

# MITP Infrastructure Technologies

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# Overview

Our mission is to establish a long-term incubator for creating and nurturing innovative projects which address various complex challenges in the area of architecting and constructing cloud infrastructure of the future

We are focused on optimization of cloud infrastructure, identification of re-usable architectural patterns and best-practices

# Organization goals

- Study modern infrastructure technologies and solutions including virtualization, containers, orchestration and etc.
- Research of strategy and methodologies for optimal management of container-based infrastructure lifecycle
- Research of emerging software architecture paradigms like microservices and serverless
- Research of cloud workload acceleration

# Focus areas in 2017

- Containers

Containers have become an indispensable ingredient of modern IT systems

- Machine Learning/Deep Learning

With the rise of machine learning and deep learning, it might be practical to adopt these technologies to lifecycle management of infrastructure solutions for optimal use of resource

- Blockchain

Blockchain becomes an underlying decentralized platform for multiple applications in financial sector, banks, markets and etc

- Hardware acceleration

Cloud workload acceleration with FPGAs and GPUs

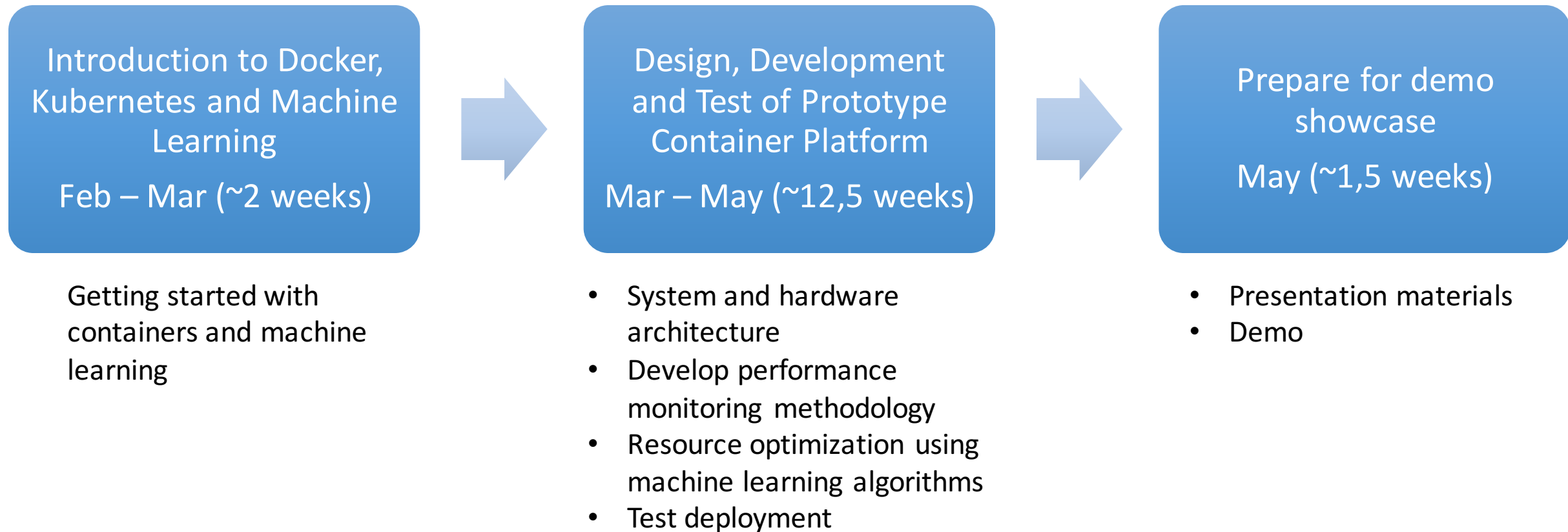
# Project: Private blockchain-based system with containers and machine learning

- Design and implement a platform for Blockchain-based solutions using Docker containers with Kubernetes
- Use machine learning algorithms to manage this platform in the most resource-effective way
- High performance hardware architecture with workload acceleration on GPUs and FPGAs
- Timeframe: 2 semesters
- Team: ~13 people
- Skills/Expertise: Python/Golang/NodeJS/Machine Learning/Algorithms

# Technologies/Platforms

- Container management systems: Docker/Kubernetes/OpenStack
- Monitoring: Prometheus
- Stream Processing Systems and analytics: Apache Spark
- Cloud Providers: IBM Bluemix/AWS/MIPT Cloud
- Hardware: FPGA, GPU
- Blockchain technology: Ethereum/Hyperledger

# Roadmap, Feb-May 2017



# Roadmap (cont-d), Sep-Dec 2017

