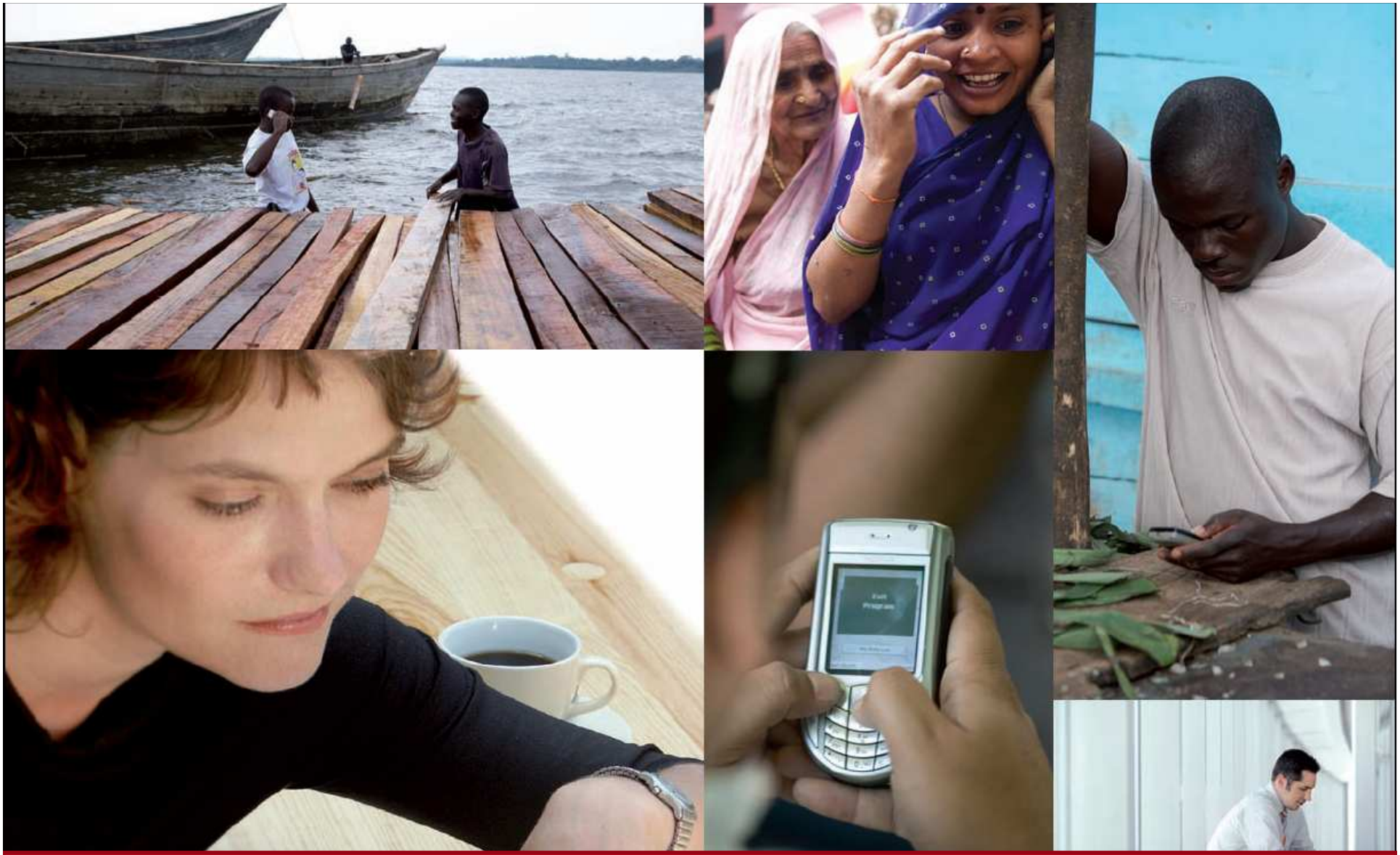


Digital Dividend in Africa

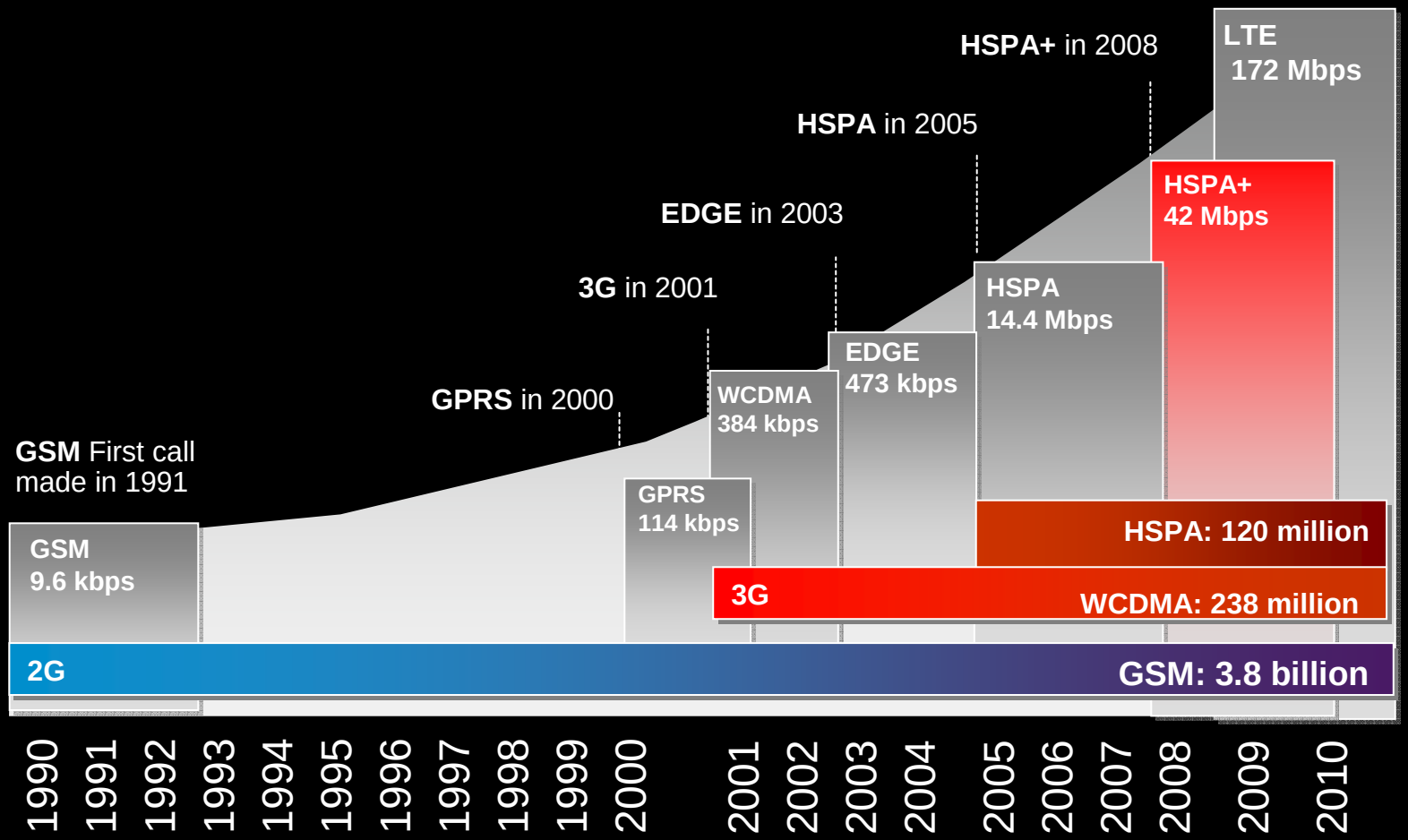
Ross Bateson
GSM Association

Brief History of the GSMA




- Founded in 1987 by 15 operators committed to the joint development of a cross border digital system for mobile communications
- Became the global trade group for the mobile industry, representing the vast majority of mobile phone networks across the world
  - Now encompassing commercial, public policy and technical initiatives, ensuring mobile services work globally
- The Association's members now serve more than 3.5 billion customers
  - More than 750 operator Members across 218 countries
  - Over 200 Associate Members (manufacturers and suppliers)

Beyond GSM: Voice to Video



Source: Wireless Intelligence, June, 2009

GSM technology holds nearly two decades of proven development

Mobile's Role in Economic Recovery

- Mobile is a driver of investment
  - The industry is forecast to invest $800 billion, globally, during the next five years
- This will be fuelled by demand for mobile broadband
  - Independent estimates by A.T. Kearney identify that $550 billion of this is earmarked for mobile broadband
  - As mobile broadband repeats the productivity revolution of mobile phones, the global GDP boost could be 3-4%

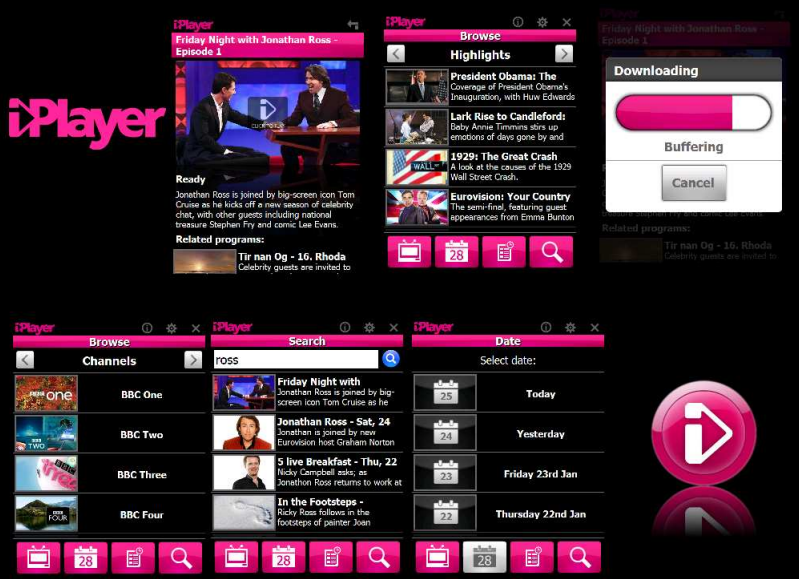
Mobile's Role in Social Value

- Globally policy makers have identified widespread internet access as a critical tool in social development
- Mobile Broadband provides a perfect platform to deliver social value

Source: Dotecon;Aegis Analysis Mason (2006 Annex C)

Broadcast and Broadband

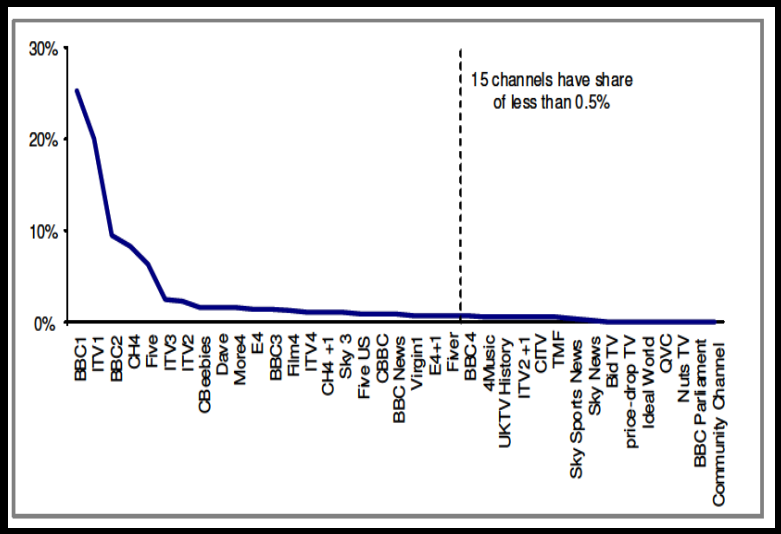
- Video over the internet is a well-established phenomena
- YouTube and other social media sites drive video-over-internet usage
- BBC iPlayer has huge and growing usage
  - 115m downloads December 2009
  - 120m downloads January 2010
- Broadband also has a big role to play in niche TV distribution



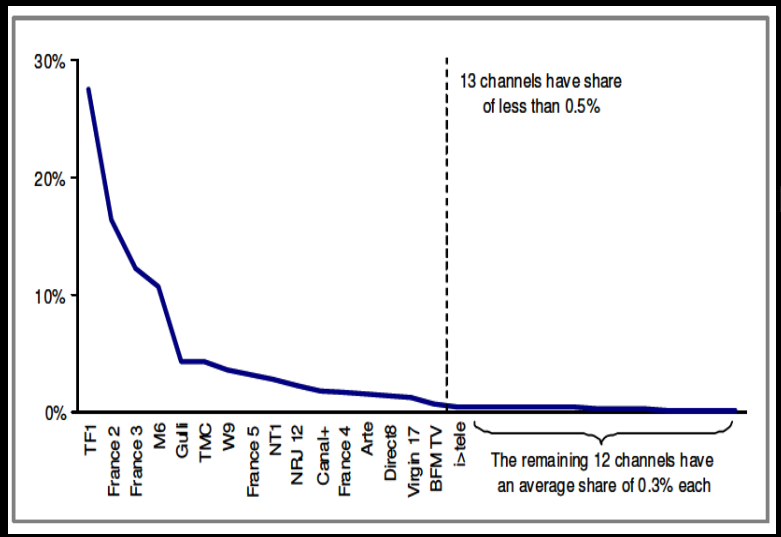
Broadband and the Multi-Channel Environment

- Research from Europe as DTV started to mature (2008)
- Both UK and France cases show heavy tail-off after first 6-10 channels
- In both cases, the top channel accounts for more viewing than all channels outside top 6
- DTT is inefficient medium for distribution of very small channels
- Online TV / broadband can help: *but mobile needs spectrum*

UK

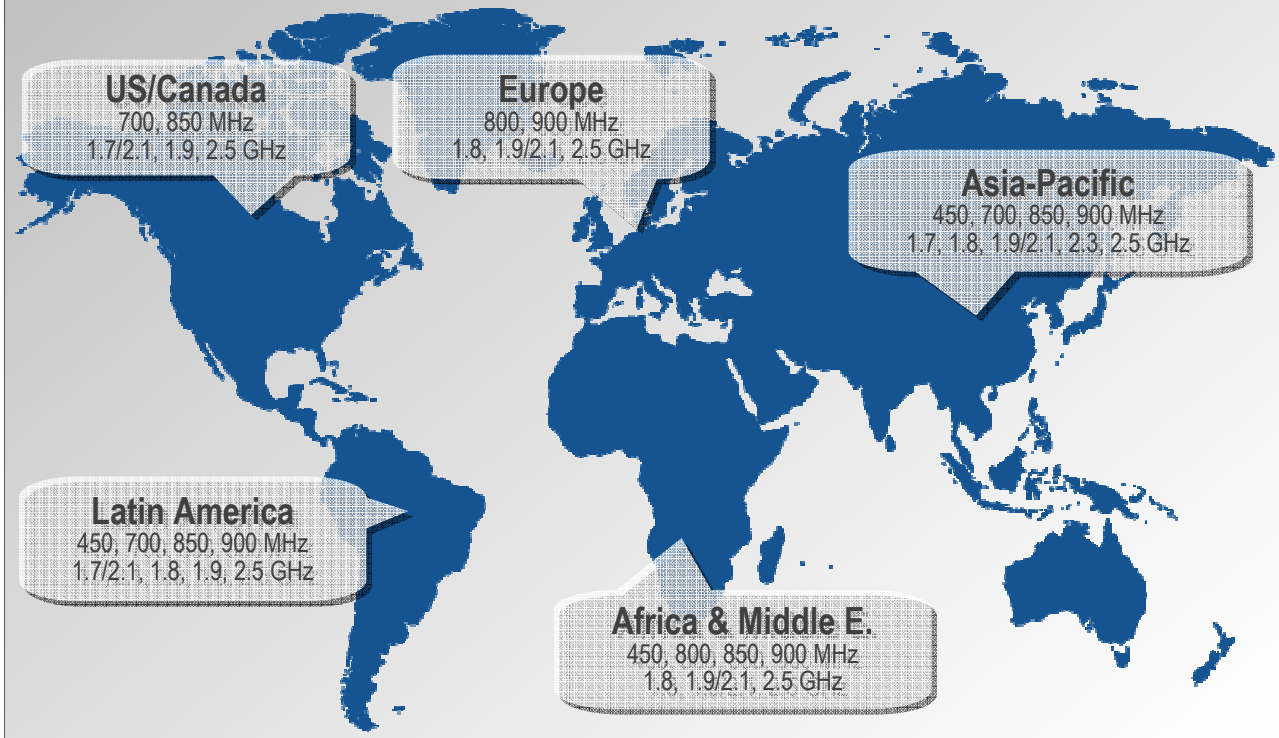


FRA



Source: Human Capital, 2008

Worldwide Mobile Broadband Spectrum



Recommended Technology

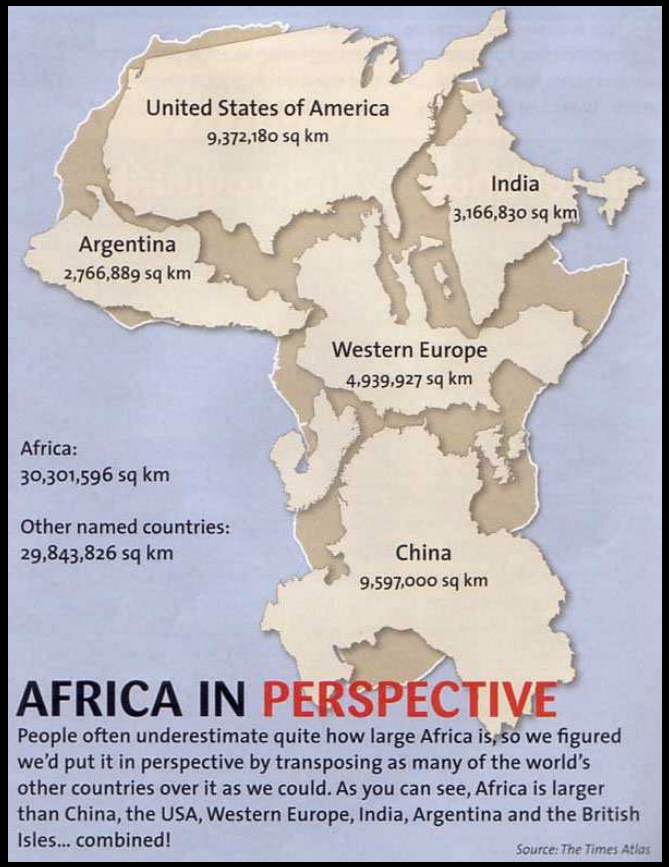
FDD Blocks	5 MHz	10 MHz	20 MHz
Recommended Technology	HSPA+ & EV-DO Rev. B	HSPA+ & LTE (2x5 MHz DO Rev. B)	LTE (2x10 MHz HSPA+)

Bandwidth Deployment Options[1]

FDD Blocks/ Spectrum band	5 MHz	10 MHz	20 MHz
2.5/2.6 GHz[2]	✓	✓	✓
2.1 GHz (1.7 or 1.9 uplink)	✓	✓	
1.5, 1.7, 1.8, 1.9 GHz	✓	✓	
900 MHz	✓		
800/850 MHz	✓		
Digital Dividend[3] (700 to 800 MHz)	✓	✓	

Africa: Covering All Areas

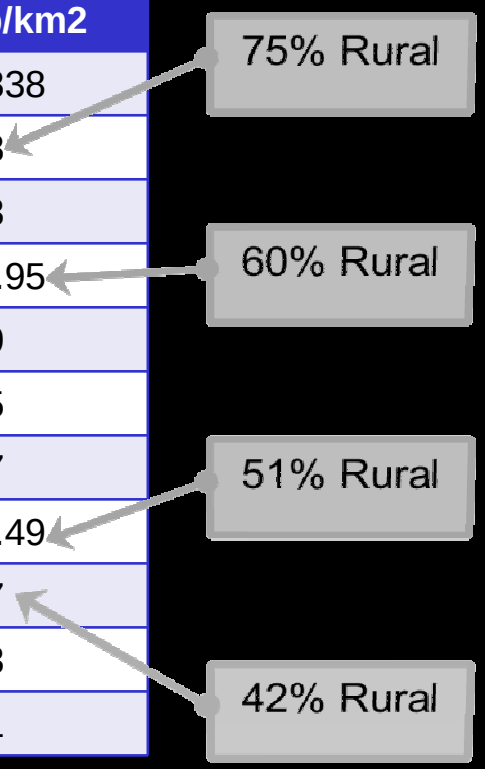
- Africa's huge landmass creates specific difficulties for network operators
- Ensuring all consumers have the benefits of mobile broadband has a strong demand on spectrum and there are two vital bands for the LTE community:
  - 2.5GHz
  - Digital Dividend band
- Coverage of rural areas needs lower frequency spectrum to reach further
- Digital divide between urban and rural areas will be lowered by the Digital Dividend



African Population Coverage

Country	Pop/km2
Angola	14.838
Chad	8.78
Cote d'Ivoire	65.3
The Gambia	150.95
Ghana	99.9
Kenya	68.5
Mali	11.7
Nigeria	167.49
Senegal	63.7
South Africa	40.3
Zambia	17.1

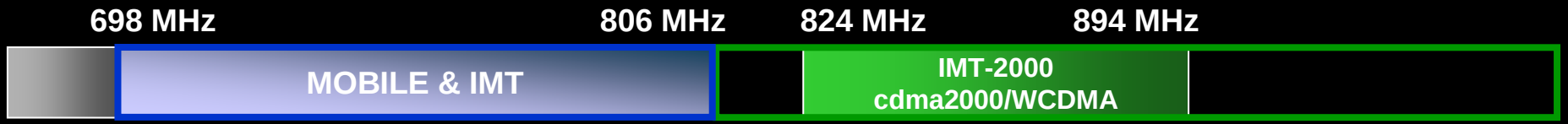
Comparison:	
UK	246
Germany	232
France	114



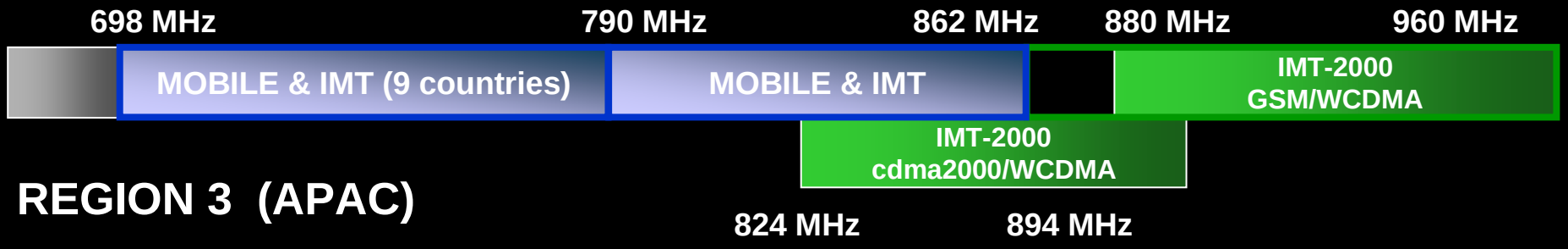
- Low population density of African continent is ideally suited to Digital Dividend spectrum
- Cost of providing universal access is greatly lowered
- Low-population countries with fewer operators can use wider, cleaner channels to provide higher bandwidth services

The band 698-960 MHz

REGION 1 (EMEA)



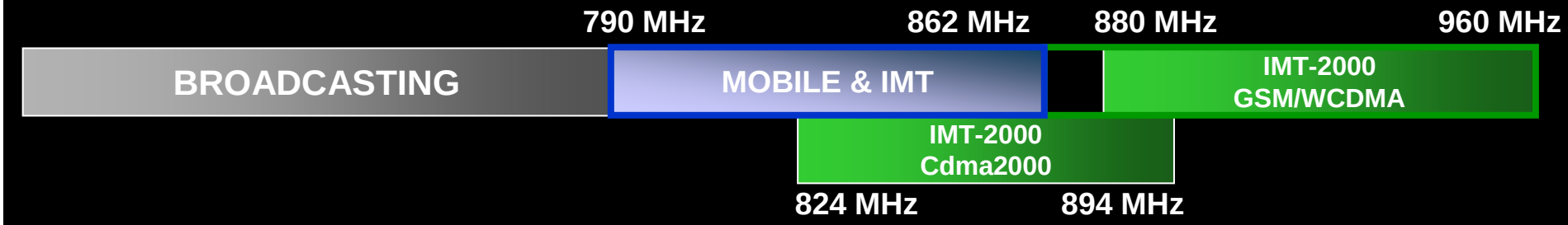
REGION 2 (Americas)



REGION 3 (APAC)

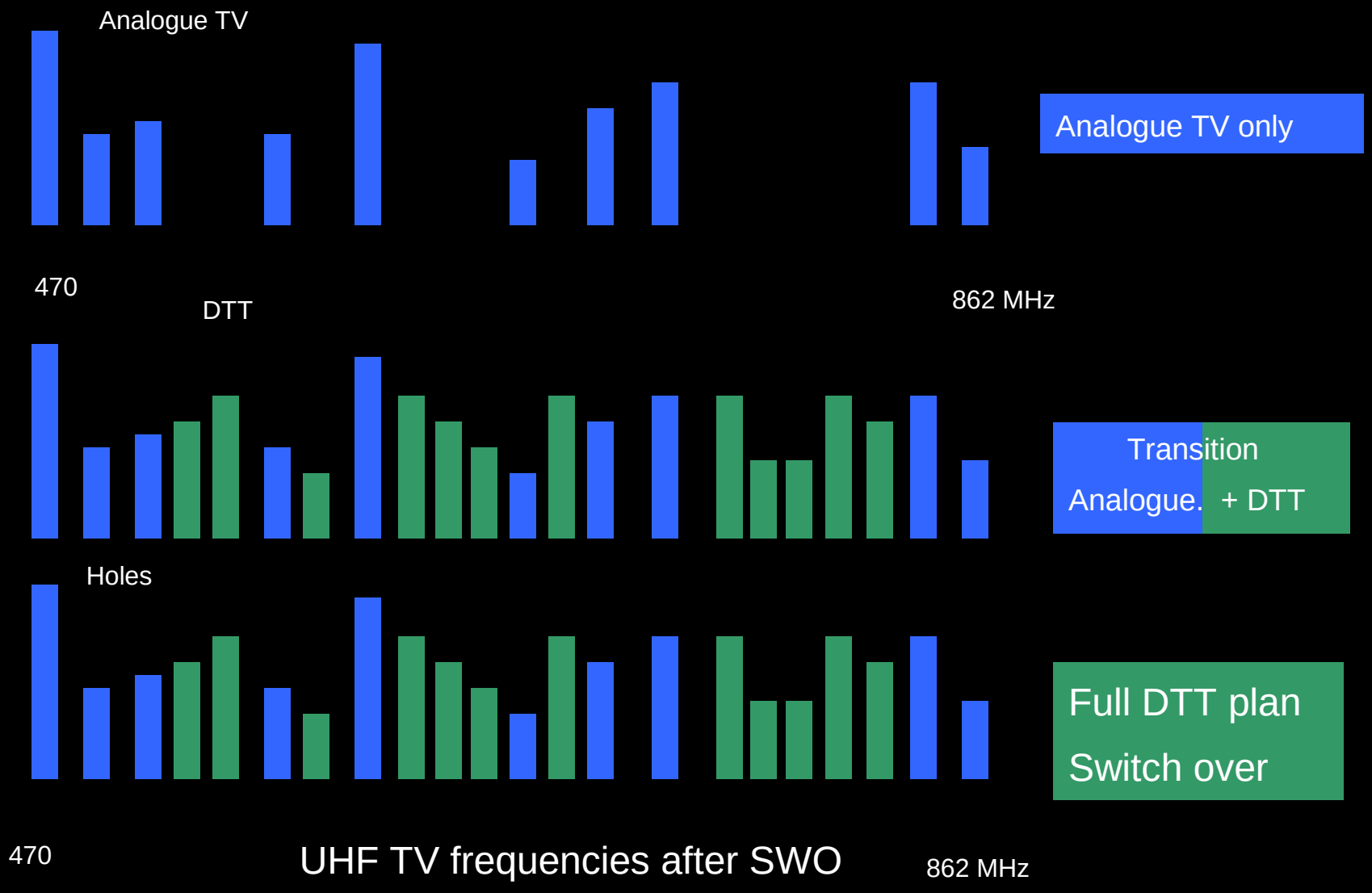
The band 698-960 MHz

REGION 1 (EMEA)



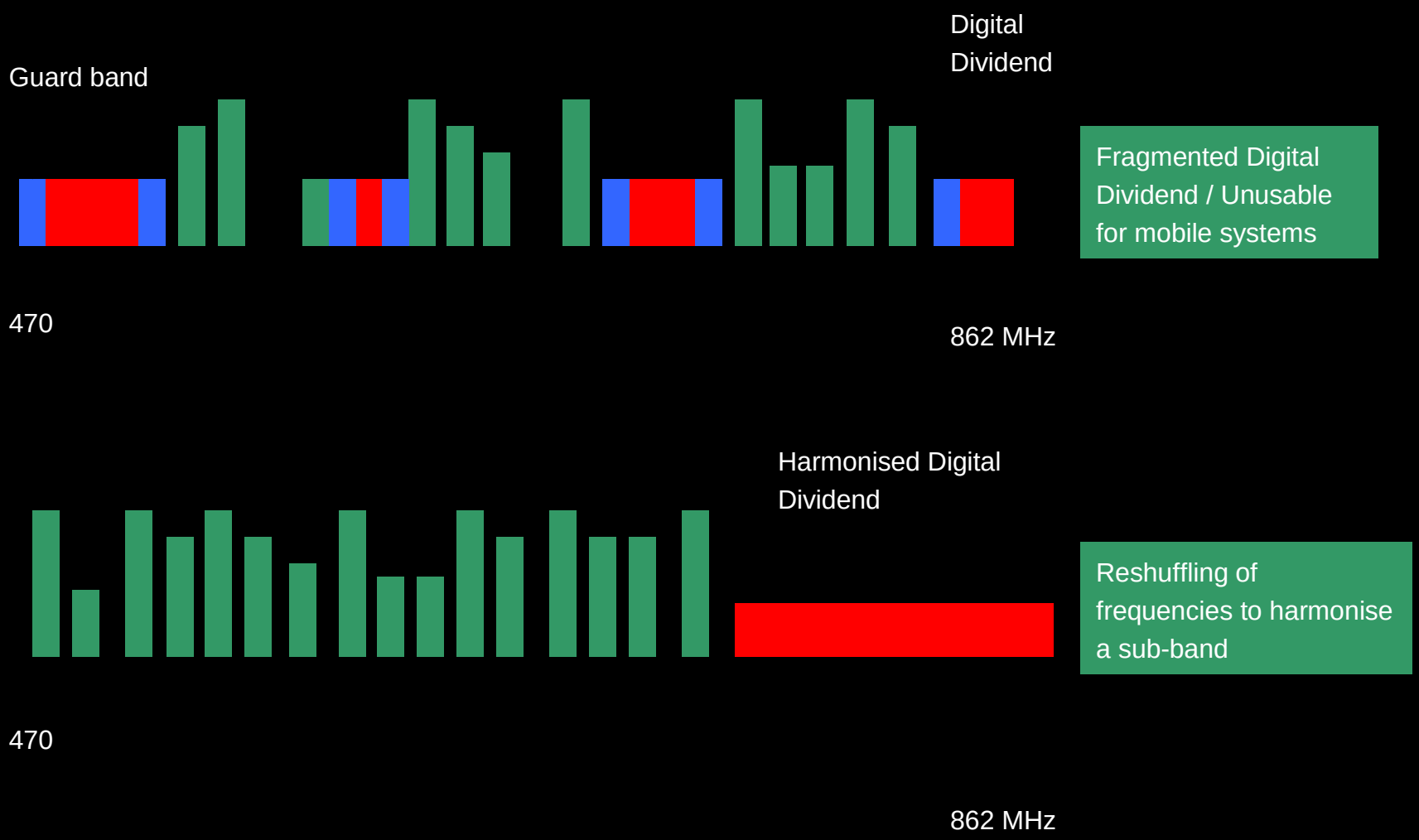
AFRICA

The UHF Digital Dividend: Fragmentation Risk



Source: Qualcomm

Harmonisation is vital for Mobile services



Source: Qualcomm

Conclusions

1. Assess the REAL need of Digital TV and the most spectrum-efficient means of distributing

2. Assign DTT frequencies from the lower part of the band: even if re-planning is needed . . . many Administrations have done this!

3. Ensure that regional discussion takes place and bear in mind opportunities for harmonization with other regions

4. Old broadcast models are changing: mobile broadband can help the broadcast community reach more people more efficiently

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