

# HUAWEI-NUS Innovation Challenge

Enablement Session 2

23 February 2023



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# Enablement Session 2

Huawei-NUS Innovation Challenge



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Huawei Cloud



# Outline

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1. Introduction of HUAWEI CLOUD Basics
2. Introduction of ModelArts
3. Introduction of AI Development Process Using ModelArts
4. Advantages of ModelArts
5. Notebook Demo

# 1. Introduction of HUAWEI CLOUD Basics-Service List

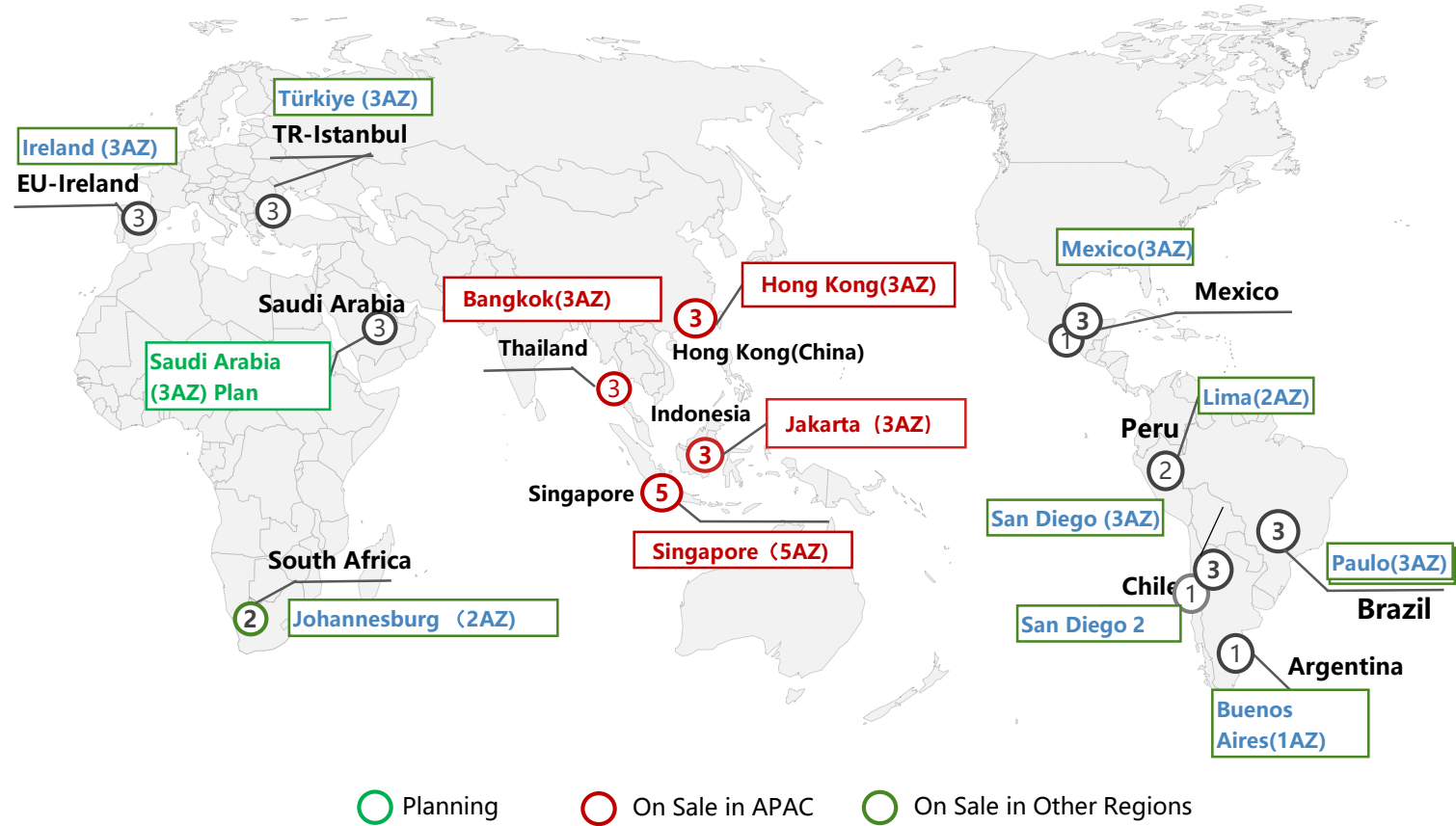
200+ Cloud Services Are Available  
and More Are Coming

|                                                         |                                                           |                                                           |
|---------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|
| <b>Compute</b><br>ESC BMS AS ...                        | <b>Application services</b><br>BCS SMN APIG ...           | <b>Software development</b><br>CodeCheck TestMan CloudIDE |
| <b>Network</b><br>VPC ELB EIP ...                       | <b>Storage</b><br>EVS SFS OBS ...                         | <b>Containers</b><br>CCE CCI FunctionStage                |
| <b>Enterprise intelligence</b><br>MLS DLS MRS ...       | <b>Security</b><br>WAF DEW HSS ...                        | <b>Video</b><br>LSA Live MPC                              |
| <b>Management</b><br>CES CTS IAM ...                    | <b>Cloud meeting</b><br>Cloud meeting Webinar API/DSK ... | <b>Databases</b><br>RDS DDS DRS ...                       |
| <b>Distributed regions</b><br>IEF IES Dedicated regions | <b>Hybrid cloud</b><br>HUAWEI CLOUD Stack                 | <b>Internet of Things</b><br>IoT platform                 |

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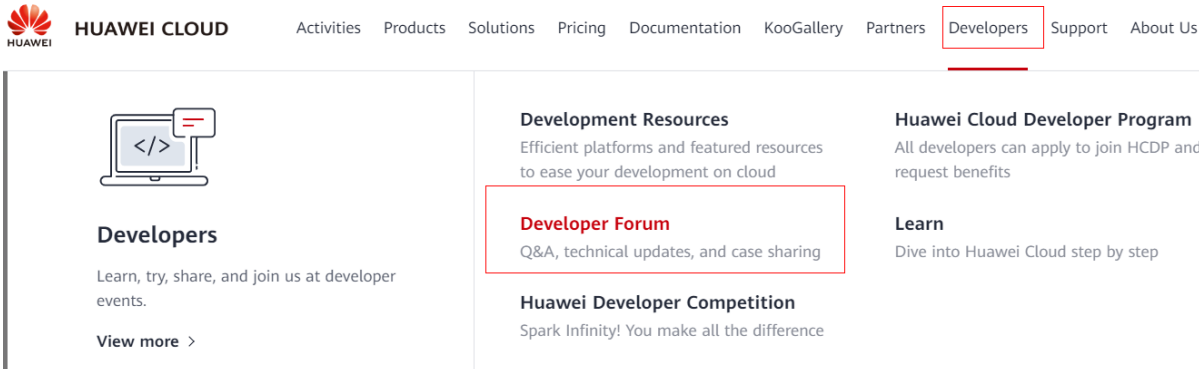


# 1. Introduction of HUAWEI CLOUD Basics-Service List

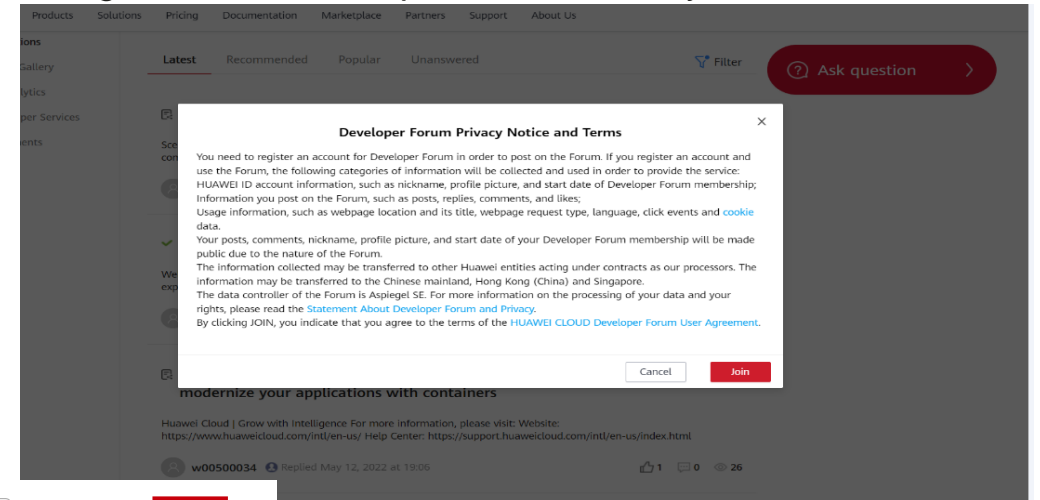


# 1. Introduction of HUAWEI CLOUD Basics-Join HUAWEI CLOUD Developer Forum

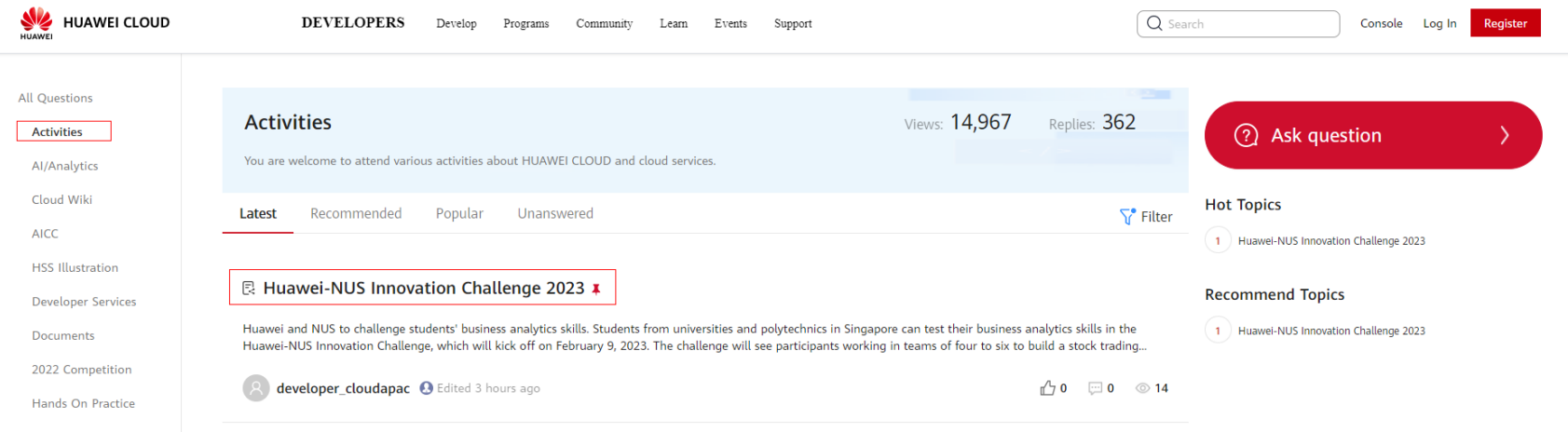
a. Log in with your [Huawei Cloud account](#) and go to the [Huawei Cloud Developer Forum](#).



b. Agree to the Developer Forum Privacy Notice and Terms.

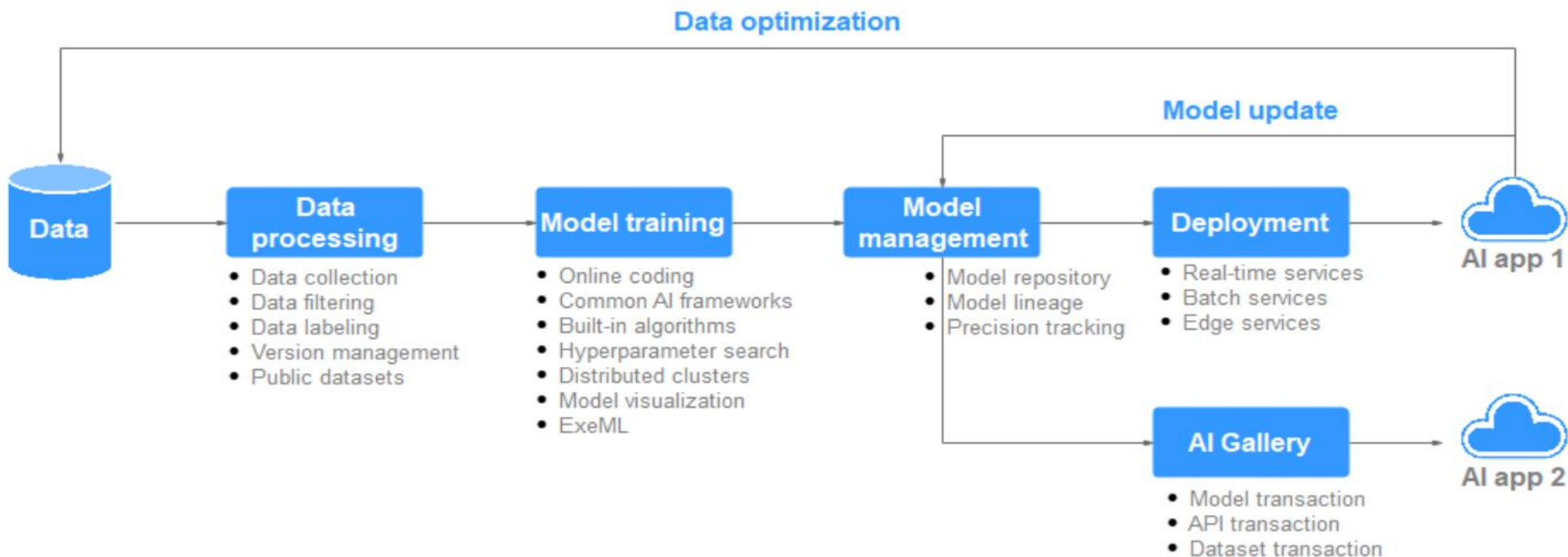


c. And then, begin to browse, write posts and reply in the Forum.



## 2. Introduction of ModelArts

ModelArts is a one-stop AI development platform geared toward developers and data scientists of all skill levels. It enables you to rapidly build, train, and deploy models anywhere (from the cloud to the edge), and manage full-lifecycle AI workflows.



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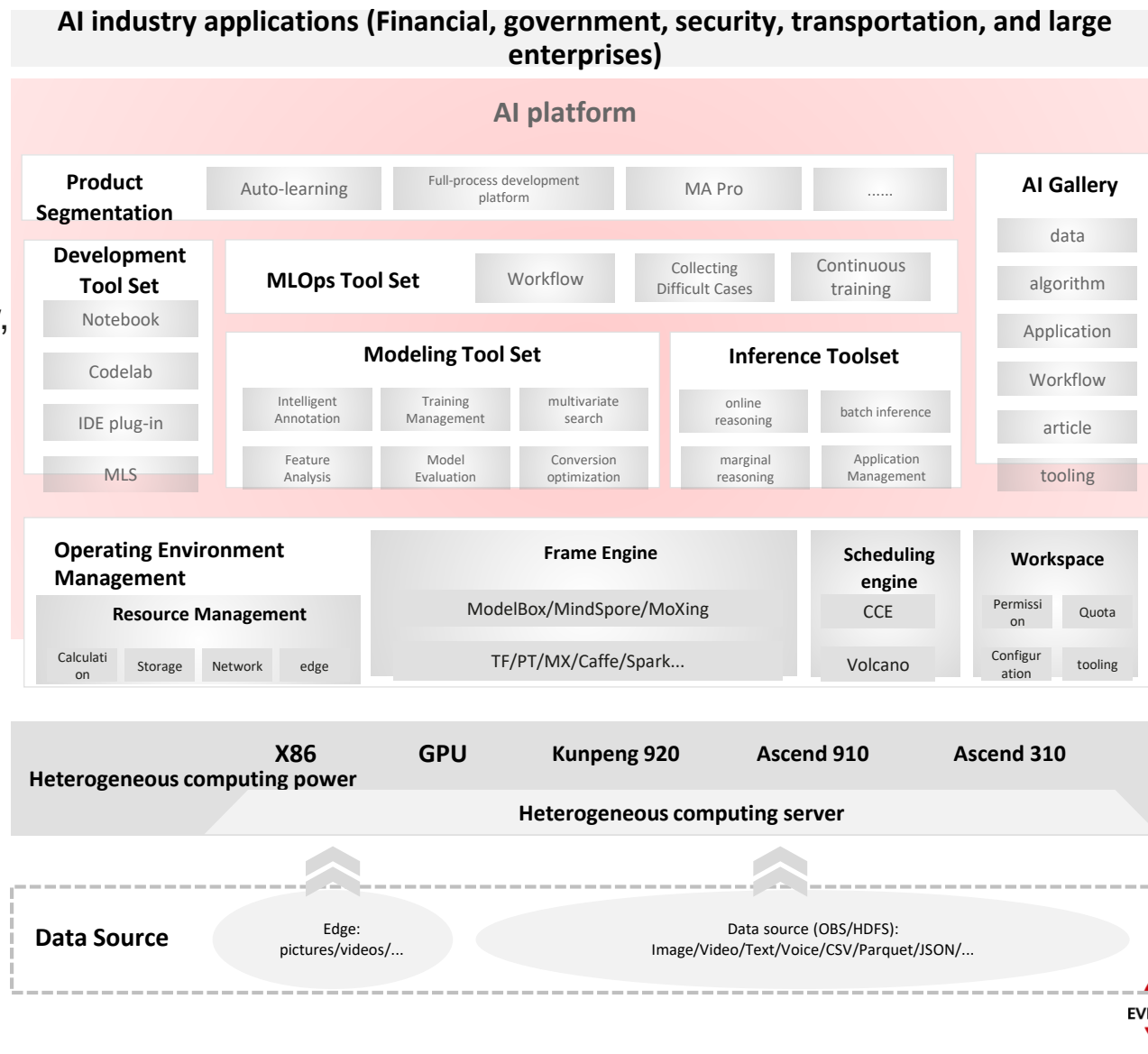
### 3. Introduction of AI Development Using ModelArts

ModelArts covers all stages of AI development, including data processing and model training and deployment. In addition, ModelArts supports popular open-source AI development frameworks such as TensorFlow, MXNet, and PyTorch. ModelArts also allows you to use customized algorithm frameworks tailored to your needs.

#### Development Process

- Determine an objective
- Prepare data
- Train a model
- Evaluate the model
- Deploy the model

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## 4. Advantages of ModelArts (1)

### One-stop platform

1. The out-of-the-box and full-lifecycle AI development platform provides one-stop data processing, and development, training, management, and deployment of models.

### Easy to use

1. Multiple built-in models provided and free use of open-source models
2. Automatic optimization of hyperparameters
3. Code-free development and simplified operations
4. One-click deployment of models to the cloud, edge, and devices

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## 4. Advantages of ModelArts (2)

### High performance

1. The self-developed MoXing deep learning framework accelerates algorithm development and training.
2. Optimized GPU utilization accelerates real-time inference.
3. Models running on Ascend AI chips achieve more efficient inference.

### Flexible

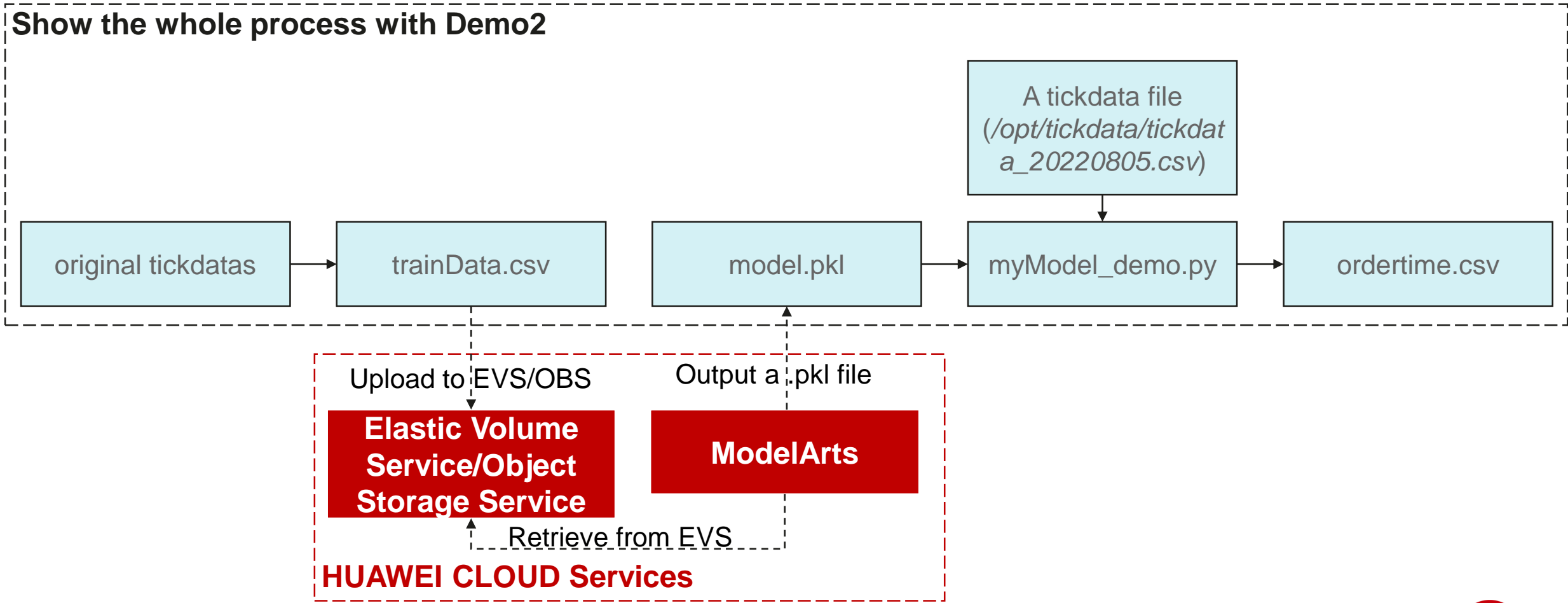
1. Popular open-source frameworks available, such as TensorFlow, Spark\_MLlib, MXNet, Caffe, PyTorch, XGBoost-Sklearn, and MindSpore
2. Popular GPUs and Huawei-proprietary Ascend chips
3. Exclusive use of dedicated resources
4. Custom images for custom frameworks and operators

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# 5. Notebook Demo-Overview

Show the whole process with Demo2



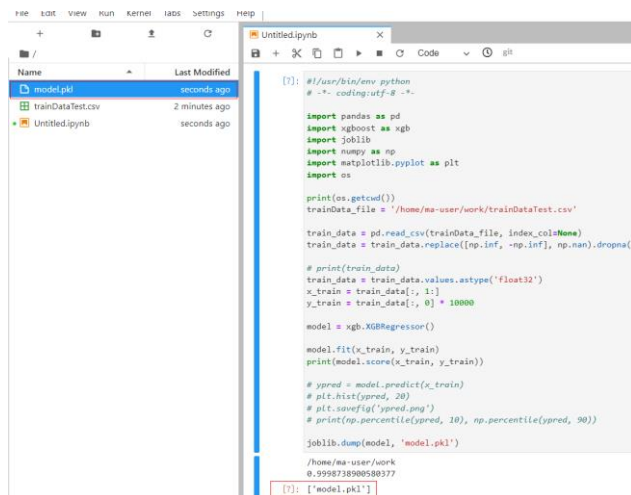
## 5. Notebook Demo-Overview

### Steps

1. Login your HUAWEI CLOUD account and going to console
2. Choose ModelArts Service and open DevEnviron drop-down menu
3. Click Notebook button and then click create button
4. Run code and get result file
5. Download .pkl file

### Old Version\*

Use Multi-Engine  
1.0(XGBoost-Sklearn)  
Public Image to create  
Notebook



```
[1]: #!/usr/bin/env python
# -*- coding:utf-8 -*-

import pandas as pd
import xgboost as xgb
import joblib
import numpy as np
import matplotlib.pyplot as plt
import os

print(os.getcwd())
trainData_file = '/home/ma-user/work/trainDataTest.csv'

train_data = pd.read_csv(trainData_file, index_col=None)
train_data = train_data.replace([np.inf, -np.inf], np.nan).dropna()

# print(train_data)
train_data = train_data.values.astype('float32')
x_train = train_data[:, 1:]
y_train = train_data[:, 0] * 10000

model = xgb.XGBRegressor()
model.fit(x_train, y_train)
print(model.score(x_train, y_train))

# ypred = model.predict(x_train)
# plt.hist(ypred, 20)
# plt.savefig('ypred.png')
# print(np.percentile(ypred, 10), np.percentile(ypred, 90))

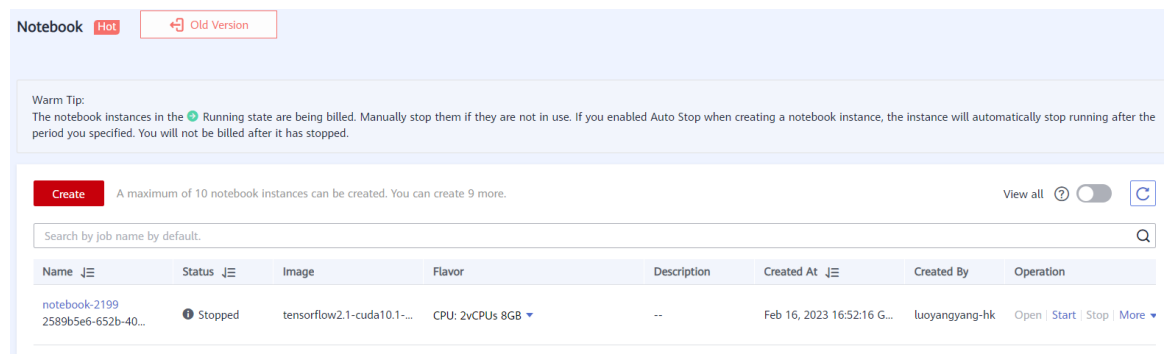
joblib.dump(model, 'model.pkl')

/home/ma-user/work
0.99987380859377
[1]: ['model.pkl']
```

***\*old version notebook at ModelArts will be discontinued at 00:00 GMT+08:00 on March 30, 2023.***

### New Version

Use tensorflow{version}-cuda{version}-cudnn7-ubuntu18.04  
Public Image to create Notebook



Notebook Hot Old Version

Warm Tip:  
The notebook instances in the Running state are being billed. Manually stop them if they are not in use. If you enabled Auto Stop when creating a notebook instance, the instance will automatically stop running after the period you specified. You will not be billed after it has stopped.

Create A maximum of 10 notebook instances can be created. You can create 9 more. View all ? 🔍

Search by job name by default. 🔍

| Name                                 | Status               | Image                      | Flavor          | Description | Created At                 | Created By     | Operation                                                                |
|--------------------------------------|----------------------|----------------------------|-----------------|-------------|----------------------------|----------------|--------------------------------------------------------------------------|
| notebook-2199<br>2589b5e6-652b-40... | <span>Stopped</span> | tensorflow2.1-cuda10.1-... | CPU: 2vCPUs 8GB | --          | Feb 16, 2023 16:52:16 G... | luoyangyang-hk | <span>Open</span> <span>Start</span> <span>Stop</span> <span>More</span> |

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## Q: How to change the flavor of a notebook instance

A: Click the drop down icon at the **Flavor** column

Create

A maximum of 10 notebook instances can be created. You can create 8 more.

View all ? ☐

Search by job name by default.

| Name                                                                  | Status  | Image                                | Flavor                                                                      | Description                 | Created At                      | Created By     | Operation                    |
|-----------------------------------------------------------------------|---------|--------------------------------------|-----------------------------------------------------------------------------|-----------------------------|---------------------------------|----------------|------------------------------|
| <a href="#">notebook-nus-lyy-obs</a><br>2589b5e6-c0f7-40ca-a1c9-c0... | Stopped | tensorflow2.1-cuda10.1-cudnn7-ubu... | CPU: 2vCPUs 8GB ▲<br>CPU: 8vCPUs 32GB<br>GPU: 1*V100(32GB) CPU: 8vCPUs 64GB | --                          | Feb 20, 2023 15:23:38 GMT+08:00 | luoyangyang-hk | Open   Start   Stop   More ▼ |
| <a href="#">notebook-nus-lyy-evs</a><br>2589b5e6-652b-404f-9169-9...  | Stopped | tensorflow2.1-cuda10.1-cudnn7-ubu... |                                                                             | Flavor fee: \$6.06 USD/Hour | 16, 2023 16:52:16 GMT+08:00     | luoyangyang-hk | Open   Start   Stop   More ▼ |

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## Q: How to expand the EVS storage size?

A: Step 1, start the notebook instance

Step 2, click the name link at instance **Name column**

Step 3, click the **Expansion button** to expand the size you want

Create

A maximum of 10 notebook instances can be created. You can create 8 more.

View all ? ☐

C

Search by job name by default. Q

| Name                                                                  | Status               | Image                                | Flavor          | Description | Created At                      | Created By     | Operation                  |
|-----------------------------------------------------------------------|----------------------|--------------------------------------|-----------------|-------------|---------------------------------|----------------|----------------------------|
| <a href="#">notebook-nus-lyy-obs</a><br>2589b5e6-c0f7-40ca-a1c9-c0... | Stopped              | tensorflow2.1-cuda10.1-cudnn7-ubu... | CPU: 2vCPUs 8GB | --          | Feb 20, 2023 15:23:38 GMT+08:00 | luoyangyang-hk | Open   Start   Stop   More |
| <a href="#">notebook-nus-lyy-evs</a><br>2589b5e6-652b-404f-9169-9...  | Running(59 minute... | tensorflow2.1-cuda10.1-cudnn7-ubu... | CPU: 2vCPUs 8GB | --          | Feb 16, 2023 16:52:16 GMT+08:00 | luoyangyang-hk | Open   Start   Stop   More |

< notebook-nus-lyy-evs

Name

notebook-nus-lyy-evs

Status

Running(59 minutes left)

ID

2589b5e6-652b-404f-9169-97a33a1ea9ee

Storage Mount

/home/ma-user/work/

Storage Capacity

5 GB (EVS) Expansion

Remote SSH

☐

Storage

Event

Tags

Storage Capacity Expansion

\* Size

0GB

20GB

40GB

60GB

80GB

100GB

10

+

The current storage of instance is 5 GB. After expanding capacity successfully, the storage is 15 GB. New capacity fee 6.50.004/Hour

OK

Cancel

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**Question: *What's the difference between using EVS and OBS to store data?***

**Answer:** Elastic Volume Service(EVS) provides **scalable block storage for servers**. It supports various disk types from extreme SSD to Common I/O, with high security and reliability. Object Storage Service(OBS) provides **an object-based massive storage cloud service**. It is suitable **for storing data of any size and type**.

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## *Questions and Answers*



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# Thank you.

把数字世界带入每个人、每个家庭、  
每个组织，构建万物互联的智能世界。

Bring digital to every person, home and  
organization for a fully connected,  
intelligent world.

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