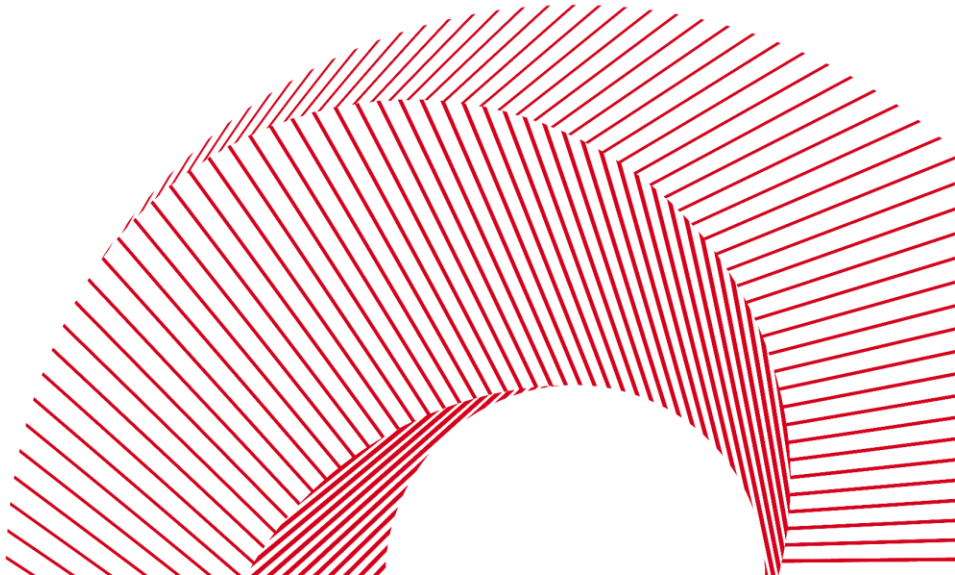
MOBIS

ML-Ops – End year report 2023

2023.12.12

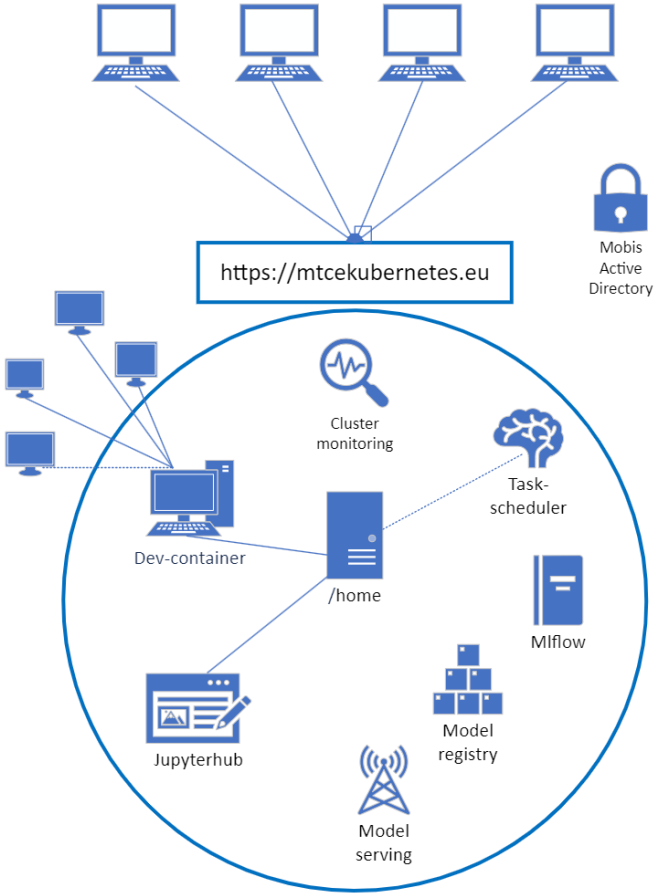
Camera Department



1) Kubernetes Cluster Overview

The Kubernetes cluster manages the GPU-Server Infrastructure of the Camera Department
It provides services for data pipelines (ingress & anonymization), training and job scheduling.

High-level Overview



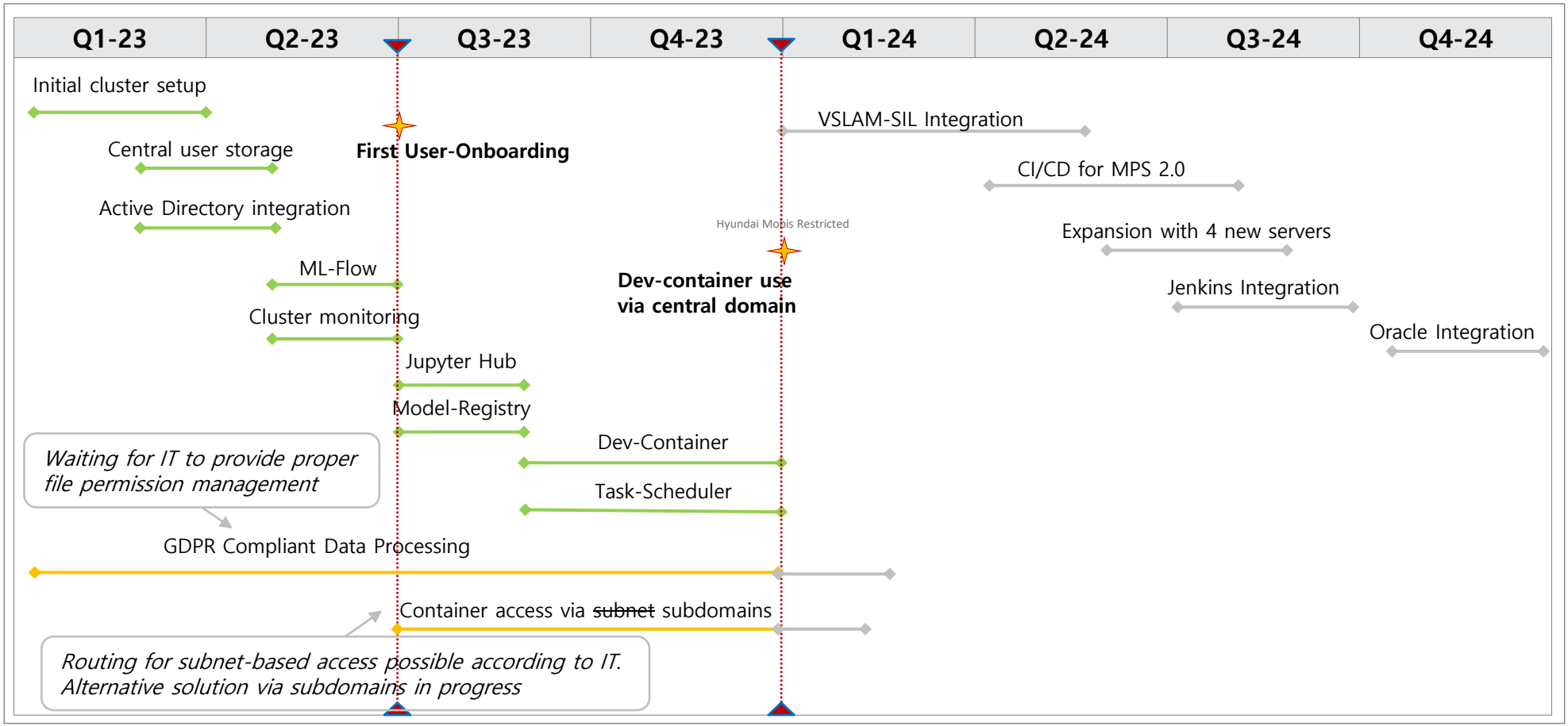
Completed Tasks in Detail

1. Access to all services through a single domain
2. Integration with Active Directory Services to re-use existing authentication mechanisms
3. Central user storage for data access throughout all services for consistent user experience
4. Cross-team collaboration and optimized resource usage
   - Processing and anonymization of raw vehicle recordings by the data team
5. Dev-Containers: Pre-configured development environments that run inside the cluster
   - Instant setup: preinstalled environments for instant project launch.
   - Cost savings: Reduced need for physical workstations
6. Cluster Monitoring: Central service to monitor all server resources (e.g. GPU, RAM, CPU utilization)
7. ML-Flow for tracking neural network development
8. Model Registry: Allows serving existing models via a Web-API. Example: Segment Anything (used for GOD)
9. Jupyter hub: Collaborative web-based environments for data science and interactive programming

2) Kubernetes Cluster Implementation

- The most important features of the cluster have been implemented.
- GDPR compliant data processing is delayed because of insufficient support by IT.
- In the following year it will be extended with more compute, CI/CD pipelines.

Timeline 2023-2024



The one for all mobility