June 2011

Mobile Broadband – today and tomorrow

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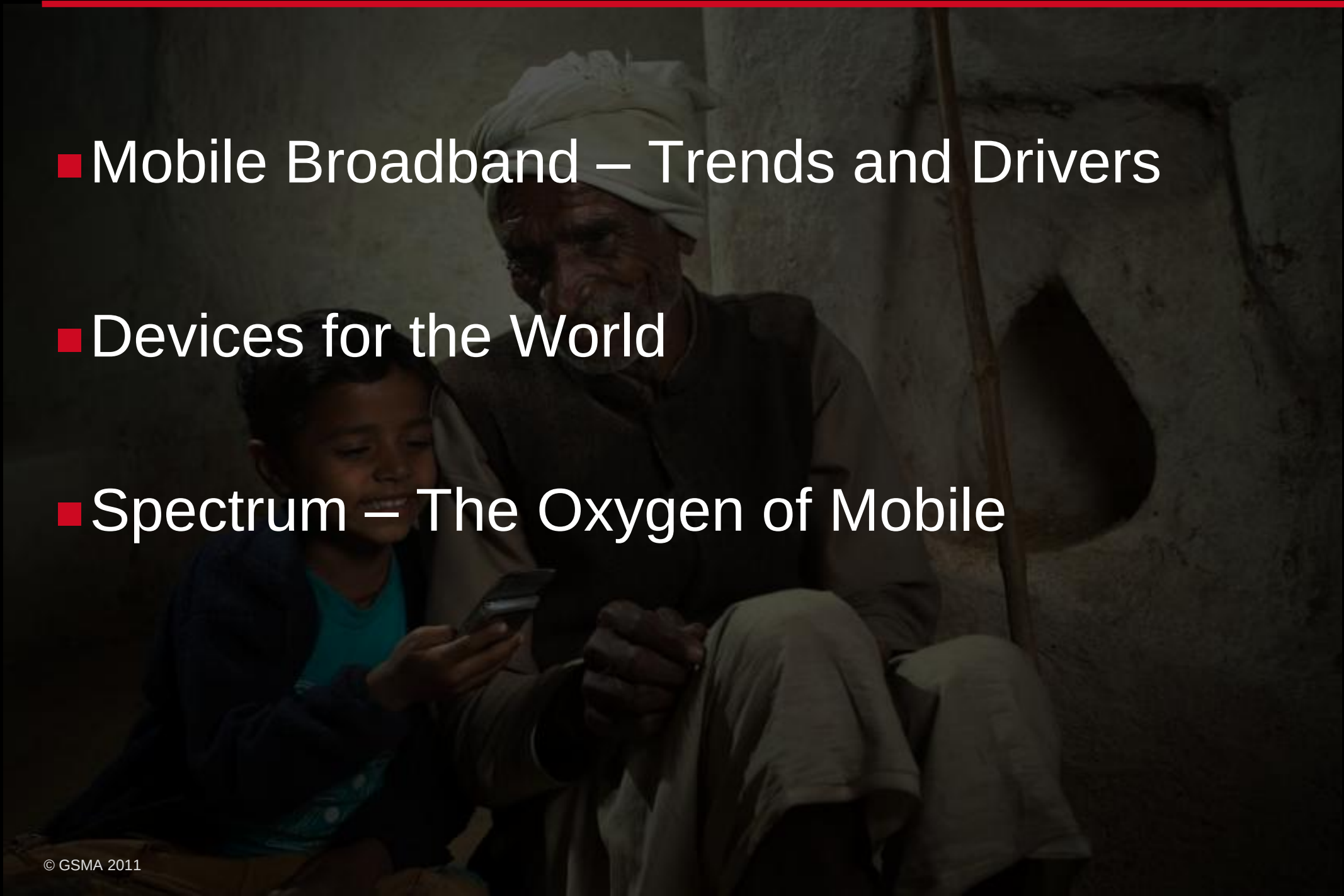
GSMA

The GSM Association

Today's Agenda

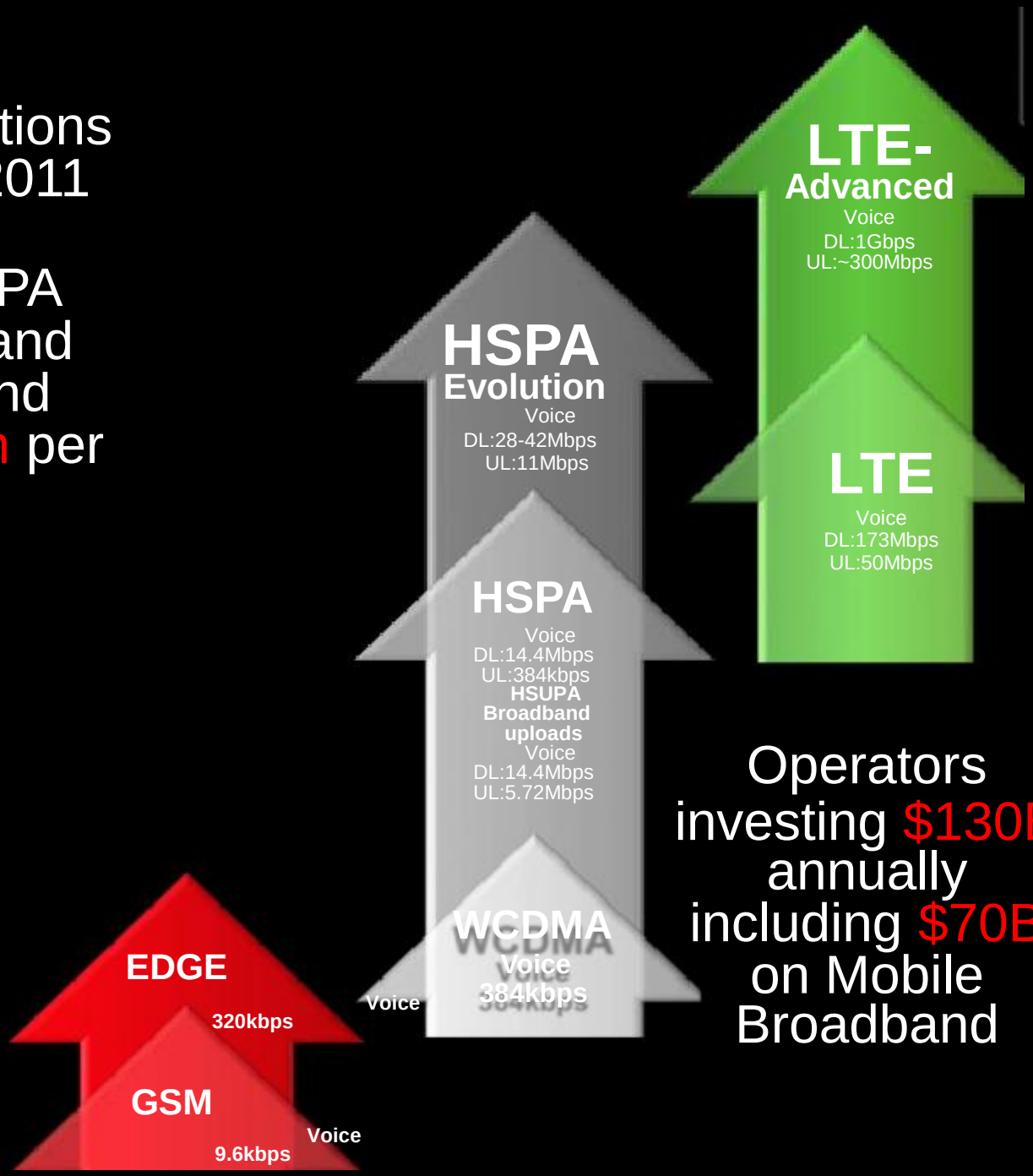


- Mobile Broadband – Trends and Drivers
- Devices for the World
- Spectrum – The Oxygen of Mobile

The Power of Networks

6 billion connections by the end of 2011

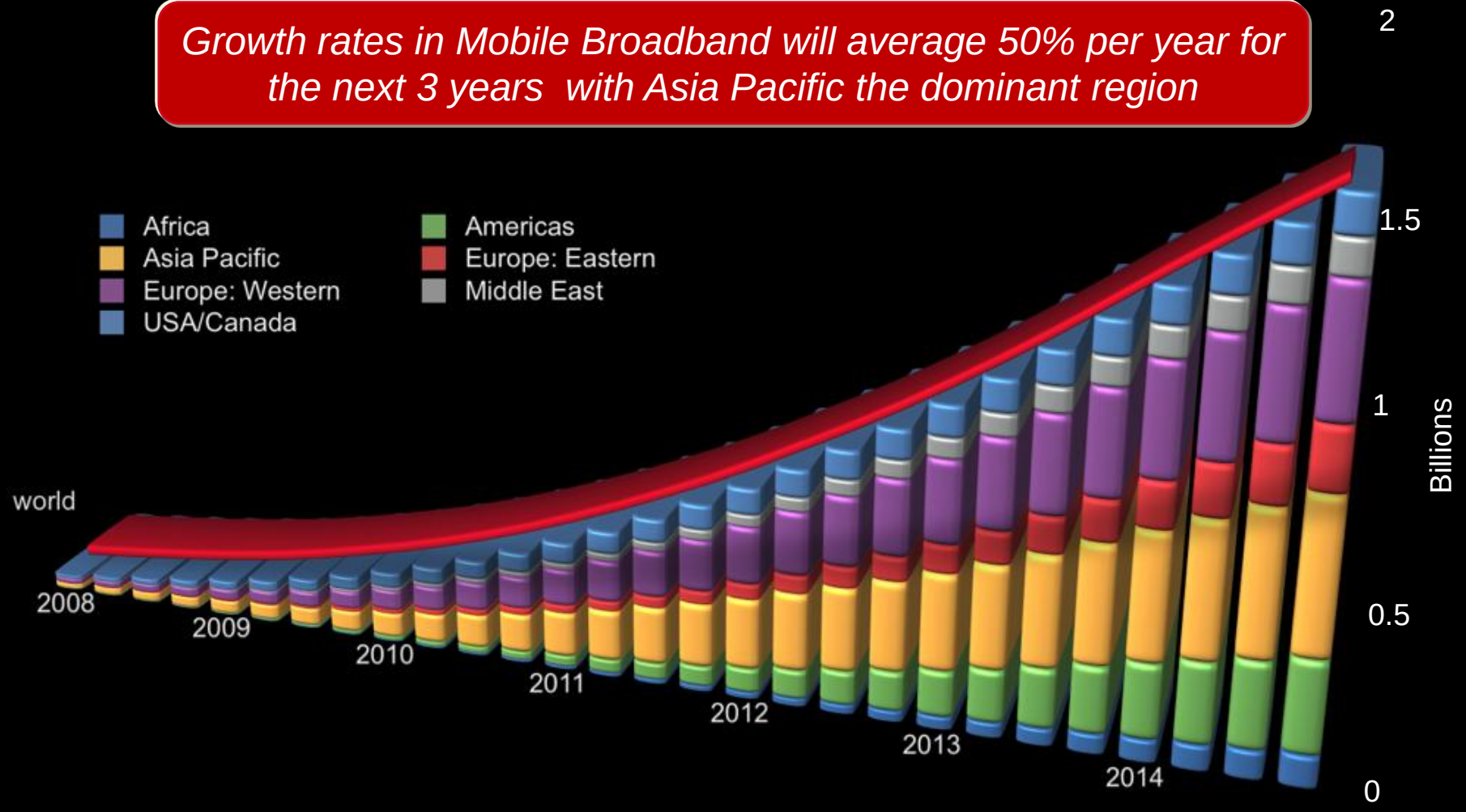
500 million HSPA Mobile Broadband connections and adding 19 million per month



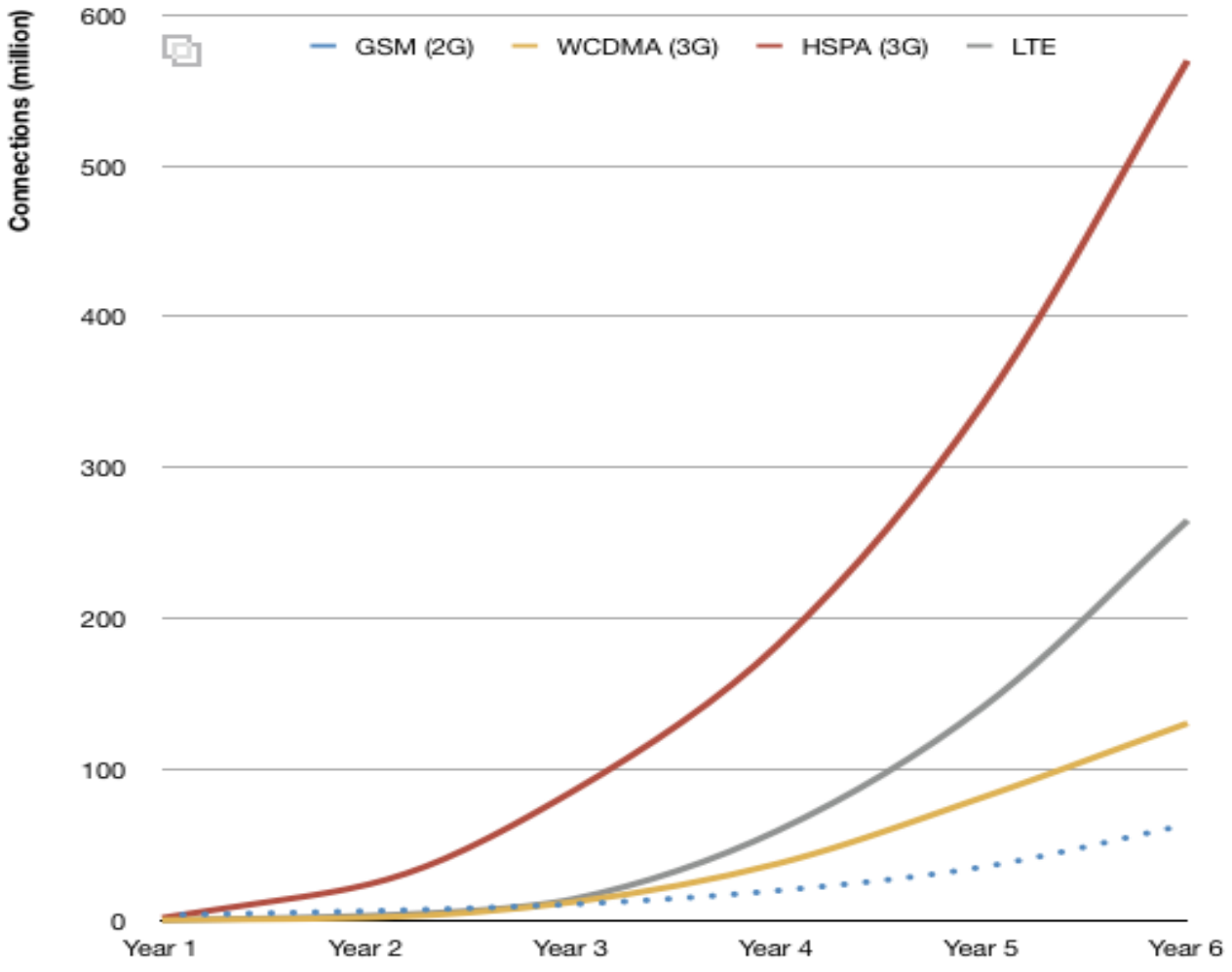
Operators investing $130B annually including $70B on Mobile Broadband

Mobile Broadband Take-up

Growth rates in Mobile Broadband will average 50% per year for the next 3 years with Asia Pacific the dominant region



The Phenomenal Pace of HSPA ….



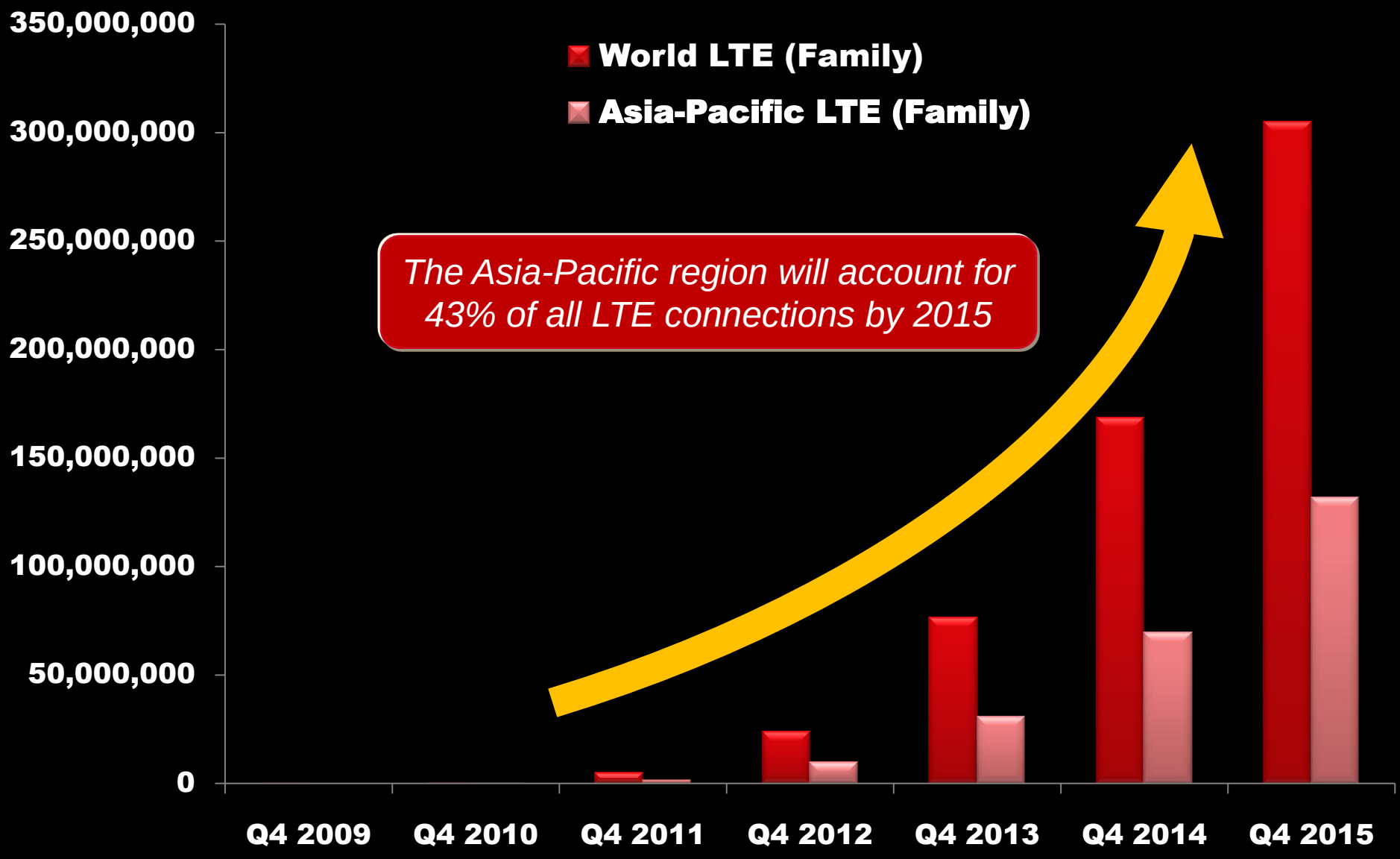
Adoption, Mobile Broadband* technologies 1–6 years after launch
Source: Wireless Intelligence

** All devices, including handsets; GSM adoption for comparison only*

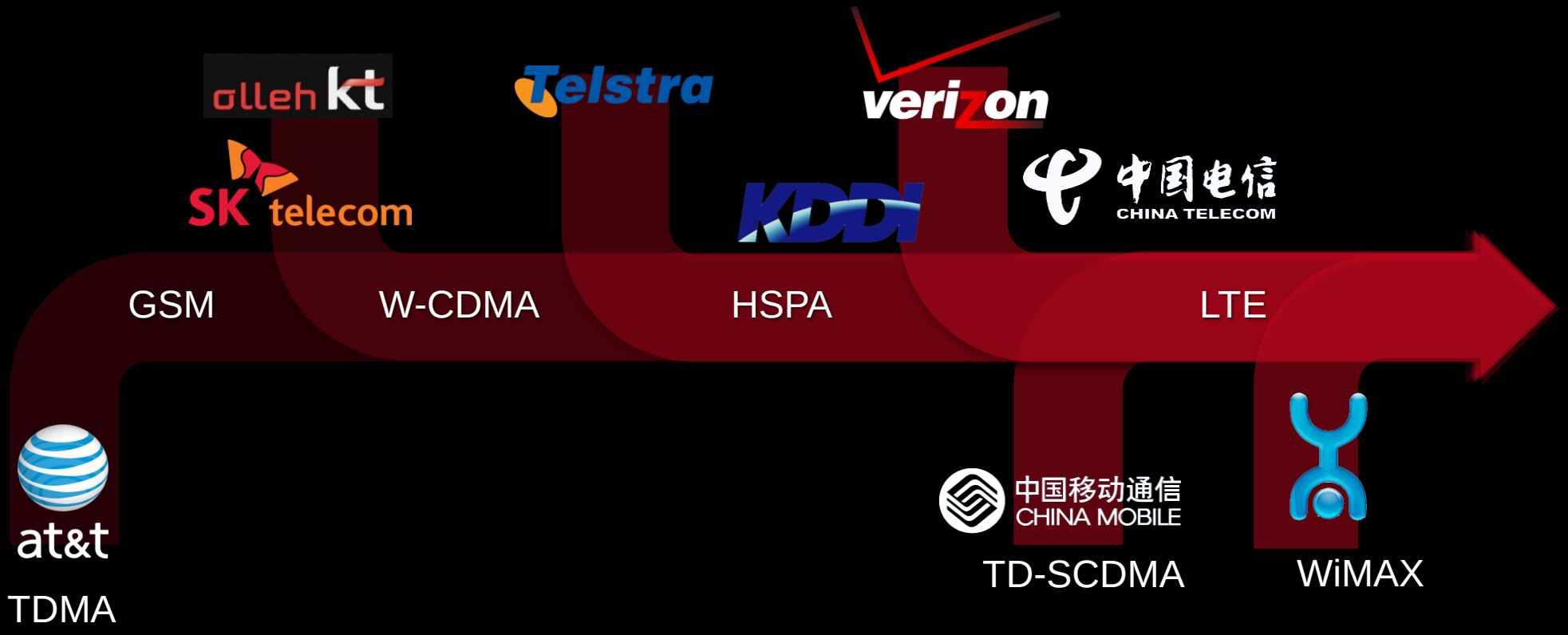
WCDMA HSPA adoption in its first six years is ten times greater than the take up of GSM mobile phones

The industry will reach one billion HSPA connections by the end of 2012

… Heralding the Promise of LTE



LTE: Growing Momentum



21 Commercial LTE networks as of today; 206 more in the works

Data Revenues: Steady Growth

Data ARPU / % of service revenue

- Mobistar: *Non-sms mobile data represents 8% of revenues*
- m1: *Mobile data as a % of service revs* ***increased to 17.8%***
- SoftBank: ***Data ARPU surpasses Voice ARPU***
- at&t: *Wireless* ***data ARPU increase from $17 to $21***
- T-Mobile: *Mobile data as a % of service revs* ***increased by 4% to 26%***
- SmarTone vodafone: *Data contributes* ***33% of service revenues***

Total data operator revenues

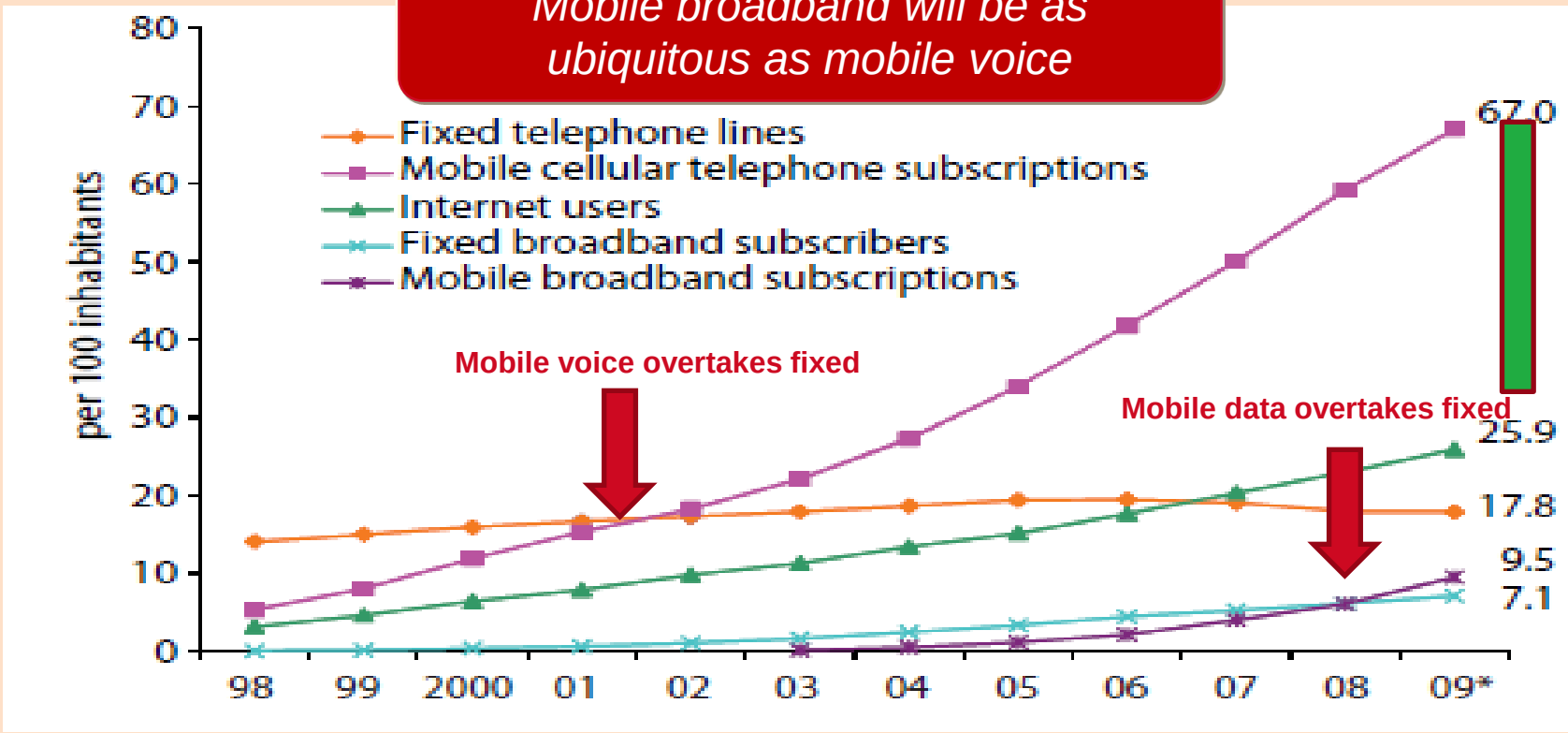
- vodafone: ***Data revenue growth of 31.1%*** *in Q1 10*
- vodacom: ***Data revenue growth of 32.8%*** *in 2010*
- orange: *Wireless* ***data revenue growth of 40%*** *in Q1 10*
- Telefónica: ***Data revenue growth of 43.6%*** *in Q1 10*
- TELECOM ITALIA: ***Mobile BB revenue growth of 19.6%*** *in 2009*
- PCCW 電訊盈科: *Wireless* ***data revenue growth of 34%*** *in Q1 10*

Source: Operator investor sites

The Opportunity: 5 billion+ MBB users

Chart 1.1: Global ICT developments, 1998-2009

Mobile broadband will be as ubiquitous as mobile voice



Note: * Estimates.
Source: ITU World Telecommunication/ICT Indicators database.

Source : http://www.itu.int/ITU-D/ict/publications/idi/2010/index.html

The Power of Devices

- It was forecast that shipments of smartphones would surpass that of PCs in 2012

This already happened in 4Q 2010

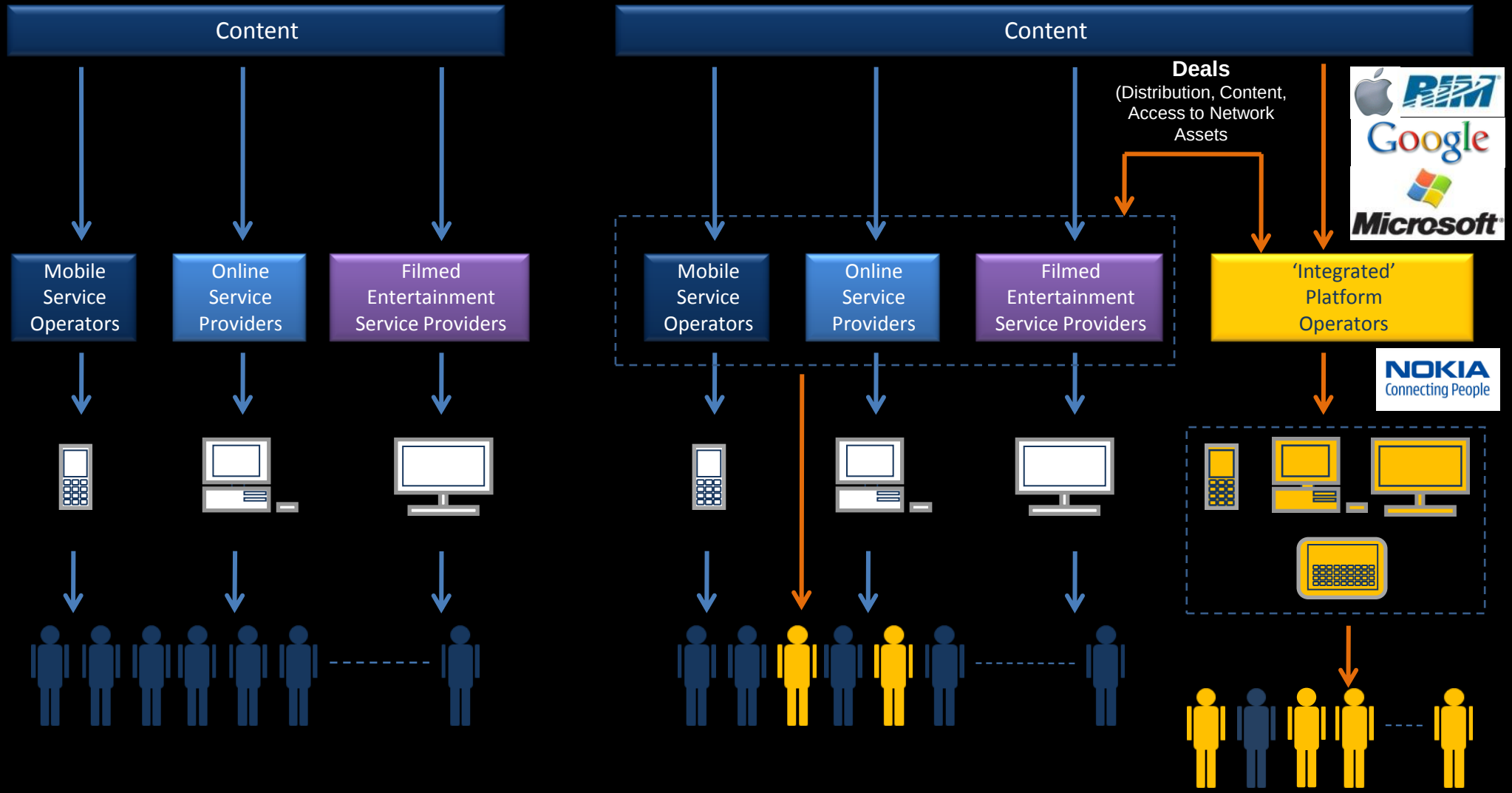
100.9 million

92.1 million

Source: Gartner, Inc.

Industry Support

New Landscape: Devices



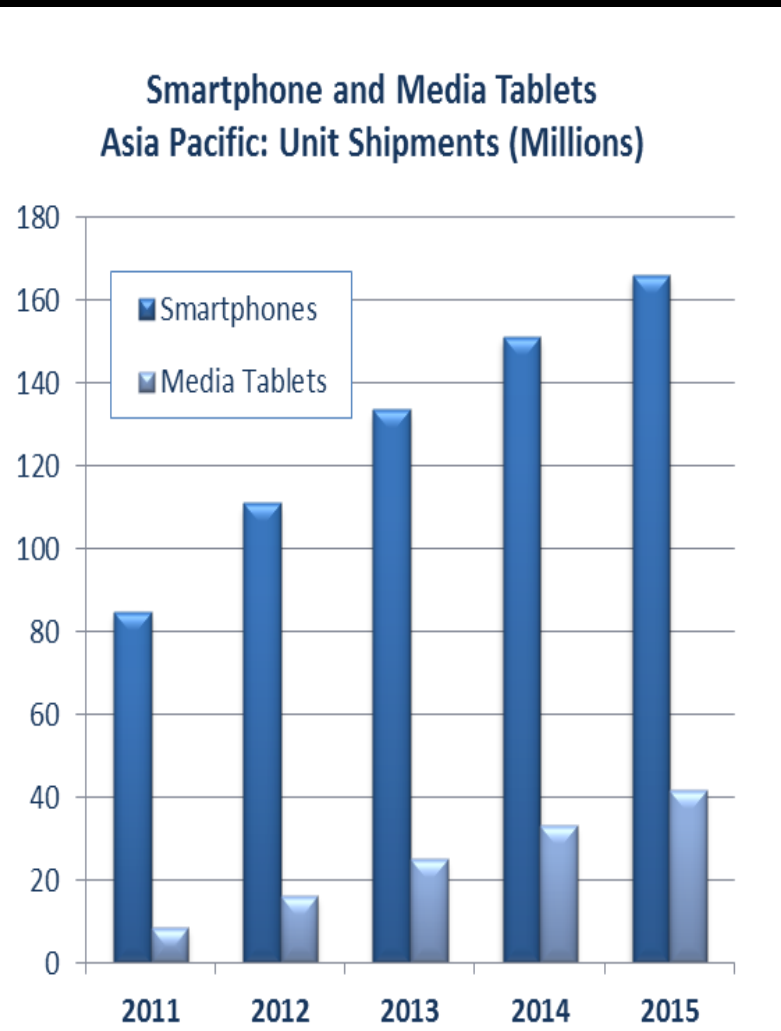
Key Integrated Platforms

RIM

android

NOKIA
Connecting People

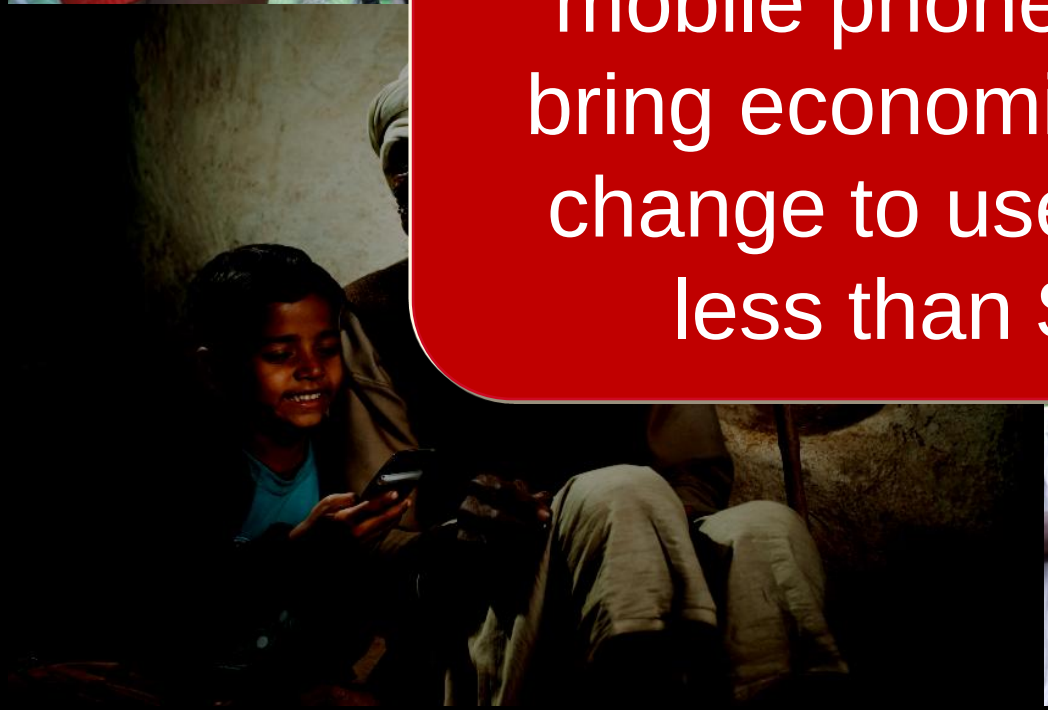
Windows phone



Combined revenues of Nokia (devices), Apple, Google and RIM represented 13% of India's GDP in 2010

Driving Economic and Social Change

Using the power of the mobile phone industry to bring economic and social change to users living on less than $2 a day



Leading Wide-Ranging Initiatives…

Mobile Money for the Unbanked

Giving 20m people access to financial services for the first time by 2012

Mobile Beyond Traditional Communications

Healthcare	Transportation	Utilities	Consumer Electronics	Government
				
				
				

The Embedded Mobile Future

Mobile data demand.....

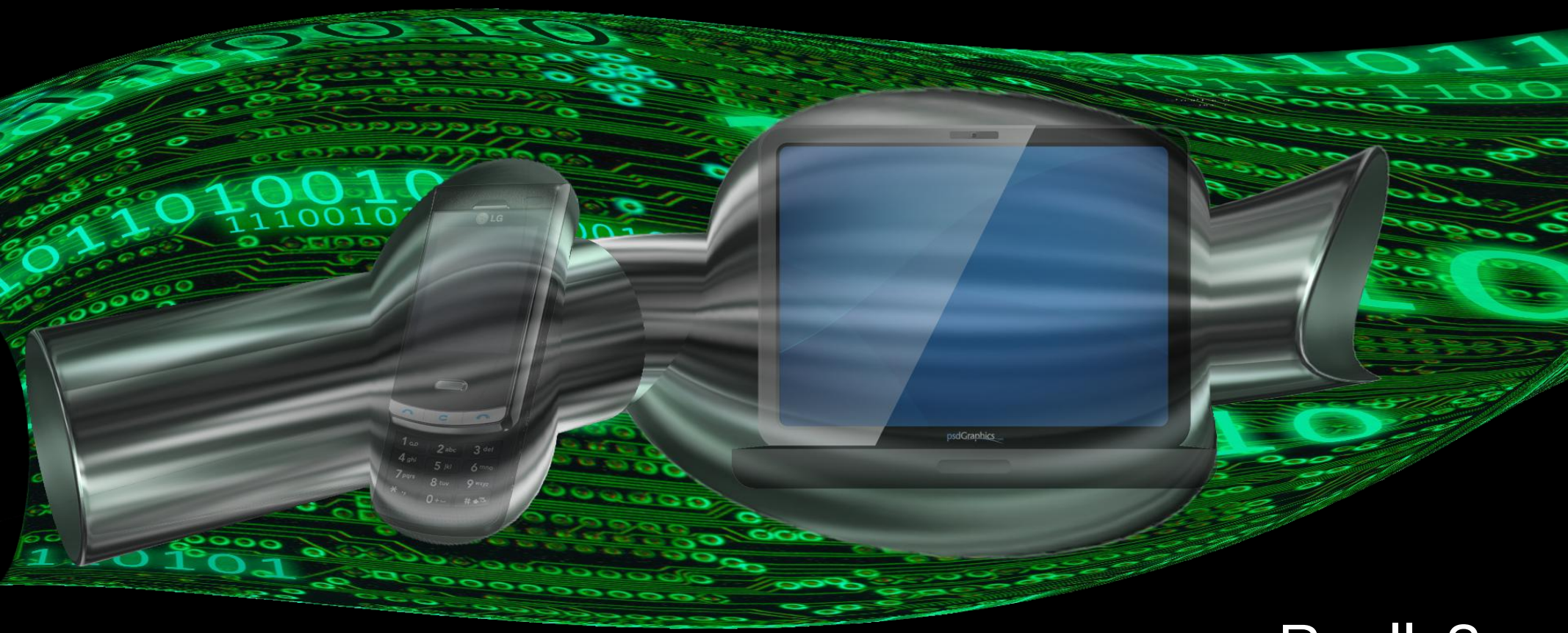
iPhone = Android

Smartphone 50x traffic of a feature phone

By 2015, networks will need to support over 700% more traffic than they do today

2008: The Credit Crunch...

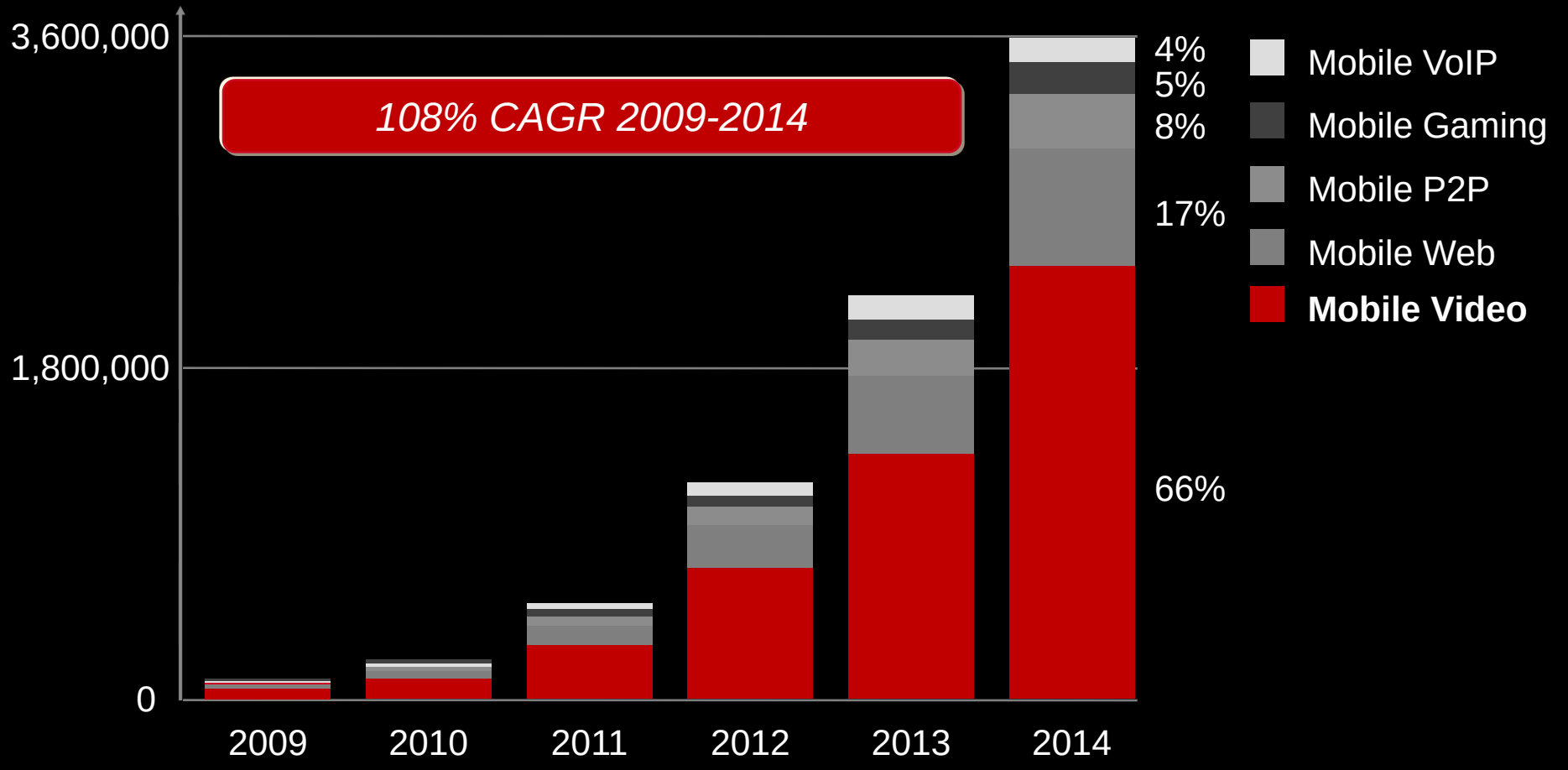
... 2012: The Capacity Crunch



... Really?

Traffic Growth Forecasts

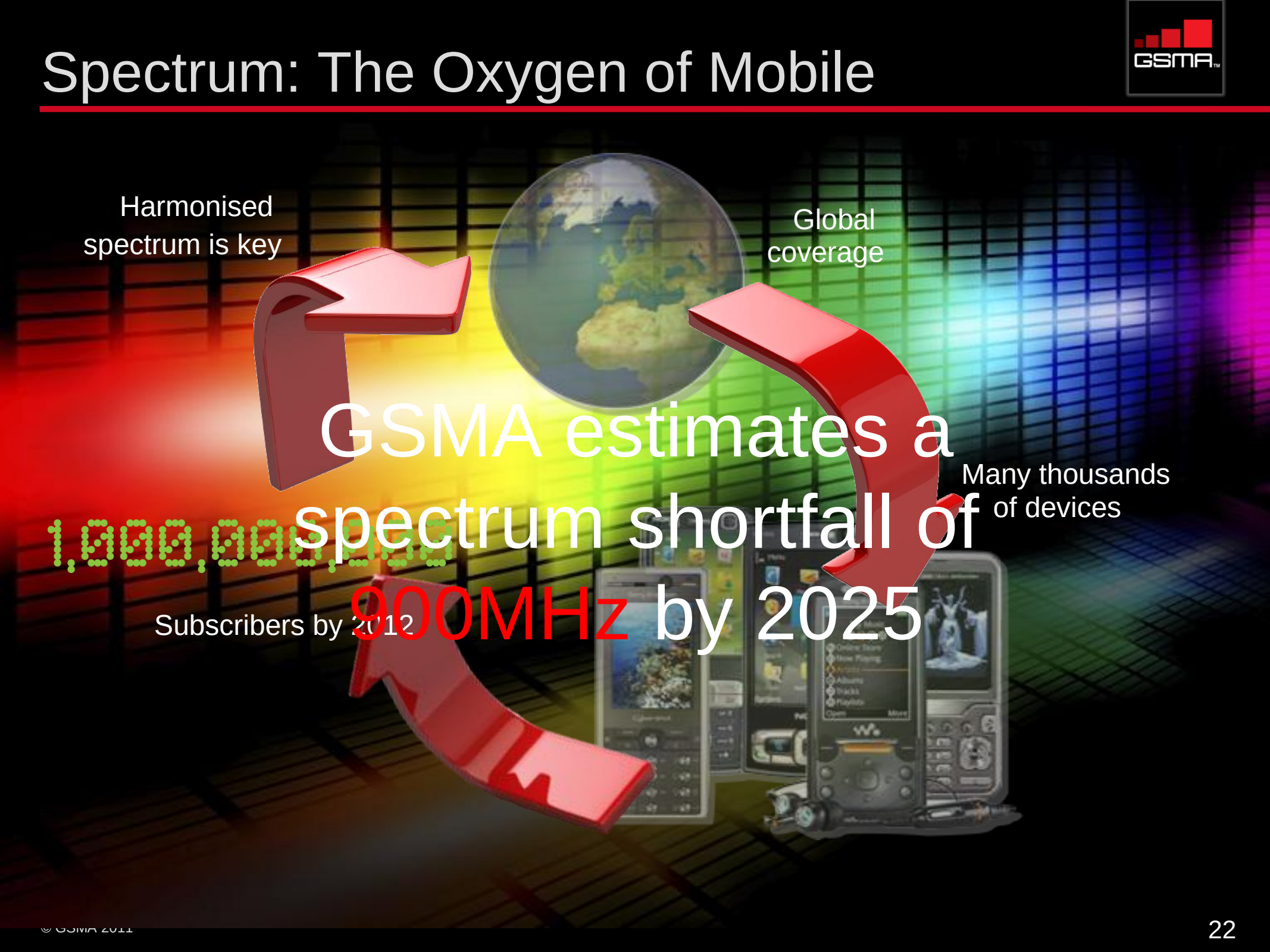
Mobile Traffic (TB per Month)



Source: Cisco VNI Global 2010

Source: Cisco VNI Mobile, 2010

Spectrum: The Oxygen of Mobile



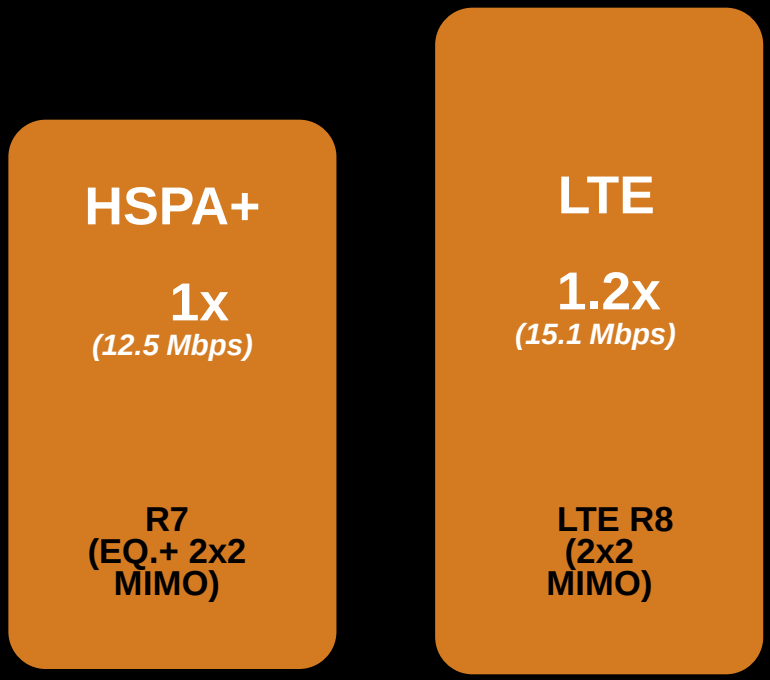
Life left in HSPA…

Similar HSPA+ and LTE Performance on top of a more developed ecosystem

Similar Spectral Efficiency

with same number of antennas and bandwidth

(Downlink sector capacity in 10 MHz FDD)[1]



Note: HSPA+ spectral efficiency would improve with multicarrier.

Similar Peak Data Rates

with same bandwidth and number of antennas

Bandwidth	HSPA+	LTE
5 MHZ	42 Mbps	37 Mbps
10 MHZ	84 Mbps	73 Mbps
20 MHZ	168 Mbps	150 Mbps

Note: Assuming 2x2MIMO. LTE supports 4x4MIMO but initial deployments will be 2x2 MIMO. LTE takes required overhead into account, 172 Mbps possible per standards

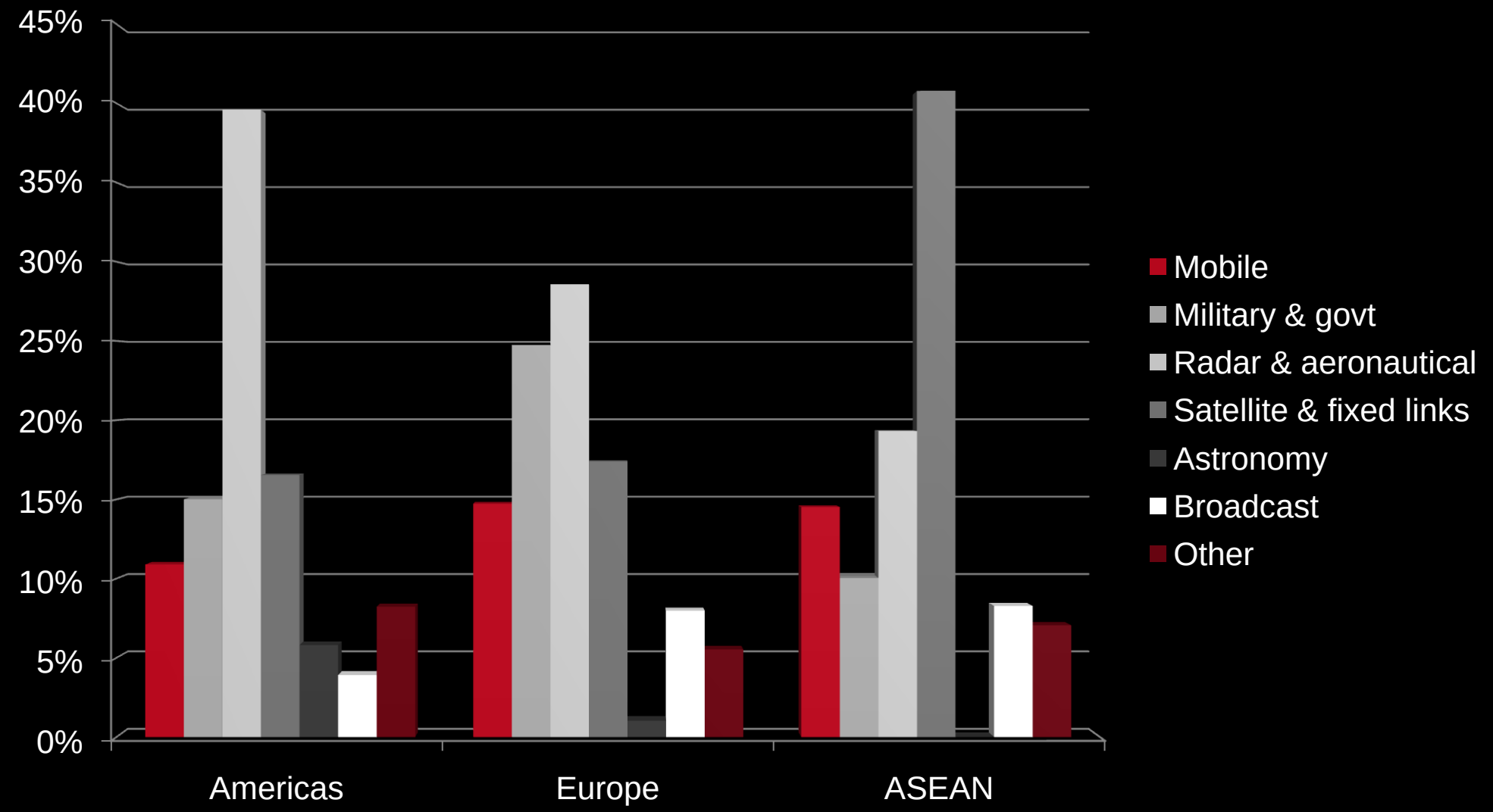
Similar RTT Latency

Transport NW key for low latency—can be same for LTE&HSPA+

	HSPA+	LTE
RT T3	28 ms + Transport network	22 ms +Transport network

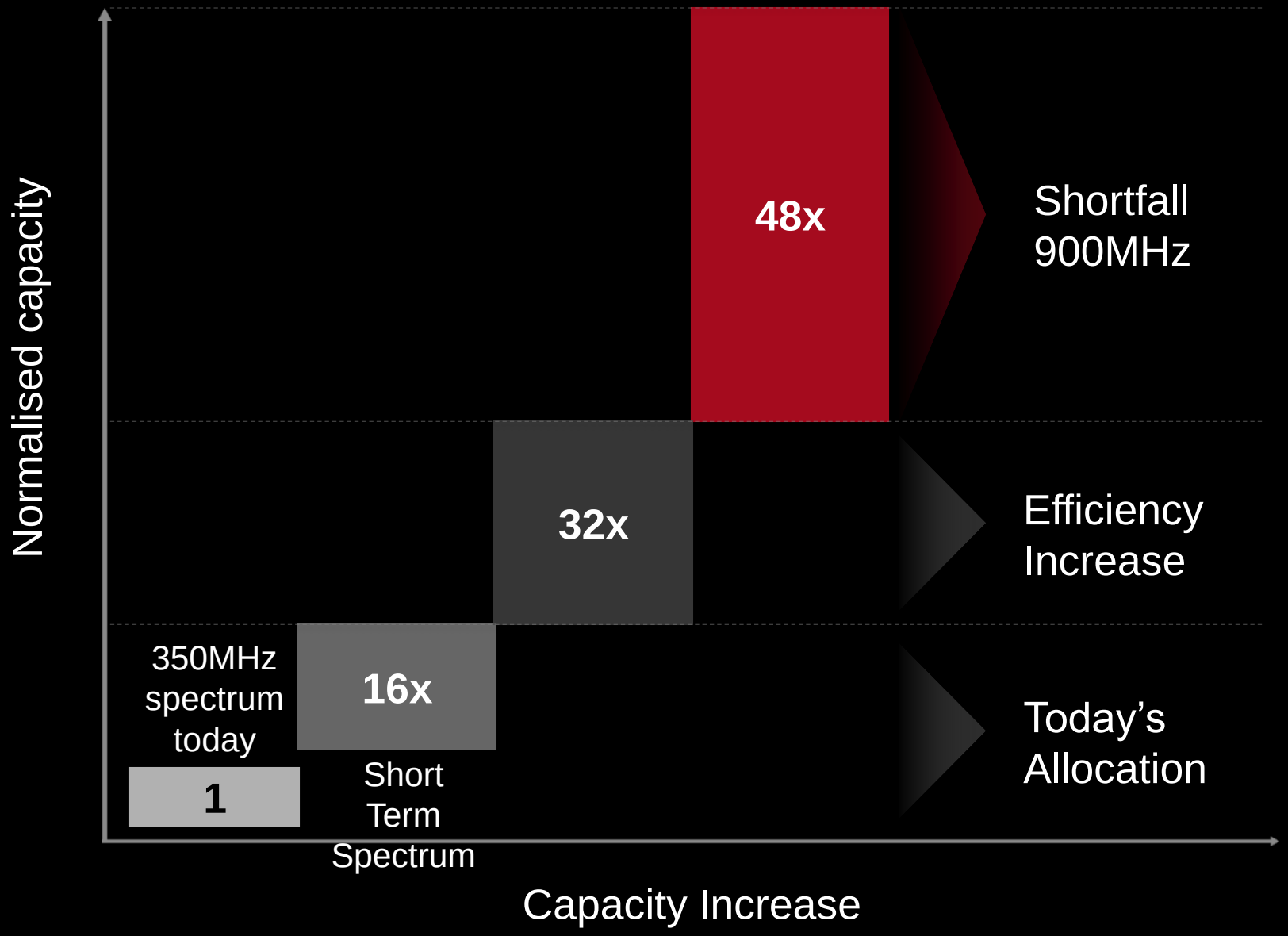
Moving incumbents: A Significant Challenge

Percentage Spectrum Allocations: 400MHz - 5GHz

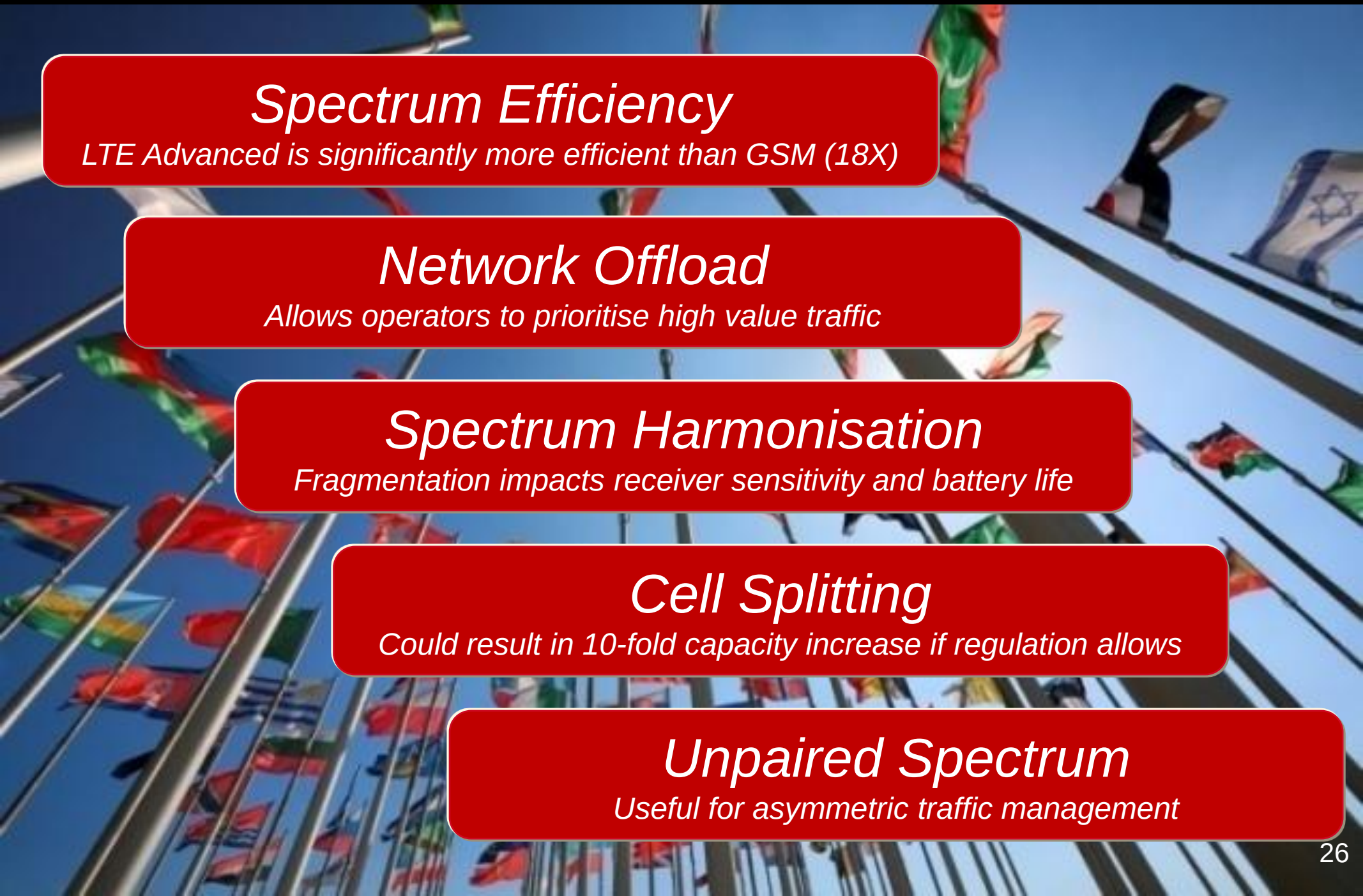


Meeting the capacity shortfall

Forecasted 2025 Capacity Need



Trends driving efficient utilisation



Spectrum Efficiency

LTE Advanced is significantly more efficient than GSM (18X)

Network Offload

Allows operators to prioritise high value traffic

Spectrum Harmonisation

Fragmentation impacts receiver sensitivity and battery life

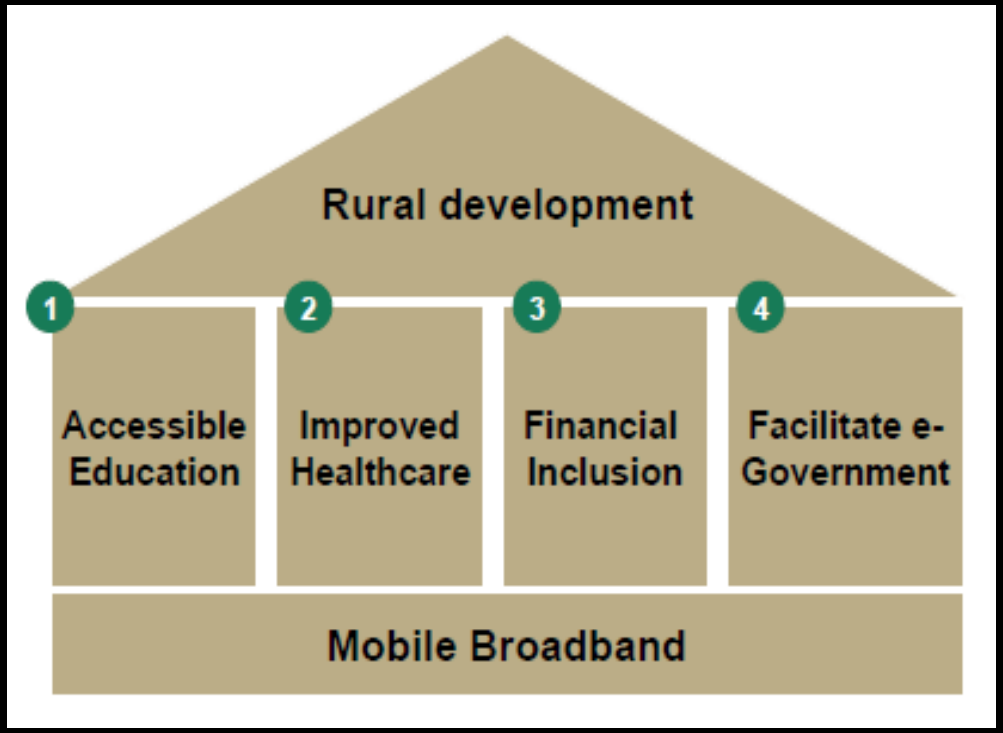
Cell Splitting

Could result in 10-fold capacity increase if regulation allows

Unpaired Spectrum

Useful for asymmetric traffic management

Spectrum for Social Development



Allocating 700 MHz band to mobile broadband in APAC

- Can increase rural Internet subscriptions by 14-23% by 2020
- Overall number of Internet subscriptions expected to increase 2-8%
- 1.1M new business activities could be created by 2020
- Could contribute additional US$ 103B to government revenues for 2014-2020

Thank you!

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