



ITU-D CAIRO 13 – 15 DECEMBER

WHERE IS THE GROWTH AND WHAT DO WE NEED TO DO ABOUT IT?

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UMTS
Forum



OUTLINE

- › Broadband is ‘tipping’
- › Delivering Mobile Broadband
- › Spectrum Challenge
- › Create spectrum
 - (and don’t break the laws of physics)
- › Conclusions



THE "DIGITAL NATIVES"

A NEW GENERATION IS EMERGING

**10,000 hours of
mobile phone use**

**MySpace/
YouTube**

**Different expectations
about work and play**

**250,000 emails,
IM, and SMS**

**Technologically
literate**

**5,000 hours of
video game playing**

**Constantly
connected**

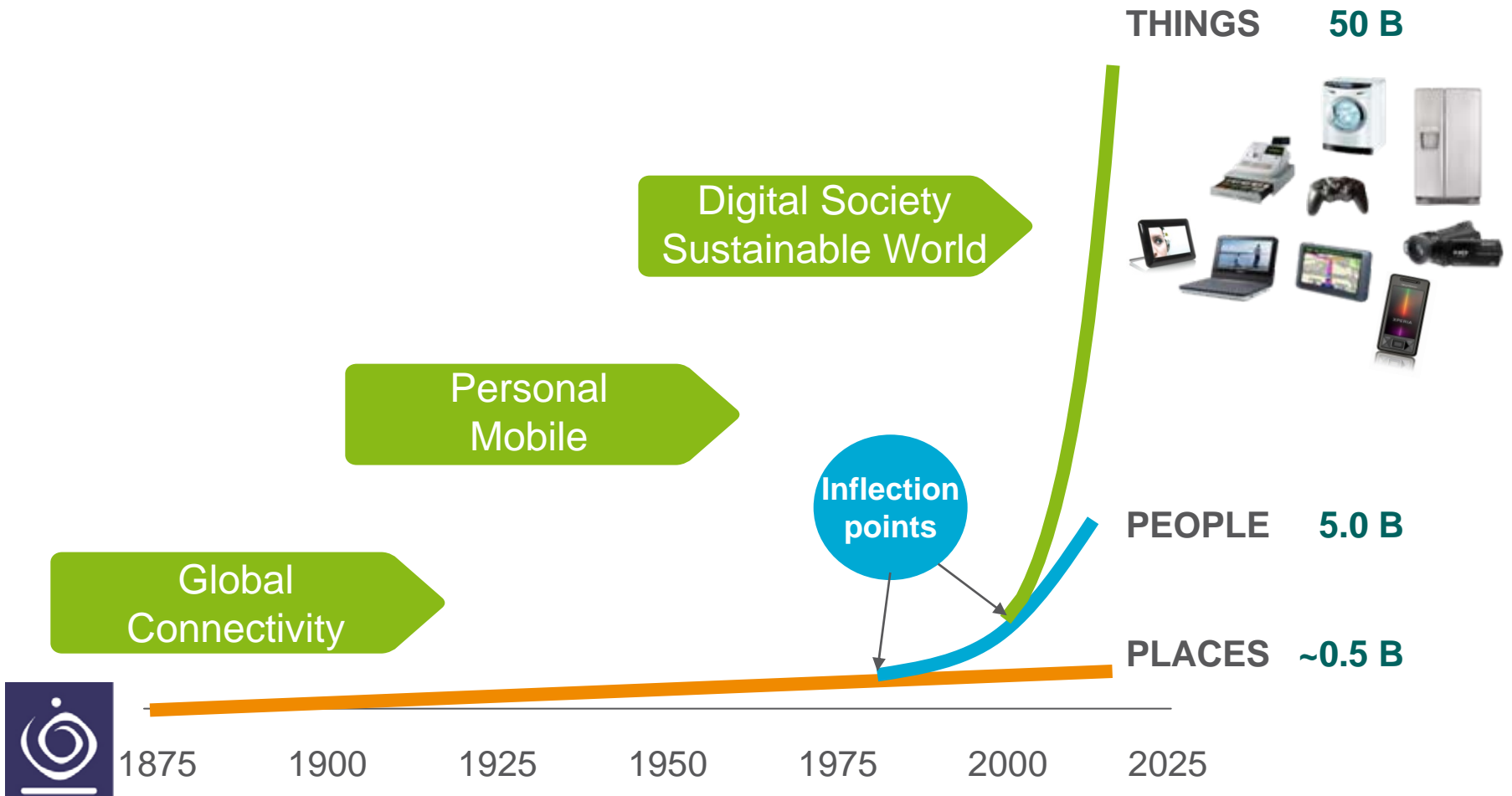


**3,500 hours of online
social networking**

**Sharing/
Blogging**

**Content creators
and multi-taskers**

INFLECTION POINTS DRIVING THE MOBILE BUSINESS

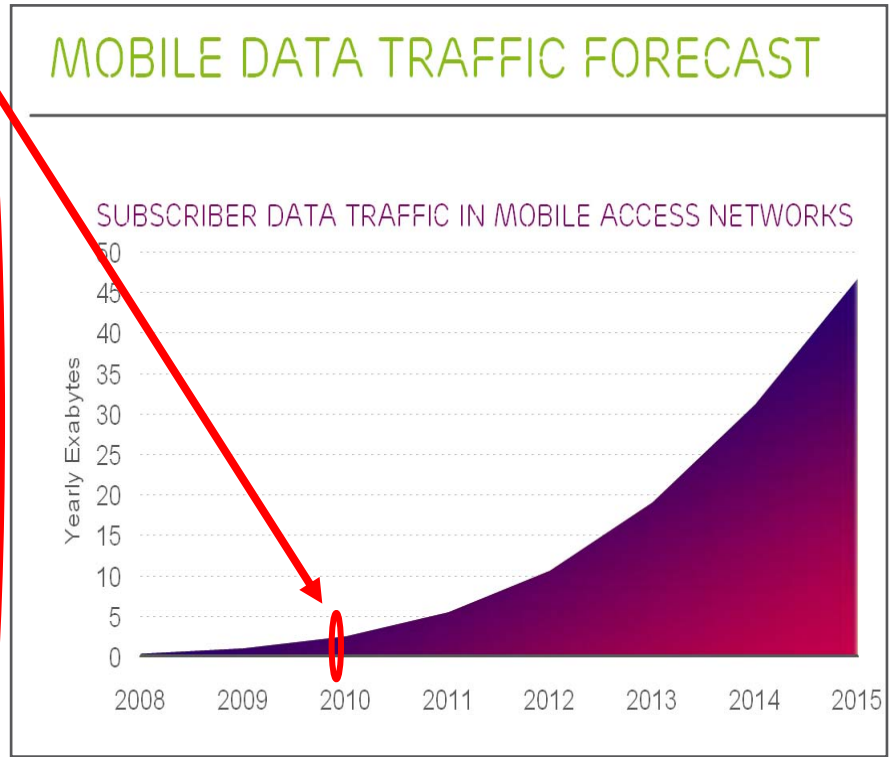
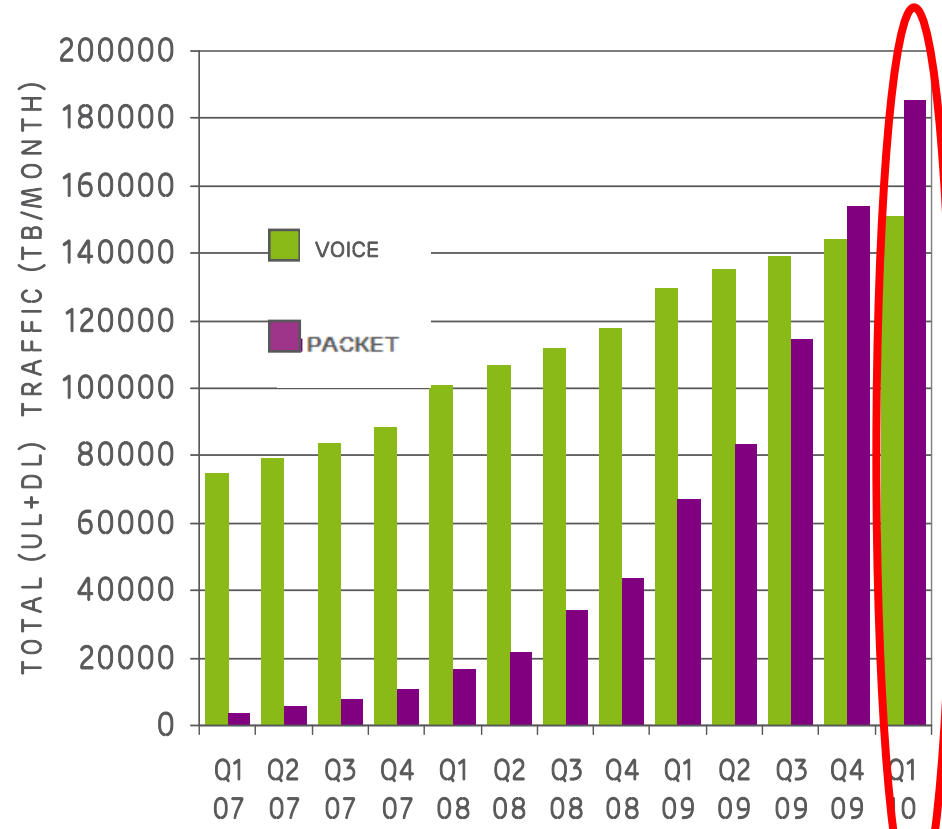


Source: Ericsson
U N I T S
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50 BILLION CONNECTIONS 2020



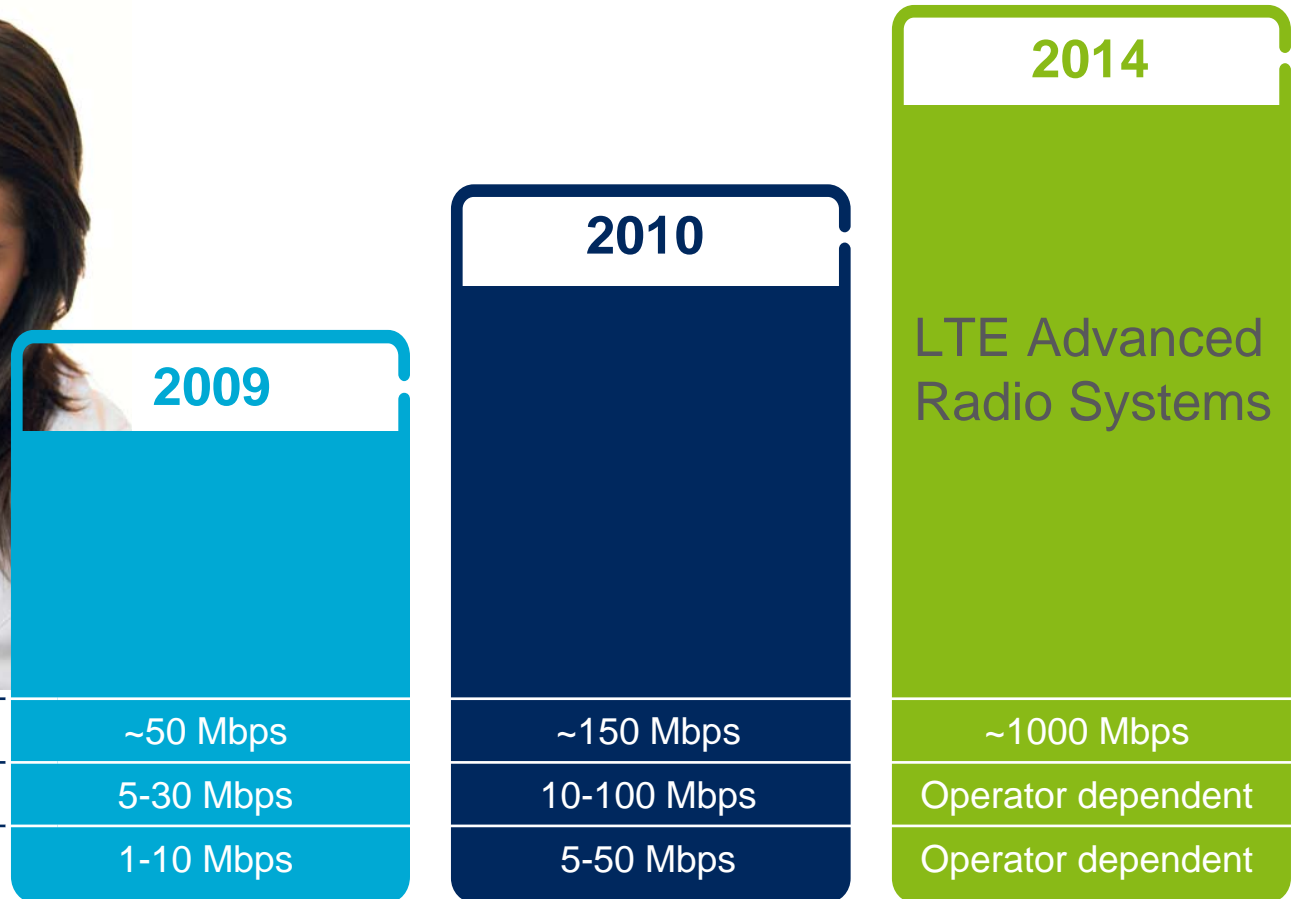
MOBILE DATA GROWTH.....



Source: Ericsson Measurements in Global Networks (DVB-H, Mobile WiMax, M2M and WiFi traffic not included)

This slide contains forward looking statements

MOBILE BROADBAND SPEED EVOLUTION

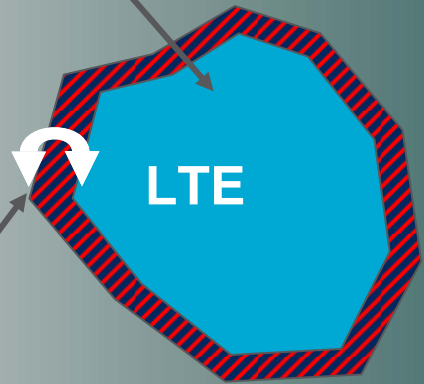
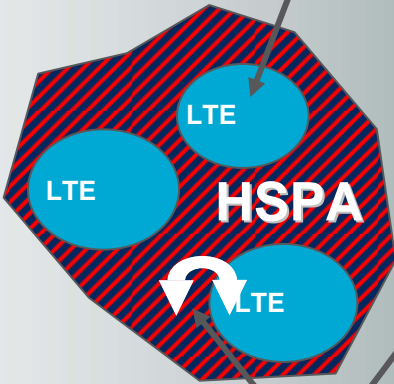


EXCELLENT PATH TO EVEN HIGHER SPEEDS

ONE FAMILY – NEW GENERATIONS

Start LTE services in selected areas and continuously increase coverage

Provide nationwide Mobile broadband coverage with EDGE and HSPA



Seamless network enables transparency towards end-users

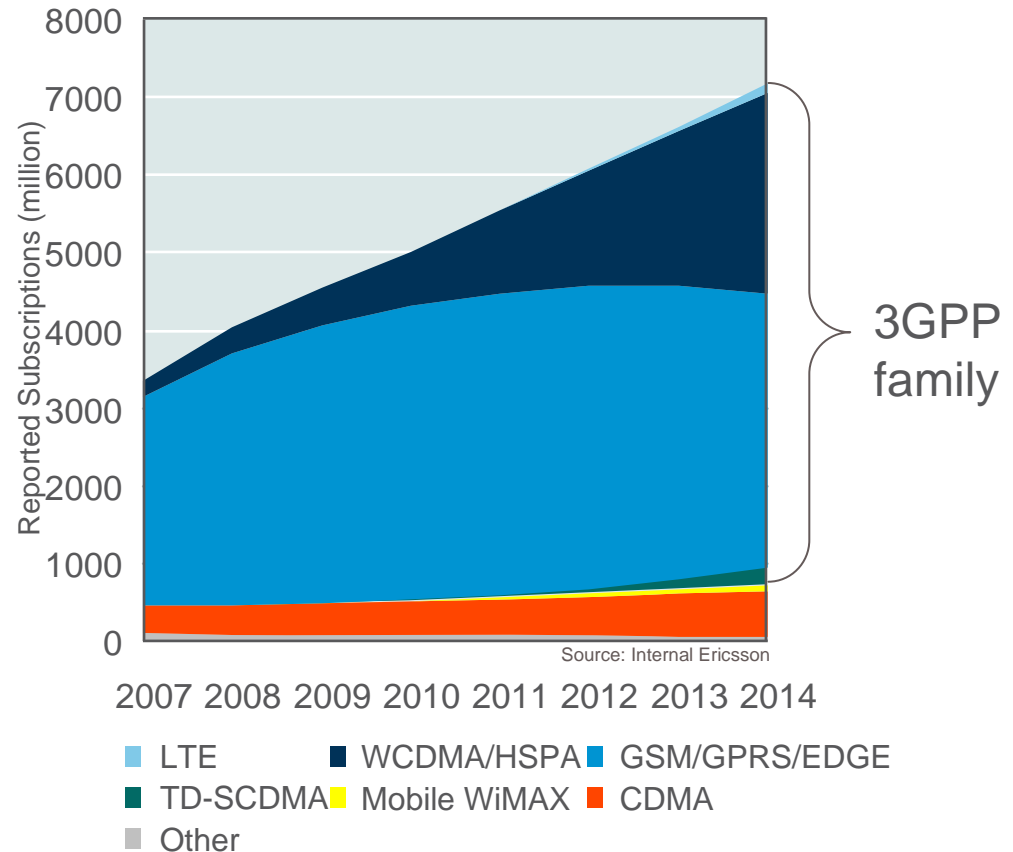


TOWARDS 50 BILLION 2020

- SUBSCRIBERS => SUBSCRIPTIONS => DEVICES => AGGREGATED "THINGS"

This slide contains forward looking statements

- › Asia Pacific the voice leader
- › US passed Japan as largest mobile data market
- › US, Japan and Korea are largest 3G markets
- › AT&T, NTT DoCoMo and Koreans are largest HSPA players
- › China, US, India and Japan will be largest 3G markets by 2014

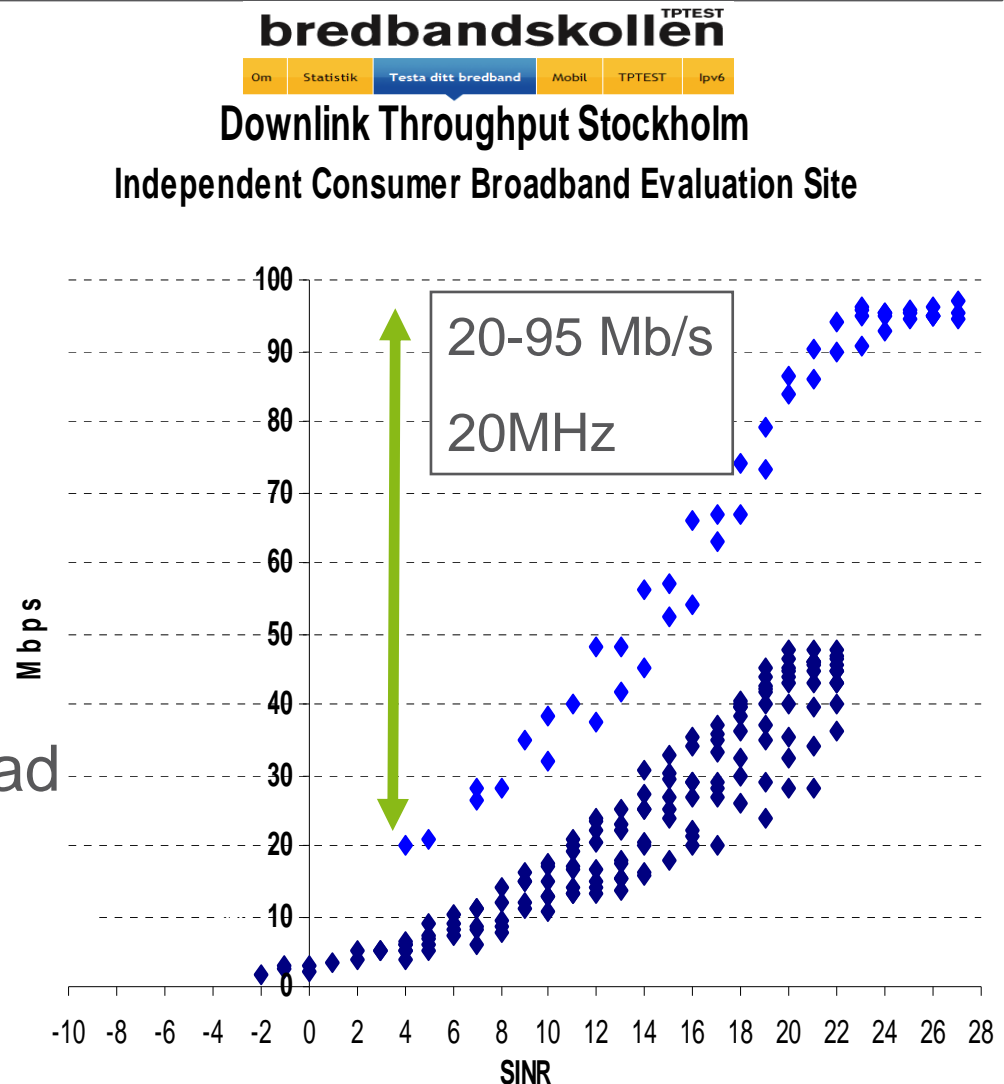


Harmonized spectrum is the key mass market enabler

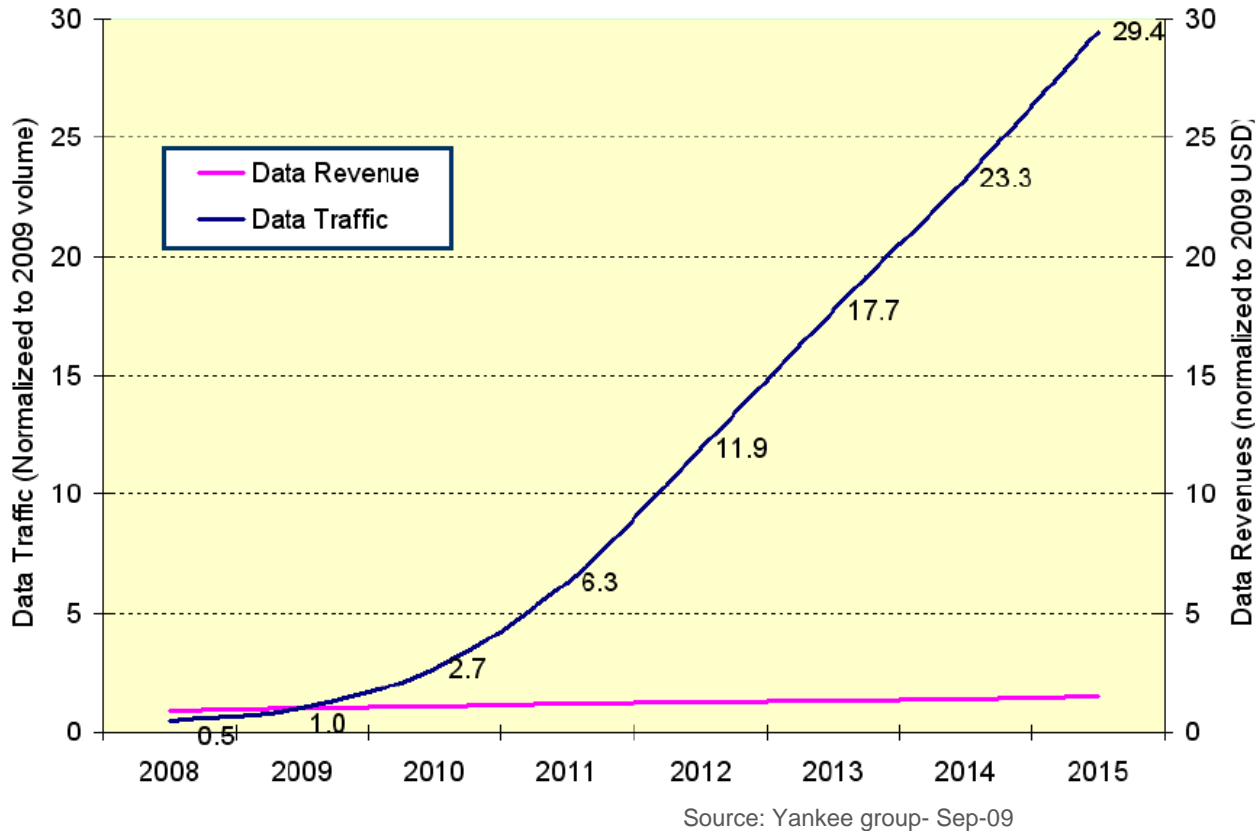
– WORLD FIRST COMMERCIAL LTE

- › 40Mbps Commercial launch
Dec 14, 2009
 - Initially Stockholm city+
 - HSPA fallback; Dual mode device
 - 25 Swedish cities end '10
 - Customers love it!
- › ~95% * of end user download speeds between 35-95Mbps

*Based on independent testing site



WHO BENEFITS FROM THE TRAFFIC GROWTH?



Beneficiaries:
 Internet Players
 P2P users
 Media Players
 Enterprise
 Consumers
 Advertisers
 Government

↓
 Telecom Traditional Business
 ↑



[More Equipment and Spectrum Required to Realise Benefits]

CURRENT SPECTRUM

MAY NOT BE ENOUGH FOR IMT AFTER YEAR 2015

PREDICTED SPECTRUM REQUIREMENTS BY THE YEAR 2020 FOR IMT

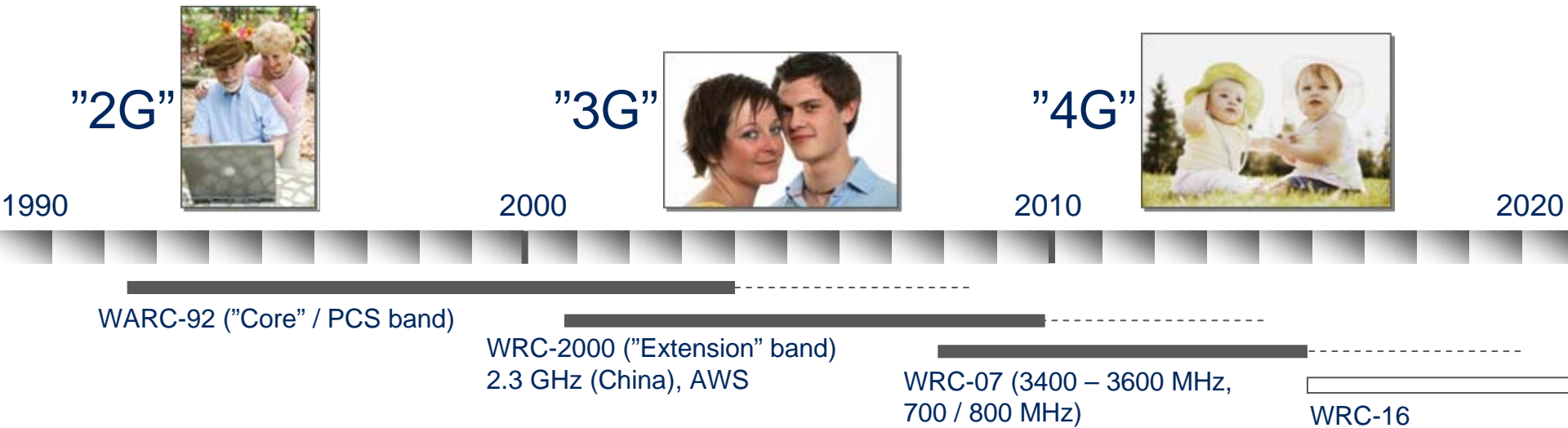
- may suggest a inconsistency of the order of 1000 MHz in the timeframe 2015 – 2020
- subject to traffic and subscriptions, and national circumstances

		Region 1		Region 2		Region 3	
User demand setting	Predicted total (MHz)	Identified (MHz)	Net additional (MHz)	Identified (MHz)	Net additional (MHz)	Identified (MHz)	Net additional (MHz)
Low	1 280	693	587	723	557	749	531
High	1 720	693	1 027	723	997	749	971
NOTE – Prediction based on one network deployment.							

Reference: ITU CPM Report to WRC-07 and Report ITU-R M.2078

[Support needed to achieve the goals at ITU WRC-16]

SPECTRUM FOR IMT; A LONG TERM BUSINESS



› **Spectrum is a key asset and decisions need to be forward looking:**

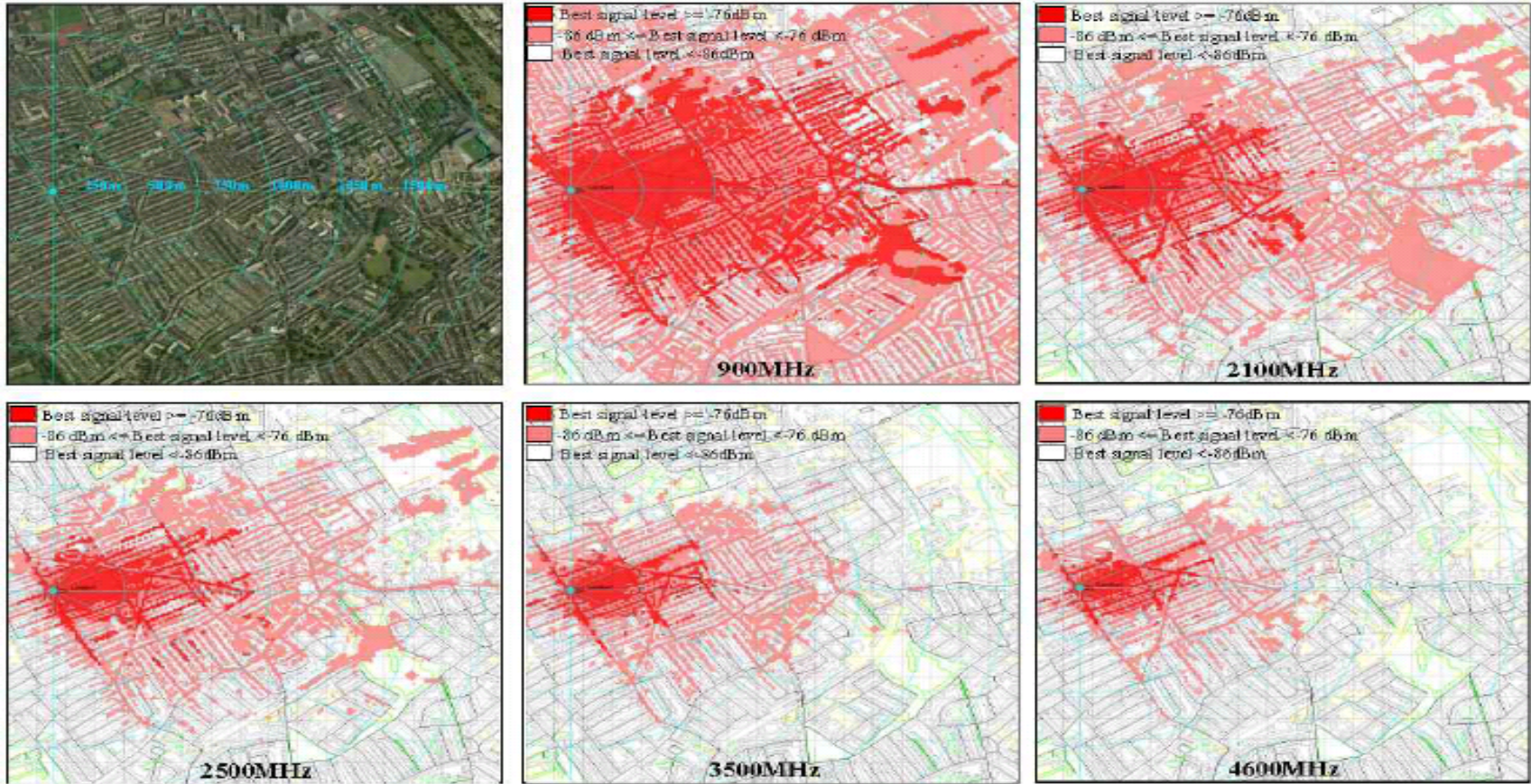
- **WARC-92:** the "Core" band, 1850 – 2025, and 2110 – 2170 MHz
- WRC-97: no IMT spectrum identified
- **WRC-2000:** "Extension" band 2500 – 2690 MHz, (2300 – 2400 MHz)
- WRC-03: no IMT spectrum identified
- **WRC-07:** 2300 – 2400 MHz, 3400 – 3600 MHz and 700 / 800 MHz
- **WRC-12:** no IMT spectrum will be identified; but AI 8.2 needs to be addressed
- **WRC-16 :** more mobile broadband spectrum for IMT will be needed



WHY IS SPECTRUM <1GHz SO IMPORTANT?

KEY FOR COST EFFECTIVE MBB ROLLOUT

$20 \times \log Kxf = \text{Double the frequency and you lose 6 dB}$

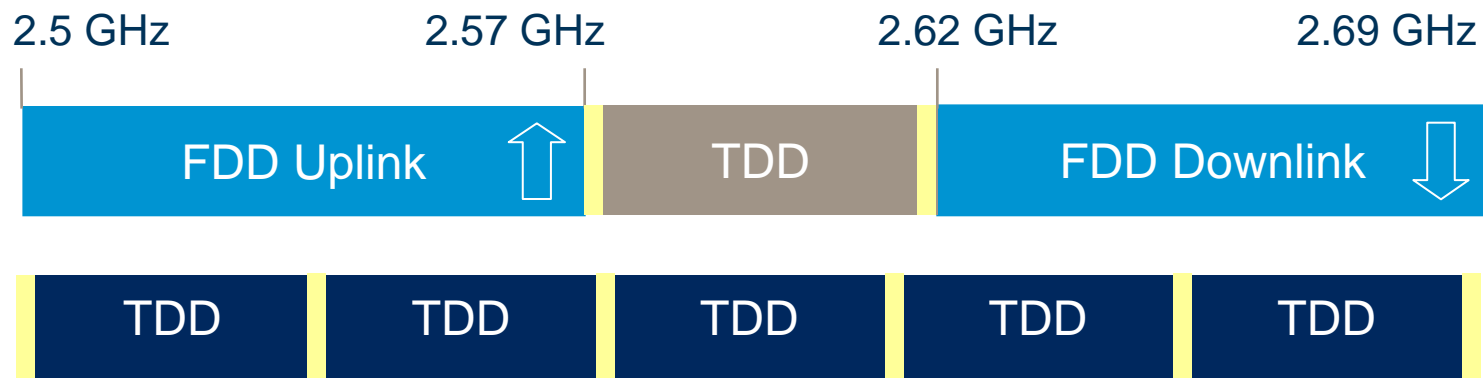


CEPT DECISION ECC/DEC/(05)05

HARMONISING LTE SPECTRUM IN 2.6 GHZ

Implementing bands of 2 x 70 MHz for FDD
 Implementing a band of 50 MHz for TDD

Consideration for the need for protection between FDD and TDD usages



A still from Star Trek: The Motion Picture showing Montgomery Scott (James Doohan) in his red uniform sitting at the console in the bridge. He has a serious expression. In the background, another crew member is visible at a different console. The bridge has a futuristic design with wood paneling and various control panels.

Create More Spectrum

Without breaking the laws of Physics

NATIONAL SECURITY AND PUBLIC SAFETY

Aid in policing with Specific solutions



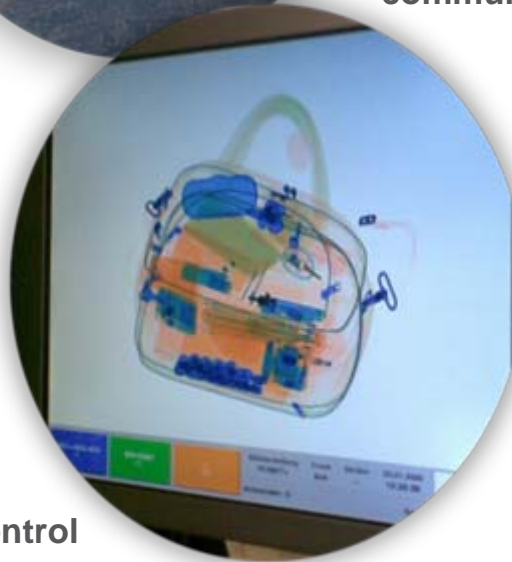
Provide emergency communications



Deliver government secure communications



Improve Border Control



NSPS - COMMERCIAL SYSTEMS ARE SUPERIOR

- › Far easier to coordinate non NSPS assets
- › Communication Appropriate solutions (PTT)
- › Much Cheaper (per indiv)
- › Highly available networks 99.999 typical
- › High level of coverage for most NSPS requirements
- › Security through SIMSEC assured
- › Priority of service possible at any time

Commercial Open Technology

3G/GSM Network



	2004	2005	2006	2007	2008	2009
	WCDMA	HSPA Phase 1	HSPA Phase 2	MBMS	MIMO /HSPA	LTE 20 MHz
DL Mbit/s	3.84	3.6	14	14	28	100
UL Mbit/s	0.064	0.384	3.1	3.1	5.8	50
Latency (ms)	~150	~75	~75	~75	~30	~10



HOW TO CREATE SPECTRUM

- › Harmonise for the greater good
- › Service and Technology Neutrality (allows refarming)
- › Have NSPS critically review their spectrum and service needs.
- › Even in disaster situations, commercial networks are probably more reliable and flexible than proprietary ones.



THE TELECOM INDUSTRY IS KEY TO ENHANCING EVERY OTHER INDUSTRY

› Broadband is 'tipping'

- Delivering benefits to society both economically and socially
- Ultimately for the mass market, Mobile Broadband will dominate

› Mainstream technology always more cost effective

- 3GPP (HSPA/LTE) 90% of Mobile Broadband Market
- Other technologies will play niche roles

› Globally harmonized spectrum to allow mainstream technologies

- Full 2x60 MHz allocated at 2.1 GHz (HSPA)
- TDD globally aligned at 2.3 GHz (LTE)
- FDD and TDD in IMT extension band at 2.6 GHz (HSPA<E)

› You can 'create' more spectrum

- It's painful, but keep the big picture in mind
- Consider delivering NSPS over commercial networks



U M T S
F o r u m

Mainstream technology and frequency allocation key to close the Digital Divide



Q&A