June 2020 San Diego

Qualcomm

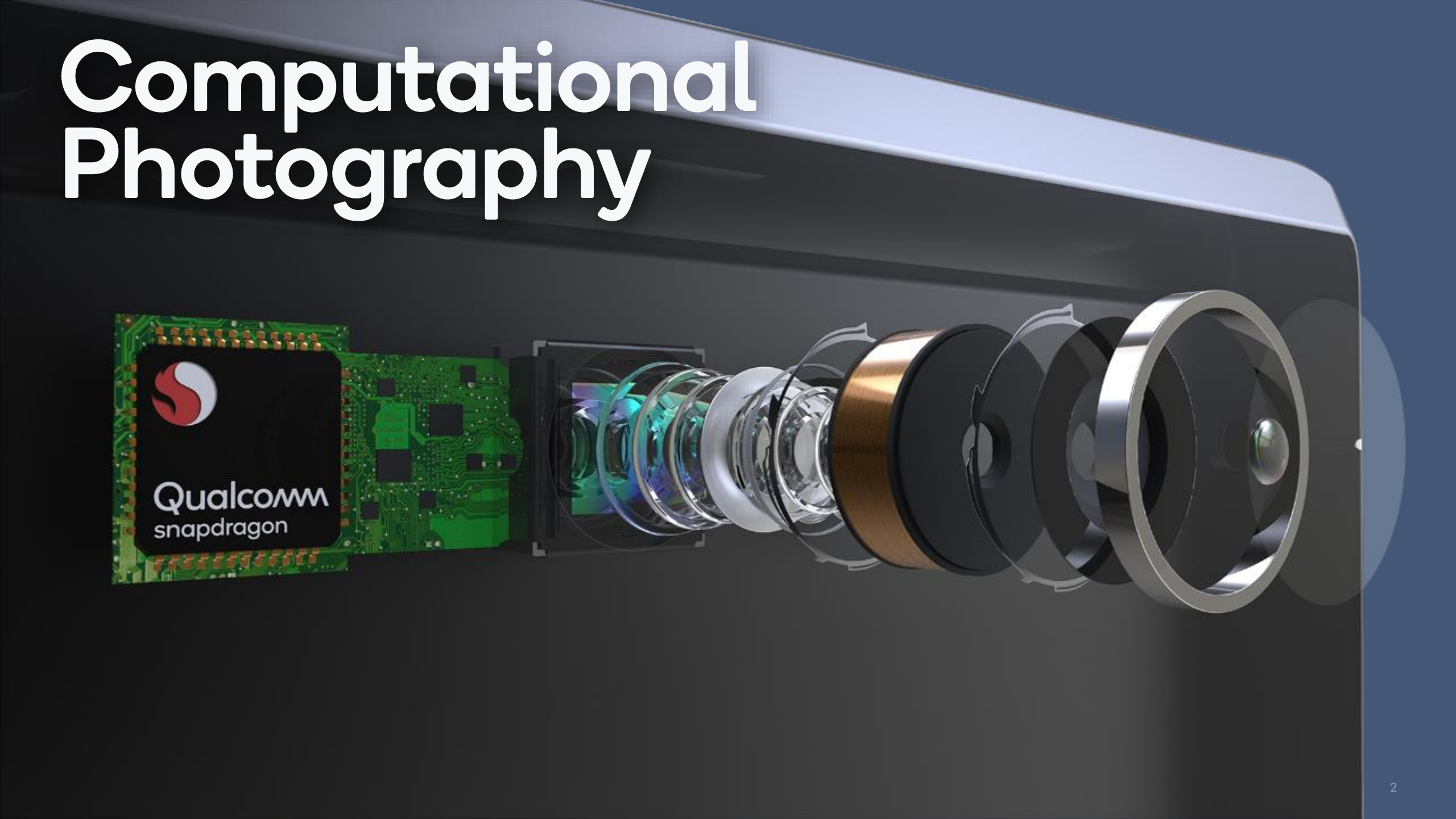
Qualcomm® Snapdragon™ Tech Summit Camera

Judd Heape

Vice President, Product Management

Qualcomm Technologies, Inc.

Computational Photography



888
5G
Qualcomm
snapdragon
Bright Exposure
Dark Exposure
Color Temperature
Depth Map
Final Photo

888 5G
Qualcomm snapdragon

Gigapixel speed. Professional quality.

- First HEIF capture on Android
- World's First Computer Vision ISP
- First 4K Video Capture
- First 4K HDR10 Video Capture
- First 4K HDR10+ Video Capture
- First Gigapixel Speed ISP – 2 Gigapixels per Second
- First 4KHDR + 64MP Simultaneous Capture
- First up to 200 MP Photo Capture
- First 8K Video Capture
- First No Limit Slo-Mo Video Capture at 960 FPS

Oppo
Find X2 Pro

Samsung
Galaxy
Note 20 Ultra

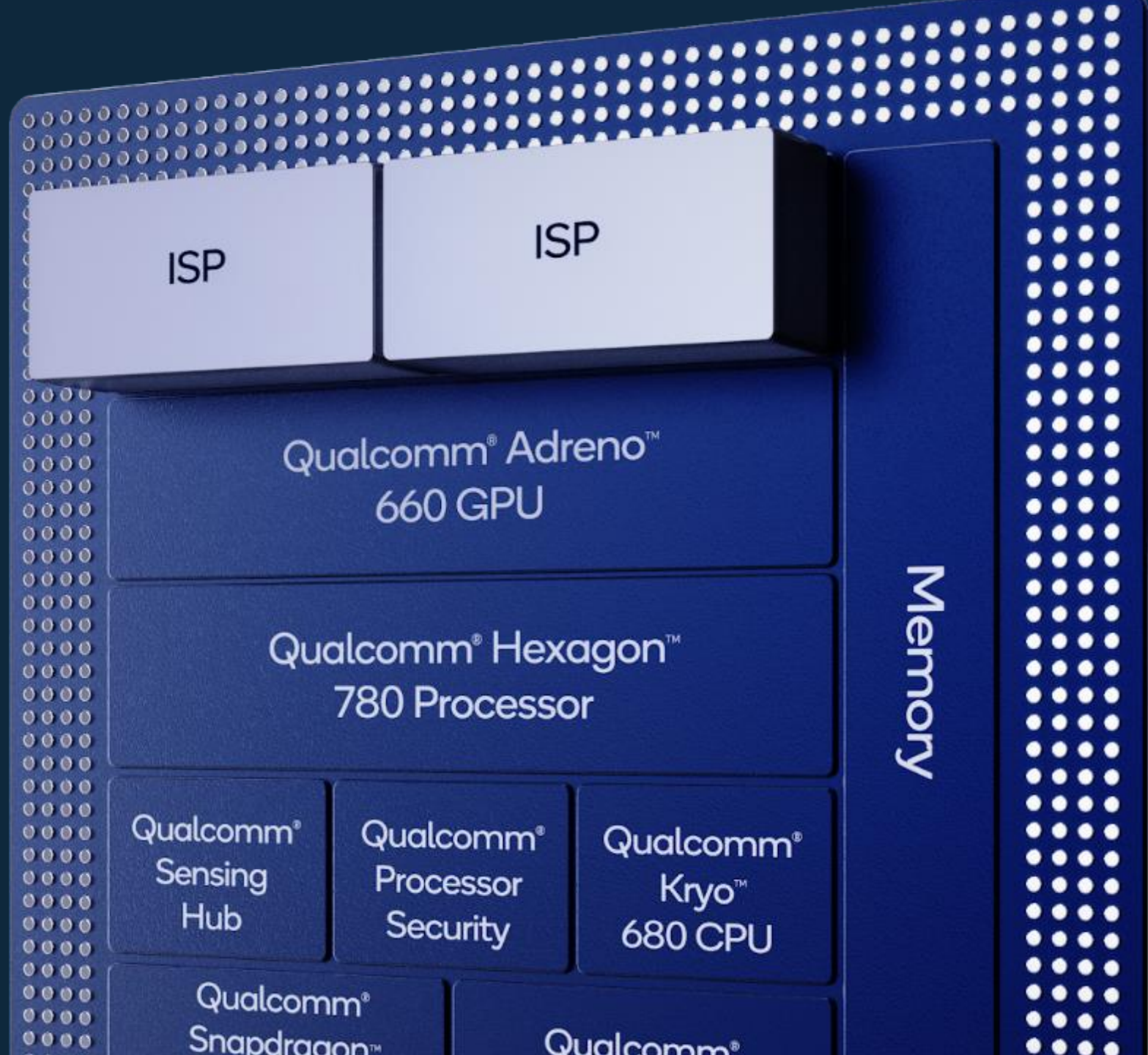
Sony
Xperia 1 II

vivo
X50 Pro+

Xiaomi
Mi 10 Ultra

5G
Qualcomm
snapdragon

Dual ISP



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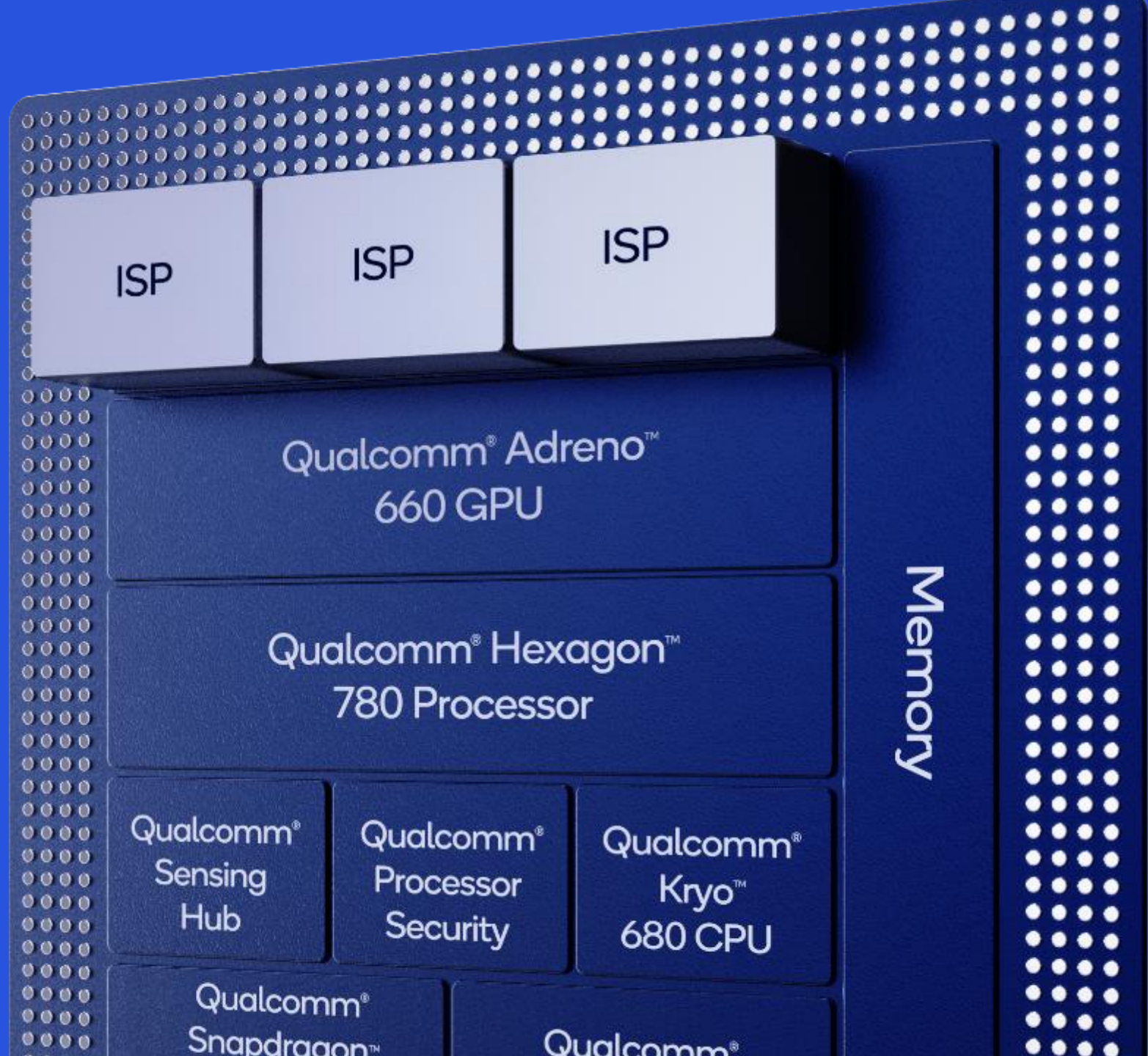
Spectra 580
Hero video

Qualcomm Spectra™ 580 ISP

First Snapdragon with Triple ISP

Triple concurrency

Triple parallel processing



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Triple concurrency

Triple video capture

4K HDR

4K HDR

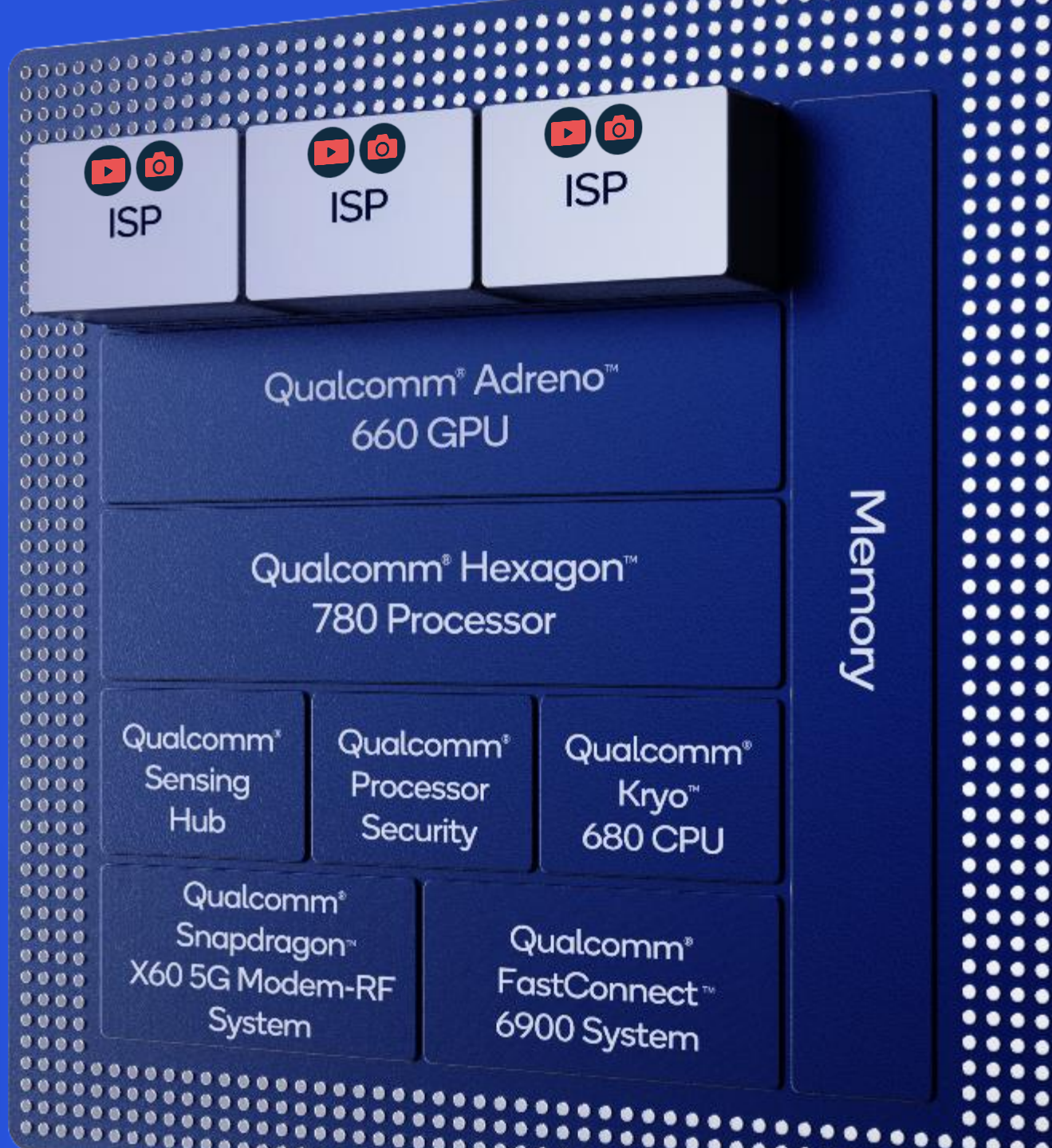
4K HDR

Triple photo capture

28 MP

28 MP

28 MP



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Qualcomm Spectra™ 580

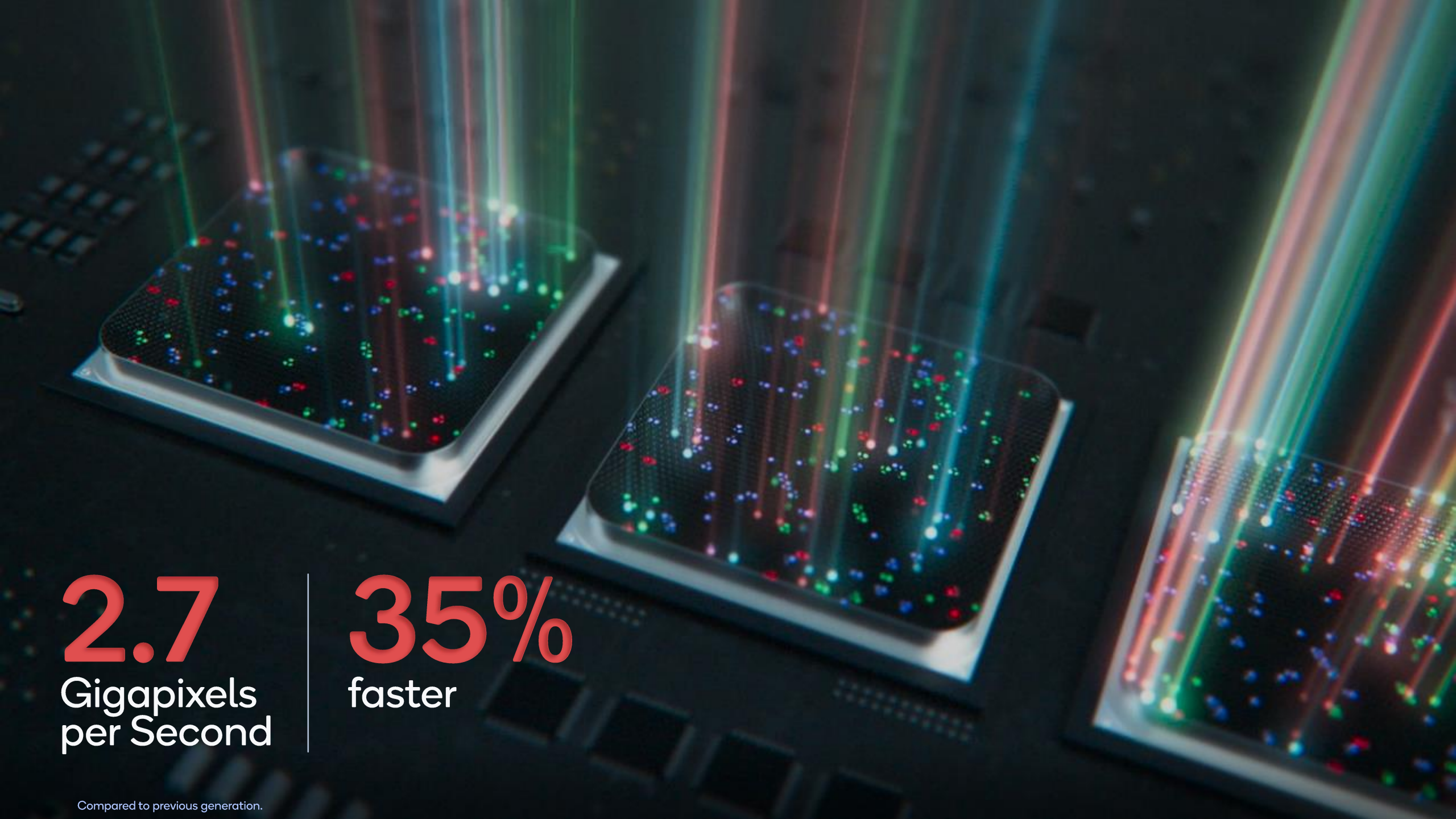
Triple camera concurrency

Enhanced ISP architecture

Speed boost

Quality boost

New computational photography



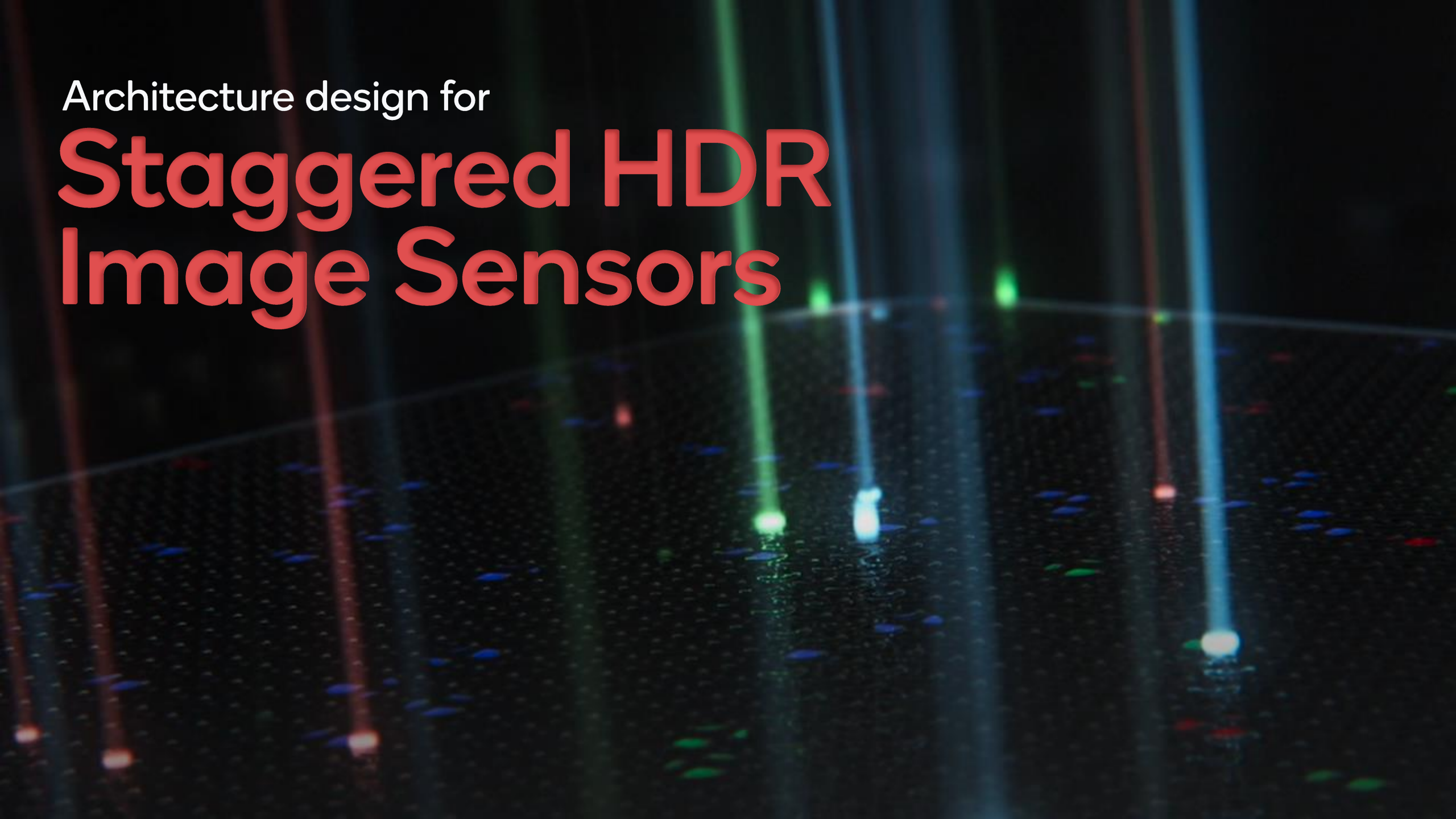
Compared to previous generation.

Burst Photo Capture Demo Video

Filmed live on Snapdragon 888 5G Reference Design

New
Low Light Architecture
Capture in .1 Lux

Low Light Demo Video


Architecture design for
Staggered HDR
Image Sensors

HDR Capture

10-Bit HDR

10-bit color depth
Each frame contains over 1 billion shades of color

Computational HDR

Capture multiple images at different exposures
Create a final image with extreme dynamic range

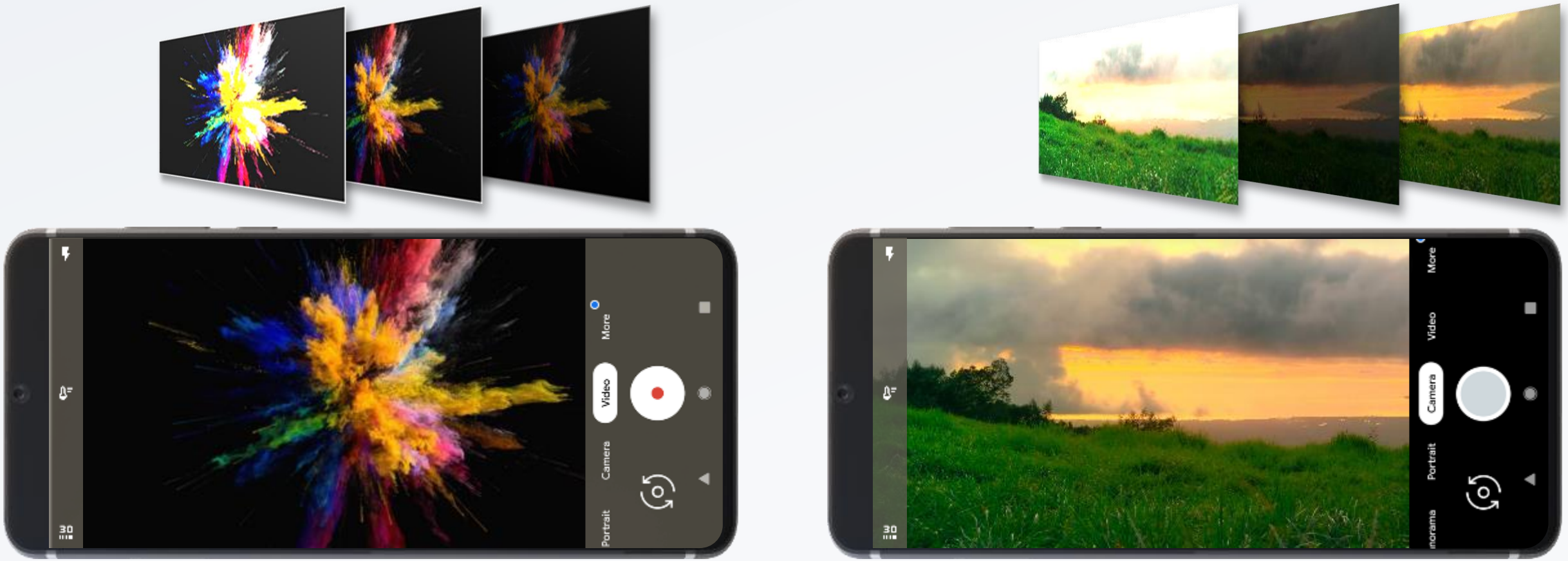
Single
exposure
per frame

10-bit 4K HDR Video Capture

First on
Snapdragon 845

Multiple
exposures
per image

8-bit Photo Capture
with Computational HDR



10-bit HDR with Computational HDR

For photo capture and video capture

1st

10-bit HDR HEIF Photo Capture

Capture photos
in over one billion shades of color

1st

4K HDR with Computational HDR Video Capture

Capture videos
with extreme dynamic range

Computational HDR

for all capture modes

10-Bit Color Depth

Over 1 Billion Shades of color: snapshots and videos

Staggered HDR Image Sensors

Captures three 10-bit images

Triple ISP

Merge three 10-bit HDR Images

4K HDR with Computational HDR
Professional quality in challenging lighting

Video Chat with
Computational
HDR
Professional
quality in
challenging
lighting

Computational HDR Video Demo

120Hz Displays

120 FPS

Gaming

Hypersmooth Gaming

120Hz Displays

120 FPS

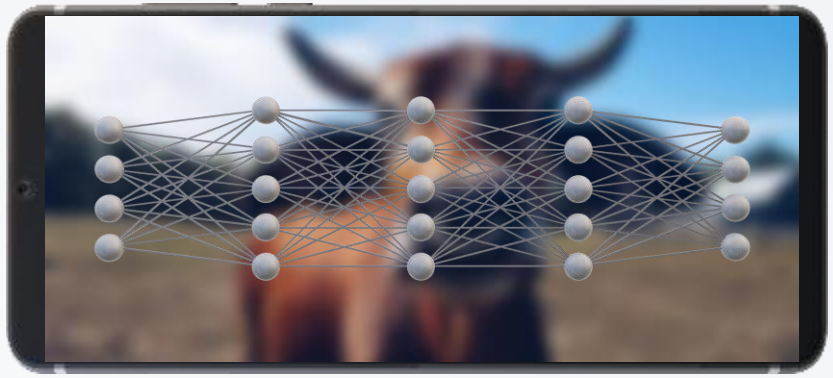
4K Video capture

4K Video playback

Hypersmooth Video Playback

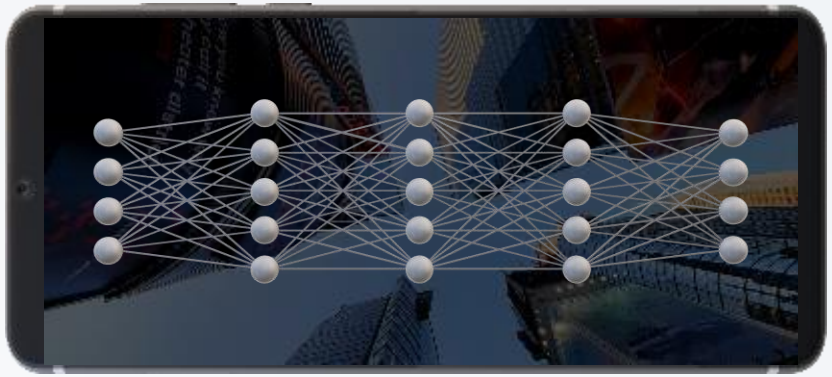
4K at 120 FPS Capture and Playback Video Demo

First Qualcomm Spectra™ with 3A powered by AI (10th Gen 3A)



Saliency Neural Net **Auto Focus**

Saliency Neural Net **Auto Exposure**



Advanced **Auto White Balance**

Auto focus

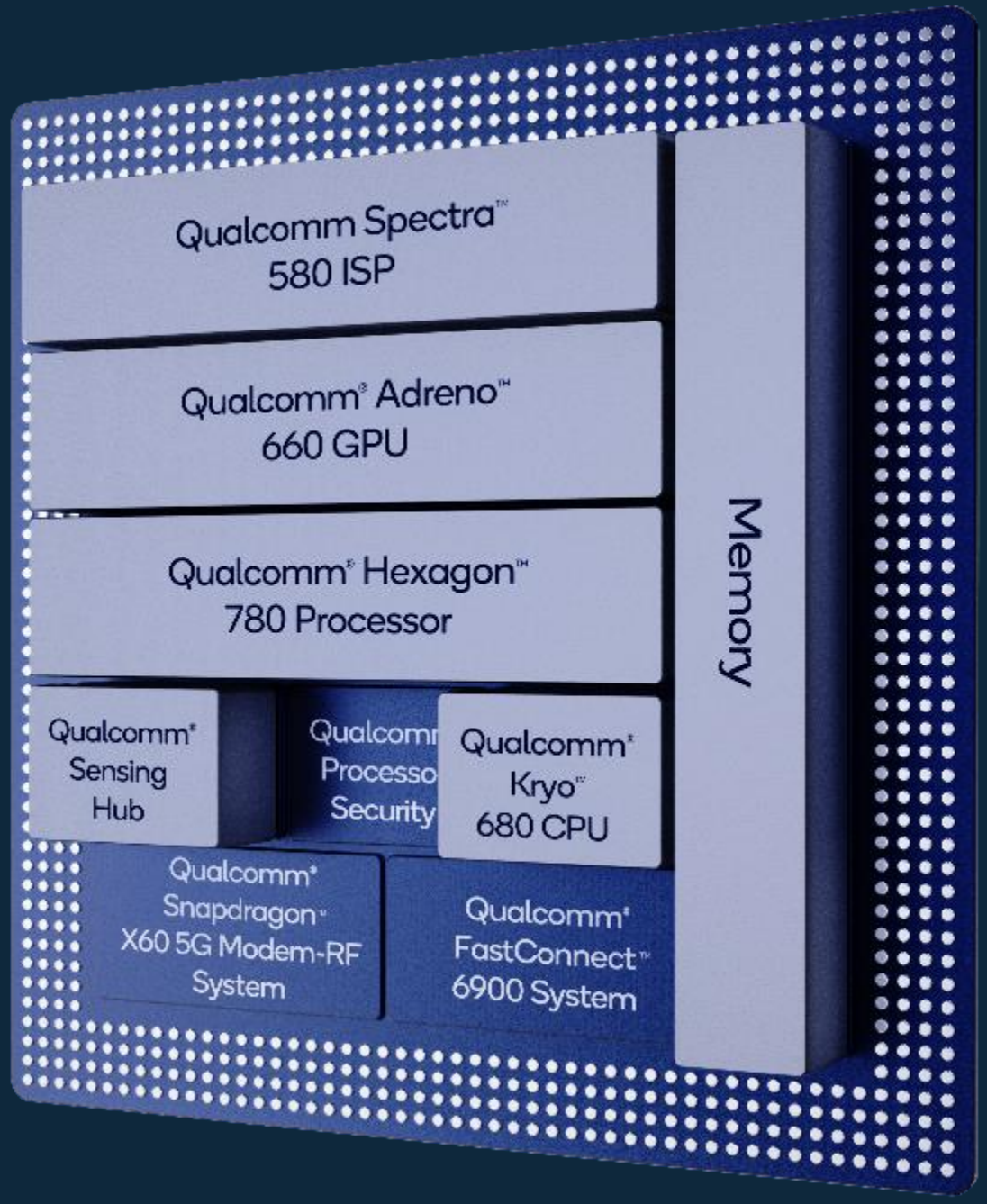
Auto focus

AI Autofocus Demo Video

Triple ISP

+

6th Generation Qualcomm® AI Engine



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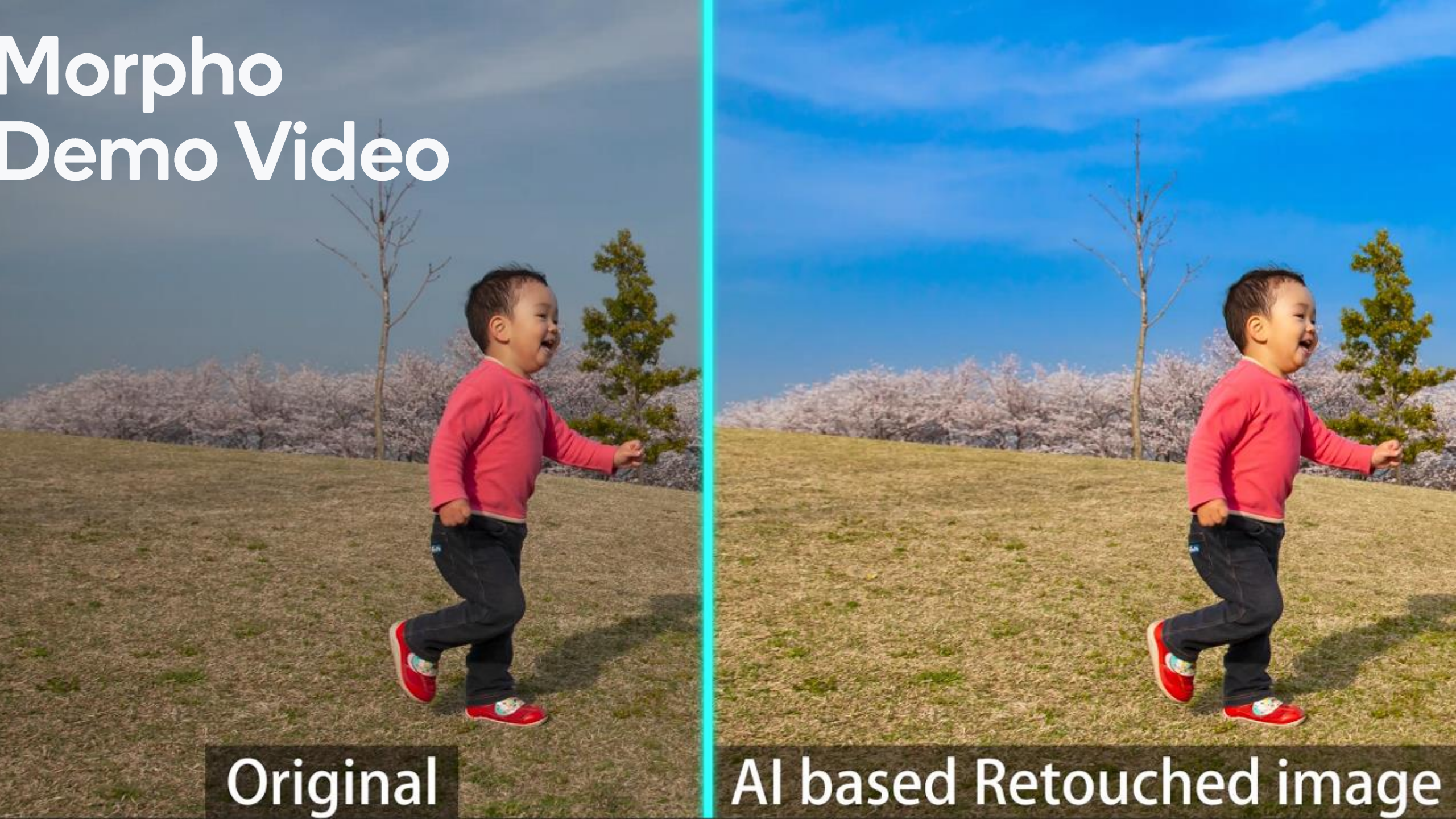
Arcsoft Autozoom Video Demo


Morpho
Demo Video
Original
AI based Retouched image

Jiigan AI Demo Video

AI Image Enhancements
Morpho

Triple ISP + AI
ArcSoft

4K @ 120 FPS video capture
4K @ 120 FPS video playback

AI for 3A
AI for Auto Focus

AI for Auto Exposure

Advanced Auto White Balance

Low Light Architecture
Capture photos in 0.1 lux

Professional Quality

Camera Highlights

Qualcomm Spectra 580 ISP
First Snapdragon with Triple ISP (1st)

Triple Concurrency and Triple Parallel Processing

Professional image quality

Gigapixel speed
2.7 Gigapixels per second

35% faster

12MP at 120FPS

Triple ISP
Triple 4K HDR Video Capture

Triple 28MP Photo Capture

Perfect smooth zoom

Architecture for Staggered HDR Image Sensors

4K HDR Video Capture with Computational HDR (1st)

10-bit HDR HEIF for Photo Capture (1st)

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