

Open Source AceCon

2021 智能云边开源峰会

AI x Cloud Native x Edge Computing

人工智能 × 云原生 × 边缘计算

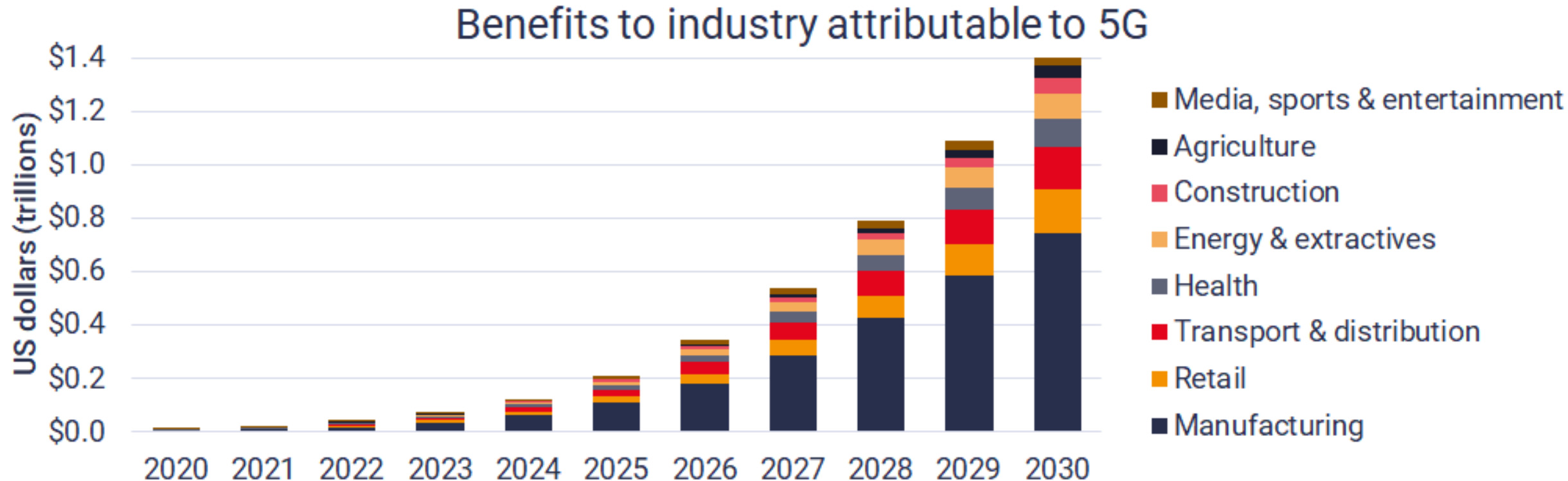
边缘计算及可持续计算

EdgeX Foundry, Kubernetes, TVM & Flowgate

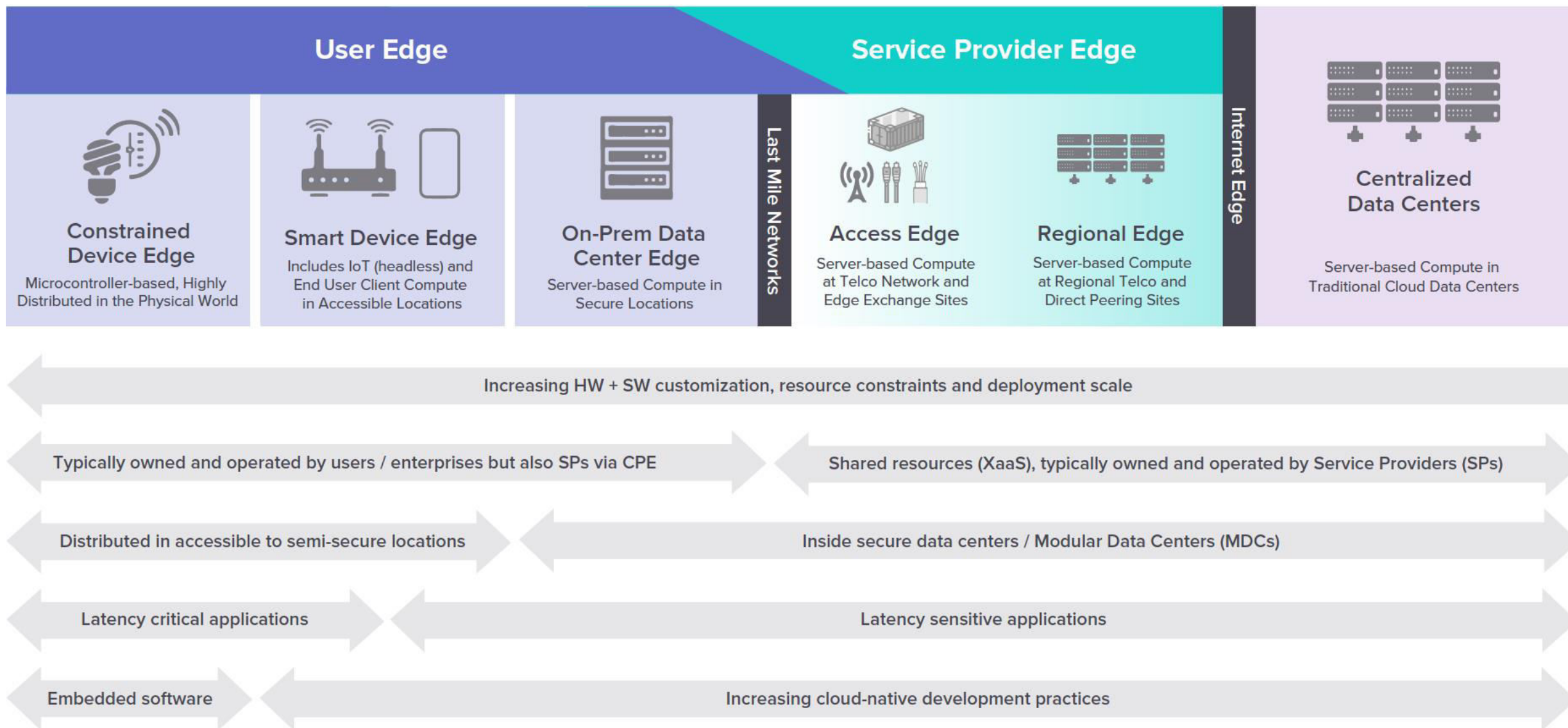
路广

VMware中国研发总监

边缘计算是云计算的4倍并会冲击4万亿经济规模

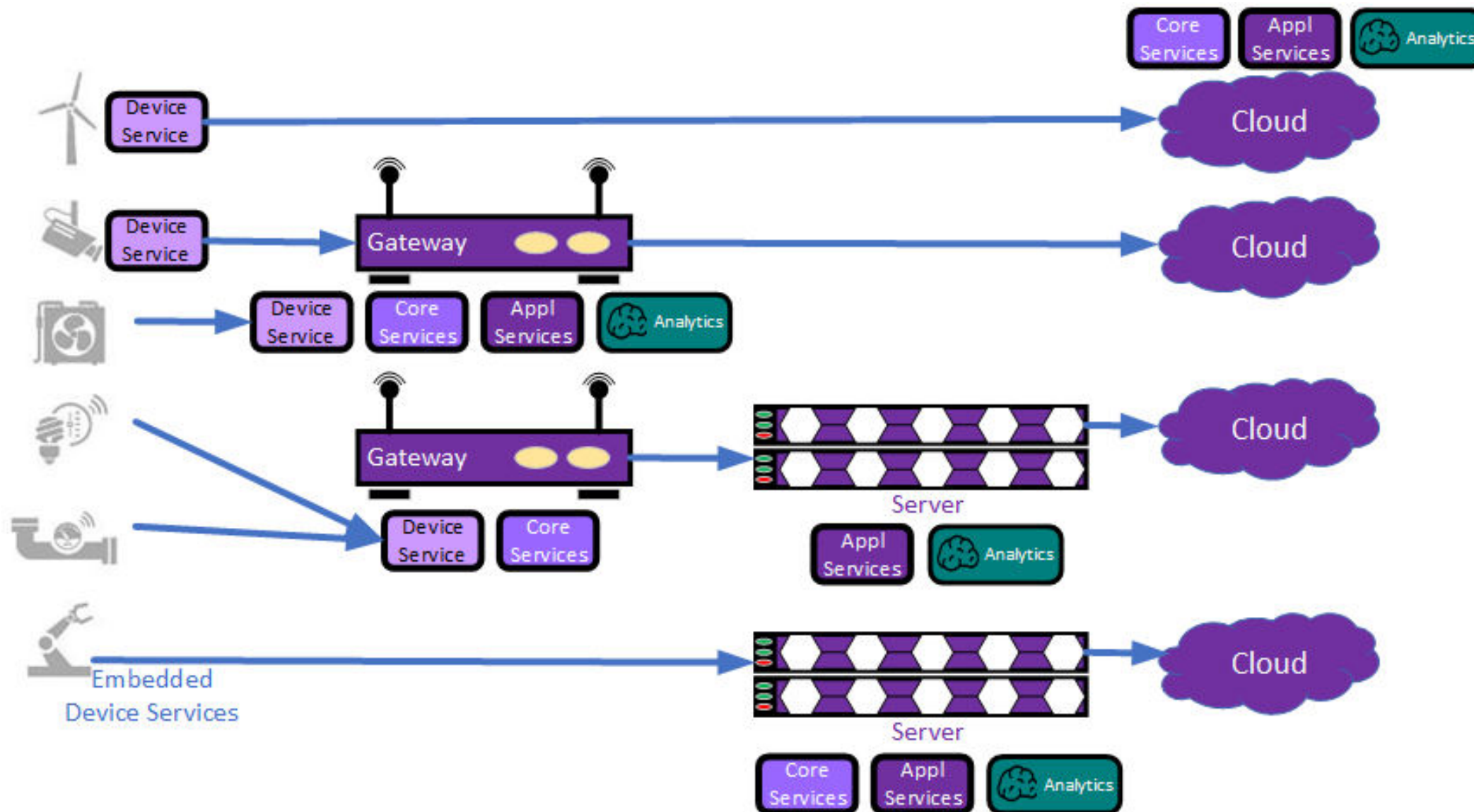


<http://www.chetansharma.com/publications/edge-internet-economy/>



EdgeX Foundry在边缘上多层、分布式部署

<https://www.edgexfoundry.org/>



大量应用正在从云向边缘迁移

基于Kubernetes的云原生平台扩展支持边缘应用

Industry 4.0 will transform the enterprise to be more agile, aware, efficient, intelligent, safe and sustainable.

Industry 4.0 will be enabled by unifying key technologies — each of which are reaching peak maturity at the same time:



Cloud Computing

Design and implement cloud environments and workloads.



Modern Connectivity

Design and test private LTE and SD-WAN solutions.



Edge Computing

Implement and orchestrate edge compute infrastructure



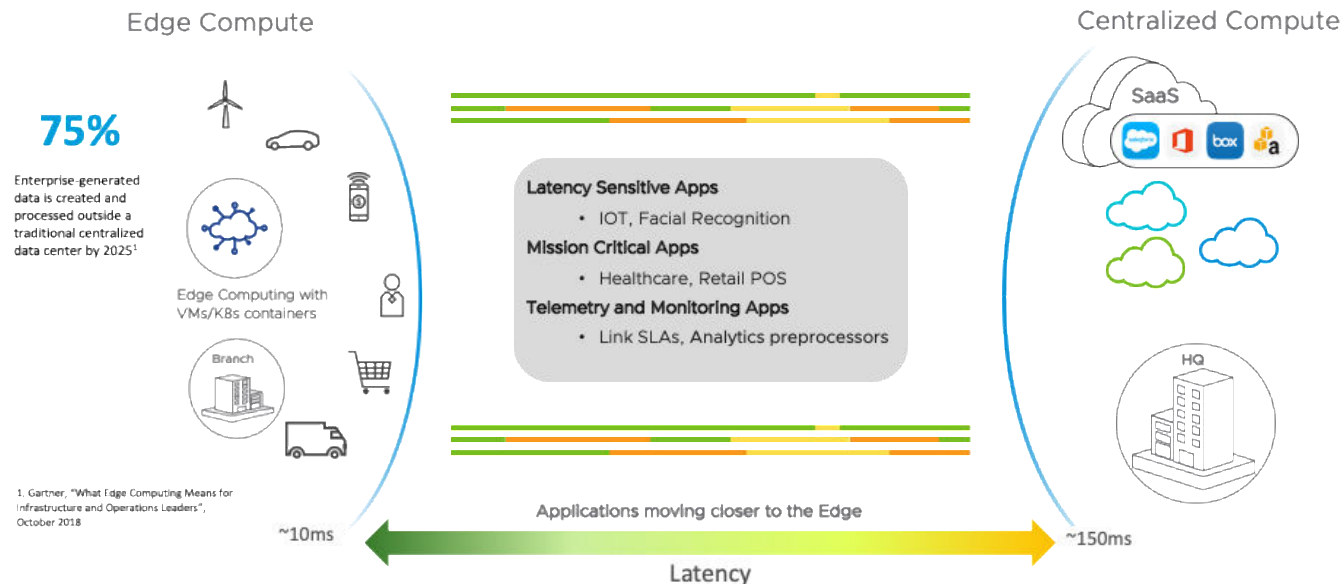
Endpoint Devices

Connectivity solutions for new and legacy equipment.



Edge/IoT Applications

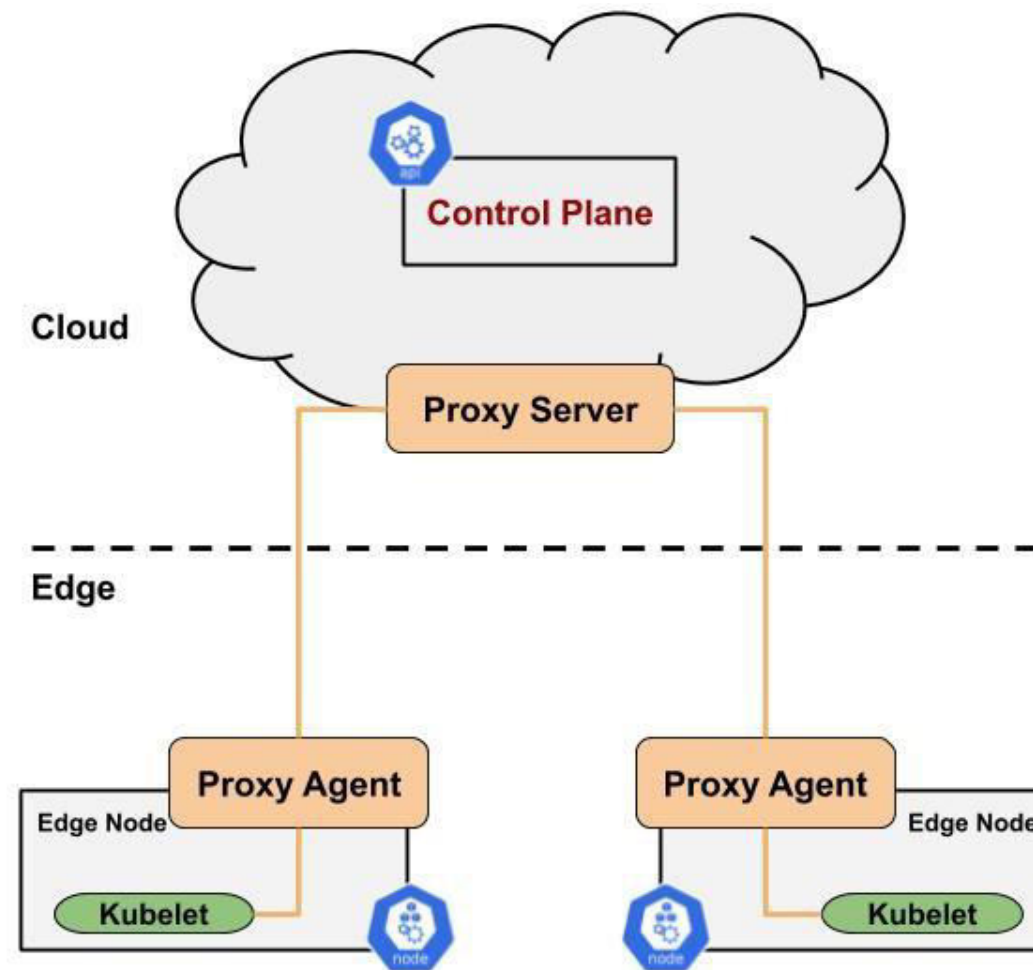
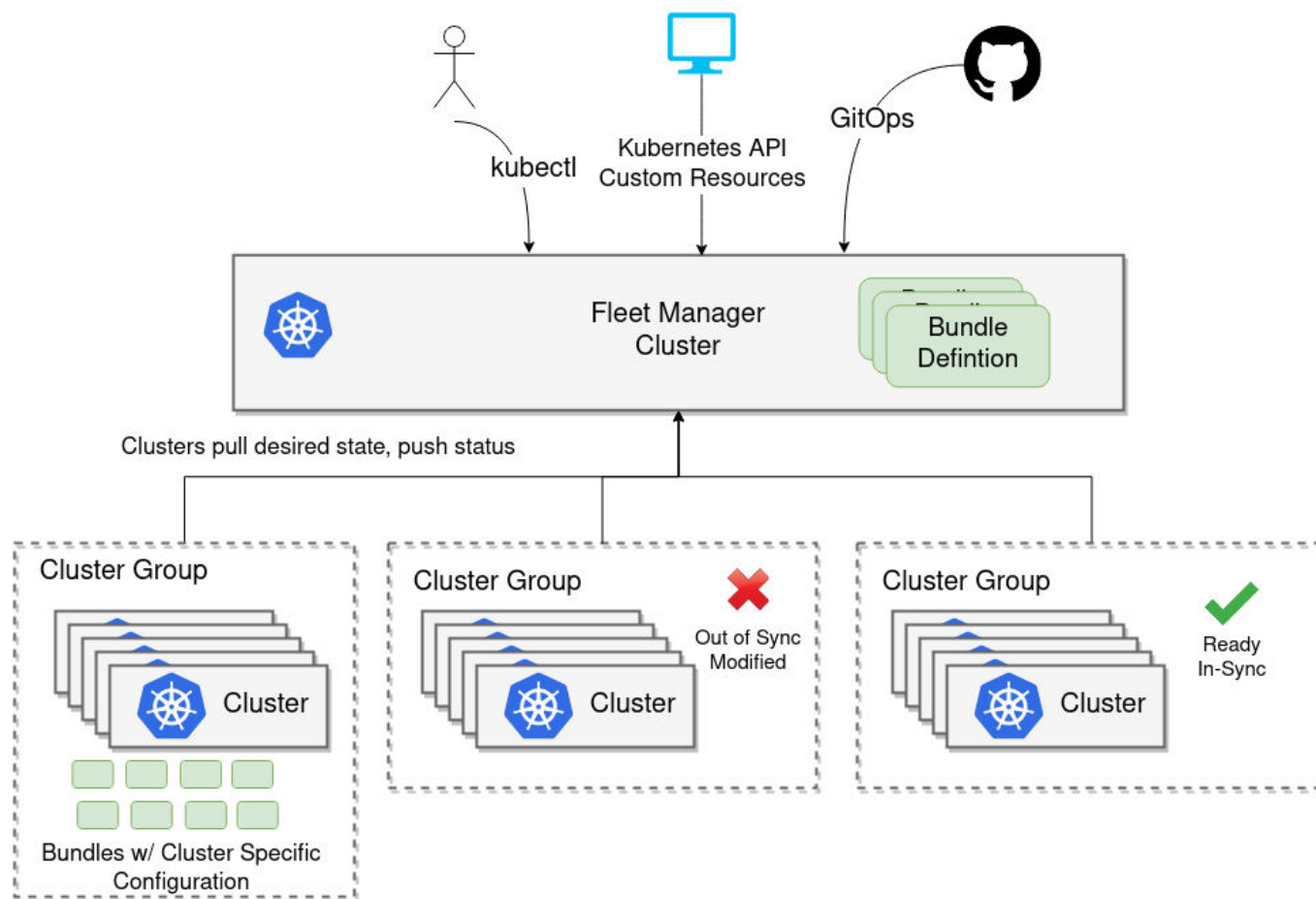
Design, test and deploy next-generation applications.



World Wide
Technology

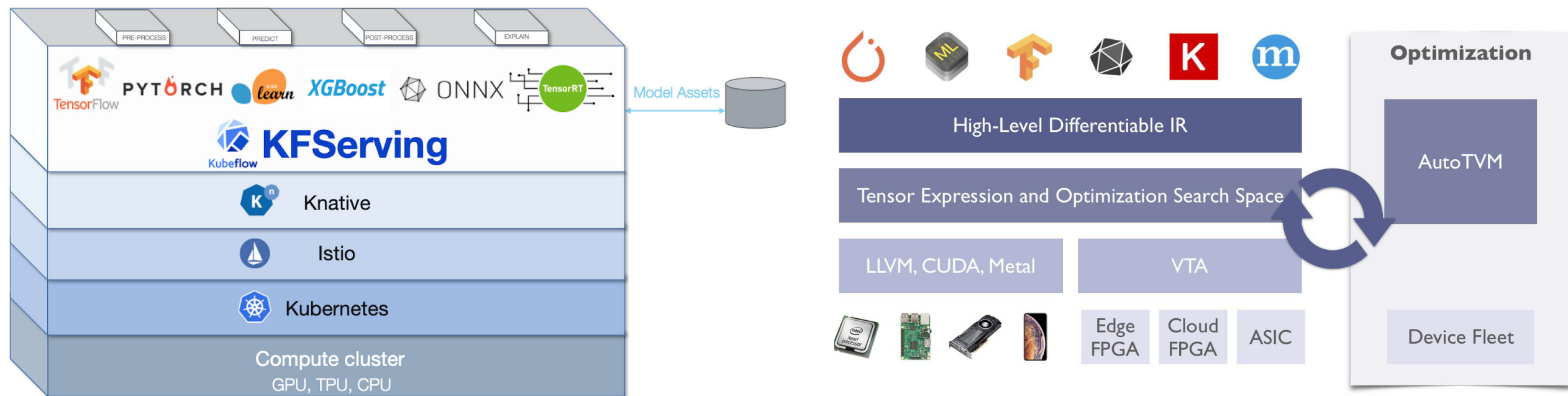
Kubernetes在边缘的架构思路

轻量发行版 vs. 边缘扩展



ML在边缘部署

MLOps 平台、支持异构加速器、编译与优化、与Kubernetes生态集成



<https://tvm.apache.org/>

OUR TRACK RECORD OF SUSTAINABILITY INNOVATION

5

FOUNDERS RENTED SPACE ABOVE THE *Cheese* HOUSE DELI



25 PEOPLE



FIRST INTERNATIONAL OFFICE OPENED IN FRIMLEY, UK

150 PEOPLE

VMWARE ENTERS SPACE

SUPPORT FOR NASA MISSIONS USING VMWARE VIRTUALIZATION SOFTWARE



300 PEOPLE



750

WINDOWS INSTALLED THAT OPEN & CLOSE TO REDUCE NEED FOR AIR CONDITIONING AND ALLOW FOR FRESH AIR



PROTECTED 9 MATURE REDWOOD TREES

(40-50' IN HEIGHT) WE FONDLY CALLED THIS ENDEAVOR THE "VTREE MOTION"

1,500 PEOPLE



PALO ALTO HQ

"CAMPUS IN A FOREST"

HIRED SUSTAINABLE ARCHITECTURE FIRM TO DESIGN OUR CAMPUS HEADQUARTERS

20,000

SQUARE FEET OF RECLAIMED WOOD FLOORING



LEED PLATINUM® DATA CENTER

100% CLEAN POWERED

IN EAST WENATCHEE, WASHINGTON, U.S.



RECYCLING

GLOBAL PROGRAM STARTED



CREATED SEPARATE WASTE STREAM FOR COMPOST

(LONG BEFORE THE CITY OF PALO ALTO IMPLEMENTED PROGRAM)



USE POTATO-BASED DISPOSABLE UTENSILS AT PALO ALTO HQ



OFFERED MORE HEALTHY SNACK CHOICES (BUT KEPT M&M'S :))

DIVERTED 85%

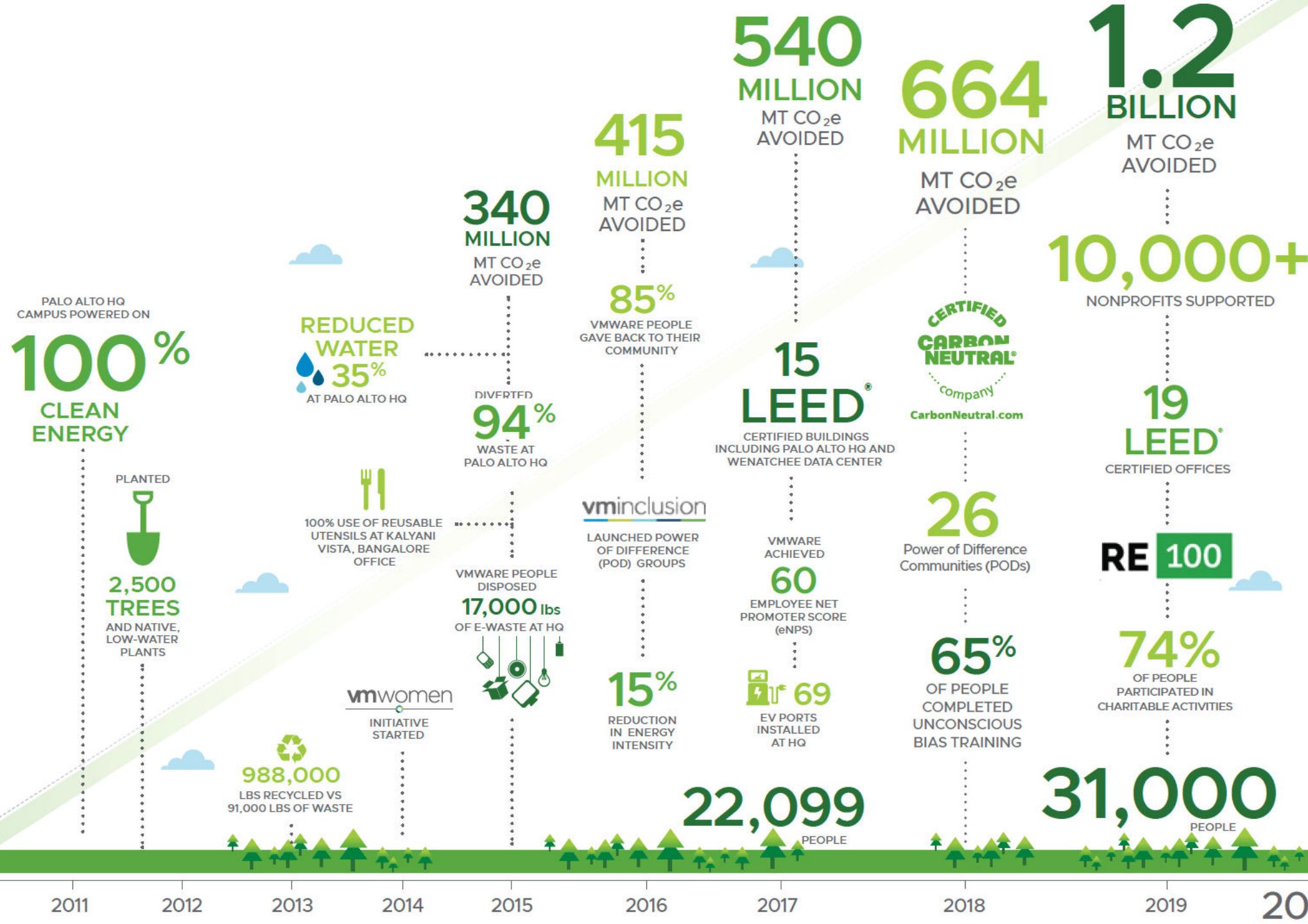
WASTE AT PALO ALTO HQ



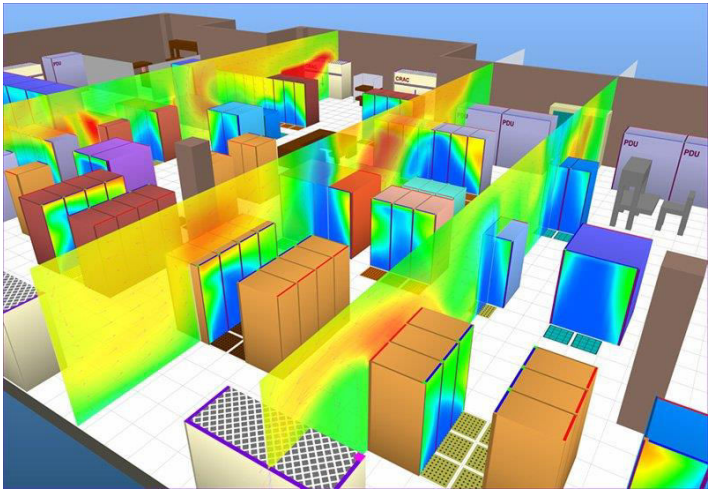
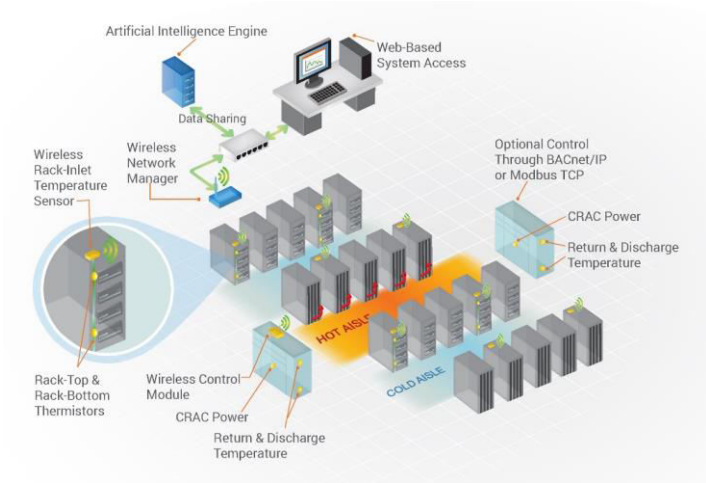
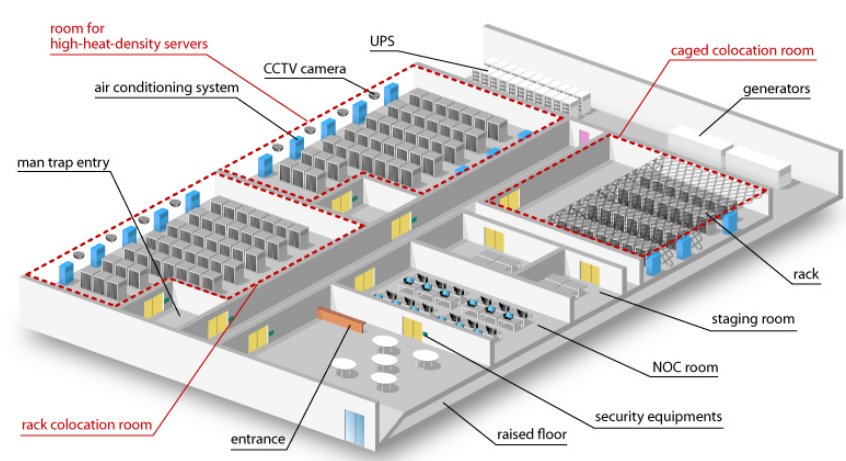
VMWARE FOUNDATION STARTED

9,000 PEOPLE

1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010



可持续性是企业数据中心的指标



全国数据中心耗电量



千瓦时

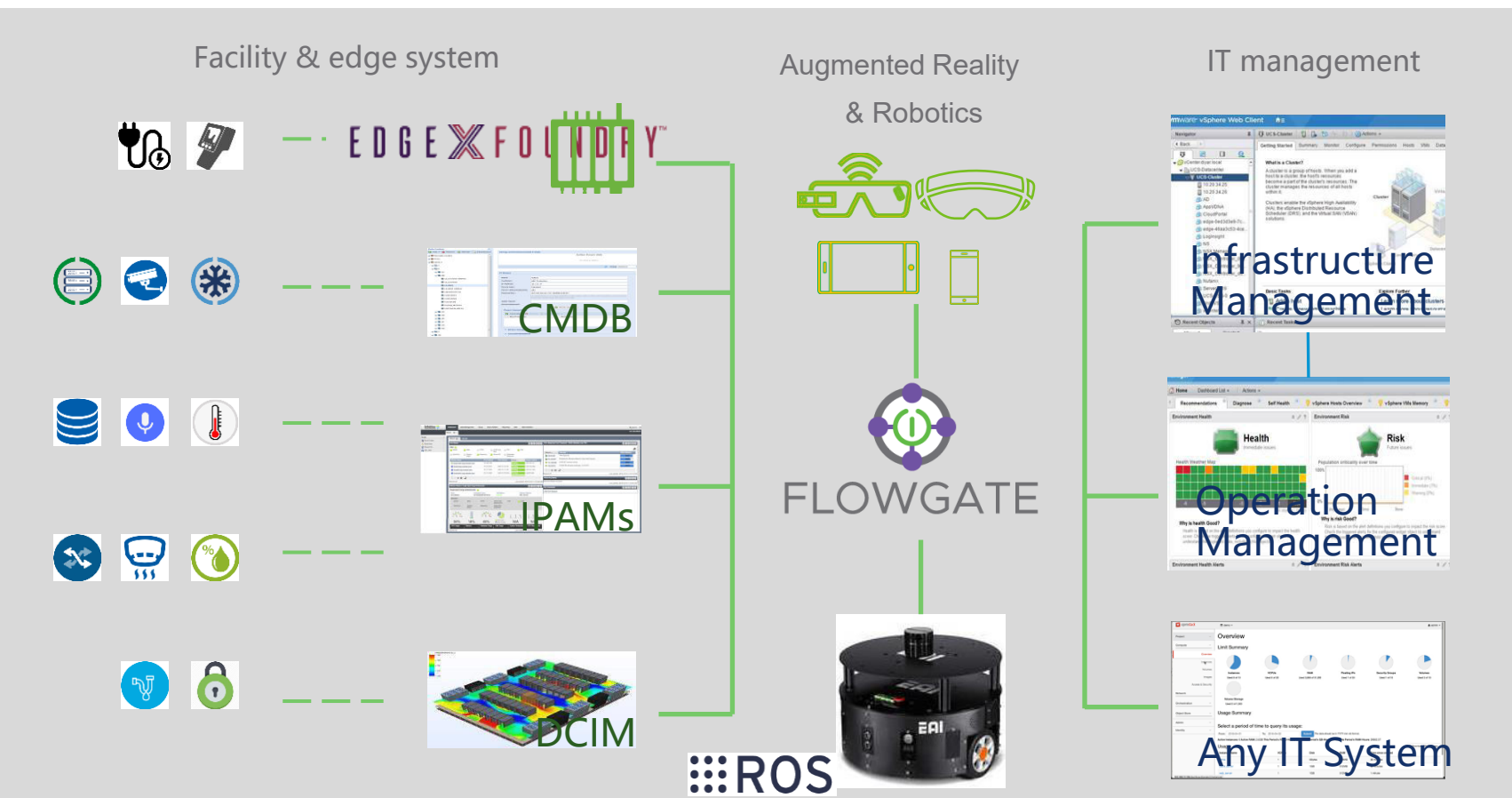


三峡大坝发电量



Flowgate项目融合管理企业数据中心IT/动环系统

<https://github.com/vmware/flowgate>



VMware发起的开放源码项目
(Apache许可证)

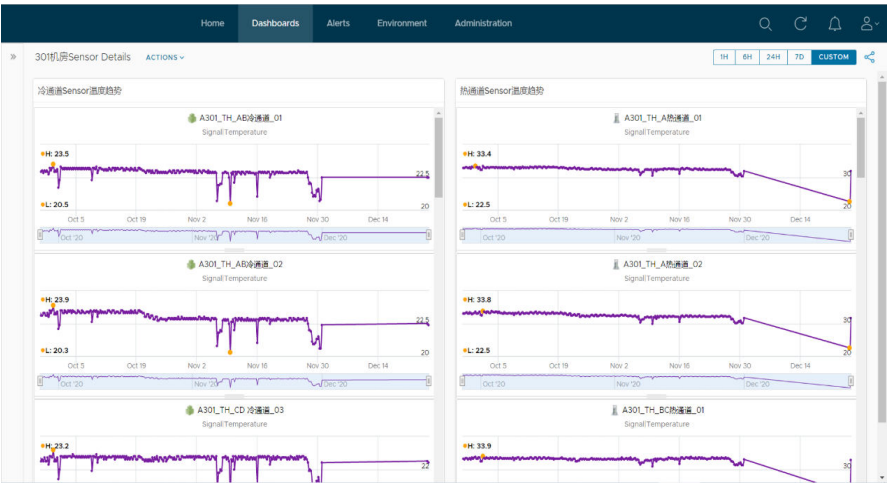
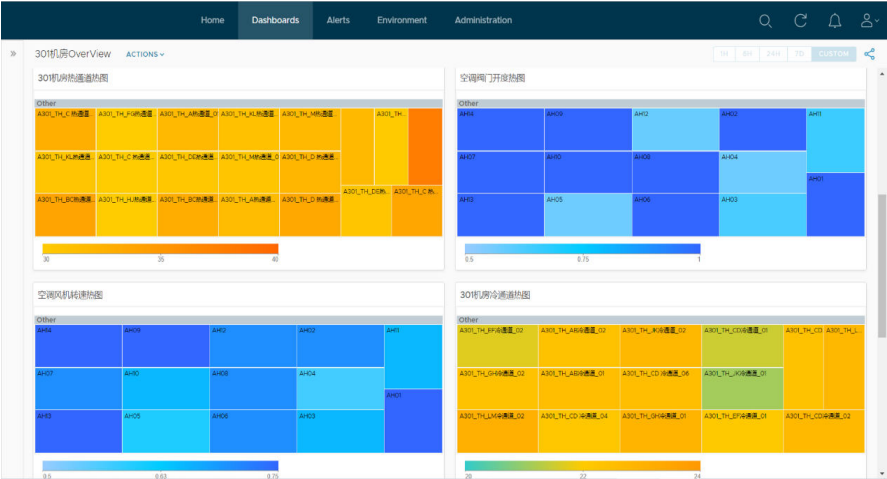
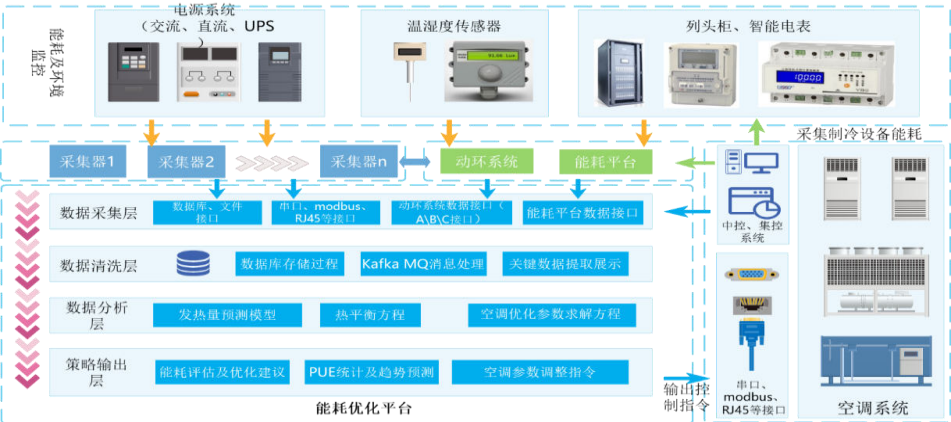
集成进vROps企业版，管理包在
VMware云市场发布

与Intel和云创远景合作，在数据中
心内节省制冷系统能耗。

与可持续性小组合作，打造
VMware总部微电网项目。

VMware与Intel和Quarkdata的Deep Cooling联合方案

联合白皮书即将发布

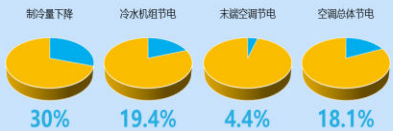


2021年初完成主要技术工作。

已经在多家大型数据中心生产性部署，节能效果可达30%。

数十家客户等待交付。

Carbon Neutral Computing Technology for Sustainability
How IDCs grow computing infrastructure landscape with reducing overall carbon footprint



节能效果



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AI x Cloud Native x Edge Computing

人工智能 × 云原生 × 边缘计算

Thank You