



Perform

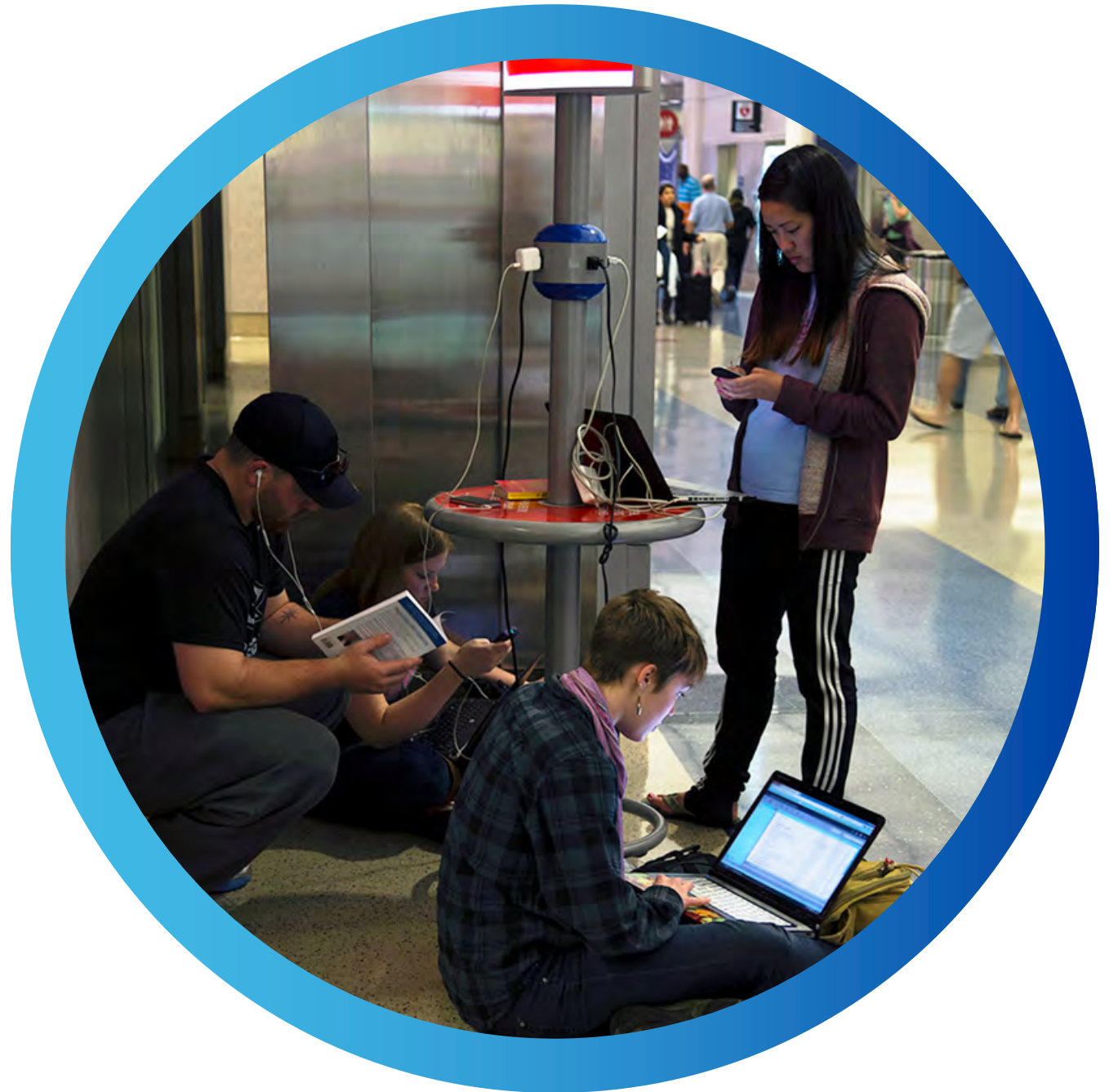
Travis Lanier

Sr. Director, Product Management
Qualcomm Technologies, Inc.
@qualcomm



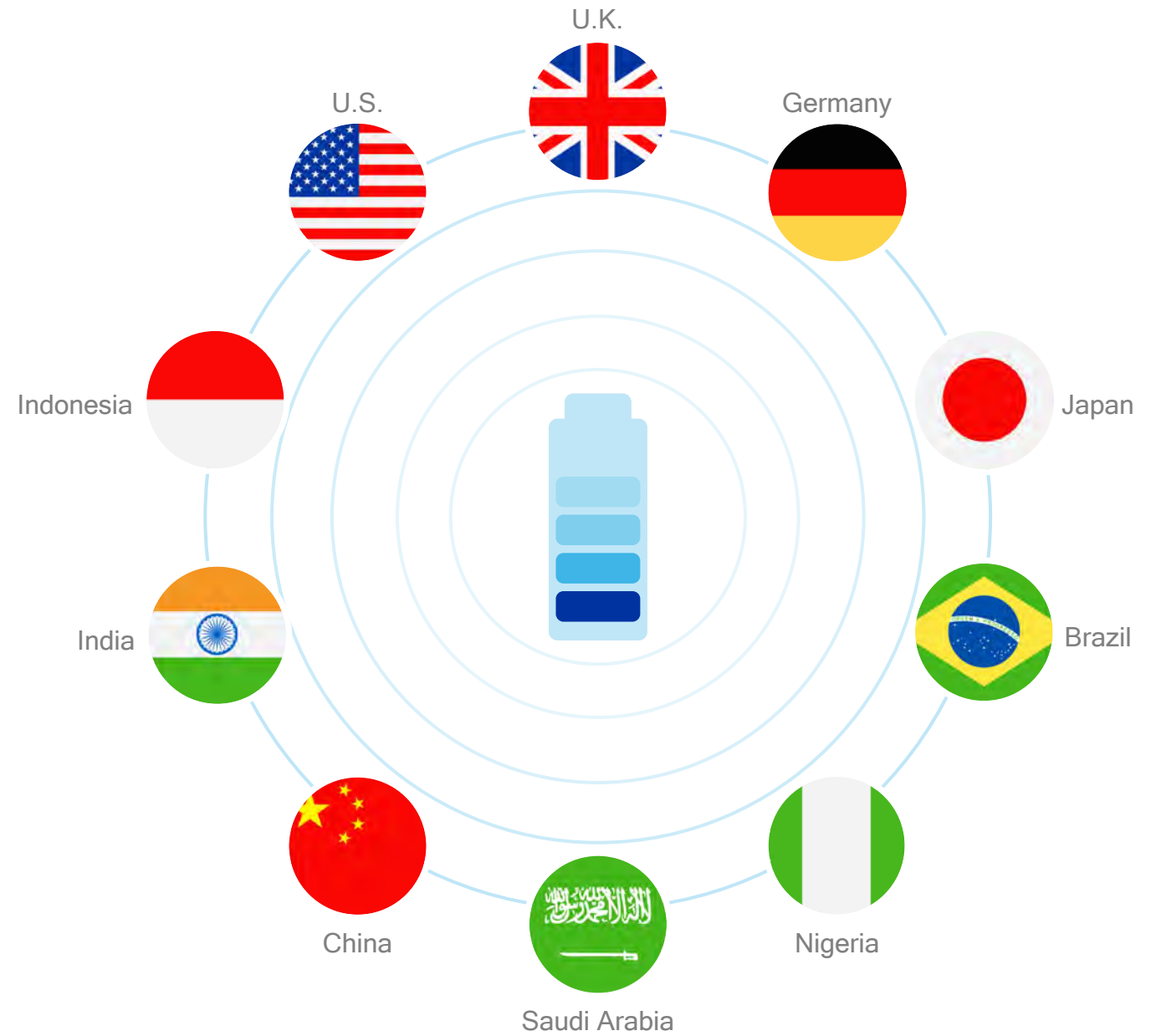
More powerful
and longer lasting
mobile experiences

Because nobody
wants to be
this person



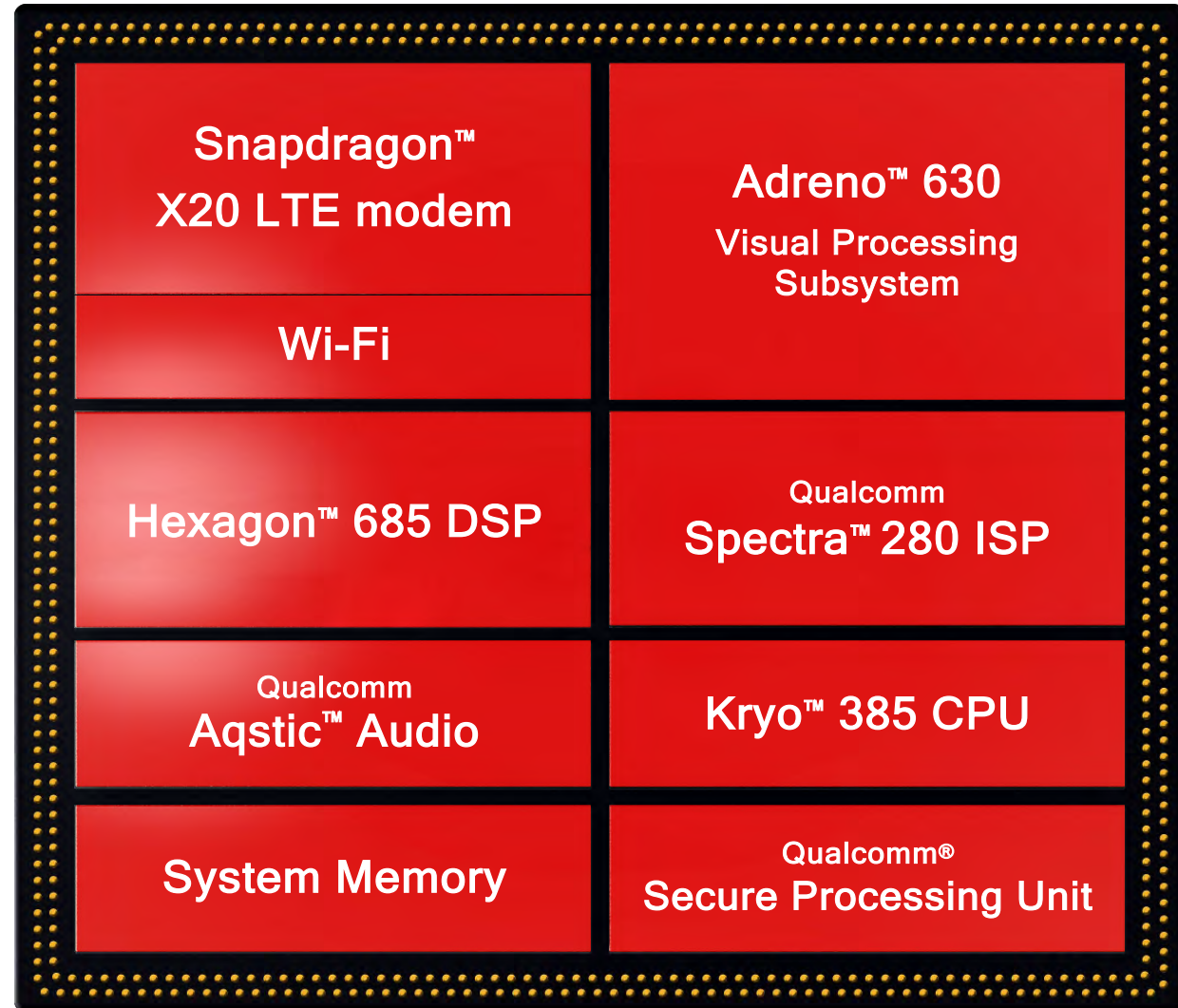
Battery life

The #1 smartphone purchase criteria worldwide

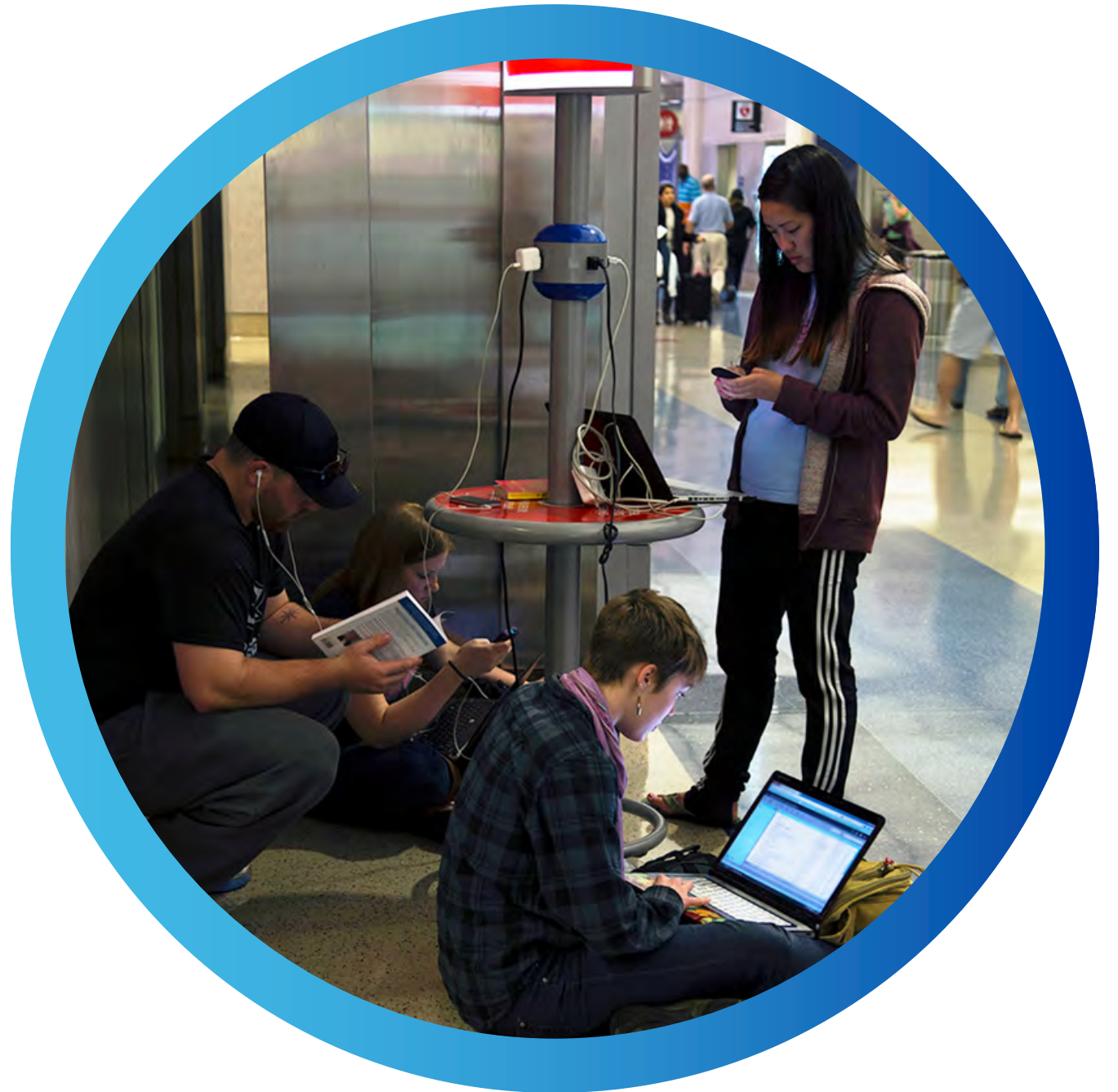


New Architectures throughout SDM845

For entirely new levels
of performance and
battery life



Because nobody
wants to be
this person



Power #1 purchase criteria for laptops, too

All-Day Battery Life

20+ Hours of Video Playback



Ultra HD
(4k)



Continuous 4K UHD
Premium capture:
The demand for a
more brilliant life

4+
hours



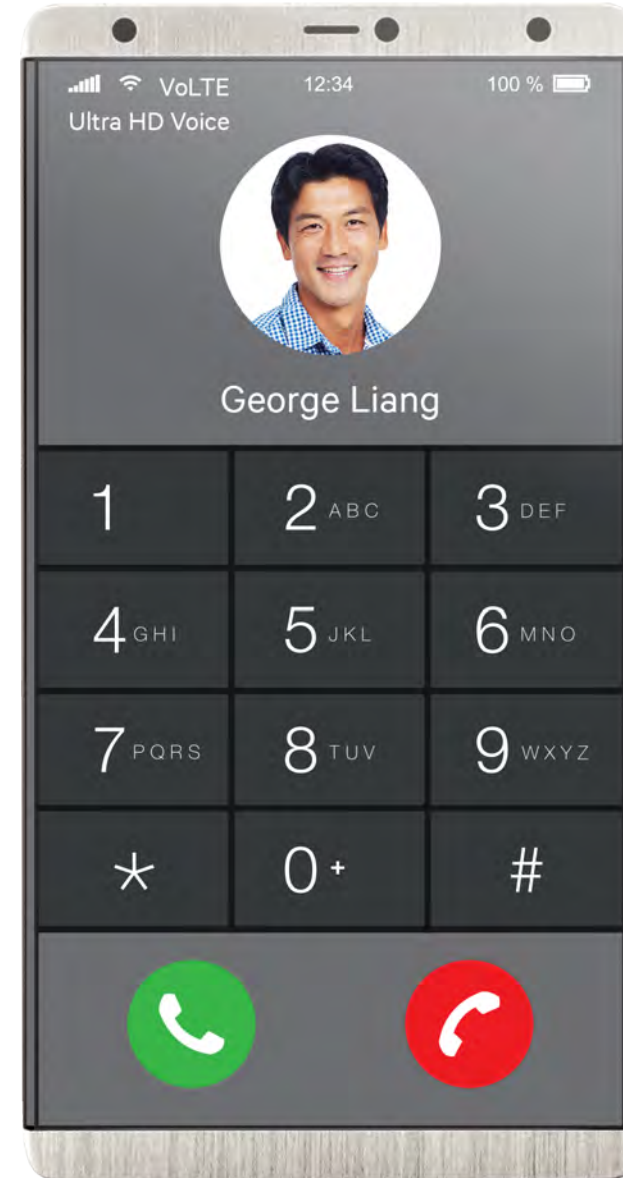
Continuous VR gameplay: The demand for new realities

3+
hours



Ultra HD Voice:
The demand for louder,
clearer, longer voice

2+
days



Qualcomm Quick Charge 4

0 to 50% in 15 minutes

Industry Leading Charging Method

160+ Mobile Devices

Compatible Superset of USB-PD

One charger for everything



“Quick Charge is designed to increase the battery charge of a device by up to 50% in 15 minutes. Actual results may vary depending on device design.”

Higher performance
experiences through
power efficient
architectures



KRYO 385

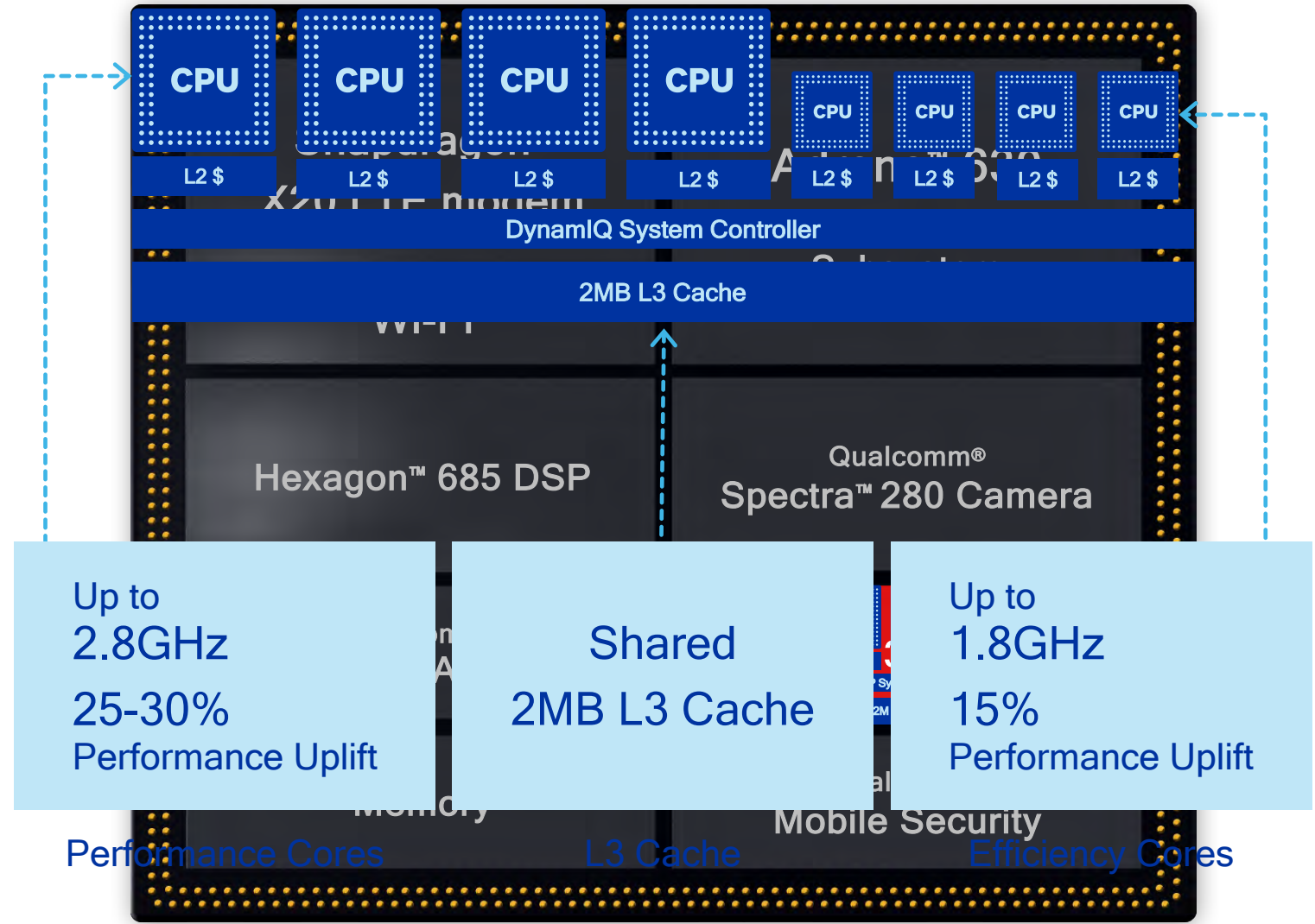
Built on Arm Cortex™ Technology
Latest 2nd Generation 10LPP FINFET

Microarchitecture

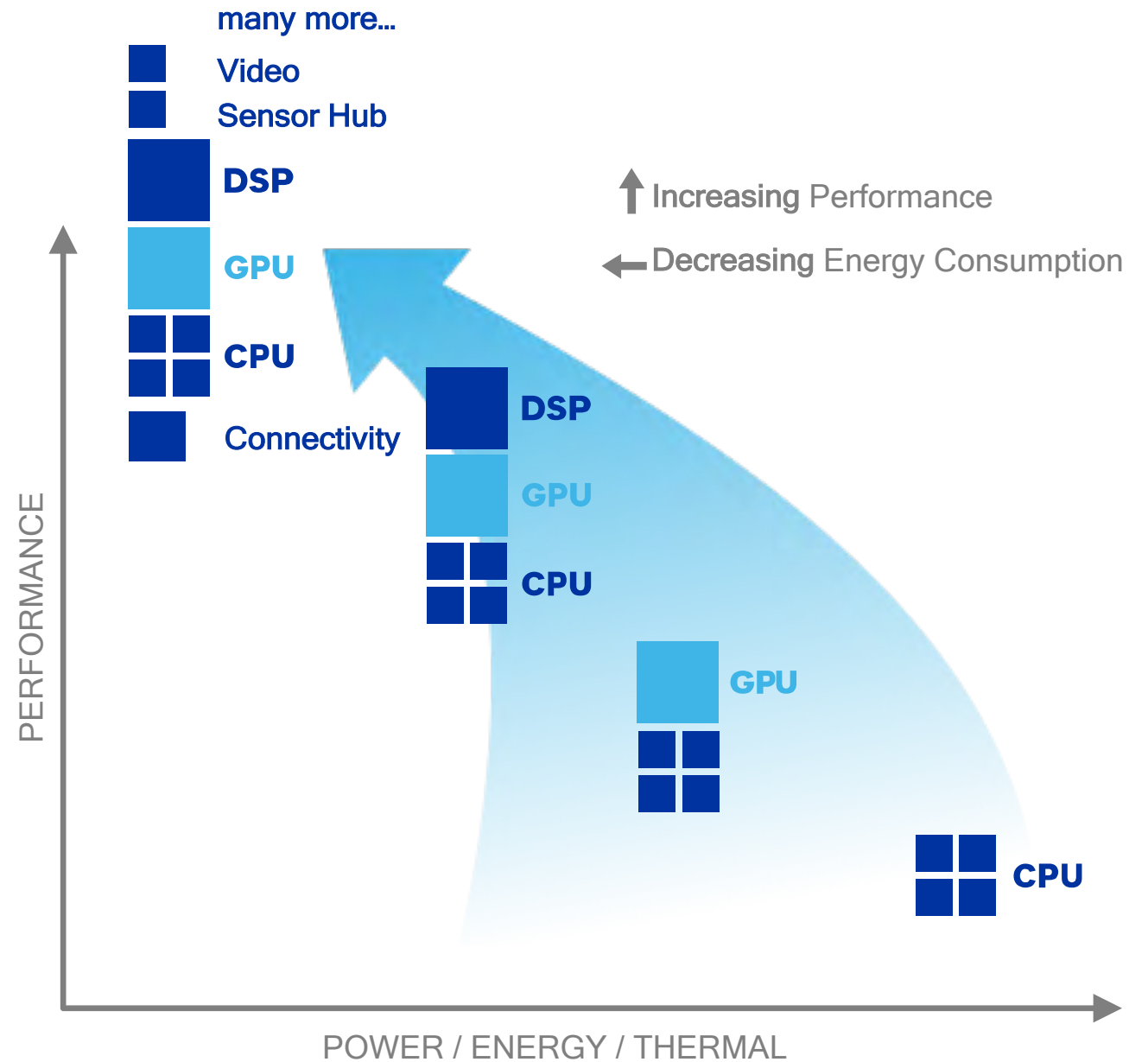
- Private per core L2 cache
- Arm DynamIQ technology
- 3 separate clock and voltage domains

Customizations for system integration

- Bus QoS service for memory throughput
- Page table additions for security



Heterogeneous compute for All-Day battery life



AR

Truly heterogenous approach

Snapdragon™ X20 LTE modem	Adreno™ 630 Visual Processing Subsystem
Wi-Fi	
Hexagon™ 685 DSP	Qualcomm Spectra™ 280 ISP
Qualcomm Aqstic™ Audio	Kryo™ 385 CPU
System Memory	Qualcomm® Secure Processing Unit

Adreno 630

Visual Processing Subsystem: Significant upgrades in power and performance

30%

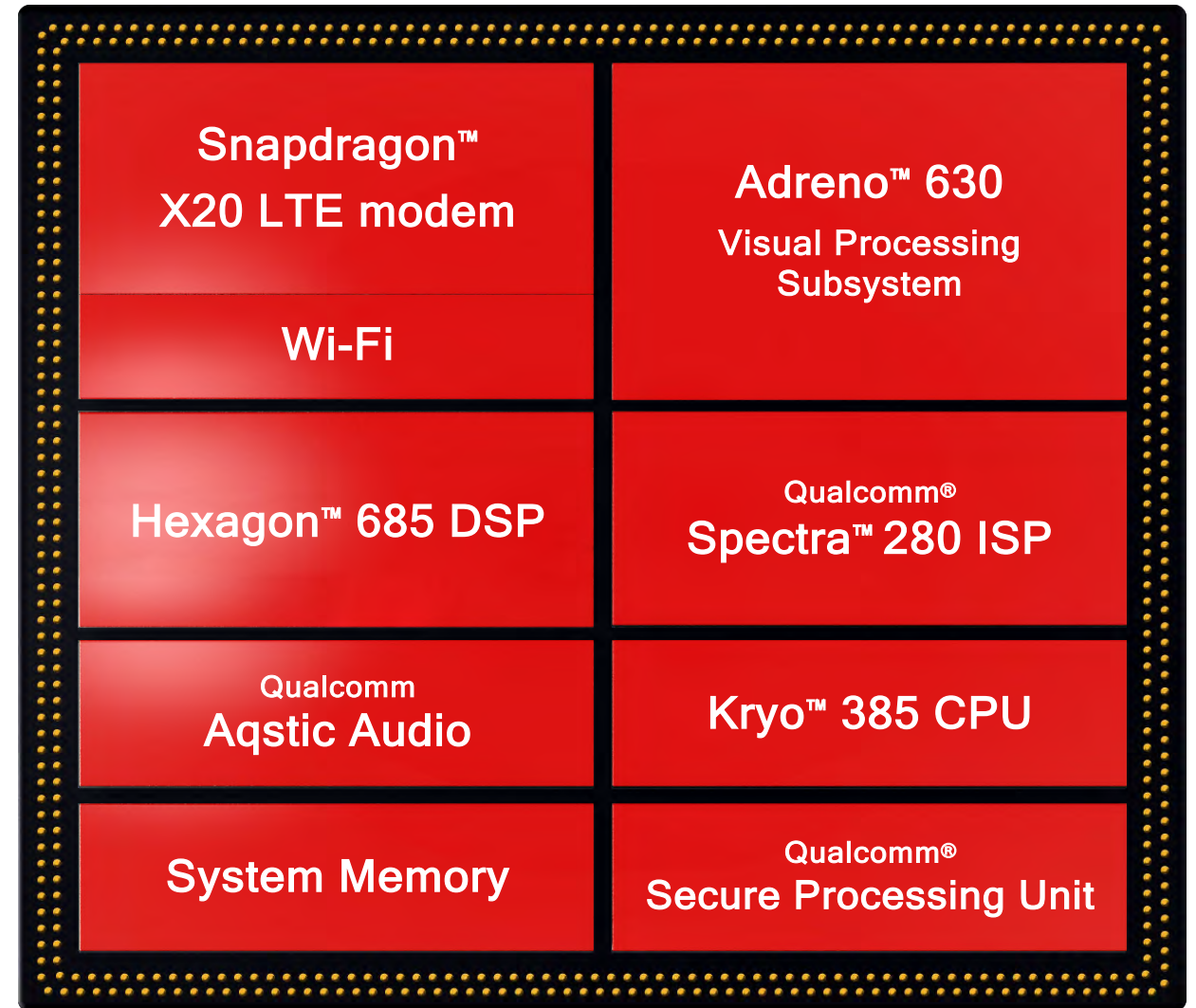
Better graphics performance

30%

power reductions

2.5x

faster display throughput

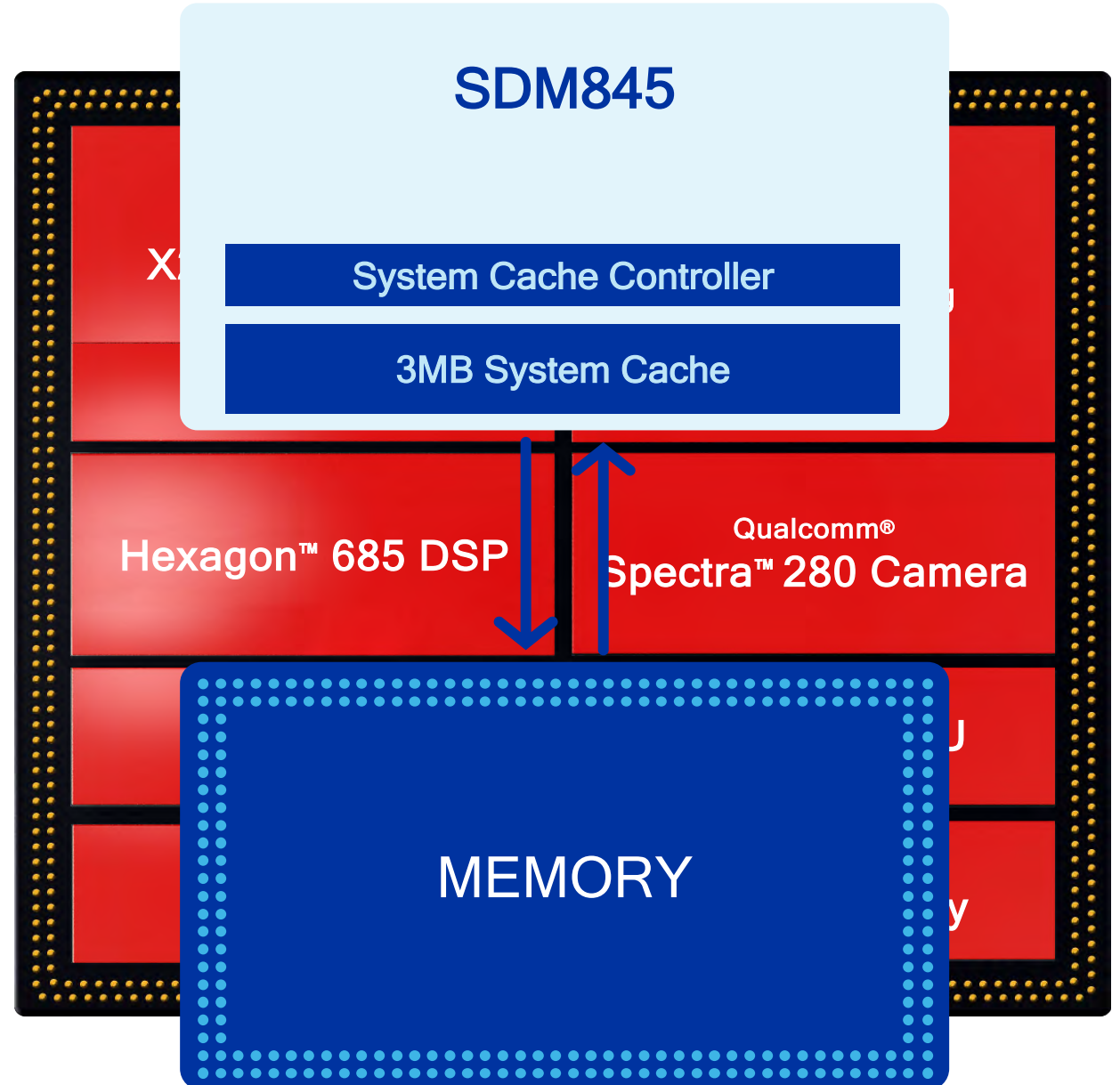


System Cache

3MB

Reduces power by
limiting memory access
bandwidth 40-75%

System performance uplift



Vector Math

Sudoku?

5	3			7				
6			1	9	5			
	9	8					6	
8				6				3
4			8		3			1
7				2				6
	6					2	8	
			4	1	9			5
				8			7	9

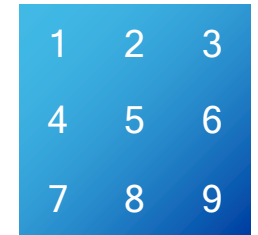
Tensors, Matrices, and Vectors, oh my!



Scalar
0th order Tensor



Vector
1st order Tensor



Matrix
2nd order Tensor

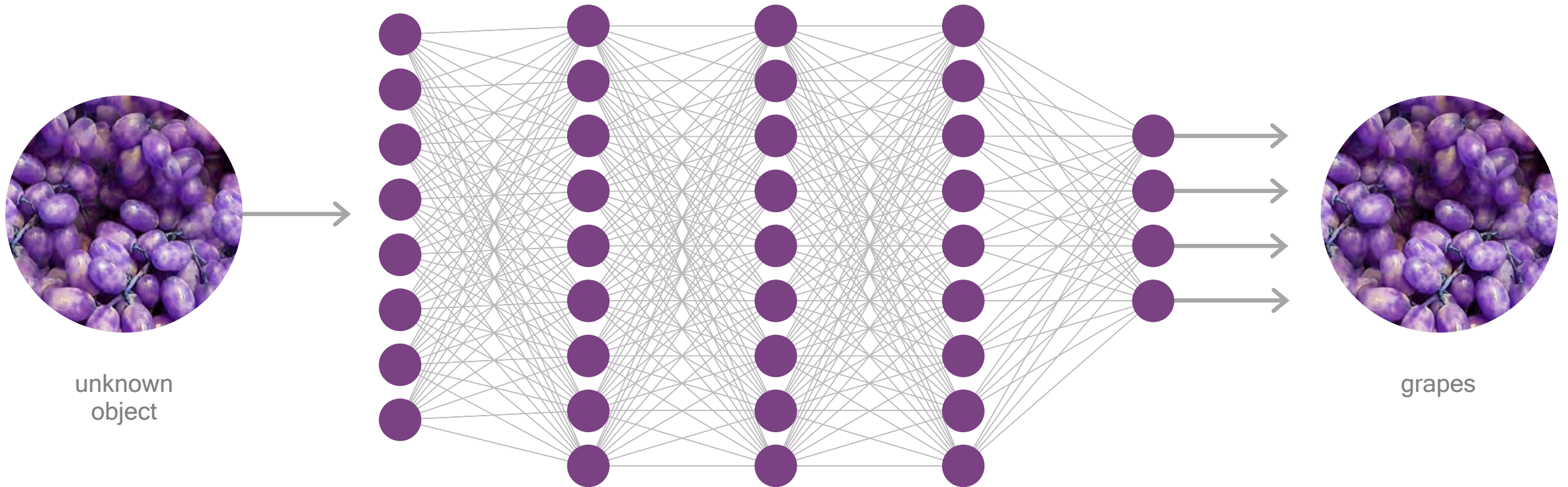


Tensor
3rd order Tensor



Tensor
4th order Tensor

Vector Math is the foundation of deep learning

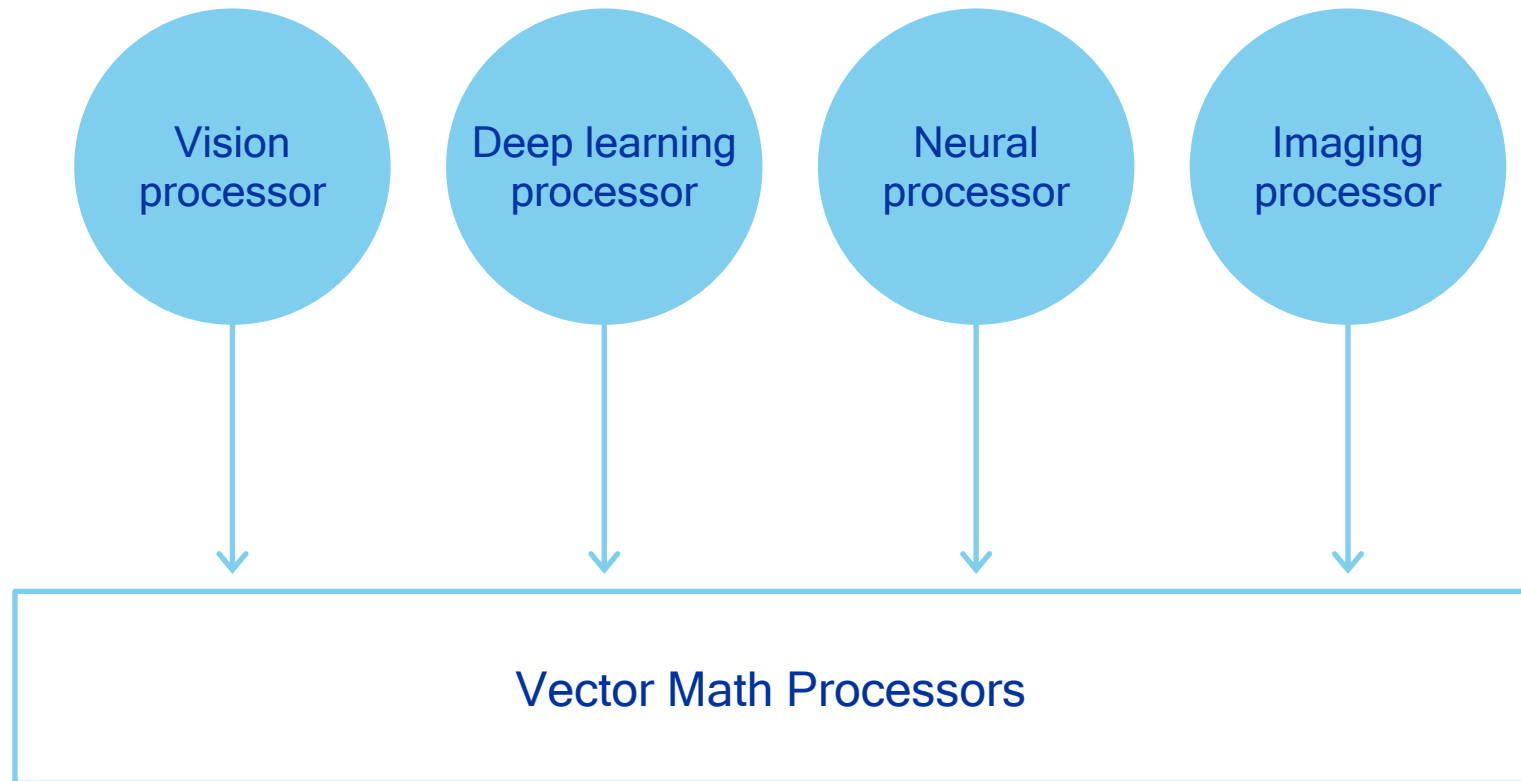


Hexagon 685: 3rd Generation Vector DSP: Optimizing power and performance for AI & Imaging

2015
SDM820
Hexagon 680

2016
SDM835
Hexagon 682

2017
SDM845
Hexagon 685



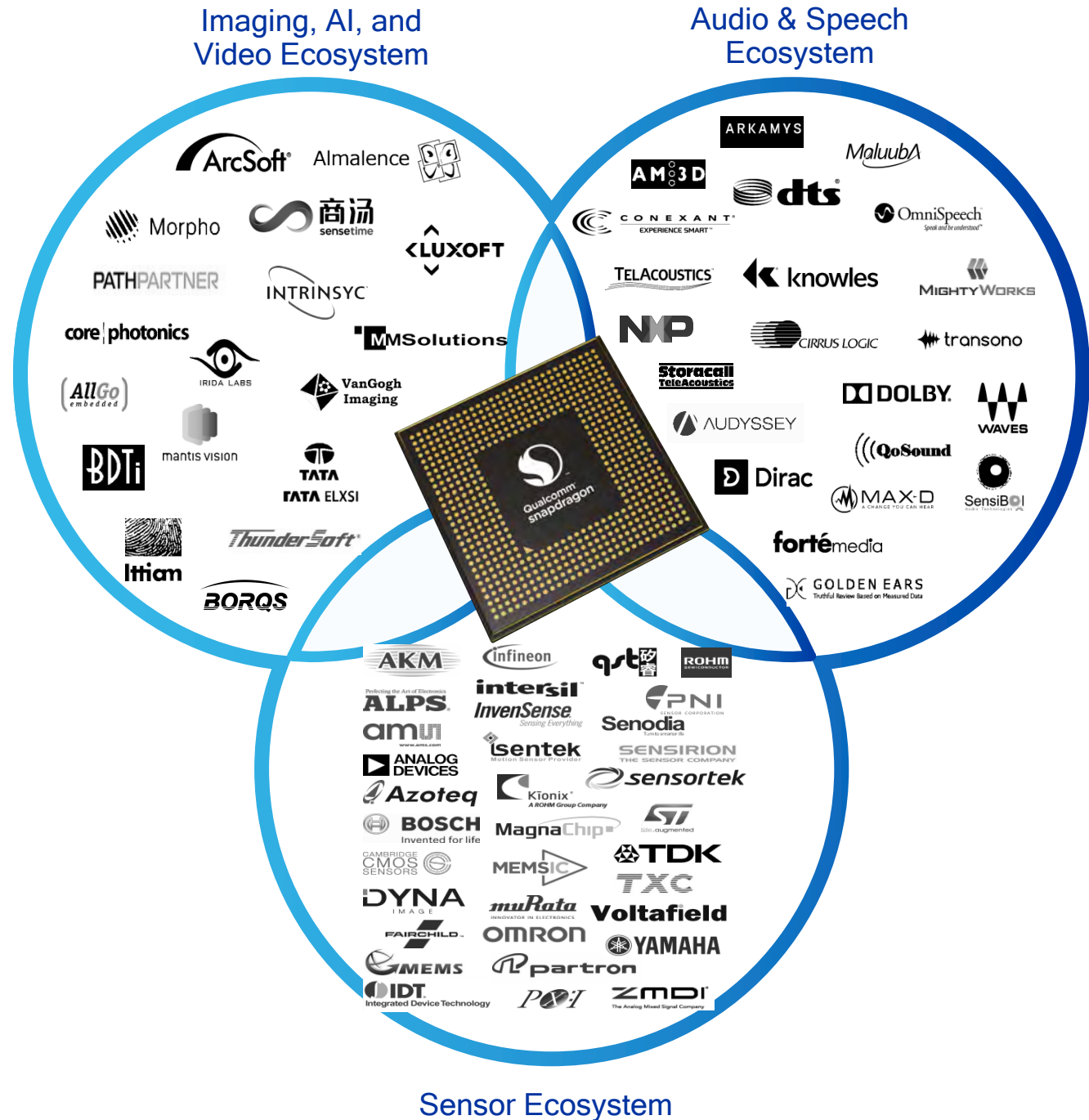
The Hexagon Ecosystem

Power efficient software differentiation

Hexagon Vector DSP (HVX)

Hexagon Scalar DSP (Audio)

Hexagon All-Ways Aware Hub (Sensor)



Developing for Hexagon

Qualcomm® Snapdragon™ Neural Processing Engine

Software Development Kit

Halide

Language for high performance image processing



Open-source library for machine intelligence

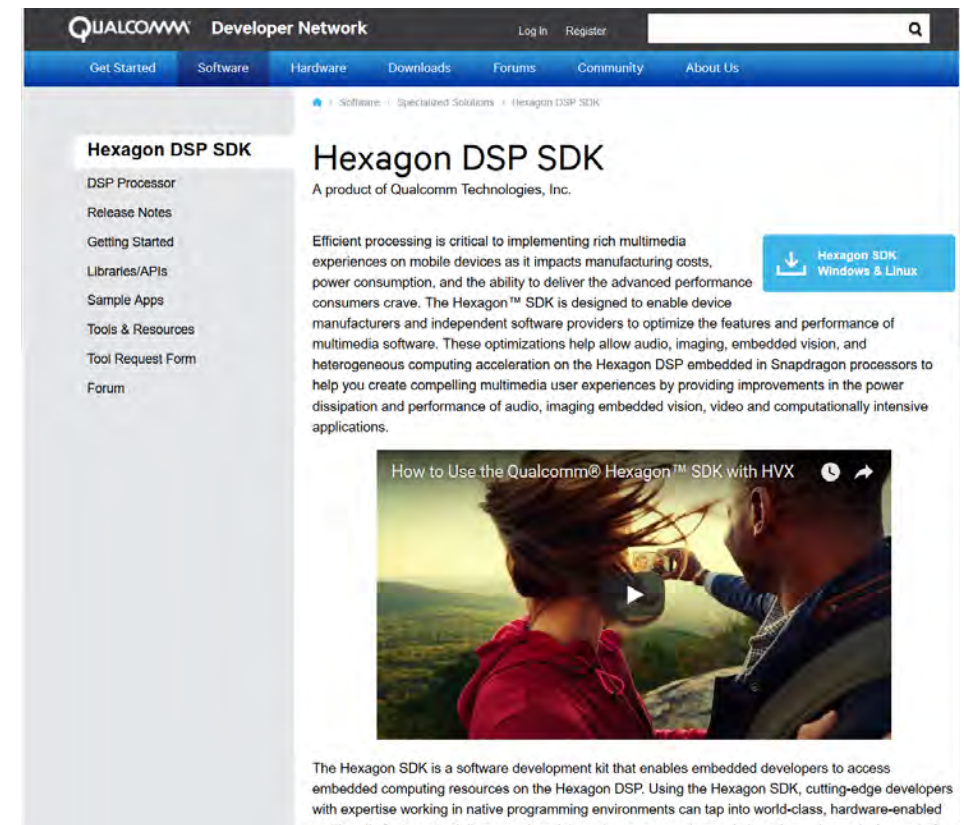
Qualcomm Developer Network

Hexagon DSP SDK

<https://developer.qualcomm.com/software/hexagon-dsp-sdk>

Forum for development questions:

<https://developer.qualcomm.com/forums/software/hexagon-dsp-sdk>

A screenshot of the Qualcomm Developer Network website's Hexagon DSP SDK page. The page has a dark blue header with the Qualcomm logo and navigation links like 'Get Started', 'Software', 'Hardware', 'Downloads', 'Forums', 'Community', and 'About Us'. The main content area is white. On the left, there's a sidebar with links for 'Hexagon DSP SDK', 'DSP Processor', 'Release Notes', 'Getting Started', 'Libraries/APIs', 'Sample Apps', 'Tools & Resources', 'Tool Request Form', and 'Forum'. The main content area features the title 'Hexagon DSP SDK' and a sub-header 'A product of Qualcomm Technologies, Inc.'. Below this is a paragraph describing the SDK's purpose in enabling efficient multimedia processing on mobile devices. A blue button with a download icon and the text 'Hexagon SDK Windows & Linux' is visible. At the bottom, there's a video player with the title 'How to Use the Qualcomm® Hexagon™ SDK with HVX' and a play button icon. The video thumbnail shows two people looking at a landscape.



The true test of performance:

Fastest connections,
in the most demanding places

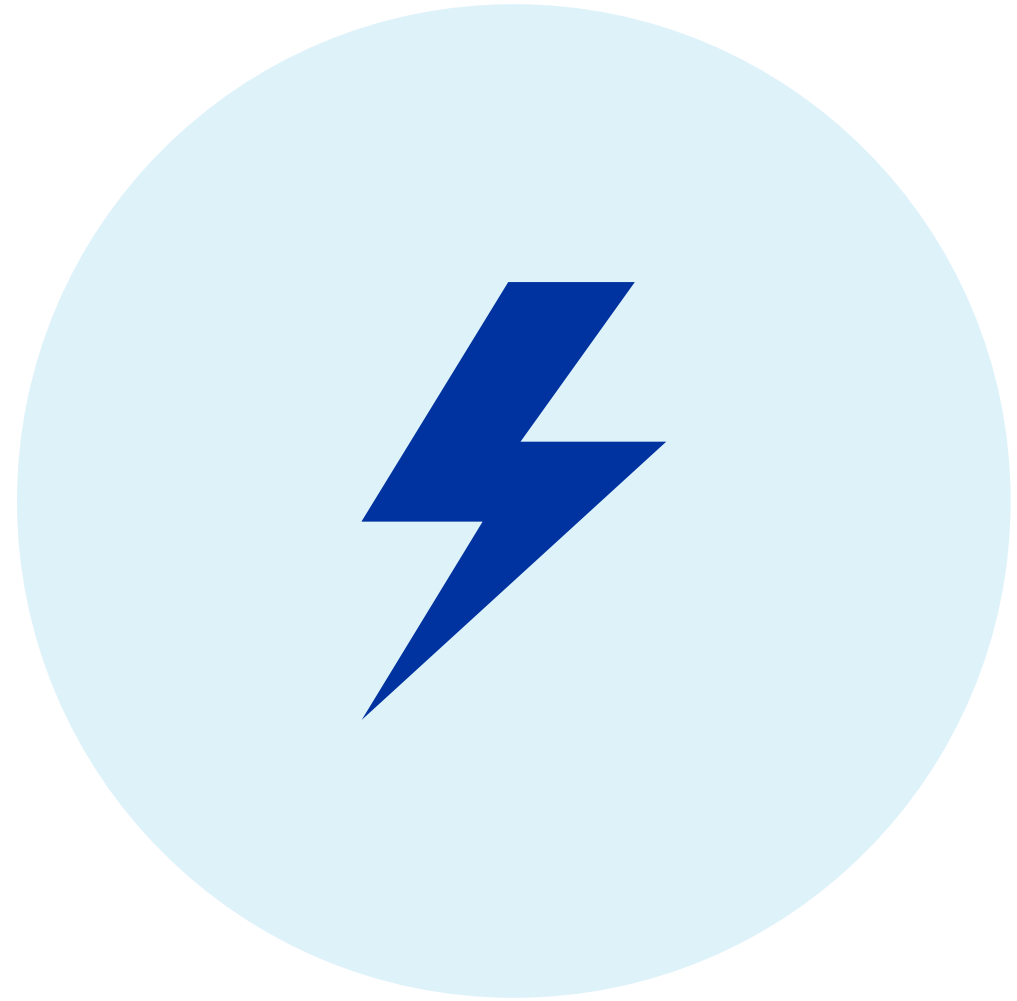


Performance highlights

Multi-hour and multi-day battery
life across key experiences

New architectures featuring 3rd gen
Hexagon Vector DSP for AI

Connected by the fastest modem



Thank you

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