

集成电路近期热点方向 -AMD的选择与准备

时昕 博士

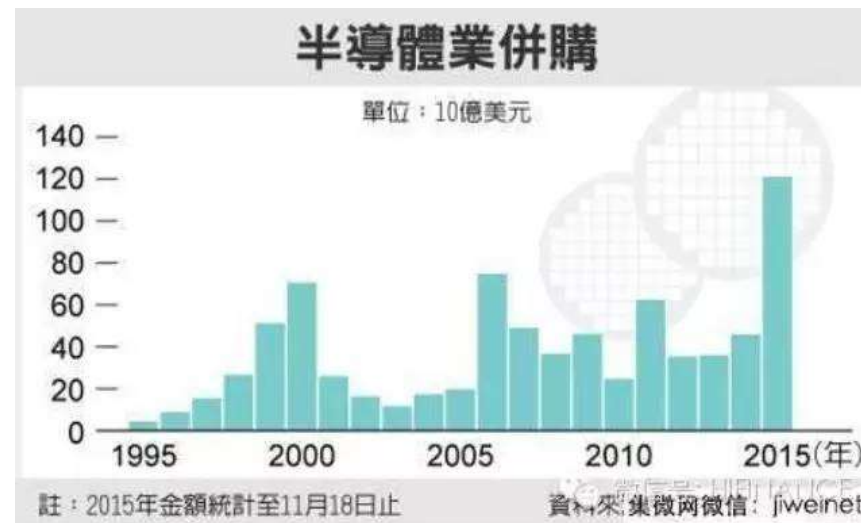
软件合作及解决方案

日程

- 集成电路行业近期热点
- AMD的选择

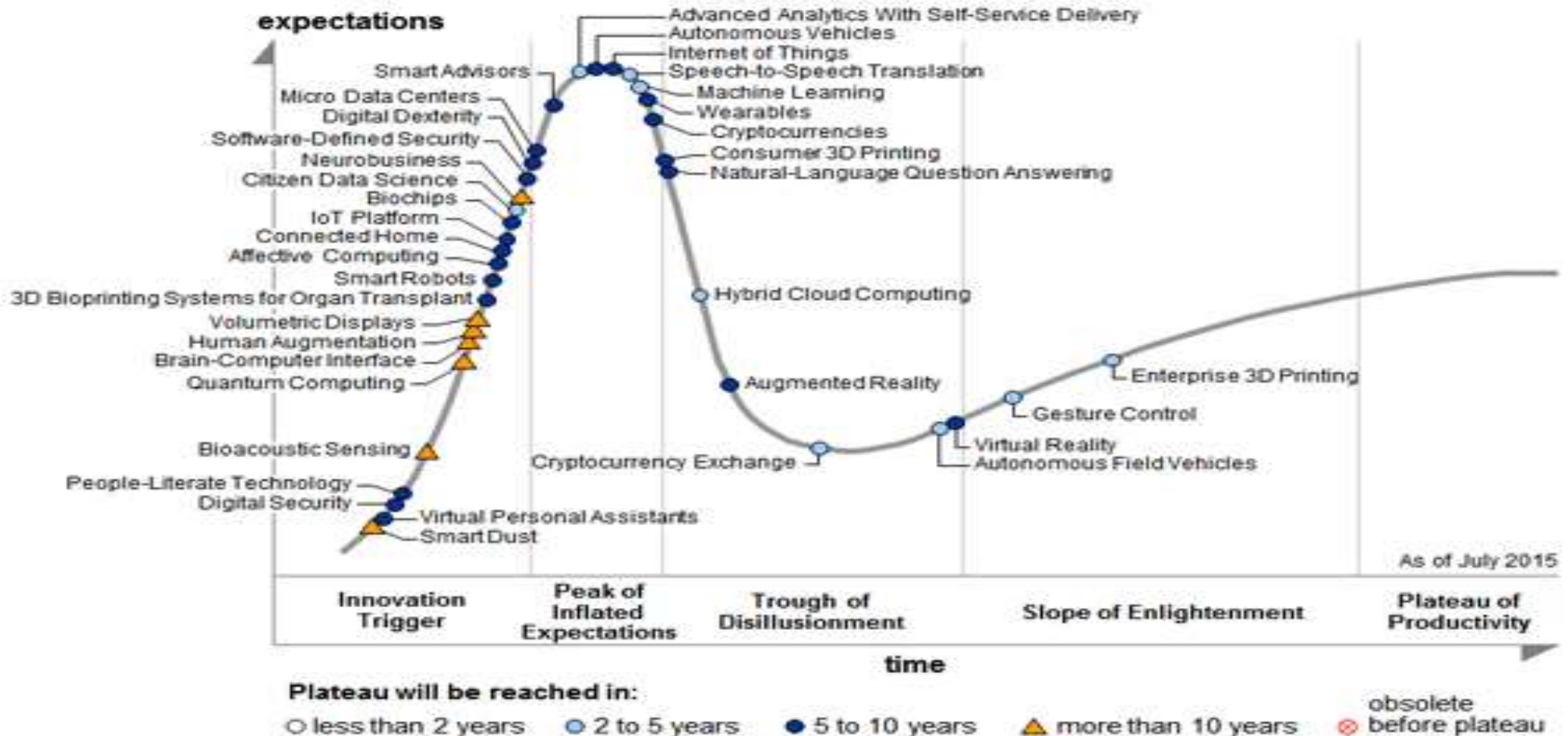
购并潮回顾

时间	收购方	被收购方	金额
June	Intel	Altera	167亿
March	NXP	Freescale	118亿
May	Avago	Broadcom	370亿
March	Cypress	Spansion	40亿
October	Qualcomm	CSR	24亿
October	西部数据	Sandisk	190亿
July	紫光	西部数据	38亿
			~1800亿



Dell 670亿美元收购EMC。IT行业有史以来最大并购案

2015技术成熟度曲线 - Gartner



转型中的AMD

-- 面向崭新的高增长市场

坚守核心市场

Maintain traditional PC strongholds

Grow in desktop and graphics channel

Target commercial opportunities

进入增长市场

┌ **Embedded**嵌入式

Professional Graphics服务器显卡

Dense Server密集服务器

Semi-Custom半定制芯片

Ultra-Low Power Client超低功耗客户机

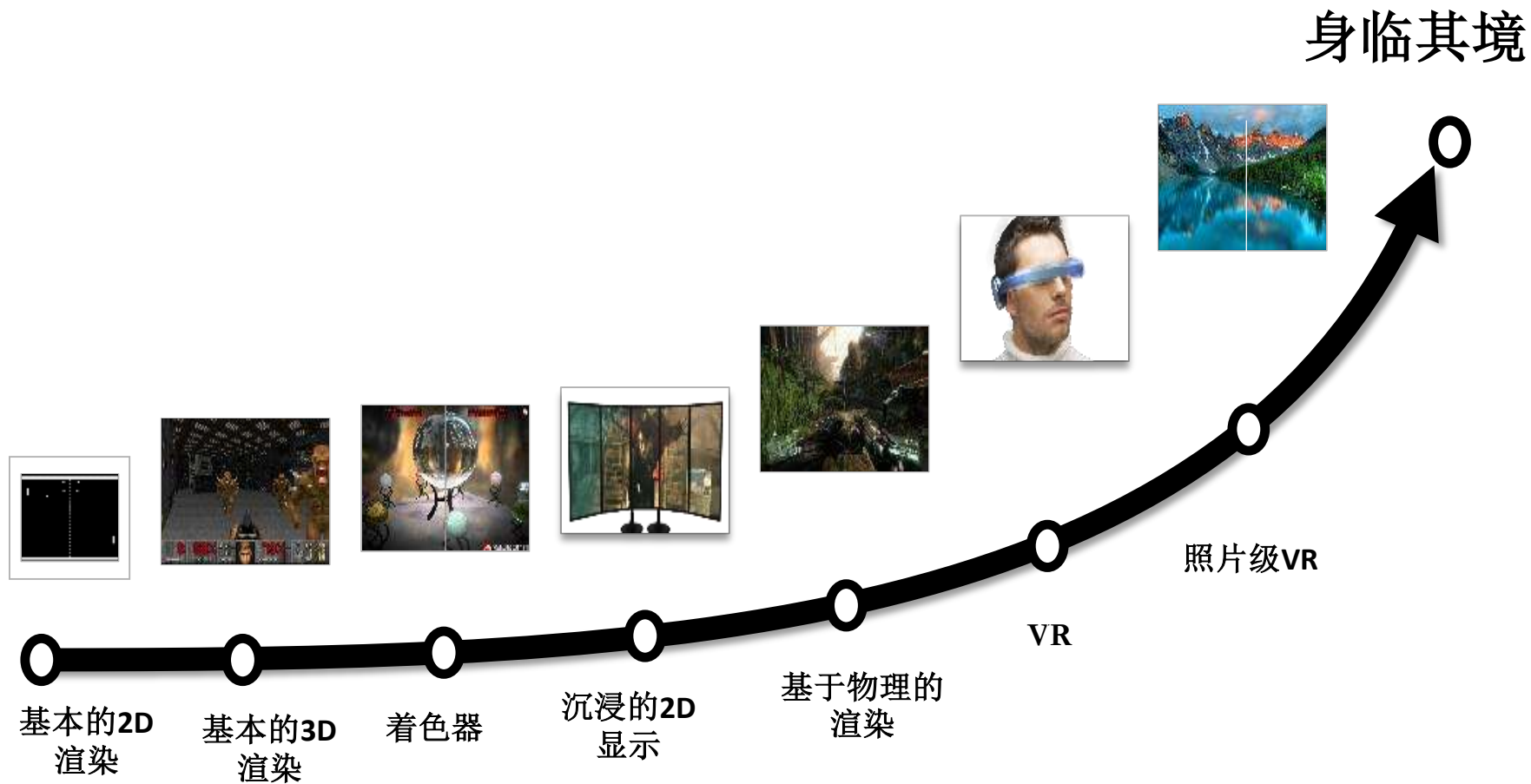
AMD的选择

- Machine Learning
- VR
- Healthcare
- Misc.

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VR技术是实时视觉体验的又一次革命



VR底层技术系统

图形子系统

图形显示

图形渲染

CPU处理驱动程序

空间音效

像素暂留

头部跟踪

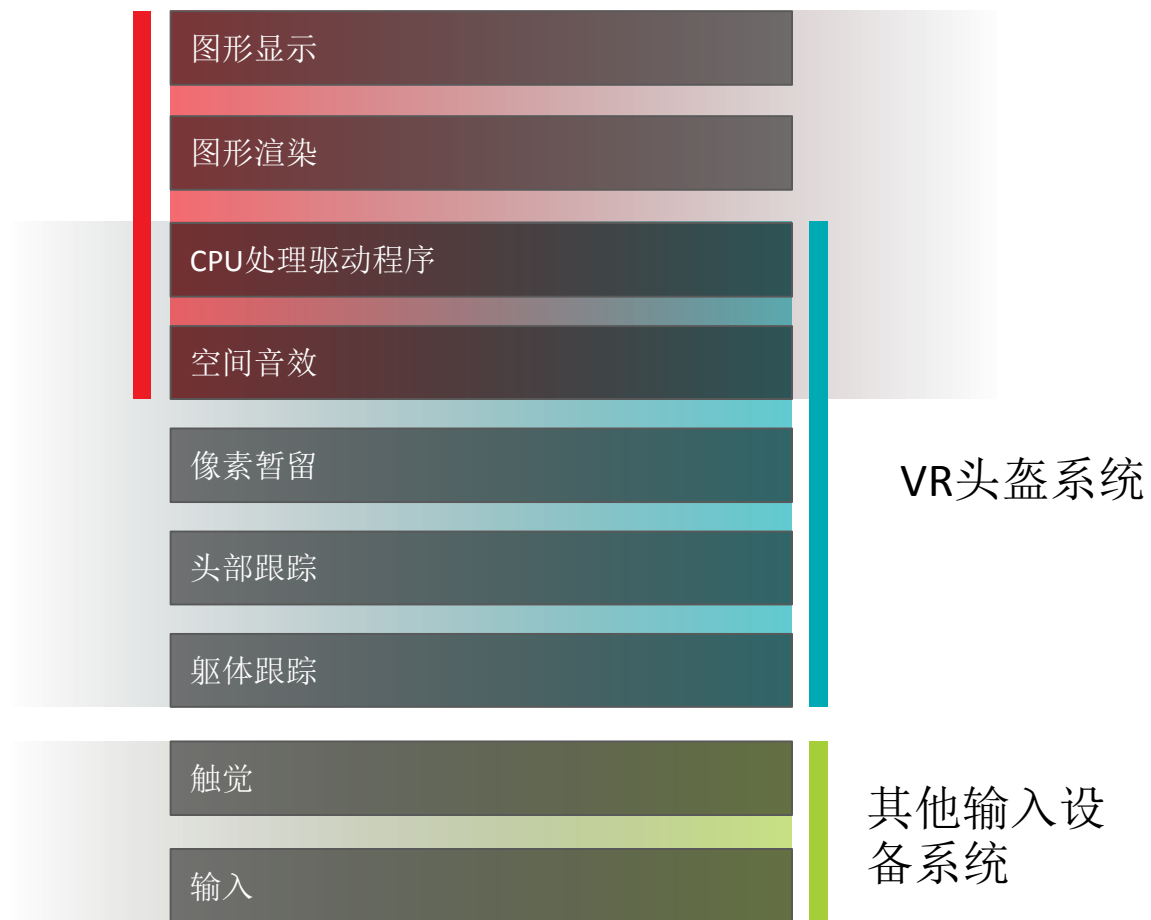
躯体跟踪

触觉

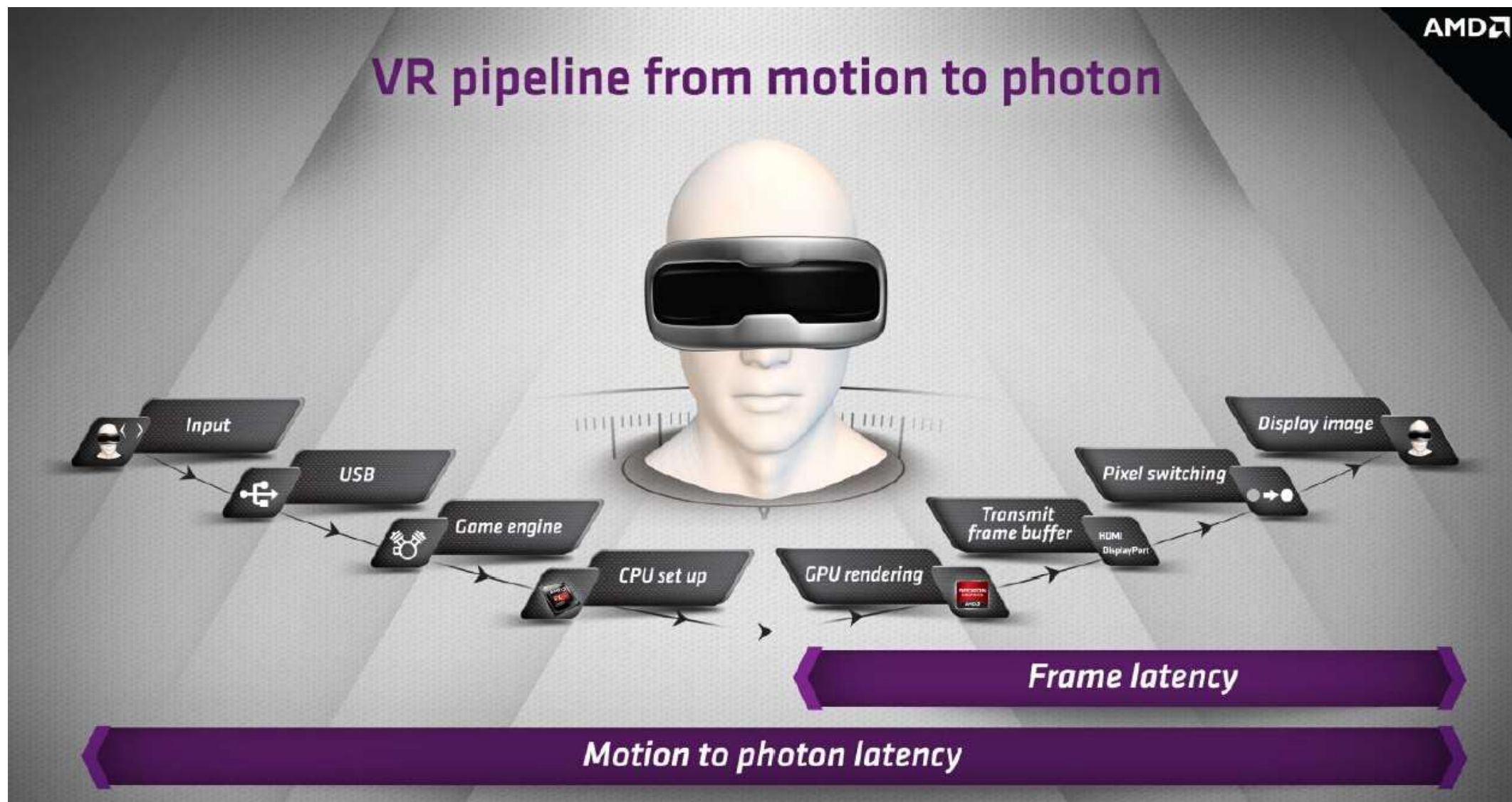
输入

VR头盔系统

其他输入设备系统



VR流水线：从动作到显示



医疗器械

Medical Imaging



Ultrasound

X-ray/CT

MRI

Endoscopy

- ▲ High compute and image processing performance
- ▲ Long term availability
- ▲ Easily scalable software and hardware solutions

The AMD R-Series APU and AMD Radeon Embedded and FirePro discrete graphics are superb solutions for medical imaging applications.

Patient Infotainment



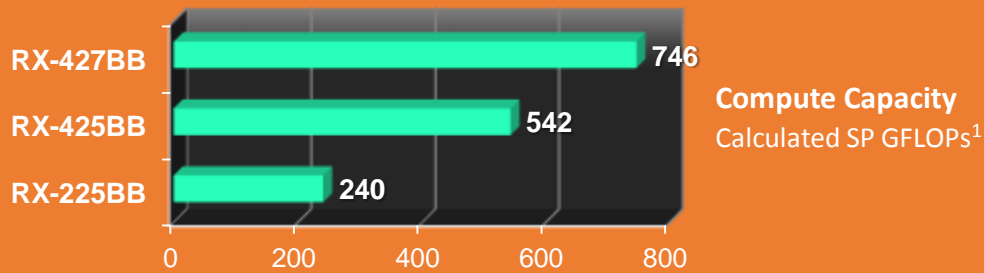
- ▲ High multimedia and gaming performance
- ▲ Low power and cost effective

The AMD G-Series SOC is a superb solution for patient infotainment and bed side terminal applications.

医疗器械

High Compute and Image Processing Performance

- ▲ Excellent imager processing and computation on the GPU
- ▲ Expand performance with discrete GPU(s)



High Integration and Low Power

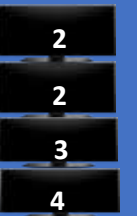
- ▲ Integrated CPU and high performance compute engine (GPU) help reduce need for separate processors, FPGAs, and DSPs
- ▲ Power/thermal options:
 - ▲ R-Series TDPs from 13–35 Watts
 - ▲ G-Series as low as 2.8W Average Power²
- ▲ Easily meet size, weight, power, and cost needs of portable medical applications

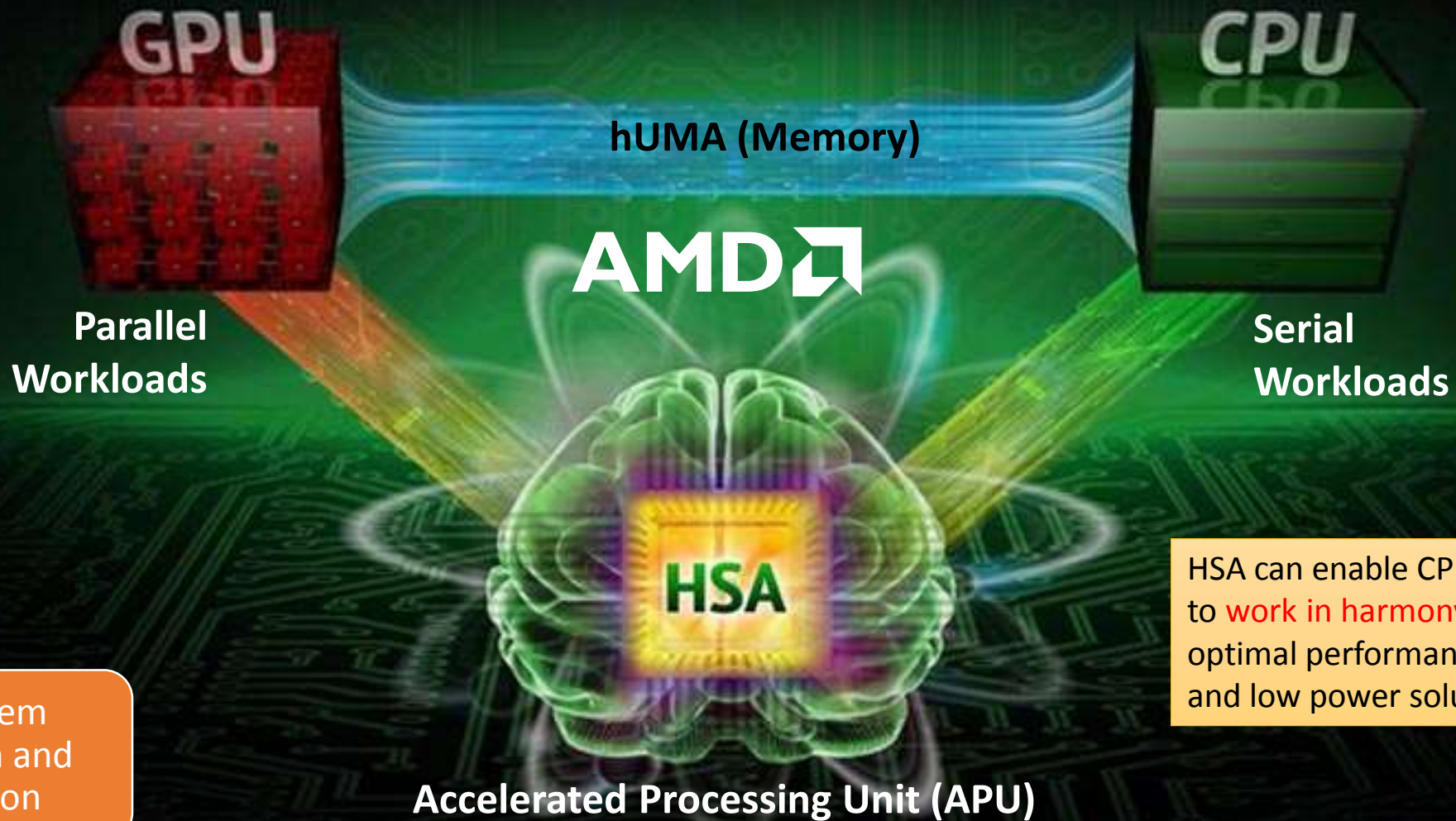
Simplify Software Development

- ▲ HSA can help accelerate applications using standard programming languages
- ▲ Easily scale software across low power SOC, High Performance APU, and discrete GPU
- ▲ Reduce need for custom DSPs and large FPGAs

Graphics and Display Support

- ▲ Up to four independent 4k displays
- ▲ Excellent graphics performance for 3D/4D rendering
- ▲ Eliminates the need for discrete GPU

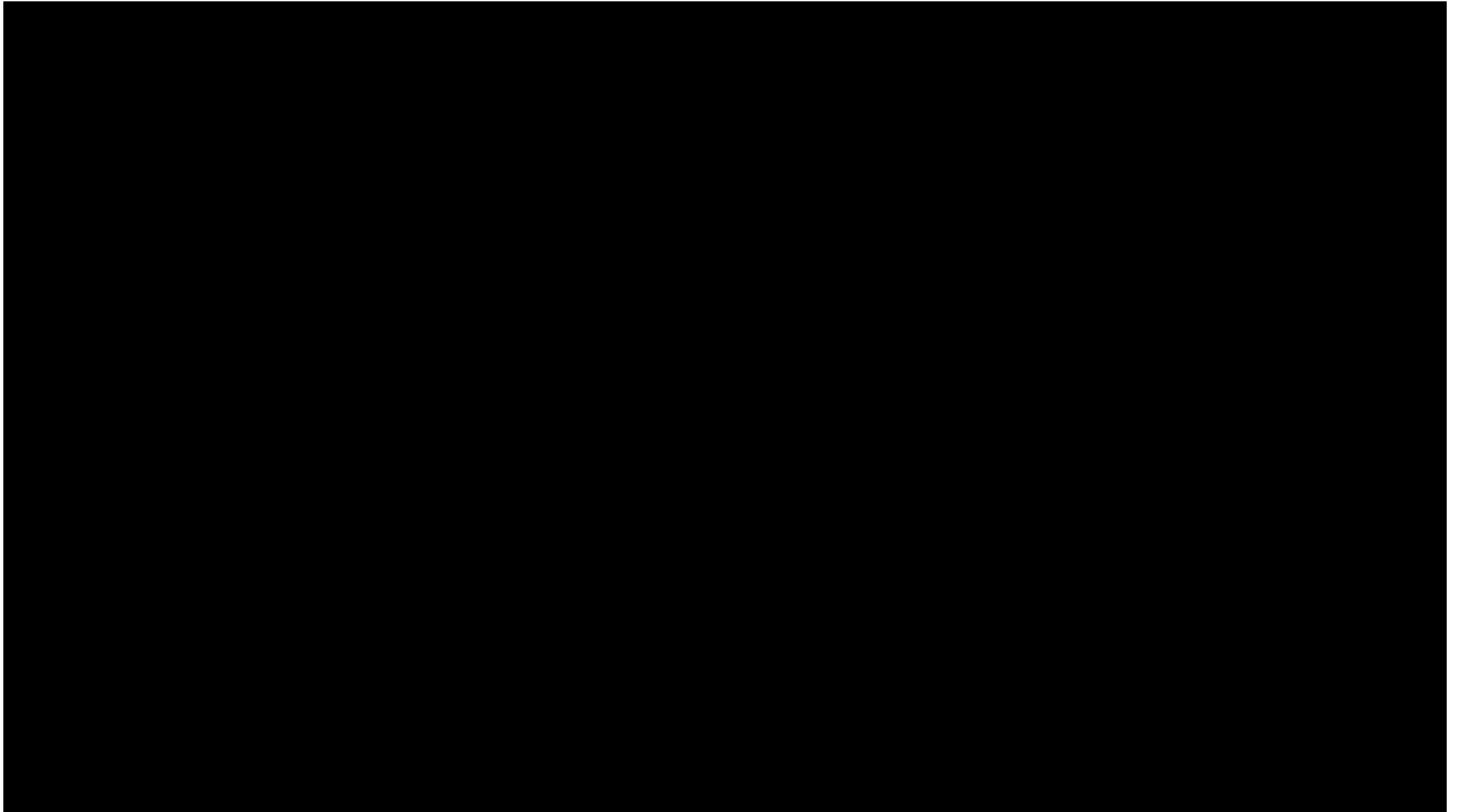




Support System Optimization and Miniaturization

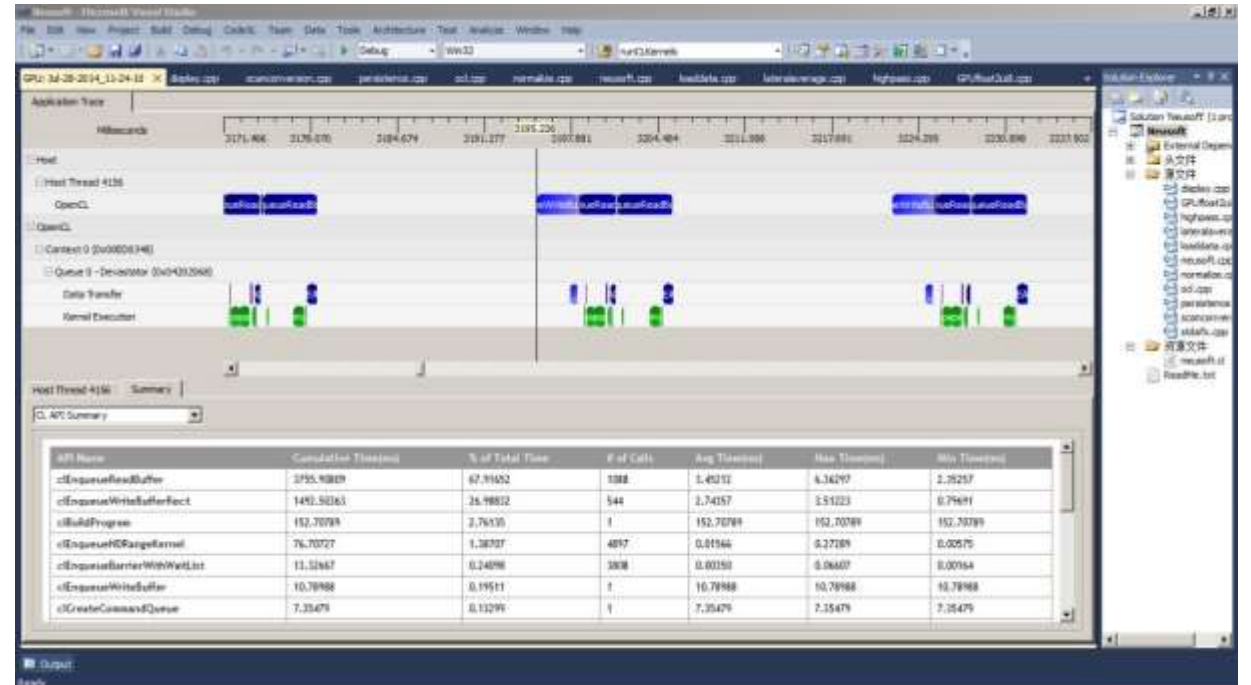
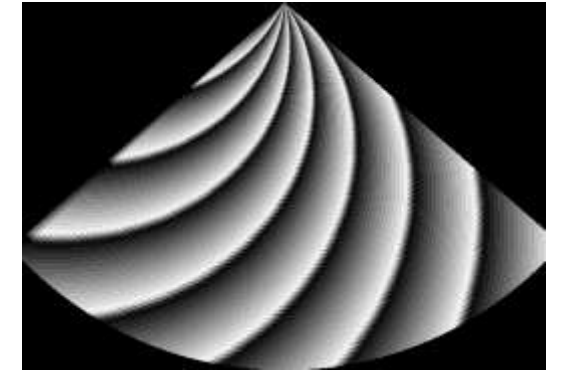
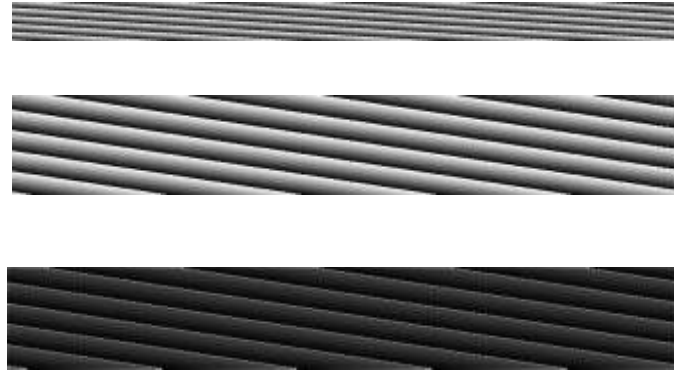
HSA can enable CPU and GPU to **work in harmony** to deliver optimal performance in small and low power solutions

N-body Simulation



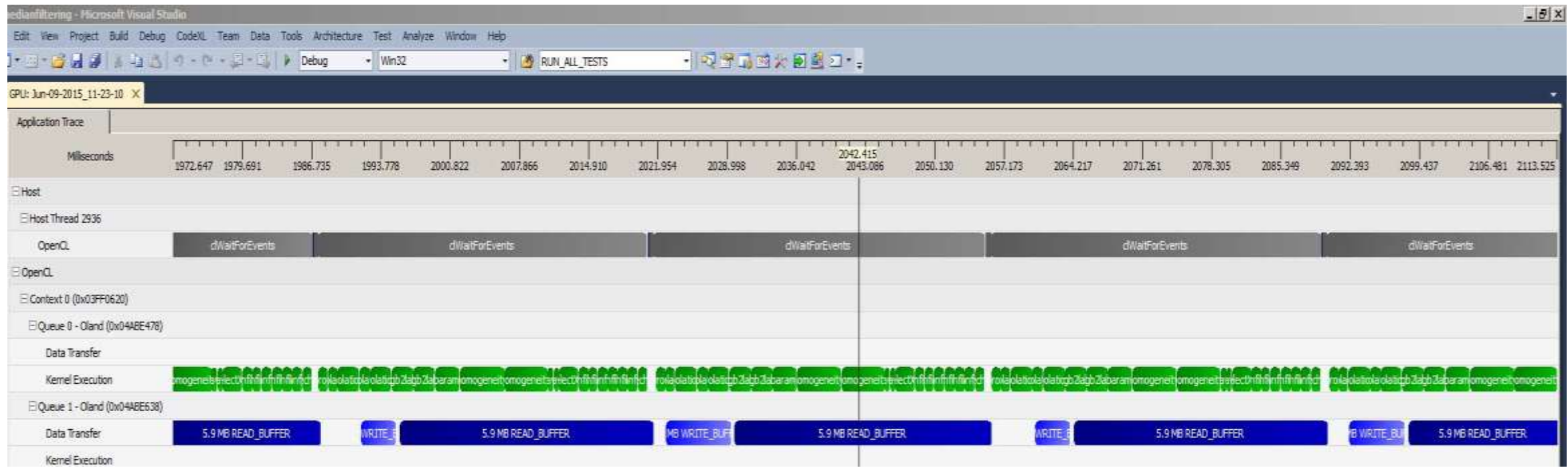
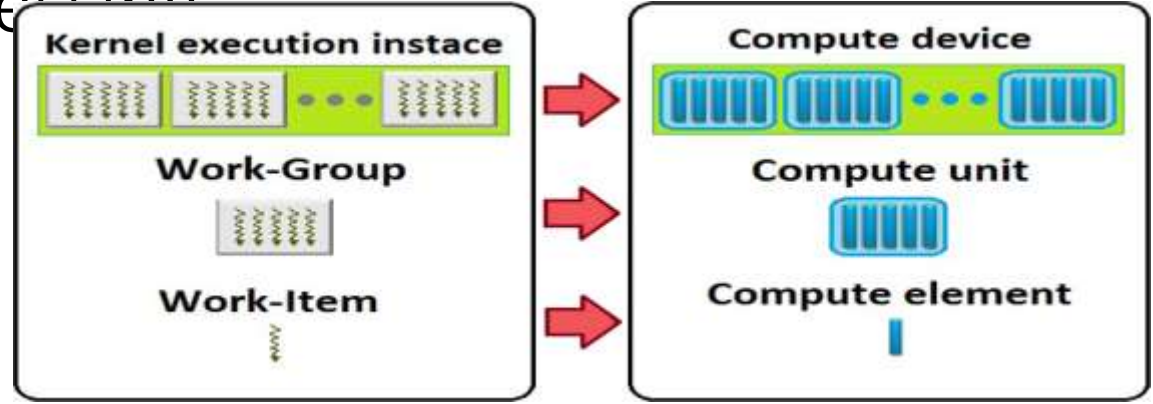
A CASE – Image Post-Processing Algorithms

- ▲ High-pass filtering
- ▲ Lateral averaging
- ▲ Polar-to-Cartesian Interpolation



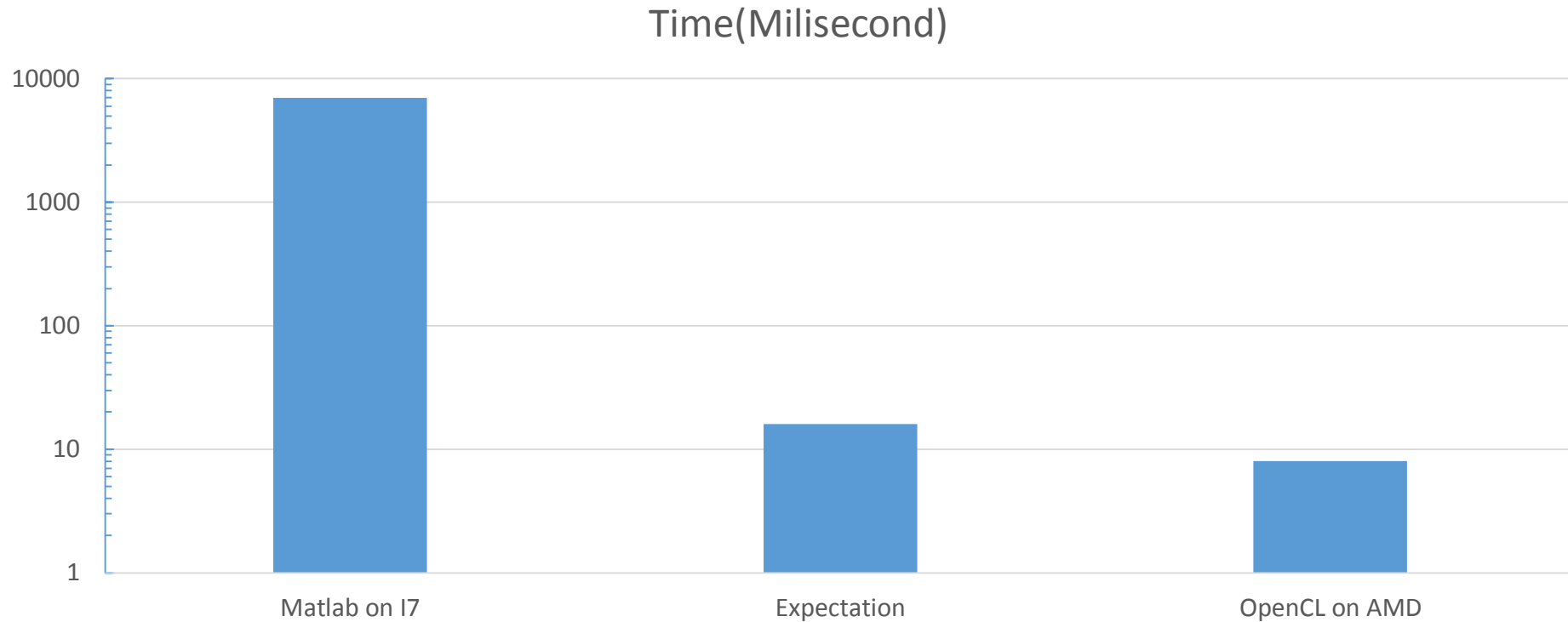
A CASE – Image REALTIME Processing

- ▲ Adaptive De-Mosaicking
- ▲ 1920X1080
- ▲ >100 FPS



PERFORMANCE RESULT

- Expects 60fps (i.e. 16.67ms per image).
- The Matlab implementation on the Intel i7 costs about 7 seconds.
- The AMD solution is ~8ms.



The Less The Better

Q&A

谢谢！