

Blueprint: KubeEdge Edge Service Family (Type 1: ML Inference Offloading)

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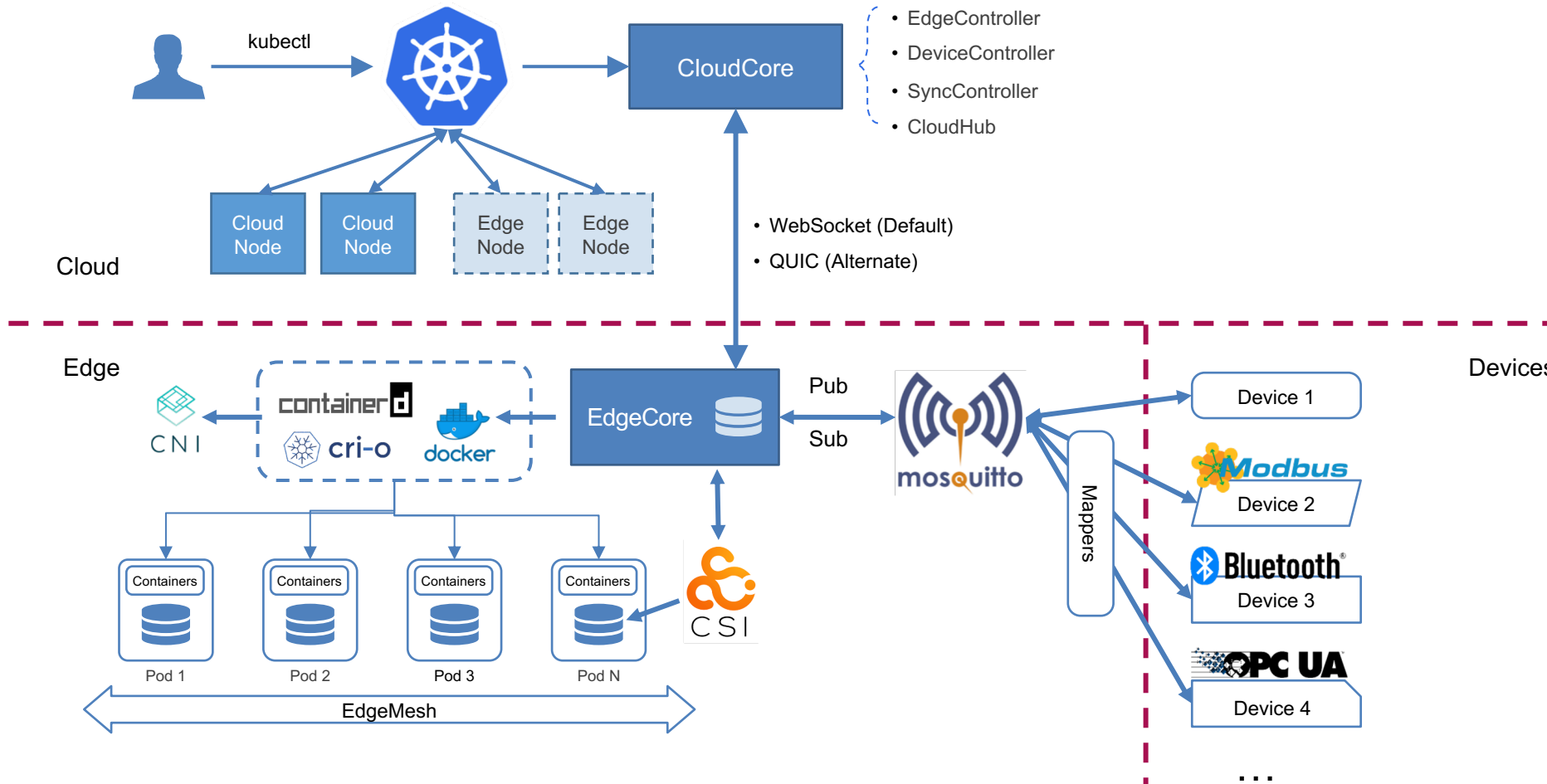
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General Blueprint Introduction

- ❖ KubeEdge Edge Service family focuses on a device/edge/cloud collaboration framework around KubeEdge. The verticals of focus have been IoT and MEC etc.
- ❖ The key component KubeEdge is a unique design from scratch of edge nodes and edge cloud, with all source code developed in the upstream CNCF KubeEdge Project.
- ❖ Type I of KubeEdge Edge Service family focuses an edge stack listed in the next slide of the use case ML Inference Offloading on x86 servers.
- ❖ This blueprint family will leverage various infrastructures. Arm servers support is the next case. This blueprint family is infrastructure neutral.

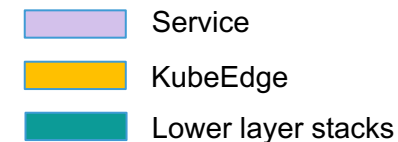
KubeEdge Architecture



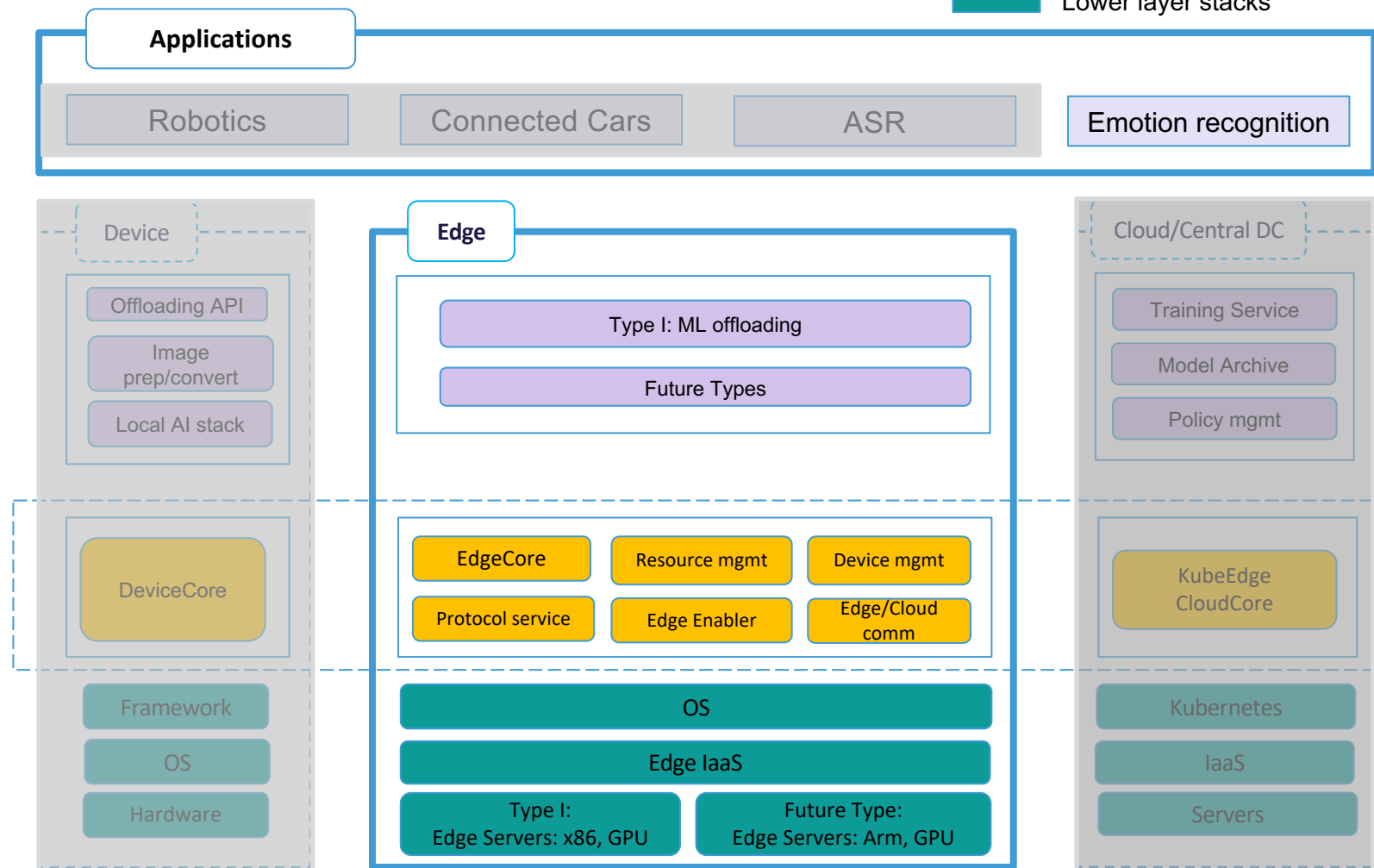
KubeEdge 1.6 release

- ❖ <https://github.com/kubeedge/kubeedge/blob/master/CHANGELOG/CHANGELOG-1.6.md>
- ❖ Add support of Autonomic Kube-API Endpoint on edge in Release 1.6. Both vanilla Kubernetes APIs and CRDs are supported.
- ❖ Support Remote Exec to Pods on Edge From Cloud in Release 1.5 (*K8s exec api or kubectl exec*).
- ❖ Metrics-Server Support for metrics collection across cloud and edge in Release 1.4

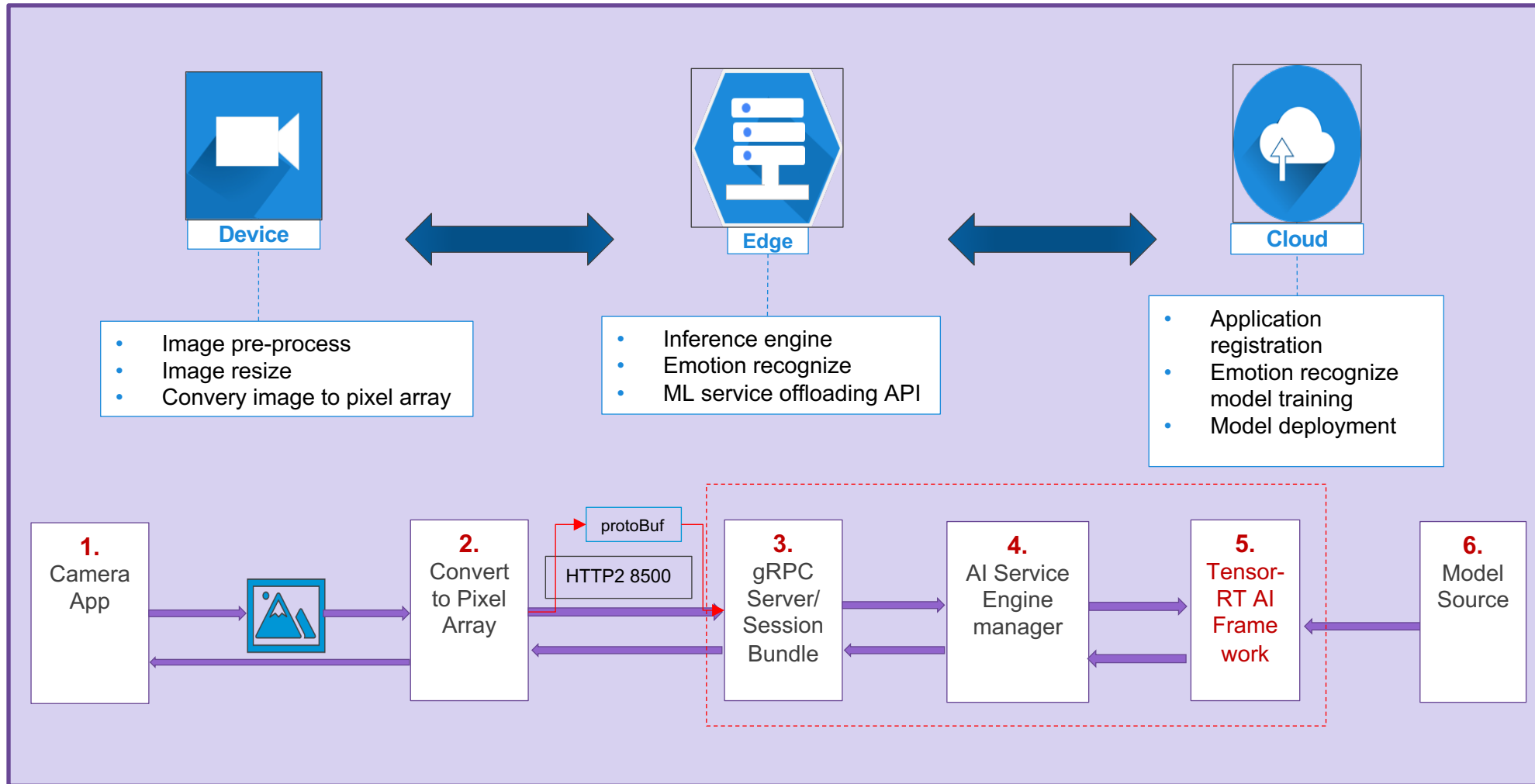
KubeEdge ML Offloading Functional Block Diagram



- **KubeEdge:** Device, Edge and Cloud Collaboration.
- **ML offloading service:**
 - Resource limited device needs to offload AI processing
 - Typical offloading approach is offloading inference to edge and training to central DC/Cloud
 - A device/edge/cloud collaboration framework is essential to ML offloading. KubeEdge provides underline software platform.



Use Case : Device App ML model inference offloading workflow



- Emotion recognition

Thank you

Welcome participants

- **Wiki:** <https://wiki.akraino.org/display/AK/KubeEdge+Edge+Service+Blueprint>
- **Weekly Meeting:** <https://zoom.us/j/91049610205>, every Tuesday 20:00 PDT.
- **Slack Channel:** <https://lfedge.slack.com/archives/C0155MP4TSB>



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