

“LTE Roaming Workshop”

GSMA’s View on LTE Roaming

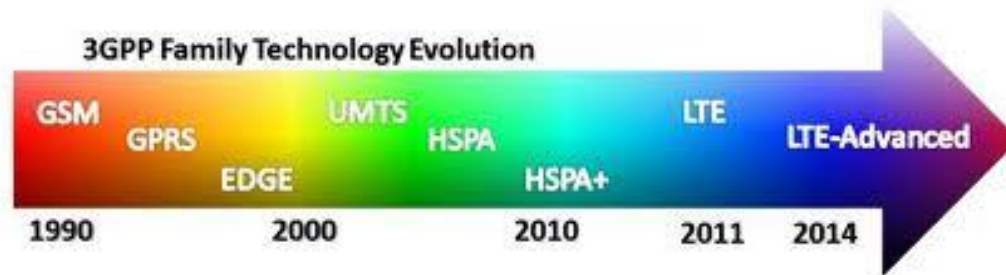
GSMA LA Roaming Week – Oranjestad, Aruba

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GSMA's Role in Roaming

- GSMA has held a key role in defining the technical and commercial frameworks of Roaming relationships between mobile operators for more than 20 years.



GSMA's Role in Roaming

- This role has been extended in to the LTE era.
 - 2008 – GSMA 'Next Generation Roaming and Interoperability' (NGRAI) project defined LTE data roaming principles
 - 2010 – Voice over LTE (VoLTE) initiative defined how voice service will be delivered over LTE, including Roaming.
 - IREG, BARG, TADIG working group documents upgraded to include LTE roaming principles.
 - Public Policy lobbying for global and regional alignment of spectrum bands licensed for LTE deployments.

GSMA's Role in Roaming

- Basic frameworks for LTE Roaming are in place

**206 commercial 4G LTE networks
worldwide across 79 countries**
25 networks operating in Latin America
and the Caribbean in 14 countries

1000+ user devices announced

- Data Roaming service being launched during 2013
 - Many already live.

Challenges and Questions for LTE Roaming

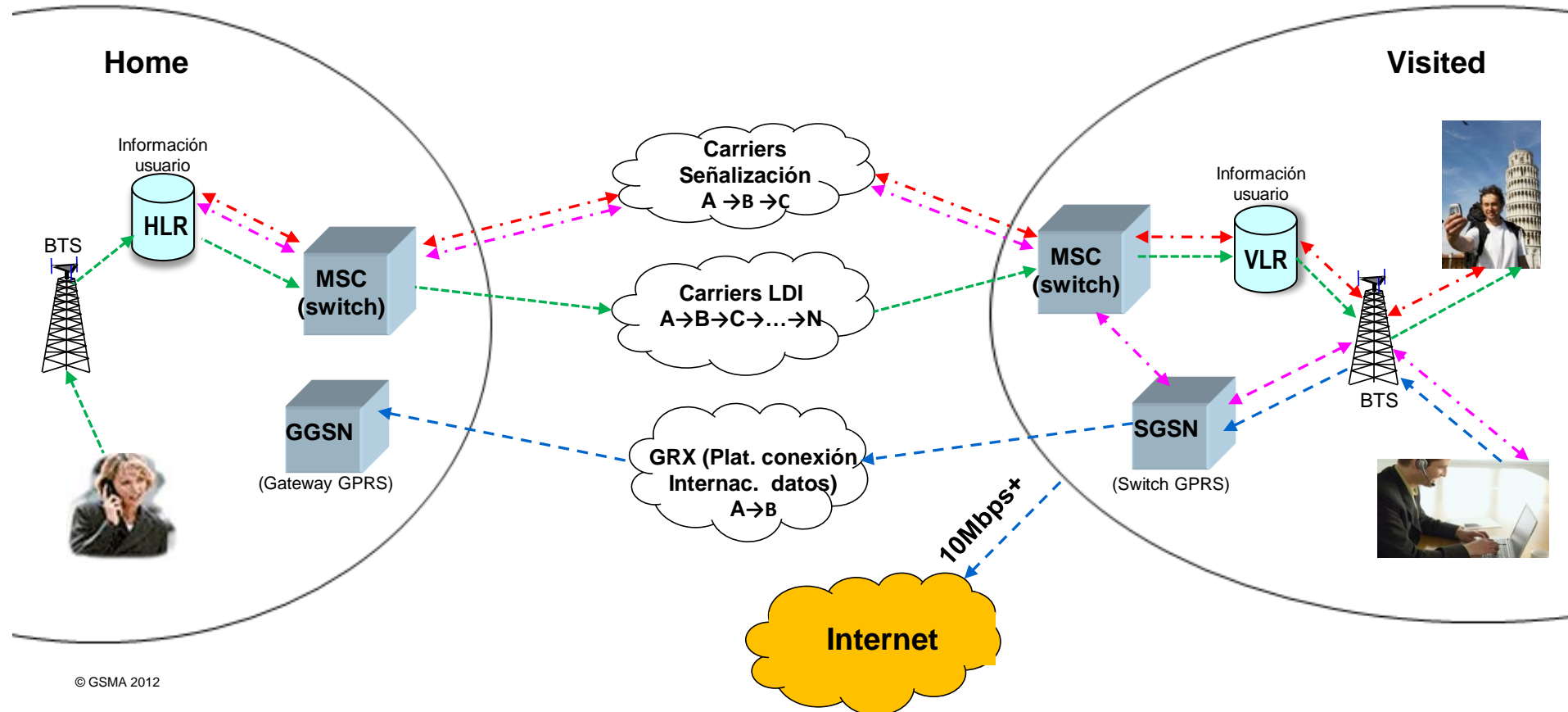
- Device – how many bands are needed for a ‘LTE World phone’?
 - Likely to be 16 or more, but most popular devices support no more than 4.

LTE FDD
2600 MHz band 7
1800 MHz band 3
800 MHz band 20
700 MHz bands 12, 17
2100 MHz band 1
700 MHz band 13
800/1800/2600 tri-band
AWS band 4
850 MHz band 5
900 MHz band 8
1900 MHz band 2
LTE TDD
2600 MHz band 38
2300 MHz band 40
1900 MHz band 39
2600 Mhz band 41
3500 MHz band 42, 43



Challenges and Questions for LTE Roaming

- If bandwidths are 10Mbps+, and most traffic is generated from the internet, does home routing still make sense?
 - Local Breakout of traffic from Visited network may be more economical and simpler, but changes wholesale Roaming model and technical implementation.



Challenges and Questions for LTE Roaming

- How will Voice over LTE Roaming be implemented?
 - Very complex implementation when combined with CS voice, and even more complex when needing to guarantee end-to-end Quality of Experience.