

Blueprint: AI on the Edge

Baidu

 THE **LINUX** FOUNDATION

 **LF** EDGE

Table of Contents

- ❑ General Blueprint Introduction
- ❑ Blueprint Use Cases
- ❑ Network Architecture
- ❑ MEC Architecture/MEC Software Architecture
- ❑ OTE Use IEC as Edge Infrastructure
- ❑ Future Plan

General Blueprint Introduction

- ❑ AI on the Edge Blueprint focuses on establishing an open source MEC platform combined with AI capacities at the Edge, which could be used for Safety, security, and surveillance.
- ❑ The first release of AI on the Edge Blueprint is targeted at Q4, 2019.
- ❑ AI on the Edge Blueprint is sponsored by Baidu, Arm, and Intel.
- ❑ Contact: Hechun Zhang (zhanghechun@baidu.com)
- ❑ Refer to:

<https://wiki.akraino.org/display/AK/IEC+Type+5%3A+AI+on+the+edge+for+Integrated+Edge+Cloud+%28IEC%29+Blueprint+Family>

Blueprint Use cases

Security Monitoring	Conduct smoke detection on densely populated places such as industrial parks and community properties to quickly detect whether there is a fire, reduce the damage caused by fire, and improve the safety of the park.
Classroom concentration analysis	Conduct a full evaluation of the overall class and the concentration of individual students, help teachers and school authorities to fully understand the teaching situation, according to the concentration data of each course, conduct targeted class knowledge test and strengthen.
Factory safety production	By identifying whether employees wear helmets, safety gloves, etc., monitor and evaluate the work of workers in the workshop to help companies monitor the safety production status in a comprehensive and timely manner. Statistical results and analytical data can be used as a reference for strengthening the level of safety production management.
Kitchen hygiene monitoring	Monitor staff's smoking and cell phone behavior in the kitchen of the catering industry, ensuring the safety and hygiene of the food production process.

Concentration Analysis



Helmet Detection



Call Detection



Smoking Detection



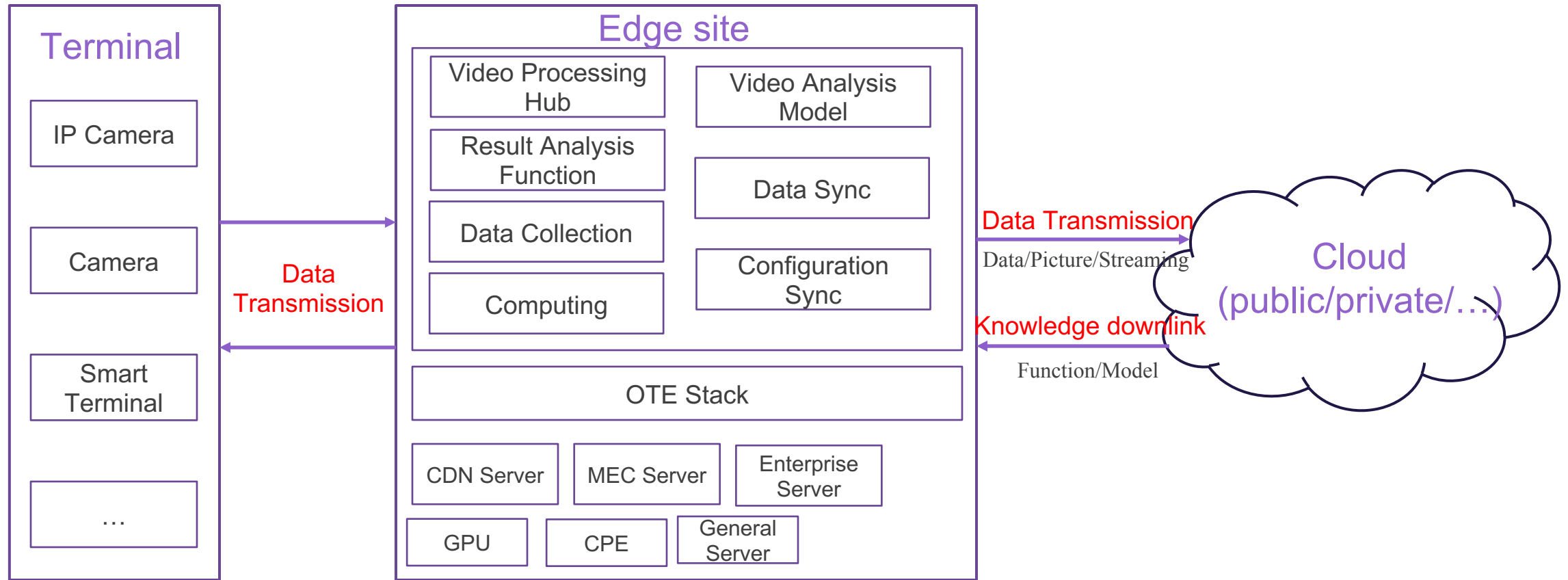
Hair Detection



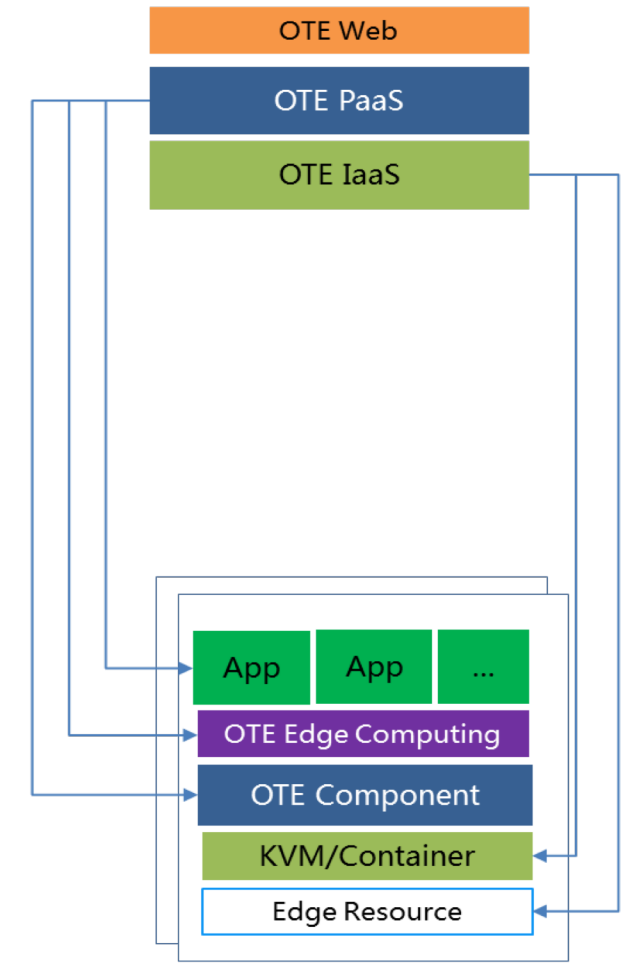
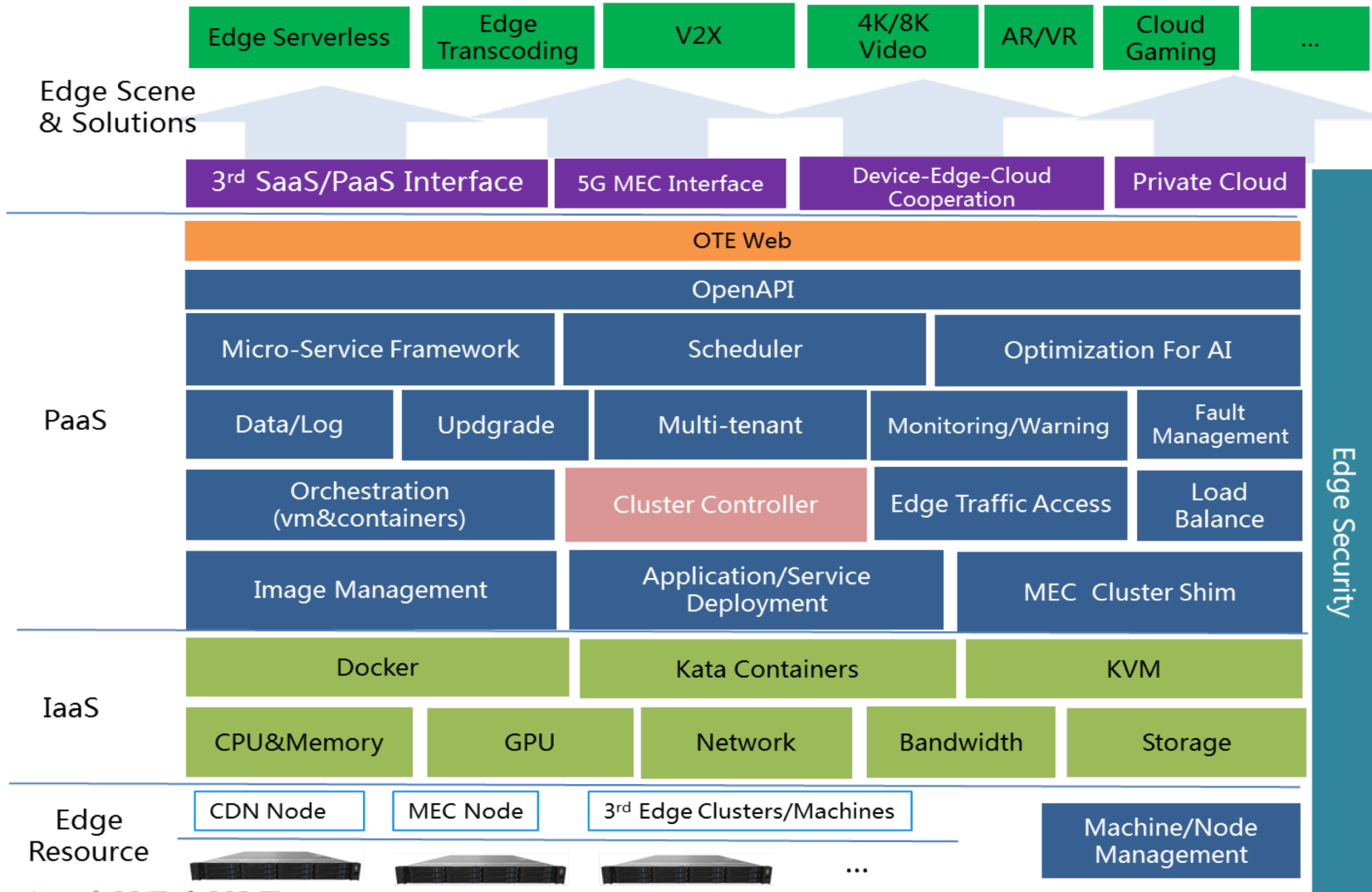
Fire Detection



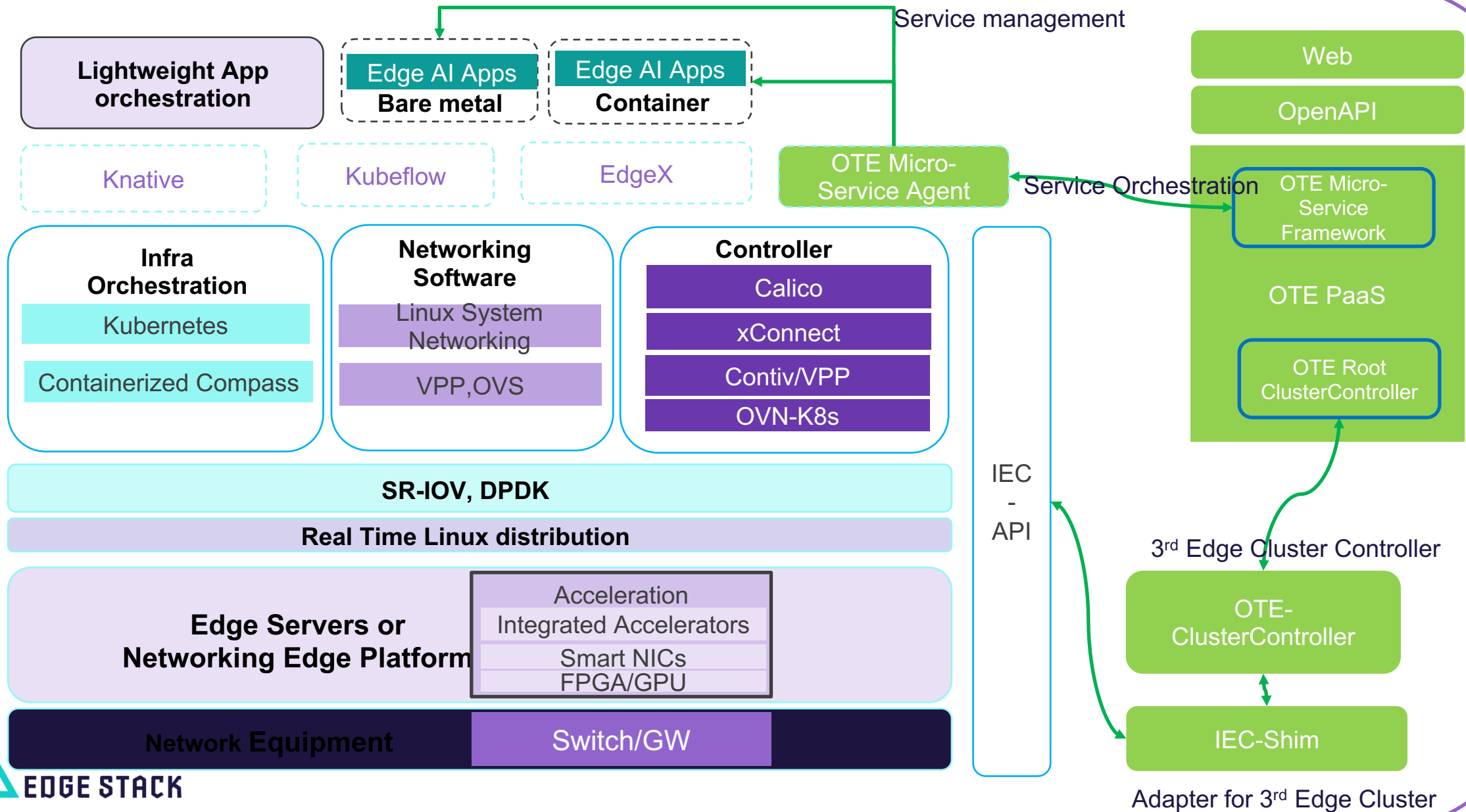
Network Architecture



MEC Software Architecture



OTE Use IEC as Edge Infrastructure



Future Plan

- ❑ The first demo of AI on the Edge Blueprint is targeted at Oct 31st, 2019.
- ❑ The first Akraino version will be released in Q4, 2019.

AI on the Edge Blueprint Criteria

Case Attributes	Description	Informational
Type	New Blueprint for AI on the Edge	
Blueprint Family - Proposed Name	Integrated Edge Cloud (IEC)	
Use Case	Safety, Security, and Surveillance	
Blueprint proposed Name	AI on the Edge	
Initial POD Cost (capex)	Leverage Unicycle POD - less than \$150k	
Scale & Type	Up to 7 servers, x86/ARM server or deep edge class With nVIDIA Tesla K80 GPUs	
Applications	<ol style="list-style-type: none"> 1. Small scale IoT data aggregation and machine learning platform 2. Small scale deep learning models training for video data 3. Model training for Acumos Apps 	
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	
SDN	Calico container networking, or OVS-DPDK	
Workload Type	Containers	
Additional Details	<u>Acumos</u> and EdgeX interfaces will be connected in this case	

Contact Us

The Linux Foundation

1 Letterman Drive

Building D, Suite D4700

San Francisco CA 94129

Phone/Fax: +1 415 7239709

www.linuxfoundation.org



General Inquiries

info@linuxfoundation.org

Membership

membership@linuxfoundation.org

Corporate Training

training@linuxfoundation.org

Event Sponsorship

sponsorships@linuxfoundation.org

Legal Notices

The Linux Foundation, The Linux Foundation logos, and other marks that may be used herein are owned by The Linux Foundation or its affiliated entities, and are subject to The Linux Foundation's Trademark Usage Policy at <https://www.linuxfoundation.org/trademark-usage>, as may be modified from time to time.

Linux is a registered trademark of Linus Torvalds. Please see the Linux Mark Institute's trademark usage page at <https://lmi.linuxfoundation.org> for details regarding use of this trademark.

Some marks that may be used herein are owned by projects operating as separately incorporated entities managed by The Linux Foundation, and have their own trademarks, policies and usage guidelines.

TWITTER, TWEET, RETWEET and the Twitter logo are trademarks of Twitter, Inc. or its affiliates.

Facebook and the "f" logo are trademarks of Facebook or its affiliates.

LinkedIn, the LinkedIn logo, the IN logo and InMail are registered trademarks or trademarks of LinkedIn Corporation and its affiliates in the United States and/or other countries.

YouTube and the YouTube icon are trademarks of YouTube or its affiliates.

All other trademarks are the property of their respective owners. Use of such marks herein does not represent affiliation with or authorization, sponsorship or approval by such owners unless otherwise expressly specified.

The Linux Foundation is subject to other policies, including without limitation its Privacy Policy at <https://www.linuxfoundation.org/privacy> and its Antitrust Policy at <https://www.linuxfoundation.org/antitrust-policy>, each as may be modified from time to time. More information about The Linux Foundation's policies is available at <https://www.linuxfoundation.org>.

Please email legal@linuxfoundation.org with any questions about The Linux Foundation's policies or the notices set forth on this slide.