How mobile is redefining computing

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#nextinmobile
Key industry trends driving innovation

Redefining computing

The 1000x data challenge

Digital 6th sense
A new era: mobile drives growth in computing

Expanding areas for smartphone innovation

CPU
- 2MB L2 (8064 only)
- aSMP
- Custom krait
- Web Tech innovations
- High performance floating point
- Custom system interconnect

GPU
- FlexRender™ technology
- GPGPU compute for imaging/video
  (RenderScript, OpenCL, LLVM)
- Unified shader architecture
- Low power innovations
- Stereoscopic rendering
- Accelerated WebGL
- Profiling tools

DSP/Multimedia
- 21 MPix
- 20x digital zoom
- Zero shutter lag
- Ultrasound
- 7.1 surround playback
- 5.1 surround camcorder
- Stereo 3D video
- 1080p HD video
- Browser with HTML5 and 1080p flash
- Computational camera
- Noise cancellation

Modems
- Coexistence with connectivity
  VoLTE/SRVCC
- Advanced receivers
- Power optimization
- LTE world mode
- LTE broadcast
- LTE TDD
- RF multi-band
- TD-SCDMA

Connectivity
- Coexistence with WWAN
  Indoor location
  GPS/GNSS
- .1lac

Sensors
- Accelerometer
- Proximity
- Pressure
- Ambient light
- Gestures
- Temperature
- Gyroscope
- IR sensing
- Humidity
- Magnetometer
- Accelerometer
- Proximity
- Pressure
- Ambient light
- Gestures
- Temperature
- Gyroscope
- IR sensing
- Humidity
- Magnetometer

Displays
- Color correction
- Content adaptive backlight
- Frame buffer compression
- 3D
- Wireless display
- MEMS

CPU
- DSP/Multimedia
- Connectivity
- Sensors
- Displays
- Modems
- GPU
Strategy
Drive smartphone leadership into adjacent opportunities

- Set the design point
- Own the key technology blocks
- Integration
- Scale – deployment and ability to invest
A full platform solution for the new era of computing

- Leading hardware
- Drivers & optional advanced features software
- High level operating system
- Qualcomm® reference designs
- Enabling technologies
- HW & SW development tools & customer support
Qualcomm is a mobile native
We lead the industry we co-created after decades of investment and experience

#1

3G/4G/LTE
RF
AP
GPU
DSP

Sources: Mobile AP Unit Shipment - Strategy Analytics; GPU Shipment - Jon Peddi Research; DSP shipment - Forward Concepts; 3G/4G/LTE - Strategy Analytics; RF iSuppli, Q1'12
3G / 4G LTE
Years ahead in LTE

3rd generation LTE

World-mode: supporting 7 cellular modes

Qualcomm® RF360 Front End Solution for global LTE designs

Qualcomm RF360i is a product of Qualcomm Technologies Inc.
The unique Qualcomm advantage
Hiding the complexity underneath the most seamless mobile connectivity

Handover Techniques (Multiple Can Apply in Each Case)
- System Selection
- Blind Redirection
- Redirection w/ Measurements
- Reselection

Qualcomm Gobi is a product of Qualcomm Technologies Inc.

Handover Combinations (Hypothetical Examples)
- LTE
- 2G/3G

Radio Frequency Bands
- GERAN
- CDMA 1x
- UMTS
- TD-SCDMA
- LTE

Connectivity
- Wi-Fi
- BT
- GPS

Handover Techniques (Multiple Can Apply in Each Case)
- PS Handover
- CS Fallback
- CSFB w/ SI Tunneling
- Single Radio VCC
Advantages

Single SKU
Power
Performance
Size
Time to market

One solution designed for:
All modes. All bands.

Antenna Matching Tuner
Envelope Power Tracker
Power Amp & Antenna Switch
RF POP™

*As compared to the previous Qualcomm RF solution.
Unmatched scale of global deployment

Qualcomm® Snapdragon™ S4 MSM8x60 launch

- Commercial sample to first carrier acceptance in 52 days
- 30 OEMs, 30+ operators
- 150+ launches worldwide
- Our fastest integrated chip to ship 10M units
Connectivity
Leadership in Wi-Fi and location technology

Integrated Qualcomm VIVE™ 802.11ac / 11n

Qualcomm IZat™ location

Qualcomm VIVE and Qualcomm IZat are products of Qualcomm Atheros Inc.
Navigation performance video
Applications SoC
Ahead of standard, off-the-shelf solutions

Custom design from the ground up

Integrated architecture (CPU, GPU, DSP)
“Our two Vellamo benchmarks both show the One doing very well. In the HTML5 test, the One puts everything else to shame—including the old APQ8064 based Droid DNA and the Galaxy Note 2. The Qualcomm comparison is the more interesting as it echoes some of what we saw in the microbenchmarks—take into account the clock speed difference and you're looking at a 22% improvement in performance due to the new Krait 300 cores.”

Brian Klug, AnandTech.com (4/12/13)
“The ‘game’ benchmarks in GLBench give us a good indication of overall performance. The off-screen results are most interesting from drawing comparative conclusions: The One is fast—it’s now the fastest smartphone we’ve ever tested in the Egypt HD off-screen test.”

Brian Klug, AnandTech.com (4/12/13)
Browser performance video
Multimedia
Setting consumer expectations

- Ultra HD capture & playback*
- 7.1 surround sound*
- Advanced camera features

*Qualcomm Snapdragon 800 Processors.
Demos: Ultra HD and 7.1 sound
Power efficiency and integration
Critical in mobile and in our philosophy

- KRAIT CPU
- ADRENO GPU
- HEXAGON DSP
- CONNECTIVITY
  - 4G LTE, WiFi, USB, BT and FM
- MULTIMEDIA
  - Audio, video, and gestures
- CAMERA
- DISPLAY/LCD
- NAVIGATION
Mobile requires to master and integrate all key technologies

- Applications SoC
  - CPU
  - GPU
  - DSP

- Multimedia

- 3G/4G LTE and connectivity

- Power efficiency and integration
Qualcomm® Snapdragon™ processors

**Snapdragon 800**
Premium smartphones, Smart TVs, digital media adapters and tablets.

**Snapdragon 600**
Mid-high tier smartphones and tablets.

**Snapdragon 400**
High volume smartphones and tablets.

**Snapdragon 200**
Entry level smartphones.
At the heart of the devices you love

85+
Device customers

850+
Devices announced*

*Includes Qualcomm reference design
Source: Qualcomm Technologies Inc. data
Qualcomm Reference Design
Accelerating global growth of smartphones

200+ Devices launched
40+ OEMs
14 Countries

Qualcomm Reference Design is a product of Qualcomm Technologies Inc.
Source: Qualcomm Technologies Inc. data
Qualcomm Snapdragon across a range of devices
Smartphone technology is expanding into many other computing and CE categories
A Dragon is Coming video
Thank you

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