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Qualcomm Technologies, Inc.

Year 2013

Battery
3000mAH

Camera
Single camera

Resolution
1080p/FHD

Audio
Audio jack

Network
4G LTE, CAT 4
150Mbps
Minimal antennas

DISPLAY
5 inch screen

WIFI
802.11 ac

Much more in today's phone

Battery
4000mAH

Camera
Multiple cameras
Depth sensing for security and IQ

Audio
Audio/Microphones 4+

Network
4G LTE, CAT 18
Gigabit LTE
Sophisticated antennas

DISPLAY
Edge-to-edge
6+ inch displays
2K+ displays
Fingerprint/ Under Display
HDR Display

WIFI
802.11 ac/ad

Additional features
More Graphics Horsepower
Quick Charge

App Performance Then:
Simple/ Single Function

Communications
Phone Calls
Messaging/SMS
Email
Alarms/Calendar

Multimedia
MP3 playback
Camera
Local Photos & Files

Social Media
Browser/Search Bar

Location
Maps

App Performance Now:
Increased Performance demands

Communications
Video Chat
Visual email
Weibo

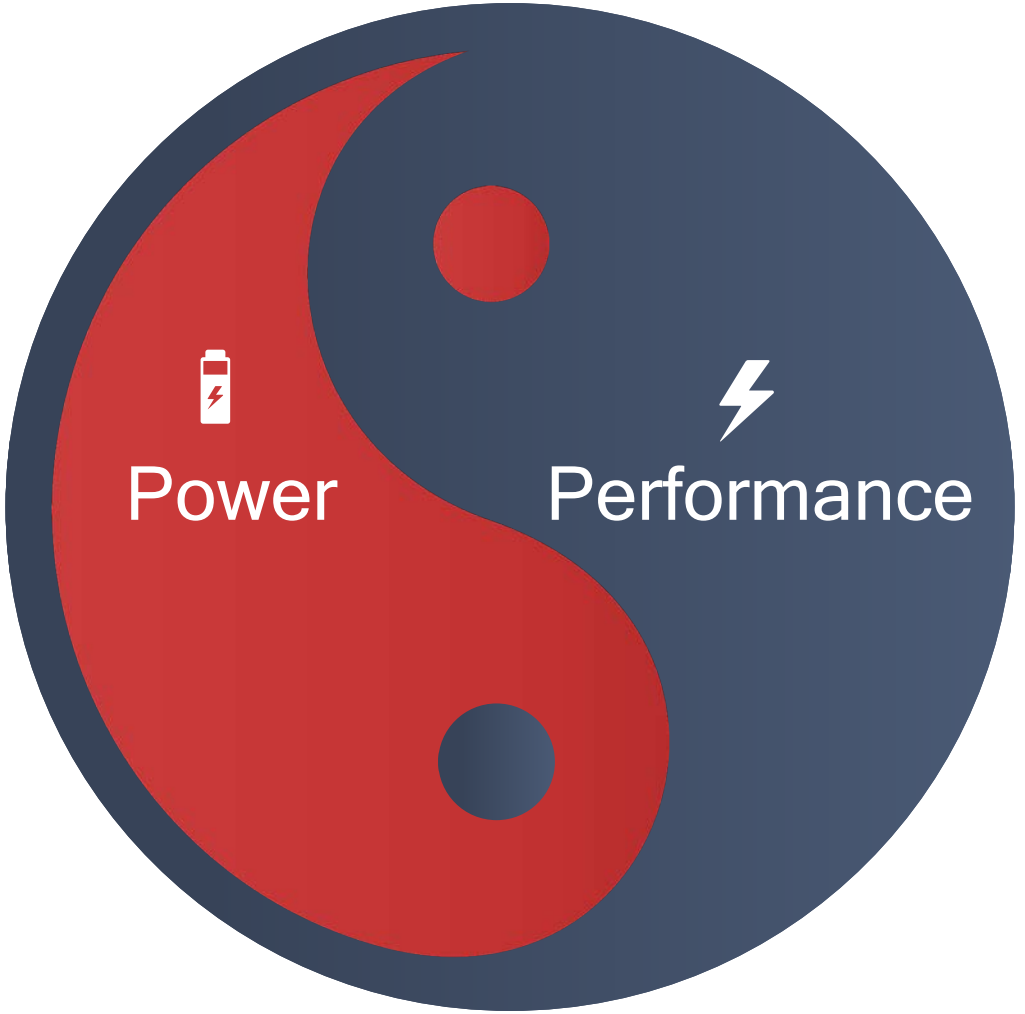
Multimedia
Video Capture
Photo/Video editing
Console Gaming
XR

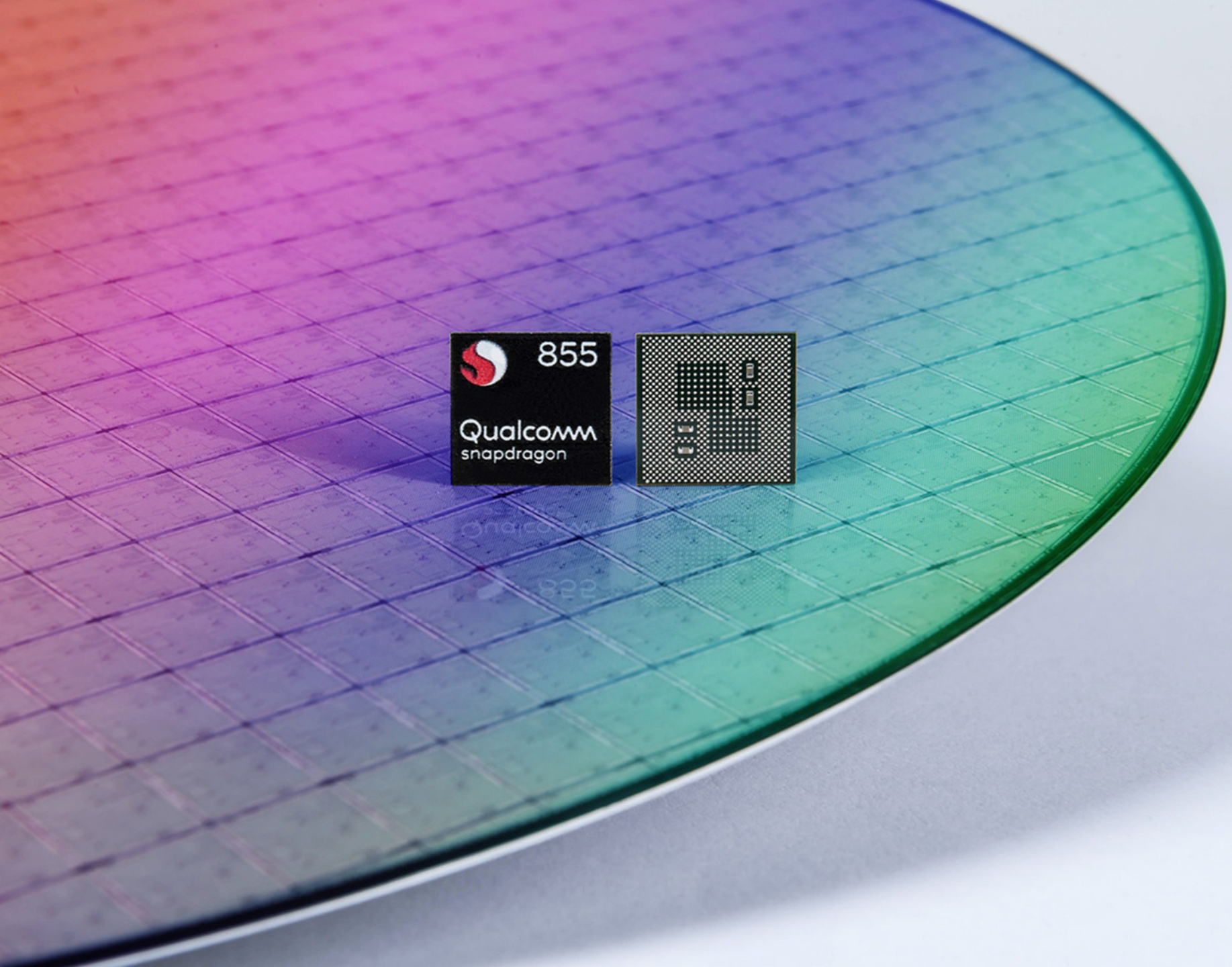
Social Media
WeChat
Facebook
Instagram
Snapchat

Artificial Intelligence
Voice Assistants
AI Acceleration

Power and performance balance

Our design philosophy





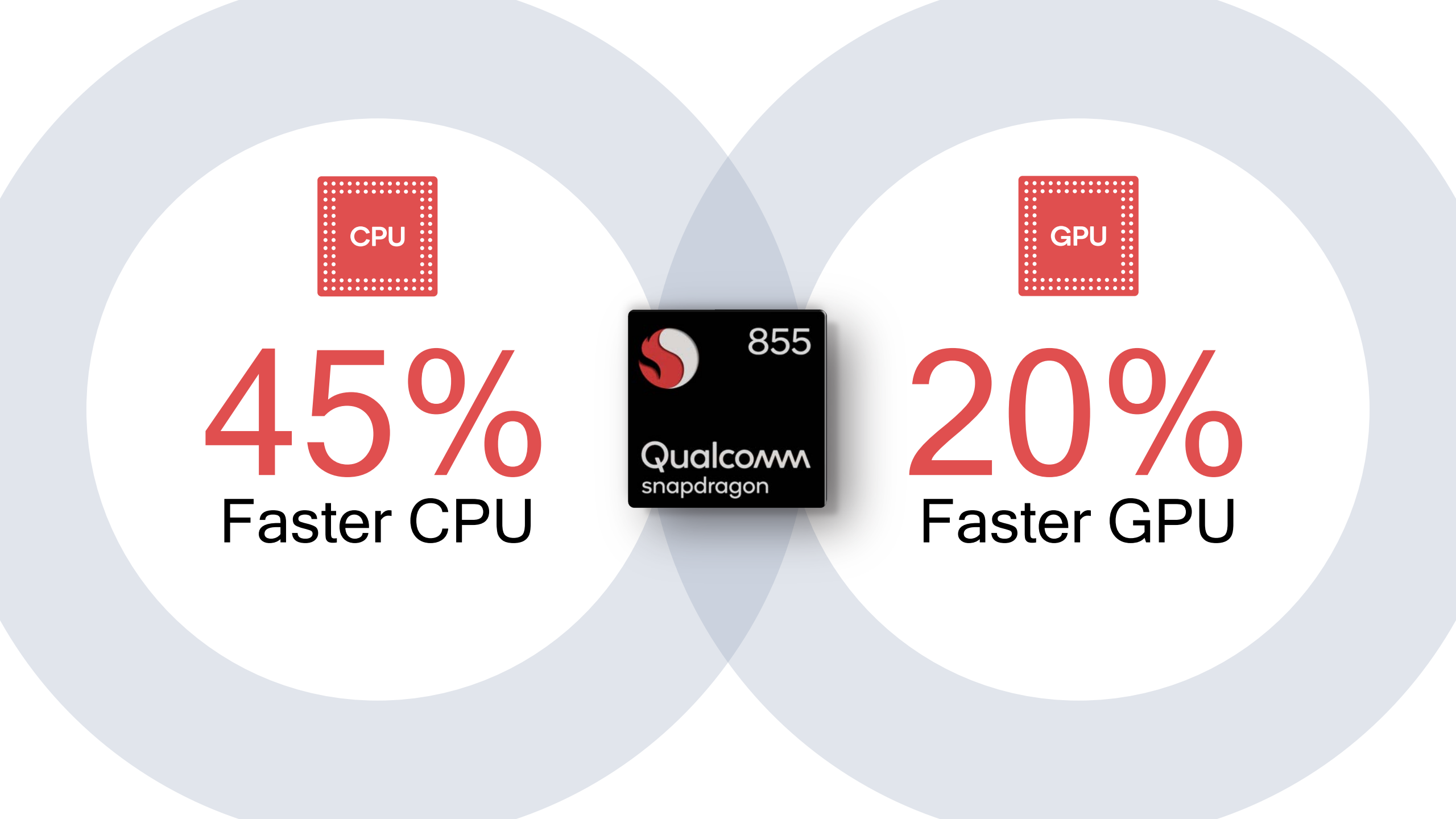
SoC Leadership

7nm Technology

Custom-Designed cores

Advanced Architecture

Power and Performance


CPU
45%
Faster CPU
855
Qualcomm
snapdragon
GPU
20%
Faster GPU

Adreno 640

Qualcomm designed GPU

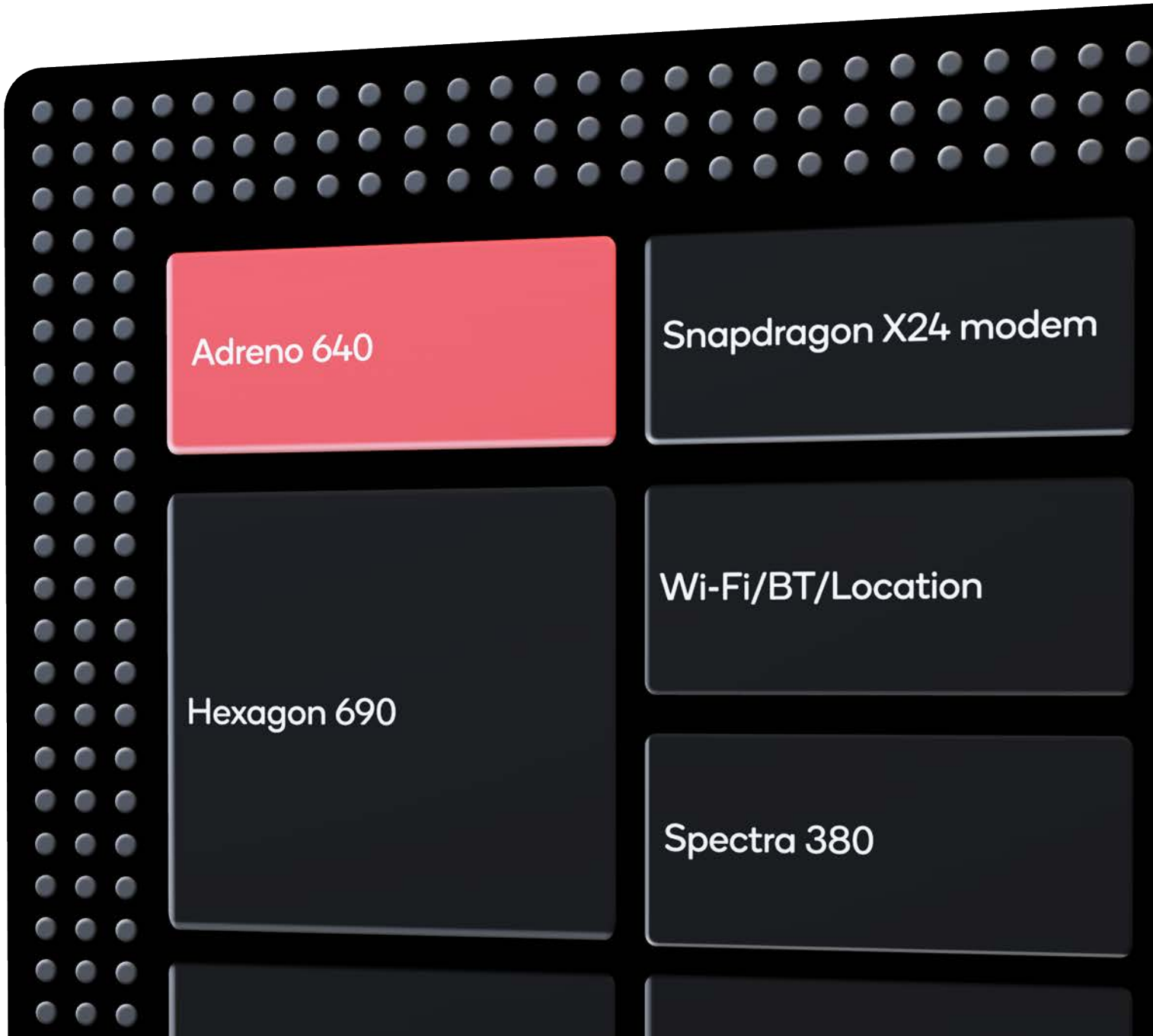
20% faster graphics rendering

Industry leader in performance/watt

- Integrated microcontroller for power management
- Lowest driver overhead for less CPU power

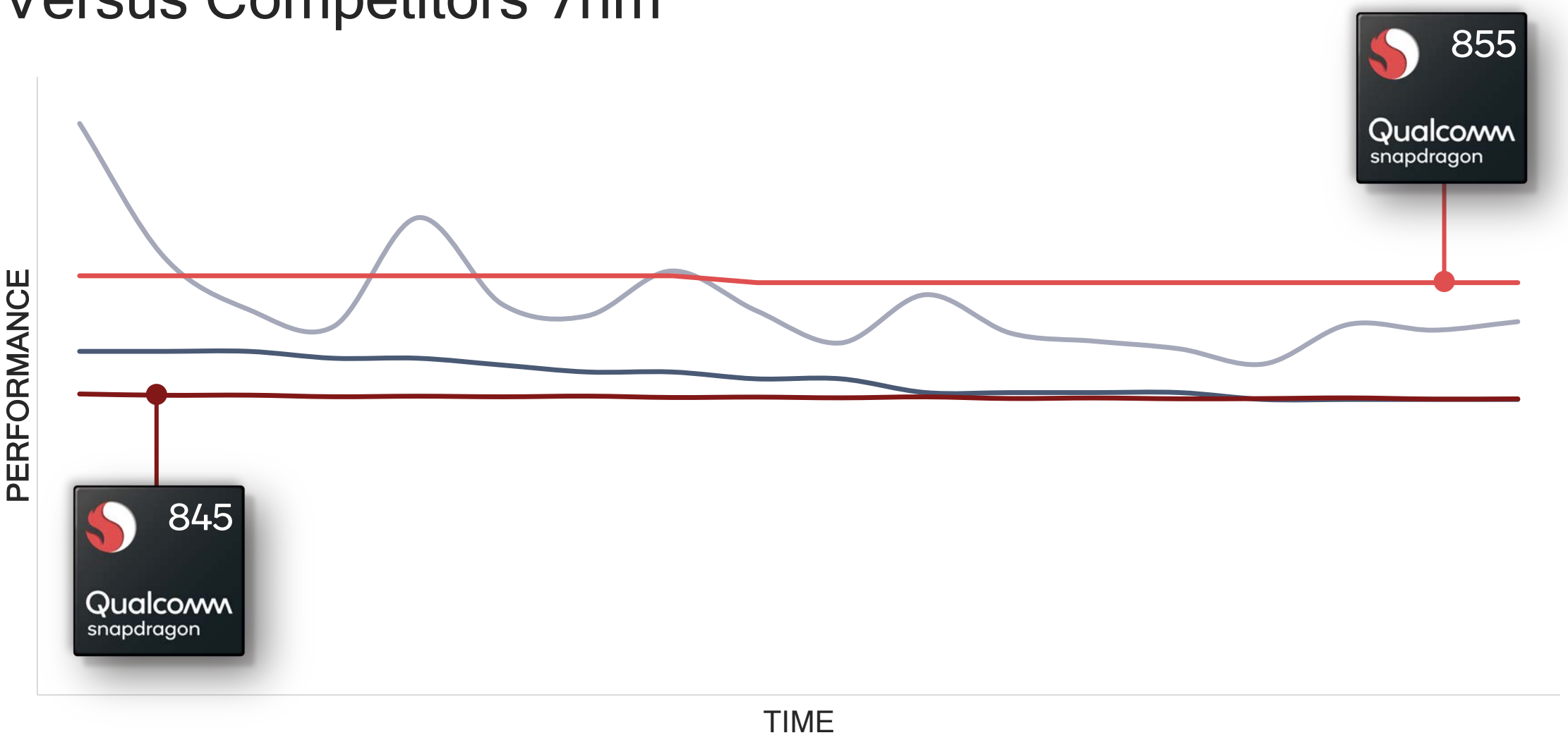
Industry leader in graphics feature set

- First to mobile with Vulkan 1.1

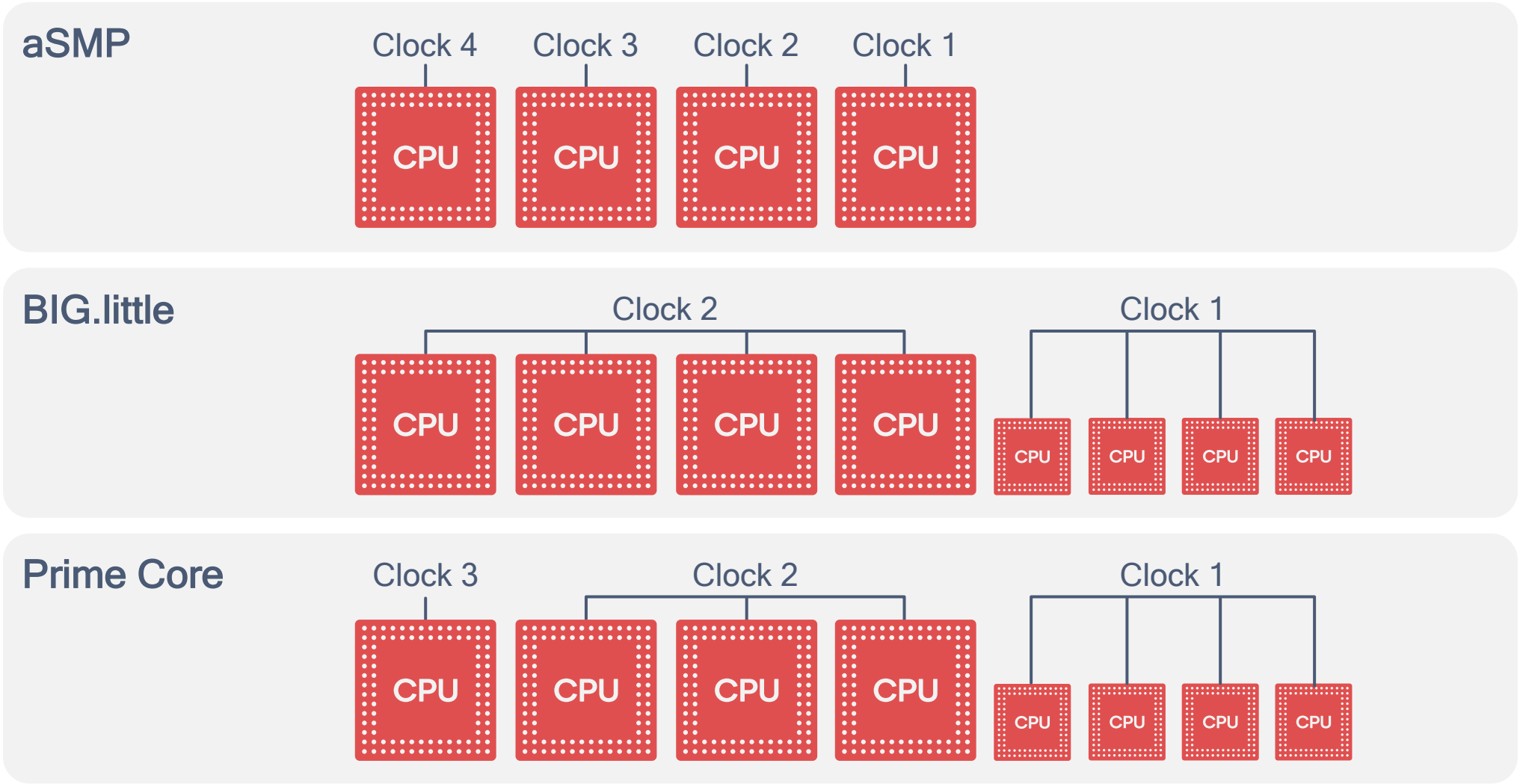


Sustained Gaming Performance

Versus Competitors 7nm



Kryo 485: Introducing Prime Core



Kryo 485

Built on Arm Cortex Technology

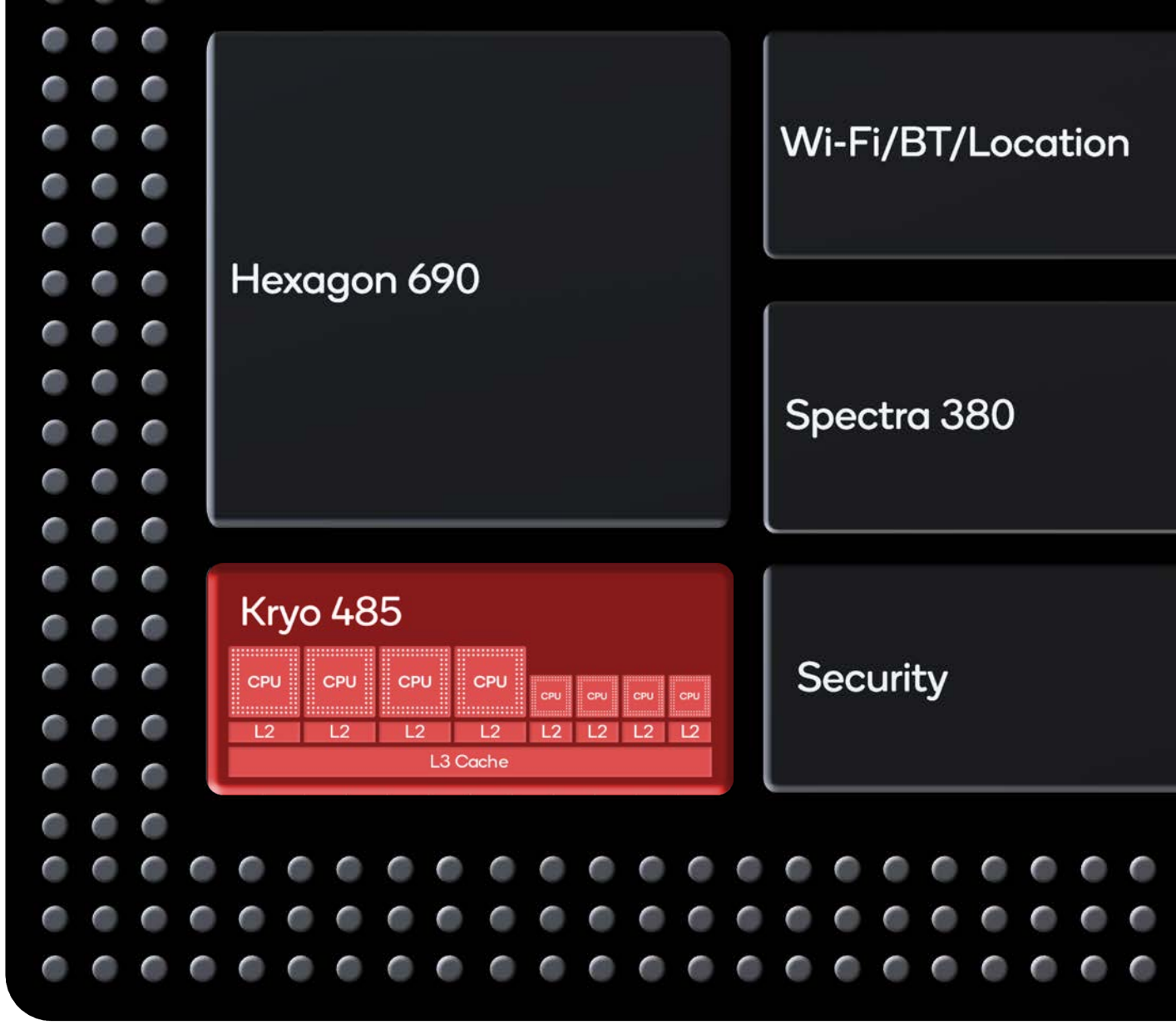
45% performance uplift

1 x 2.84GHz Prime Core
3 x 2.42GHz Performance Cores
4 x 1.80GHZ Efficiency Cores

Customized design for Snapdragon

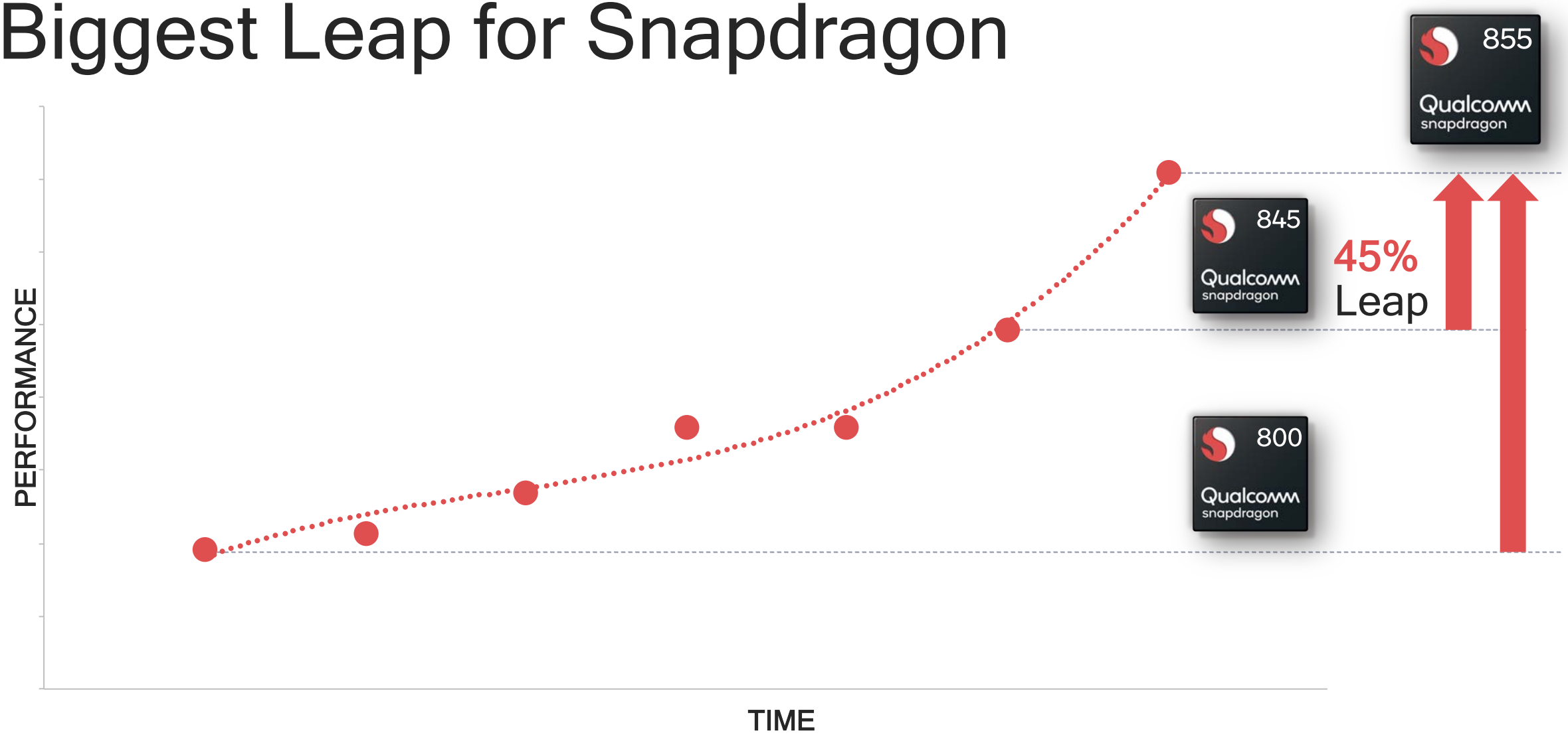
- Larger Out-of-order execution window
- Optimized data prefetch for better efficiency

Private per core L2 cache + Shared L3 Cache + System Cache



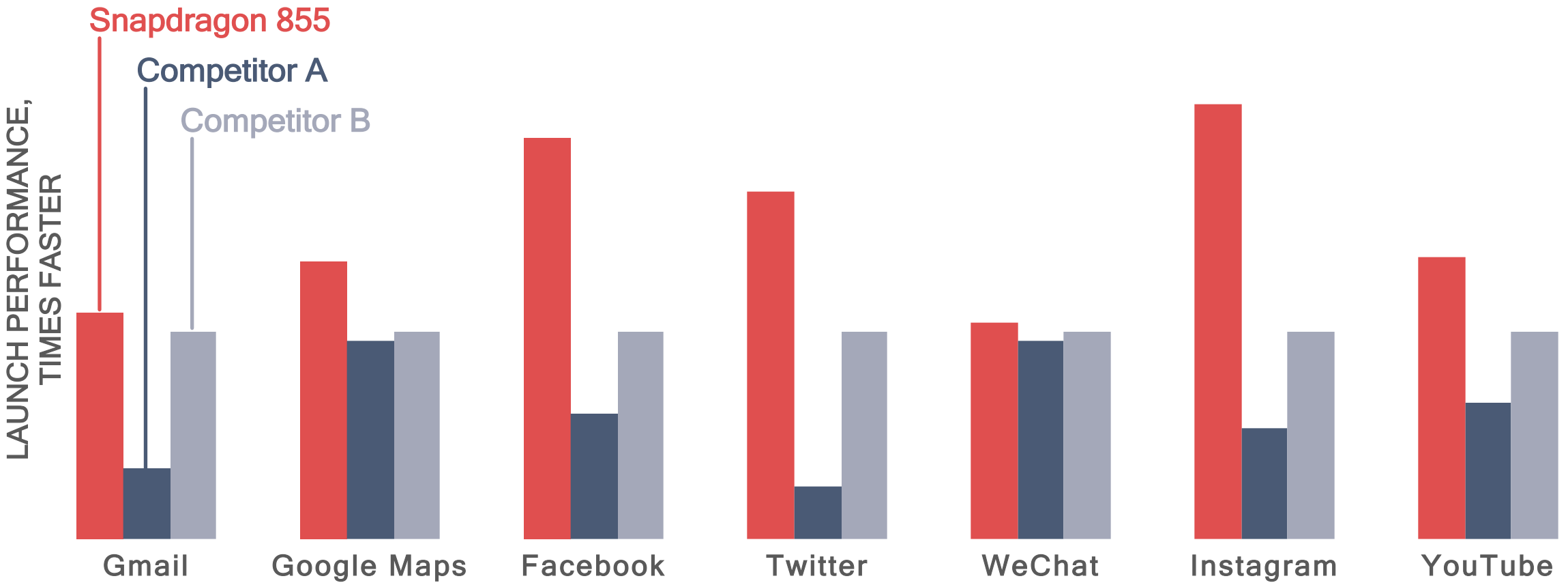
Kryo 485 Performance

Biggest Leap for Snapdragon



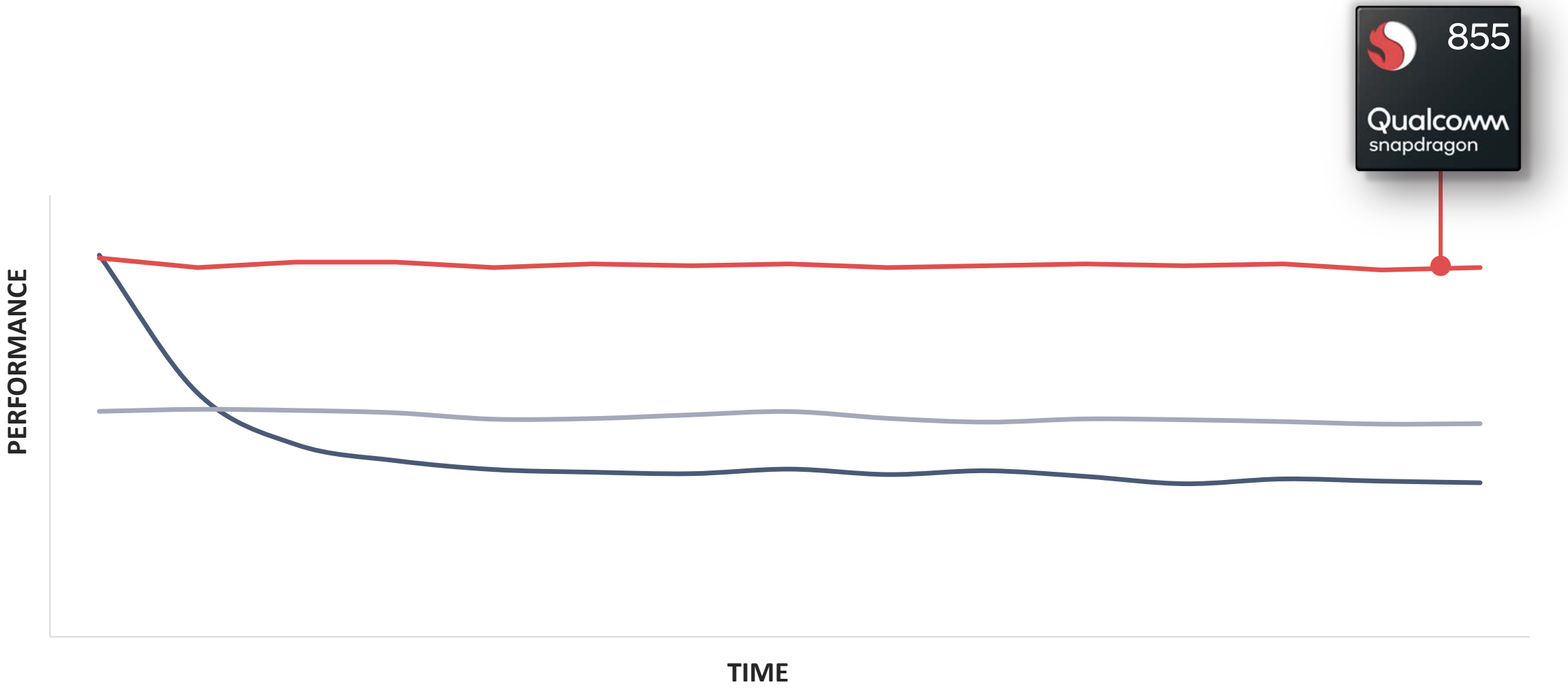
Fastest processor for the apps you use most often

App launch performance compared to other 7nm mobile processors



Sustained System Performance

Versus Competitor 7nm



Hexagon 690

Enabling partner innovation

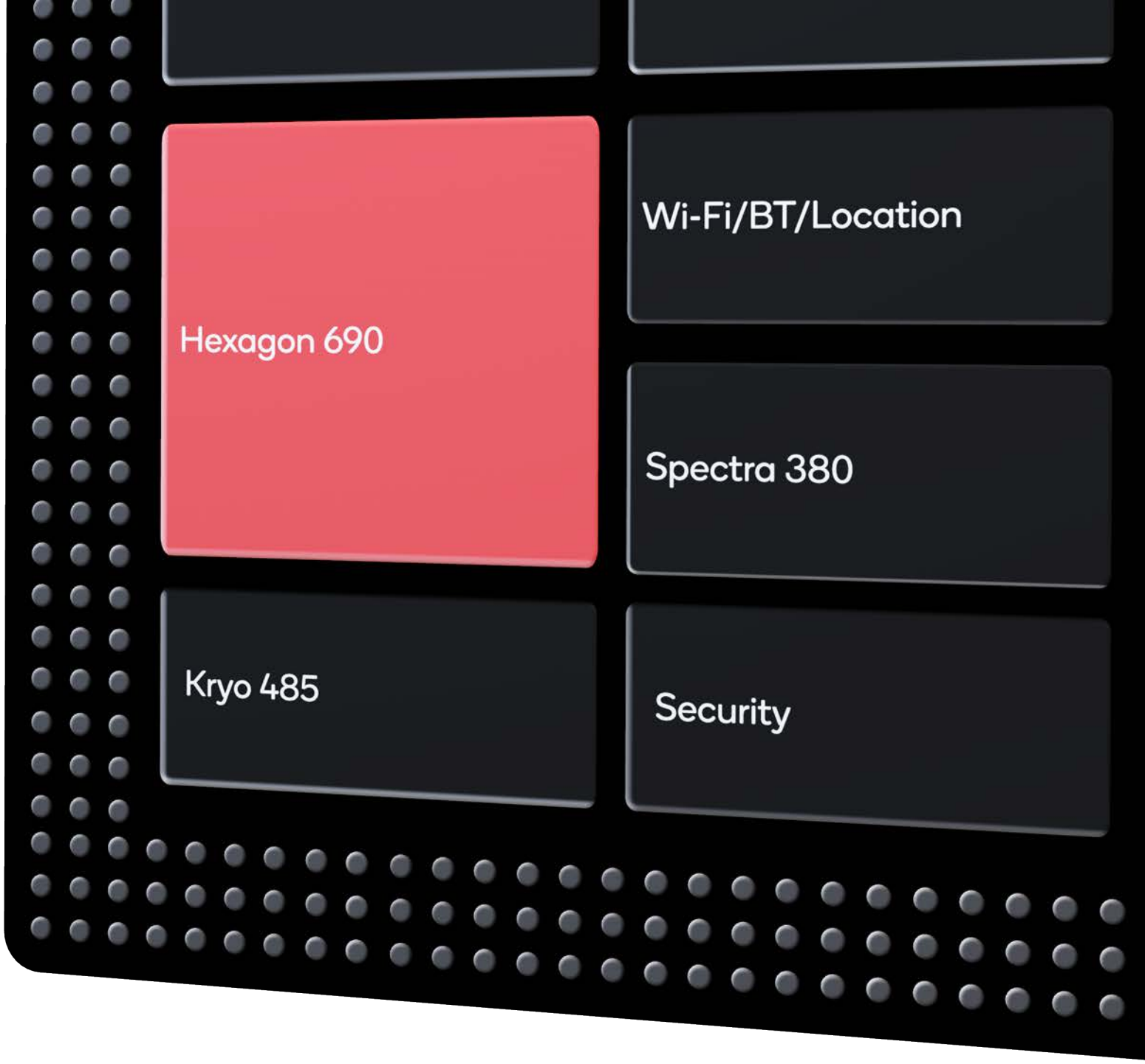
Qualcomm designed

Over **10 billion** DSPs shipped for established software ecosystem

Powerful combination

of classic DSP + AI processing

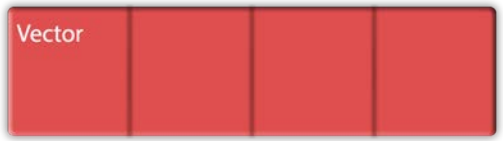
Secure DSP processing



Hexagon 690

1.2x Scalar Performance

- Quad threaded

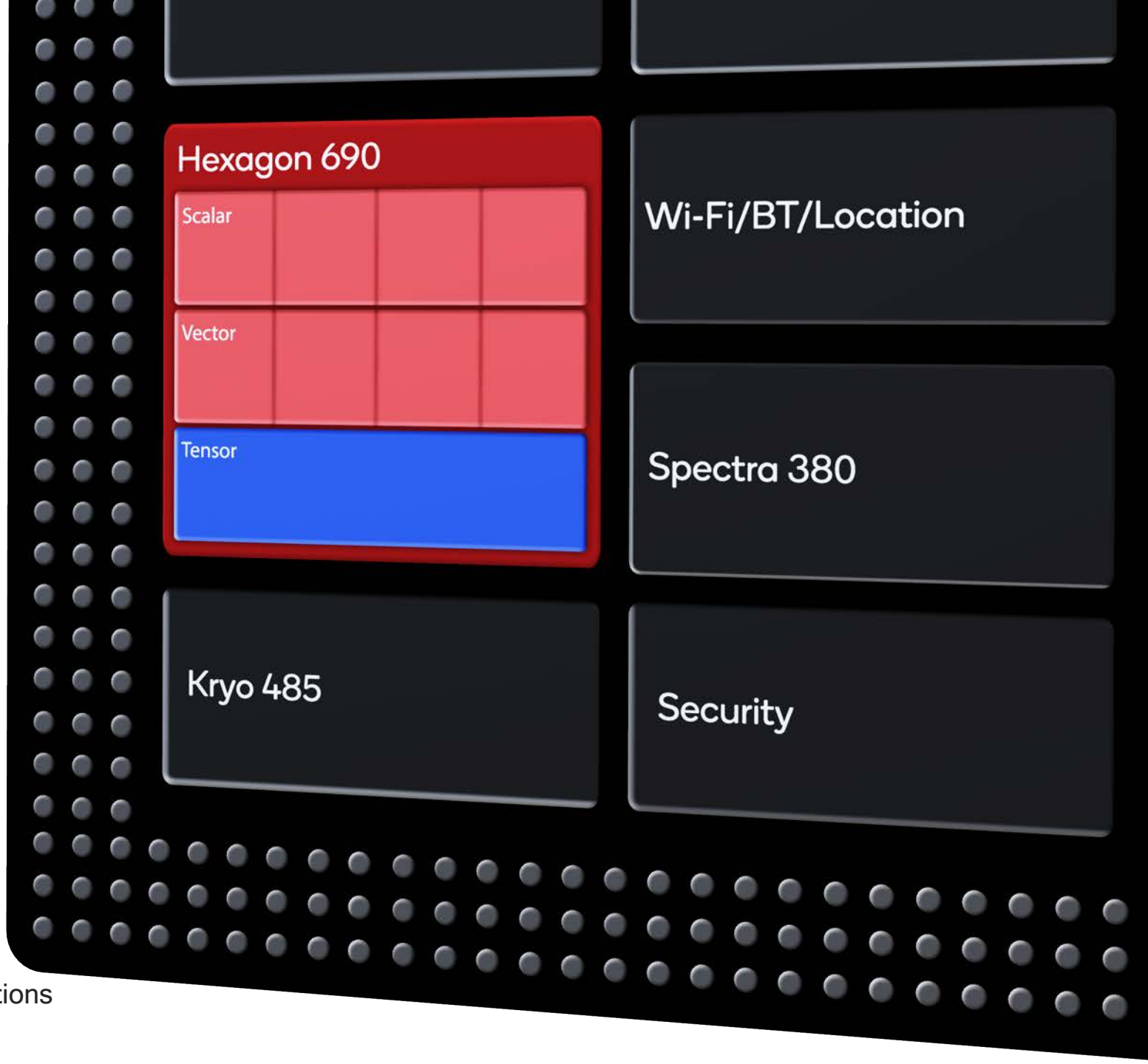


2x Vector eXtensions Performance

- AI and conventional image processing
- 4 Vector extensions

New Tensor Accelerator

- Qualcomm designed
- Dedicated to AI
- Multidimensional math and integrated nonlinear functions

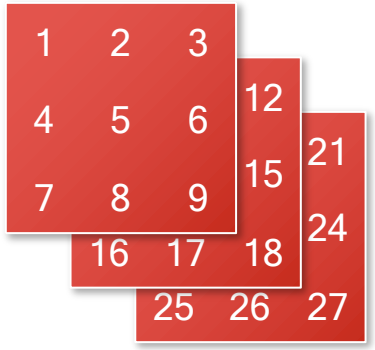


Tensor Accelerator accelerates higher order computation used in AI

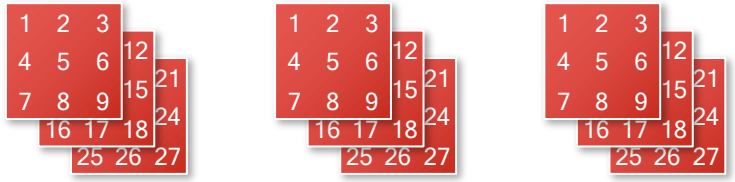
Scalar
0th order Tensor

Vector
1st order Tensor

Matrix
2nd order Tensor



Tensor
3rd order Tensor



Tensor
4th order Tensor

Snapdragon 855

Performance highlights

45% Kryo CPU performance increase, biggest leap ever in Snapdragon performance

20% Adreno GPU performance increase with industry leading power efficiency & **Vulkan 1.1** support

New Hexagon Tensor Accelerator dedicated for AI & doubled Hexagon Vector eXtension performance