

## Lab - AI GOVERNANCE

### 1.1 Lab overview

AI governance is the process of defining policies and establishing accountability to guide the creation and deployment of AI systems in an organization. Capturing and managing metadata on AI models as part of AI governance processes provides transparency into how AI systems are constructed and deployed, a key requirement for most regulatory concerns.

This lab demonstrates how IBM's Cloud Pak for Data applies the methodology of AI governance to enable organizations to trust AI-powered outcomes at every step of the AI lifecycle. You will apply bias, risk and drift measures to ensure transparency and explainability of results from an AI model in production. The following Cloud Pak for Data toolkits will be demonstrated: AutoAI, Jupyter notebooks, Factsheets, OpenScale and Watson Trust.

### 1.2 Personas represented in this lab

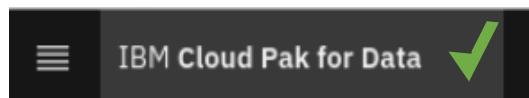
Persona (Role)	Capabilities
 Administrator	<p>Administrators set up and maintain the CPD environment itself.</p> <p>Note: while some of the Admin work can be done in the CPD web client, most of the Admin work on the cluster would be done in OpenShift which is outside the scope of this workshop.</p> <p><i>The exercises in this first lab represent some typical CPD Administrator activities.</i></p>

Persona (Role)	Capabilities
 Data Scientist	Data Scientists bring expertise in statistics and the process of building ML/AI models to make predictions and answer key business questions.

Persona (Role)	Capabilities
 Business Analyst	Business Analysts deliver value by taking data, using it to answer questions, and communicating the results to help make better business decisions.

## 1.3 Return Home

1. Make sure you are logged in as [admin](#), then select the [IBM Cloud Pak for Data](#) link at the top



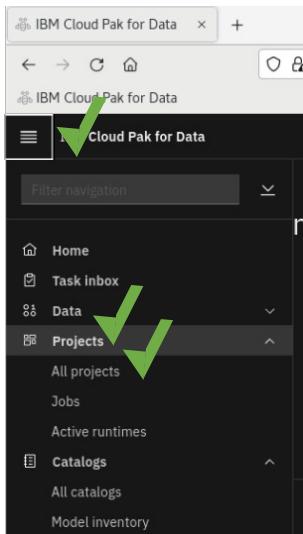
This will place you in the home screen for Cloud Pak for Data. This screen is completely customizable, allowing you to brand according to your organization, add and delete any of the tiles, etc. In addition, this screens' content will change based on the role of the user logging in.

A screenshot of the IBM Cloud Pak for Data home screen. The interface is dark-themed. At the top, there's a navigation bar with a search bar and a teal circular profile icon. Below it, a main banner says "Welcome, admin!" and features three tiles: "Discover services", "Manage users", and "Stay informed". The "Discover services" tile has a sub-section for "OpenPages". The "Manage users" tile has a sub-section for "All projects". The "Stay informed" tile has a sub-section for "Recent projects". The central area is titled "Overview" and includes sections for "Recent projects" (listing "IA Project - Watson Query, WKC, DataStage Assets" from Sep 13, 2022), "Requests" (showing 0 data requests), and "Notifications" (listing two notifications about metadata enrichment results). On the left, there's a sidebar with "Quick navigation" links: OpenPages, All projects, Instances, Databases, Data virtualization, and Catalogs.

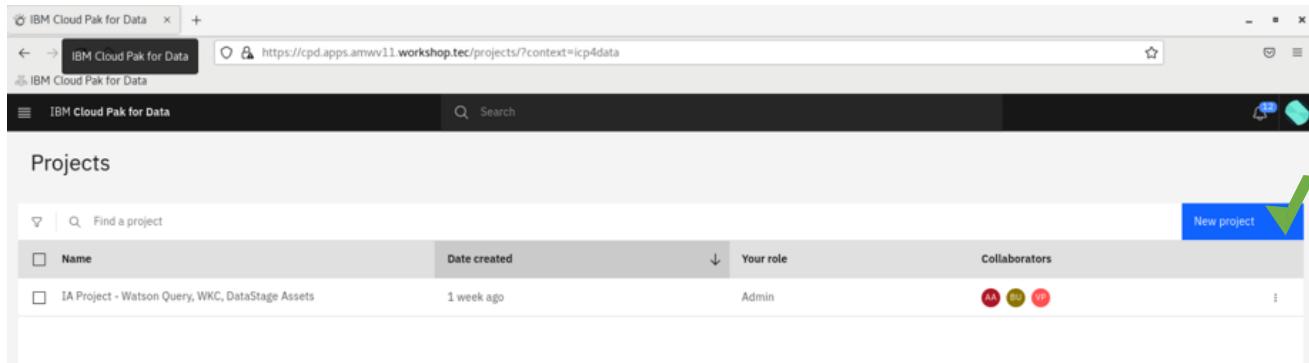
Note the 'Recent Projects' section on the home screen. Projects are where the user develops assets – access Operational assets, Configuration assets, Environments, Jobs, Asset storage, Integrations and on and on are all housed within a project during development. Follow the lab steps below to create the AI Governance Project.

## 1.4 Create the AI Governance Project

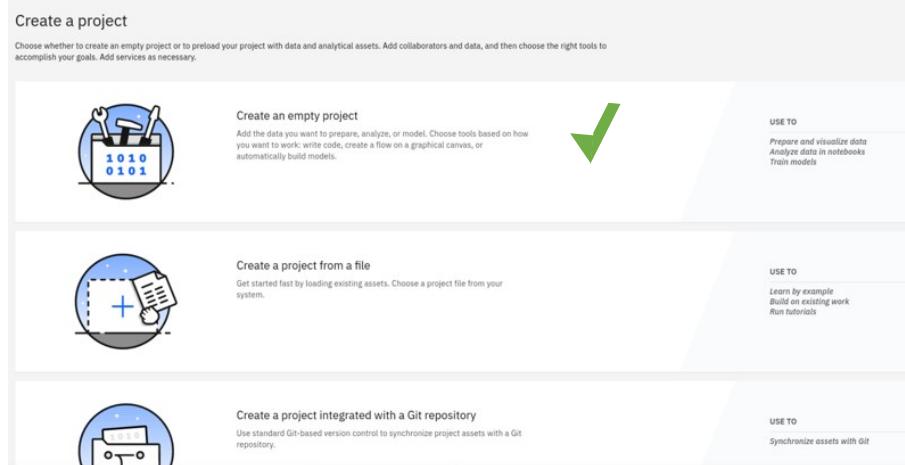
1. Select the Hamburger menu (top left), then Select “Projects”, and then “All Projects”.



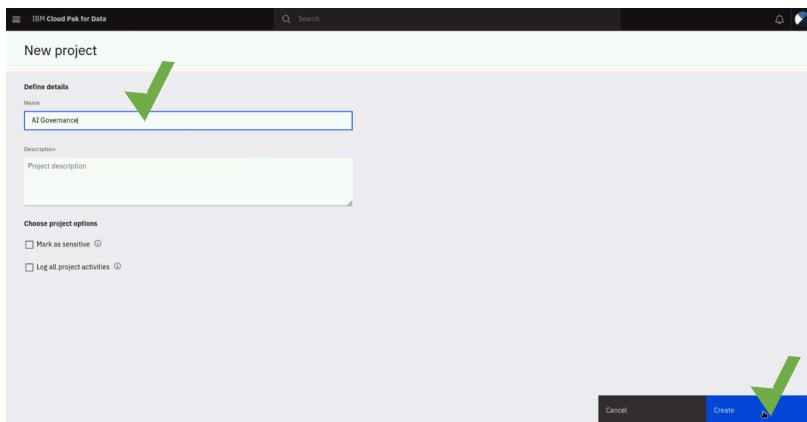
2. In the Projects window, Select the “New Project” Button



3. Select “Create an empty project”.

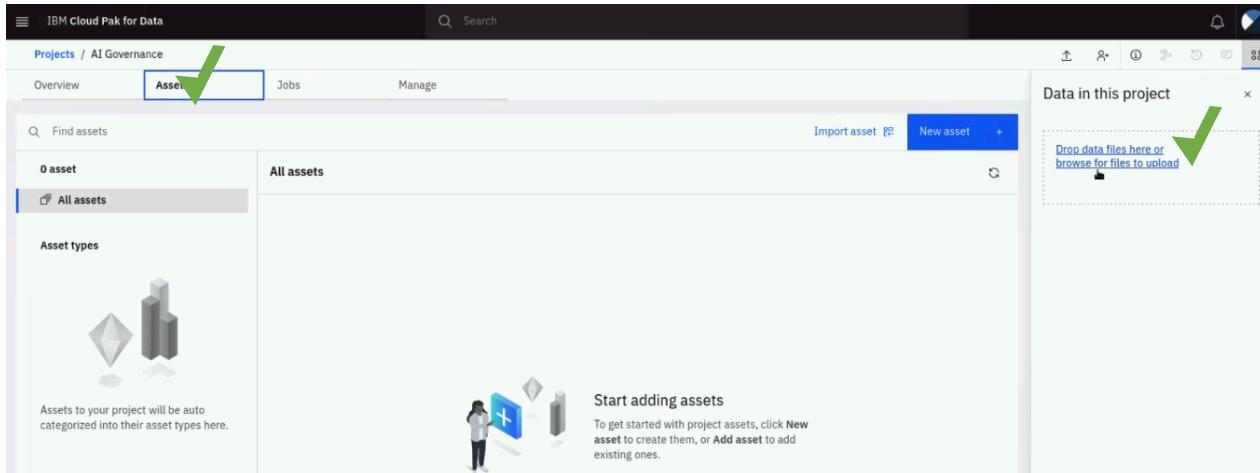


4. Select the Name box and type “AI Governance”, then Select the “Create” button (lower right).

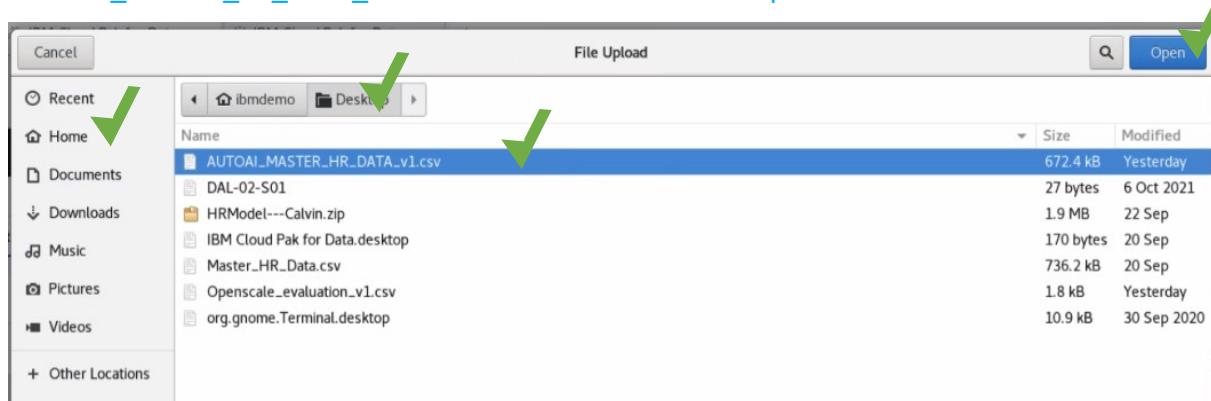


Now that the project has been created, we will add a Connection and a Dataset to the AI Governance project for our analysis.

5. Select the “Assets” tab, then the “Drop data files here or browse for files to upload” link.



6. In the navigation window Select “Home” and then Select “Desktop” and then Select “AUTOAI\_Master\_HR\_Data\_v1.csv” and then Select the “Open” button



This screen will appear showing the new asset in the list

The screenshot shows the 'Assets' tab in the Watson Studio interface. On the left, there's a sidebar with '1 assets' and 'All assets'. The main area lists an asset named 'AUTOAI\_MASTER\_HR\_DATA\_v1.csv' with a 'CSV' icon, '2 minutes ago' as the last modified time, and 'admin (You)' as the author. A green checkmark is overlaid on the list next to the asset name.

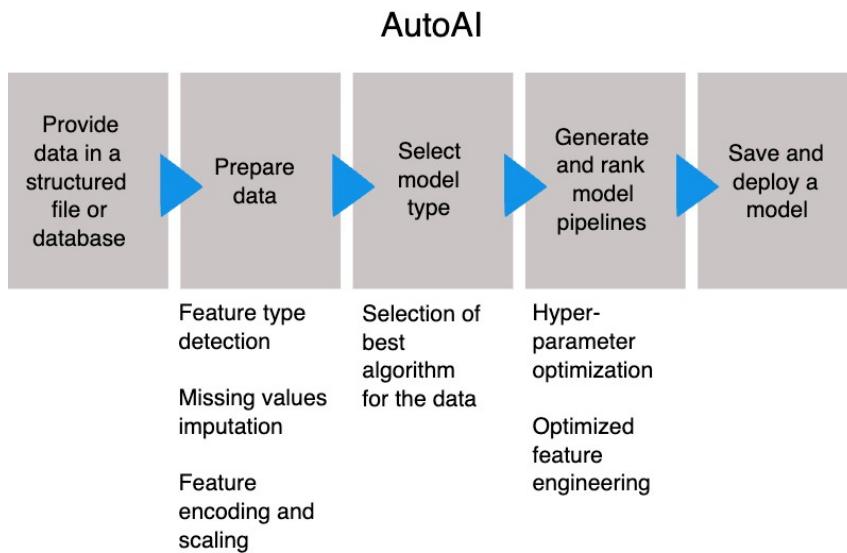
You have successfully created a project and added a dataset to begin your attrition analysis. A project is a workspace where you can collaborate with others to create a data science project. From a project, you can add assets, tools and define a workspace to derive value through data science. We will now use AutoAI to create a Machine Learning Model within our project.

## 1.5 Developing AI Models in Cloud Pak for Data

The AutoAI graphical tool in Watson Studio analyzes your data and discovers data transformations, algorithms, and parameter settings that work best for your predictive modeling problem. AutoAI displays the results as model candidate pipelines ranked on a leaderboard for you to choose from.

Using AutoAI, you can build and deploy a machine learning model with sophisticated training features with zero code through a graphical interface.

AutoAI automatically runs the following tasks to build and evaluate candidate model pipelines



This lab will showcase the AutoAI functionality in Cloud Pak for Data using the assets we created in the AI Governance Project to employee attrition for the Human Resource department.

1. Select Home then Select the “AI Governance” project

The screenshot shows the IBM Cloud Pak for Data interface. At the top, it says "Welcome, admin!". Below that are three main sections: "Discover services", "Manage users", and "Stay informed". In the center, there's a 3D visualization of data cubes and a magnifying glass. On the left, under "Overview", there are links for "OpenPages openpages", "All projects", "Instances", "Databases", and "Data visualization". In the middle, there's a "Recent projects" card with "AI Governance" highlighted by a green checkmark. To the right, there are "Requests" and "Notifications" sections. A green arrow points to the "AI Governance" project in the recent projects list.

2. Select “New asset”

The screenshot shows the "Assets" tab in the "AI Governance" project. It has tabs for "Overview", "Assets", and "Jobs". Under "Assets", there's a search bar and a list of "1 assets". A green arrow points to the "New asset" button at the top right of the list. To the right, there's a sidebar titled "Data in this project" with a "Drop data files here or browse for files to upload" area.

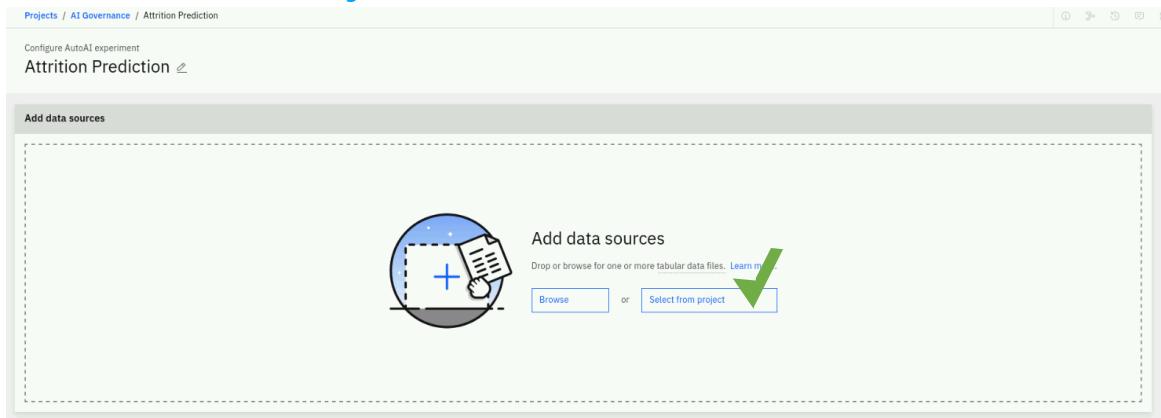
3. In the New asset window, Select the “AutoAI” tile

The screenshot shows the "Automated builders" section. It has two tiles: "AutoAI" and "Metadata enrichment". The "AutoAI" tile is selected and highlighted with a green arrow. It has a subdescription: "Automatically analyze your tabular data and generate candidate model pipelines customized for your predictive modeling problem."

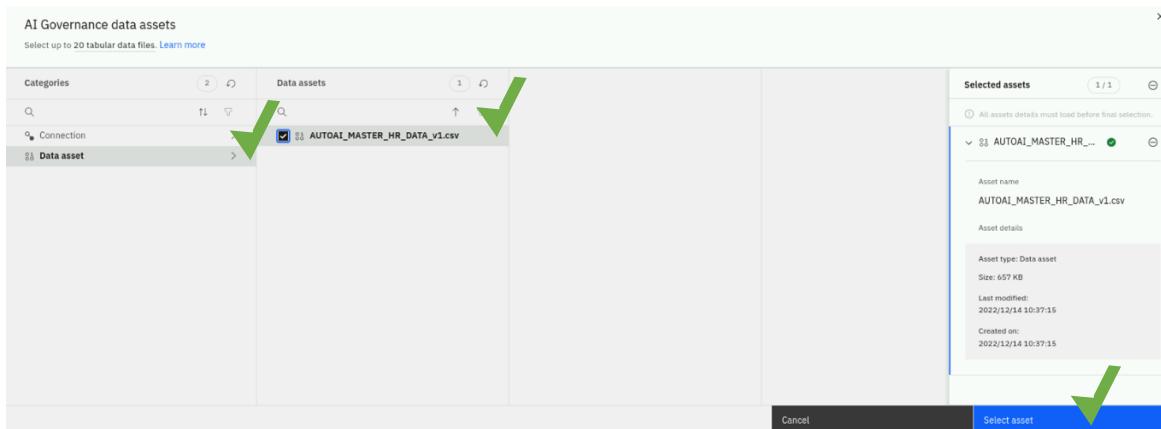
4. Select each field in the Define details pane and enter the information as shown in the diagram below. Name = “Attrition Prediction”, Description = “To predict employee attrition within the enterprise”, Tags = “Attrition”. Select the “+” sign after typing in “Attrition” to assign the tag. Then Select “Create”.

The screenshot shows the "Define details" pane for creating an AutoAI experiment. It has fields for "Name" (Attrition Prediction), "Description (optional)" (To predict employee attrition within the enterprise), and "Tags (optional)" (Attrition). A green arrow points to the "Name" field. Another green arrow points to the "Description" field. A third green arrow points to the "Tags" field, where the word "Attrition" is typed. At the bottom right, there are "Cancel" and "Create" buttons, with a green arrow pointing to the "Create" button.

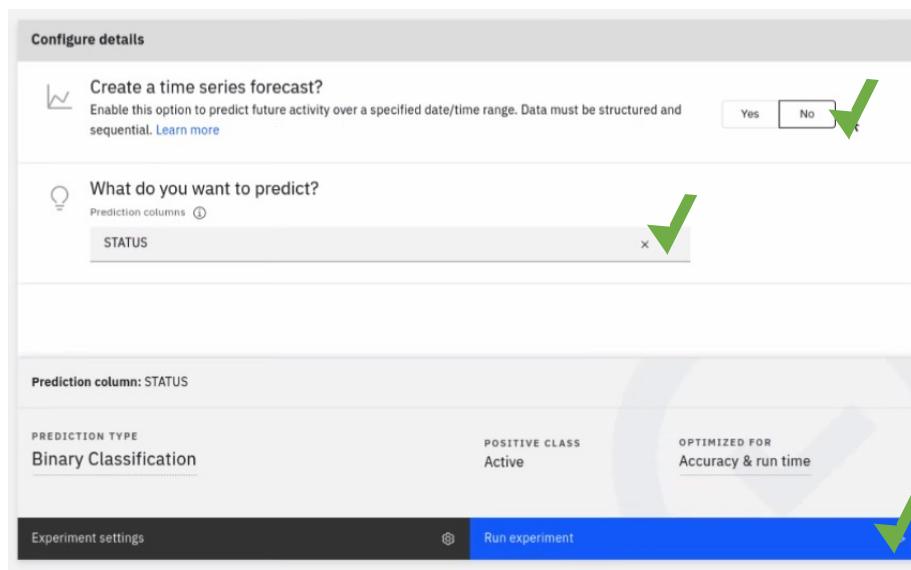
5. Select “[Select from Project](#)” button to add another data source to connect to.



6. Select the right of [Data asset](#) to open the path to the AUTOAI\_MASTER\_HR\_Data\_v1.csv dataset. Select the [radio button](#) then select “[Select asset](#)”.



7. Select “[No](#)” in the “Create a time series forecast?” area. Then, select the drop-down [arrow](#) in the “What do you want to predict” section and Select “[Status](#)”, and then Select the “[Run experiment](#)” button



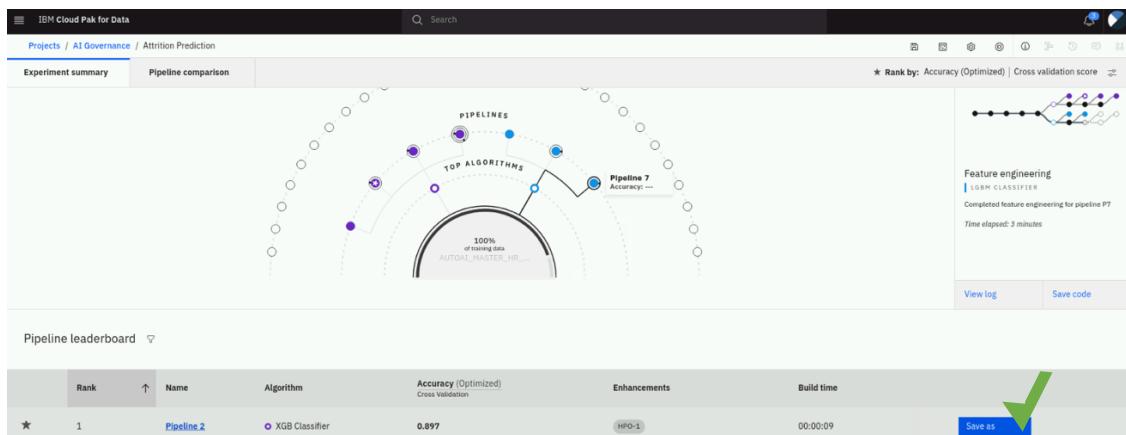
While running the experiment, the Watson Studio AutoAI tool is analyzing the data and discovering data transformations, algorithms, and parameter settings best suited for the specific predictive modeling experiment. This process could take 2-3 minutes.

You will see this display while it is executing



When the experiment completes, AutoAI displays the results as model candidate pipelines ranked on a leaderboard for you to choose from. Note that AutoAI has found multiple algorithms which we can use for our attrition prediction. We will focus on the top 2.

8. Hover over the **first model** in the Pipeline leaderboard list and Select “Save as”.



*NOTE: Your Pipeline champion may differ than above image.*

9. Select the “Name” field and **type “(Champion)”** in front of the prepopulated text “Attrition Prediction – P3 Random Forest Classifier”. Then Select the “Description” field and **type “Champion Model for attrition prediction”**. Then Select the “Tags” field, **Select “Add new tag”** pop-up button, and **type “Champion”** in the “Tags” field. Finally, Select the “Create” button.

The screenshot shows the 'Save as' dialog box. It has two main sections: 'Select asset type' (set to 'Model') and 'Define details'. In the 'Define details' section, the 'Name' field contains '(Champion) Attrition Prediction - P2 Snap Random Forest Classifier', the 'Description' field contains 'Champion Model for attrition prediction', and the 'Tags' field has 'Champion' selected. A blue arrow points to the 'Champion' tag entry. At the bottom, there are 'Cancel' and 'Create' buttons, with a blue arrow pointing to the 'Create' button.

Note: Select the “X” in the upper right corner of the “Saved model successfully” pop-up window



10. Select the second model in the “Pipeline leaderboard” list (Pipeline 3 (your Pipeline may vary)) and Select the “Save as” button

Rank	Name	Algorithm	Accuracy (Optimized) Cross Validation	Enhancements	Build time
★ 1	Pipeline 2	Snap Random Forest Classifier	0.981	HPO-1	00:00:08
2	Pipeline 3	Snap Random Forest Classifier	0.981	HPO-1 FE	00:00:44

11. Select the Name field and type “(Challenger)” in front of the prepopulated text “Attrition Prediction – P3 Random Forest Classifier” (*Your text may vary depending on pipeline*). Then Select the Description field and type “Challenger Model for attrition prediction”. Then Select the Tags field and type “Attrition” finally, Select the

Save as

Select asset type

**Model**

Create a Watson Machine Learning model asset that you can test with new data, deploy to generate predictions, and trace lineage activity.

**Notebook**

Create a notebook if you want to view the code that created this model pipeline or interact with with the model programmatically.

Define details

Name: (Challenger) Attrition Prediction - P3 Snap Random Forest Classifier

Description (optional): Challenger Model for attrition prediction

Tags: Attrition

Create

“Create” button.

Note: Select the “X” in the upper right corner of the “Saved model successfully” pop-up window.



This lab used CPD’s AutoAI tool to simplify the creation of AI of models. AutoAI automates various tasks to ease the workflow for data scientists creating machine learning models. It automates steps such as preparing data for modeling with automated feature engineering, provides choices for the best algorithm/estimator for the problem, experiments with pipelines and hyperparameter optimization for the trained models. Note that all processing steps are documented as metadata and consumed by Factsheets.

Cloud Pak for Data provides other options to create AI models through other tools such as SPSS Modeler and Jupyter notebooks. These products are packaged within CPD and can be accessed through the Asset button. As part of IBM’s Trustworthy track, note that CPD enables you to house your enterprise AI utilization in a single platform to ensure trust is exhibited across all model development phases.

## 1.6 FactSheets

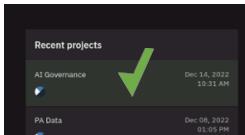
Proposals for higher quality and more consistent AI documentation have emerged to address ethical and legal concerns and general social impacts of such systems. However, little is known about the needs of those who would produce or consume these new forms of documentation, as well as how to create this documentation. This is where IBM's Factsheet addresses gaps in current model development processes, and its purpose is to:

- Define the scope for policy creation which includes what information is collected on models, who can use the model and for what purpose, and the way it should operate
- Automatically capture the model facts as detailed in the FactSheet template throughout the AI lifecycle
- Offer extended knowledge on unapparent AI model development metrics in multiple formats depending on the preferences of the user and external audience

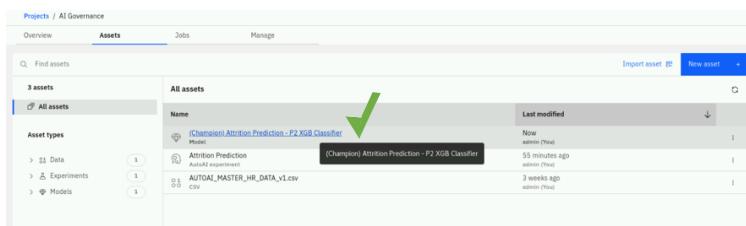
1. Return to the “IBM Cloud Pak for Data” home screen



2. Select the “AI Governance” project folder to review our saved models.



3. Select the “Assets” tab and then Select the “(Champion) Attrition Prediction – xxx” asset



This Metadata screen will appear for your review

4. Review the AI Factsheet for your model. AI Factsheets capture model metadata across the model development lifecycle, facilitating subsequent enterprise validation or external regulation. AI Factsheets enables model validators and approvers to get an accurate, always up-to-date view of the model lifecycle details. In this example, we have retrieved the training scores of our model.

Training metrics		
Metric	Training data	Holdout data
Accuracy	0.8965906	0.8010127
Average precision	0.9411343	0.8037983
Balanced accuracy	0.555334	0.53154796
F1	0.9447205	0.9360544
Log loss	-0.28834936	-0.29009596
Precision	0.90116274	0.89982723
Recall	0.99271923	0.97722725
Roc auc	0.78383374	0.7994186

Input schema		
Feature	Data type	Description

Note: This integration with Watson Machine Learning and Watson OpenScale also results in the capture of deployment metadata and introduces critical monitors for bias detection and quality in the subsequent steps of IBM’s AI Governance capabilities.

## 1.7 Deployments

IBM Cloud Paks enable the deployment of models, scripts, functions, manage your deployments, and prepare your assets for model production. Watson Machine is used to manage deployment spaces so that you can put models into production, then monitor these models for fairness and explainability.

Deployment spaces contain deployable assets such as deployments, deployment jobs, associated input and output data and the associated environments. You can use this space to deploy models and manage your deployments. The deployments dashboard is an aggregate view of deployment activity available to you across spaces.

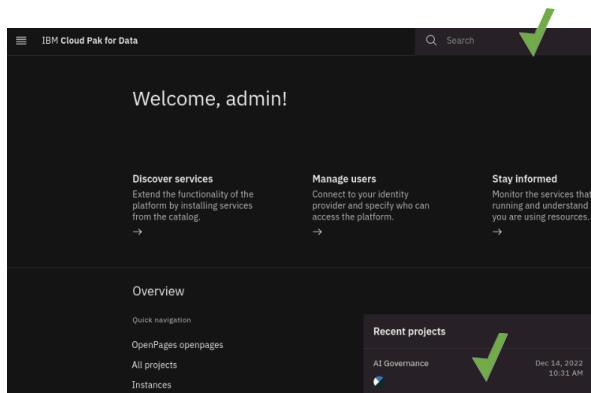
A deployment space is not associated with a project. You can deploy assets from multiple projects to a space, and you can deploy assets to more than one space. For example, you might have a test space for evaluating deployments, and a production space for deployments that you want to deploy in business applications.

**Deploy**

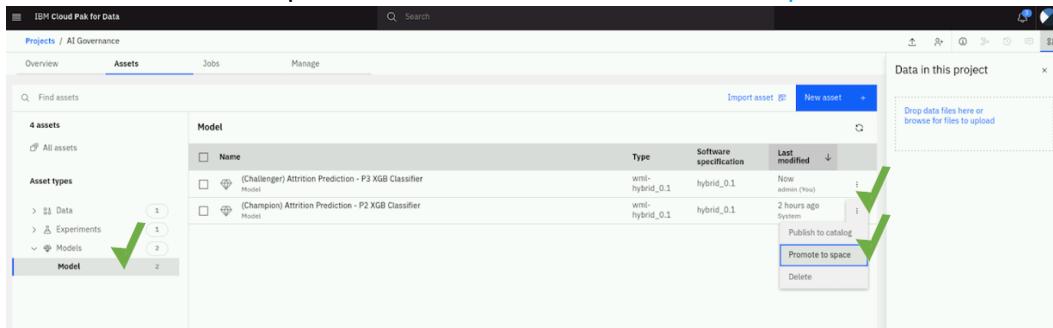
- Organize your assets in a deployment space
- Deploy and score models and functions
- Monitor deployments in a dashboard

In this portion of the lab, we will add the models we created into a Deployment space called, “AI Governance Deployment”. We will then be able to manage these deployed M/L models via Cloud Pak.

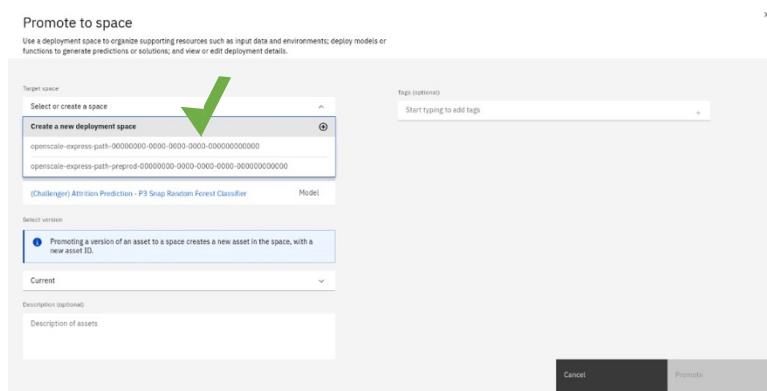
1. Begin at the Home Screen by Selecting “[IBM Cloud Pak for Data](#)” in the upper left of the window. Select the “[AI Governance](#)” Project by selecting it in the Recent projects area



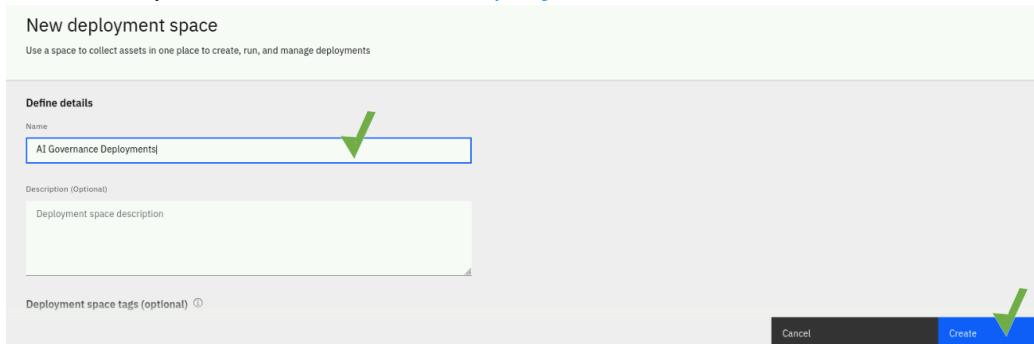
2. From the left pane of the project's Assets tab, Select “[Models](#)”, then Click the vertical ellipsis icon beside the Champion model and Select “[Promote to space](#)”.



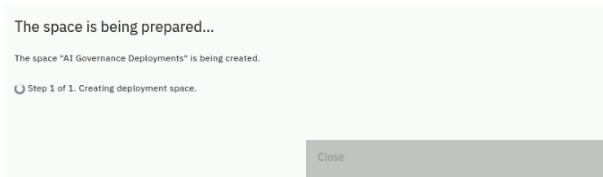
3. Create a new deployment space by Selecting [Create a new deployment space](#) from the drop- down menu within the Target Space area.



4. Name the space “[AI Governance Deployments](#)” and Select the “[Create](#)” button



This notification window will appear

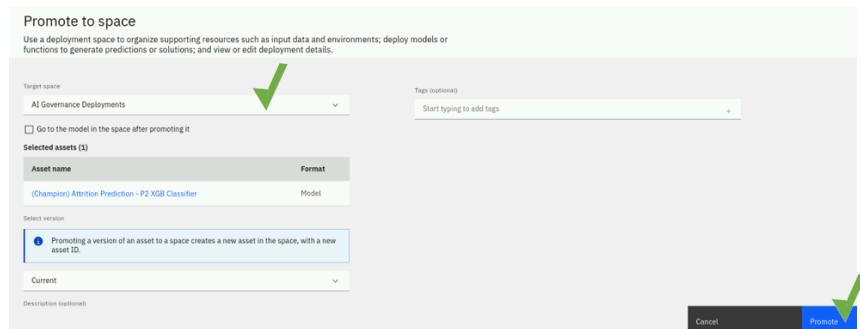


5. Close the “This space is ready” notification window. Select “Close”

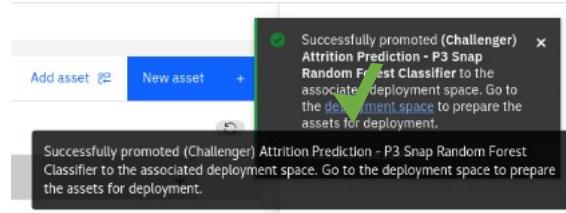
The space is ready  
Close this notification to resume your work. Click **Deployments** in the navigation pane to view and access the new space.  
Step 1 of 1. Creating deployment space.



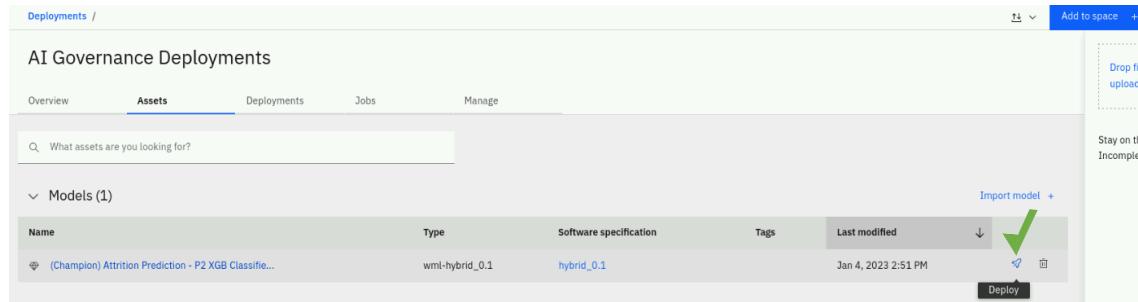
6. Select the “Promote” button



7. Upon completion – Select the “Deployment space” link from the notification window.



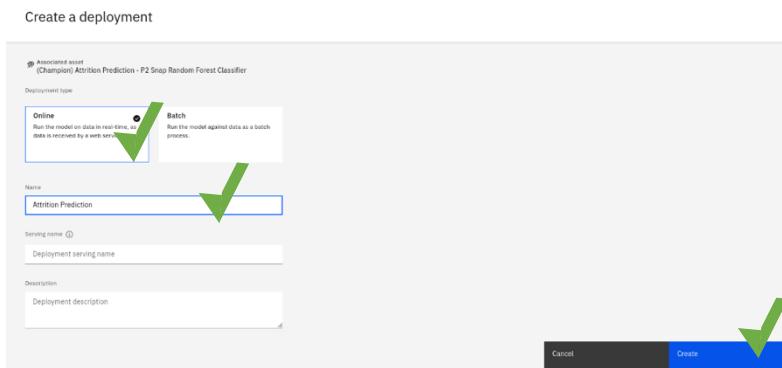
8. Returning to the “AI Governance” deployment space, select the **Asset** tab. To deploy your model, hover your mouse over the model and Select the “Rocket” icon.



Deployment spaces are divided into two categories, online deployments, and batch deployments. For this activity, let's focus on online deployments and what capabilities are contained within an online deployment. When an online deployment is created (also called Web service), the deployment is used to load a model or Python code and generate predictions online, in real time.

*Note: If a ‘Welcome to your deployment space’ box pops up, select ‘Maybe Later’.*

9. Select “[Online](#)” in the “Create a deployment” window, then, Select the Name field and Name it “[Attrition Prediction](#)” and then Select the “[Create](#)” button



10. While it is being deployed, you will be directed back to your AI Governance Deployments. Select the “[Deployments](#)” tab to see the status. This will take 2-4 minutes to complete and the status to update.

Name	Type	Status	Asset	Tags	Last modified
Attrition Prediction	Online	In progress	(Champion) Attrition Prediction - P2 XGB Classifier		Jan 4, 2023 2:56 PM

11. The deployment space has been successfully created. Select the “[Attrition Prediction](#)” Name

Name	Type	Status	Asset
Attrition Prediction	Online	Deployed	(Champion) Attrition Prediction - P2 XGB Classifier

12. Select the “[Test](#)” tab

```
# TODO: manually define and pass values to be scored below
curl -X POST -H "Content-Type: application/json" -H "Accept: application/json" -H "Authorization: Bearer $IAM_AUTH_TOKEN" -d '{"input_data": [{"fields": ["$ARRAY_OF_INPUT_FIELDS"], "values": ["$ARRAY_OF_VALUES_TO_BE_SCORED", "Another_Array_of_values_to_be_scored"]}], "url": "https://cpd-icpd-instance.apps.amev1.workshop.tes.m2.v4/deployments/7d540dd3-ce41-4c49-8881-3a2edea60/predictions?version=2023-01-04"}'
```

Note: Test provides a place where you can enter data and get a prediction back from the deployed model. If your model has a defined schema, a form shows on screen. In the form, you can enter data in one of these ways:

- 1) You could enter data directly in the form – OR...

The screenshot shows the 'Attrition Prediction' API test interface. It has tabs for 'Deployments', 'API reference', 'Test' (which is selected), and 'Deployment details'. Under 'Enter input data', there's a section for 'Input' with a 'Paste JSON' button. Below it, there's a table area with columns: 'EMPID (double)', 'TITLE (other)', 'DEPARTMENT (other)', 'FUNCTION (other)', 'DIVISION (other)', 'UNION\_STATUS (other)', 'EMPLOYMENT\_CATEGORY (other)', 'AGE (double)', 'GENERATION (other)', 'PAY\_SCALE\_GROUP (other)', and 'GENDER (other)'. A green arrow points to the 'DEPARTMENT' column, and another green arrow points to the 'DIVISION' column. The table shows 5 rows of sample data. At the bottom right is a 'Predict' button.

- 2) Select the **JSON** tab and enter your input data as JSON code. Regardless of method, the input data must match the schema of the model. Submit the input data and get a score, or prediction, back. – OR...

The screenshot shows the 'Attrition Prediction' API test interface. The 'Test' tab is selected. In the 'Enter input data' section, there's a 'Body' field containing JSON code. A green arrow points to the 'Body' field. At the bottom right is a 'Predict' button.

- 3) You can test the Attrition Prediction Model by inserting this JSON code chunk in the “Enter input data screen” and click on “Predict”. It will return a prediction and probability of the prediction. What makes this significant is that it gives you the ability to use the code to run a single prediction test. In this example we are specifically predicting for employee id “61900” for their likelihood to leave the organization. Consider how this supports audits in a regulatory circumstance.

The screenshot shows the 'Attrition prediction' API test interface. The 'Test' tab is selected. In the 'Enter input data' section, there's a 'Body' field containing JSON code. A large red box highlights the JSON code, and a green arrow points to the 'Body' field. At the bottom right is a 'Predict' button.

- 4) Open a new browser tab within your Firefox browser. Go to <https://raw.githubusercontent.com/cwong79/CPD4.5.0Lab/main/model-payload.json>. Copy the JSON code from here and paste it in the Enter input data box (shown above).

- 5) Once you have copy/pasted the code, Select the “Predict” button



Results:

Result

```
0 {
1   "predictions": [
2     {
3       "fields": [
4         "prediction",
5         "probability"
6       ],
7       "values": [
8         [
9           "Active",
10          [
11            0.8888988494873047,
12            0.11110112816095352
13          ]
14        ]
15      ]
16    ]
17 }
18 ]
```

The results will appear in the right window. In this instance the Attrition Model has predicted that this employee will leave the organization with 97.5% accuracy. Note that your results may differ from other participants in the workshop based on environmental variances.

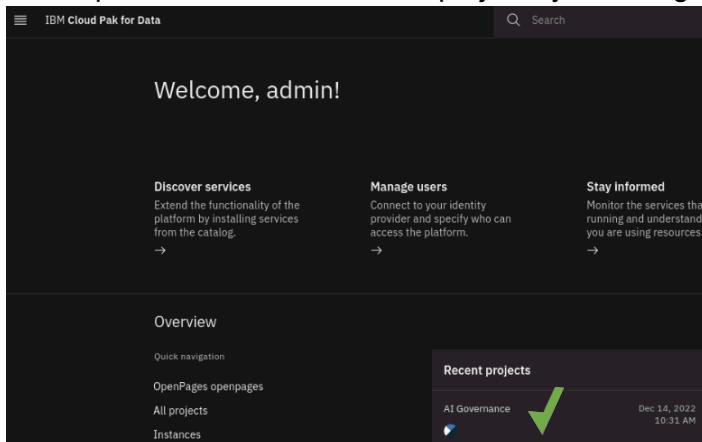
**Summary:** In this deployment space, you can record a models’ production lifecycle and manage its interactions with its creator and contributors. Deployment spaces contain deployable assets, deployments, deployment jobs, associated input and output data, and the associated environments. You can use spaces to deploy models and manage your deployments.

As a best practice, all deployed models within an Enterprise should be effectively managed in a single location. This way all risk and governance guidelines can be applied to all AI usage within that Enterprise. CPD automatically packages models within a production space as an available API, eliminating the typical manual process of deploying a containerized model as you would through other methods. The advantages of deploying a model in CPD is twofold. 1) Multiple data access points can be established in CPD through its data fabric capabilities. Therefore, removing manual processes around recording model training and testing metrics. 2) In later steps, you will see how model performance decay impacts model deployment and allows the model owner to create guardrails to rectify the decay through mediation automation.

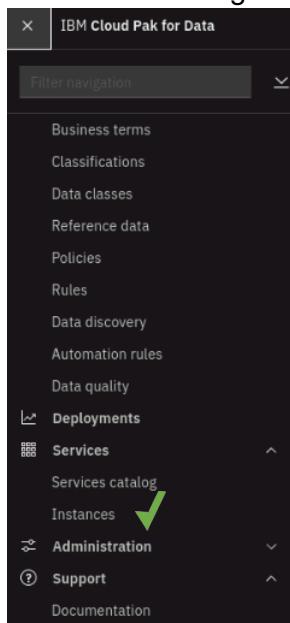
Thus far, we have worked together to 1) Create a collaborative working space 2) Create a model using an automated model creation tool 3) Create a deployment space to manage the model’s production. We will now continue our journey by showing CPD’s AI Governance capabilities through Openscale.

## 1.8. DB2 Data load

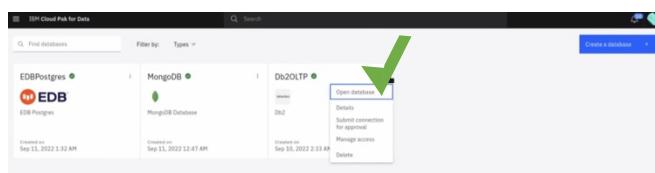
- At the Home Screen, Select “IBM Cloud Pak for Data” in the upper left of the window. Then open the “AI Governance” project by selecting it in the “Recent projects” area.



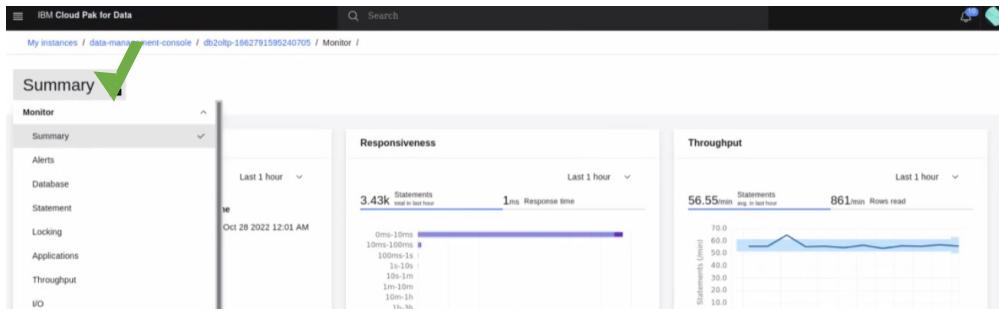
- From the hamburger menu Select [Services](#) then [Instances](#)



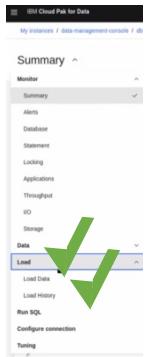
- Select the ellipsis icon within the “Db2OLTP” tile and then Select “[Open database](#)”



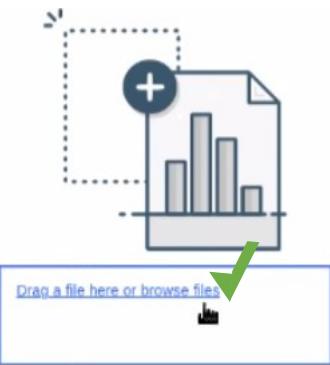
4. Select the “Summary” down arrow



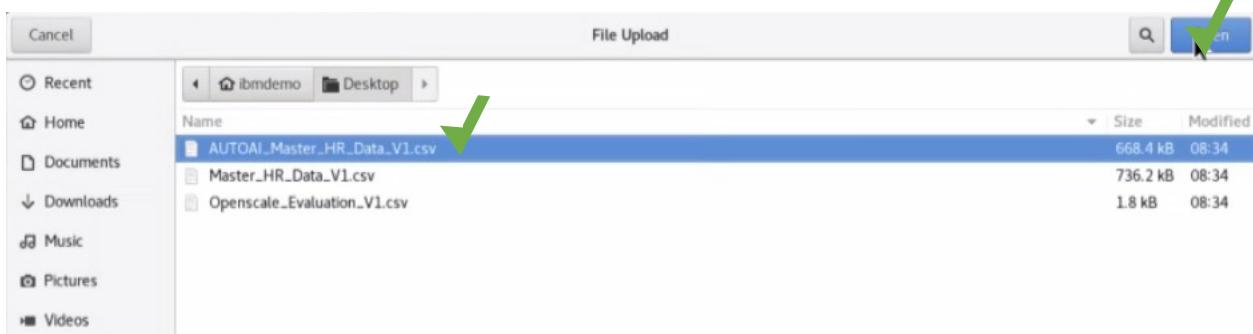
5. Select “Load”, and then “Load Data”



6. Select the “Drag a file here or browse files”



7. Select “AUTOAI\_Master\_HR\_Data\_v1.csv” and then Select “Open”



8. Select the “Next” button



## Lab – IBM Modular Workshop – AI Governance

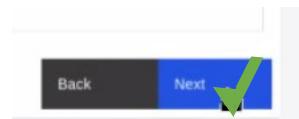
9. Select “HR” and then Select the “New Table +” button



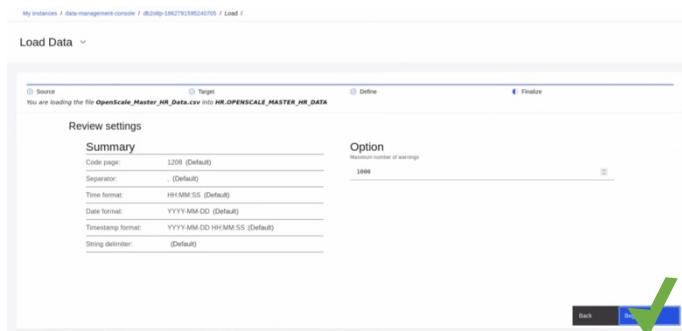
10. Name the table “[AUTOAI\\_Master\\_HR\\_Data\\_v1](#)” and select the “Create” button



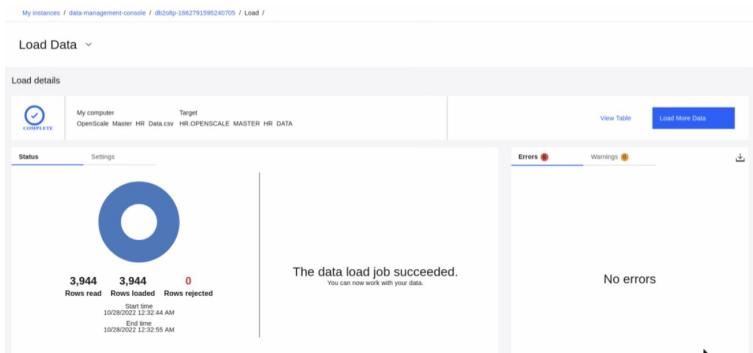
11. Select the “Next” button. Note: You may have to wait a minute while the table is created



12. Select “Begin Load”



13. When the load completes you will see:





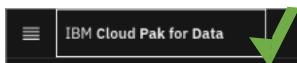




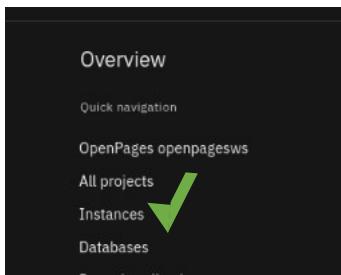
## 1.9 Openscale

A key component of Cloud Pak AI Governance solution is the ability to monitor M/L models for accuracy, fairness, explainability and drift. Through OpenScale's operations console, users can track and measure AI outcomes allowing alignment with business outcomes and organizational KPI's, enabling users to adjust and respond to business changes. The platform provides out-of-the-box metrics as well as the option of customized metrics for tracking model performance. Model outcomes are tracked and measured across its lifecycle, allow it to adapt for changing business needs. CPD detects and mitigates risk and harmful bias, providing business with actionable insights for business development and change plans.

1. Return to the CPD Home screen



2. Select Instances



3. Scroll down in the "Instances" window, find the "openscale-defaultinstance" and select the vertical ellipsis button and then Select "Open"

Name	Type	Created by	vCPU requests	Memory requests (GiB)	Users	Status	Created on	
data-virtualization	dv	admin	11.50	38.50 Gi	3	green circle icon	Sep 10, 2022	⋮
Cognos Analytics in cpd-instance	cognos-analytics-app	admin	8.40	39.20 Gi	2	green circle icon	Sep 10, 2022	⋮
Db2OLTP Service Instance for db2oltp-1662791595240705	db2oltp	admin	4.10	12.25 Gi	1	green circle icon	Sep 10, 2022	⋮
openscale-defaultinstance IBM Watson OpenScale	aios	admin	-	-	1	green circle icon	Sep 9, 2022	⋮
ds-px-default The default DataStage runtime instance	datastage	admin	2.50	6.00 Gi	1	green circle icon	Sep 9, 2022	⋮
ProfHbIntrnl	spark	__internal_profiler__	-	-	1	green circle icon	Sep 9, 2022	⋮

You are now in CPD OpenScale viewing your “Insights dashboard”

IBM Watson OpenScale

## Insights dashboard

Deployments Monitored	Quality Alerts	Fairness Alerts	Drift Alerts	Custom Alerts
0	--	--	--	--

Filter by Tags ▾ Alert type ▾ Machine learning provider ▾

Q Which deployment are you looking for?

## Components of OpenScale

### Insights Dashboard

The Insights dashboard displays the models that you are monitoring and provides status of model evaluation results.

IBM Watson OpenScale

## Insights dashboard

Insights dashboard

Deployments Monitored	Quality Alerts	Fairness Alerts	Drift Alerts	Custom Alerts
0	--	--	--	--

Filter by Tags ▾ Alert type ▾ Machine learning provider ▾

Q Which deployment are you looking for?

### Explain a transaction

Explanations describe how the model determined a prediction. It lists model utilization on a transactional basis. This inventory contains important factors that led to the predictions, providing confidence in the AI Model.

IBM Watson OpenScale

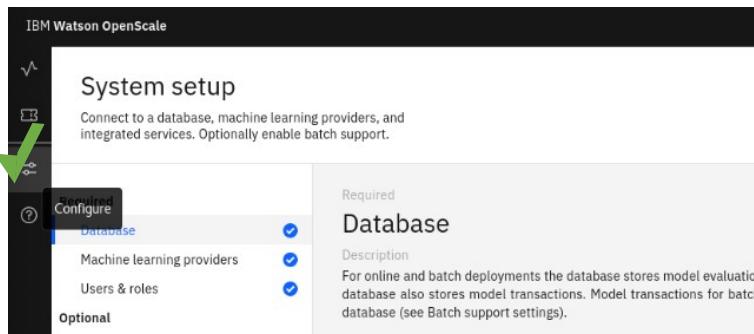
## Find a transaction

Deployed model

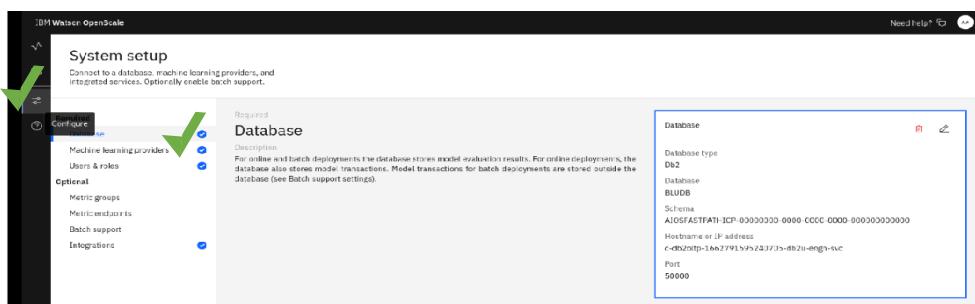
Explain a transaction

## Configure

You will use the “Configure” tab to configure storage, machine learning providers, and users.



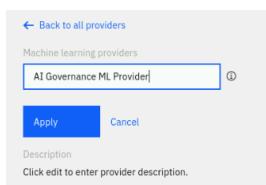
4. Select “Configure” from the menu on the left. Then Select “Machine learning providers”. Note the Database information is displayed in the box on the right. This database stores the information of every model run as a transaction capturing information on model payload, predictions, and calculated quality metrics. In this example, we see a Db2 database. However, the database type can be configured based on the database technologies you prefer.



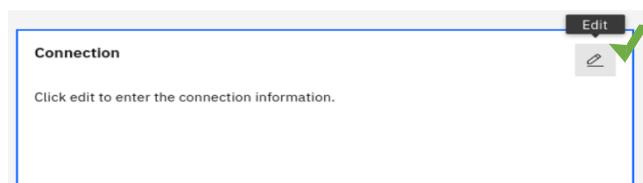
5. Select the “Add machine learning provider” button



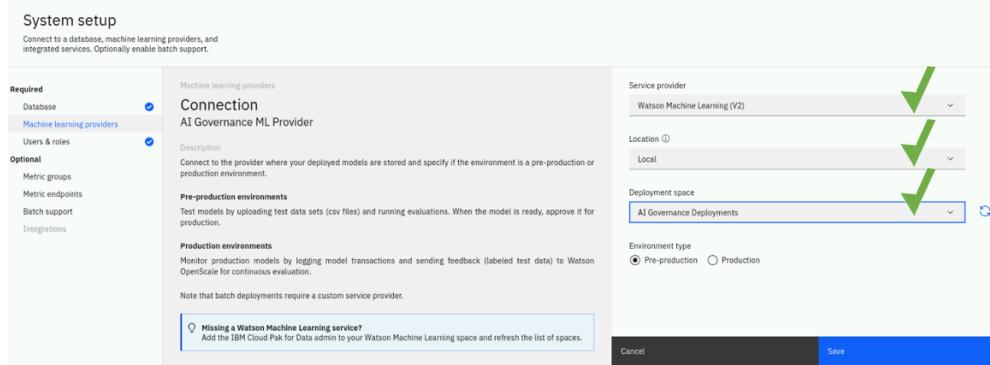
6. In the New Provider screen select the Edit Pencil by Machine learning providers. Name this instance “AI Governance ML Provider”. Select the “Apply” button.



7. Select the “Edit pencil” in the “Connection” box to the right

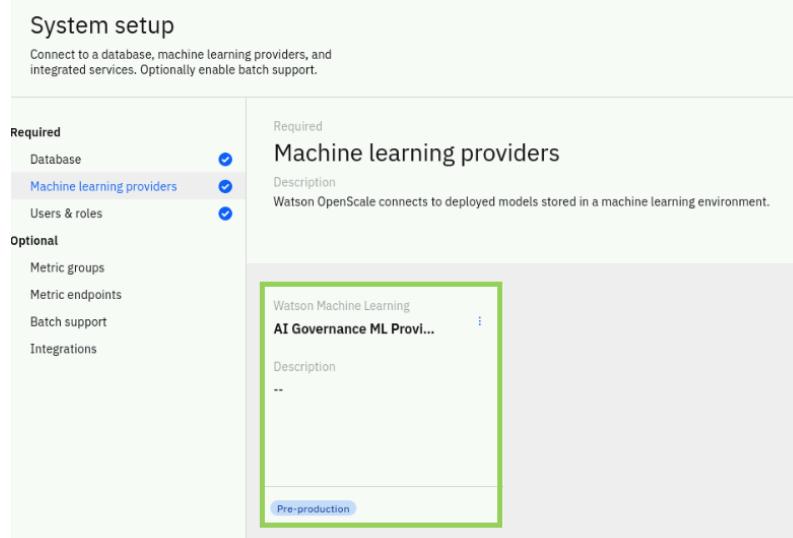


8. Select the drop-down arrow in the “Service provider” and Select “[Watson Machine Learning \(V2\)](#)”, then Select the drop-down arrow in “Location” box and Select “[Local](#)”. Then Select the drop-down arrow in the “Deployment space” box and Select “[AI Governance Deployments](#)”. Finally Select the “Save” button.



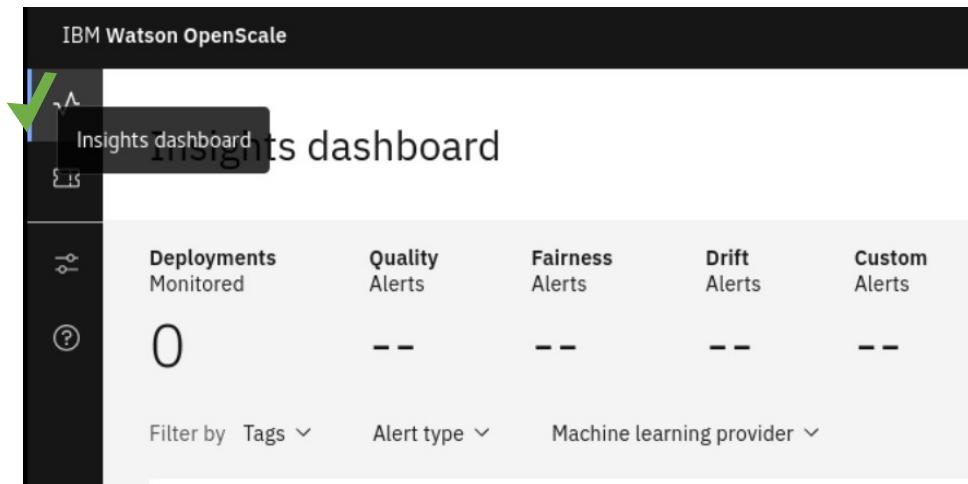
## Machine Learning Providers

You have now created Machine Learning provider access point which is now visible as a tile in the screen you are currently viewing (the “AI Governance ML Provider” tile)



Machine learning providers incorporate artificial intelligence engines, pre-trained machine learning models, and a variety of ML tools designed to create and train custom ML models at scale. Examples of Machine Learning providers include IBM Watson Machine Learning, Amazon SageMaker, Microsoft Azure ML Studio and Microsoft Azure ML Service. In the above activity, we used IBM’s in-house Watson Machine Learning as the service provider.

9. Select the “[Insights dashboard](#)” icon on the left menu to begin building a Model Monitor for our Insights Dashboard

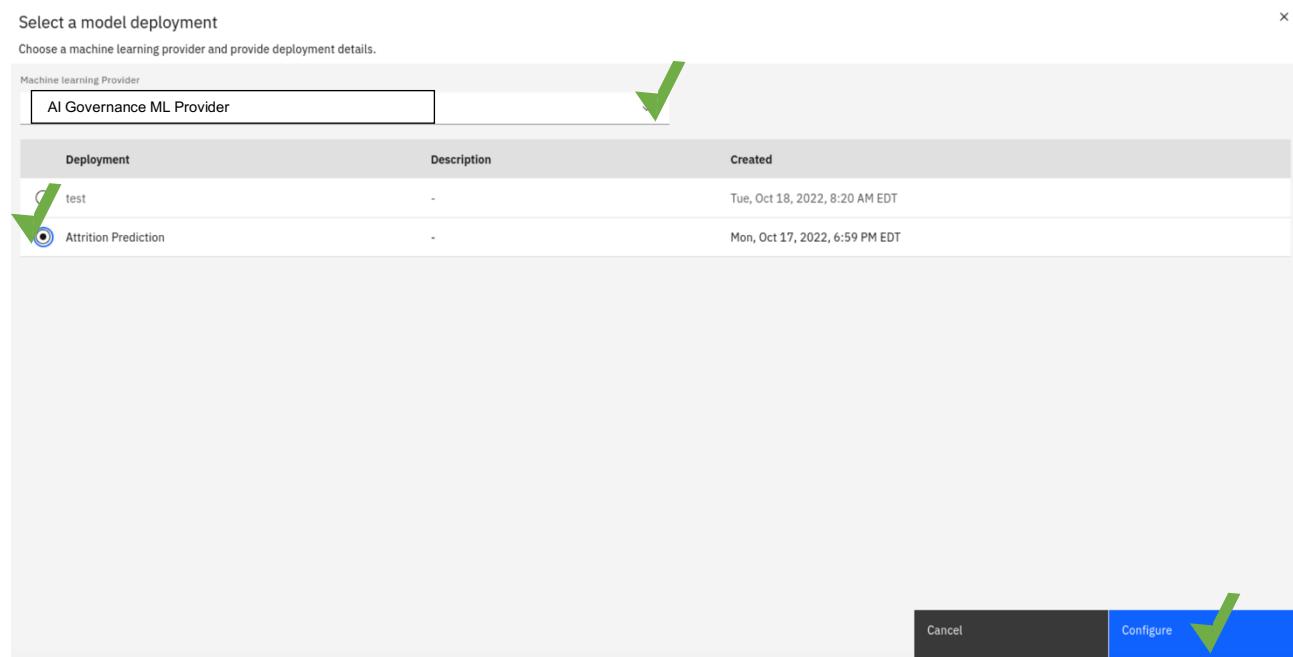


The screenshot shows the IBM Watson OpenScale interface. The top navigation bar is black with the text "IBM Watson OpenScale". On the left, there's a sidebar with icons for "Deployments Monitored" (0), "Quality Alerts" (--), "Fairness Alerts" (--), "Drift Alerts" (--), and "Custom Alerts" (--). Below the sidebar, the main area has sections for "Filter by Tags", "Alert type", and "Machine learning provider".

10. Select the “[Add to dashboard](#)” button



11. Select the drop-down arrow in the “Machine learning Provider” drop-down box Select the “[AI Governance ML Provider](#)” option, then Select the “[Attrition Prediction](#)” radio button. Finally, Select “[Configure](#)”



Select a model deployment

Choose a machine learning provider and provide deployment details.

Machine learning Provider

AI Governance ML Provider

Deployment	Description	Created
test	-	Tue, Oct 18, 2022, 8:20 AM EDT
Attrition Prediction	-	Mon, Oct 17, 2022, 6:59 PM EDT

Deployment

Description

Created

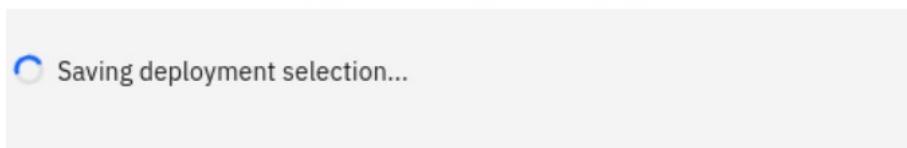
Cancel

Configure

This message will appear:

## Select a model deployment

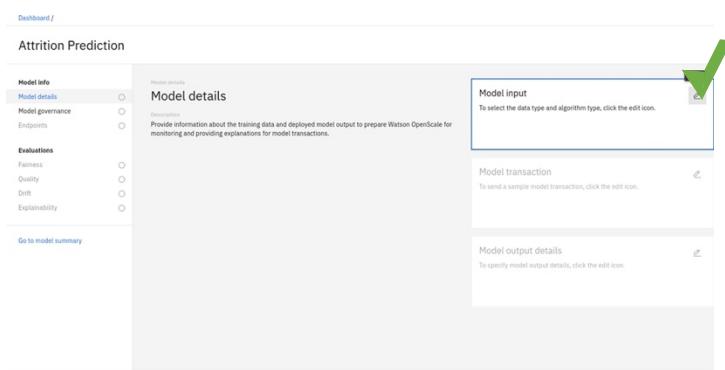
Choose a machine learning provider and provide deployment details.



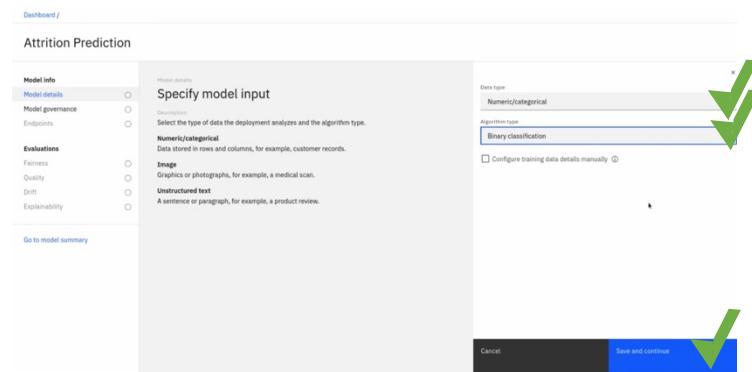
12. Upon completion, Select the “[Configure monitors](#)” button in the bottom right of the window



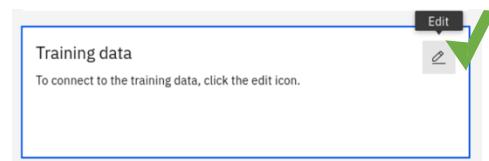
13. In the “Attrition Prediction” window select “[Model input](#)” Edit pencil



14. Select **Numeric/categorical** from the drop-down arrow listing under Data Type. Select **Binary classification** from the Algorithm type drop down arrow listing. Select **Save and continue**



15. After the model input selections are saved, Select the **Edit pencil** in the Training data window



16. Under the Storage Type drop down menu, Select **Database or cloud storage** then under Location select "**Db2**". Now enter the following information in the corresponding fields below:

- "Hostname": worker4.amwv11.workshop.tec
- "port": 31067
- "Database": BLUDB
- "username": admin
- "password": cpdaccess

Storage type	Database or cloud storage	✓
Location	Db2	✓
Hostname or IP address	worker4.amwv11.workshop.tec	
Port	31067	✓
Database	BLUDB	✓
Username	admin	✓
Password	*****	✓

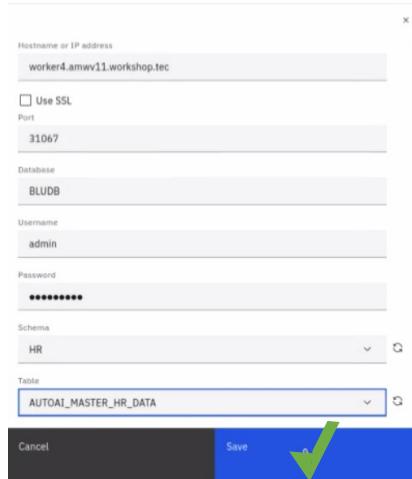
17. Scroll down and Select “[Connect](#)”



18. When the connection is made, the drop-down arrow menu in the schema box will become available. Scroll down within the Select the schema drop down list and select “HR”



19. Select [AUTOAI\\_Master\\_HR\\_Data\\_v1](#) in the Select the table list

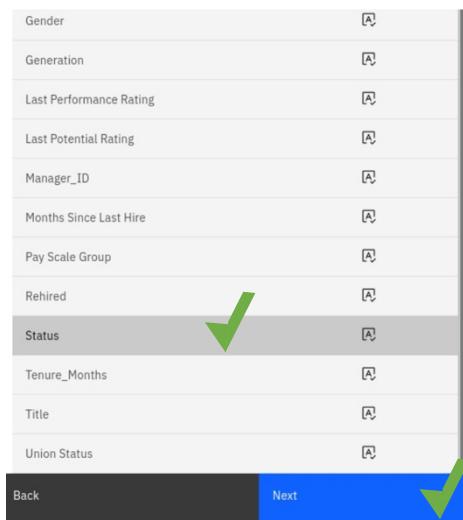


20. Select the [Next](#) button

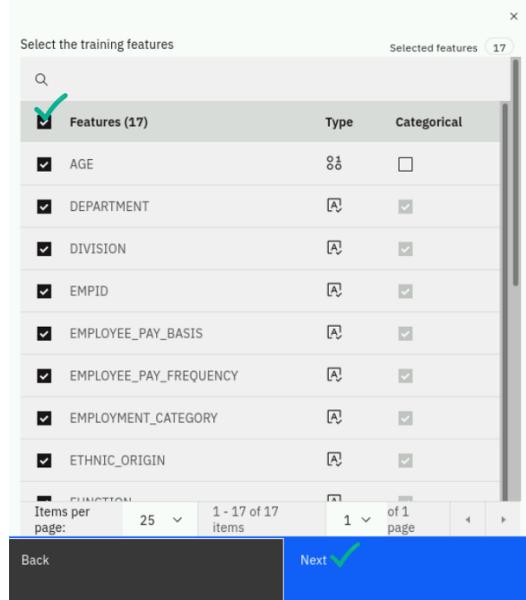


## Lab – IBM Modular Workshop – AI Governance

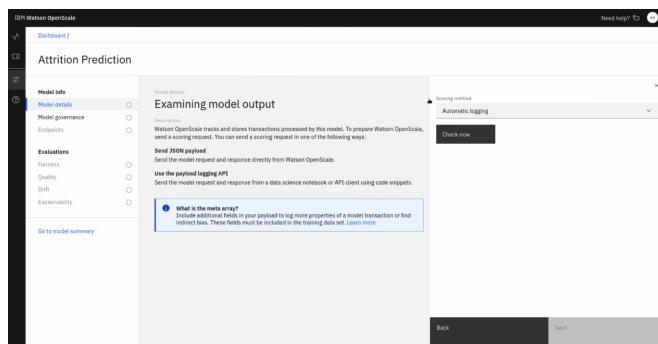
21. Scroll down and Select the Label **Status**, then select the **Next** button



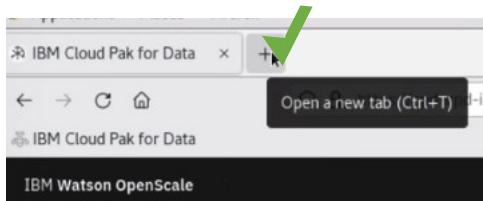
22. In the Select the training features window, select the check box for all “**Features (17)**” to select all items in the list, then select the **Next** button



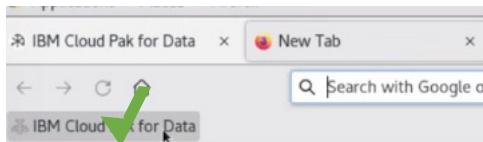
23. You will return to the Attrition Prediction window



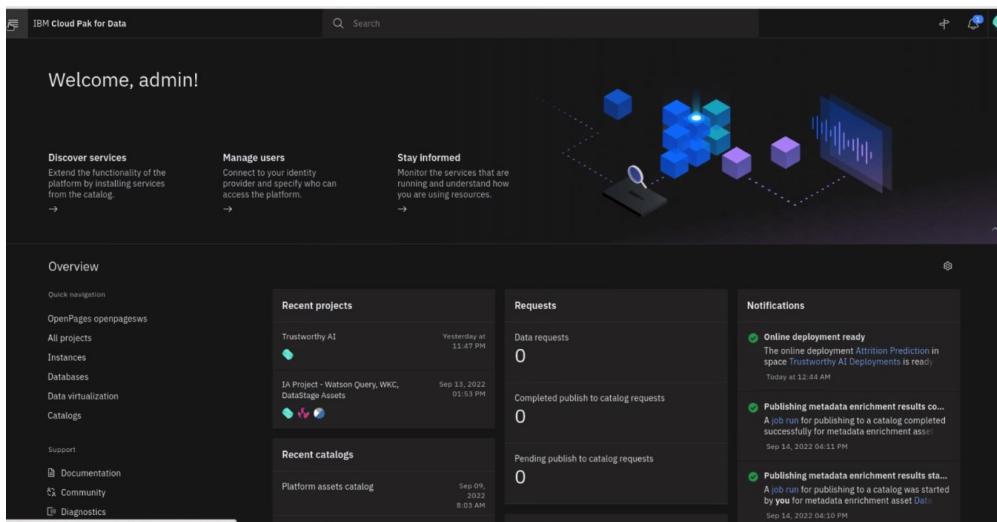
24. You will now open another instance of CPD. Go to the Firefox menu bar and select the + (plus) sign to open a newtab-instance on the browser in your image.  
*Note: Do not open another Firefox tab on YOUR machine.*



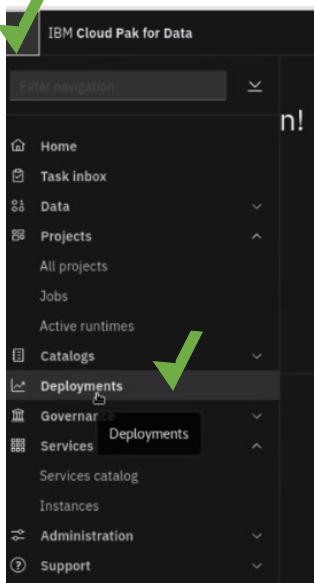
25. Then Select the Firefox bookmark link 'IBM Cloud Pak for Data'.



You will now see a new Cloud Pak for Data Home screen



26. Open the Hamburger menu and Select “Deployments”



27. Select “AI Governance Deployments”

Name	Last modified	Your role	Collaborators	Tags	Online deployments	Jobs
AI Governance Deployments	Jan 4, 2023 1:38 PM	Admin	AA		1	0
AI Governance Deployments	Nov 21, 2022 11:41 AM	Admin	AA		0	1

28. Select the “Deployments” tab and then “Attrition Prediction”

Name	Type	Status	Asset
Attrition Prediction	Online	Deployed	(Champion) Attrition Prediction - P2 XGB Classifier

29. Select the “Test” tab

Attrition Prediction ● Deployed Online

API reference ● Test Deployment details

Enter input data

Input Paste JSON

Enter data manually or use a JSON file to populate the spreadsheet. Max file size is 50 MB.

Browse local files ↗ Search in space ↗

```
{
  "input_data": [
    {
      "fields": [
        "EMPID",
        "TITLE",
        "DEPARTMENT",
        "FUNCTION",
        "DIVISION",
        "UNION_STATUS",
        "EMPLOYMENT_CATEGORY",
        "AGE"
      ]
    }
  ]
}
```

30. Select the Paste JSON tab and highlight the entire input data as shown below

Input Paste JSON

Enter data manually or use a JSON file to populate the spreadsheet. Max file size is 50 MB.

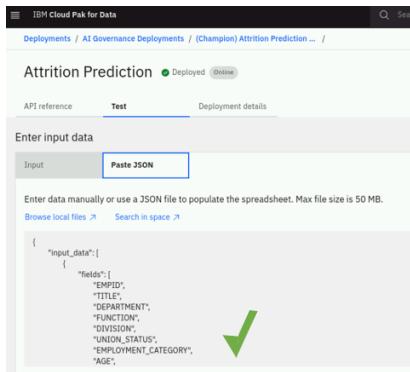
Browse local files ↗ Search in space ↗

```

{
  "input_data": [
    {
      "fields": [
        "EMPID",
        "TITLE",
        "DEPARTMENT",
        "FUNCTION",
        "DIVISION",
        "UNION_STATUS",
        "EMPLOYMENT_CATEGORY",
        "AGE"
      ]
    }
  ]
}

```

31. You will now need to [open another Firefox tab](#) and copy the JSON code from <https://raw.githubusercontent.com/cwong79/CPD4.5.0Lab/main/model-payload.json>



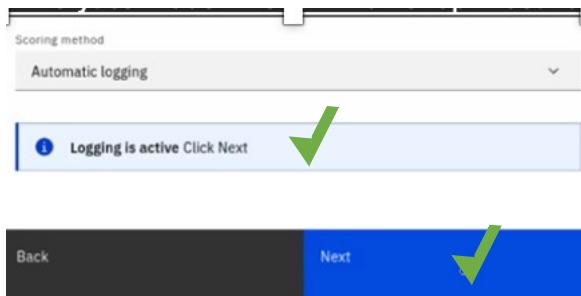
32. After successfully pasting the code – Select the “[Predict](#)” button in the lower right



33. Wait about 60 seconds, and then in the Attrition Prediction window (in your original Firefox tab), Select the “[Check now](#)” button in the right window

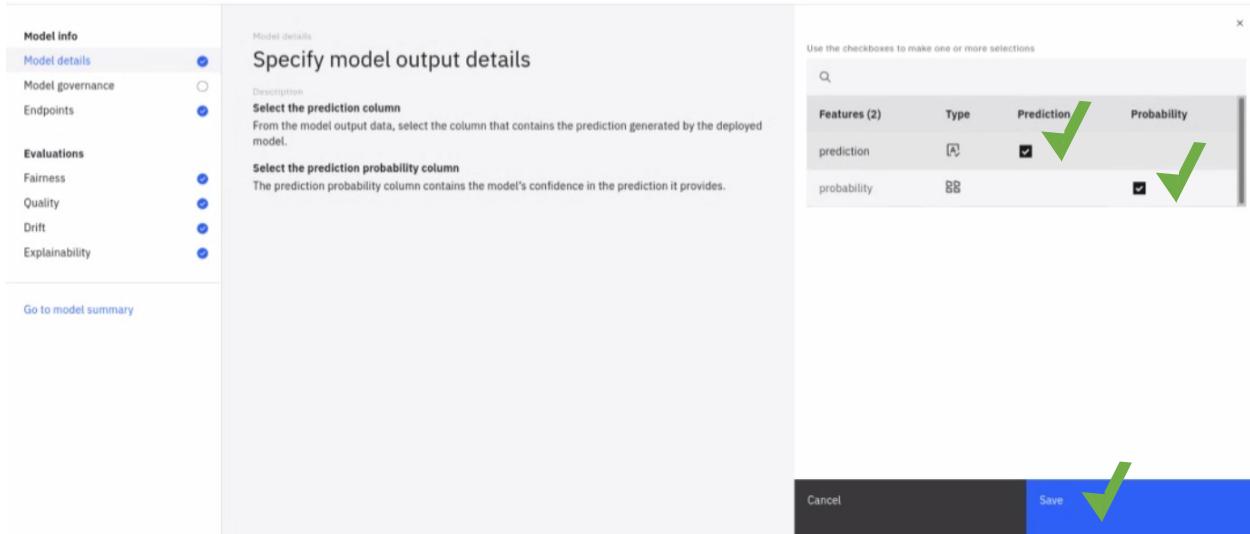


34. Note that a message “Logging is active Click Next” appears in the left pane of the Attrition Prediction window, Select the [Next](#) button

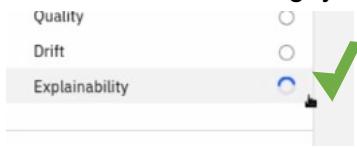


35. When the Attrition Prediction window appears, select the [Prediction check box](#) for the “Prediction” feature and select the [Probability check box](#) for “probability” feature, then [Save](#) button

Attrition prediction



Note that as it is saving, you will see Explainability running/spooling in the left menu



Once it finishes, the running/spooling animation will stop and a blue dot will appear

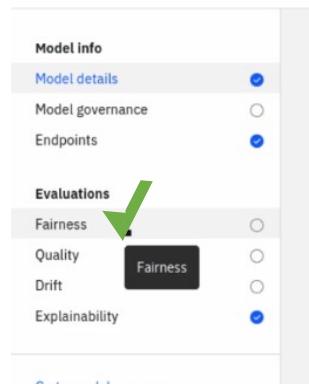


## Fairness

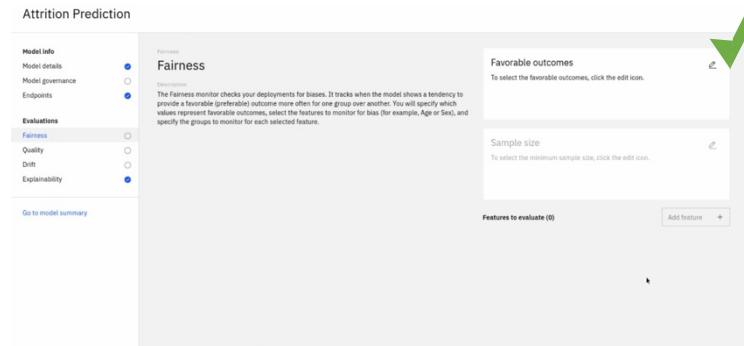
The Fairness monitor checks your deployments for biases. It tracks when the model shows a tendency to provide a favorable (preferable) outcome more often for one group over another. You will specify which values represent favorable outcomes, select the features to monitor for bias (for example, Age or Sex), and specify the groups to monitor for each selected feature.

1. Select “**Fairness**” from the Evaluations menu

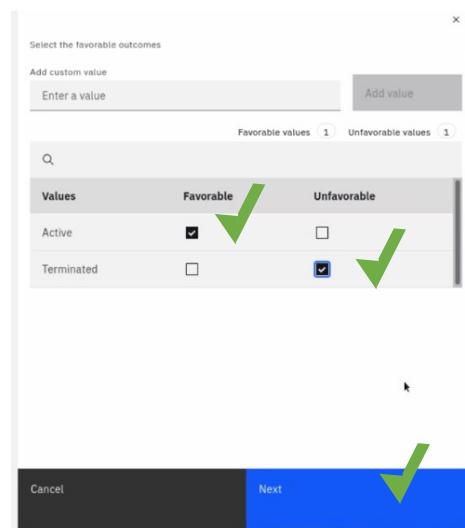
### Attrition Prediction



2. Select the **Edit Pencil** icon in the Favorable outcomes window



3. Select **Favorable** for the Active value and select **Unfavorable** for the Terminated value. Select the **Next** button



- Enter “10” into the “Minimum sample size” and select the **Next** button

- Select **Gender**, and then Select the **Save** button

- Select **Monitored** for the Female value and **Reference** for Male value. Then Select the **Save** button

## Notice Fairness is Spooling/Running

Attrition Prediction

Model info

- Model details
- Model governance
- Endpoints

Evaluations

- Fairness (selected, highlighted in blue)
- Quality
- Drift
- Explainability

[Go to model summary](#)

When it completes the spooling stops

Attrition Prediction

Model info

- Model details
- Model governance
- Endpoints

Evaluations

- Fairness (selected, highlighted in blue)
- Quality
- Drift
- Explainability

[Go to model summary](#)

## Quality

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

1. Select the **Quality** menu item and then select the **Edit pencil icon** to configure quality monitor in OpenScale. As explained on the Quality page, OpenScale can monitor the Quality metric which measures the model's ability to correctly predict outcomes that match labeled data.

Attrition Prediction

Model info

- Model details
- Model governance
- Endpoints

Evaluations

- Fairness
- Quality (selected, highlighted in blue)
- Drift
- Explainability

[Go to model summary](#)

**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**

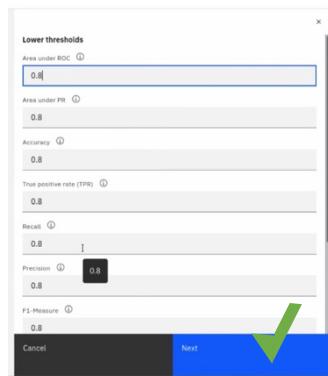
To select quality threshold values, click the edit icon.

**Sample size**

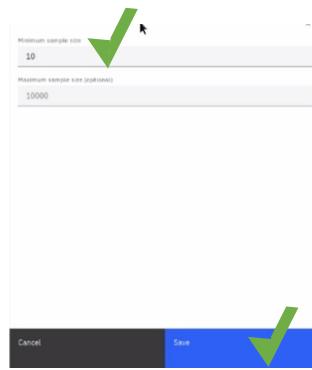
To select the minimum and maximum sample sizes, click the edit icon.

## Lab – IBM Modular Workshop – AI Governance

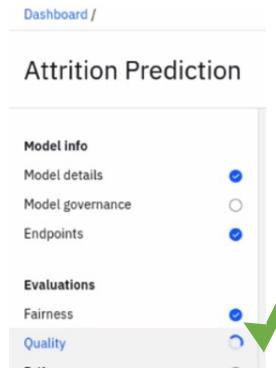
2. This window enables us to enter custom threshold values. For this demo, we will not change the default thresholds. Select the **Next** button



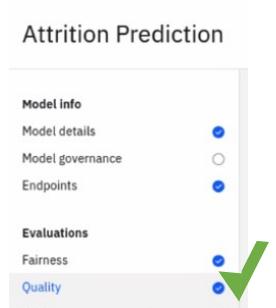
3. Enter **10** and then Select the **Save** button



The Quality job will spool and run for a few minutes



When it completes and displays a solid blue dot, we will set up the Drift monitor



## Drift

Drift metrics track the degree of change in accuracy and data consistency based on the accuracy and data consistency at training time.

1. Select **Drift** from the Evaluations menu and then select the **Edit pencil icon** from Drift Model

Attrition Prediction

**Model Info**

- Model details
- Model governance
- Endpoints

**Evaluations**

- Fairness
- Quality
- Drift** (highlighted with a green checkmark)
- Explainability

[Go to model summary](#)

**Drift**

**Drop in accuracy**

**Drop in data consistency**

**Drift model**

To select a drift model training option, click the edit icon.

**Drift thresholds**

**Upper thresholds**

To select drift threshold value, click the edit icon.

**Sample size**

To select the sample size, click the edit icon.

2. Select **Trust in Watson OpenScale** radio button and Select the **Next** button

Attrition Prediction

**Model Info**

- Model details
- Endpoints

**Evaluations**

- Fairness
- Quality
- Drift** (highlighted with a green checkmark)
- Explainability

[Go to model summary](#)

**Train a drift model**

**Training option**

- Train in Watson OpenScale** (selected)
- Train in a data science notebook

[Cancel](#) **Next**

For details on Drift monitors, check the [Drift documentation page](#).

3. Set the drift thresholds at the **10%** range for both Drop in accuracy and data consistency, then select the **Next** button

Attrition Prediction

**Model Info**

- Model details
- Endpoints

**Evaluations**

- Fairness
- Quality
- Drift** (highlighted with a green checkmark)
- Explainability

[Go to model summary](#)

**Drift thresholds**

**Upper thresholds**

Drop in accuracy: **10** %

Drop in data consistency: **10** %

[Back](#) **Next**

4. Enter **10** into the Maximum sample size and select the **Save** button

Minimum sample size  
10

Maximum sample size (optional)  
10000

Cancel Save

Spooling

Dashboard /

## Attrition Prediction

**Model Info**

- Model details
- Model governance
- Endpoints

**Evaluations**

- Fairness
- Quality
- Drift**  In Progress
- Explainability

[Go to model summary](#)

5. Wait for Drift evaluation to complete, then select the **Go to model summary** link

Dashboard /

## Attrition prediction

**Model info**

- Model details
- Model governance
- Endpoints

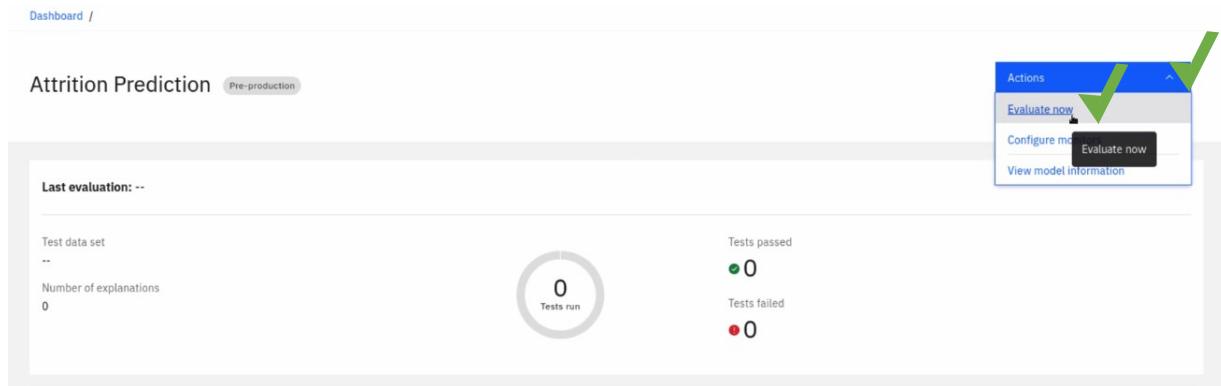
**Evaluations**

- Fairness
- Quality
- Drift**  Completed
- Explainability

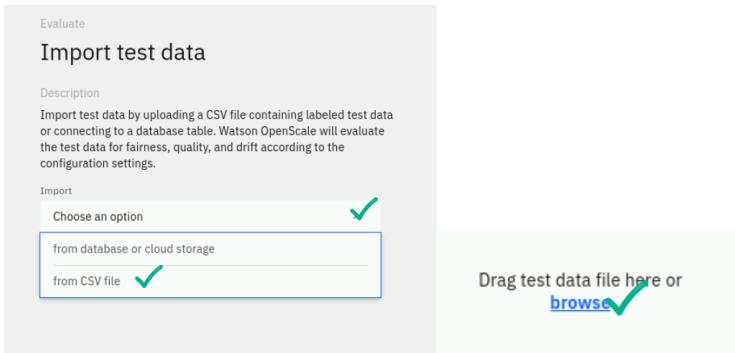
[Go to model summary](#)

## Evaluation

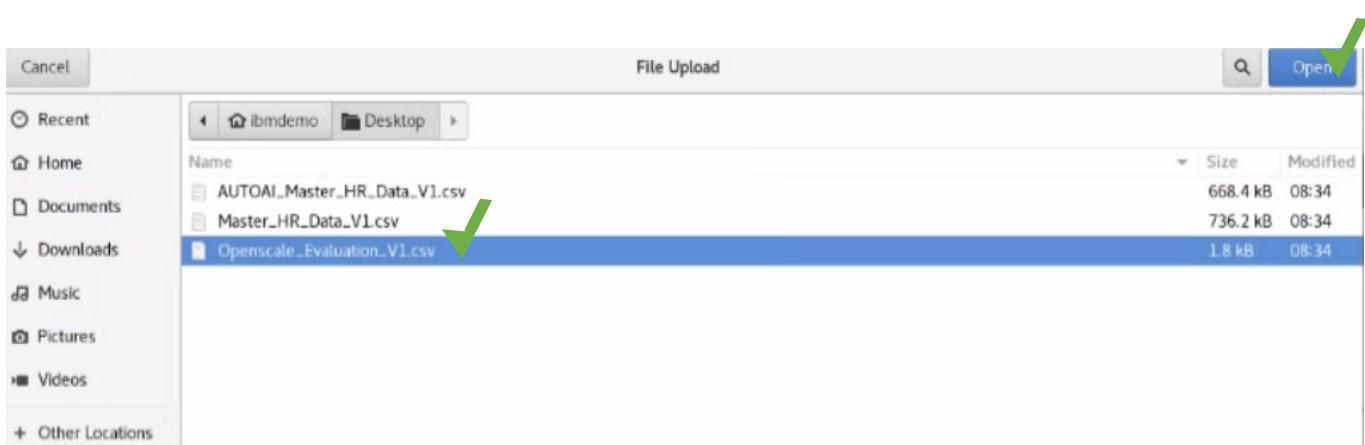
- When you return to the Attrition Prediction window, Select the drop-down arrow in the Actions section, then select Evaluate now



- Select the dropdown on Import Test Data file and select the “From CSV file” link, then Select browse

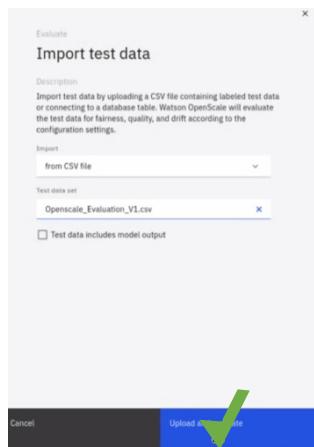


- Select the “Openscale\_Evaluation-V1.csv” line item and then Select the Open button



## Lab – IBM Modular Workshop – AI Governance

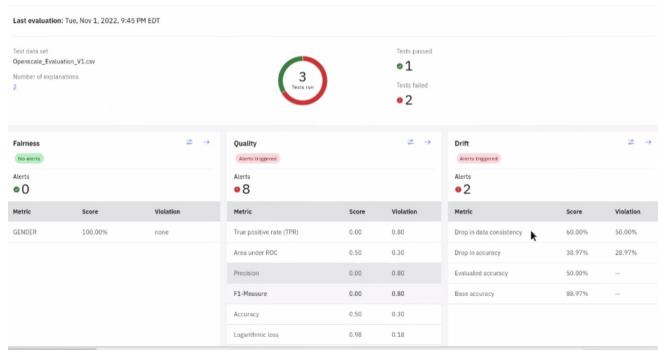
### 4. Select the [Upload and Evaluate](#) button



You will see the Evaluation running/loading. This can take up to 3 minutes

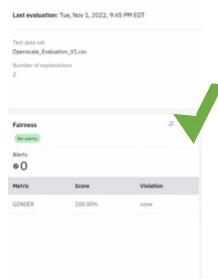


When the Evaluation completes, you will see this screen

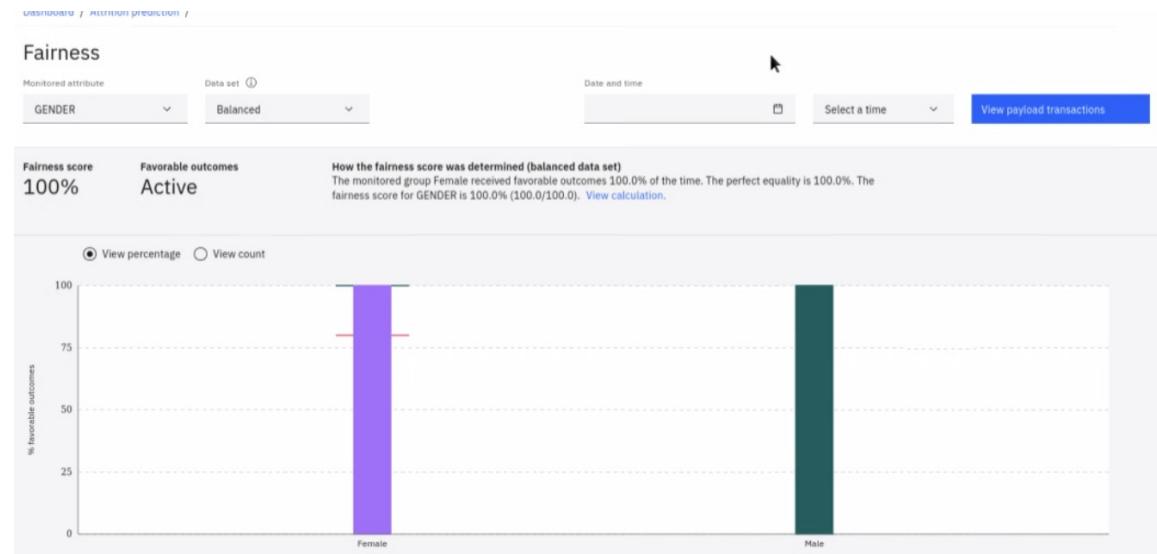


We have successfully completed the OpenScale evaluation for fairness, quality, and drift for our attrition prediction model.

Note that by Selecting the right facing arrow within each monitor, additional details regarding that monitors observations are available.



## See details



In production, as your machine learning model is deployed in an end-user application, Cloud Pak for Data will monitor scoring events via APIs, and display a dashboard that business/AI Ops users can leverage to detect undesirable behavior(s) and establish trust in the AI monitors. Openscale uploads evaluation data, runs scoring against it, and compares the model prediction to the labeled result to compute an overall quality score. Once the evaluation completes, you can investigate your results further

You can search for specific model transactions using OpenScale.

## Transaction

1. Select the [Explain a transaction](#) menu button

IBM Watson OpenScale

Dashboard / Attrition prediction Explain a transaction Pre-production

Approved Model is approved for production deployment.

Last evaluation: Tue, Nov 1, 2022, 9:45 PM EDT

Test data set: Openscale\_Evaluation\_V1.csv

Number of explanations: 2

Fairness: No alerts

Alerts: 0

Metric Score Violation

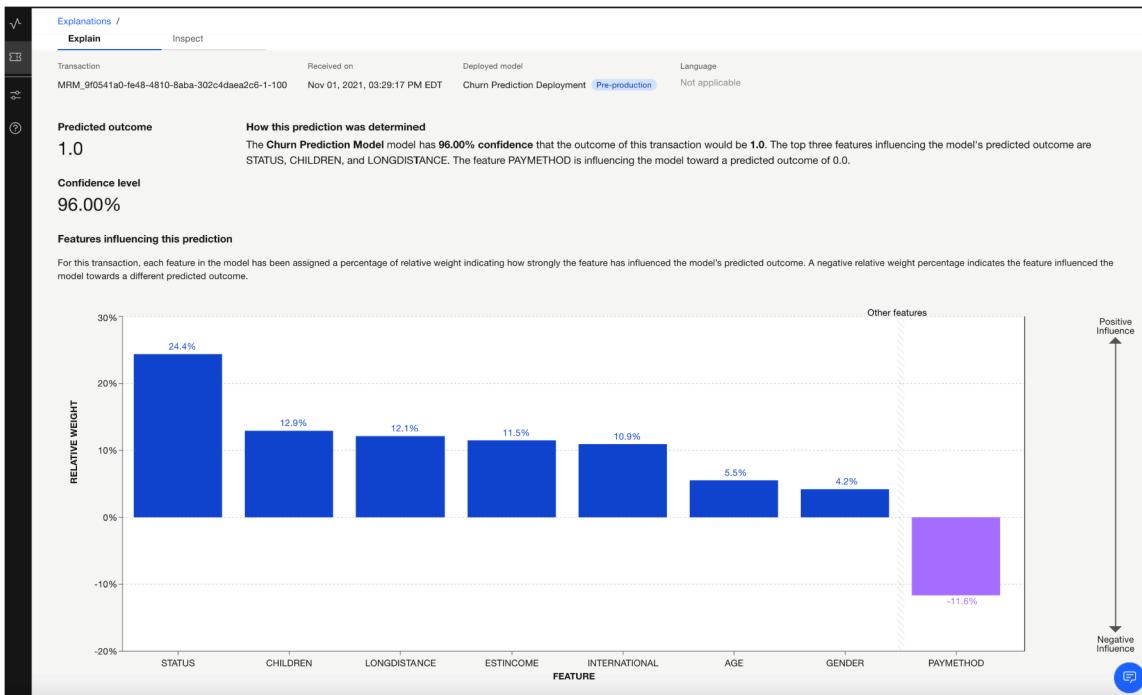
## Lab – IBM Modular Workshop – AI Governance

- On the Transactions page, review the results. Select the [Explain](#) link under the Actions column for one or more of these transactions to better understand how the model reached the output prediction.

The screenshot shows the 'Find a transaction' interface in IBM Watson OpenScale. The 'Deployed model' dropdown is set to 'Attrition prediction'. Below it, a table lists three recent transactions. The third transaction, MRM\_692fa8f8-59ff-4b70-af2f-3990afb8a0e2-1-2, has an 'Actions' column containing a blue 'Explain' link, which is highlighted with a green arrow.

Transaction ID	Timestamp	Prediction	Confidence	Actions
MRM_692fa8f8-59ff-4b70-af2f-3990afb8a0e2-1-1	Nov 1, 2022, 9:45:32 PM	Active	61.07%	<a href="#">Explain</a>
MRM_692fa8f8-59ff-4b70-af2f-3990afb8a0e2-1-10	Nov 1, 2022, 9:45:32 PM	Active	88.39%	<a href="#">Explain</a>
MRM_692fa8f8-59ff-4b70-af2f-3990afb8a0e2-1-2	Nov 1, 2022, 9:45:32 PM	Active	87.82%	<a href="#">Explain</a>

- On the Explanations page, review the various features and how they contributed to the output prediction for these records.



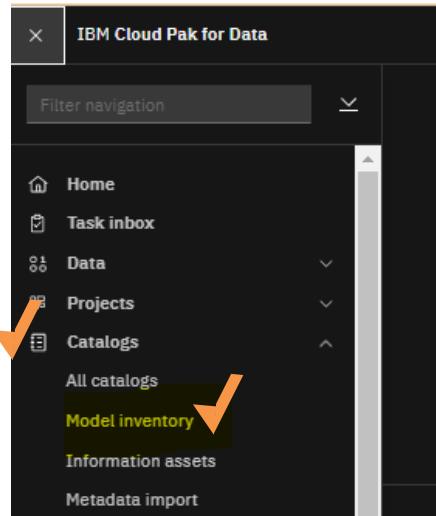
**Summary:** This lab illustrated how you can leverage OpenScale capabilities to deliver AI Governance by running model evaluation to validate that Quality, Fairness, and Drift metrics are within the configured thresholds. Additionally, AIOps engineers, data scientists, and business users can trigger explanation of individual transactions to gain confidence in the predictions of the model.

## 2.0 Factsheets / OpenPages

Information collected in Factsheets is essential in order to comply with various compliance demands. IBM OpenPages offers the ability to properly govern your AI models in a secure environment that allows traceability, automation and regulatory reporting. For example, OpenPages can raise issues based on information collected in Factsheets. Issues can be automatically assigned to different users based on user-definable criteria. These workflows can send emails and reminders to the assignees. All other activity related to the model(s) can be registered in OpenPages, so business users can easily see the inventory of models, their statuses, key metrics, ownership, validations, change requests, attestations and other key activities related to risk and compliance demands.

### Enable OpenPages / Factsheets Integration

1. In a new window, open a new CPD tab and select ‘Catalogs’ → ‘Model Inventory’ from the Hamburger.

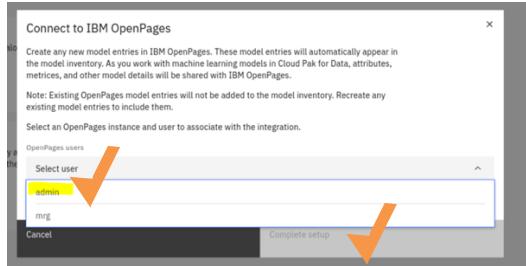


2. Once it opens click on the Manage tab as seen below and turn on the IBM OpenPages integration.

The screenshot shows the 'Model inventory' page with the 'Manage' tab selected. In the 'IBM OpenPages Integration' section, there is a note about automatically adding external models to the catalog and a 'Sync with IBM OpenPages' button with a toggle switch set to 'Off'.

## Lab – IBM Modular Workshop – AI Governance

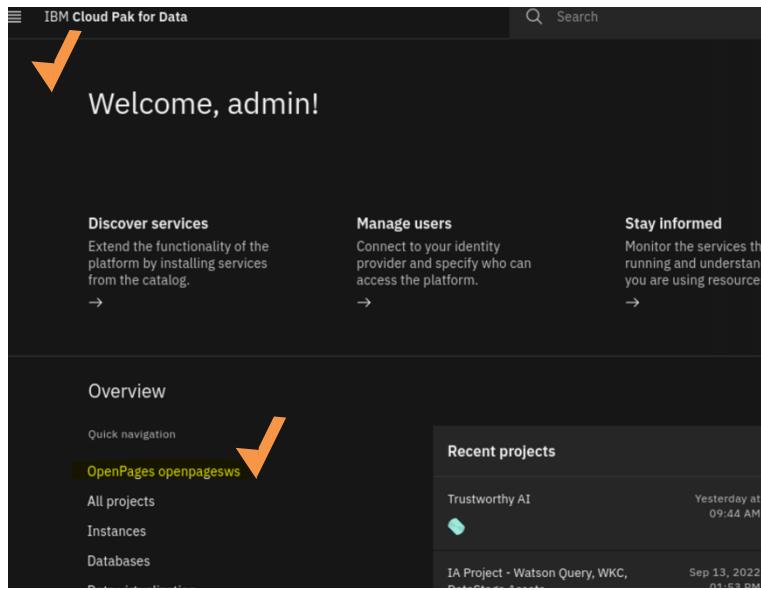
3. In the Connect to OpenPages screen select user admin from the drop down and click “Complete Setup” once setup is complete click continue.



You have now created a connection between Factsheets (inside Watson Knowledge Catalog) and the OpenPages solution that will allow you to fully govern the models and stay in compliance with regulatory requirements.

## 2.1. Opening the OpenPages instance and exploring the interfaces with other areas of the platform – such as Factsheets and WKC

1. Return to the Cloud Pak for Data Home page, then Select From the quick navigation OpenPages openpagesws



1. You will be taken to the **OpenPages Home Page** which has been configured so you can easily add a new Model Entry. This record is meant to record the description, purpose and business area where the model lives. This simply provides context for the model (or models) that will be governed within OpenPages for compliance and good governance practices.

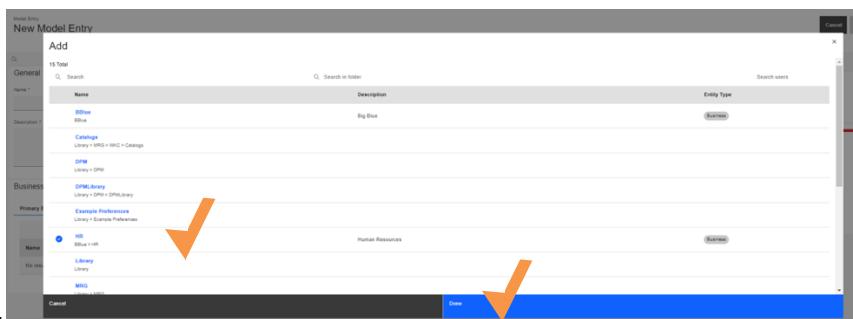
The screenshot shows the IBM OpenPages Home dashboard. On the left, there's a 'No tasks' panel with a note about workflow enablement. Below it is a 'Useful Links' section with links to the Responsible AI Institute, Model Risk Management - Comptroller's Handbook (OCC), EU Draft AI Regulation, and SR 11-7 Information. The main dashboard area has several sections: 'Model Entries by Status' (1 Approved Model), 'Model Validation Status' (0 Reviews Awaiting Assignment), 'Model Risk Tier Breakdown' (1 Tier 1 Model), and 'Model Change Management' (0 Change Requests). There are also sections for 'Deployments by Status' (No data available), 'My Reviews Underway' (0), and 'Change Requests In Process' (0).

- On the **Model Entry** screen enter in the following required fields: Name; Purpose; Description. Next select a Primary Business Entity in the Business Entity section by clicking on the 'Add' button. Note that all required fields must be entered before the save options is available.

Enter a Model Entry Name, Description, and Purpose.

The 'New Model Entry' dialog box is open. It has tabs for 'General' and 'Business Entities'. The 'General' tab contains fields for 'Name' (Champion Attrition Model), 'Purpose' (HR - Predict Attrition), and 'Description' (AutoAI generated model). The 'Business Entities' tab shows a list of entities under 'Primary Business...' and 'Other Business E...'. A modal window titled 'Model Request Creation' is overlaid, asking for a name, purpose, and description for the model request. Red arrows point to the 'Name', 'Purpose', and 'Description' fields in the main dialog.

To add a Primary Business Entity, click 'Add' and type HR in the search bar. Click on 'HR' and select 'Done'.



- Once you enter the required fields go ahead and click save.

A new Model Entry record will be created and you will be brought to the Model Entry Task View screen.

The screenshot shows the 'Model Entry' screen in IBM OpenPages. A new entry named 'Student01-Model\_entry' has been created. The 'Third Party Link' field is currently empty. Other fields like Name, Purpose, and Description are filled with placeholder text.

Once created, a **background process will create this Model Entry in Watson Knowledge Catalog (WKC)**. This process will take about 10-20 seconds.

4. **Refresh your Browser.** You should expect to see the 'Third Party Link' and 'External ID' fields populated. If the fields are not populated, please continue to refresh your browser until those fields are populated.

The screenshot shows the same 'Model Entry' screen after refreshing. The 'Third Party Link' field now contains a URL: <https://cpd-cpd-instance.apps.amwv11.workshop.tec/openpages-openpagesws/app/jspview/react/grc/task-view/3001?>. The 'External ID' field also contains a value: 5792dd06-a10c-43e7-a99c-7891164b7594.

5. Click the hyperlink in the 'Third Party Link' field. **This link will take you to the newly created record in the Watson Knowledge Catalog.**

NOTE: you may be required to reenter your login credentials at this point.

The data you entered in OpenPages (Name, Description, and Purpose) is automatically populated in the CP4D Model Inventory Catalog.

From the Model Entry Click on the blue button '**Add to Project**'. This will allow the catalog entry to be linked to the project(s) we have created as well as the models that have been created under that project.

## Lab – IBM Modular Workshop – AI Governance

The screenshot shows the 'Platform assets catalog' interface. A model entry titled 'Student01-Model\_entry' is selected. On the right side, there is a sidebar with various asset details like 'Description', 'Asset owner', 'Privacy', 'Asset details', and 'Tags'. At the top right of the sidebar, there is a blue button labeled 'Add to project' with a red arrow pointing to it.

- In the drop-down for Target select **AI Governance** and click 'Add' in the lower right.

The screenshot shows the 'Add to project' dialog. The 'Target' dropdown is set to 'Trustworthy AI'. Under 'Selected assets (1)', there is a list with one item: 'Champion Student Model' from the 'Platform assets catalog'. At the bottom right of the dialog, there is a blue 'Add' button with a red arrow pointing to it.

- Let's look at our project.** Return to the Cloud Pak Home page, navigate to your Project by clicking on the Hamburger menu and select Projects  $\Rightarrow$  All Projects.
- From the list, select TrustworthyAI.

The screenshot shows the 'Projects' page. The 'Find a project' search bar has 'TrustworthyAI' typed into it. Below the search bar, there is a list of projects. The 'TrustworthyAI' project is selected, as indicated by a red arrow pointing to its name. The project details show it is an 'IA Project' with 'WKC, DataStage Assets'.

- In the Project record, click on the Assets tab. That will show all relevant assets tied to the project – such as the actual models.

## Lab – IBM Modular Workshop – AI Governance

Under Asset Types, select '**Saved Models**' and select one of the Models listed (Champion) Attrition prediction...

Name	Last modified
(Challenger) Attrition Prediction - P4 Snap Random Forest Model	22 hours ago admin (Read)
(Champion) Attrition Prediction - P3 Snap Random Forest Model	22 hours ago admin (Read)

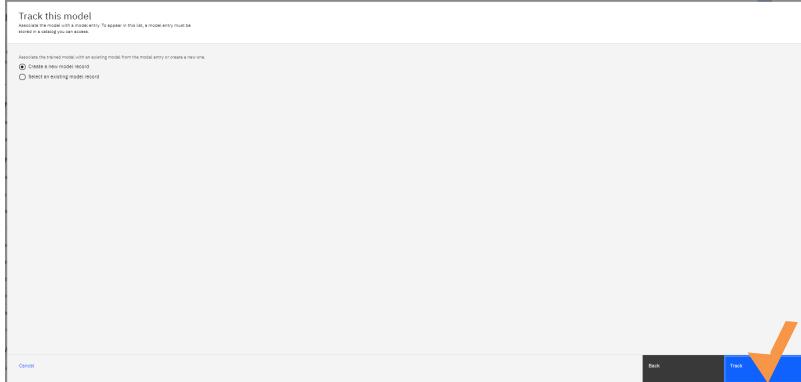
- Once the Model is selected, you will be presented with the Factsheets screen about this Model. If this model needs to be fully governed in order to comply with compliance requirements, **it can be flagged to be tracked inside OpenPages**.

Click '**Track This Model**' – which will create and send the model information to OpenPages.

- On the 'Track this Model' screen, select the Model Entry from OpenPages that you previously created. **This will create the Model under the Model Entry in OpenPages**.

Model entry	Description	Parent entity	Catalog	Status
Champion Attrition Model	AutoAI Generated Model	HR	Platform assets catalog	Proposed
GO-56	123	HR	Platform assets catalog	Proposed

- Click 'Create a new model' and click the 'Track' button.



After a few seconds (approx. 30 seconds) you will see a success message telling you “**Tracking Enabled**. Go to OpenPages to update the status of the model.”

In essence, **the model has now been enabled to be fully governed inside OpenPages**. This means that other information can be defined and tracked in OpenPages. This could be periodic model attestations, model metrics, model change management or decommissioning workflows, issues and actions, etc. These activities are normally performed by model managers and business users.

### Let's check it out in OpenPages!!!!

1. From the model screen that you're viewing, you can scroll down and click on the IBM OpenPages model link – this will take you to the OpenPages view of this model.

Model inventory	
Model entry	TD Test Model
Model entry status	Approved

Model information	
Model description	Description not added
IBM OpenPages model	<b>CHAMPION_DLA_HR_ATTRITION - P3 XGB Classifier</b>
IBM OpenPages model status	Proposed
Tags	
Model ID	ecb02606-63cb-4198-99f7-8e73913eb81e

In OpenPages you'll see general information about this model.

## Lab – IBM Modular Workshop – AI Governance

CHAMPION\_DLA\_HR\_ATTRITION - P3 XGB Classifier

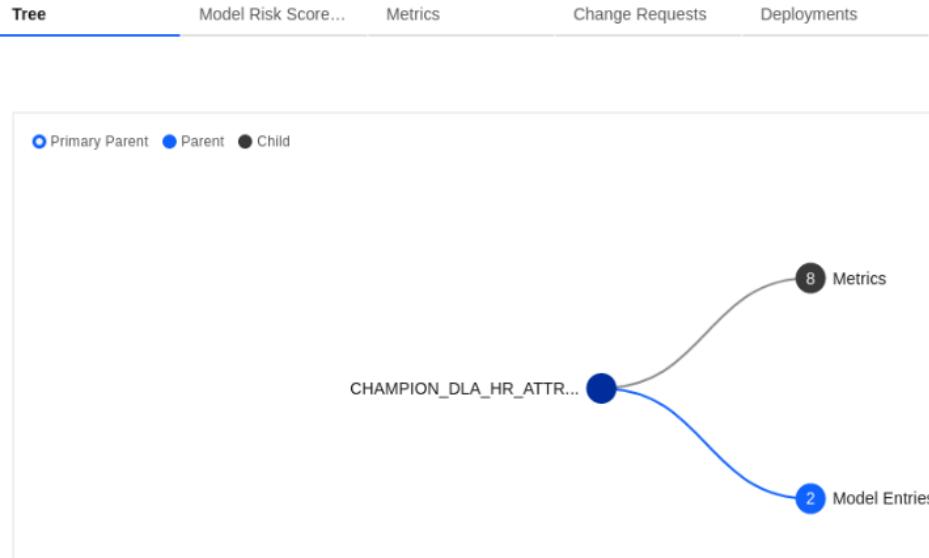
Proposed

Scroll down and you'll see important information that was passed over from Factsheets.

### Model Facts

WKC Name CHAMPION_DLA_HR_ATTRITION - P3 XGB Classifier	WKC Description	Project Name TrustworthyAI	Model Type wml-hybrid_0.1						
Third Party Link									
			<a href="https://cpd-cpd-instance.apps.amwv11.workshop.tec/ml/models/ecb02606-63cb-4198-99f7-8e73913eb81e?projectId=6b579d16-0376-4522-aeb0-1304f169012c">https://cpd-cpd-instance.apps.amwv11.workshop.tec/ml/models/ecb02606-63cb-4198-99f7-8e73913eb81e?projectId=6b579d16-0376-4522-aeb0-1304f169012c</a>						
External ID ecb02606-63cb-4198-99f7-8e73913eb81e	Container ID 6b579d16-0376-4522-aeb0-1304f169012c	Container Type project	Input Type						
Algorithm XGBClassifier	Prediction Type classification	Software Specification hybrid_0.1	Created By admin						
Hyperparameters	Hybrid Pipeline autoai-kb_rt22.1-py3.9	Number of Features 17							
Input Schema auto_ai_kb_input_schema									
<table border="1"> <thead> <tr> <th>Feature</th> <th>Data type</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>FMPID</td> <td>integer</td> <td>- more</td> </tr> </tbody> </table>				Feature	Data type	Description	FMPID	integer	- more
Feature	Data type	Description							
FMPID	integer	- more							

You will also see a tree view of all the relevant relationships of the model.



## Including metrics

Name	Description	Value	Breach Status	Value Date
MET_0000001 BIG-BLUE > HR	Watson Studio Notebook metric for Roc auc	0.7679402	Not Determined	2/22/2023
MET_0000002 BIG-BLUE > HR	Watson Studio Notebook metric for Balanced accuracy	0.63095915	Not Determined	2/22/2023
MET_0000003 BIG-BLUE > HR	Watson Studio Notebook metric for Precision	0.9181032	Not Determined	2/22/2023
MET_0000004 BIG-BLUE > HR	Watson Studio Notebook metric for Recall	0.9439696	Not Determined	2/22/2023
MET_0000005 BIG-BLUE > HR	Watson Studio Notebook metric for Log loss	-0.33635494	Not Determined	2/22/2023
MET_0000006 BIG-BLUE > HR	Watson Studio Notebook metric for Accuracy	0.87517613	Not Determined	2/22/2023
MET_0000007 BIG-BLUE > HR	Watson Studio Notebook metric for F1	0.9308555	Not Determined	2/22/2023
MET_0000008 BIG-BLUE > HR	Watson Studio Notebook metric for Average precision	0.9165375	Not Determined	2/22/2023

- Further down, you're able to view other key relationships, as well as the ability to create a new issue related to the model. This could be an issue that you see due to a negative metric being received from Factsheets and OpenScale.

### 3. Create an issue against this model.

Name	Priority
No results	

4. Create new and fill out the issue creation form with the sample information below. Notice the required fields on the right-hand side of the form. Make sure you enter your user ‘admin’ as the issue owner.

New Issue

CHAMPION\_DLA\_HR\_ATTRITION - P3 XGB Classifier\_ISS\_0000001

\* Description  
Model needs to be re-calibrated due to poor performance on fairness and accuracy.

\* Priority  
Not Determined

\* Issue Type  
Operating Effectiveness

Deficiency Details ①

Issue Owner \*  
 admin

Identified By Individual  
Search users

Search users

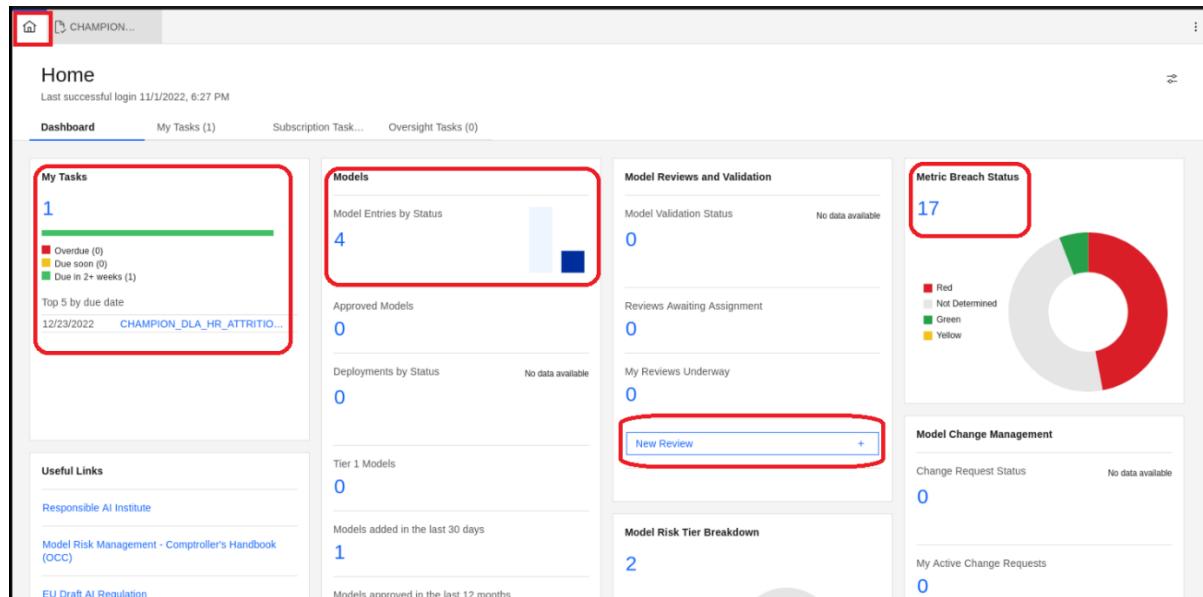
Identified By Group

\* Due Date \*  
12/31/2022

All Key Items (7) ▾

- Name \*
- Description \*
- Issue Type \*
- Issue Owner \*
- Identified By Individual
- Identified By Group
- Due Date \*

5. Once saved, the issue will be created and will go through the workflow engine for necessary reviews and approvals. Since you assigned this issue to yourself, you can now click on the house icon on the upper-left corner which will take you to this user’s main screen.



The Home Page screen will display important additional information about the model governance functionality in IBM OpenPages. This includes:

**My Tasks** – displays all workflow task notifications assigned to this user. In your case, you should see one task (the issue you created and assigned to yourself). Other assignments will display this as well.

**Models** – provides a list of different searches on the model inventory in the system.

**Model Reviews and Validation** – displays different searches showing validations and reviews with the ability to create New Reviews.

Home dashboards are fully configurable according to each user's needs. In other OpenPages-centric labs we'll explore more of the capabilities around model governance and risk management such as:

- Model Inventory Management
- Model Validations
- Model Change Management
- Model Decommissioning
- Issues and Actions
- Reporting and dashboards

**Congratulations!** You've completed the OpenPages portion of this lab.