

# Technology Trends

Future key areas - vision

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# Outline

- Future key areas – vision
- Major trends today
- Summary

# Future key areas - vision



# Devices everywhere

- 1000 % penetration rate
- Trillions of radio tags and billions of sensors



# Everything shared

- Recording and sharing life
- Web 3.0
- 3D audio and graphics



# The next 3 billion users

- First access to internet on mobile device



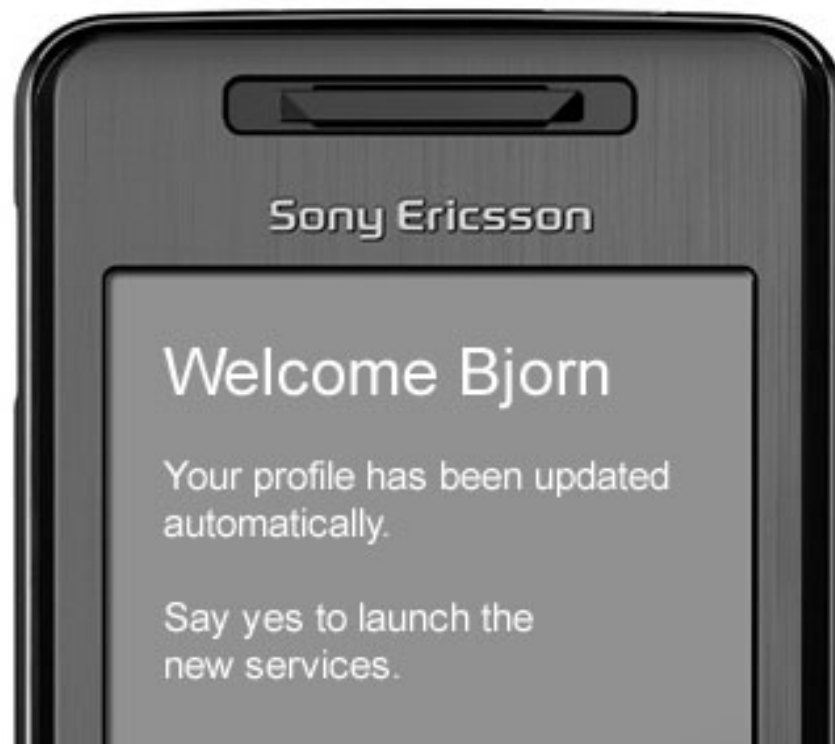
# High integrity

- Secure terminals
- Secure transactions
- Secure sharing



# Simplicity

- Simple and easy service adoption
- Services easily deployed and managed
- Automated and self-managed networks





# Everyday Interaction

- Touch or photo interaction
- Background computing & learning
- Flexible displaying



# Infinite performance

- Wireless access also for larger screens
- Fiber networks spanning the world



Gbps



Tbps



# Sustainability

- Information and communication technology can contribute



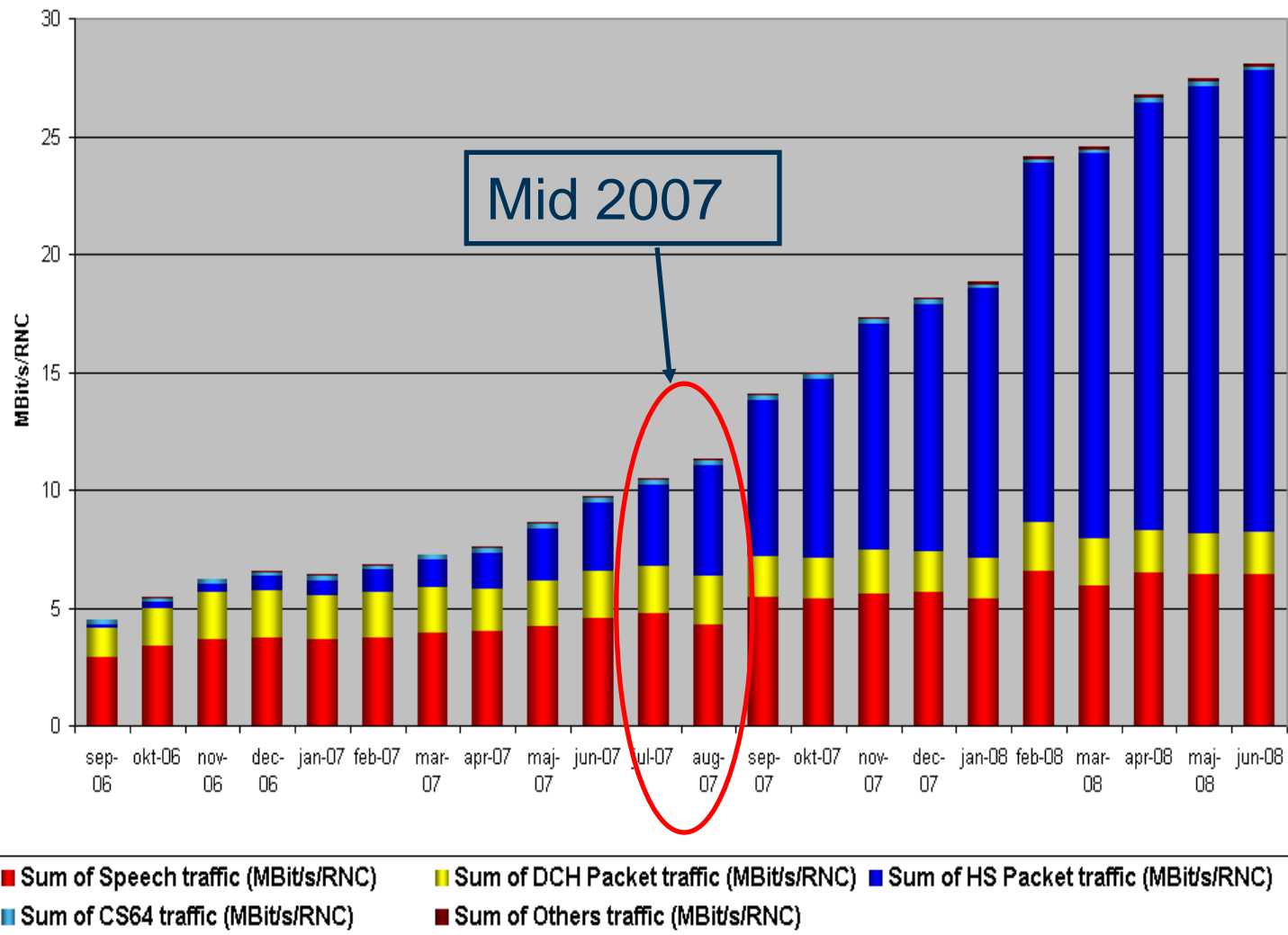
# Research for Technology Leadership

- Devices everywhere
- Everything shared
- Next 3 billion users
- High integrity
- Simplicity
- Everyday interaction
- Infinite performance
- Sustainability



# Major trends - today

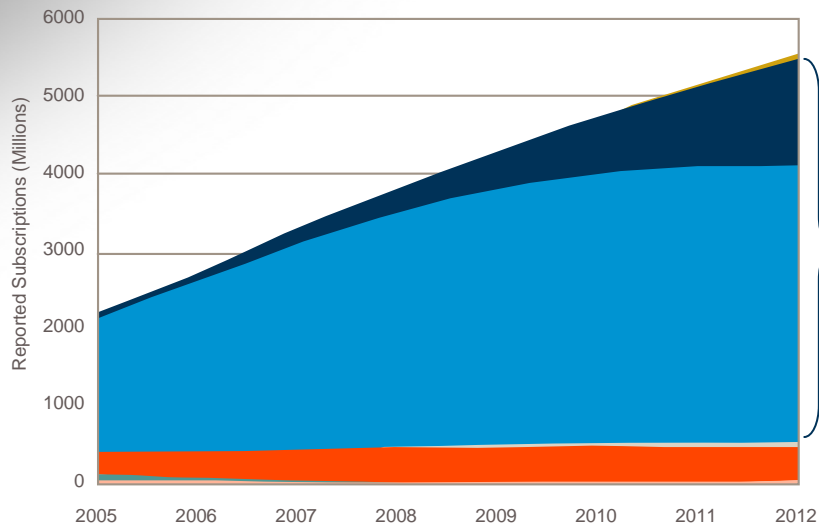
# Traffic growth – All markets



Source: NetQB

# HSPA – a world wide technology

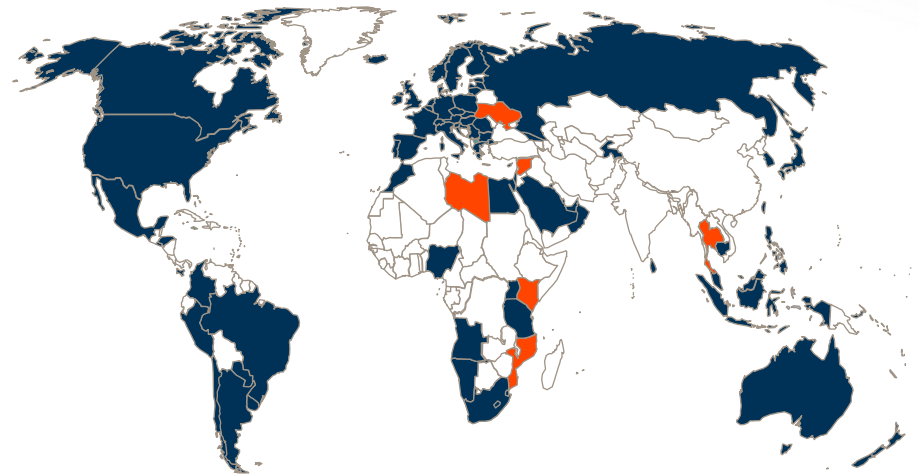
Subscribers by technology



- Analogue & Other
- Mobile WiMAX
- LTE
- TDMA
- GSM/GPRS/EDGE
- CDMA
- WCDMA/HSPA

Source: Internal Ericsson

HSPA coverage



- Commercial HSPA networks
- HSPA network launch commitments

Source: GSA – Global mobile Suppliers Association: March 7, 2008

>200 commercial networks in more than 80 countries

# 750 HSPA enabled devices

.....with 150% annual growth

- 300 HSPA phones, media players, camera
- 200 PC data cards (PC cards/embedded modules/chipsets)
- 100 notebooks
- 50 Wireless routers



5 times more devices and 3 times more suppliers in one year



# Mobile Broadband positioned for take off



All Major Notebook Manufacturers ready for Embedded HSPA

# Attractive HSPA pricing

On par with fixed broadband

**\$34** per month

3.6 Mbps      3 GB

Maxis Malaysia



**\$32** per month

7.2 Mbps      unlimited

3 Sweden



**\$31** per month

7.2/1.4 Mbps      3 GB

Mobikom Austria



**\$56** per month

7.2 Mbps      Notebook included

The Phonehouse Sweden



Rapid uptake in consumer segment

# HSPA is Mobile Broadband

- >200 HSPA operators in >80 countries
- >240 million WCDMA/HSPA subscribers
- >700 HSPA devices by >100 suppliers

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**RACING TEAM**

# Technology trends - onwards

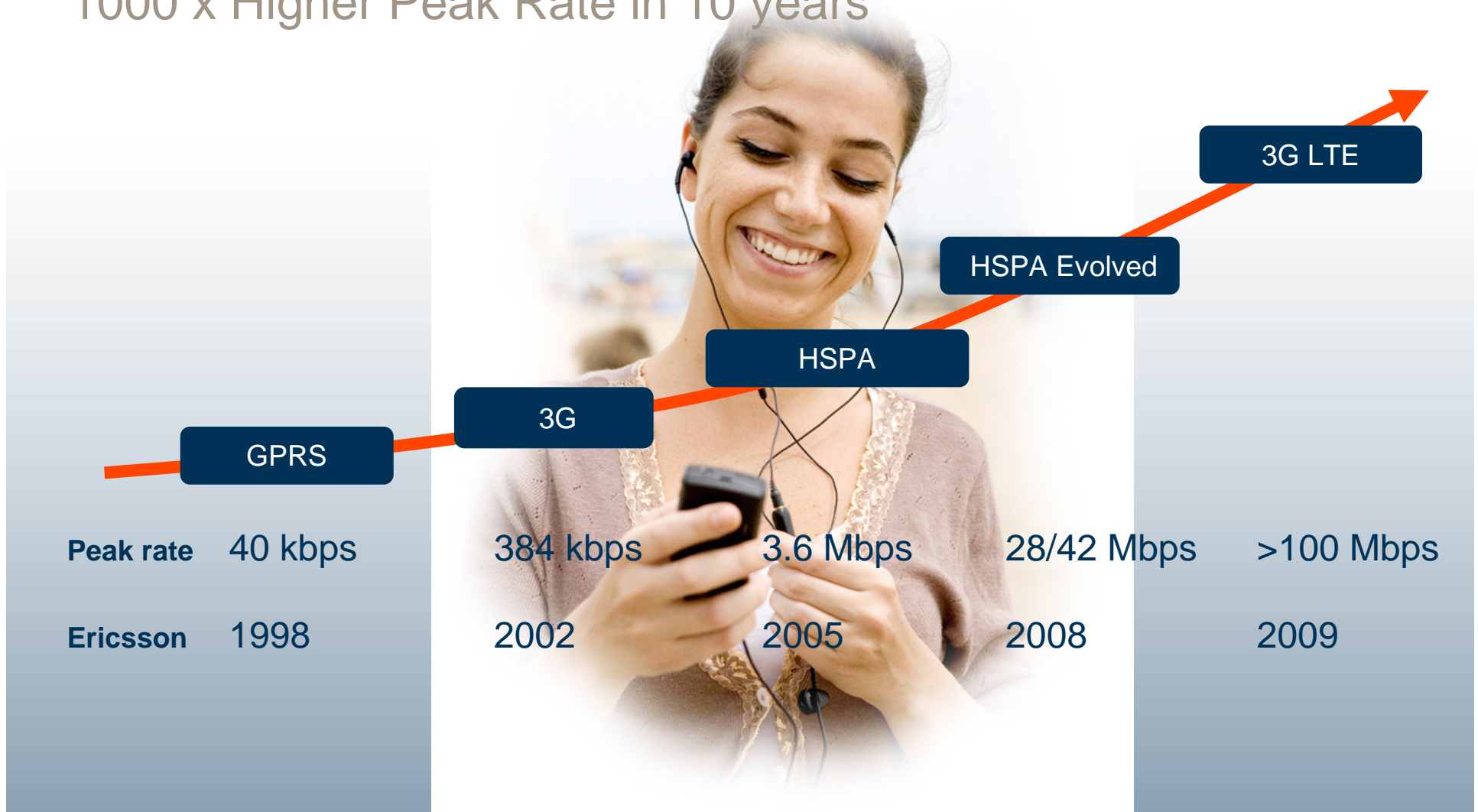
- Faster networks
- More powerful processors
- Higher memory capacity
- New Services



Technology trends drives user behavior

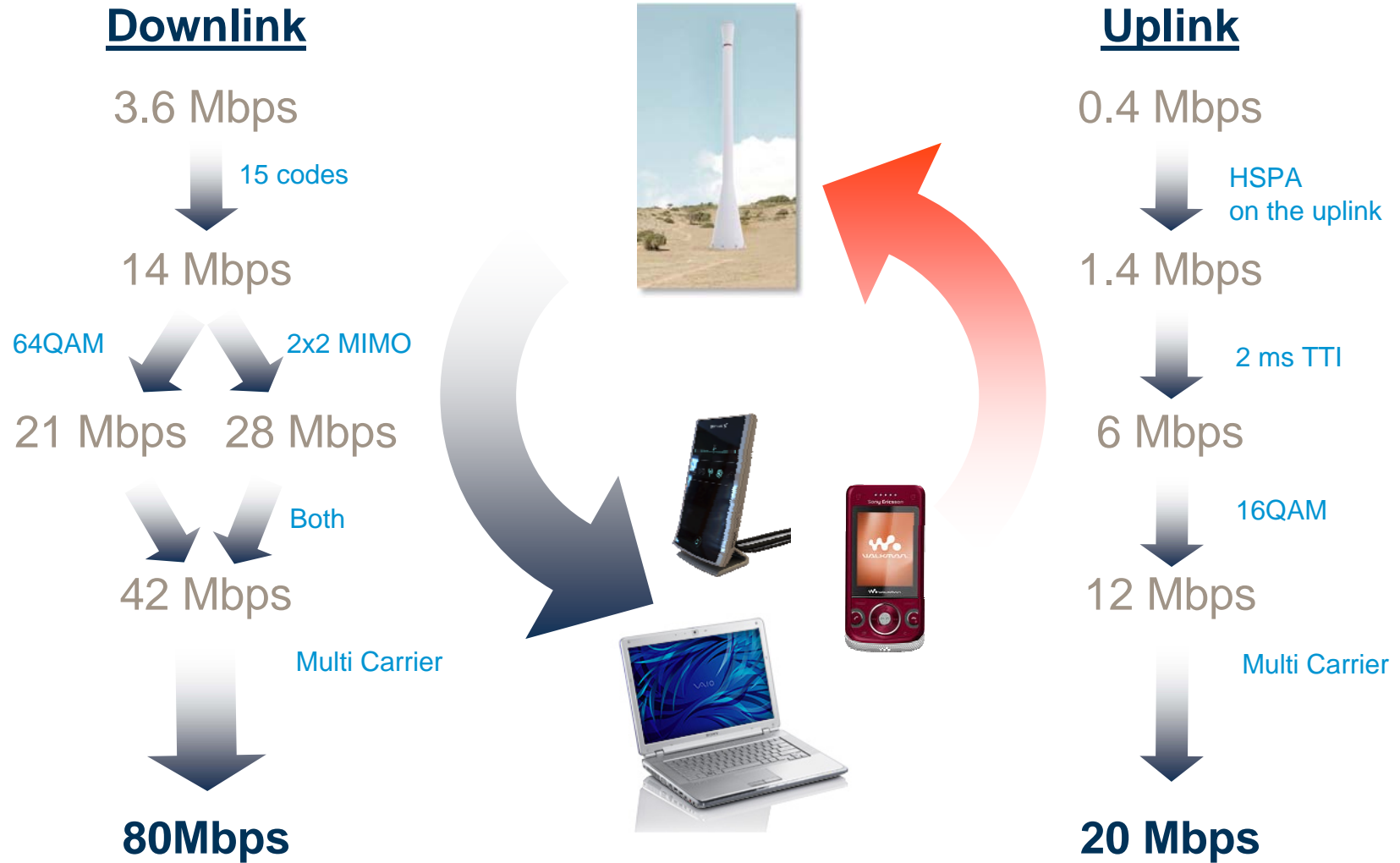
# GSM and 3G data evolution

1000 x Higher Peak Rate in 10 years



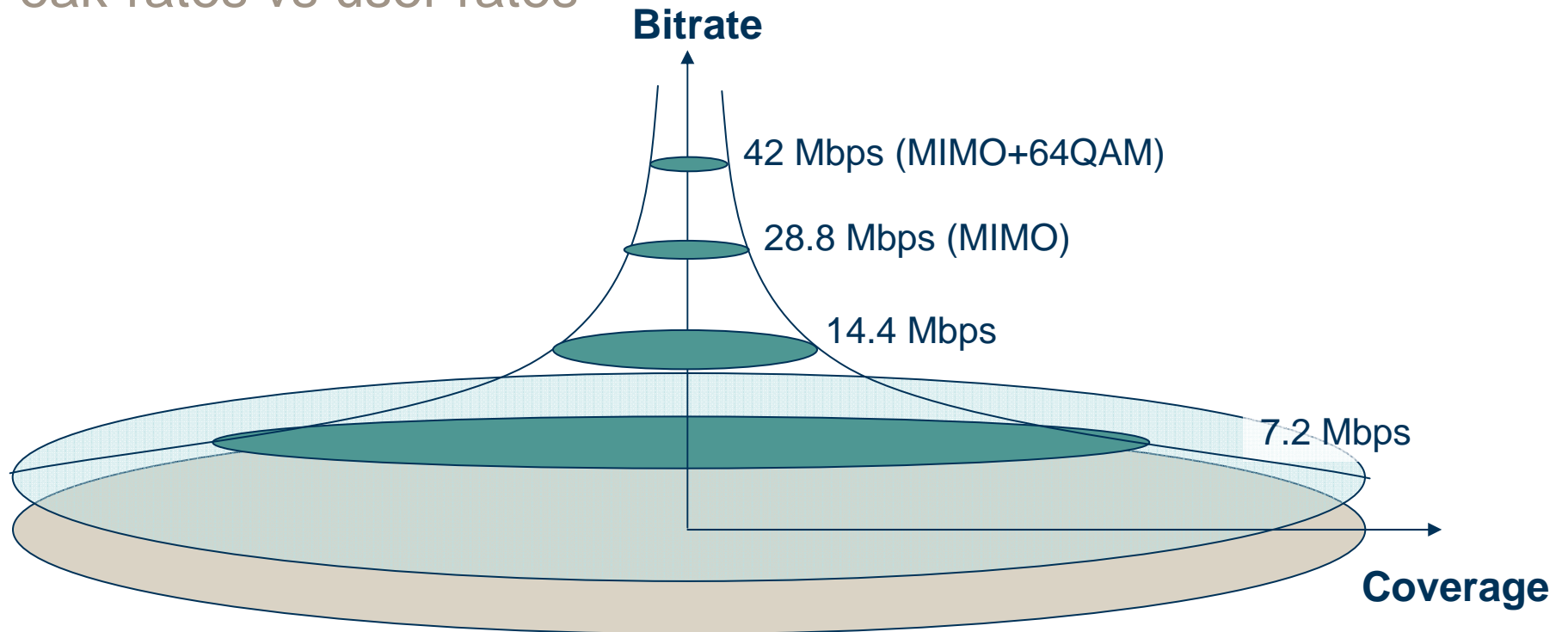
1000 x Higher Peak Rate in 10 years

# HSPA speed evolution



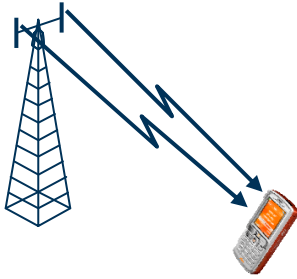
# Challenge:

Peak-rates vs user rates

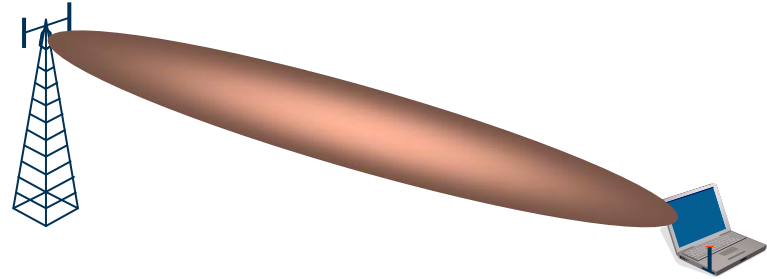


*Challenge* - Coverage for high bit rates

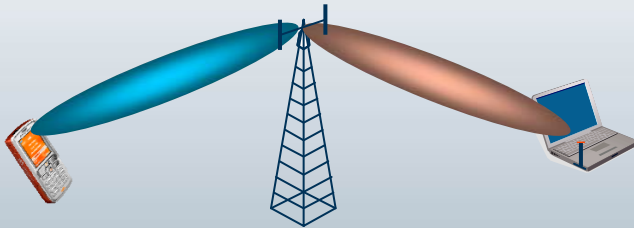
# Multi-antenna transmission techniques



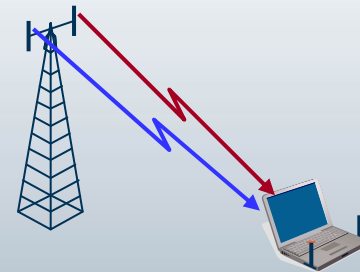
**Diversity** for improved system performance



**Beam-forming** for improved coverage (less cells to cover a given area)



**SDMA** for improved capacity (more users per cell)

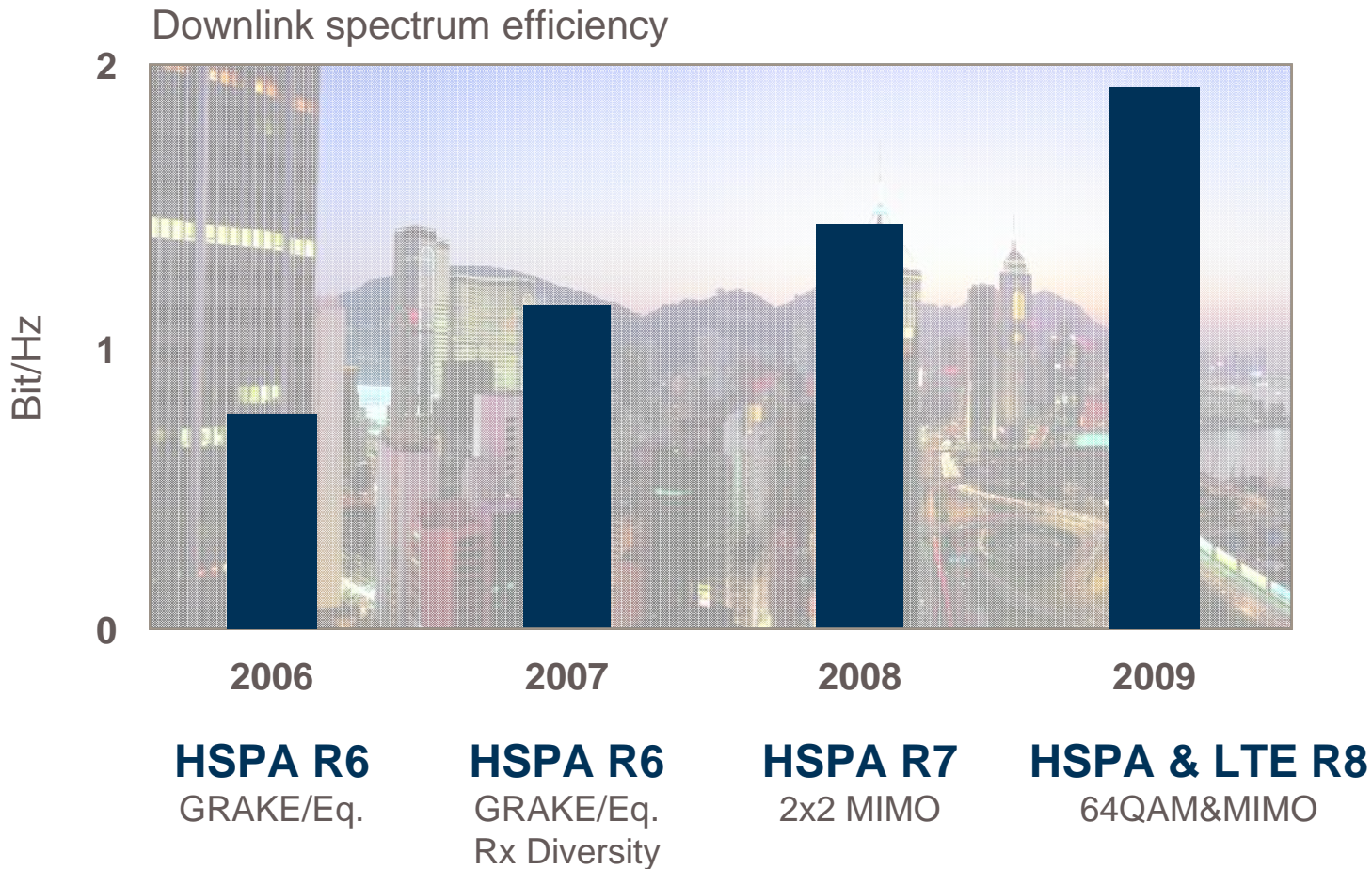


**Multi-layer transmission** ("MIMO") for higher data rates in a given bandwidth

**What multi-antenna technique to use depends on what to achieve**



# HSPA and LTE capacity evolution



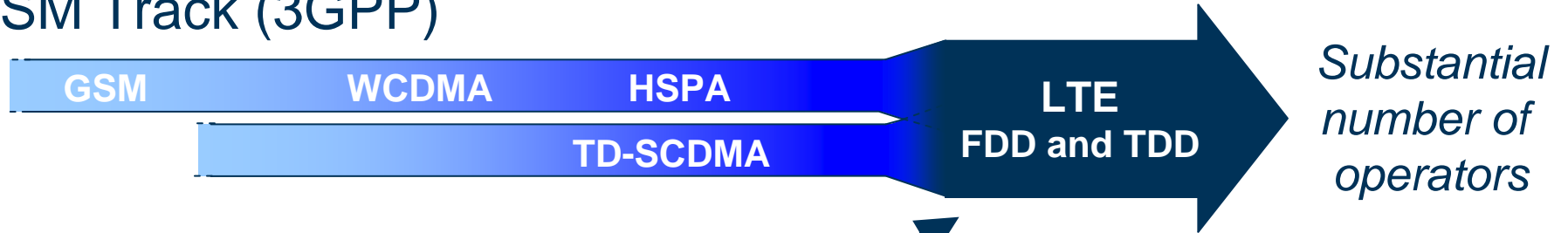
Simulated under normal radio conditions

Twice the capacity with HSPA evolution and LTE

# Common LTE Evolution

Alignment for WCDMA/HSPA, TD-SCDMA (China) and CDMA

## GSM Track (3GPP)

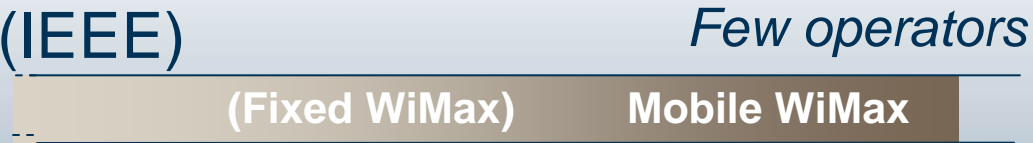


## CDMA Track (3GPP2)



*Some operators*

## WiMax Track (IEEE)



*Few operators*



**LTE the Global standard for Next Generation**

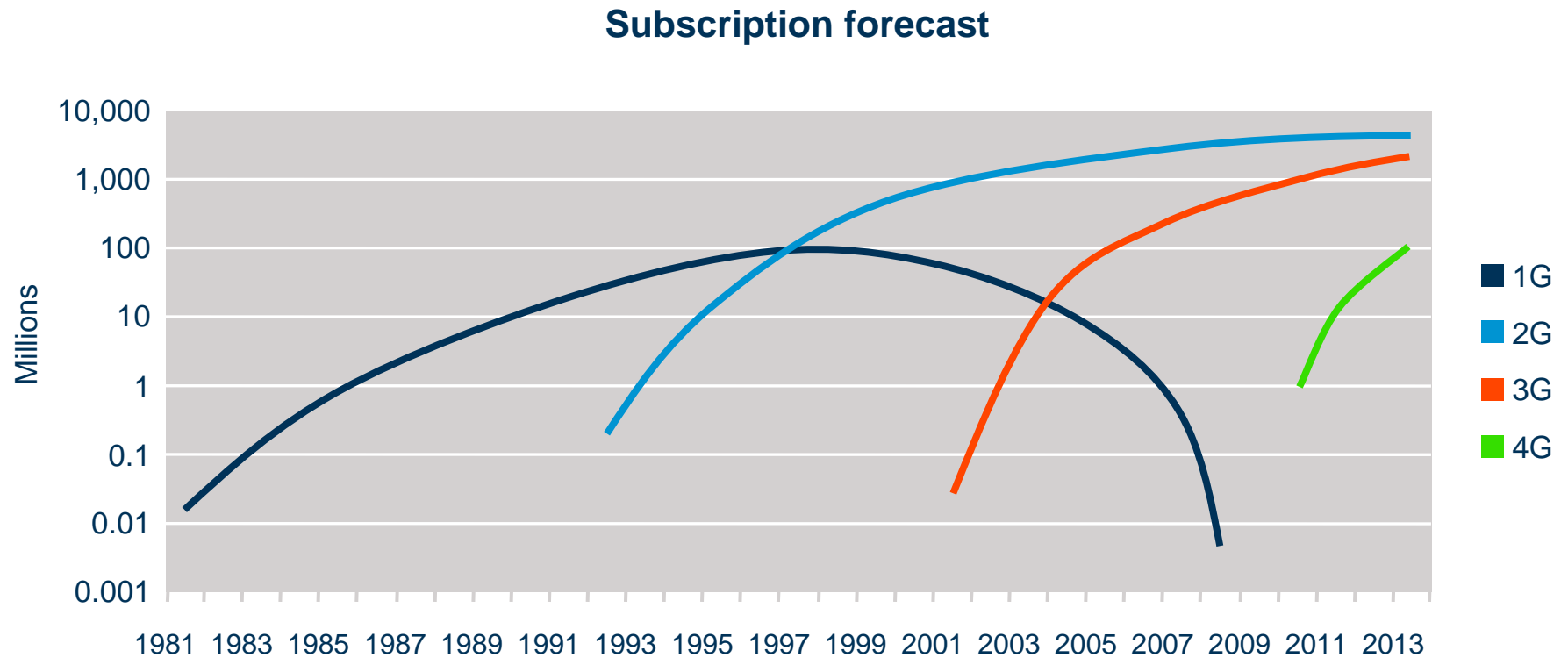
# Key milestone for LTE

On June 26 the NGMN Alliance announced that “based on intensive and detailed technology evaluations, 3GPP LTE/SAE is the first technology which broadly meets its recommendations and is approved by its Board”



The Next Generation Mobile Network (NGMN) Alliance currently consists of 52 world leading global network operators, technology vendors and universities.

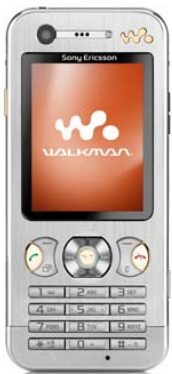
# Mobile generations



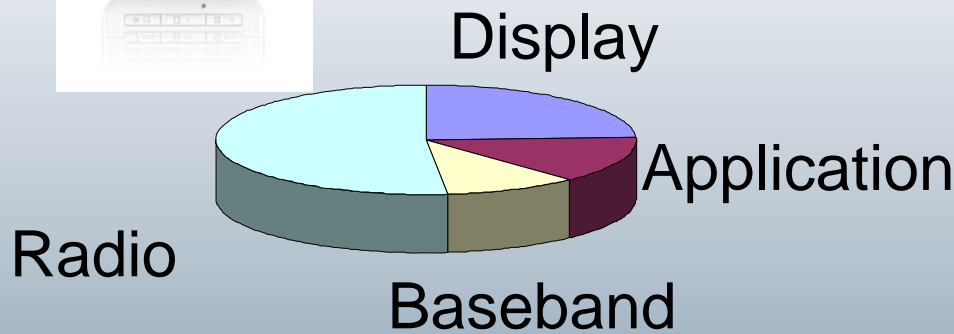
10 years between each generation – but faster take up each time

# Power usage trend

## Today



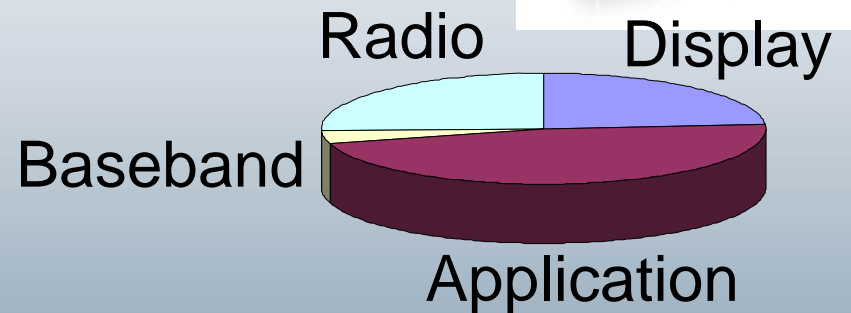
QVGA LCD  
2.5"  
HSPA  
1 Mbit/s video



Total 1450 mW

## 2012

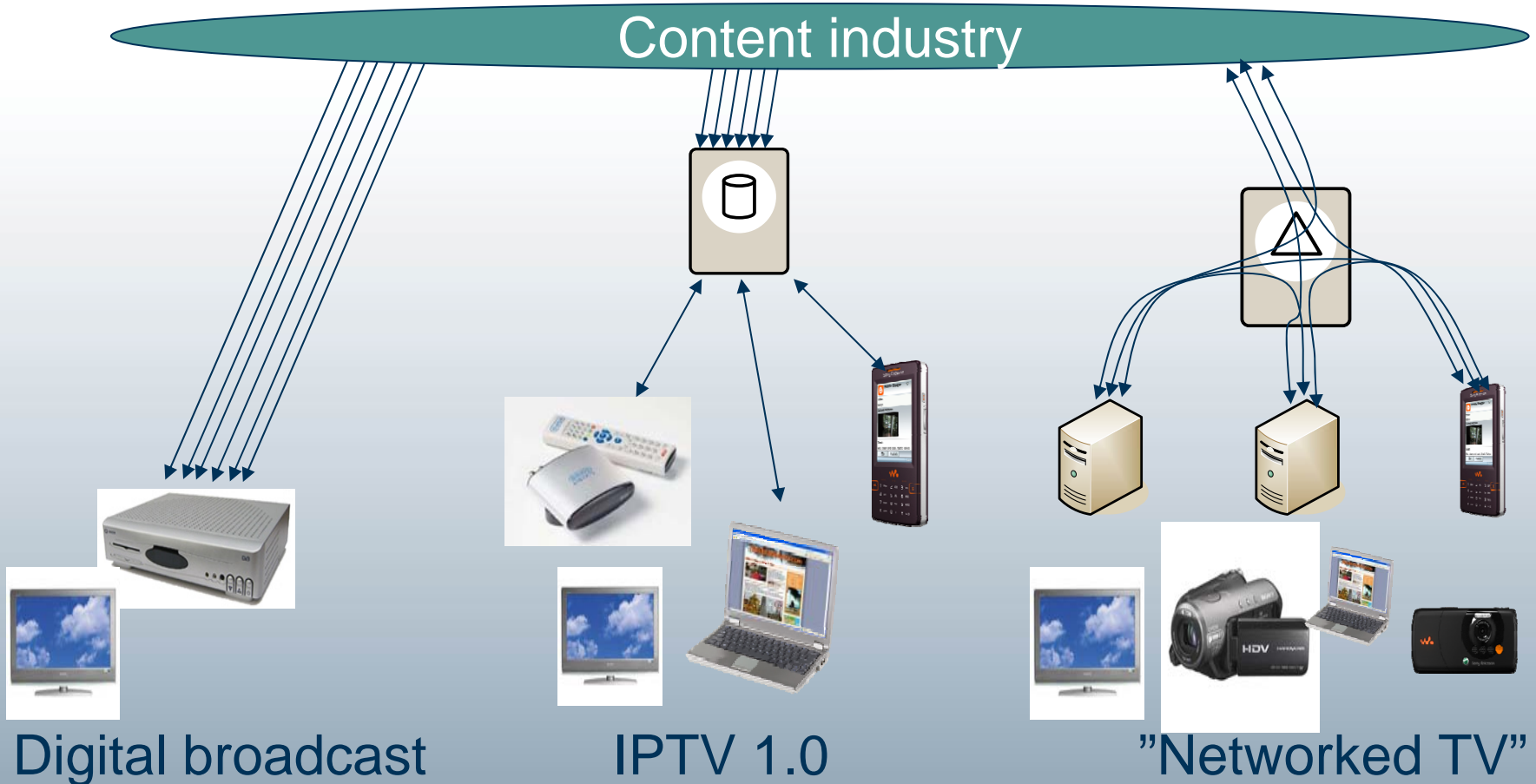
WXGA OLED  
6"  
LTE  
Multi core  
HD video



Total 1275 mW

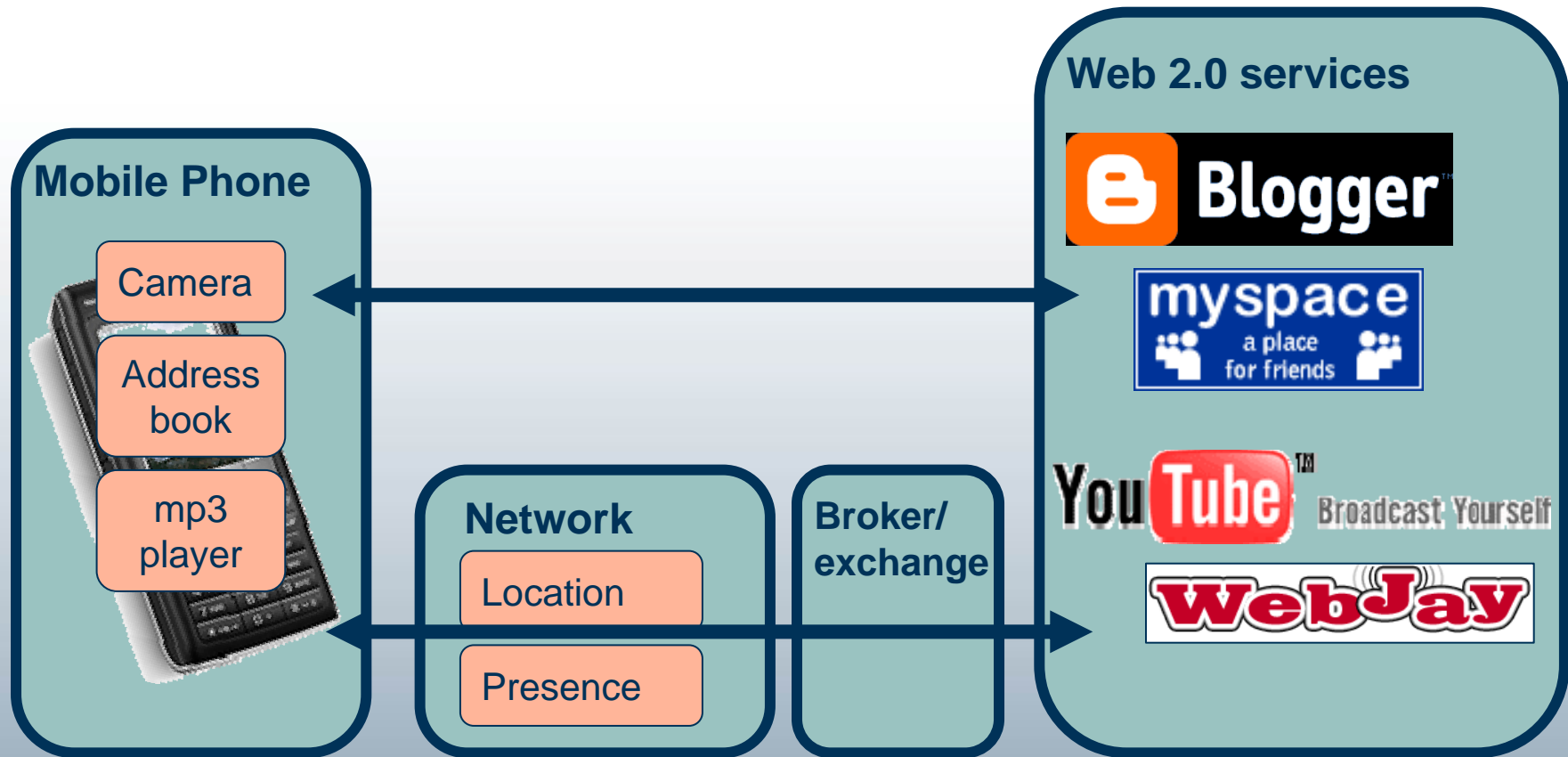
Lower power consumption leaves room for more processing power

# Digital TV evolution – three phases



Networked TV - a new dimension of the TV user experience

# Making Web 2.0 mobile



Make the phone the main source of User Generated Content

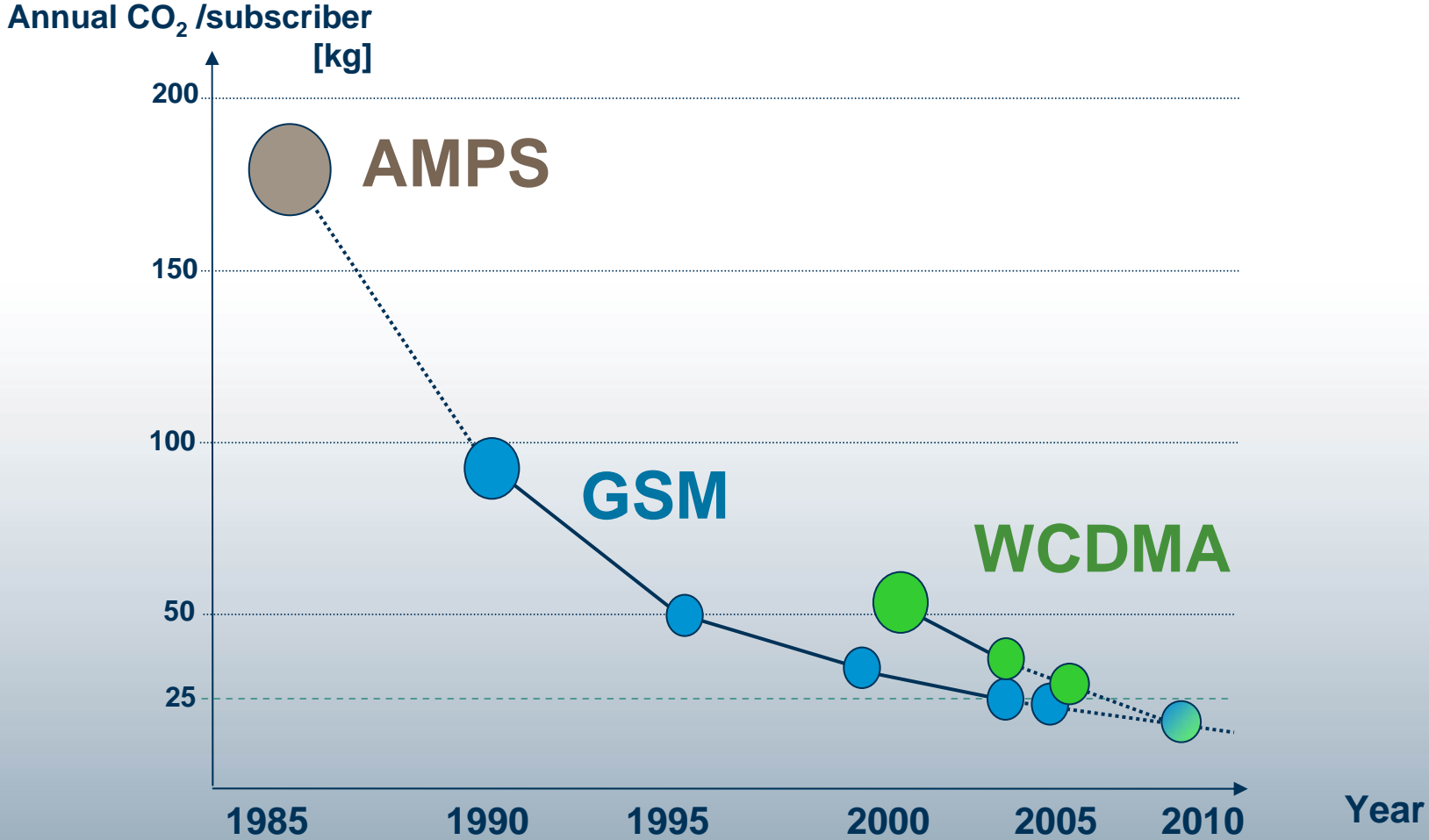
# Telecom, ICT and CO<sub>2</sub>

<b>2007</b>	<b>Share of global CO<sub>2</sub> emissions</b>
Mobile telecom (3.3 billion subscriptions)	<b>0.2%</b>
Other ICT (PCs, data centers, fixed telecom)	~ 1.8%
<b>TOTAL ICT:</b>	<b>2%</b>

**Total ICT sector only contributes 2% of total CO<sub>2</sub> emission**



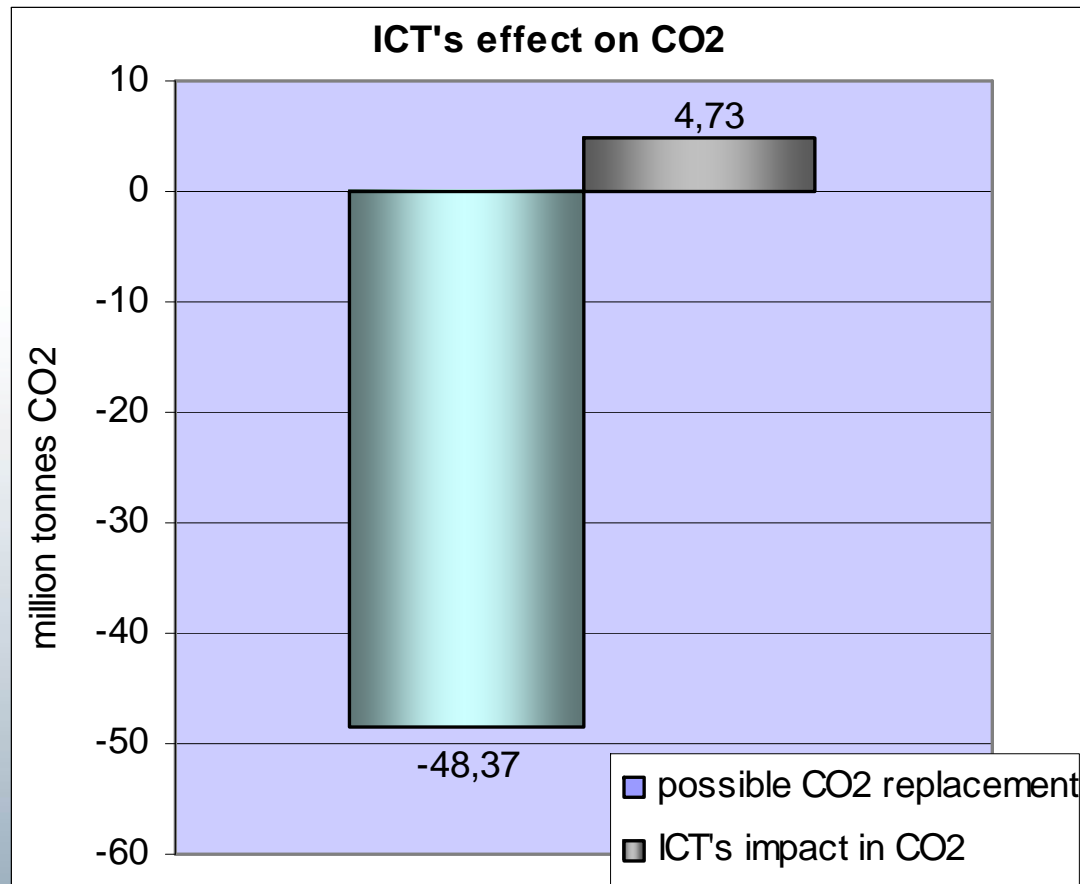
# CO<sub>2</sub> per subscriber, Ericsson networks



Mobile Subscription now 25 kg CO<sub>2</sub> per year – Same as driving car for 1h

# Telecom's potential in CO<sub>2</sub> reduction

From problems to solutions



Source:  
WWF, ETNO

10 times Payback in CO<sub>2</sub> reduction

# Summary

- HSPA is Mobile Broadband Today
- LTE is the Global choice for Next Generation (4G)
- Data traffic has surpassed voice traffic
- Excellent opportunity to introduce new services
- Performance will increase even further

**We did Mobile Telephony – Now we do Mobile Broadband**

**ERICSSON** 

**TAKING YOU FORWARD**