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What is Edge Computing?

EDGE COMPUTING IS THE PLACEMENT OF DATA CENTER-GRADE NETWORK, **COMPUTE & STORAGE** CLOSER TO **ENDPOINT DEVICES**

TO IMPROVE SERVICE CAPABILITIES

OPTIMIZE TCO

COMPLY WITH DATA LOCALITY

AND REDUCE APPLICATION LATENCY
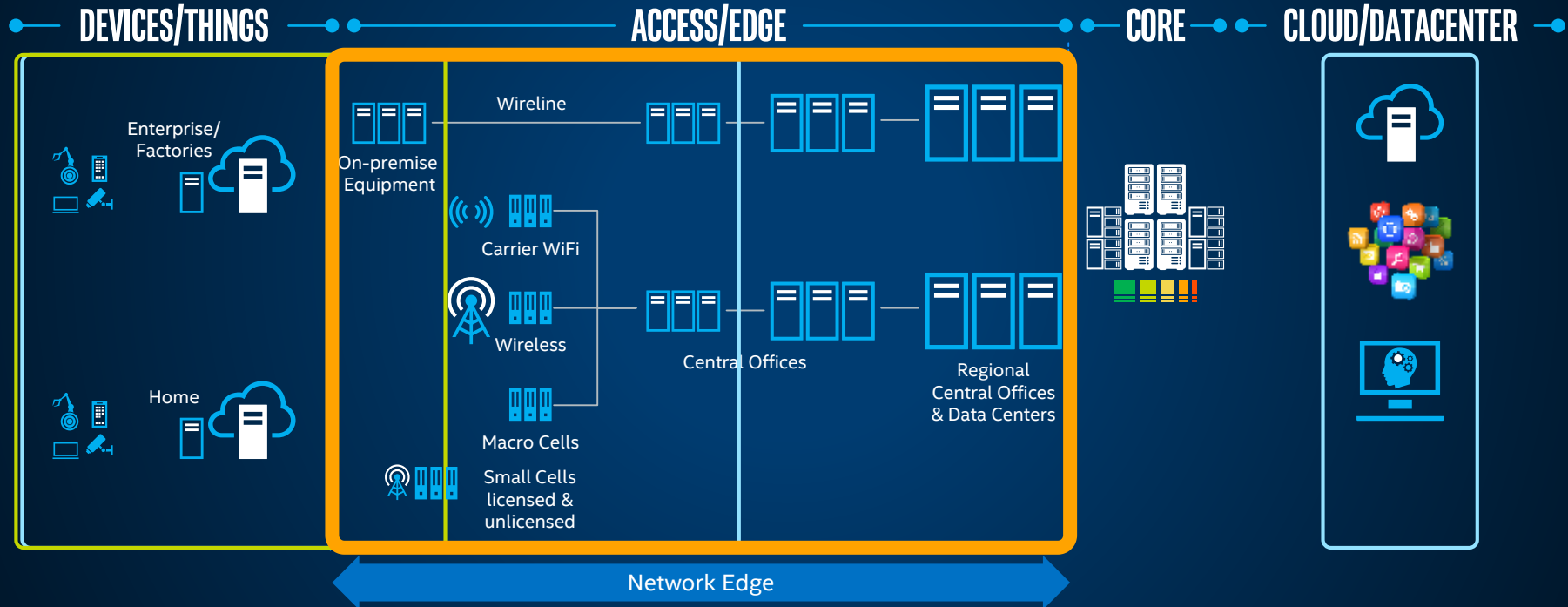
THE EDGE IS THE OUTMOST LAYERS OF PROCESSING OR NETWORK BEFORE TRANSITION TO THE ENDPOINT **OR** ANOTHER NETWORK

Distributed Network of Data Centers

5G Clients | WIRELESS / WIRELINE | Base Station | Local CO | Regional CO | Core | Cloud / OTT

MASSIVE DATA SETS

DATA SOVEREIGNTY / PRIVACY

LATENCY= <5 mS

LATENCY= 10mS+

LATENCY= 40mS+

LATENCY= 100mS+
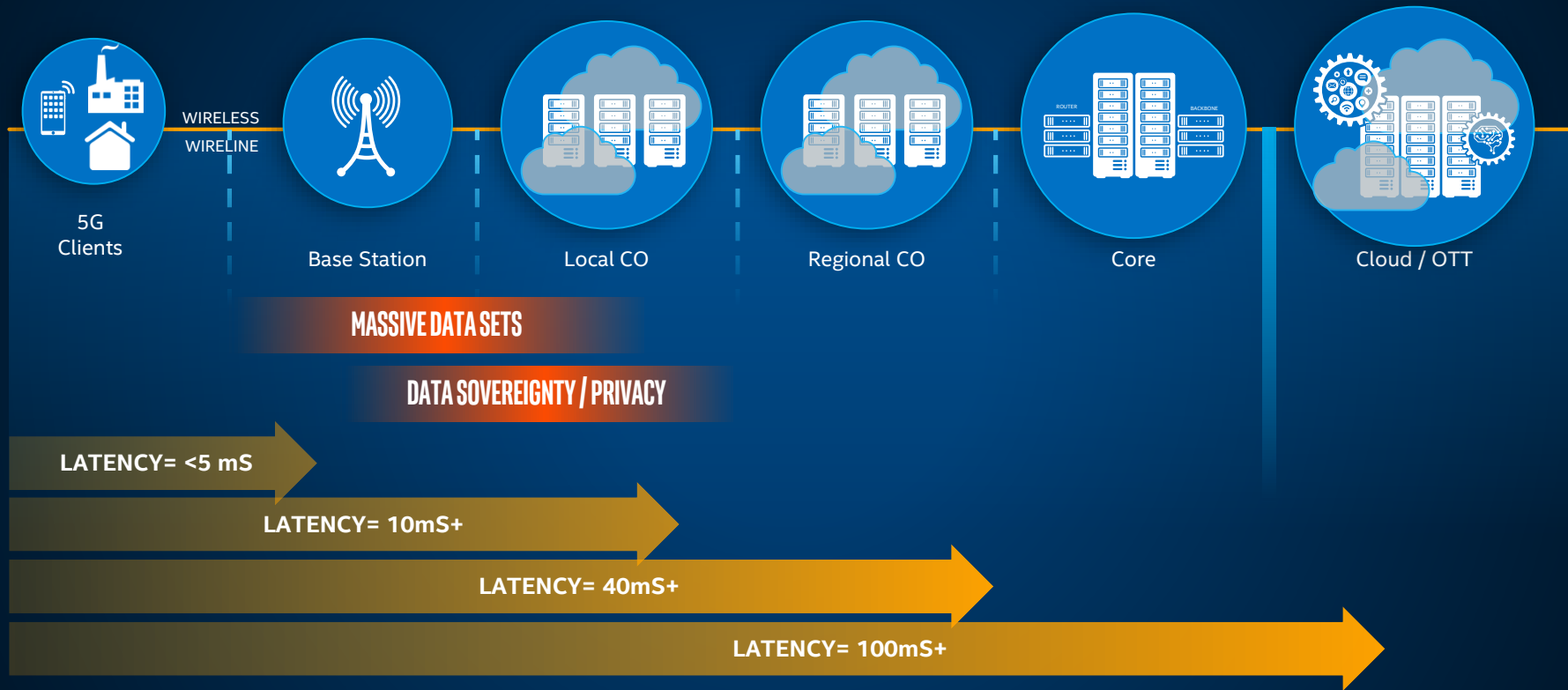
Above calculations conservatively based on 5us latency / km + congestion + transfer/processing + overheads

Key Drivers for Edge Compute

Low latency that can not be achieved by using centralized cloud

Reduction of movement of the massive amount data generated by IoT devices to reduce cost and enable efficient use of resources

Data privacy and data sovereignty

Context awareness

Scenarios where connectivity is unreliable or limited

Better experience, faster transactions

Edge is Moving from Hype to Deployments!

WAREHOUSE & MANUFACTURING

HOSPITALITY & CASINOS

TRANSPORTATION

ADAS

RETAIL

SMART CITY

EDGE CLOUD GAMING

INSPECTION & INFRASTRUCTURE

SMART STADIUMS

VR/AR WITH LOCATION

SECURITY, RECOGNITION, SURVEILLANCE

VR GOES BEYOND GAMING IN SEVERAL INDUSTRIES

HEALTH

VR can be used in health training & education, surgery simulations, integrated to treatment, etc.

ENTERPRISE

GE* using Oculus Rift* to demonstrate underwater technologies

MOVIES & TV

Hollywood is quickly embracing VR with projects like Fox Innovation Lab's* *The Martian VR Experience*ial*

MILITARY

Canadian soldier using VR to improve tactical techniques and augmentation of awareness in combat

EDUCATION

Alchemy VR*, Google's Expeditions Pioneer Program,* and other education programs are using VR with students

SPORTS

STRIVR* is a training program used in several NFL* teams more than twelve colleges

NCAA "MARCH MADNESS" LIVE ON VR (2018)

https://www.youtube.com/watch?v=DZwr0izJYkc

Intel – Front Row Seats to March Madness

https://www.turner.com/pressroom/ncaa-march-madness-live-vr-app-offer-virtual-reality-coverage-throughout-2018-ncaa

AR/VR IN <u>HEALTHCARE</u>

Health will be the second largest VR Market by 2025

- PAIN MANAGEMENT

- MEDICAL TRAINING

- REHABILITATION

- MENTAL HEALTH

- REMOTE SURGERY

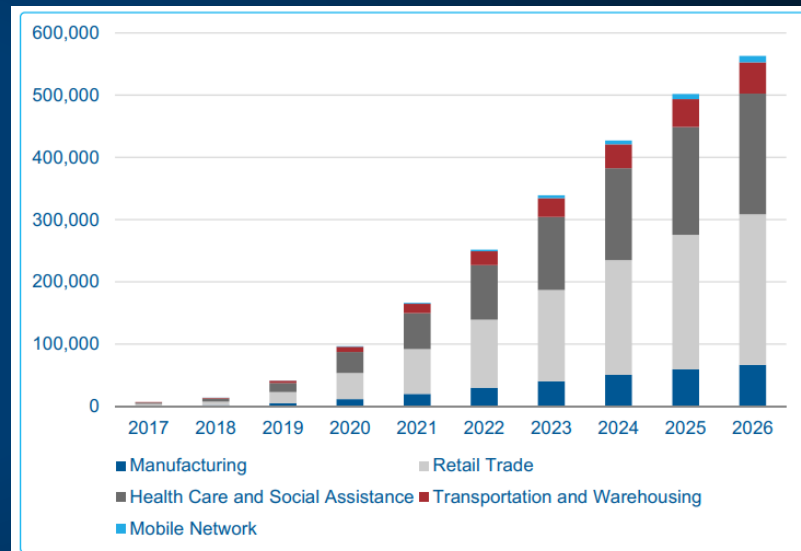# EDGE DEPLOYMENTS IN THE <u>RETAIL</u> EDGE

CASE STUDY

- Large US Tech Retailer (2000+ stores)

- Stores: Fulfillment, Repair, Support, Showroom, Events.

- Demos, Videos, PoS, SW Updates, Digital Signage, AR / VR in planning (all via Wifi)

- MEC Deployment in 25 new stores with a private LTE deployment

<u>55% TCO REDUCTION IN 3-YEAR</u>

US MEC Installations (iGR Study)

Source: iGR, 2017

Legend: Manufacturing, Retail Trade, Health Care and Social Assistance, Transportation and Warehousing, Mobile Network

Ecosystem Vendors

APPLICATION VENDORS

| CDN | AR | Analytics | In Venue Experience | Video Gaming and/ or Image Processing |
| Location | Ads | Broadcasters | | |

DAS / ENODE-B / CONNECTIVITY

MEC/EDGE CLOUD & INTEGRATORS

CAMERAS / SYSTEMS

REAL ESTATE

GROWING NUMBER OF APPLICATION VENDORS TO CLOSE ENTERPRISE AND CONSUMER GAPS

Enabling network transformation/ Edge Build-out

INVEST
OPEN SOURCE AND STANDARDS

3GPP · 5GAA Automotive Association · CLOUD FOUNDRY

CLOUD NATIVE COMPUTING FOUNDATION · DPDK · ETSI World Class Standards

katacontainers · kubernetes · (linux)

ONAP · OPEN DAYLIGHT · Open Source MANO

openstack · OPNFV · OvS Open vSwitch · FD.io

INDUSTRY COLLABORATION
INTEL® NETWORK BUILDERS

300+ Members   **30+** Comms SPs

82+
POCs/Trials/Deployments
Based on Member Solutions

126+
Network Builder
University Program
Members

38+
Network Edge
Ecosystem Program
Members

intel select solution

intel XEON PLATINUM inside · **NFVI** · NETWORK FUNCTIONS VIRTUALIZATION INFRASTRUCTURE

HUAWEI · QCT · Lenovo

NOKIA · redhat · ubuntu

intel XEON inside · **UCPE** · UNIVERSAL CUSTOMER PREMISES EQUIPMENT

ADVANTECH · Lanner · PREMIER

Silicom Connectivity Solutions · SUPERMICRO · ubuntu

Common Support Structure Across "Builders" Initiatives

*Other names and brands may be claimed as the property of others.

intel

Wrap-up

CALL TO ACTION

1
Understand Business Opportunity

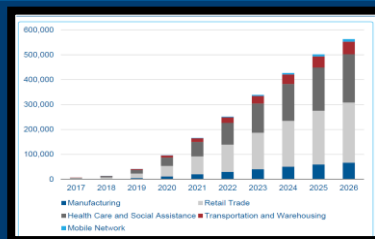**(Possible Edge Business Cases in your Industry)**

2
Understand Business Case and Monetization

(New capabilites should prove positive ROI)

3
Identify players and build the Ecosystem

(New capabilites should prove positive ROI)

GRACIAS! OBRIGADO ! THANK YOU!