

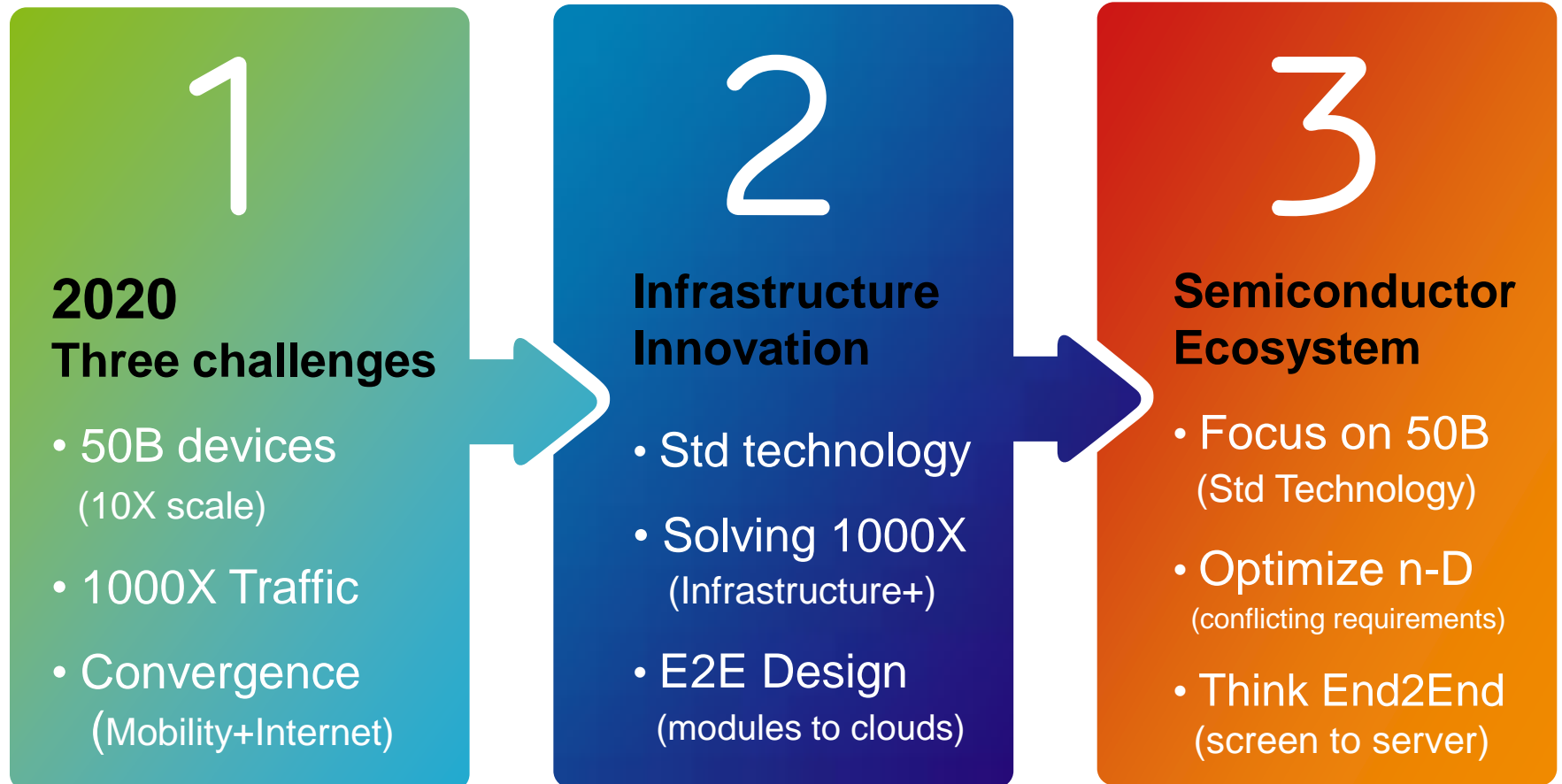


# INFRASTRUCTURE INNOVATION

*CAN THE CHALLENGE BE MET ?*

ARPIT JOSHIPURA  
VICE PRESIDENT, STRATEGY & COMMUNICATIONS  
ERICSSON SILICON VALLEY

# KEY MESSAGES



# KEY MESSAGES

---

1

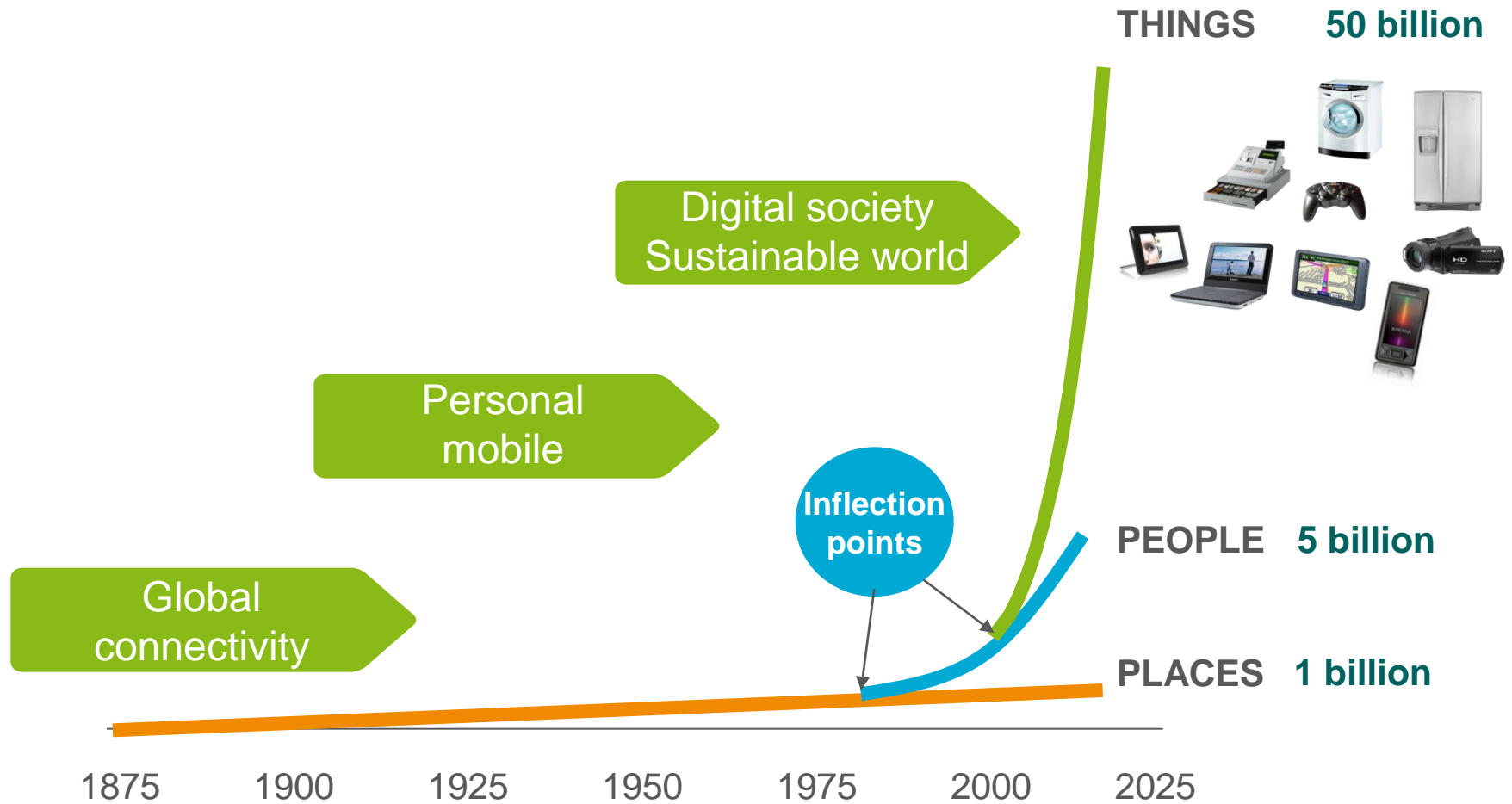
**2020**  
**Three challenges**

- 50B devices  
(10X scale)
- 1000X Traffic
- Convergence  
(Mobility+Internet)



THE TOP 3  
CHALLENGES  
THIS DECADE

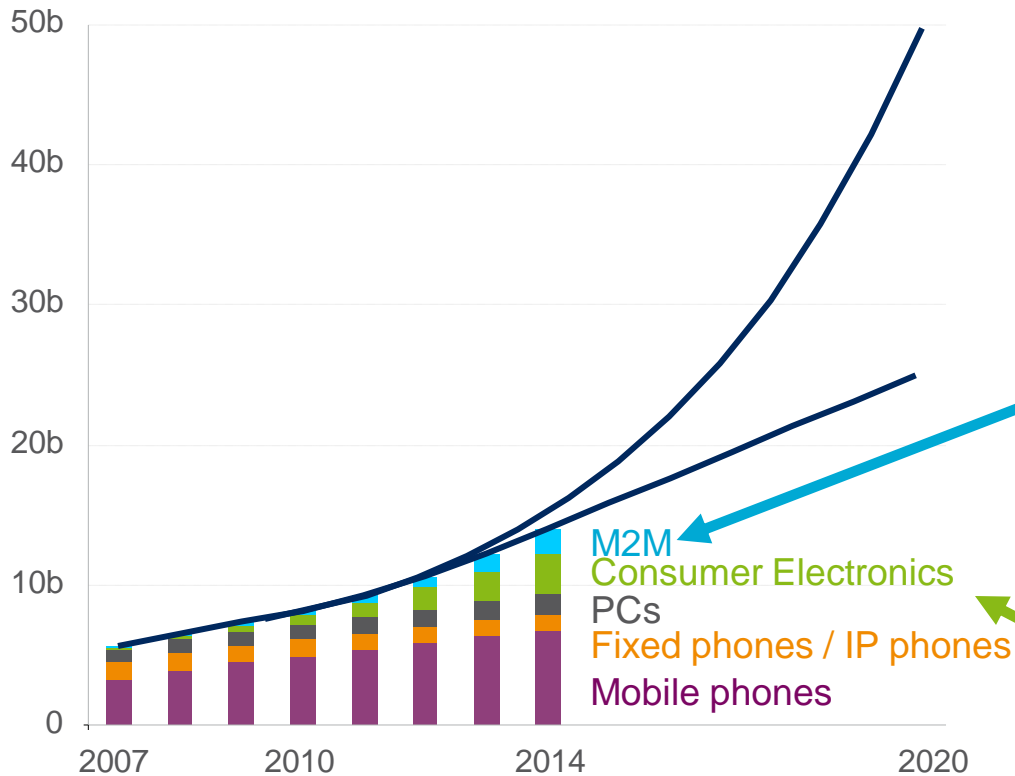
# INFLECTION POINTS DRIVING OUR BUSINESS



Source: Ericsson

# NEW DEVICES AND NEW INDUSTRIES BRING NEW BUSINESS OPPORTUNITIES

## Connected Devices Worldwide



### Addressing Industries

- Traffic systems, Automotive
- Transport and logistics
- Utilities – smart grid
- Security – connected buildings
- Home appliances
- Medical automation, Remote healthcare
- ATM, Point of sale, Vending
- Critical infrastructures
- Monitoring and control

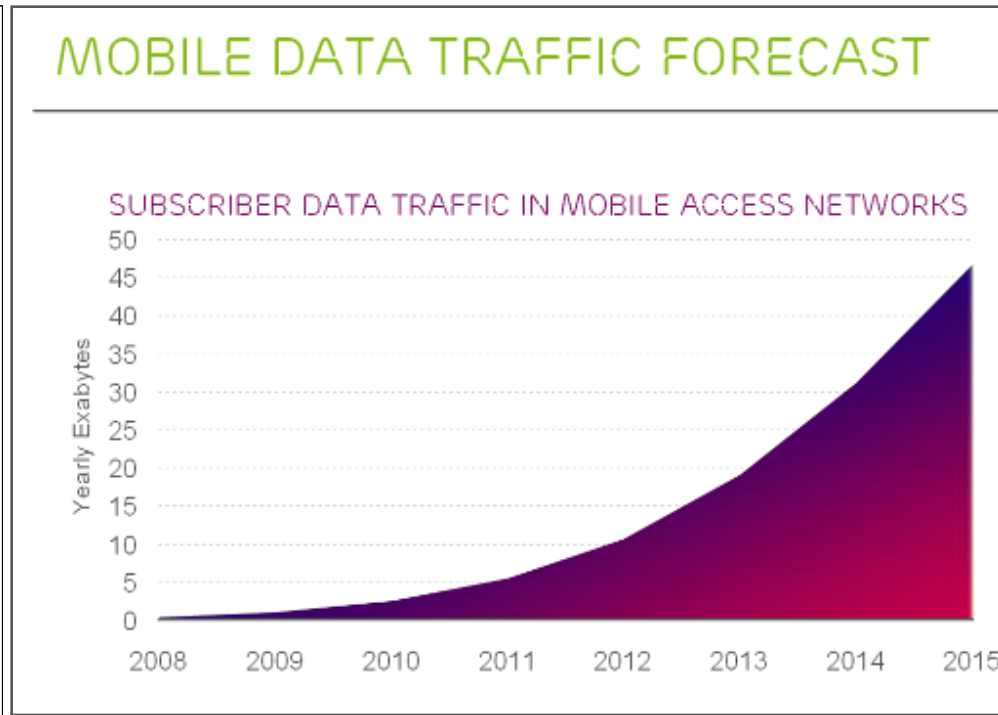
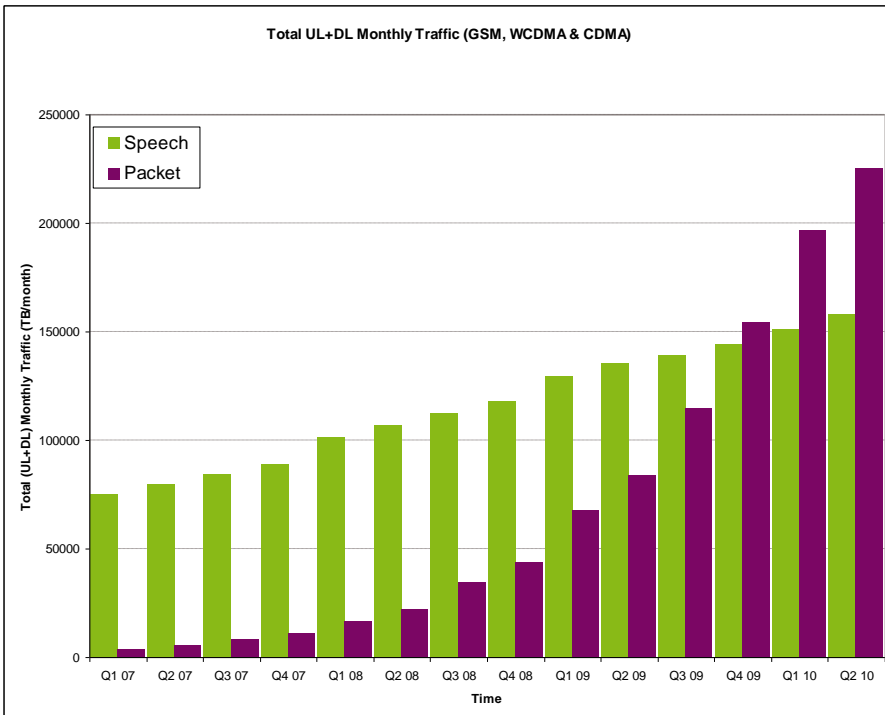
### More devices per person

- eBook readers, Music players, DVD players, Gaming devices, Cameras, Home appliances, In-vehicle entertainment etc.

**New telecom cycle: 10x devices, 10x industries**

# MEASURED VOICE AND DATA TRAFFIC – GLOBAL TOTAL

\* Measured data updated August 2010



- › Q209 to Q210: Mobile data traffic nearly triples
- › Mobile data traffic grew 10 times faster than voice

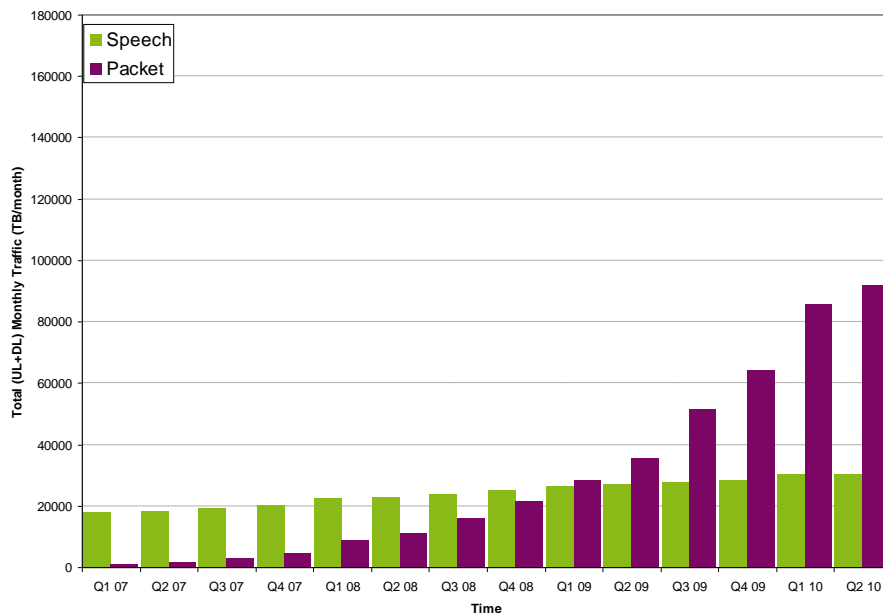
# MEASURED VOICE AND DATA

## REGIONAL BREAKDOWN

Measured data updated  
August 2010

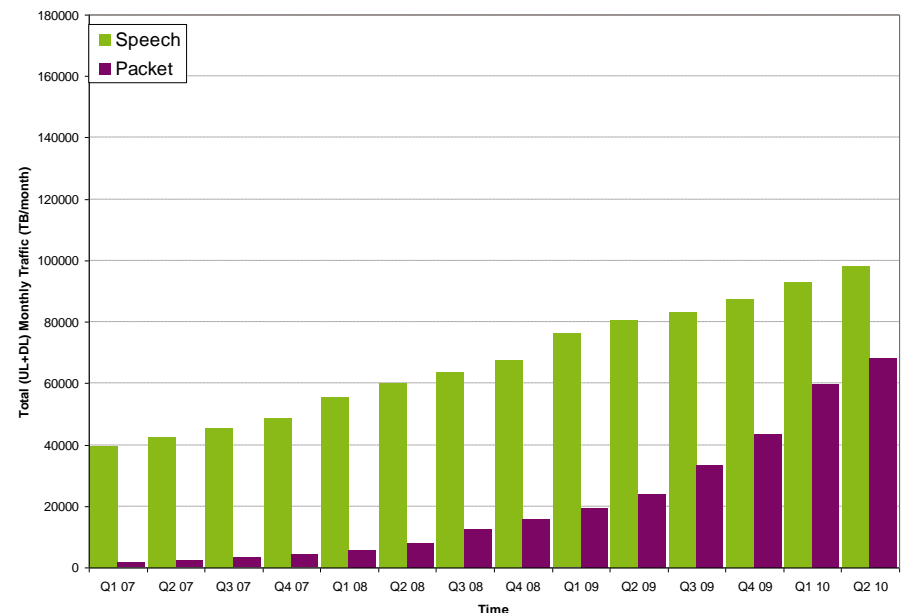
### EMEA

Total UL+DL Monthly Traffic (GSM, WCDMA & CDMA)



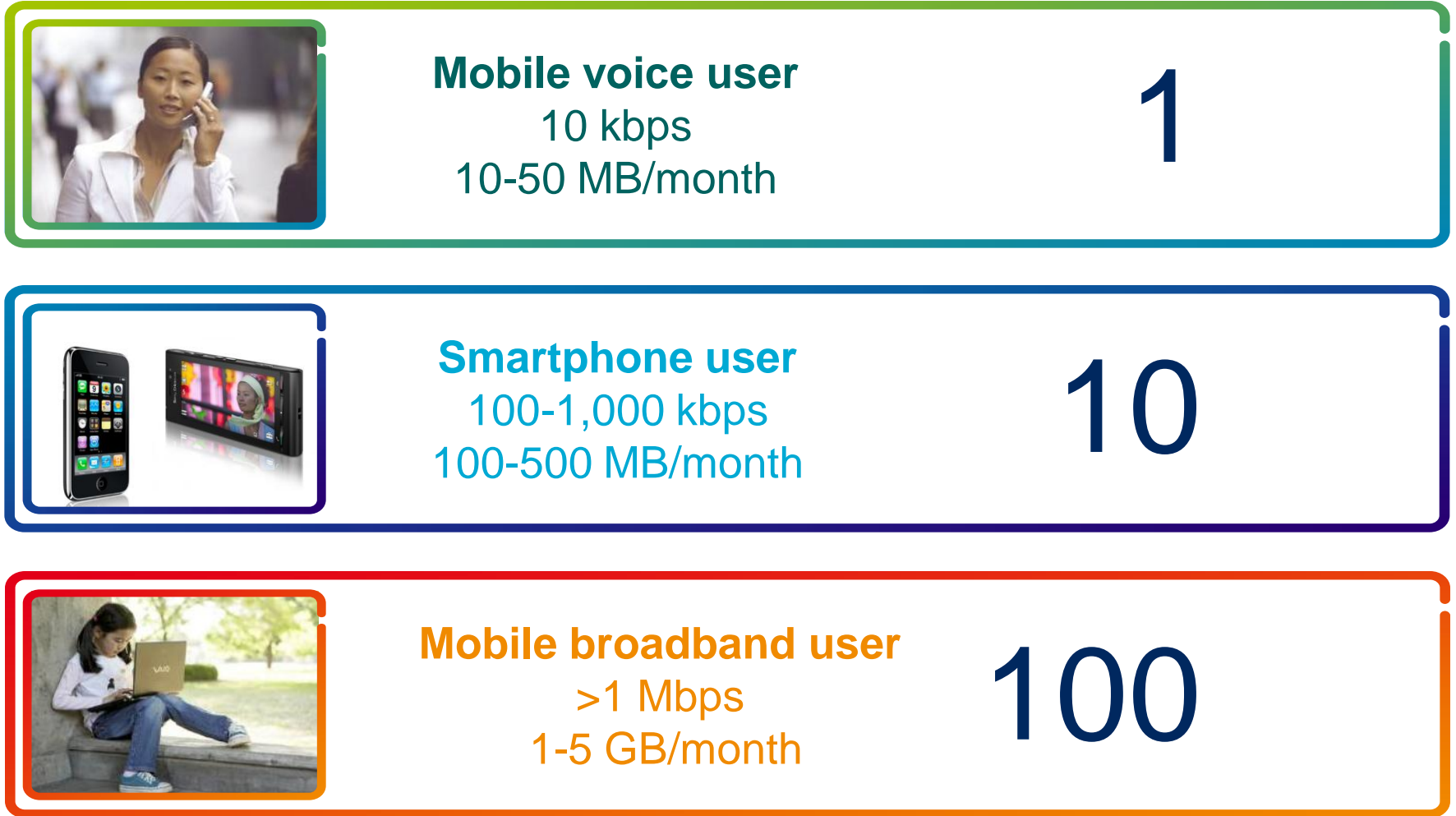
### APAC

Total UL+DL Monthly Traffic (GSM, WCDMA & CDMA)

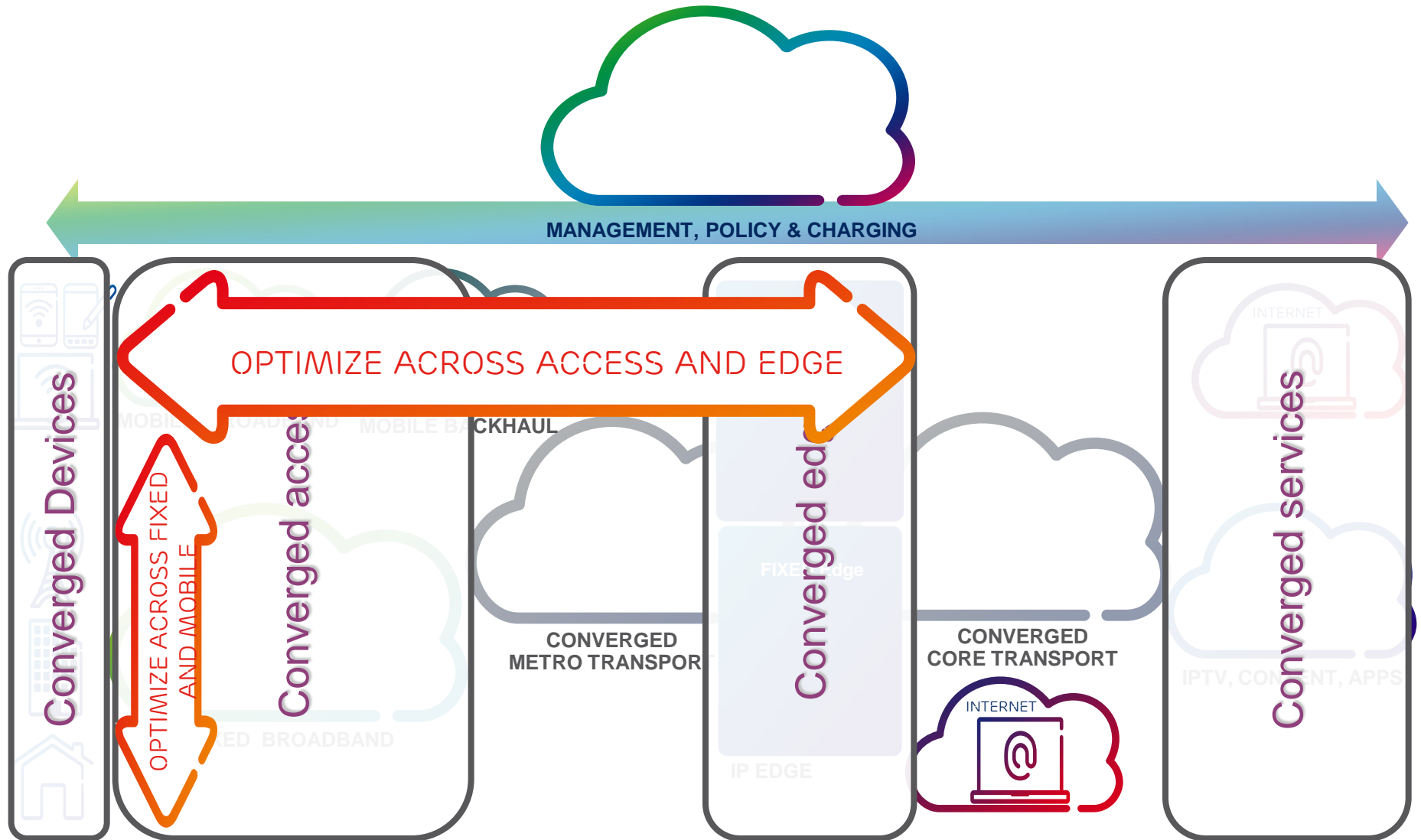


- › EMEA: Dominates global traffic with more mobile broadband
- › APAC: Voice still dominates, but data catching up

# SMARTPHONES DRIVE TRAFFIC & REVENUE

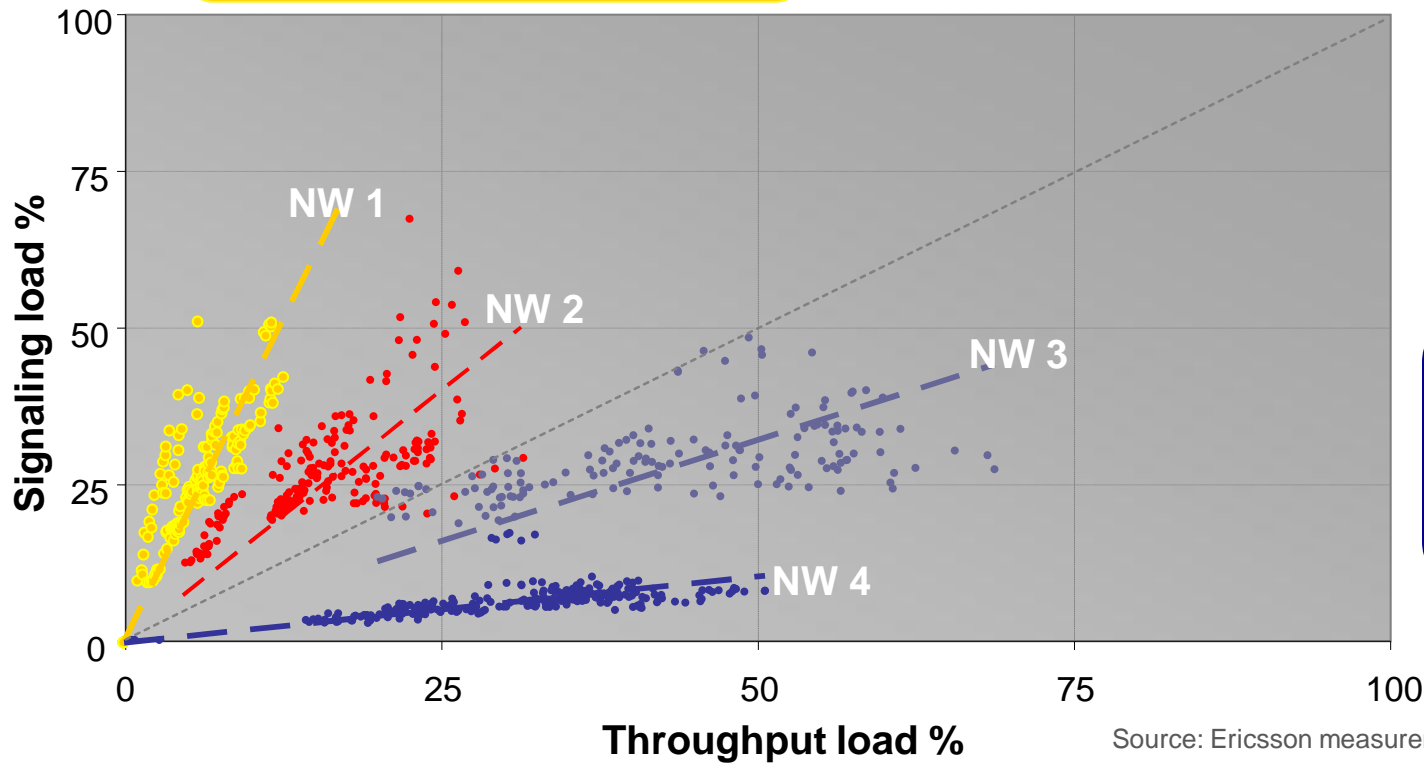


# SMARTER PIPES ENABLED BY IP & CONVERGENCE



# SMARTER PIPE WITH IP & CONVERGENCE

NW1  
NETWORKS WITH  
SMARTPHONES



NW4  
FIXED NETWORKS  
(BUSINESS &  
RESIDENTIAL)

CONVERGENCE REQUIRES BOTH THROUGHPUT AND SIGNALING SCALE

# KEY MESSAGES

---

2

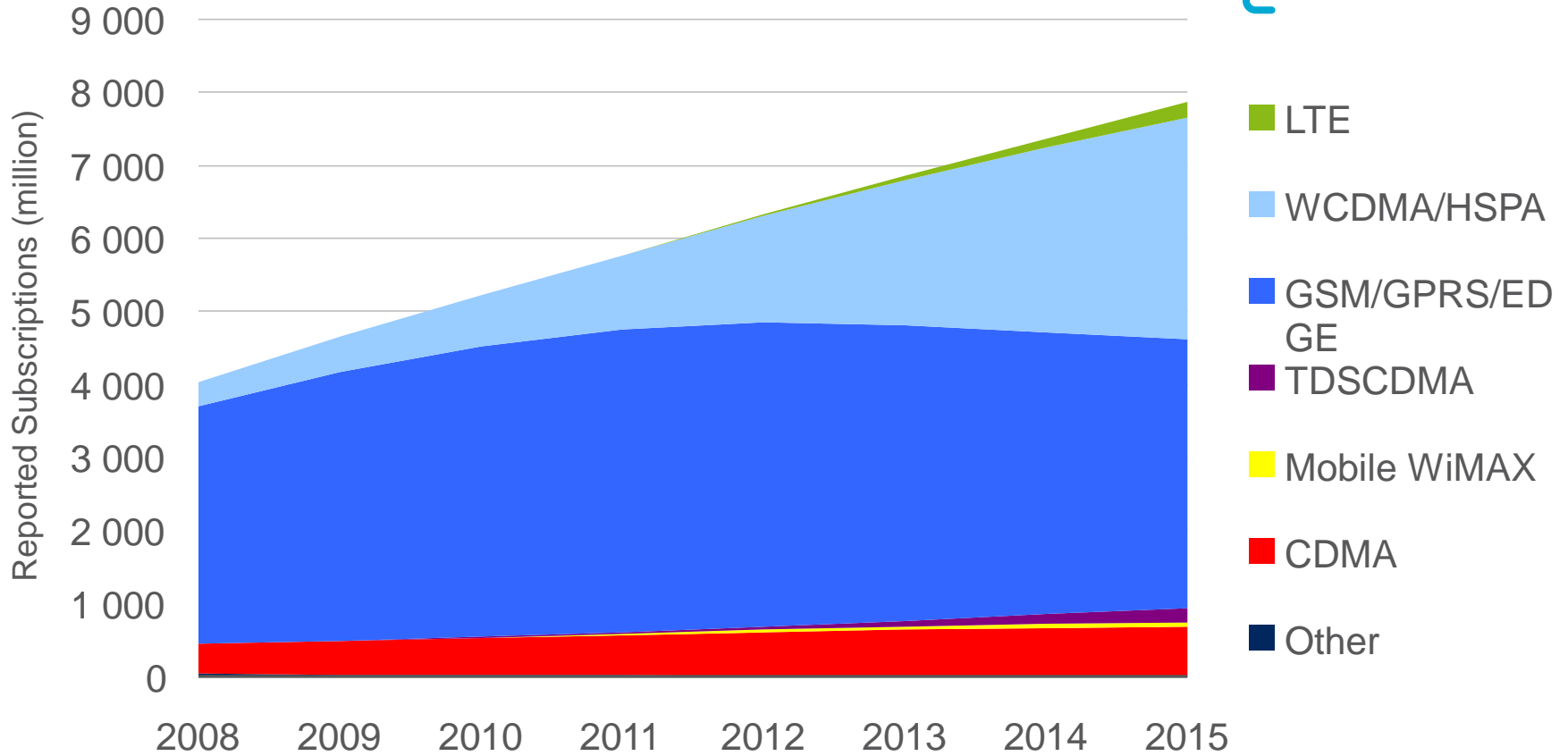
## Infrastructure Innovation

- Std technology
- Solving 1000X  
(Infrastructure+)
- E2E Design  
(modules to clouds)

# REPORTED MOBILE SUBSCRIPTIONS

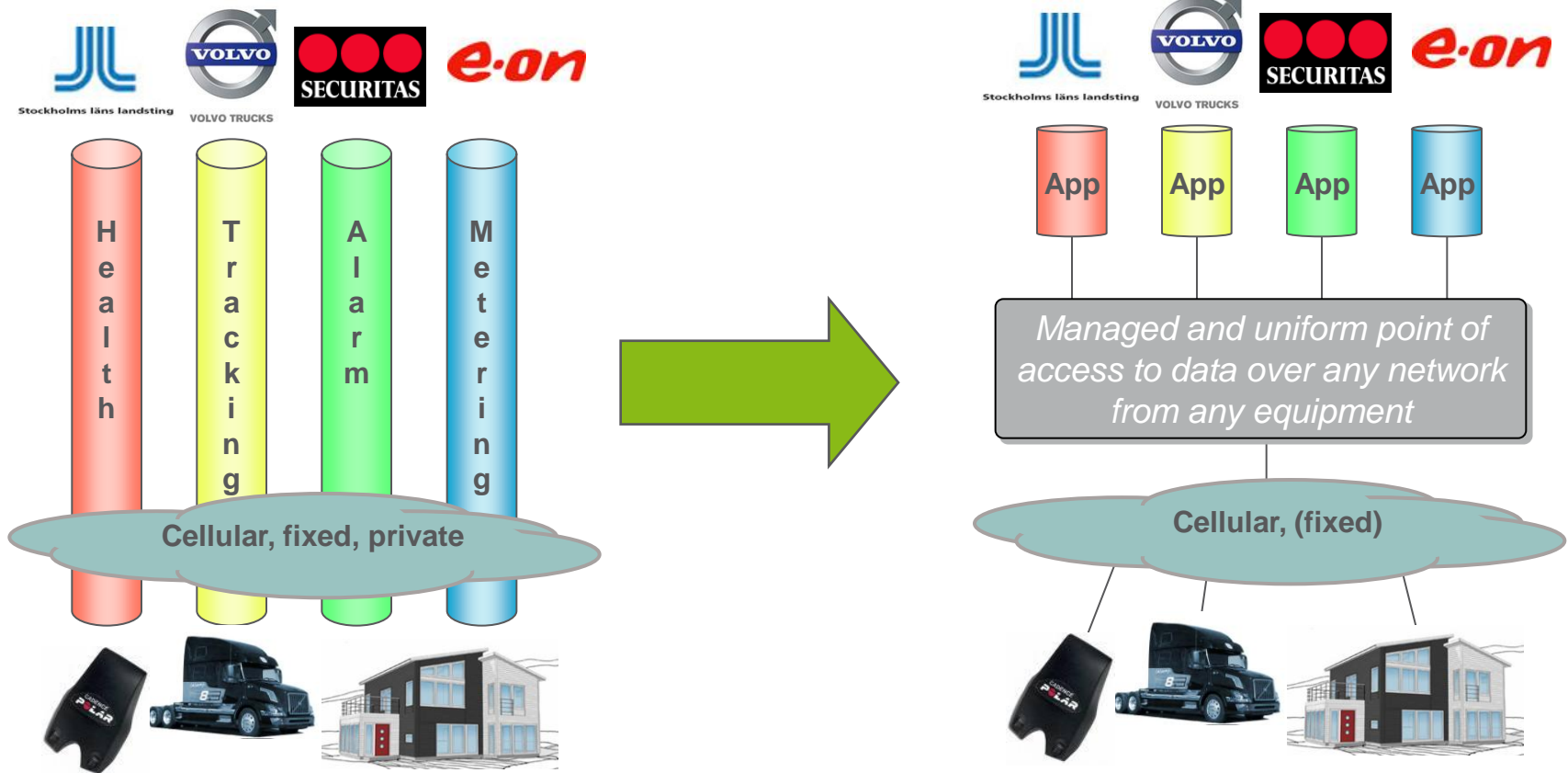
By system standard

M2M connections to be added on top



Source: Internal Ericsson  
This slide contains forward looking statements

# VERTICALS IN THE 50B VISION BASED ON HORIZONTAL LAYERS



BUILDING ON STANDARDIZED TECHNOLOGY TO ACHIEVE ECONOMY OF SCALE

# 1000X TRAFFIC BY 2020 INFRASTRUCTURE+ SOLUTION

---

- › Question: Where do we find a capacity increase of a factor 1000?
- › Answer: HSPA and LTE vs. WCDMA gives a factor **10**  
Spectral efficiency improvements from 1 bps/Hz to 2 bps/Hz gives a factor **2**  
More allocated spectrum gives a factor **5**  
~3 times smaller cell radius gives a factor **10**

**In total  $10*5*2*10 = 1000$**

# EMBEDDED MODULES FROM ERICSSON

## Mobile Broadband Module for Notebooks: 1<sup>st</sup> 21Mbps



F5521GW

**21 Mbps**  
**Always on**  
**Intel Anti-theft**  
**Multiple FW on card**  
**Native Open Source**

## Embedded 3G in Tablets



F3307

**Quick Connect**  
**Low Power**  
**Native Open Source**  
**Soft SIM lock**

# WAKE ON WIRELESS/ALWAYS ON

## Anti-Theft

Lap top turned into a brick

## Innovation opportunity

With always-on multiple new applications are possible

## Manageability

Push down urgent updates

Device in sleep mode

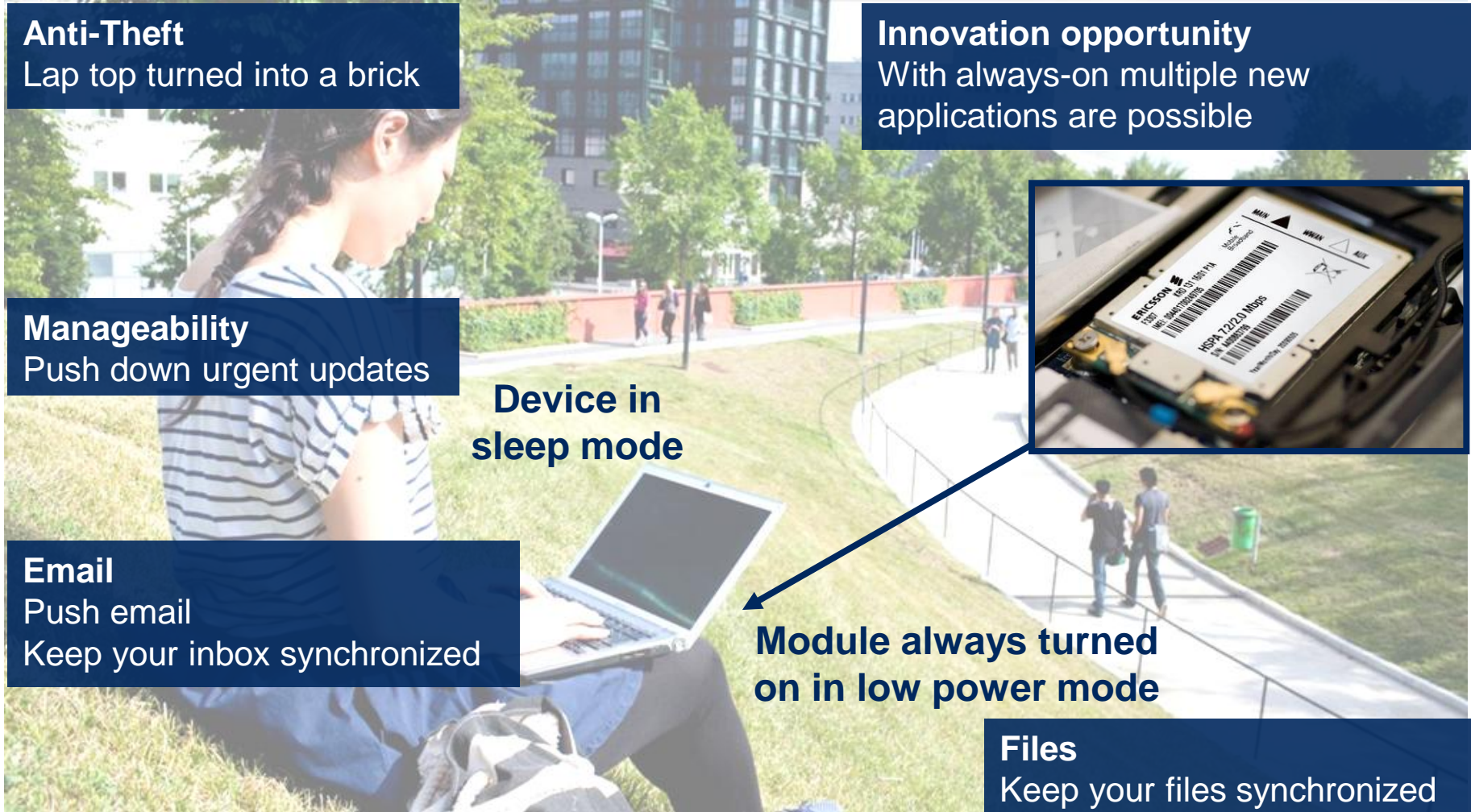
## Email

Push email  
Keep your inbox synchronized

Module always turned on in low power mode

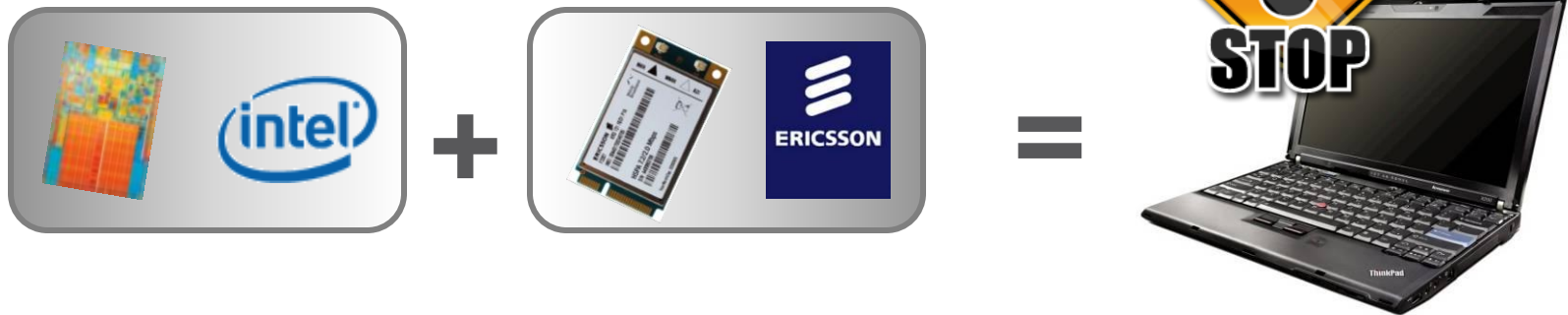
## Files

Keep your files synchronized



# INTEL ANTI THEFT COOPERATION

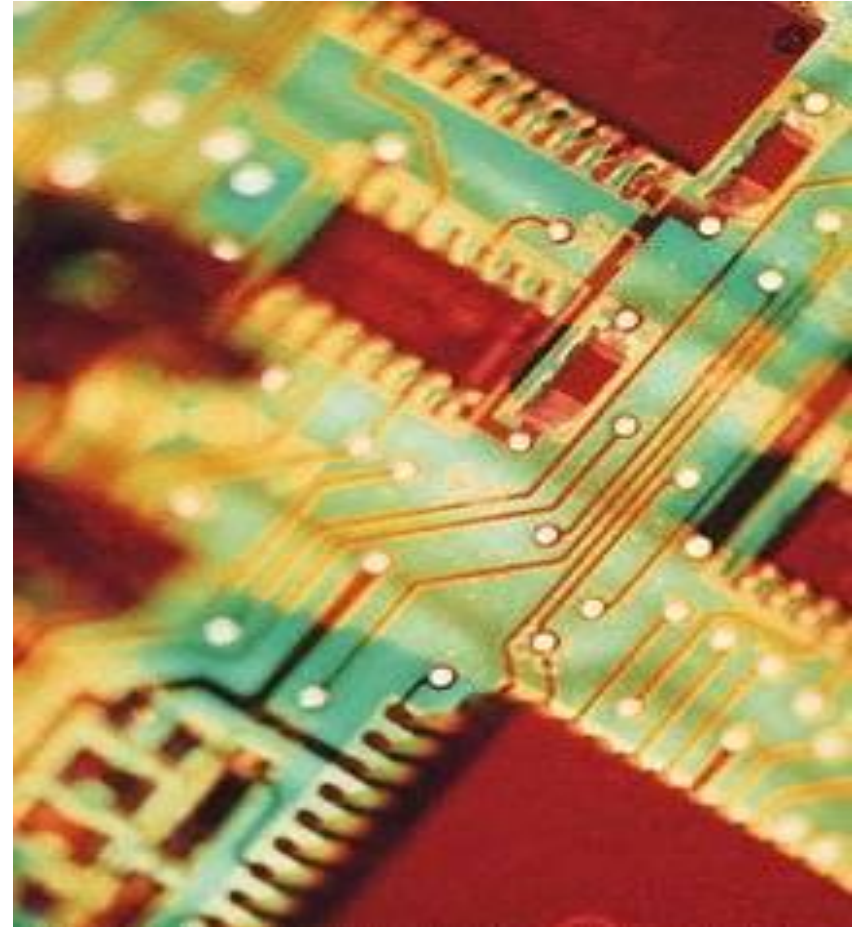
Combining the power of IA with Wireless Connectivity of Ericsson to enable Anti-Theft & Subscription Services for Mobile PC platforms



# INFRASTRUCTURE ASICS

## INTERNET ROUTERS AND MOBILE BASE STATIONS

- › Network Packet Processing (Routers, Base Stations etc)
  - Customized Performance  
Power/Performance v/s Cost/Flexibility
  - Optimized as a System !
  - Latest process (40/45nm)
  
- › Control & Management Plane
  - Network Processors
  
- › Device Semiconductors
  - Scale, Cost, Size
  - Part Optimized
    - › Processing, Memory, Connectivity

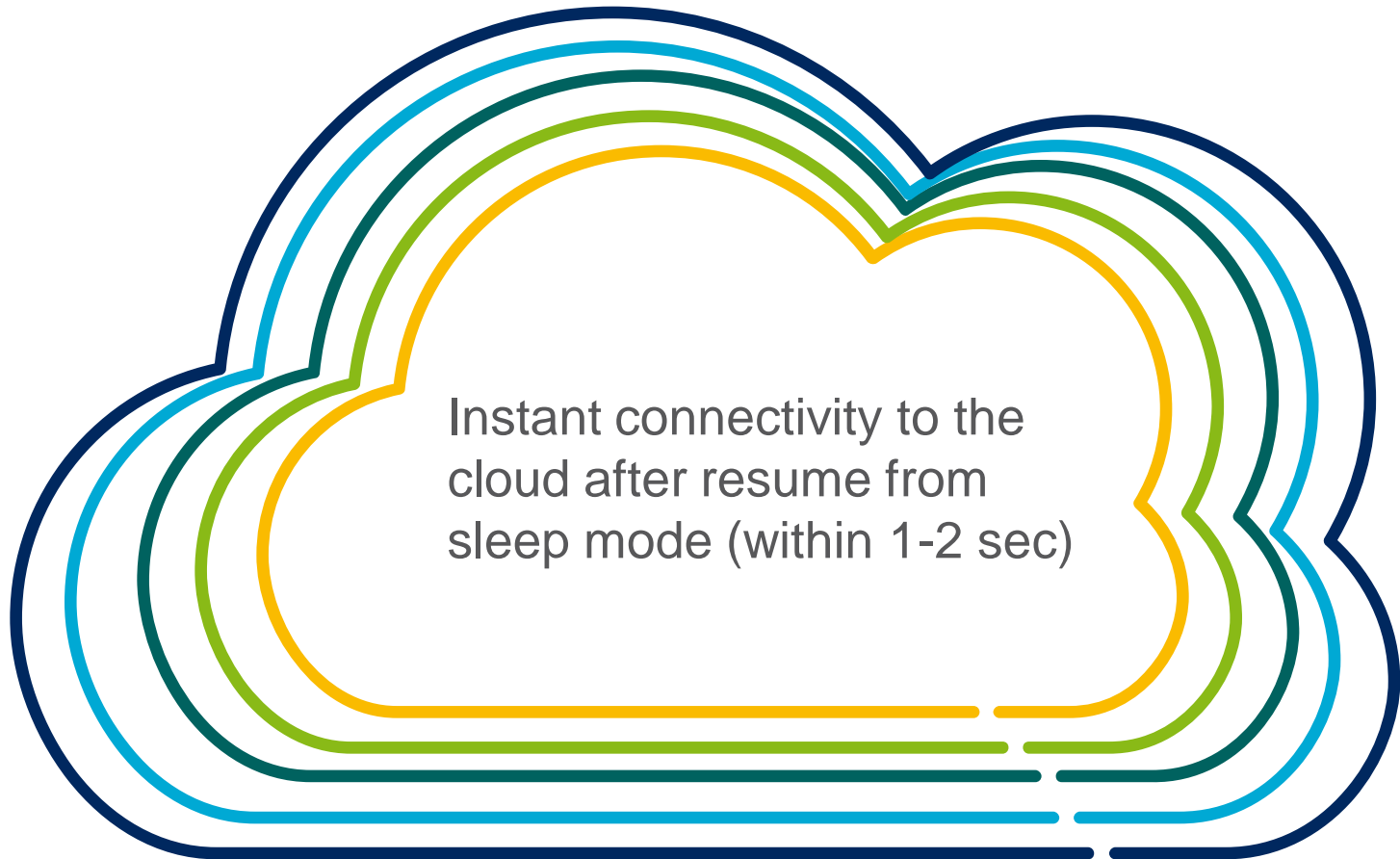


Future Services require more memory access (Mobility, P2P, Video, Personalization)

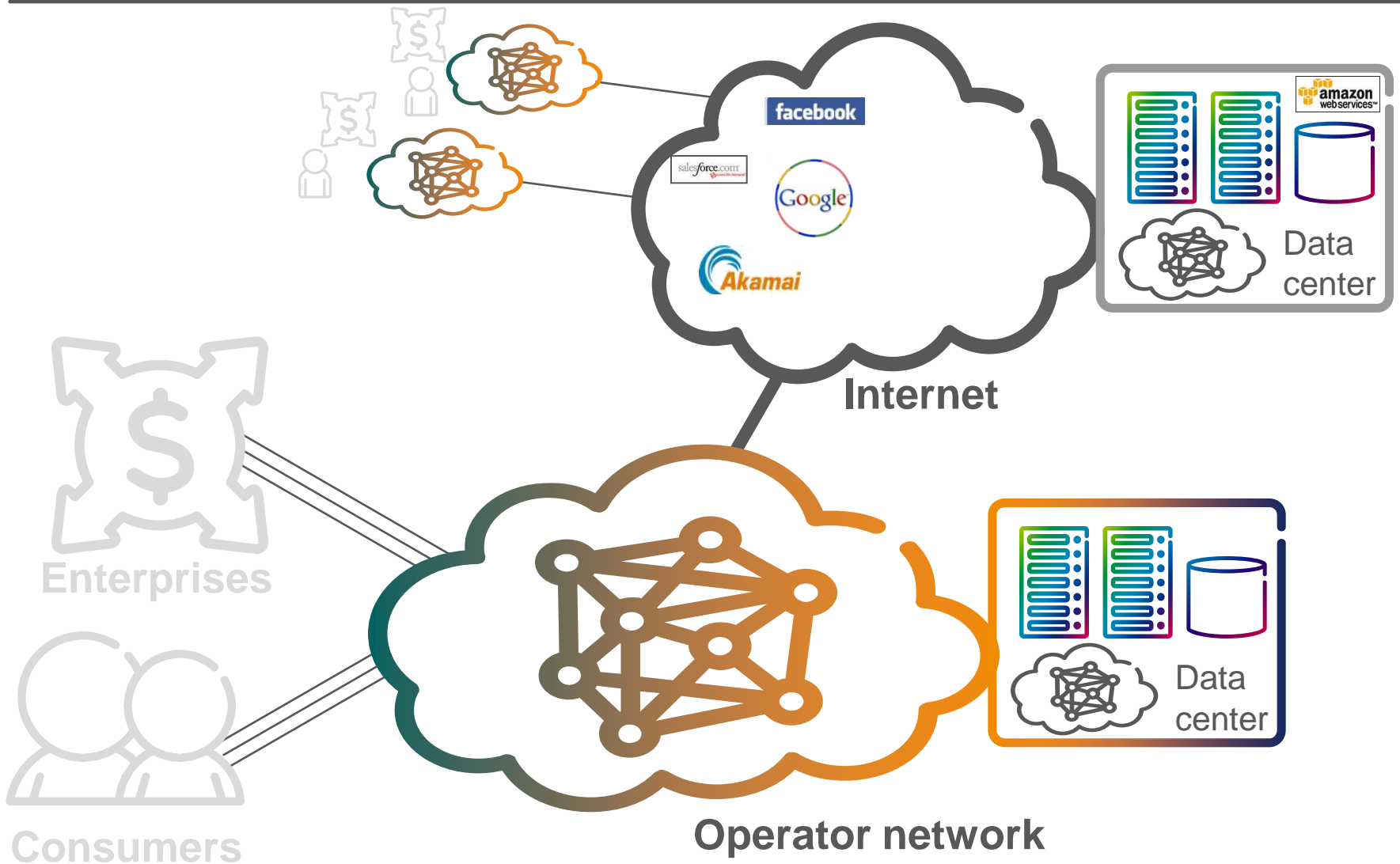
Total System Optimization Required (I/O+Memory+Processing+Connectivity)

# ERICSSON QUICK CONNECT FEATURE

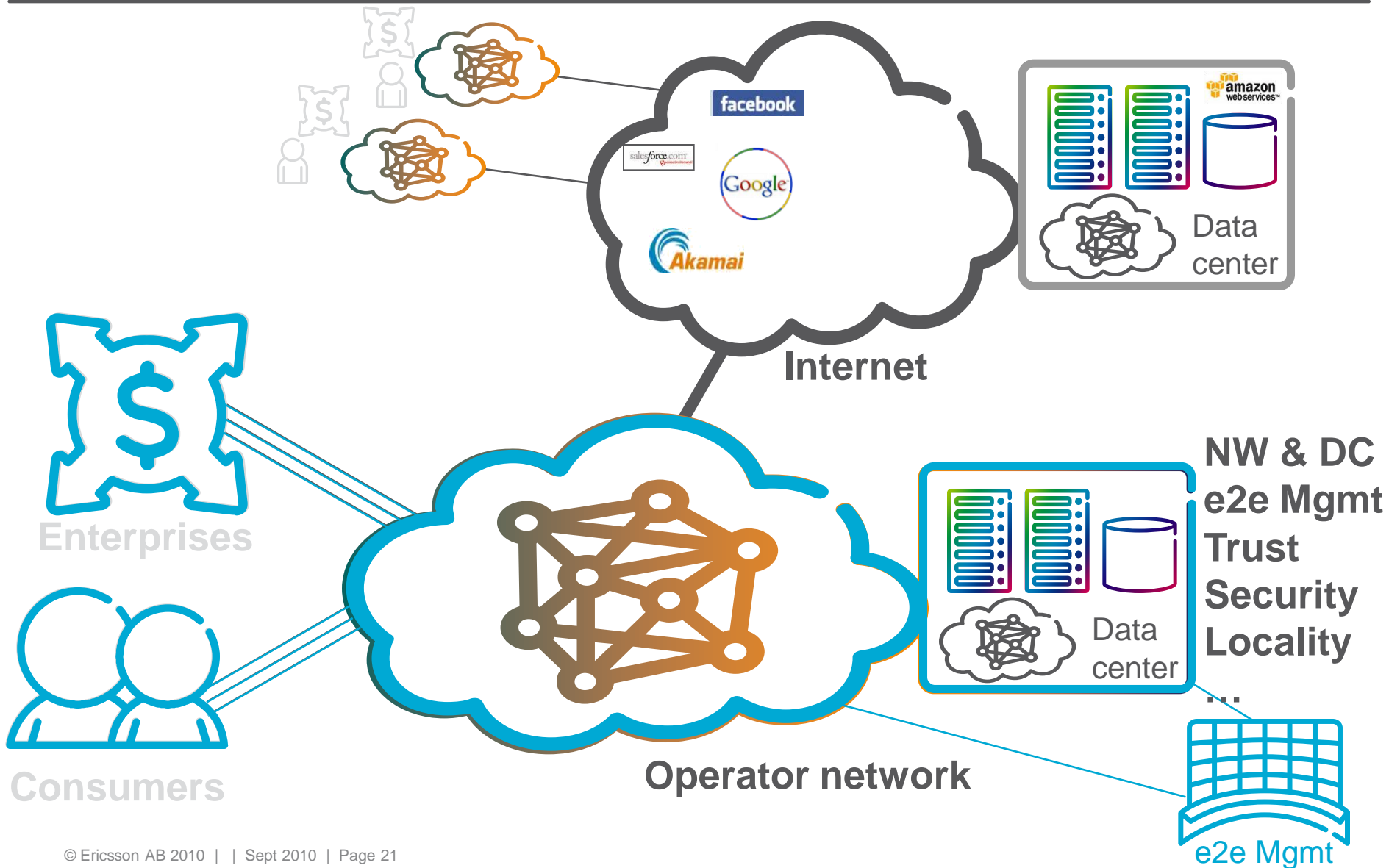
---



# CLOUD SERVICE PROVIDERS



# CLOUD SERVICE PROVIDERS: BEYOND THE DATA CENTERS



# KEY MESSAGES

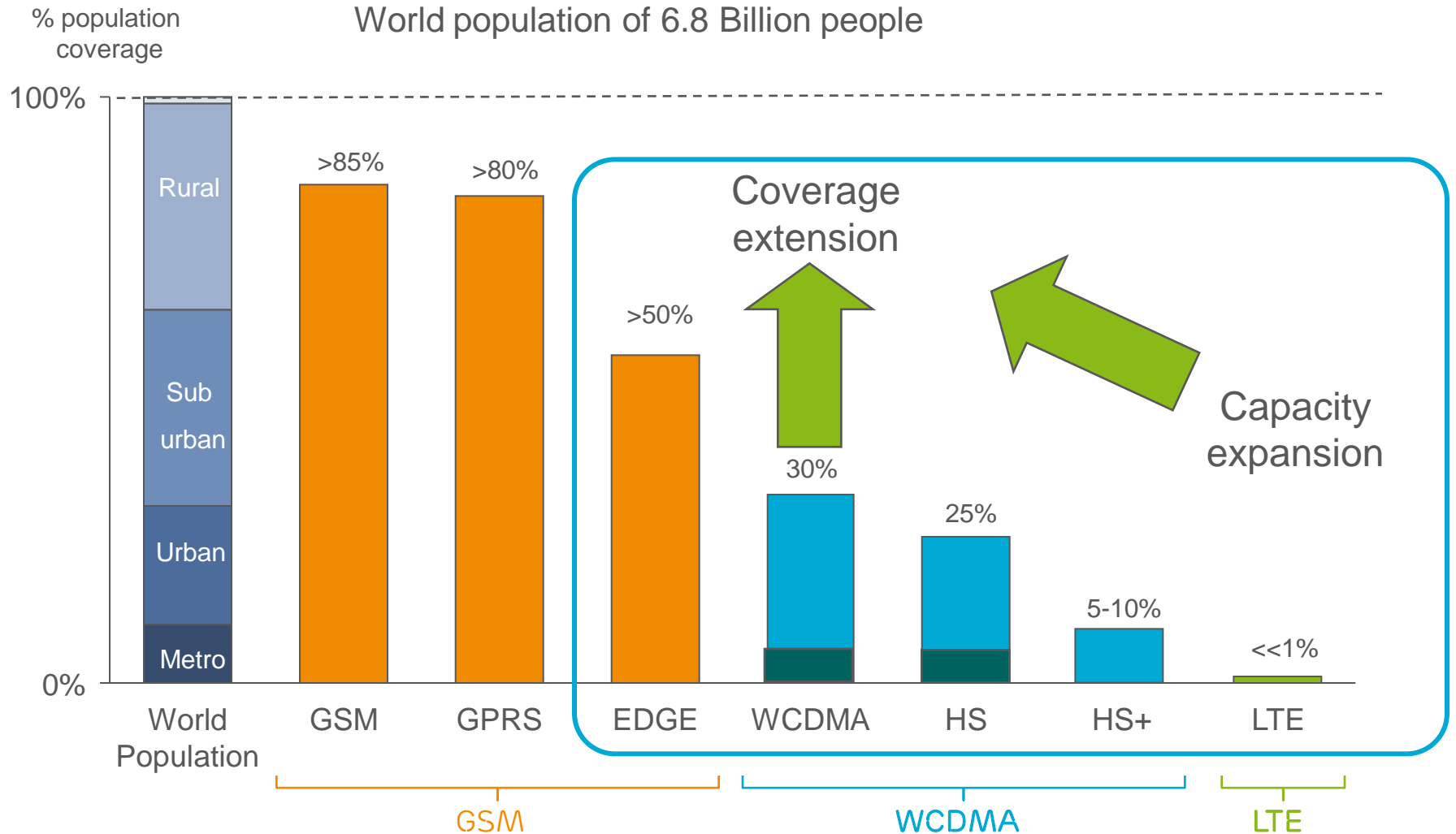
---

# 3

## **Semiconductor Ecosystem**

- Focus on 50B  
(Std Technology)
- Optimize n-D  
(conflicting requirements)
- Think End2End  
(screen to server)

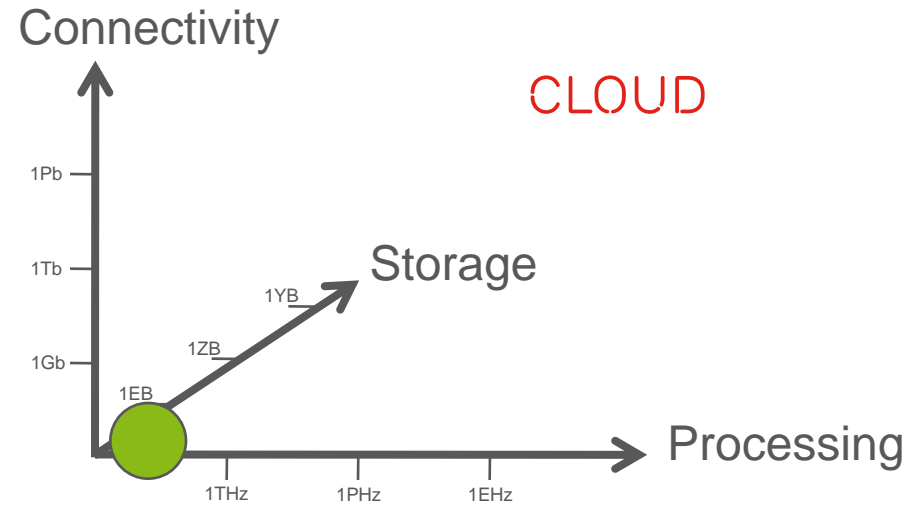
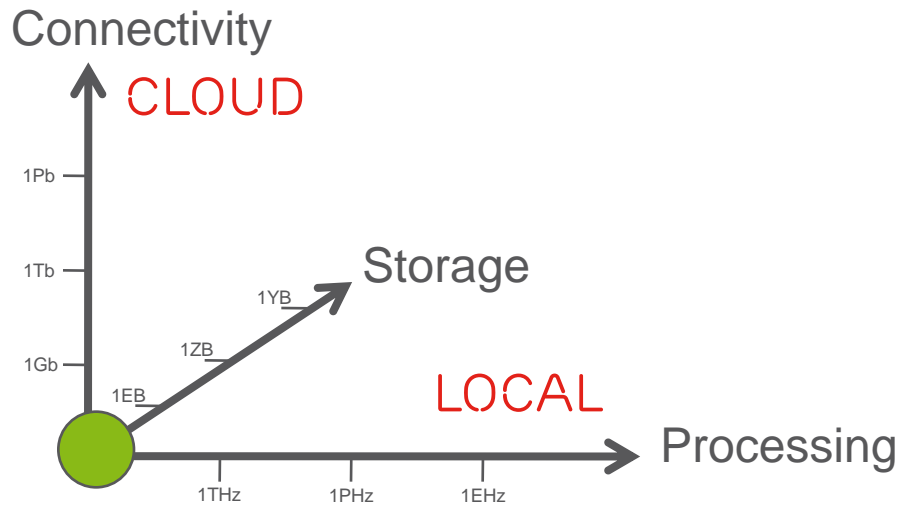
# GLOBAL DEPLOYMENT OF STANDARDIZED TECHNOLOGY



# N-DIMENSIONS TO THE PROBLEM

## DEVICES

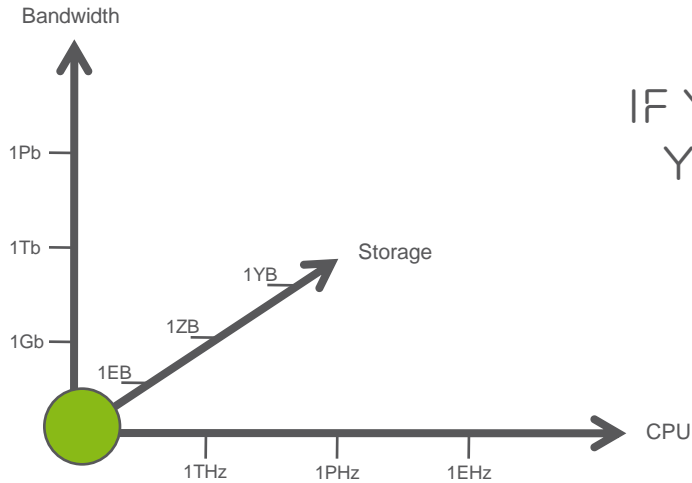
## NETWORK & DATA CENTERS (INCLUDING SERVICES)



DECADES OF DEBATE ON CENTRALIZED VERSUS DISTRIBUTED

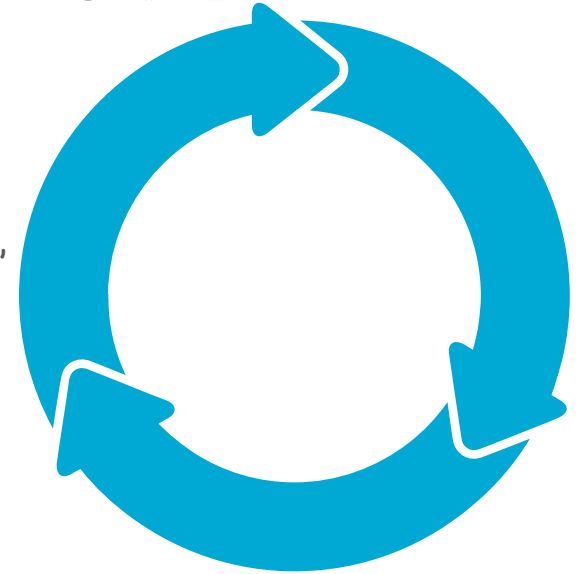
# OPTIMIZING CONFLICTING REQUIREMENTS

DEVICE, NETWORK/DC  
(Size/Speed at Cost/unit)



IF YOU CAN PROCESS MORE, YOU STORE MORE

IF YOU CAN STORE MORE, YOU DOWNLOAD MORE



IF YOU CAN DOWNLOAD MORE YOU WILL STORE AND PROCESS MORE

**AND FINALLY TWO ORTHOGONAL REQUIREMENTS**  
**VIRTUALIZATION = LOCATION DOES NOT MATTER BUT**  
**MOBILITY = LOCATION MATTERS**

# CONNECTIVITY & END TO END VIEW



[ SCREEN-2-SERVER IS THE NEW END-2-END ]

# THE NEW BROADBAND WORLD REALITIES OF CONNECTIVITY

**Device  
Momentum**

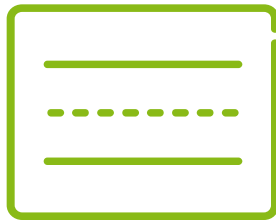
**Resource  
Utilization**

**Applications**

**Content and  
apps storage**

**Power  
Consumption**

**Business  
Models**



Shared

Dedicated

Defined & tested

Own device

Irrelevant

Flat Rate



Personal

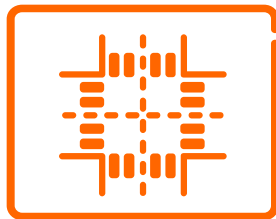
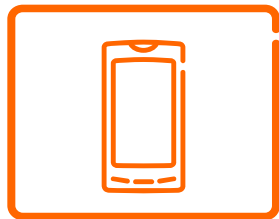
Shared

100s per day

Cloud

Low

Differentiated



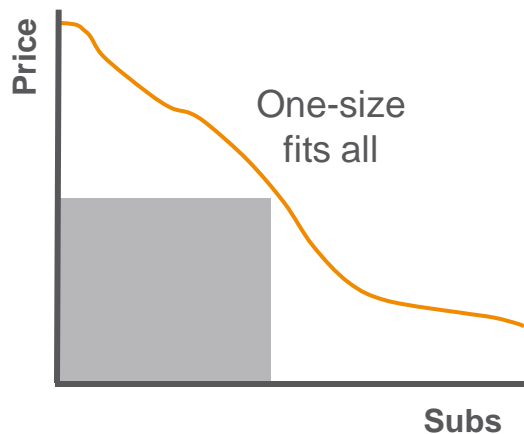
# THREE WAVES OF MOBILE BROADBAND EVOLUTION

## Mobile Broadband 1<sup>st</sup> Wave

### Establishing Market



Standard

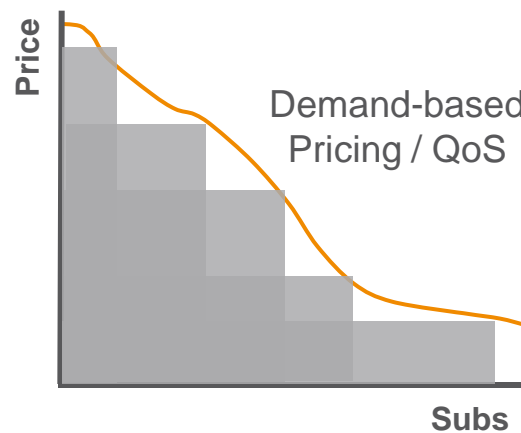


## Mobile Broadband 2<sup>nd</sup> Wave

### Differentiating Services



Smart

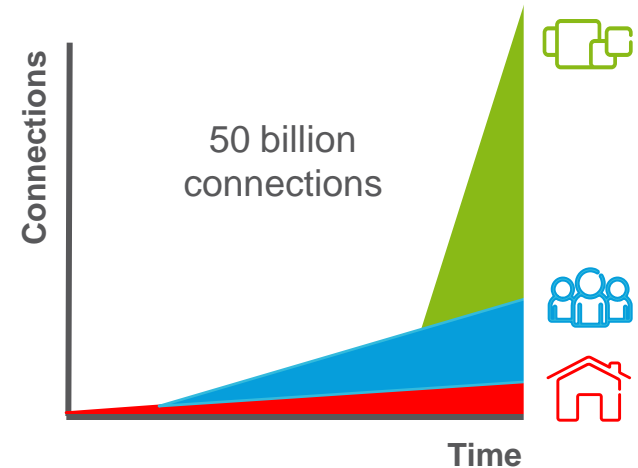


## Mobile Broadband 3<sup>rd</sup> Wave

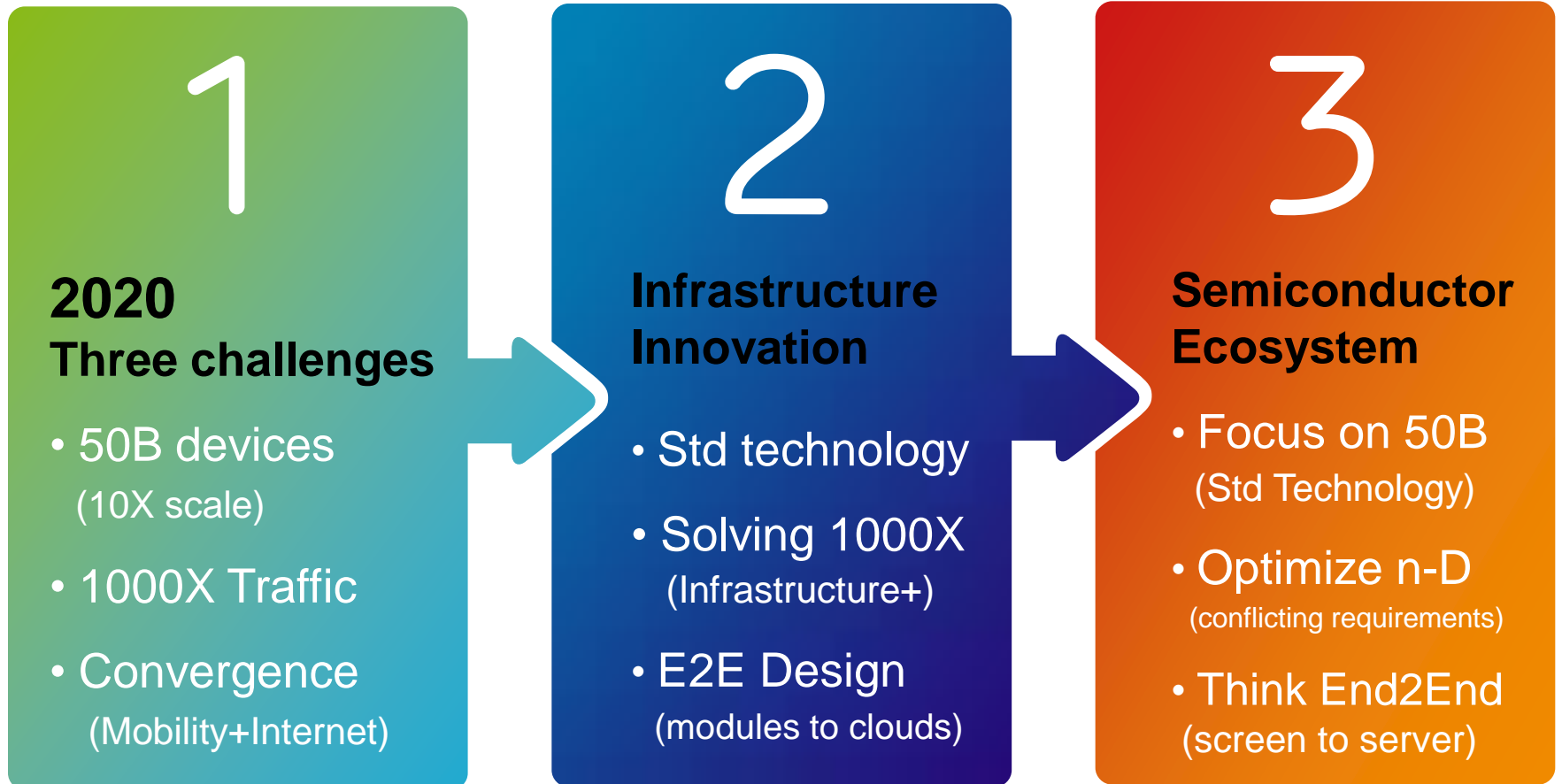
### Connecting Everything



Scale



# KEY MESSAGES





**ERICSSON**