Machine Learning Reply

REPLY
MACHINE LEARNING

Agenda

1. Introduction
2. MLOps CoP
3. MLOps Services

Introduction

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Reply industry and technology focus spans diverse expertise - united by digitalization

Reply expertise and diverse services

Internet of Things

- AUTONOMOUS VEHICLES
- INDUSTRIAL SYSTEMS
- CONNECTED PRODUCTS
- ENERGY ECOSYSTEMS
- HEALTHCARE

Industry Platforms

- RETAIL & CPG
- ENERGY
- HEALTHCARE
- TELECOM & MEDIA
- MANUFACTURING & LOGISTICS
- FINANCIAL SERVICES

customer experience

- IMMERSIVE EXPERIENCE
- DESIGN & UX
- VIDEO
- SOCIAL MEDIA & STORYTELLING
- DIGITAL ECOSYSTEM

Intelligent Automation	ARTIFICIAL INTELLIGENCE	Machine Learning
Development & Operations	CLOUD PLATFORMS	Data
Security Operation Center	CYBER SECURITY	Security consulting

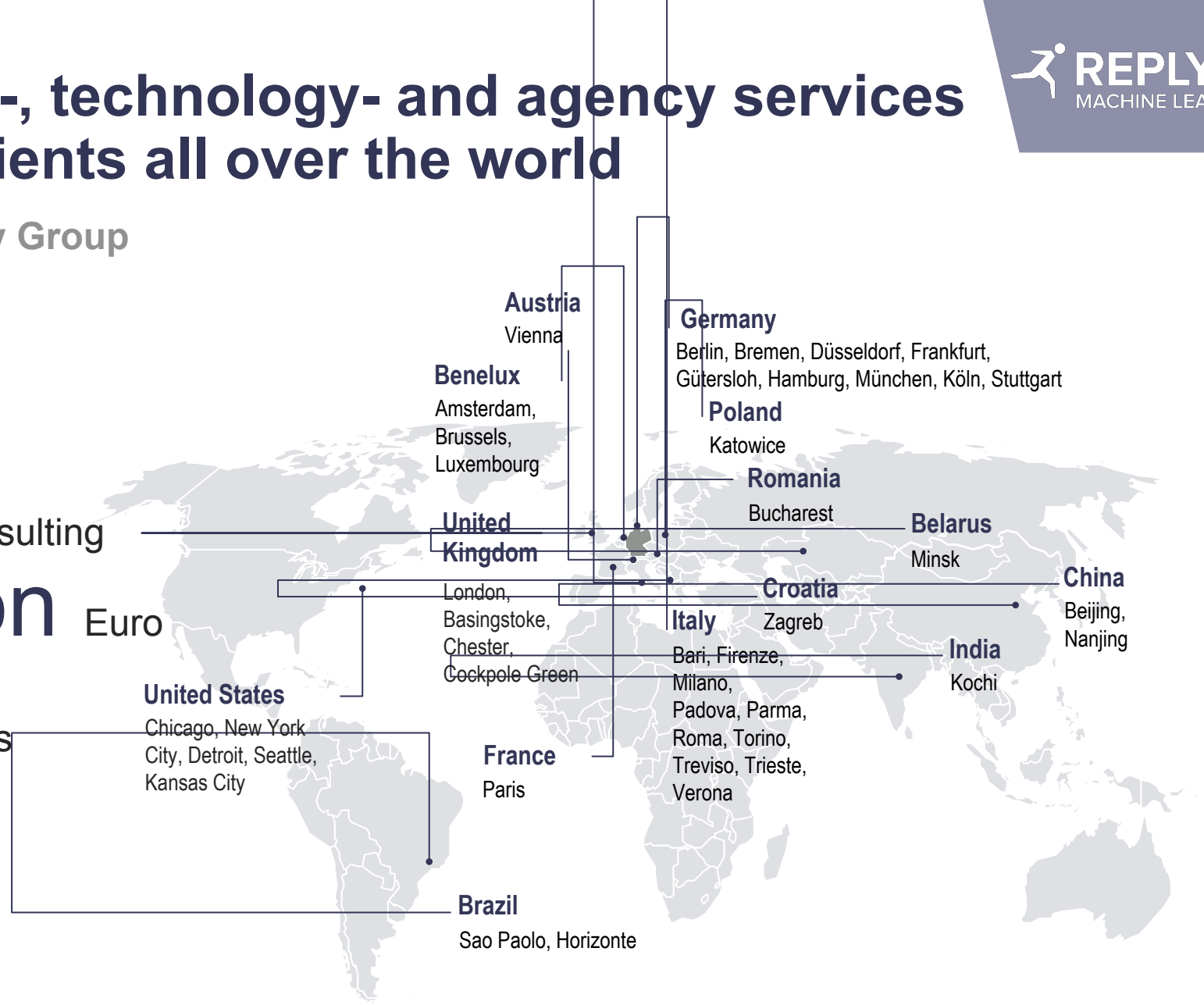
Reply offers consulting-, technology- and agency services across industries for clients all over the world

Global Presence in 2023 of the Reply Group

#1 fastest growing technology consulting firm

Annual turnover of **1.8 billion** Euro

More than **14.000** employees



Our expertise is covering every aspect of transforming businesses into true data driven organisations

Pioneer in AI & ML	Cloud platform design	Business Transformation	State of the art applications	E2E project implementation	Reply innovation culture	Industry Know-How	Technology Partners

1 Consulting / Incubator

Reply supports organisations in setting up data driven businesses while also providing trainings tailored to the clients needs.

2 Analytics Platforms

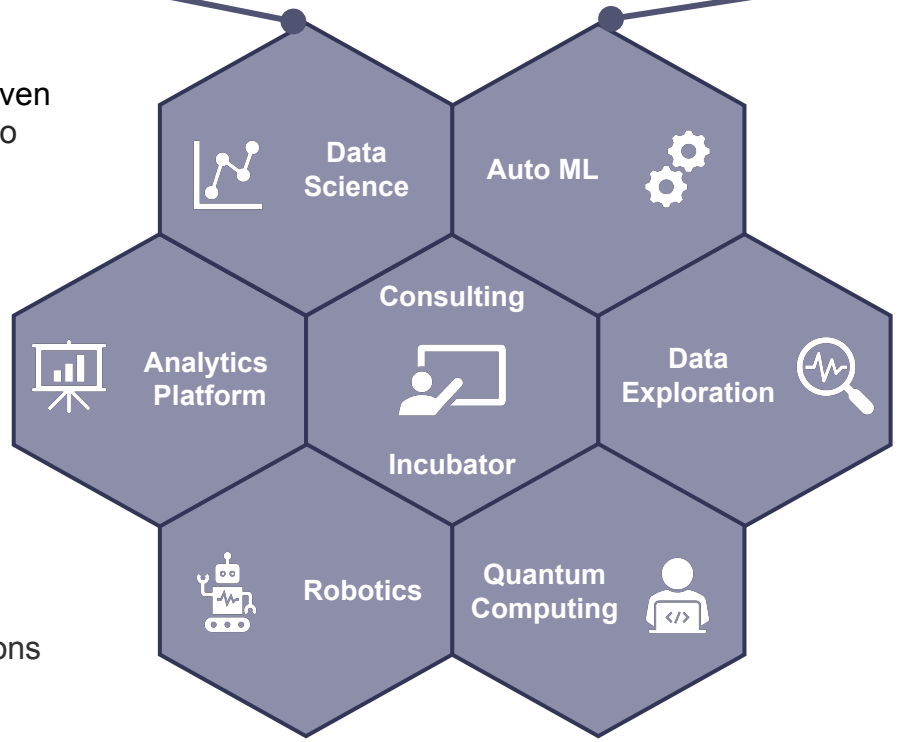
Reply provides services in diverse areas of analytics platforms.

3 Data Science

We support our clients in managing increasing data volumes and variants through Data Science on cloud solutions.

4 Auto ML

Reply strongly believes in the value-added from strategic partnerships and pursues two collaborations in this field.



5 Data Exploration

Reply enables business users to visualize and understand their data in order to become a data-driven organization.

6 Quantum Computing

We offer expertise in classification and dimensional reduction and drive for strategic partnerships.

7 Robotics

Reply has started a collaboration with Boston Dynamics, a leading company in the area of mobile robots.

Customers profit from Machine Learning Reply‘s expertise in AI & ML projects across industries

Non-exhaustive customer selection

Our AI / ML expertise:

- Introduction to **Machine Learning, Artificial Intelligence & Data Science**
- Consulting on **industry situation** for Data Analytics and **AI Business Opportunities**
- **ML automated solutions**
- **Advanced Visualization solutions**
- **(Un-)supervised learning**
- **Neural Networks and Deep Learning**
- **Expanding Use Case implementation & integration knowledge** with example applications like Predictive Maintenance, Natural Language Processing, Image Recognition, Customer Segmentation, Fraud Detection, Churn Predictions, Chatbots, Risk Management, Cross Selling, …

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Additionally to the major players, Reply also counts numerous medium-sized companies among its customers

Non-exhaustive selection of customers (small to medium-sized)

MLOps CoP

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MLOps Community of Practice @ MLReply

Marouen Hizaoui

Sunitha Radhakrishnan

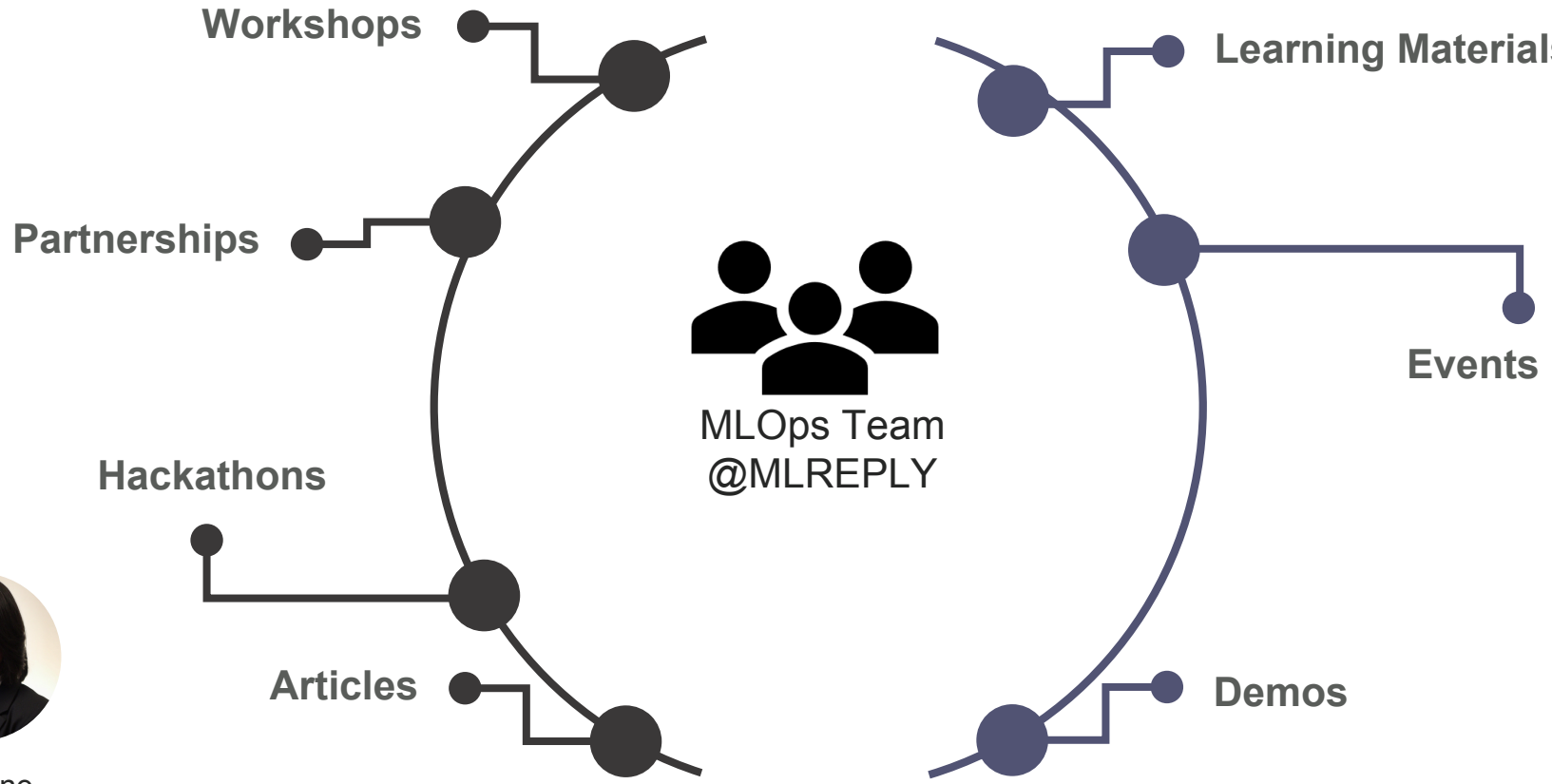
Victor Caceres

Tolga Öztürk

Arun Jayachandran

Raza Ali

Jasmine Padhye



MLOps Services

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Automation in lifecycle of ML applications

Lifecycle unification and process optimization

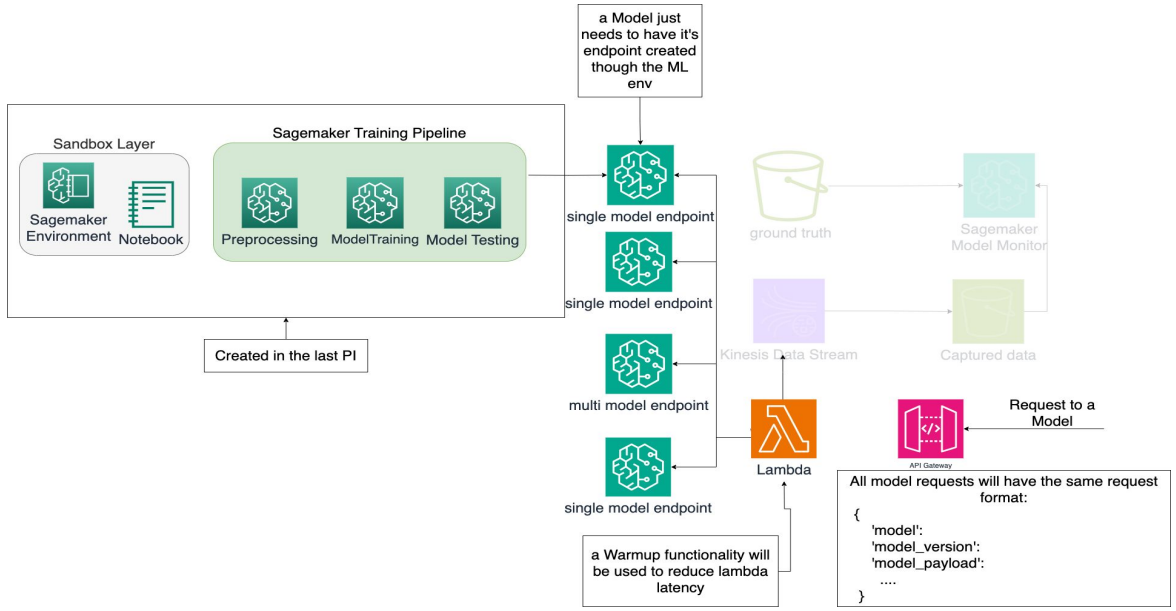
Initial situation and challenges

- Production data inaccessible (security reasons)
- Different DS dev environments with many limitations
- A lot of **manual effort** to train ML models
- A lot of dependencies and delays in ML models deployment(Months)

Approach and result

- Creation of sandbox environment with Model dev capabilities and access to prod. Data in a secure way.
- Model deployment automation
- Dedicated API for model access from the different services
- Model performance monitoring
- Cost efficient and maintainable ML platform

Overview



Acceleration of data product shipment

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Platform Scope, Design and Implementation

Initial situation and challenges

- Models created but not used
- Fully manual DS process
- Locally developed dashboards

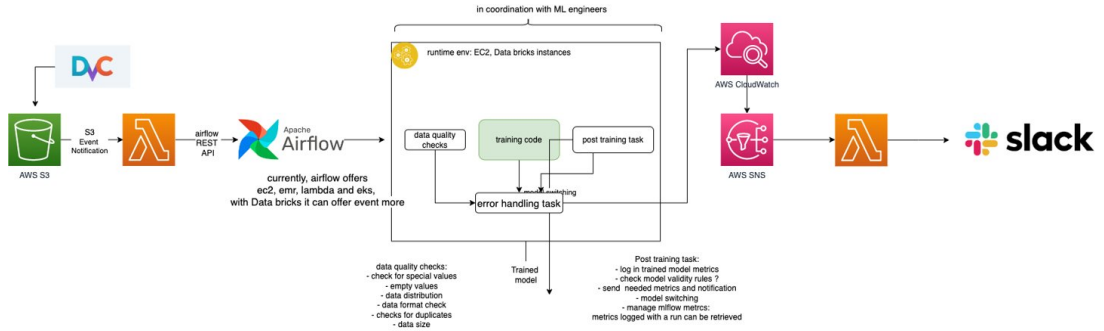
Approach

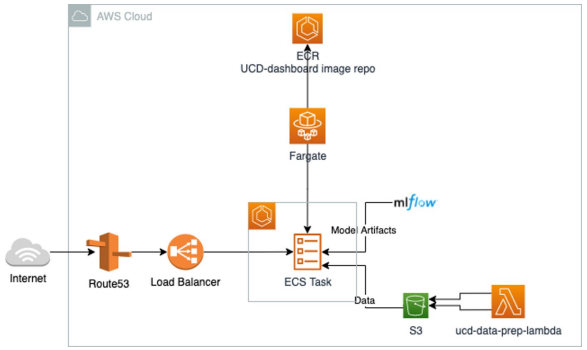
- Introduce the concept of Data products
- Leverage IaC blue print templates for different types of Data products
- Have MLOps principles integrated by designs

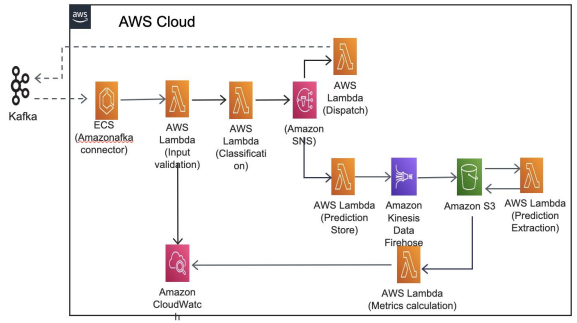
Result

- Fast shipping of Data products (from months to days)
- Quick disaster recovery
- Efficient model redeployment, update and monitoring
- Data products accessibility and availability

Overview







Continuous Integration / Continuous Deployment (CI/CD)

Automatic Code Change Identification, Code Quality Check, Test, Build, and Deployment

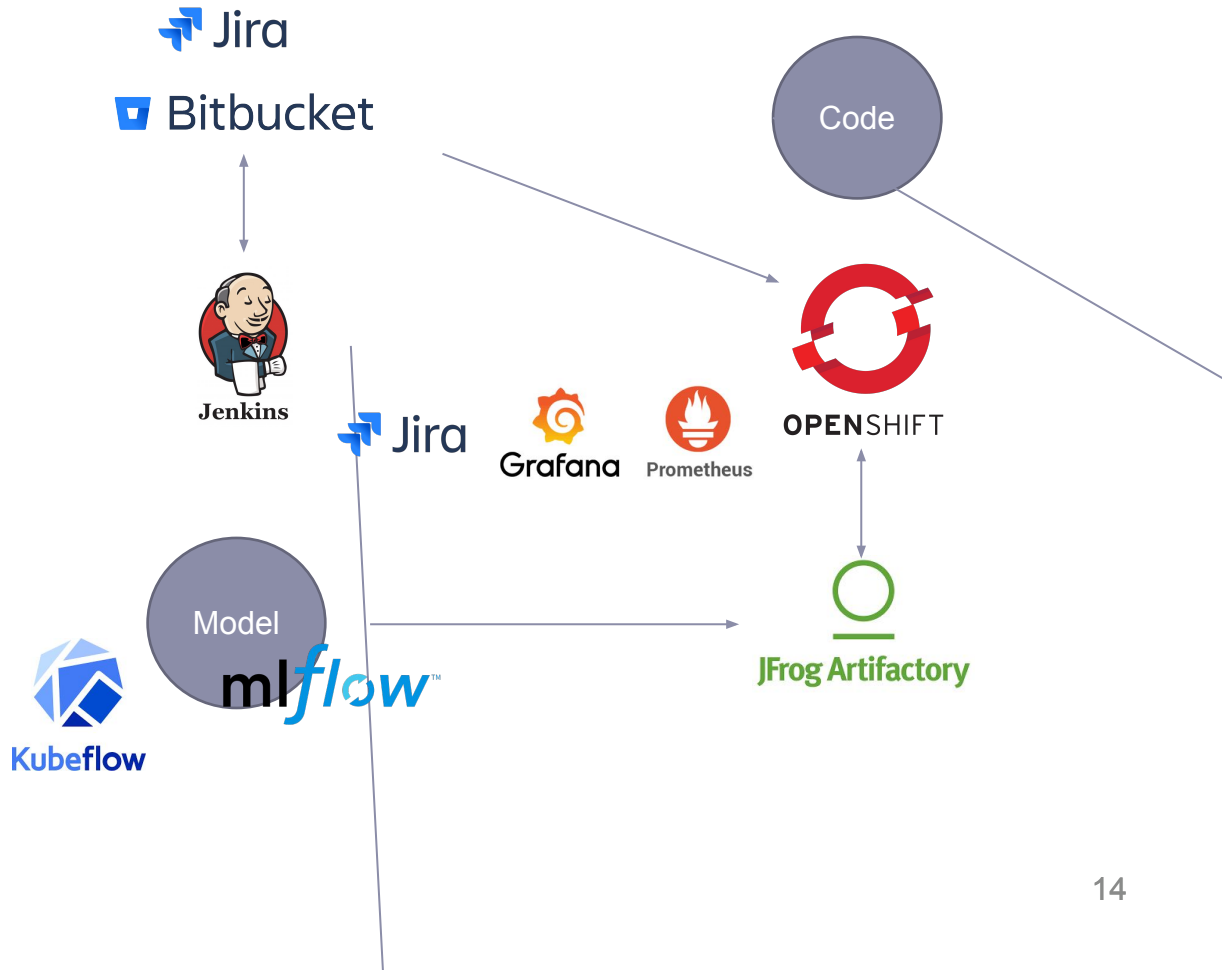
Initial situation and challenges

- No **automatic CI/CD pipeline** was in place
- Build and deployments were done manually
- No **code quality** standards were used
- **Tests** are performed manually with no guidelines
- No visibililty over model performance

Approach and result

- The new CI/CD is designed and implemented with complete set of stages for linting and testing using **Jenkins**, **Git**, **Bash**, **Openshift**, **Pylint**, **MyPy**, **pytest**
- Significant decrease in time-to-develop and **time-to-release**
- **Model Monitoring** with ticketing

Overview



Code unification while holding up flexibility

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ML Platform

Initial situation and challenges

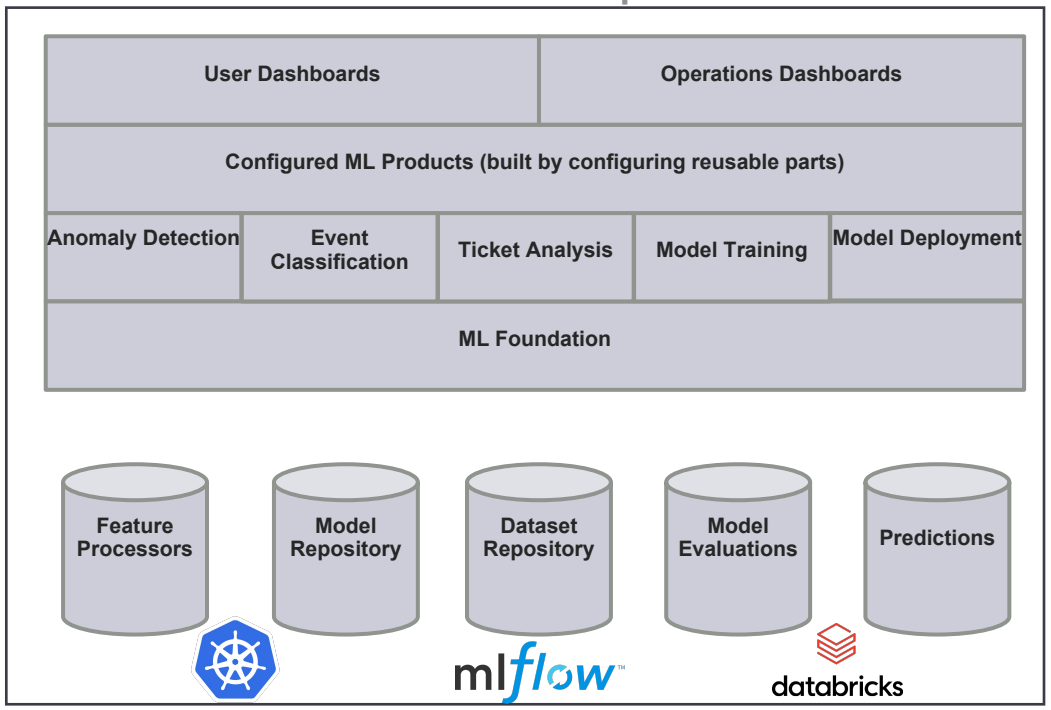
- Developing Machine Learning applications and **deploying** them to production initially took quite **long (~90 days)**.
- Main challenge was to **separate generic code** from application specific code while keeping enough **flexibility** for arbitrary use cases.

Approach and result

- General services for accessing the Hadoop cluster and source systems and executing **reusable pipelines**.
- Increased platform adoption within the company and **reduced model development cost** (~70 models in production with a time to deploy of ~21 days)
- Create actual ML products mainly by selecting the needed the pre-processing steps and model types from the available repositories

Overview

ML Platform built on reusable components



Thank you!

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Machine Learning Engineer (m/f/d)

Data Scientist Consultant (m/f/d)

…and many more on *https://machinelearningreply.recruitee.com*

WE ARE HIRING!

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