



# DELIVERING BETTER BUSINESS OUTCOMES **AT THE EDGE**

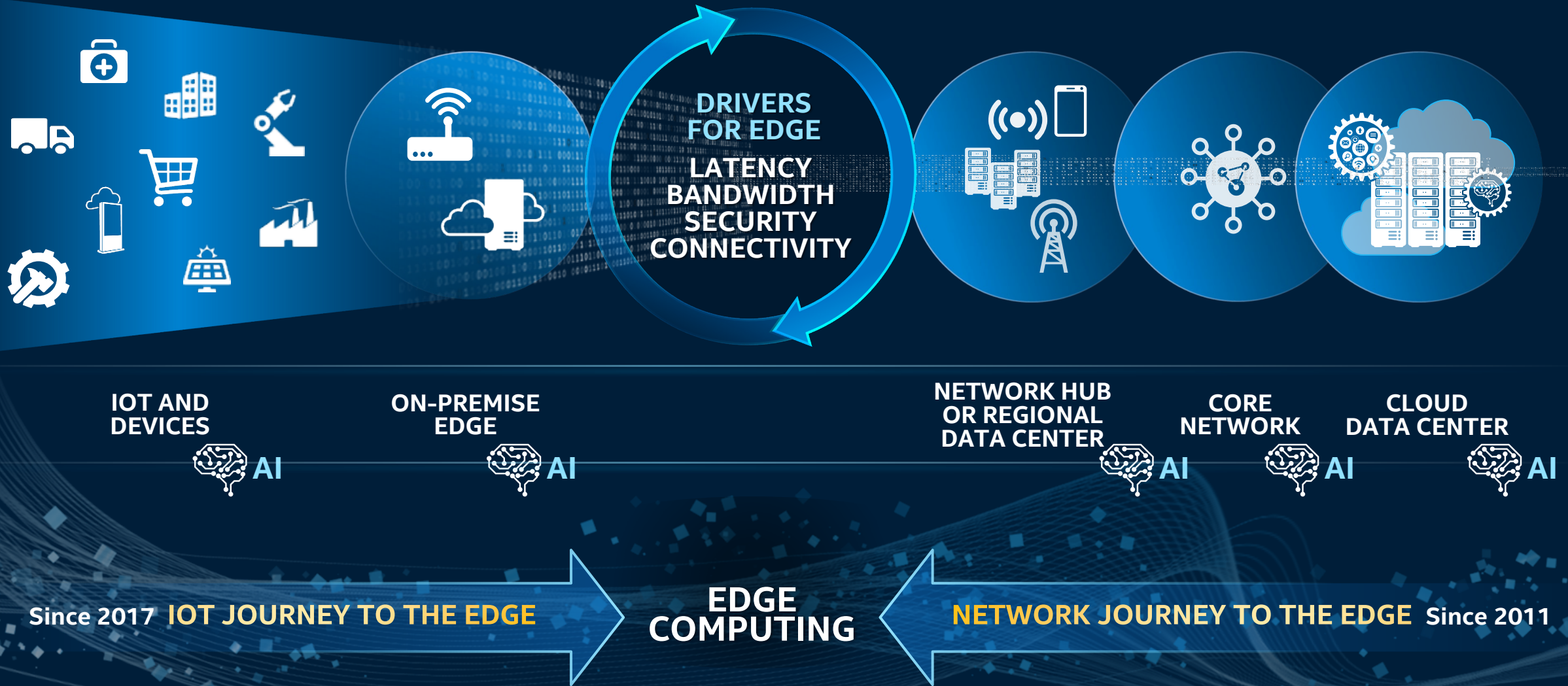
September 2020

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SVP and GM, Intel IoT Group

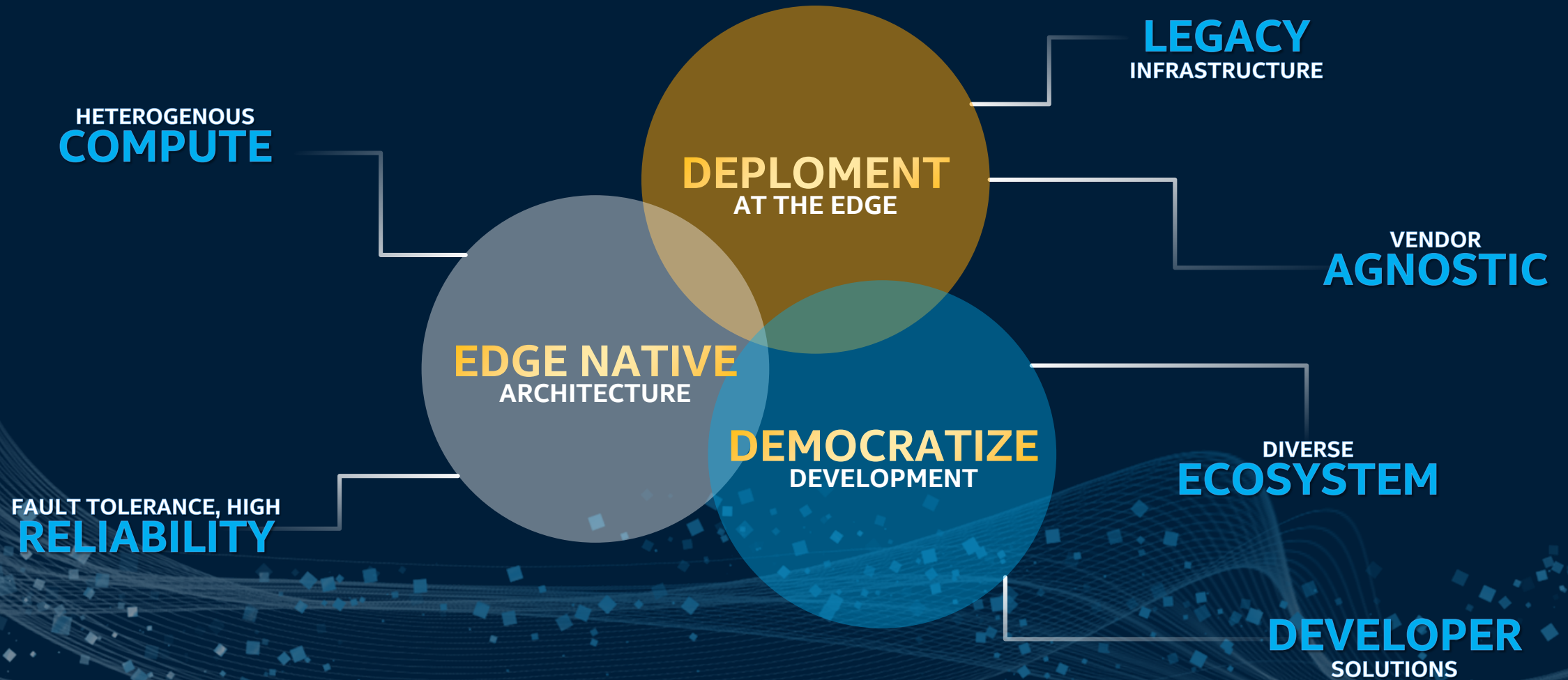
**Daniel C. Rodriguez**  
CVP and GM, Intel Network Platforms Group



# THE MOMENTOUS SHIFT TO THE EDGE



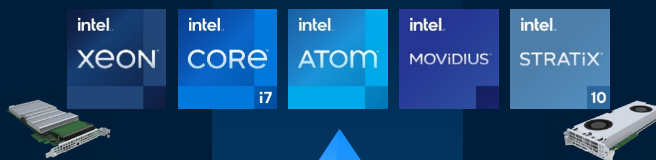
# UNCOVERING CHALLENGES AT THE EDGE



# DELIVERING BUSINESS OUTCOMES AT THE EDGE

## DIVERSE PRODUCT PORTFOLIO

WITH EDGE SPECIFIC OPTIMIZATIONS,  
FEATURES AND ACCELERATORS



## VAST ECOSYSTEM SCALE

SCALE WITH ECOSYSTEM  
TO **ACCELERATE** DEPLOYMENTS  
AND DELIVER RESULTS



## ROBUST DEVELOPER TOOLS

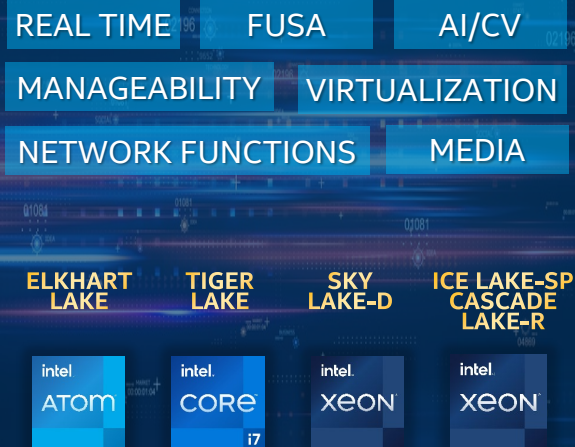
DRIVING CONVERGENCE OF  
ANALYTICS, MEDIA AND NETWORKING WITH  
VERTICAL SPECIFIC OFFERINGS





# ENHANCED SILICON FOR THE EDGE

## ENHANCED FOR THE EDGE



## BUILT FOR EDGE AI



Visual Services Accelerator

## BUILT FOR 5G



WORKLOAD OPTIMIZATION ACROSS SCALABLE PRODUCT PORTFOLIO

# PERPETUATING MOORE'S LAW

## EXPONENTIAL IMPROVEMENTS COMBINING HW + SW

■ Baseline Performance

■ Additional Software Performance



1X<sup>1</sup>



2.1X<sup>1</sup>

25.6X<sup>1</sup>



R1 2018 OpenVINO™

1<sup>st</sup> Generation Xeon® Scalable

R1 2019 OpenVINO™

1<sup>st</sup> Generation Xeon Scalable

R3 2019 OpenVINO™

2<sup>nd</sup> Gen Xeon Scalable

<sup>1</sup> For more complete information about performance and benchmark results, visit [www.intel.com/benchmarks](https://www.intel.com/benchmarks). See backup for configuration details.  
Comparison of Frames Per Second utilizing Mobilenet SSD, Batch 1.



# DEVELOP FASTER FOR THE EDGE



VISION



RETAIL



INDUSTRIAL



CITIES



✓ DEEP LEARNING  
ACCELERATION



✓ 5G NETWORK  
TRANSFORMATION



✓ MEDIA EXPERIENCE  
EVOLUTION

...and more



EDGE AND CLOUD  
ORCHESTRATION



MULTI-CLOUD  
CAPABILITY



OPEN SOURCE  
COLLABORATION



HARDWARE SCALABILITY AND  
DEVELOPER KITS OF CHOICE

# BUILDING OUT THE CONVERGED EDGE SOLUTIONS

IT AND OT  
INSIGHTS

CT  
INSIGHTS

INFERENCE NETWORK

ANALYTICS

MEDIA



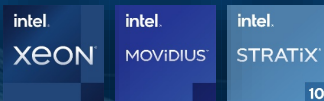
OpenVINO™

OpenNESS

ACCELERATE TIME TO BUSINESS OUTCOMES AND LOWERING TOTAL COST OF OWNERSHIP

AVAILABLE ON INTEL® EDGE SOFTWARE HUB – Q3 2020

## DEVELOPER KITS



iiEi



## SOFTWARE PACKAGE

OPTIMIZED & PRE-BUNDLES

INTEL® CONVERGED  
EDGE INSIGHTS

OpenVINO + OpenNESS

## REF. IMPLEMENTATIONS

FOR KEY USE CASES



Wireless-Network Ready  
Intelligent Traffic Mgmt



## ECOSYSTEM SCALE

INTEL® RFP READY KITS  
INTEL® MARKET READY SOLUTIONS

QNAP

FOXCONN  
鴻海科技集團

SKYLAB

CONVERGED EDGE REFERENCE ARCHITECTURE (CERA) ENABLING PARTNERS TO BUILD USE CASE SPECIFIC SOLUTIONS FOR RAPID SCALE



# DELIGHTING DEVELOPERS AT THE EDGE

LEARN EDGE AI EXPERTISE

AVAILABLE NOW

**OPENVINO CERTIFICATION**  
NANODEGREE FOR EDGE AI



"Edge AI Is The Future, Intel and Udacity Are Teaming Up to Train Developers"

April 2020 [link](#)

**Forbes**

**INDUSTRY RECOGNIZED**

SPECIALIZED TRAINING FOR DEVELOPERS

**IN-DEPTH**

TRAININGS TO ENABLE LEARNING & EXPERTISE

TRY BEFORE YOU BUY

AVAILABLE NOW

**INTEL® DEV  
CLOUD FOR THE EDGE**



"Intel's DevCloud for the Edge is the 2020 Vision Product of the Year Award Winner!"

June 2020 [link](#)



**FULL RANGE**

INTEL EDGE PRODUCTS OF CHOICE

**NO CAPEX**

NO CONFIGURATION OR WAITING

ACCELERATE DEVELOPMENT

AVAILABLE NOW

**INTEL® EDGE SOFTWARE HUB**  
USE CASE-SPECIFIC OFFERINGS



REFERENCE IMPLEMENTATIONS  
+  
OPTIMIZED EDGE SOFTWARE PACKAGES

JUNE'20 INITIAL RELEASE WITH  
QUARTERLY UPDATES

**OPTIMIZED**

FOR RAPID PROTOTYPE TO PRODUCTION

**SEAMLESS UX/DX**

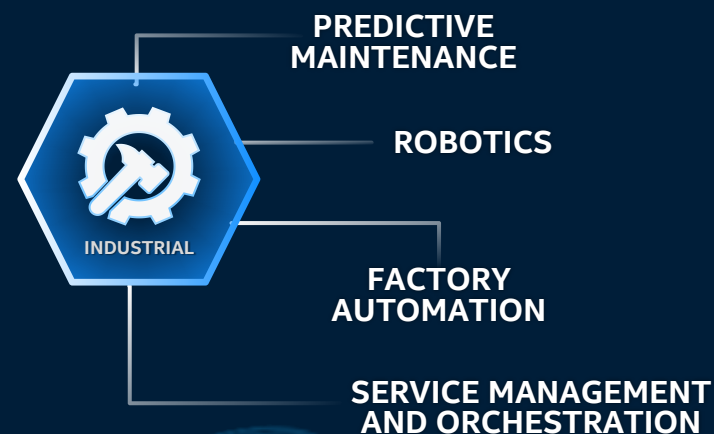
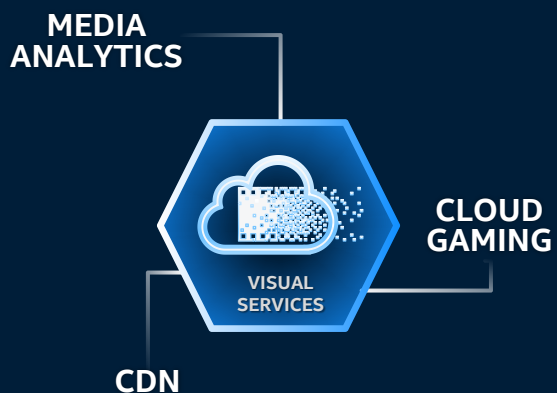
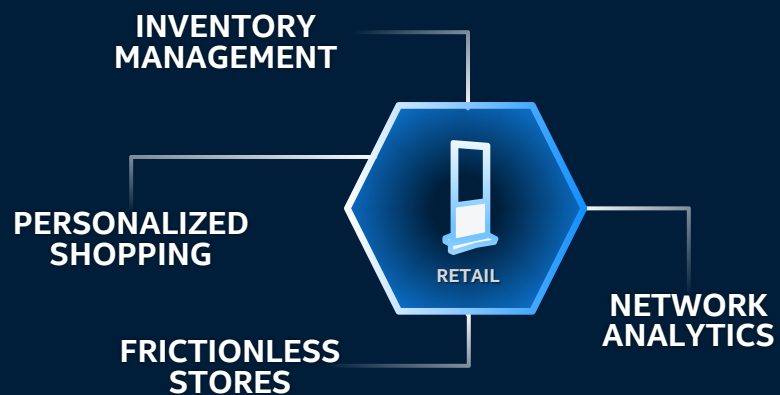
ONE STOP RESOURCE & PORTFOLIO FOR SCALE

# DELIVERING RESULTS AT THE EDGE WITH ECOSYSTEM

**1,200+** ECOSYSTEM PARTNERS  
FOR THE EDGE

**300+** EDGE SOLUTIONS  
USE CASE SPECIFIC

**15,000+** END USER DEPLOYMENTS<sup>1</sup>  
UNIQUE SINCE 2018

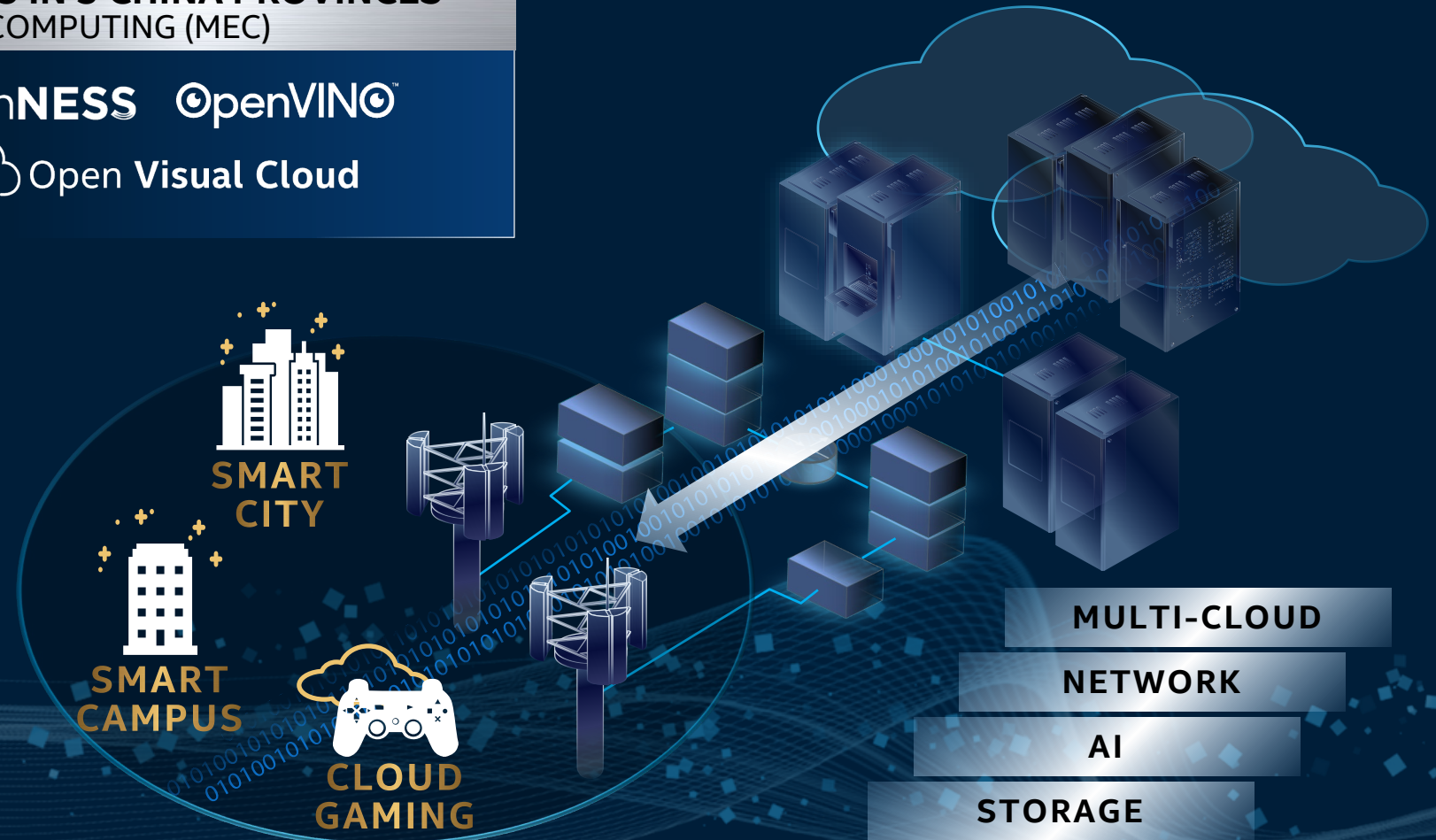


<sup>1</sup> Source: Based on internal Intel information



# DELIVERING A BETTER OUTCOME - CHINA UNICOM



COMMERCIAL DEPLOYMENTS IN 3 CHINA PROVINCES  
ON 5G MOBILE EDGE COMPUTING (MEC)





# 15,000+ END CUSTOMER DEPLOYMENTS<sup>1</sup>

## REAL WORLD VALUE ACROSS INDUSTRIES

Sensormatic <small>by Johnson Controls</small>	ExxonMobil	 Audi	 Momentum + QNAP	Lenovo + cellnex <sup>®</sup>	LUMEN <sup>®</sup> <small>(formerly CenturyLink)</small>	Rakuten Mobile
<b>AI for Social Distance</b>	<b>Open Process Automation</b>	<b>Edge Analytics and Machine Learning</b>	<b>Computer Vision for Smart Retail</b>	<b>CDN and Smart Cities</b>	<b>Next-Gen CDNs</b>	<b>World's First Cloud-Native Network</b>
<i>Helped Stores Meet Social Distancing + Occupancy Requirements</i>	<i>Collaborated on Open Industry Standards Technologies</i>	<i>100% Increased Efficiency While Reducing Cost<sup>2</sup></i>	<i>Enhanced Store, Staffing, and Customer Insights</i>	<i>New Edge Computing Solutions to Support MNOs</i>	<i>Better Monetized Data Throughout Network Value Chain</i>	<i>Launched the 1st End To End Cloud Native Wireless Network</i>
Intel <sup>®</sup> Movidius <sup>™</sup> VPUs  Intel <sup>®</sup> Atom <sup>™</sup> , Intel <sup>®</sup> Core <sup>™</sup> , and Intel <sup>®</sup> Xeon <sup>™</sup> processors  OpenVINO <sup>™</sup>	Intel <sup>®</sup> Xeon <sup>™</sup> , Intel <sup>®</sup> Core <sup>™</sup> , and Intel <sup>®</sup> Atom <sup>™</sup> processors	Edge Insights for Industrial AI algorithms	Intel <sup>®</sup> Xeon <sup>™</sup> D processors Intel <sup>®</sup> Movidius <sup>™</sup> VPUs Intel <sup>®</sup> QAT OpenVINO <sup>™</sup> OpenNESS	Intel <sup>®</sup> Xeon <sup>™</sup> D processors OpenVINO <sup>™</sup> OpenNESS <sup>3</sup>	Intel <sup>®</sup> Xeon <sup>™</sup> processors Intel <sup>®</sup> Optane <sup>™</sup> SSDs	Intel <sup>®</sup> Xeon <sup>™</sup> processors Intel <sup>®</sup> Ethernet Network Adaptors Intel <sup>®</sup> FPGAs OpenNESS FlexRAN

<sup>1</sup> Source: Based on internal Intel information

<sup>2</sup> Source: <https://www.intel.com/content/www/us/en/customer-spotlight/stories/audi-automated-factory.html>

<sup>3</sup> Incorporating OpenNESS for networking workloads in the future.

# Notices and Disclaimers

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors.

Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more complete information visit [www.intel.com/benchmarks](http://www.intel.com/benchmarks).

Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See backup for configuration details. No product or component can be absolutely secure.

Your costs and results may vary.

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Performance results are based on testing as of April 18, 2019 except for 2019 R3 testing which is as of Sept 21, 2019 and may not reflect all publicly available security updates. See configuration disclosure for details. No product or component can be absolutely secure. Configurations shown below.

	1	2	3
System Board	Intel® Server S2600 (Dual socket)	Supermicro / X11SPL-F	Supermicro / X11SPL-F
Product	Xeon Silver 4216	Intel(R) Xeon(R) Silver 4112	Intel(R) Xeon(R) Silver 4112
CPU sockets	2	-	1
Physical cores	2 x 16	4	4
Processor Base Frequency	2.10 GHz	2.60GHz	2.60GHz
HyperThreading	enabled	-	enabled
Turbo	On	-	On
Power-Performance Mode	Performance Mode	-	-
Total System Memory size	12 x 64GB	16384	16384
Memory speed	2400MHz	2400MHz	2400MHz
Software OS	Ubuntu 18.04	Ubuntu 16.04.3 LTS	Ubuntu 16.04.6 LTS
Software Kernel	4.15.0-66-generic x86_64	4.13.0-36-generic	4.15.0-29-generic
Test Date	27 September 2019	25 May 2018	18 April 2019
Precision (IntMode)	Int 8 (Throughput Mode)	FP32	Int 8 (Throughput Mode)
Power (TDP)	200W	85W	85W
Price Link on 30 Sep 2019 (Prices may vary)	\$2,024	\$483	\$483
Network	Mobilenet SSD	Mobilenet SSD	Mobilenet SSD



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