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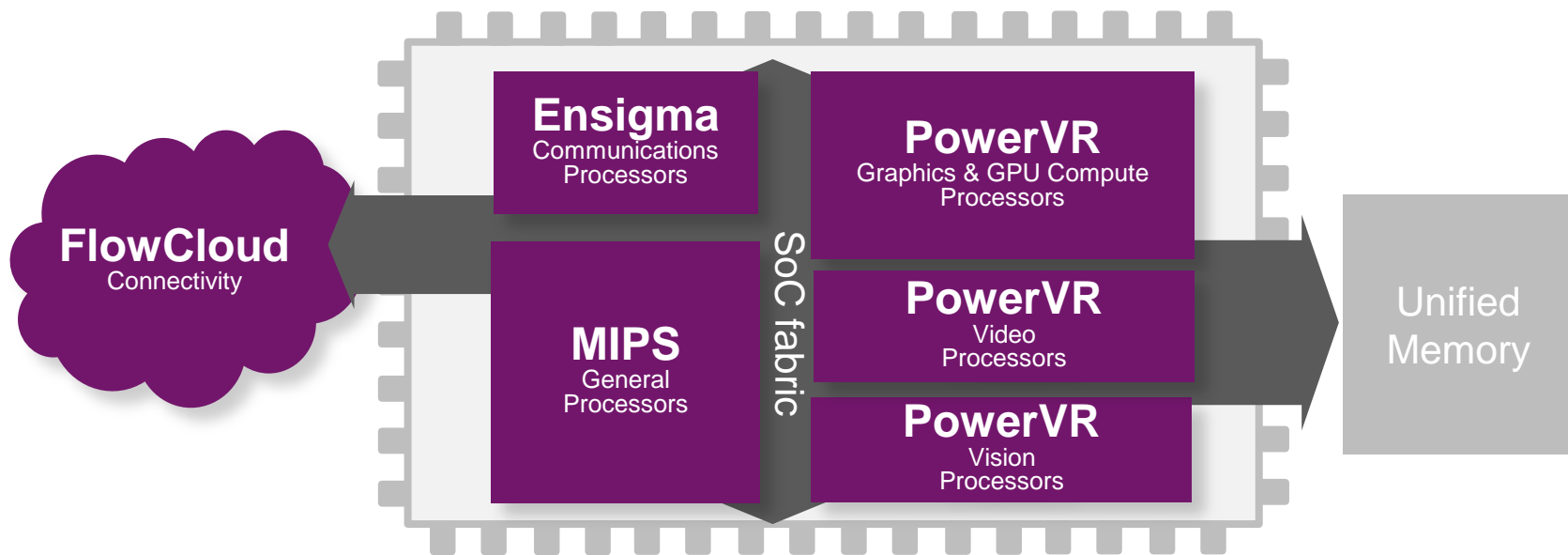
Next Gen Opportunities

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www.imgtec.com

Imagination - 世界前三大半导体 IP设计公司



Each IP core is a class leader
Lowest power; smallest silicon area
Open and customer-centric business model

几个数据

- **31% exhibitors from China**
- **16% from Shenzhen , Shenzhen !**
- **Big fund – 1300万亿集成电路产业基金**
- **400 无人机企业 → 70%在中国**
- **中国在世界新经济中的作用毋庸置疑**

我的CES 见闻

- **Driverless/ Smart cars**
- **VR Devices**
- **Drones**
- **AI**
 - Smart Home
 - HDR & 8K TV
 - Healthy Devices
 - Smart Traffic
 -

下一个机会在哪？

Forecast

IoT & 安全

AR&VR

Automotive
Electronics

AI



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智能汽车



智能汽车主要技术趋势

How these are trending

■ 半自动驾驶

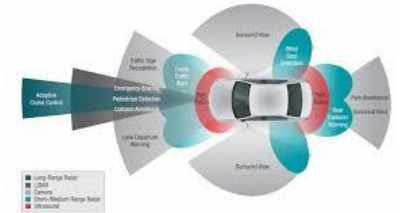
- Long way off for complete autonomy (2025/2030) requiring V2V, V2I
- Legislative/regulatory measures supporting autonomous vehicle testing and deployment in 2016-2017

■ Driver Assist and Safety 辅助驾驶与安全

- Camera/vision/radar systems to improve/automate decision making
- Requirement for increasingly heavy processing (CPU, GPU and dedicated processing)

■ 数字面板与车载娱乐

- Multiple configurable HMI's/screens/HUDs
- Vehicle apps/internet – interfacing rather than integrating
 - MirrorLink, Apple Carplay, Android Auto
 - Genivi
 - Video/streaming/gaming entertainment



智能汽车主要技术趋势

How these are trending

■ 车联网

- V2V, V2I, V2Internet, telematics
- Legislative/regulatory measures supporting autonomous vehicle testing and deployment in 2016-2017
- Car will have 'full internet' via the 'Fin'
- Up to 11 different wireless technologies in play.
- Creates a security nightmare

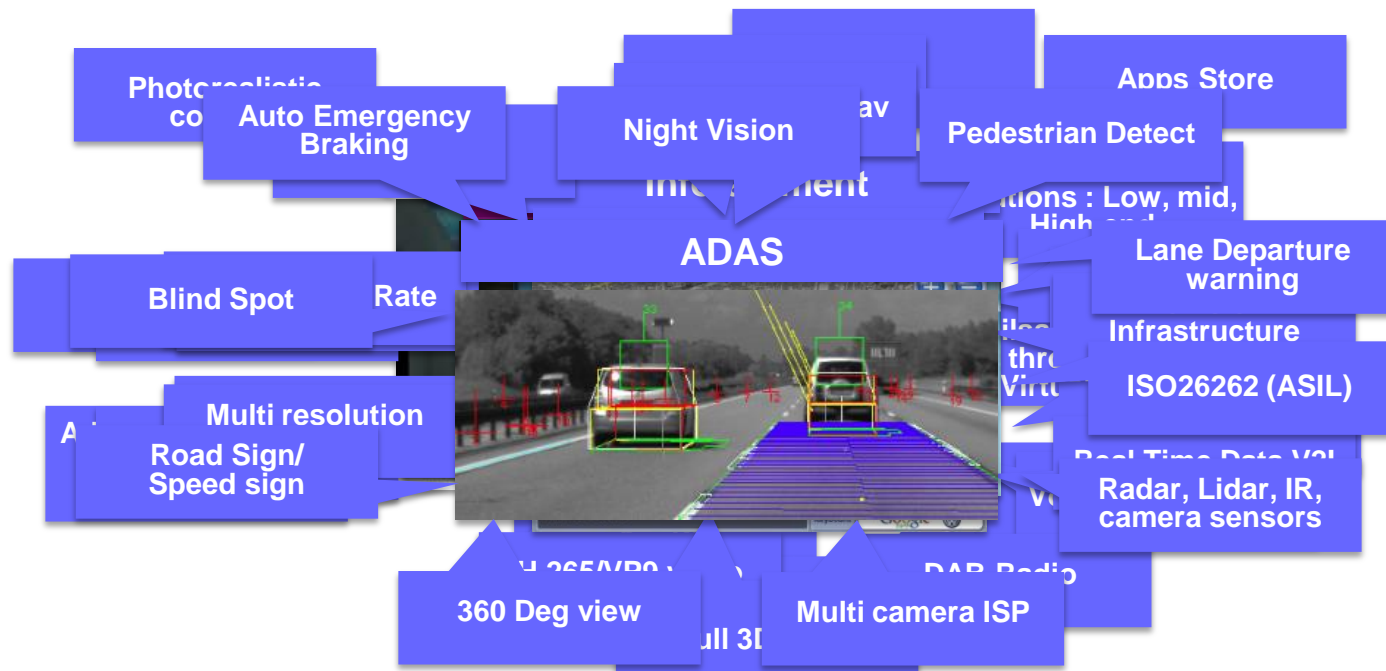
■ 电池与动力

- Engine, battery management and Power train. Hybrid powertrain needs increasing processing power
- Direct inj, cylinder deactivation, knock detect, hybrid powertrain; move from 8/16 to 32/64-bit MPUs



多媒体面板- a complex system

Multi-screen, multi-standard, multi-sensor



Dashboard – GPU requirements

Wide Range of Possibilities & GPU Requirements

Entry Level

PowerVR GPU Series 5/6XE/7XE

- Low res 2D/3D UIs
- Small silicon area
- low power & memory
- High end functionality

Single Screen
Low Resolution
Single Task
Digital/Mechanical

Mid Range

PowerVR GPU Series 6XT/7XE

- Entry Level 3D UI
- Advanced 3D graphics
- Simple GPU Compute
- Secure multi-tasking

Single/Multi-Screen
High Resolution
Multi-Task (HMI/Entertainment)
Full Digital
Basic ADAS Functions

High End

PowerVR GPU Series 6XT/7XT

- 4-16 Cluster
- Virtualization
- Ray Tracing-photorealism
- TFLOPs GPU Compute

Multi-Screen/HUD
High Retina Resolution
Virtualised Multi-Tasking
Full Digital
Full ADAS Functionality



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IoT 与安全

Connected home – landscape

Consumer Electronics



Home Appliances



Network Technology



Home Monitoring



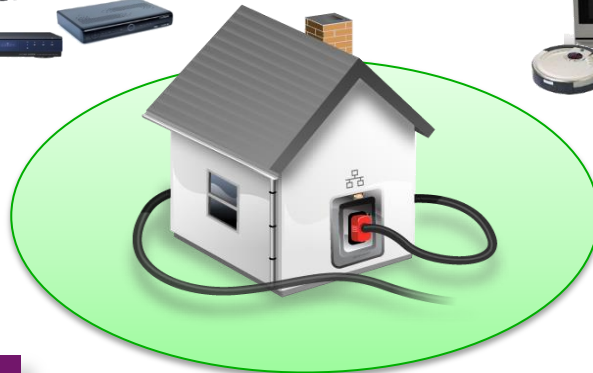
Smart Grid



Home Control



Healthcare



The digital home revolution is coming

Everything going wireless – and all must work together

Consumers expect their content everywhere

- Streamed from the cloud and locally
- Controlled by smartphones, tablets, smart watches, ...

Everything must work together

- Multimedia, home automation, security, eHealth must all join up

Consumer products must “just work”

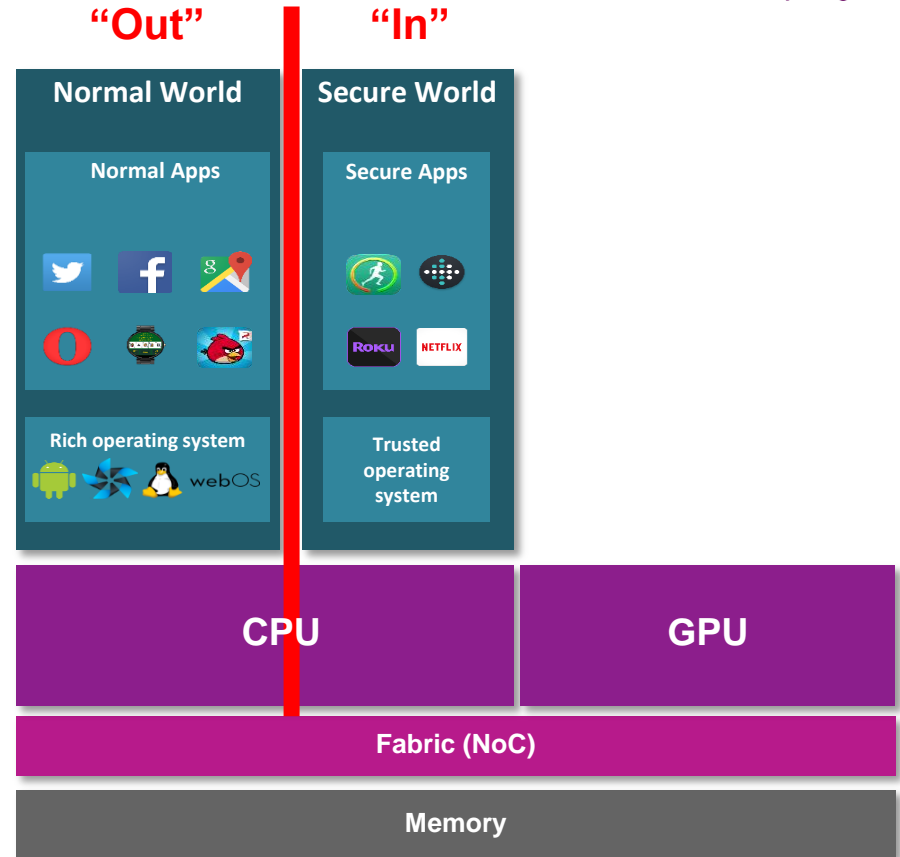
- Technology making life simple



Current security solutions

Designed for yesterday's needs

- Optimal for products that are defined in the factory and never change
- CPU centric
- Segment SoC in to two worlds
 - Normal World
 - Secure World
- Secure applications all co-exist in the secure world



It's a changing world

Smart everything, open everything, internet of everything



Current solutions won't scale to address sophisticated apps and services enabled by next-generation connected devices and the cloud

Introducing OmniShield

Enabling next-generation SoC security

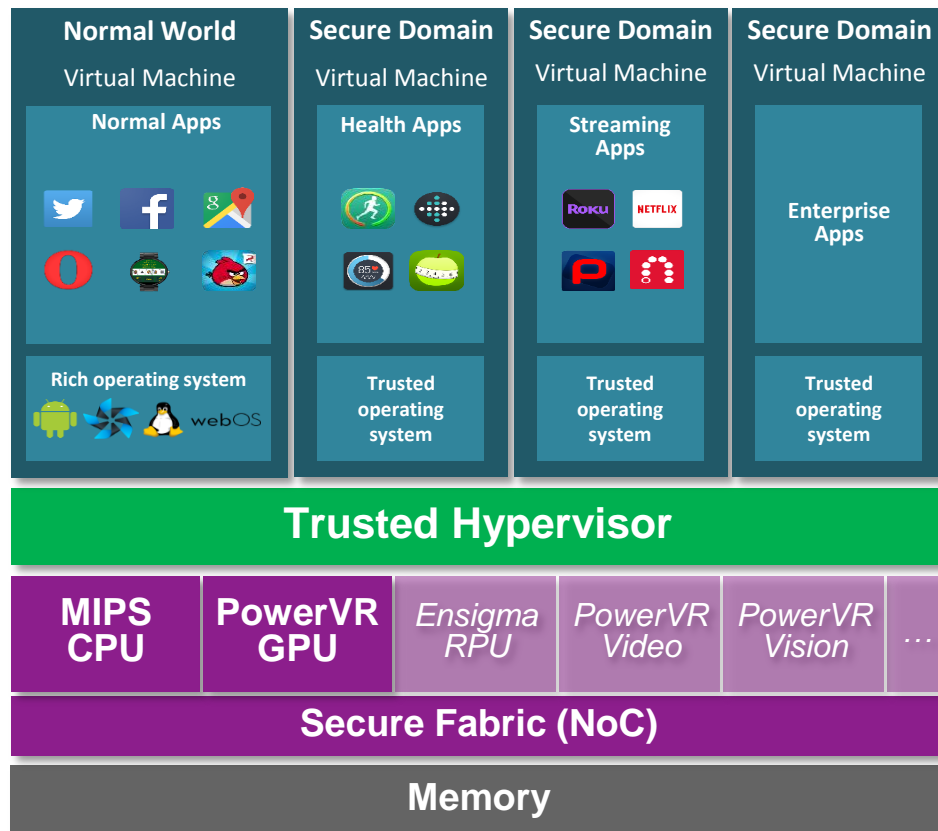
- **OmniShield-ready hardware and software IP**
 - Designed to provide the industry's most scalable, secure solutions for protection of next-generation SoCs
- **Multi-domain separation-based architecture**
 - Beyond binary: each secure/non-secure app/OS can operate independently
 - Scalable to address heterogeneous architectures
- **Ensures security & reliability**
- **Eases development/deployment of apps and services**



Changing use models in connected devices require a new security approach to protect OEM products and operator services

OmniShield Benefits

- **Multi-domain**
 - 2 - 255 secure domains
 - Isolate critical software
- **Heterogeneous**
 - CPU / GPU / connectivity
- **Scalable**
 - Multiple threads, cores, clusters
- **Fully hardware supported**
- **Simple, well understood SW model**
- **Accelerate time-to-market & revenue**
 - Reduction in QA, testing, certification
 - Deploy software containers for third-party services from other vendors





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VR & AR

VR = 沉浸 + 互动 + 想象

- VR hardware devices, VR interactive, and VR contents will leading the next gen innovation.



VR – 下一代运算平台

- “Virtual reality (VR) and augmented reality (AR) have the potential to become the next big computing platform, and as we saw with the PC and smartphone, we expect new markets to be created and existing markets to be disrupted”

-- The Goldman Sachs Group, Inc.



PC & Laptop



Mobile & Tablet



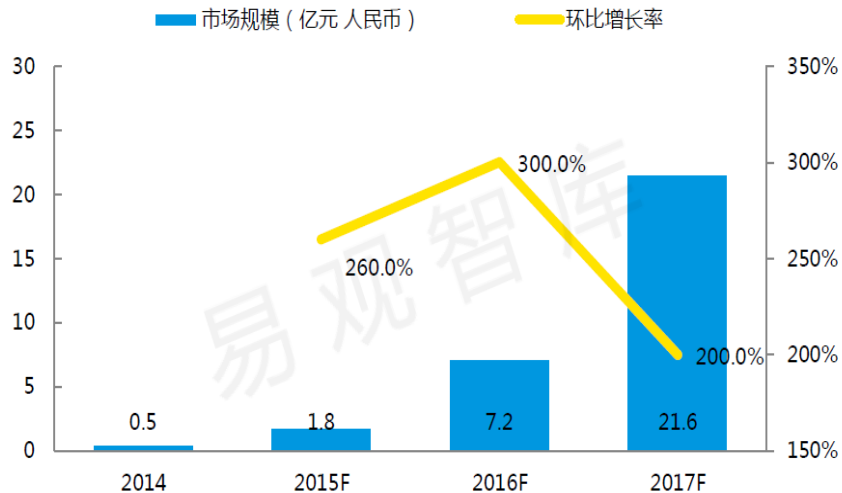
VR & AR HMD

Market Size – Global & China

2 Billion RMB by 2017 in China

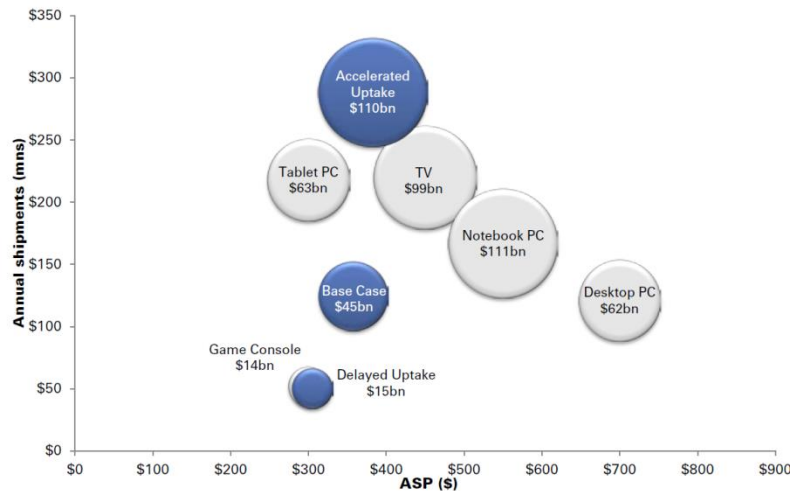
- It is expected, the market size of China immersed VR devices will exceed 2 Billion RMB by 2017

2015-2017 China VR equipment market size forecast



Source: <http://www.analysis.cn/>

VR/AR HMD market has the potential to reach over \$100bn annually by 2025



Source: Goldman Sachs Global Investment Research, IDC

VR market financing investment situation in China

VR market accepted by many capitals in China, hot

代码	上市公司	投资公司/产品	投资方向	参股比例/金额	产业链位置
000793	华闻传媒	Virglass (乐相科技)	PC 端头显	19.50% 1462.50 万	全产业链投资
		3Glasses	PC 端头显	2.5% 375.00 万	
		北京兰亭数字	VR 内容制作	15.44%	
0547.HK	数字王国	加拿大 VR 公司 IMV	内容制作	3890 万美元 66.7%	内容/方案
002717	岭南园林	4D 影院+CG 特效	VR 互动体验		内容/体验
002751	易尚展示	3D 扫描, 虚拟展示	To B 业务		内容
300113	顺网科技	VR 体验馆	VR 体验馆		渠道/体验
300104	乐视网	LEVR 头盔	移动设备		输出+内容平台
		灵镜 VR	VR 头显	1000 万美元	
300005	探路者		虚拟现实体育		
XNET	迅雷	乐相科技	PC 端头显	3000 万美元	输出设备
002517.SZ	恺英网络				
300027	华谊兄弟	圣威特科技	VR 实景体验		线下体验
430339	中搜网络	赛欧必弗	虚拟现实 APP	2000 万人民币	VR 内容平台
INTC	英特尔	完美幻境	全景相机		输出设备
GAME	盛大网络	Upload	VR 垂直媒体	125 万美元	内容/体验
		Solfar 工作室	VR 内容制作	210 万美元	
00700	腾讯领投	赞那度	“旅行 VR”APP	8000 多万人民币	内容/体验
300098	高新兴	蚁视	VR 头显	3 亿人民币	输出设备

投资方	投资公司	投资方向	投资金额	产业链位置
和君领投	爱客科技	VR 一体机	千万人民币	输出设备
	Ximmerse	交互	1000 万人民币	输入设备
IDG 资本	TVR 时光机	VR 游戏	数百万人民币	内容
启明创投	岚锋创视	全景相机	800 万美元	输出设备
和智资本、毅达资本	睿悦信息	VR 头显	8000 万人民币	输出设备
洪泰基金	清显科技	VR 视频	400 万人民币	内容/体验
腾讯领投	赞那度	“旅行 VR”APP	8000 多万人民币	内容/体验
IDG 资本、乐博资本、麦星	uSens 凌感科技	VR 头显	550 万美元	输出设备
	若干自然人	小鸟看看	VR 头显	数千万人民币
	Sightpano	全景视觉内容	500 万人民币	内容/体验
APUS 领投, 丰厚资本跟投	焰火工坊	SDK, VR 眼镜及应用	1000 万人民币	输出+内容
光速安振领投, 途家与当代置业跟投	无忧我房	房地产众筹+VR 样板间	500 万美元	内容/体验
一起装修网领投, 慧鑫泉投资跟投	美屋 365	VR 室内装潢	1800 万人民币	内容/体验
九合资本领投, 和君资本跟投	指挥家	VR 室内装潢	百万美元	内容/体验

Virtual Reality Devices

Immersive VR Devices local

VR Devices:

Most of devices
players are new
startup high-tech
companies.

PC based VR Helmet



All-in-one VR Helmet



Mobile phone box



VR 技术需求及难点

- 强大芯片、显卡来支持其顺畅运行
 - 不管是PC 端，还是移动端VR 设备，甚至是VR 一体机，都需要

显卡： Nvidia GTX 970/AMD R9 290 级别或更高
处理器： Intel i5-4590 或更高
内存： 8GB 或以上的RAM
操作系统： Windows 7 SP1 64 位或以上
其他： 兼容HDMI1.3 视频输出； 3 个USB3.0 接口加1 个USB2.0

- 接口与传输

- 有线
- 无线
 - 数据吞吐量极大： 4K视频 3840x2160像素x 10bit 色深，每个像素36位色彩x60帧率 = 2G 字节/秒



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