

LTE Towards Mobile Broadband



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Latin America Roadmap to LTE

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Agenda

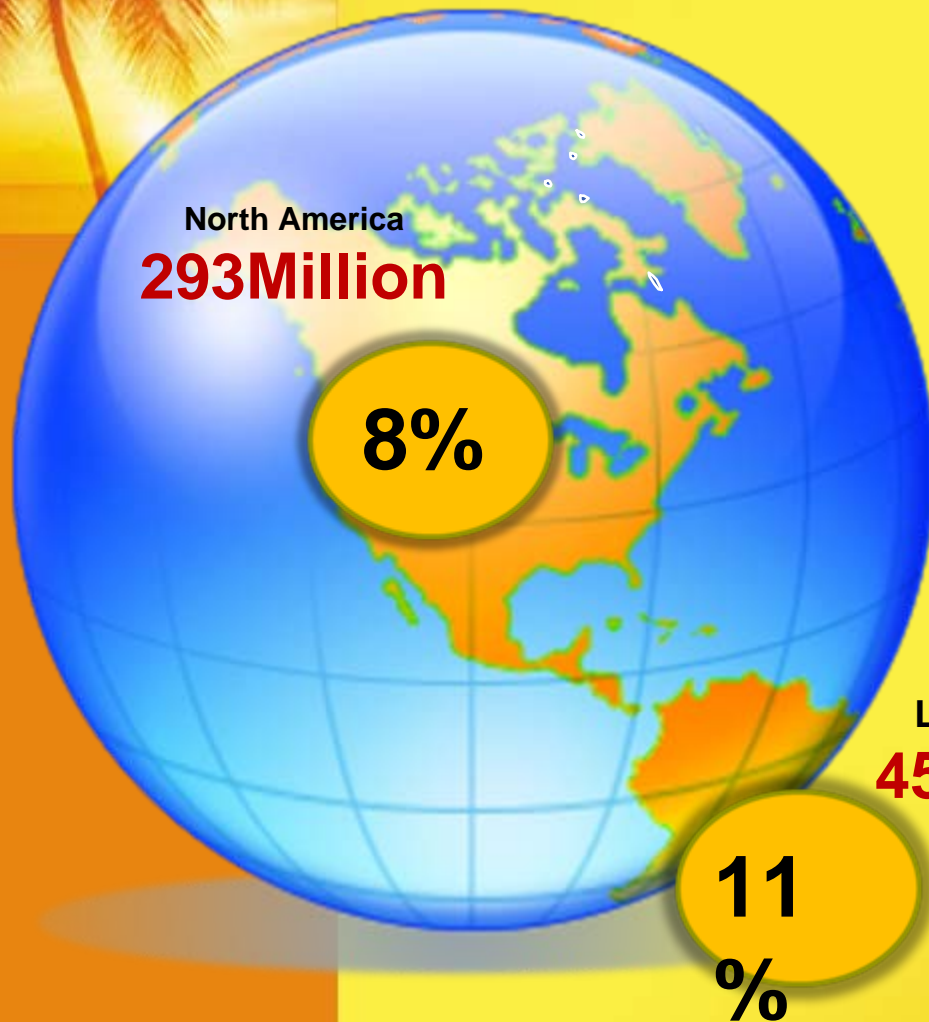
- **Technology and market update**
- **Competition in Latin America**
- **Data contribution to ARPU**
- **3G HSPA status and evolution to LTE**
- **Regional regulatory environment**
- **Conclusions**

3G Americas Board of Governors

The mission of 3G Americas is to promote, facilitate and advocate for the deployment of the GSM family of technologies including LTE throughout the Americas



Wireless Market in the Western Hemisphere



North America
293 Million

8%

Global Subscriptions

4 Billion

19% of Total Global Subscriptions

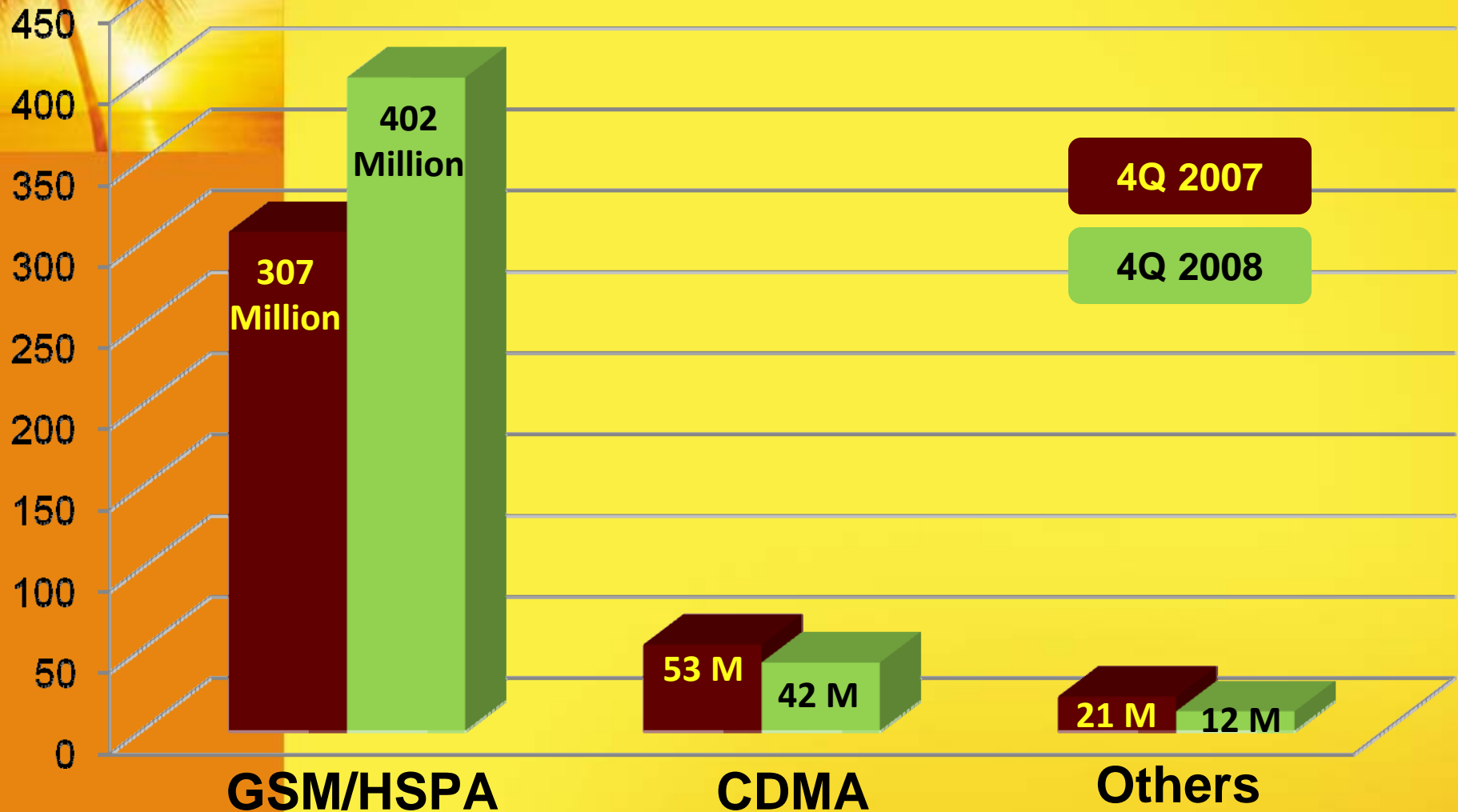
Latin America
455 Million

11%

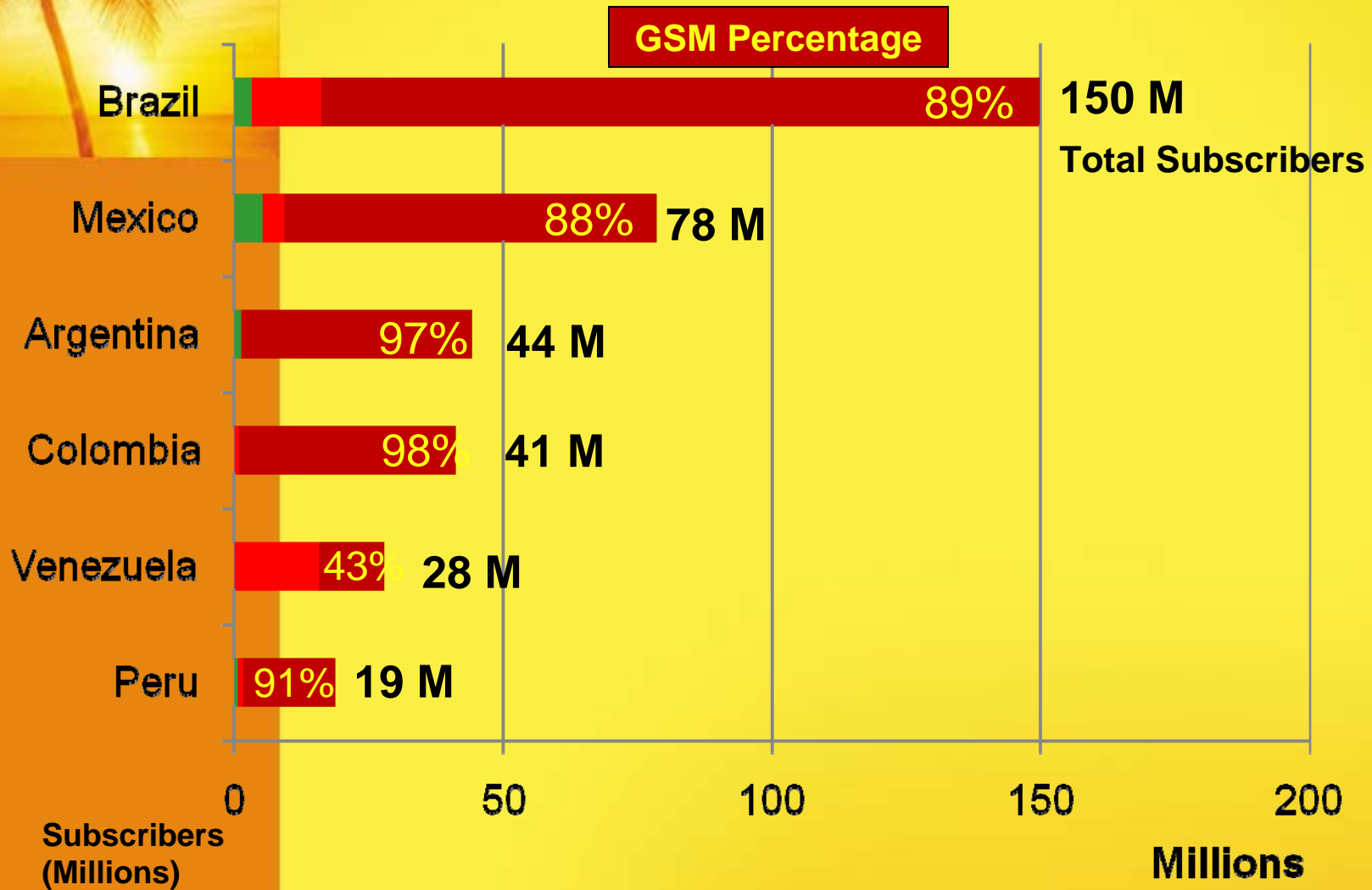
Latin America is a growth engine for 3G in the Americas

Wireless Technology Growth - Latin America

Subscribers By Technology

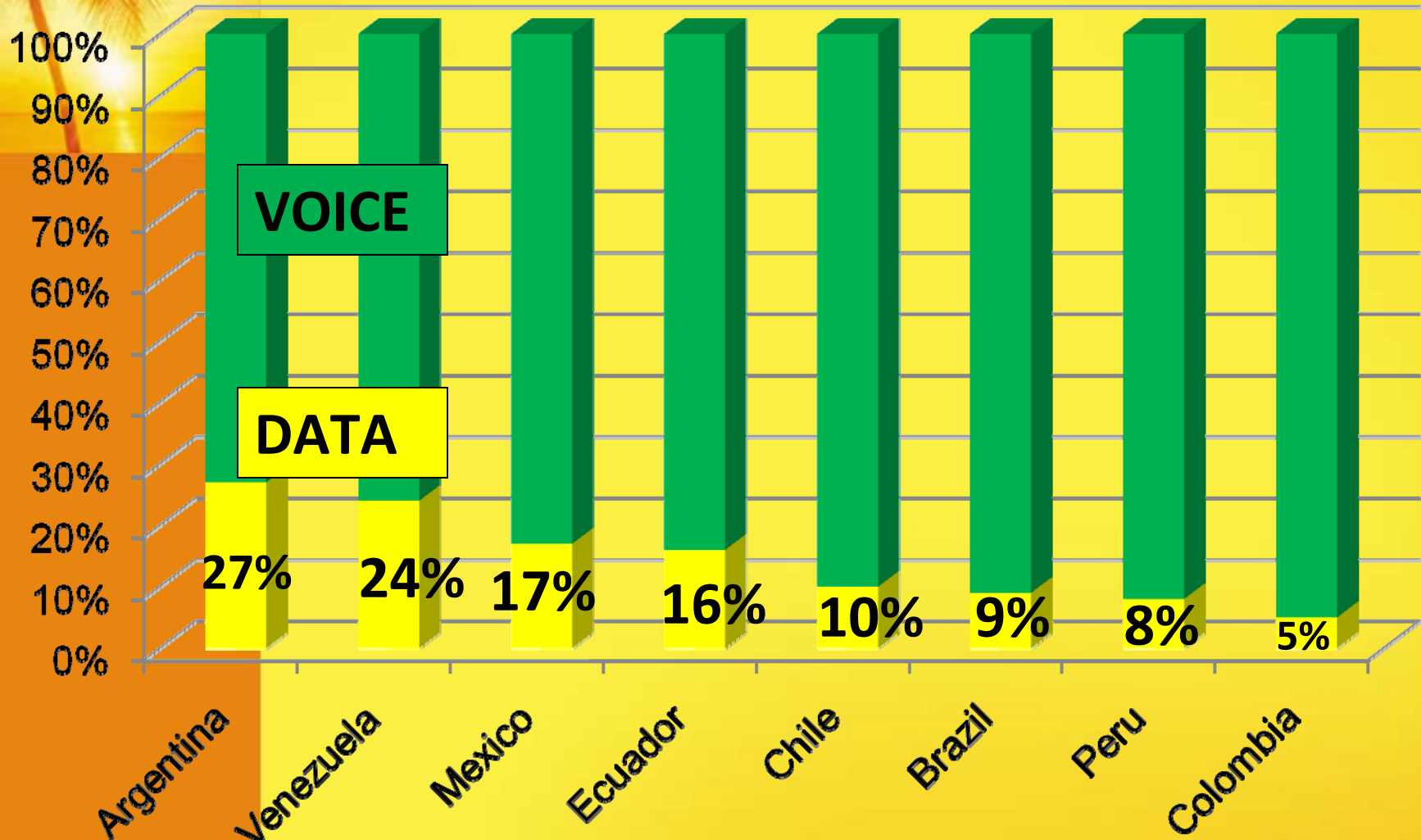


Technology market share 4Q 2008



Data contribution to ARPU during 3Q 2008

Data contribution to ARPU has reached an average of 9% in Latin America and 21% in North America



Value Added Service (VAS) Trends

SMS = 75 - 80% of VAS revenues

Ringtones



Wallpapers



Push e-mail



Streaming Music



Mobile TV

Video clips



Social Networking

Mobile social networking revenues could reach US\$52 billion by 2012

Blogging

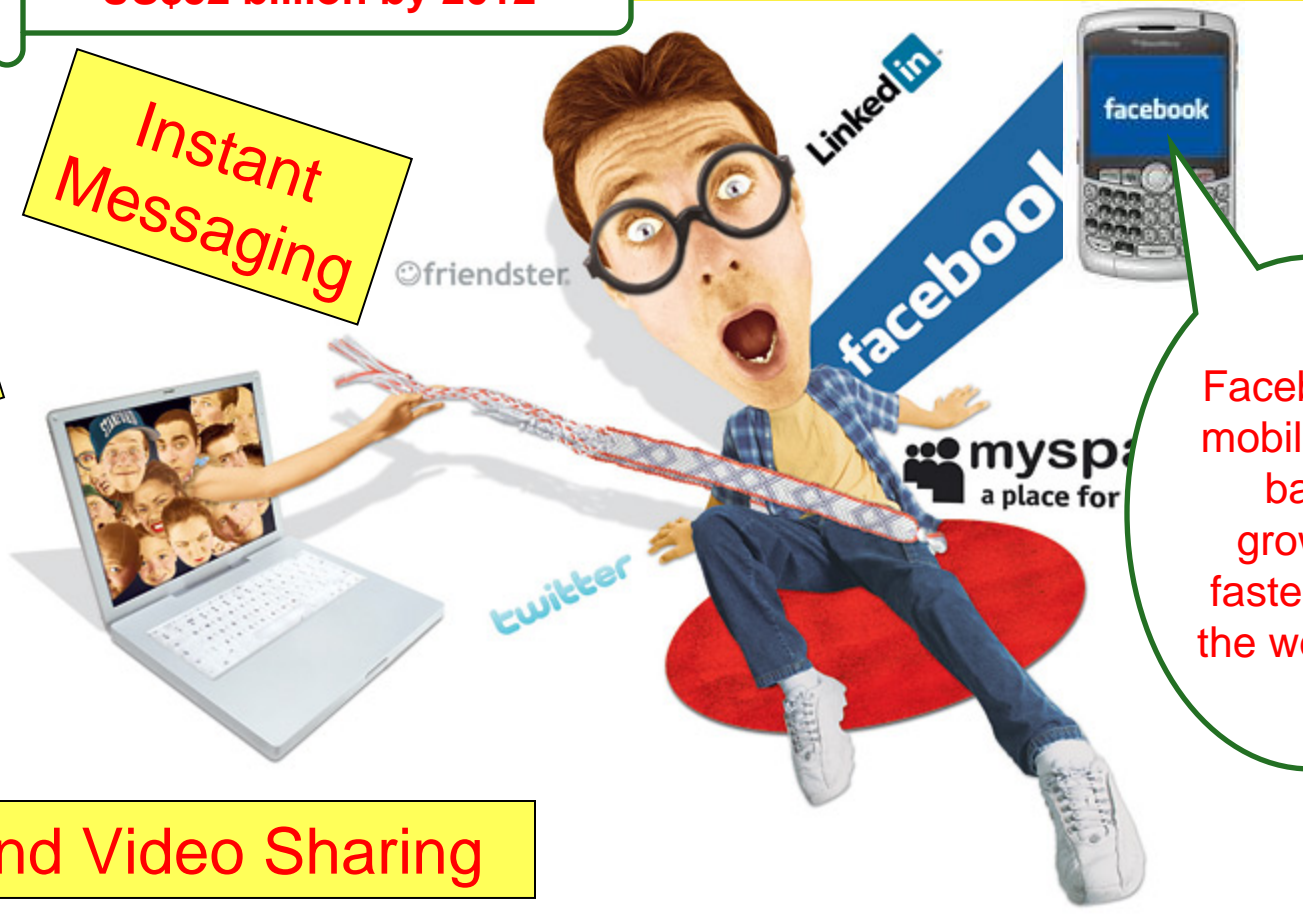
Instant Messaging

Games

SMS

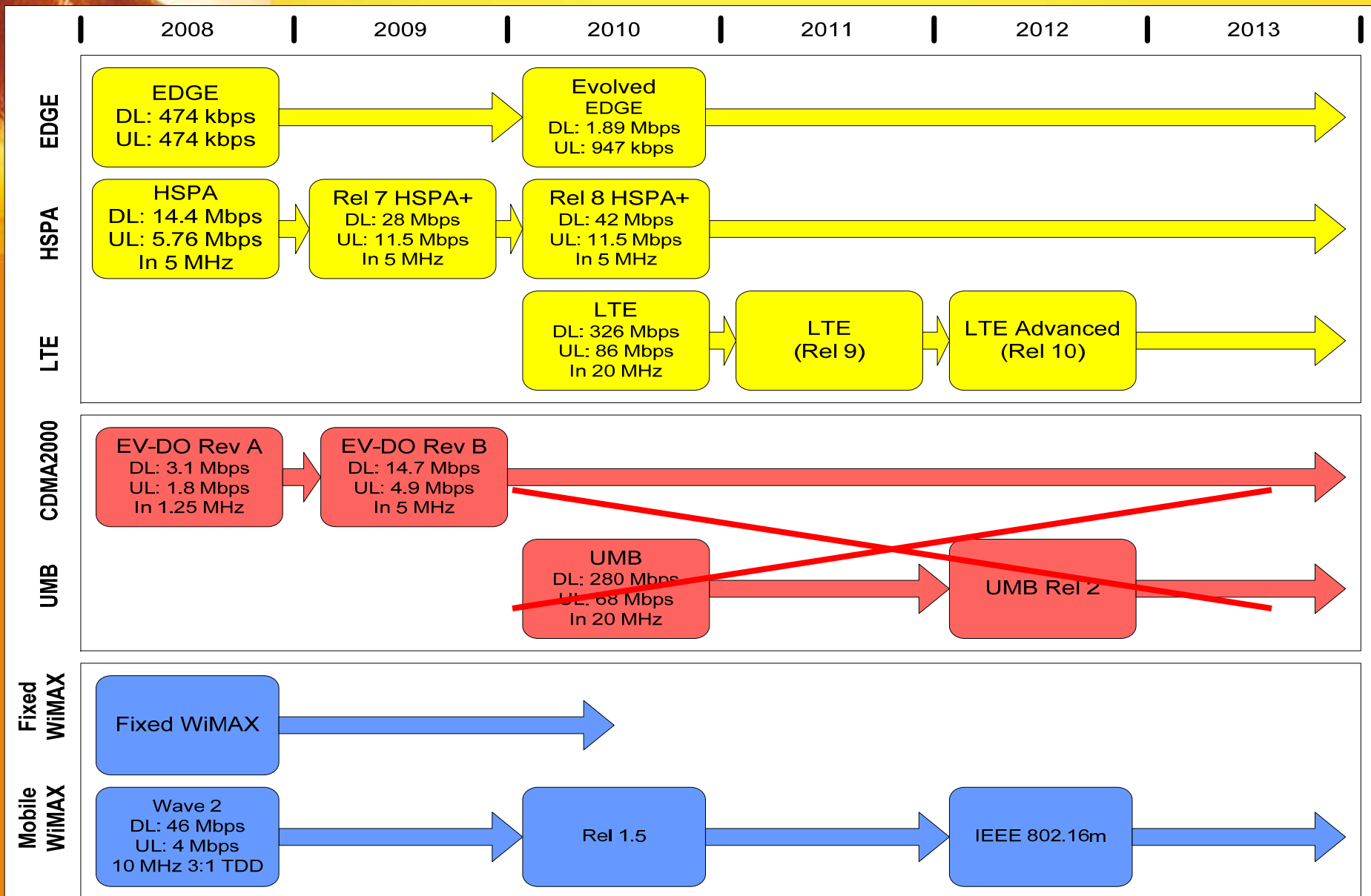
Photo and Video Sharing

Location based socialization services



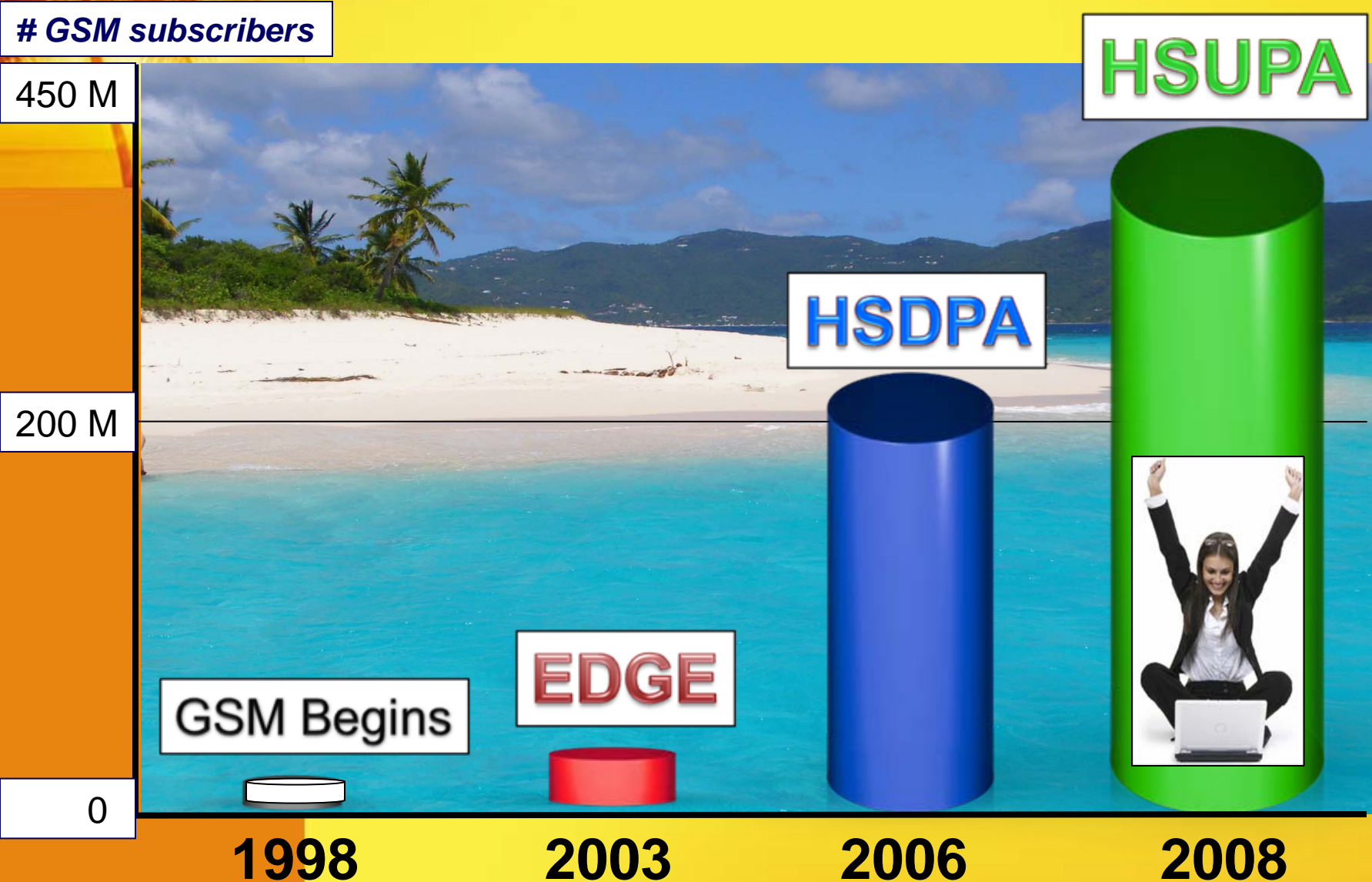
Facebook's mobile user base growing faster than the website!

Evolution of TDMA, CDMA, and OFDMA Systems



Notes: Throughput rates are peak theoretical network rates. Radio channel bandwidths indicated. Dates refer to expected initial commercial network deployment except 2008 which shows available technologies that year. No operator commitments for UMB.

Latin America Transition to Mobile Broadband



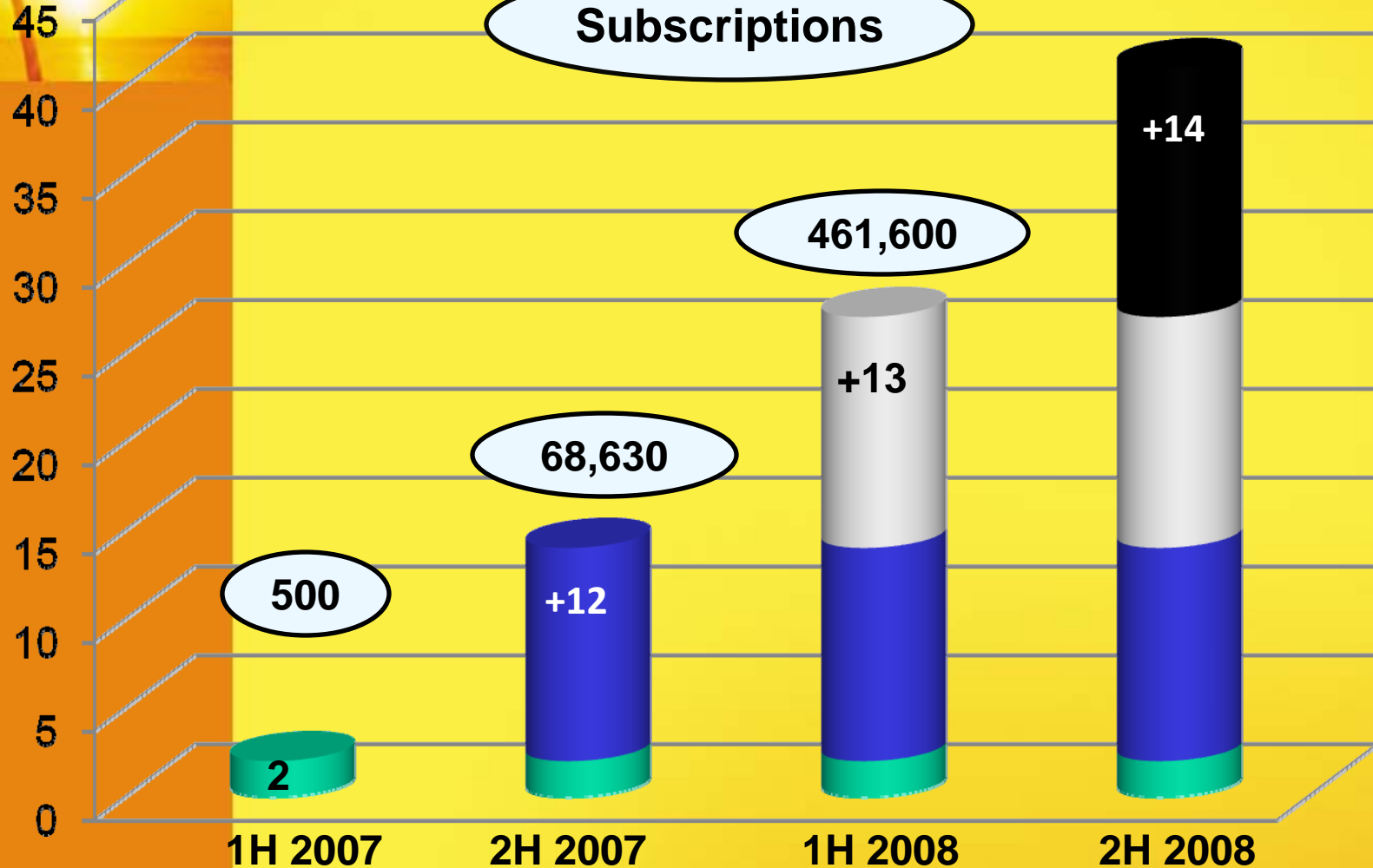
HSPA Deployments in Latin America and the Caribbean

41 HSPA Networks in Service in 20 countries



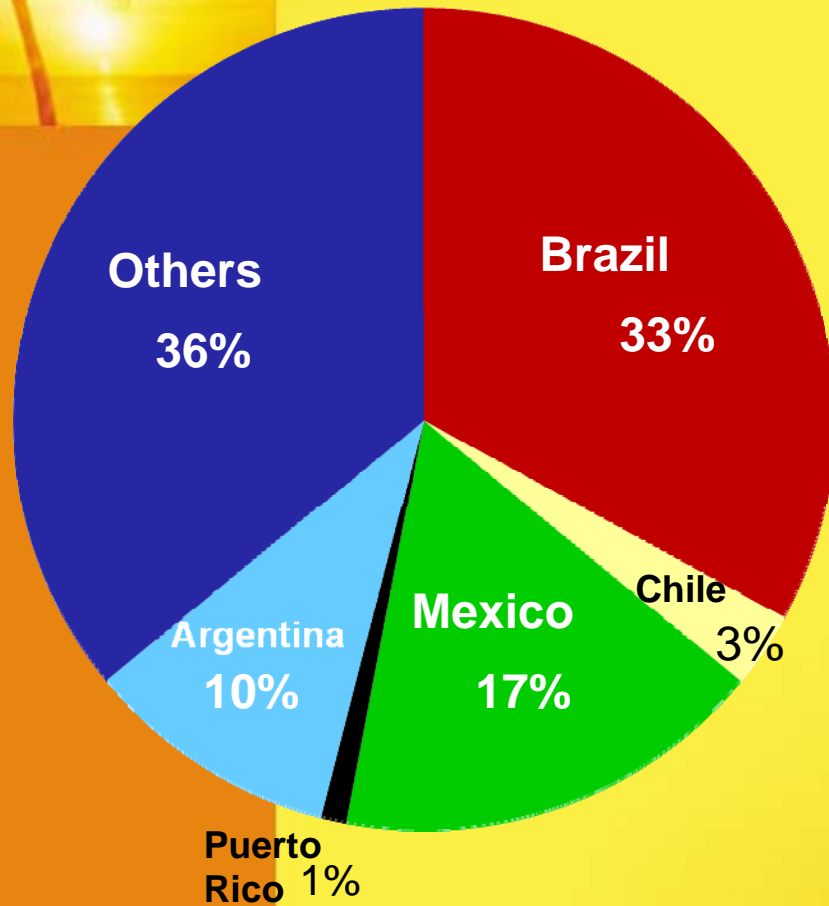
HSPA Networks and Subscriptions Growth in Latin America

HSPA Networks

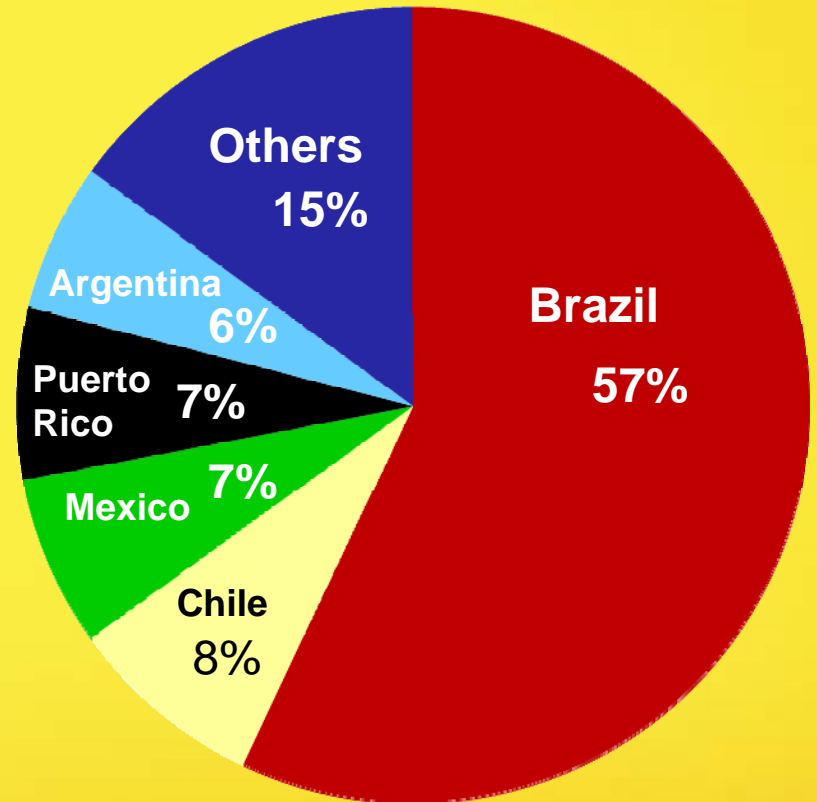


Where is HSPA being adopted in Latin America?

Wireless Subscribers



HSPA Subscriptions





Regional Regulatory Environment

- **A need for more spectrum and rid of spectrum caps**
- **Spectrum regulation clarity**
- **Number portability in service in Mexico and Brazil**
- **Taxation still a burden for operators and consumers**
- **New 3G spectrum:**
 - **1.9 / 2.1 GHz (Brazil)**
 - **1.7 / 2.1 GHz (Chile, Mexico, Argentina)**



Spectrum auctioned

- **Venezuela:** December 2007
 - 2X30 1900 MHz bands auctioned. Winners: 2 incumbents (Movilnet and Telefonica); price: \$ 120M USD
- **Brazil:** December 2007
 - 1X30 and 3X20 1900/2100 MHz bands auctioned. Winners: 6 incumbents (Brasil Telecom, Claro, CTBC, Oi, TIM Brasil and VIVO); price: \$ 3B USD
- **Panama:** May 2008
 - 2X30 1900 MHz bands auctioned; Winners: 2 new operators (America Movil and Digicel)



Spectrum to be auctioned

- **Peru:** 1Q-2Q 2009
 - 1X30 1900 MHz band to promote a new player to compete with America Movil, Telefonica and Nextel
- **Mexico:** 1Q-2Q 2009
 - 410-430 MHz
 - Unsold PCS spectrum in 1900 MHz
 - 1700/2100 MHz (AWS)
 - 3400-3700 MHz
- **Chile:** 2009
 - 1700/2100 MHz (AWS)
 - 700 MHz
- **Argentina:** 2009
 - 1700/2100 MHz (AWS)
- **Colombia:** 2009
 - Unsold PCS spectrum in 1900 MHz
 - 1700/2100 MHz (AWS)



Summary

- **Average indicators:**
 - Wireless penetration: 70%
 - Prepaid: 80%
 - ARPU: \$ 15 USD

- **Big push by operators for 3G HSDPA devices** (handsets, cards, USB)
- **Slower Subscriber growth in top markets**
- **Operators trying to focus more on postpaid users and expanding ARPU as growth slows**
- **Operator expansion continues:**
 - Telefonica , America Movil, TIM command 76% of the market
 - Digicel (Caribbean) enters Central America (El Salvador, Guatemala, Honduras, Panama)
 - America Movil enters Caribbean (Dominican Republic, Jamaica, Puerto Rico)



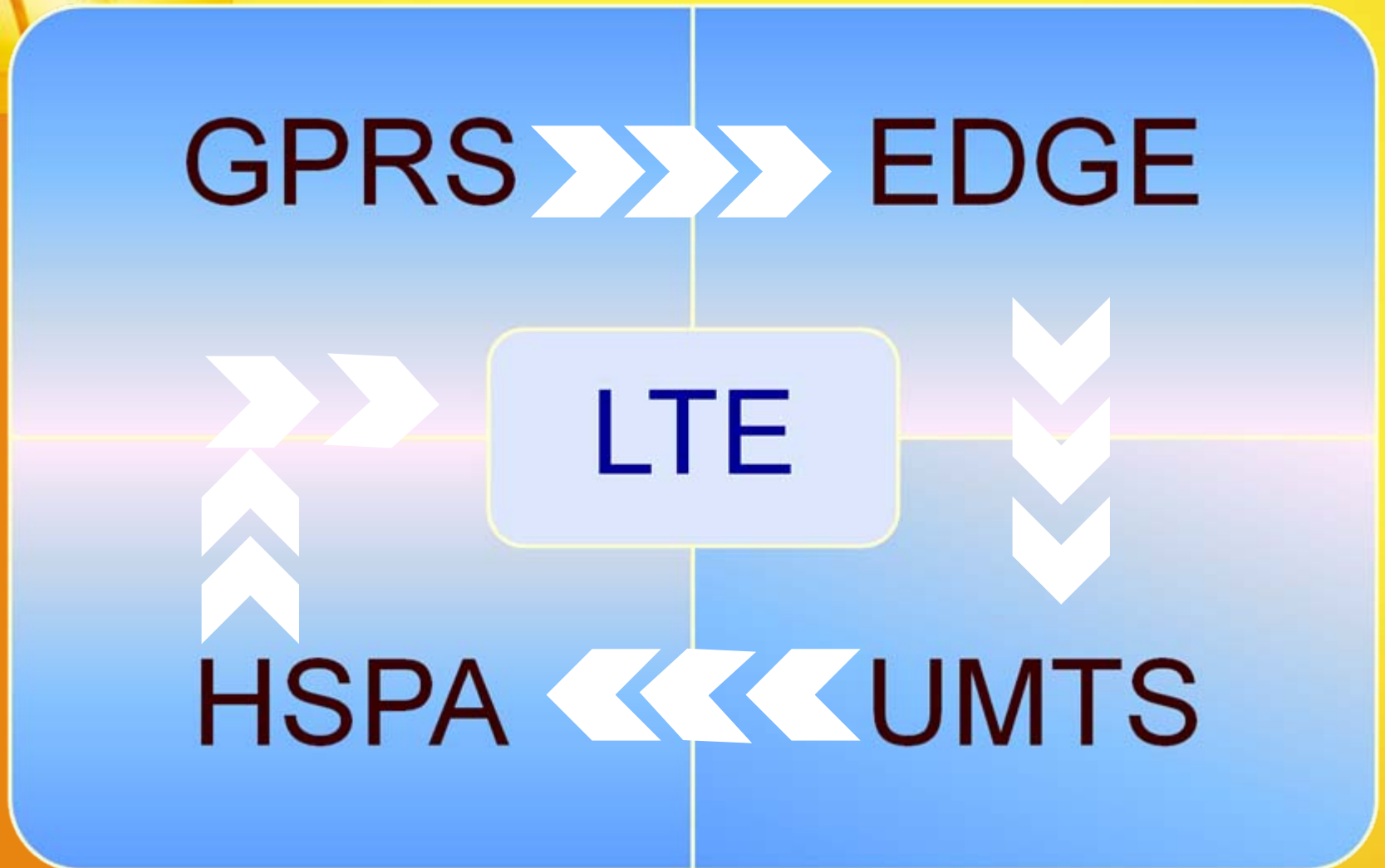
Summary

41 commercial 3G HSPA networks in 20 countries with more than 3 million subscriptions

Regulatory issues & Opportunities:

- **3G spectrum auctions (1.9/2.1, 1.7/2.1)**
- **Number portability being implemented (Mexico, Brazil)**
- **Competition levels, new operators (MVNO, cooperatives, mergers)**
- **Discussion of 2.5 MHz Spectrum for Mobile Wireless**
- **Considering 700 MHz spectrum for future**
- **Taxation**

GSM Technology Path





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