

Lab-1: Setup Environment

Introduction

This lab will set up the Watson Studio environment for subsequent labs and introduce you to the Project and Gallery features of Watson Studio. Watson Studio is an integrated platform of tools, services, data, and meta-data to help companies and agencies accelerate their shift to be data driven organizations. The platform enables data professionals such as data scientists, data engineers, business analysts, and application developers collaboratively work with data to build, train, deploy machine learning and deep learning models at scale to infuse AI into business to drive innovation. Watson Studio is designed to support the development and deployment of data and analytics assets for the enterprise.

End-to-End Data Science

The general flow of the End to End Data Science PoT will be guided by the activities shown in Figure 1- End to End Flow. This lab will focus on the Create Project and Research Topics activities.

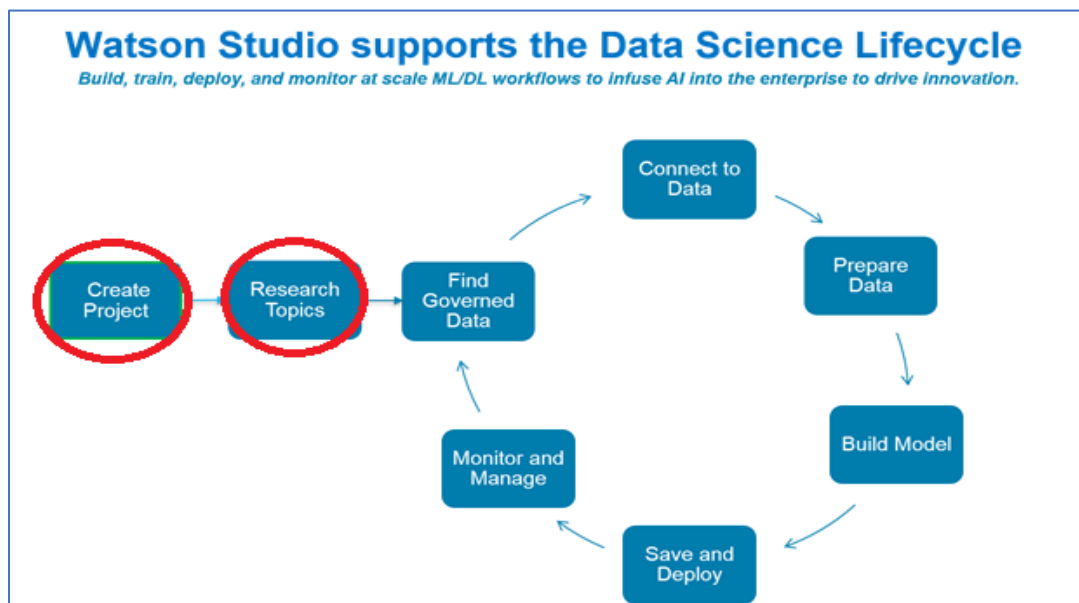


Figure 1- End to End Flow

Objectives

The goal of this lab is to familiarize the user with the Project and Gallery features of Watson Studio, and to set up the environment for subsequent labs. Projects are a core component of Watson Studio. Projects enable you to organize your analytic and data assets in one place. Projects are also the home base for collaboration. Colleagues can be added as collaborators on a project with administrator, editor, or viewer access.

The [Watson Gallery](#) contains samples that you can use in your project:

- Run sample notebooks to learn new techniques or to use as templates for your own notebooks.
- Add sample data sets to your project

The [Watson Community](#) contains resources to help you learn about data science:

- Read articles from many sources to keep current with data science trends.
- Read tutorials for multiple skill levels to learn how to do specific data science tasks.

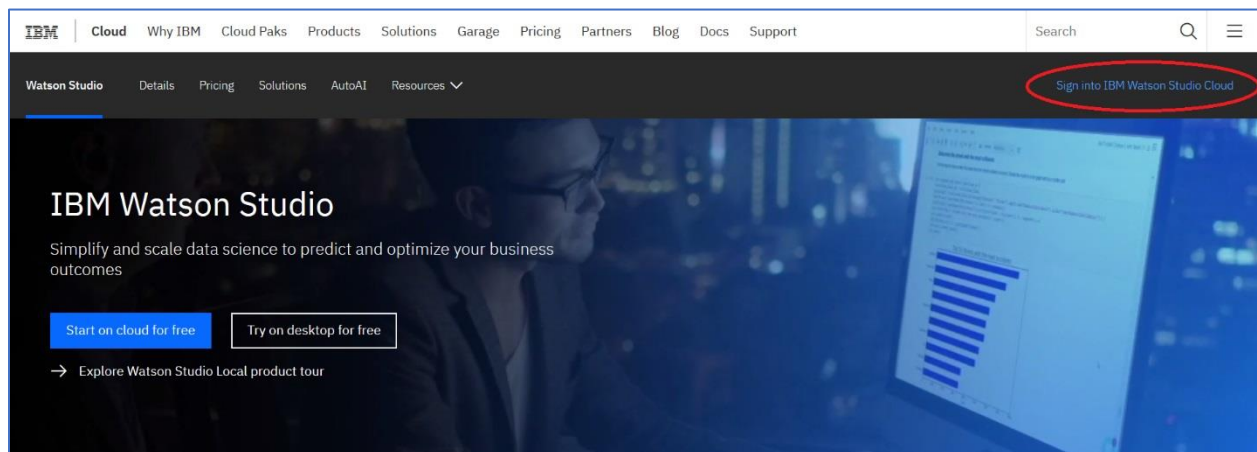
The Watson Gallery and Watson Community features support the “Research Topics” activity in the end-to-end process shown above.

After completing this lab, you will be familiar with these features of Watson Studio.

1. Create a project
2. Create an object storage instance and associate it with the project
3. Associate an existing Watson Machine Learning service instance with the project
4. Add a collaborator to the project
5. Research topics by searching for a notebook in the Gallery

Create a Project

1. Log into your Watson Studio account by typing in the url **datascience.ibm.com** in your Firefox or Chrome browser.
2. Click on **Sign into Watson Studio Cloud** (not Cloud sign-up/log-in)



3. Enter your Watson Studio user id and click **Continue**.

Log in to IBM

IBMid

[Forgot IBMid?](#)

wsuser30000@gmail.com

☐ Remember me [i](#)

Continue

Don't have an account? [Create an IBMid](#)

Need help? [Contact the IBMid help desk](#)

4. Enter your **Password** and click **Log in**.

Log in to IBM

Logging in as wsuser30000@gmail.com [Not you?](#)

Password

[Forgot password?](#)

.....



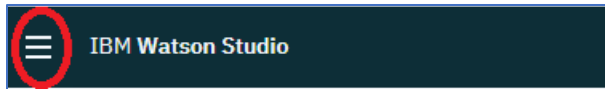
☐ Remember me [i](#)

Log in

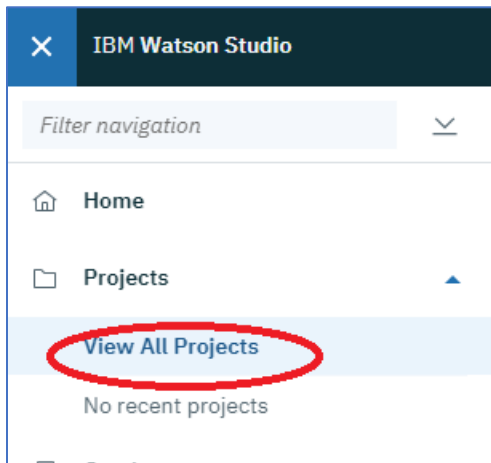
Don't have an account? [Create an IBMid](#)

Need help? [Contact the IBMid help desk](#)

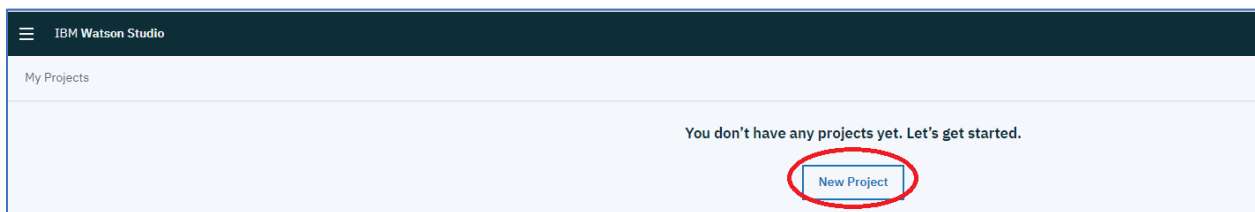
5. Click on the hamburger icon .



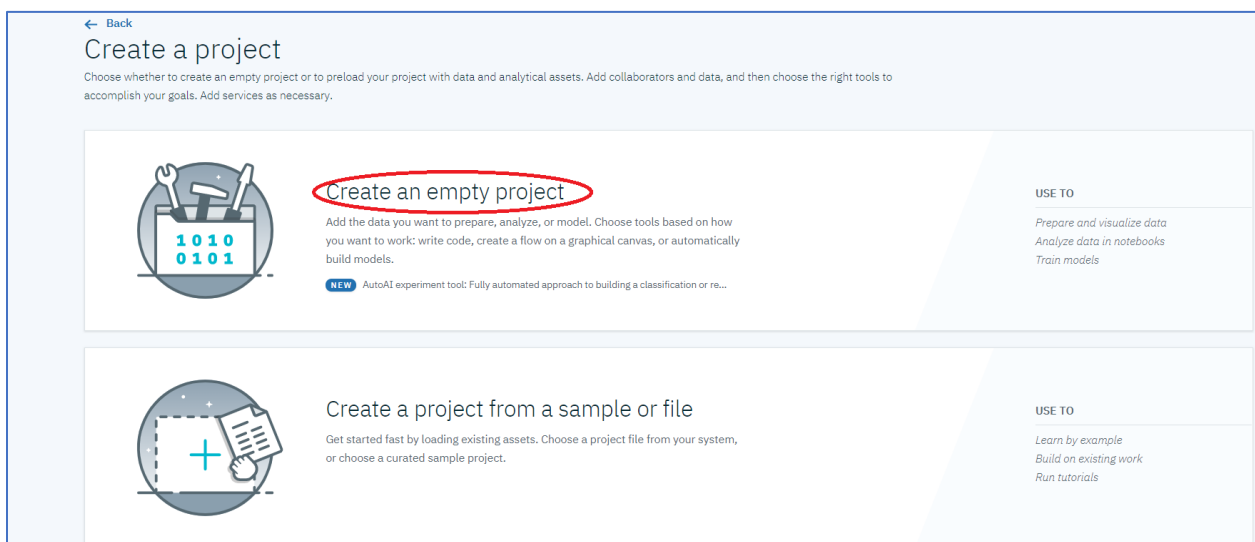
6. Click on **View All Projects**



7. Click on **New Project**.



8. Click on Create an empty project.



9. Enter “Watson Studio Labs” for the **Name**, optionally enter a **Description**, check **Restrict who can be a collaborator** (if it’s unchecked), and in **Define Storage** click on **Add** to add an object storage instance.

New project

Define project details

Name

Watson Studio Labs

Description

Project description

Choose project options

☒ Restrict who can be a collaborator

Project will include integration with Cloud Object Storage for storing project assets.

Define storage

1 Select storage service

Add

Add an object storage instance and then return to this page and click Refresh.

2 Refresh

Cancel

Create

10. Click on **Lite**, and then click on **Create**

Cloud Object Storage

IBM Cloud Object Storage is a highly scalable cloud storage service, designed for high durability, resiliency and security. Store, manage and access your data via our self-service portal and RESTful APIs. Connect applications directly to Cloud Object Storage use other IBM Cloud Services with your data.

Features

Storage for the IBM Cloud

IBM Cloud Object Storage provides unstructured data storage for cloud applications. Libraries and SDKs support a common set of S3 API functions for connecting new applications to available cloud storage and integrating your data into other services on the IBM Watson and Cloud Platform available with Regional and Cross Region resiliency options worldwide.

Built-in Aspera high-speed transfer

With IBM Cloud Object Storage Aspera high-speed data transfer, you can improve data transfer performance by quickly transferring data over long distances, and under various network conditions. It's natively integrated into Cloud Object Storage and there is no additional cost for uploading data.

Storage Classes and Archive Policy

Choose storage classes based on your usage patterns for active, less active, and cold workloads with Standard, Vault, and Cold Vault respectively. Use Flex class for dynamic data access with usage patterns that are hard to predict. For rarely used data that requires long-term retention, simply set an Archive policy with our existing storage class tiers allowing you to reduce costs even further with our lowest priced Archive storage.

Access and Key Management

IBM Identity and Access Management (IAM) policies allow for granular access control at the bucket level using role-based policies. IBM Protect support allows customers to have their own managed encryption keys for higher level data security.

Pricing Plan: Monthly Process shown above reflect the: United States

PLAN	FEATURES	PRICING
<input checked="" type="radio"/> Lite	1 COS Service Instance Storage up to 25 GB/mo. Up to 20,000 GET requests/mo. Up to 2,000 PUT requests/mo. Up to Data Retrieval 10 GB/mo. Up to 5GB Public Outbound Applies to aggregate total across all storage bucket classes	Free
<input type="radio"/> Standard	There is no minimum fee, so you pay only for what you use.	Expand each section to view details

The Lite service plan for Cloud Object Storage includes Regional and Cross Regional resiliency, flexible data classes, and built in security.

Cancel

Create

11. Click **Confirm**.

×

Confirm Creation

Plan

Lite

Resource group

Default

Service name

cloud-object-storage-uu

Cancel

Confirm

12. Click **Refresh**.

New project

Define project details

Name

Watson Studio Labs

Description

Project description

Choose project options

☒ Restrict who can be a collaborator ⓘ

Project will include integration with Cloud Object Storage for storing project assets.

Define storage

① Select storage service

Add

Add an object storage instance and then return to this page and click Refresh.

Refresh

13. Click **Create**.

New project

Define project details

Name

Watson Studio Labs

Description

Project description

Choose project options

☒ Restrict who can be a collaborator

Project will include integration with Cloud Object Storage for storing project assets.

Storage

cloud-object-storage-uu

Cancel

Create

14. The Project **Overview** page is shown. This page provides summarized information about the project. In addition to the Overview page, are seven other pages described below.
- Assets Page** – Analytics and Data assets can be added to the project from this page.
 - Environments Page** - Provides information on the current notebook environments that are defined, lists the active notebook environments currently running, and enables users to create custom notebook environments.
 - Jobs Page** – Provides the interface to the job subsystem. This replaces the separate UIs to set up and run jobs for Notebooks and the Data Refinery. This is a new feature in Watson Studio Cloud version.
 - Deployments Page** – Lists the deployed models
 - Access Control** – Lists the project collaborators and enables users to add/remove collaborators.
 - Settings** – Enables users to view and set project attributes.

IBM Watson Studio

Upgrade

Felix Doe's Account

FD

My Projects / Watson Studio Labs

Launch IDE

Add to project

Overview

Assets

Environments

Jobs

Deployments

Access Control

Settings

Watson Studio Labs

Last Updated: 10 Jan, 2020

Readme

0

Assets

1

Collaborators

Date created

10 Jan, 2020

Description

No description available

Storage

Cloud Object Storage

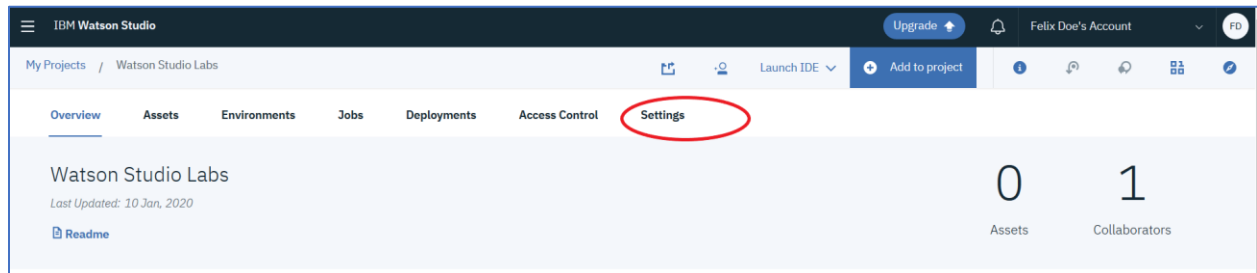
0 Byte used

Recent activity

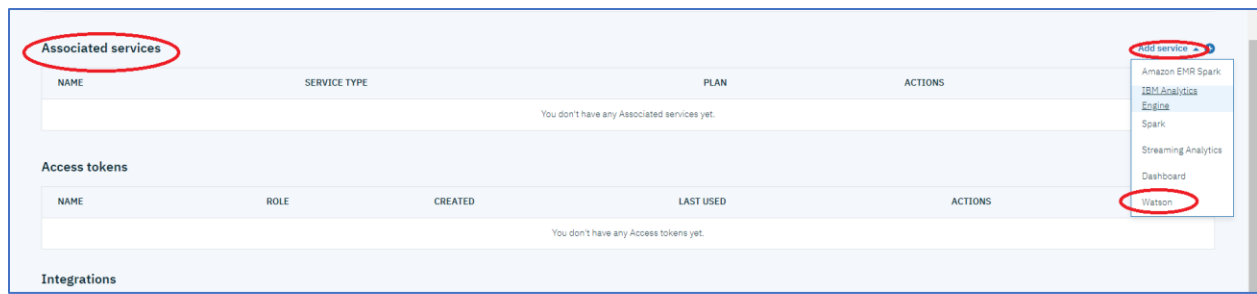
Associate a Watson Machine Learning Service to the Project

To save and deploy machine learning models, a Watson Machine Learning service must be created (if one doesn't exist) and added to our project.

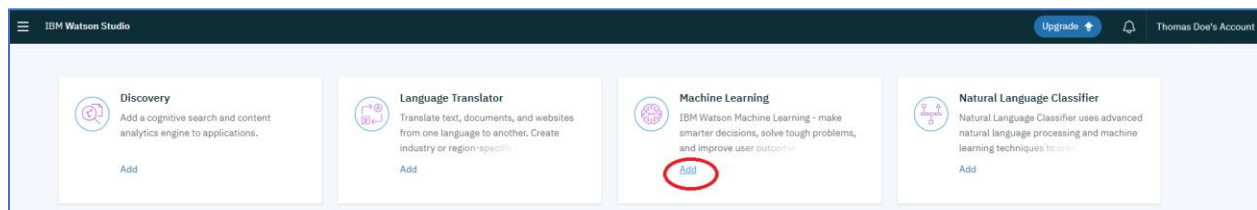
1. Click on **Settings** to navigate to the Project **Settings** page.



2. Scroll down to **Associated Services**, click on **Add service**, click on **Watson**.



3. Click on **Add** in the **Machine Learning** tile.



4. Newer Watson Studio accounts come with the WatsonMachineLearning instance already created. Select **Existing**, select **WatsonMachineLearning** for the **Existing Service Instance**, and click on **Select**. If you don't have an existing service, click on New and follow the instructions to create a Lite Watson Machine Learning service.

Machine Learning

Existing New

RESOURCE GROUP All Resources ▾ LOCATION All Locations ▾ CLOUD FOUNDRY ORG None ▾

Existing Service Instance

WatsonMachineLearning ▾

Select Cancel

5. The **WatsonMachineLearning** service is associated with the project.

Associated services Add service +				
NAME	SERVICE TYPE	PLAN	ACTIONS	
WatsonMachineLearning	Watson - Machine Learning			

Add a Project Collaborator

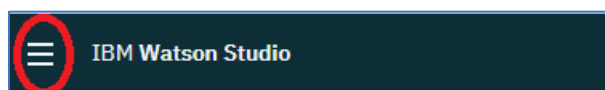
Colleagues can gain access to a project's data and analytic assets by being made a collaborator. Permissions are based on the assigned role. The roles are administrator, editor, and viewer.

Recall, the project that was created in this lab restricts who can collaborate. This option was required to demonstrate the Watson Knowledge catalog features in lab-2. The restriction limits the collaborators to be members of your company (if your company has federated SAML with IBM Cloud), or a member of the project creator's IBM Cloud account. Given the restriction, to demonstrate adding collaborators to the project, we will need to first add the collaborator to your IBM Cloud account.

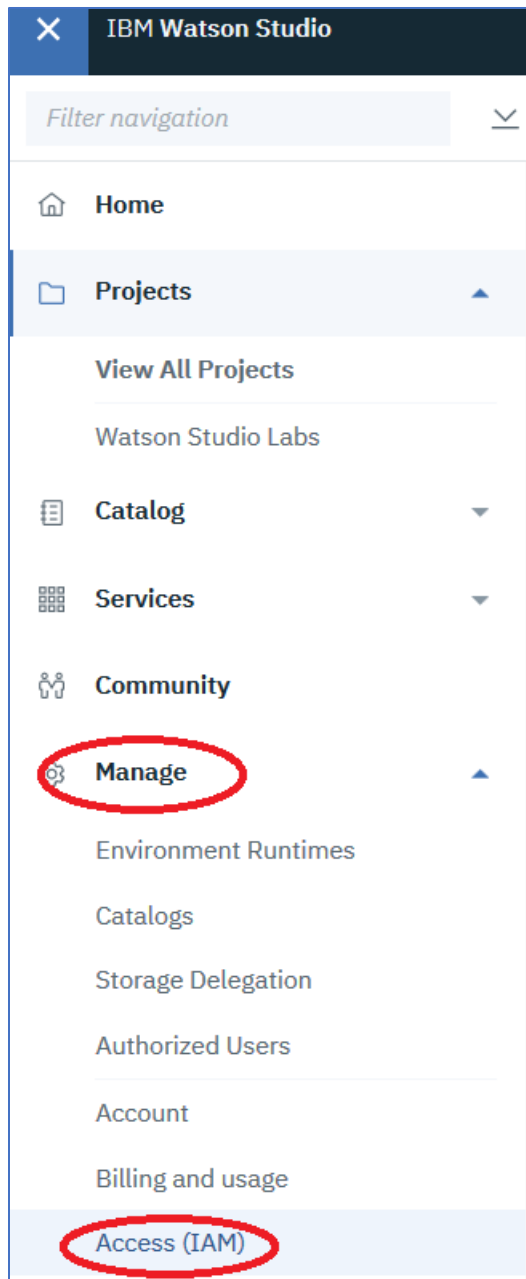
We will add two collaborators. One to demonstrate project collaboration, the second to demonstrate catalog collaboration.

Step 1 – Add Collaborator to the IBM Account

1. Click on the hamburger ☰ icon

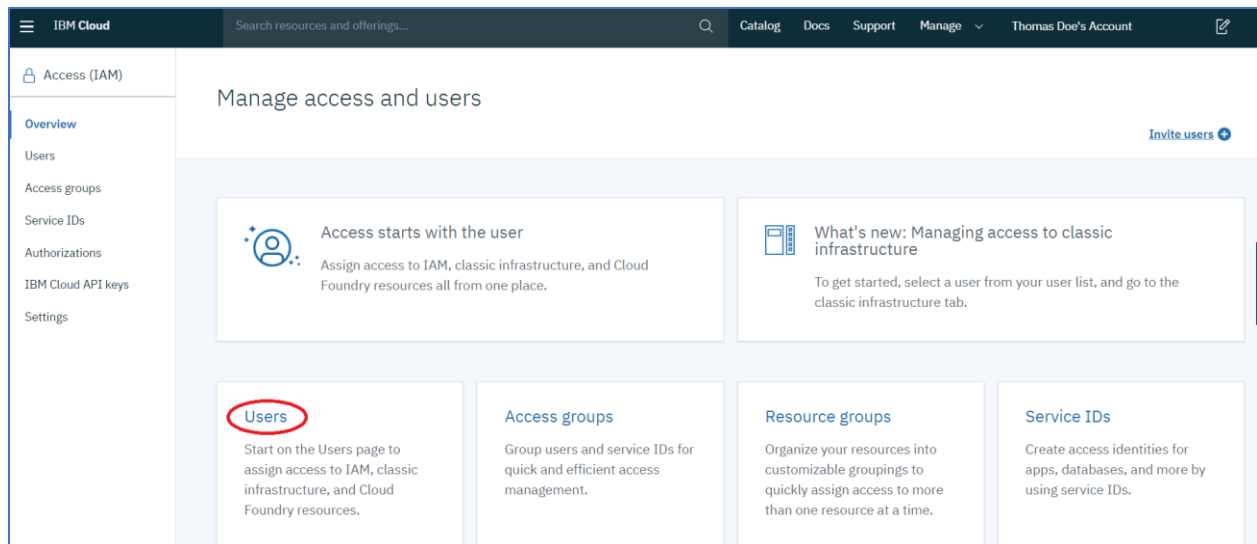


2. Click on **Manage** and then click on **Access (IAM)**

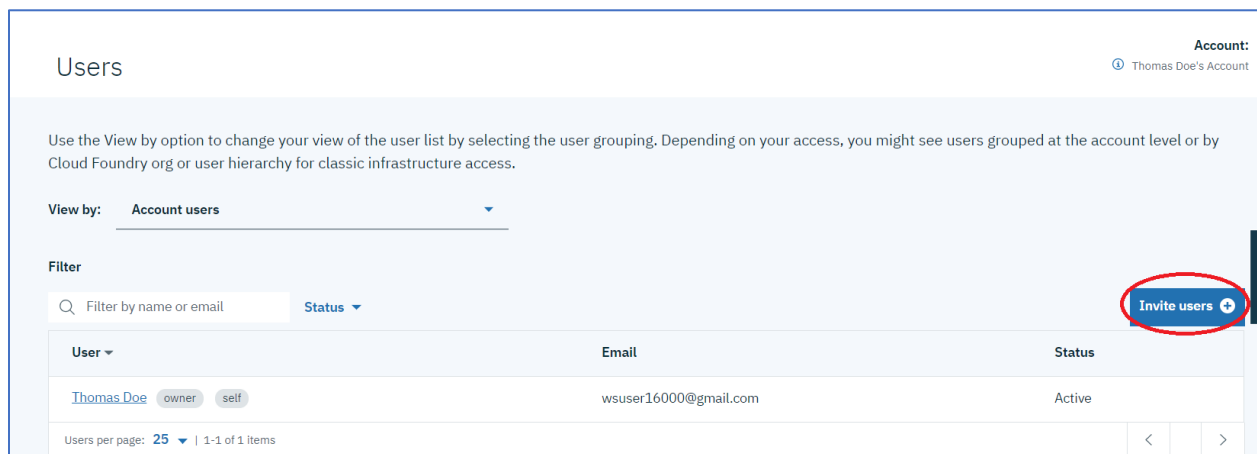


3. An **Identity and Access Management (IAM)** browser tab is created providing the IBM Cloud user interface to the IAM subsystem. Click on **Users**.





4. Click on **Invite Users**.



5. For **E-mail address**, enter the **PROJECT COLLABORATOR** e-mail address on the index card handed out, and click on **Assign users additional access**.

IBM Cloud

Search resources and offerings...

Q

Catalog

Docs

Support

Manage

Felix Doe's Account

Users /

Invite users

Account: Felix Doe's Account

Enter email addresses

beekmanb@us.ibm.com

Add users to access groups

Add users to one or more access groups. You can assign users only to the access groups that you have access to manage.

No access groups are available. Go to the [Access groups](#) page to view or create access groups.

Assign users additional access

Depending on your level of access, you [Expand/Collapse](#) Foundry roles, classic infrastructure permissions, and IAM access policies. By default, users don't have access to view, create, or manage support cases.

Access summary

Summary

API

1

User

0

Access groups

0

Assignments

You haven't added any access, but that's ok. You can still invite users to your account.

Invite

Cancel

FEEDBACK

6. Click on **IAM services**.

IBM Cloud

Search resources and offerings...

Q

Catalog

Docs

Support

Manage

Users /

Invite users

Enter email addresses

beekmanb@us.ibm.com

Add users to access groups

Add users to one or more access groups. You can assign users only to the access groups that you have access to manage.

Assign users additional access

Depending on your level of access, you can assign Cloud Foundry roles, classic infrastructure permissions, and IAM access policies. By default, users don't have access to view, create, or manage support cases.

Cloud Foundry

Access to orgs and spaces that contain resources managed by Cloud Foundry

✓

IAM services

Access to IAM-enabled services

Account management

Access to services like billing, user management, support center, and more

7. Click on **All Identity and Access enabled services**.

IBM Cloud Search resources and offerings... Catalog Docs Support Manage

Invite users

Enter email addresses

beekmanb@us.ibm.com

Add users to access groups
Add users to one or more access groups. You can assign users only to the access groups that you have access to manage.

Assign users additional access
Depending on your level of access, you can assign Cloud Foundry roles, classic infrastructure permissions, and IAM access policies. By default, users don't have access to view, create, or manage support cases.

Cloud Foundry
Access to orgs and spaces that contain resources managed by Cloud Foundry

IAM services
Access to IAM-enabled services

Account management
Access to services like billing, user management, support center, and more

What type of access do you want to assign?

All Identity and Access enabled services in Account

8. Scroll down click on **Viewer** under **Platform access** and **Reader** under **Service access**, and click on **Add**.

IBM Cloud Search resources and offerings... Catalog Docs Support Manage

Region
All regions

Platform access

☒ Viewer As a viewer, you can view service instances, but you can't modify them.

☐ Operator As an operator, you can perform platform actions required to configure and operate service instances, such as viewing a service's dashboard.

☐ Editor As an editor, you can perform all platform actions except for managing the account and assigning access policies.

☐ Administrator As an administrator, you can perform all platform actions based on the resource this role is being assigned, including assigning access policies to other users.

Service access

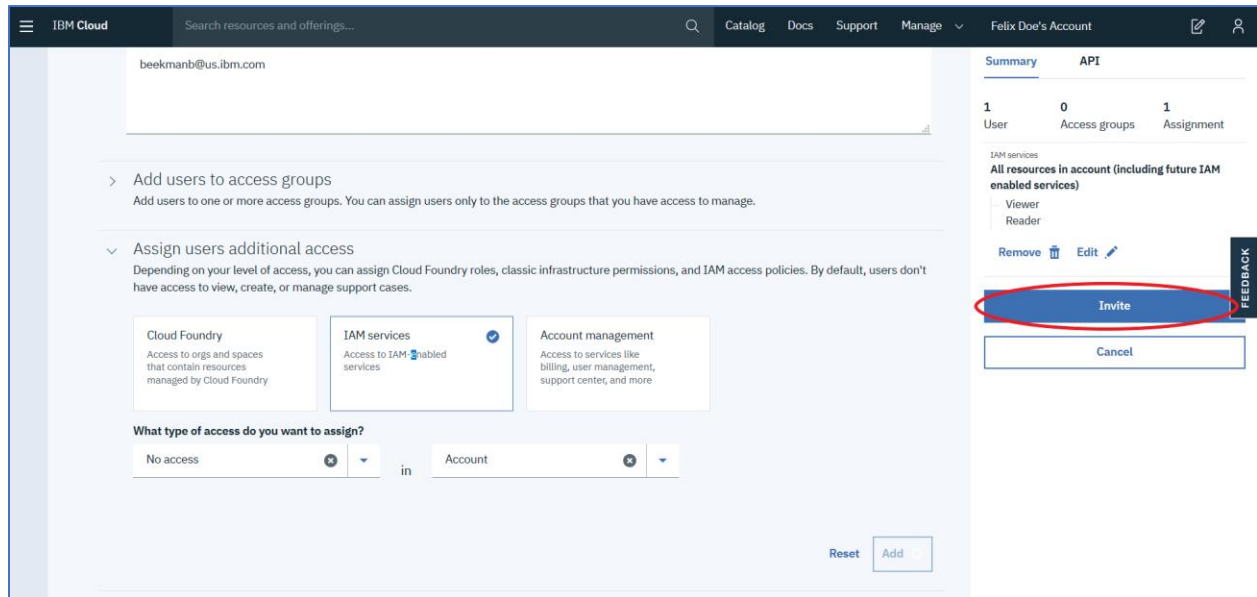
☒ Reader As a reader, you can perform read-only actions within a service such as viewing service-specific resources.

☐ Writer As a writer, you have permissions beyond the reader role, including creating and editing service-specific resources.

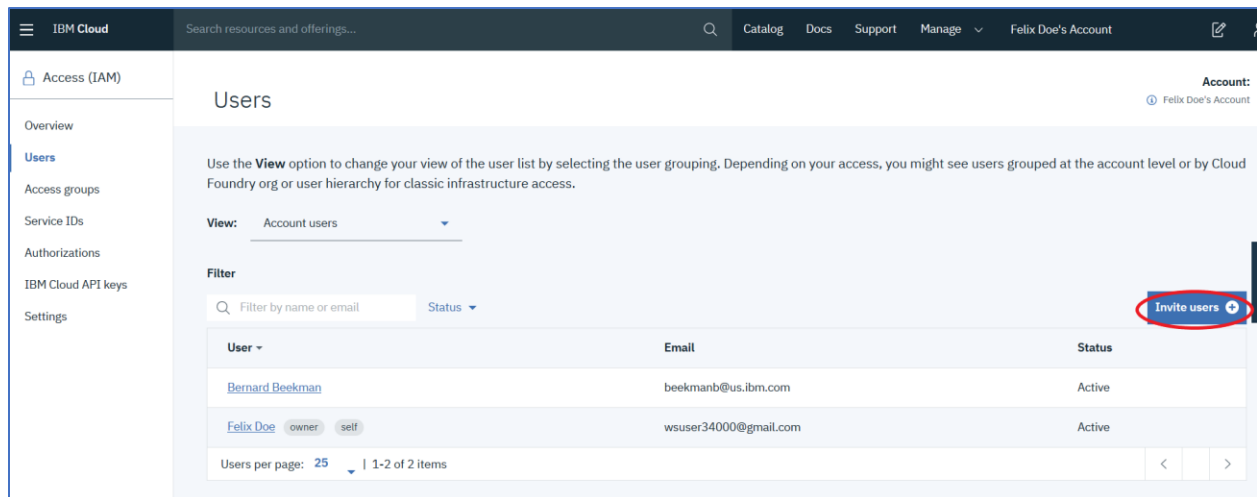
☐ Manager As a manager, you have permissions beyond the writer role to complete privileged actions as defined by the service. In addition, you can create and edit service-specific resources.

Reset Add

9. Click on **Invite**.



10. We will now repeat these steps for the **CATALOG COLLABORATOR** on the index card handed out below. Click on **Invite Users**.



11. For **E-mail address**, enter the **CATALOG COLLABORATOR** e-mail address on the index card handed out. Click on

Users /

Account:
Felix Doe's Account

Invite users

Enter email addresses

wsuserblb@gmail.com

Add users to access groups

Add users to one or more access groups. You can assign users only to the access groups that you have access to manage.

Assign users additional access

Depending on your level of access, you can assign Cloud Foundry roles, classic infrastructure permissions, and IAM access policies. By default, users don't have access to view, create, or manage support cases.

Access summary

Summary

API

1

0

0

User

Access groups

Assignments

You haven't added any access, but that's ok. You can still invite users to your account.

Invite

Cancel

FEEDBACK

12. Click on **IAM services**.

IBM Cloud

Search resources and offerings...

Catalog Docs Support Manage

Users /

Invite users

Enter email addresses

wsuserblb@gmail.com

Add users to access groups

Add users to one or more access groups. You can assign users only to the access groups that you have access to manage.

Assign users additional access

Depending on your level of access, you can assign Cloud Foundry roles, classic infrastructure permissions, and IAM access policies. By default, users don't have access to view, create, or manage support cases.

Cloud Foundry

Access to orgs and spaces that contain resources managed by Cloud Foundry

IAM services

Access to IAM-enabled services

Account management

Access to services like billing, user management, support center, and more

13. Under **What type of access do you want to assign?** select **All Identity and Access enabled services**.

IBM Cloud

Search resources and offerings...

Q

Catalog

Docs

Support

Manage

Enter email addresses

wsuserblb@gmail.com

>

Add users to access groups

Add users to one or more access groups. You can assign users only to the access groups that you have access to manage.

✓

Assign users additional access

Depending on your level of access, you can assign Cloud Foundry roles, classic infrastructure permissions, and IAM access policies. By default, users don't have access to view, create, or manage support cases.

Cloud Foundry

Access to orgs and spaces that contain resources managed by Cloud Foundry

IAM services

Access to IAM-enabled services

Account management

Access to services like billing, user management, support center, and more

What type of access do you want to assign?

All Identity and Access enabled services

in

Account

This option automatically grants access to new services when added.

14. Scroll down click on **Viewer** under **Platform access** and **Reader** under **Service access** and click on **Add**.

IBM Cloud

Search resources and offerings...

Q

Catalog

Docs

Support

Manage

Region

All regions

Platform access

☒

Viewer

As a viewer, you can view service instances, but you can't modify them.

☐

Operator

As an operator, you can perform platform actions required to configure and operate service instances, such as viewing a service's dashboard.

☐

Editor

As an editor, you can perform all platform actions except for managing the account and assigning access policies.

☐

Administrator

As an administrator, you can perform all platform actions based on the resource this role is being assigned, including assigning access policies to other users.

Service access

☒

Reader

As a reader, you can perform read-only actions within a service such as viewing service-specific resources.

☐

Writer

As a writer, you have permissions beyond the reader role, including creating and editing service-specific resources.

☐

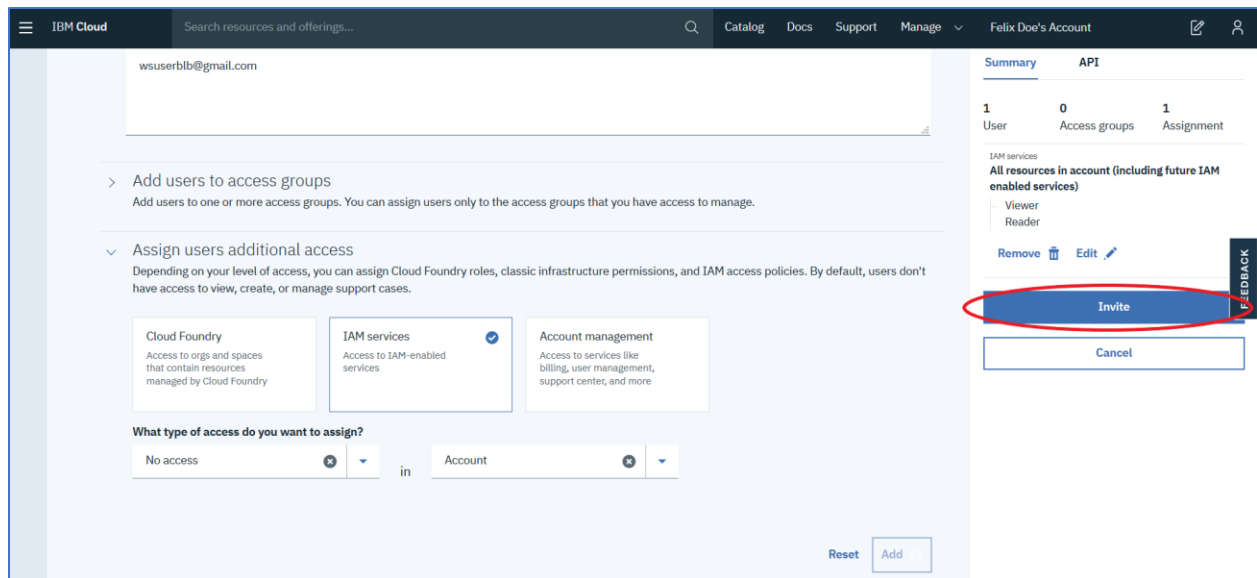
Manager

As a manager, you have permissions beyond the writer role to complete privileged actions as defined by the service. In addition, you can create and edit service-specific resources.

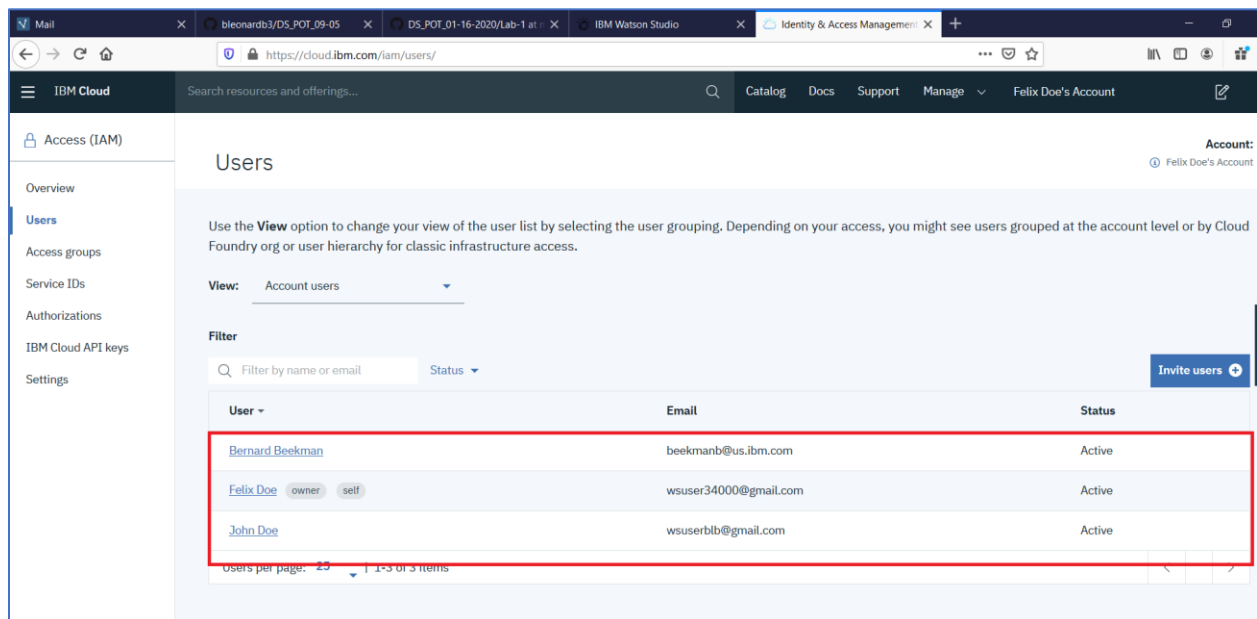
Reset

Add

15. Click on **Invite**.



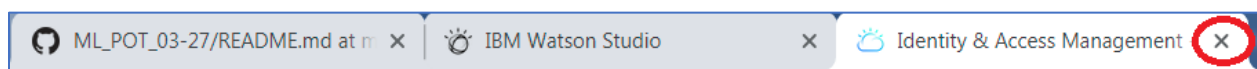
16. You should have three users in the account.



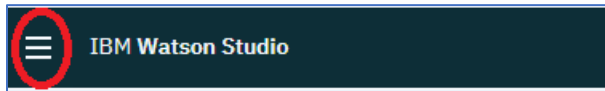
Step 2 – Add Collaborator to the Project

Now that the collaborator has been added to the IBM Cloud Account, you can add the collaborator to the project.

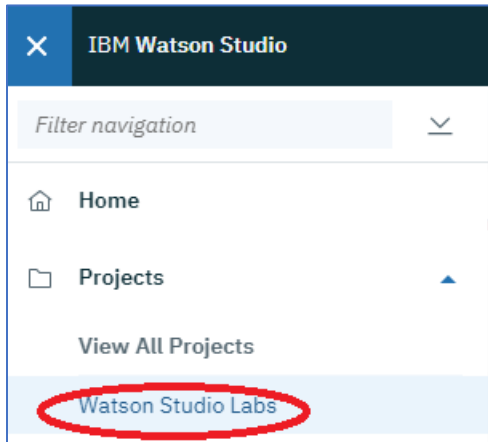
1. Close the Identity and Access Management tab.



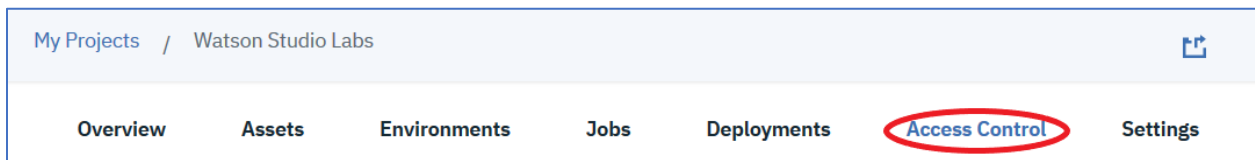
2. Click on the **IBM Watson Studio** tab. Click on the  icon.



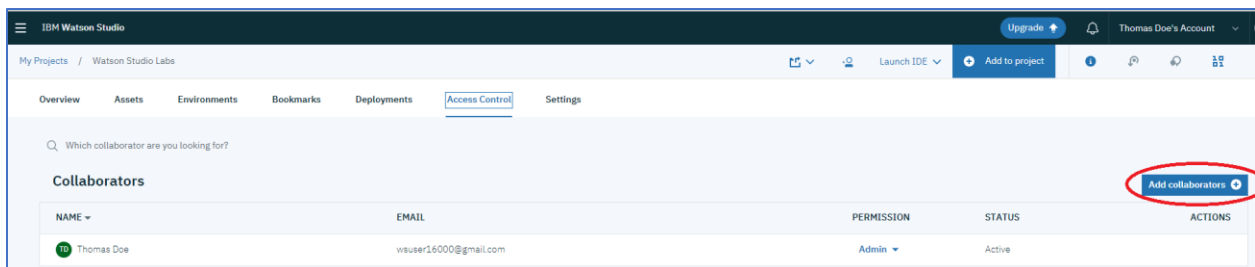
3. Click on Watson Studio Labs.



4. Click on the **Access Control** tab.



5. Click on **Add collaborators**.



6. For **Invite**, enter the **PROJECT COLLABORATOR** e-mail address on the index card handed out by the instructor, press the <Enter> key, select Editor from the **Access Level** dropdown, and click on **Add**.

Watson Studio Labs

Add collaborators

Collaborators

Admin (1) ▾

wsuser16000@gmail.com

Invite

beekmanb@us.ibm.com X

Add more people...

Access level

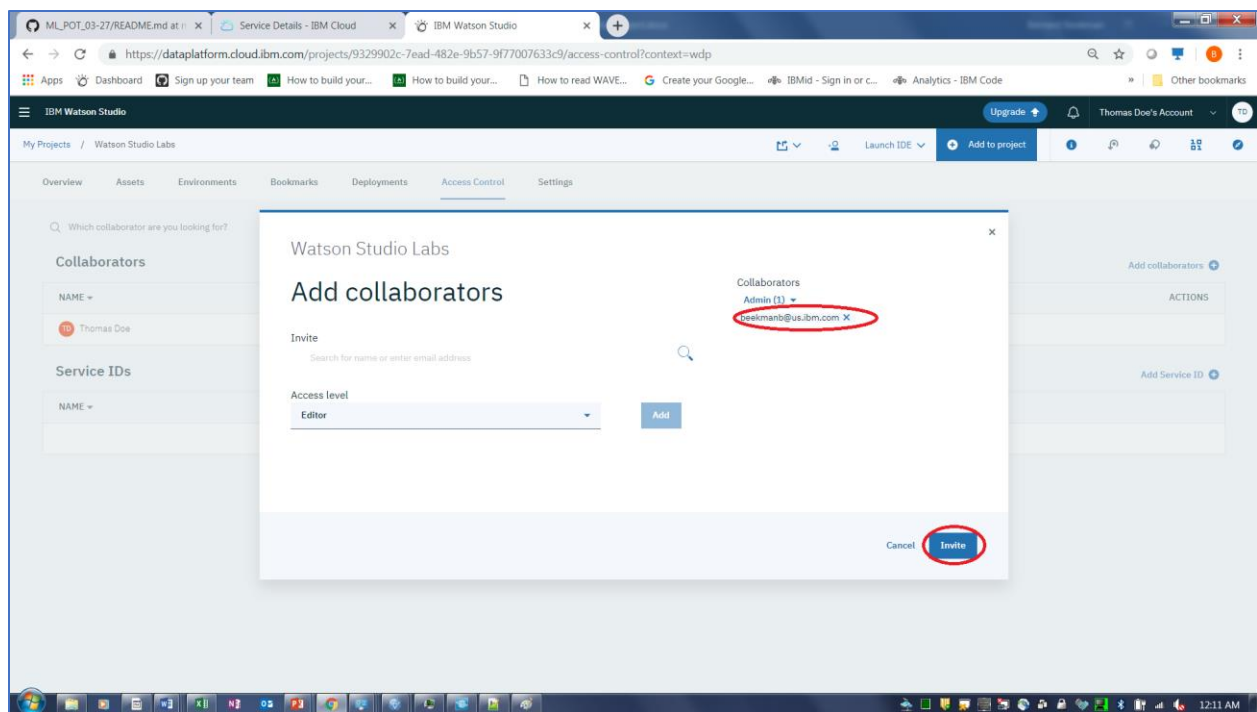
Editor ▾

Add

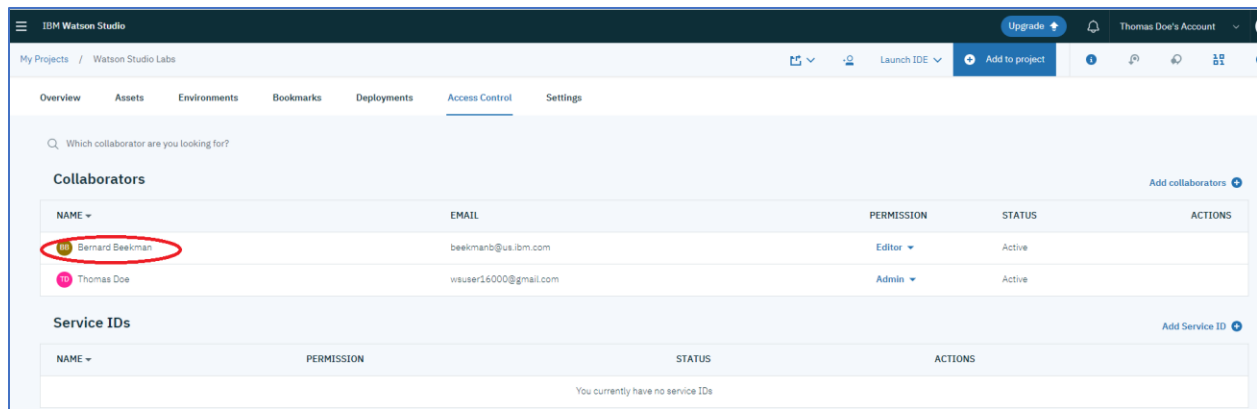
Cancel

Invite

- The collaborator is added to the list of Collaborators on the right-hand side. Click on **Invite**.




- The collaborator is added.

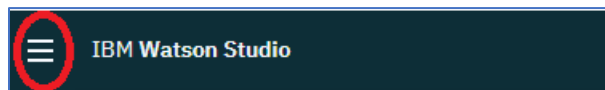


Research Topics

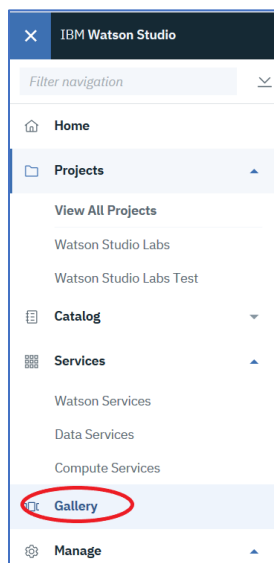
As you work on a data analysis project, you may need to do some research to help find a solution. Watson Studio provides a built-in capability, accessed via the **Gallery** option, that contains sample notebooks, and sample datasets. These are curated on a regular basis to provide up-to-date materials.

For the lab exercise, assume that you are interested in learning how to use the Watson Machine Learning api to save and deploy a machine learning model. We will look for a sample notebook that demonstrates this capability and add this notebook to our project. **Note, we are doing this exercise for illustrative purposes on using the Gallery, and not for use in any subsequent lab.**

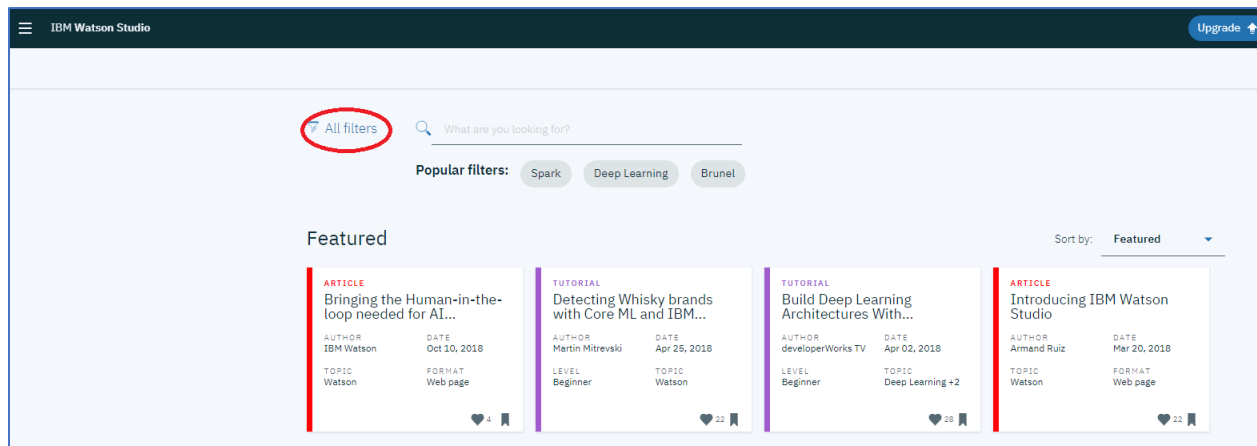
1. Click on the  icon.



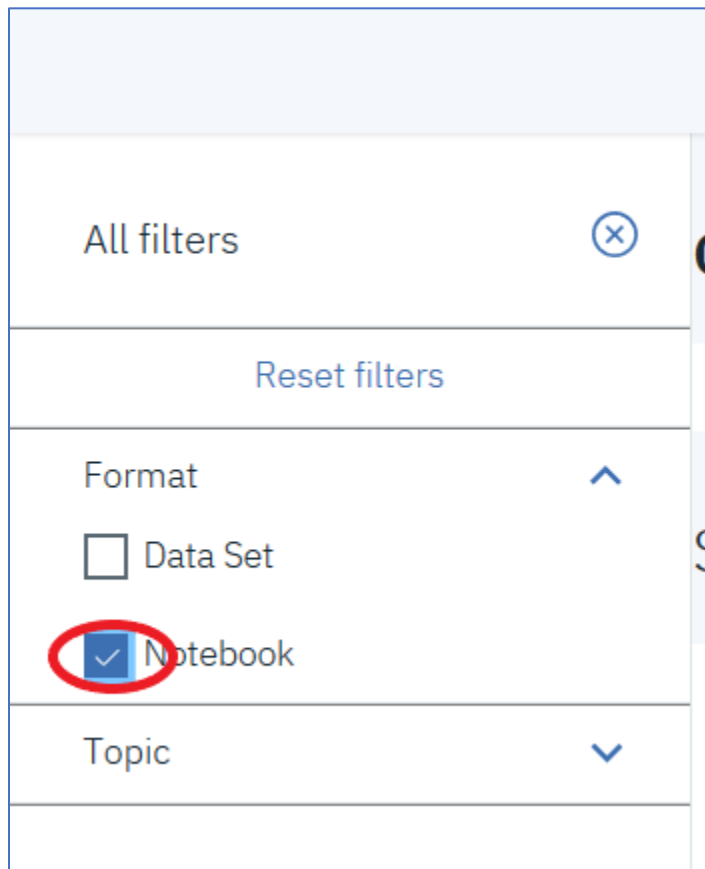
2. Click on **Gallery**.



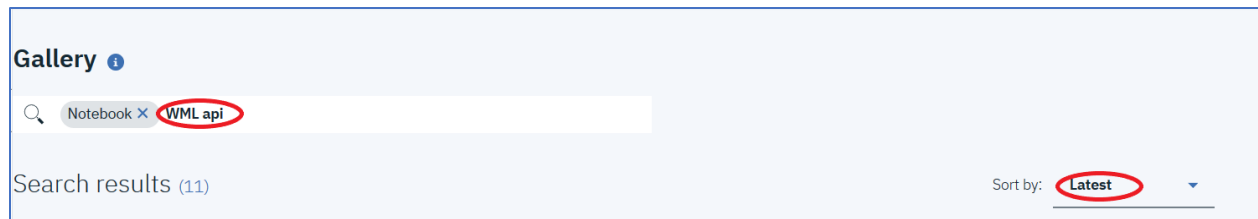
3. The Gallery is displayed. Click on **All filters**.



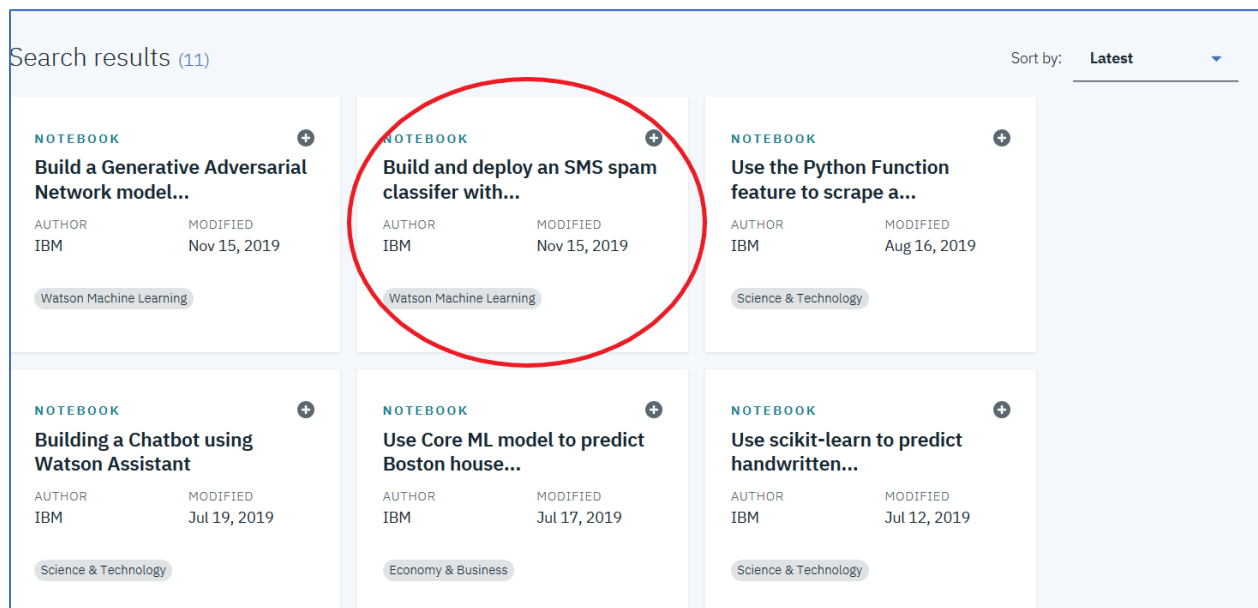
4. Click on **Notebook**.



5. Enter **Watson Machine Learning** in the **Search** area. Click on the **Sort by** dropdown and change it to **Latest** to get the most up-to-date information.



6. The Gallery view is updated. Locate the Gallery Card “Build and deploy an SMS Spam classifier with ...”. Hover the mouse over the card. The descriptive text refers to the Watson Machine Learning api. This notebook appears to be a good candidate for having code demonstrating the use of the Watson Machine Learning api. Click on the **Gallery Card**.



7. Review the notebook documentation. Scroll down to the “**3. Save and deploy**” section of the notebook. This shows the procedure to use the Watson Machine Learning client to save and deploy a machine learning model. Click on **Add to project**.

Gallery / Build and deploy an SMS spam classifier with Watson Machine Learning

← Back

Tags
Watson Machine Learning

Modified
Nov 15, 2019

Add to project

Build and deploy an SMS spam classifier with Watson Machine Learning

Learning

3. Save and deploy

After creating a model, you might want to make use of its predictions later. In order to do this, we will persist models with Watson Machine Learning. With WML, you can easily save and deploy models, among other powerful features. Saving a model makes this model portable – as long as you can connect to WML, you can load your saved models into your environment. Deploying a model exposes the predictive capacity of the model as an API endpoint, which you can consume in applications, for example.

Use the client to save your model to the WML Repository. From there, you can load and deploy models as well. If you don't already have a WML account, you can get more details [here](#).

First, we will Import the library and specify our credentials. If you don't know where to find your credentials, they are available to you both in the Watson Studio Project and in IBM Cloud.

```
In [11]: from watson_machine_learning_client import WatsonMachineLearningAPIClient

wml_credentials = {
    "apikey": "",
    "username": "",
    "password": "",
    "instance_id": "",
    "url": ""
}
```

PUBLISHER
IBM

TERMS OF USE
<https://opensource.org/licenses/MIT>

8. Click on **Select Project**.

Add to Project

Select Project

Cancel Add

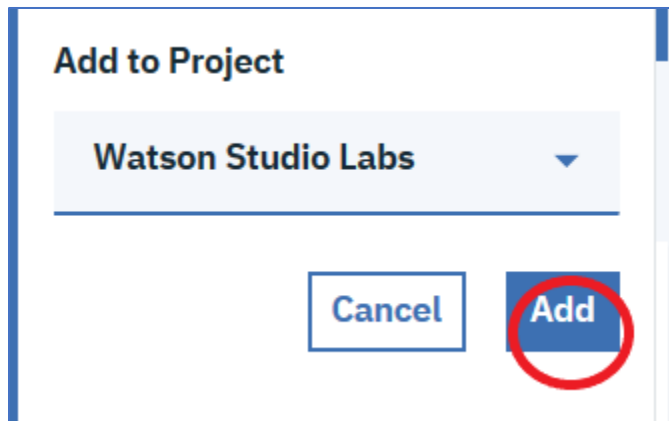
9. Click on **Watson Studio Labs**.

Add to Project

Select Project

Watson Studio Labs

10. Click on **Add**.



11. The panel to create a notebook with the From URL option is displayed. Click on **Create Notebook**.

A screenshot of the 'New notebook' panel in Watson Studio. The breadcrumb trail at the top is 'My Projects / Watson Studio Labs / Add Notebook'. The panel has three tabs: 'Blank', 'From file', and 'From URL'. The 'From URL' tab is selected. The 'Name' field contains 'Build and deploy an SMS spam classifier with Watson Machine Learning' with a character count of '-27 characters remaining'. The 'Description (optional)' field is empty with a character count of '500 characters remaining'. The 'Select runtime' dropdown is set to 'Default Python 3.6 XS (2 vCPU and 8 GB RAM)'. Below it, a note states: 'The selected runtime has 2 vCPU and 8 GB RAM and consumes 1 capacity unit per hour. [Learn more](#) about capacity unit hours and Watson Studio pricing plans.' The 'Notebook URL' field contains 'https://api.dataplatform.cloud.ibm.com/v2/gallery-assets/entries/d793d02d8cb833f7a'. At the bottom right, there are 'Cancel' and 'Create Notebook' buttons. The 'Create Notebook' button is circled in red.

12. The notebook is loaded in editing model for you to review how the Watson Machine Learning api is used to save and deploy a model.

You have completed Lab-1!

- ✓ Created a project
- ✓ Created an object storage instance and associate it with the project
- ✓ Associated an existing Watson Machine Learning service instance with the project
- ✓ Added a collaborator to the project
- ✓ Demonstrated researching topics by searching the Gallery.

