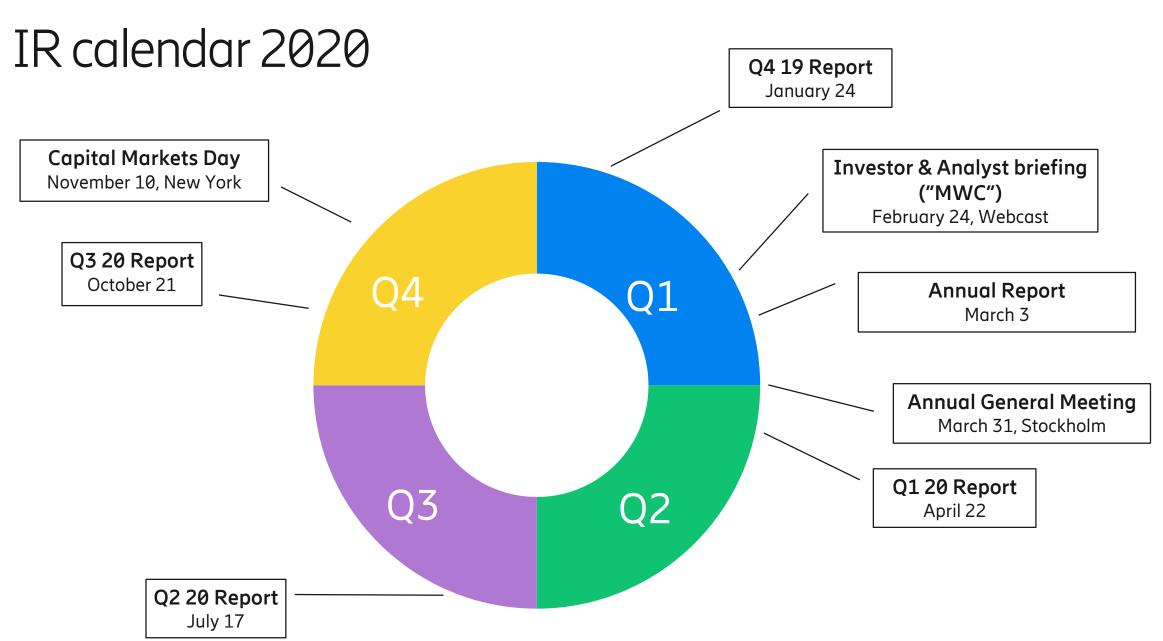


## Safe harbor statement

This presentation contains forward-looking statements. Such statements are based on our current expectations and are subject to risks and uncertainties that could materially affect our business and results. Please read our earnings reports and our most recent annual report for a better understanding of these risks and uncertainties and please see the last page in this presentation for further information about forward-looking statements. Any forward-looking statements made during this presentation speaks only as of the date of this presentation and Ericsson expressly disclaim a duty to provide updates to these forward-looking statements, and the estimates and assumptions associated with them.







# Agenda — Monday, Feb 24

#### Welcome and introduction

Peter Nyquist, VP Head of Investor Relations

#### Ericsson on track

Carl Mellander, CFO

#### 5G

Thomas Norén, Head of 5G Commercialization, Networks

#### **Networks**

Fredrik Jejdling, Head of Business Area Networks

#### **Digital Services**

Jan Karlsson, Head of Business Area Digital Services

#### 5G in North America

Niklas Heuveldop, Head of Market Area North America

Q&A





### Ericsson on track



### Market Development – RAN market grew by 5%<sup>1</sup> in 2019

- Winning footprint based on technology leadership market share gains<sup>1</sup> in North America and Europe
- Fundamentals strong in North America more clarity on the operator merger

#### Leader in 5G

- 81 commercial 5G agreements first with commercial 5G live networks in 4 continents
- Leading operators have started to invest in 5G core Ericsson well positioned

#### Strong financial performance in 2019

- Operating margin reached 9.7%<sup>2</sup> in FY 2019 close to 2020 target
- Free cash flow before M&A of SEK 17.7 b.<sup>2</sup> (4.3)

# 5G grows faster than initially anticipated



### 5G still in early stages

#### **5G Momentum**

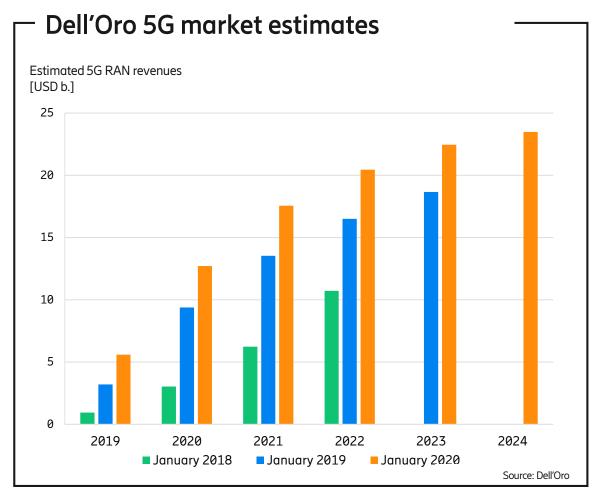
—Faster than originally anticipated

#### **5G Forecasts**

- —55-65%<sup>1</sup> world population coverage by 2025
- $-\sim 1/3^{1}$  of all mobile subscriptions by 2025

#### **5G Use Cases**

- Digitalizing the Enterprise to enable new revenue pools for operators in consumer and business segments
- Extended investment phases to cover additional needs in IoT and Industry 4.0



<sup>&</sup>lt;sup>1</sup> Source: Ericsson Mobility Report

# RAN market share development



### Market update

#### North America – #1

Grew with all major operators in 2019

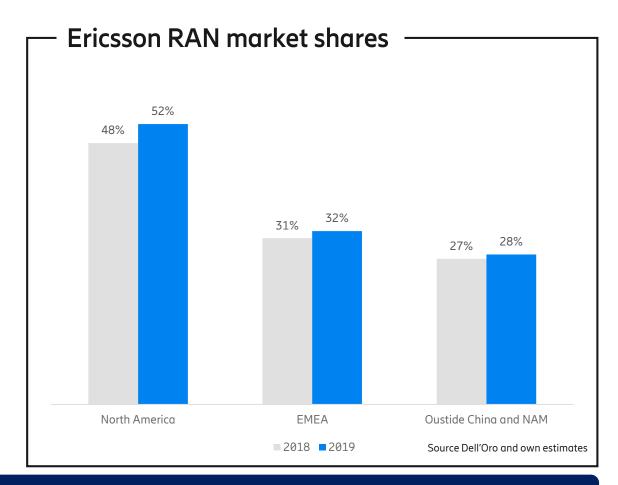
#### Europe – first with 5G

- 5G live with Vodafone in London
- 5G with Telia and Telenor in Norway
- Swisscom first with 5G commercial network

#### MEA – Q419 market share 37% (30% Q418)

- 5G with STC in Saudi Arabia
- 5G with MTN in South Africa
- 5G with Etisalat in UAE

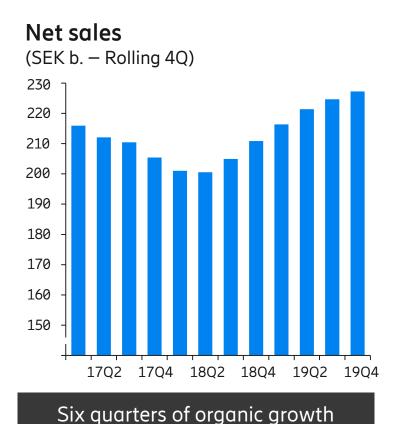
Market share outside China and North America increased to 33% in Q4 2019 from 27% in Q3



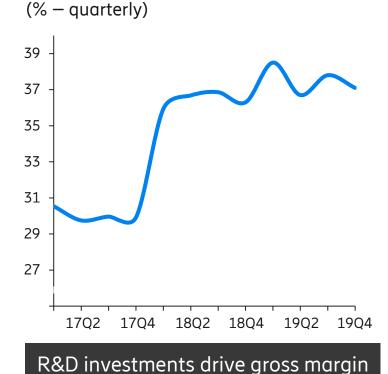
### Technology leadership drives market share growth

# Robust financial performance since 2017

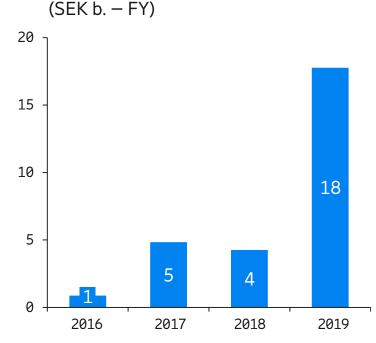




Underlying gross margin<sup>1</sup>



Free cash flow before M&A<sup>2</sup>



Solid working capital improvement

Financial ambition and target 2020

SEK 230 – 240 b.

37-39 %<sup>1</sup> Op. margin >10 %<sup>1</sup>

Strong

## Value creation in focus

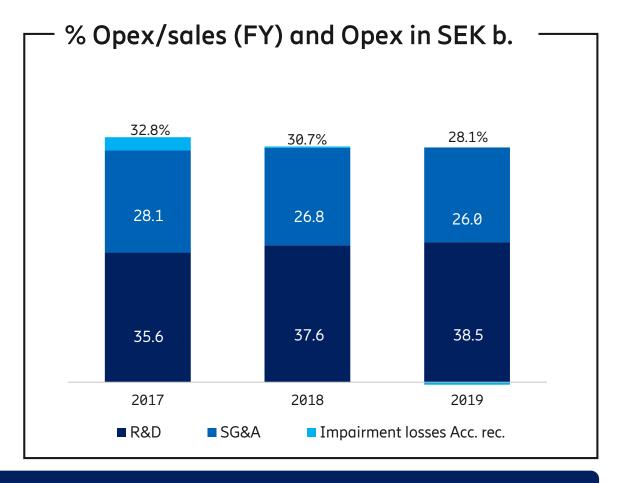


#### R&D investments focused on long-term value creation

- —Strong R&D is fundamental for developing new products and technology leadership (incl. Kathrein)
- —R&D in two dimensions maintain current business and investing for future growth

#### Increased opex in other areas to strengthen Ericsson

- —**Digitalization** to achieve next level of efficiencies
- —Compliance through stronger processes
- —**Security** for product and enterprise



#### Value creation through increased investments, primarily in R&D

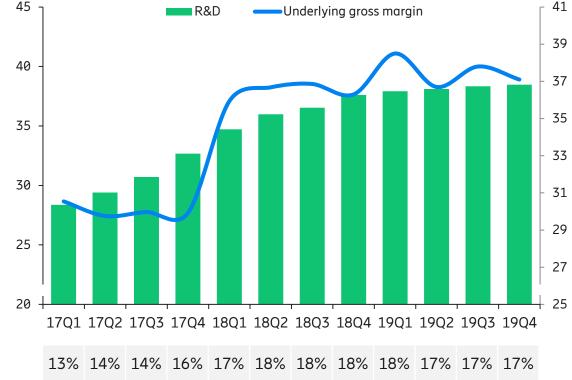
## R&D investments to drive long-term sales and margin



(% – quarterly)

#### The focused business strategy

- Investments in R&D to retain and extend technology and cost leadership and stay competitive
- R&D fundamental to increasing market share
- Organic sales growth for six consecutive quarters
- GM improvement to a high degree driven by earlier investments in Ericsson Radio System (ERS)
- Between 17Q1 and 19Q4 rolling 4Q:
  - Added SEK ~8 b. R&D<sup>1</sup>, incl. net of R&D capitalization
  - Gross income improved SEK ~19 b.<sup>2</sup>



R&D in relation to net sales — Rolling 4Q<sup>1</sup>

R&D adds value through sales and gross margin expansion

<sup>1</sup>R&D excludes restructuring charges. 2017 excludes extraordinary items and is not restated for IFRS 15. <sup>2</sup> Gross margin excluding restructuring charges and costs for revised BSS strategy in 2018 Q4. 2017 excludes extraordinary items and is not restated for IFRS 15.

R&D¹ and underlying gross margin²

(SEK b. – Rolling 4Q)

# Digitalization to achieve next level of efficiencies



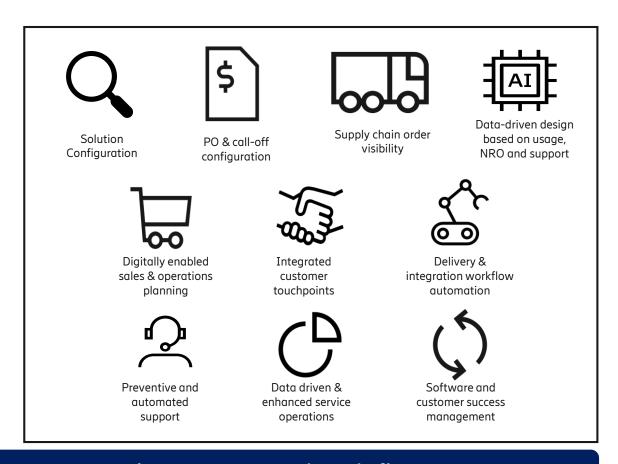
Simplified and faster interaction with customers and suppliers

#### 10 projects defined, including

- —Supply flow order tracking for customers
- —Preventive and automated customer support
- —Automated handling of recurring billing

#### Investing SEK 0.5 -1 b. per year until 2022

- —Level depending on scope and feasibility of projects
- —Expect payback time of 1-3 years
- —Benefits starting in 2021



Operational efficiency end-to-end — increase sales, income and cash flow

## Journey to strengthen focus on long-term value creation



#### Foundation developed



- Focused on long-term profitability through financial targets settings - 2020 and 2022
- Moved focus towards drivers impacting Cash-Flow — Working Capital
- ✓ **Economic Profit** as an internal performance metric – to capture the capital invested

#### **Ongoing initiatives**



- Strengthening the focus on value creation in **strategic decision**making:
  - Increased focus on cash flow
  - Always comparing options
  - Strengthened risk analysis
  - Improved decision accountability and follow-up mechanisms
- Enhancing operational decision processes to ensure increased focus on value creation

#### Ultimate ambition



- Value creation mindset embedded into Ericsson's company culture
- Incentives based on long-term value creation
- **Improved transparency** on portfolio performance and ability to discontinue underperforming activities to more effectively (re-) allocate resources between businesses



# Agenda



5G adoption

Technology re-cap

Smart CAPEX: Core and Radio Migration

# Agenda



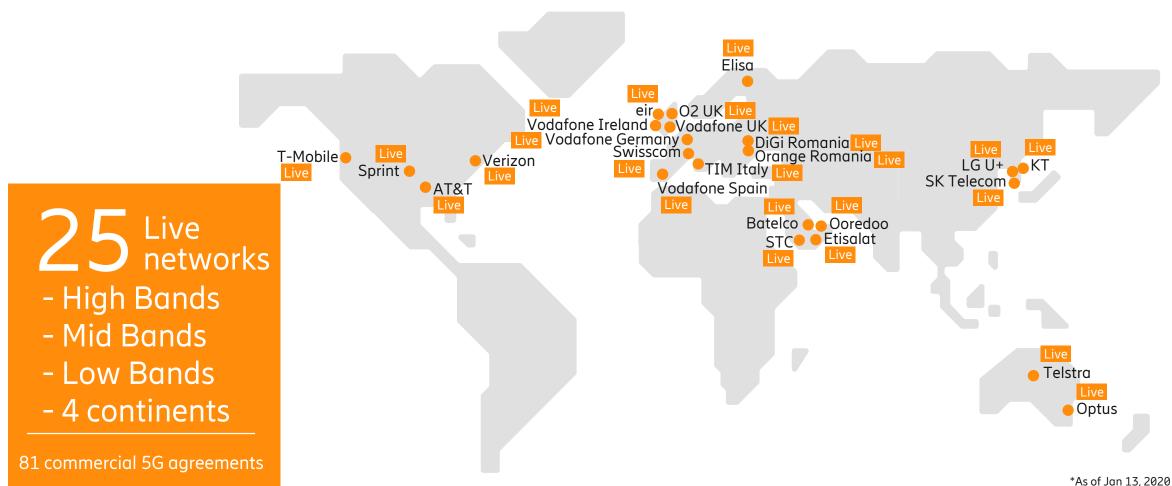
5G adoption

Technology re-cap

Smart CAPEX: Core and Radio Migration

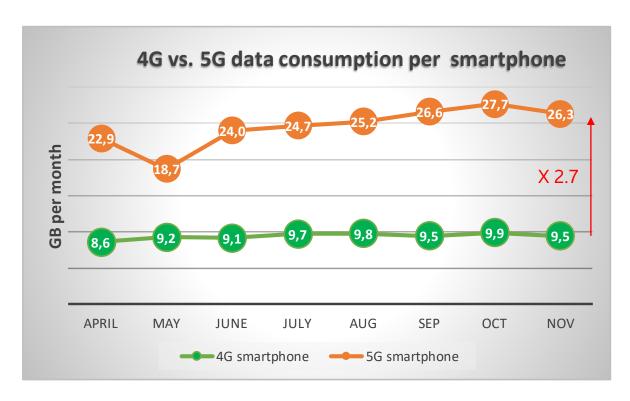
## First with commercial 5G live



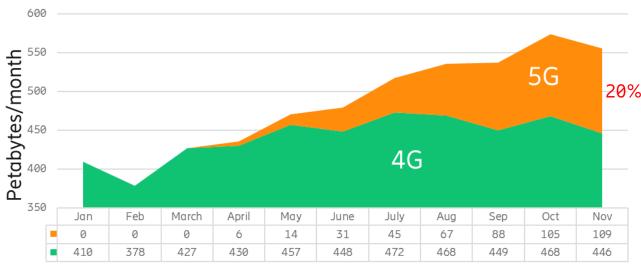


### Korea LTE vs. 5G Traffic





### Monthly mobile data traffic 4G and 5G (PB)

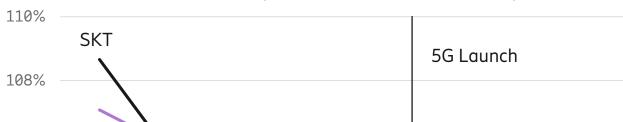


Source: Ministry of Science and IT Korea

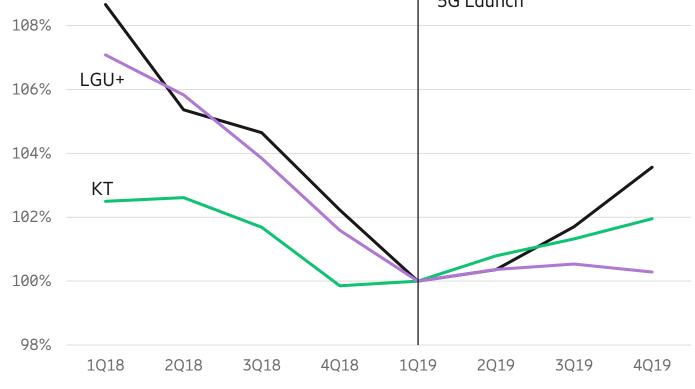




#### Monthly ARPU Evolution for Korean Operators (ARPU 1Q19 indexed 100%)



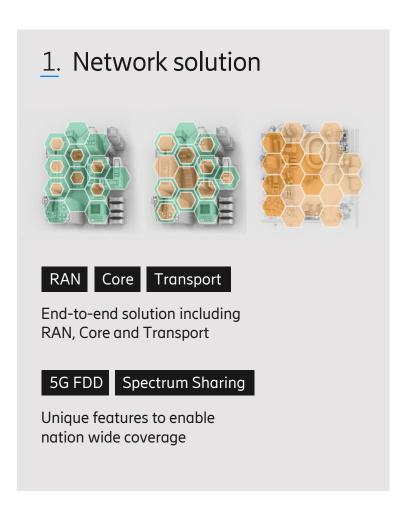
- 50% of operators are charging a premium of 5G over 4G
- ConsumerLab survey showing consumers willing to pay 20% premium for 5G
- Korean operators charging over 10% premium for 5G offerings
- 5G penetration reached 7% in Korea by end of 2019

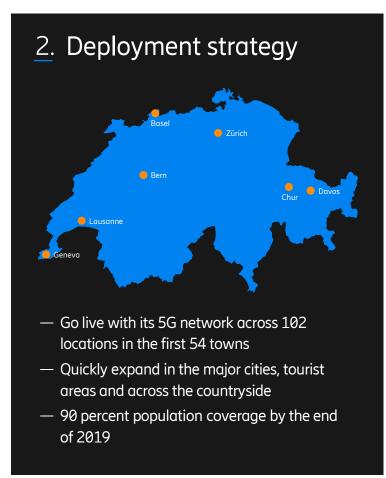


Operator ARPU levels likely to increase as 5G subscriber penetration grows in 2020

### Swisscom 5G













# Agenda



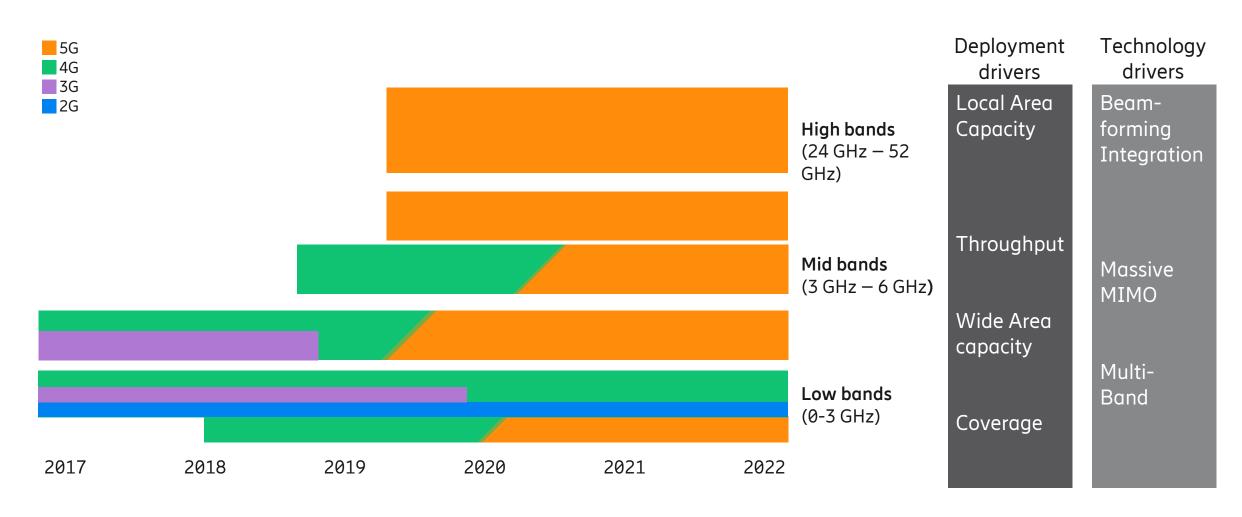
5G adoption

Technology re-cap

Smart CAPEX: Core and Radio Migration







## Mid Band 5G Radios — Korea example



### AIR3239 (32TRX) Compact

Antenna Elements: 128

Antenna Branches: 32T32R

Output Power: 100W

Size: 570x400x150 mm

(band depended)



### AIR6488 (64TRX) Extreme Capacity

Antenna Elements: 128

Antenna Branches: 64T64R

Output Power: 200W

Size: 800x400x150 mm

(band depended)



Antenna: Regular macro

Antenna Branches: 4T4R

Output Power: 160W

Size: 16 liter

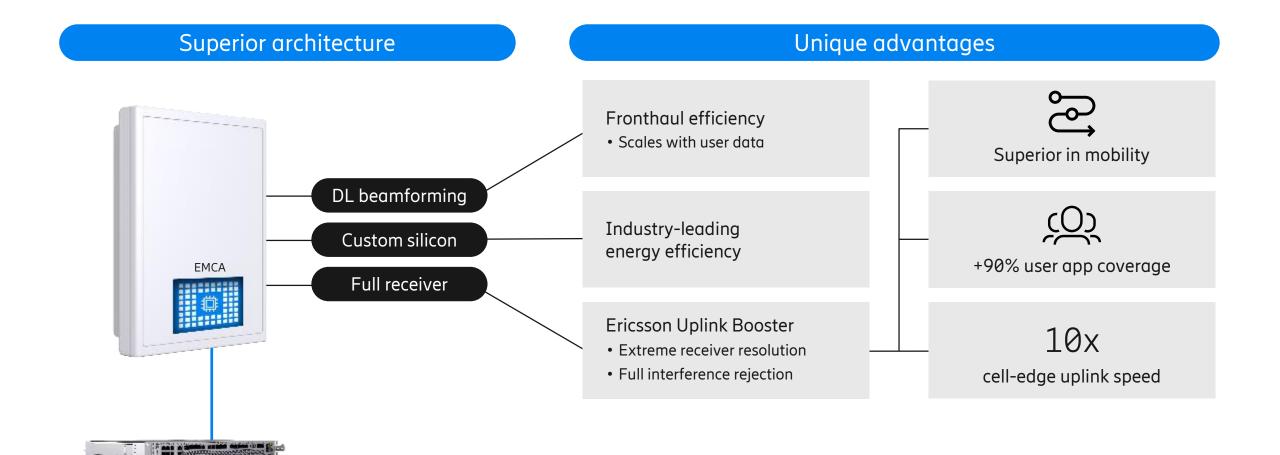






## Ericsson superior Massive MIMO architecture

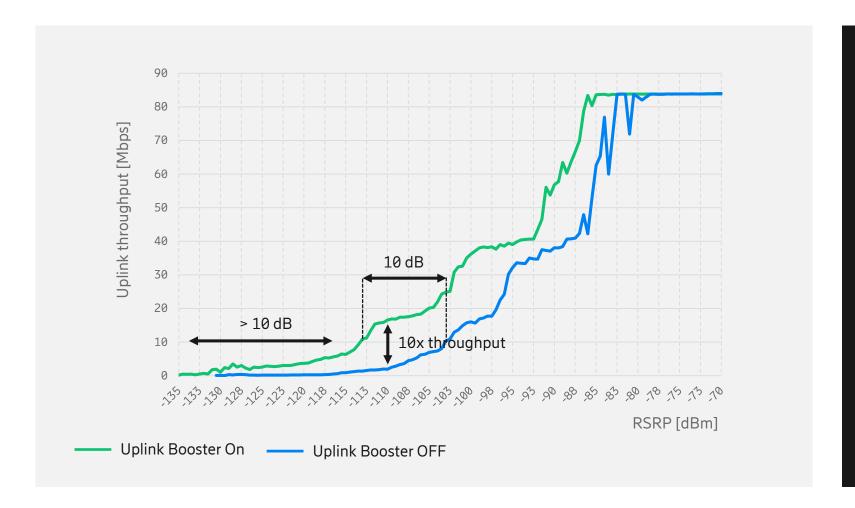




RAN Compute baseband





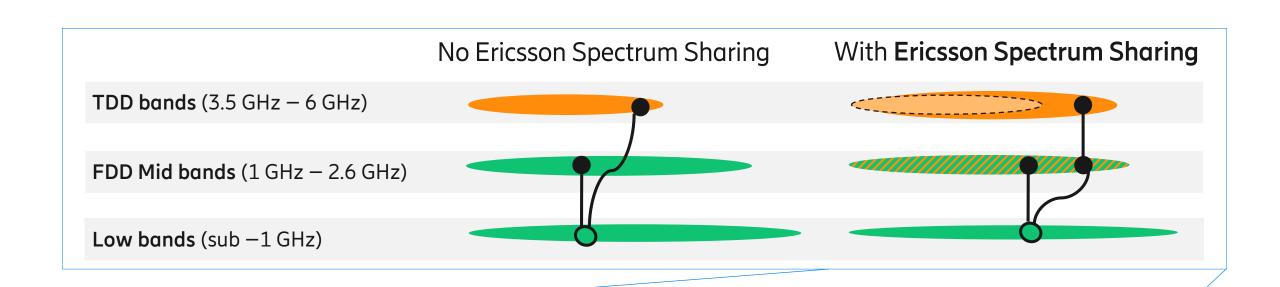


Maximize
uplink MIMO
performance
through zerocompromise
architecture

# 5G investment strategy — leverage your assets



4G/5G spectrum sharing



### Lowest network cost

Lower band and CA with FDD bands

### Higher DL Speed and Capacity

3.5GHz BW available to more UE's

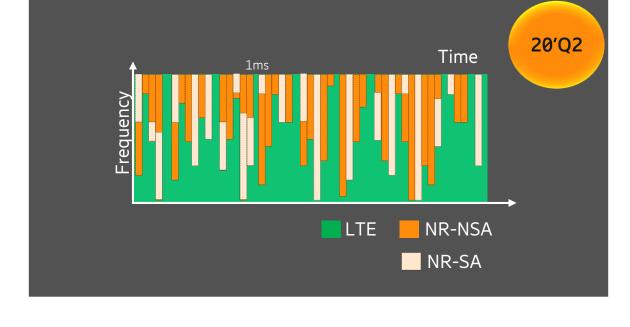
### Standalone Ready

SA low latency and Services

## Full support for standalone







- SW on Ericsson Radio System HW
- Dynamic sharing betwen 4G and 5G Non-standalone
- Time allocation granularity on <u>1ms</u>

- SW package on installed base
- Instant sharing between 4G, 5G Nonstandalone and 5G standalone
- NR-SA and NR-NSA UEs will co-exist with LTE

## Why 5G Core and standalone NR?



Enhanced Network
Slicing support

Service Based Architecture for agility

Less complex RAN & UE architecture

Target architecture for new use cases and innovation



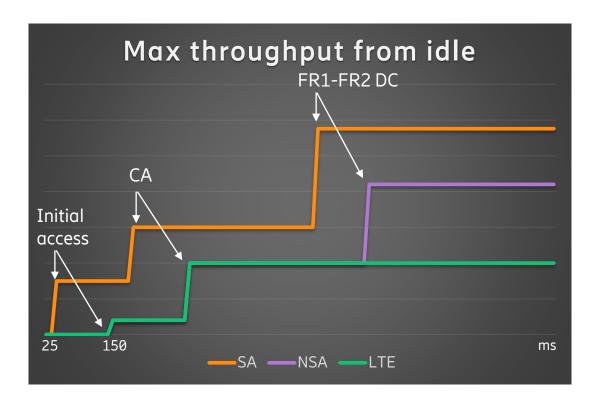


### Standalone NR

### 3

### Throughput comparison SA/NSA/LTE

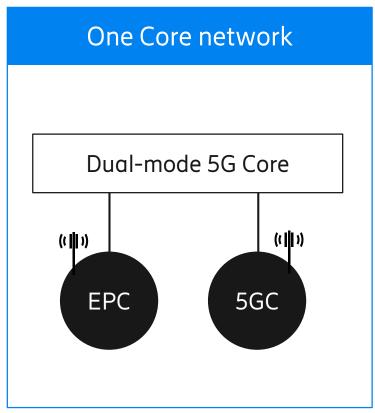
- Fast access to download data
- RRC inactive allow for fast access to RRC connect
- Faster access to higher data rates
- Clear advantage starting at midband with high bandwidth
- Carrier aggregation to boost throughput
- Dual connectivity to combine FR1 and FR2



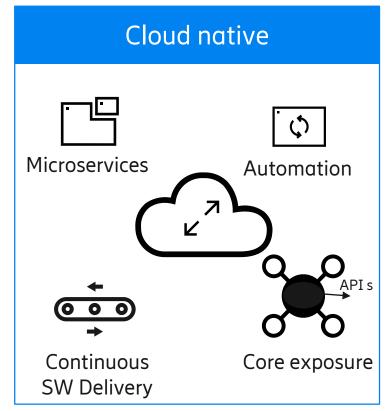
### Fast access to large bandwidth is a key differentiator in SA

### Ericsson's dual-mode 5G Core

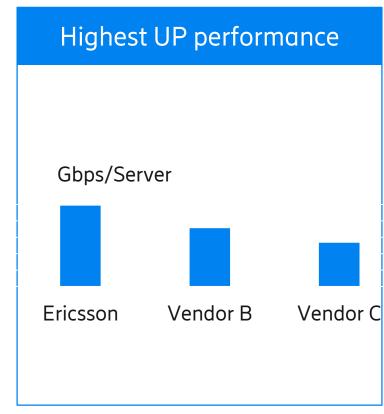




Manage growth with CAPEX efficiency



Reduce OPEX and open for new service creation



Superior performance on virtual S/PGW

# Switching on AI in networks



### Advanced traffic management

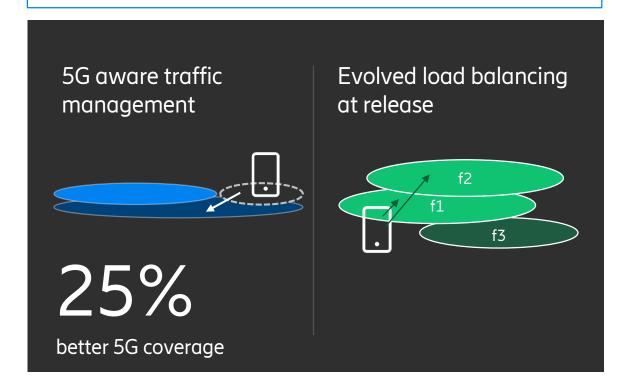
For 5G Plug-Ins and LTE RAN

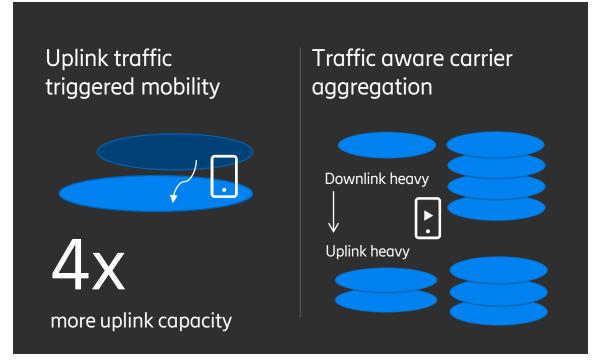


### Evolved carrier optimization

For LTE RAN







# Agenda



5G adoption

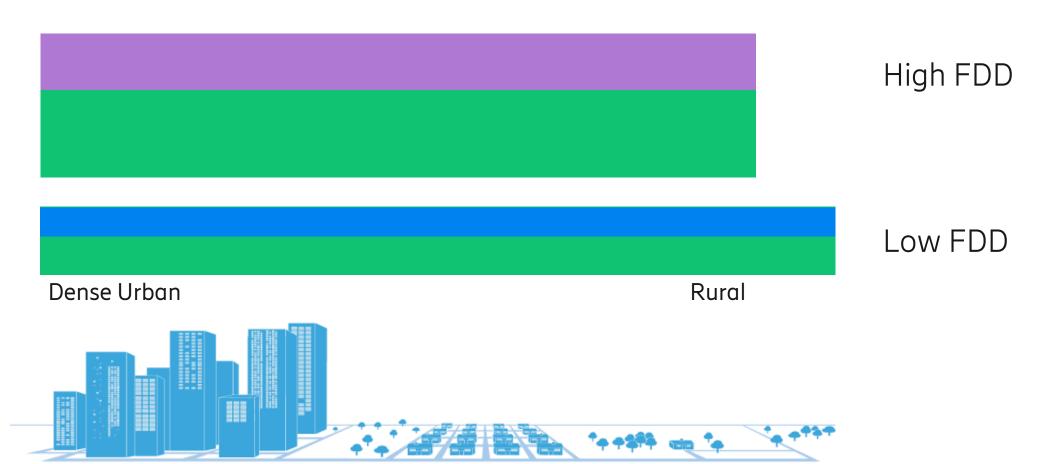
Technology re-cap

Smart CAPEX: Core and Radio Migration

# Typical network today







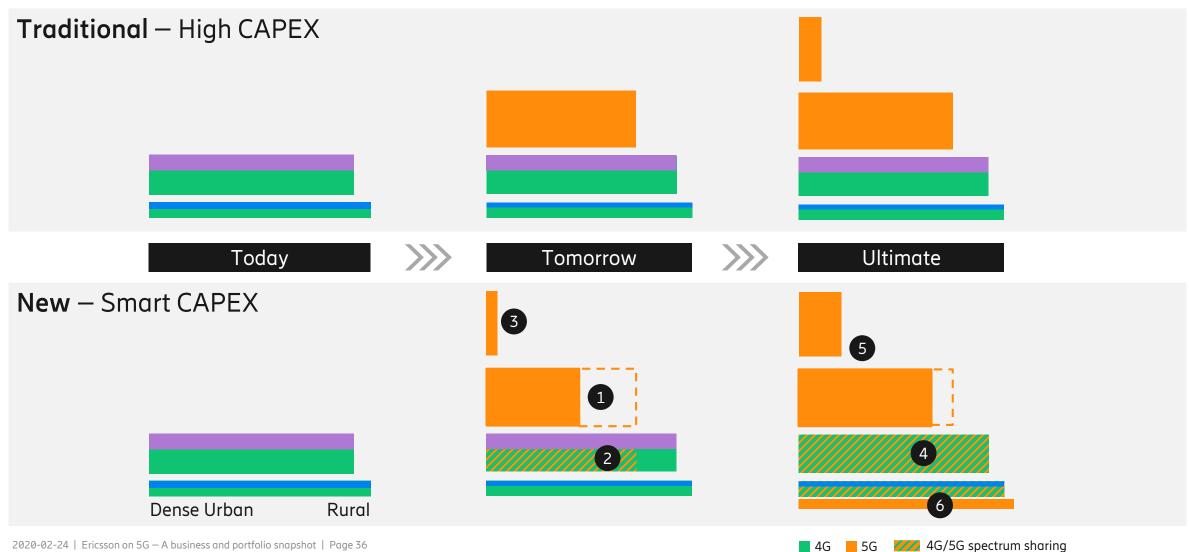
# Two Approaches to build 5G





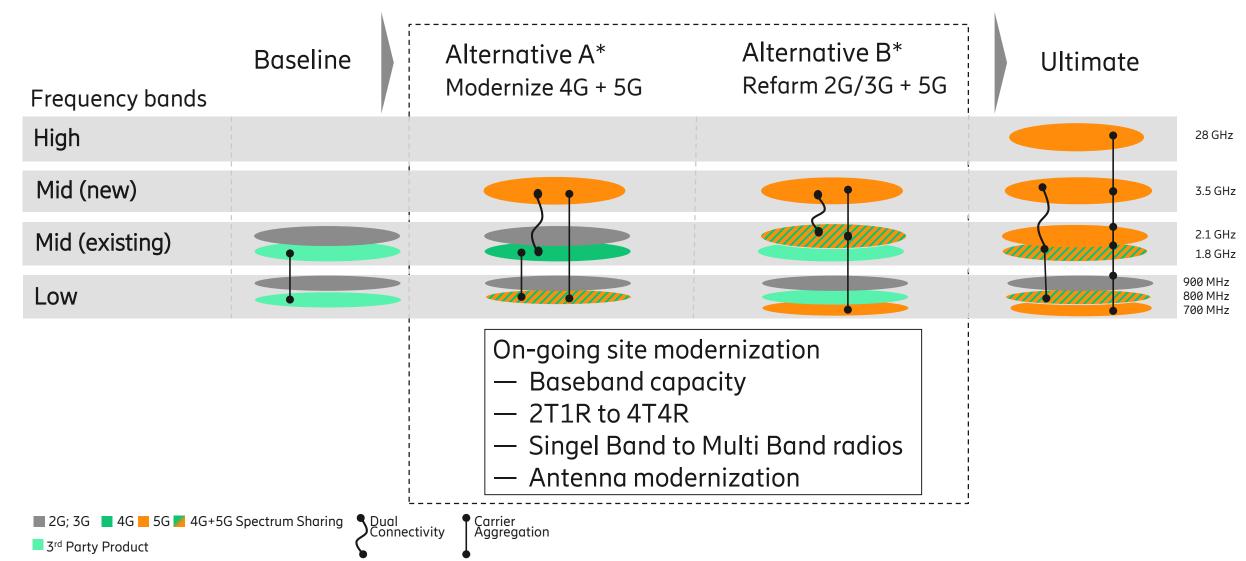
# Two Approaches to build 5G





### Alternatives for non-Ericsson RAN





<sup>\*</sup> Alternatives: Operator dependent; can be mixed; other alternatives can be considered





5G is here

Smart CAPEX and AI

More for more

Segment Networks .11 5G 21:26 Network overview \$ 100 % E 5G 5G deployed successfully Your network is now running on 5G. Performance Network slicing Fredrik Jejdling Head of segment Networks 250

## Agenda



Market update

Networks update

## Agenda



Market update

Networks update

### 2019: 5G took off



13M subscriptions

High-end smartphones and pocket routers; ~USD 1,000



Coverage in major cities and highly populated areas by early movers



Smartphone-driven use cases



Non-standalone 5G; in one band



### 2020: 5G to scale up



13M subscriptions

High-end smartphones and pocket routers; ~USD 1,000



Coverage in major cities and highly populated areas by early movers



Smartphone-driven use cases



Non-standalone 5G; in one band



100M

Subscriptions\*

High-end smartphones, volume devices and mid-tier smartphones <USD 300

Wide 5G coverage by early movers; 20-25% operators\* to launch 5G



Consumer service bundling; trials continue for industries



Standalone 5G introduced; 5G in multiple bands



\* Ericsson analysis

<sup>\*</sup> Ericsson Mobility Report Nov 2019

## Ericsson leading 5G today



First with commercial 5G live networks in 4 continents: Americas, Europe, Asia and Oceania

81

commercial 5G agreements

Commercial 5G agreements or contracts with unique operators, 25 live networks

65%

of 5G US city deployments

We are leading 5G city deployment in mid and high band in US

40+

commercial devices

Widest ecosystem of supported devices on 5G live networks

90%

Nationwide coverage

Swisscom achieves nationwide coverage with Spectrum Sharing and 5G low band

## Agenda

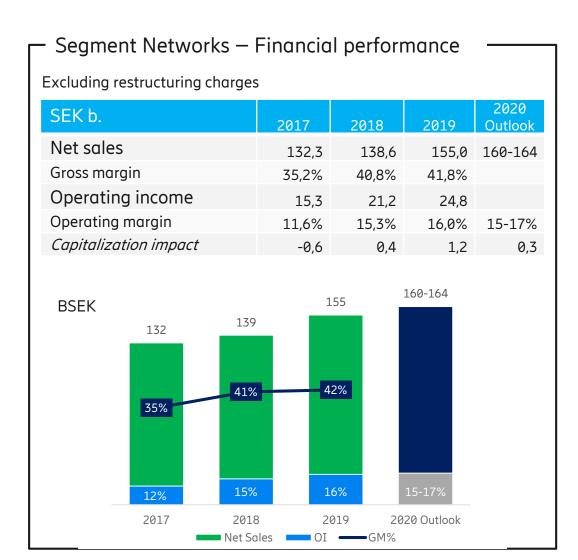


Market update

Networks update

### **Networks**





- Organic sales +6%
  - Growth driven by LTE and 5G investments
  - The sales increase was primarily in the US, South Korea, Italy, Germany and Saudi Arabia
- Gross margin increased to 41.8%
  - Impact of strategic contracts and Kathrein, offset by operating leverage
  - Lower restructuring charges in 2019 contributed positively
- Operating income increased to 24.8 SEK b
  - Higher sales and gross margin partly offset by increased operating expenses
    - Higher investments in R&D to strengthen the technology leadership and increased investments in digital transformation, compliance and security
  - Lower restructuring charges had a positive impact

### Focused strategy execution for Networks



Invest in technology and cost leadership

Selective market expansion based on technology and cost competitiveness

Acceleration of 5G with lead customers



- 6 500 R&D engineers hired since Q1 17
- 3 500 service engineers left



- 100 radios planned for 2020
- Spectrum sharing over live 5G commercial networks
- 5G Stand-Alone end-to-end data call



- From 28.8 % Q4 18 to 29.1% Q4 19
- Key deals with Verizon, Softbank, Optus



- Net sales +7%
- Gross margin +1.2pp

### Accelerating our strategy execution



#### **Execution Workstreams**

#### **Objectives**

Win the Technology Race

Industry leadership through meeting customer demands, keeping focus on cost and investing in long term leadership

World Class Development

Master the complexity and reinvent scale in the portfolio, exceeding customer demands efficiently with quality and speed

Next-Gen Supply & Services

Create a customer-centric, predictable, automated supply & service delivery chain, reducing lead time by half, enabling higher quality delivery at competitive cost

Compete on Value

Maximize value monetization for Ericsson Networks portfolio

Sourcing Excellence

Create sustainable business value through innovative and competitive supplier ecosystem

Wanted Position 2022+

Technology Leadership
Business Leadership
Commercial leadership

### Where we compete



Fixed access

Complement and expand broadband with Fixed Wireless Access (FWA)

Primary market: Antennas system

### KATHREIN

Build capability & competence

Primary focus and market: Radio Access Network

Invest in cost competitiveness, network performance & 5G evolution

Expand in converged transport & mobile backhaul

Invest in existing portfolio and partner

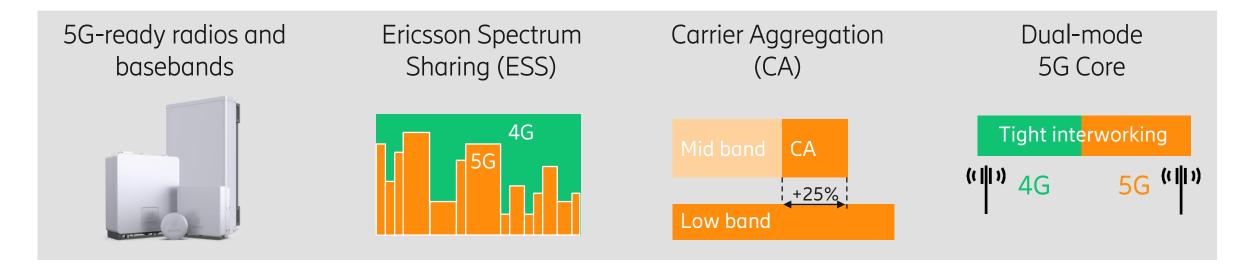
Enterprise/Industries/Vertical

Use-case approach with focus on mission critical capabilities



## Key technologies for better 5G





## 5 million radios

We have shipped 5 million 5G-ready radios since 2015

## 1ms

spectral efficiency

Dynamic allocation of spectrum between 4G and 5G is the best way to deploy 5G +25%

### better performance

ESS and CA provide 27% extra capacity and 25% better mid band population coverage

### 5G Standalone faster introduction

SW migration from nonstandalone to standalone in both RAN and core

### Ericsson Networks' portfolio strengths





Unique and flexible RAN Compute architecture

Redefining the site, tightly integrated antenna innovations

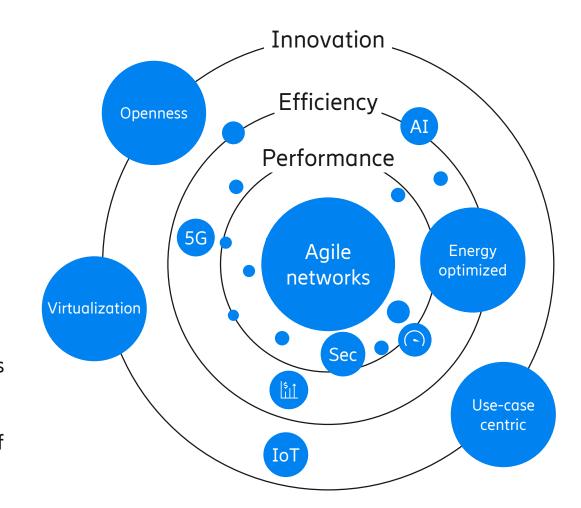
Modular Ericsson Radio System for all site needs

Intelligent Network
Services

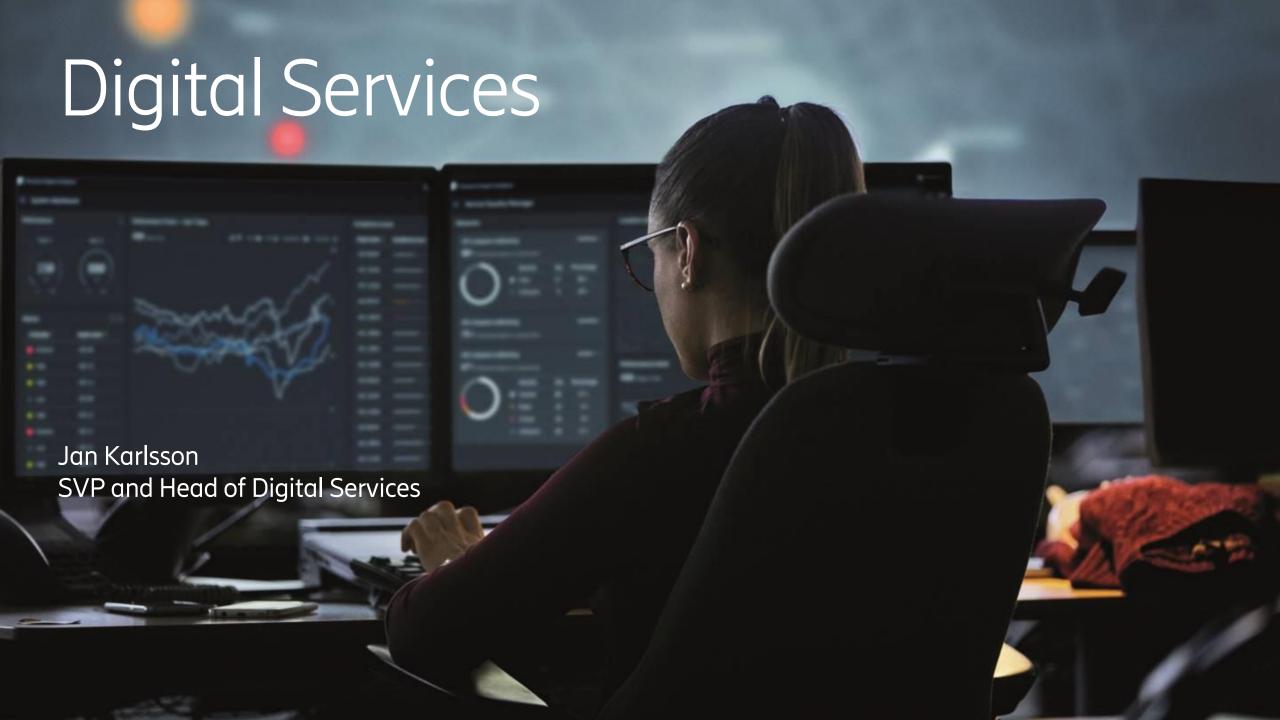


## A better 5G and beyond





Use-case centric and agile technologies, applied across the ecosystem, will enable faster and targeted innovation for the benefit of the whole industry







5G core standalone — 5GC

 $\longleftrightarrow$ 

Cloud native and automation

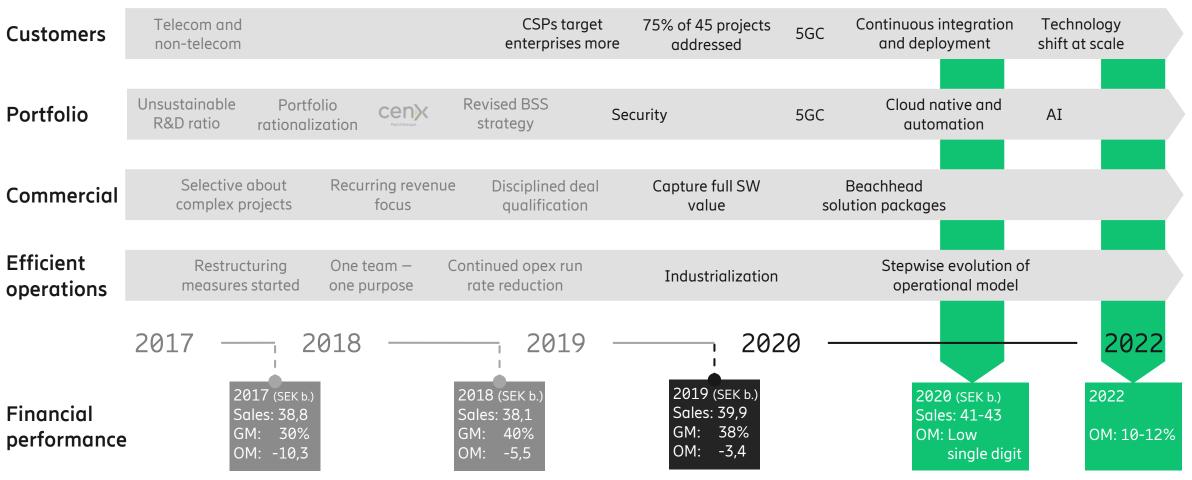
To fully realize 5G – 5G standalone is next

Customers have started to invest in 5GC: the new core network architecture for 5G standalone

How it will revolutionize the networks and the way we and our customers work

### Our transformation journey

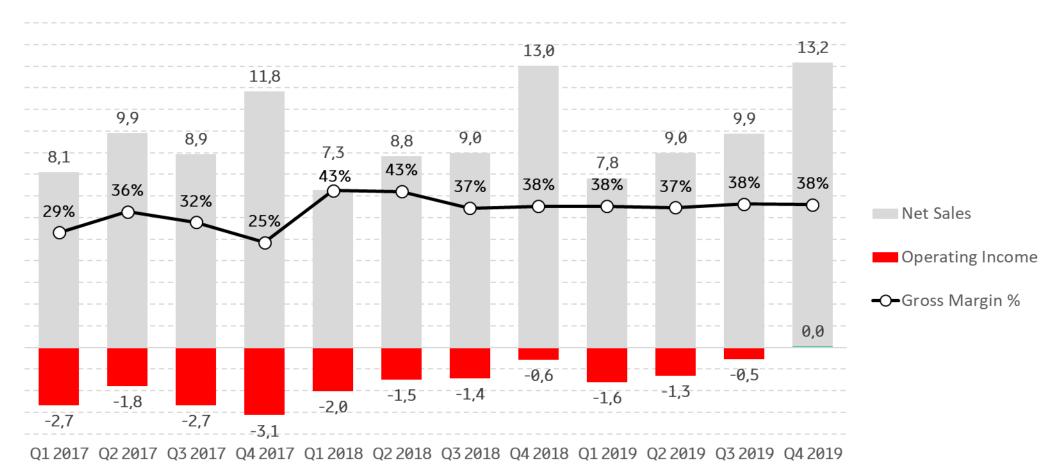




Operating income and margin excluding restructuring charges. 2017 excluding restructuring and SEK 14.5 b. in impairments and write downs. 2018 excluding restructuring and SEK 3.0 b in impairments and write downs

### Digital Services — on track towards profitability





### Agenda



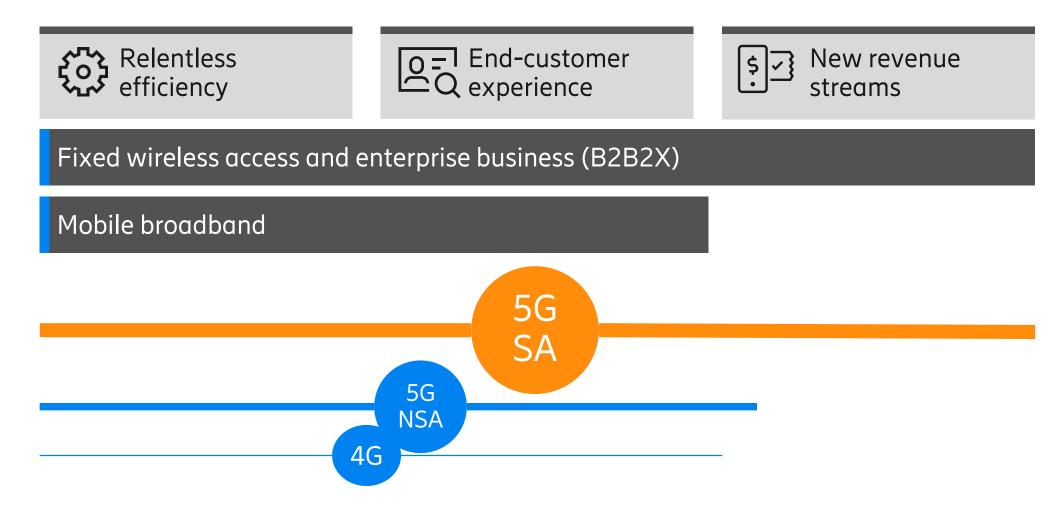
Performance and strategic direction

5G core standalone — why a priority and why cloud native

Implications for Digital Services

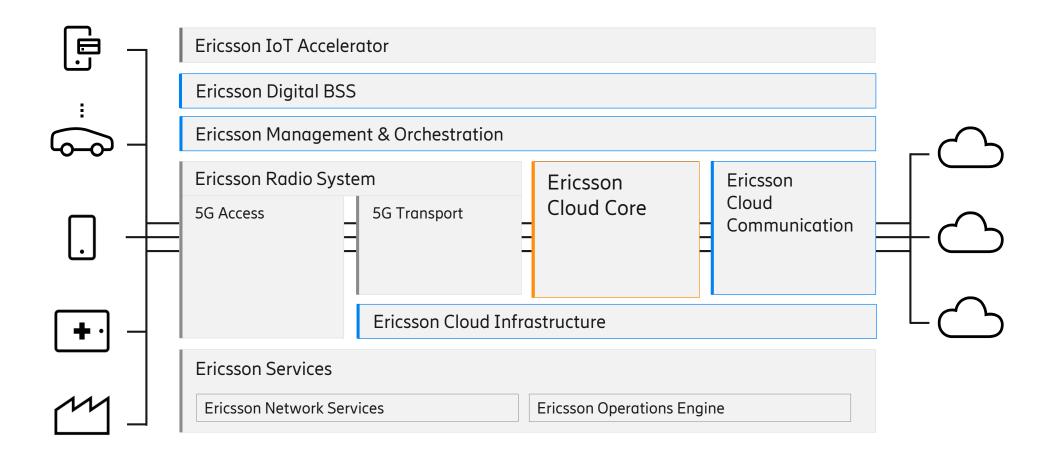


# 5G standalone – one programmable network for CSPs to expand beyond mobile broadband



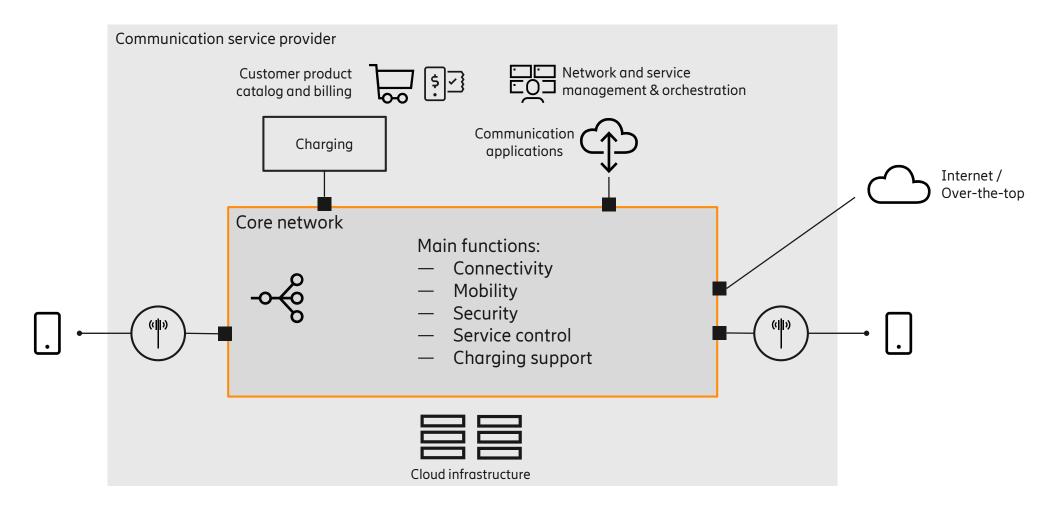






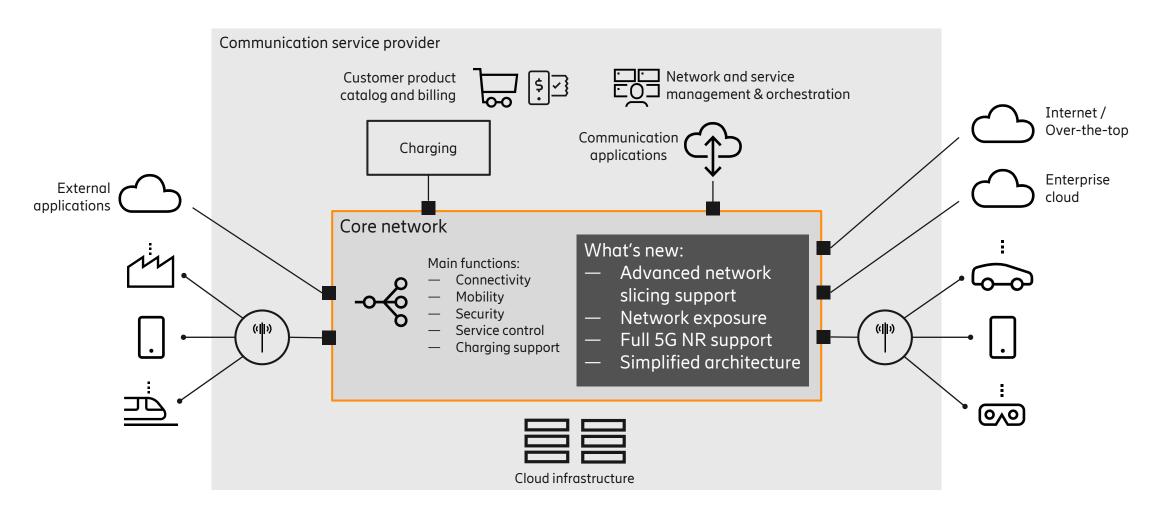
### What do core networks do?

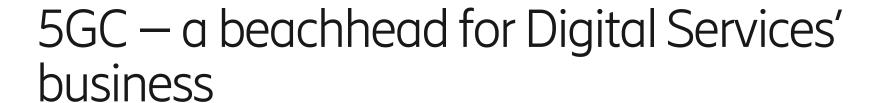






# New functions in 5GC enable business beyond mobile broadband



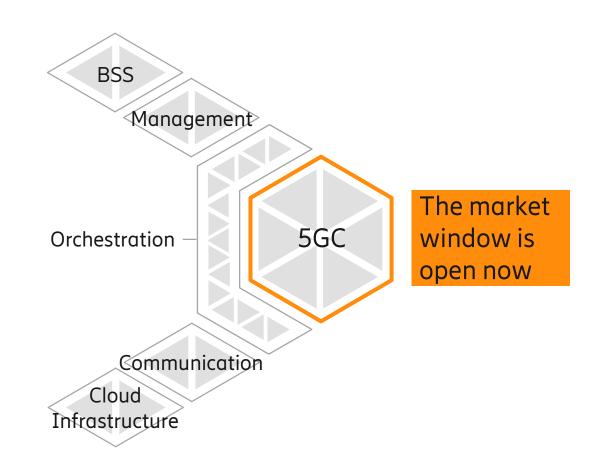




3GPP's standard means a completely new core for 5G standalone

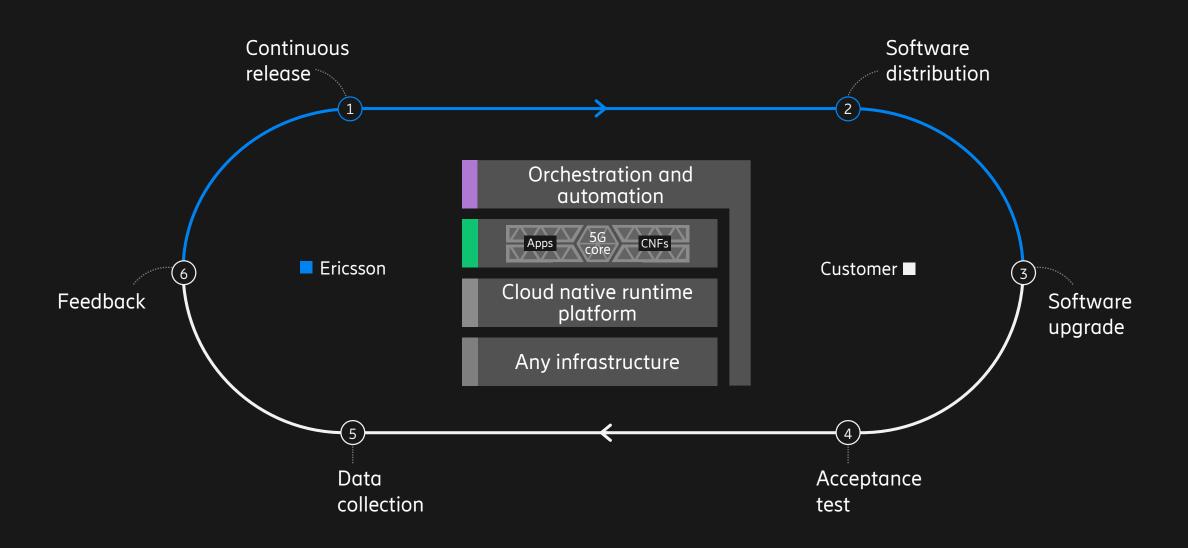
### Ericsson's dual-mode 5G Core

- Cloud native from start
- TCO efficient
- High performing
- Supporting 5GC and EPC



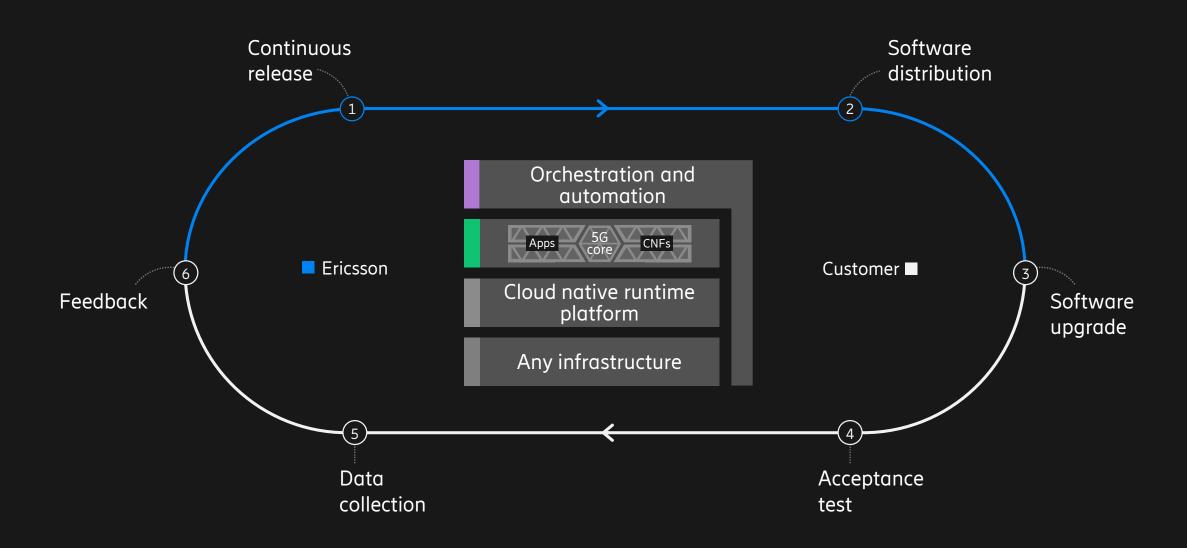
### Cloud native and CI/CD video





### Cloud native and CI/CD





## The industry's first live cloud native container-based core network



### Ericsson and Telstra achieve containerbased commercial Evolved Packet Core milestone

- Ericsson's cloud-native container-based Evolved Packet Core deployed in Telstra's production Network Functions Virtualization Infrastructure (NFVi)
- The achievement with Telstra marks a significant advance in network orchestration and automation
- Opens possibilities for Telstra to significantly scale traditional wireless networks in creating new 5G services for consumers and enterprise customers with emerging technologies

PRESS RELEASE | DEC 18, 2019 06:00 (GMT +00:00)

Emilio Romeo, Head of Ericsson Australia and New Zealand, says: "Telstra and Ericsson are leading the mobile industry with this first container-based cloud-native Evolved Packet Core in Telstra's production environment and carrying live traffic. This is an important step towards fundamentally changing the way both companies deploy and operate mobile core networks. Core networks will become much more flexible and agile, allowing operators such as Telstra to quickly create and deploy compelling new services for their customers. This in turn helps operators build new revenues."

Shailin Sehgal, Product Enablement Technology Executive, Telstra, says: "Through the T22 initiative, Telstra's business is being transformed to improve service delivery and provide customers with enhanced experiences. To achieve this transformation, Telstra's network needs to become more flexible and efficient, and cloud-native container-based applications such as Ericsson's containerized Evolved Packet Core are a key element of this. This is key to cost effectively scaling and automating our network and speeding up the delivery of innovative new services that are essential in a 5G world. We are pleased to be working with Ericsson to deliver innovation into our network that will assist Telstra maintain its industry leadership."

## 5G core standalone – 5GC



Cloud native and automation

### KDDI and Ericsson achieve 5G cloudnative CI/CD software pipeline breakthrough

- Ericsson CI/CD pipeline for cloud-native 5G Core standalone software deployment successfully tested
- Ericsson solution enables fast and efficient delivery of new software and functionalities while maintaining network quality
- Solution meets communications service provider software delivery needs for 5G networks

PRESS RELEASE | FEB 20, 2020 08:00 (GMT +00:00)

The CI/CD pipeline speeds up the software acceptance process through the advanced automation of software distribution, deployment, validation and feedback, while reducing human-error risks.

It shortens time to market of new software from months to weeks. Ericsson's CI/CD pipeline enabled KDDI to deploy complicated sliced and distributed network functions more easily through simplified workflows.

### Agenda



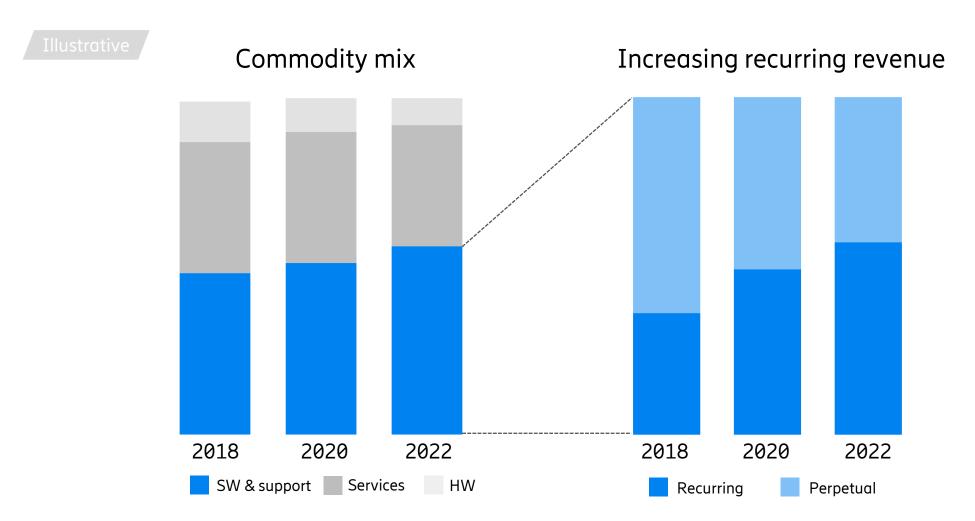
Performance and strategic direction

5G core standalone — why a priority and why cloud native

Implications for Digital Services

### Our business mix and its evolution





### Transforming ourselves



### Cloud native portfolio

- Common application development framework
  - Design principles
  - Tools
  - Marketplace

## Automate software delivery and deployment

- Common end-to-end CI/CD software pipeline
  - Development to customer deployment

#### Industrialization

 Foster and facilitate re-use of industrialized systems integration assets across customer engagements

### Summary



5G core standalone – 5GC



Cloud native and automation

To fully realize 5G — 5G standalone is next

Customers have started to invest in 5GC: the new core network architecture for 5G standalone

The networks and the way we and our customers work will fundamentally change

Speed and efficiency in R&D
Solutions scale seamlessly
Automation of software upgrades

Continued strategy execution

North America .11 5G 21:26 Network overview 5G 5G deployed successfully Your network is now running on 5G. Performance Niklas Heuveldop Head of Market Area North America 250

### Market Area North America





Q&A will follow, to ask questions, please call:

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### Q&A

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