



# Enhancing the Mobile Experience with Connectivity

David Favreau,  
VP, Product Management



## Wi-Fi in mobile devices benefits consumers

Quicker downloads, smoother streaming, faster gaming with higher bandwidth



Multi-100 Mbps speeds help extend battery life with quicker sends and receives



Peer-to-peer file sharing without presence of Wi-Fi access points



## Wi-Fi in Mobile: Helping Operators Offload Growing Data Traffic



- Challenges bring out the best in us, and we are facing a formidable one: The 1000x challenge. The genesis of this goes back to the phenomenal growth in the mobile broadband data witnessed in the last few years. Globally, the mobile traffic has been approximately doubling each year during last few years. However, the industry is now preparing for a staggering 1000x increase. But Qualcomm is not in the business of predicting when we will reach the 1000x demand, we are working on the solutions to enable the 1000x supply over the next decade.
- There is no doubt there will be increasing data demand fuelled for example by increased smartphone penetration, proliferation of mobile computing and 'Internet of Everything' connections
  - ~5B cumulative smartphone sales estimated in 2012-2016 (Gartner, Mar. '12)
  - 650M+ tablets and notebooks expected to ship in 2016 (average of Gartner, Strategy Analytics and ABI, all Mar. '12)
  - 120M+ cellular Machine-to-Machine modules expected to ship in 2016 (average of ABI (Mar. '12) and IMS (Apr. '12))
- There is also increased data utilization per device
  - The average amount of traffic per smartphone nearly tripled in 2011; 150 MB/Mo, versus 55 MB/Mo in 2010 (Cisco, Feb. '12)
  - In 2011, the typical smartphone generated 35X more mobile data traffic than the typical basic-feature cell phone (Cisco, Feb. '12)

- Many wireless operators have seen a much stronger demand than the global doubling in mobile data we have seen the last couple of years
  - Over the past five years, AT&T's wireless data traffic has grown 200X (AT&T, Feb. '12)
  - China Mobile expects data traffic on its mobile network to surge >150% this year, and the company expects the sharp rise to continue in coming years (WSJ, Jun. '12)
  - The FCC projected 35x growth from 2009 to 2014, using an average of industry projections

## Only Qualcomm integrates Wi-Fi, Bluetooth, FM and GNSS into 3G/LTE Solutions

- Enhanced coexistence between LTE/ISM bands

- **Enhanced Wi-Fi Performance**

- Wi-Fi subsystem connects directly to the WWAN core
- Eliminates limits of SDIO interface
- Advantage increases with higher 11ac data rates

- **Lower latency for multimedia**

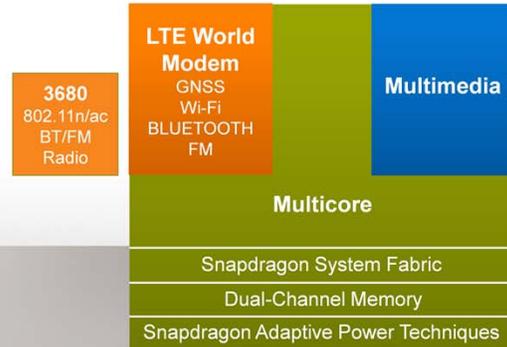
- Faster response to environmental changes for smooth video and audio

- **Always-on positioning without added power**

- Location engine uses WAN signals to determine position



MSM8960  
Snapdragon S4



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# Snapdragon: Empowering Smart Connected Devices

Rob Chandhok,  
SVP & Pres, QIS; Pres, QuIC



- New York, NY

## An Era of Smart Connected Devices

Mobile at the Center  
of the Ecosystem



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- We live in an era of smart connected devices, where end user is at the center
- And mobile experience is becoming the expectation in other device categories
- Innovation in mobile is impacting all smart connected devices, including computing, smart TVs, smart meters, wireless health or connected cars
- Meeting the needs of these diverse device types is a massive engineering and platform challenge. Just the sort of big and technically complex challenge we like to take on
- This is the sort of challenge that requires technology sharing across device types and scale or roadmap and execution ability

# Enabling Smart Connected Devices

**3G/4G Migration into  
New Connected  
Opportunities**



**Smartphone  
Expansion into New  
Mobile Categories**



**New, Adjacent  
Categories**



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## Snapdragon Processor Technology Leadership Across Devices



**50+**  
Manufacturers  
Shipping  
with  
Qualcomm

**420+**  
Devices  
Announced

**400+**  
Designs  
In  
Development

**30+**  
Tablets

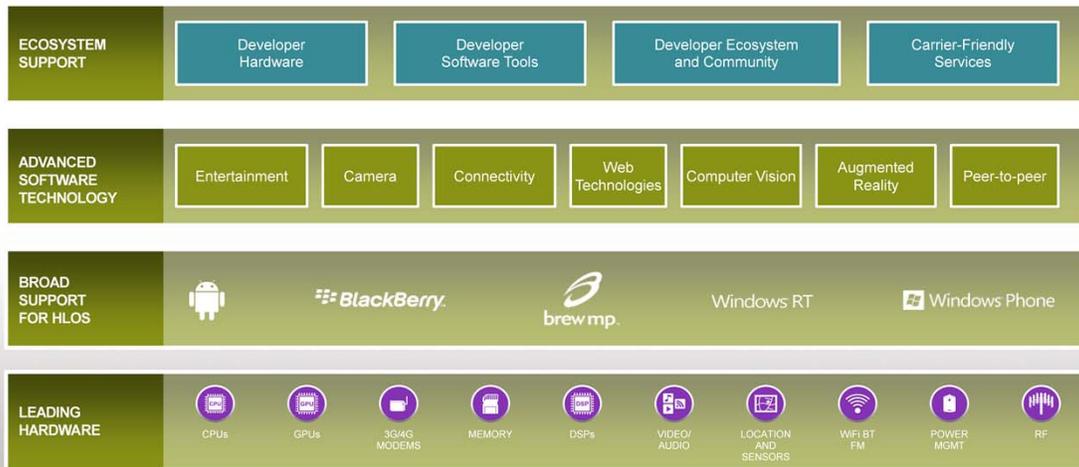


**175+ Snapdragon S4 Designs In Development**

Source: Qualcomm data.

- 50+ device customers; Qualcomm chipsets power a large portion of commercial 3G devices
- In a large portion of Android-powered smartphones, powers all Windows Phones available today; first chipset company to support Windows Phone and Windows 8
- There are 340+ Snapdragon devices announced with 400+ Snapdragon designs in development, including more than 35 tablets
- Snapdragon shipments in the first quarter of fiscal year 2012 grew by more than 120 percent year-over-year
- There are 35 announced/commercially available devices that use the Snapdragon S3 class of processors
- There are 120+ designs in development using Snapdragon S4 processors
- 320+ commercial Android devices in the market with Qualcomm chips
- There are 28 commercial Windows Phone devices featuring Snapdragon processors, including 11 Windows Phone 7 devices, and 17 Windows Phone 7.5 devices.
- 7+ billion cumulative chips shipped\*
  - Q1 12 shipped ~156 million MSMs
  - Q4 11 shipped ~127 million MSMs
  - Q3 11 shipped ~120 million MSMs
  - Q2 11 shipped ~118 million MSMs
  - Q1 11 shipped ~118 million MSMs
  - Q4 10 shipped ~111 million MSMs
- DETAILS OF ALL DEVICES
- Left: Vodaphone 858 Smart – S1 \$130
- Middle: ZTE Libra – S1 \$175
- Middle: Huawei IDEOS U8520 Duplex – S1 \$230
- Right: HTC Explorer – S1 \$255
- MID-RANGE
- Left: Sony Ericsson Xperia Arc S – S2 \$555 expected in Q4
- Middle: Samsung Galaxy S II – S2 \$555
- Middle: Blackberry Torch 9850 – S2 \$620 expected in Q4
- \*\*: HTC Titan (WP7/Mango) – S2 \$710 expected in Q4 (Xperia Play currently showing)
- HIGH-END
- Left: Pantech Vega Racer – S3 expected Q4 w/ 8660 chip
- Right: HTC Jetstream Tablet – S3 \$900

# The Snapdragon Processor System Spans Hardware, Software, Services, and Ecosystem Tools



# Beyond Mobile. And Beyond All Expectations

Introducing Snapdragon S4 processors by Qualcomm



## S4 Prime

**Mobile experience, meets TV.** Televisions and set-top that are designed to offer a compromise free way to bring the best mobile experiences to the biggest screen in the house.



## S4 Pro

**Computing that goes the distance.** Performance so powerful, it isn't only for mobile devices. Ultra-thin and sleek computing devices that are designed to take seamless experiences and boundary-breaking battery efficiency to new places.



## S4 Plus

**Powerful mobile experiences.** Smartphones and tablets that are designed to deliver dynamic immersive experiences and powerful, battery-friendly performance that put new possibilities in your hands.



## S4 Play

**Where essential mobility starts.** Step up to a new level of mobility. Start posting status updates, checking email, sharing pics and video with friends, and even managing your business.

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# **Gobi – Evolving 3G/4G LTE to Meet the Challenges of Mobile Connectivity**

**Serge Willenegger,  
VP, Product Management**



## Gobi Modem: Technology Leadership Across Segments

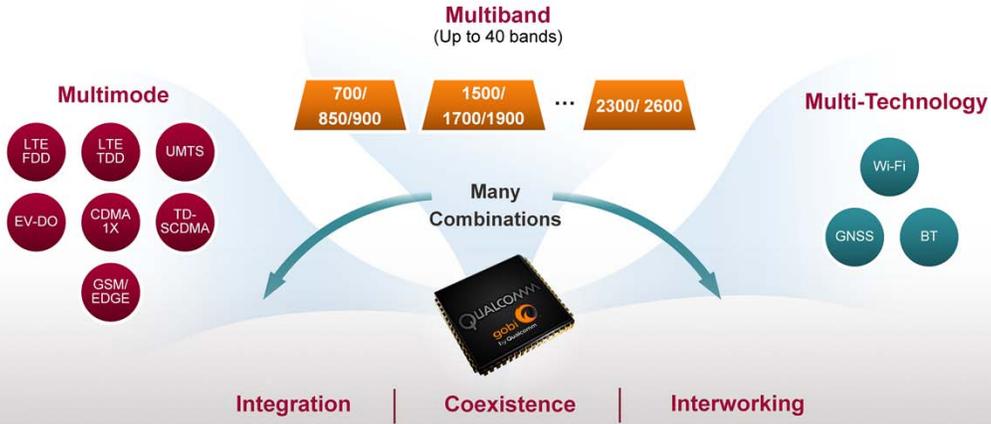
>600 Gobi Enabled Devices Launched Since 2009



MDM9x15 Based Devices Commercially Launched. 90+ Designs Planned

- M2M
- 25 for Telematics
- 36 for other M2M

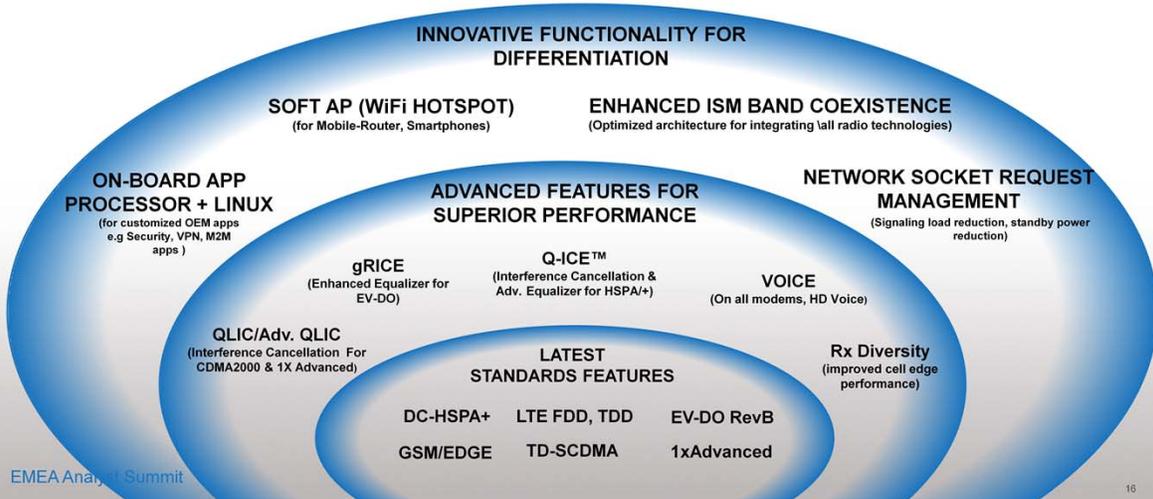
# Gobi—Simplifying Complexity



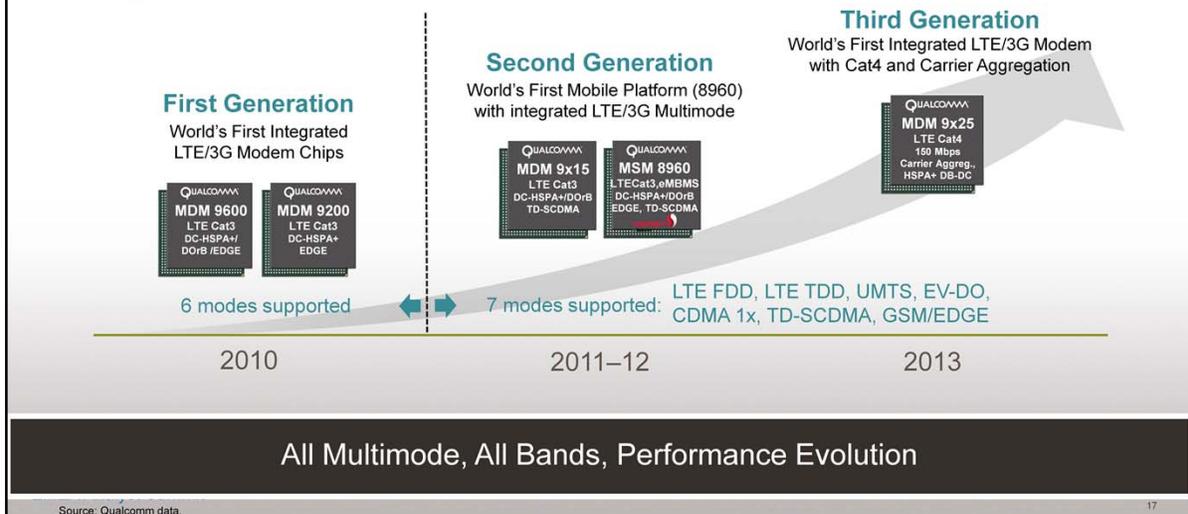
Seamless Interworking Across Broadest Set of Technologies and Bands

# Advanced Features for a Differentiated Experience

## Above and Beyond Standards

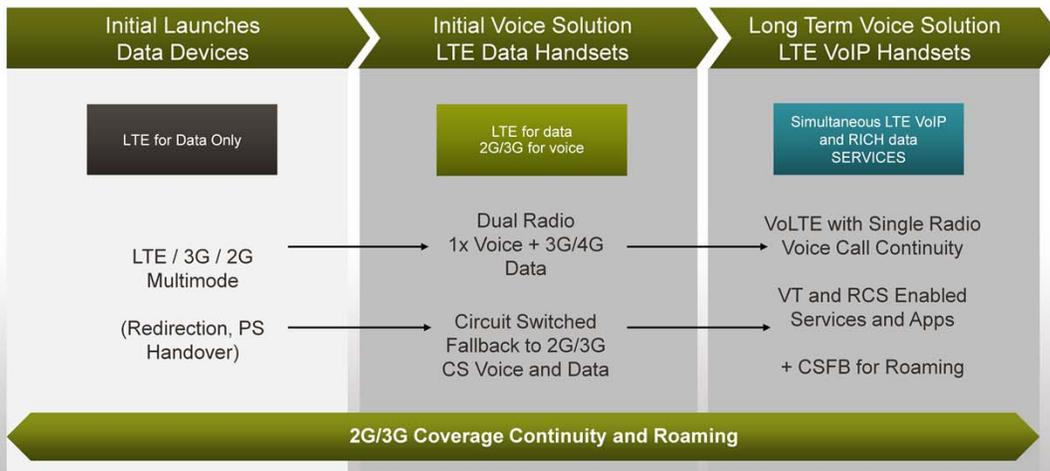


## Leading in LTE Technology Development Already on Third Generation of LTE



- Qualcomm has commercially shipped its first two generations of LTE/3G multimode modems and is already on its **third generation of LTE**
- Gobi modems are the only modems that **integrate all 7 of the world's cellular standards**.

## High Level Multimode Options for LTE Voice



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- As the industry has transitioned from LTE data only devices (1<sup>st</sup> column) to handsets (2<sup>nd</sup> and 3<sup>rd</sup> column), two distinct phases for LTE voice support have taken shape, depicted in the two columns to the right
- In these two phases, three main voice options for multimode devices have emerged; dual radio (SVLTE), CSFB (to 1x, GSM and UMTS) and VoLTE (with SRVCC).
- Qualcomm solutions support all three options.
- Even as VoLTE gets deployed, CSFB will required as a roaming solution for many years.

## Summary: Gobi Modem Leadership Across Multiple Dimensions

Highly Integrated, Complete System Solutions

*Small form-factor, power-efficient, faster TTM*

Industry's Widest & Most Extensive Modem Portfolio

*Also, flexibility to leverage same platforms across many segments*

Simplifying Complexity - Broadest Technology & Band Support

*Interworking between multiple modes, technologies and spectrum bands*

Advanced Features for Differentiated Experience

*Advanced receivers, ISM coexistence optimization, aoft AP, apps processor +Linux*

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