DATA SCIENCE on Microsoft Azure

Created by
Mouafek Ayadi

Content

01. What is Data Science?

02. Some DS use cases

03. AML services

04. ML Pipelines

05. E2E ML

06. Compute

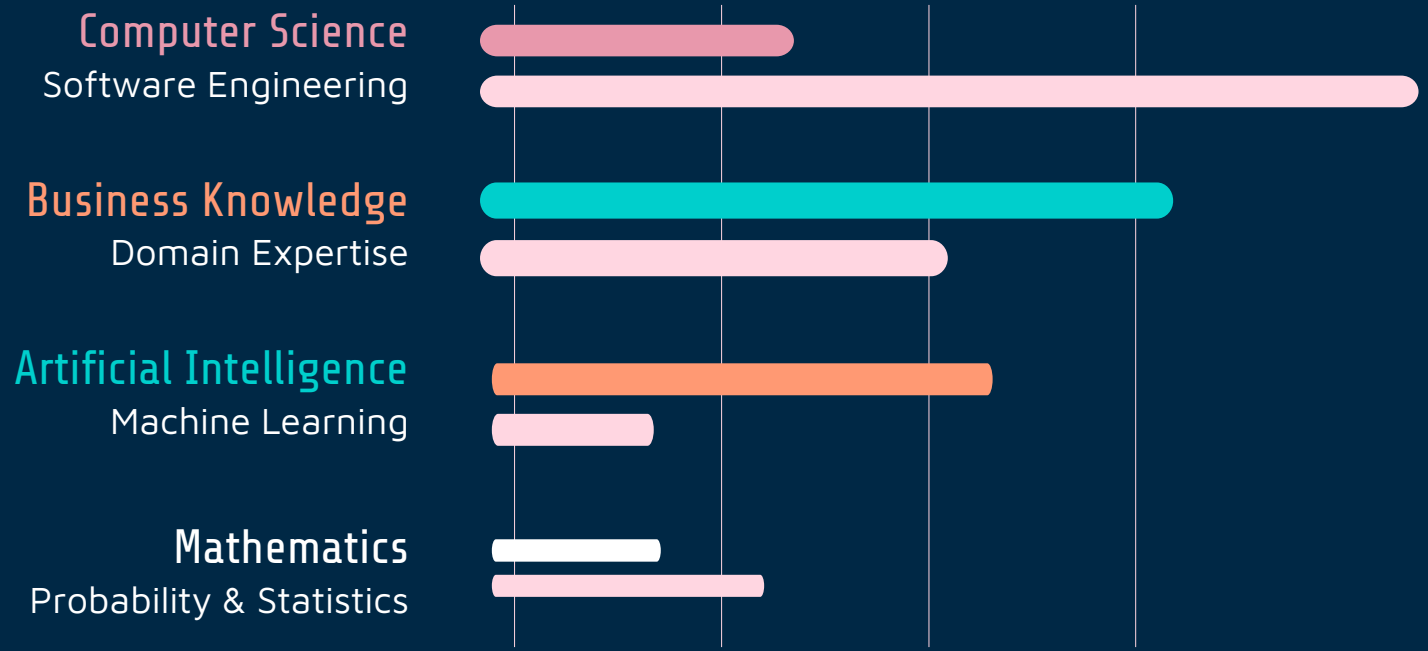
07. MLOPS

08. Security

09. Fair Learning

10. Kahoot

What is Data Science?



Financial services use cases

Effective customer engagement

Customer profiles
Credit history
Transactional data
LTV
Loyalty

Customer analytics

Customer 360 degree evaluation
Customer segmentation
Reduced customer churn
Underwriting, servicing and delinquency handling
Insights for new products

Faster innovation for a better customer experience

Decision services management

Customer segmentation
CRM data
Credit data
Market data

Financial modeling

Commercial/retail banking, securities, trading and investment models
Decision science, simulations and forecasting
Investment recommendations

Improved consumer outcomes and increased revenue

Risk and revenue management

Transaction data
Demographics
Purchasing history
Trends

Risk, fraud, threat detection

Real-time anomaly detection
Card monitoring and fraud detection
Security threat identification
Risk aggregation

Enhanced customer experience with machine learning

Risk and compliance management

CRM
Credit
Risk
Merchant records
Products and services

Credit analytics

Enterprise DataHub
Regulatory and compliance analysis
Credit risk management
Automated credit analytics

Transform growth with predictive analytics

Recommendation engine

Clickstream data
Products
Services
Customer service data

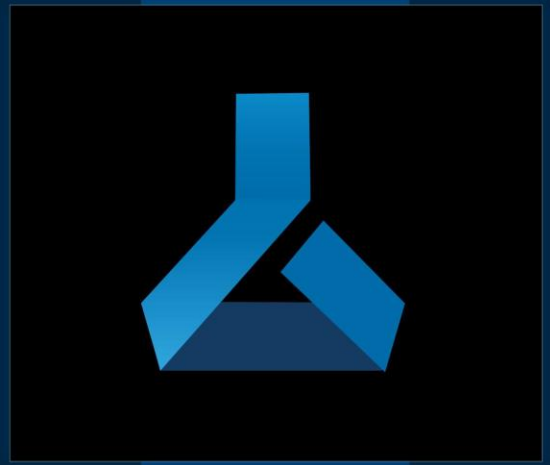
Marketing analytics

Recommendation engine
Predictive analytics and targeted advertising
Fast marketing and multi-channel engagement
Customer sentiment analysis

Improved customer engagement with machine learning

Azure Machine Learning Services

Technical Details



Azure ML service Key Elements

Workspace

Models

Environments

Experiments

Deployment

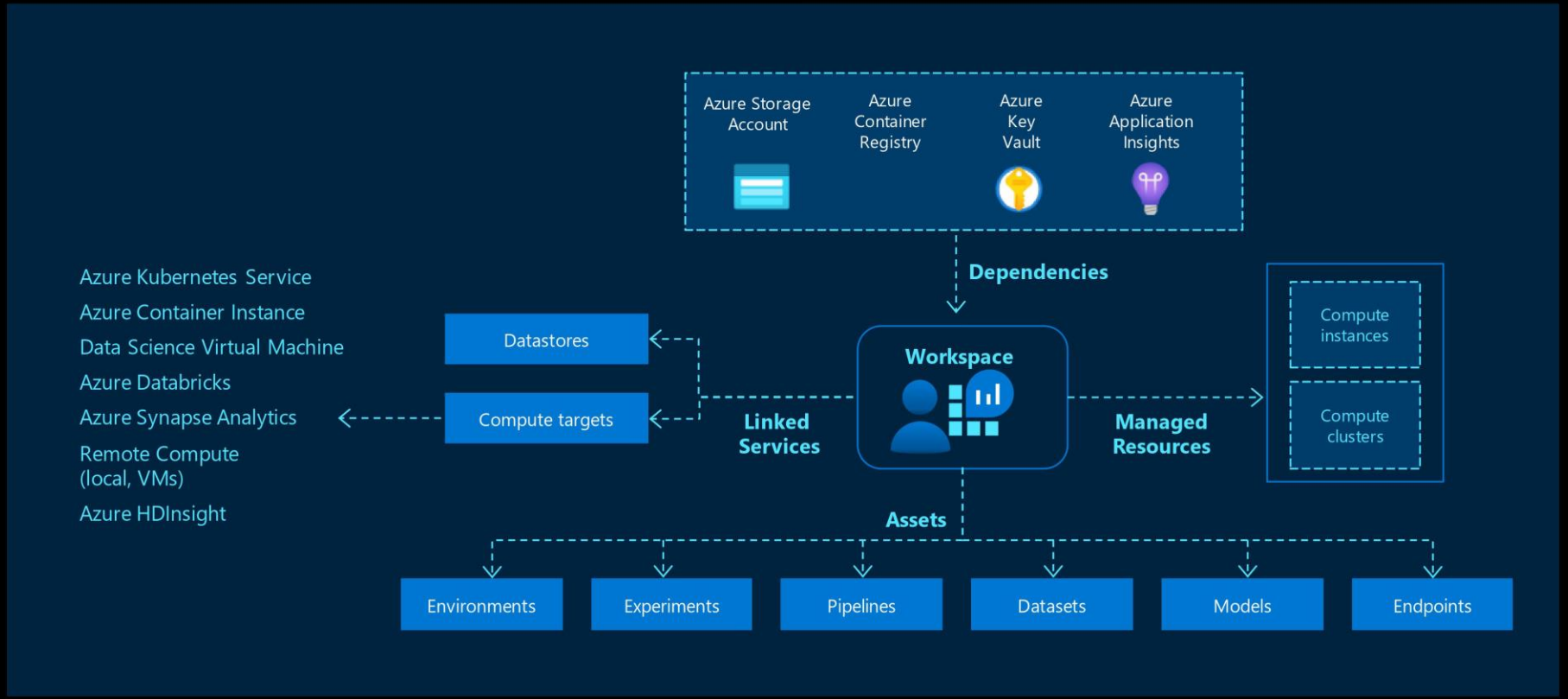
Pipelines

Datastores

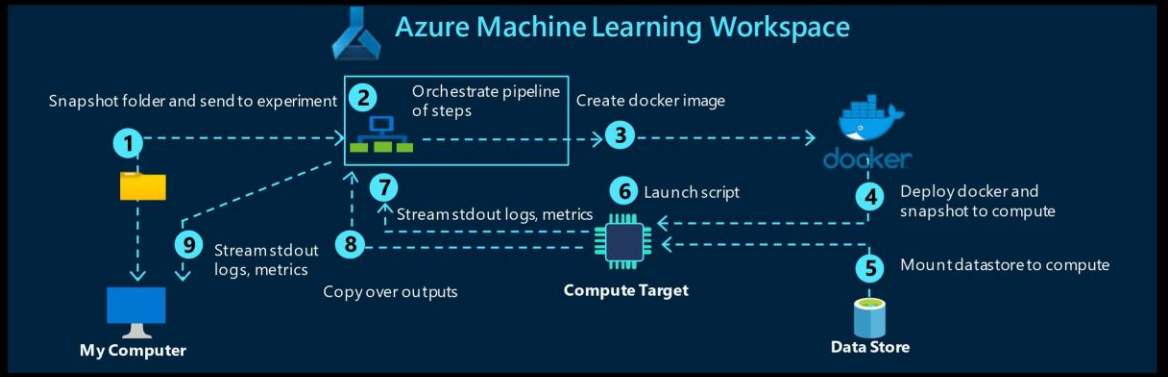
Compute Target

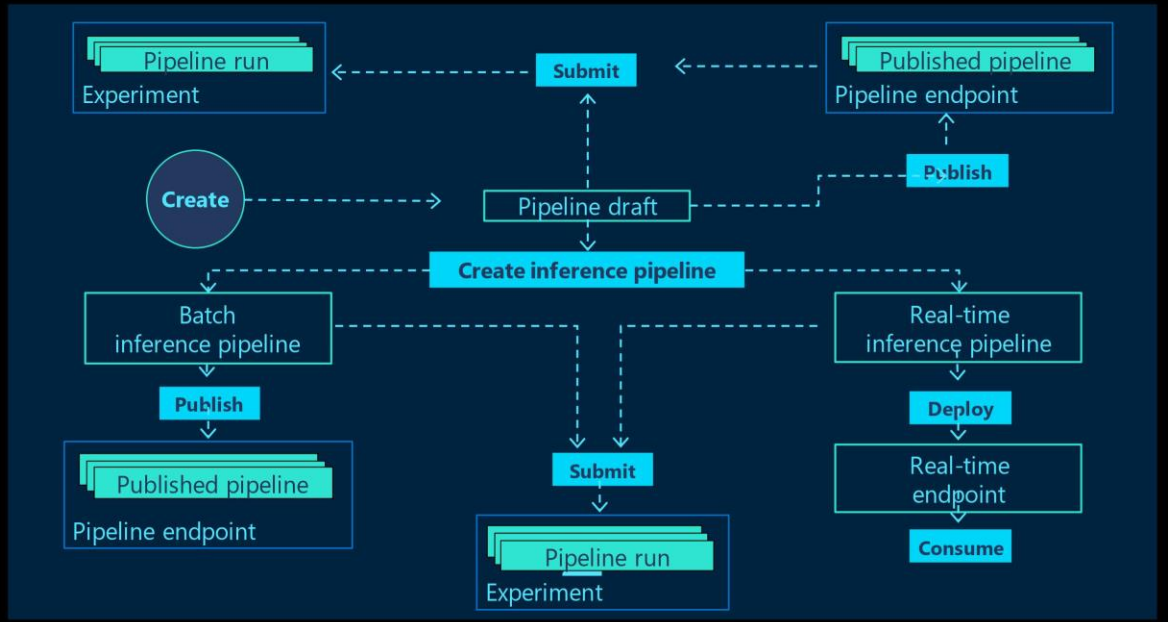
Data Labelling

Key Elements of Azure Machine Learning



ML Pipelines





E2E ML Life Cycle

Data Preparation

- Multiple Data Sources
- Multiple Formats
- Cleansing
- Transformation

Model Building

- Choice of algorithms
- Choice of language
- Choice of development tools
- Local Testing

Model Training

- Code first, No Code, Low Code
- Distributed Training
- Azure Arc
- K8s

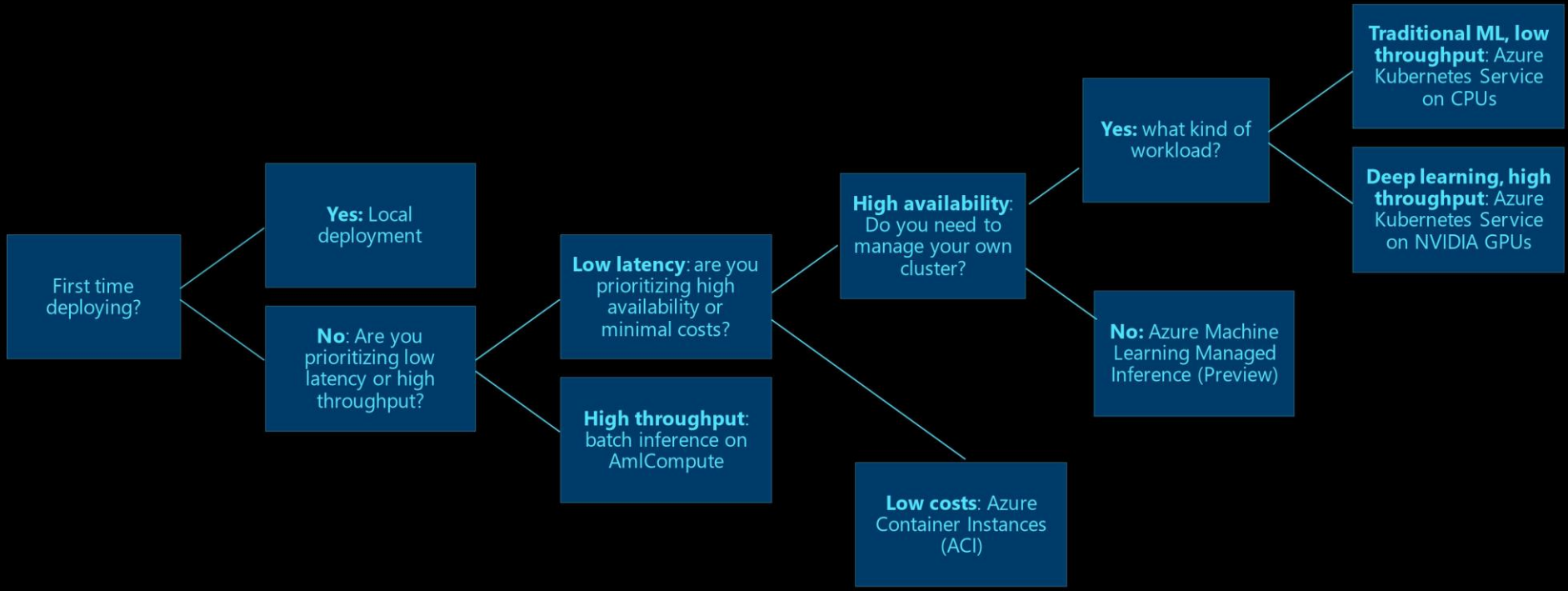
Model Registration and Management

- Containerization
- Versioning
- Model Repository
- Track Experiments

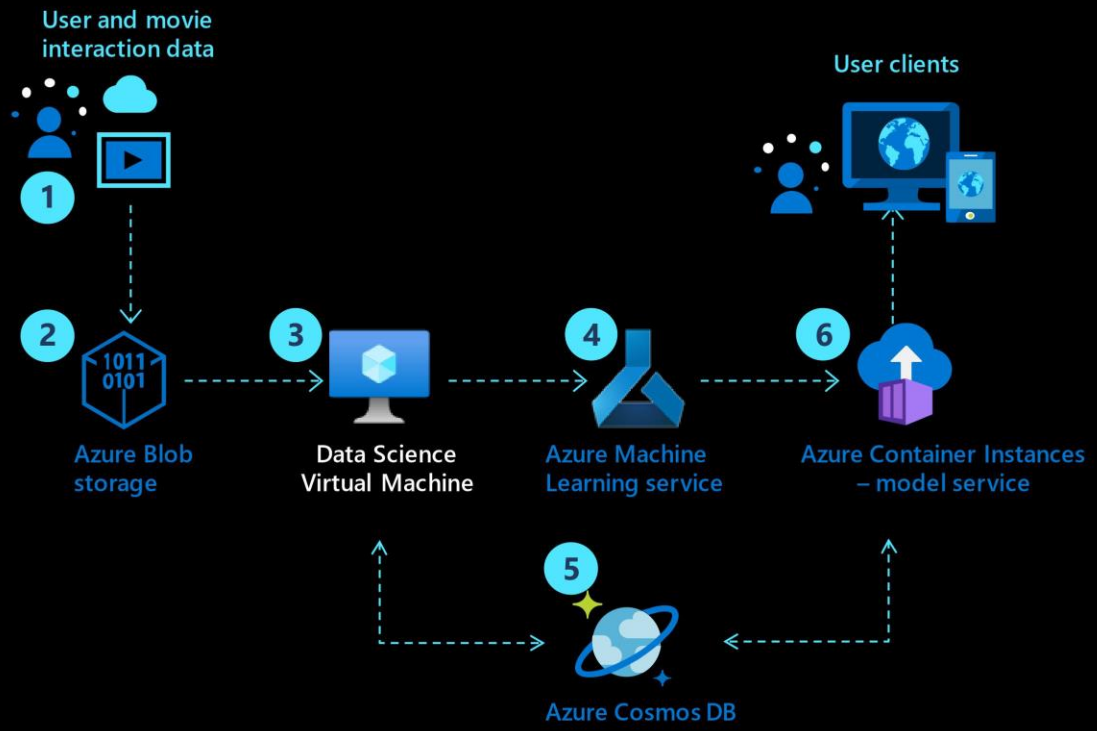
Model Deployment

- Deploying your model
- Real time Inferencing
- Batch Inferencing
- Monitoring

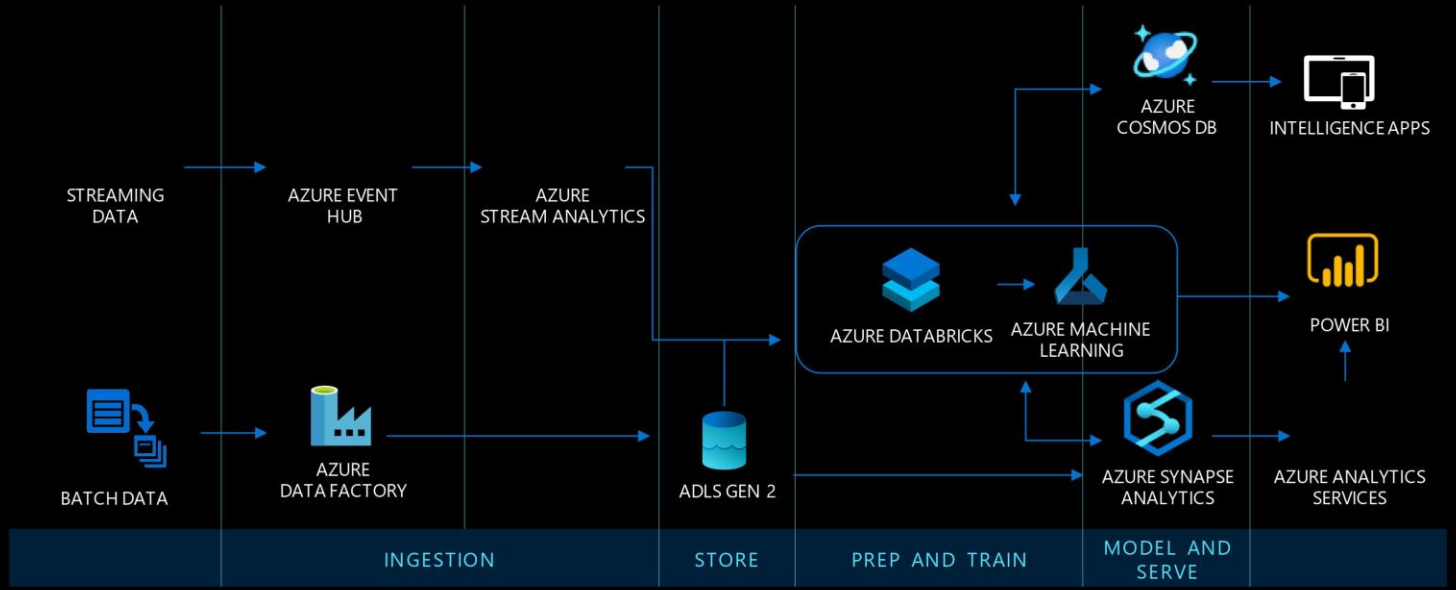
Choosing an inferencing target



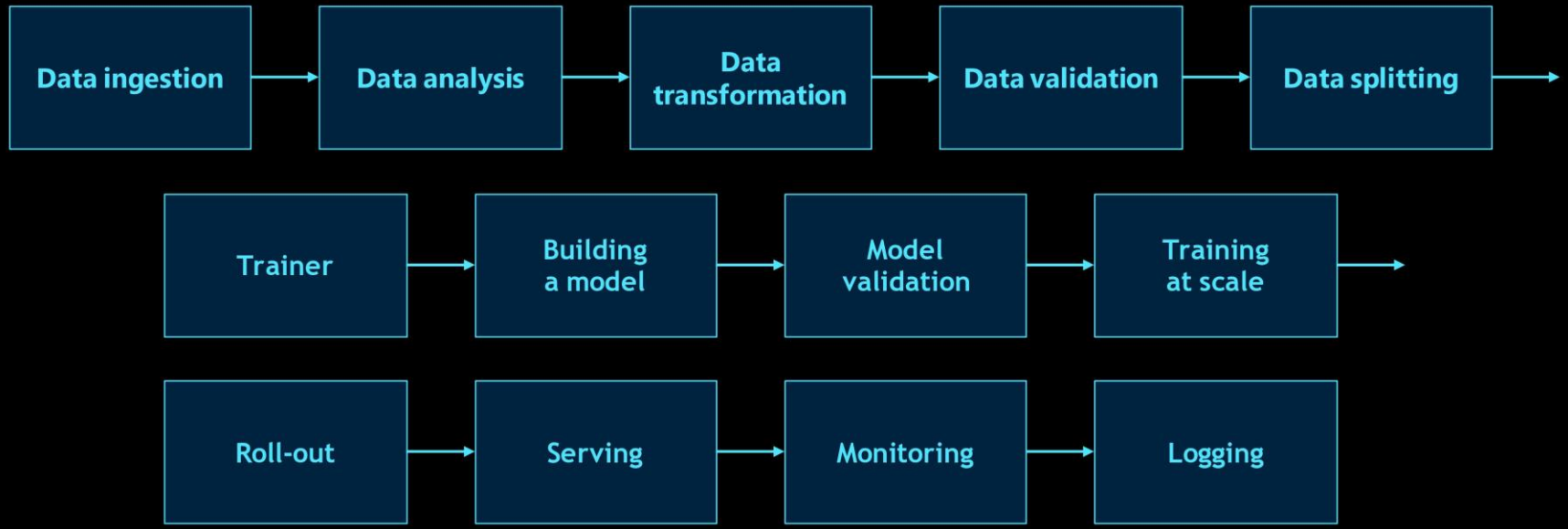
Movie recommendations on Azure



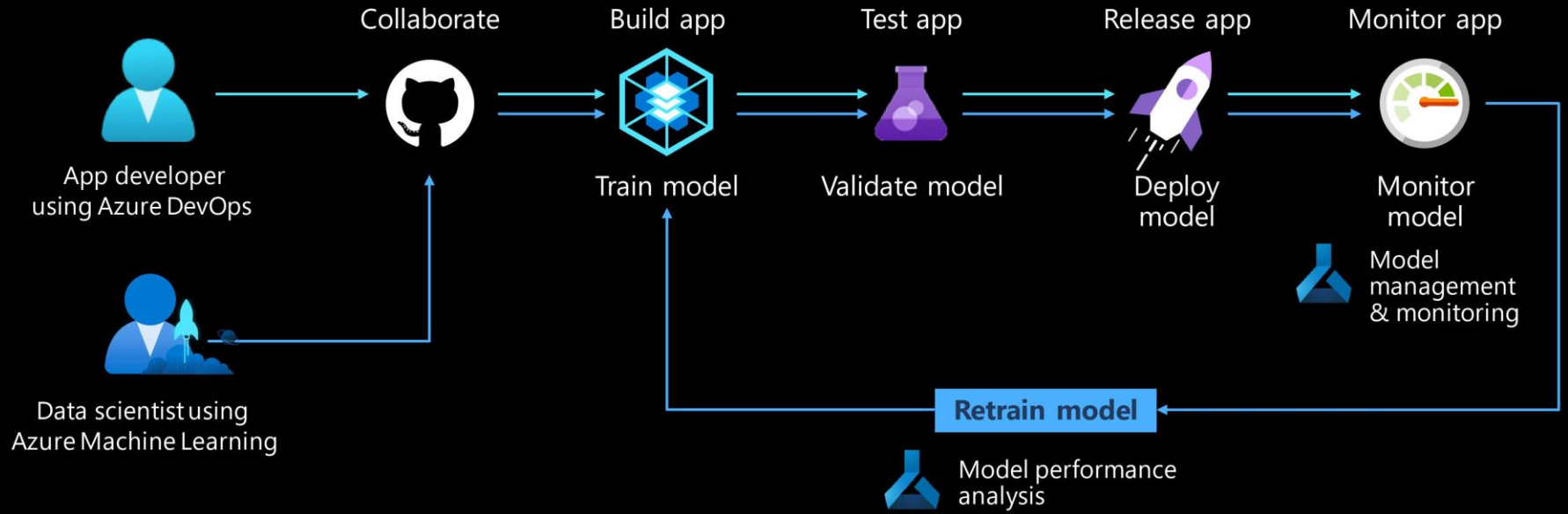
AzureML + Synapse +Databricks + Power BI for fraud detection



Components of the MLOps lifecycle

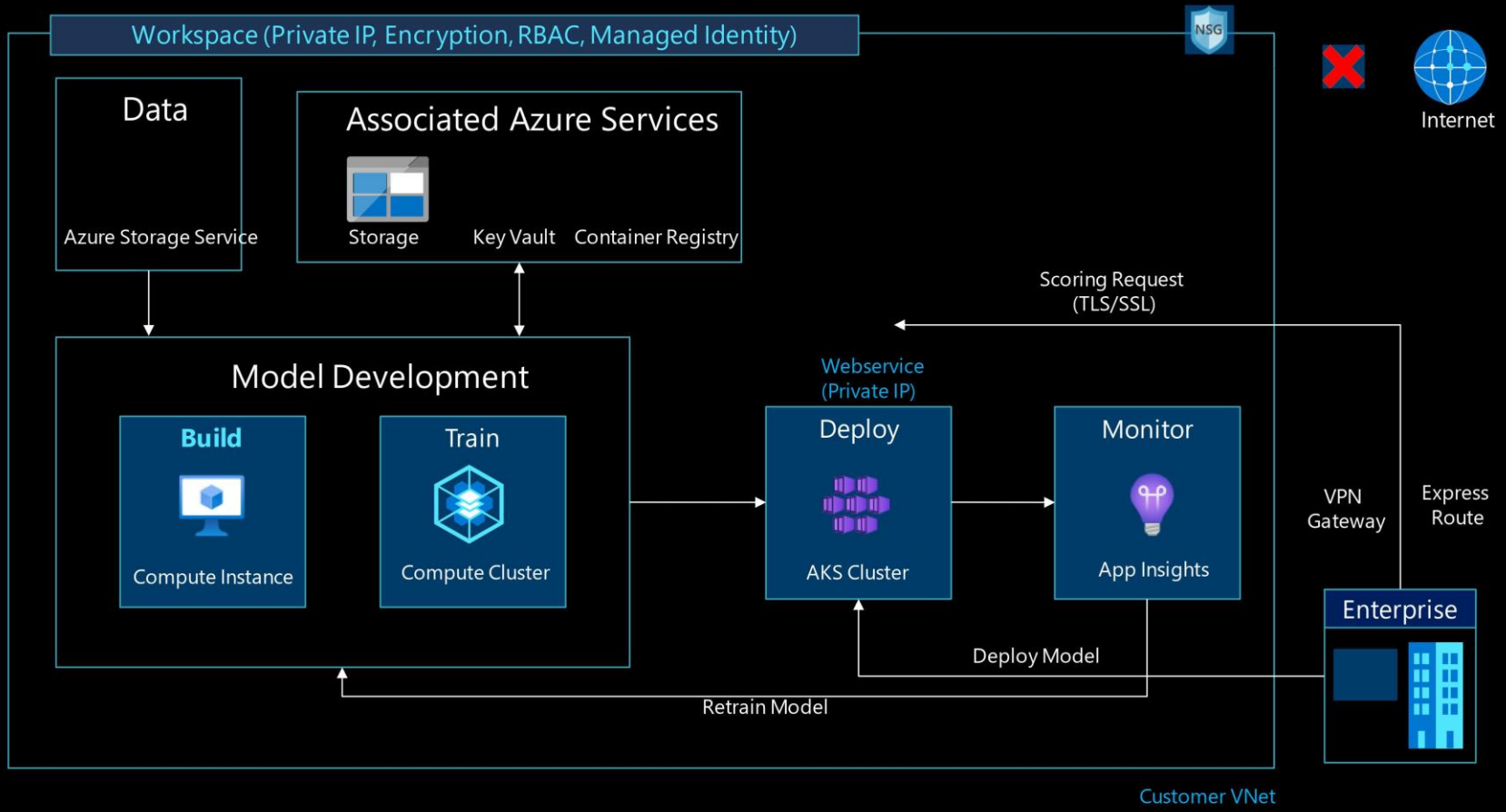


MLOps Workflow



Model reproducibility | Model validation | Model deployment | Model retraining

E2E Secure AzureML



Assess Fairness and Mitigate Unfairness

Training a Fairness-Unaware Predicto

```
from sklearn.compose import ColumnTransformer

column_tranformer = ColumnTransformer([('onehot', OneHotEncoder(handle_unknown='ignore’),
        ['Sex', 'Country', 'Race', 'Workclass', 'Marital Status', 'Occupation','Relationship’]),
        ('scaler', StandardScaler(), ['Capital Gain', 'Capital Loss', 'Hours per week’,
        'Education-Num'])])

# Append classifier to preprocessing pipeline.
# Now we have a full prediction pipeline.
clf = Pipeline(steps=[('preprocessor', column_tranformer),
                      ('classifier', LogisticRegression(solver='liblinear', fit_intercept=True))])

model = clf.fit(X_train, Y_train)
```

Do you have any questions?

THANKS

https://www.linkedin.com/in/mouafek-ayadi/

CREDITS: This presentation template was created by Slidesgo, including icons by Flaticon, and infographics & images by Freepik