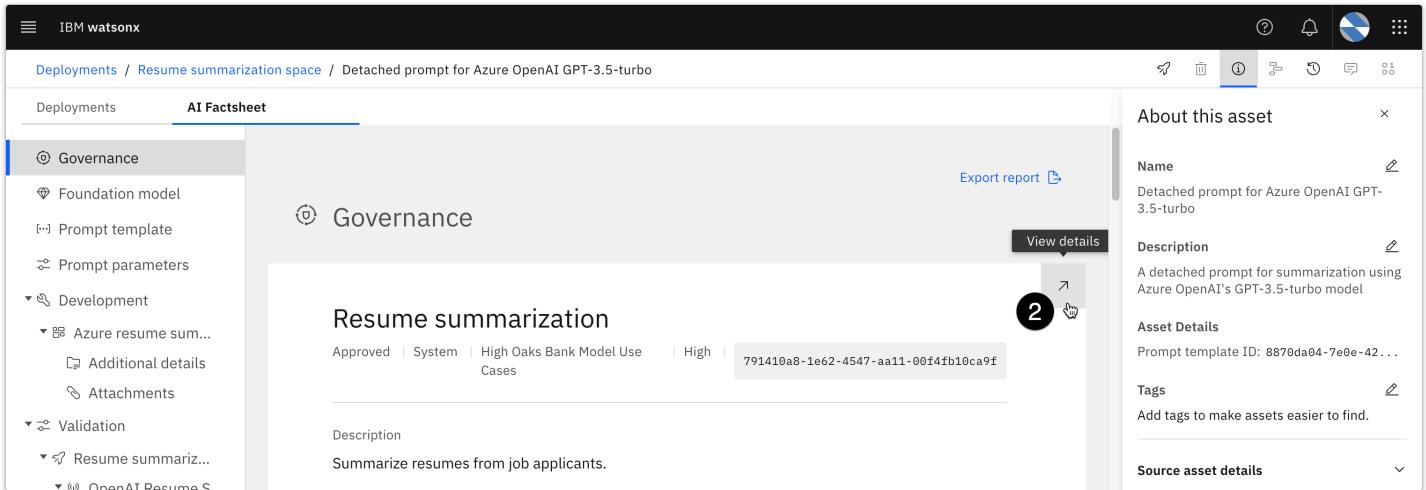
Evaluations

AI Factsheet

Interested in more details?
This information is part of AI factsheet. Click here to view the more details.

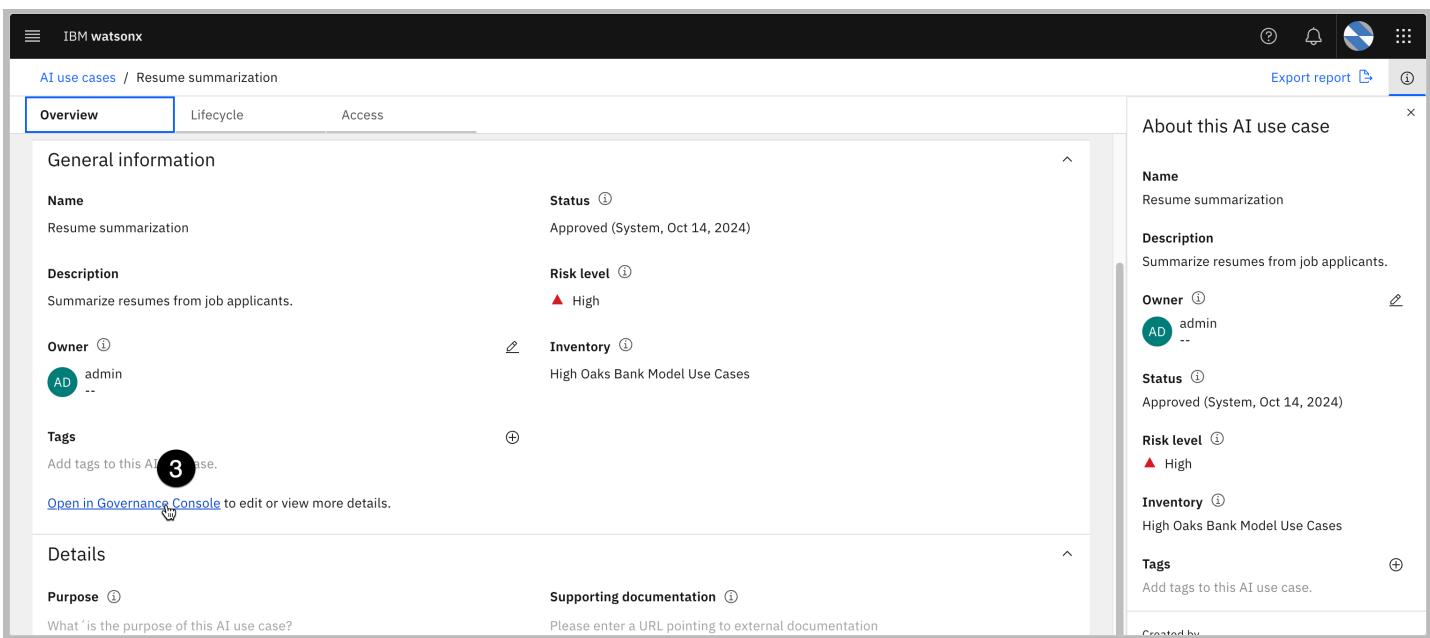


2. From the **Governance** section, click on the **View details** button. The AI use case screen opens.



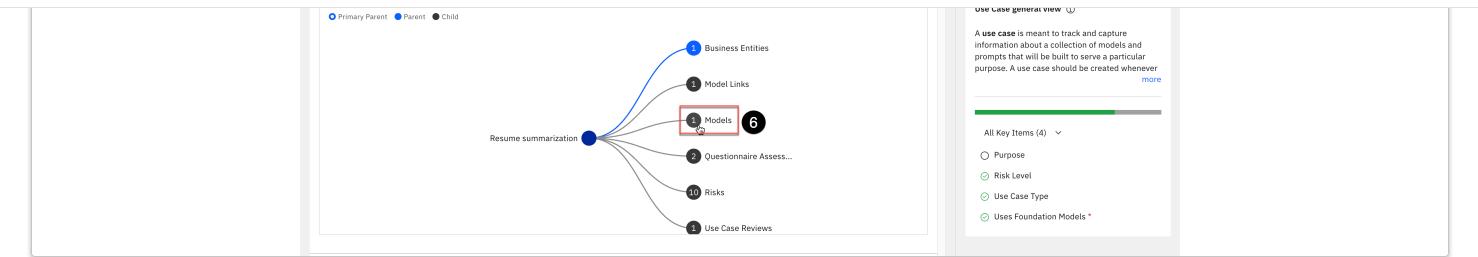
The screenshot shows the IBM watsonx interface with the navigation bar "IBM watsonx" and the path "Deployments / Resume summarization space / Detached prompt for Azure OpenAI GPT-3.5-turbo". The left sidebar has sections like "Governance", "Development", "Validation", and "OpenAI Resume S...". The main area is titled "Governance" and "Resume summarization". It shows details like "Approved", "System", "High Oaks Bank Model Use Cases", "High", and a unique ID "791410a8-1e62-4547-aa11-00f1fb10ca9f". The right panel is titled "About this asset" with sections for "Name", "Description", "Asset Details", "Tags", and "Source asset details". A callout bubble with the number 2 points to the "View details" button.

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. The "General information" section includes fields for "Name" (Resume summarization), "Status" (Approved, System, Oct 14, 2024), "Description" (Summarize resumes from job applicants.), "Owner" (admin), "Risk level" (High), "Inventory" (High Oaks Bank Model Use Cases), and "Tags". A callout bubble with the number 3 points to the "Open in Governance Console" link. The "Details" section includes "Purpose" (What is the purpose of this AI use case?) and "Supporting documentation" (Please enter a URL pointing to external documentation). The right panel is titled "About this AI use case" with detailed information matching the general information section.

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.

This screenshot shows the 'Model' details for the 'Detached prompt for Azure OpenAI GPT-3.5-turbo' model. The 'General' tab is selected, displaying the name, inventory name, and description. The 'Name' field contains 'Detached prompt for Azure OpenAI GPT-3.5-turbo'. The 'Inventory Name' field also contains 'Detached prompt for Azure OpenAI GPT-3.5-turbo'. The 'Description' field contains 'A detached prompt for summarization using Azure OpenAI's GPT-3.5-turbo model'. The 'Model Status' is set to 'Proposed'. A callout box labeled 7 points to the model name in the list. Another callout box labeled 8 points to the 'Open in tab' button in the top right corner of the model details panel.

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 create a model to make hiring recommendations for the HR department. You will then evaluate that model and compare it to an external model running on Amazon SageMaker.

1. Create a hiring model use case

As discussed in the generative model section, model governance starts with a use case request.

1. Signed in as the **complianceofficer** user in the watsonx governance console, 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.

The screenshot shows the top navigation bar of the IBM SkillZone application. The 'Assessments' tab is highlighted. A dropdown menu is open under the 'Inventory' section, listing options like 'Inventory' (selected), 'Use Cases', 'Models', 'Model Versions', 'Model Deployments', 'Model Risk Scorecards', and 'Model Attestations'. Numbered callouts (2) and (3) point to the 'Inventory' and 'Use Cases' items respectively.

- Click on the New button on the right. The New Use Case tab opens.

The screenshot shows the 'Use Cases' list view with 33 entries. The table columns include Name, Purpose, Description, Owner, Status, Risk Level, and Tags. Two specific entries are highlighted with numbered callouts: 'Agency Based LGD Estimation' (4) and 'Banking book HTM corporate bond - income' (5). Both entries have their 'Owner' set to 'Bob Eldridge' and 'Status' as 'Approved for Development'. The 'Risk Level' for the first is 'Low' and for the second is 'Medium'. A 'New' button is visible in the top right corner of the header area.

- Enter Application screening into the Name field.
- Enter complianceofficer into the Owner field.
- Enter Screen applications for positions or similar text in the Description field.

The screenshot shows the 'New Use Case' creation dialog. In the 'General' tab, the 'Name' field (5) contains 'Application screening', the 'Owner' field (6) contains 'complianceofficer', and the 'Description' field (7) contains 'Screen applications for positions.' A modal window titled 'Model Use Case creation' is open on the right, providing a detailed description of what a model use case is and listing requirements. It also shows a progress bar and a note about one item requiring attention.

- Scroll down to the Business Entities section and click the Add button. The Add dialog opens.
- Locate the Human Resources entity from the list and click on it.
- Click Done to add the entity and close the dialog.

The screenshot shows the IBM Watsonx Governance console interface. On the left, there's a navigation sidebar with categories like Organization, Assessments, Inventory, Reviews, Compliance, and Policy Management. The main area displays a list of use cases. One use case, 'Hiring', is highlighted with a blue background and has a circled number '1' above it. Other visible use cases include 'High-Demand Banking', 'Investment Banking', 'Retail Banking', and 'Consumer Banking'. Each use case entry includes a brief description and several small circular icons.

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

In a real-world scenario, you would now follow the same process you used for the generative model use case as described in [3. Progress the use case to the next phase](#) and [4. Identify use case risks](#) to approve the model use cases for the predictive models. You may do so now if you wish, or you may continue on with the lab.

2. Create a deployment space for the hiring model

Now that the use case for the model has been approved, you can create the models. The steps in this section would be typically undertaken by data scientists and AI engineers, as they work with data developed and cleaned by the data engineers to build models. This lab does not focus on the details of model creation and deployment; instead, you will rapidly prototype a model using [IBM's AutoAI service](#), and deploy it in your environment. Next, you will evaluate it as well as a similar model deployed on AWS SageMaker.

- Return to the watsonx home screen, signed in as the created user. Ensure that you are using the watsonx context (as opposed to the Cloud Pak for Data context).

The screenshot shows the IBM Watsonx home screen. At the top, there's a navigation bar with tabs for 'IBM watsonx' (circled with '1'), 'Attached pr...', 'Use Cases', and 'Application s...'. Below the navigation bar is a sidebar with sections for Organization, Assessments, Inventory, Reviews, Compliance, and Policy Management. The main area shows a single card for a 'Hiring' use case, which is partially visible. The card includes fields for Status (Proposed) and Risk Level, along with an 'Action' button. There are also search and filter icons at the bottom of the main area.

- Click on the **hamburger menu** in the upper left to open it.
- Click on the **Deployments** menu item. The **Deployments** screen opens.

The screenshot shows the IBM Watsonx Deployments screen. At the top, there's a navigation bar with tabs for 'IBM watsonx' (circled with '2') and 'Deployment spaces'. Below the navigation bar is a sidebar with sections for Home, Data, Projects, AI governance, Deployments (circled with '3'), Services, Administration, and Support. The main area features a large central panel with a purple gradient background. It contains three cards: 'Chat and build prompts with foundation models' (with a 'Start chatting...' button), 'Tune a foundation model with labeled data' (with a 'with Tuning Studio' button), and 'Work with data and models in Python or R notebooks' (with a 'with Jupyter notebook editor' button). Below these cards, there are sections for 'Projects' (listing 'test project') and 'Deployment spaces' (listing 'Resume summarization space').

- Click on the **New deployment space** button to create a deployment space. A **deployment space** is an object in watsonx that contains deployable assets, deployments, deployment jobs, associated input and output data, and the associated environments.
- Enter **application screening development** in the **Name** field.
- Click on the dropdown for **Deployment stage** and select **Development**. This metadata for the space will be used by the monitoring service (OpenScale) to determine how data for the model is stored in the datamart when performing evaluations. Predictive models hosted internally (in the same Cloud Pak for Data environment as the monitoring service) that are deployed to **Production** spaces will automatically have their input and output data recorded in the datamart, and evaluations will be performed on that data. Models hosted in non-production spaces will be evaluated based on comma-separated value (CSV) file uploads.

Use a space to collect assets in one place to create, run, and manage deployments

Define details

Name
application screening development 5

Description (Optional)
Deployment space description

Upload space assets (optional)

Populate your space with assets exported from a project or space to a .zip file. You can add more assets after the space is created.

Drop .zip file here or browse your files to upload

Deployment stage (i)

Development 6

Deployment space tags (optional) (i)

Add a tag

7. Click **Create** to create the deployment space. When the space is finished creating, you will be able to deploy models to it as REST endpoints, and can begin monitoring the models in the monitoring service.
8. When the dialog window shows **The space is ready**, click the **View new space** button. The new space opens.

3. Create the hiring model

Next, you will build the hiring model, and begin tracking it through the approved hiring use case you created and moved through the workflow in previous steps.

1. Click on the **hamburger menu** in the upper left.
2. Click on the **Projects** menu item to open it.
3. Click on the **All projects** menu item. The **Projects** screen opens.

development

Deployments	All
0	0
View deployments	

Space history

① No notifications
You will see your most recent notifications here.

4. Click the **New project** button to create a new project. The **Create a project** screen opens.
5. Enter **hiring model development** in the **Name** field.
6. Click the **Create** button. A new empty project will be created, and will open to the **Overview** tab.
7. Right-click on the link for the **hiring training data file** and save it to your hard drive. Ensure that the file is saved with the **.csv** (comma-separated value) extension.
8. Click on the **Assets** tab.
9. From the **Data in this project** panel of the project screen, click the **Drop data files here...** link. The system file explorer opens. Browse to the file you downloaded and import it. When the file has been imported, it will show in the **All assets** list in the center of the screen.



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

11. From the **Work with models** section, click on the **Build machine learning models automatically** tile. The **Build machine learning models automatically** window opens.

12. In the **Define details** section, enter **application screening experiment** in the **Name** field.

13. Click **Create** to create the experiment. The **Add data source** window opens.

14. Click the **Select data from project** button. The **Select data from project** window opens.

15. From the **Categories** list, click on the **Data asset** item. The **Data assets** list appears, showing all data assets in your project.

16. Check the box to the left of the training data file you uploaded to the project.

17. Click the **Select asset** button in the bottom right. The **Configure details** panel opens.

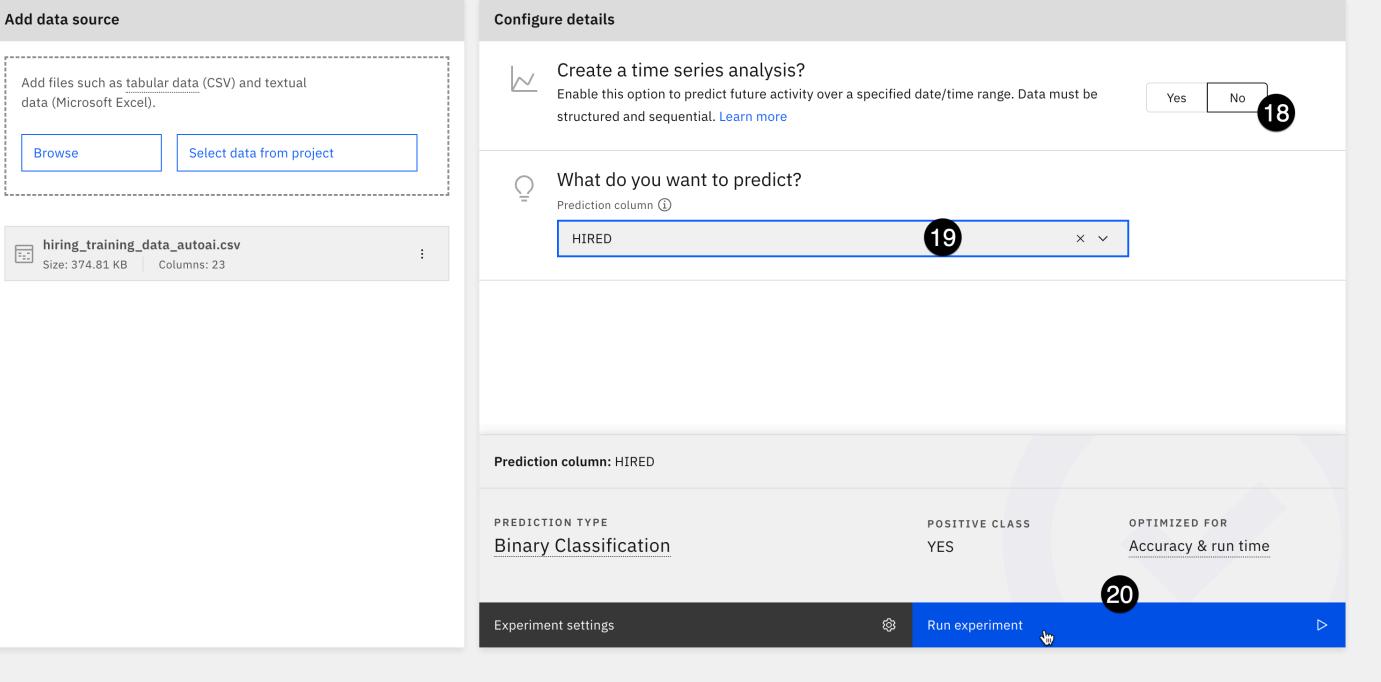
18. Click **No** in the **Create a time series analysis?** section.

19. In the **What do you want to predict?** section, click on the **Prediction column** dropdown and select **HIRRED**.

Configure AutoAI experiment

application screening experiment 

Autosaved: 3:47:35 PM

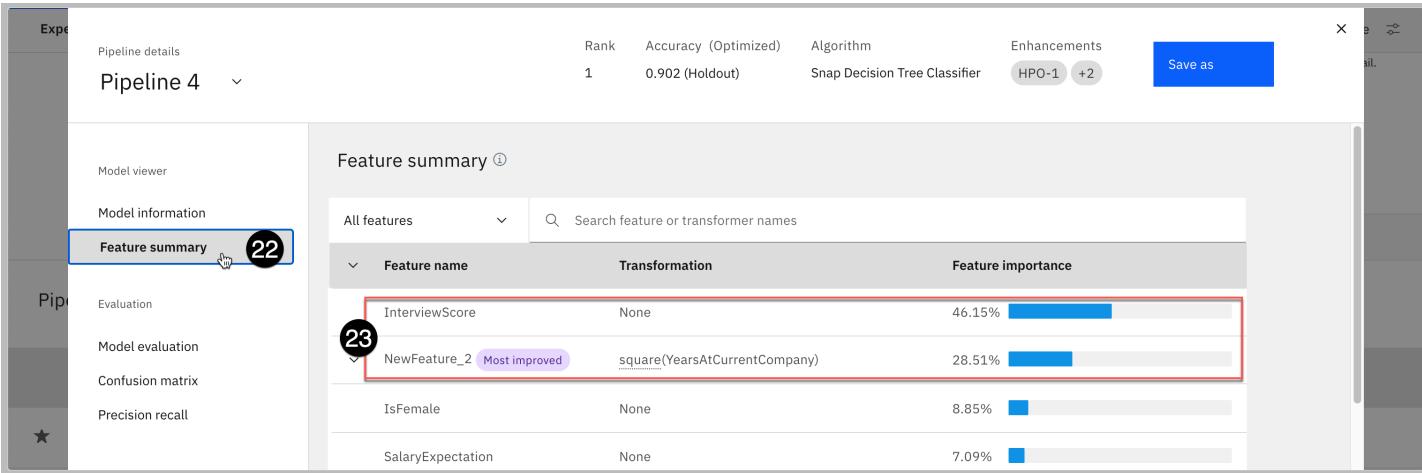


The screenshot shows the 'Configure details' section of the AutoAI experiment configuration. It includes:

- Add data source:** A section for adding files, with 'Browse' and 'Select data from project' buttons.
- Configure details:**
 - Create a time series analysis?**: A question with 'Yes' and 'No' buttons; 'No' is selected and highlighted with a circled number 18.
 - What do you want to predict?**: A dropdown menu with 'HIRED' selected and highlighted with a circled number 19.
 - Prediction column:** HIRED
 - PREDICTION TYPE:** Binary Classification
 - POSITIVE CLASS:** YES
 - OPTIMIZED FOR:** Accuracy & run time
- Experiment settings:** A button for adjusting experiment parameters.
- Run experiment:** A blue button with a play icon and highlighted with a circled number 20.

When the service finishes, the **Experiment summary** screen will show the pipelines generated, ranked based on accuracy. Note that the algorithm with the highest accuracy will likely differ than the screenshot below, based on the random selection of training and test data performed by the model.

21. From the **Pipeline leaderboard** table, click on the entry with the highest accuracy score. The **Pipeline details** window opens.
22. From the **Model viewer** section on the left, click on the **Feature summary** item. The **Feature summary** is displayed, ranking features by their importance. The more important the feature, the greater the effect it has on the output of the model when it is altered.
23. Make a note of the important features for your model. In the screenshot below, **InterviewScore** and **YearsAtCurrentCompany** are by far the most important features; the ones in your model may differ. You will use this information later when configuring the drift V2 monitor.



The screenshot shows the **Pipeline details** window for **Pipeline 4**. The **Feature summary** tab is selected and highlighted with a circled number 22. The table displays feature importance:

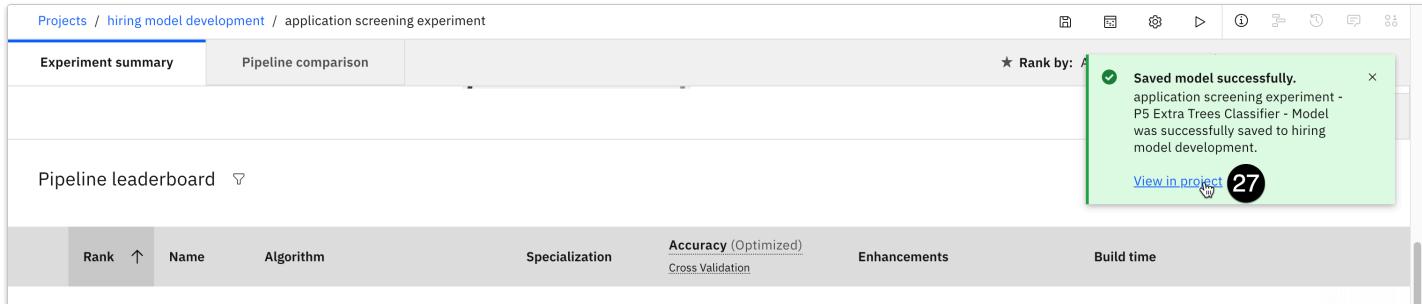
Feature name	Transformation	Feature importance
InterviewScore	None	46.15%
NewFeature_2 (Most improved)	square(YearsAtCurrentCompany)	28.51%
IsFemale	None	8.85%
SalaryExpectation	None	7.09%

A red box highlights the top two rows: **InterviewScore** and **NewFeature_2**.

24. Click the **x** icon in the upper right of the **Pipeline details** window to close it.
25. From the **Pipeline leaderboard** table, hover your mouse over the entry with the highest accuracy score. Click on the **Save as** button that appears. The **Save as** window opens.

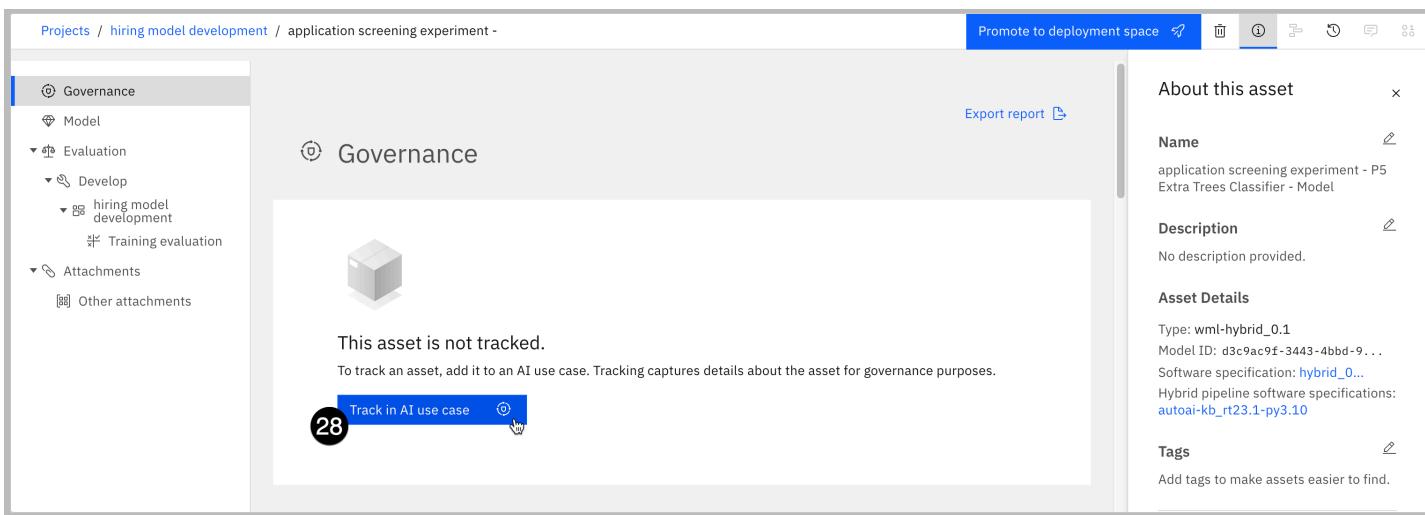
Rank	Name	Algorithm	Specialization	Accuracy (Optimized) Cross Validation	Enhancements	Build time
★ 1	Pipeline 5	Batched Tree Ensemble Classifier (Extra Trees Classifier)	INCR	0.905	HPO-1 FE HPO-2 BATCH	00:01:23
2	Pipeline 4	Extra Trees Classifier		0.905	HPO-1 FE	00:01:19
3	Pipeline 3	Extra Trees Classifier		0.905	HPO-1 FE	00:01:03
4	Pipeline 2	Extra Trees Classifier		0.903	HPO-1	00:00:09

26. Click the **Create** button in the bottom right to save the pipeline as a model in your project.
 27. When the model finishes saving, a **Saved model successfully** notification will appear on your screen. Click the **View in project** link in the notification to go to the model information screen.



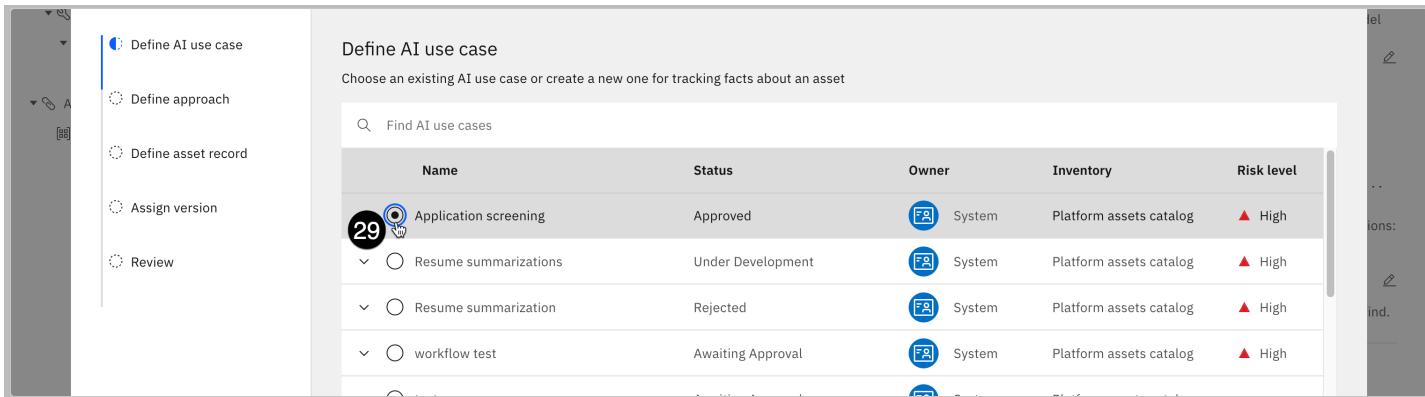
The screenshot shows the Pipeline leaderboard screen. At the top, there are tabs for 'Experiment summary' and 'Pipeline comparison'. A green notification box on the right side says 'Saved model successfully.' with a link 'View in project' (circled with number 27). The main table has columns: Rank, Name, Algorithm, Specialization, Accuracy (Optimized) - Cross Validation, Enhancements, and Build time.

28. To create a Factsheet for the model, it must be tracked as part of an AI use case. Click the **Track in AI use case** button in the **Governance** section. The **Track in AI use case** window opens, with a list of available use cases. Note that this list has been automatically populated with the list of use cases created in the governance console.



The screenshot shows the Governance screen. On the left, there's a sidebar with categories like Governance, Model, Evaluation, Develop, Attachments, and Other attachments. The main area shows a card titled 'Governance' with a small icon, the text 'This asset is not tracked.', and a button 'Track in AI use case' (circled with number 28). To the right, there's a panel titled 'About this asset' with fields for Name, Description, Asset Details, and Tags.

29. Select the **Application screening** use case from the list.



The screenshot shows the 'Define AI use case' screen. On the left, there's a sidebar with options: Define AI use case, Define approach, Define asset record, Assign version, and Review. The main area has a title 'Define AI use case' and a sub-section 'Choose an existing AI use case or create a new one for tracking facts about an asset'. Below this is a search bar 'Find AI use cases' and a table with columns: Name, Status, Owner, Inventory, and Risk level. One row is highlighted with a circled number 29, labeled 'Application screening'.

30. Click the **Next** button. The **Define approach** screen opens.
 31. Click on the **Next** button. The **Define asset record** screen opens. This screen allows you to specify an existing model entry created in the governenence console (OpenPages). Because you have not already created a model entry for this model, click on the tile for **New asset record**.

Track an asset to collect details about the asset in factsheets as part of a governance strategy.

Define asset record

Approach: **Default approach** | Use case: **Application screening**

Associate the trained model with an existing model record or create a new model record in OpenPages. This will sync the tracked model facts between Model inventory and OpenPages.

+ Existing asset record + New asset record **31**

32. Click the **Next** button. The **Assign version** screen opens. The version will be included in model metadata in the Factsheet.
33. Click on the **Stable** tile to reflect a model that the model developers are ready to have evaluated.
34. Click on the **Next** button. The **Review** screen opens.
35. Click on the **Track asset** button to add the model to the use case. After the model is added, the Factsheet opens, displaying governance information.

Note: Note that you may receive an error message that the model was not reachable, or that it is already being tracked; this typically occurs if the system call to track the model takes longer than expected to return, and can typically be fixed by refreshing the screen.

4. Deploy the model

Now that the model has been added as part of the use case, the model Factsheet will start automatically collecting metadata about the model, including deployments, evaluation metrics, and more. If you wish, you can open the **Models** view from the inventory in the governance console to see how that data is represented there; you can also find it in the view of the **Application screening** use case.

Take a moment to review the information presented on the Factsheet. In the **Lifecycle** section, the model is shown as being in the **Develop** phase. You can see the model creator, the creation date, software specification, prediction type, and information on the training data features. Additionally, since the model was created in AutoAI, the initial evaluation done while training the model is available, showing model quality features such as **Accuracy**, **F1**, and **Precision**.

1. When you have finished reviewing the Factsheet, click the **Promote to deployment space** button at the top of the screen. The **Promote to space** window opens.

IBM watsonx

Projects / hiring model development / application screening experiment - P5 XGB Classifier - Model

Governance Model Development hiring model devel... Additional details Attachments

Governance

Application screening

Proposed | System | High Oaks Bank Model Use Cases | None | a0d7164e-1991-48a0-b0ed-1be7542837a3

Promote to space **1** **Select this asset**

Export report

Name	application screening experiment - P5 XGB Classifier - Model
Description	No description provided.
Asset Details	Type: wml-hybrid_0.1

2. Click on the **Target space** dropdown and select the deployment space you created in a previous step.
3. Check the box to the left of **Go to the model in the space after promoting it**.

- Click the **Promote** button to promote the model to the space. Promoting the model can take up to a minute. When the process has finished, the deployment information screen for the model opens.
- Click the **New deployment** button. The **Create a deployment** window opens.

The screenshot shows the IBM WatsonX interface with the title bar "IBM watsonx". Below it, the navigation path is "Deployments / application screening development / application screening experiment - P5 XGB Classifier - Model". The main content is the "Deployments" tab of the AI Factsheet. A search bar and a "New deployment" button are visible. To the right, a modal window titled "About this asset" displays details: Name (application screening experiment - P5 XGB Classifier - Model), Description (No description provided), and Asset Details (Type: wml-hybrid_0.1, Model ID: 63dc0fc9-8724-45...). A callout bubble with the number "5" is positioned over the "New deployment" button.

- Enter **application screening - dev** in the **Name** field.
- Click the **Create** button to create the deployment. The **Create a deployment** window closes. The deployment you created now shows in the list, with the **Status** field showing as **Initializing**. It may take up to two minutes for the deployment to be ready.

Note: Integration between the different components of watsonx.governance is ongoing. For the next steps, you will switch the context back to the Cloud Pak for Data context. In future releases, these steps will likely be unnecessary.

- When the **Status** field changes to **Deployed**, click on the **context** button in the upper right to open the context menu.
- Click on the **IBM Cloud Pak for Data** menu item. The Cloud Pak for Data home screen opens.

The screenshot shows the IBM Cloud Pak for Data interface with the title bar "IBM watsonx". Below it, the navigation path is "Deployments / application screening development". The main content is the "Deployments" tab. A search bar is present. To the right, a modal window titled "IBM Cloud Pak for Data" is open, showing the "IBM Cloud Pak for Data" logo. A callout bubble with the number "8" is positioned over the "IBM Cloud Pak for Data" menu item.

- Click on the **hamburger menu** in the upper left to open it.
- Click on the **Deployments** menu item. The **Deployments** screen opens.

The screenshot shows the IBM Cloud Pak for Data interface with the title bar "IBM Cloud Pak for Data". The sidebar on the left includes icons for Home, Data, Projects, Catalogs, AI governance, Deployments (which is highlighted with a callout bubble "11"), and Services. The main content area features a dark background with a central graphic of interconnected cubes. It includes sections for "Manage users", "Stay informed", and "Recent projects" (with one entry: "hiring model development" last updated "Today at 2:51 PM"). A callout bubble with the number "10" is positioned over the "Home" icon in the sidebar.

The screenshot shows the IBM Cloud Pak for Data interface with the 'Deployments' tab selected. A deployment named 'application screening - dev' is listed in the table. The deployment status is 'Deployed' and 'Online'. The last modified time is '1 hour ago' by 'Eric Martens (You)'. A circled number '13' is shown near the deployment row.

5. Configure model info

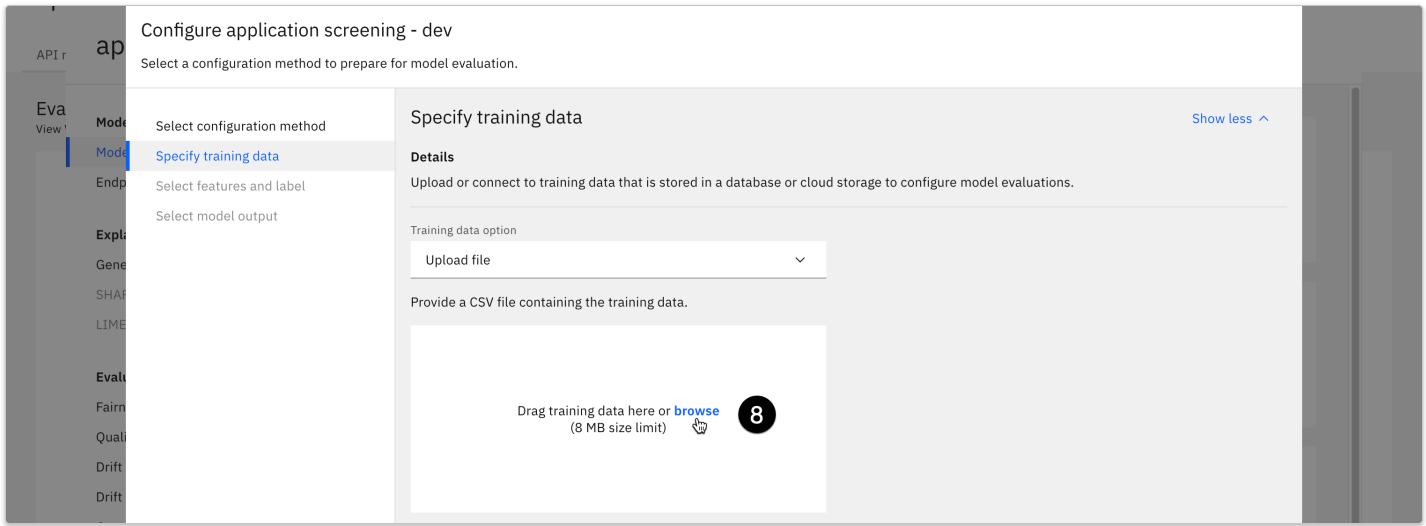
Models can be evaluated at any point during their lifecycle. In the next step, you will configure the evaluation settings.

1. Click on the **Evaluations** tab.
2. Click on the **Configure OpenScale evaluation settings** button. The **Associate a service instance** dialog opens.

The screenshot shows the 'application screening - dev' deployment page. The 'Evaluations' tab is selected, indicated by a blue border and a circled number '1'. Below the tab, there is a section titled 'Evaluation results' with a sub-section 'Start configuring model evaluations'. A blue button labeled 'Configure OpenScale evaluation settings' is highlighted with a circled number '2'.

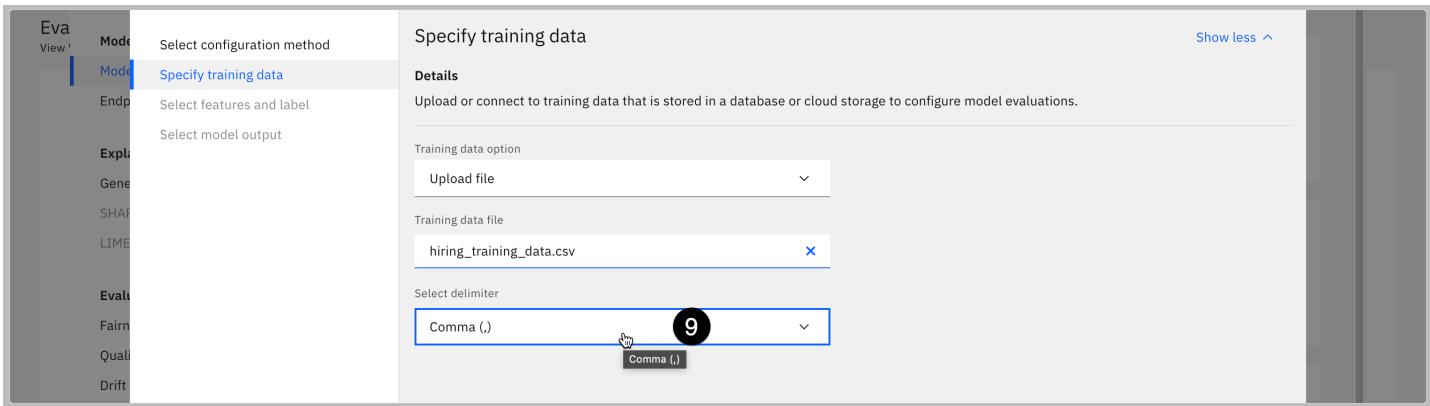
3. Click the **Associate a service instance** button. The deployment space will be added as a machine learning provider for the watsonx.governance monitoring service (OpenScale). The **Prepare for evaluation** window opens.
4. Leave the storage settings set to their default values and click on the **View summary** button. The setup summary window opens.
5. Note that the summary includes metadata such as the model input data type, algorithm type, and more, which have been automatically imported from the AutoAI model you created. Click on the **Finish** button to create a subscription for the model in the monitoring service. The **Configure OpenScale evaluation settings** window opens.
6. Click on the **Edit** icon in the **Training data** tile.

7. Leave the default setup selected for the configuration method, and click on the **Next** button. The **Specify training data** screen opens.
8. Click on the **browse** link in the file area, and locate the **hiring_training_data.csv** file you downloaded to your machine when creating the model.



The screenshot shows the 'Specify training data' configuration screen. On the left, there's a sidebar with various tabs like API, View, Model, Endpoints, Explainability, Generative, SHAP, LIME, Evaluation, Fairness, Quality, Drift, and Drift. The 'Model' tab is active, and its sub-menu is expanded, showing 'Select configuration method' and 'Specify training data'. The 'Specify training data' option is highlighted with a blue background. The main panel has a title 'Specify training data' and a sub-section 'Details' with the instruction 'Upload or connect to training data that is stored in a database or cloud storage to configure model evaluations.' Below this is a 'Training data option' section with a dropdown menu set to 'Upload file'. A large input field below it is labeled 'Provide a CSV file containing the training data.' and contains the placeholder 'Drag training data here or browse (8 MB size limit)'. A circular callout with the number '8' is positioned over the 'browse' link.

9. Click on the **Select delimiter** dropdown and select **Comma (,)**.



This screenshot shows the same 'Specify training data' screen as the previous one, but the 'Select delimiter' dropdown has been interacted with. The dropdown menu is open, and the option 'Comma (,)' is highlighted with a blue border and a circular callout with the number '9' over it. The other options in the menu are 'Tab (t)', 'Semicolon (;)', and 'None ()'. The rest of the screen remains the same, with the 'Upload file' dropdown still set to 'Upload file' and the CSV file 'hiring_training_data.csv' listed in the 'Training data file' section.

10. Click on the **Next** button. The **Select the feature columns and label column** screen opens.
11. Verify that **HIRED** is correctly identified as the **Label/Target** and that the remaining columns are selected as **Features**.

12. Scroll to the bottom of the list and check the **Categorical** box for the **IsFemale** feature to denote that this feature is categorical.

	Features (19)	Type	Categorical ^①	Label / Target
<input checked="" type="checkbox"/>	Age	8:1	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	BusinessTravel	8:0	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Education	8:1	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	HIRED	8:0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	InterviewScore	8:1	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	IsFemale	8:1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	JobLevel	8:0	<input type="checkbox"/>	<input type="checkbox"/>

13. Click on the **Next** button. The monitoring service will send a request to the model input to determine the format of its output.
 14. Verify that the **prediction** and **probability** fields have been correctly identified, and click on the **View summary** button.
 15. Click on the **Finish** button to save your changes.

6. Configure explainability and fairness

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

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

application screening - dev

- Model info
- Model details
- Endpoints
- Explainability
 - General settings 1
 - SHAP
 - LIME (enhanced)
- Evaluations
- Fairness
- Quality

Model details

Description

Provide information about the training data and deployed model output to prepare Watsonx for monitoring and providing explanations for model transactions.

Reconfigure model

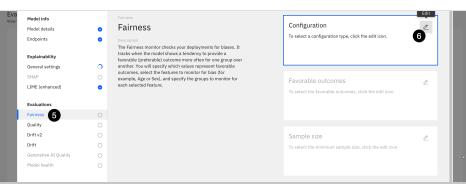
Configuration package

Package file
(File name is not available)

Training data label

Label column
HIRED

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.



7. 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.

8. 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"/>

9. Click on the **Next** button. The **Sample size** screen opens.

10. Enter **100** in the **Minimum sample size** field. This will allow you to calculate evaluations without needing more than 100 rows of data.

11. 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](#).

12. Click on the **Next** button.

13. 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.

14. IBM Watson 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.

15. Scroll down in the table on the right and check the box to the left of the **IsFemale** item.

Fields	Recommended	Type
<input type="checkbox"/> Age	<input checked="" type="checkbox"/>	
<input type="checkbox"/> TotalWorkingYears	<input checked="" type="checkbox"/>	
<input type="checkbox"/> YearsAtCurrentCompany	<input checked="" type="checkbox"/>	
<input type="checkbox"/> BusinessTravel	<input type="checkbox"/>	
<input type="checkbox"/> Education	<input type="checkbox"/>	
<input type="checkbox"/> InterviewScore	<input type="checkbox"/>	
<input checked="" type="checkbox"/> IsFemale	<input type="checkbox"/>	
<input type="checkbox"/> JobLevel	<input type="checkbox"/>	
<input type="checkbox"/> JobType	<input type="checkbox"/>	

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.

22. 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**.

Configure OpenScale evaluation settings

application screening - dev

Model info

- Model details
- Endpoints

Explainability

- General settings
- SHAP
- LIME (enhanced)

Evaluations

- Fairness
- Quality
- Drift v2
- Drift
- Generative AI Quality
- Model health

Fairness

Specify the monitored groups for [IsFemale]

Description

Add value ranges and select the groups to monitor. Minimum and maximum values from the training data are presented for reference.

The percentage of favorable outcomes delivered to the monitored groups will be compared to the percentage of favorable outcomes delivered to the remaining groups (the reference groups) to check for potential bias.

A fairness score of 100% implies that the monitored group and reference group received an equal number of favorable values. Likewise, a fairness score of 50% implies that the monitored group received half as many favorable outcomes as the reference group.

Set the fairness alert threshold to track when the fairness value falls below an acceptable level.

Select the groups to monitor [IsFemale]

Minimum value: 0 Maximum value: 1

Values	Monitored	Reference	Recommended
0-0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	22
1-1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

23. Click the **Next** button.
24. 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.

Configure OpenScale evaluation settings

application screening - dev

Model info

- Model details
- Endpoints

Explainability

- General settings
- SHAP
- LIME (enhanced)

Evaluations

- Fairness
- Quality 1
- Drift v2
- Drift
- Generative AI Quality
- Model health

Quality

Description

The Quality monitor evaluates how well your model predicts accurate outcomes. It identifies when model quality declines, so you can retrain your model appropriately.

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.](#)

Quality thresholds

To select quality threshold values, click the edit icon.

Lower thresholds

To select quality threshold values, click the edit icon.

Area under ROC	<input type="text"/>
Area under PR	<input type="text"/>
Accuracy	<input type="text"/>
True positive rate (TPR)	<input type="text"/>
Recall	<input type="text"/>

- 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.
- Enter **100** in the **Minimum sample size** field.
- Click on the **Save** button to save your configuration.
- From the **Evaluations** section on the left, click on the **Drift v2** item.
- Click on the **Edit** icon in the **Compute the drift archive** tile.

application screening - dev

Model info

- Model details
- Endpoints

Explainability

- General settings
- SHAP
- LIME (enhanced)

Evaluations

- Fairness
- Quality
- Drift v2 **6**
- Drift
- Generative AI Quality
- Model health

Drift v2

Description

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.

Compute the drift archive

To compute the drift archive, click the edit icon.

Drift thresholds

To set drift thresholds, click the edit icon.

Important features

To select important features, click the 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.
10. When developing the model in AutoAI, you identified the features that had the greatest impact on the model's output. Locate those features in the list and check the boxes to the left of them to mark them as important.
11. Once all of the important features have been identified, click on the **Next** button to continue. The **Most important features** screen opens.

Features (18)		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	

Back **Next** 11

12. Check the box to the left of the most important feature to identify it.
13. Click on the **Next** button to continue.
14. 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.
15. Click on the **X** button in the upper right to close the evaluation settings window.

8. Evaluate the AutoAI 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.

application screening - dev Deployed Online

API reference Test Evaluations Transactions AI Factsheet

Last evaluation: --

Test data set

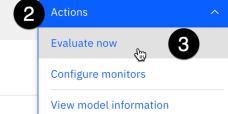
--

Number of explanations



Tests passed

0



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.

application screening - dev Deployed Online

API reference Test Evaluations Transactions AI Factsheet

Last evaluation: --

Test data set

--

Number of explanations

0

0 Tests run

Evaluate

Import test data

Description

watsonx.governance evaluates production models for fairness and drift using logged scoring requests received by the model. Scoring requests are logged using the payload logging endpoint. watsonx.governance evaluates production models for quality using labeled test data. Labeled test data is provided using the feedback endpoint or file upload.

Import test data by uploading a CSV file containing labeled test data or connecting to a database table. watsonx.governance will evaluate the test data for fairness, quality, and drift according to the configuration settings.

Import

from CSV file 4

Test data set

[hiring_evaluation_data.csv](#) 5

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.

At this point, you can find the model in the governance console and view the metrics associated with it. You may do so now if you wish. Next, you will evaluate a third-party model deployed to Amazon SageMaker. Instructions for reserving an account that can connect to this model are in the [environment configuration lab](#).

The SageMaker model will be added from the watsonx monitoring (OpenScale) insights dashboard.

8. Click on the **hamburger menu** in the upper left to open it.
9. Click on the **Services** menu item to expand it.
10. Click on the **Instances** menu item. The **Instances** screen opens.



11. 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.
12. Click on the **Open** menu item. The monitoring dashboard opens. Note that there are already entries listed for the two previous models you evaluated.

Instances

Last updated: 10/16/2024 9:43 PM ⓘ

Filter by: Type ▾ Status ▾ Data plane ▾ Physical location ▾

Name	Type	Created by	vCPU requests	Memory requests (GiB)	Data plane	Physical location	Status	Created on
cpd-db	db2oltp	admin	2.10	4.25 Gi	—	—	Green	Oct 14, 2024
openscale-defaultinstance IBM Watson OpenScale	aios	admin	0.00	0.00 Gi	—	—	Green	Oct 14, 2024
openpagesinstance-cr OpenPages Instance	openpages	admin	4.45	12.40 Gi	—	—	Green	Oct 14, 2024

Find instances ⚙ New instance +

11. Context menu for the 'openscale-defaultinstance' row.

12. 'Open' option selected in the context menu.

9. Add the SageMaker model to the dashboard

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

IBM watsonx Need help? ⓘ EM

Insights dashboard Refresh ⓘ Add to dashboard +

Deployments monitored	Quality Alerts	Fairness Alerts	Drift v2 Alerts	Drift Alerts	Global explanation Alerts	Custom Alerts
1	3	1	3	--	--	--

Filter by Tags ▾ Alert type ▾ Machine learning provider ▾ Sort by Severity ▾

Which deployment are you looking for?

1. Click on the 'Configure' button in the top left corner.

2. From the **Required** section in the left panel, click on **Machine learning providers**.
3. Click on the **Add machine learning provider** button.

IBM watsonx Need help? ⓘ EM

System setup

Required

Machine learning providers

Description

Watson OpenScale connects to deployed models stored in a machine learning environment.

Add machine learning provider +

2. Click on the 'Machine learning providers' link in the 'Required' section.

3. Click on the '+ Add machine learning provider' button.

System setup

Connect to a database, machine learning providers, and integrated services. Optionally enable batch support.

Required

- Database
- Machine learning providers** (selected)
- Users & roles

Optional

- Metric groups
- Metric endpoints
- Batch support
- Integrations

[← Back to all providers](#) [Edit](#)

New provider

Description [Edit](#)

Click edit to enter provider description.

Connection

Click edit to enter the connection information.

- Enter **SageMaker development** in the text field and click the **Apply** button.
- Click on the **Edit** button in the **Connection** tile. The **Connection** panel opens.
- 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.

System setup

Connect to a database, machine learning providers, and integrated services. Optionally enable batch support.

Required

- Database
- Machine learning providers** (selected)
- Users & roles

Optional

- Metric groups
- Metric endpoints
- Batch support
- Integrations

Machine learning providers

Connection

SageMaker development

Description

Connect to the provider where your deployed models are stored and specify if the environment is a pre-production or production environment.

Pre-production environments

Test models by uploading test data sets (csv files) and running evaluations. When the model is ready, approve it for production.

Production environments

Monitor production models by logging model transactions and sending feedback (labeled test data) to Watson OpenScale for continuous evaluation.

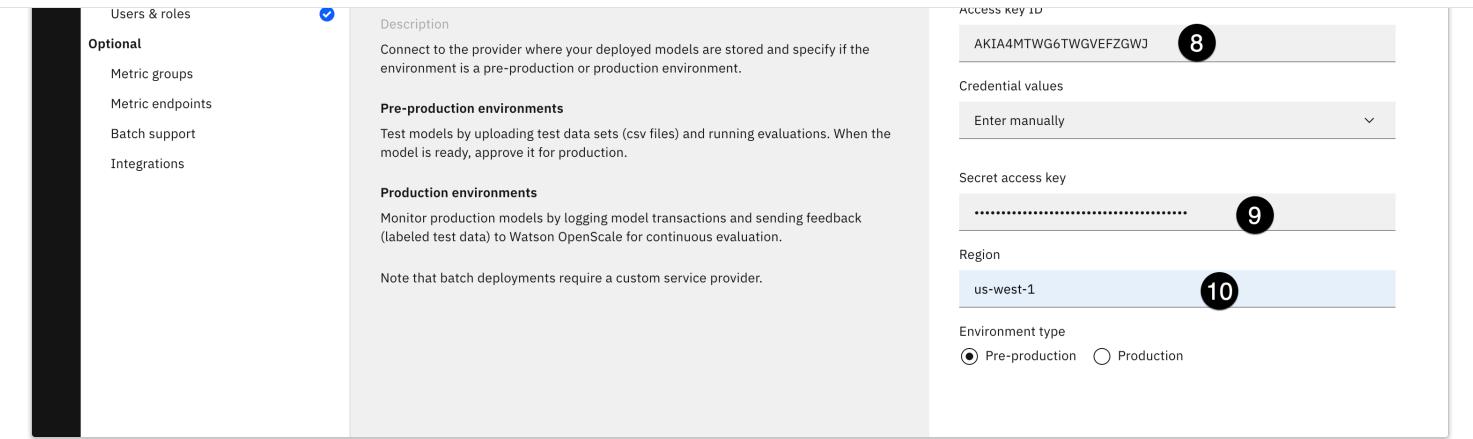
Service provider

Choose an option

- Watson Machine Learning (V2)
- IBM SPSS Collaboration & Deployment Services
- Custom Environment
- Amazon SageMaker** (selected)
- Microsoft Azure ML Studio
- Microsoft Azure ML Service

Enter your SageMaker credentials from your [TechZone reservation](#).

- In the **Access key ID** field, enter the **AWS_ACCESS_KEY_ID** value from your reservation.
- In the **Secret access key** field, enter the **AWS_SECRET_ACCESS_KEY** value from your reservation.
- In the **Region** field, enter the **Region** value from your reservation.



Optional

- Users & roles
- Metric groups
- Metric endpoints
- Batch support
- Integrations

Description

Connect to the provider where your deployed models are stored and specify if the environment is a pre-production or production environment.

Pre-production environments

Test models by uploading test data sets (csv files) and running evaluations. When the model is ready, approve it for production.

Production environments

Monitor production models by logging model transactions and sending feedback (labeled test data) to Watson OpenScale for continuous evaluation.

Note that batch deployments require a custom service provider.

Access key ID **8** AKIA4MTWG6TWGVEFZGWJ

Credential values

Enter manually

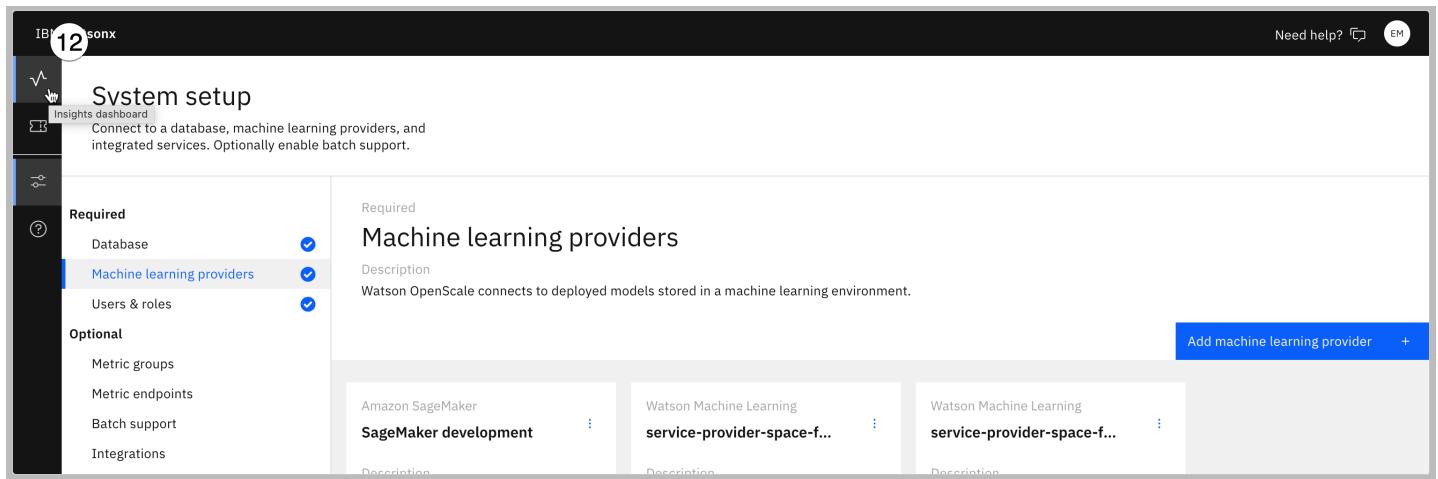
Secret access key **9** (redacted)

Region **10** us-west-1

Environment type

Pre-production 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.



System setup

Connect to a database, machine learning providers, and integrated services. Optionally enable batch support.

Required

- Database
- Machine learning providers**
- Users & roles

Optional

- Metric groups
- Metric endpoints
- Batch support
- Integrations

Machine learning providers

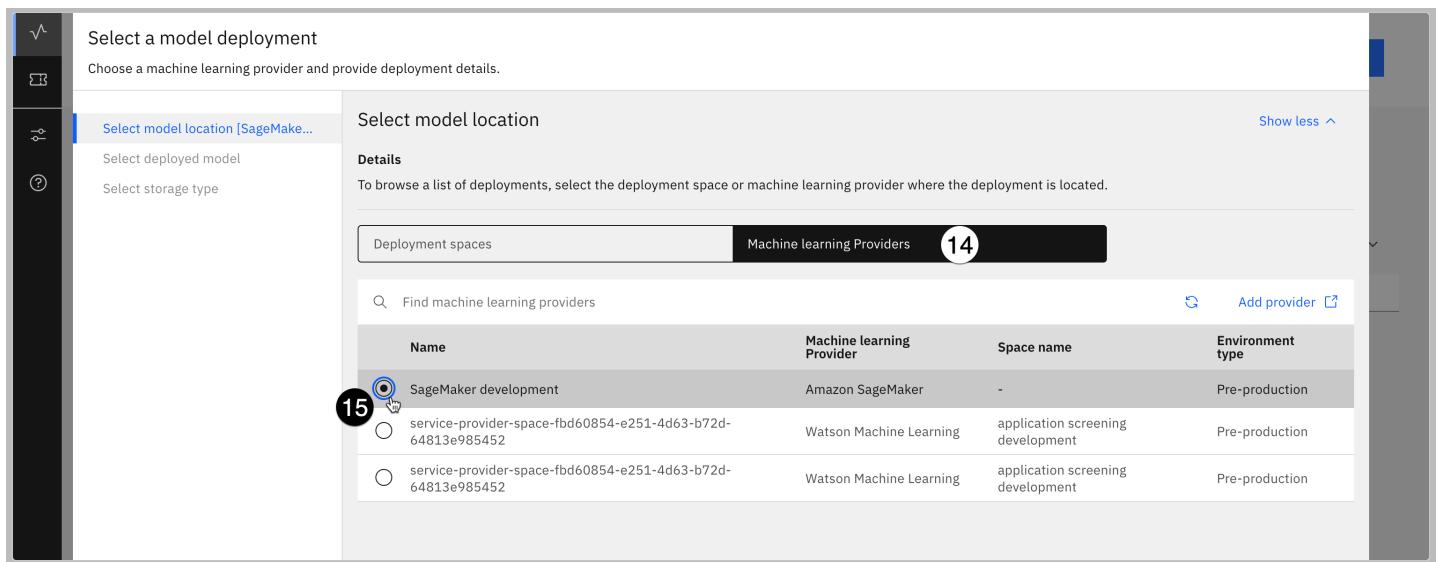
Description

Watson OpenScale connects to deployed models stored in a machine learning environment.

Add machine learning provider +

Amazon SageMaker SageMaker development	Watson Machine Learning service-provider-space-f...	Watson Machine Learning service-provider-space-f...
Description	Description	Description

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.



Select a model deployment

Choose a machine learning provider and provide deployment details.

Select model location [SageMake...]

Details

To browse a list of deployments, select the deployment space or machine learning provider where the deployment is located.

Deployment spaces **14** **Machine learning Providers**

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.

Select deployed model [hiring-en...]

Select storage type

Details

Choose a deployment from the deployment space or machine learning provider you selected.

Find Deployment Hide added models

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.

Select model location [SageMake...]

Select deployed model [hiring-en...]

Select storage type

Details

Choose a location to store the model transactions and analysis results.

Show less ^

Storage types

System-managed <input checked="" type="checkbox"/>	Self-managed
Model transactions are stored in the OpenScale database and evaluated by OpenScale.	Model transactions are stored in your own data warehouse and evaluated by your Spark analytics engine.

Data type **19**

Algorithm type **20**

Model endpoint

hiring-endpoint-scoring-05-30-2024

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.

10. 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. Click the link to browse to the **hiring_training_data.csv** file you downloaded to your machine earlier to train the AutoAI model. The same file was used to train the SageMaker model.
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.



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.

<input checked="" type="checkbox"/>	YearsAtCurrentCompany	81	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	RelevantExperience	81	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	JobType	80	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	SalaryExpectation	81	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	IsFemale	80	<input checked="" type="checkbox"/>	7

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.

Features (2)	Type	Prediction	Probability
score	81	<input type="checkbox"/>	<input checked="" type="checkbox"/> 10
predicted_label	80	<input type="checkbox"/>	<input type="checkbox"/>

11. Click on the **View summary** button.
12. Click on the **Finish** button to finalize your configuration.
13. Configure the model monitors and explainability service for the SageMaker model using the same values and thresholds you used for the AutoAI model, making sure to set the minimum records required for fairness and quality scoring to **100**.

11. Evaluate the SageMaker model

1. Return to the **Insights dashboard** for the monitoring service.
2. Click on the tile for the **hiring-endpoint-scoring** model.
3. Click on the **Actions** button to open the **Actions** menu.
4. Click on **Evaluate now** from the list of actions.
5. Click on the **Import** dropdown and select **from CSV file**.
6. Click the link to browse to the **hiring_evaluation_data.csv** file you used to evaluate the AutoAI model.
7. Click on the **Upload and evaluate** button to begin the evaluation. Note that the evaluation can take up to five minutes to complete.
8. When the evaluation has finished, take a moment to review the results. Compare the evaluations for this model with the AutoAI model.

12. 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. However, the model entry defaults to the **admin** user as the owner. In order to add it to the use case, you will need to log in as the **admin** to add it to the use case.

Again, due to issues with watsonx governance console sessions, it is **HIGHLY ADVISED** that you use a different browser or a browser window running in private/incognito mode when changing users.

1. Log into the Cloud Pak for Data home screen as the **admin** user that you used to do the configuration steps.
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 IBM Cloud Pak for Data dashboard. On the left, there's a navigation sidebar with sections like Home, Data, Projects, Catalogs, AI governance, AI use cases, External models (highlighted with a red circle labeled 4), Deployments, Services, and Instances. The main area features a dark background with a central graphic of a computer monitor displaying data cubes. Below the graphic are three cards: 'Alerts' (No alerts to display), 'Recent projects' (factsheet experiments, hiring model development), and 'Requests' (No data available). A search bar at the top right says 'Search'.

5. 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.
6. 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' list page. It has a header with a search bar and a 'Find an external model' input field. The table columns are Name, Provider, Owner, Inventory, AI use case, and Phase. One row is visible: 'Hiring-linear-learner-2024-05-21-18-25' with Provider '--', Owner 'admin', Inventory 'Platform assets catalog', AI use case 'n/a', and Phase 'Validate'. To the right of the table is a context menu with items 'Track in AI use case...', 'Delete', and '...'. A red circle labeled 5 is over the 'Track in AI use case...' item, and another red circle labeled 6 is over the context menu itself.

7. 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. On the left, a sidebar lists steps: 'Define AI use case' (selected, highlighted with a red circle labeled 7), 'Define approach', 'Define asset record', 'Assign version', and 'Review'. The main panel is titled 'Define AI use case' and contains a sub-header 'Choose an existing AI use case or create a new one for tracking facts about an asset'. It includes a search bar 'Find AI use cases' and a table with columns Name, Status, Owner, Inventory, and Risk level. Three rows are shown: 'Application screening' (Approved, System, Platform assets catalog, High), 'Resume summarizations' (Under Development, System, Platform assets catalog, High), and 'Resume summarization' (Rejected, System, Platform assets catalog, High).

8. Click on the **Next** button. The **Define approach** window opens.
9. Click on the **Next** button to accept the default approach. The **Define asset record** window opens.
10. 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.

The versions listed here refer to there already being a model defined for this particular use case; the AutoAI version of the model was created as version 1.0.0. Therefore, this model is seen as an iteration on the AutoAI model, with version numbers changing to reflect that. Choose the version change as desired or leave it set to **Patch change**.

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.

13. View the model metrics in the use case

For this step, you will once again sign in as the created user (**NOT** the admin), and open the watsonx governance console (OpenPages).

For this step, you will once again sign in as the created user (**NOT** the admin), and open the watsonx governance console (OpenPages).

1. Return to the governance console, signed in as the created user, and click on the **hamburger menu** in the upper left corner.
2. Click on the **Inventory** menu item to expand it.
3. Click on the **Use Cases** menu item. The **Use Cases** tab opens.

	Purpose	Description	Owner	Status	Risk Level	Tags
Corporate Banking	Uses internal and external recovery data, adjusted for macro-economic impact. Uses statistical regression	Bob Eldridge	Approved for Development	Low		
Model bond - income	ALM based income forecast for the HTM portfolio, initially for the CCAR 2013 stress-test. Vendor solution	Bob Eldridge	Approved for Development	Medium		

4. Click on the **Application screening** use case from the list.
5. 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: 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.

14. Promote the model to production

In this section, you will promote the AutoAI-created model to a production deployment space to see how this change is reflected in the model lifecycle and how it affects the appearance and calculations of metrics data.

1. From the Cloud Pak for Data home screen, click the **hamburger icon** in the upper left.
2. Click on the **Projects** menu item to expand it.

The screenshot shows the Cloud Pak for Data interface. On the left, a sidebar menu is open with several sections: Home, Data (Platform connections, Databases), Projects (All projects, Jobs, Tool runtimes), Catalogs, AI governance, and Deployments. The 'Projects' section is highlighted with a red circle labeled '2'. Below it, under 'All projects', there is a card with three vertical dots labeled '3'. The main content area displays a table of roles:

	Description	Enabled permissions	Users and groups
	Data quality analyst role	Create projects	-
	Developer role	Access catalogs, Create service instances, Create projects, Create deployment spaces	-
		Administer platform, Create service instances,	-

4. From the list of projects, click on the **hiring model development** project. The project information screen opens.
5. Click on the **Assets** tab to open it.
6. Click on the three vertical dots to the right of the **application screening...** model to open the context menu.
7. Click on the **Promote to space** menu item. The **Promote to space** window opens.

The screenshot shows the 'hiring model development' project page. The 'Assets' tab is selected, indicated by a red circle labeled '5'. The left sidebar shows asset types: Data (1), Experiments (1), and Models (1). The main area displays a table of assets:

Name	Last modified	Actions
application screening experiment - P10 Extra Trees... Model	26 minutes ago Modified by System	...
application screening experiment AutoAI experiment	28 minutes ago Modified by you	...
hiring_training_data.csv CSV	1 hour ago Modified by you	...

A context menu is open over the third row ('hiring_training_data.csv'). The menu items are: Publish to catalog (highlighted with a blue box), Promote to space (with a cursor icon), and Delete. A red circle labeled '6' is over the 'Publish to catalog' option, and a red circle labeled '7' is over the 'Promote to space' option. To the right, a sidebar titled 'Data in this project' has a dashed box labeled 'Drop data files here or browse for files to upload'.

8. Click on the **Target space** dropdown and select **Create a new deployment space**. The **Create a deployment space** window opens.

The screenshot shows the 'Promote to space' dialog box. It includes a sidebar with 'Assets' and a main area with the following fields:

- Target space:** A dropdown menu labeled 'Select or create a space' with a red circle labeled '8' over it. Below it is a button 'Create a new deployment space' with a plus sign.
- Selected assets (1):** A table showing one asset: 'application screening experiment - P10 Extra Trees Classifier - Model'.
- Tags (optional):** A text input field 'Add a tag'.

9. Enter **application screening production** in the **Name** field.
10. Click on the **Deployment stage** dropdown and select **Production**.
11. Click **Create** to create the space, which can take up to two minutes.

Create a deployment space

Use a space to collect assets in one place to create, run, and manage deployments

Define details

Name

application screening production (9)

Description (Optional)

Deployment space description

Deployment stage ⓘ

Production (10)

Deployment space tags (optional) ⓘ

Add a tag

Cancel Create (11)

12. Click the **x** icon to close the **The space is ready** dialog. The **Promote to space** window opens.
13. Check the box to the left of **Go to the model in the space after promoting it**.

Promote to space

Use a deployment space to organize supporting resources such as input data and environments; deploy models or functions to generate predictions or solutions; and view or edit deployment details.

Target space

application screening production (13)

Go to the model in the space after promoting it

Selected assets (1)

Name	Format
application screening experiment - P10 Extra Trees Classifier - Model	Model

Tags (optional)

Add a tag

14. Click the **Promote** button to promote the model to the space. Promoting the model can take up to a minute. When the process has finished, the deployment information screen for the model opens.
15. Click the **New deployment** button. The **Create a deployment** window opens.
16. Enter **application screening - production** in the **Name** field.
17. Click the **Create** button to create the deployment. The **Create a deployment** window closes. The deployment you created now shows in the list, with the **Status** field showing as **Initializing**. It may take up to two minutes for the deployment to be ready.
18. When the **Status** field changes to **Deployed**, click on the link for the deployment name. The deployment information screen opens to the **API reference** tab.

IBM Cloud Pak for Data

Deployments / application screening production / application screening experiment - P10 Extra Trees Classifier - Model

Deployments AI Factsheet

Name	Type	Status	Tags	Last modified
application screening - production (18)	Online	Deployed	Add tags +	2 minutes ago Eric Martens (You)

application screening experiment - P10 Extra Trees Classifier - Model

Created May 28, 2024, 1:18 PM

Type wml-hybrid_0.1

Model ID

20. Click on the **Deployments breadcrumb** link at the top of the screen. The list of deployment spaces opens.

The screenshot shows the 'application screening - production' deployment space. The 'API reference' tab is selected. On the right, there's an 'About this deployment' panel with fields like Name (application screening - production), Description (No description provided), Deployment ID (52a4b7fc-1a6e-4b44-b905-9878d69b547b), and Deployment Details (Serving name: No serving name). A 'Copied!' message is visible next to the Deployment ID field. Below the panel, there's a 'Code snippets' section with tabs for cURL, Java, JavaScript, Python, and Scala.

21. Click on the **application screening production** space from the list.
 22. Click on the **Manage** tab.
 23. Click on the **Copy** icon for the **Space GUID** value to copy it to your clipboard. Paste the value into your text file. You will use this value in upcoming steps in a Jupyter notebook as the **SPACE_GUID** value.

The screenshot shows the 'application screening production' space details. The 'Manage' tab is selected. In the 'Details' section, the Space GUID is listed as 1e24668d-1a50-44ea-ac4e-cc26e869f9ae, with a copy icon next to it. A 'Copied!' message is displayed below the GUID. Other details shown include Name (application screening production), Description (No description provided), Date created (Jun 3, 2024, 4:19 PM by Eric Martens (You)), and Last updated (Jun 3, 2024, 4:19 PM).

The model has now been deployed to a production deployment space. In the next step, you will configure monitoring for a production model.

15. Configure production monitoring

Now that the model has been deployed to a production space, you can configure it to be monitored as if it were in a production environment. For models in production environments, watsonx.governance records all input and output data of the model in a datamart, which is a set of tables in the Db2 database you configured for the monitoring service (OpenScale) in the environment configuration lab.

For IBM models hosted in the same environment as your watsonx.governance services (in this case, the AutoAI hiring model), that data is automatically written to the datamart without any further effort or code required. For third-party models or IBM models hosted in other environments (the SageMaker hiring model, the Azure and watsonx resume summarization models) that data must be written to the datamart using API calls.

Additionally, for production environments, the monitoring service will automatically run at timed intervals to take evaluations. Fairness and quality are evaluated hourly, and drift is evaluated every three hours. Disparate impact (fairness) and drift are computed based on the model input and output, and do not require additional ground truth feedback data. Quality **does** require the upload of additional ground truth feedback data.

1. Return to the watsonx.governance monitoring service (OpenScale) Insights dashboard. Recall that it can be found from the **Instances** item in the **Services** section of the Cloud Pak for Data home page menu.
2. Click on the **Configure** button on the left.

The screenshot shows the Insights dashboard with the following data:

Category	Value
Deployments monitored	11
Quality Alerts	2
Fairness Alerts	6
Drift v2 Alerts	--
Drift Alerts	--
Global explanation Alerts	--
Custom Alerts	--

Below the dashboard, there are filters for Tags, Alert type, Machine learning provider, and a search bar for deployment names.

3. Click on the **Machine learning providers** item in the menu on the left.
4. Click on the **Add machine learning provider** button.

The screenshot shows the System setup page under the Required section. The **Machine learning providers** item is selected (marked with a circled '3'). On the right, a modal window titled "Machine learning providers" is open, showing a list of existing providers: "SageMaker development", "service-provider-space-f...", and "service-provider-space-f...". A blue button labeled "Add machine learning provider" is visible at the bottom right of the modal (marked with a circled '4').

5. Click on the **Edit icon** for the **Machine learning providers**.
6. Enter **application screening production space** in the name field and click the **Apply** button.

The screenshot shows the System setup page with the "Machine learning providers" item selected in the sidebar (marked with a circled '5'). A modal dialog is open, showing the current name "application screening production space" in the input field (marked with a circled '6'). Below the input field is a "Description" section with a placeholder "Click edit to enter provider description." To the right of the input field is a "Connection" section with a note "Click edit to enter the connection information." A blue "Apply" button is visible at the bottom left of the dialog, and a "Cancel" button is at the bottom right.

7. Click on the **Edit button** in the **Connection** tile. The **Connection** window opens.
8. Click on the **Service provider** dropdown and select **Watson Machine Learning (V2)**.
9. Click on the **Location** dropdown and select **Local**.
10. Click on the **Deployment space** dropdown and select the **application screening production space** you created in a previous step.
11. Use the radio button to select the **Production** setting for **Environment type**.

Required

- Database
- Machine learning providers**
- Users & roles

Optional

- Metric groups
- Metric endpoints
- Batch support
- Integrations

Machine learning providers

Connection application screening production space

Description

Connect to the provider where your deployed models are stored and specify if the environment is a pre-production or production environment.

Pre-production environments

Test models by uploading test data sets (csv files) and running evaluations. When the model is ready, approve it for production.

Production environments

Monitor production models by logging model transactions and sending feedback (labeled test data) to Watson OpenScale for continuous evaluation.

Note that batch deployments require a custom service provider.

Missing a Watson Machine Learning service?

Service provider: Watson Machine Learning (V2) (8)

Location: Local (9)

Deployment space: application screening production (10)

Environment type: Production (11)

12. Click on the **Save** button to save the deployment space as a machine learning provider.
13. Return to the **Insights dashboard** by clicking the button in the upper left.
14. Click on the **Add to dashboard** button in the upper right.
15. Use the radio button to select the **application screening production** deployment space from either the **Deployment spaces** list or the **Machine learning providers** list.

Select a model deployment

Choose a machine learning provider and provide deployment details.

Select model location [application screening production]

Deployment spaces

Name	Environment type	Machine learning provider name
application screening production	Production	application screening production space

Create a space

16. Click on the **Next** button. The **Select a deployed model** screen opens.
17. Use the radio button to select the **application screening - production** deployment.
18. Click on the **Next** button. The **Select storage type** screen opens.

Because you have already configured monitoring for the pre-production version of this model, you can import those settings without having to re-enter all of them.

19. Check the **Import settings** box.

Select a model deployment

Choose a machine learning provider and provide deployment details.

Select model location [application screening production]

Select storage type

Import settings

19 Import settings

20. Click on the **Next** button. The **Select pre-production deployment** screen opens.
21. Use the radio button to select the **application screening - dev** deployment.

Select a model deployment
Choose a machine learning provider and provide deployment details.

Select model location [application...]
Select deployed model [application...]
Select storage type
Import settings

Select pre-production deployment
Choose the pre-production deployment that you want to import the settings from.

Name	Machine learning provider	Description
hiring-endpoint-scoring-05-30-2024	SageMaker development	
application screening - dev	service-provider-space-fbd60854-e251-4d6...	

22. Click on the **View summary** button. The configuration settings for the model appear.

23. Click on the **Finish** button to complete the monitoring configuration.

16. Feed data to the model

Because IBM-hosted production models log data directly into the datamart from requests received by the model, you will need to send actual scoring requests to the model to trigger the evaluations. In this step, you will run a Jupyter notebook to feed data to the model.

1. Click on the **hamburger menu** in the upper left.
2. Click on the **Projects** menu item to expand it.
3. Click on the **All projects** menu item. The **Projects** screen opens.

Cloud Pak for Data

Filter navigation

Search

API key

Home

Data

Platform connections

Databases

Projects

All projects

Jobs

Tool runtimes

Catalogs

AI governance

Deployments

Git integrations

Password

Description	Enabled permissions	Users and groups
Data quality analyst role	Create projects	-
Developer role	Access catalogs, Create service instances, Create projects, Create deployment spaces	-
	Administer platform, Create service instances, Manage platform health, Manage configurations	-

4. Click on the **hiring model development** project from the list to open it.

5. Click on the **Assets** tab to open it.
6. Click on the **New asset** button. The **New asset** window opens.

IBM Cloud Pak for Data

Projects / hiring model development

Overview Assets 5 Jobs Manage

Find assets

Import assets New asset

3 assets All assets

All assets

Name	Last modified
application screening experiment - P10 Extra Trees... Model	9 hours ago Modified by System
application screening experiment AutoAI experiment	9 hours ago Modified by you
hiring_training_data.csv CSV	10 hours ago Modified by you

Asset types

Data 1 Experiments 1 Models 1

Data

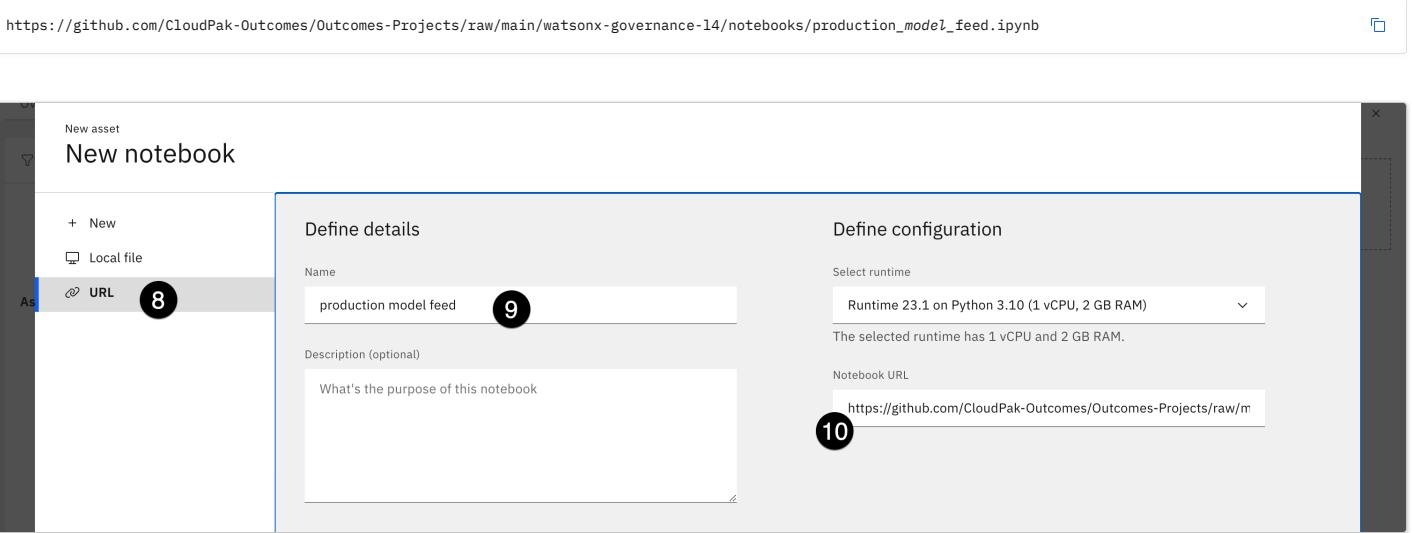
Experiments

Models

Data in this project

Drop data files here or browse for files to upload

9. Enter **production model feed** into the **Name** field.
10. Copy and paste the following URL into the **Notebook URL** field:



11. Click the **Create** button to create the notebook.
 12. Update the values in the first code cell.
- The **USERNAME** and **PASSWORD** values are for the user you created as part of the lab, and will already be filled out if you have followed the instructions exactly.
 - The **CPD_URL** value will be the URL of your Cloud Pak for Data environment.
 - The **DEPLOYMENT_ID** and **SPACE_GUID** values are the ones you obtained in [6. Promote the model to production](#).
 - **RECORDS_TO_SCORE** is the number of requests that will be sent to the model, and must be greater than or equal to the minimum number of records required for **Fairness** and **Drift** evaluations you configured when setting up the model monitoring.
13. Run the notebook, examining what the cells are doing. Note that this notebook can be configured as a scheduled job to continually feed data to the model for demo purposes.

Once the notebook has finished, the model's datamart payload log will have enough data to perform fairness and drift evaluations. You can also upload the evaluation data you used for the pre-production models if you would like to calculate model quality.

Take a moment to view the model Factsheets and observe the updates to the model's lifecycle, as well as changes in the governance console.

Conclusion

Congratulations, you have completed the `watsonx.governance` Level 4 proof of experience (PoX) 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 and Watson Machine Learning. 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.

Your feedback is essential to the improvement of this course. Please feel free to provide that on the course page, or directly to the course author. Thank you for your time, and happy selling.

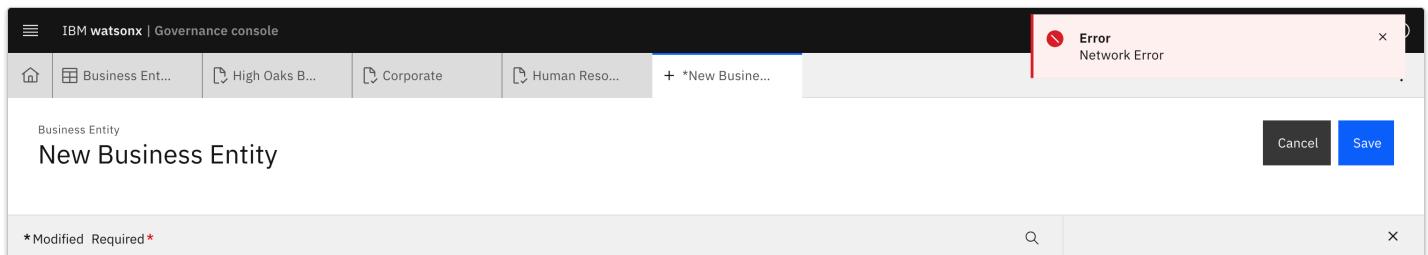
Troubleshooting

The following issues may appear as you run through the lab. This section will grow over time based on user feedback.

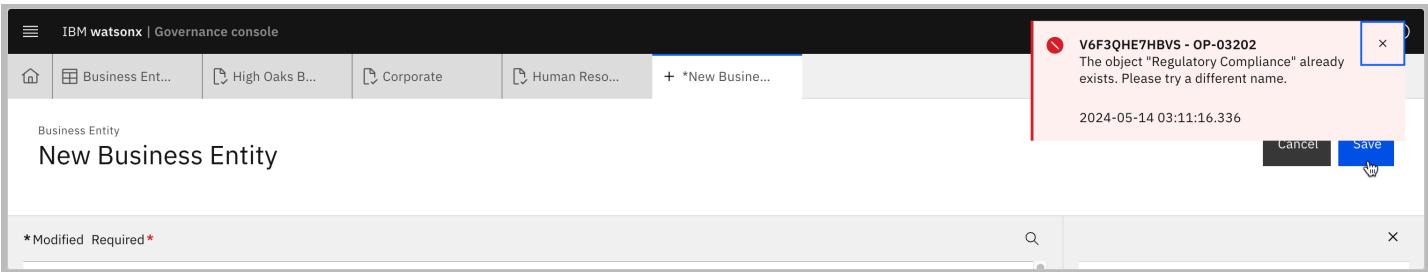
1. Governance console Save button disabled

When editing entities in the governance console, occasionally the **Save** button will be disabled. The most common cause is that some relevant information in the form is missing, which may or may not be called out in the progress panel on the right. Ensure that all required fields (denoted with a red asterisk) have been filled out.

2. Governance console errors



In most cases, re-trying the action will resolve the problem. In some cases when creating a new entity, you will receive an error stating that the entity already exists, in which case it likely saved successfully:



Typically, the object has been created successfully, but the action took longer than expected, which generated the failure message. In these cases, you can ignore the message and proceed. In rare cases, you will need to delete and then re-create the entity.

3. Requested operation could not be completed in the governance console

The most frequent cause of this error is incorrectly persisted browser session information when switching between the admin user and the created user in the governance console. For this reason, it is **HIGHLY RECOMMENDED** that you use your browser's private/incognito mode when signing in as the created user.

