# Thomson Reuters Labs

Challenges and best practices in developing ML into Legal information systems at **scale** 

January 4<sup>th</sup>, 2023



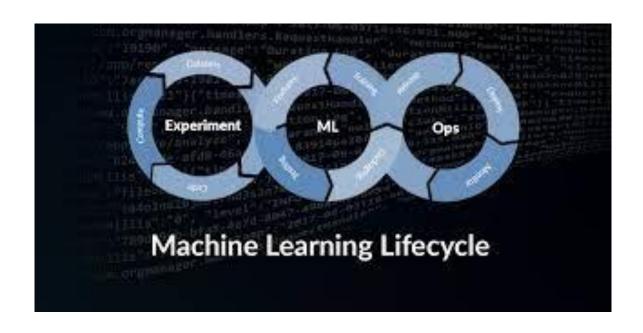
### Integrating ML Solutions into IT systems and workflows

■ What is the Existing Ecosystem?





# Building the first Prototype

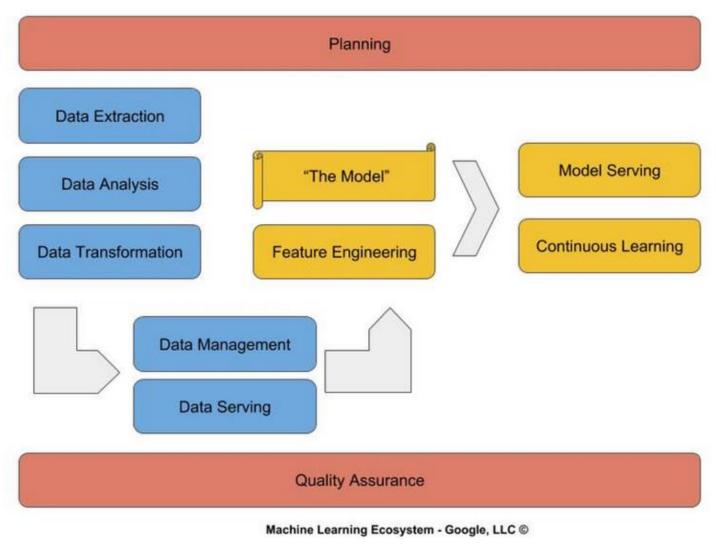


- Identify Data.
- ☐ Train.
- ☐ Share performance with the SME & Business teams.
- Evaluation tool for SME.
- □ Assess Feedback.
- ☐ Iterate.
- ☐ Engineer.
- ☐ Release.



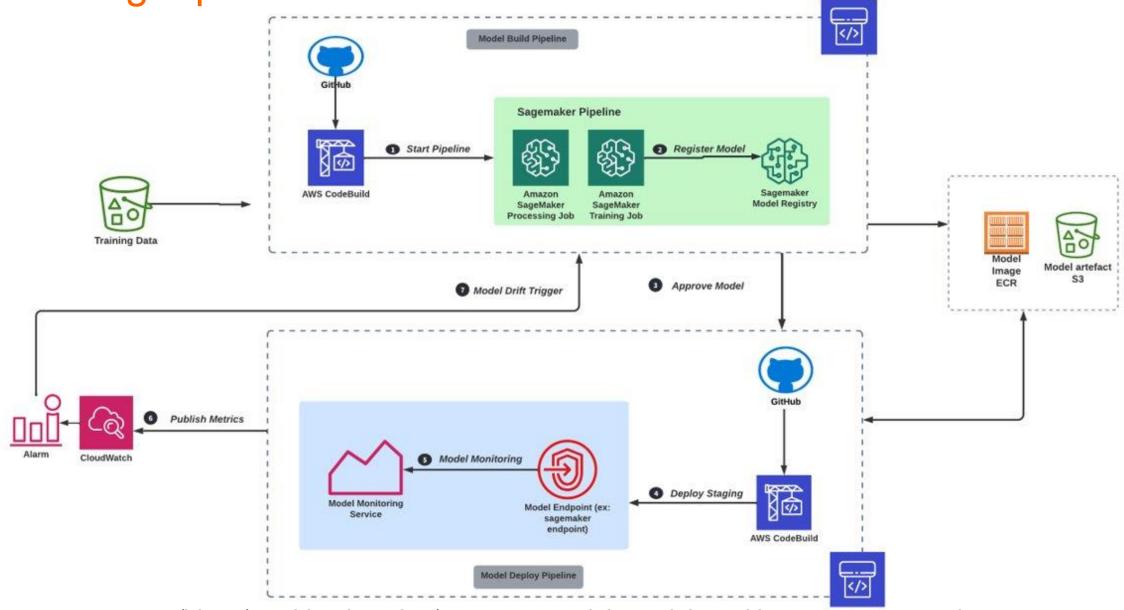
## Planning for ML Projects

- Data Availability
- SME Availability
- Identify impacted eco-system
- Rearchitect workflows and pipelines
- Engineer the ML solution for optimisation and cost effectiveness
- Design Feedback loop
- Prepare for Model sustenance





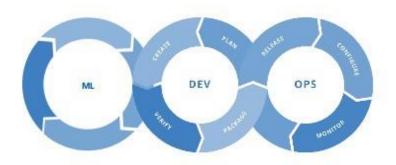
Re-training Pipeline



https://aws.amazon.com/blogs/machine-learning/automate-model-retraining-with-amazon-sagemaker-pipelines-when-drift-is-detected/

# What Testing do ML Projects require?

- ☐ Unit-testing for the ML code
- Model performance testing
- Model end-point testing
- System Load testing
- □ SLA / Performance testing
- Regression testing
- Security testing
- Stress testing



Experiment
Data Acquisition
Business Understanding
Initial Modeling

Develop
Modeling + Testing
Continuous Integration
Continuous Deployment

Operate
Continuous Delivery
Data Feedback Loop
System + Model Monitoring



### **Cloud Services**

#### **Model Training**



Amazon SageMaker Training Jobs



Training Data in S3

#### **Model Registry**





#### ML CI/CD and Infrastructure







#### **Model Deployment**



Amazon SageMaker Endpoint



AWS Lambda





### TR Labs – Who We Are

#### **Functions and Focus**

- Al Applied Research
- AI/ML Engineering
- Human Centered AI Design
  - Natural Language Processing (NLP)
  - Neural Networks
  - Machine Learning
  - Deep Learning
  - Computer Vision
  - Cognitive Computing
  - Cloud Native
  - Model Ops
  - Emerging Tech
  - Human-Centric Al
  - Rapid Prototyping
  - Production ready innovation

### 130+ talented colleagues operating globally

Thomson Reuters Labs Locations



