多屏融合为无线互联带来新机会

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内容提要

- 实现多屏融合的两种无线互联模式

- 显示流模式及Intel® WiDi技术概况

- 相关产业链现状及技术前景展望

用户日渐追求互联计算和多屏融合的体验

台式机　　　　笔记本　　　　上网本　　　　平板电脑　　　　智能手机　　　　智能系统

实现多屏融合的两种无线互联模式

内容流

显示流

or

内容存储

.avi, .jpg, .mp

显示设备必须能够
渲染源内容文件格式

发射端设备完成所有渲染
及向显示设备输出视频流

dlna

AirPlay

Windows Play To

intel WiDi
Wireless Display

Intel® WiDi

WiFi CERTIFIED

Wi-Fi Display

AirPlay Mirroring
(iOS 5)

WHDI
WIRELESS HOME DIGITAL INTERFACE

WirelessHD™

智能电视*

(*examples：Samsung AllShare, Panasonic Viera Connect)

(intel)

内容流模式
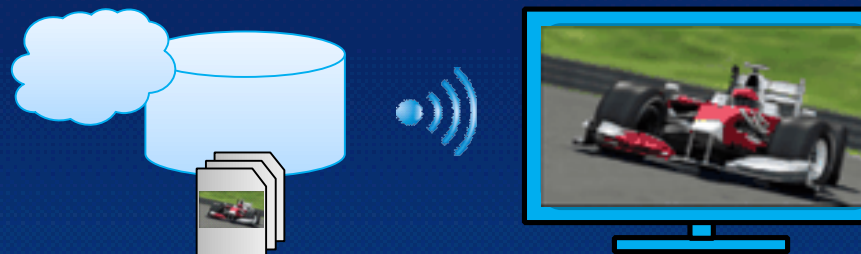
- 文件存储在本地（或云端），通过诸如UPnP或私有协议将内容流发送到另一个设备
- 应用受限
  - 以音乐/视频/图片等媒体内容（格式受限，DRM受限）
  - 对应用/服务的支持很少，浏览受限（互动受限）
- 内容的可用性受限于相应的"渠道"或专为某个平台开发的应用程序

	Apple TV	• Requires Apple TV ($99) plus... • ...iOS devices only • Limited number of ecosystem devices (mostly audio) • Protected content limited to iTunes
	DLNA	• Thousands of devices certified, but... • Reputation for difficulty of use • Fragmentation causes compatibility issues
	Set Top Box	• Requires hardware ($49-$99) • Limited selection of streaming content • Simple remotes – search and control is cumbersome

显示流模式

- 笔记本屏幕上所见的任何内容都同样显示在电视屏幕上
- 类似于台式机的另一块扩展屏幕；可符合HDCP 2.0的要求
- 没有文件格式的限制（由笔记本进行渲染并发送到显示设备）
- 可以做笔记本所能做的任何事情，包括网页浏览/视频会议/应用程序等

Intel® Wireless Display	**intel WiDi** Wireless Display	Integrated to Intel® Core™ laptops ~$99 TV Adapter	• No BOM adder to systems with Intel® Core™ and Centrino WiFi • Available on mainstream SKUs as low as $699
WHDI HP Wireless TV Connect		$199 Dual-dongle 5GHz	External solution Can incur interference with other 5GHz devices
WirelessHD Vizio XWH200		$229 Dual-dongle 60GHz	External solution ~$199 option for certain Alienware gaming laptops

不同的技术都能做些什么

内容流　　　　　　　　　　　　　　　　　显示流

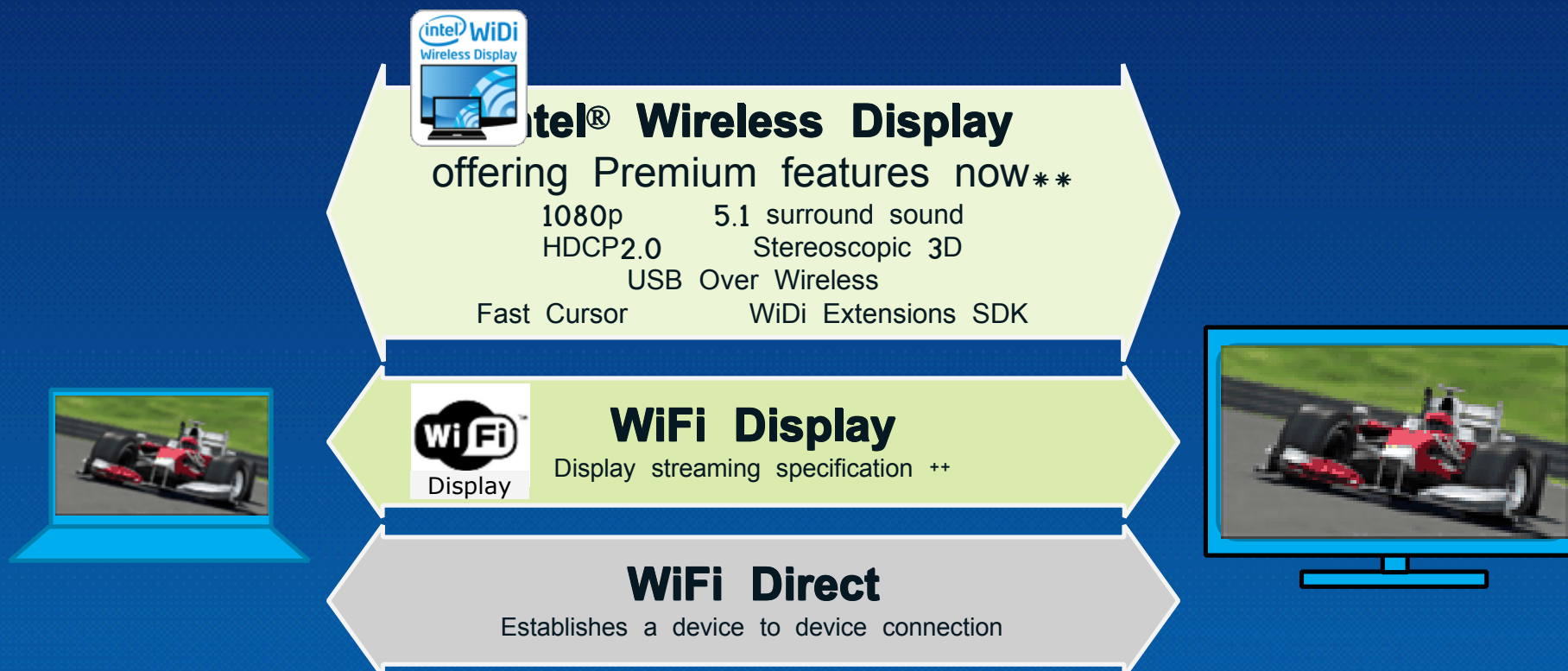| Usage	Smart TV/ Set Top Box	DLNA	AirPlay	Play To	Intel® WiDi
Online commercial content (Netflix, Hulu)	Requires a platform-enabled app*	Requires a platform-enabled app*	Select apps	Unknown	Yes
Online User-created content (YouTube, Flickr)	Requires a platform-enabled app*	Requires a platform-enabled app*	Yes	Yes	Yes
Local content	If DLNA	Yes	Yes	Yes	Yes
Protected Content (HDCP 2.0)	No	Optional	iTunes content only	No	Yes
Web browsing	Limited	No	No	No	Yes
Productivity apps	No	No		No	Yes
Video Chat	No	No		No	Yes
Typical interactivity control	Simple remote	Simple remote	Simple remote or iOS device	Win 8 device	Same as laptop

*Platform-enabled app: In order to stream content, a content provider such as Facebook or Pandora must develop a specific app to run on each available platform

显示流模式为内容格式和网络服务提供了更多的选择性和兼容性

(intel)

显示流：Intel® WiDi 和 WiFi Display

Intel® Wireless Display

offering Premium features now∗∗

1080p	5.1 surround sound
HDCP2.0	Stereoscopic 3D
USB Over Wireless	
Fast Cursor	WiDi Extensions SDK

WiFi Display
Display streaming specification ++
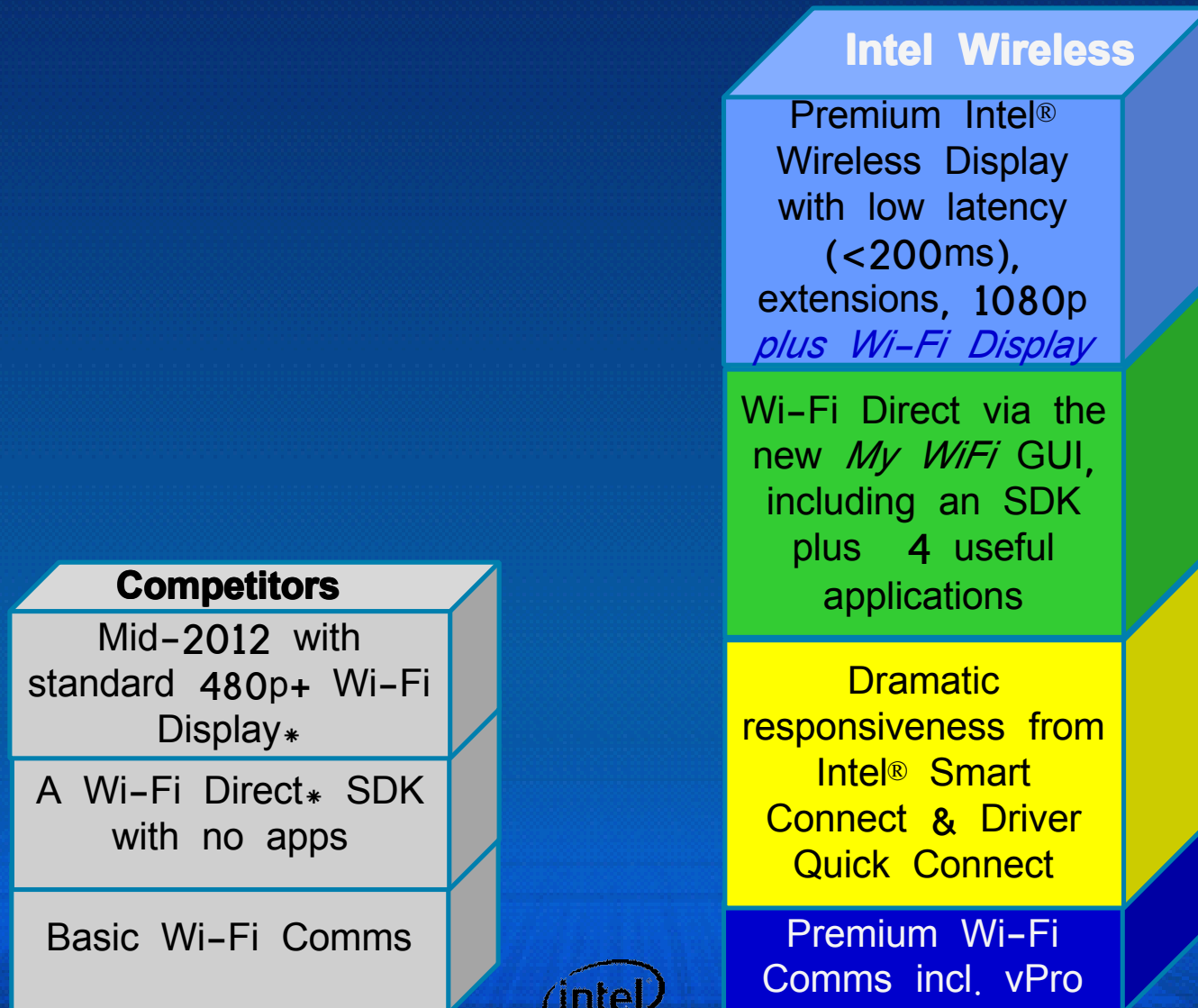
WiFi Direct
Establishes a device to device connection

∗ Intel® WiDi offers premium features not required in the standard Wi-Fi Display specification
∗∗ Some premium features not POR (in planning)
++ Specification due out in Q2'12

Intel® WiDi 在标准的 WiFi Display 之上提供更多增强的能力，
实现了更好的用户体验

(intel)

Intel® WiDi 的功能层次

Intel Wireless

Premium Intel® Wireless Display with low latency (<200ms), extensions, 1080p *plus Wi-Fi Display*

Wi-Fi Direct via the new *My WiFi* GUI, including an SDK plus 4 useful applications

Dramatic responsiveness from Intel® Smart Connect & Driver Quick Connect

Premium Wi-Fi Comms incl. vPro

Competitors

Mid-2012 with standard 480p+ Wi-Fi Display∗

A Wi-Fi Direct∗ SDK with no apps

Basic Wi-Fi Comms

(intel)

Intel® WiDi 兼容 WiFi Display 并提供增强性能

	Intel WiDi Source (Tx) [1]	WiFi Display Source (Tx)
WiFi Display certified	Yes	Yes
1080p	Yes	480p Mandatory (720p/1080p Optional)
HDCP2.0 (copy protected content)	Yes	Optional
Audio	5.1 Surround	Optional
Low Latency	Yes	No*
USB back channel	Yes	No*
Extensions SDK	Yes	No*
Fast Cursor	Yes	No*
Professional IT	Yes	No*
Legacy WiDi Adapter	Yes	No*

Intel® WiDi 设备完全支持与 WiFi Display (WFD) 设备的互操作

		Transmit Devices PC, Tablet, Phone	
		WiDi	WFD
Display Devices TV, etc.	WiDi & WFD	WiDi features supported	WFD features supported
	WFD	WFD features supported	WFD features supported

用户使用 Intel® Wireless Display-certified 设备可获得最佳体验

* Could be done only if Tx vendor enabled their own proprietary Rx ecosystem
1. Supported in Intel WiDi version 3.0

Intel® WiDi 针对软件/固件/编码/图形引擎进行了全面优化，提供了更好的无线显示体验

Intel® WiDi 性能概述

处理器				
典型场景	消费笔记本➜高清电视		消费笔记本➜高清电视或音响 商务笔记本➜会议室投影	
Intel® WiDi 产品特征	720p Stereo Audio 2.4GHz WiFi 600ms Display latency		Full HD 1080p S3D ½ resolution WiFi 2.4GHz or 5GHz Surround Sound* Interactivity <200ms latency* Blu-ray, DVD, Intel® Insider™* Intel Wireless Music*	
平台要求	2010 Intel® Core™ 处理器 Works with Intel WiFi or Intel WiFi + WiMax combo		Intel® Core™ 处理器 + Intel® Wireless Works with Switchable Graphics Works with Intel® WiFi + BT combo Works with Intel® WiFi + WiMax combo	

* Requires an upgrade to software version 2.1, most OEM systems will pre-install this for Back to School.

扩展产业链，使更多接收端对接Intel® WiDi

	2011	Holiday'11 – Spring'12 (targets)	BTS – Holiday 2012 (targets)
intel WiDi Wireless Display	• TV adapters • Gen 2 featur • ~$100 ASP Display upgradeable	• Lower cost TV adapters • Gen 2 features • $69-79 ASP Display upgradeable	• TV/Projector Adapters • Gen 2/3 features • $49/TBD Display certified
intel WiDi Wireless Display		• Integrated CE • HDTV, Bluray, S • Gen 2 features Display upgradeable	• Integrated CE • HDTV, Bluray, ST • Gen 3 features Display certified
dlna Display WiFi Display		• No Adapter Required • DLNA, PS3, Xbox, TV STB • Gen 1 features • >100Mu install base WW • Consumer download	• No Adapter Required • DLNA, PS3, Xbox, TV STB • Gen 1 features • >100Mu install base WW • OEM Pre-Install
			• WFA Display certified devices • Gen 1/2 features
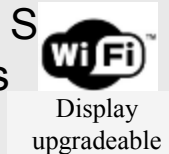
一些新的 Intel® WiDi 接收端
于2012年CES期间宣布并在第一季度正式发布

HDTV

SAMSUNG

LG

TOSHIBA
Leading Innovation ≫

Set Top Box

NETGEAR neo tv™ *

at&t | U-verse℠ **

Intel WiDi over DLNA

PlayStation™

for basic media streaming***

…在2012年当中还会看到更多的接收端设备发布和上市

(intel)

*   Netgear Neo TV 200 will not support HDCP2.0 (including Bluray, Intel Insider)
**   AT&T U-verse STB will not support HDCP2.0 or 1080p using Intel WiDi
***   Intel WiDi over DLNA works with DLNA certified DMP's that support AVC at 720p. No HDCP2. Latency will vary by DMP.

目标：实现各种平台的多屏融合体验

发射端

Notebook	intel CORE i5 inside	2010
Netbook	intel Atom inside	2011
Desktop	intel inside CORE i5	2012
Tablet	intel Atom inside	Future
Smartphone	intel Atom inside	Future

intel WiDi
Wireless Display

支持软件产业链利用 Intel® WiDi 的能力实现多屏融合体验的创新

接收端

HDTV，Monitor，Projector

Game Console
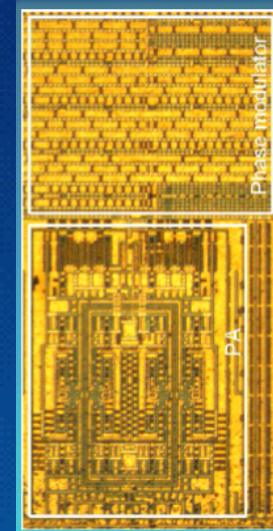
Blu-ray Player

STB or DVR

Adapters

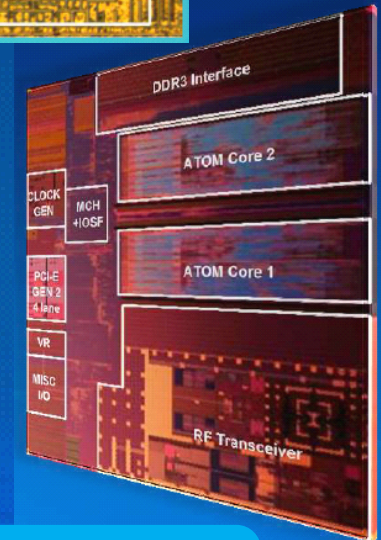Soft-receivers

intel

英特尔在 ISSCC 2012 展示的最新成果

- 纯数字RF发射器
  - *"A 20dBm 2.4GHz Digital Outphasing Transmitter for WLAN Application in 32nm CMOS"*

- 首个集成CMOS WiFi Radio 的 Atom SoC
  - *"32nm x86 OS-Compliant PC On-Chip With Dual-Core Atom® Processor and RF WiFi Transceiver"*

半导体工艺升级将加速无线互联应用的普及

谢　谢　!

Q & A