

# Advantech: Leading The Standardization of **Embedded ARM** Platform

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# IOT与智慧城市发展中RISC巨大商机

Internet of Things

+

Cloud Computing



电梯多媒体



PIDS系统



3G信号检测



铁路巡检



电力控制



车/船/航显示



高精度GPS

机房监控



公交车广告



清分机/点钞机

清分机/点钞机



船载导航

重型机械



重型机械

军用卡车

机器人DCS



自动售卖机

机器人DCS



## Avantech看到的ARM嵌入式市场趋势

X86 solution 转型 ARM solution

低端ARM升级到高性能ARM

# 市场趋势----X86 to ARM

## 典型案例1(KIOSK)自动贩卖机/清分机

- 现在方案：X86整机+XP
- 潜力: 6K/Y
- 转型方向：ARM A9+ **Android**



## 典型案例2(环保)：气相分析仪

- 以前方案：X86主板
- 潜力: 3K/Y
- 转型方向：ARM A9单板+ **Android 4.0** + OpenFrame



# 市场趋势----X86 to ARM

## 典型案例3 ( 医疗 ) : 超声

- 以前方案 : X86+XP
- 转型方案: **A9 ( system bus ) + Android**
- 潜力: 3K/Y



## 典型案例4 ( Digital Signage ) : 电梯广告机

- 以前方案 : X86 For 高端 , ARM9 For 低端
- 客户高端转型方向 : A9 ( **低成本、双通道 24bit LVDS** ) + Linux+**QT**
- 潜力: 5K/Y



# 市场趋势----低端ARM升级到高端ARM

- 典型案例1：机器人控制手柄，年用量7K



- 以前方案：ARM9+WINCE6.0/5.0
- 客户升级：**A9 ODM+WINCE**（产品升级换代、统一平台、加显示）
- 潜力：30K/Y

- 典型案例2（特殊PAD）：机载娱乐设备



- 以前方案：A8+Android
- 客户升级：**A9 ( system bus ) +Android ( 2D/3D )**
- 潜力：3K/Y

# 研华协同创新研发中心RISC发展策略



Kunshan Manufacturing Center

R&D Building

10 mins by walk

Learning Center

Campus Hotel

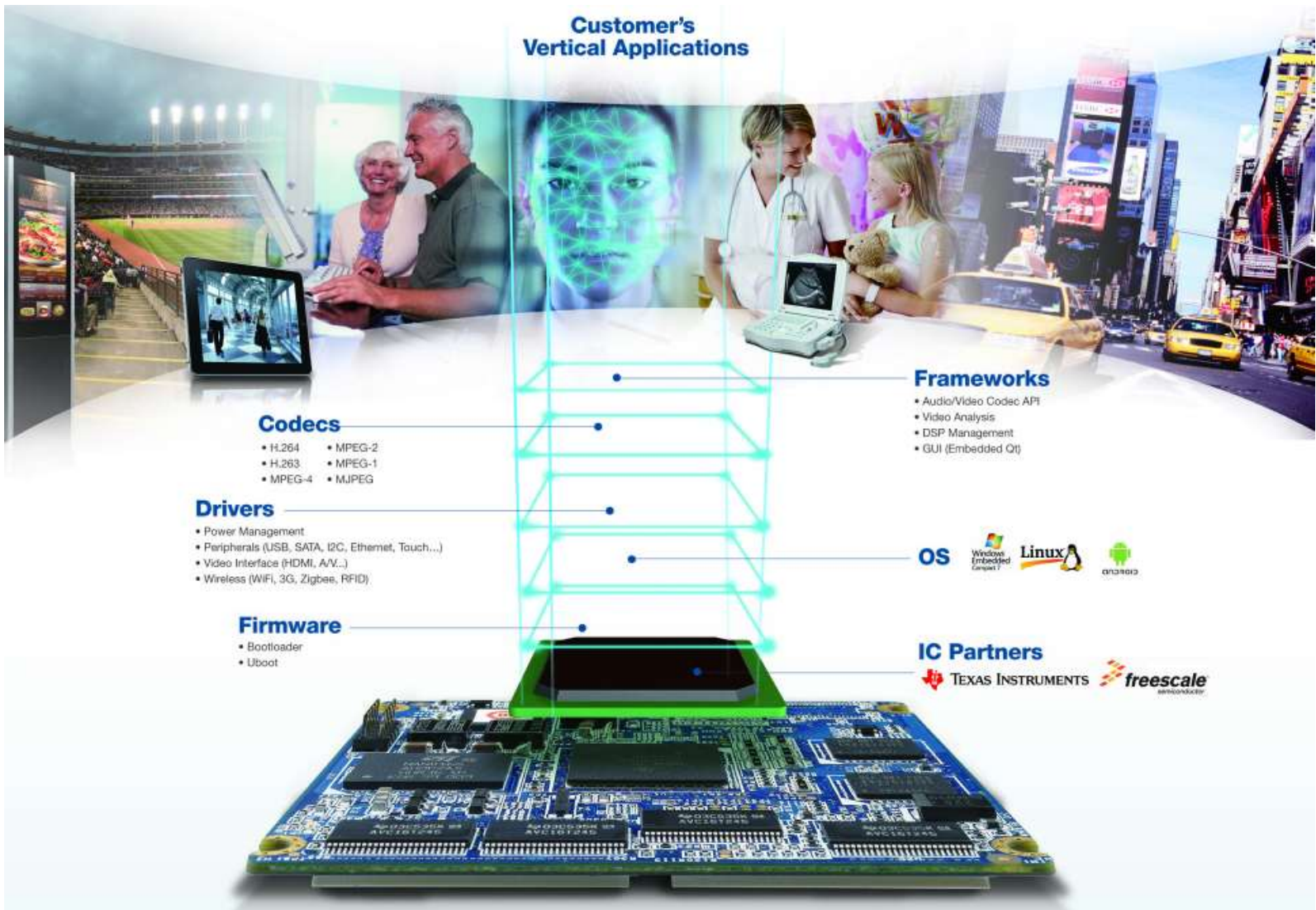
Land : 27,000 m<sup>2</sup>

Floor Space : 40,000 m<sup>2</sup>

Construction : Oct. 2011

建立以A+TC为核心的RISC & Linux  
设计中心，满足大中华市场需求。







# 研华提供高端工业级RISC/ARM平台





# 研华提供的RISC/ARM平台服务

## USER APPLICATIONS

FRAMEWORKS	Audio/Video Codec API	Video Analysis	DSP Management	GUI (Embedded Qt)		
CODES	H.264	H.263	MPEG-4	MPEG-2	MPEG-1	MJPEG
DRIVERS	Power Management	Peripherals (USB, SATA, I2C, Ethernet, Touch...)	Video Interface (HDMI, A/V...)	Wireless (WiFi, 3G, Zigbee, RFID)		
OS						
FIRMWARE	Bootloader		Uboot			
IC PARTNERS						

### ARM-Based System Integration



Computer-on-Module



Single Board Computer



Digital Signage



Box PC



# 硬件/软件 设计集成

  
Windows  
Embedded CE

**RISC Module**



RTX

SMARC

Qseven



**Linux™**



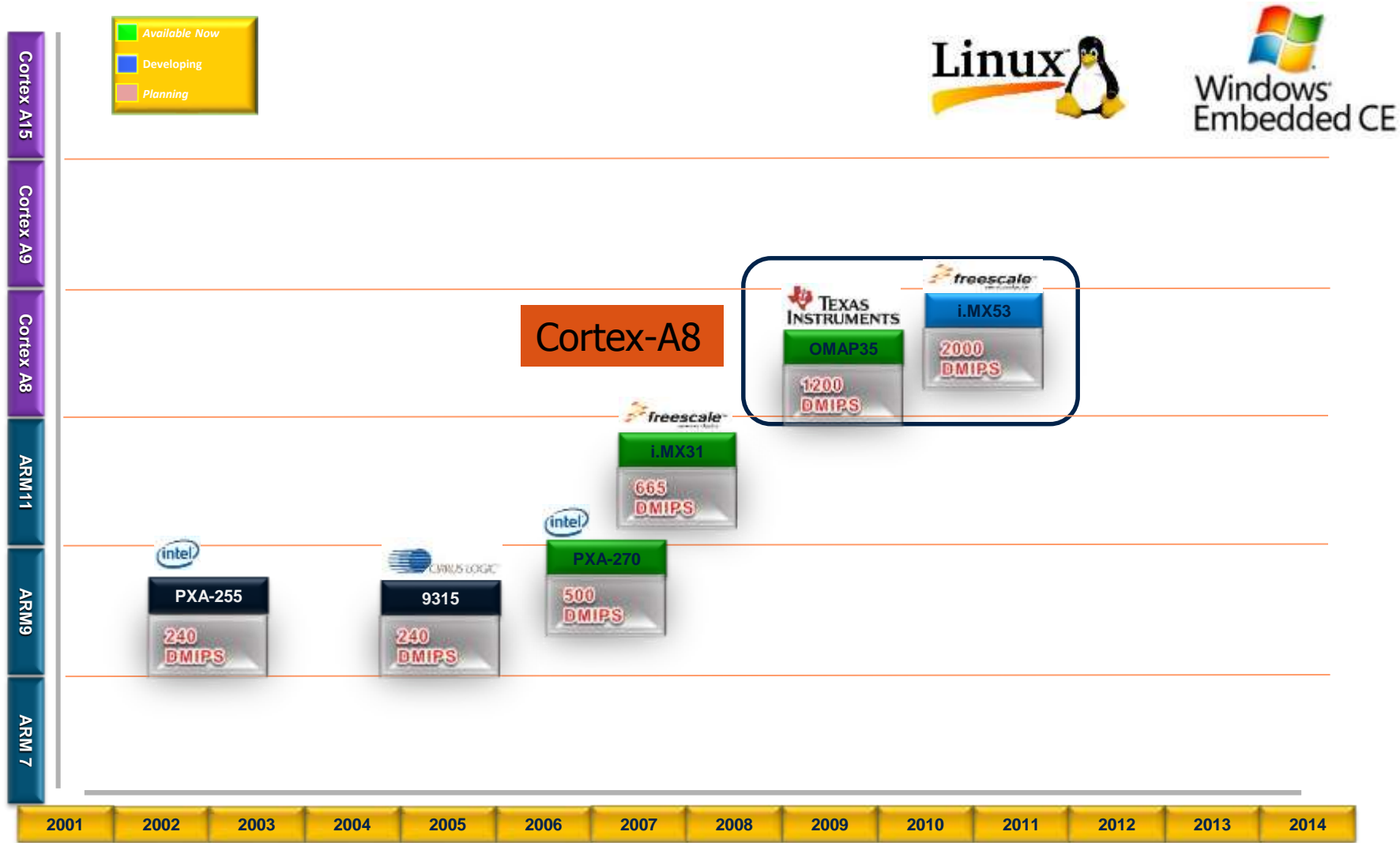
**3.5" SBC**



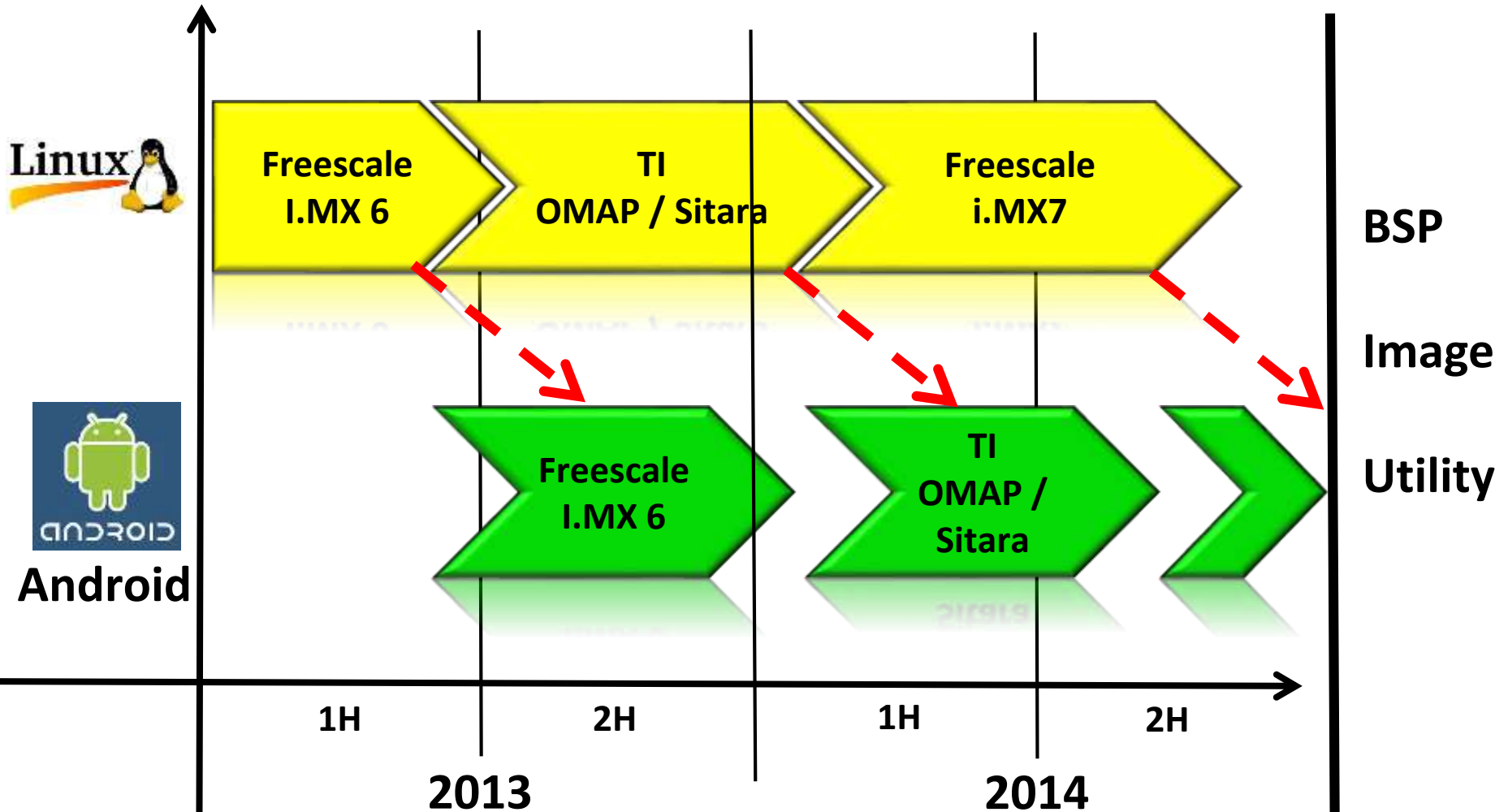
**Box**



# Advantech RISC/ARM Past 10 Years Roadmap



# Software Development Strategy & Schedule



# ARM在嵌入式应用面临的问题

专案性质, 资源重复利用率低

信息不明确, 开发风险高

软件硬件相依性高, 分工困难

用不起, 或是不敢用



# X86 vs ARM for Entry Level Applications

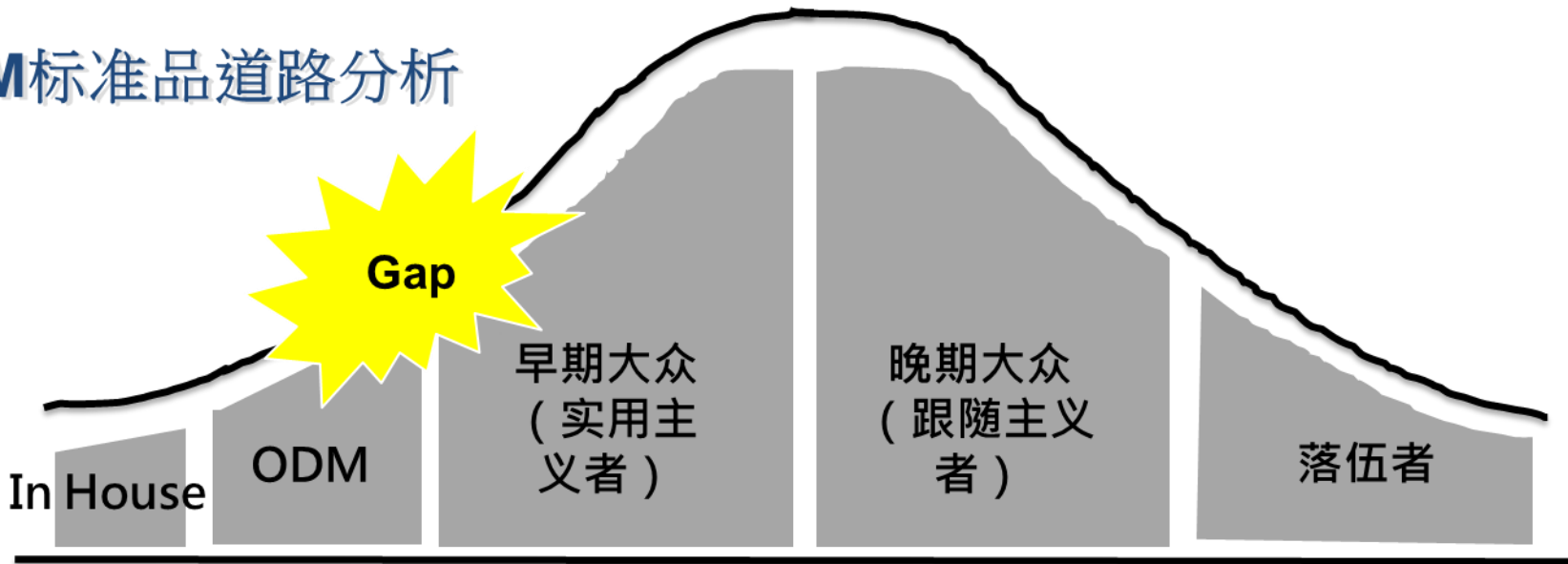
<b>C1</b>	<b>FAB</b>	X86	<	<b>ARM</b>	ARM具备低功耗、体积小、开机快等特色
	<b>Cost</b>	X86	=	<b>ARM</b>	ARM产品单价低，但整体开发成本较X86高
<b>C2</b>		X86	<	<b>ARM</b>	X86 solution多如牛毛，但是ARM目前都还是属于Project base，客户对ARM产品了解度不高
<b>C3</b>		X86	<	<b>ARM</b>	ARM因为标准化不高，所以对客户的道德成本相对较高
<b>C4</b>		X86	<	<b>ARM</b>	ARM都是Project base，因为客户被绑定风险高

X86相对于ARM在低阶嵌入式应用具备较低的C2，C3与C4成本，但是为何客户还是愿意采用ARM solution，主要是因为ARM提供的“FAB”对低阶嵌入式应用具有很大的吸引力！

<b>Feature</b>	<b>Advantage</b>	<b>Benefit</b>
低功耗<3W	待机与工作时间长	较佳的工作效率与维护成本
-40~105 工作温度	可在较苛刻环境下工作	产品有差异，可以卖较好的价格
SOC设计	系统体积可以大幅缩小	增加可已导入的应用，商机变大，成本变低
开机启动快	素缎客户等待的时间	相对与X86方案，能较符合客户期待



# ARM标准品道路分析



特点	拥有强大的技术实力，但是产品局限于自身应用	单一project数量大，足够支撑外包开发所产品的成本	具备所在产业的竞争优势，也了解ARM的优势，也想用ARM来提升产品竞争力，但是因为公司规模开发能力，被迫使用标准X86 solution	受市场潮流与ARM单价低等因素，可能会迫于客户要求进入ARM方案	非因技术或是市场因素而不导入ARM方案，如Intel的partner
最在意的4C	C1(u)	C1 (u+c)	C3 C4 C2 C1	C1( c)  C4	Ignore
角色	Project Base Model		Standard Product Model		



# Across the Gap~!

Strategy		Fix which Cost
参与标准Formfactor的制定	Follow: ULP, Q7	C3, C4
	Create:RTX	
加强上游厂商连接，做原厂与客户的桥梁	Freescle	C2
Design in Service	Hardware	C2, C3
	Software	



# 引领嵌入式ARM平台之标准化



**SGeT** STANDARDIZATION  
GROUP FOR  
EMBEDDED  
TECHNOLOGIES

**RTX**  
RISC Technology eXtended

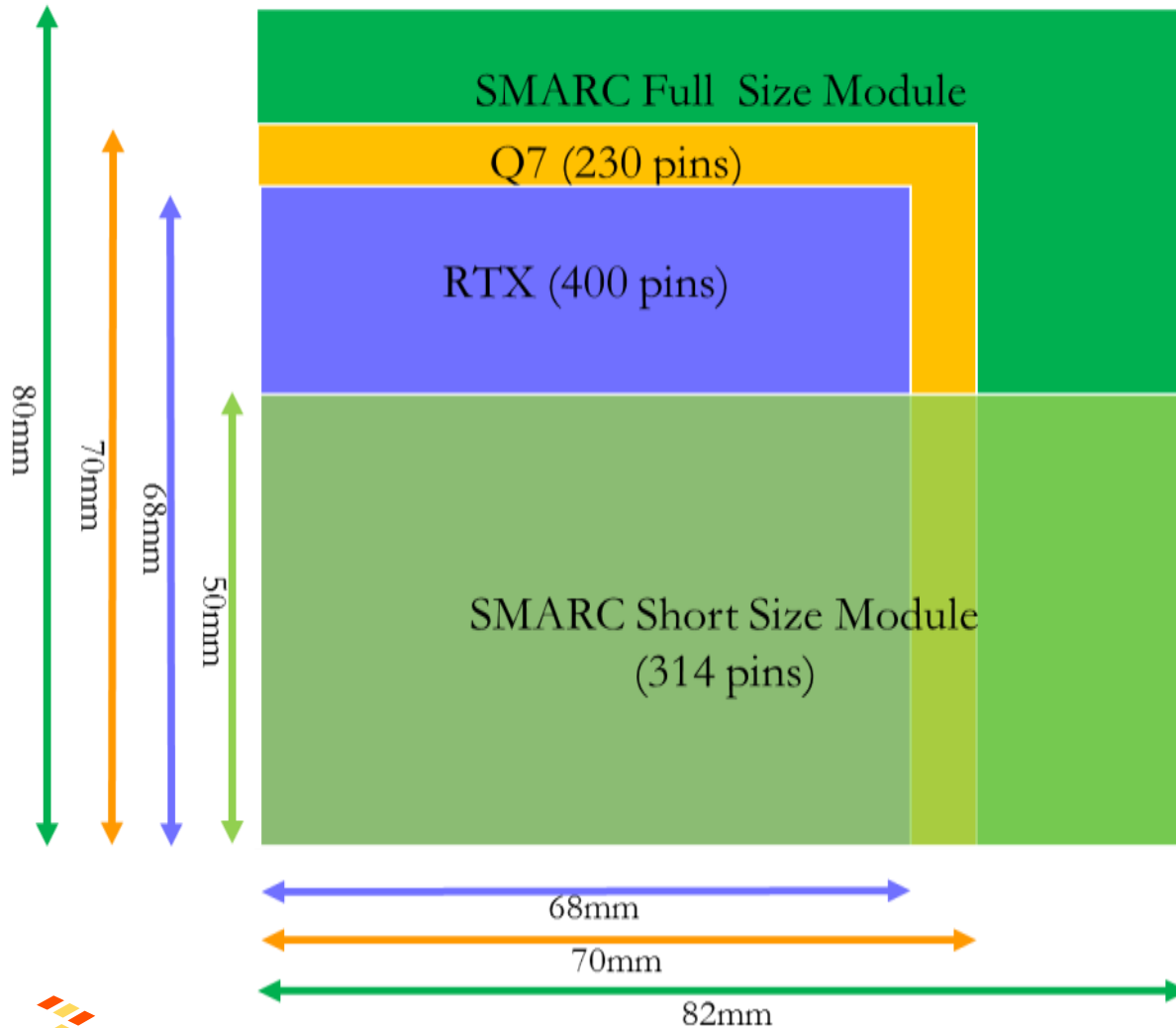






Q S E V E N

 **SMARC**



# 研华A9核心模块Form Factor



- **RTX (Advantech)**  
(68mm x 68mm)
- **Q7 (Congatec)**  
(70mm x 70mm)
- **SMARC Short Size (Kontron)**  
(82mm x 50mm)
- **SMARC Full Size**  
(82mm x 80mm)

# RISC Modules in Application

## RTX 68x68mm

### 2.0 mm PCB Thickness

- Solder crack resistance
- Anti-distortion
- Better signal quality

### Wide Range Power Input 5V~24V

- Easy power input design
- High tolerance on voltage change

### Wide Temperature -40~85°C

- More flexible operation environment
- More reliable design

### 4 x B2B Connectors

- Oxidation resistance
- Excellent electrical performance
- Anti-vibration

## Ruggedized Applications



## Q Seven 70x70mm



- First RISC module standard
- Low cost

## SMARC 80x52mm

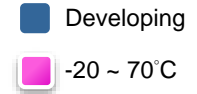
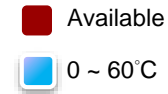


- Slim type, applicable to RISC
- Camera, Battery & UART support

## Portable Applications



# Roadmap of ROM



0 ~ 60°C

-20 ~ 70°C

-40 ~ 85°C

RTX 2.0



## ROM-3420

- **Freescale i.MX6**
- 1GB DDR3, 4GB Flash
- 24 bit LVDS, TTL, HDMI
- 1 system bus
- 68 x 68 mm (LxW)

Q2'14

## ROM-3310

- **TI Sitara cortex A8**
- 512MB DDR3, 4GB Flash
- 24 bit LVDS,
- 4UART, 1GbE
- 68 x 68 mm (LxW)

Q2'14

SMARC



## ROM-5420

- **Freescale i.MX6**
- 1GB DDR3, 4GB Flash
- 24 bit LVDS, TTL, HDMI
- + 3.25~5 VDC
- 82 x 50 mm (LxW)

## ROM-5310

- **TI Sitara cortex A8**
- 512MB DDR3, 4GB Flash
- 24 bit LVDS,
- 4UART, 1 GbE
- 82 x 50 mm (LxW)

Q2' 15

## ROM-5620

- **Freescale i.MX7**
- 1GB DDR3, 4GB Flash
- 24 bit LVDS, TTL, HDMI
- 1 GbE, 1 USB3.0
- 82 x 50 mm (LxW)

Q3' 15

Q7




## ROM-7420

- **Freescale i.MX6**
- 1GB DDR3, 4GB Flash
- 24 bit LVDS, VGA, HDMI
- UART, GPIO
- 70 x 70 mm (LxW)



# Roadmap of RSB (3.5" SBC)

■ Available    ■ Developing    ■ Planning  
0 ~ 60°C    -20 ~ 80°C    -40 ~ 85°C  
 Fanless

Signage SBC

Linux 

**RSB-4410** ■ 

- Freescale i.MX 6
- 1 HDMI, 1 VGA, 1 LVDS
- 1 USB 2.0, 1 UART, 1 GbE
- 1 SD, 1 Audio out
- 1 Mini PCI-E w/ SIM
- 2 USB 2.0 via pin-header
- 2 2 wires UART
- 1 DC-jack, 12 VDC-in
- 146 x 102mm (3.5")



Auto. SBC

Windows Embedded Compact 7  Linux 

**RSB-4210** ■ 


- Freescale i.MX 53 1GHz
- 512 MB DDR3, 2GB Flash
- HDMI, VGA
- 4 USB, 1 OTG, 1 UART
- 2 10/100Mbps LAN
- 1 SD / SIM card
- 1 Mini PCI-E(only USB)
- 146 x 102 mm (3.5")




Linux 

**RSB-4220** ■ 


- TI Sitara AM335x cortex A8
- 512MB DDR3, 4 G Flash
- 1 LVDS, USB, 1 UART
- 4 UART, 8 GPIO (Isolation)
- 2 Gigabit LAN
- 1 Mini PCIe(only USB)
- 1 SD / SIM card
- +12/19/24 VDC-In
- 146 x 102 mm (3.5") Q2' 14

Linux 


**RSB-4411** ■ 

**Freescale CRB**

- i.MX6 Solo/Dual/Quad
- 512 MB DDR3, 32GB Flash
- 1 USB OTG, 2UARTs
- 4 USB 2.0, 1Micro SD, 1GbE
- 1 Mini PCIe
- 1 Mini PCIe (mSATA)
- +12VDC-In
- 146 x 102 mm (3.5") Q3' 14



# Roadmap of Box

■ Available    ■ Developing    ■ Planning  
0 ~ 40°C    -20 ~ 70°C    -40 ~ 85°C  
 Fanless

## Networking Box

**Linux** 

### UBC-200

- Freescale i.MX6 Dual 1G
- 1GB DDR3, 4GB Flash
- 1 HDMI
- 1 USB 2.0, 1 SD, 1 GbE
- 1 Mini PCI-Express w/ SIM
- +12/19/24 VDC-in
- 108x 79x 30mm

Q1' 14




**Linux** 

### UBC-220

- Freescale i.MX6 Dual 1G
- 1GB DDR3, 4GB Flash
- 1 HDMI
- 1 USB 2.0, 1 SD, 1 GbE
- 2 Mini PCIe w/ SIM
- +12/19/24 VDC-In
- 108x 79x 30mm

Q2' 14



**Linux** 

### UBC-211

- TI Sitara AM335x cortex A8
- 512MB DDR3, 4GB Flash
- 1 USB 2.0, 1 SD, 2GbE
- 1 Mini PCIe (USB signal)
- +12/19/24 VDC-In

Q3' 14



**Linux** 

### UBC-221

- i.MX6 Solo/Dual/Quad
- 512 MB DDR3, 32GB Flash
- 1 USB OTG, 2UARTs
- 4 USB 2.0, 1Micro SD, 1GbE
- 1 Mini PCIe
- 1 Mini PCIe (mSATA)
- +12VDC-In

Q2' 14



## Signage & Automatic

**Linux**  

### UBC-DS31

- Freescale i.MX 6 Dual core
- 1 GB DDR3, 4 G Flash
- HDMI / CRT
- 1 USB / 1 UART
- 1 GbE / 1 SD
- 191x129x30mm

FULL HD 1080



**Linux** 

### UBC-FA30

- TI Sitara AM335x cortex A8
- 512 MB DDR3, 4 G Flash
- 1 USB / 1 UART
- 4 UART / 8 GPIO (Isolation)
- 2 Gigabit LAN
- 1 Mini PCIe(USB signal)
- 1 SD / SIM card
- +12/19/24 VDC-In

Q2'14

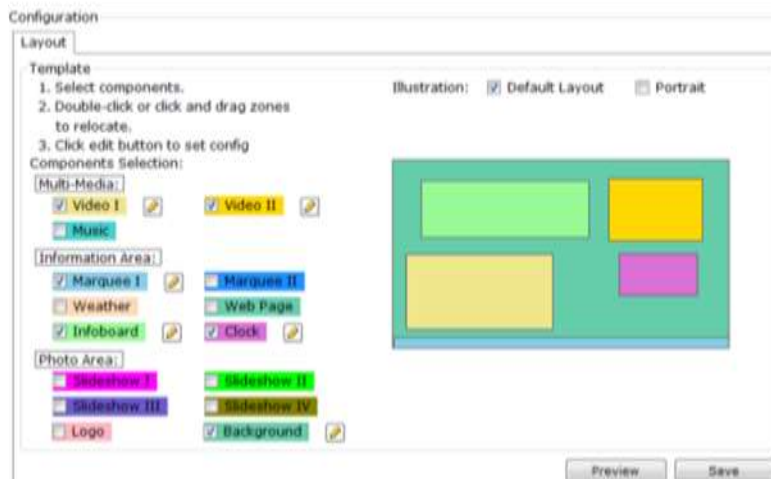


# Android Signage S/W of UBC-DS31

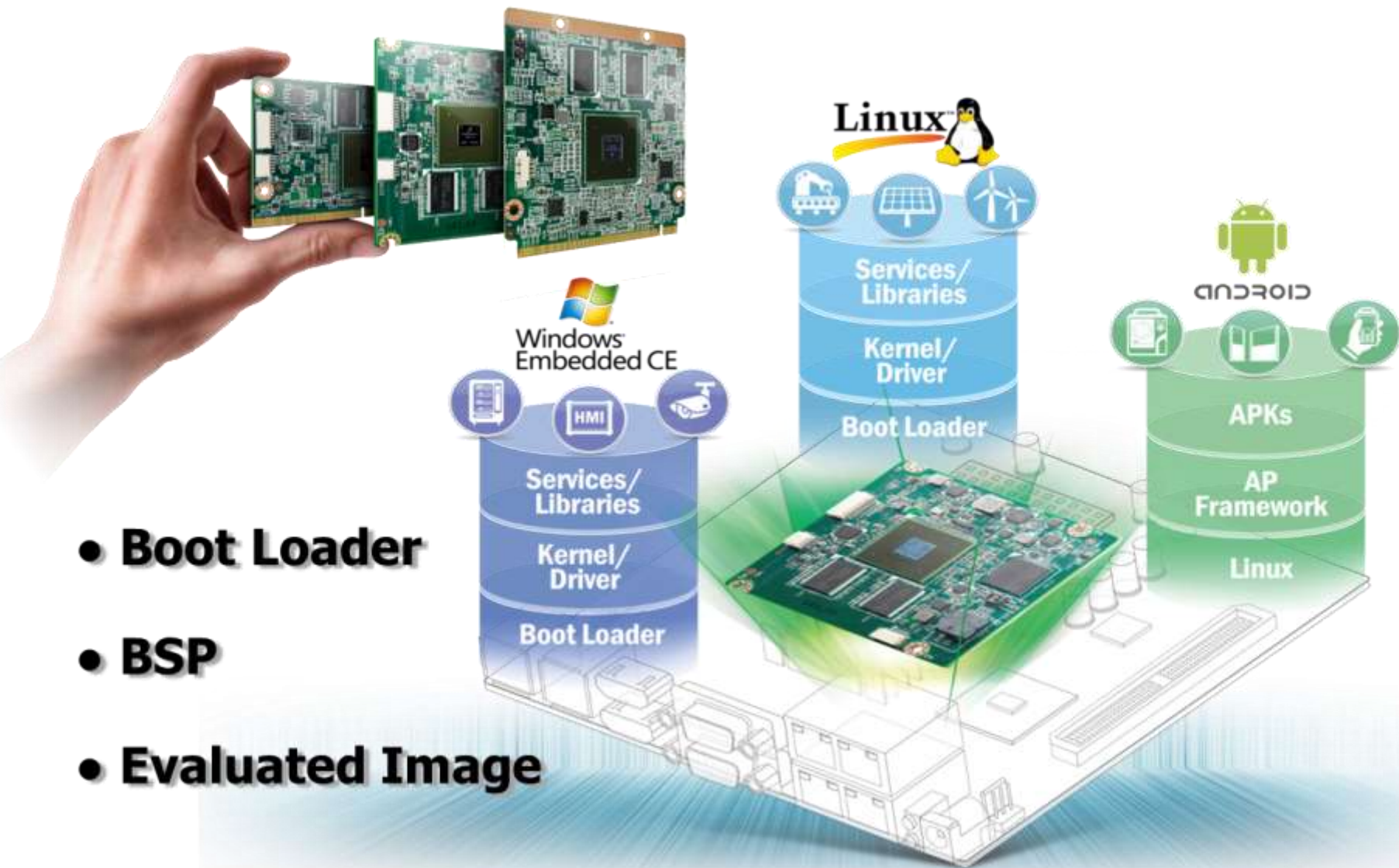
## Android Signage S/W : Uposter



- Android base player(4.2.2)
- Max. 11 Widgets
- 2 Full HD video playback capacity
- Landscape & Portrait display
- System Recovery via SD Card
- Scheduling Power ON/OFF
- Content via FTP/Dropbox
- HTML5/ Flash/ Java via Web
- Multi-language support
- Layout editor of MS Windows



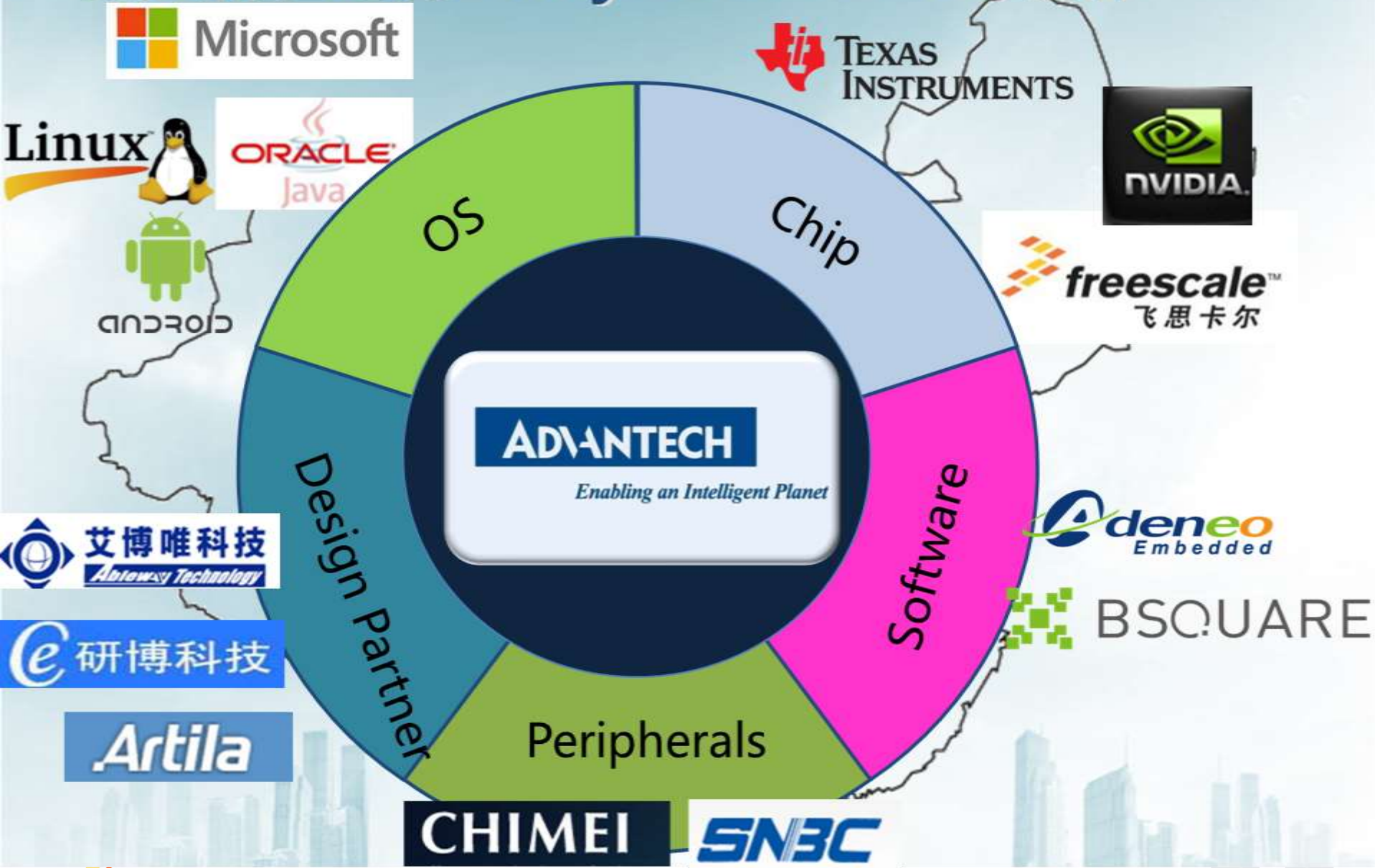
# 多样化的嵌入式操作系统支持



- **Boot Loader**
- **BSP**
- **Evaluated Image**



# 强大的在地化Ecosystem Partner协作



# Partnering for Smart City & IoT Solutions

驱动智慧城市创新 共建物联产业典范

Industrial Cloud  
& Cloud Networks

Private Cloud

iConnectivity

Transportation  
Power & Energy  
IoT Devices  
Embedded Software  
Computer On Modules  
Video and RFID  
iBuilding/BEMS  
Industrial HMI  
Environmental & Facility Monitoring  
Intelligent Display  
Intelligent Systems  
Embedded Design-in Services  
Image & Video Processing  
Machine Automation  
iRetail & Hospitality  
iHospital  
Industrial PCs  
WebAccess+  
Digital Healthcare  
Digital Logistics



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