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“Broadband for all”

Broadband as an Enabler for New Services and Economic Growth



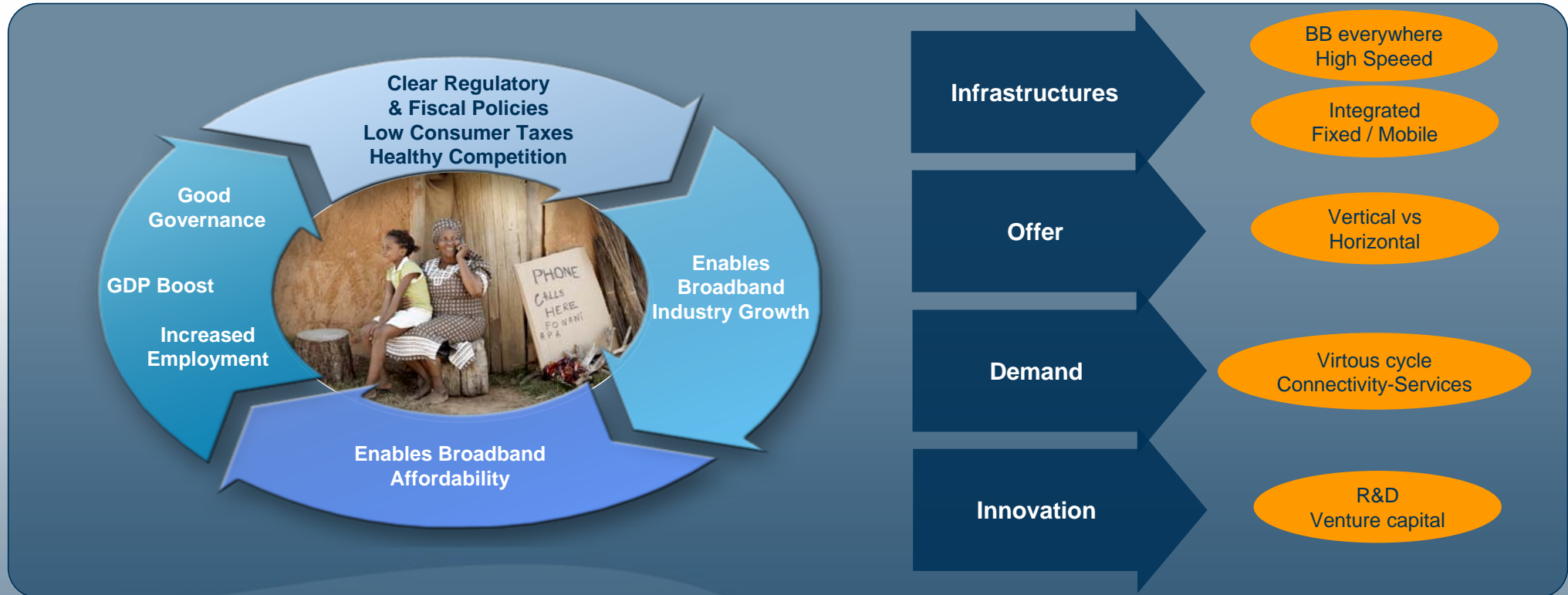
Broadband benefits society

Individuals, enterprises and governments



Universal need for services & efficiency gain

Mobile and Fixed Broadband services spur positive growth circle



Broadband Everywhere



**Live meeting without traveling
via full size video conferencing**



Working from home



**Increased efficiency, productivity & customer
satisfaction**



Broadband on the move



Healthcare to all and everywhere

The Individual TV Experience

**HD
TV**

Personalization

Communication

Interactivity

Full Service Broadband

A consumer proposition



Broadband services to a screen of your choice

Large and fast-growing eco-system



Mobile
Broadband

- Around 1470 HSPA-devices from around 170 suppliers
- Strong mobile traffic growth – data 6 times more than voice
- LTE will accelerate this trend further – more spectrum needed!

Telecom replaces travel

1 year

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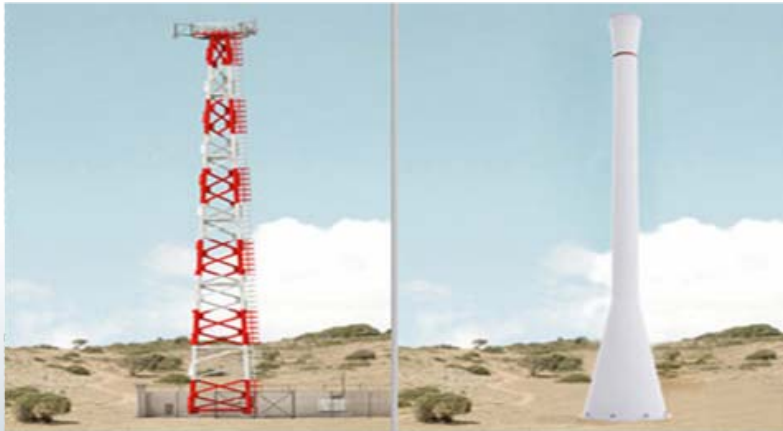
1 hour



Source: Life Cycle Assessment study, Ericsson Research, 2007

Sustainable communications

Integrated sites



Ericsson Tower Tube

- Lower operation cost
 - Up to 40% less energy & CO₂
- Lower manufacturing cost
 - About 30% less energy & CO₂



Solar village charger

Prototype for use in Millennium Villages
Charges up to 20 phones overnight



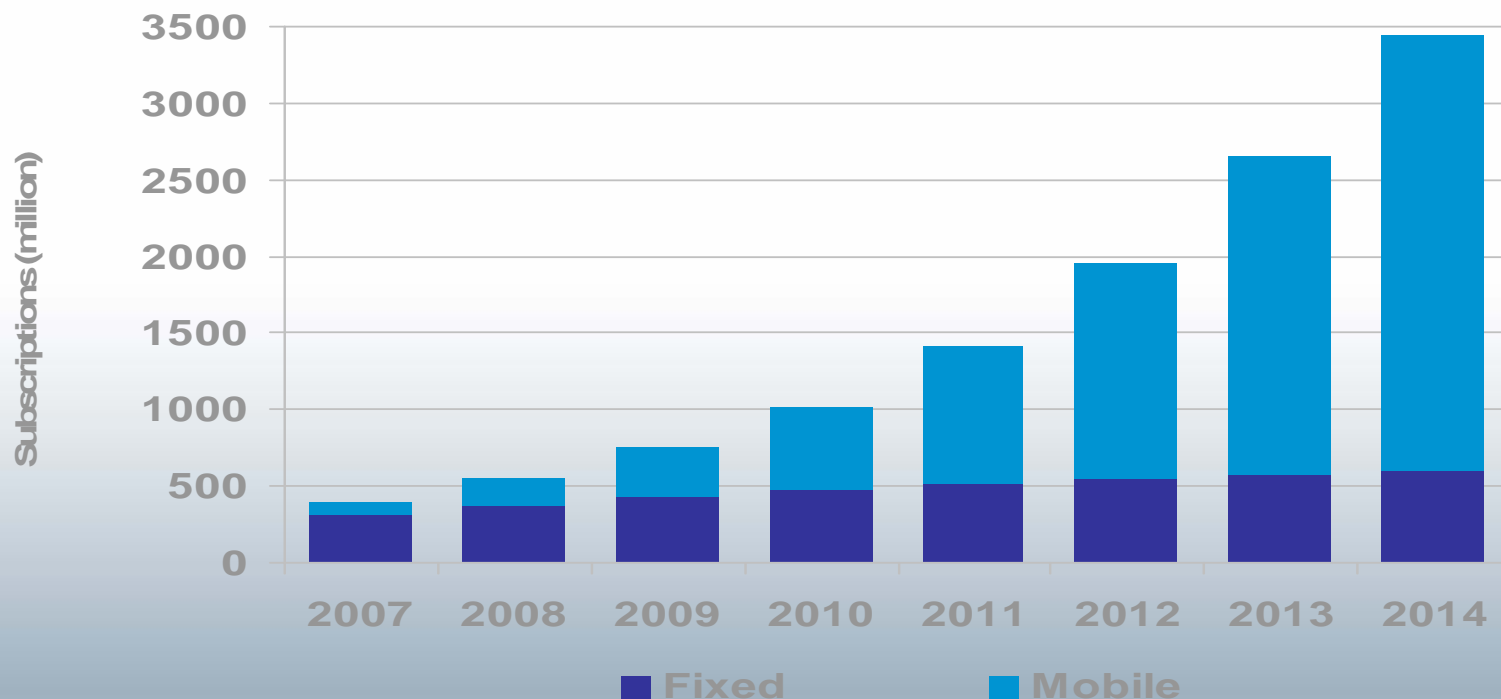
Green Site Solutions

Solar, biofuel, hybrid, fuelcell, wind

Source: Ericsson

Impressive broadband growth

Broadband subscription forecast



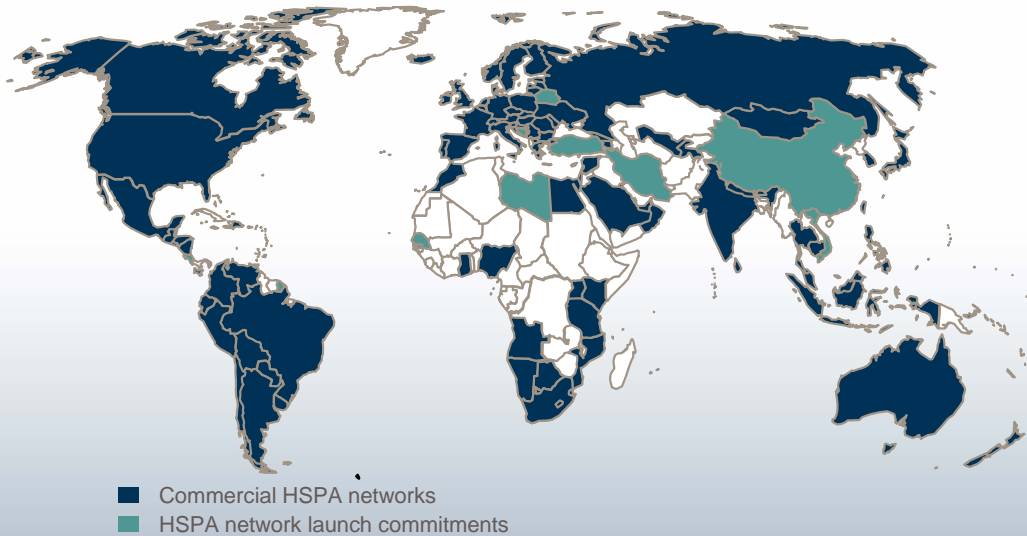
Mobile Broadband includes: CDMA2000 EV-DO, HSPA, LTE, Mobile WiMAX & TDSCDMA. It includes handsets (vast majority), USB dongles, embedded modules etc.
 Fixed broadband includes: DSL, FTTx, Cable modem.

Source: Internal Ericsson

Mobile broadband 80% of all subscriptions in 2014

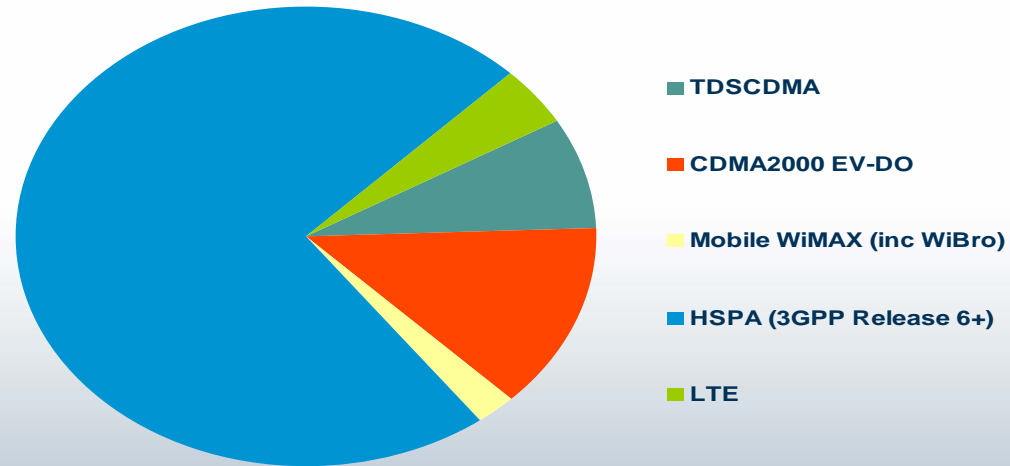
Mobile broadband here and now

HSPA coverage today



Source: GSA – Global mobile Suppliers Association: May 2009

Subscribers by technology 2014



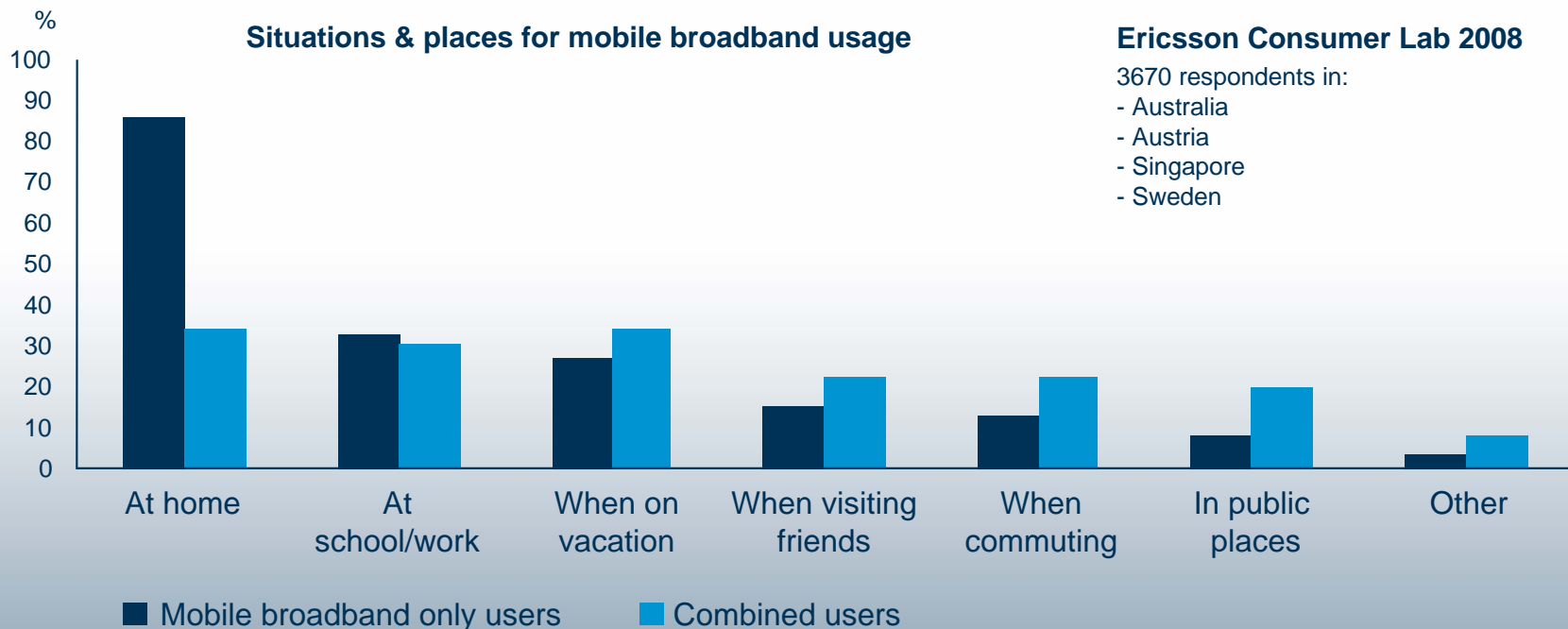
Source: Internal Ericsson

- 123 million HSPA subscribers today

Around 270 commercial HSPA networks in around 115 countries today



Mobility is the key driver for acquiring & usage



Source: Ericsson Consumer Lab, Mobile broadband Usage, drivers and barriers study 2008

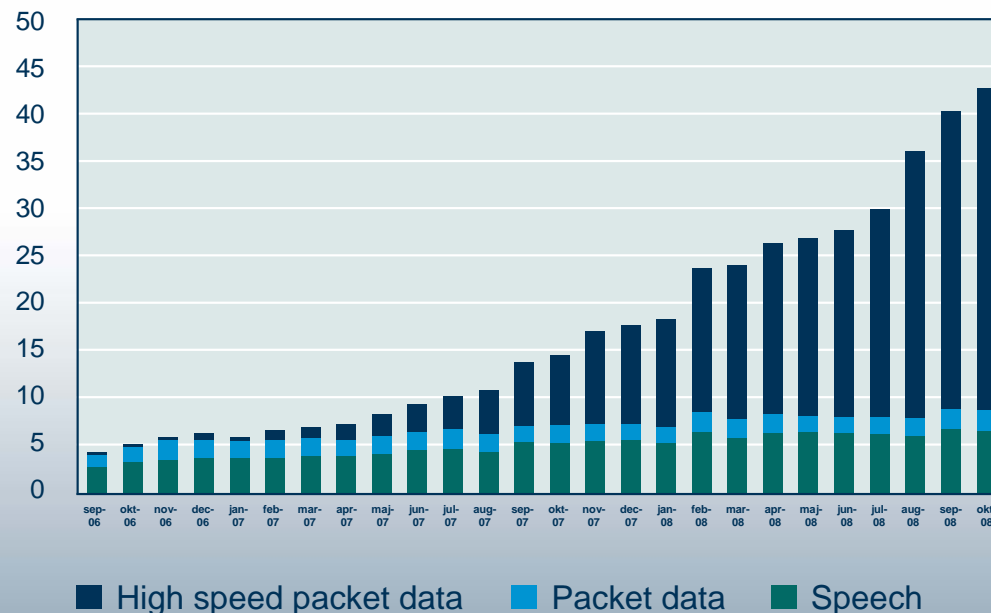
More broadband usage drives demand for everywhere usage

Data now 6 times more than voice

Fast subscriber growth

- 300 million WCDMA/HSPA subscribers world wide
- 6 million new HSPA subscribers per month, 95 million in total
- 1276 HSPA devices are launched from 164 suppliers
- HSPA is deployed in 237 networks in 105 countries/territories
- 85% of the traffic in WCDMA/ HSPA networks is data

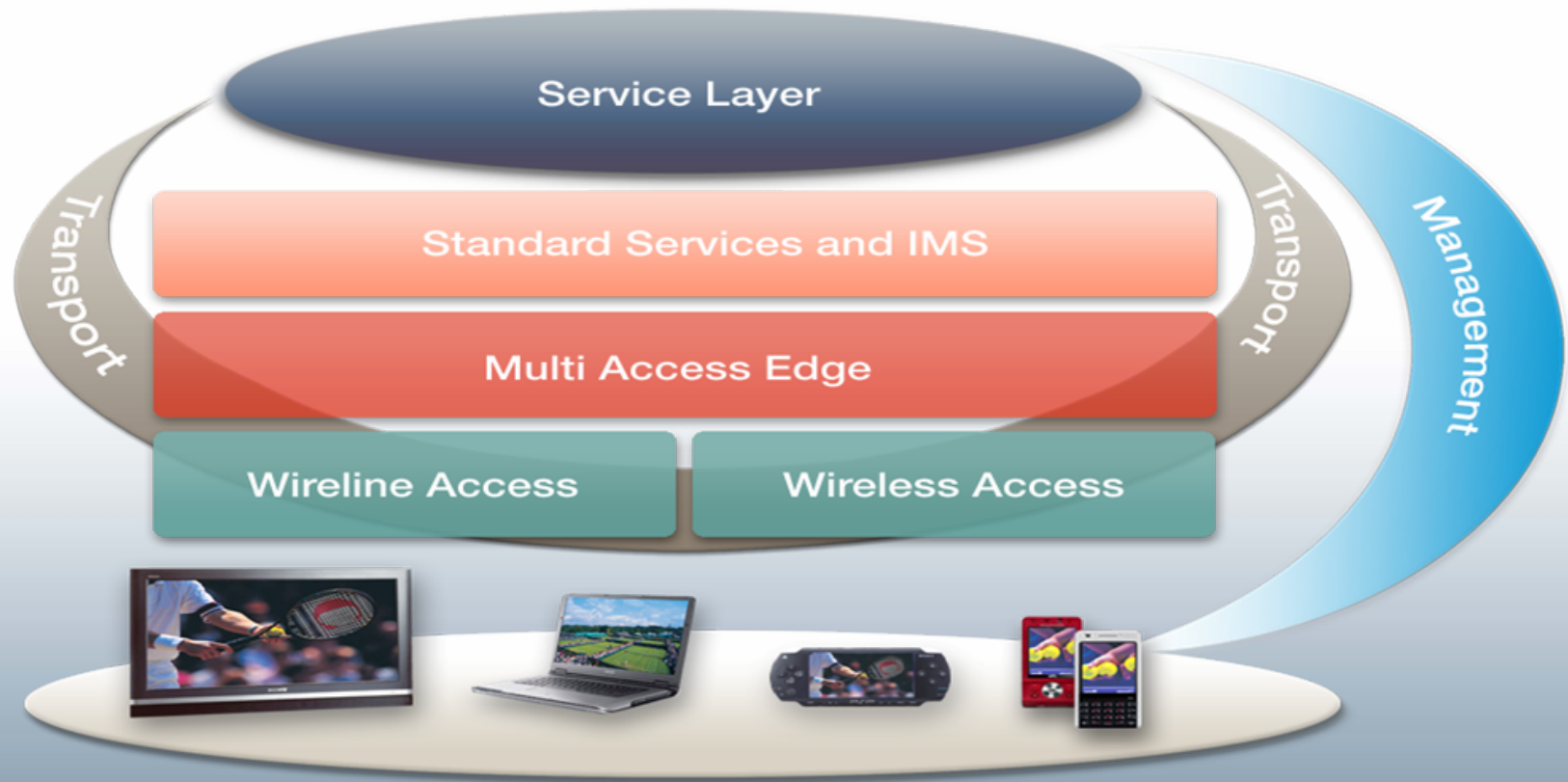
Strong traffic growth – WCDMA/HSPA world wide



Source: GSMA, GSA, and NetQB, November-08

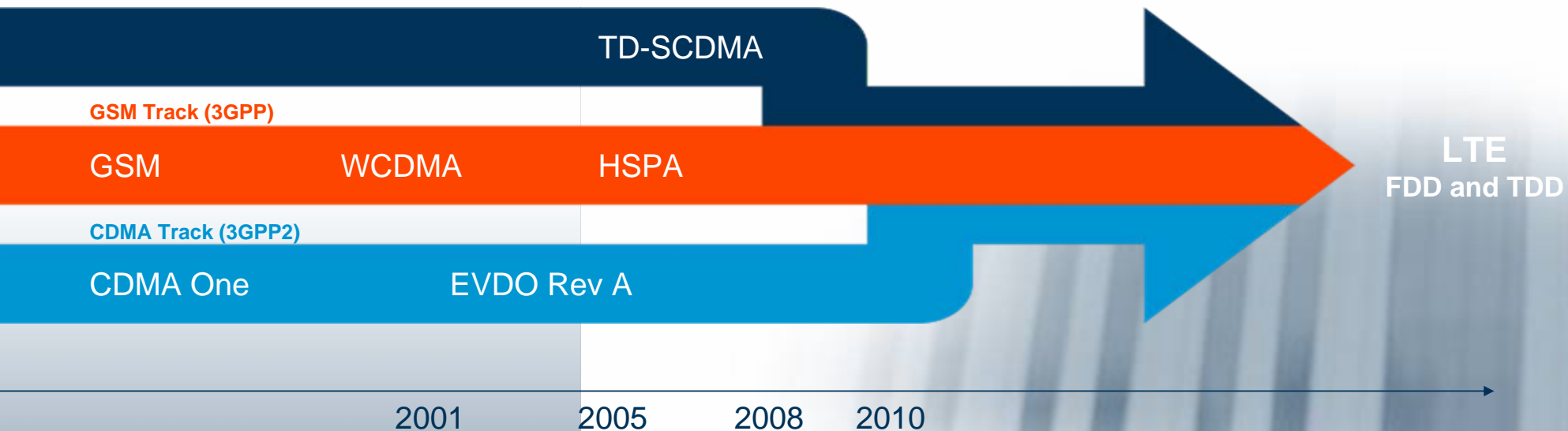
LTE will accelerate this trend further – more spectrum needed!

Full Service Broadband architecture



Mobile System Evolution

Global Support



LTE – the global standard for Next Generation

Current 3GPP bands

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)	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	UMTS1500	1428-1453/1476-1501
12, 13, 14, 17	US 700	698-716/728-746 776-788/746-758 788-798/758-768 704-716/734-746

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	(1915)1910-1930
38	IMT Extension Center Gap	2570-2620
39	China TDD	1880-1920
40	2.3 TDD	2300-2400

Additional (FDD&TDD)		
	800 MHz	790-862
	3.5 GHz	3400-3600
	3.7 GHz	3600-3800

Wide range of bands enables global support

Harmonization of spectrum

– For mobile broadband

International harmonization of spectrum gives:

- rich **ecosystem** providing **interoperability**
- easy **cross border coordination**
- international **roaming**
- availability of **affordable** products

...bridging the digital divide



Harmonized spectrum has enabled global mobile penetration of 59%

Mobile Broadband Performance

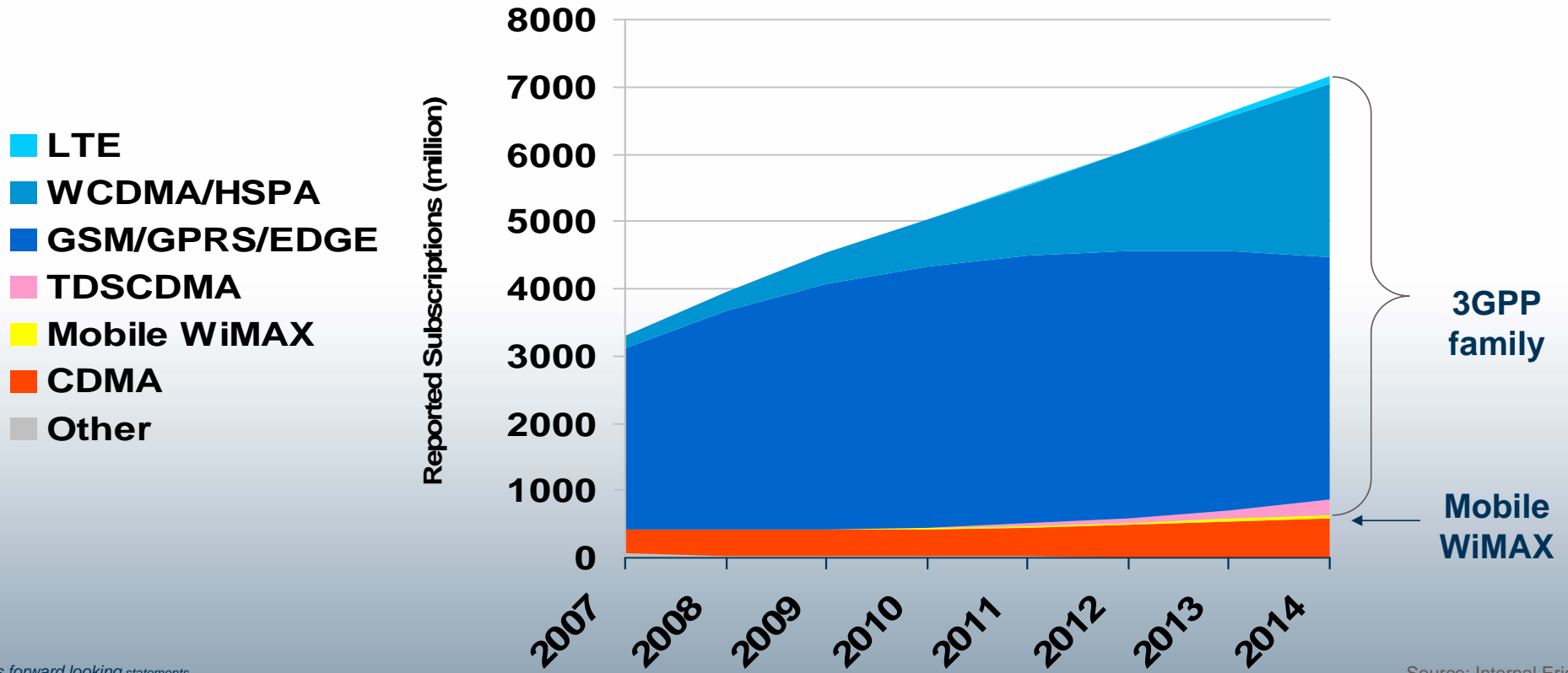


Spectrum and Global harmonization

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Downlink						Duplex gap	Uplink						
30 MHz (6 blocks of 5 MHz)						11 MHz	30 MHz (6 blocks of 5 MHz)						

Mobile Broadband Performance

3GPP family success gives economies of scale



This slide contains forward looking statements

Source: Internal Ericsson

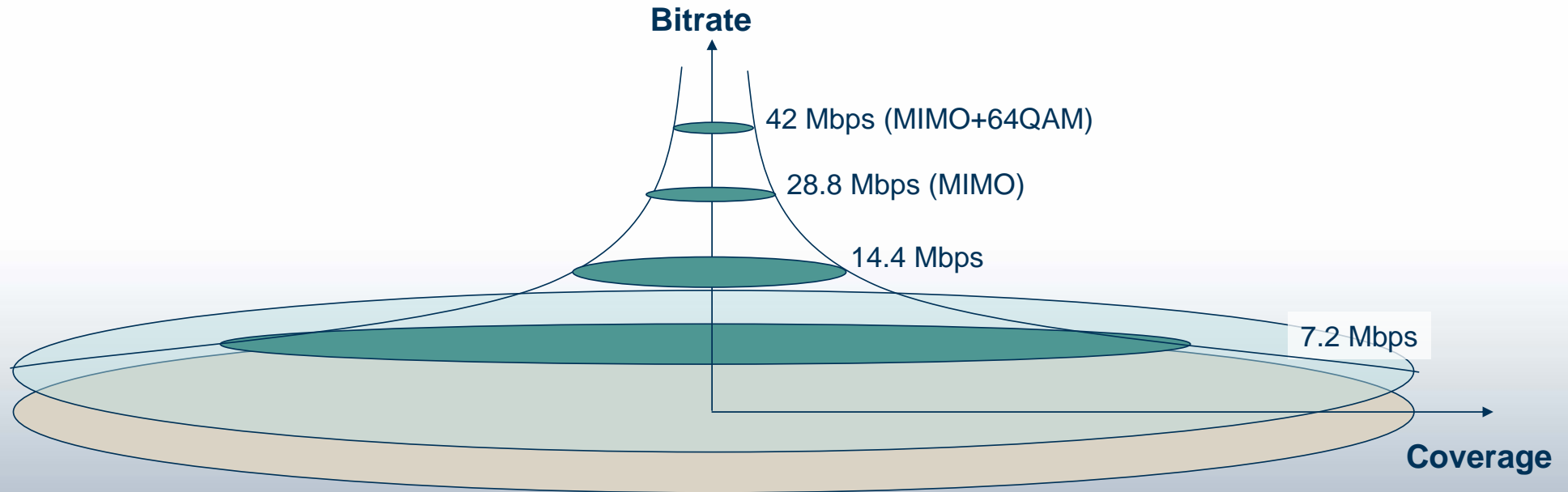
Harmonized spectrum is a key mass market enabler

Peak-rate and user rate

- HSPA provides peak rates of 7.2, 14.4, 21, 28, 42 Mbps and beyond
- LTE provides peak rates of 100, 150, 300 Mbps and beyond

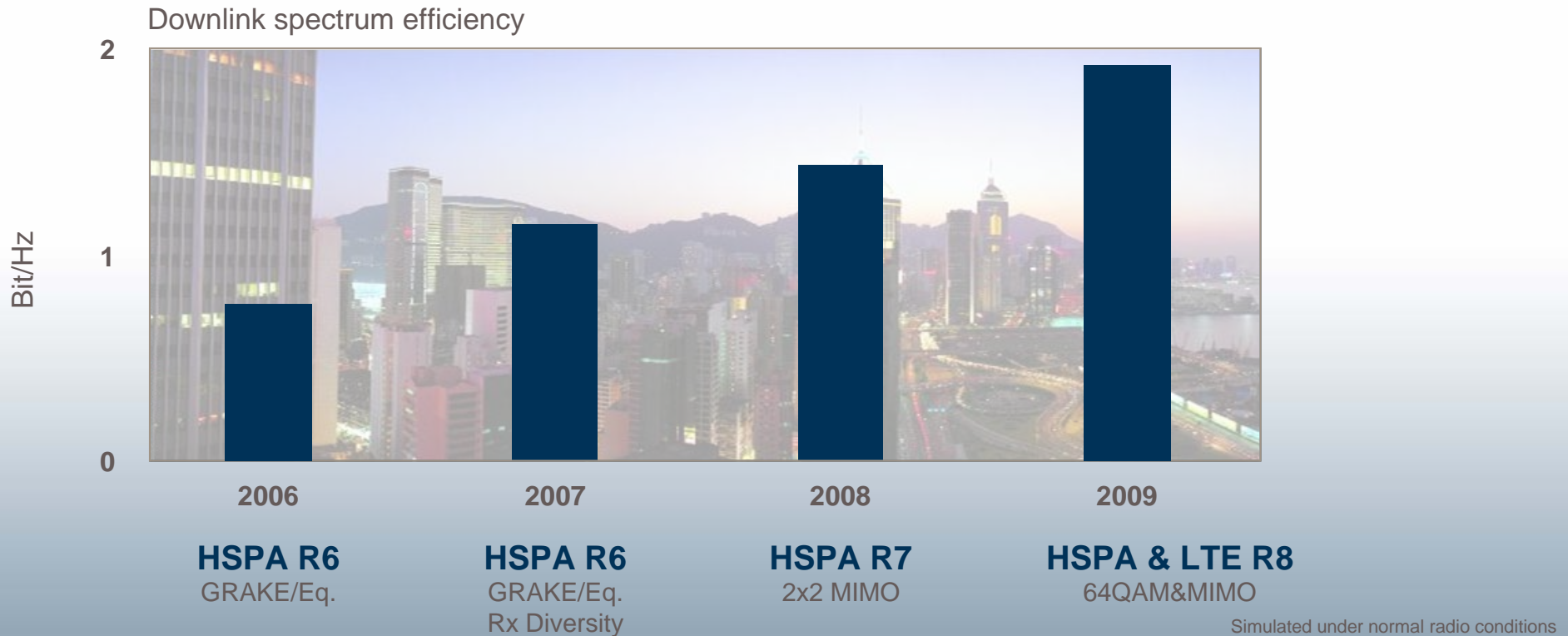
- Average HSPA user rates typically 2-4 Mbps today
- User rates for LTE in 20 MHz spectrum typically 5x – 10x today's Mobile broadband

Relation between Peak Rate & Coverage



Capacity does not scale with peak rate

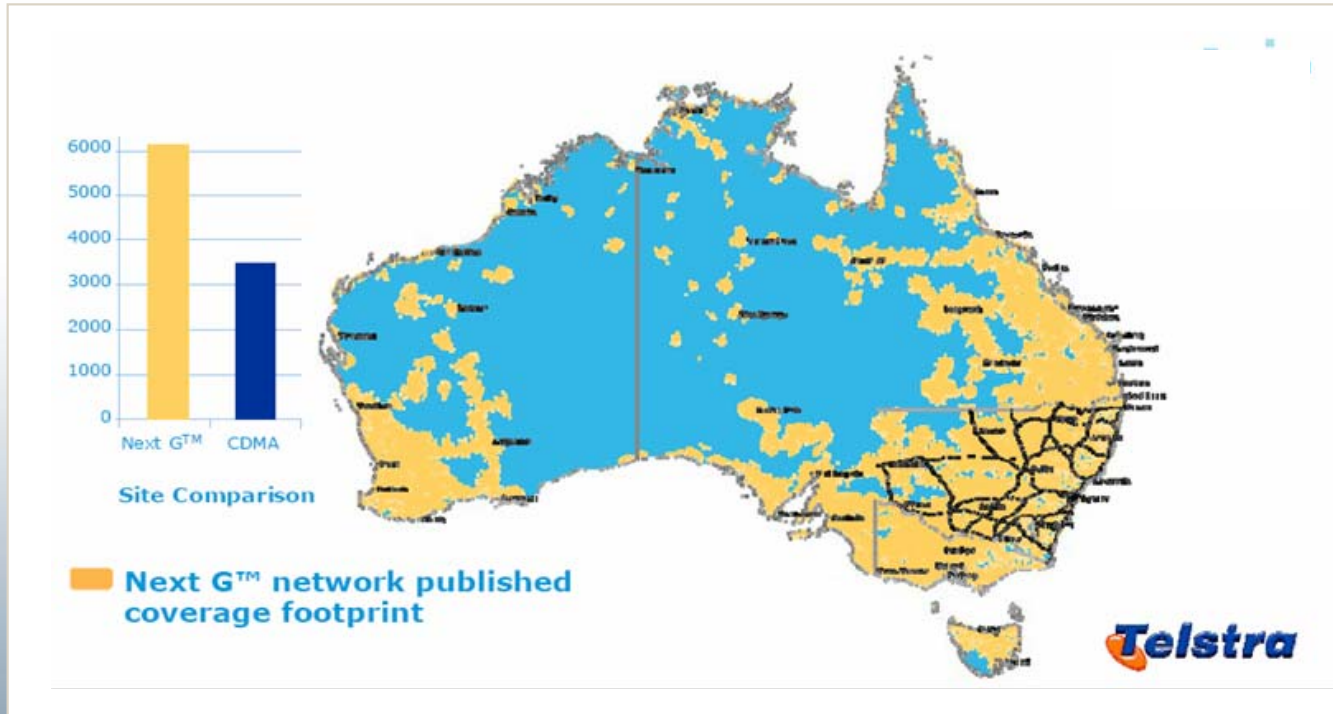
HSPA and LTE capacity evolution



Double the capacity with HSPA Evolution and LTE

98.9% population coverage

HSPA 14/1.4 Mbps nation wide, up to 200km cell range

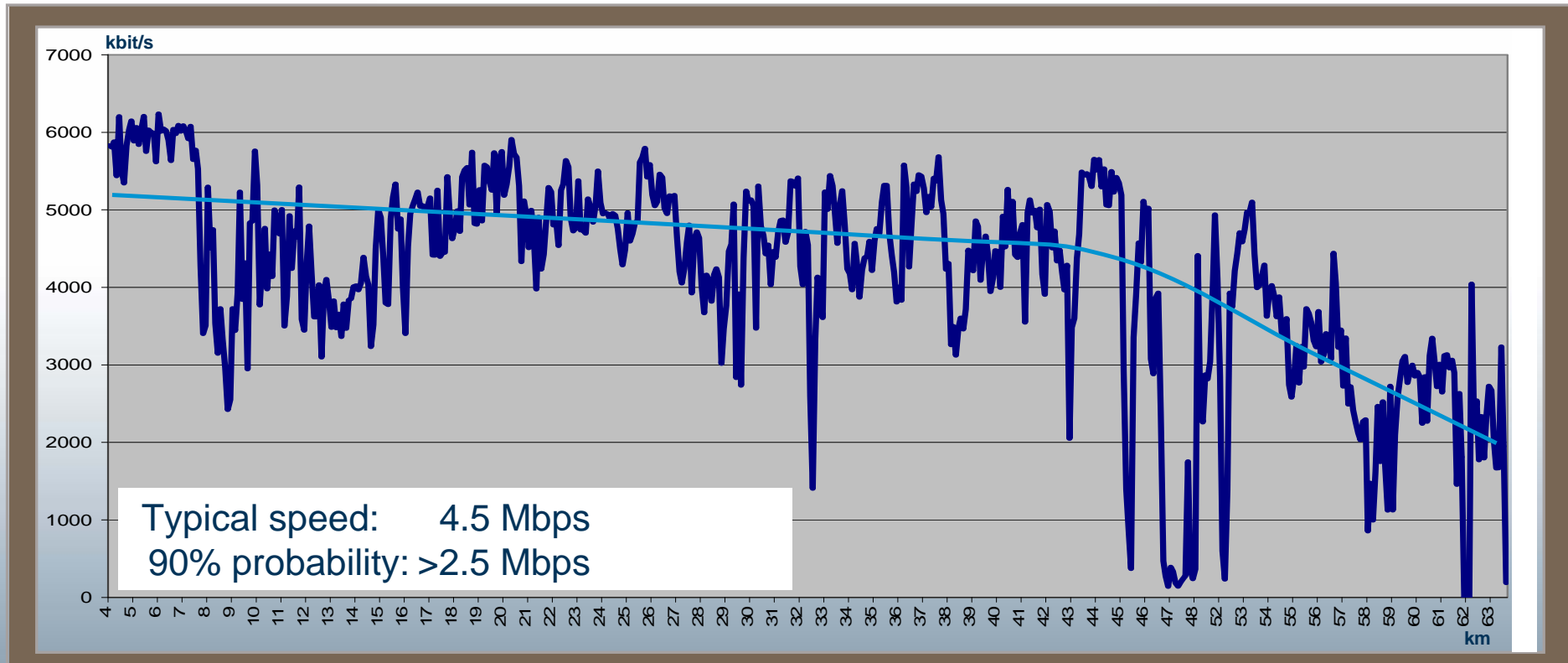


Telstra Investor Day, Nov. 1 '07

Strong uptake with superior coverage and speed

HSDPA 7.2 Mbps & Extended Range

Drive testing in Australia, December 2006

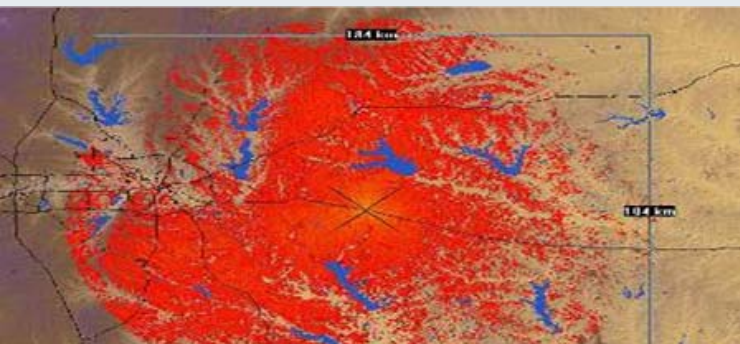


Higher Speed – Longer Range

HSPA Extended range

2.1 MHz examples

- Coverage expansion
 - Fixed Wireless Broadband
 - Roaming fee reductions
 - Site Reduction
- Roaming revenues



3 Mbps @ 74 km, NLOS
14 dBi terminal panel antenna

96m

3 Italia

51282 LENOLA LAZIO 50654 CAMPO...
50645 MONTE SAN BIAZIO LAZIO 51130 SPIGN...
LAZIO 50401 FONDI LAZIO
50550 ITRI LAZIO 50408...
50787 SPERLONGA LAZIO 50406 FO...
50044 SAN FELICE CIRCEO LAZIO 50422 GAETA LAZIO
61943 MONDRA...

-105 dBm at 72 km

2007 Europa Technologies
Image © 2007 TerraMetrics

Streaming 100%

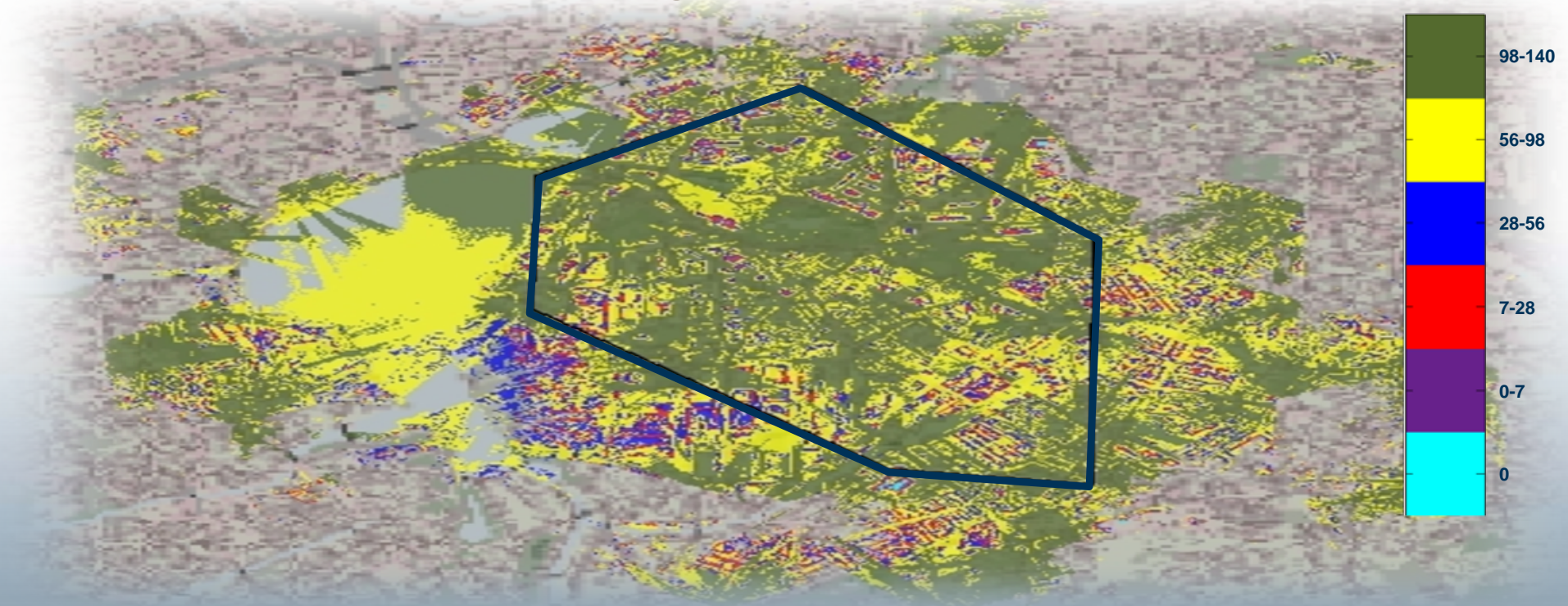
1.1 Mbps HSDPA @ 80 Km
Multiple Voice & Video Calls

A composite image showing a 3 Italia logo, a satellite map of the Lazio region in Italy with various location markers, a signal strength measurement of -105 dBm at 72 km, and a 3D topographic map showing signal coverage over a mountainous area. A yellow line connects the antenna tower in the top right to the signal strength measurement on the 3D map. A small window titled 'Color' is visible on the 3D map.

28 references on 2100 MHz

LTE Simulation – Urban Network

End-user perceived bit-rate with typical best-effort data traffic pattern, 2.6 GHz band, 20 MHz, on a 900 MHz site grid



5-10X user data rate compared to current HSPA very realistic

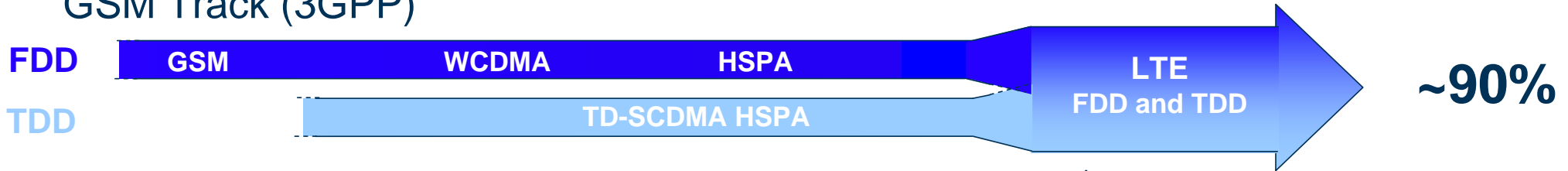
Spectrum strategy for 2G/3G/LTE

Common LTE Evolution

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

2014

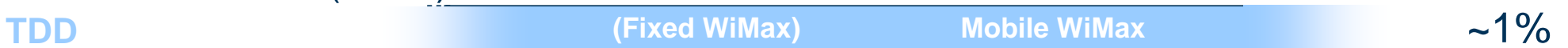
GSM Track (3GPP)



CDMA Track (3GPP2)



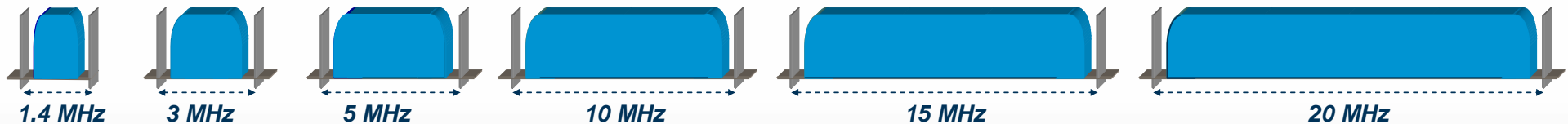
WiMax Track (IEEE)



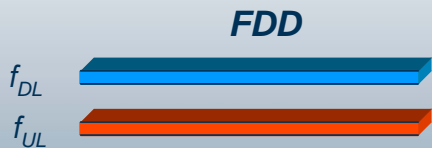
LTE the Global standard for Next Generation (4G)

Spectrum Flexibility

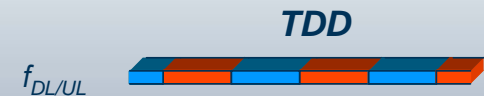
LTE provides spectrum flexibility for operation in differently-sized spectrum



LTE supports paired and unpaired spectrum on the same HW platform



Highest data rates for given bandwidth and peak power



Unpaired spectrum


Maximum commonality between FDD and TDD

3GPP Bands – Likely usage

Frequency Division Duplex - FDD		
Band	Technology	Frequencies (MHz)
1	HSPA	1920 -1980/2110 -2170
2	HSPA	1850 -1910/1930 -1990
3	LTE	1710 -1785/1805 -1880
4	(HSPA) LTE	1710 -1755/2110 -2155
5	HSPA	824 -849/869 -894
6	HSPA (Japan)	830 -840/875 -885
7	LTE	2500 -2570/2620 -2690
8	HSPA later some countries LTE	880 -915/925 -960
9	HSPA (Japan)	1750 -1785/1845 -1880
10	(HSPA) LTE	1710 -1770/2110 -2170
11	HSPA (Japan)	1428 -1453/1476 -1501
12, 13, 14, 17	LTE	698 -716/728 -746 777 -787/746 -756 788 -798/758 -768 704 -716/734 -746

Time Division Duplex - TDD		
Band	Technology	Frequencies (MHz)
33, 34	later	1900 -1920 2010 -2025
35, 36	-	1850 -1910 1930 -1990
37	-	(1915)1910 -1930
38	LTE TDD	2570 -2620
39	LTE TDD	1880 -1920
40	LTE TDD	2300 -2400

Additional (FDD&TDD)		
	LTE FDD	790 - 862
	LTE FDD & TDD	3400 -3600
	LTE FDD & TDD	3600 -3800

 = Under study in 3GPP

There will be “HSPA-bands” and “LTE-bands”

ECC Decision of [June] 2009 on harmonised conditions for Mobile/Fixed Communications Networks operating in the band 790-862 MHz

“Preferred Harmonised frequency arrangement” (realistic)

791-796	796- 801	801-806	806- 811	811-816	816- 821	821 - 832	832- 837	837- 842	842- 847	847- 852	852- 857	857- 862
Downlink						Duplex gap	Uplink					
30 MHz (6 blocks of 5 MHz)						11 MHz	30 MHz (6 blocks of 5 MHz)					

Note 1: Guardband of 1 MHz between Broadcasting below 790 and mobile DL starting at 791 MHz

Note 2: Sweden, Germany, France; have announced auctions of the band to happen late 2009 or during 2010

“Guidance for administrations not implementing the preferred channelling arrangements” (specific national circumstances)

790-797	797-802	802-807	807-812	812-817	817-822	822-827	827-832	832-837	837-842	842-847	847-852	852-857	857-862
Guard band	Unpaired												
7 MHz	65 MHz (13 blocks of 5 MHz)												

PT1 agreement April 29 ; ECC Decision June 2009 ; EC Recommendation end 2009

Summary 1

- **Broadband everywhere and anytime central to closing digital divide**
 - Broadband benefits society and economy enhancing efficiency, productivity, sustainability as well as social and personal life
- **A seamless user experience on any device, any service, anywhere**
 - Moving towards a converged broadband enabled world
- **Actions needed to stimulate deployments**
 - Additional harmonized spectrum for broadband, everywhere and for all
 - Holistic policies/regulations, less and fair regulation, more certainties

Summary 2

Mobile Broadband Performance

- Mass market broadband with HSPA
- LTE the global choice for next generation (4G) – speeds 5x-10x that of HSPA today

Spectrum and Global Harmonization

- Globally harmonized IMT spectrum essential
- FDD always better than TDD

Harmonized spectrum and mainstream HSPA and LTE technologies essential

ERICSSON 

TAKING YOU FORWARD