



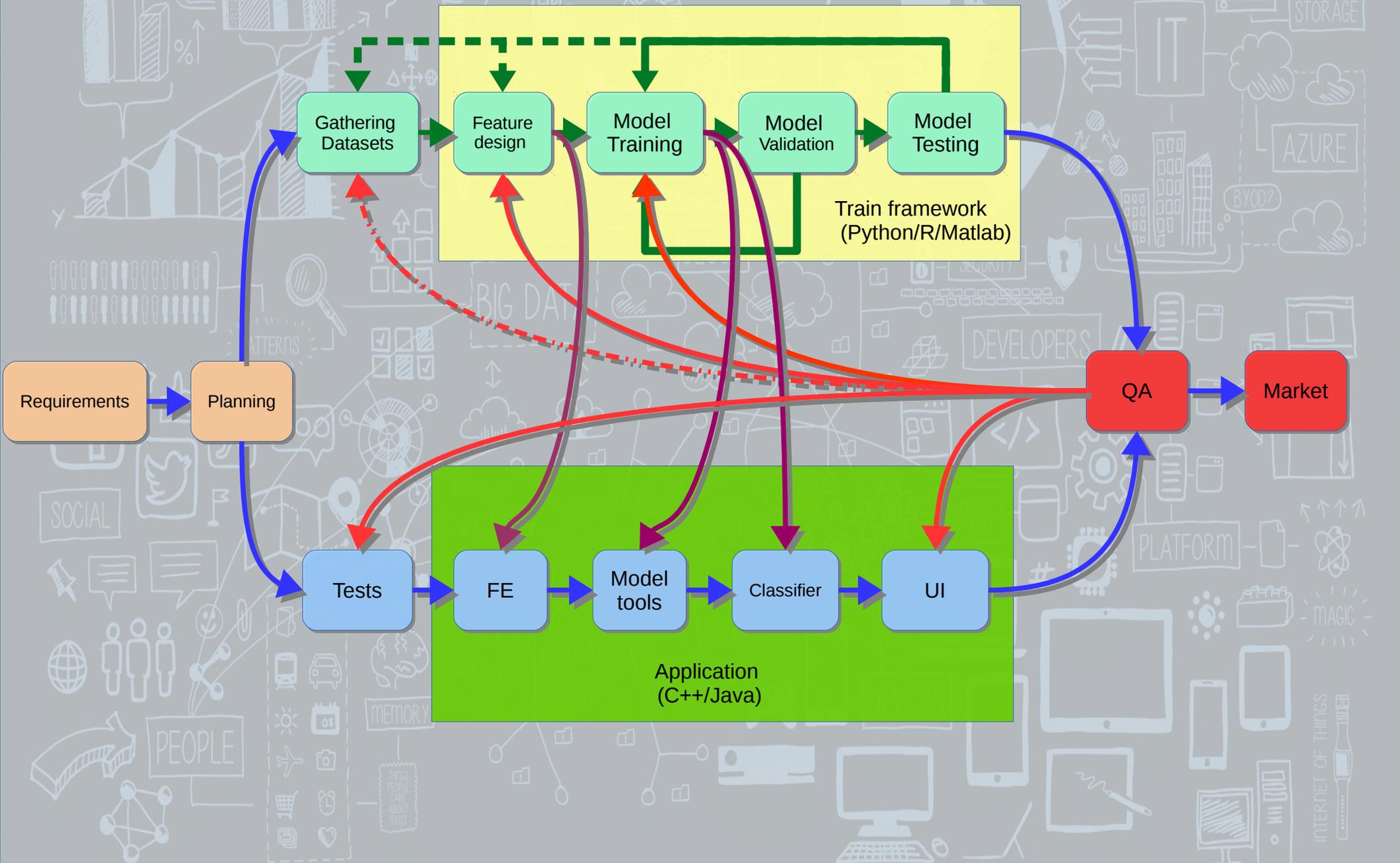
# Continuous Machine Learning

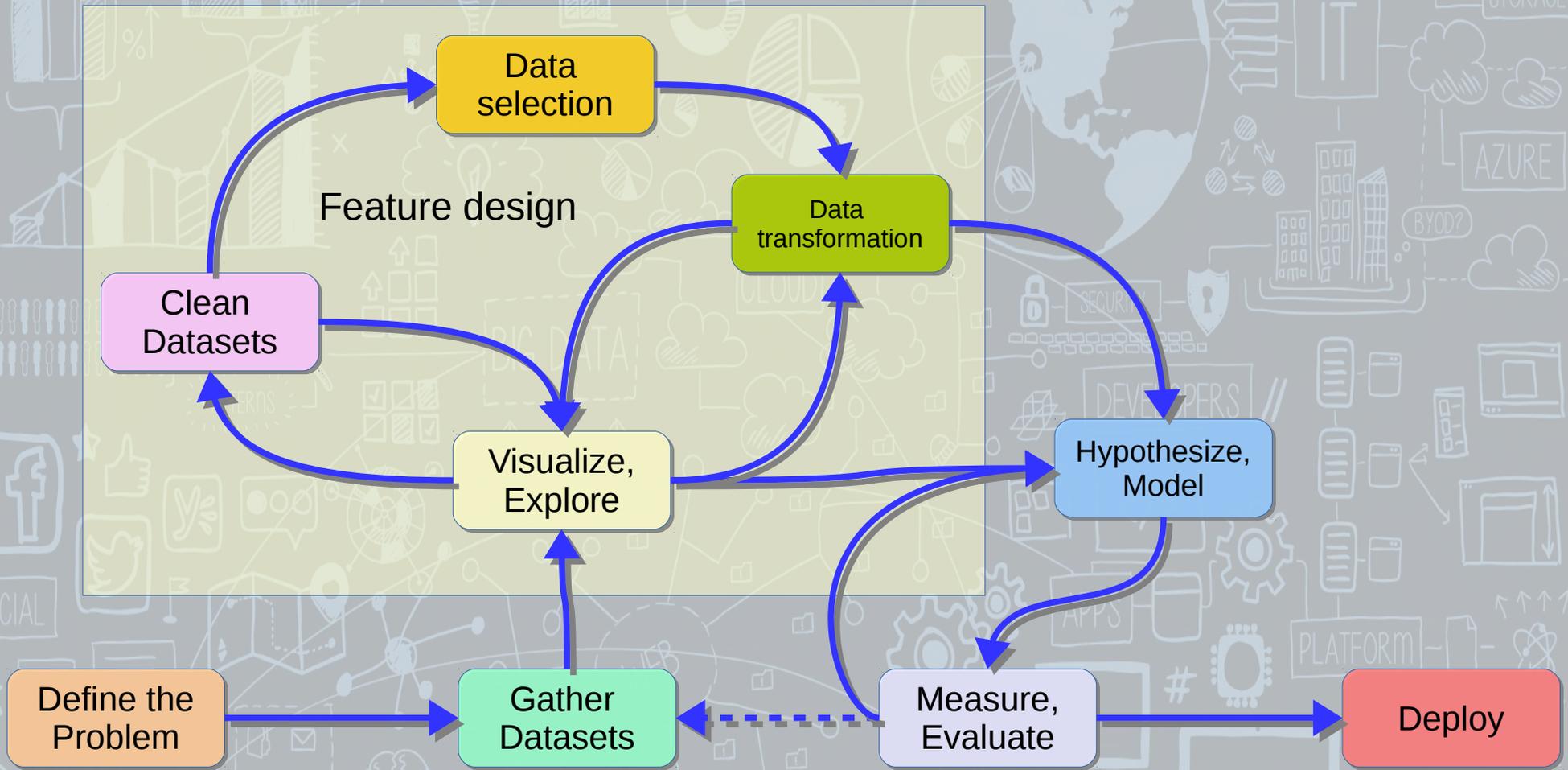
**Kostiantyn Bokhan, PhD**

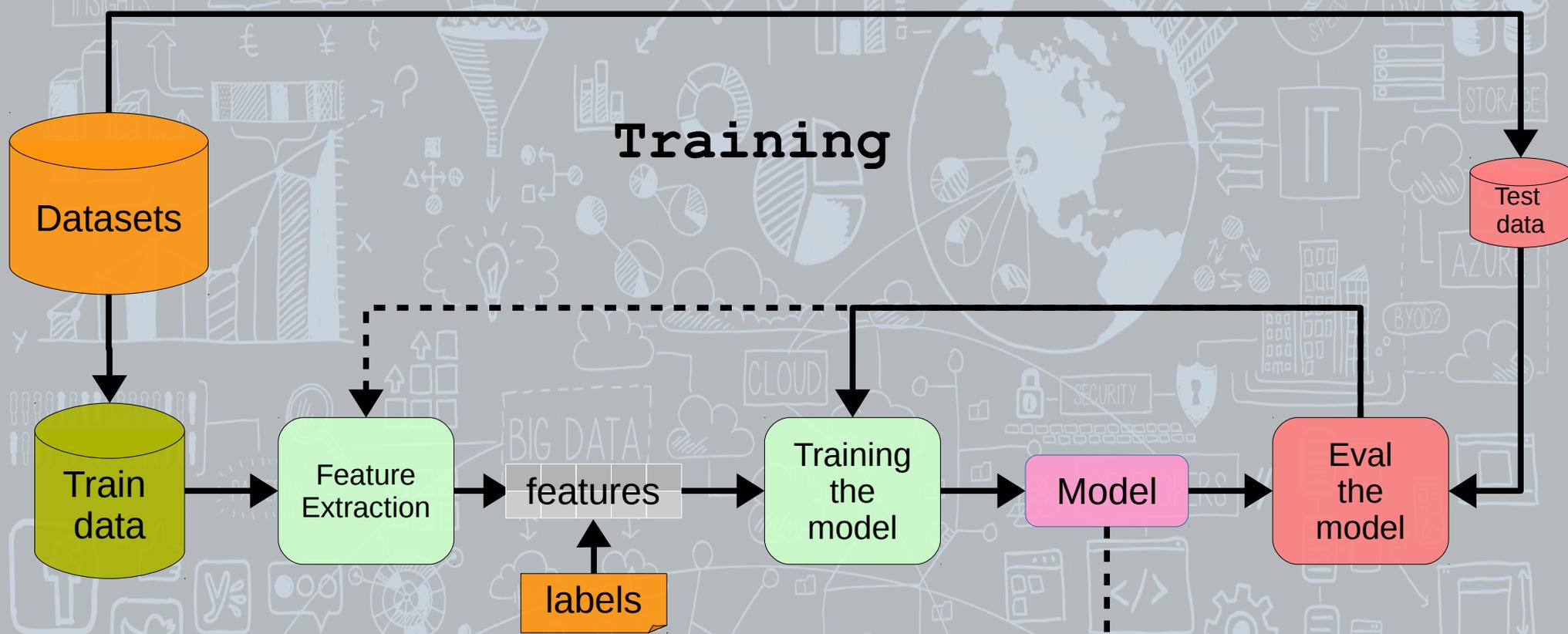
*Project Lead at Samsung R&D Ukraine*

Kharkiv, October 2016

- **ML dev. workflows**
- **ML dev. issues**
- **ML dev. solutions**
- **Continuous machine learning (CML)**
- **Aspects of CML**
- **CML infrastructure**
- **CML – delivery**

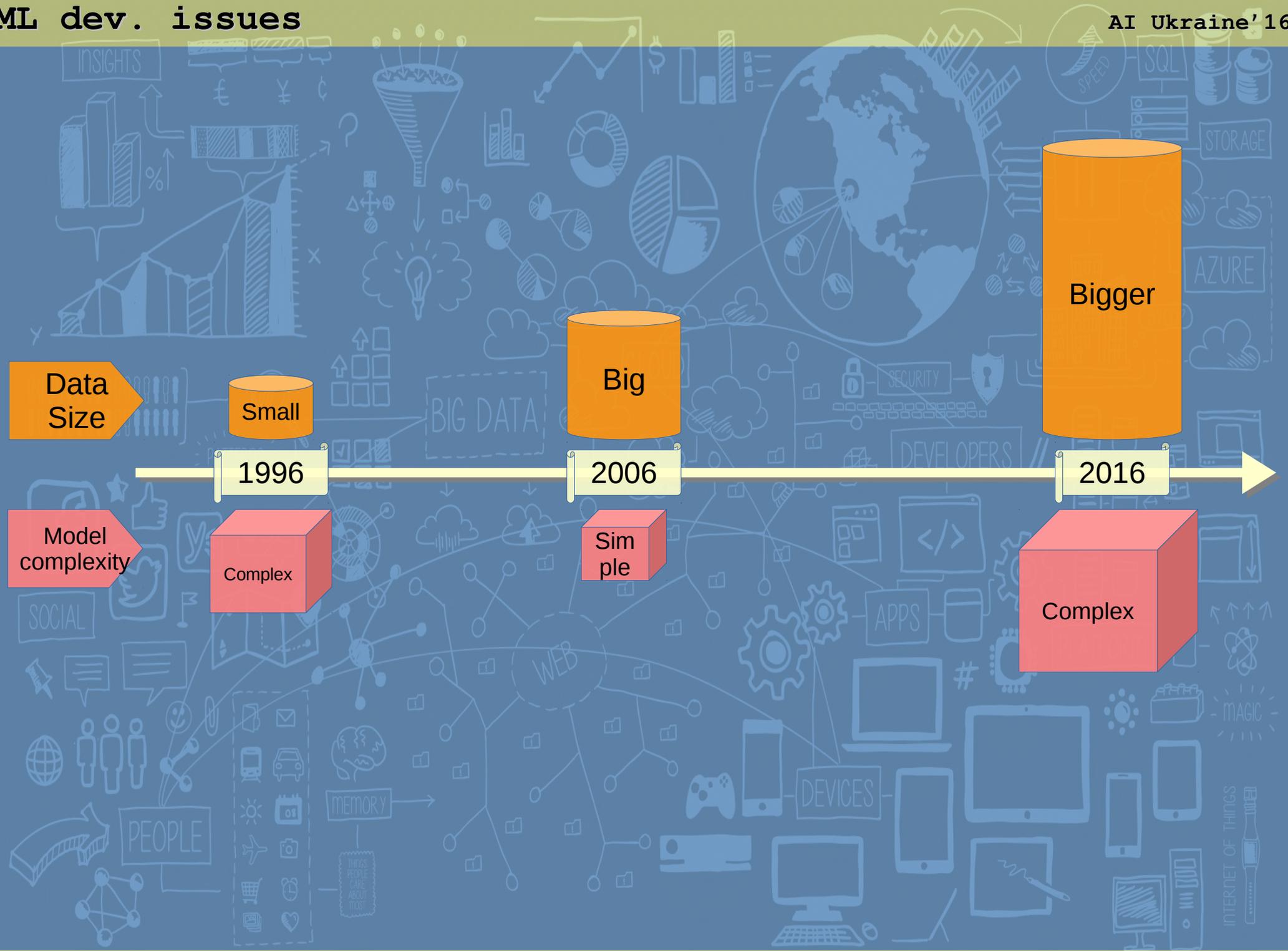




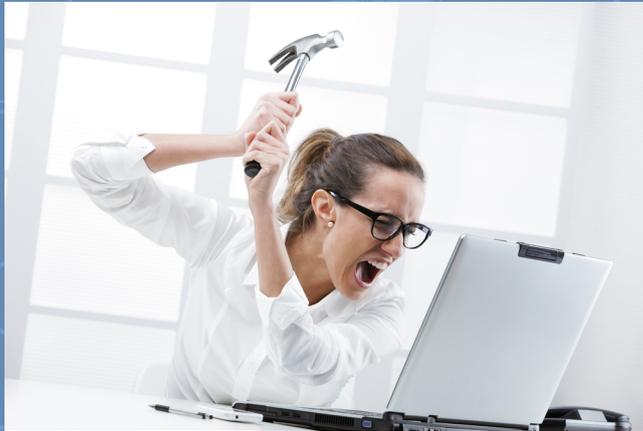


# Training

# Predicting

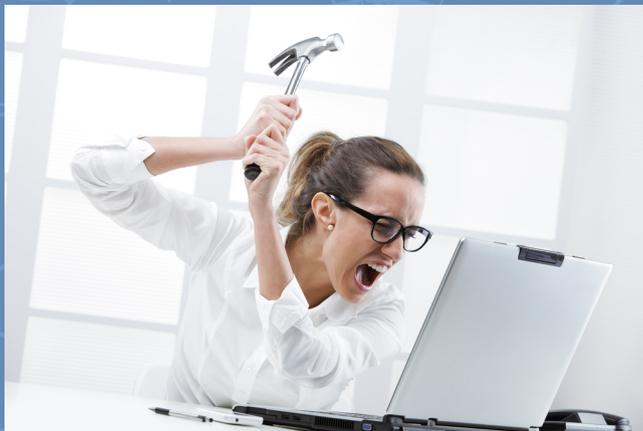


# Performance



## Machine Learning on PC

# Performance

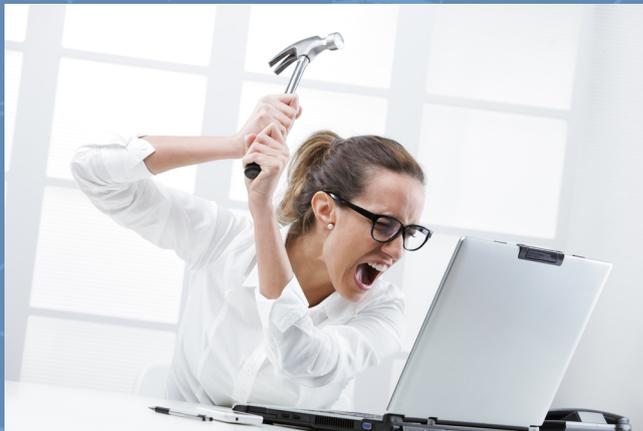


Machine Learning on PC



Machine Learning on AWS

# Performance



Machine Learning on PC

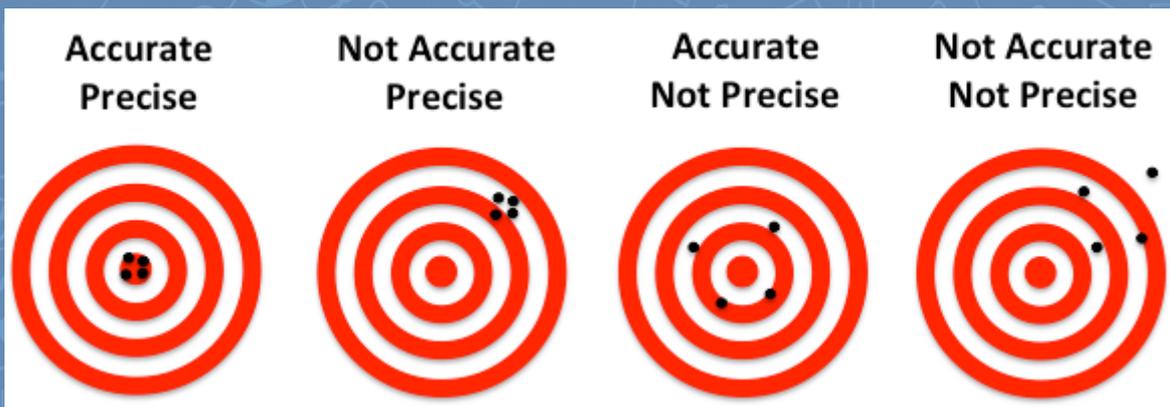


Machine Learning on AWS



Machine Learning on dedicated cluster

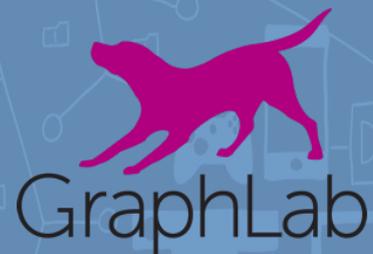
# Uncertainty



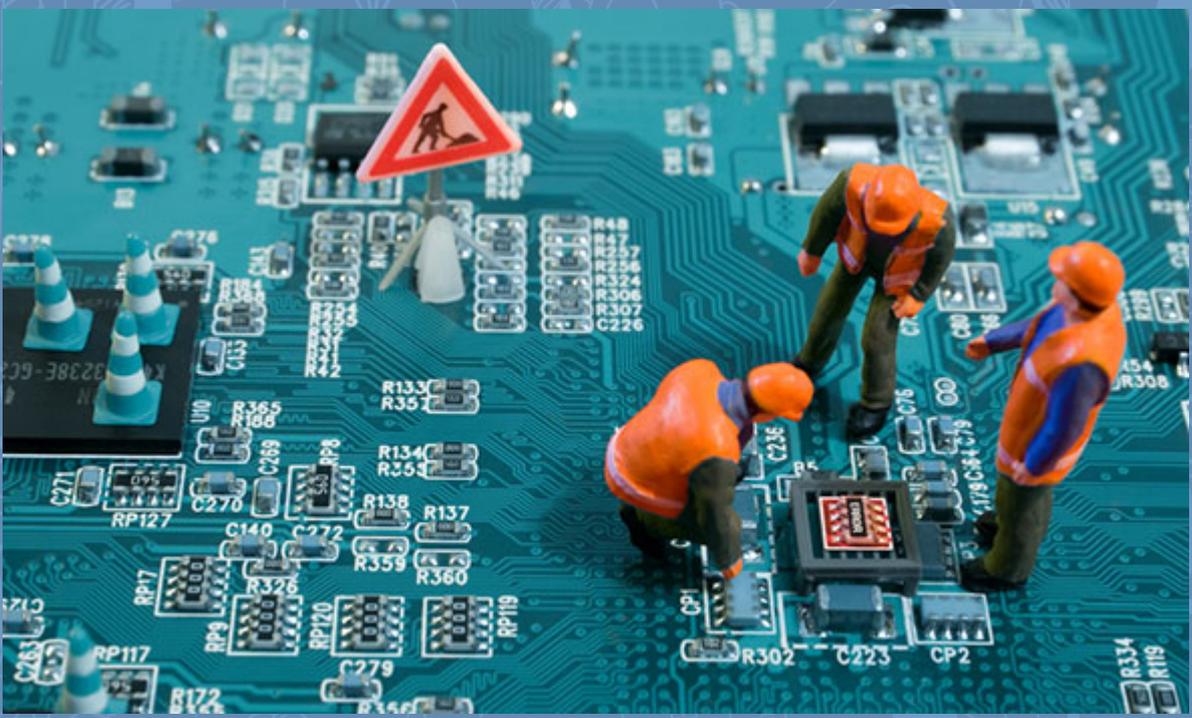
variety



DEEPLARNING4J



# Reliability



# Resource management



# Performance



GRID ENGINE



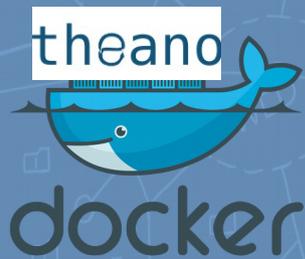
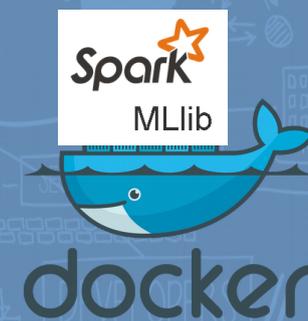
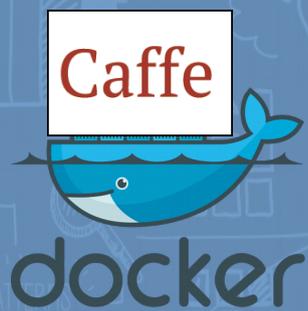
# Performance + Reliability



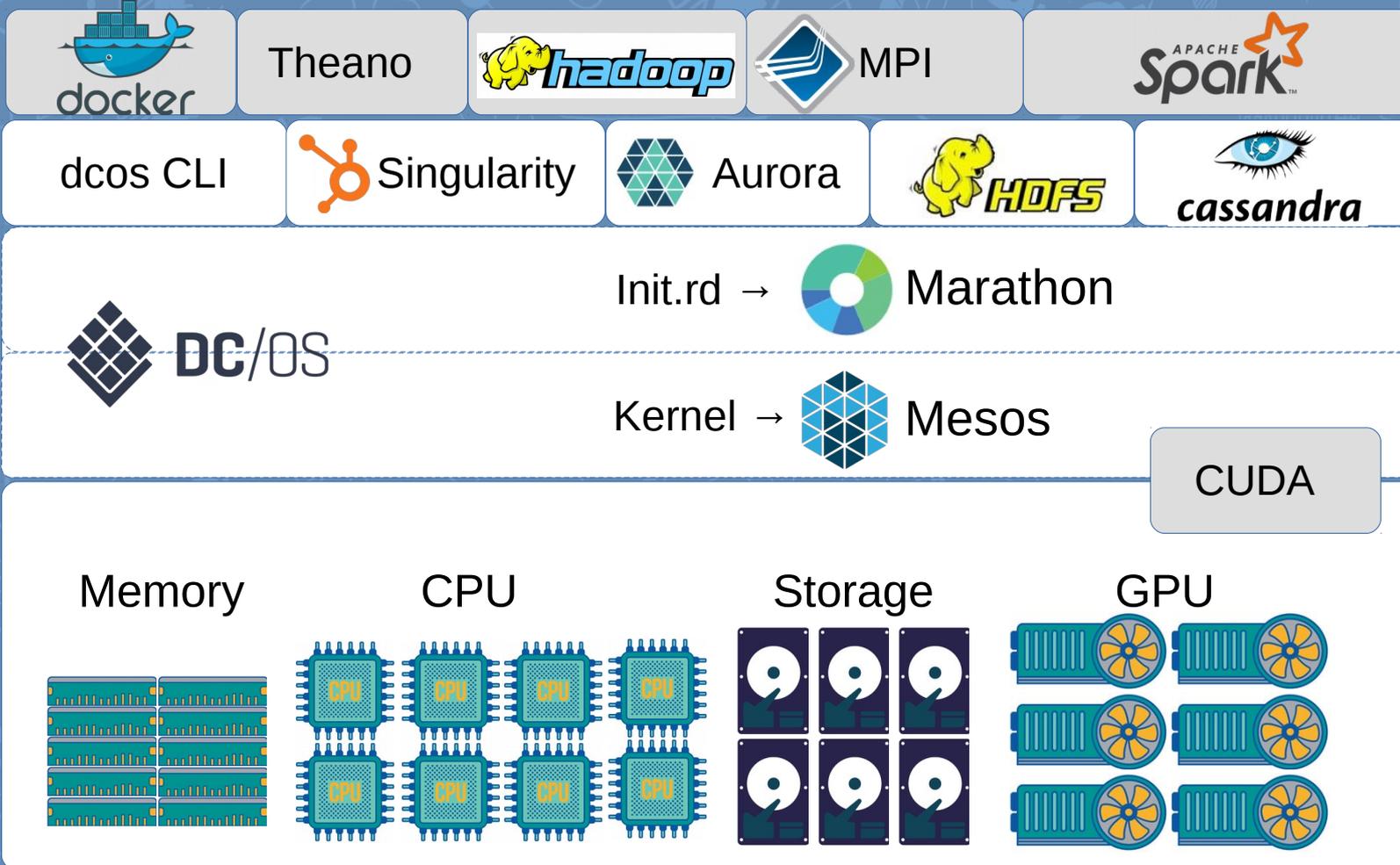
+



# Variety



# Resource management





Mesosphere Enterprise DC/OS is an enterprise grade datacenter-scale operating system, providing a single platform for running containers, big data, and distributed apps in production.

## Services & Applications

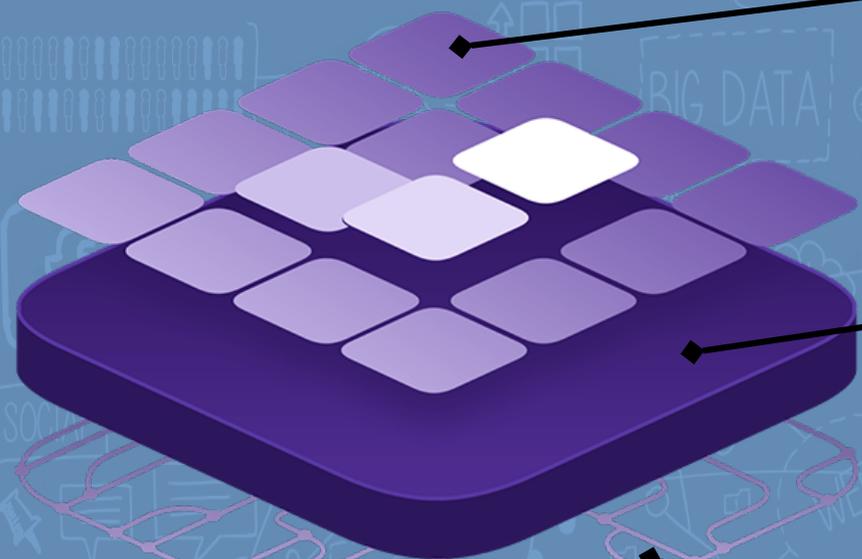
Easily deploy and run datacenter-wide app services such Docker, Cassandra, Spark pooled on a single platform

## DC/OS Powered by Apache Mesos

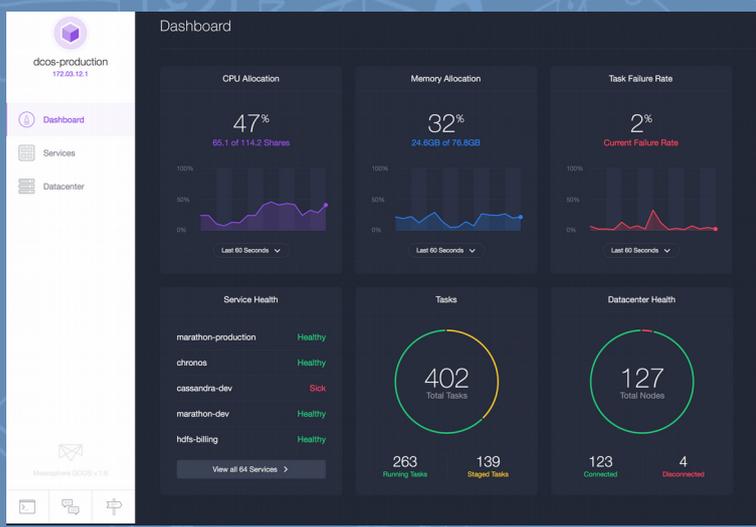
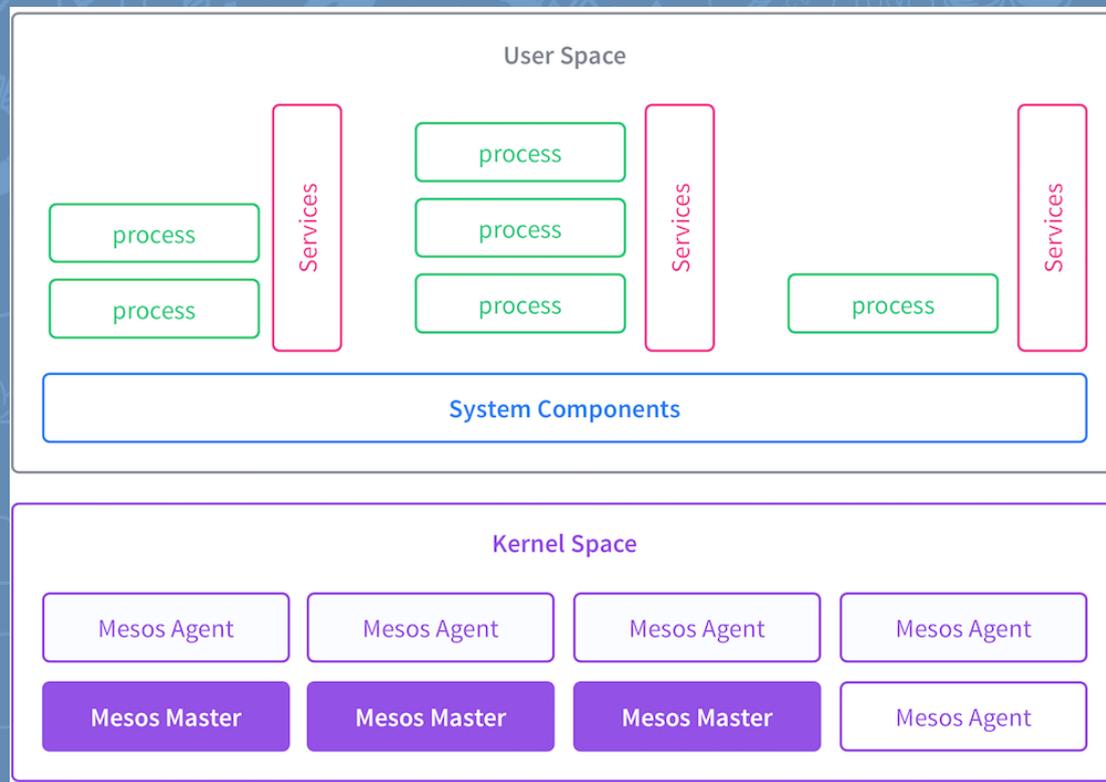
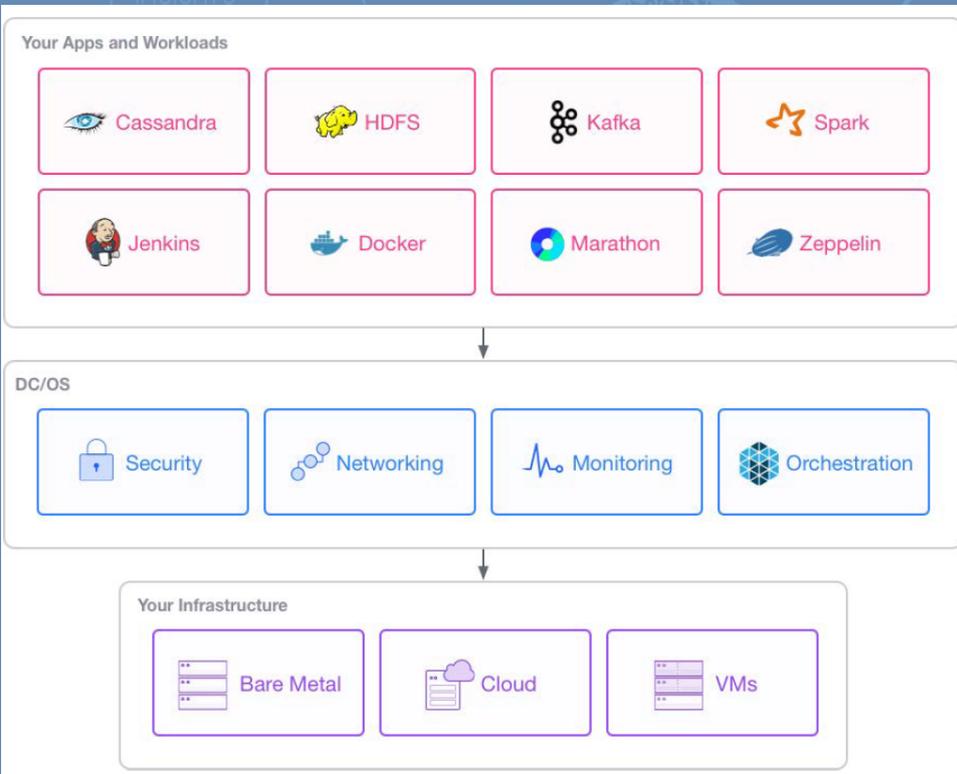
Runtime, tools and best practices built-in to simplify operations and deliver a production self-healing infrastructure

## Run Anywhere

Bare-metal, virtual, cloud or hybrid – DC/OS runs on it all – only requirement is a modern Linux distro, Windows support coming soon :)

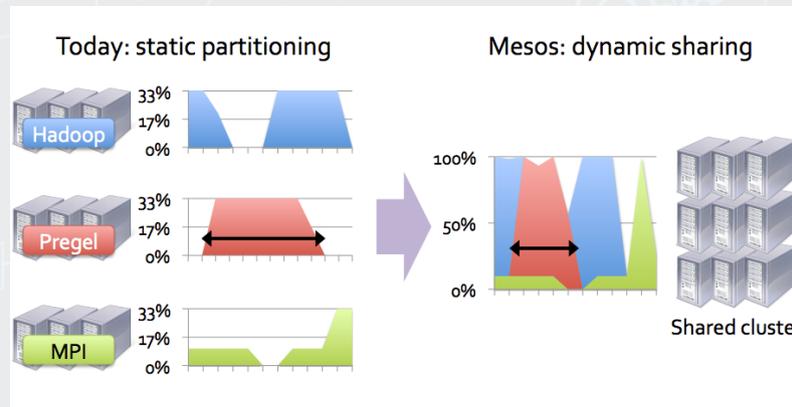
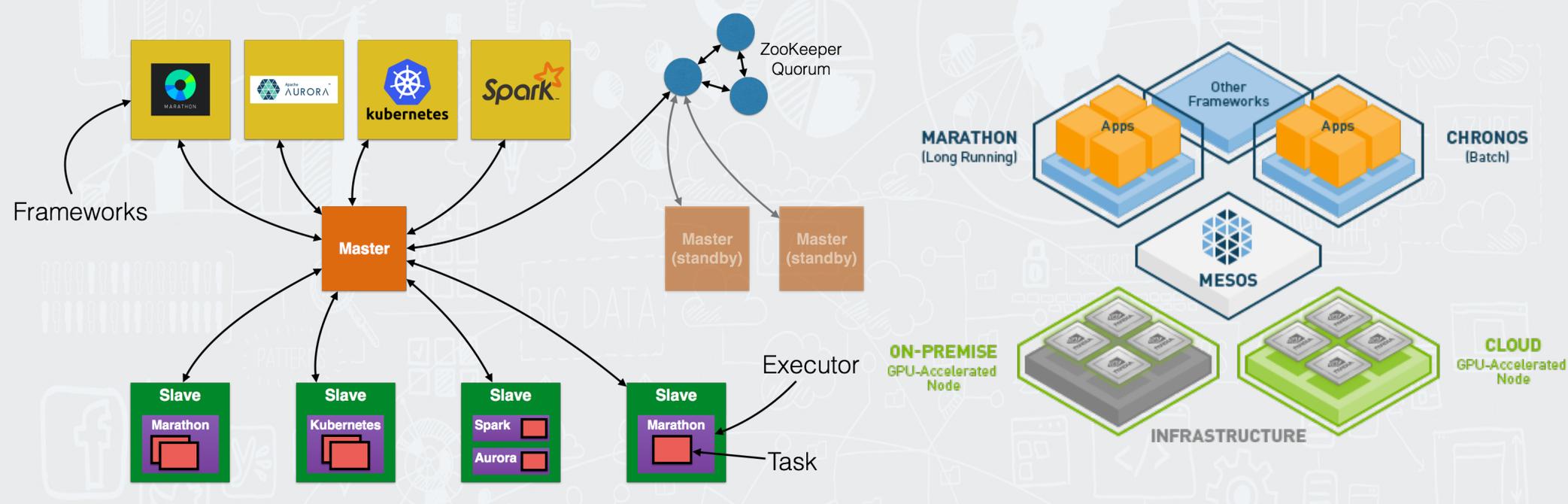


Source: <https://dcos.io/docs/1.8/overview/architecture/>



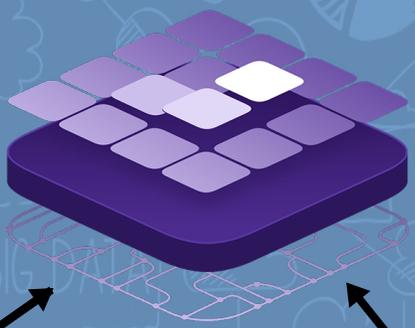
Source: <https://dcos.io/docs/1.8/overview/architecture/>

Apache Mesos is the open-source distributed systems kernel at the heart of the Mesosphere DC/OS. It abstracts the entire datacenter into a single pool of computing resources, simplifying running distributed systems at scale.

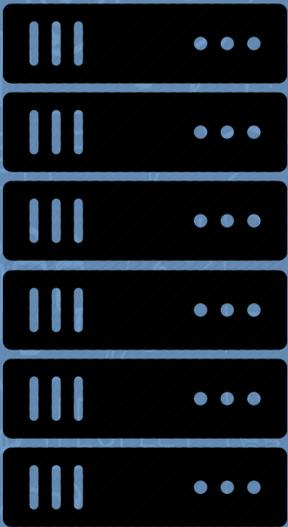


Sources: <http://nvidia.com>, <http://blog.arungupta.me/docker-apache-mesos-marathon/>

# Hybrid



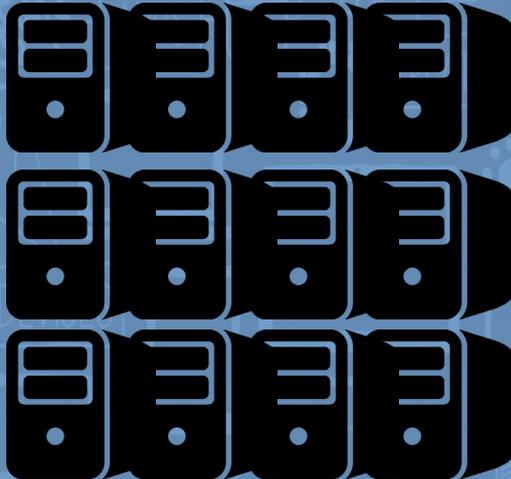
Virtual nodes



Test devices



Bare-metal nodes with GPU





**Continuous**

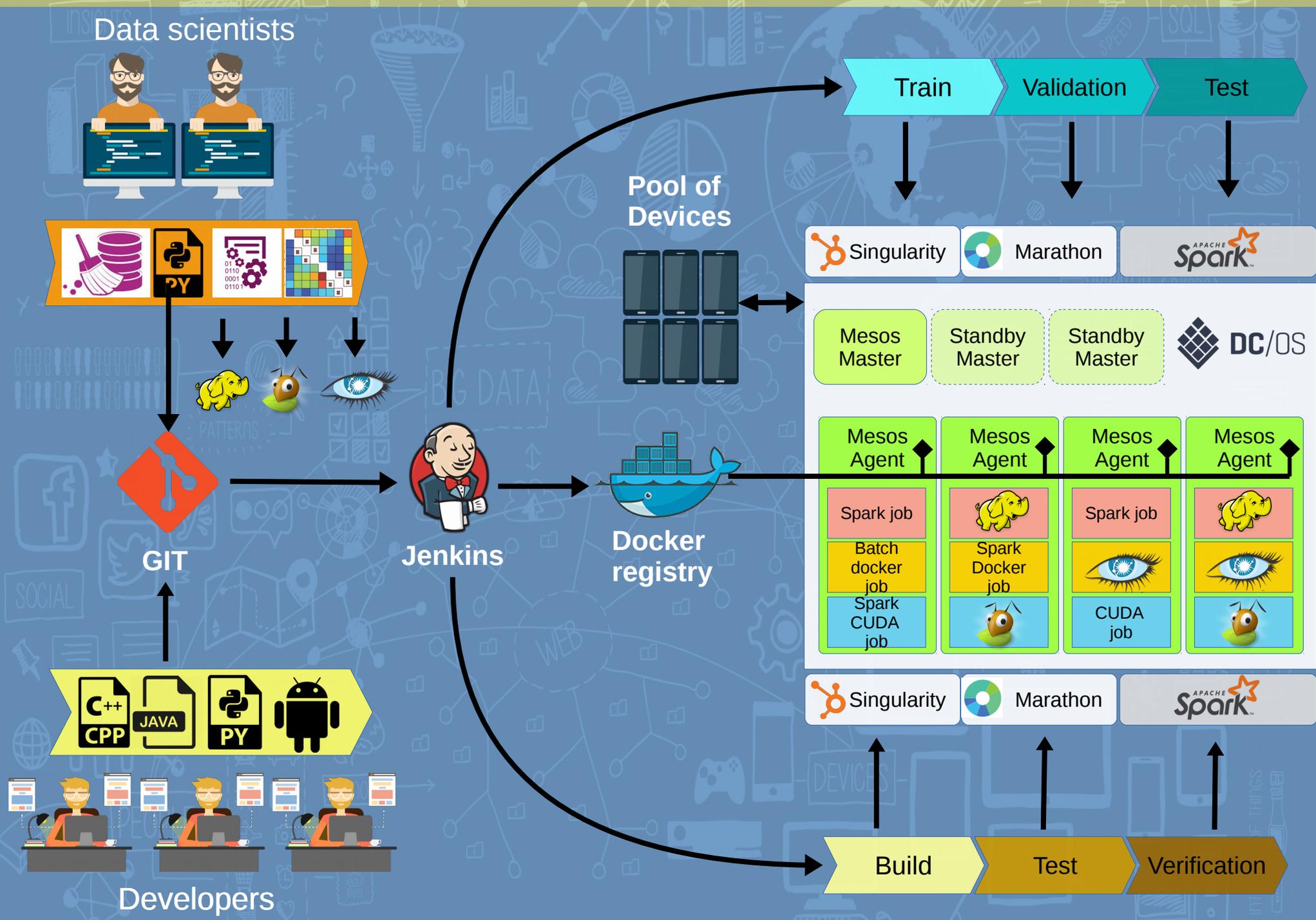
**Continuous  
Development**

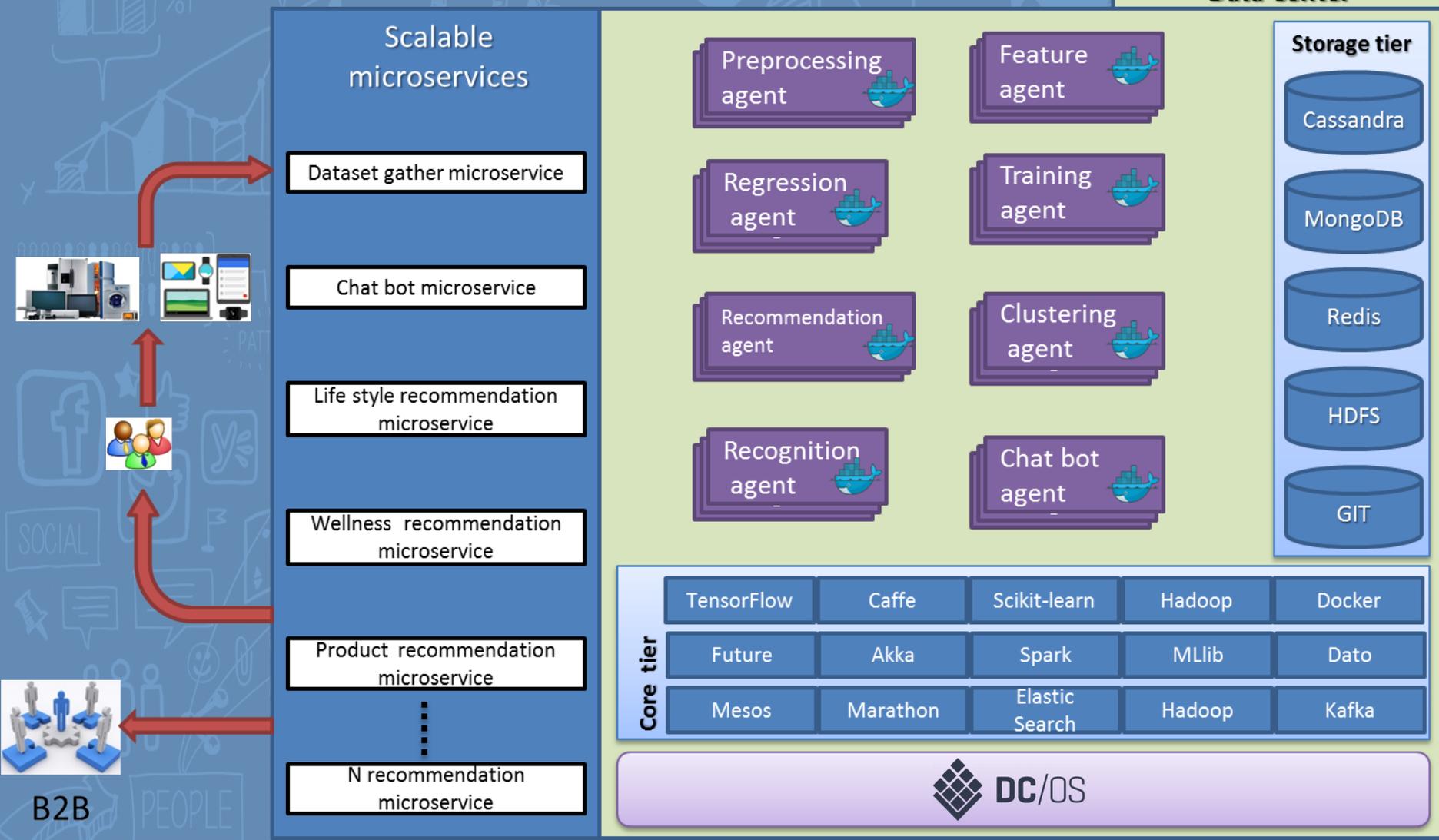
**Continuous  
Integration**

**Continuous  
Deployment**

**Continuous Delivery**

**Continuous Everything**





B2B

