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# IMT: solutions and applications for mobile broadband

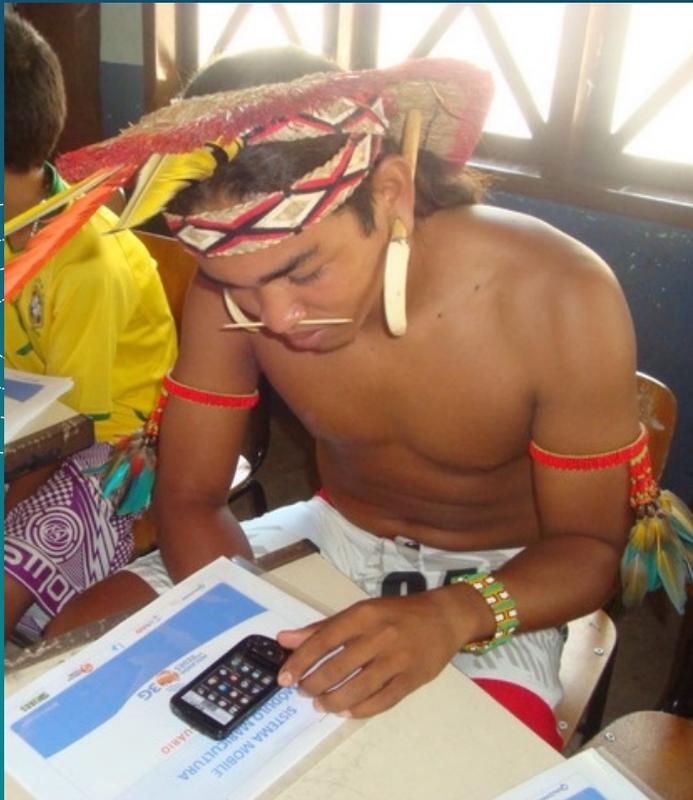


FORUM  
AUGUST 2014



# Mobile changes everything

## How we manage our health



## How we work

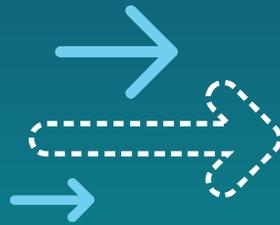


## How we learn

# Industry is shifting to mobile architecture



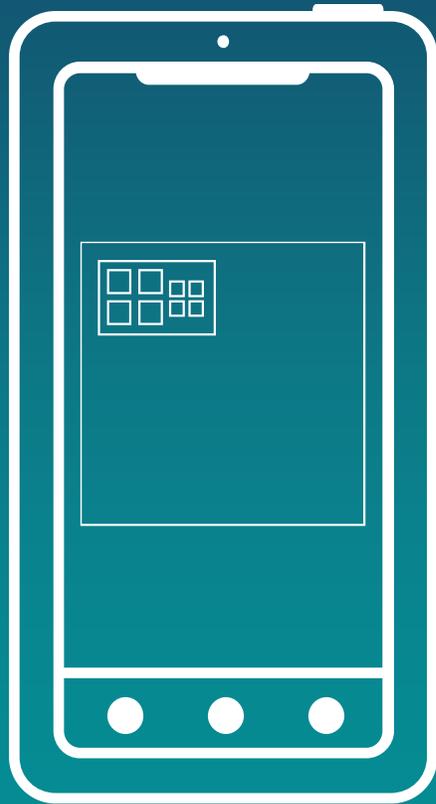
**The PC Era**  
CPU-centric approach



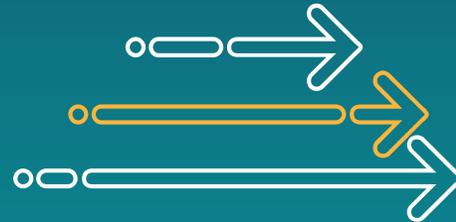
**The Mobile Era**  
Integrated technology

# Smartphone 2.0: From specs to experience-based design

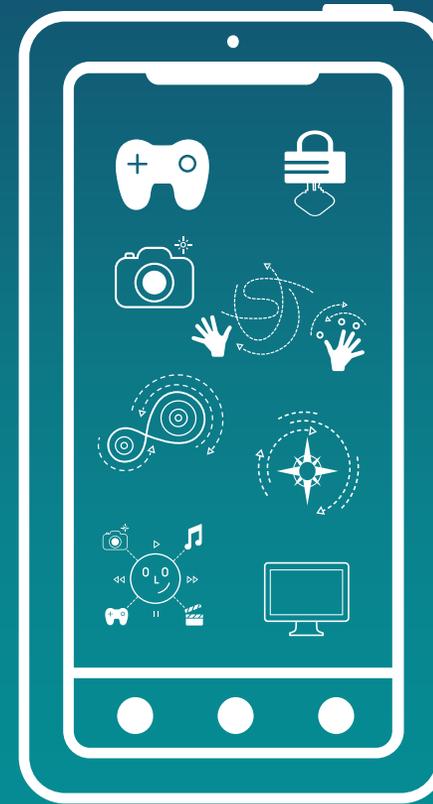
## Specs



1.0



## Experiences



2.0

# Emerging region growth

~5.1B 3G/4G connections expected by 2018

> 80%

Of handset shipments expected  
to be smartphones in 2017





Retail



Energy



Computing



Entertainment

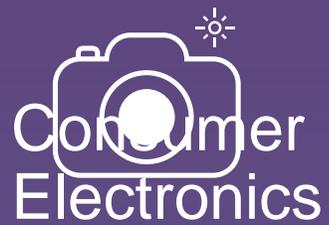


Education



Marketing

# ECOSYSTEMS EVOLVING TO MOBILE



Consumer  
Electronics

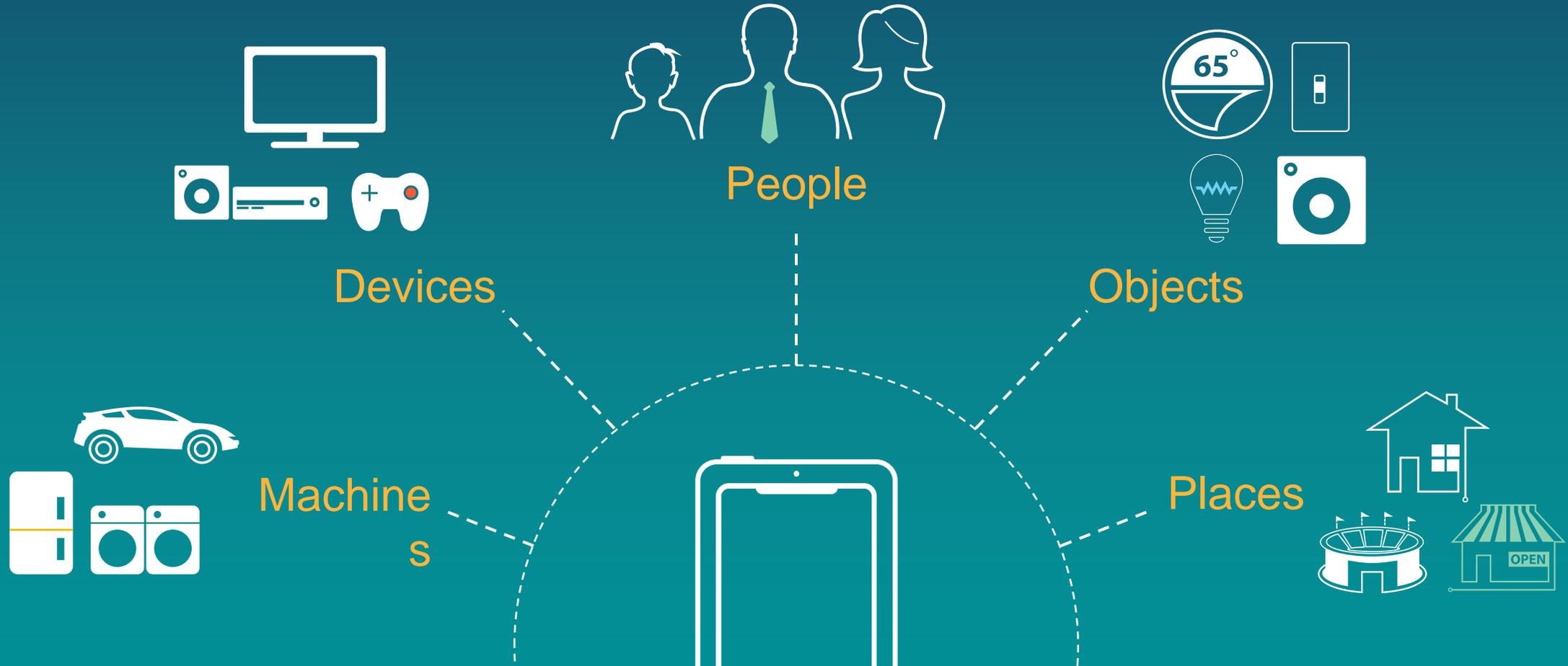


Healthcare



# Applying mobile technologies to everything

Making them more aware, connected, intelligent, and interactive





# THE INTERNET 25 BILLION EVERYTHING

connected devices by 2020



# TRANSFORMING HEALTH

**45% REDUCTION**  
in mortality rate for chronic disease  
patients using telehealth



# TRANSFORMING EDUCATION

## 180M STUDENTS

in emerging regions can further their education with mEducation



# ENABLING SMARTER HOMES >2X CONNECTED DEVICES

in the household from 2013  
to 2020





Content Sharing

Instrumentation

Driver Assistance

Rear Seat Entertainment

Navigation

HD Quality Graphics

3D Maps  
Multimedia Streaming

Bluetooth  
Wi-Fi Hotspot

Mobile Device Integration

This use case is a fictitious depiction of potential applications for Gobi and Snapdragon product offerings – not actual connected car and infotainment product. All screen images are simulated.

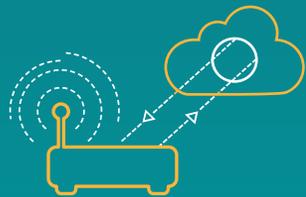
# “Connected Infotainment”

# Connected smarthome

## Transforming the home experience



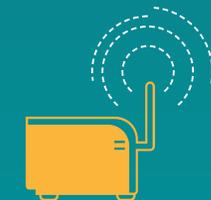
Connectivity  
(802.11ac and low power  
Wi-Fi)



Internet processor



Small cells



# Expanding into smart energy

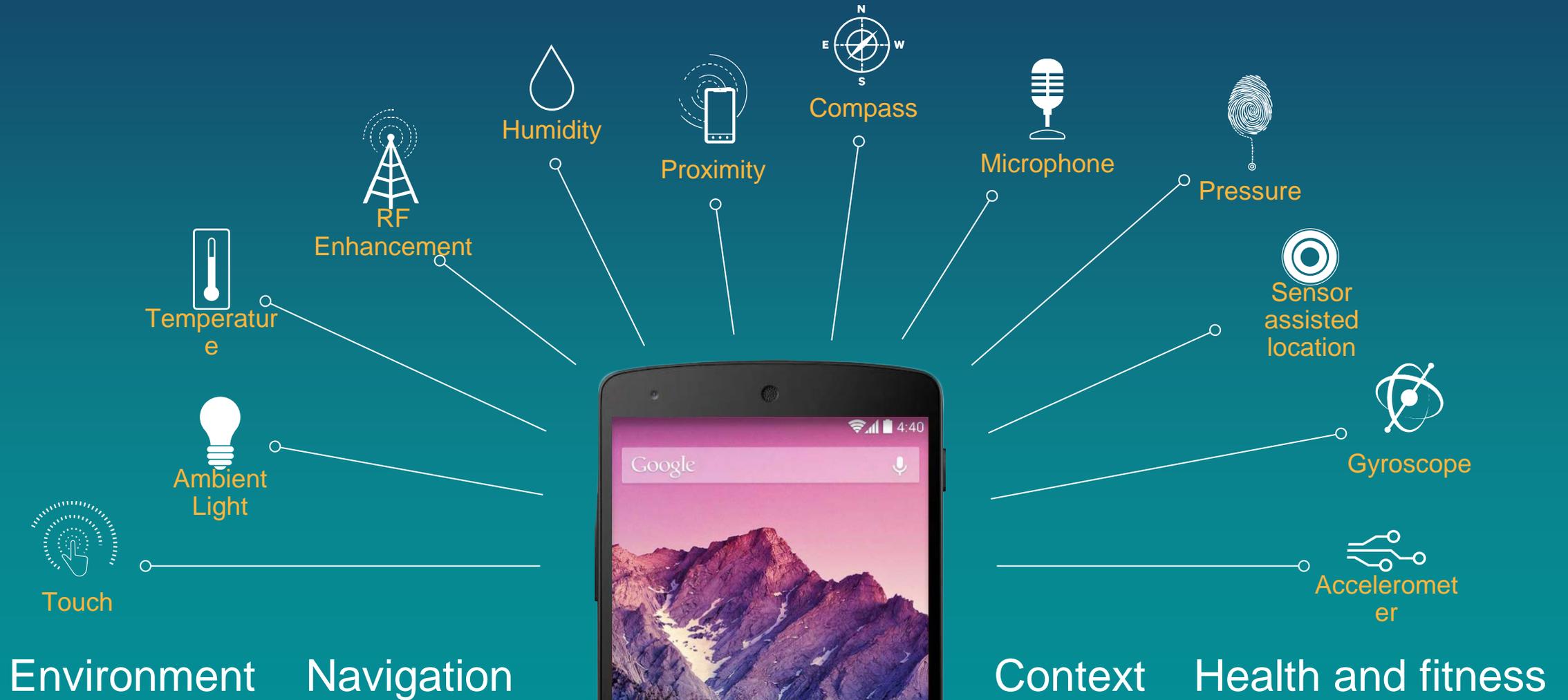
Climate change and increasing energy costs drives urgency for solutions

# 41%

CAGR estimated smart meter shipments between 2011-2016



# Evolution of integrated sensors



# LTE-advanced carrier aggregation

**Spectrum bands**



**LTE carriers**



**Supplemental DL**



**Aggregated data pipe**

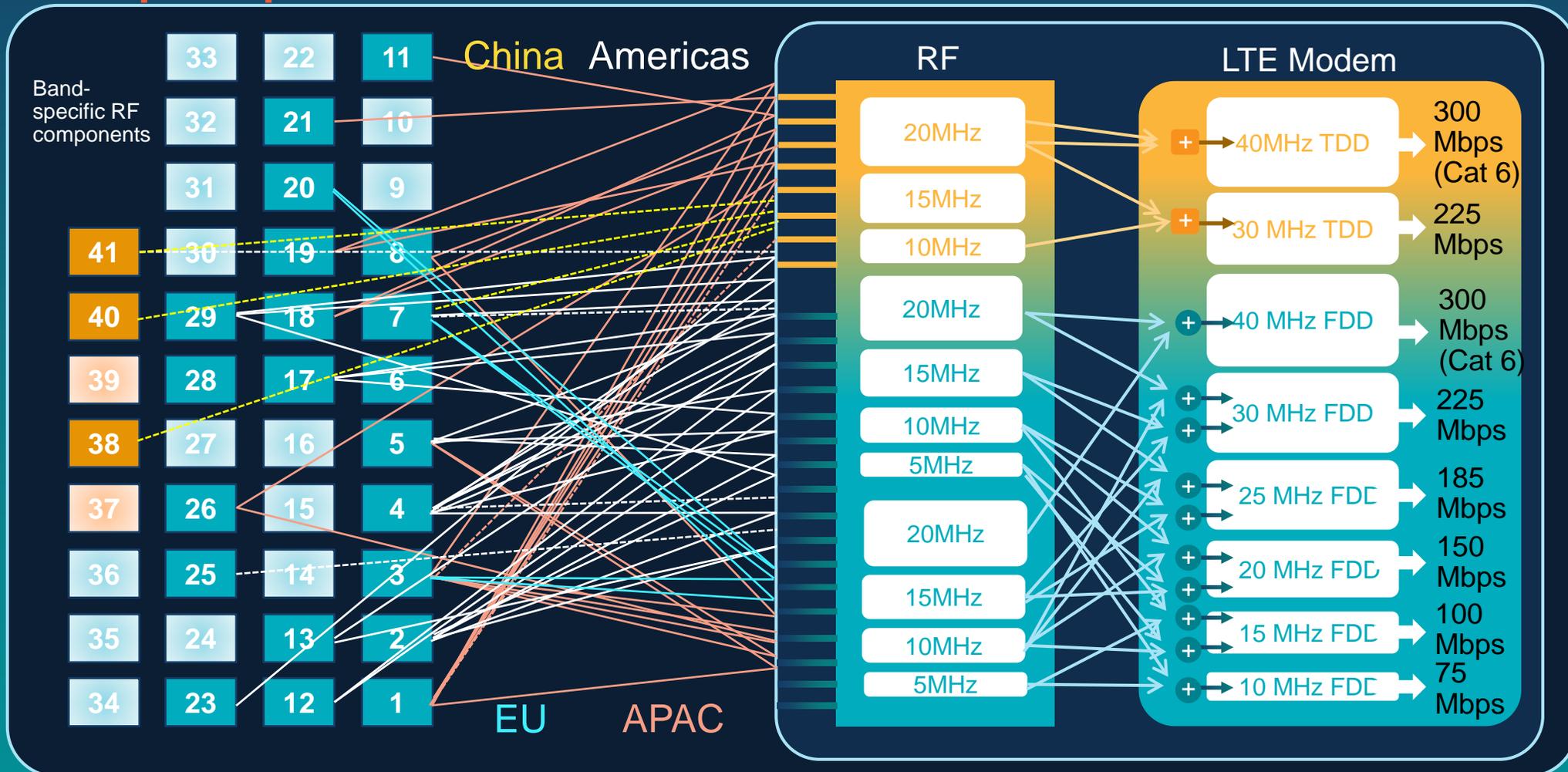


Utilizes all spectrum assets

Enhances user experience

# Success requires management of increasing complexity

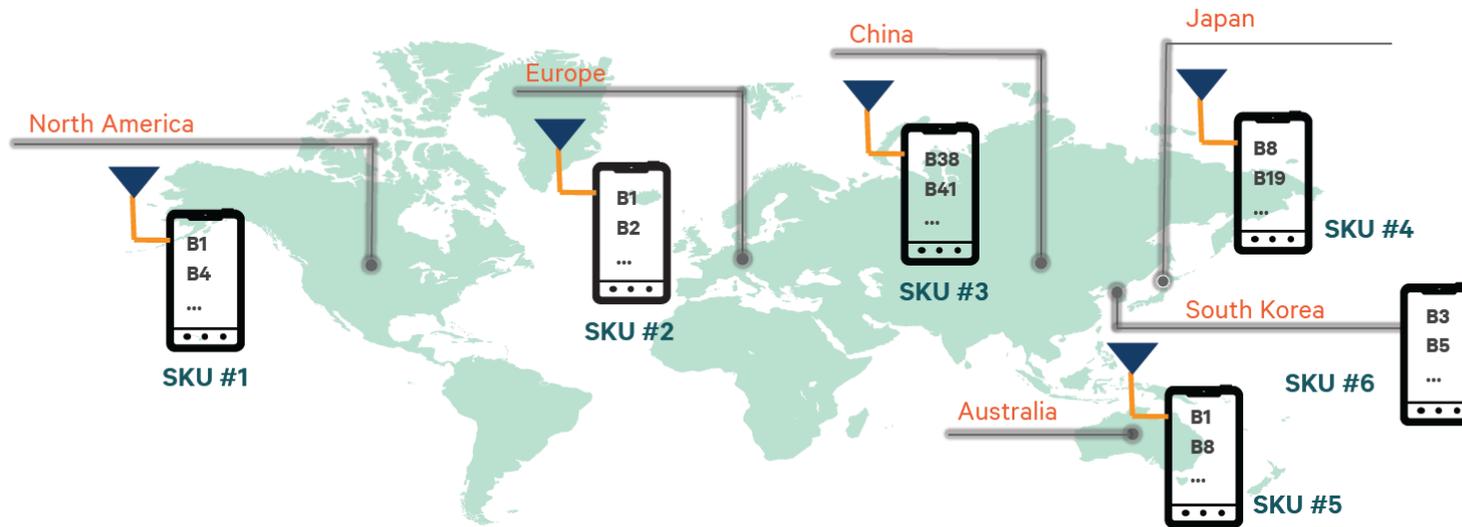
Driven by global adoption of carrier aggregation



# Global nature of LTE requires more than local solutions

Conventional RF solutions require several designs (SKUs) for the same phone

- Multiple Designs (several SKUs)
  - Multiple NRE
  - Fragmented BOM
  - More inventory
- Single design (single SKU)
  - Reduced NRE
  - Consolidated BOM
  - Less inventory

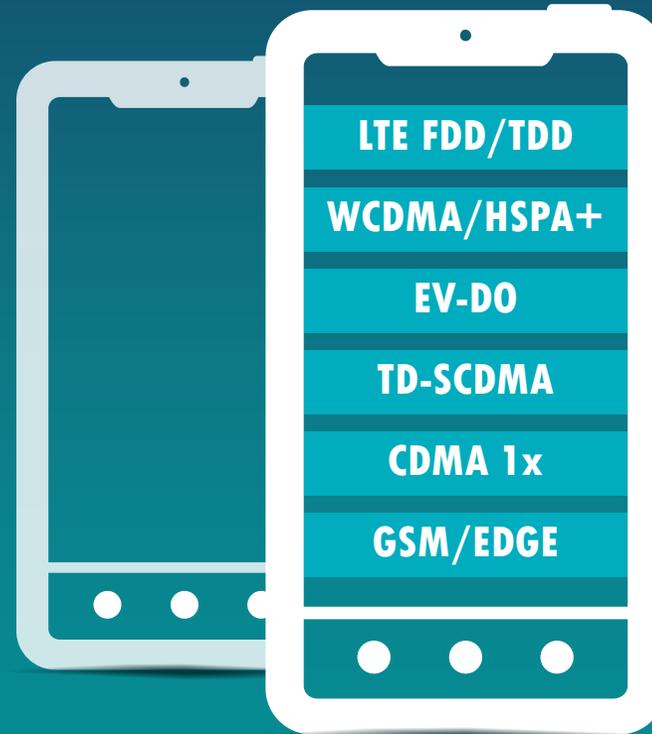


Single SKU helps increase the volume and reduce the costs to make LTE mainstream

# Multimode, multiband devices benefit users and operators

Global roaming and backward compatibility

Seamless mobile data and voice experience  
SKU simplicity and economies of scale



# Fourth generation LTE

## New Qualcomm® Gobi™ LTE Advanced modem and RF solution

### Wired broadband performance, seamless mobility

Dynamically adapts for superior performance

**2x** faster\* LTE Advanced to 300 Mbps

**4th** generation LTE modem

**1st** 20nm modem



### One chip, all carrier aggregation combinations

Supports next gen LTE Advanced wideband CA

**4th** generation LTE transceiver

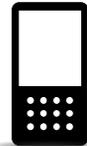
**1st** 28nm RF

**~3x\*** more CA band combinations

# Inherent LTE FDD/TDD interworking and seamless voice



**Initial launches**  
LTE data  
devices



**Initial voice solution**  
LTE data handsets



**Long-term voice solution**  
LTE VoIP handsets

## LTE for data only

LTE TDD/FDD with 2G/3G multimode launched globally<sup>1</sup>

Inherent seamless TDD/FDD interworking for data

## LTE for data 2G/3G for voice

Circuit switched fallback (CSFB) to 2G/3G voice launched globally (FDD and TDD)

Inherent seamless TDD/FDD interworking

## Simultaneous LTE VoIP and rich data services

Coming: VoLTE with single radio voice call continuity (SRVCC) + CSFB to 2G/3G voice for roaming

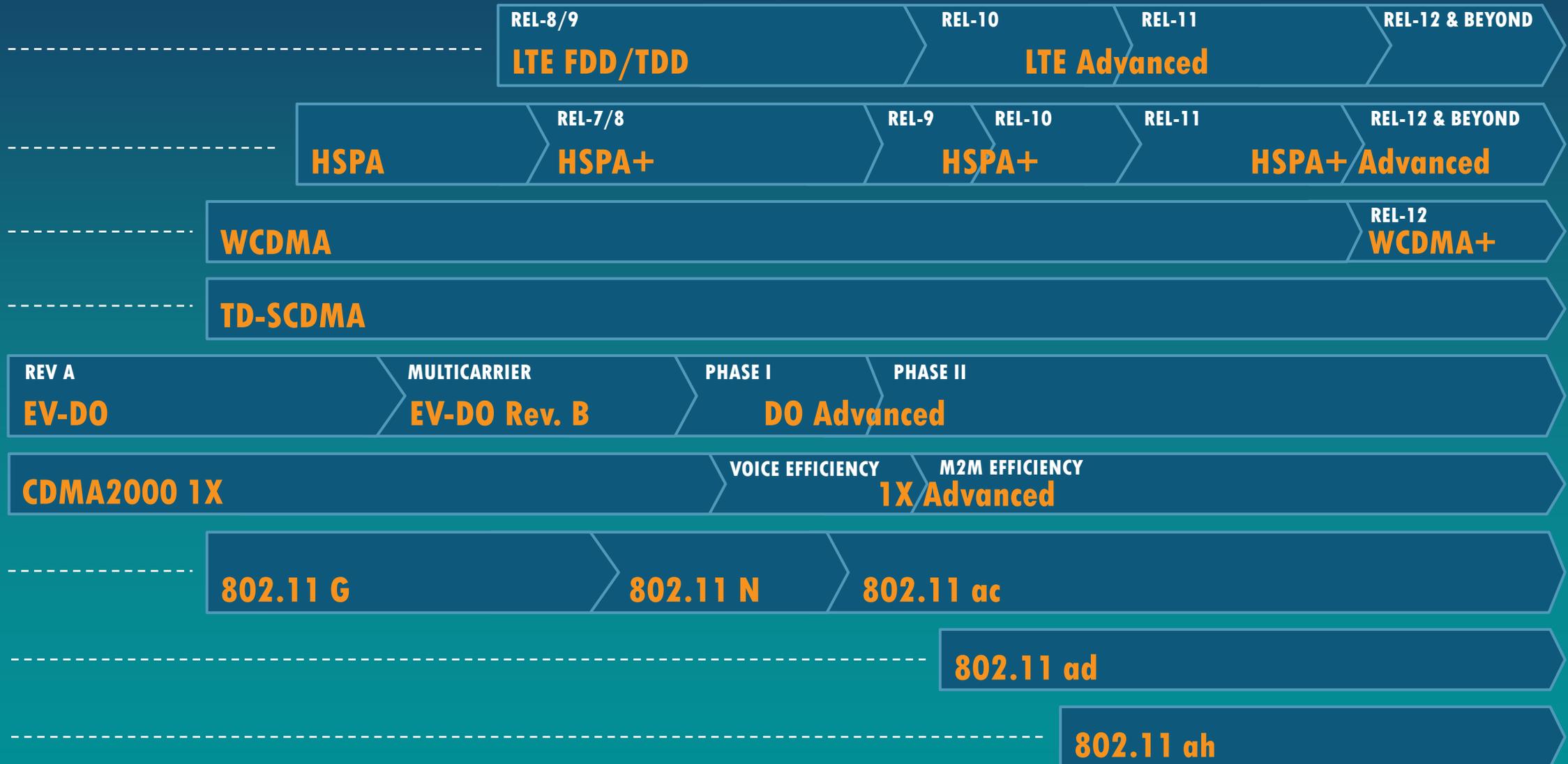
Inherent seamless TDD/FDD interworking for VoLTE

**2G/3G coverage continuity and roaming**

<sup>1</sup>Including seamless data LTE and 3G interworking with mobility through redirection, and packet switched handover.

# Evolution of wireless connectivity

New features, plus backwards compatibility raises the bar



# Industry taking the next step with LTE-Advanced

300 Mbps peak rate enabled by carrier aggregation is the gold standard for 2014

**~100 Mbps**  
LTE CAT3

**~150 Mbps**  
LTE-Advanced CAT4

**~300 Mbps**  
LTE-Advanced CAT6

2011 - 2012

2013

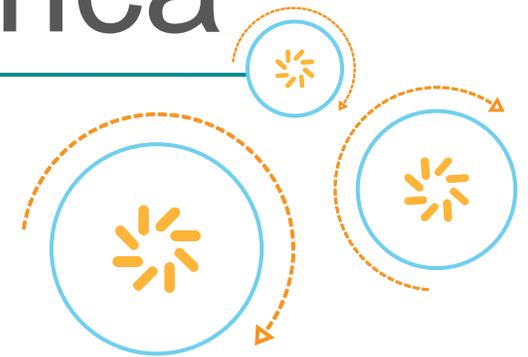
2014

Beyond



# Mobile is key to bridging the digital divide in Latin America

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# Thank you

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