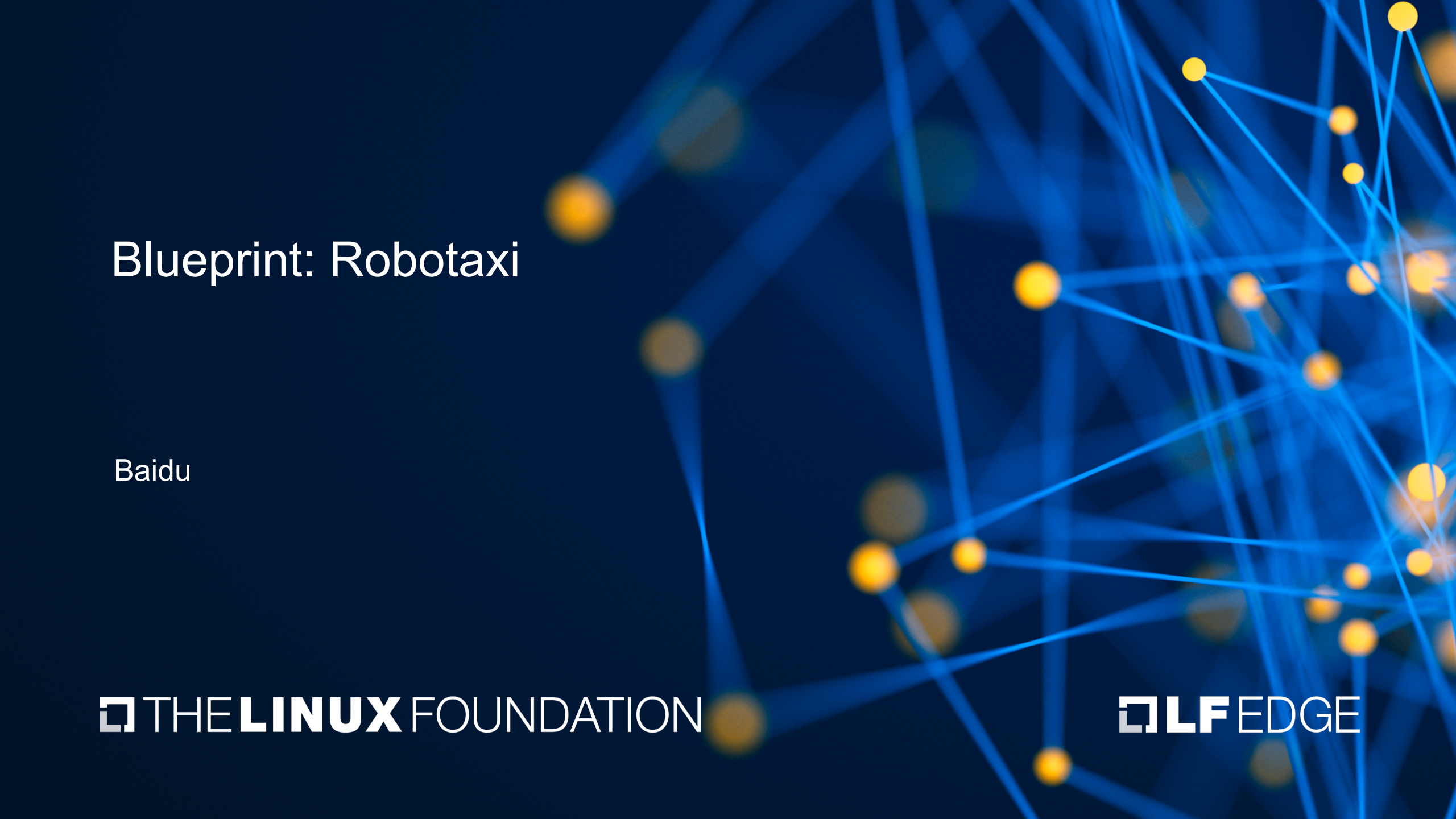
Blueprint: Robotaxi

Baidu



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General Blueprint Introduction

- The Robotaxi Blueprint focuses on establishing an open source MEC platform combined with AI capacities at the autonomous driving scenario.
- The first release of the Robotaxi Blueprint is targeted at Q2, 2020.
- The Robotaxi Blueprint is sponsored by Baidu, Intel, Arm, and Vmware.
- Contact: Hechun Zhang (zhanghechun@baidu.com)
- Refer to: https://wiki.akraino.org/display/AK/The+AI+Edge%3A+RoboTaxi

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Blueprint Use cases

■ Urban Scenarios with autonomous driving vehicles

Avoiding blind spots or safer autonomous driving and accelerating efforts in implementing driving fleet solutions.

- Autonomous drive sharing: reducing the cost-per-kilometer by 50% compared to current private car and taxi costs
- Low-speed unmanned logistics vehicles
- Unmanned minibuses in closed parks
- Unmanned buses on city roads

autonomous ride sharing

low-speed unmanned logistics vehicles

unmanned minibuses

unmanned buses

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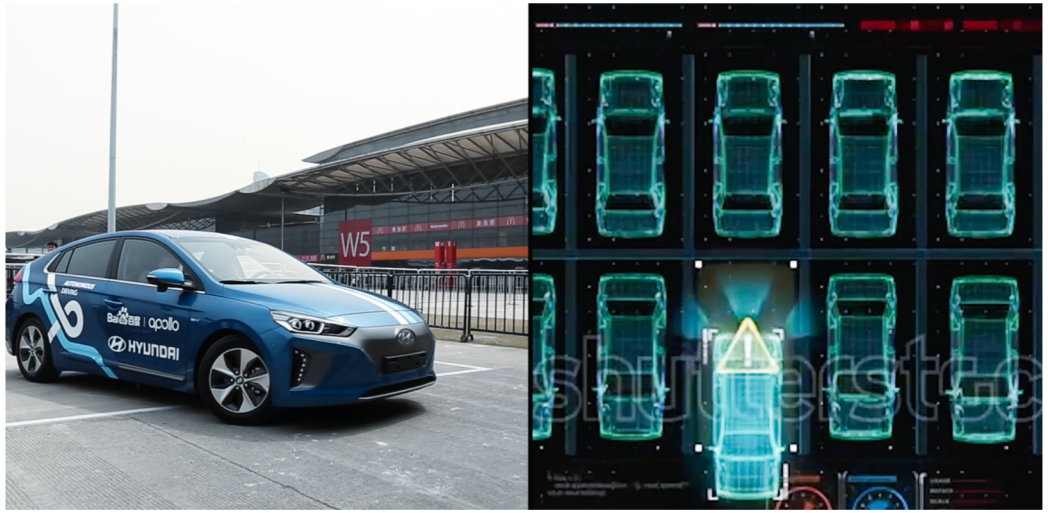
Blueprint Use cases

■ Use cases for Valet Parking

- Deploy sensors on vehicles and parking lots, combined with high-precision positioning, allowing vehicles to engage in fully autonomous parking.



■ Regional upgrade for autonomous driving vehicles

- With roadside sensing equipment, the vehicles can get more road condition information and make the driving mode more intelligent.

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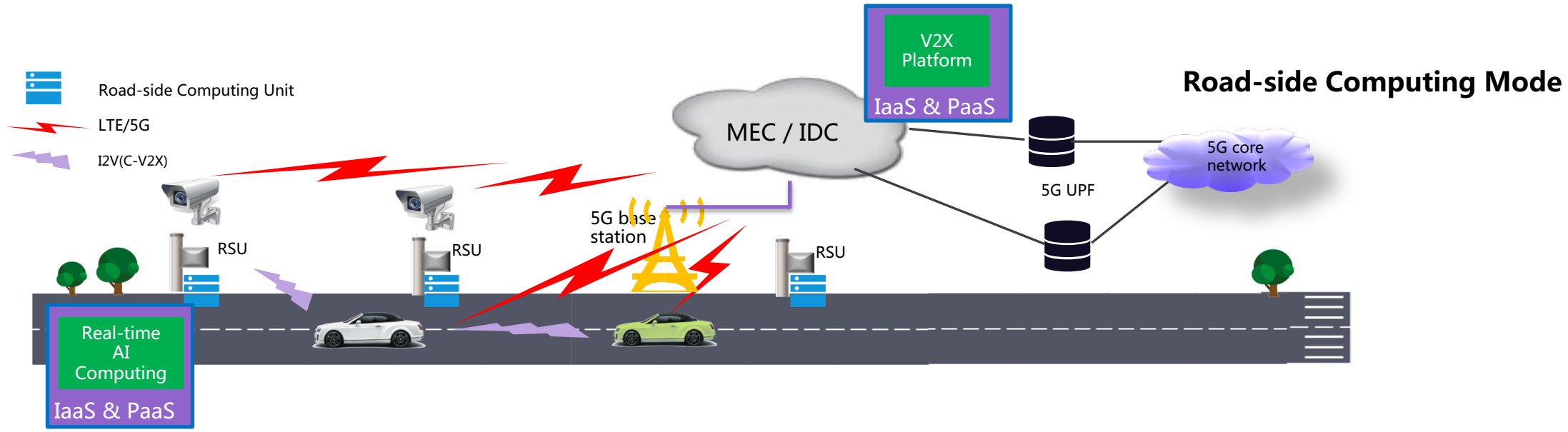
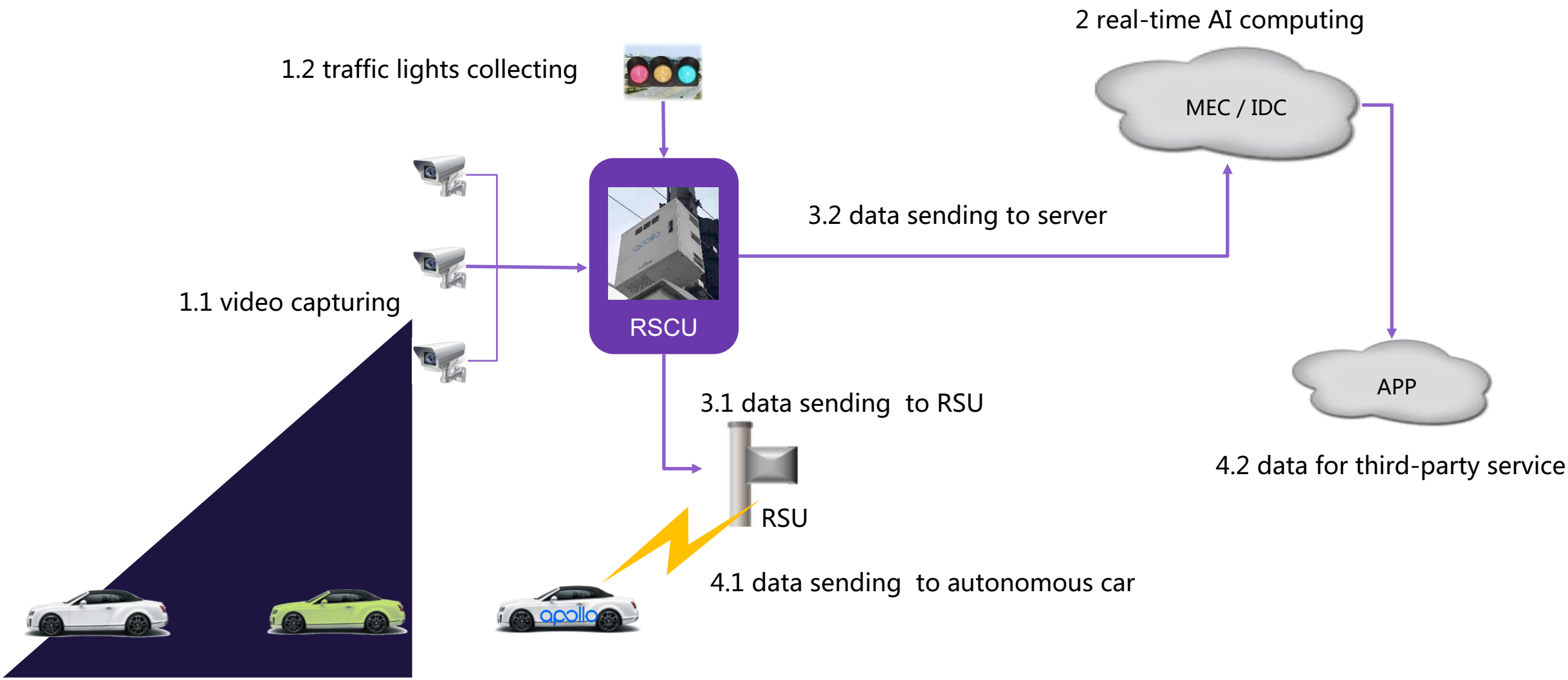
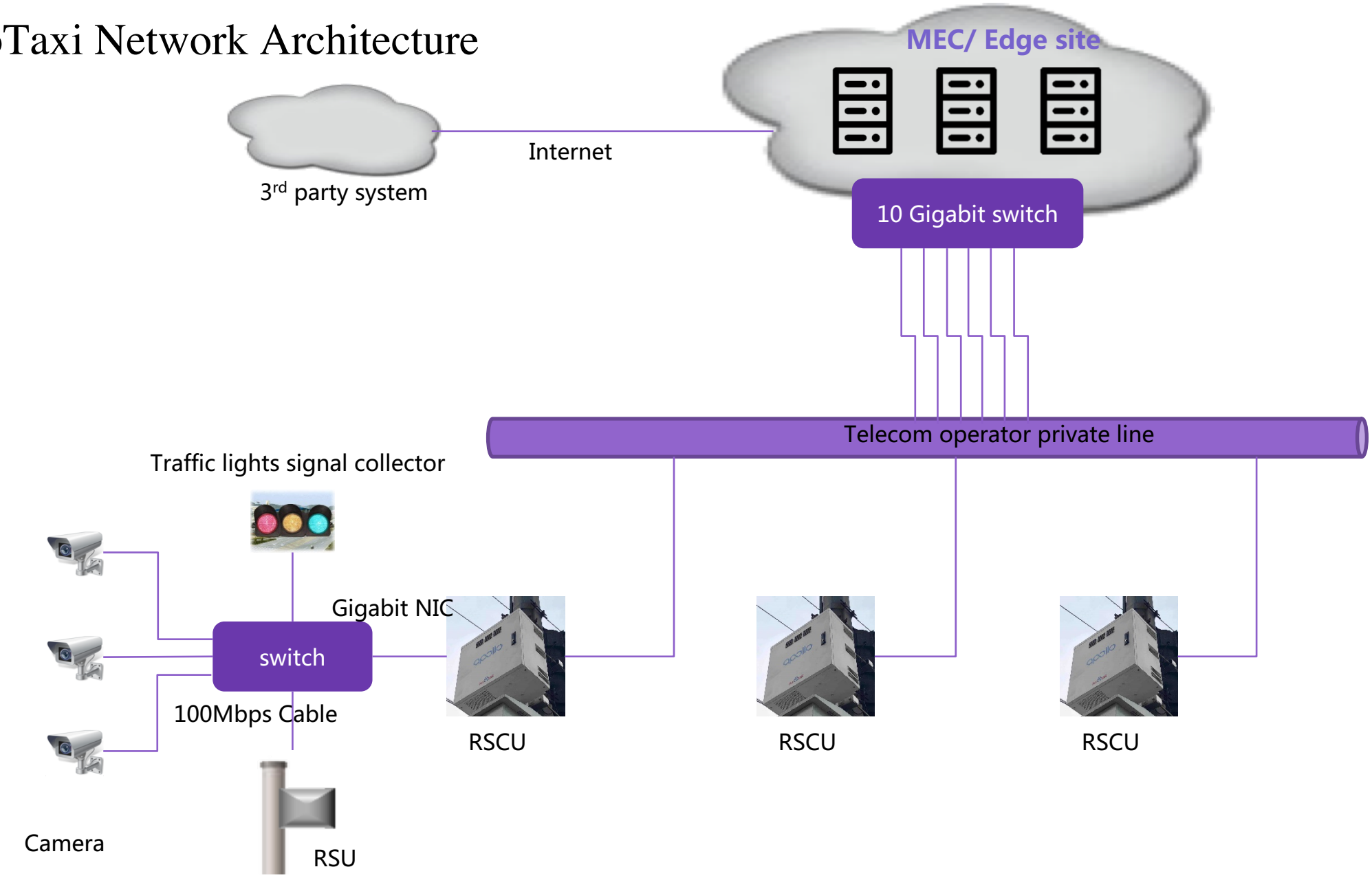
RoboTaxi Network Components



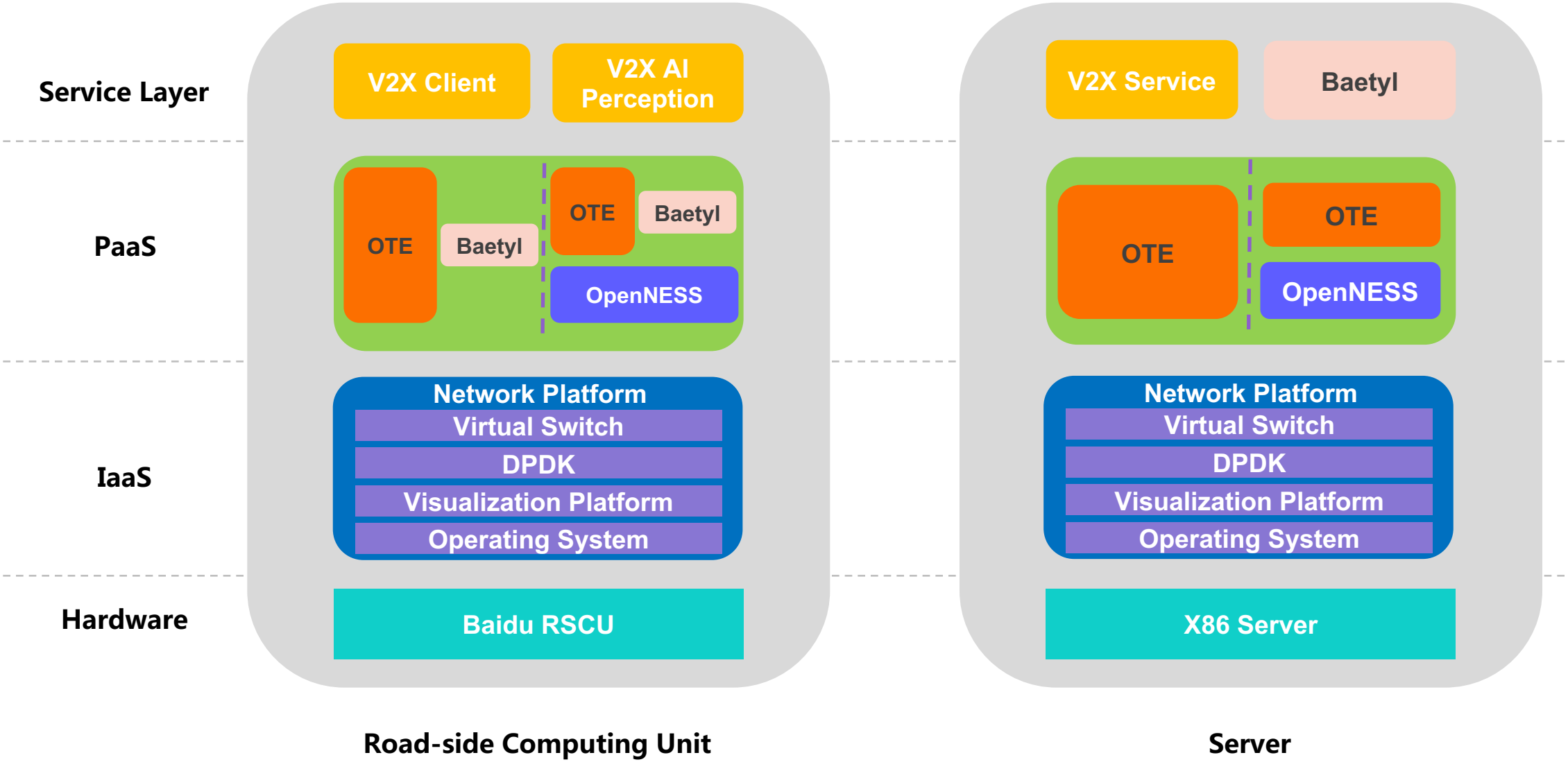
RoboTaxi Network Architecture



RoboTaxi Network Architecture



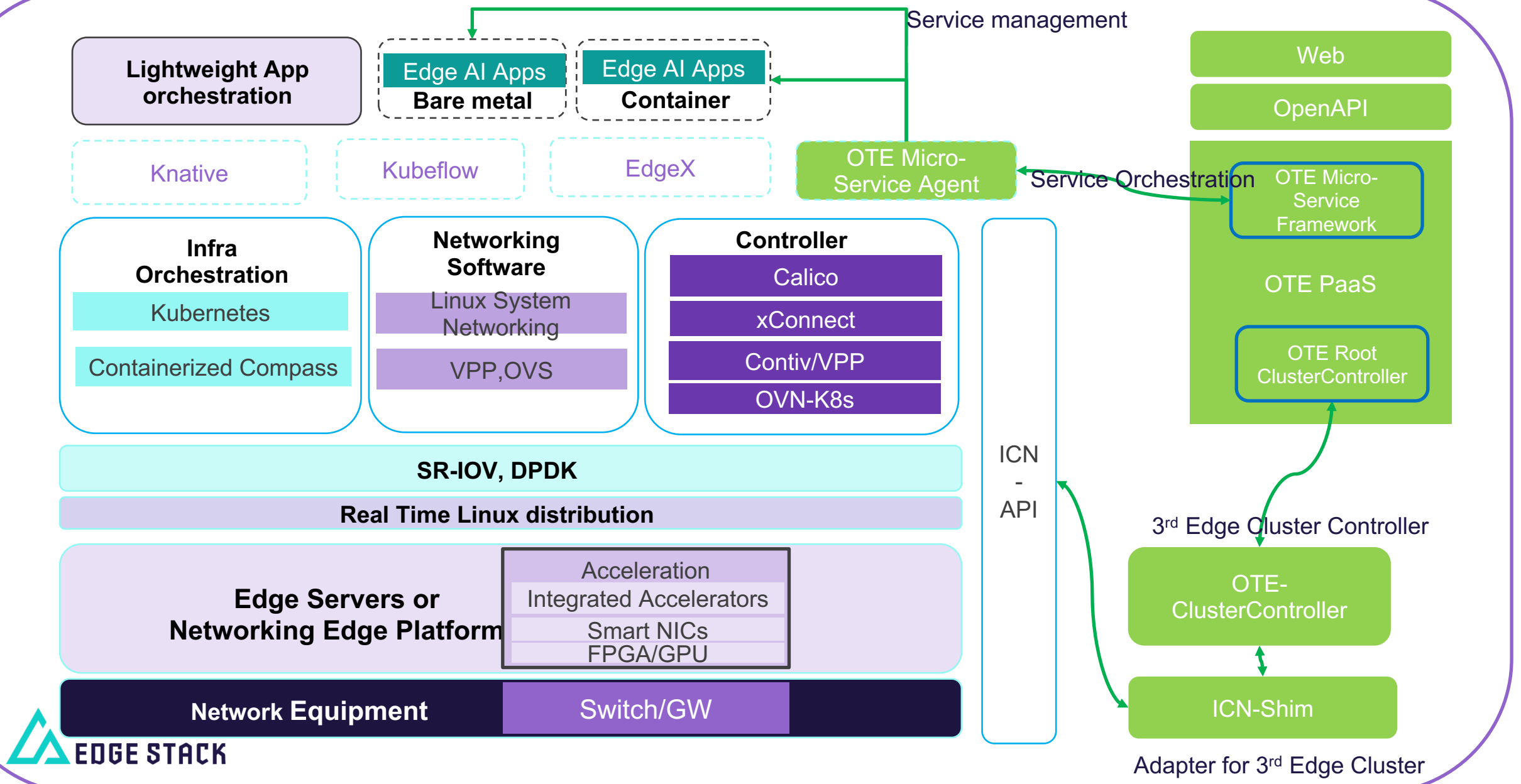
RoboTaxi MEC platform softwre architecture



Road-side Computing Unit

Server

Robotaxi uses x86 as Edge Infrastructure



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Future Plan

- The first demo of the RoboTaxi Blueprint is targeted at Q1, 2020.
- The first Akraino version will be released in Q2, 2020.

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The Robotaxi Blueprint Criteria

Case Attributes	Description	Informational
Type	New	
Blueprint Family - Proposed Name	The AI Edge	
Use Case	Autonomous driving taxi	
Blueprint proposed Name	Robotaxi	
Initial POD Cost (capex)	Leverage Unicycle POD - less than $150k	
Scale & Type	Up to 4 servers, x86 server or deep edge class With nVIDIA Tesla P4/T4 GPUs	
Applications	Autonomous driving taxi	
Power Restrictions	Less than 10Kw	
Infrastructure orchestration	Docker 1.13.1 or above K8s 1.12.5 or above- Container Orchestration OS – CentOS 7.0 or above	
PaaS	OTE Stack + OpenEdge + OpenNESS	
SDN	Calico container networking, or OVS-DPDK	
Workload Type	Containers	
Additional Details	N/A	

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