



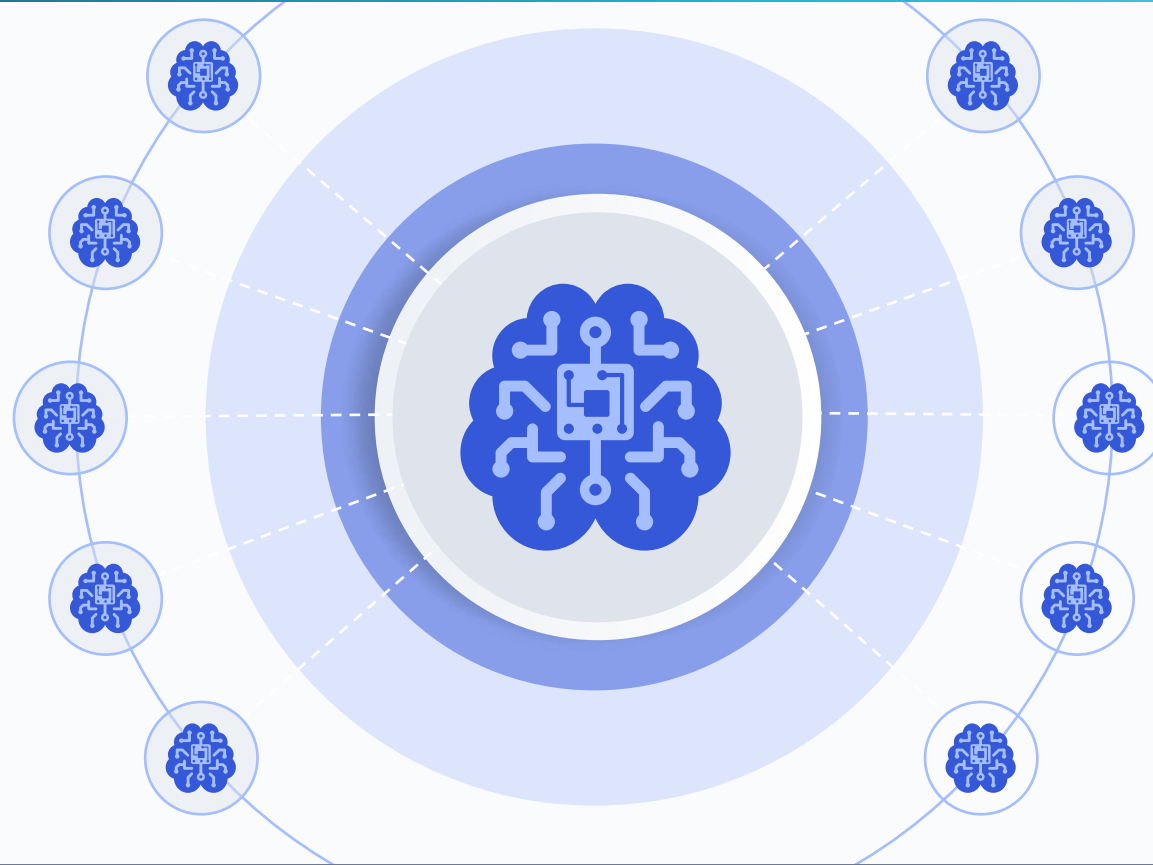
# Embedded Vision Summit

Megha Daga  
**Deploying Edge AI Solutions  
at Scale for the Internet  
of Things (IoT)**

Qualcomm

# Edge AI is the new wave for AI in IoT

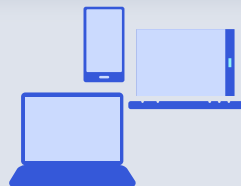
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## Key Drivers



Latency/  
speed



Bandwidth/scale/  
load balancing



Reliability

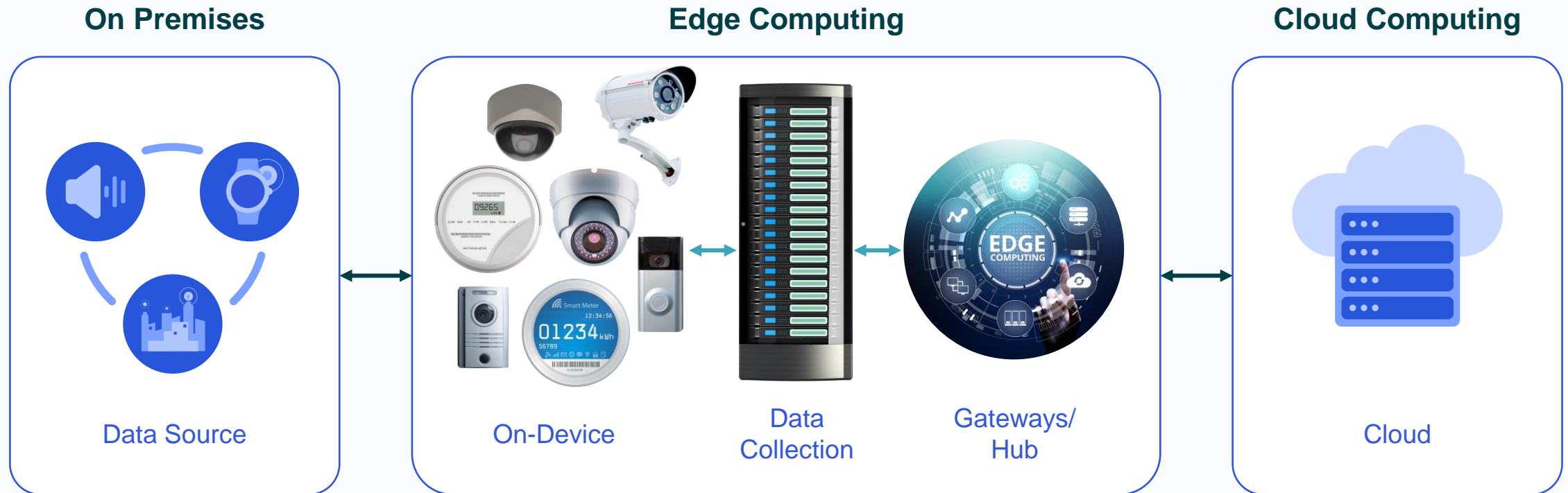


Cost



Privacy/  
security

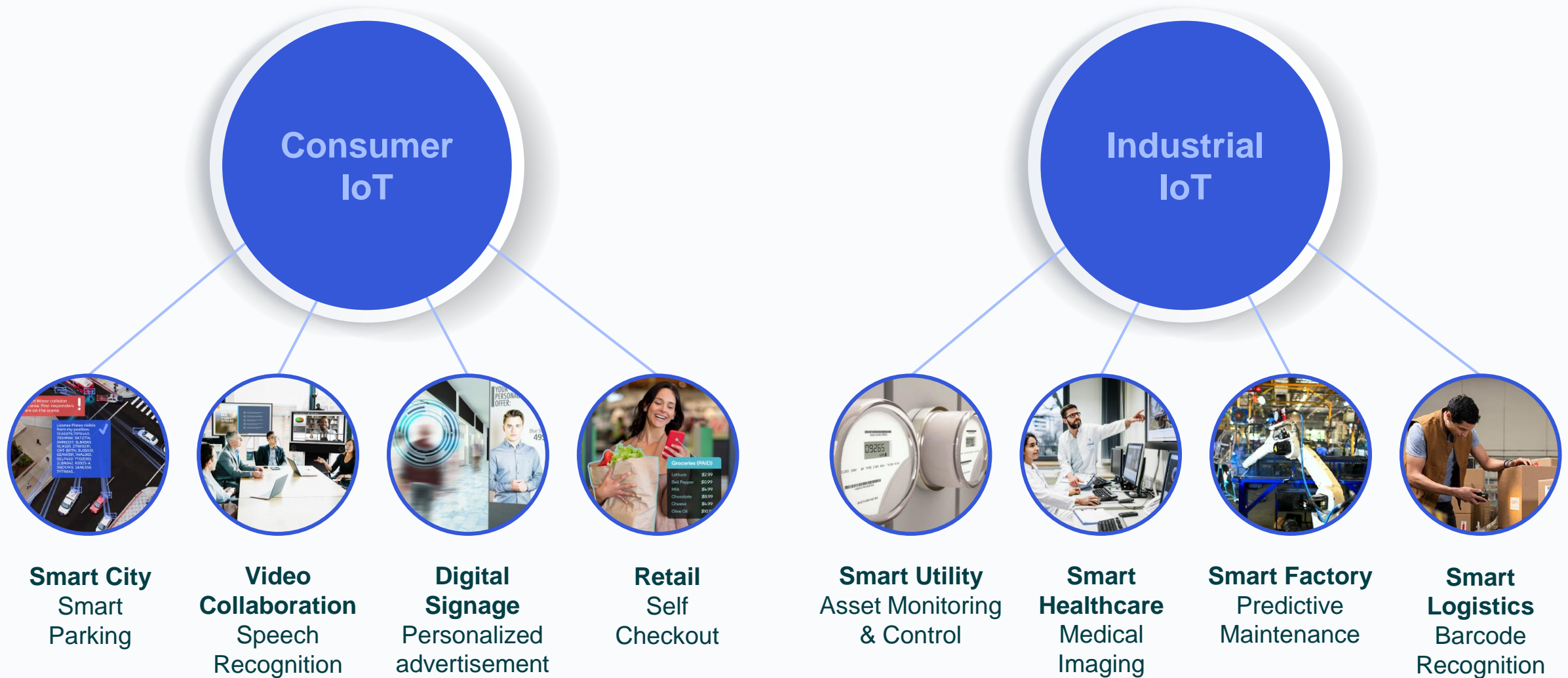
# Distributing Computing with Powerful Embedded Platforms Enabling AI at Edge in IoT



**Edge Computing → A Distributed Computing Paradigm**

Enablement of Data Computation closer to the data source

# Connected Things & Smart use cases growing at exponential scale





# Exponential increase, lack of commonality and standards in use cases leading to fragmentation across IoT stack

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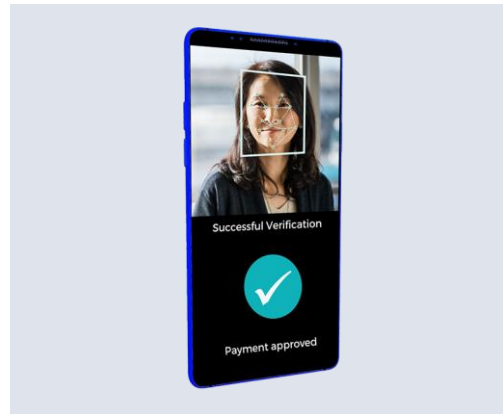
## TECHNOLOGY Fragmentation

due to  
customization  
Ex. Face  
Recognition

### Security Law



### Accuracy Payment



### Distance Surveillance



### Privacy Consumer product



## TOOL Fragmentation

Caffe2

PYTORCH

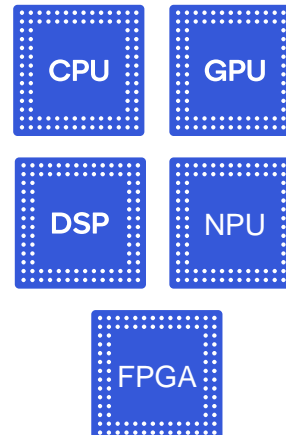
mxnet

PaddlePaddle

Chainer

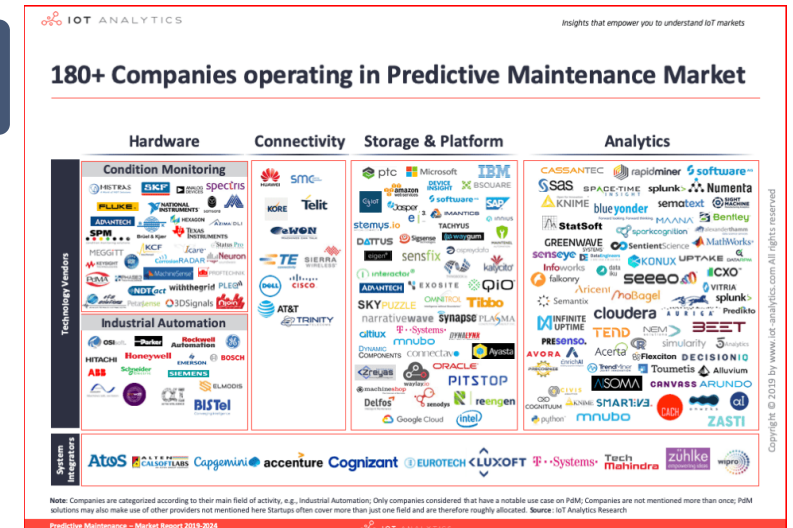
TensorFlow

## HARDWARE Fragmentation



## APPLICATION Fragmentation

**180+**  
predictive  
maintenance



Qualcomm

Source: [www.iot-analytics.com](http://www.iot-analytics.com)

# Customers challenges and asks as a result of fragmentations

**HARDWARE**  
Fragmentation

**TOOL**  
Fragmentation



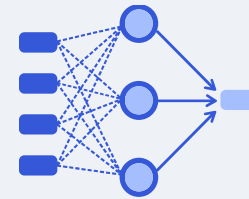
Sensor  
Selection



Model Optimization  
and Deployment

**TECHNOLOGY**  
Fragmentation

**APPLICATION**  
Fragmentation



Domain specific  
models



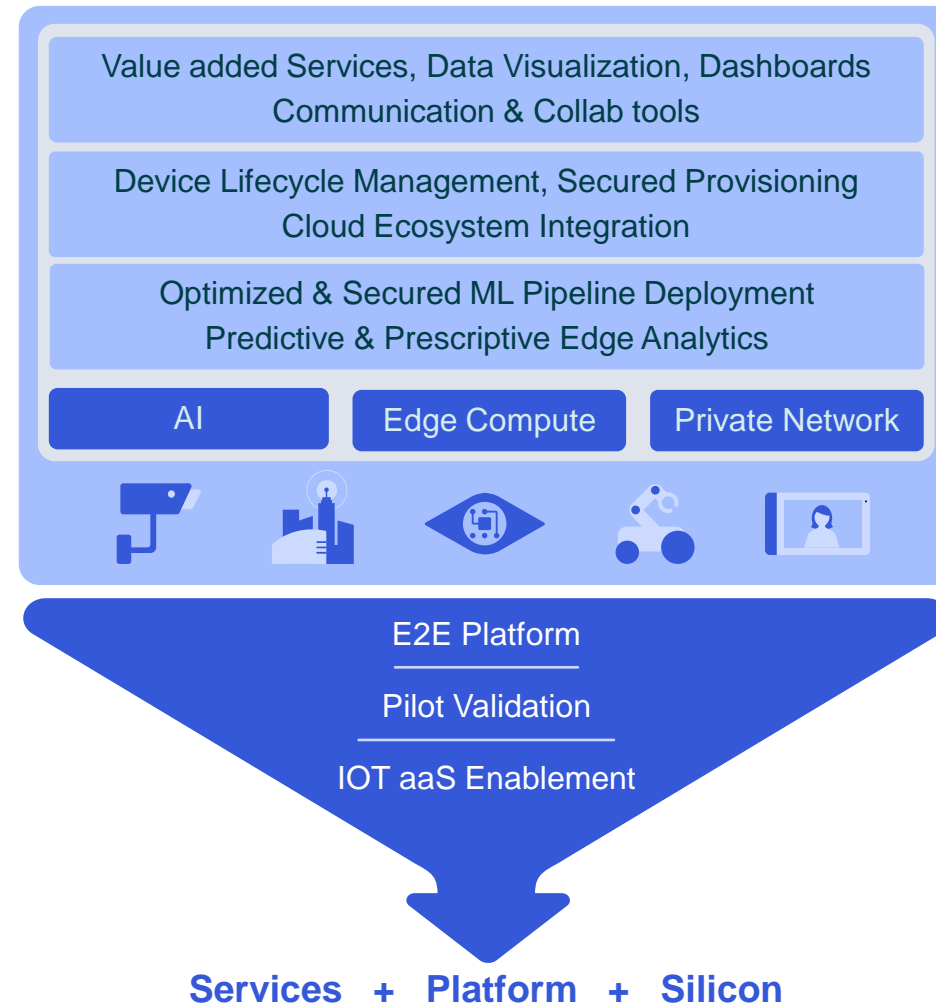
Secured  
Deployment



Model  
Adaptation

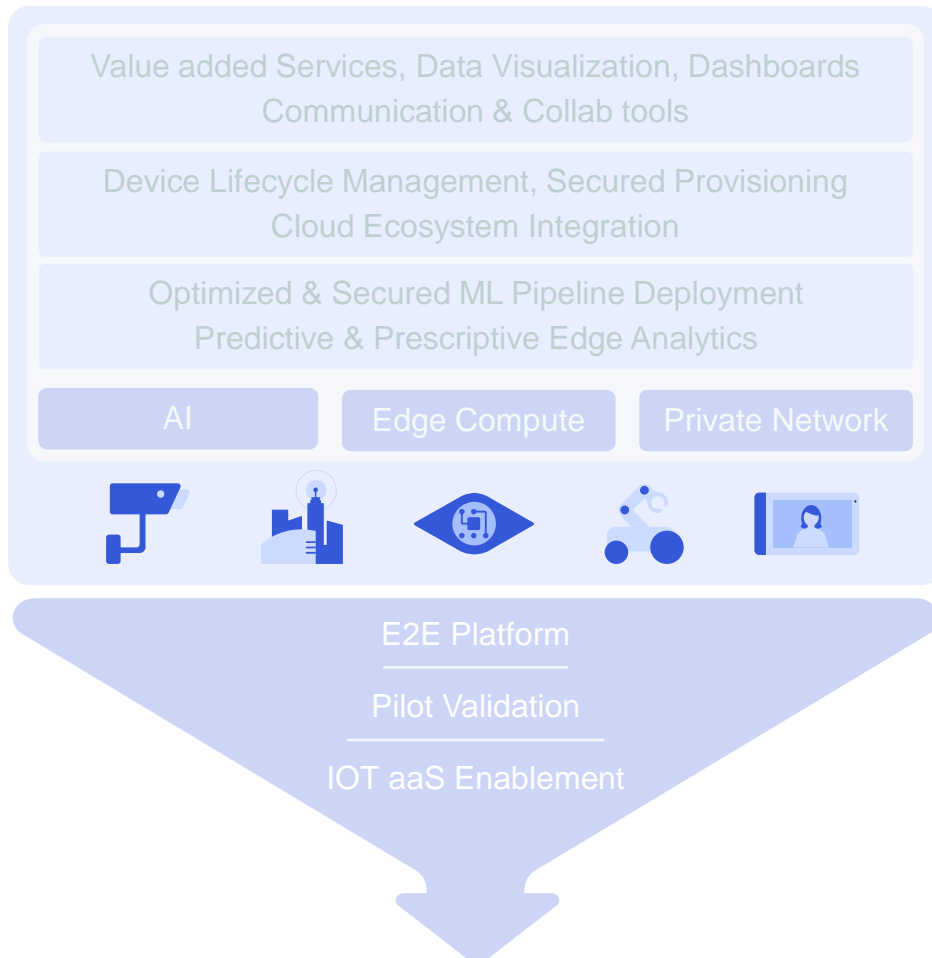
# Qualcomm Technologies providing an end-to-end (E2E) service platform answering the needs of the customer

## IOT E2E Services



# Qualcomm Technologies providing an E2E service platform answering the needs of the customer

## IOT E2E Services

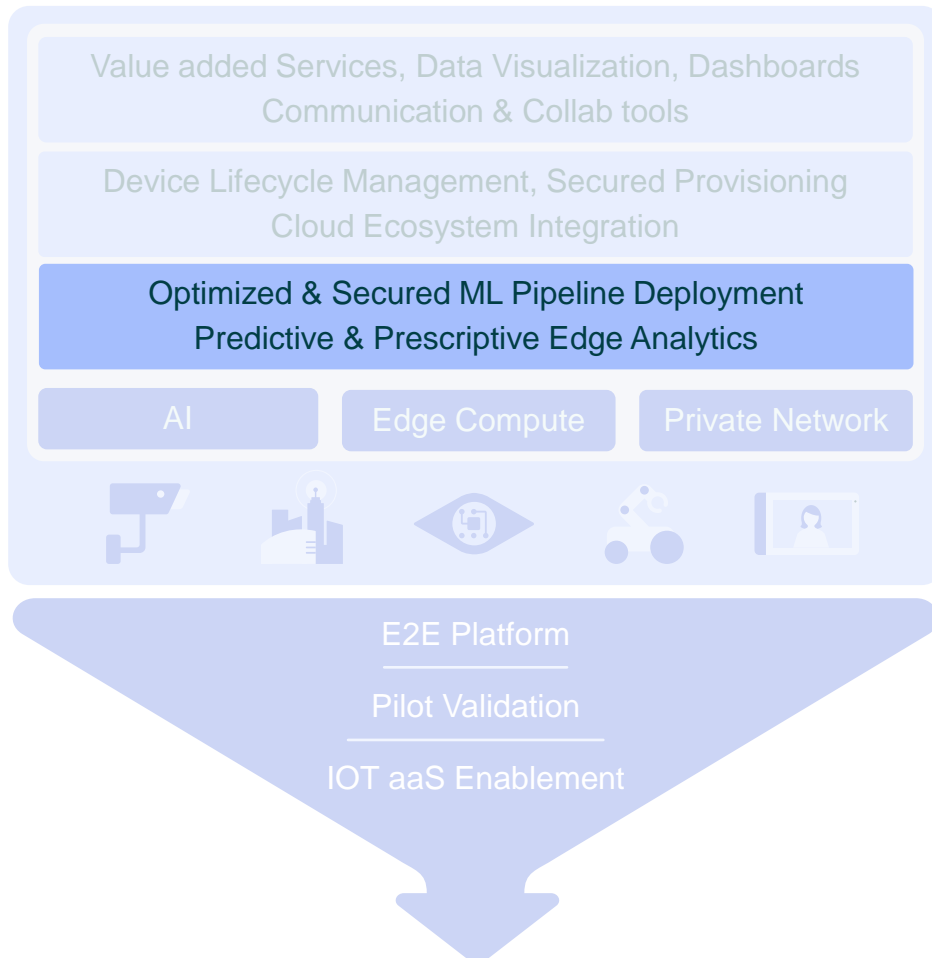


**E2E solution based on commercially available platforms with on-device AI., e.g., AI View cameras**



# Qualcomm Technologies providing an E2E service platform answering the needs of the customer

## IOT E2E Services

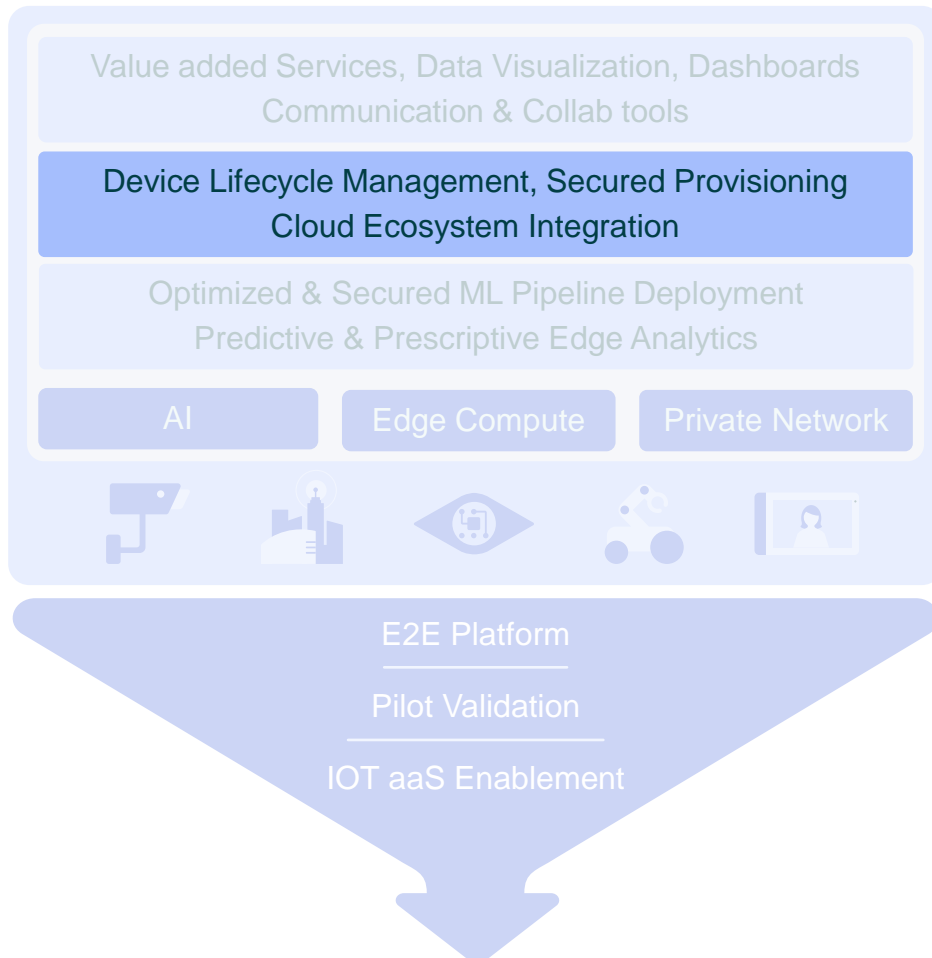


**E2E solution based on commercially available platforms with on-device AI., e.g., AI View cameras**

**Integrated optimized domain specific applications like License Plate Recognition**

# Qualcomm Technologies providing an E2E service platform answering the needs of the customer

## IOT E2E Services



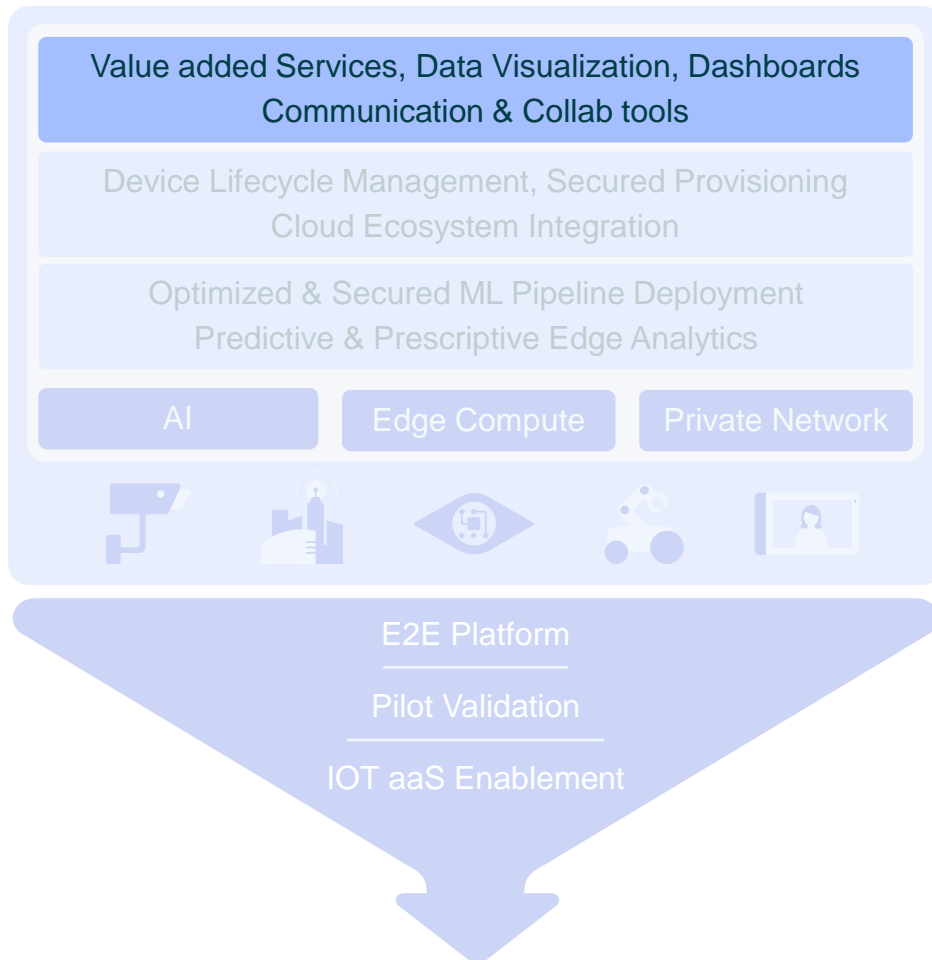
**E2E solution based on commercially available platforms with on-device AI., e.g., AI View cameras**

**Integrated optimized domain specific applications like License Plate Recognition**

**Device management & feature updates**

# Qualcomm Technologies providing an E2E service platform answering the needs of the customer

## IOT E2E Services



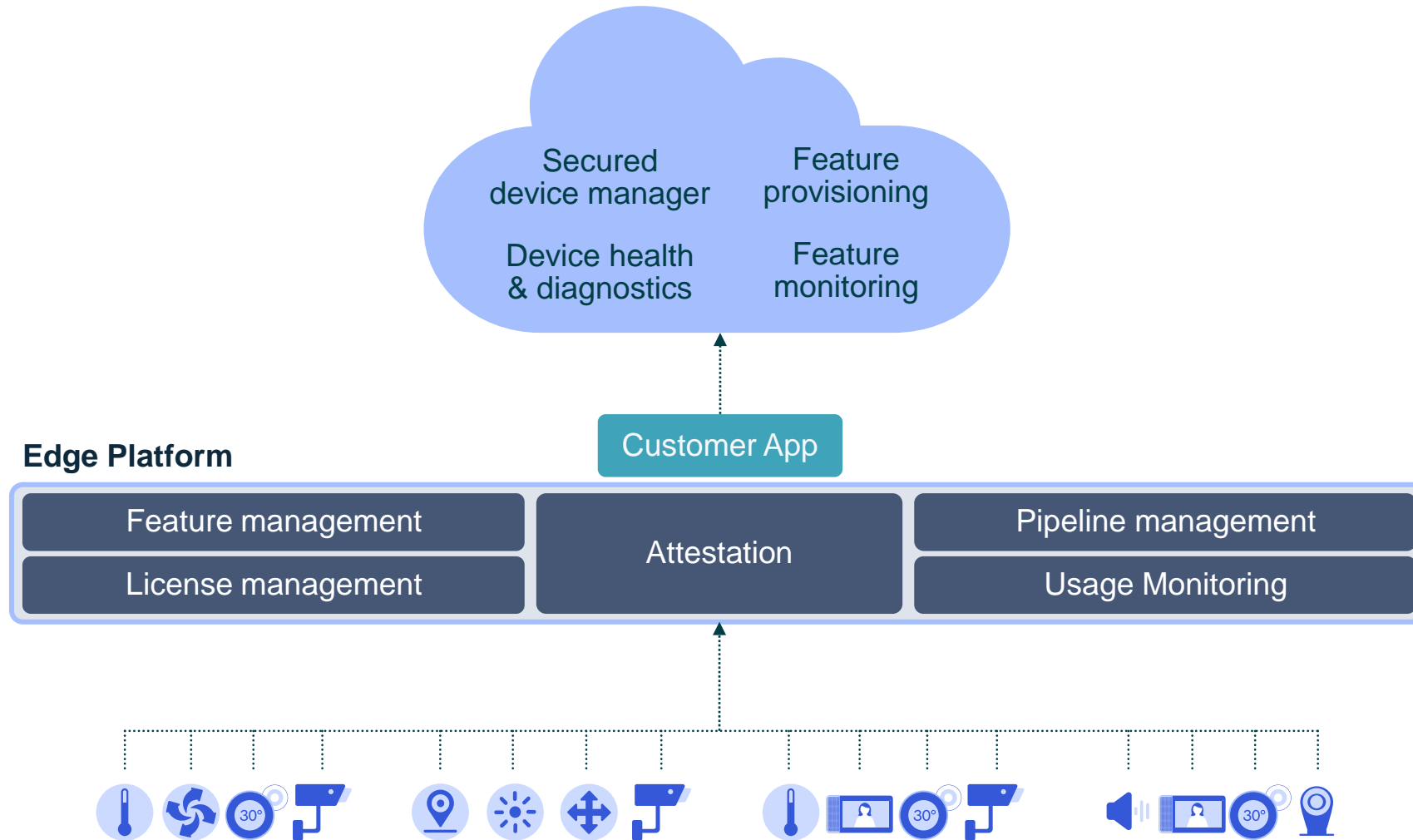
**E2E solution based on commercially available platforms with on-device AI., e.g., AI View cameras**

**Integrated optimized domain specific applications like License Plate Recognition**

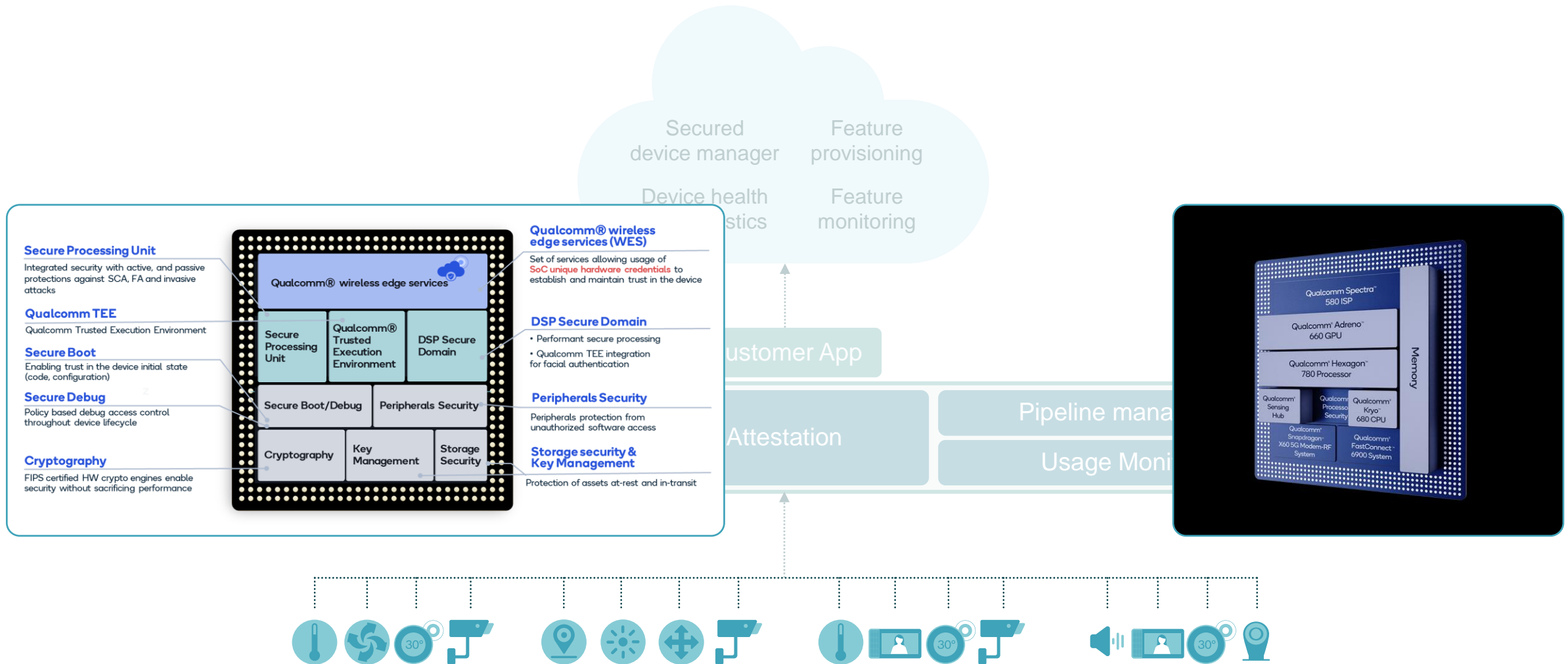
**Device management and feature updates**

**Provide End to End service from solution deployment to visualization.  
Ex. Digital twin of parking structure**

# Key Qualcomm Technologies enabling the E2E service platform

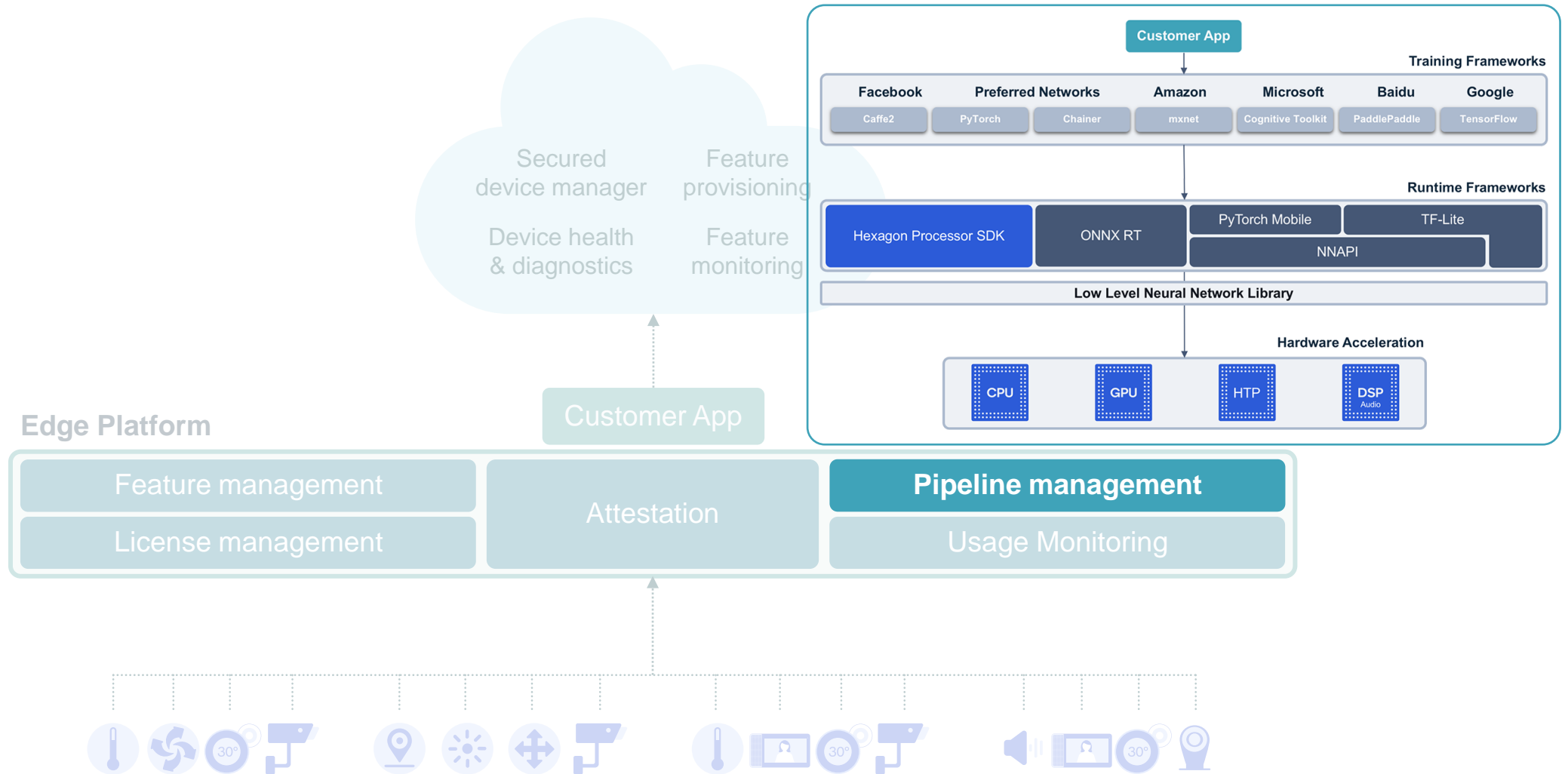


# Key Qualcomm technologies enabling the E2E service platform





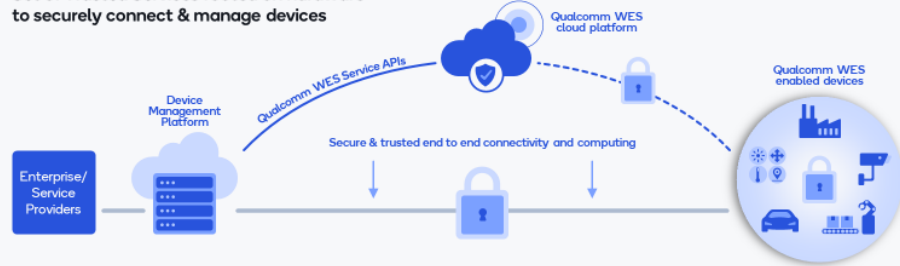
# Key Qualcomm Technologies enabling the E2E service platform



# Key Qualcomm technologies enabling the E2E service platform

## Qualcomm wireless edge services

Set of Trusted Services rooted on hardware to securely connect & manage devices



### Trusted Device Attestation

On-demand attestation service for tamper-proof chipset-based identity, device authenticity and connection integrity

### Zero Touch Device Provisioning

Plug-n-play onboarding, OTA provision unique device credentials enabling secure remote manageability

### Device Lifecycle Management

On-demand chipset upgrades, remotely activate/de-activate chipset features as needed during the life cycle of the device

Secured device manager

Device health & diagnostics

Feature provisioning

Feature monitoring

Customer App

Feature management

License management

Attestation

## Qualcomm WES Value Proposition

Qualcomm wireless edge solutions

### Enhanced security

Authenticate device's identity  
Attest device's software integrity  
Establish secure device-cloud communication  
Monitor device status & connection integrity

### Simplified provisioning

Zero-touch provisioning of TLS certificates & device credentials  
No special provisioning at OEM factory  
Secure onboarding based on HW RoT

### Reduced cost & time-to-market

Seamless, built-in security  
No additional hardware BOM required  
No need for off-the-shelf security solutions  
Logistics of provisioning

### Activate features on-the-fly

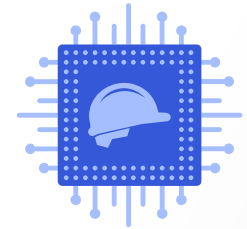
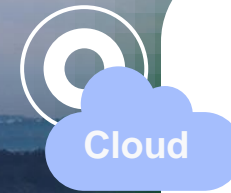
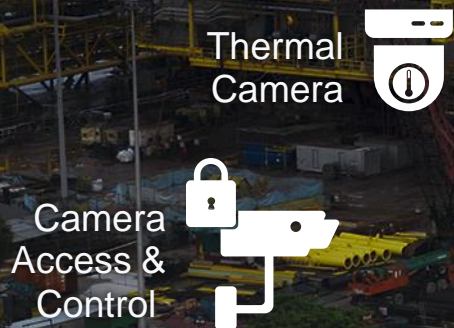
Enable pre-built chipset features  
Enable preloaded software features  
Perform OTA software feature upgrades

Qualcomm WES



# CMaaS touch points

Construction safety industry is multi-functional  
Ripe for disruption



## CMaaS

- Hard Hat
- Connected Worker
- Wearable AI Camera
- Thermal Safety Scan
- Digital workflow
- Remote Collaboration
- Connected Health Kiosk
- Drones for inspection
- Perimeter Lidar
- AI Camera for NLOS



# IoT-as-a-Service Smart Connected Spaces

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## Smart Verticals



**Smart Spaces**



**Smart Transportation**



**Smart Campuses**



**Smart Infrastructure**



**Smart Manufacturing**



**Smart Safety and Security**



**Smart Agriculture**



Smart Shops



Smart Stations



Smart Malls



Smart Display



Smart Experiences



Smart Buildings



Smart Stations



Smart Operators



Smart Traffic



Smart Crowd Management



Smart Schools



Smart Universities



Smart Stadiums



Smart Malls



Smart Roads



Smart Hospitals



Smart Borders



Smart Airports



Smart Ports



Smart Utilities (Power / Water)



Smart Grid



Smart Factory



Smart Logistics



Smart Warehousing



Asset Management



Smart Cameras



Smart Surveillance



Smart Access



Smart Livestock



Smart Farming



Smart Horticulture

## Smart Spaces



**With Fragmentation in IoT, need for a full-stack solution is eminent. E2E service by Qualcomm Technologies is driving the transformation of smart IoT And solving the challenge of Edge AI deployment at scale.**





Thank you