



# MOBILE BROADBAND: WITH A REVIEW OF THE FIRST YEAR OF LTE -- AND A LOOK AHEAD



THIS PRESENTATION CONTAINS FORWARD LOOKING STATEMENTS. SUCH STATEMENTS ARE BASED ON OUR CURRENT EXPECTATIONS AND ARE SUBJECT TO CERTAIN RISKS AND UNCERTAINTIES THAT COULD NEGATIVELY AFFECT OUR BUSINESS. PLEASE READ OUR EARNINGS REPORTS AND OUR MOST RECENT ANNUAL REPORT FOR A BETTER UNDERSTANDING OF THESE RISKS AND UNCERTAINTIES.

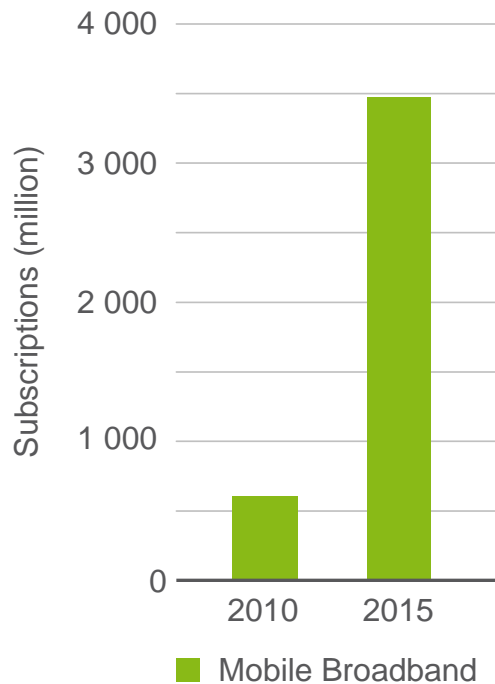


# BRINGING MOBILE BROADBAND INTO THE NEW DECADE

MARTIN LJUNGBERG  
PRODUCT MANAGER – MOBILE BROADBAND  
ERICSSON

# THREE TRENDS

## Mobile Broadband growth



## Services over the top



## The network a differentiator



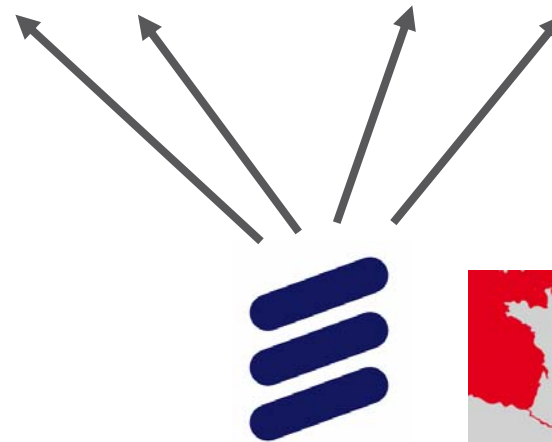
Source: Ericsson  
 This slide contains forward looking statements

# NETWORK IS DIFFERENTIATOR

ERICSSON-SUPPLIED NETWORKS SCORE HIGH

## NETZTEST 2010

LAND	Schweiz			Österreich			
Anbieter	Swisscom	Sunrise	Orange	A1 Telekom Austria	Orange	T-Mobile	Hutchison 3G
<b>BREITBAND DOWNLOAD (STADT)</b>							
Anteil > 1Mbit/s (%)	93,1%	82,6%	46,1%	97,1%	95,1%	77,3%	62,2%
Datentransferate (kbit/s)	3926	1824	1458	3802	2365	2384	1683
<b>connect URTEIL max. 500</b>	<b>454</b> sehr gut	<b>386</b> gut	<b>279</b> ausreichend	<b>465</b> sehr gut	<b>393</b> gut	<b>388</b> gut	<b>386</b> gut

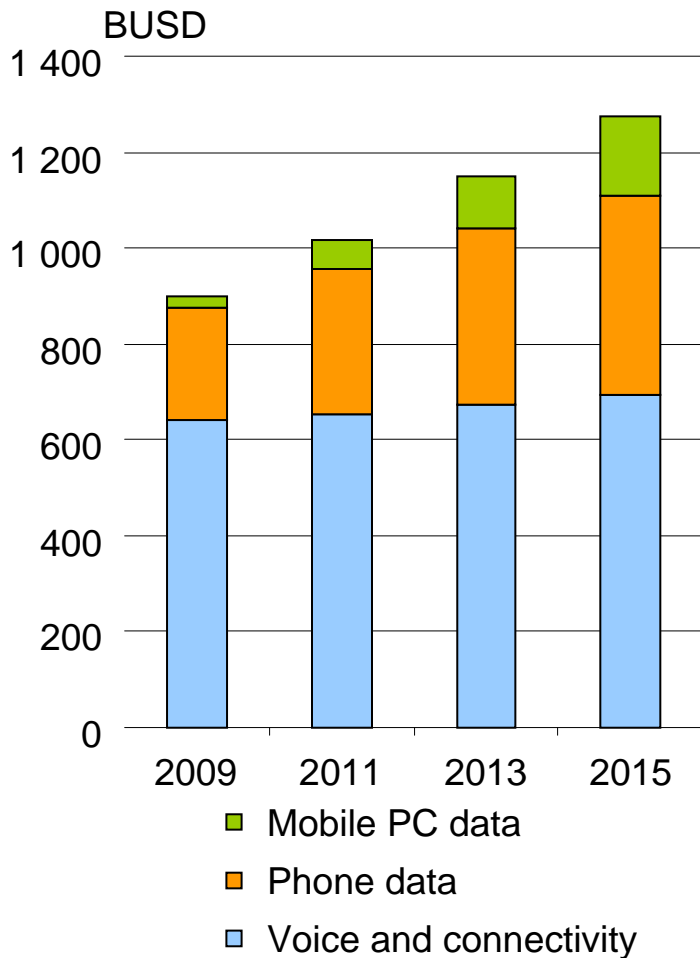


Source: Connect Magazine, October 2010

# THE TELECOM GROWTH ENGINE

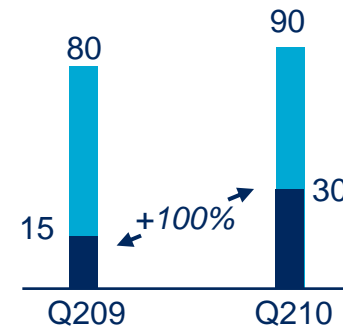
## MOBILE BROADBAND

### Global Mobile Operator Revenue

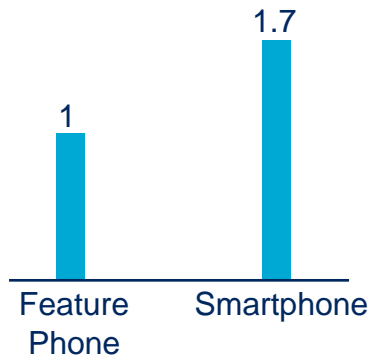


### Operator example

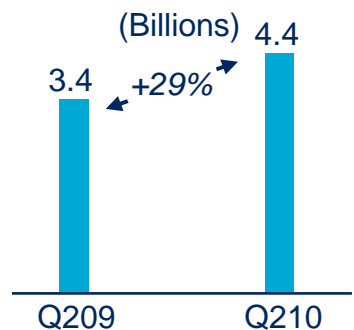
#### Subscribers & 3G Smartphones (Millions)



#### Relative ARPU

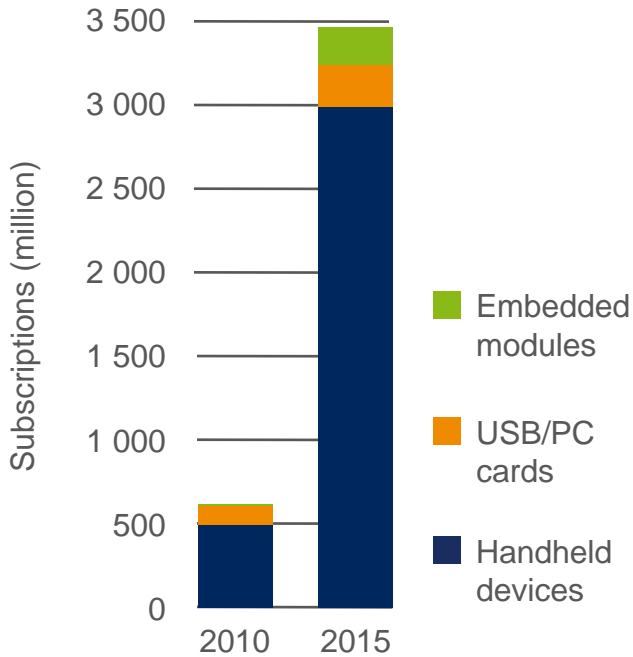


#### Data revenues (Billions)

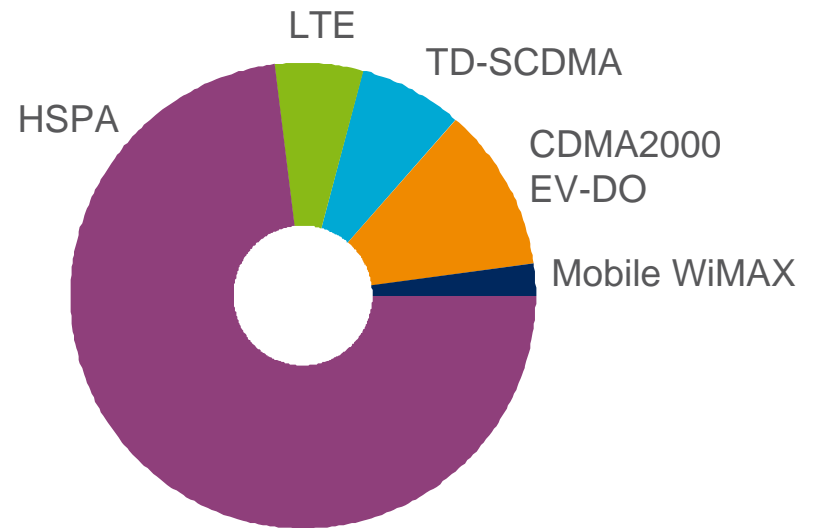


Source: Ericsson and AT&T  
This slide contains forward looking statements

# SMARTPHONES DOMINATE



Subscription types



Technology share 2015

[ 80% of subscriptions in HSPA and LTE track ]

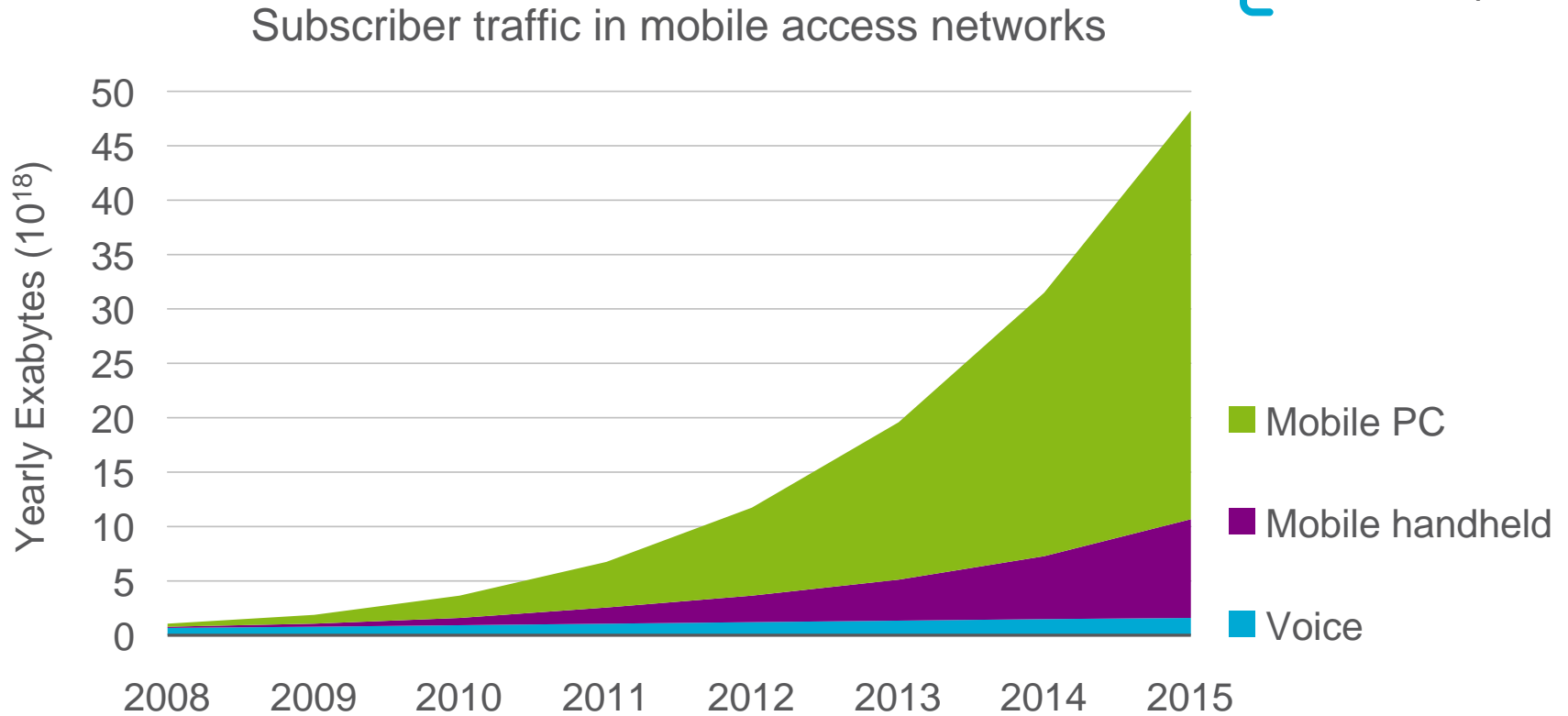
Source: Ericsson

Source: Ericsson

This slide contains forward looking statements

# MOBILE TRAFFIC, VOICE AND DATA

M2M traffic to be added on top



Source: Internal Ericsson  
 Definitions: see note pages.  
 DVB-H, Mobile WiMax, M2M and WiFi traffic not included  
 This slide contains forward looking statements

# SMARTPHONES IN ALL PRICE SEGMENTS

**Sony Ericsson  
Xperia™ X10 mini**



**European Mobile Phone  
2010-2011\***



\* Awarded by the European Imaging and Sound Association (EISA)

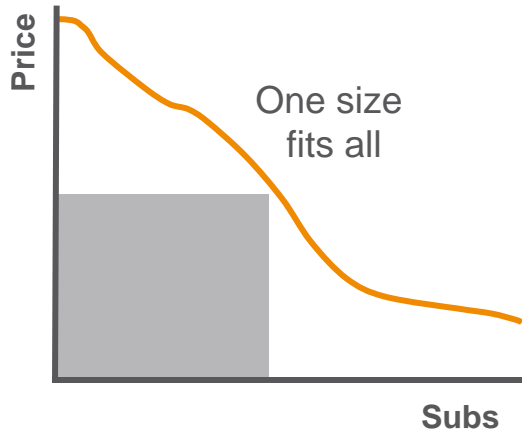
# THREE WAVES OF MOBILE BROADBAND EVOLUTION

Mobile broadband 1<sup>st</sup> wave

**Establishing market**



**Standard**

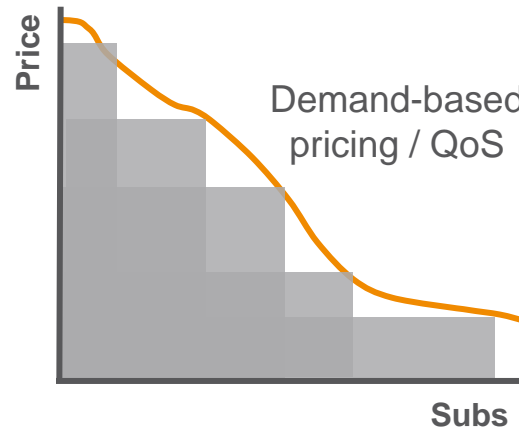


Mobile broadband 2<sup>nd</sup> wave

**Differentiating services**



**Smart**

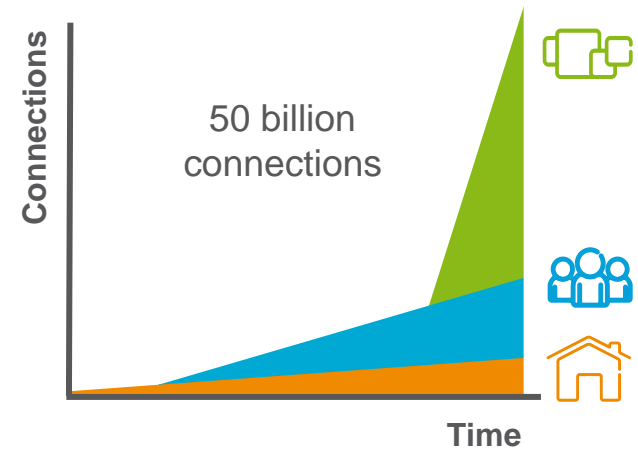


Mobile broadband 3<sup>rd</sup> wave

**Connecting everything**

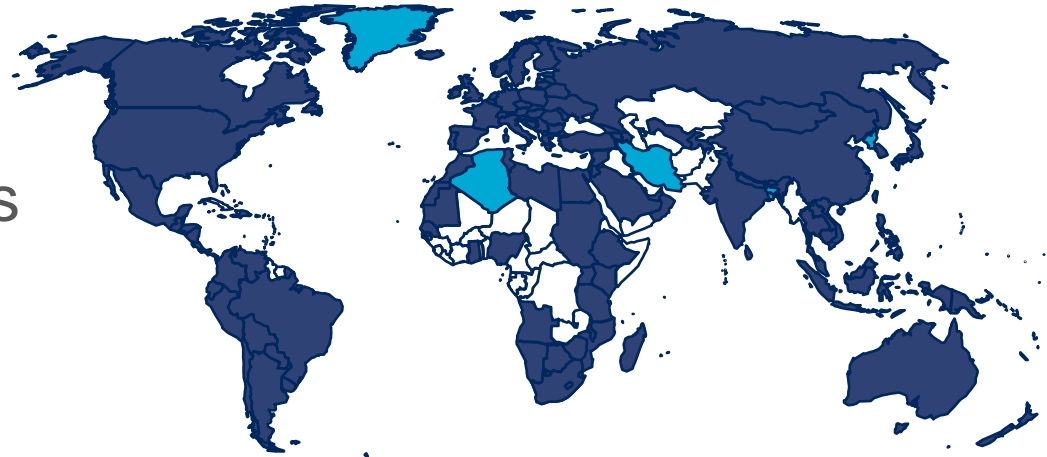


**Scale**



# HSPA SUCCESS

- › 365 networks
  - 150 countries
- › 565 Million subscribers
- › 2 579 devices
  - 235 suppliers



■ Commercial HSPA  
■ HSPA Commitments



	2009	2010	2012
Peak rate	~21 Mbps	~42 Mbps	~160 Mbps
Typical user rate downlink	4-16 Mbps	8-30 Mbps	Operator dependent
Typical user rate uplink	1-4 Mbps	2-5 Mbps	Operator dependent
Spectrum	5 MHz	10 MHz	20 MHz

Source: GSA and Informa

# QUALITY OF EXPERIENCE

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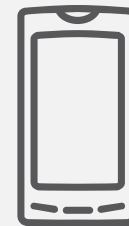
Speed



Coverage



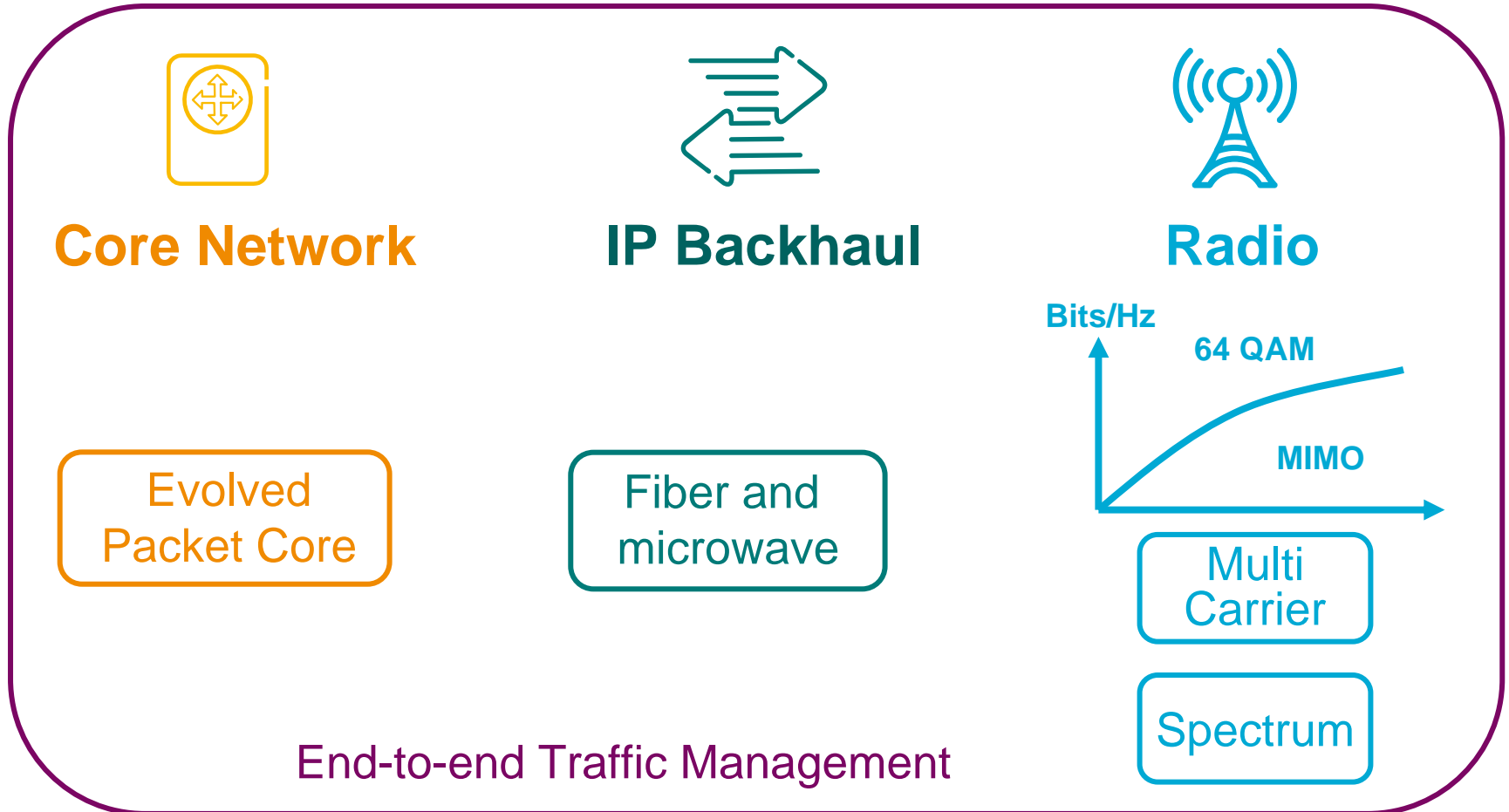
Capacity



Always on

# QUALITY OF EXPERIENCE

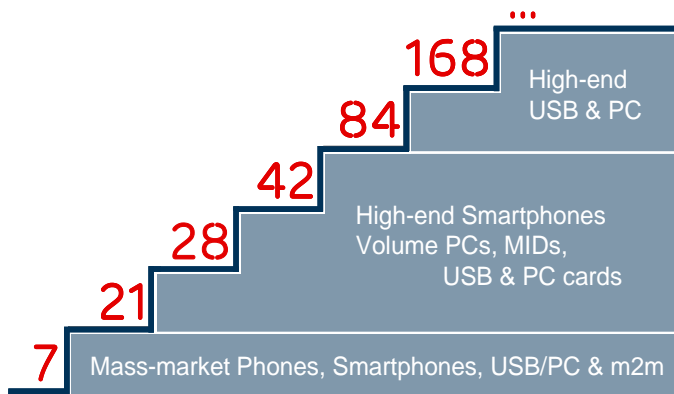
## SPEED AND CAPACITY



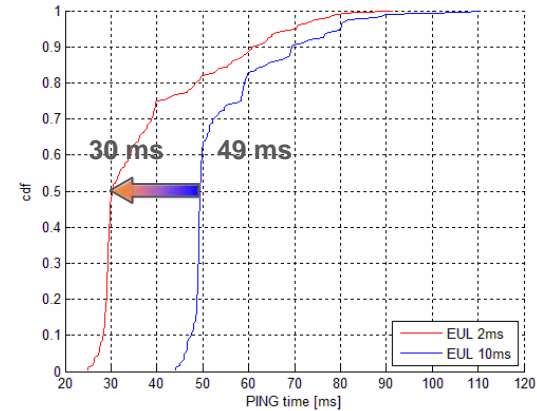
[ One network – all technologies ]

# QUALITY OF EXPERIENCE

## SPEED AND CAPACITY



## Attractive HSPA latency



### M570 Platform

- Supports 21Mbps
- Low power consumption
- Low heat generation
- Smart phones

## Dual Carrier HSPA 42 Mbps

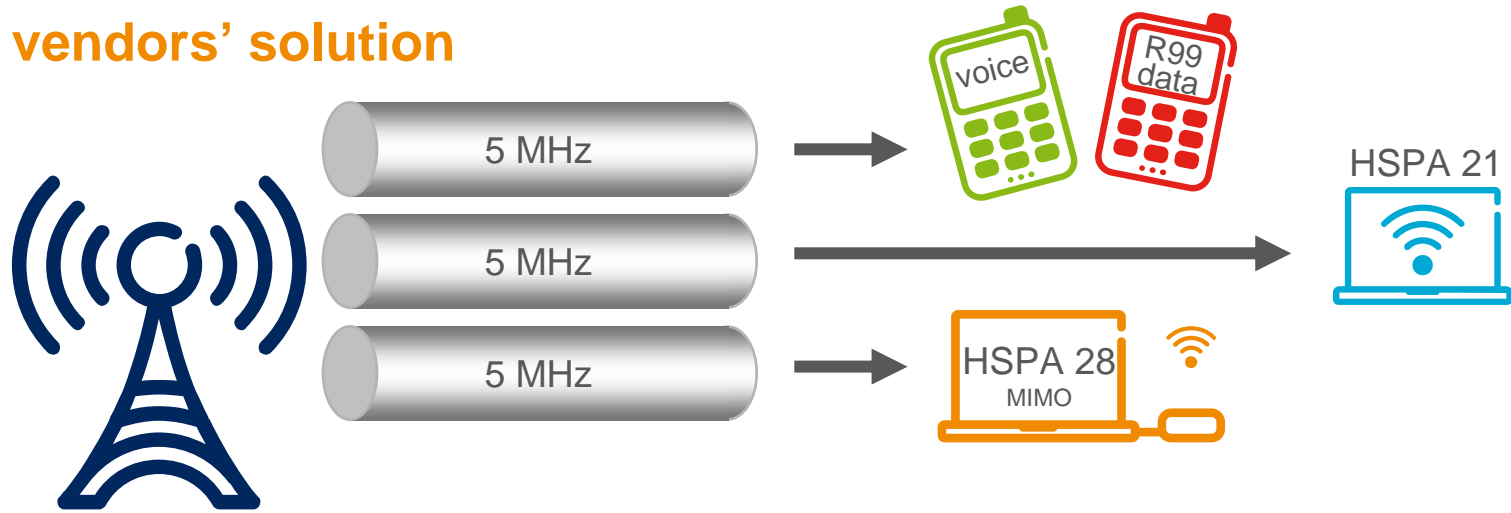
- › Telefónica Spain (21 September)
- › Over-the-air: 40.5 Mbps



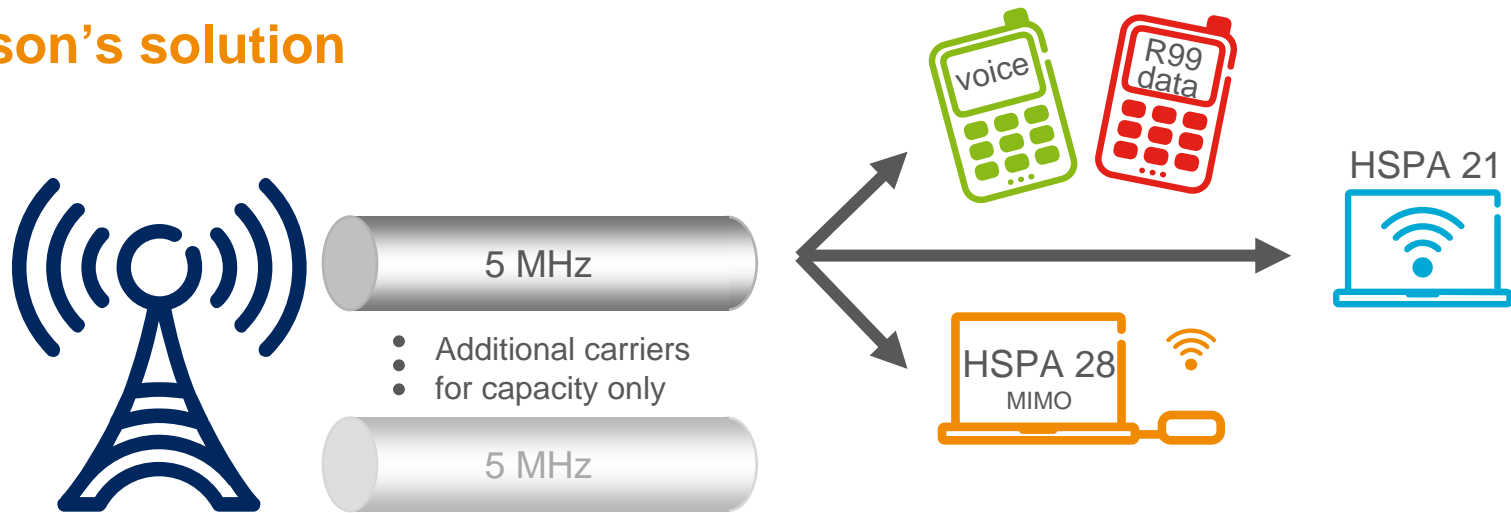
# ERICSSON WCDMA / HSPA

## INDUSTRY-UNIQUE EFFICIENCY

### Other vendors' solution



### Ericsson's solution



# QUALITY OF EXPERIENCE

## SPEED AND CAPACITY WITH LTE



- › 101 operators in 41 countries committed to deploy LTE



Dongles now



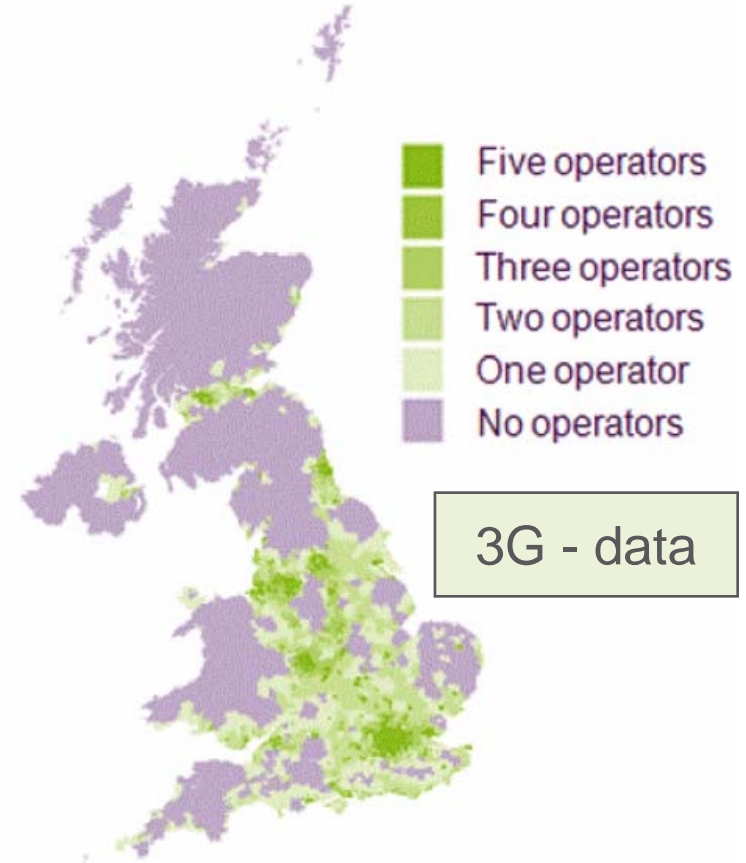
Smartphones expected soon

	2009	2010	2015
Peak rate	~50 Mbps	~150 Mbps	~1000 Mbps
Typical rate downlink	8-30 Mbps	10-100 Mbps	Operator dependent
Typical user rate uplink	3-10 Mbps	5-50 Mbps	Operator dependent
Spectrum	10 MHz	20 MHz	>20 MHz

Source: GSA

# QUALITY OF EXPERIENCE

## COVERAGE



Smartphone users demand everywhere coverage  
HSPA on all 2G sites

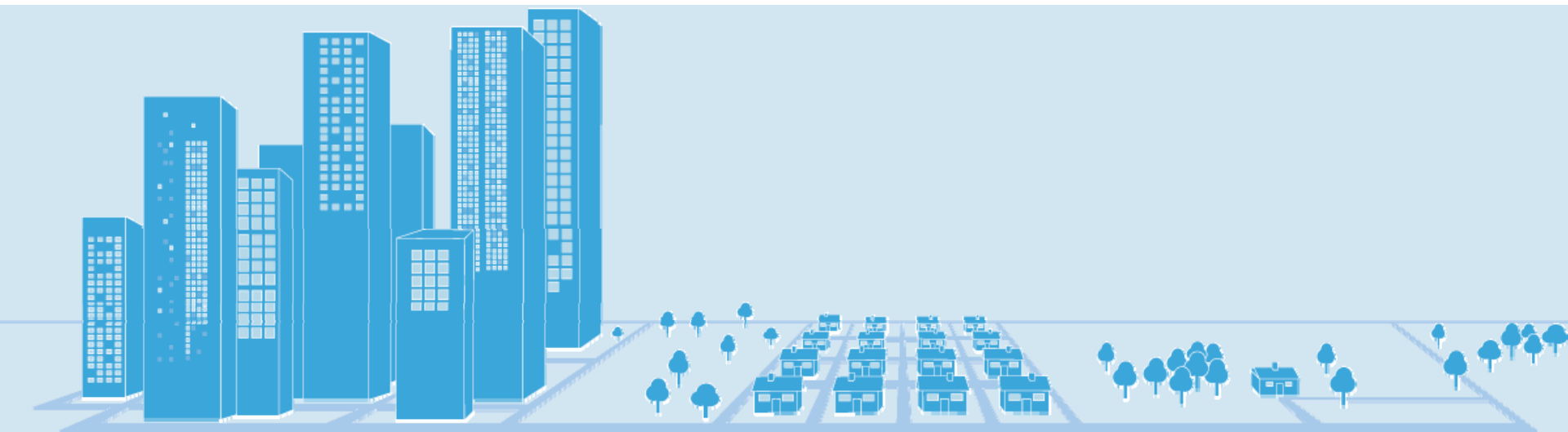
# QUALITY OF EXPERIENCE

## COVERAGE

Urban

Suburban

Rural



LTE

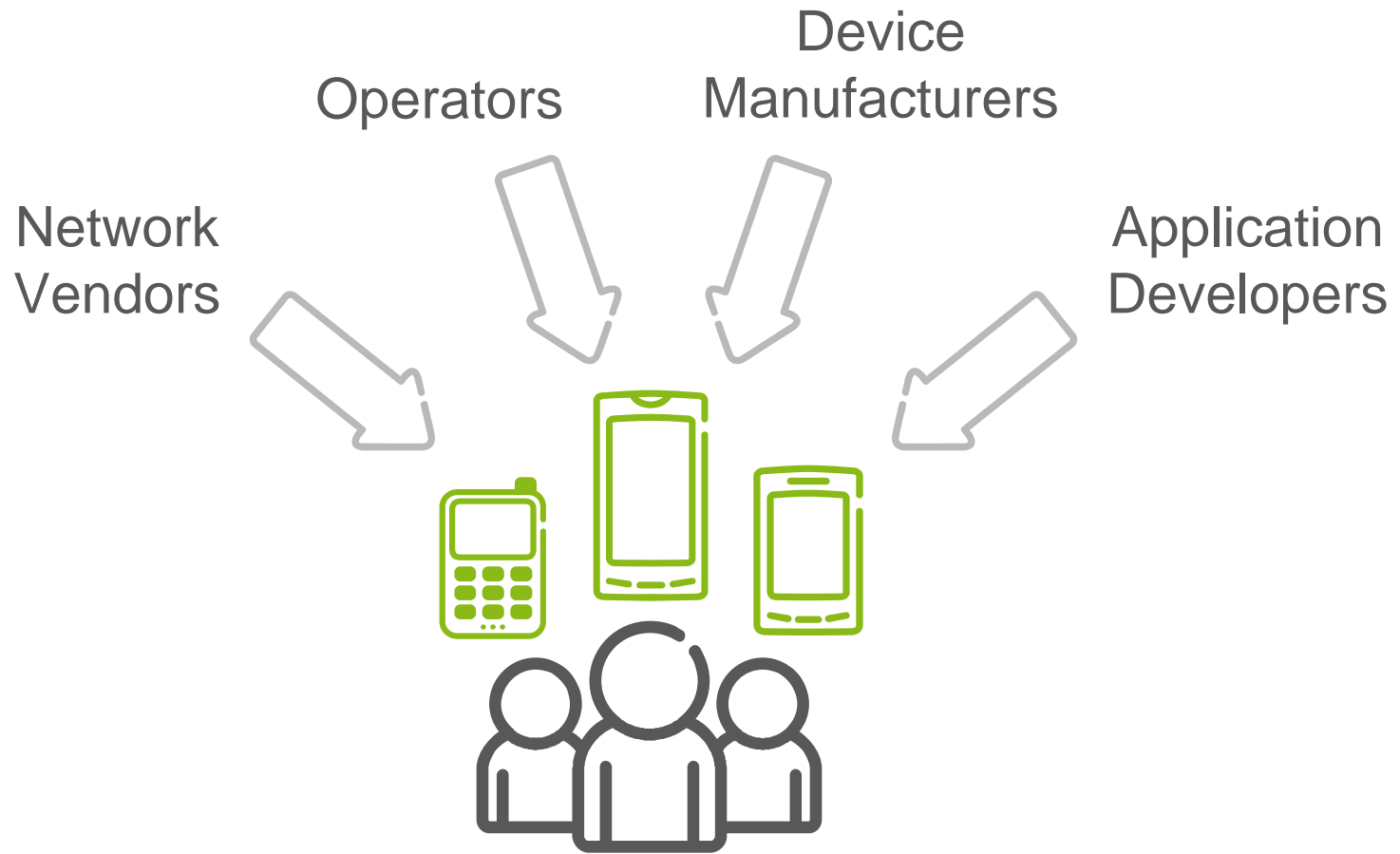
HSPA

EDGE

Low bands

# QUALITY OF EXPERIENCE

ALWAYS ON



# 1 YEAR OF MOBILE BROADBAND



- › Smartphones growth
- › HSPA networks: 365 (+29%)
- › HSPA devices: 2579 (+61%)
- › 3G subs: 565 million (+37%)

- › HSPA 42 Mbps launches



- › Tablets



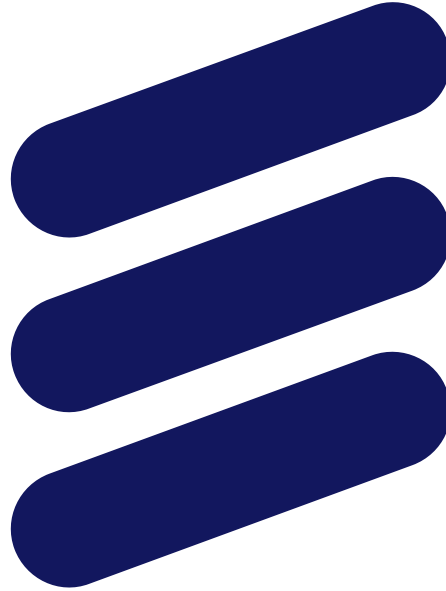
- › LTE launches



Source: GSA, Informa, Telstra, Telefónica, TeliaSonera

# INTO THE NEXT DECADE-50 BILLION





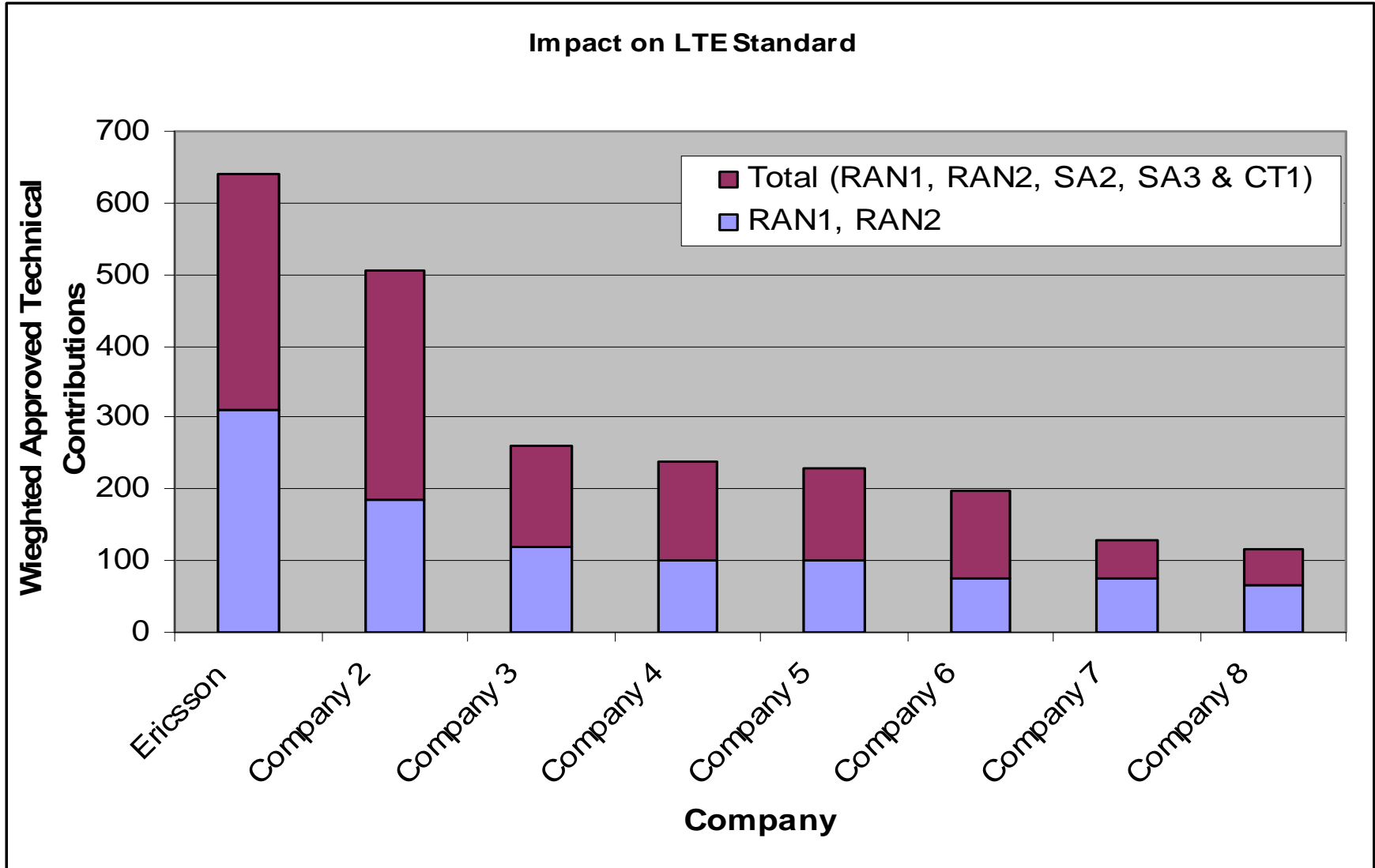
**ERICSSON**



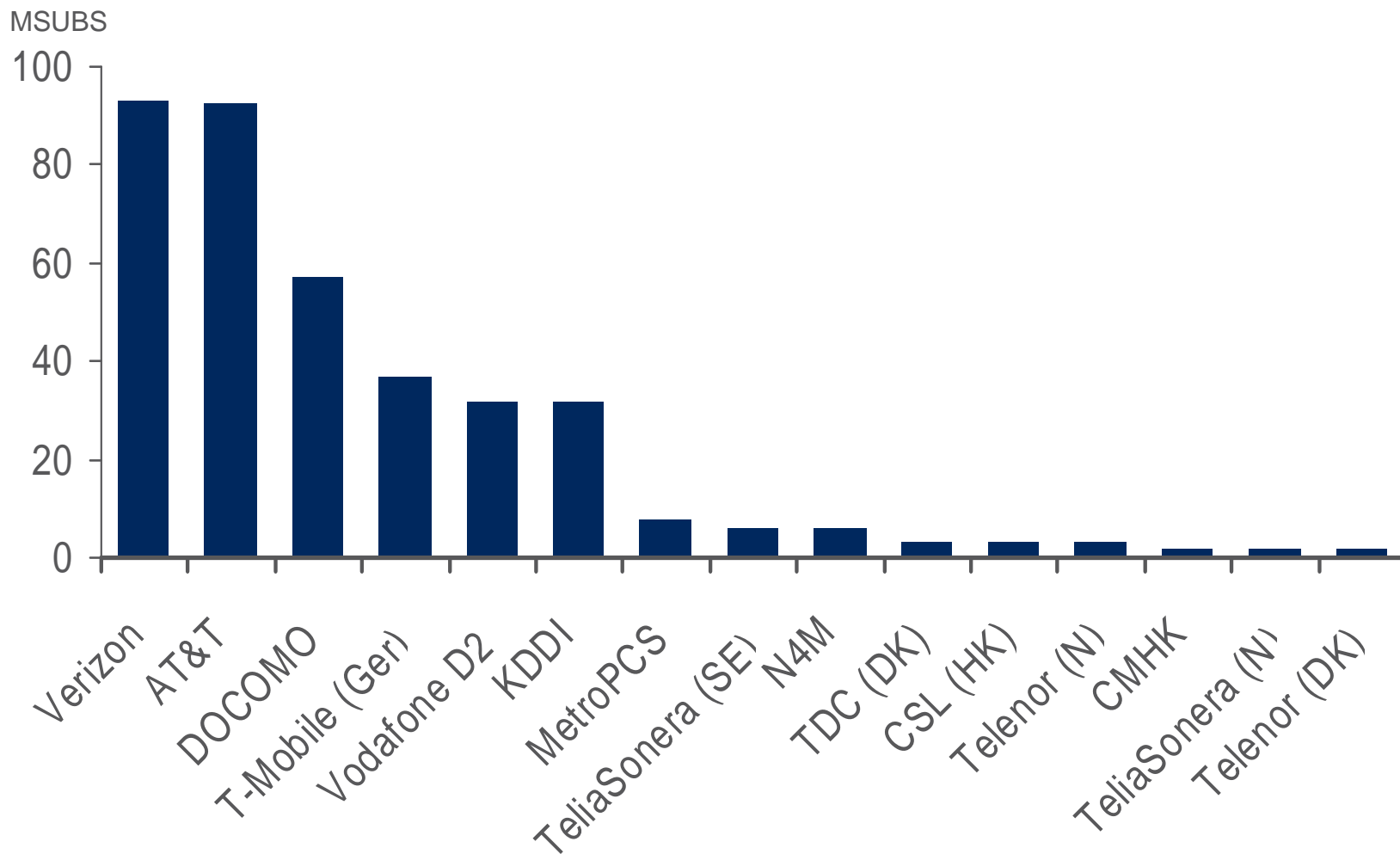
# LTE – EARLY EXPERIENCES

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PORTFOLIO MANAGEMENT

# ERICSSON LTE INDUSTRY LEADERSHIP



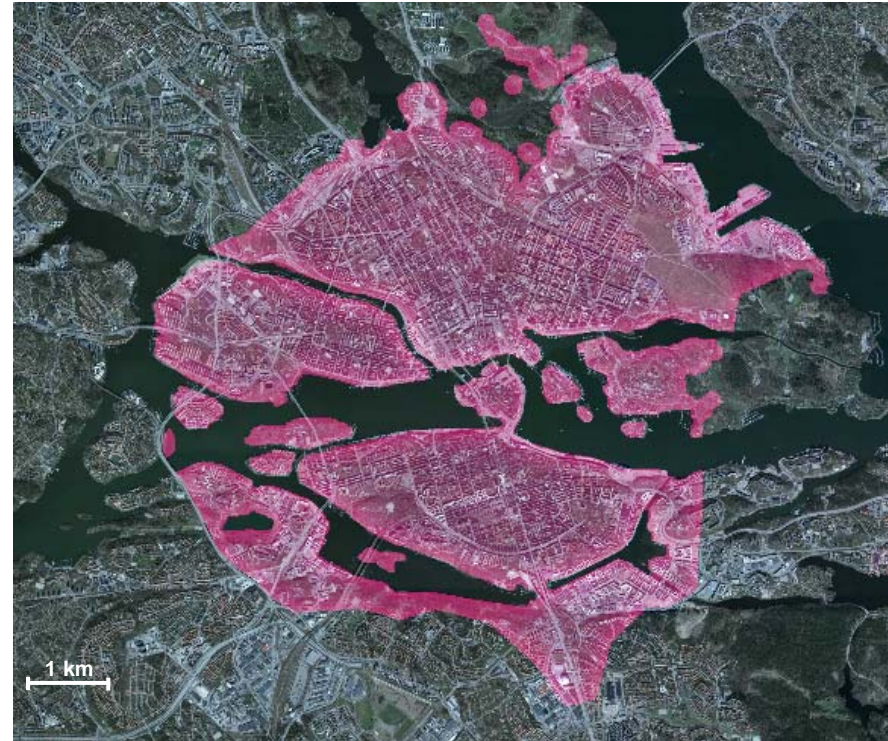
# LTE COMMERCIAL CONTRACTS BY OPERATOR SIZE



Subscriber figures from World Cellular Information Services, 09/2010

# TELIASONERA – WORLD FIRST COMMERCIAL LTE

- › Commercial launch  
Dec 14, 2009
  - Initially Stockholm city+
  - HSPA fallback
- › 25 Swedish cities end 2010
- › Pilot customers
  - Denmark, Estonia, Finland, Latvia and Lithuania



# TELIA 4G PRICE PLAN

	Start (3G only)	Mid (3G+4G)	Large 3G+4G	Total 4G
Price/month	\$6 + \$4/day	\$28 + \$14	\$38 + \$14	\$85
Speed <i>up to</i>	6 Mbps	6 Mbps	16 Mbps	80 Mbps
Data/month	3 GB	10 GB	20 GB	30 GB
USB modem	\$28	Included	Included	Included
Secure Surf/month	\$6	Included	Included	Included

Telia price plan from 2010-09-23, (1USD=7.00SEK)

# LTE DEVICES

## First Commercial Examples



## First Smartphone LTE-CDMA Hybrid



*\$299.99 free of contract*

# RBS 6000

**Multi Standard – GSM, WCDMA, LTE**

**>10 times** more capacity

**>20% better** radio performance

**x 5 times** lower energy consumption/sub

**x 2 times** better MTBF

**x 4 times** more compact

**ERICSSON**

**General Availability until now:**

- › 9 frequency bands
- › 13 Radio Modules
- › 5 Node types
- › >100 customers

# ERICSSON LTE EPC SYSTEM OFFERING

ALIGNED FUNCTIONALITY AND TESTING

SERVICES

IODT PROGRAM WITH CHIPSETS & TERMINALS



OSS



# AUTOMATIC NEIGHBOR RELATIONS, ANR

First ever SON (Self Organizing Networks) solution  
in a live LTE network

– Automatic Neighbor Relations, ANR

› Setup:

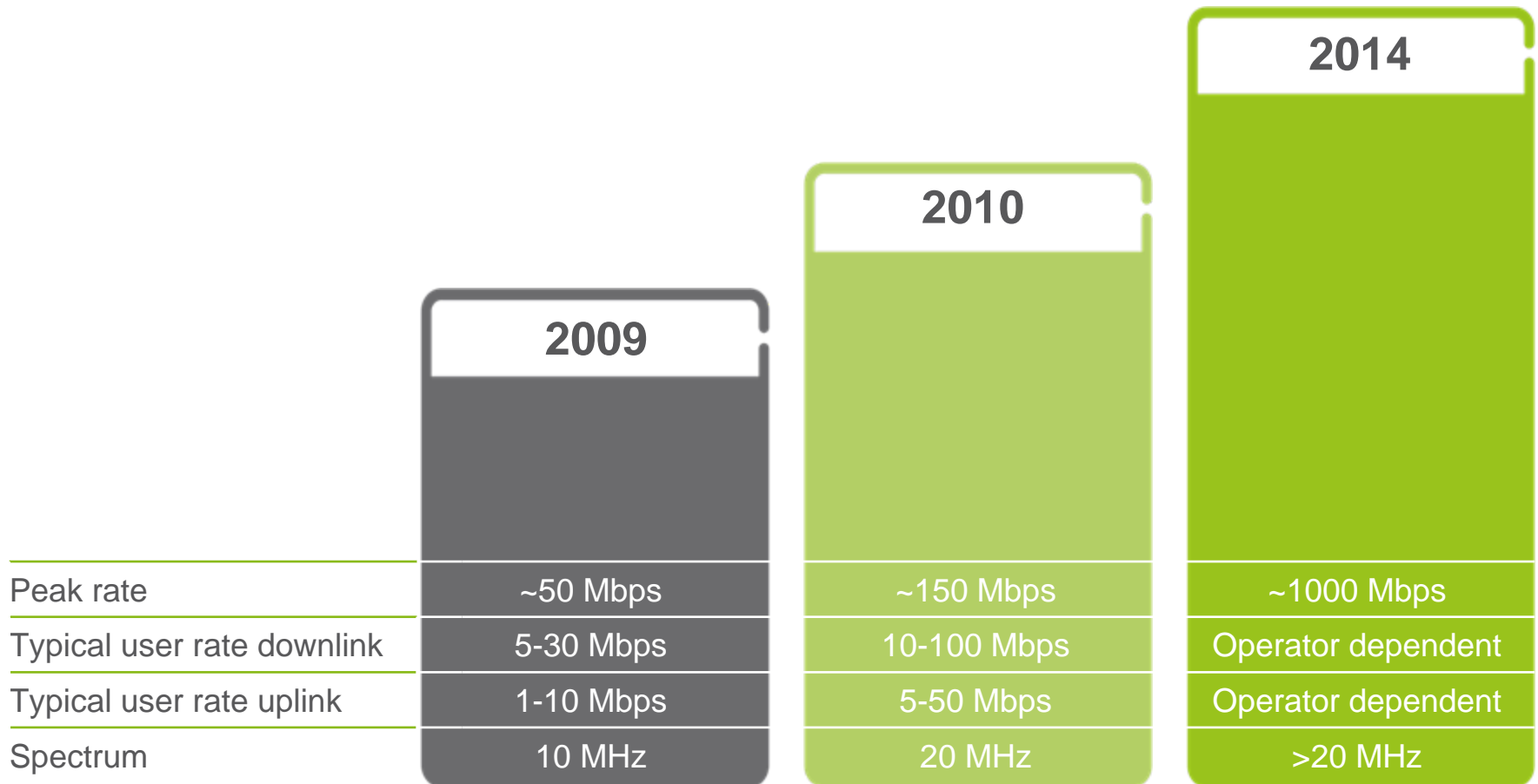
- live network
- no pre-configured neighbors
- no spontaneous traffic
- drive test: predefined route for predictability

› Result:

- All necessary cell relations was added automatically
  - › no planning or optimization was required
- 100% handover success rate
  - › cell relations was added in time for successful handover

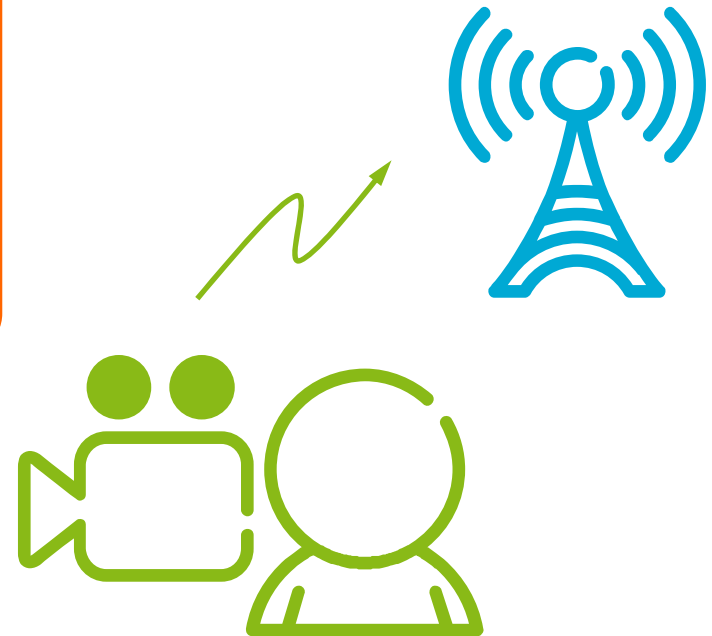
ANR is one of the new innovative features in LTE that improves network performance at the same time as it reduces OpEx

# COMMERCIAL LTE SPEED EVOLUTION



# THE ROYAL WEDDING IN SWEDEN

## PRODUCED WITH 4G LTE TECHNOLOGY





# TECHNOLOGY UPDATE ON LTE – FDD AND TDD

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PORTFOLIO MANAGEMENT

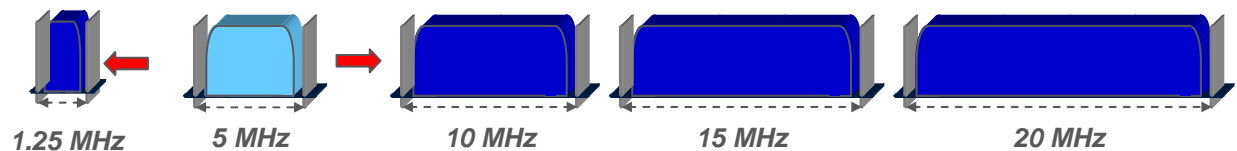
# LTE – HIGH LEVEL TECHNICAL OVERVIEW

## › Higher end-user bitrates by wider carrier bandwidth

- >150 Mbps in a 20 MHz carrier bandwidth.

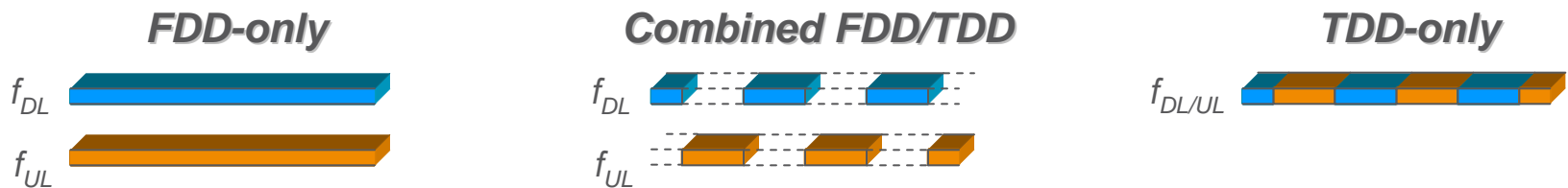
## › Spectrum flexibility and smooth migration into legacy bands

- Flexible bandwidth



## › Spectrum availability

- Support for operation in both FDD and TDD dedicated spectrum

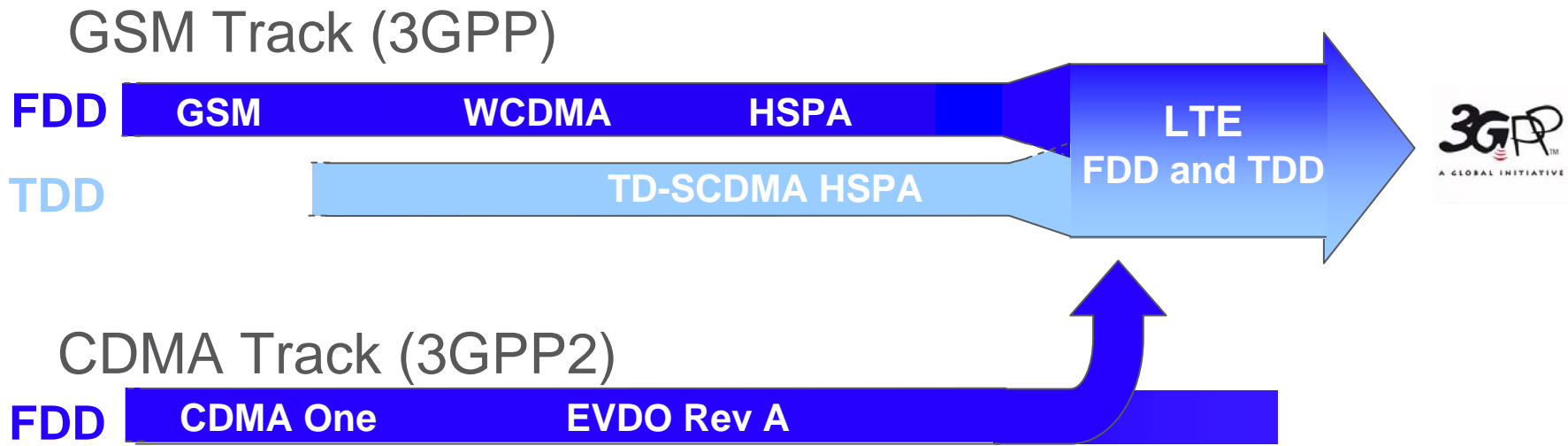


## › Simplified network operation

- Plug-and-play architecture, Self Optimizing Networks

# COMMON LTE EVOLUTION – FDD AND TDD

ALIGNMENT FOR WCDMA/HSPA, TD-SCDMA (CHINA) AND CDMA



LTE the Global standard for Next Generation (4G)

# TD-LTE - GLOBAL MARKET

- › Same LTE technology for FDD and TDD
- › Economies of scale
  - Devices
  - Infrastructure
- › Strong support from large operators
- › Spectrum available globally
  - China, India, US, and ROW



# LTE BANDS – COMMERCIAL 2010/2011

FDD		
Band	“Identifier”	Frequencies (MHz)
1	IMT Core Band	1920-1980/2110-2170
2	PCS 1900	1850-1910/1930-1990
3	GSM 1800	1710-1785/1805-1880
4	AWS (US & other)	1710-1755/2110-2155
5	850	824-849/869-894
6	850 (Japan #1)	830-840/875-885
7	IMT Extension	2500-2570/2620-2690
8	GSM 900	880-915/925-960
9	1700 (Japan)	1750-1785/1845-1880
10	3G Americas	1710-1770/2110-2170
11	1500 (Japan #1)	1428-1448/1476-1496
12	US 700	698-716/728-746
13	US 700	777-787/746-756
14	US 700	788-798/758-768
17	US 700	704-716/734-746
18	850 (Japan #2)	815-830/860-875
19	850 (Japan #3)	830-845/875-890
20	Digital Dividend	832-862/791-821
21	1500 (Japan #2)	1448-1463/1496-1511

TDD		
Band	“Identifier”	Frequencies (MHz)
33 34	TDD 2000	1900-1920 2010-2025
35 36	TDD 1900	1850-1910 1930-1990
37	PCS Center Gap	1910-1930
38	IMT Extension Center Gap	2570-2620
39	China TDD	1880-1920
40	2.3 TDD	2300-2400

Additional being specified (FDD&TDD)		
Band	Identifier	Frequencies (MHz)
	3.5 GHz	3400-3600
	3.7 GHz	3600-3800

# GLOBALLY ALIGNED BANDS FOR TD-LTE

The 2.6 GHz "IMT Extension band" with unpaired part in 2570-2620 MHz

Arrangement for CEPT (Europe), CITELE (Latin America) (and on national basis)



The "IMT band" in 2300-2400 MHz

The only major frequency band identified for IMT available in all ITU Regions (*driven by China since WRC-2000*)



Additional regional TDD opportunities for TD-LTE exist as well

Unpaired spectrum availability increasing – mainstream TDD opportunity

# ERICSSON TD-LTE STRENGTHS

- › First with
  - FDD and TDD on same platform
  - 3GPP compliant end-to-end TD-LTE interoperability
  - TD-LTE Data call over air showcased in India
  - e2e demo with commercial grade chipset
  
- › Active participant in China Mobile trials since 2008
  
- › India – 2.3 GHz (BWA) auctions recently concluded
  - Ericsson currently engaged in:
    - › Demo's
    - › Trials
    - › Commercial negotiations
  
- › End-to-end solution
  - eNodeB – shared platform for FDD and TDD
  - EPC core
  - Mobile Backhaul
  - OSS
  
- › Cooperation with leading global UE and chipset vendors
  
- › Interoperability and co-existence with legacy systems



# ST-ERICSSON SUPPORT OF TD-LTE

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- › ST-Ericsson enables pioneering video applications demonstration on a TD-LTE tablet at the closing ceremony of Expo 2010 Shanghai China
  
- › M700 platform, TD-LTE version (non-commercial)
  - Supports up to 100/50 DL/UL.
  - LTE quad band for global coverage
  - TD-LTE dual band support: 38 and 40
  - Flexible frequency band support, all bandwidths (1.4 up to 20 MHz)
  - Single-chip RF ASIC with MIMO support
  
- › Available next year, ST-Ericsson next generation modem will support TD-SCDMA in addition to both versions of LTE (FDD/TDD), HSPA+ and EDGE.

# SUMMARY

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- › LTE is building global momentum at amazing speeds
- › Very successful commercial roll-out, from initial global launch to stable high performance network
- › Ericsson's technology leadership has successfully carried over into a leadership position for LTE contracts of commercial systems
- › TD-LTE is showing a strong momentum with support from large operators
- › Significant amounts of TDD Spectrum is available globally
  - China, India, US, and ROW
- › Ericsson is fully committed to TD-LTE, providing products that capitalize on combined FDD and TDD volumes



**ERICSSON**