Spectrum Audit - What does the mobile world look like today?

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GSMA BY THE NUMBERS

MEMBERSHIP

800 mobile operators in over 220 countries

230 associate members

MOBILE REACH

6.6 billion mobile connections

3.2 billion individual subscribers

PRESENCE

Offices in 9 countries serving every region

Staff based in 26 countries representing 36 nationalities
ENABLING A MOBILE FUTURE

ACCELERATING MOBILE INNOVATION THROUGH GLOBAL INITIATIVES

CONNECTED LIVING
Realising the potential of connected devices across many sectors to improve lives

FUTURE COMMUNICATIONS
Creating an enhanced mobile experience via voice-over-IP, messaging and content-sharing applications

MOBILE COMMERCE
Enabling transactional services via contactless radio technology

NETWORK APIs
Developing interfaces to fully exploit mobile network capabilities

MOBILE IDENTITY
Authenticating users securely and conveniently

SPECTRUM
Promoting effective spectrum policy and delivery of mobile broadband
THE RISE OF MOBILE BROADBAND

**EUROPE**
353,500,000
Mobile broadband connections
48% Penetration
49% Annual growth

**ASIA**
788,500,000
Mobile broadband connections
18% Penetration
49% Annual growth

**AMERICAS**
421,000,000
Mobile broadband connections
44% Penetration
25% Annual growth

**AFRICA**
65,000,000
Mobile broadband connections
6% Penetration
80% Annual growth

**OCEANIA**
28,000,000
Mobile broadband connections
74% Penetration
17% Annual growth

Source: GSMA Intelligence, Q1 2013
EVOlution of MOBile Technology

- GSM
- GPRS
- EDGE
- HSPA
- HSPA+
- CDMA, EV-DO, WIMAX, TD-SCDMA and other technologies

LEADING TO THE PROGRESSION OF MOBILE SERVICES

- VOICE: Telephony, Messaging
- DATA: Email, Browsing
- VIDEO: YouTube, Conferencing
- SMART APPS: mMoney, mHealth
REGIONAL IMPACT

NORTH AMERICA
In the US and Canada, as well as Japan, South Korea and Australia, 80% of citizens are covered by LTE networks, on average. (GSMA Intelligence, May 2013)

LATIN AMERICA
The total mobile ecosystem contributes $175 billion to the region’s economy, or 3.6% of regional GDP. (AT Kearney, 2012)

EUROPE
Mobile is comparable in size to aerospace and larger than pharmaceuticals, with revenues amounting to €174 billion in 2010. (AT Kearney, 2011)

ASIA PACIFIC
The Digital Dividend could be worth nearly $1 trillion in additional GDP. (Boston Consulting Group, 2012)

SUB-SAHARAN AFRICA
A direct economic impact of $32 billion was generated by mobile operators and their associated ecosystems in 2011. (Deloitte, 2012)

ARAB STATES
By releasing Digital Dividend, 2.6GHz and 1.8GHz spectrum, an additional 5.9 million jobs could be created. (Deloitte, 2013)
SPECTRUM FOR MOBILE

Brings down the cost of mobile devices
Enables people to roam
Reduces interference issues along borders

SPECTRUM HARMONISATION MATTERS

CHOICE
competition

ROAMING
harmonised bands

MOBILE SPECTRUM

AFFORDABILITY
economies of scale

SCALE
billions of subscribers
MOBILE DATA KEEPS CLIMBING

GLOBAL DATA TRAFFIC FORECASTS FROM MULTIPLE SOURCES

Mobile data traffic doubled in one year between Q3 2011 and Q3 2012
(Ericsson)

Sources
Analysys Mason, Global Mobile Network Traffic, June 2011
Ericsson Mobility Report, November 2012
Orange Global Forecast 2010-2020
Cisco VNI Mobile Forecast 2013
WRC SPECTRUM ALLOCATION PROCESS

10+ YEARS

Approval of WRC agenda item

Regional group preparation for WRC

WRC campaign

WRC identification to IMT

Regional group definition of band plans

WP5D work

ITU-R band plans

Discussion and approval of national regulations

Clearing process

Auction or beauty contest

Commercial launch
NEW BANDS FOR MOBILE

RADIO SPECTRUM: IDENTIFIED MOBILE BANDS

450–470 MHz

Digital Dividend (700/800 MHz)

900 MHz

1.8 GHz

2.1 GHz

2.3 GHz

2.6 GHz

3.4 GHz

470–790 MHz

1.3–1.4 GHz

1.427–1.7 GHz

2.7–2.9 GHz

3.4–3.8 GHz

3.8–4.2 GHz

CANDIDATE BAND RANGES FOR WRC-15
THANK YOU
# Spectrum Policy Landscape

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<th>Spectrum Planning</th>
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<td>Band plan harmonisation</td>
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<td>TV white space</td>
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## SPECTRUM LICENSING

### A STABLE LICENSING FRAMEWORK FACILITATES INVESTMENT

- Remove service and technology restrictions
- Facilitate international harmonisation
- Conduct a public written consultation before key decisions
- Ensure rights to use spectrum are clearly specified
- Develop a road map for spectrum release

### A RENEWAL PROCESS SHOULD BE DEFINED WELL BEFORE LICENCE EXPIRATION

- Establish the licence-renewal approach two to four years in advance
- Publish the renewal criteria, as well as the terms and conditions to be applied to the renewed licence
- Avoid network investment being postponed, as a result
SPECTRUM AUCTIONS

AUCTIONS ARE
AN ECONOMICALLY EFFICIENT WAY
TO ALLOCATE SPECTRUM

… when there is competition for limited spectrum resources
… when demand is expected to exceed supply

AUCTIONS ARE NOT
THE ONLY OPTION AVAILABLE TO GOVERNMENT
FOR SPECTRUM ALLOCATION

Consultation with mobile operators and other stakeholders is essential

AUCTIONS SHOULD
REFLECT THE LONG-TERM ECONOMIC VALUE OF THE SPECTRUM, NOT MAXIMISE SHORT-TERM REVENUE FOR GOVERNMENTS

Auctions should be fair, transparent and designed for the specific market circumstances
**SHARE USE OF SPECTRUM**

Exclusive access remains the main regulatory approach for mobile broadband spectrum — guaranteeing quality of service, safeguarding against interference and providing a higher degree of market certainty to create incentives for investment.

<table>
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<tr>
<th>LICENSED SHARED ACCESS</th>
<th>Provides one potential solution for operators to access “additional” spectrum for mobile broadband (e.g., the 2.3GHz band in Europe), within specified time, geography or frequency constraints</th>
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<td>TV WHITE SPACE</td>
<td>Relies on the concept of opportunistic access to the spectrum resource for which quality of service and availability are not predictable</td>
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<td>COGNITIVE RADIO</td>
<td>Represents an emerging and potentially disruptive technology requiring more research before being ready for wide-scale deployment</td>
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A way for spectrum to be shared between a limited number of mobile operators and noncommercial (governmental) users.

Appropriate for IMT-identified bands in accordance with sharing rules.

Guaranteed access to spectrum, enabling a high and dependable quality of service.