

Data Science Workshop

An Experiential Journey with Data to Inspire *Your* Work (Prework: Setup Instructions)

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Neeraj Madan

Upkar Lidder

Feb 2nd, 2022

Agenda

1. [Predictive Analytics and Machine Learning Solutions](#)
2. Overview of [Watson Studio](#) and [Watson Machine Learning](#)
3. Setup an Environment
 - Registration ([Create an account](#))
 - Setup an Environment ([API Key](#), [Watson Machine Learning](#), [Cloud Object Storage](#), and [Watson Studio](#))
4. [Create a Project](#)

Predictive Analytics and Machine Learning Solutions

To name a few:

1. IBM Watson Studio
2. SAS Advanced Analytics
3. RapidMiner
4. Amazon SageMaker
5. Azure Machine Learning Studio (Microsoft)
6. Google Cloud AI Platform

“The Forrester Wave™: Multimodal Predictive Analytics And Machine Learning Solutions, Q3 2018”, Forrester Research, September 2018

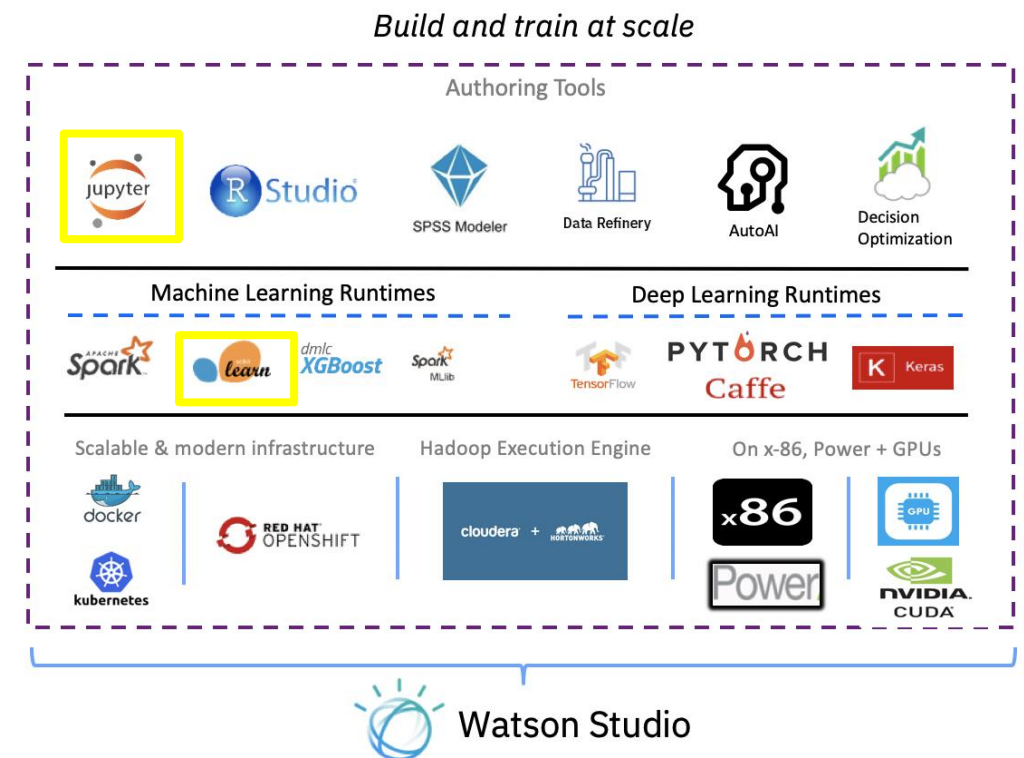
IBM Watson Studio Overview (1 of 4)

(Enterprise Data Science platform that helps your team work together to build models to make better data driven decisions for your business)

Analyze any data, no matter where it lives

Empower your entire organization with notebooks, visual productivity, and automation tools

One platform to rule them all from discovery to production



IBM Watson Studio Overview (2 of 4)

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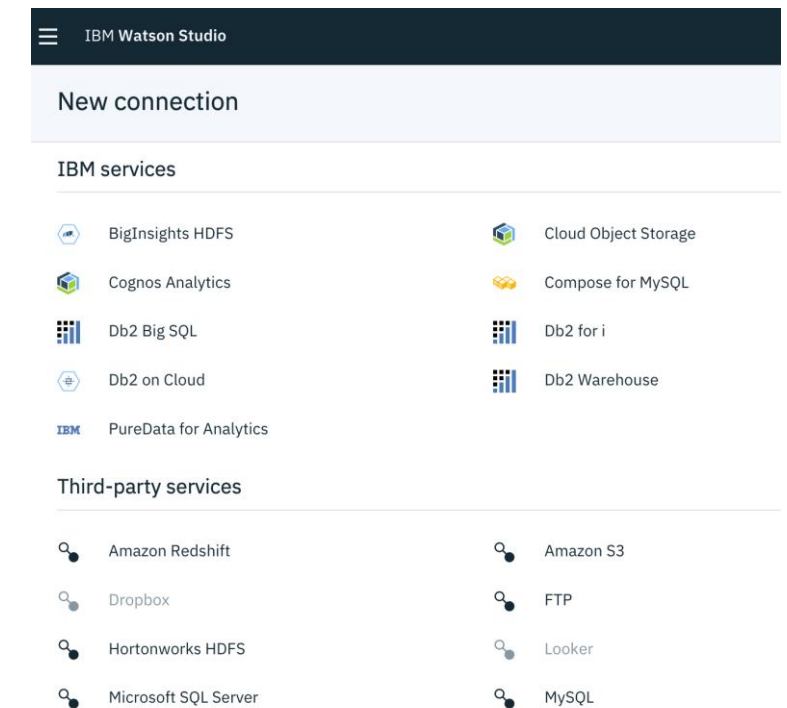
Connect to and analyze your data without moving a single byte through dozens of connectors and multiple deployment options.

Empower your entire organization with notebooks, visual productivity, and automation tools

Leverage your entire organization with a variety of tools in a single integrated platform.

One platform to rule them all from discovery to production

Analyze data, build predictive models, and seamlessly integrate Watson Machine Learning to deploy at scale



IBM Services like Cognos & DB2

3rd Party Services like Amazon S3, Hadoop, & Microsoft SQL Server

We have Public Cloud, Private Cloud, & Desktop/Server deployment options

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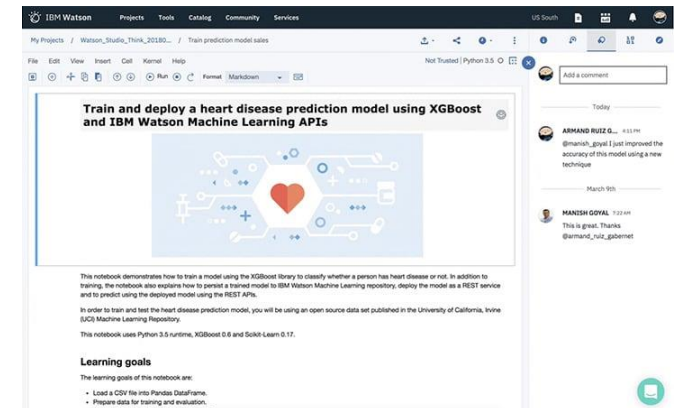
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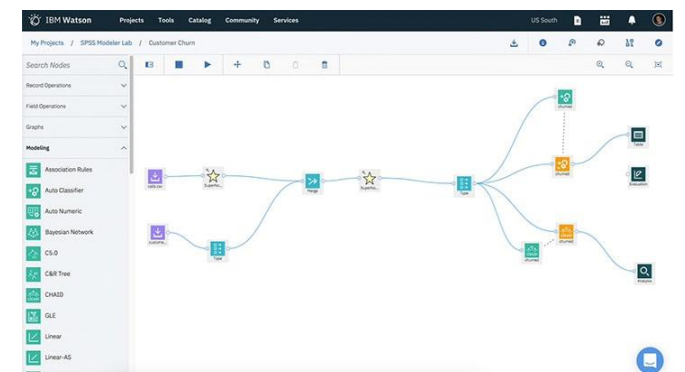
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Super charged Jupyter Notebooks & R Studio as most popular IDEs for data scientists well integrated with data connectors and rich set of default environments



Visual tools such as SPSS Modeler, Data Refinery, & AutoAI for non coders to analyze data and build models

IBM Watson Studio Overview (4 of 4)

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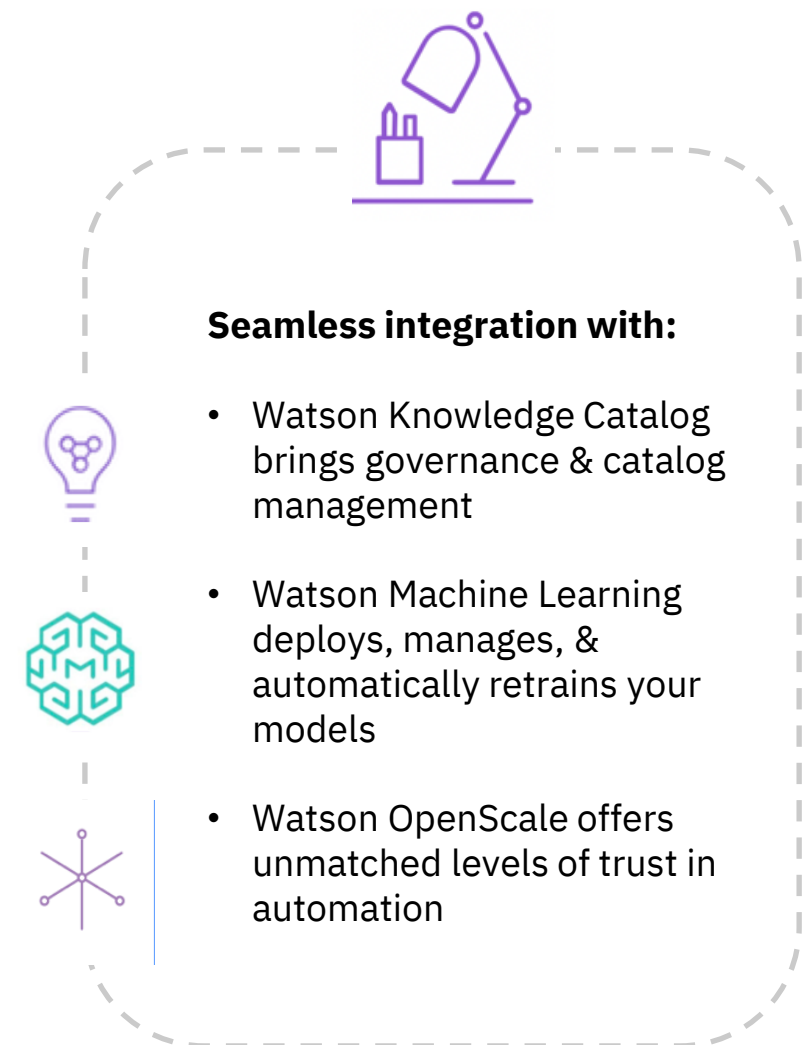
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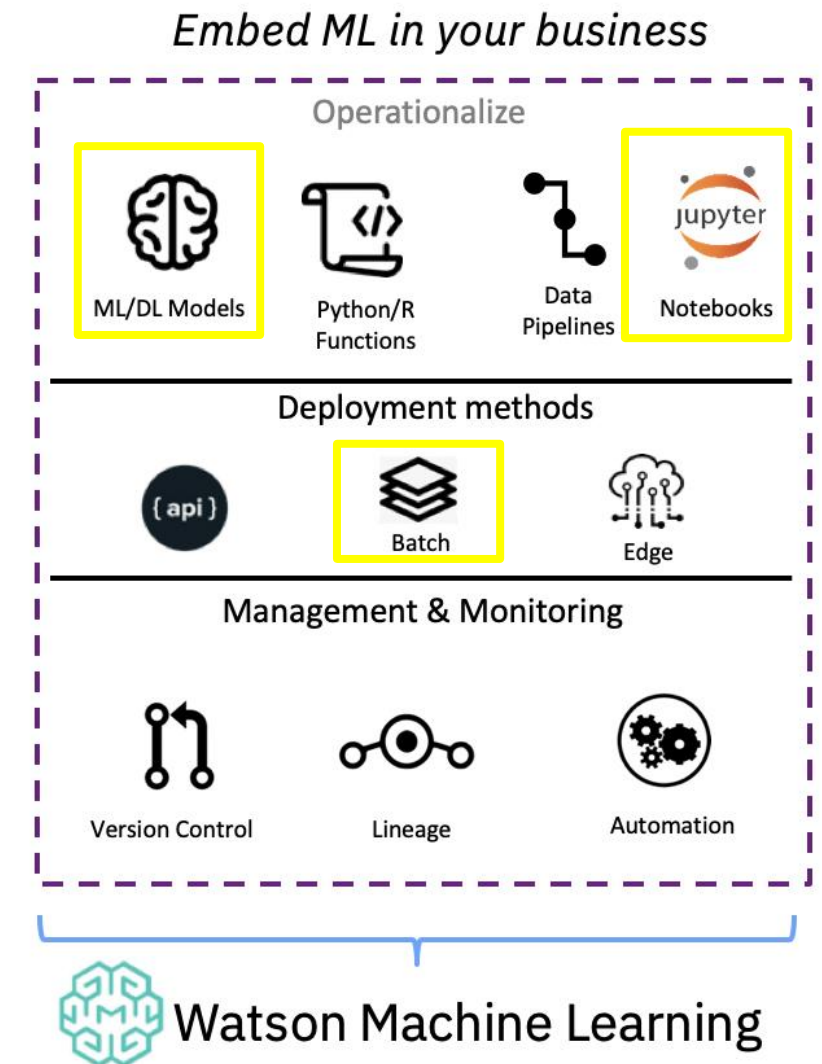
IBM Watson Machine Learning Overview (1 of 4)

(Embed Machine Learning and Deep Learning in your Business)

Deploy and Manage Models

Intelligent Model Operations

Accelerate Compute Intensive Workloads



IBM Watson Machine Learning Overview (2 of 4)

(Embed Machine Learning and Deep Learning in your Business)

Deploy and Manage Models

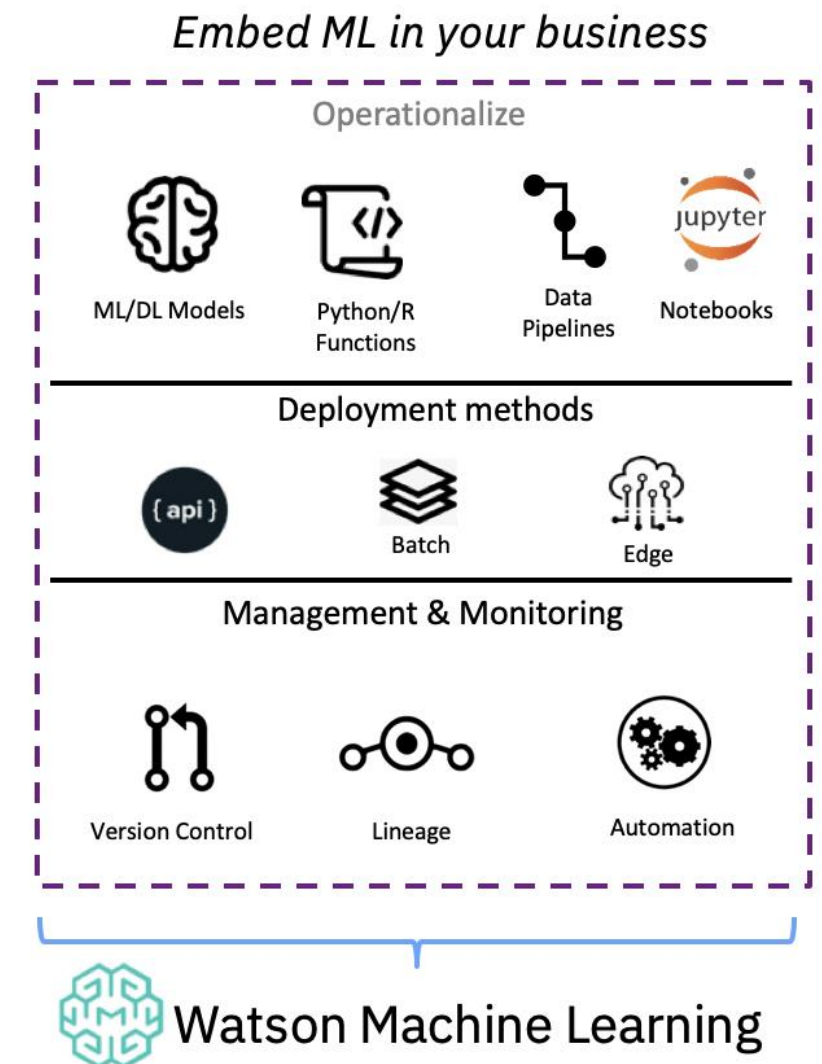
Move models to production, in an easy, secure, and compliant way.

Intelligent Model Operations

Embed intelligent training services, with feedback loops that constantly learn from new data, regardless where it resides.

Accelerate Compute Intensive Workloads

Distribute your deep learning training and Hadoop/Spark workloads with multi-tenant job scheduling .



IBM Watson Machine Learning Overview (3 of 4)

(Embed Machine Learning and Deep Learning in your Business)

Deploy and Manage Models

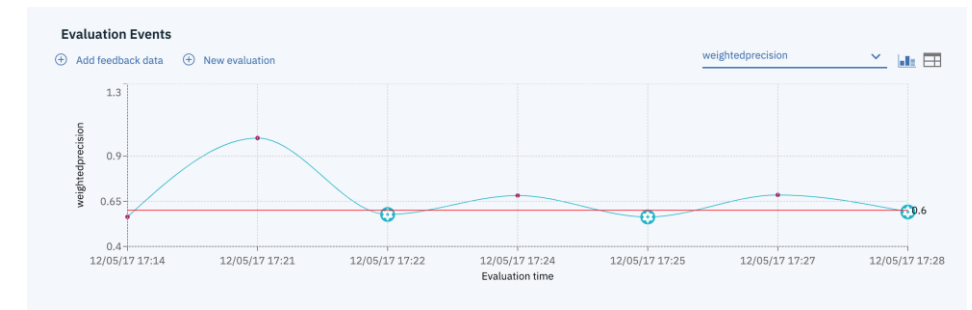
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- **Configure learning systems**
- **Flexible management experience**
 - User Interface
 - CLI
 - APIs
 - Python SDK

IBM Watson Machine Learning Overview (4 of 4)

(Embed Machine Learning and Deep Learning in your Business)

Deploy and Manage Models

Move models to production, in an easy, secure, and compliant way.

Intelligent Model Operations

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Accelerate Compute Intensive Workloads

Distribute your deep learning training and Hadoop/Spark workloads with multi-tenant job scheduling .



- **Visually monitor training jobs**
 - Experiments
 - AutoAI
- **WML Accelerator for optimized Spark and GPU jobs**
- **Integration with Hadoop for in-place batch training and scoring**

Getting Started: Setup an Environment

Registration (Sign up / Log into [IBM Cloud](#)) (1 of 3)

Create an IBM Cloud account

Already have an IBM Cloud account? [Log in](#)

Account information

Email

Enter your email id

Password

Enter password

Next ↓

☐ Verify email

☐ Personal information

☐ Account notice

Continue

IBM Cloud

Hello,

Thank you for signing up for IBM Cloud!

Your 7-digit verification code is:

XXXXXX

Enter this verification code on the IBM Cloud registration page where you requested the code. This code is valid for 30 minutes.

Welcome and happy building!

Thank you,
IBM Cloud

Visit the [IBM Cloud console](#).

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IBM

Getting Started: Setup an Environment

Registration (Sign up / Log into [IBM Cloud](#)) (2 of 3)

Create an IBM Cloud account

Already have an IBM Cloud account? [Log in](#)

☒ **Account information** [Edit](#)

☒ **Verify email**

We sent a 7-digit verification code to **neerajmadan2701@gmail.com**.
This code is valid for 30 minutes.

Verification code

[Next](#) [Resend code](#)

☐ **Personal information**

☐ **Account notice**

[Continue](#)



Create an IBM Cloud account

Already have an IBM Cloud account? [Log in](#)

☒ **Account information** [Edit](#)

☒ **Verify email**

☒ **Personal information**

First name

Last name

Country or region

[Next](#)

☐ **Account notice**

Getting Started: Setup an Environment

Registration (Sign up / Log into [IBM Cloud](#)) (3 of 3)

Create an IBM Cloud account

Already have an IBM Cloud account? [Log in](#)

✓ Account information [Edit](#)

✓ Verify email

✓ Personal information [Edit](#)

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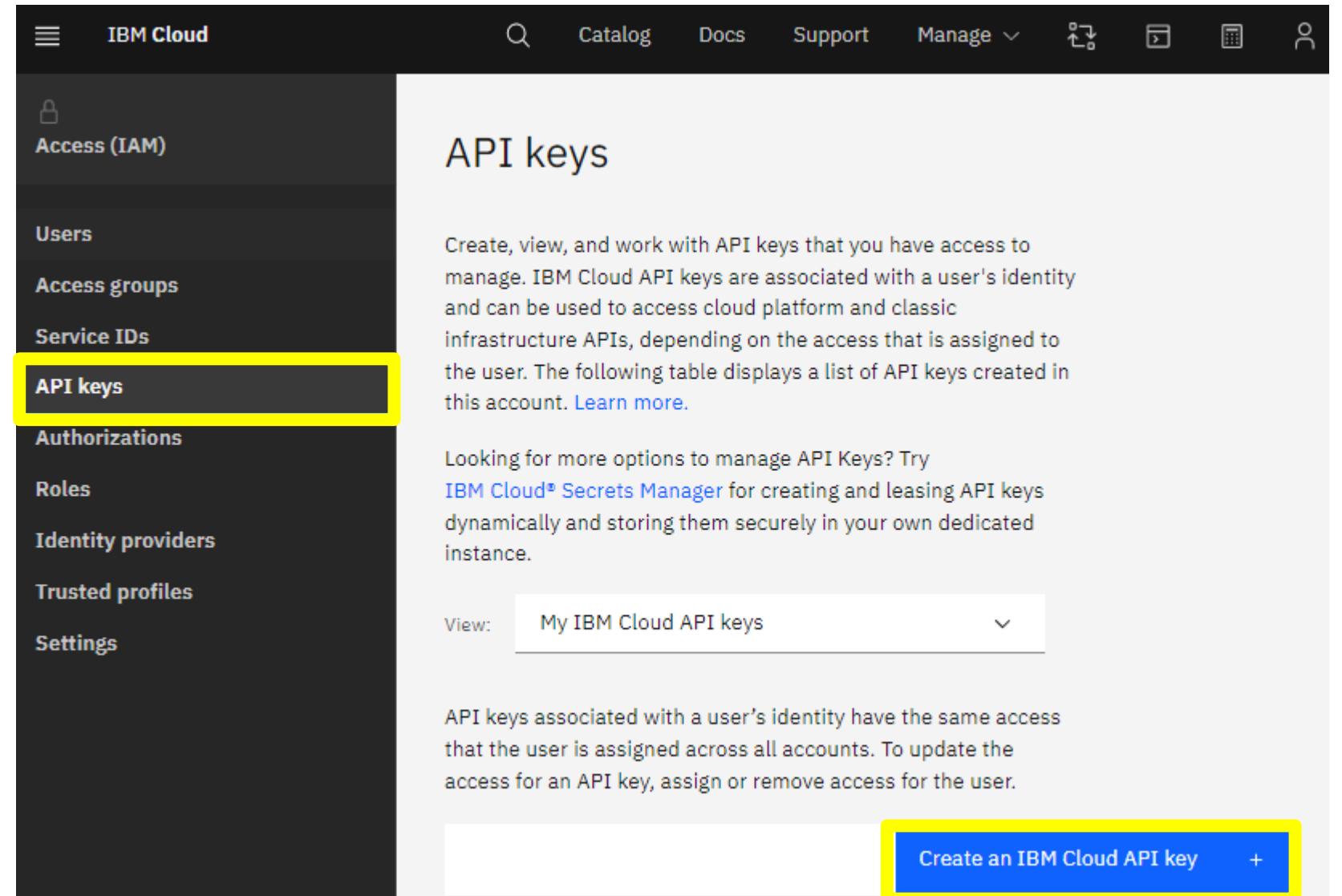
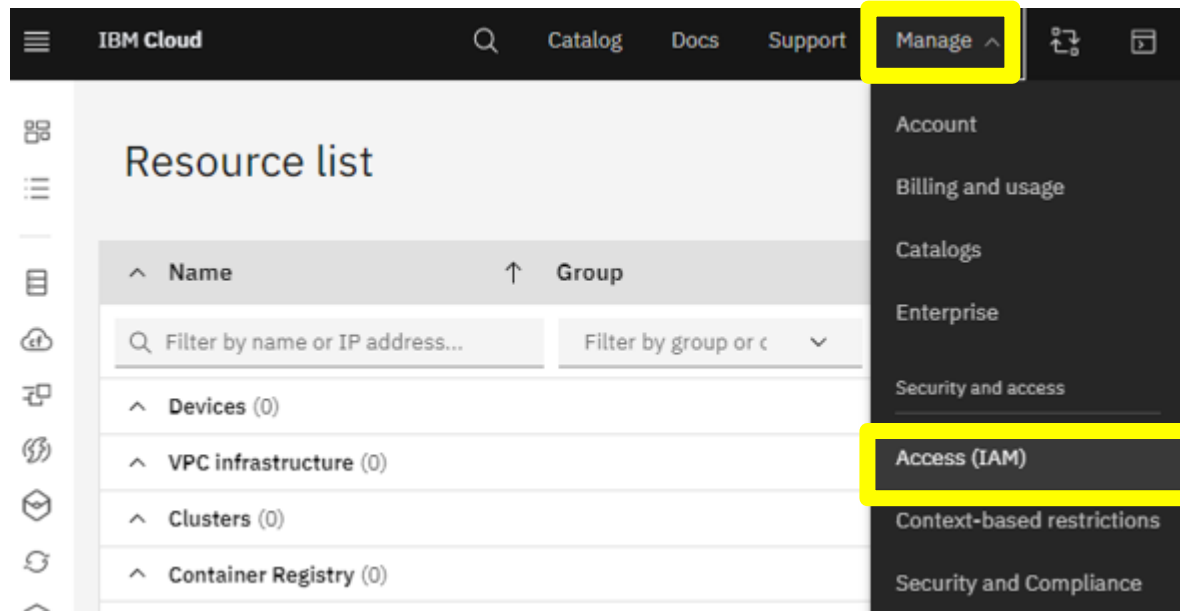
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☒ I accept the product [Terms and Conditions](#) of this registration form.

Continue →

Getting Started: Access (IAM)

API Key (1 of 2)



Getting Started: Access (IAM)

API Key: Create, Copy and Download API Key (2 of 2)

Create API key

×

Name

Enter name of API Key

Description

Cancel

Create

API key successfully created

Copy the API key or click download to save it. You won't be able to see this API key again, so you can't retrieve it later. The API key is no longer displayed after 286 seconds.

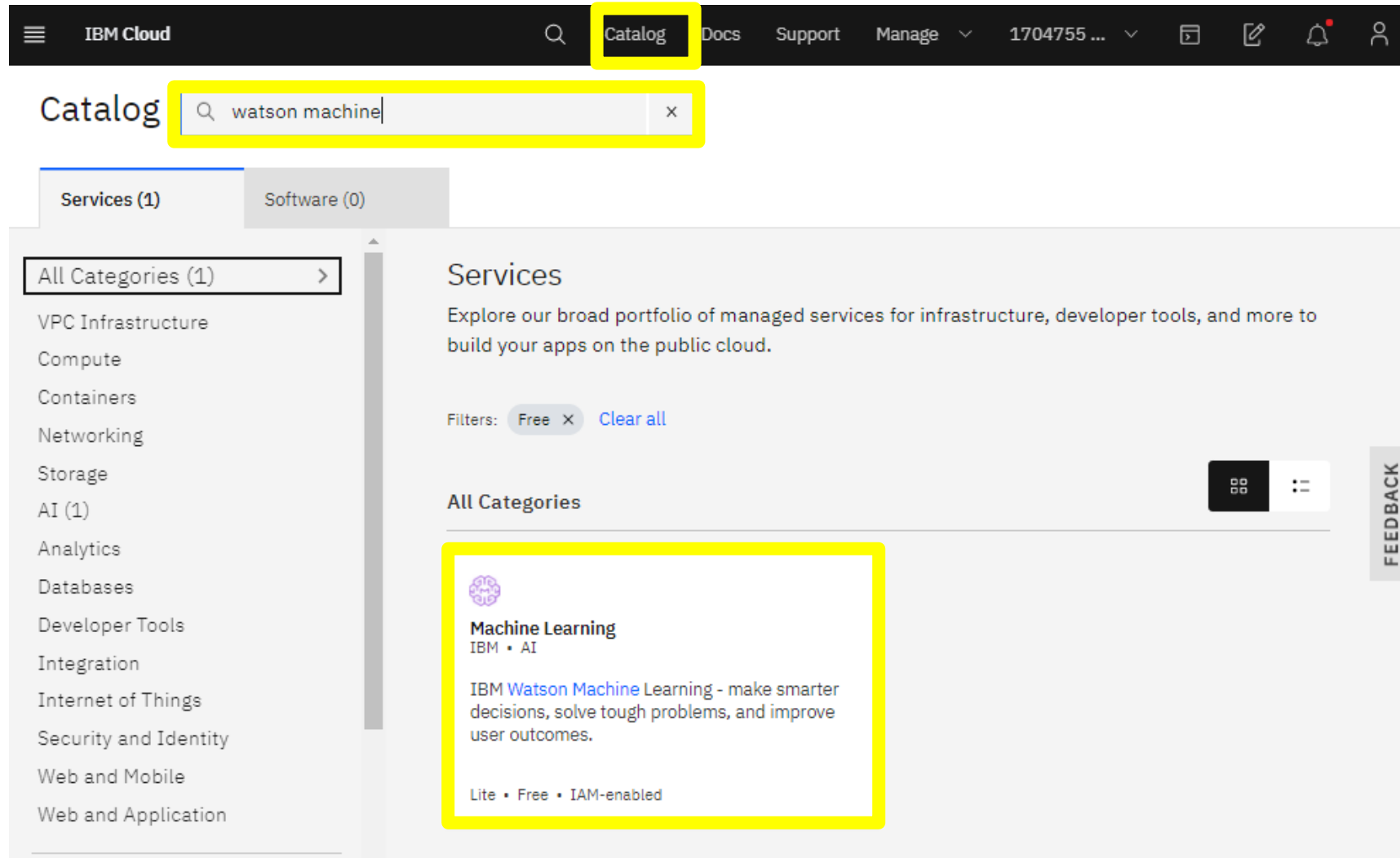
API key

.....

Copy  Download 

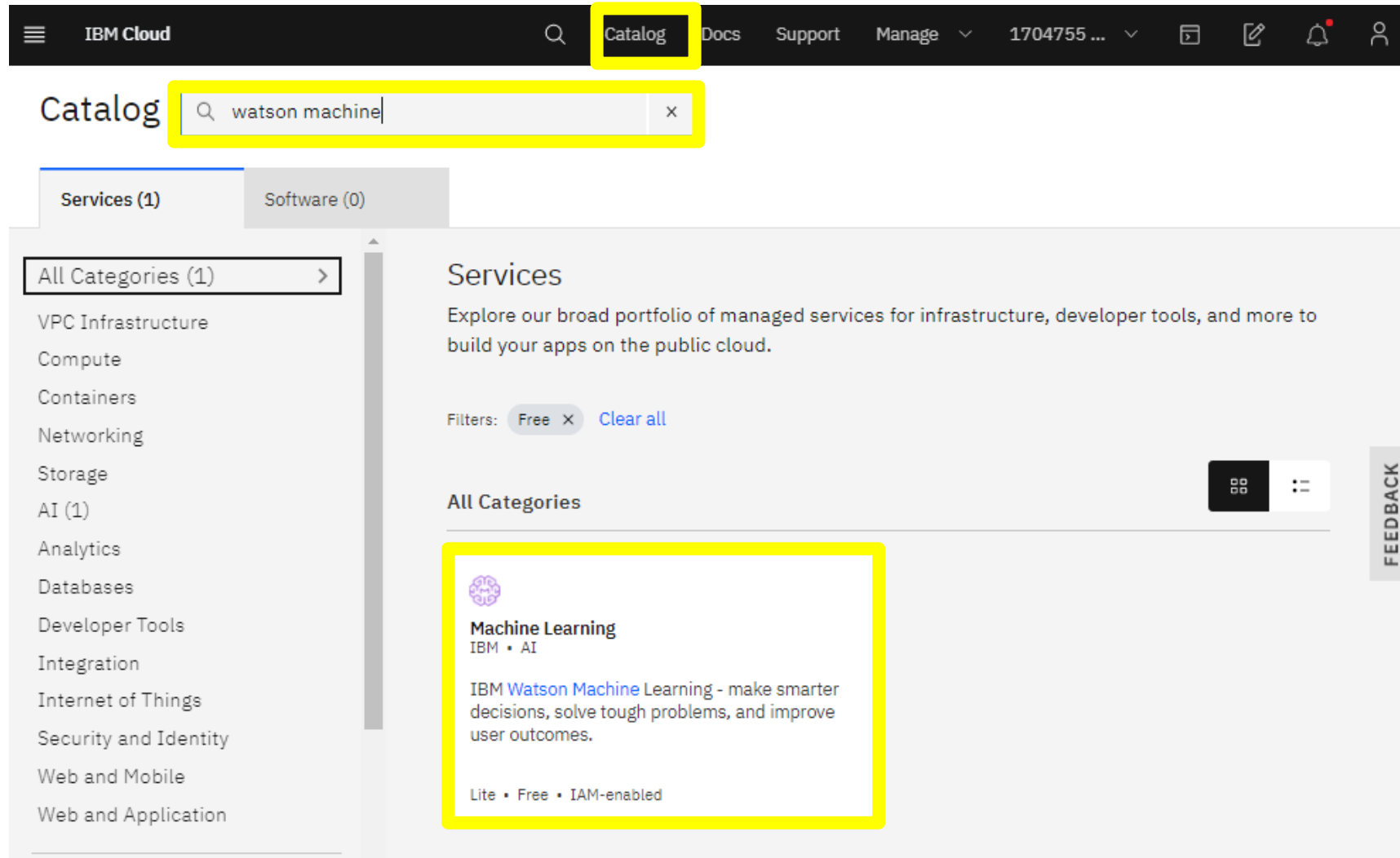
Getting Started: Setup an Environment

Watson Machine Learning (1 of 2)



Getting Started: Setup an Environment

Watson Machine Learning (1 of 2)



Getting Started: Setup an Environment

Watson Machine Learning (2 of 2)

IBM Watson Studio

Upgrade

Neeraj Madan's Account

NM

Machine Learning

IBM Watson Machine Learning is a full-service IBM Cloud offering that makes it easy for developers and data scientists to work together to integrate predictive capabilities with their applications. The Machine Learning service is a set of REST APIs that you can call from any programming language to develop applications that make smarter decisions, solve tough problems, and improve user outcomes.

Features

Machine Learning features

Take advantage of machine learning models management (continuous learning system) and deployment (online, batch, streaming). Select any of widely supported machine learning frameworks: TensorFlow, Keras, Caffe, PyTorch, Spark MLlib, scikit learn, xgboost and SPSS.

Wide choice of interfaces

Use the command line interface and Python client to manage your artifacts. Extend your application with artificial intelligence through the Watson Machine Learning REST API.

Integration with Watson Studio

Create and train machine learning models with the best tools and the latest expertise in a social environment built by and for data scientists.

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

PLAN	FEATURES	PRICING
<div>Lite</div>	<div><div>Service instance</div><div>5 model deployments</div><div>5,000 predictions</div><div>50 capacity unit-hours (CUH) included:</div><div>Capacity Type:</div><div><div>1 (one) NVIDIA K80 GPU = 2 capacity units required per hour</div><div>1 (one) NVIDIA V100 GPU = 8 capacity units required per hour</div><div>1 vCPU and 4 GB RAM = 0.5 capacity units required per hour</div><div>2 vCPU and 8 GB RAM = 1 capacity units required per hour</div><div>4 vCPU and 16 GB RAM = 2 capacity units required per hour</div><div>8 vCPU and 32 GB RAM = 4 capacity units required per hour</div><div>16 vCPU and 64 GB RAM = 8 capacity units required per hour</div></div><div>Auto AI</div><div>8 vCPU and 32 GB RAM = 20 capacity units required per hour</div><div>Decision Optimization</div><div>2 vCPU and 8 GB RAM = 30 capacity units required per hour</div><div>4 vCPU and 16 GB RAM = 40 capacity units required per hour</div><div>16 vCPU and 64 GB RAM = 60 capacity units required per hour</div></div>	Free

The lite plan instance of the IBM Watson Machine Learning service provides you with a maximum of 5 deployed models, 5,000 predictions per month, and 50 capacity unit-hours per month during which model can be trained, evaluated, and deployed to be available to accept prediction events, with a minimum of 1 minute per training job.



Confirm Creation

Region

Dallas

Plan

Lite

Resource group

Default

Service name

pm-20-uu

Cancel

Confirm

Create



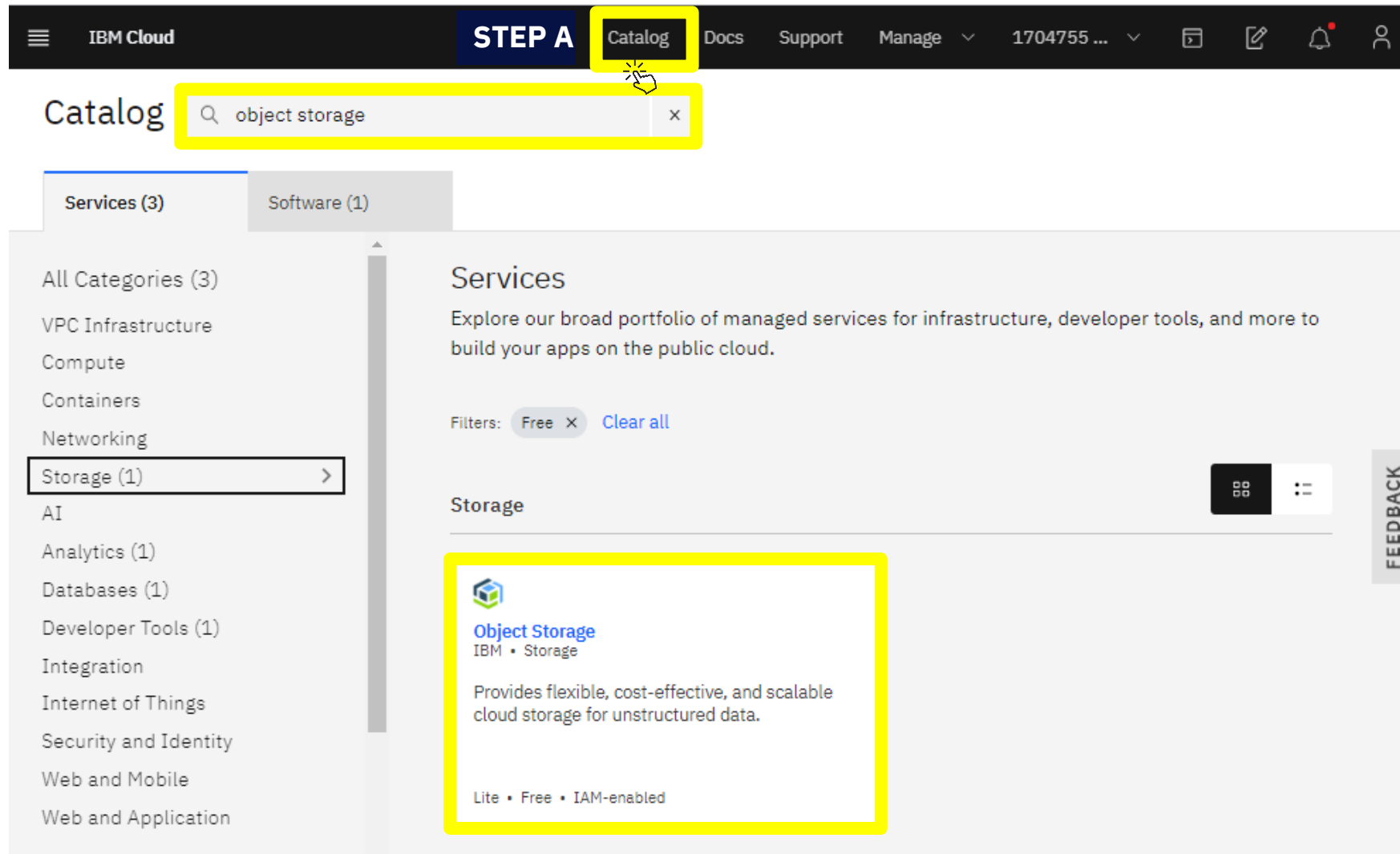
STEP D

STEP E



Getting Started: Setup an Environment

Cloud Object Storage (1 of 2)



Getting Started: Setup an Environment

Cloud Object Storage (2 of 2)

IBM Watson Studio

Upgrade

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Existing

New

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 scalable cloud storage and integrating your data into other services on the IBM Cloud Platform as well as IBM Watson services. IBM Cloud Object Storage is available with Regional, Cross Region and single site 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 is 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. Key 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
<div><div>Lite</div></div>	<div>1 COS Service Instance</div> <div>Storage up to 25 GB/mo.</div> <div>Up to 20,000 GET requests/mo.</div> <div>Up to 2,000 PUT requests/mo.</div> <div>Up to Data Retrieval 10 GB/mo.</div> <div>Up to 5GB Public Outbound</div> <div>Applies to aggregate total across all storage bucket classes</div>	<div>Free</div>
<div><div>Standard</div></div>	<div>There is no minimum fee, so you pay only for what you use.</div>	<div>Expand each section to view details</div>

Cancel

Create

STEP D



Confirm Creation

Plan

Lite

Resource group

Default

Service name

cloud-object-storage-qx

Cancel

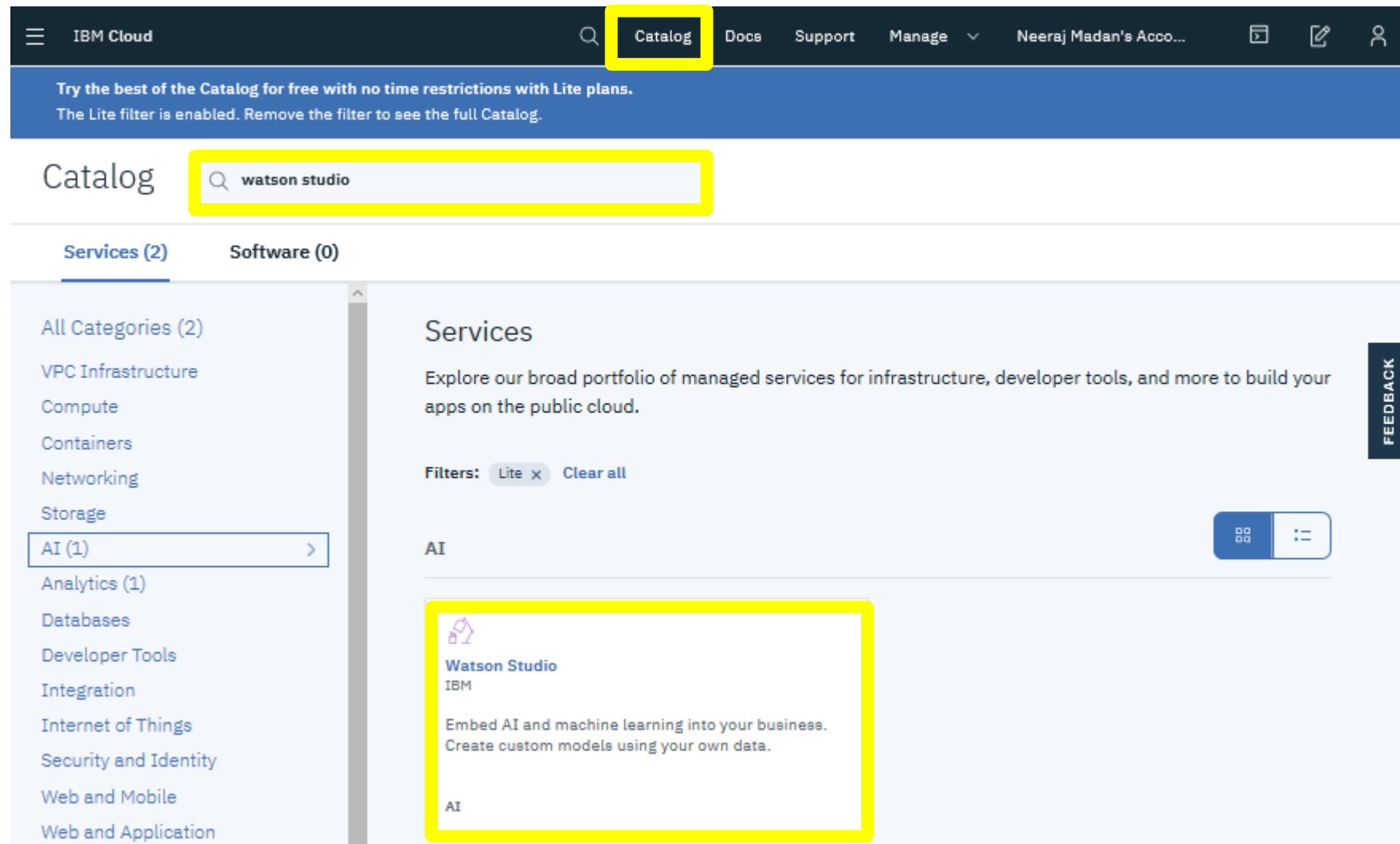
Confirm

STEP E



Getting Started: Setup an Environment

Watson Studio Service (1 of 2)



Getting Started: Setup an Environment

Watson Studio Service (2 of 2)

The screenshot shows the IBM Cloud Watson Studio service page. The top navigation bar includes 'IBM Cloud', a search icon, 'Catalog', 'Docs', 'Support', 'Manage', and a user profile 'Neeraj Madan's Acco...'. The main header features the 'Watson Studio' logo, tabs for 'Lite', 'IBM', 'Service', and 'IAM-enabled', and links for 'Need Help?', 'Contact Support', and 'View docs'. The 'Create' tab is active, showing a 'Select a region' dropdown set to 'Dallas' and a 'Select a pricing plan' section. A table lists the 'Lite' plan as selected, with features including 1 authorized user and 60 capacity unit-hours monthly limit. The 'Create' button is highlighted with a yellow border. The right sidebar shows a 'Summary' section with details like 'Region: Dallas', 'Plan: Lite', and 'Service name: Watson Studio-79'. Below the summary are buttons for 'Create', 'Add to estimate', and 'View terms', with a 'FEEDBACK' button on the far right.

IBM Cloud

Watson Studio Lite IBM Service IAM-enabled

Author: IBM • Date of last update: 01/13/2020

Need Help? [Contact Support](#) [View docs](#)

Create About

Select a region

Dallas

Select a pricing plan

Displayed prices do not include tax. Monthly prices shown are for country or region: [United States](#)

PLAN	FEATURES	PRICING
✓ Lite	1 authorized user 60 capacity unit-hours monthly limit 1 free small compute environment with 1 vCPU and 4 GB RAM (does not require capacity unit-hours)	Free

The Lite plan for Watson Studio offers everything you need to become a better data scientist or domain expert in a collaborative environment.

Lite plan services are deleted after 30 days of inactivity.

Summary

Watson Studio Free

Region: Dallas

Plan: Lite

Service name: Watson Studio-79

Resource group: Default

Create

Add to estimate

[View terms](#)

FEEDBACK

Getting Started: Final Check

Verify Services and Storage; Launch Watson Studio

The diagram illustrates the final steps to launch Watson Studio. It starts with the IBM Cloud console, where the 'Resource List' is highlighted. A blue arrow points to a table of services and storage. Another blue arrow points to a registration form. A final blue arrow points from the 'Go to IBM Watson Studio' button to the right.

IBM Cloud

Dashboard

Resource List

Services to show Watson Studio, Cloud Object Storage, and Machine Learning Services.

Services (2)					
Watson Studio-79	Default	Dallas	Watson Studio	Active	
pm-20-jx	Default	Dallas	Machine Learning	Active	

Storage (1)				
cloud-object-storage-qx	Default	Global	Cloud Object Storage	Provisioned

Watson Studio in Cloud Pak for Data

Watson Studio is one of the core services in Cloud Pak for Data as a Service. Build, deploy and manage AI models, and optimize decisions on IBM Cloud Pak for Data.

Launch in IBM Cloud Pak for Data

Provide your information to continue

Company name

Phone number

Continue

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☐ by phone

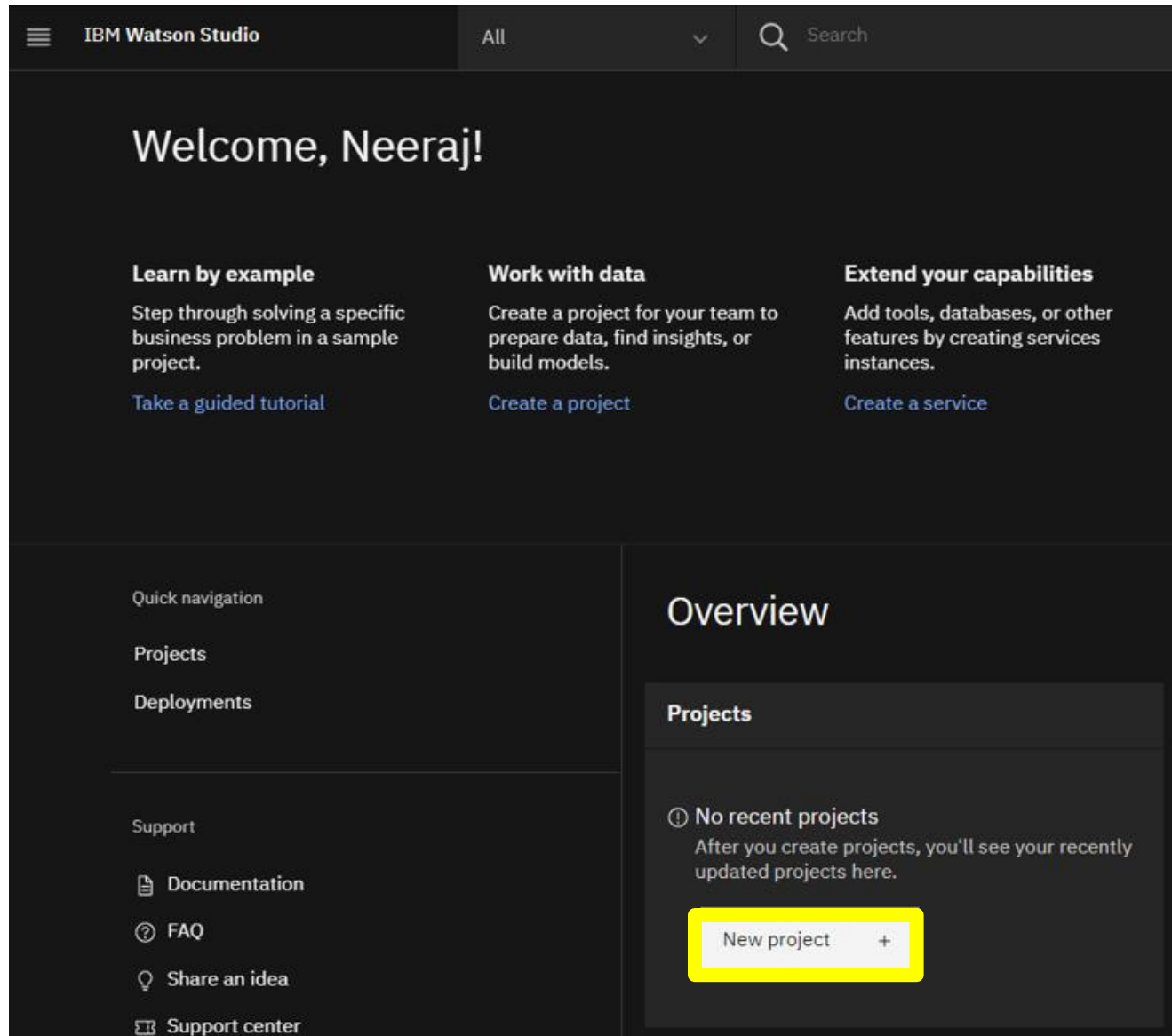
You can withdraw your marketing consent at any time by submitting an [opt-out request](#). Also, you may unsubscribe from receiving marketing emails by clicking the unsubscribe link in each email. More information on our processing can be found in the [IBM Privacy Statement](#).

By submitting this form, I acknowledge that I have read and understand the IBM Privacy Statement and I accept the product [Terms and Conditions](#) of this registration form.

Go to IBM Watson Studio


Getting Started: Create a Project


Select a New Project (1 of 5)





Getting Started: Create a Project

Mention the Project Name (2 of 5)

 IBM Watson Studio

Upgrade 



Neeraj Madan's Account 

NM

New project

Define project details


Name

Net Promoter Score Prediction

Description

Project description

Choose project options

☐ Restrict who can be a collaborator 

Project includes integration with [Cloud Object Storage](#) for storing project assets.

Storage

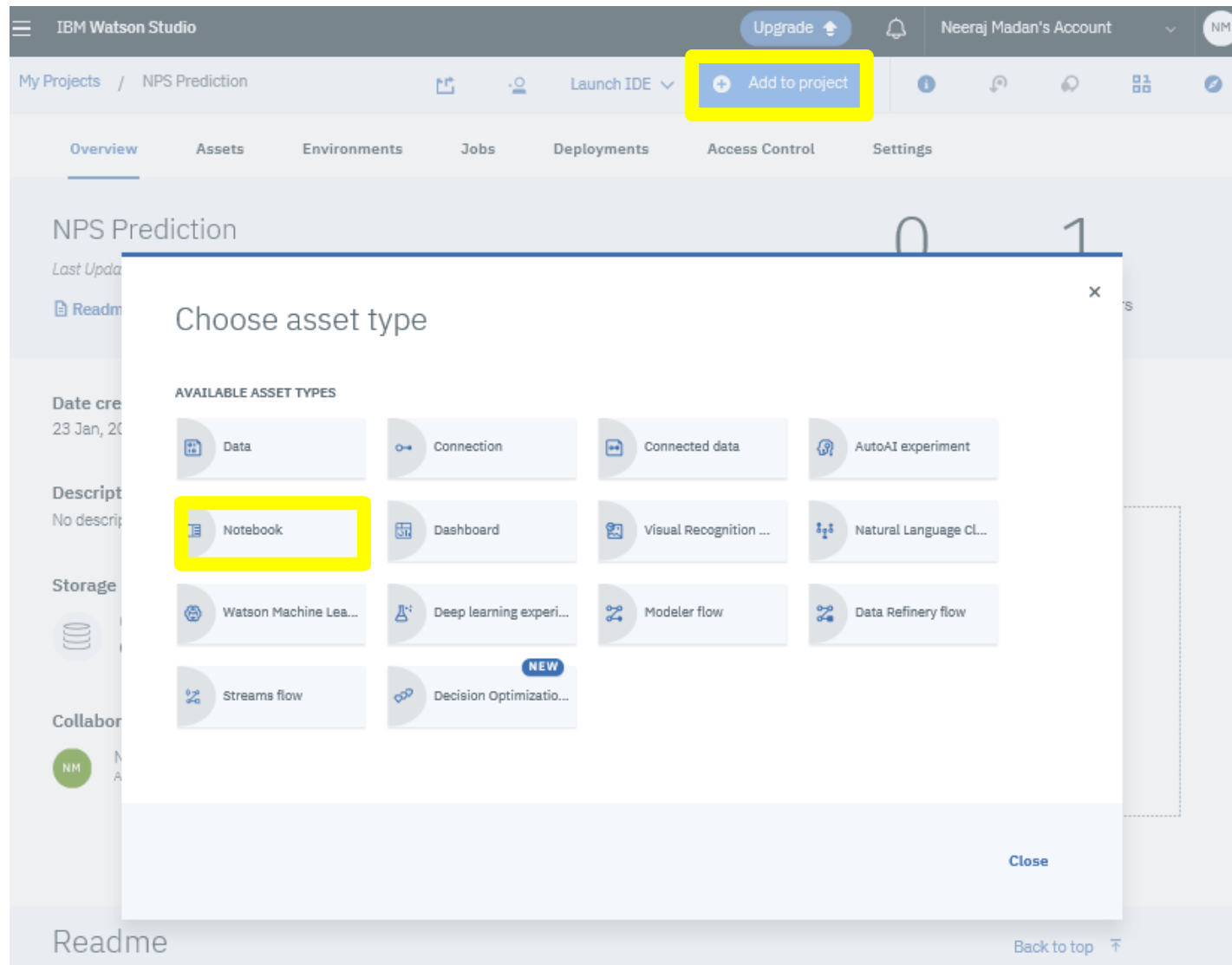
cloud-object-storage-qx

Cancel

Create

Getting Started: Create a Project

Add a notebook to your project (3 of 5)



Getting Started: Create a Project

Import a notebook from GitHub (4 of 5)

IBM Watson Studio

Upgrade

Neeraj Madan's Account

My Projects / NPS Prediction / Add Notebook

New notebook

Blank From file **From URL**

Name

NPS Prediction

26 characters remaining

Description (optional)

Type your Description here

500 characters remaining

Select runtime

Default Python 3.8 XS (2 vCPU 8 GB RAM)

The selected runtime has 1 vCPU and 4 GB RAM and is free.
[Learn more](#) about capacity unit hours and Watson Studio pricing plans.

Notebook URL

Use the notebook link mentioned below

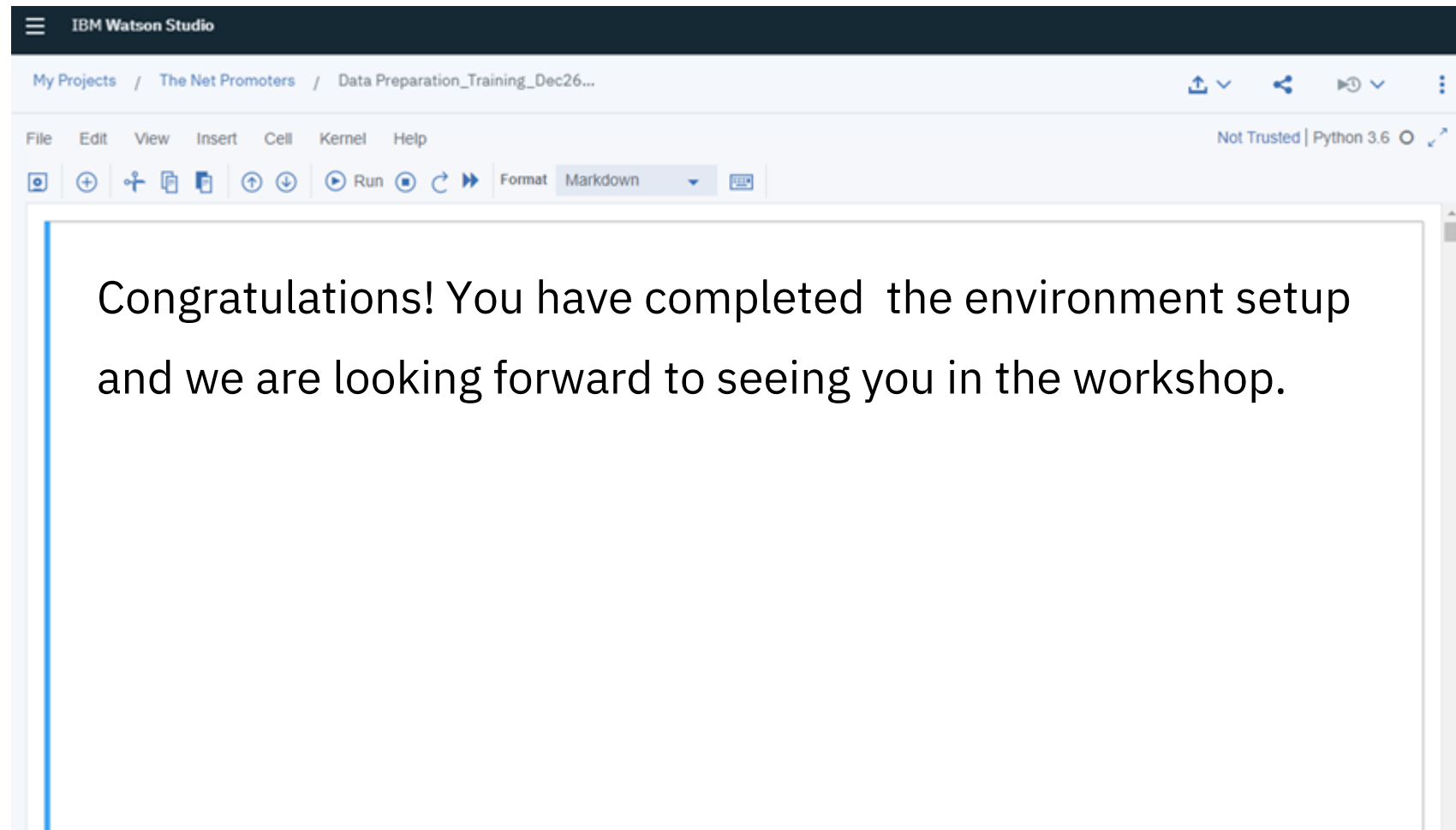
Notebook URL:

<https://github.com/neemadan/An-Experiential-Journey-With-Data-to-Inspire-Your-Work/blob/master/Workshop%20Setup%20Instructions%20Notebook.ipynb> (For testing purpose only)

<https://github.com/neemadan/An-Experiential-Journey-With-Data-to-Inspire-Your-Work/blob/master/An%20Experimental%20Journey%20With%20Data%20to%20Inspire%20Your%20Work.ipynb> (To be used in the workshop)

Getting Started: Create a Project

Let's get started! (5 of 5)



Contact Us

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	<p>Name: Neeraj Madan Email Id: nmadan@us.ibm.com LinkedIn: https://www.linkedin.com/in/neerajmadan/</p>

