



Qualcomm

Cristiano Amon

President, Qualcomm Incorporated

Safe Harbor

In addition to the historical information contained herein, this presentation and the conference call that accompanies it contain forward-looking statements that are inherently subject to risks and uncertainties, including but not limited to statements regarding: our business, product, technology, financial and acquisition strategies, priorities, plans, drivers, opportunities, outlook, estimates and expectations; our growth opportunities and initiatives, including our core mobile business, 5G, RF front-end, and adjacencies such as automotive, including ADAS, IoT, security, networking, compute and cloud/edge AI, and our growth, revenues, design wins, share and investments therein and our positioning to take advantage of opportunities in these areas; 5G, including its rollout, features, benefits, performance, drivers for adoption, economic impact, the opportunities for growth it creates, including in other industries, our investments in, contributions to and innovations that enable/are at the core of 5G, and 5G’s potential impact on our business and financial results; our technologies and technology leadership; our products, product performance, product leadership and product roadmap; market and industry trends, and their potential impact on our business, and our positioning to take advantage thereof; our capital structure; QTL’s business, strategy, patent portfolio, R&D and standards leadership, foundational innovations and inventions, and being well-positioned for the future; the FTC lawsuit and our expectations regarding timing of key milestones; and our expectations, estimates, forecasts and guidance related to our financial results, other financial and business metrics, and our business, as well as the factors and assumptions underlying such expectations, estimates, forecasts and guidance. Forward-looking statements are generally identified by words such as “estimates,” “guidance,” “expects,” “anticipates,” “intends,” “plans,” “believes,” “seeks” and similar expressions. Actual results may differ materially from those referred to in the forward-looking statements due to a number of important factors, including but not limited to: commercial network deployments, expansions and upgrades of CDMA, OFDMA and other communications technologies, our customers’ and licensees’ sales of products and services based on these technologies and our customers’ demand for our products and services; competition in an environment of rapid technological change; our dependence on a small number of customers and licensees, which increasingly includes a small number of Chinese OEMs; our dependence on the premium-tier device segment; attacks on our licensing business model, including current and future legal proceedings and governmental investigations and proceedings, including potential adverse outcomes relating to the Federal Trade Commission lawsuit against us, and actions of quasi-governmental bodies and standards and industry organizations; potential changes in our patent licensing practices, whether due to governmental investigations, private legal proceedings challenging those practices, or otherwise; the difficulties in enforcing and protecting our intellectual property rights; our ability to extend our technologies, products and services into new and expanded product areas and adjacent industry segments and applications outside of traditional cellular industries; risks associated with the operation and control of our manufacturing facilities; the continued and future success of our licensing programs, which requires us to continue to evolve our patent portfolio, and the need to renew or renegotiate license agreements that are expiring; our dependence on a limited number of third-party suppliers; claims by third parties that we infringe their intellectual property; strategic acquisitions, transactions and investments and our ability to consummate planned strategic acquisitions; our compliance with laws, regulations, policies and standards; our use of open source software; the cyclical nature of the semiconductor industry, and our stock price and earnings volatility; our indebtedness and our significant stock repurchase program; security breaches of our information technology systems or other misappropriation of our intellectual property or proprietary or confidential information; potential tax liabilities; global, regional or local economic conditions or political actions that impact the industries in which we operate; our ability to attract and retain qualified employees; foreign currency fluctuations; and failures in our products or services or in the products or services of our customers or licensees, including those resulting from security vulnerabilities, defects or errors. These and other risks are set forth in our Annual Report on Form 10-K for the fiscal year ended September 29, 2019 filed with the SEC. Our reports filed with the SEC are available on our website at www.qualcomm.com. We undertake no obligation to update, or continue to provide information with respect to, any forward-looking statement or risk factor, whether as a result of new information, future events or otherwise.

This presentation includes “non-GAAP financial measures” as that term is defined in Regulation G. Further discussion regarding our use of non-GAAP financial measures, as well as the most directly comparable GAAP financial measures and information reconciling these non-GAAP financial measures to our financial results prepared in accordance with GAAP, are included at the end of this presentation. The Non-GAAP financial measures should not be considered a substitute for, or superior to, the financial measures prepared in accordance with GAAP.

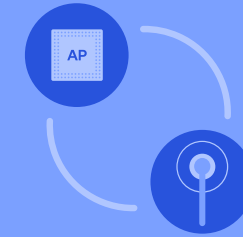
We refer to “Qualcomm” for ease of reference. However, in connection with our October 2012 reorganization, Qualcomm Incorporated continues to operate QTL and own the vast majority of our patent portfolio, while Qualcomm Technologies, Inc., its wholly-owned subsidiary, now operates, along with its subsidiaries, substantially all of our products and services businesses, including QCT, and substantially all of our research and development functions.

Executing on our

strategy



Drive 5G
smartphone
transition



Build scale
in adjacent
platforms



Invest in
long-term
opportunities

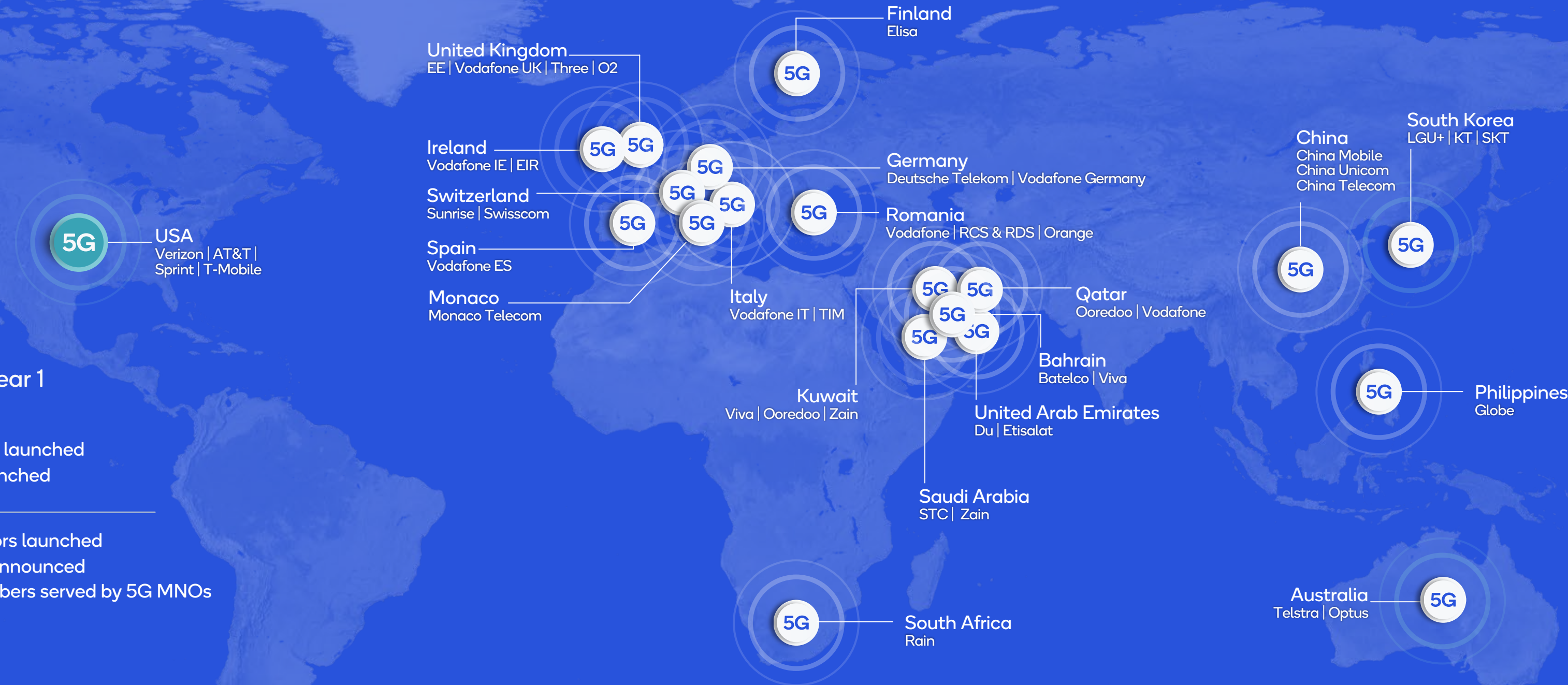
2019 is the year of 5G

Global commercialization
moving faster than 4G

- 5G** Sub-6
- 5G** Sub-6 + mmWave

Comparison of Year 1 announcements

- 4G** 4 Operators launched
3 OEMs launched
- 5G** 40+ Operators launched
40+ OEMs announced
2.4B Subscribers served by 5G MNOs



2020

Commercialization rapidly
expanding around the globe

-  Sub-6
-  Sub-6 + mmWave



2021+

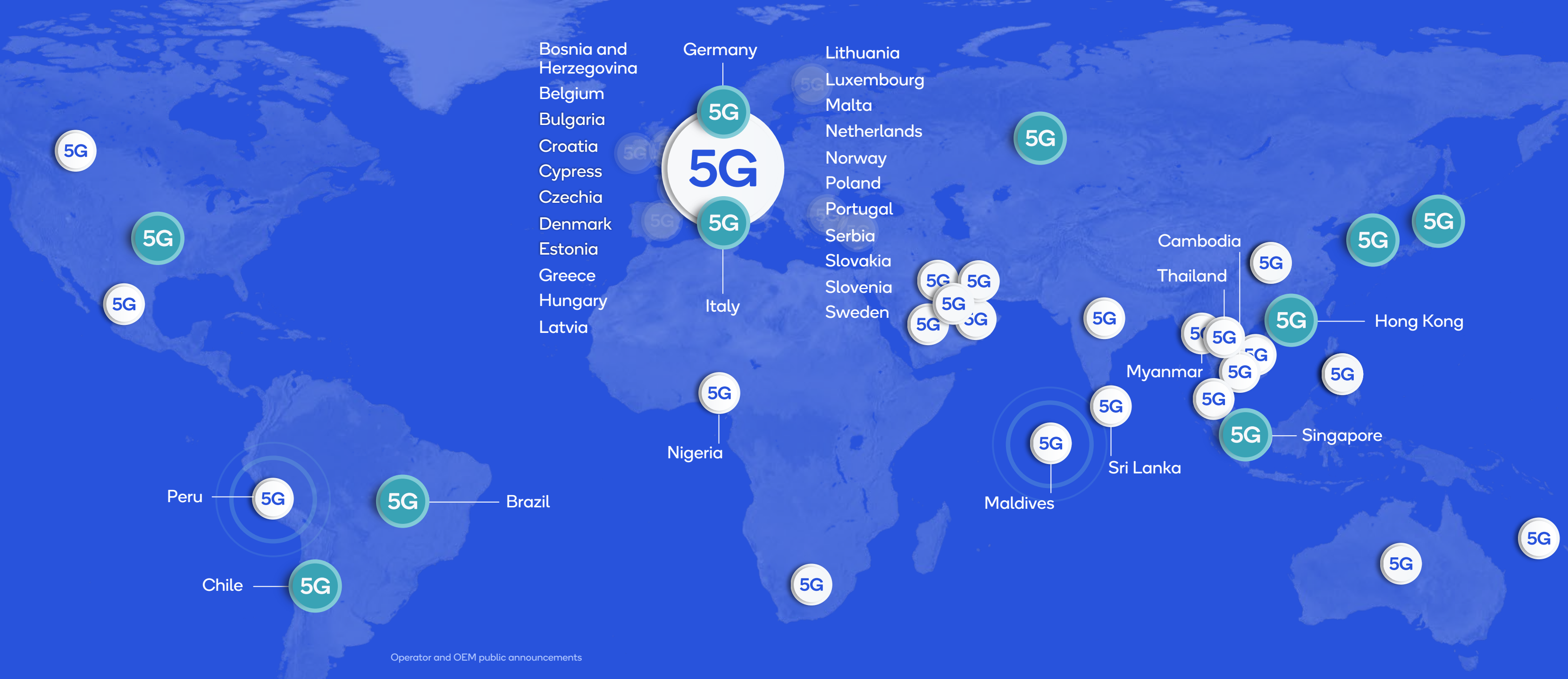
Commercialization rapidly
expanding around the globe



Sub-6

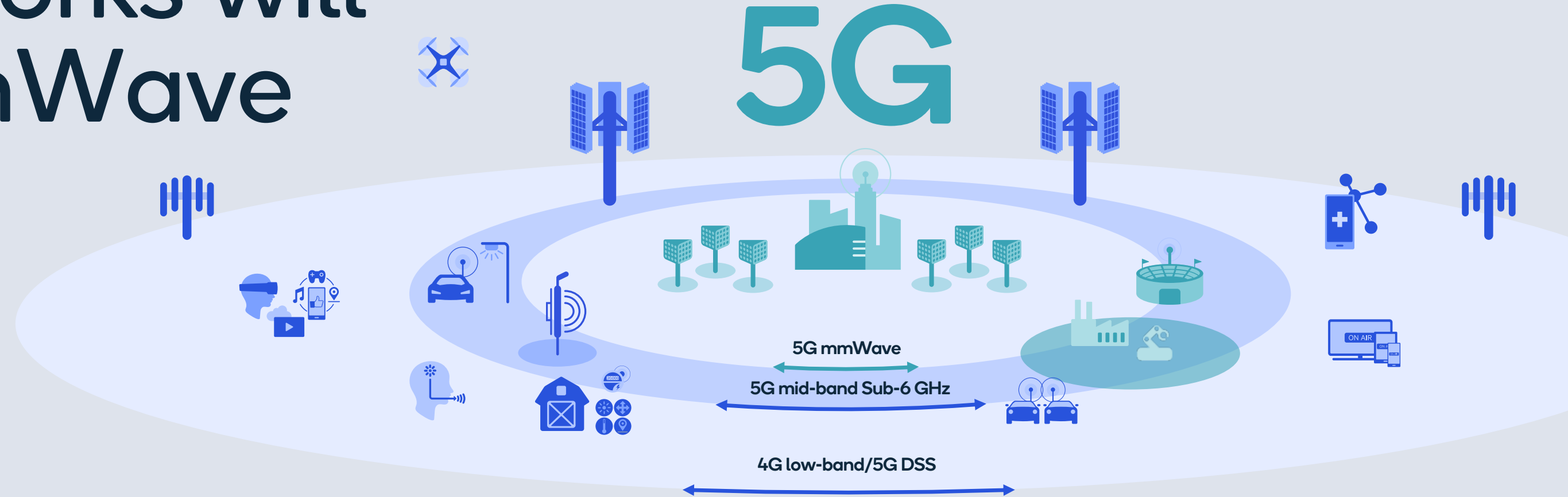


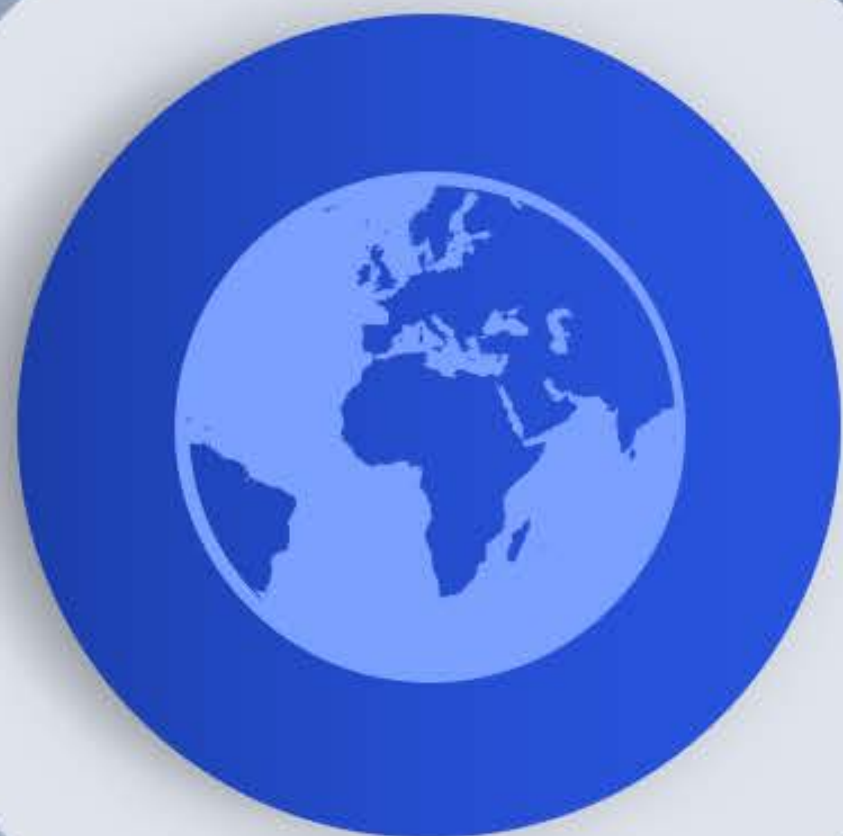
Sub-6 + mmWave



Leading 5G networks will have Sub-6 + mmWave

Combining coverage, capacity, and performance benefits





Significant

5G

coverage is
achievable

San Francisco

5G multimode mmWave

65%

outdoor coverage using
existing LTE sites

Frankfurt

5G multimode Sub-6 GHz

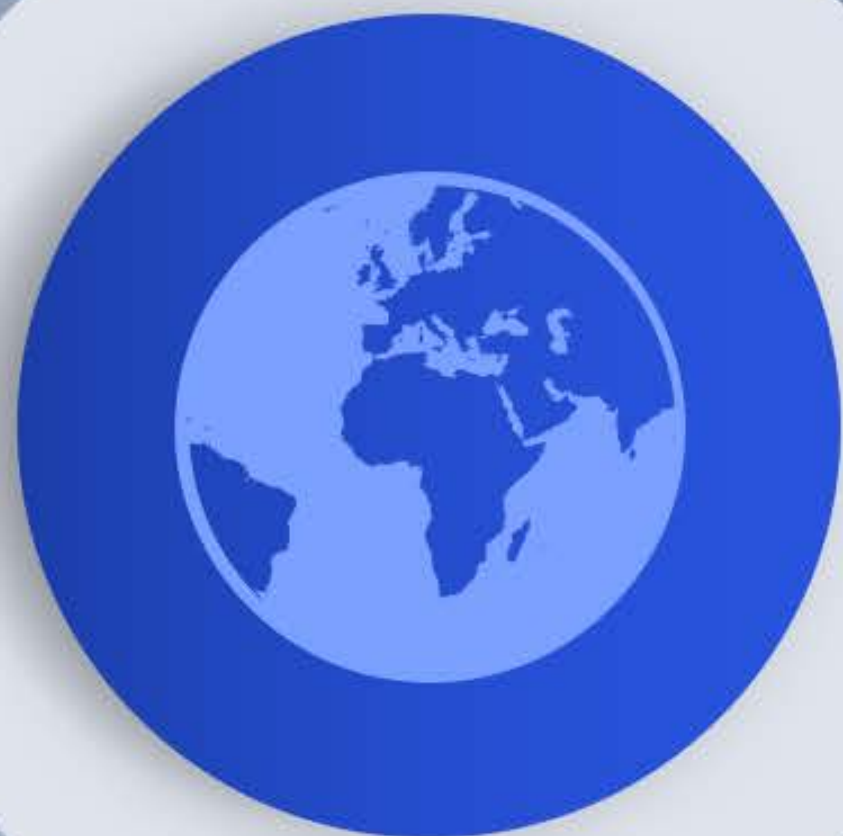
78%

outdoor coverage using
existing LTE sites

Source: Company simulation data and internal analysis

Frankfurt: 3.5 GHz 5G NR + LTE multimode; DSS carrier using n1 (2.1 GHz)

San Francisco: 28 GHz 5G NR + LTE multimode



Significant

5G

coverage is
achievable

San Francisco

5G multimode mmWave

65%

outdoor coverage using
existing LTE sites

Frankfurt

5G multimode Sub-6 GHz

Approximately

96%

with Dynamic Spectrum
Sharing carrier

Source: Company simulation data and internal analysis

Frankfurt: 3.5 GHz 5G NR + LTE multimode; DSS carrier using n1 (2.1 GHz)

San Francisco: 28 GHz 5G NR + LTE multimode



5G

Proven 5G mmWave performance, coverage, and power-efficiency

Signals Research
Group's field results
show 5G mmWave
performing as designed

More than

10x

peak performance
gains compared to
LTE only

More than

14 hours

usage meeting
power and thermal
requirements

Non-line-of-sight:

200+ Mbps

1+ Gbps line-of-sight;
With mobility

Average rates of

1.6 Gbps

average indoors with
virtually ubiquitous
coverage

5G mmWave

realizes the full potential of

Consumer experiences | Enterprise | Industrial

Pérez
Granollers, Spain
Right wing
PKs 2019 7 (95%)

View 1



View 2



View 3



View 4



360°

High-density
venue connectivity

Virtual conferencing



5G
enterprise



Leader board

#1 Soma Abe: New York, USA

#2 Liu Wei: Nantes, France

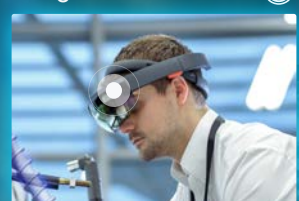
#3 Zhi Ruo: Olinda, Brazil

#4 Harvey Brown: Surrey, London

Console-quality
multi-player gaming



XR guided execution



Dynamic factory
reconfiguration



4K

4K video
surveillance



Precision
positioning



Executing on a phased approach for 5G rollout

5G is NSA, SA, FDD, TDD, CA, DSS, Sub-6, mmWave



Supporting 2019 5G rollouts with non-standalone mode



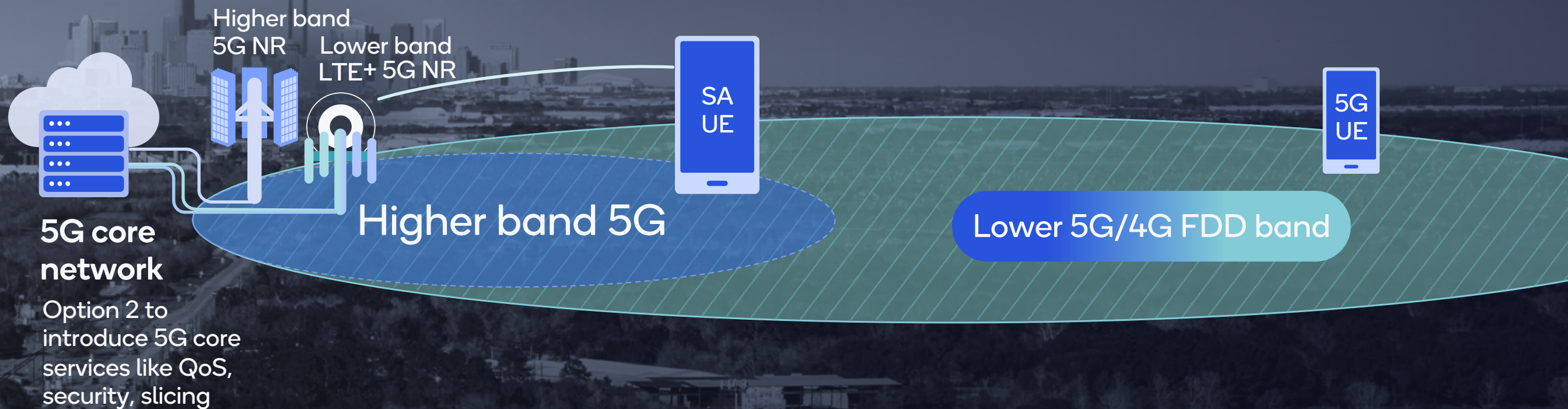
Expanding coverage with lower bands

Expand 5G coverage

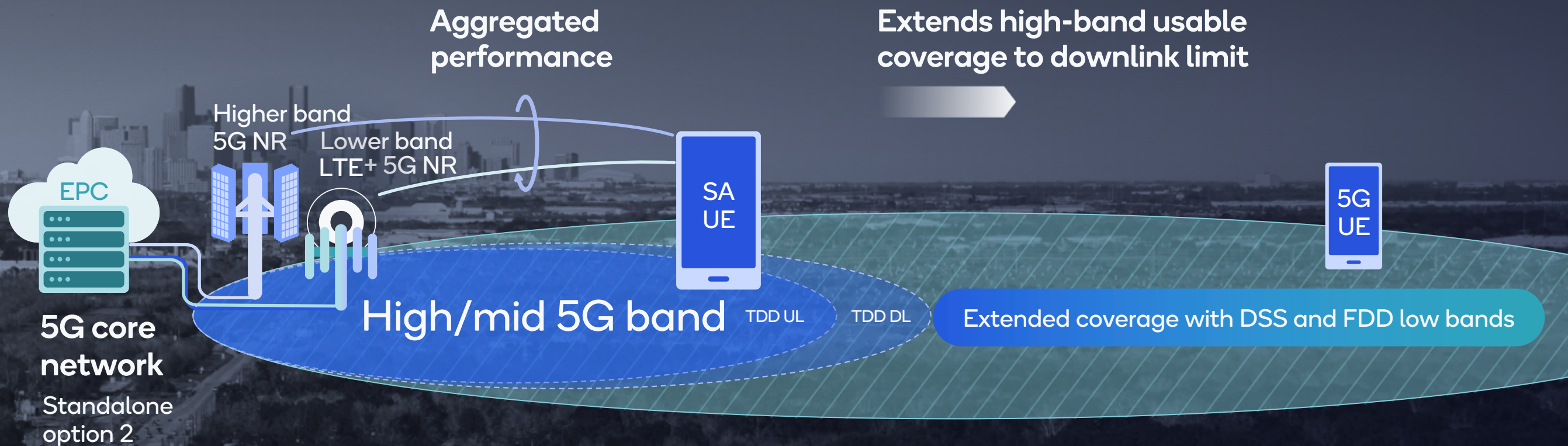
- Dynamic Spectrum Sharing (DSS)
- 5G FDD in low bands



Direct migration to standalone core network with DSS



Increasing 5G performance with carrier aggregation





Samsung Galaxy Note10+ 5G



Samsung A90 5G



Samsung Galaxy Fold

Key drivers in place for 5G adoption in 2020

4G to 5G transition to drive upgrades

3+ year old 4G phones creates appetite for upgrade cycle

Proliferation of unlimited plans

US, South Korea, and EU aligning with the growing demand for data

>3x

Growth in data consumption between 2019–2024

Mature device ecosystem

Premium-tier will be 5G regardless of coverage

Wide range of OEMs

5G scaling to mid-tier

Differentiated 5G experiences



Video



Cloud gaming



XR



Mobile computing

Consumers are responding

Korea

3.5M subscribers
90K base stations

China

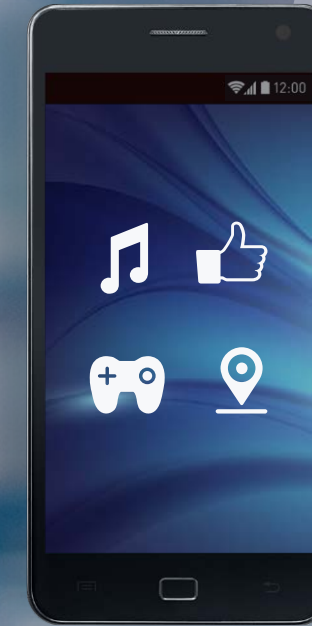
15M 5G pre-launch subscribers

+ 130K base stations EOY
1M by end of 2020

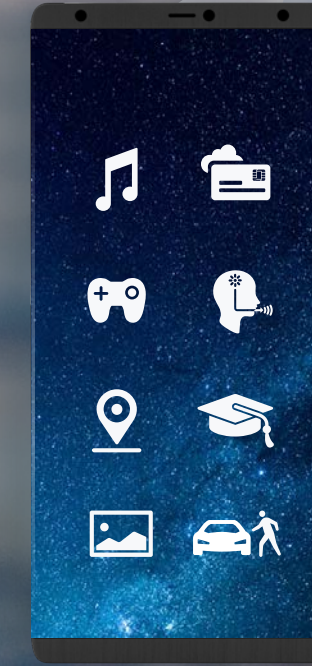
5G elevates the role of cloud services



Powerful app
platforms



4G Smartphone



5G Smartphone



Always connected
Virtually unlimited storage
On-demand computing

Well positioned to benefit from 5G transition

Presence extends across the global ecosystem



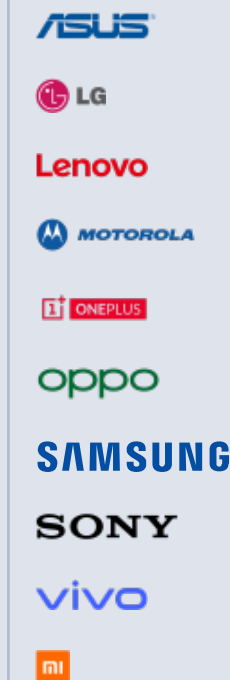
5G



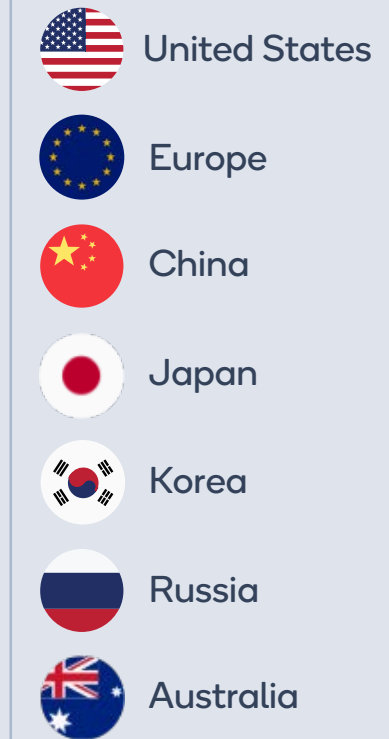
Leading
development and
test platforms



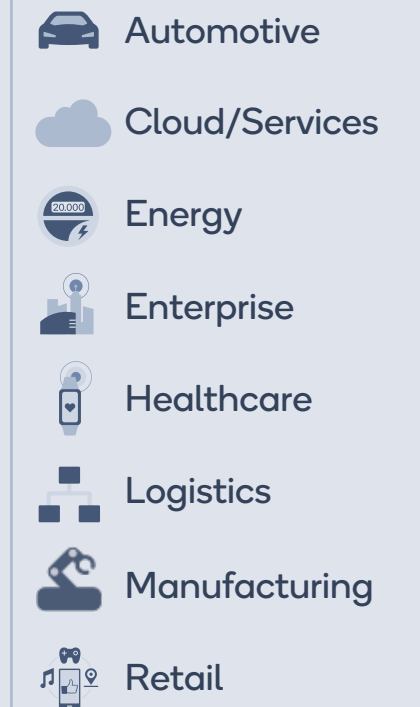
Leading portfolio
of solutions



Leading
OEMs



Key
geographies



New
industries



Drive 5G smartphone transition



Mobile
Core Chipset and RFFE

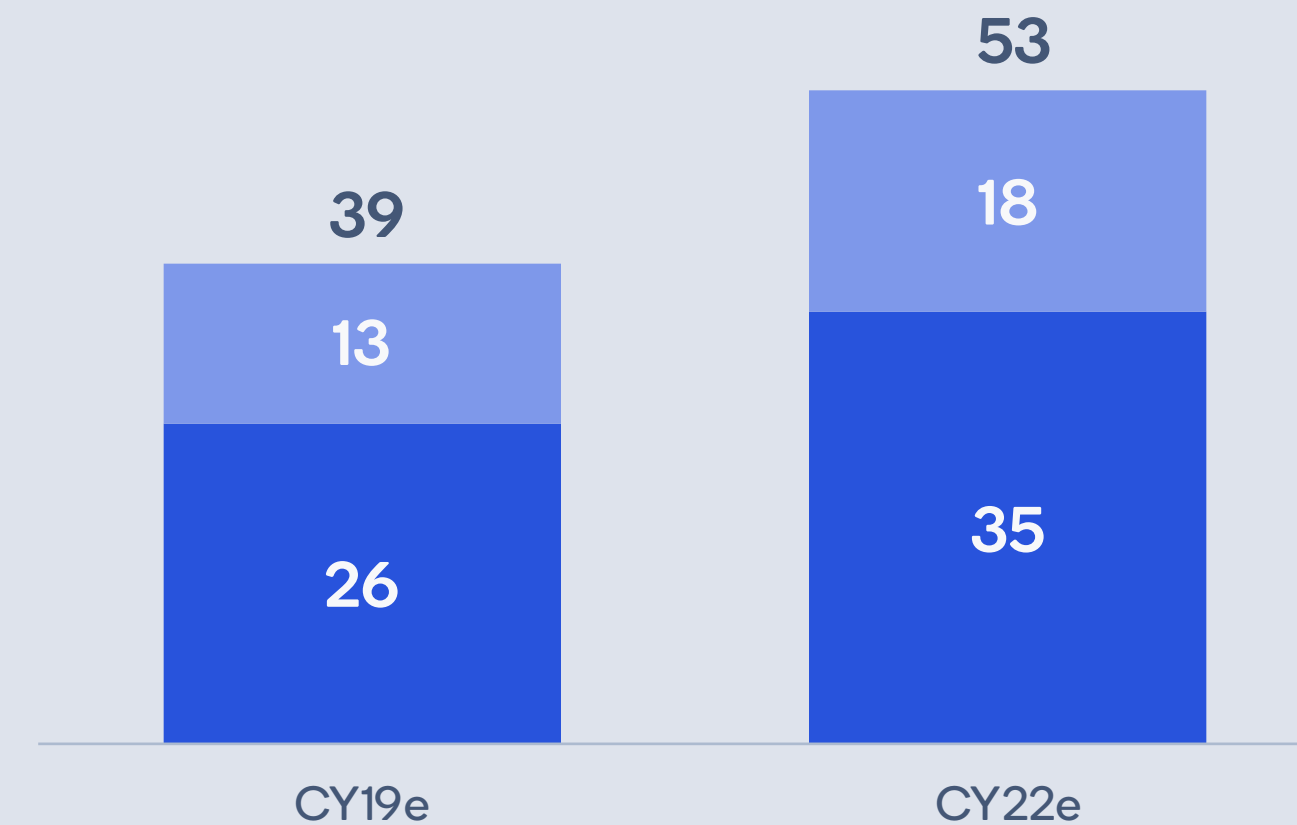
\$53B

Estimated CY22
SAM opportunity

~10% CAGR

SAM
(\$B)

■ RFFE
■ Core chipset



SAM: Serviceable Addressable Opportunity
Source: Combination of third-party and internal estimates.



5G smartphones



Lenovo
Z6 Pro 5G



LG
V50
ThinQ 5G



Motorola
moto z4/z3
+ 5G mod



Nubia
Mini 5G



OnePlus
7 Pro 5G



OPPO
Reno 5G



Samsung
Galaxy
S10 5G



Samsung
Galaxy Fold



Samsung
Galaxy
Note10+ 5G



Samsung
A90 5G



Vivo
iQOO
5G Edition



Vivo
NEX 3 5G



Xiaomi
Mi MIX 5G



ZTE
Axon 10
Pro 5G

5G embedded modules



Hotspots and CPEs



NETGEAR

NOKIA

htc

inseego

WNC

ZTE中兴

ASKEY



Qualcomm
snapdragon

230+

5G devices
launched or in
development

Qualcomm Snapdragon is a product of
Qualcomm Technologies, Inc. and/or its
subsidiaries.



Driving 5G growth in other industries

Snapdragon Modem-RF System selected by over 30 technology suppliers

Qualcomm
snapdragon
X50 5G modem-RF system

Qualcomm
snapdragon
X55 5G modem-RF system

arcadyan

Franklin Wireless

NOKIA

SIERRA
WIRELESS

ASKEY

Gemtek
Wireless Broadband Anywhere

oppo

T&W

AVM

GOSUNCN

Quanta Computer

technicolor

casa systems

htc

QUECTEL

Telit

COMPAL

insee go

SAGEMCOM

Wewins

cradlepoint

LG

SERCOM

WINGTECH
PROFESSIONAL SOLUTIONS

Fibocom

LINKSYS

SHARP

WNC

FIH-NBB
NOKIA'S MANUFACTURING SERVICE

MEIG 美格

SUNSEA

ZTE中兴



Compute



Fixed
Wireless
Access



XR



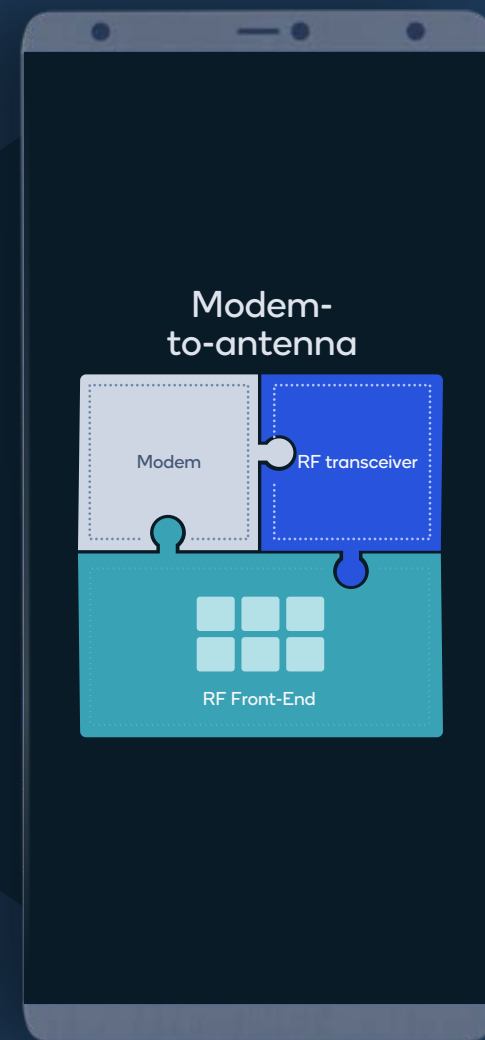
Enterprise



Automotive



Industrial
IoT



Comprehensive roadmap

of 5G Modem-RF Systems to drive 5G expansion

1H 2019
First wave of devices

Qualcomm
snapdragon 
X50 5G modem-RF system

2H 2019
Second wave

Qualcomm
snapdragon 
X55 5G modem-RF system

2020
Broader, faster adoption

Qualcomm
snapdragon  
8, 7, 6 Series Mobile Platforms



Snapdragon: the benchmark for mobile SoCs

4G and 5G connectivity

First Wi-Fi 6-ready mobile solution

Most Powerful AI in a mobile platform

Leading GPU performance

Leading gaming platform

Leading camera performance

Low power audio/voice activation

Qualcomm® 3D Sonic Sensor

A leading AI platform

1B+ AI-capable devices
enabled with our technology*



Qualcomm
snapdragon
with AI Engine

4 purpose-built gaming phones



Asus
ROG 2

6 leading DXOMark phones



Qualcomm
snapdragon

Qualcomm Spectra™ ISP

Xiaomi
Mi CC9

*Qualcomm internal estimate.

Qualcomm 3D Sonic Sensor, Qualcomm Spectra, and Qualcomm AI Engine are products of Qualcomm Technologies, Inc. and/or its subsidiaries.



Our RFFE strategy is working

Building a comprehensive modem-to-antenna solution

Multi-year investment

Completed \$3.1B acquisition of TDK's RF business

Industry leading technology position with strong attach





Early 5G smartphone designs using our Modem-RF System

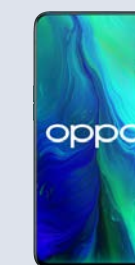
IHS teardowns reveal leadership in Sub-6 Ghz and mmWave devices



LG
V50 ThinQ 5G



OnePlus
7 Pro 5G



OPPO
Reno 5G

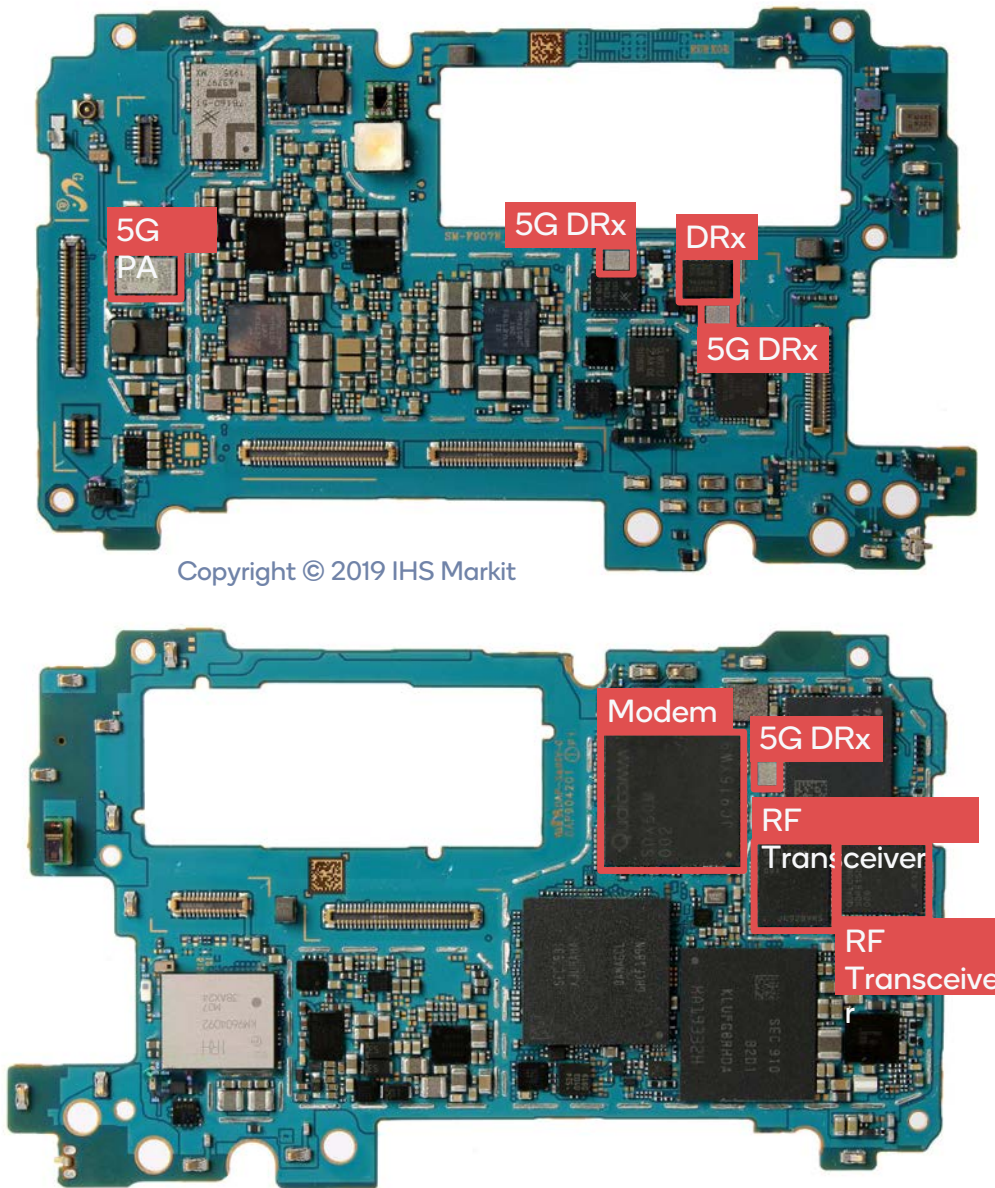
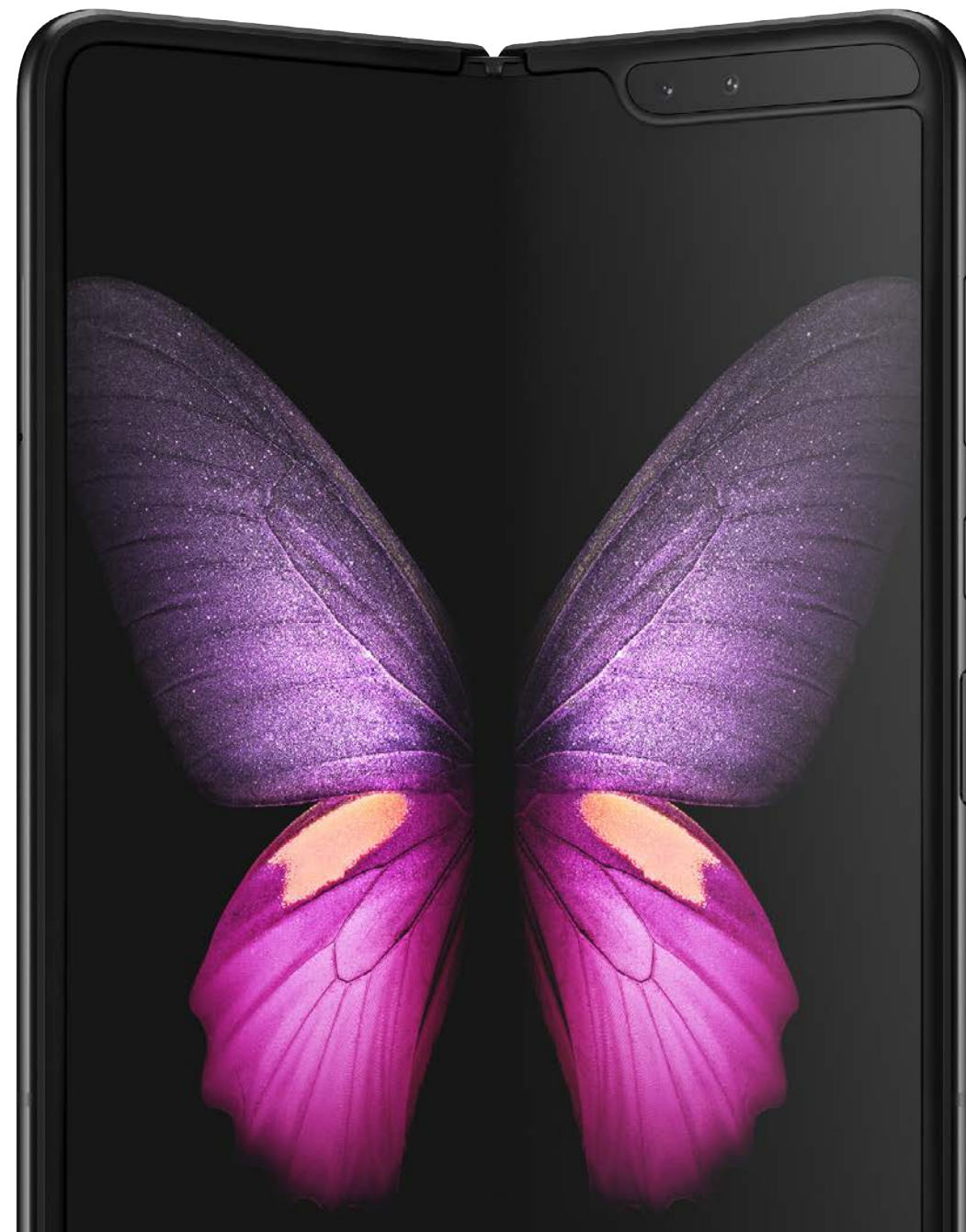


Xiaomi
Mi MIX 5G



Samsung
Galaxy S10 5G

	LG V50 ThinQ 5G	OnePlus 7 Pro 5G	OPPO Reno 5G	Xiaomi Mi MIX 5G	Samsung Galaxy S10 5G
Modem + Transceiver	●	●	●	●	●
Power amplifiers	●	●	●	●	●
DRx module	●	●	●	●	●
Envelope tracking	●	●	●	●	●
Filters	●	●	●	●	●
Antenna tuner	●	●	●	●	●
mmWave antenna module					●



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Source: "In 5G Smartphone Designs", IHS Markit, Aug 28th, 2019. Used by permission.

Samsung Galaxy Fold 5G

Sub-6 RFFE content from Qualcomm Technologies*

- | | |
|---|---|
| Snapdragon X50 5G
5G modem | Qualcomm® DM3870
4G DRx module |
| Qualcomm® PM4850
5G PA module | Qualcomm® AT3550
Antenna impedance tuner |
| Qualcomm® DM4850 x3
5G DRx module | Qualcomm® AT3516 x3
Aperture tuner |
| Qualcomm® ET5100
5G Envelope tracker | Qualcomm® B8914
Filters, duplexers, extractors |

Modem-RF System content from Qualcomm Technologies
*Not all shown here

Qualcomm PM4850, Qualcomm DM4850, Qualcomm ET5100, Qualcomm DM3870, Qualcomm AT3550, Qualcomm AT3516, and Qualcomm B8914 are products of Qualcomm Technologies, Inc. and/or its subsidiaries.

5G

We leverage R&D into adjacent platforms

The power of
our mobile platform

Industry leading technology and portfolio

5G

Expansion in growth
opportunities

Existing technologies on adjacent platforms

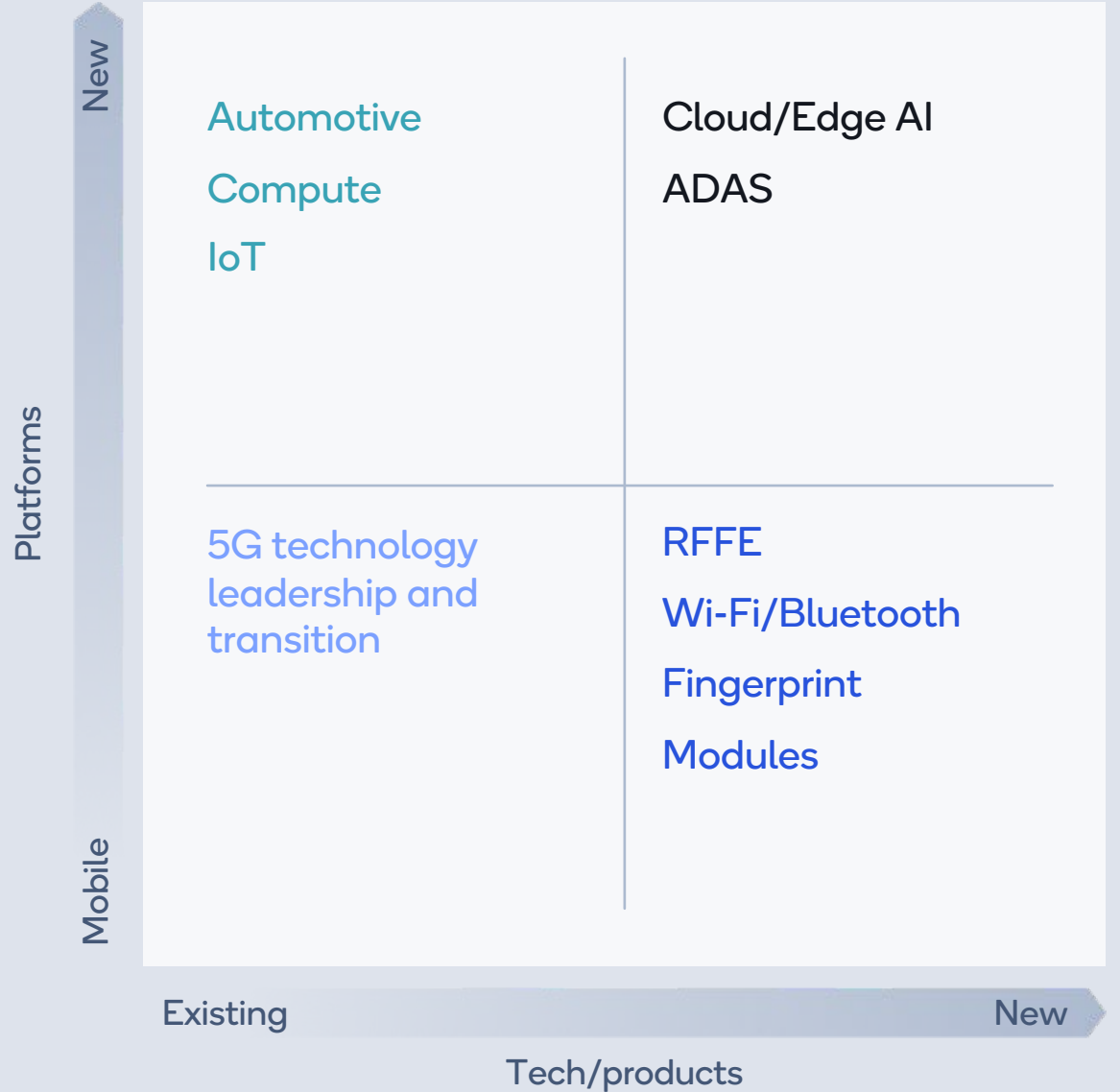


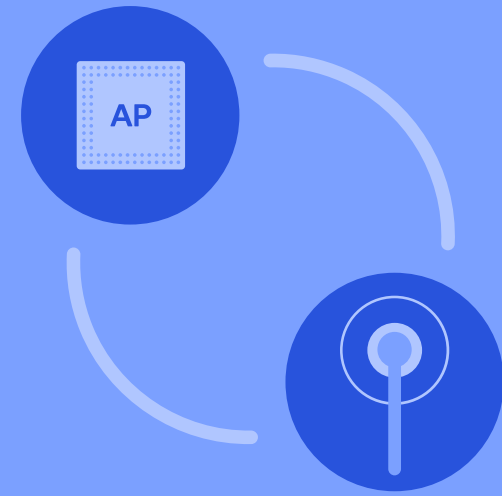
Positioned to address large opportunities
with incremental investments



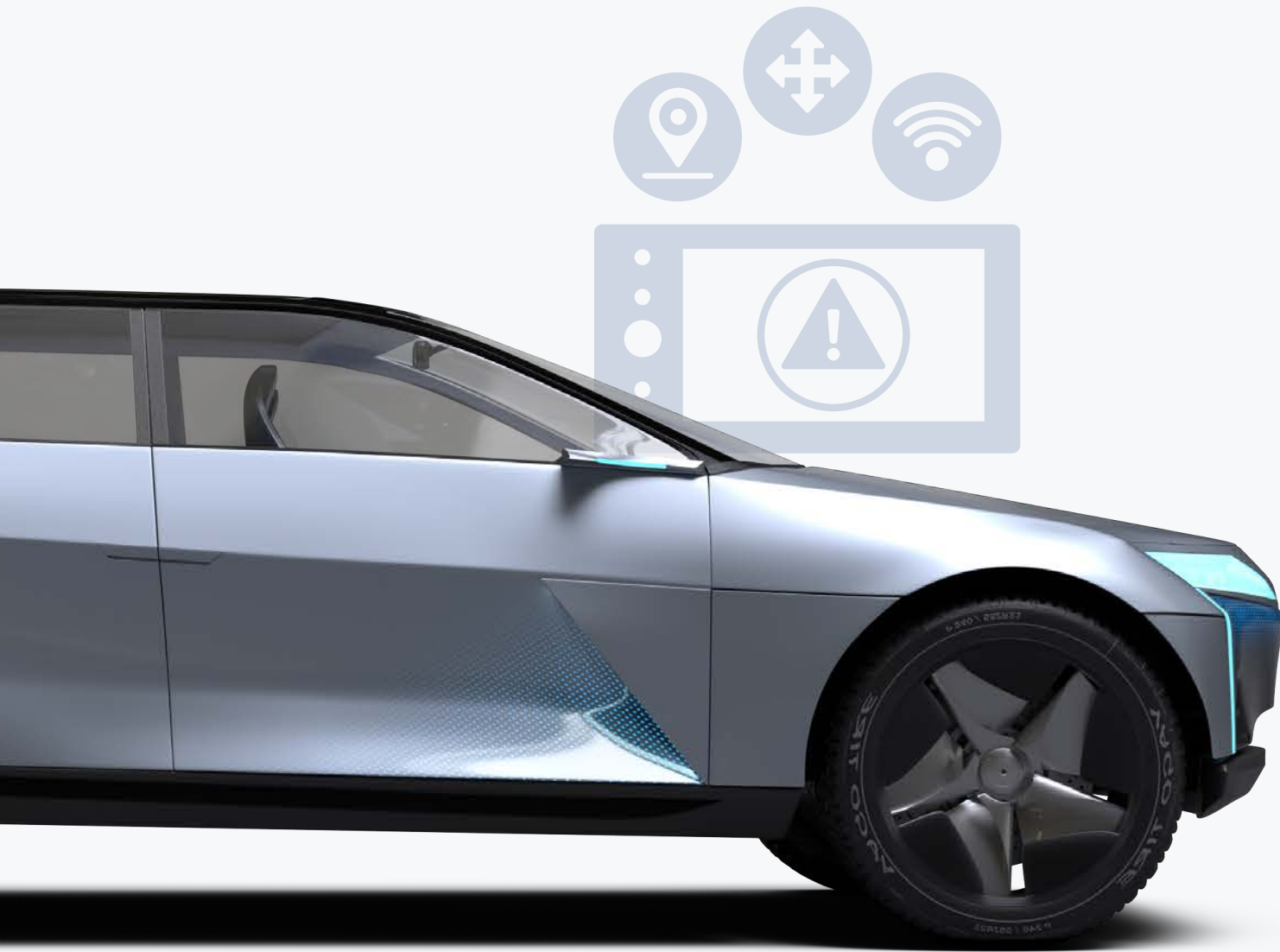
Our growth strategy

Deepen our mobile expertise and extend it to new platforms





Build scale in
adjacent platforms



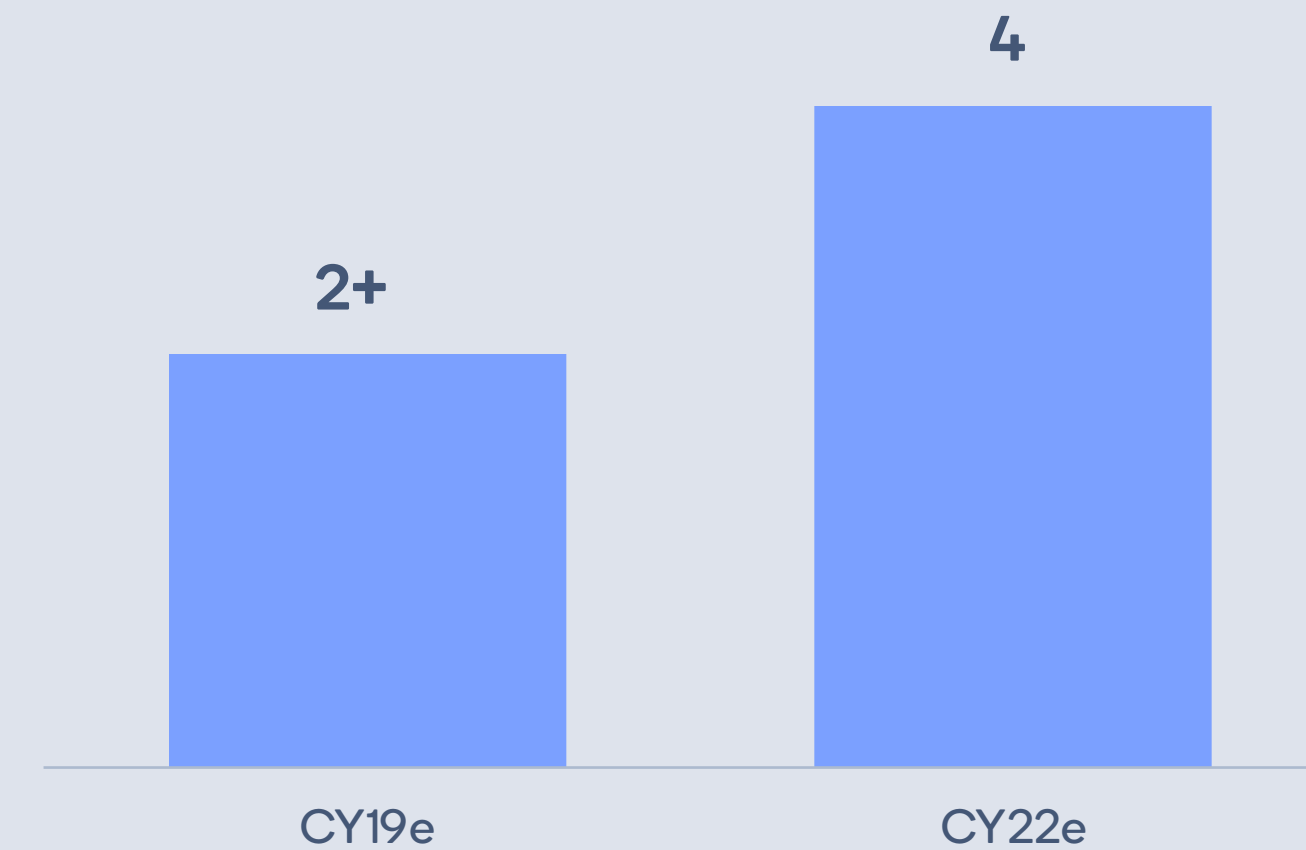
Automotive

\$4B

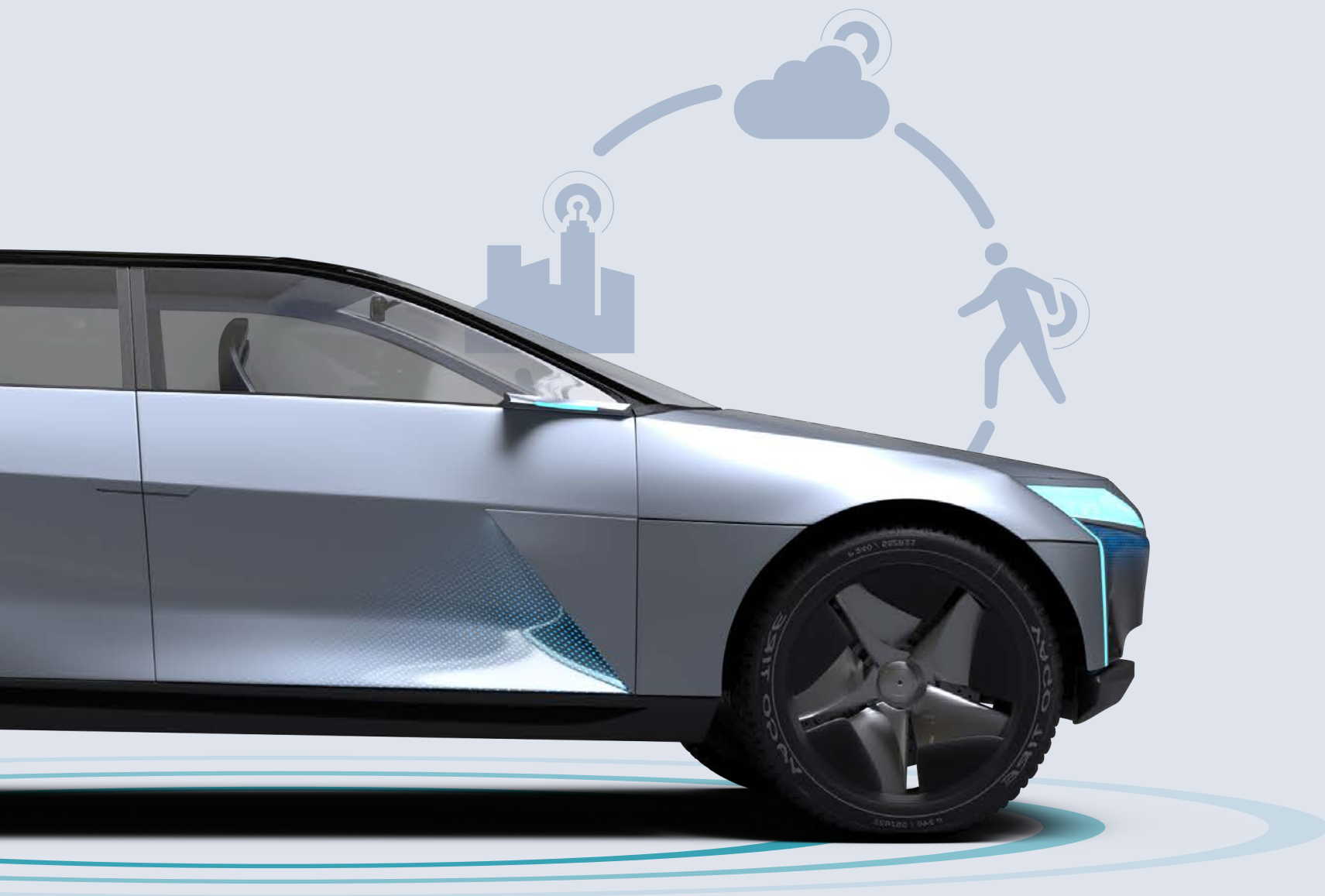
Estimated CY22
SAM opportunity

12% CAGR

SAM
(\$B)



SAM: Serviceable Addressable Opportunity
Source: Combination of third-party and internal estimates.



Vehicle domain consolidation and car-to-cloud connectivity driving auto opportunity

Automotive architecture transitioning to high value SoCs

Infotainment

Digital Cockpit

Rear Seat Entertainment

Qualcomm Snapdragon

Digital Cockpit Platforms



ADAS

High performance Safety SoC

Safety Accelerator for ADAS workloads

Reference ADAS Stack



Telematics | C-V2X

Qualcomm Snapdragon

Automotive 4G/5G platforms

Qualcomm® C-V2X platform

Cloud device management

Cloud connectivity

OTA updates

OTA feature and SKU management



Higher performance | Scalable | Upgradable | Connected
Integrated hardware | Software | Comprehensive reference designs



Trusted advisor to automakers

World's leading automakers build with our solutions



Source: Company data

Qualcomm Automotive Infotainment Platform is a product of Qualcomm Technologies, Inc. and/or its subsidiaries.

Design win pipeline reflects anticipated revenues associated with programs that have been awarded by automakers using Qualcomm solutions

#1

In telematics and
Bluetooth for automotive

#1

In premium next-gen infotainment
design wins for production
vehicles starting 2020

18

Automakers have selected the
Qualcomm® Snapdragon™
Automotive Infotainment
Platform

\$6.5B

Design win pipeline for
telematics, infotainment,
and in-car connectivity



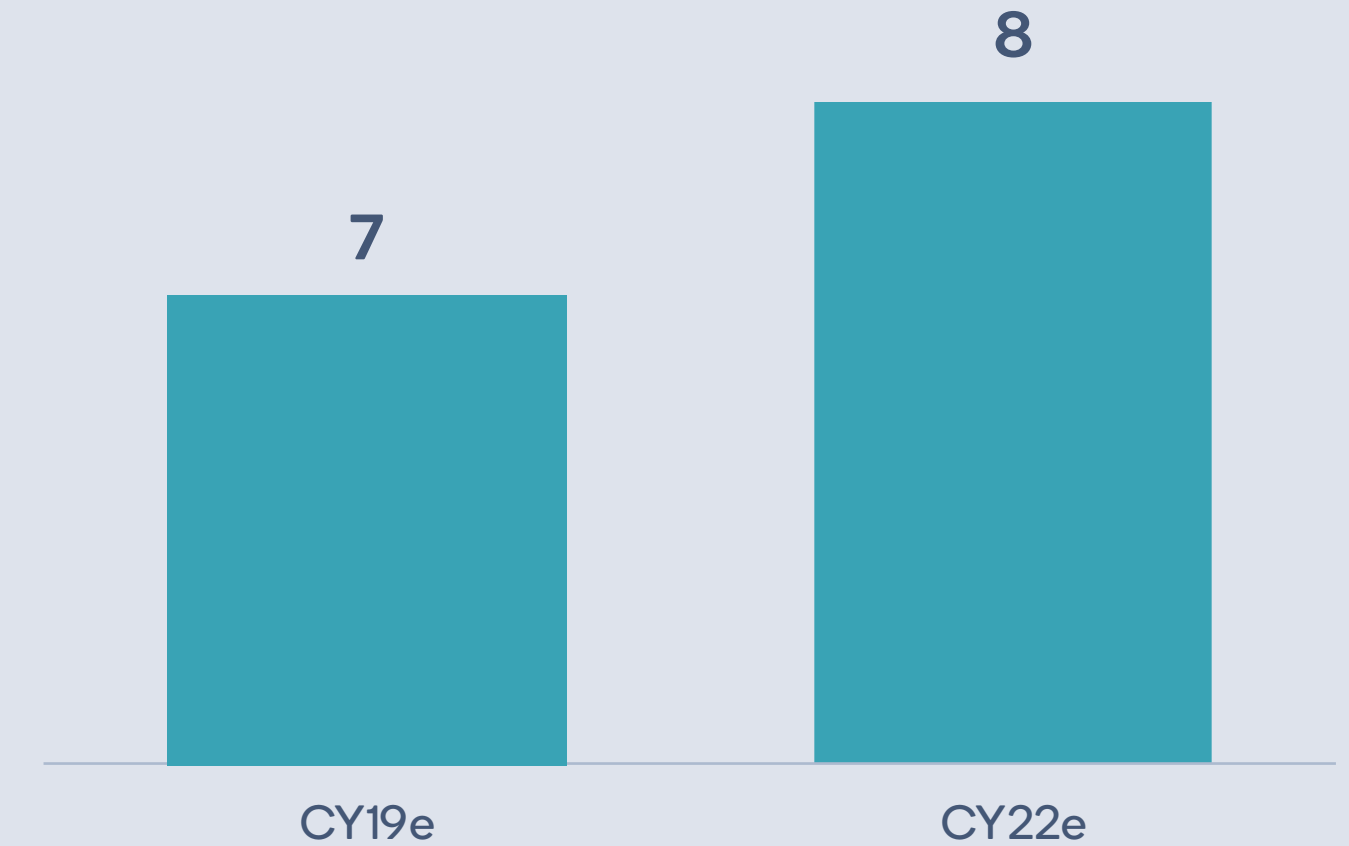
Compute

\$8B

Estimated CY22
SAM opportunity

2% CAGR

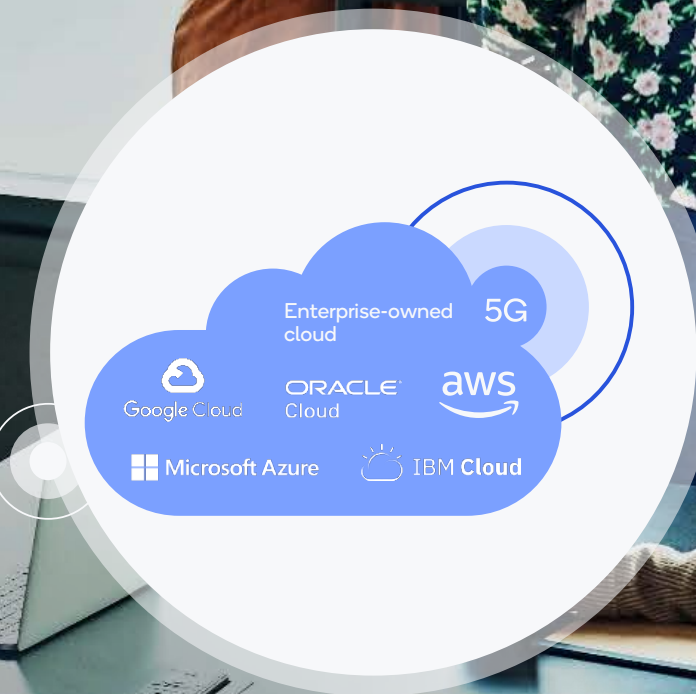
SAM
(\$B)



SAM: Serviceable Addressable Opportunity
Source: Combination of third-party and internal estimates.

Accelerating

the future of enterprise in the cloud



Redefining mobile computing



Focused on growth
areas in PC segment

Thin/light category; ASPs growth in premium

Innovation to deliver
differentiated value

Core i5 performance with multi-day
battery life, 5G, and AI

Overcoming key pain points

Secure and fast connectivity,
mobility design — thin, light, fanless

Synergy with digital
transformation, modern enterprise

Cloud growth and intelligent edge

Our position



Multiple commercial launches
YoY growth



Lenovo
Miix 630



SAMSUNG
Galaxy Book 2



Lenovo
Yoga C630



M 麦本本
MAIBENBEN



WEIBU
Weibu
Prima



HUAWEI
Matebook E



hp
Envy x2



ASUS
NovaGo

Dedicated
enterprise ready
compute platforms



SAMSUNG
Galaxy Book S



Microsoft
Surface Pro X
with Microsoft
SQ1

5G PC
Q1 2020



Lenovo



IoT

\$13B

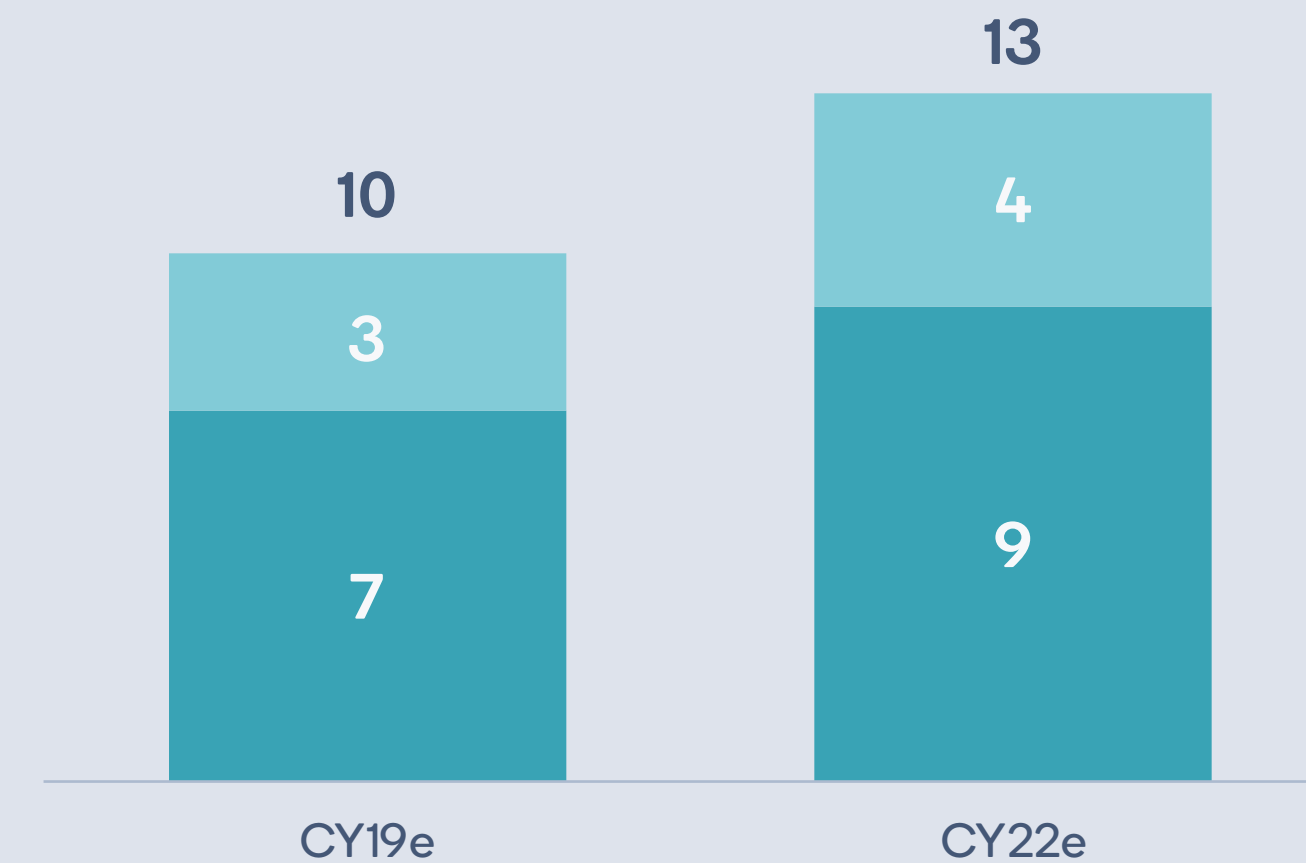
Estimated CY22
SAM opportunity

10% CAGR

SAM
(\$B)

IoT: Connectivity

IoT: Other



SAM: Serviceable Addressable Opportunity
Source: Combination of third-party and internal estimates.

Well positioned in IoT

>11,000 customers

Broad portfolio of solutions and platforms
to fuel growth and innovation



Industrial IoT

Industrial handhelds
Retail POS
Robotics
Security camera



Small cells

mmWave
Open RAN



Qualcomm

Connectivity

Wi-Fi 6
and mesh



Fixed Wireless

5G CPE



Wearables

Watches
Trackers



Voice and Music

Smart speaker
High fidelity audio
Earbuds



Qualcomm

Consumer IoT

Robots
Smart display
Cameras



XR

HMD
Viewers
Smart glasses





**Invest in long-term
opportunities**



Long-term
investment opportunities

\$18B

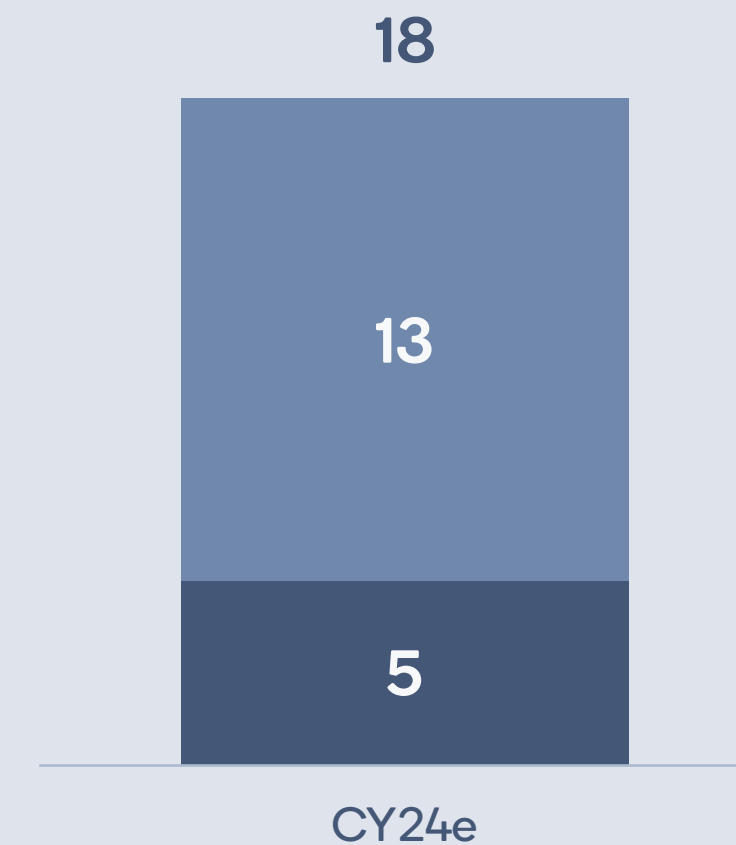
Estimated CY24
SAM opportunity

SAM: Serviceable Addressable Opportunity
Source: Combination of third-party and internal estimates.

SAM
(\$B)

■ Cloud/Edge AI

■ ADAS



Driving distributed intelligence



Bringing the cloud closer to devices at the edge





Qualcomm® Cloud AI 100 addressing four key industries

Optimized design

High performance

Low power

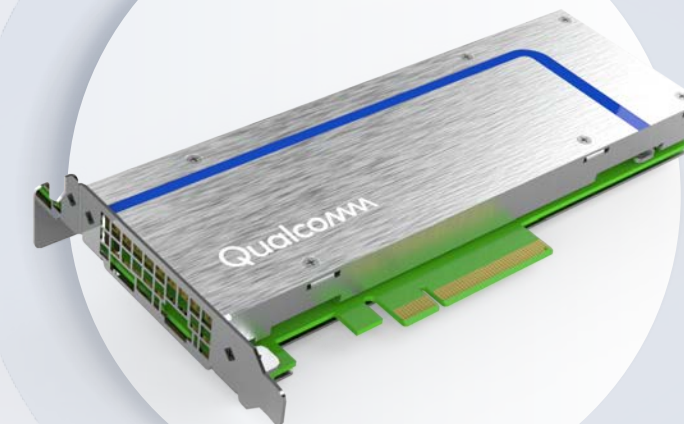
Qualcomm Cloud AI 100 is a product of Qualcomm Technologies, Inc.
and/or its subsidiaries.

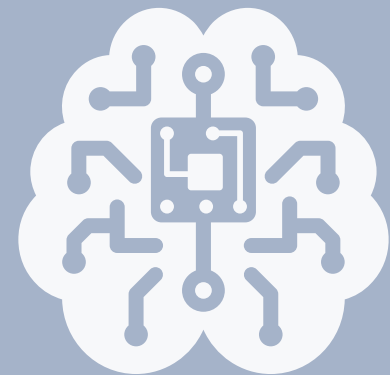
Data center

Automotive

5G edge box

5G infrastructure

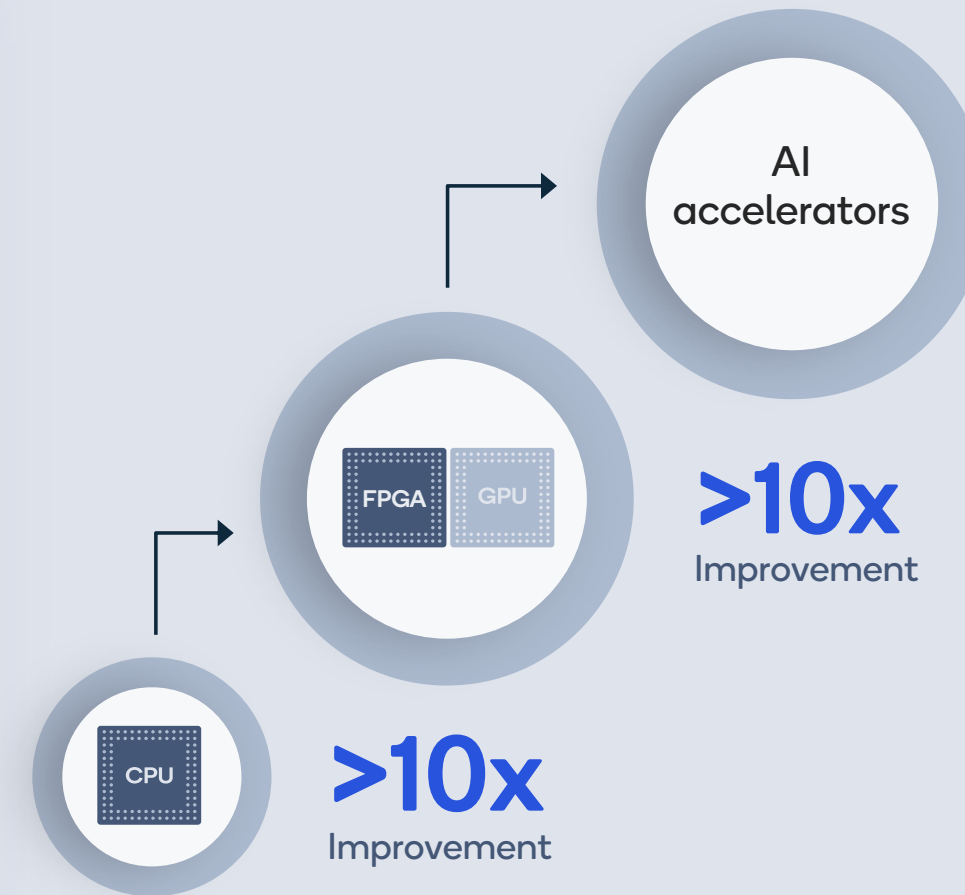




Bringing power efficient AI inference processing to the cloud

Qualcomm Cloud AI 100 offers best peak performance, performance per watt vs. competitor

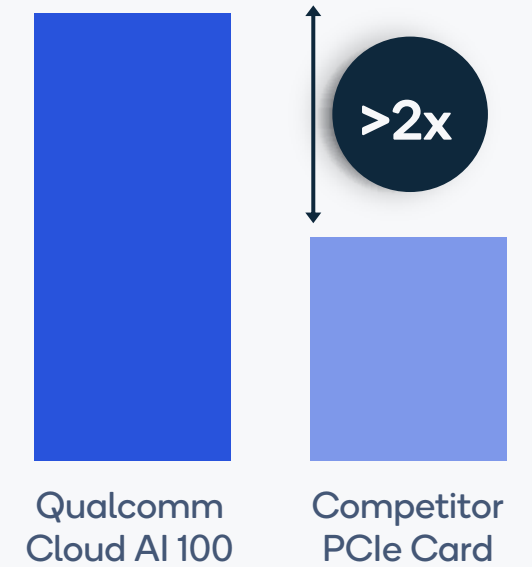
Source: Qualcomm internal analysis



Qualcomm
Cloud AI 100
vs. competitor

>2x **>2x**
Performance Perf/Watt

Resnet50 (inference/s)





Expanding our automotive system design leadership to ADAS



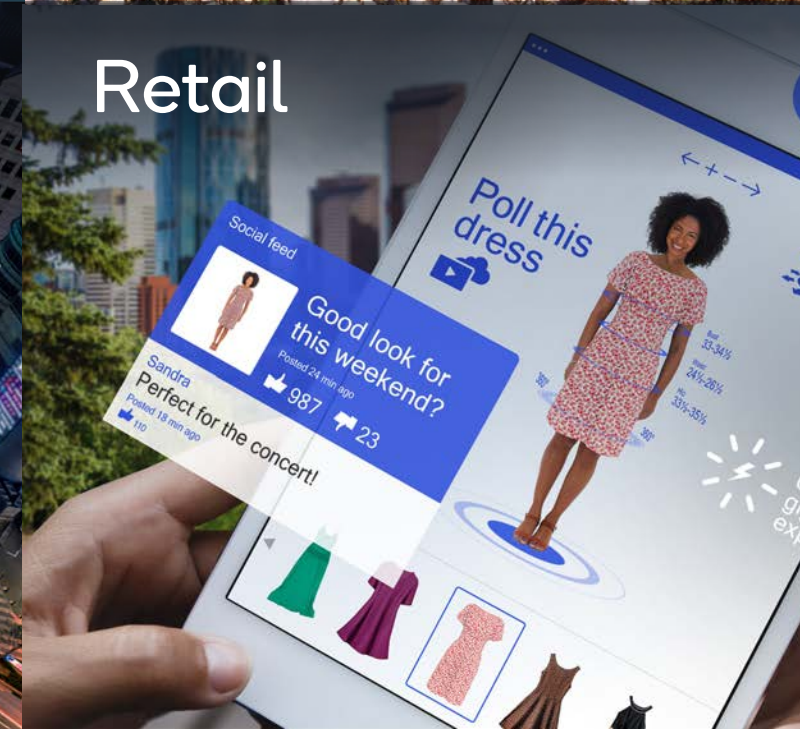
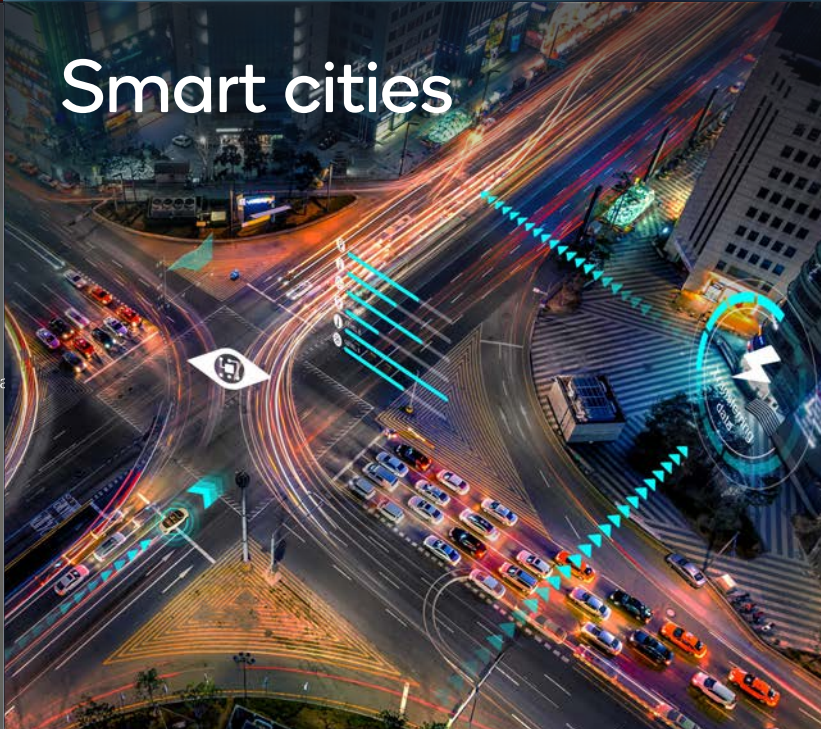
Telematics and V2X | Connectivity | Digital Cockpit | ADAS



Expanding the mobile ecosystem to new industries

Up to
\$13.2T
economic impact of
5G-enabled goods
and services in 2035*

* The 5G Economy, an independent study from IHS Markit, commissioned by Qualcomm, October 2019



5G

The 5G revolution

Mobile



4K Video



Augmented reality



Mobile gaming



Virtual presence



Cloud computing
and storage



Network-defined
RFFE



Real-time video
translation



mmWave

Auto



Connected
infotainment



C-V2X



Smart
transportation RSU



Autonomy
and live maps

Compute



Mobile
compute



Remote 4K video
conferencing



Cloud computing
and storage



Multi-person document
collaboration

IoT



eMBB edge
gateways
and MEC



Small Cell
Private Networks



Interaction in
Social-circle-based
AR



mMTC meters,
trackers, sensors



WIN
CPE FWB
access point
5G + wi-fi 6
convergence



Live 4K
360-degree video
streaming and sharing



Smart factories,
Industry 4.0



Venues and
special events



Multi-player
VR gaming

5G feeds into our strategy across mobile and adjacent platforms

**More news
to come**

Snapdragon Tech Summit

December 3–5, 2019

Next generation mobile platforms

Mobile computing update

XR update

qualcomm.com/snapdragonsummit

CES

January 7–10, 2020

ADAS driving strategy

Key takeaways

Continued investment to drive roadmap leadership to sustain momentum 2021 and beyond

Global customer footprint with multi-year agreements

5G commercialization acceleration with Sub-6 DSS and mmWave

Leading modem-to-antenna system with RF Front-End technology

Platform of choice for other industries

Well positioned for expansion and diversification

Significant opportunity ahead



Thank you

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