

FUTURE MOBILE SPECTRUM REQUIREMENTS

Creating a sustainable future for mobile broadband

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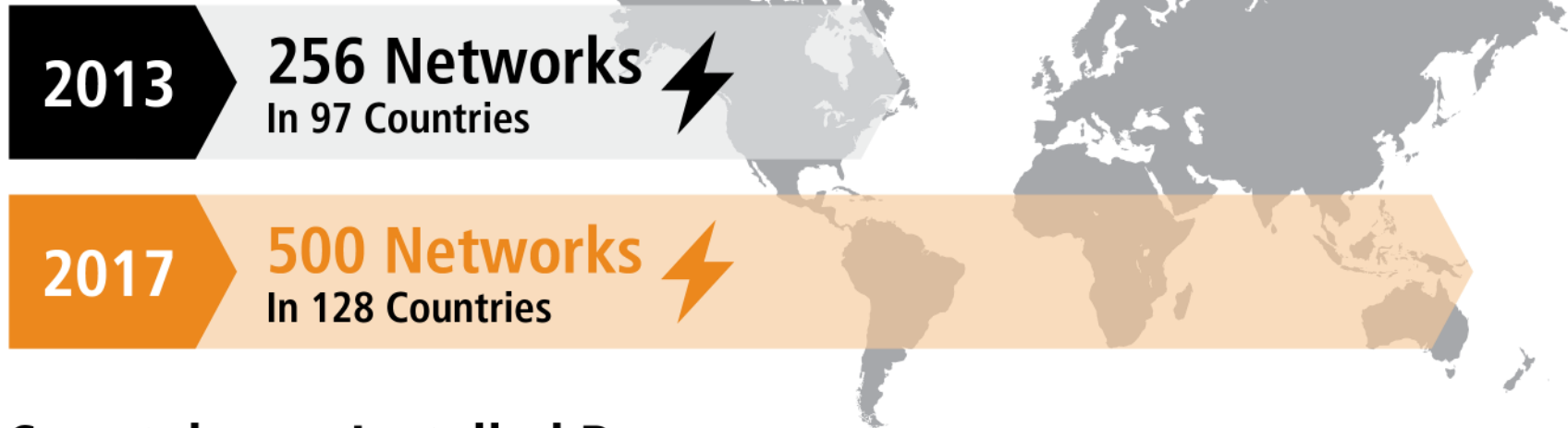
13 July 2015



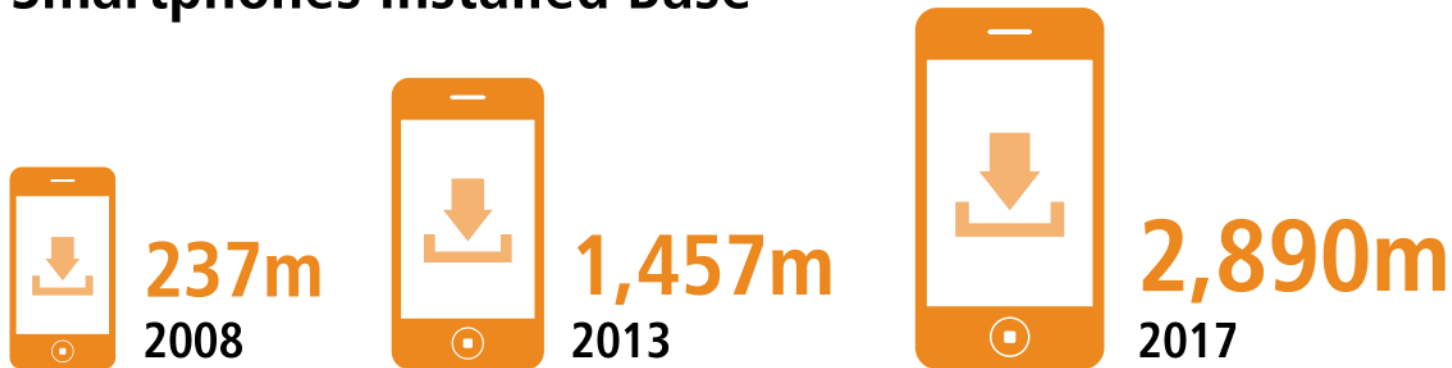
A MOBILE BROADBAND REVOLUTION



LTE Networks



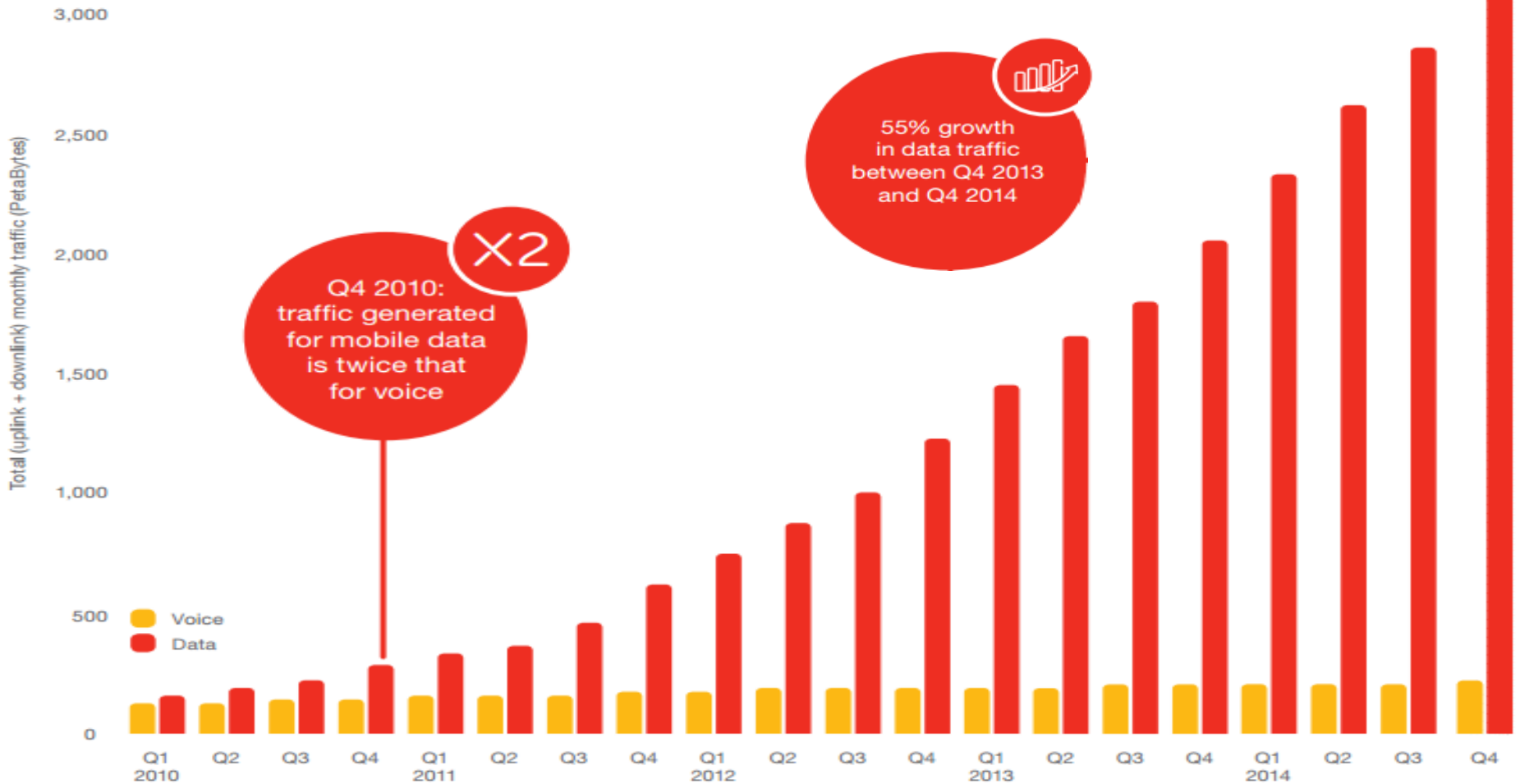
Smartphones Installed Base



MAJOR RECENT GLOBAL MOBILE DATA GROWTH



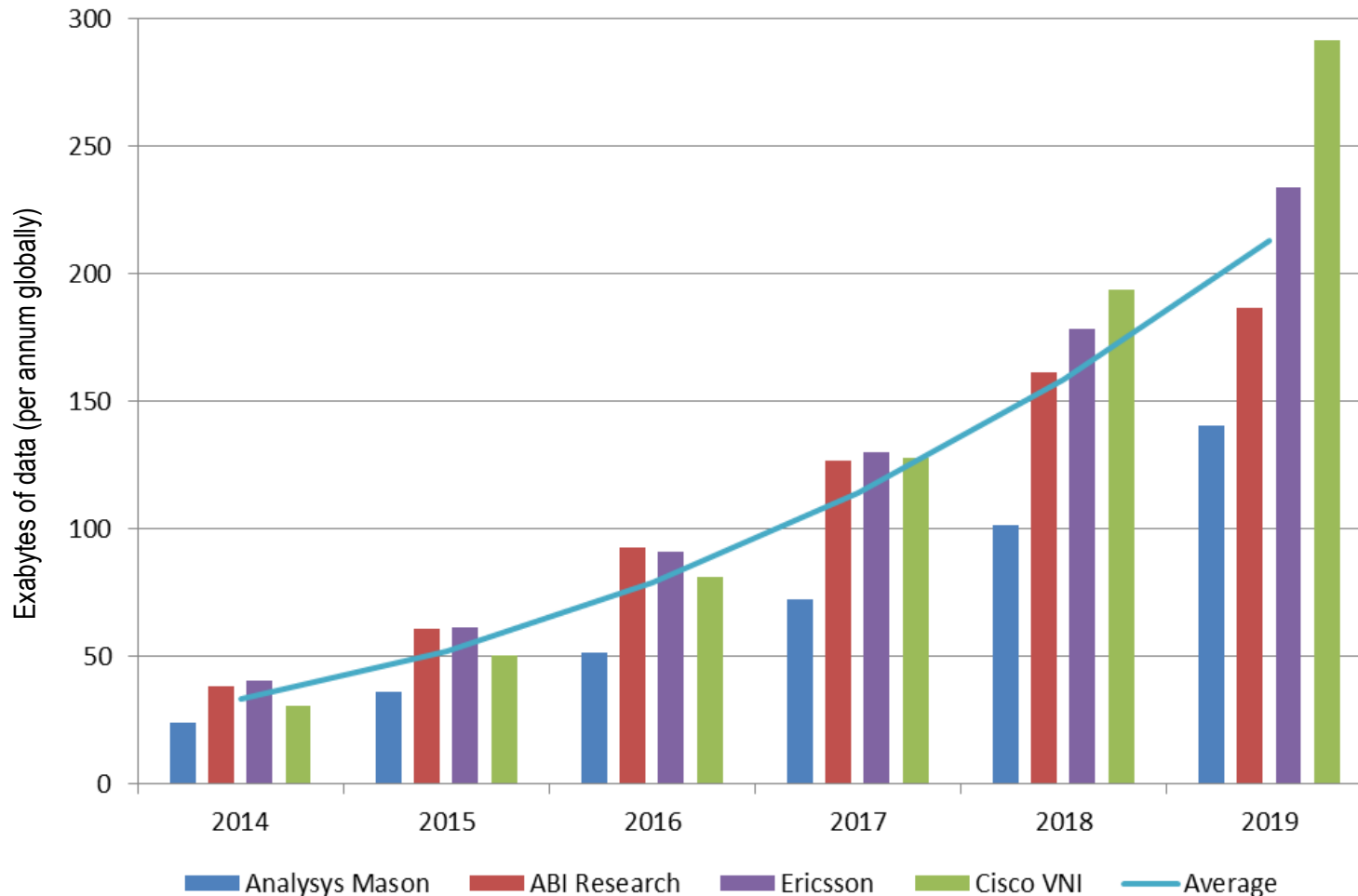
ALMOST 20X DATA GROWTH IN ONLY 5 YEARS (PB/PER MONTH)



SIGNIFICANT GROWTH TO CONTINUE...



GROWTH FROM 2014-2019 EXPECTED TO BE 6-10X



SPECTRUM FOR MOBILE

Sources

LATIN AMERICA NO EXCEPTION



UNIQUE MOBILE SUBSCRIBERS



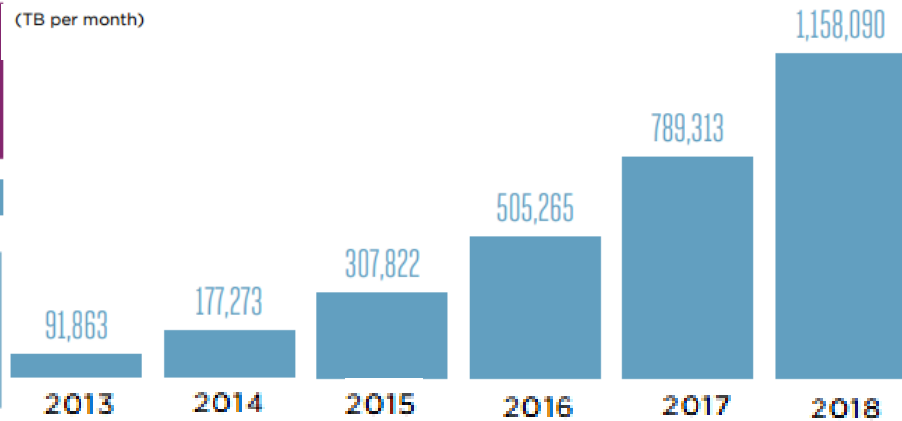
CONNECTIONS*

*Excluding M2M



Latin American mobile data traffic

(TB per month)



Technology shift fuelling data traffic growth across Latin America

3G/4G connections to increase from a third of total in 2013 to almost

80%
BY 2020



By 2020 there will be

605M
SMARTPHONE CONNECTIONS

up from 154 million at the end of 2013

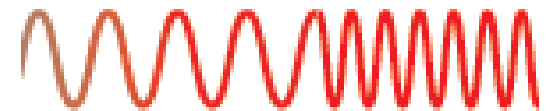
Data traffic in Latin America to grow at a CAGR of 66% out to 2018

HOW CAN THIS DATA BE SUPPORTED?



FOUR MAIN WAYS MOBILE NETWORKS CAN SUPPORT RISING DATA

- **Increasingly spectrum efficient technologies** (e.g. 3G to 4G to 5G)
- **Denser networks** (e.g. more cell sites inc. small cells)
- **Wi-Fi offload** (i.e. shifting data on to Wi-Fi networks as much as possible)
- **Using more mobile spectrum**



HOW MUCH SPECTRUM IS NEEDED AT WRC-15?



KNOW YOUR NATIONAL MOBILE SPECTRUM REQUIREMENTS FOR 2020?

- **ITU predicts 1340-1960 MHz total mobile spectrum required for mobile by 2020**
 - GSMA research shows governments need to make 600-800 MHz more available at WRC-15
- **New mobile bands MUST be identified at WRC-15 or it could be too late**
 - Can take a decade or more to make new mobile bands available
 - Existing spectrum will meet near-term demand, WRC-15 is for demand in 2020-2025 - or later
 - Countries with lower spectrum requirements still benefit from future lower cost devices

**MOBILE SERVICES WILL STRUGGLE TO MEET
GROWING DEMAND WITHOUT MORE SPECTRUM**

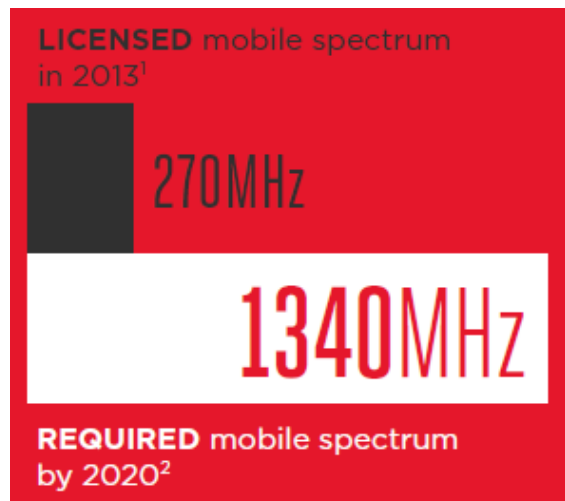
**TIME IS
RUNNING
OUT.**



LATAM SPECTRUM REQUIREMENTS



COUNTRY	LOW SCENARIO	HIGH SCENARIO
Argentina	1,093 MHz	1,628 MHz
Brazil	1,129 MHz	1,676 MHz
Chile	893 MHz	1,327 MHz
Colombia	1,057 MHz	1,578 MHz
Mexico	977 MHz	1,454 MHz



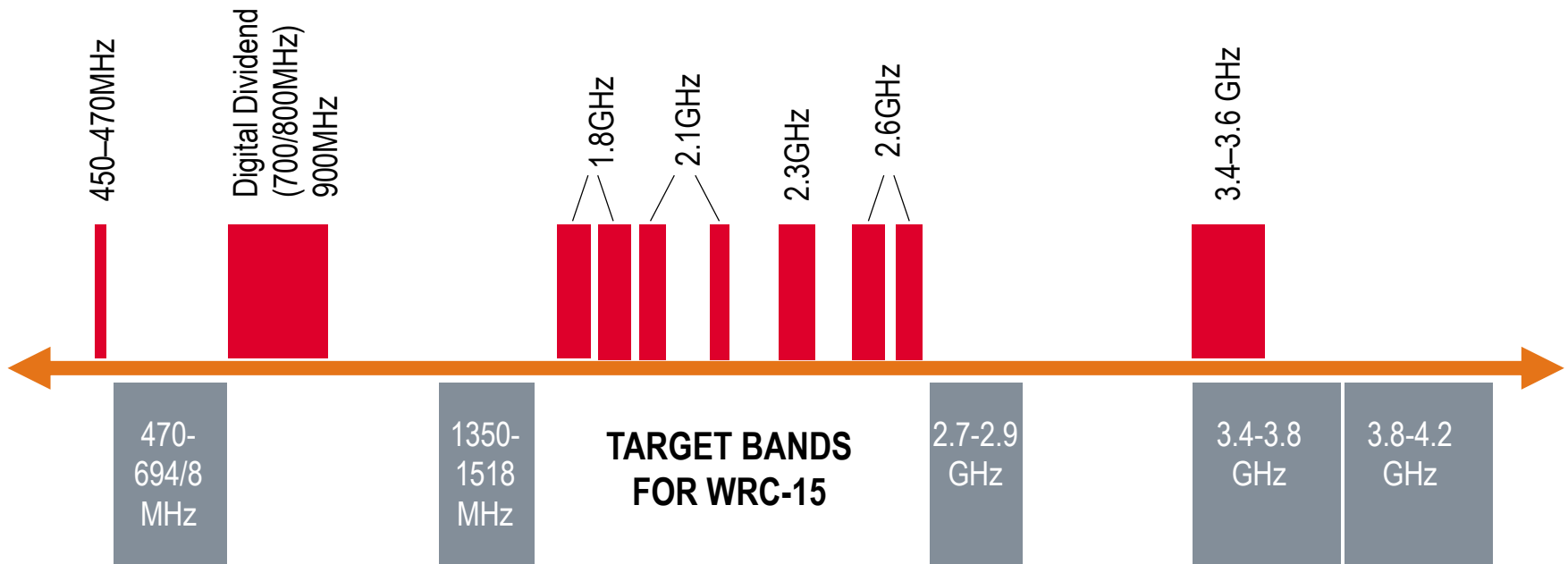
1 Average amount of spectrum licensed to mobile services in Latin America towards the end of 2013
2 Minimum amount of spectrum the ITU predicts will be needed in 2020 (based on 1340-1960MHz range)

TARGET NEW BANDS FOR MOBILE



- **GSMA had agreed widespread support for 4 new mobile allocations**
 - Sub-700MHz UHF (470-694/ 8MHz)
 - L-Band (1350-1518 MHz)
 - 2.7-2.9 GHz
 - C-Band (3.4-4.2 GHz)

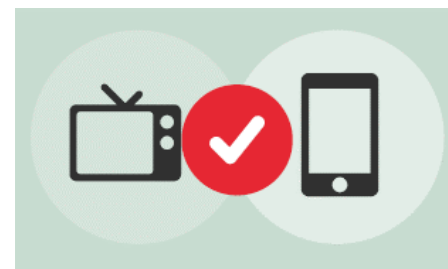
EXISTING IDENTIFIED MOBILE BANDS



EFFICIENT SPECTRUM UTILISATION = SHARING



- **We encourage regulators to look at ways of sharing bands**
 - Most bands are not allocated exclusively for one service in the Radio Regulations
- **Sharing is possible if we consider realistic scenarios – not worst-case**
- **Opponents to mobile are emphasising highly unrealistic, worst-case scenarios**
 - **L-band (1350-1518 MHz):** 500km exclusion zone based on 1 km tall LTE base stations
 - **2.7-2.9 GHz:** Exclusion zones that are hundreds of kilometres wide – ignoring practical solutions
 - **C-band:** Tens of hundreds of km exclusion zones that ignore – ignoring practical solutions



ALL GSMA RECOMMENDED NEW MOBILE BANDS FOR WRC-15 CAN BE SHARED

SUB-700MHz (470-694/8 MHz): IMPROVES INCLUSION



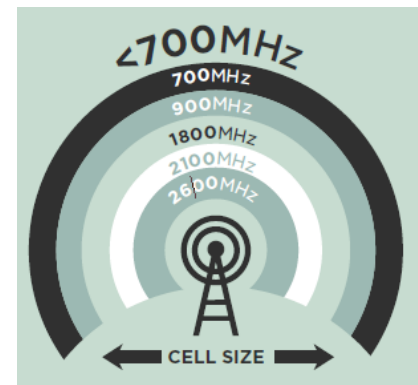
ALLOWS AFFORDABLE IMT SERVICES TO SCALE EVERYWHERE INC. RURAL AREAS

CURRENT UHF USAGE (470-694/8 MHz):

- Mostly supports digital or analogue terrestrial TV (with VHF)
- Use of terrestrial broadcast TV varies significantly by country

HOW TO ACCOMMODATE MOBILE *IN A PORTION*:

- Broadcast evolution means more squeezes into less spectrum
- US incentive auction shows it can be popular with broadcasters



EXISTING SUPPORT:

Canada, US, Mexico, Finland, Switzerland, Denmark, Egypt, Jordan, Ghana, Colombia (part).
Entire band is co-allocated to mobile on a primary basis in Asia Pacific

L-BAND (1350-1400 MHz & 1427-1518 MHz)



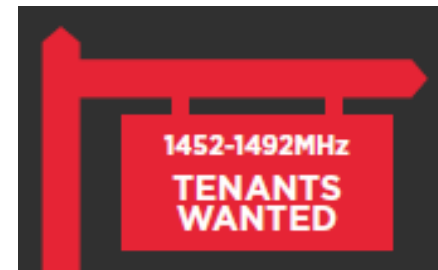
PROVIDES A GOOD MIXTURE OF MOBILE COVERAGE AND CAPACITY

CURRENT USAGE:

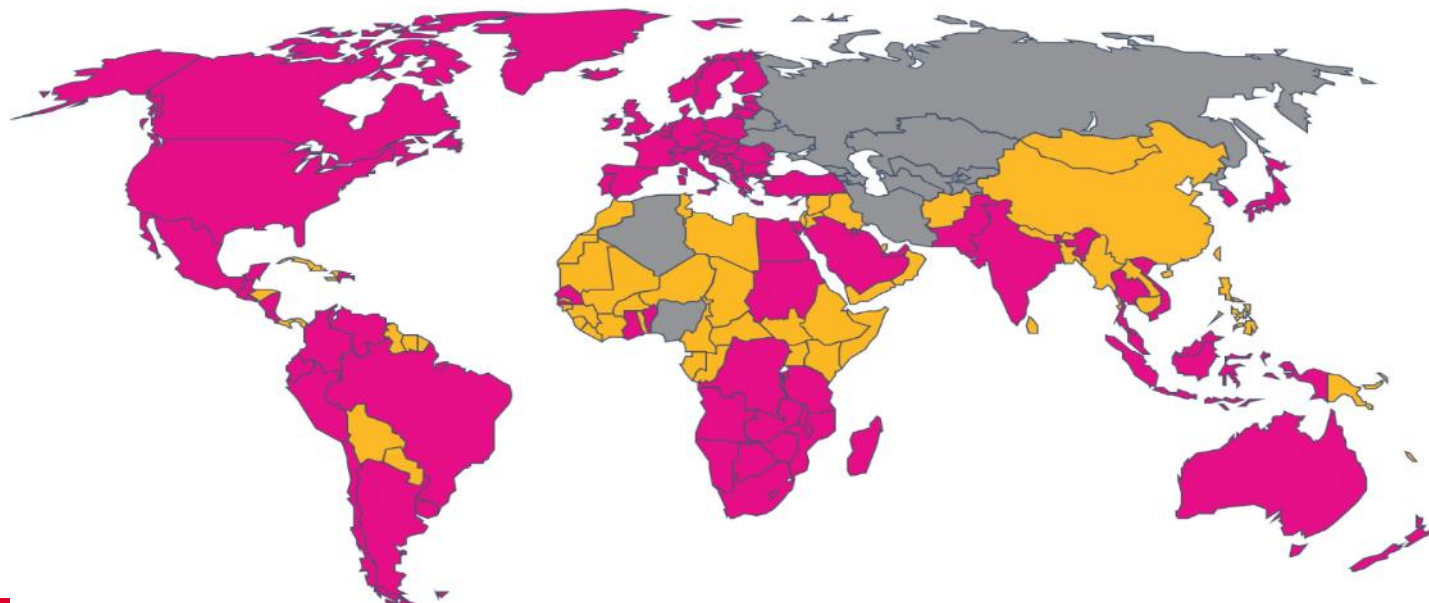
- Various: radar, aeronautical telemetry, fixed links & broadcast satellite

HOW TO ACCOMMODATE MOBILE *IN A PORTION*:

- 1452-1492 MHz is largely unused so could easily be made available
- ITU sharing studies show mobile services & existing users could operate in the band



**MAJOR
SUPPORT
FOR IMT AT
WRC-15**



Support or partial support
for 1427-1518 MHz



Unknown/
undecided



Opposed

COULD BE QUICKLY AND COST EFFECTIVELY USED TO ADD CAPACITY

CURRENT USAGE:

- Radars for aviation (military and civilian) and meteorological purposes
 - Small number in fixed areas and ability to use band much more efficiently



HOW TO ACCOMMODATE MOBILE IN A PORTION:

- All existing radar requirements can be met in a much smaller portion
- Mobile could operate where radar not used or band could be segmented

THE ECONOMIC BENEFITS OF USING THE BAND FOR MOBILE ARE MUCH GREATER THAN THE COSTS OF MOVING RADARS

EXISTING SUPPORT:

Pakistan, Sweden, Finland, UK, Norway, Senegal, Guinea, Ghana, Sudan, and 15 SADC countries.

C-BAND (3.4-4.2 GHz)



EXCELLENT CAPACITY BAND ABLE TO DELIVER THE BEST POSSIBLE EXPERIENCE

CURRENT USAGE:

- Mostly used for the Fixed Satellite Service (FSS) worldwide
- Already used for mobile broadband in some parts of the world



HOW TO ACCOMMODATE MOBILE *IN A PORTION*:

- Portion could be freed in future as FSS is increasingly moving to higher bands
- Sharing studies & live services prove satellite & IMT can use the band *under the right conditions*
 - Numerous options including FSS use of the full band in rural areas and an IMT *portion* in city centres

EXISTING SUPPORT:

- 3.4-3.6 GHz: Existing IMT footnote in 50% of ITU countries
- Common European IMT proposal for 3.4-3.8 GHz
- Strong support for 3.4-3.6/7 GHz in Region 2

**ECONOMIC BENEFITS OF ALLOCATING 3.4-3.8 GHz
TO MOBILE IN ARAB STATES EXCEED COSTS BY 24X**

WHAT'S AT STAKE: MORE THAN JUST MHZ



MOBILE DELIVERS MAJOR – AND GROWING – SOCIO-ECONOMIC BENEFITS



THESE BENEFITS WILL BE RESTRICTED WITHOUT ACCESS TO SUFFICIENT SPECTRUM

WHAT'S AT STAKE IN LATIN AMERICA



Mobile ecosystem contribution to GDP



Public funding ecosystem



Mobile ecosystem contribution to public funding in Latin America before regulatory fees

Employment

Jobs directly supported by mobile



Plus an additional **1.2M Indirect jobs** supported in 2013



Delivering financial inclusion to the still unbanked populations
36 live services and 19 planned as of June 2014



Delivering innovative new services
Number of M2M connections to grow at a CAGR of 25% per annum out to 2020

SECURING THE FUTURE OF MOBILE



THE FUTURE OF MOBILE BROADBAND IS AT RISK WITHOUT MORE SPECTRUM

- Mobile traffic is growing faster than anyone's expectations
- WRC-15 Agenda Item 1.1 could fail in its goal unless more progress is made
- There could be a serious impact on mobile services without more spectrum
- Flexibility is essential to allow countries to react to their evolving situations



CURRENT REGIONAL POSITION



BAND	IMT	NOC
470-698 MHz	US/Canada/México/Colombia 9.21	Argentina Brazil, Chile, D. Republic, Ecuador, El Salvador, Guatemala, Nicaragua, Panama, Paraguay, Peru, Urugugay, Venezuela
1350-1400 MHz	Brazil	US
1427-1517 MHz	Argentina, Brazil, Canada, Chile, Colombia, Costa Rica, D. Republic, El Salvador, Guatemala, Mexico, Nicaragua, Peru, Uruguay, US, Venezuela	-
2.7-2.9 GHz	-	Chile, Guatemala, US
3.4-4.2 GHz	Brazil, Colombia, Costa Rica, Ecuador: 3.4-3.6 GHz Canada, US: 3.4-3.7 GHz	Belize, Bolivia, El Salvador, Mexico, Nicaragua, Panama: 3.4-4.2 GHz Brazil, Ecuador Venezuela: 3.6-4.2 GHz Guatemala: 3.5-4.2 GHz

THANK YOU

