



3G, 4G

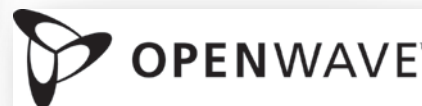
¿Donde está la región americana?

FORO REGIONAL PARA LAS AMÉRICAS:
SISTEMAS IMT—TECNOLOGÍA, EVOLUCIÓN E
IMPLEMENTACIÓN

CIUDAD DE PANAMÁ, 18 a19 de AGOSTO, 2014

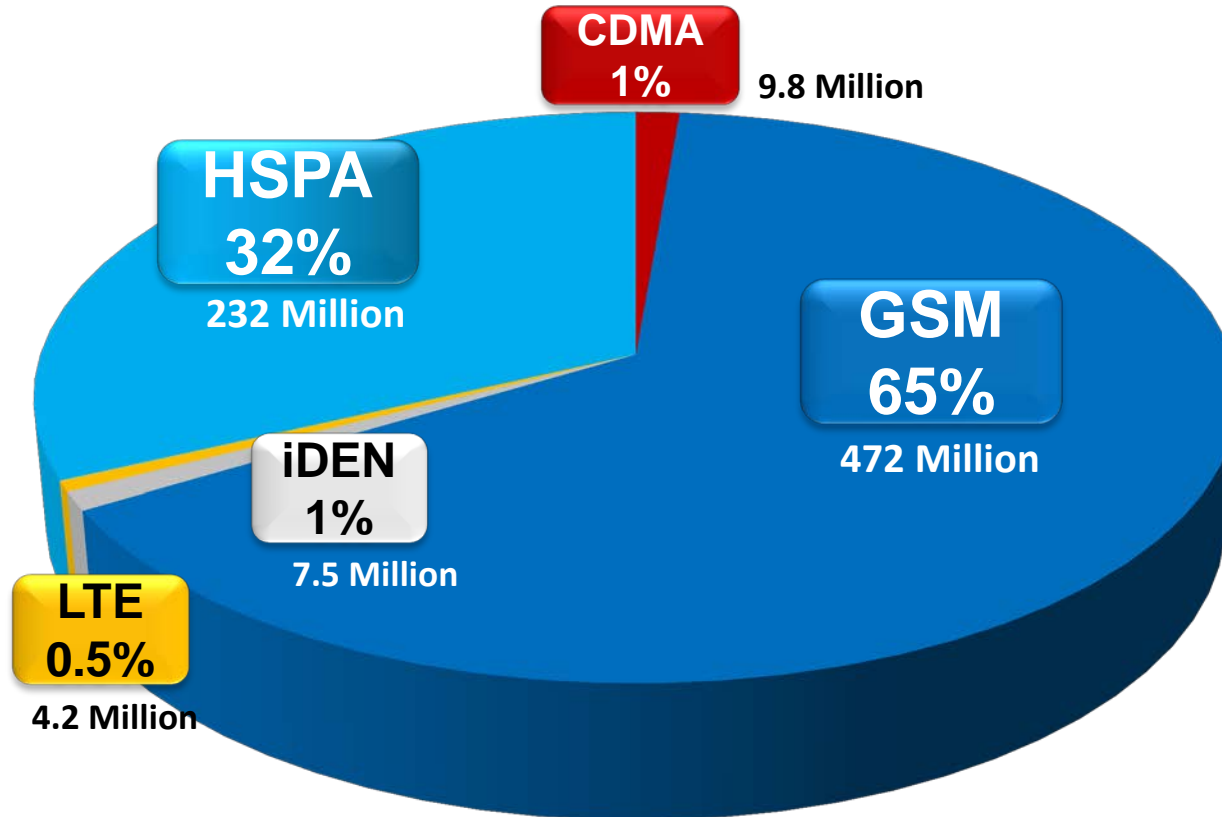


4G Americas Board of Governors



Latin America & Caribbean Mobile Technology Market Shares

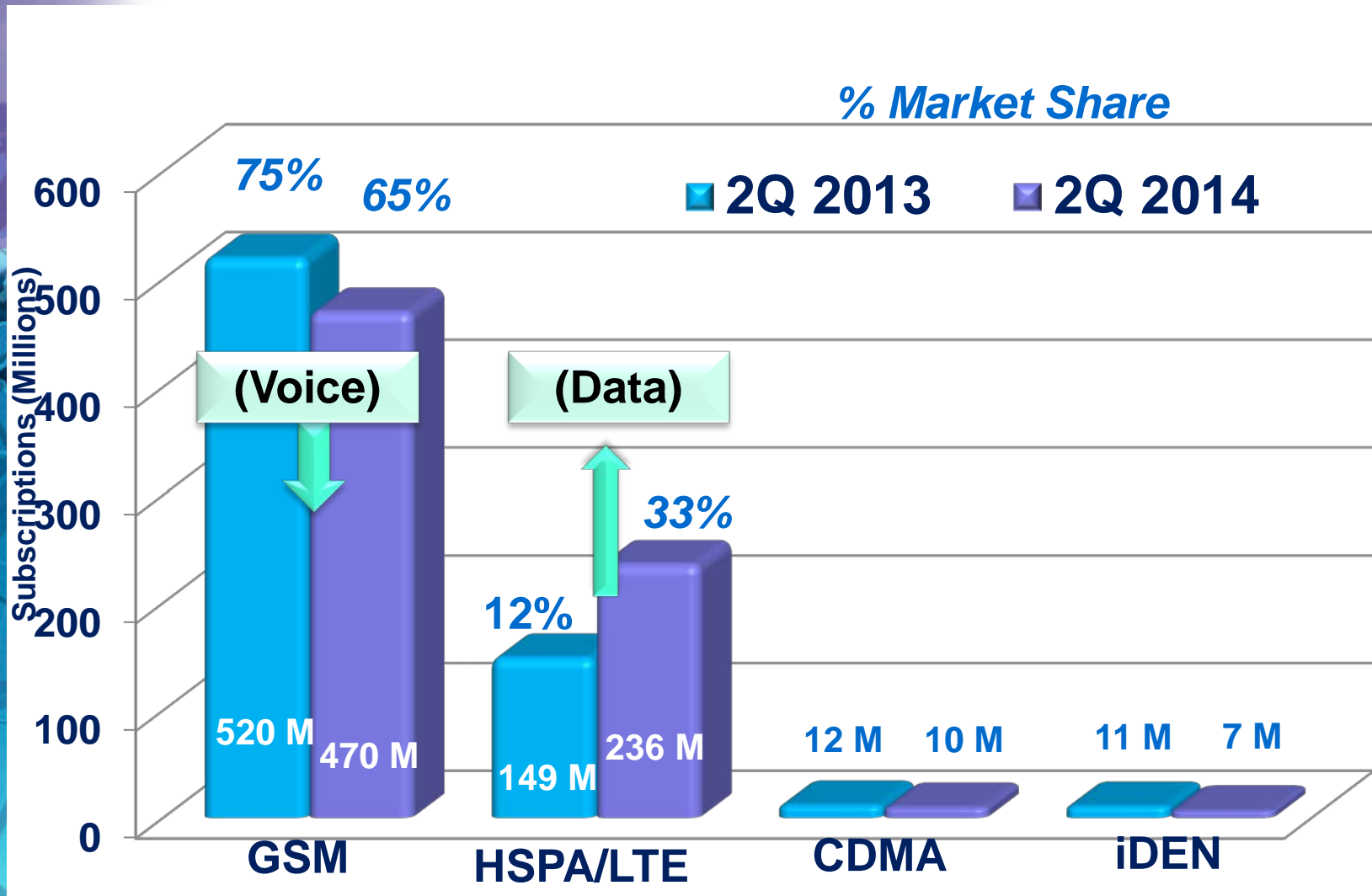
725 Million Total Mobile
Connections



Source: Informa Telecoms & Media, WCIS+, Aug 2014 Estimates

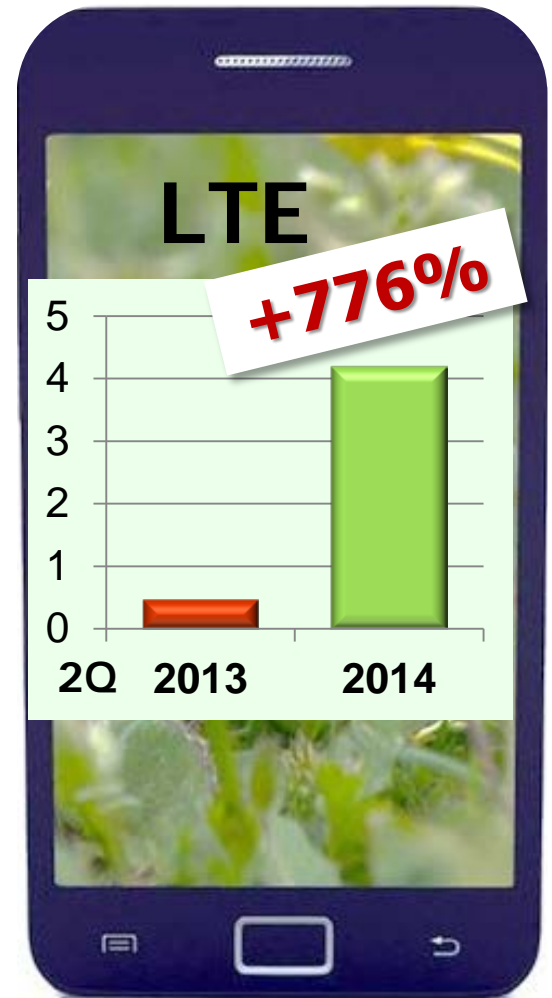
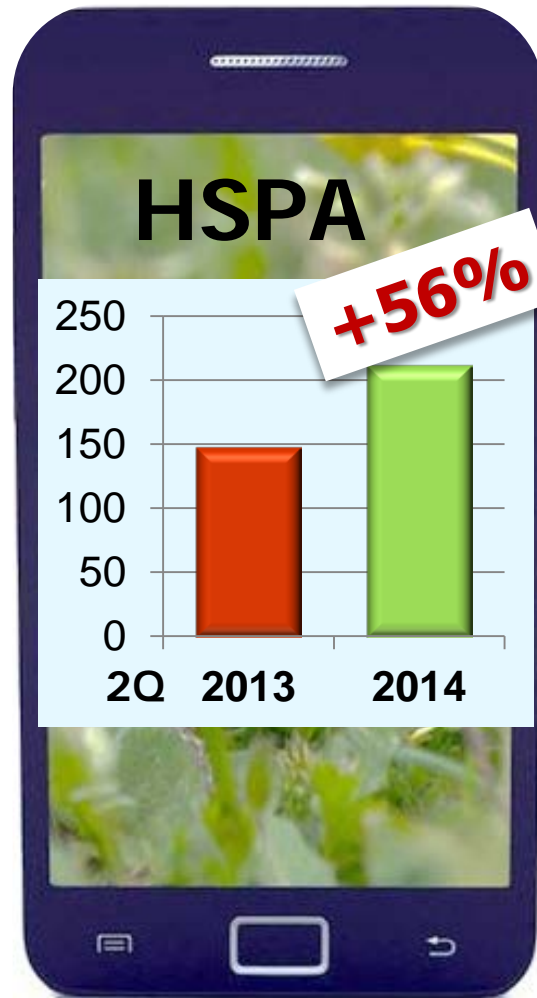


Change in Technology Market Shares in Latin America & Caribbean (2Q2013 v. 2Q2014)



Changes in 3GPP Market Shares in Latin America & Caribbean (2Q2013 v. 2Q2014)

Connections (Millions)



LTE in Latin America & the Caribbean

44 Networks
18 Countries

(as of 22 July 2014)



México

Movistar	1700/2100 AWS
Telcel	1700/2100 AWS



Colombia

UNE	2500/2690 MHz
Claro	2500/2690 MHz
Movistar	1700/2100 AWS
Tigo	1700/2100 AWS



Bolivia

Entel, Tigo	700 MHz
Claro	2500/2690 MHz
Nextel	1800 MHz
Oi	2500/2690 MHz
ON*	2500/2690 MHz



Brazil

Sky Telecom*	2500/2690 MHz
TIM	2500/2690 MHz
VIVO	2500/2690 MHz



Chile

Claro	2500/2690 MHz
Entel	2500/2690 MHz
Movistar	2500/2690 MHz



Ecuador

CNT Mobile	1700/2100 AWS
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Paraguay

Personal	1900 MHz
VOX	1700/2100 AWS



Peru

Movistar	1700/2100 AWS
Claro	1700/2100 AWS



Uruguay

Antel	1700/2100 AWS
Claro	1700/2100 AWS



Venezuela

Digitel	1800 MHz
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Antigua & Barbuda

Digicel*	700 MHz
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Aruba

SETAR	1800 MHz
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Bahamas

BTC	700 MHz
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Cayman Islands

C&W Lime	700 MHz
Digicel*	700 MHz



Costa Rica

ICE/Kolbi	2600 MHz
Claro	1800 MHz
Movistar	1800 MHz



Dominican Republic

Claro	1700/2100 AWS
Orange Dominicana	1800 MHz
Tricom	1900 MHz



Puerto Rico

AT&T	1700/2100 AWS
Claro	700 MHz
Open Mobile	700 MHz
Sprint	850/1900 MHz
T-Mobile	1700/2100 AWS



Virgin Islands

AT&T	1700/2100 AWS
Sprint	1900 MHz

*Indicates TDD networks (remainder FDD)



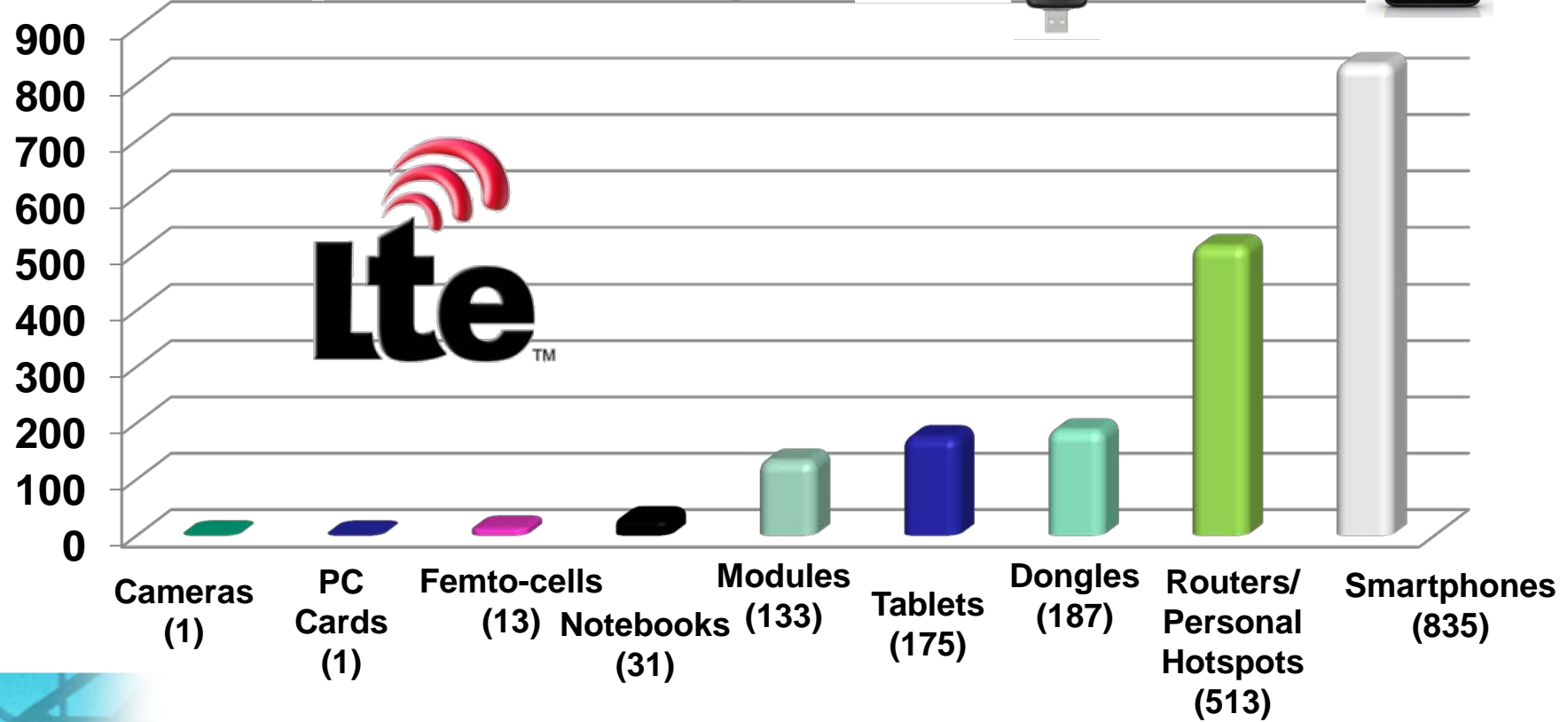
Band (MHz)	Networks	Band(MHz)	Networks
700	8	1800	6
850 / 1900	1	1700/2100	14
1900	3	2500-2690	12

(Sources: Public announcements, regulatory entities)

1,889 Total Devices in the Market

LTE User Devices

(Includes FDD and TDD)



LTE Devices per Band

LTE FDD

Frequency	Band	Devices
1800 MHz	Band 3	769
2600 MHz	Band 7	740
2100 MHz	Band 1	544
800 MHz	Band 20	467
800/1800/2600	Tri-band	413
AWS	Band 4	405
700 MHz	Bands 12, 17	379
850 MHz	Band 5	345
900 MHz	Band 8	335
700 MHz	Band 13	308
1900 MHz	Band 2	220
1900 MHz	Band 25	107
APT700	Band 28	33

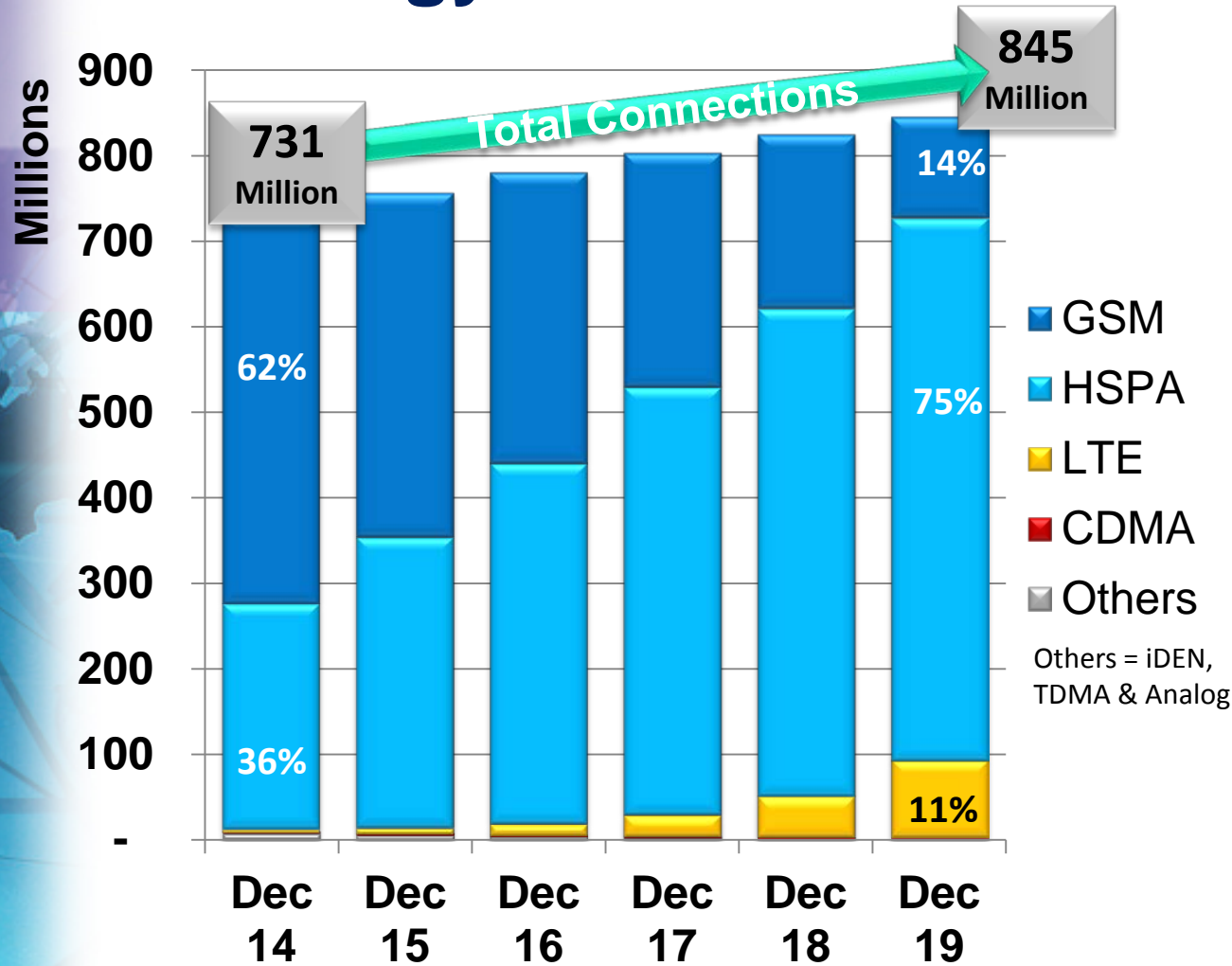


LTE TDD

Frequency	Band	Devices
2300 MHz	Band 40	361
2600 MHz	Band 38	360
1900 MHz	Band 39	203
2600 MHz	Band 41	183
3500 MHz	Band 42,43	24



Latin America & Caribbean Mobile Technology Forecast 2014-2019



Source: Informa Telecoms & Media, WCIS+, Aug 2014 Estimates

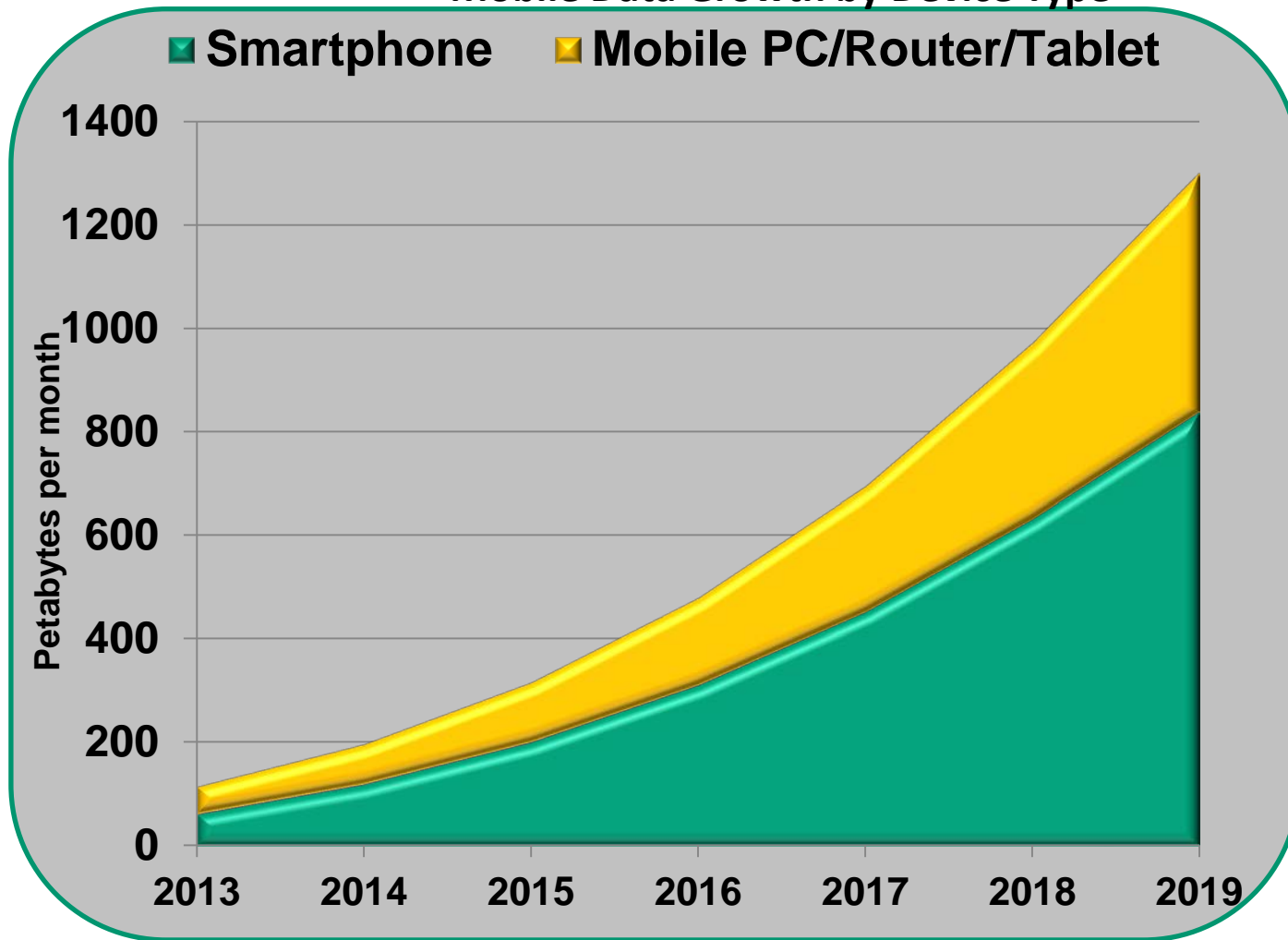


9X Increase in Mobile Data Usage in Latin America 2013-2019



From **53** petabytes to **463** petabytes monthly, the majority from smartphones

Mobile Data Growth by Device Type



FROM 2020 MOBILE NETWORKS NEED TO BE READY TO COPE WITH THE 1000X DATA CHALLENGE

Assumptions

Traffic volume per subscriber

+50% per year

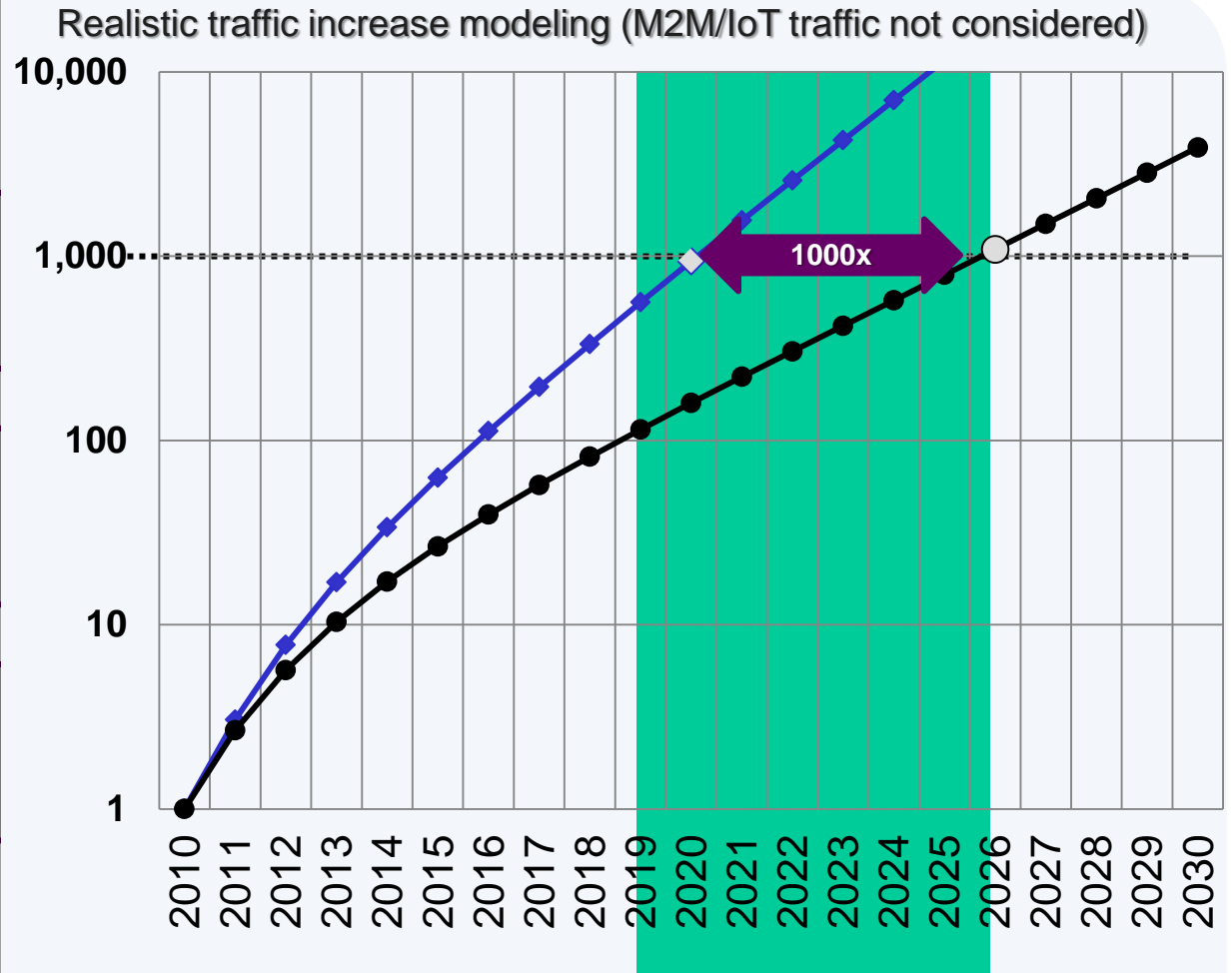
+25% per year

Total subscriber base

+10% per year

Mobile broadband penetration

reaching 100% by 2020



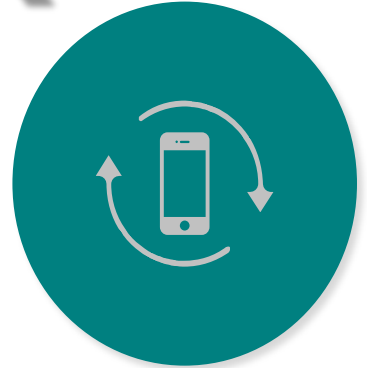
INCREASING SUPPORT & CAPACITY UP TO

1000x

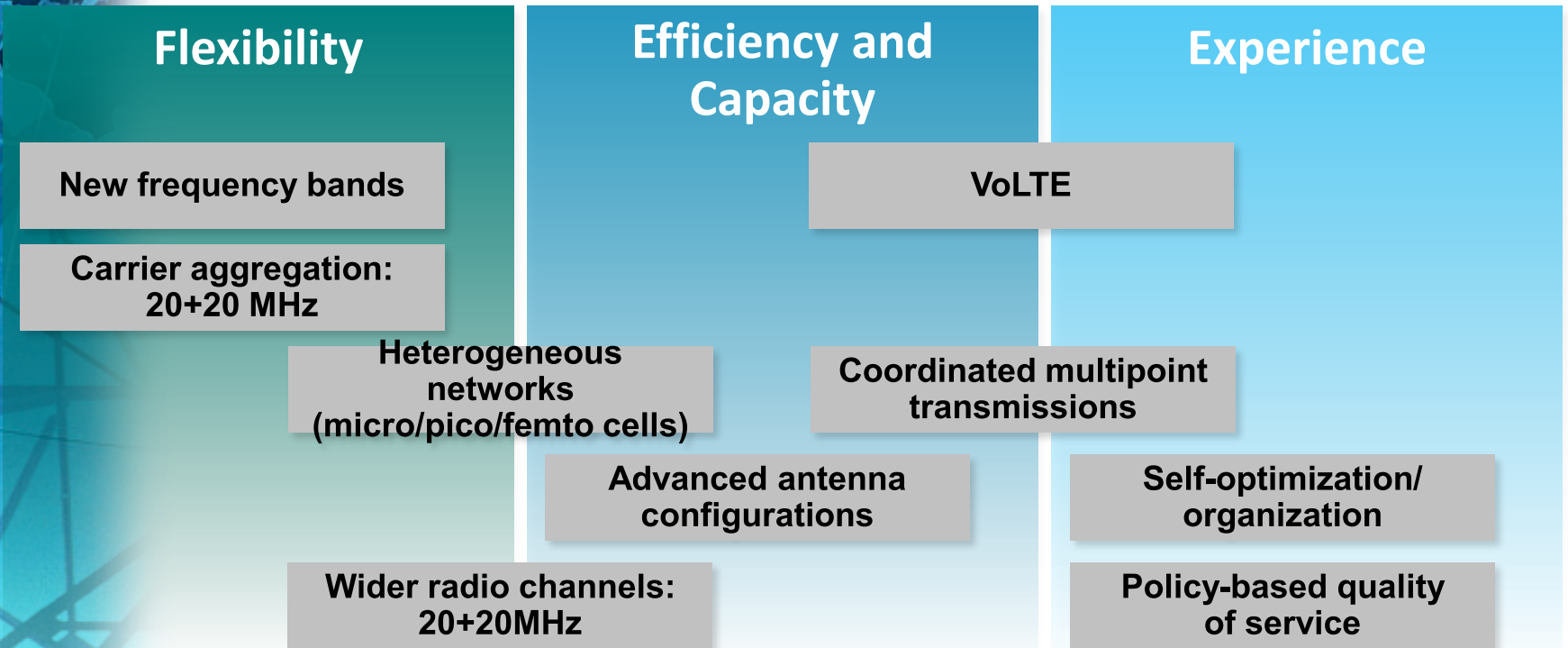
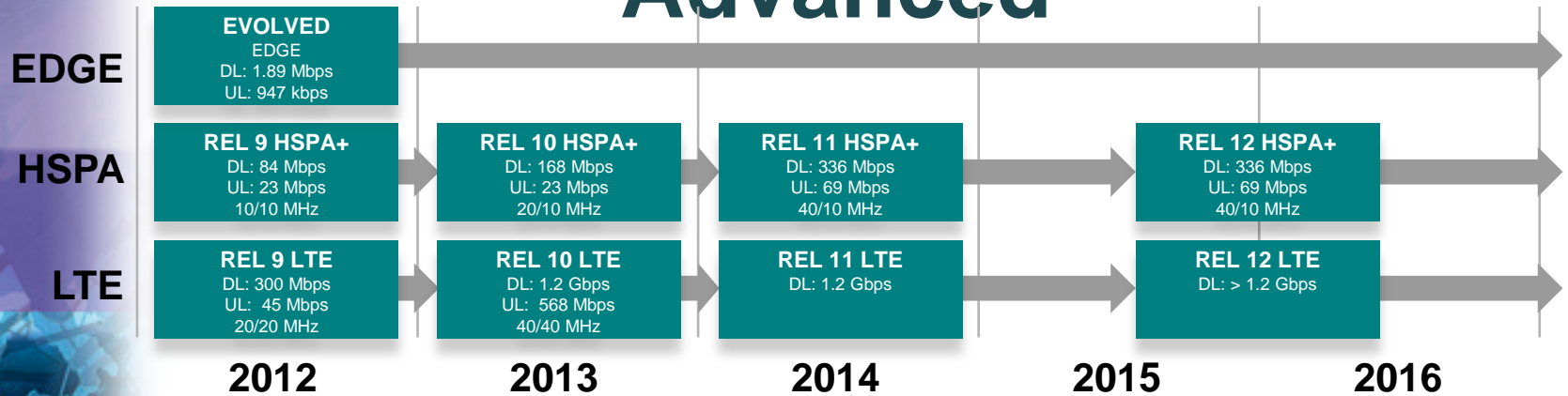
Technology
Evolution

Regulatory
Innovation

Spectrum



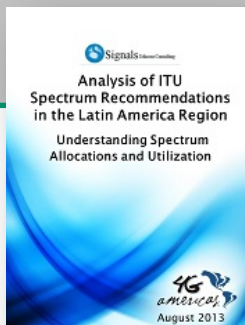
Technology Evolution To LTE-Advanced



Throughputs rates are peak theoretical network rates for that technology release. Dates refer to expected initial commercial network deployment except 2011, which shows technologies that year. There are no public announcements of deployment of WiMAX Rel 1.5 nor IEEE 802.16m. X/Y MHz indicates X MHz used on the downlink and Y MHz used on the uplink. Source: Rysavy Research/4G Americas, 2013

LATIN AMERICA SPECTRUM STATUS

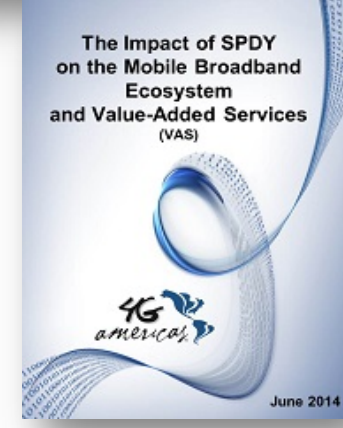
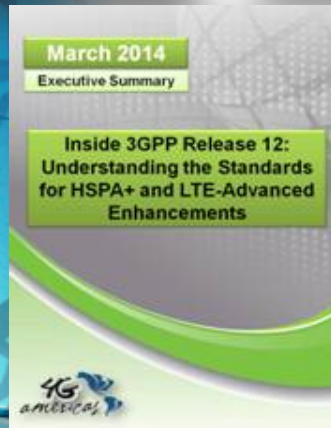
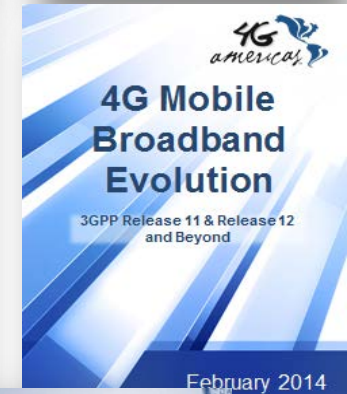
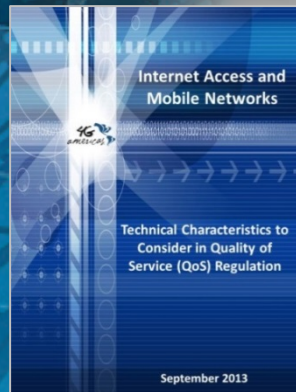
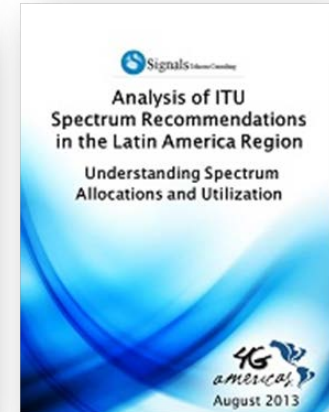
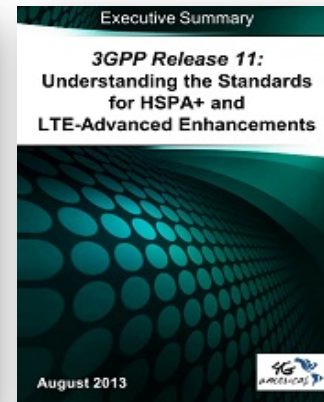
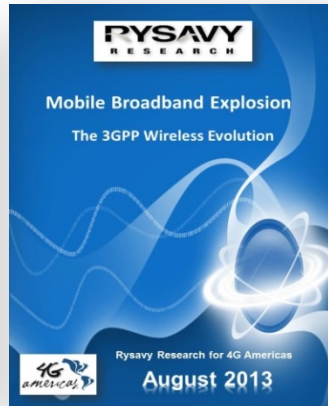
- **Reference point** - requirement for 1300 MHz by 2015 indicated by the ITU (ITU-R M.2078)
- **Summary of Regional Situation:** 3 markets are between 30%-40% of this goal, 6 are between 20%-30%, and the remainder are between 10%-20%.
- **Source:** 4G Americas, *Analysis of ITU Spectrum Recommendations in the Latin American Region* (2013).



Percent of ITU recommendation achieved, selected countries



4G AMERICAS WHITE PAPERS



Thank you!



Bob Calaff

Director, Latin America & Caribbean