

# TCS MLOps-Cockpit for automated Machine Learning lifecycle

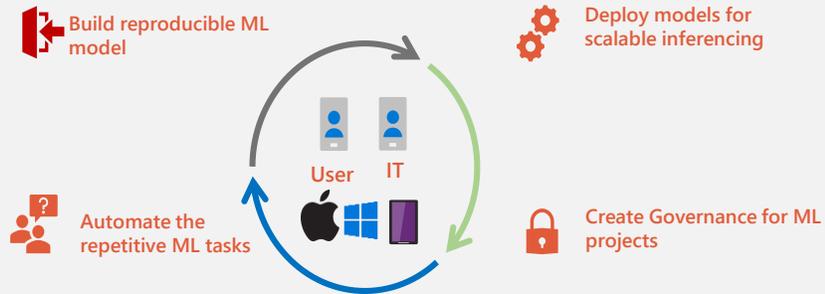
Intelligent platform designed to harness the power of DevOps and ML for engineers to improve business efficiency

## Necessity for MLOps

In the modern business landscape AI-ML is driving the growth in the industries where data is the fuel. But often it is seen that lack of monitoring for the AI-ML models and lack of potential to adapt with the change in data impacts the business. In theory MLOps bridges these gaps and our product MLOps cockpit is the one stop shop solution.

TCS MLOps Cockpit connects the dots between experimentation and production to make machine learning reusable, synergetic and continuous.

## ML Lifecycle Management



## Implementation

MLOps cockpit helps enterprises to generate value and minimize operational risk in their data science portfolio. It connects the dots between experimentation and production with key principles of ML and DevOps to make machine learning reusable, synergetic, and continuous (CI/CD/CT). Our Cockpit automates entire ecosystem to ensure uninterrupted, consistent, and efficient business value delivery. This is achieved through **monitoring-reporting** machine learning KPIs along with change in data distribution patterns (**Data Drift**) and efficiently handling it much before they start to affect business health. Our solution shifts the understanding of AI/ML models from a blind folded view to a clear view about the predictions with implementation of **Responsible AI**.



### Data Drift Monitoring

Detecting changes in data distribution pattern over a period of time and automatically triggering the retraining of model if the change in data crosses the defined threshold and also send email alert notification to the intended receivers.



### Cost Monitoring and Analytics

Data stored in the storage from model training is analyzed as per business logic and provides intuition about how well our model is gone a perform in production. It also provides the visualization for cost incurred by each resources involved in ML life cycle.



### Responsible AI

Responsible AI is a governance framework aimed to solve the black-box nature of the AI models. With interpretability, fairness, safety, privacy and error-analysis dashboards, the Cockpit ensures that the models are legally compliant.

## Benefits



### Operational Cost Optimization – ML Resource Cost per Model View

- Monitor AIML resource cost during deployment in Production
- Advisory inputs on the utilization patterns



### Increased Efficiency in System – Continuous Monitoring

- Model Governance and accuracy
- Continuous monitoring of metrics based on model types



### Automation of Pipeline – Initiate Retraining automatically

- Automated CICD deployments after each code change
- Data drift analysis and Associated automated action



### Cockpit Dashboard View – E2E ML Life cycle view

- MLOps dashboard for Business from budget analysis perspective and data privacy and regulations,
- Summarized and granular level view of deployed model health in production



### Increased Accuracy – Only Better model gets deployed

- Model accuracy comparatives
- Model validation with respect to previously deployed model



### Data Drift Detection – Email alert and automatic retraining of CI/CD pipeline

- Integrated security and model fairness features
- Explainability of model outcome with features