Snapdragon roadmap drives new experiences

- VR / AR - beyond small screen
- 360 degree camera
- 3D and low-light photography
- Security
- Biometric sensor
- Ultra HD VoLTE / audio quality

Features:
- Superior converged connectivity
- Context aware computing
- Machine learning
- Computing performance
- Virtual SIM/Multiple devices

Snapdragon is a product of Qualcomm Technologies, Inc.
Snapdragon 820 is ideal for mobile VR
Designed to meet the VR processing demands within the thermal and power constraints

- Smooth, 3D stereoscopic, image rendering, & support for the latest GPU APIs
- Low power 360° 4K HEVC video decoding & display at 60 FPS
- Qualcomm® TruPalette™ display gamut mapping, color enhancement, etc.
- Qualcomm® EcoPix™ compression, variable refresh, etc.
- Positional audio & 3D surround sound
- Fluence™ noise filtering & active noise cancellation
- Low level DSP access & tools for custom audio development
- Integrated dual-camera ISP + DSP for low power 3D reconstruction & predictive 6 DOF motion tracking
- Ultra-fast sensing for minimal motion to pixel latency

Adreno Visual Processing
- Zeroth

Qualcomm Spectra ISP
- Qualcomm Aqstic™ audio
- FastCV™ SDK

Hexagon DSP
- Snapdragon tools

Qualcomm TruPalette, Qualcomm EcoPix, Fluence Qualcomm Aqstic, and FastCV are products of Qualcomm Technologies, Inc.
MWC 2016 Recap
Snapdragon 820 Momentum

Snapdragon 820 in virtually every flagship device

HP
Elite X3

Xiaomi
Mi5

LeEco
Le Max Pro

Samsung
Galaxy S7 and
Galaxy S7 Edge

LG
G5

Sony
Xperia X Performance

Vivo
Xplay 5S

100+ designs
in development
“Qualcomm back inside Samsung’s flagship phones”

“Xiaomi’s Mi 5 Launch Event a Giant Qualcomm Lovefest”

“Qualcomm is back with a vengeance. Welcome to Snapdragon World Congress”

“Xiaomi's 'most beautiful' flagship rocks a Snapdragon 820”

“5 Reasons To Buy The LG G5”

“Qualcomm: The Biggest Winner Of MWC 2016”
Expanding the Snapdragon platform

Increases differentiation and revenue opportunities

BOM integration

Quick Charge
Power management interface
Speaker amp
Touch
Sensor Hub
Fingerprint
Codec

End-to-end design

Filters
Power Amplifier
Envelope Tracker
RF Transceiver
Antenna Switch
Antenna Tuner

GPU

CPU

ISP

Multimedia processing

LTE Modem

Memory

Sensor processing

DSP

Adreno display processing

BT FM

Wi-Fi

GNSS

USB PCI

802.11ac
MU-MIMO

802.11ad

Tri-band Wi-Fi
Snapdragon X12 LTE Modem

Up to 600 Mbps - Cat 12 DL
via 3x20MHz CA and 256-QAM, support for 4x4 MIMO

Up to 150 Mbps - Cat 13 UL
via 2x20MHz CA and 64-QAM

Multi-gigabit, Tri-Band Wi-Fi (2.4, 5 and 60GHz)
With 802.11ac 2x2 MU-MIMO and 802.11ad

Next-gen Calling – Enhanced mobility + quality
Smart Wi-Fi calling, Ultra HD voice
Kryo CPU

- Custom 64-bit CPU architecture
- Up to 2x Better performance* 2X Lower power*
- 14nm FinFET process technology
- Quad core CPU up to 2.2GHz

Source: QTI
* Compared with Snapdragon 810
Adreno 530 GPU
Leading the way in mobile visual processing

Up to 40% better performance*
Up to 40% lower power*

Designed for mobile UIs, games, web and VR
Latest in graphics and compute APIs

*compared to Snapdragon 810
Hexagon 680 DSP
Core technical benefits

**New Hexagon**
Media coprocessing and computer vision

**3x better performance***
10X lower power

**Integrated Sensor Core**
Low power island for always-on processing

*compared to our quad core Krait on imaging use case*
After

Qualcomm Spectra ISP
With Heterogeneous Signal Processing
Introducing

Quick Charge 3.0

- 4X faster than conventional charging
- > 35% more efficient than Quick Charge 2.0
- #1 fast charging solution
- Connector agnostic

Qualcomm Quick Charge is a product of Qualcomm Technologies, Inc.
Snapdragon Sense ID fingerprint technology
Mobile Industry’s FIRST ultrasonic fingerprint technology

Easier & More Reliable User Experience
Scans through:
• Common contaminants
• Glass (up to 400 µm)
• Metal (up to 400 µm)
• Plastic

More Secure
• Detailed 3D map
• Liveness detection
• Based in hardware
• On-device processing

End-to-end solution
• Custom ultrasonic ASIC
• Integrated with FIDO UAF biometric protocol
• Algorithms managed by SecureMSM technology

Expected in commercial devices 2H 2015
Snapdragon Sense ID

Accuracy and consistency

Improved user experience by consistently scanning through various contaminants

- Sweat
- Lotion/Oils
- Condensation
Snapdragon 810 Processor

Cortex A53/A57
Adreno 430
Hexagon v56
4K30 8-bit
X10 LTE Cat 10
Dual-ISP 20MP
ZSL
802.11ac
Display Compression

Snapdragon 820 Processor

Custom Kryo CPU
Adreno 530
Hexagon 680
4K60 10-bit
X12 LTE Cat 12/13
Spectra ISP 28MP
ZSL
802.11ad 60GHz
Intra-core compression with UBWC
Low Power Island (NEW)
Adjacent opportunities transformed by mobile

Auto

Mobile compute

IoT

Networking
Adjacent opportunities transformed by mobile

**Auto**
- Mobile experiences on car displays
- Vehicle-2-Cloud connectivity

**IoT**
- Connectivity everywhere and smart processing
- Mobile ecosystem scale
- Smartphone as IoT remote control

**Mobile compute**
- Smartphone changing productivity
- Cloud experience driving always on connectivity
- All-day computing

**Networking**
- Integrated gateway hub for the home or enterprise
- Wireless video defining use cases
- LTE and Wi-Fi convergence
Thank you

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