

MEDIA TEK

Wearables & IoT SuperSession

Sponsored by



XDA:DevCon 2014 – Manchester

September 28, 2014 – Mimmis Cleeren & Richard Bloor



Agenda

- Who is MediaTek
- MediaTek Labs
 - A Developer Centric Ecosystem
- MediaTek LinkIt™
- MediaTek SDK for Android (Preview Release)
- MediaTek and Open-Source
- Summary

MEDIA TEK

Who is MediaTek



Global Company – Strong Leadership Across Digital Consumer Markets

HQ	Employees	Product Lines	
Taiwan	>10K across 22 sites	<ul style="list-style-type: none"> • Mobile communications • Wireless connectivity 	<ul style="list-style-type: none"> • Digital Home • Optical storage • Broadband networking



#2

Smartphone

#1

Digital TV

#1

DVD/Blu-ray player

#1

Optical disc drive

#3

Broadband DSL

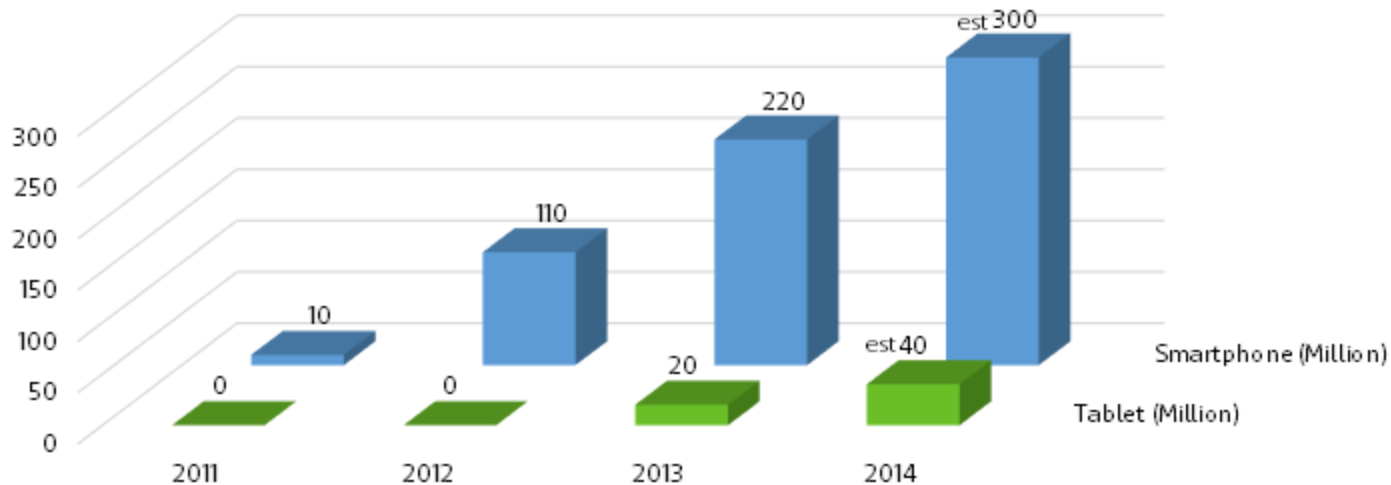
Mobile Phone Shipment Record

During 2014, MediaTek will have more than 30% global share of phones

- Major customers include:
 - Global tier-1: LG, Sony, Nokia, HTC...
 - Global brands: Alcatel, Acer, Huawei...
 - China brands: Lenovo, Coolpad, ZTE, XiaoMi...
 - China ODMs: Tinno, Huaqin, Longcheer, Ragentek, Gionee...
 - Local kings: Tecno, Micromax, BQ, Karbonn, Qmobile, BLU, Fly...

MediaTek in the Android World – Market Stats

- MediaTek share of worldwide Android device shipments (2,484,147)* in 2012-2014: **28%** (700 million)
- Gartner estimates worldwide shipments of Android to 1.1 billion in 2014*
- Approximately **one third (340 million)** of these Android devices will have MediaTek chips (Source: MediaTek, July 2014)



Source: MediaTek, July 2014

MediaTek Understands Device Ecosystems

1300+
Smartphone
projects

80+
Manufacturers

200+
Local
Brands

172
Countries



Select MediaTek Customers

LG

G Pro Lite MT6577 L5 II MT6575 L5 II Dual MT6575 L4 II MT6575 L4 II Dual MT6575 C333

lenovo

Youga Tablet 8 MT8125 S6000 MT8125 S939 MT6592 A678t MT6582 S930 MT6582 S750 MT6589 A369 MT6572

ALCATEL onetouch

Idol X+ MT6592 Pop C9 MT6582 Fierce MT6589 Hero MT6589 Idol X MT6589 Scribe HD MT6589 Snap MT6589 POP C3 MT6572

acer

Iconia A1-810 MT8125 Iconia B1-A71 MT8317 Liquid E2 MT6589 Liquid S1 MT6589 Liquid Z3 MT6572

MOTOROLA

RAZR D3 MT6577T RAZR D1 MT6575 XT390 MT6573T XT389 MT6573T XT305 MT6573 EX430 MT6276 EX225 MT6276

Panasonic

P51 MT6589

SONY
make.believe

Xperia C MT6589

ASUS

Memo HD7 MT8125

Select Operators Shipping MediaTek



Karbonn Titanium S2
MT6589



Alcatel X'Pop
MT6577



Vodafone Smart Mini
MT6575



Vodafone SmartTab III 10.1"
MT8389



Vodafone Smart III
MT6575



LG Optimus L5 II
MT6575



LG Optimus L4 II
MT6575



Vodafone SmartTab III 7"
MT8389



Alcatel POP C7
MT6572



Alcatel S'Pop
MT6575



Alcatel M'Pop
MT6575



Vodafone SmartTab II 7"
MT6575



Alcatel T'Pop
MT6575



Vodafone 575



Alcatel 30.03G



Prestigio MultiPad 4 Ultra Quad 8.0 3G
MT8389



Prestigio MultiPad 2 Ultra Duo 8.0 3G
MT8377



Prestigio MultiPad 7.0 Prime Duo 3G
MT8377



Lenovo Youga Tablet 8
MT8125



Acer Iconia B1
MT8317



Acer Iconia A1-810
MT8125



Acer Iconia A3
MT8125



Alcatel Idol X
MT6589



Alcatel Snap
MT6589



Alcatel Scribe HD
MT8125



Vonino Sirius QS
MT8389



Acer Liquid S1
MT6589



Acer Liquid E2
MT6589



Wiko Stairway
MT6589



Orange Hiro
MT6572



Orange Reyo
MT6572



Alcatel POP C5
MT6572



Acer Liquid Z5
MT6572



CAT B15
MT6577



Prestigio MultiPad 4 Ultra Quad 8.0 3G
MT8389



Alcatel Fierce
MT6589



Alcatel Idol
MT6577



Alcatel Evolve
MT6575



Alcatel S'Pop
MT6575



Alcatel M'Pop
MT6575



T-Mobile T768

Select Operators Shipping MediaTek



Motorola D3 MT6577
 Alcatel Idol MT6577
 Lenovo A2107 MT6575
 Alcatel Idol MT6577
 Alcatel M'Pop MT6575
 LG L5 II MT6575



Motorola RAZR D1 MT6575
 Alcatel T'Pop MT6575
 Alcatel S'Pop MT6575
 Alcatel OT-985 MT6573
 LG L4 II Dual MT6575
 Movistar One MT6573
 Bmobile AX515 MT6575
 Bmobile AX510 MT6575



Alcatel Idol X MT6589
 Alcatel Idol MT6577
 Motorola RAZR D3 MT6577T
 CAT B15 MT6577
 ZTE Blade C MT6572



BLU Vivo 4.65HD MT6577
 Alcatel T'pop MT6575
 ZTE V791 MT6575
 LANIX S400 MT6577
 Lanix S410 MT6589
 Lanix S600 MT6589
 M4Tel S1060 MT6572



Acer Z110 MT6575
 Motorola Motosmart MT6573T
 Motorola EX225 MT6276
 Motorola EX118
 Motorola EX108
 Motorola EX430 MT6276
 LG C375



SFR Startrail 4 MT6577
 LG L5 II Dual MT6575
 SFR StarTrial III MT6575
 SFR 251



Alcatel OT-510A MT6276
 Alcatel OT-871A MT6276
 Sonim XP5560 MT6276

Leading OEM tablets

lenovo



acer



kobo™

スタイリッシュな
軽量・スリムタブレット

LaVie Tab S



7型ワイド

NEC



ASUS®



4G LTE Verizon Ellipsis™ 7



Select MediaTek Customers & Partners

Home entertainment

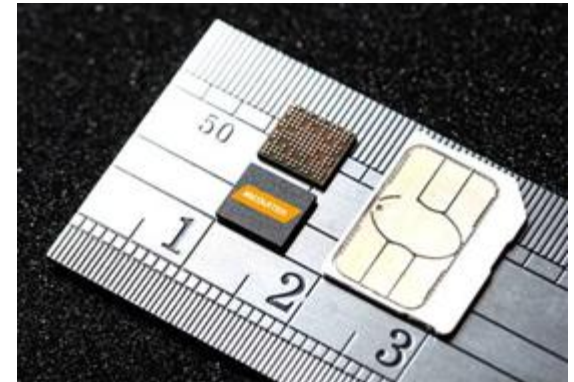


PCs & home networking



Wearables & IoT

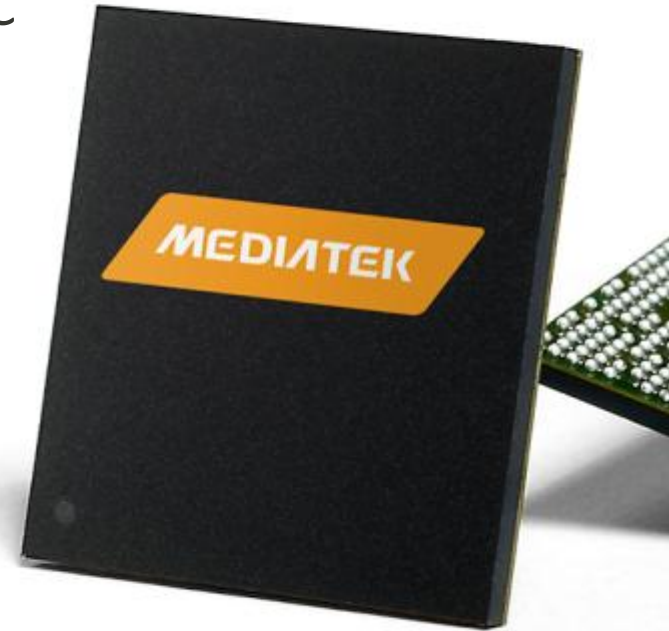
- MediaTek LinkIt™ Platform
 - Built to accelerate the wearable and IoT markets
 - MediaTek Aster (MT2502) – the world's smallest commercial SoC for Wearables
 - Companion Wi-Fi and GPS chipsets



Wearables & IoT

Smart Home SoCs

- MT7688
 - Industry's lowest power consumption SoC for Smart Home market
 - Linux-based
 - Smart home appliances, e.g. IP cameras, surveillance systems
- MT7681
 - World's smallest Smart Home SoC
 - For simpler smart home appliances such as smart plugs, lighting and sensors

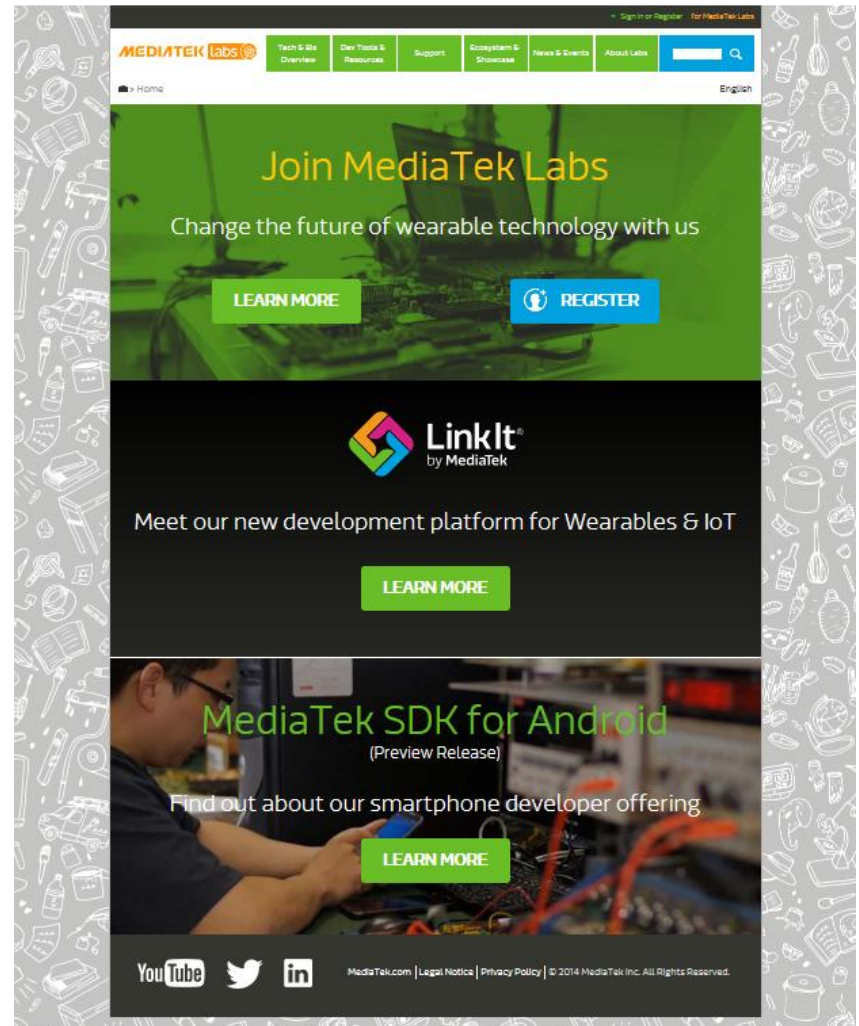


MediaTek Labs™

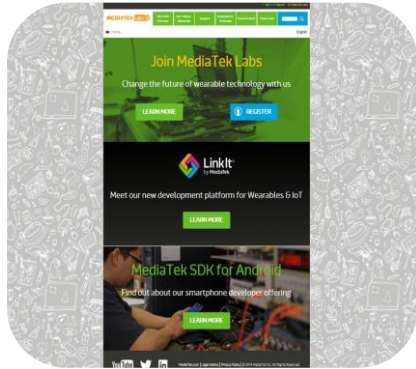
A Developer Centric Ecosystem



- Global program
- Supporting developers:
 - Device creation
 - App development
 - Services
- labs.mediatek.com



MediaTek Labs Portal & Services



labs.mediatek.com



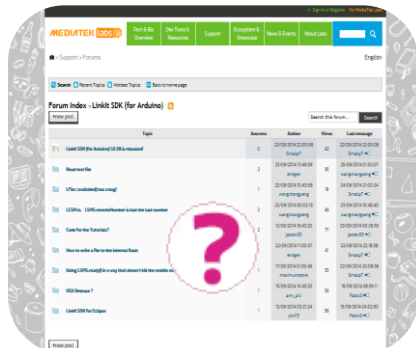
SDKs



Technical docs



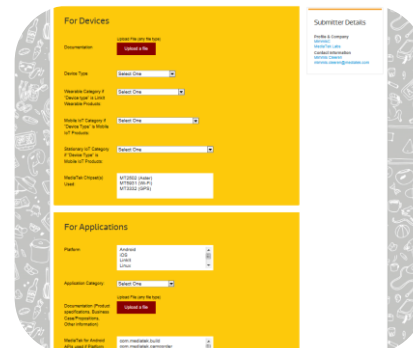
HDKs (first one out: LinkIt ONE)



Discussion Forums, FAQ & Dev Support



Newsletter



Solutions Catalog



Business Support & Matchmaking

Initial MediaTek Developer Offerings

MediaTek LinkIt™ Development Platform

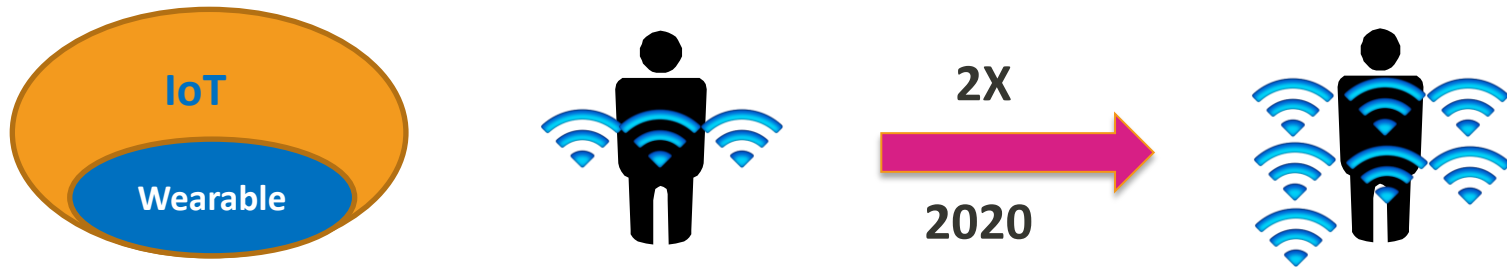
MediaTek SDK for Android (Preview Release)



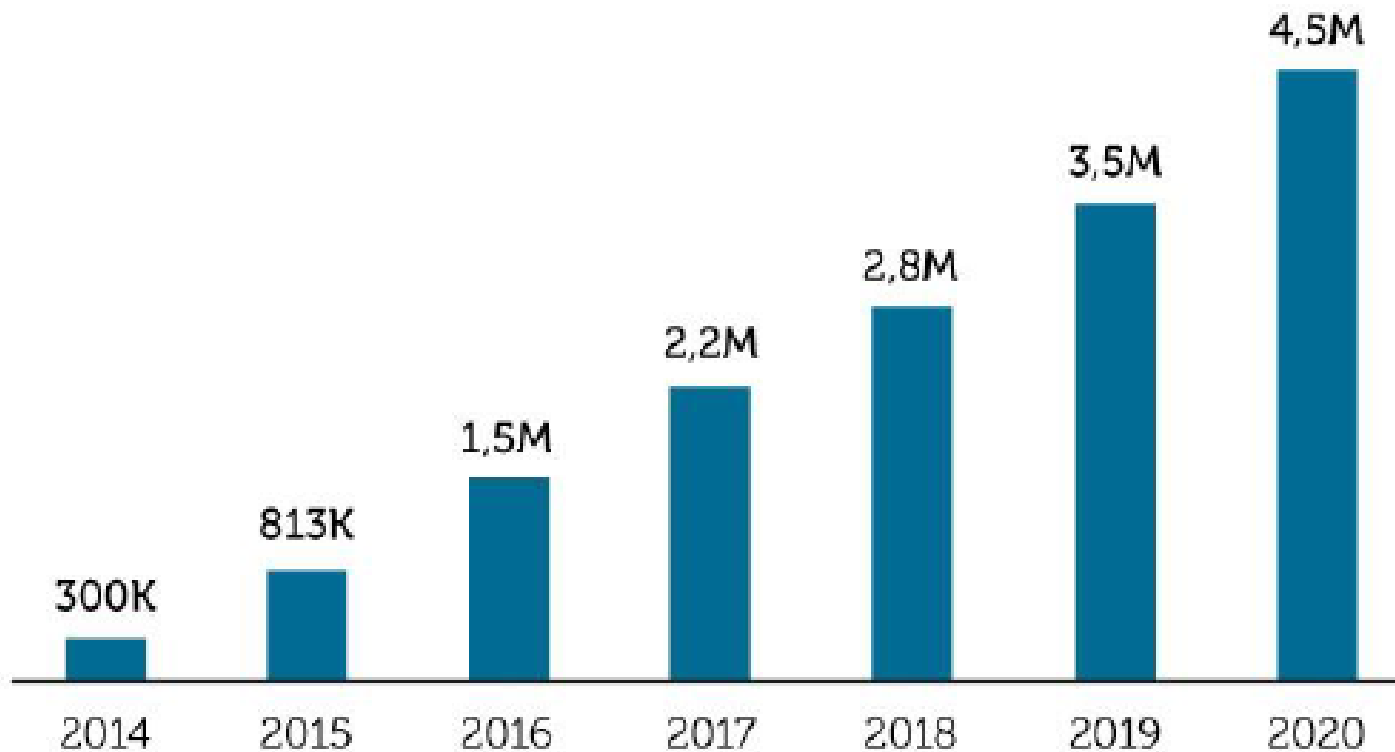
Wearables & IoT

High Growth Potential

- Estimated 26 billion units installed by 2020 (source: Gartner, 2013/11)



Estimated Number of IoT Developers 2014-2020



Source: VisionMobile Report: "IoT: Breaking Free From Internet and Things," June 2014

Broad Range of Opportunities in IoT

1(2)

Retail

- Contactless payment
- POS
- Pallet Tracking
- Electronic Billboards
- Store Access Control

Industrial Automation

- Diverse Manufacturing
- Construction
- Mining
- Environmental Monitoring

Automotive, Transportation & Logistics

- Automotive Infotainment
- Vehicle Telematics
- Intelligent Transportation Systems
- Logistics Track & Trace
- Asset Management

Aerospace & Defense

- Access Control
- Aerospace Equipment
- Military Vehicle Manufacturing

Broad Range of Opportunities in IoT

2(2)

Connected Home

- Home Automation Systems
- Energy Management
- Home Monitoring & Security
- PCs & Peripherals
- Consumer Electronics

mHealth & Wearables

- Remote Patient Monitoring
- Healthcare Wi-Fi Handsets
- Sports & Fitness Devices
- Elderly / Kids / Pets Trackers

Smart Cities

- Smart Grids
- Smart Buildings
- Building Automation
- Advanced Metering Infrastructure (AMI)

Types of Wearable Solutions

Rich
Application
Use
(RAU)



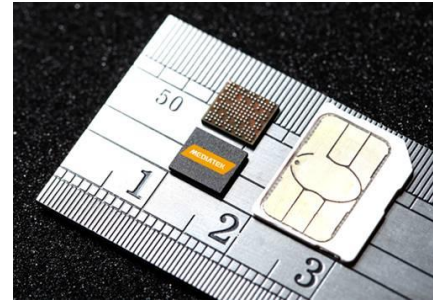
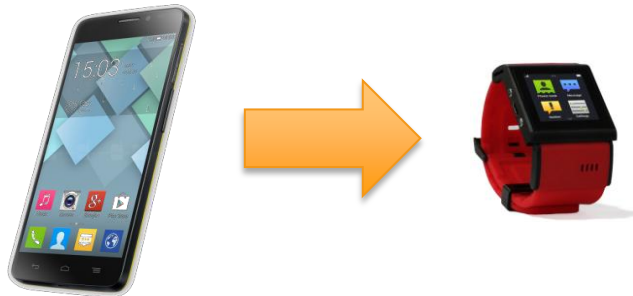
Simple
Application
Use
(SAU)



One
Application
Use
(OAU)



Enabling Developers Worldwide to Create Applications for Wearables and IoT Devices



Application Platform

Leading Connectivity

HW + SW Solution: turnkey → semi-turnkey



Inclusive design

Wireless Power



High Integration
5.4mmx6.2x1.0mm

Slim Down

Low Power

LinkIt[®]
by MediaTek

Advanced SoC

Android and iOS friendly

MediaTek Ecosystem Support

Idea

Platform

Prototype

Productize

Launch



LinkIt[®]
by MediaTek



- Components
- Design Houses
- Complementary Technologies
- Cloud Services

- Manufacturing (ODM Houses)
- Distribution Partners

MEDIATEK

labs



A Hardware & Software Development Platform for Wearables & IoT

System-on-Chip

Aster (MT2502)
– the world's
smallest SoC for
Wearables



Companion
chipsets for
WiFi and GPS

+

LinkIt OS

Feature rich OS
to power
Wearables and
IoT devices



+

LinkIt HDK

Hardware
boards based
on reference
designs by
MediaTek



First offering:
LinkIt ONE from
Seed Studio

+

LinkIt SDK

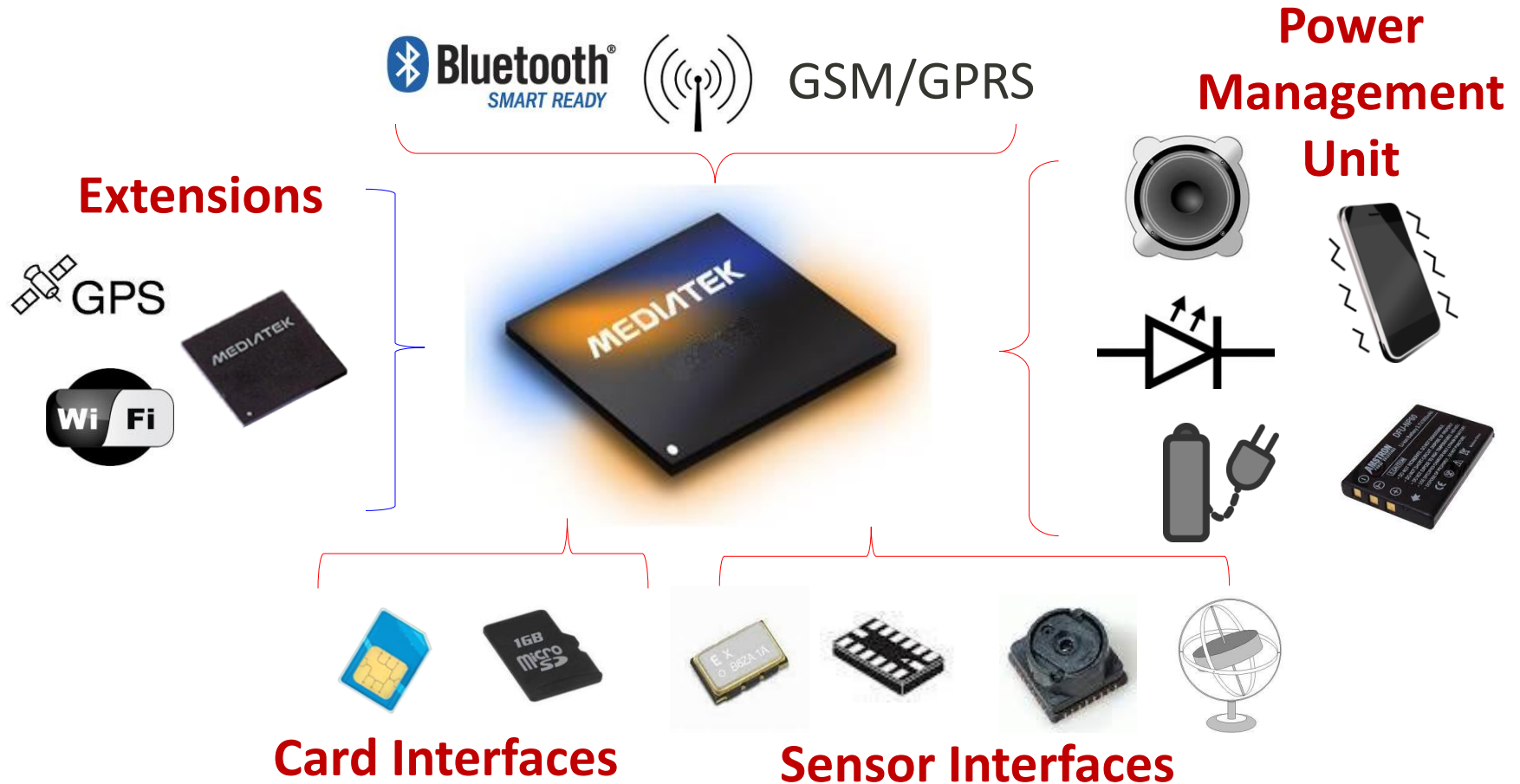
Plug-ins for
Arduino,
libraries for the
LinkIt APIs, and
board firmware
update tool



First offering:
SDK for Arduino

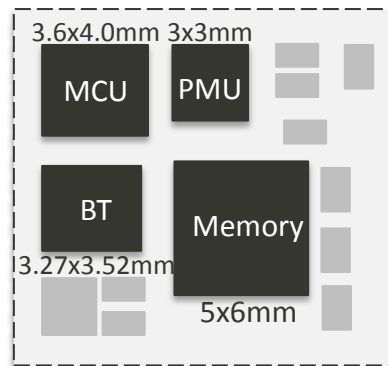
System on Chip – Aster

Comprehensive Comms and Interfaces



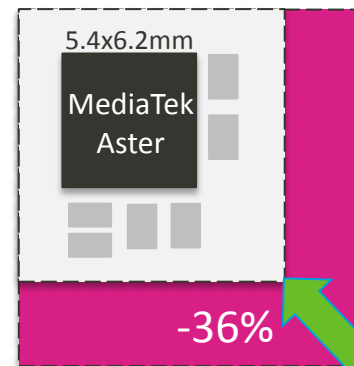
Aster: “Born for Wearable” Highly Integrated in a Tiny Size

Competitor Solution



Total Size: 140.97mm²

MediaTek Solution



Total Size: 89.84mm²

ASTER (MT2502)

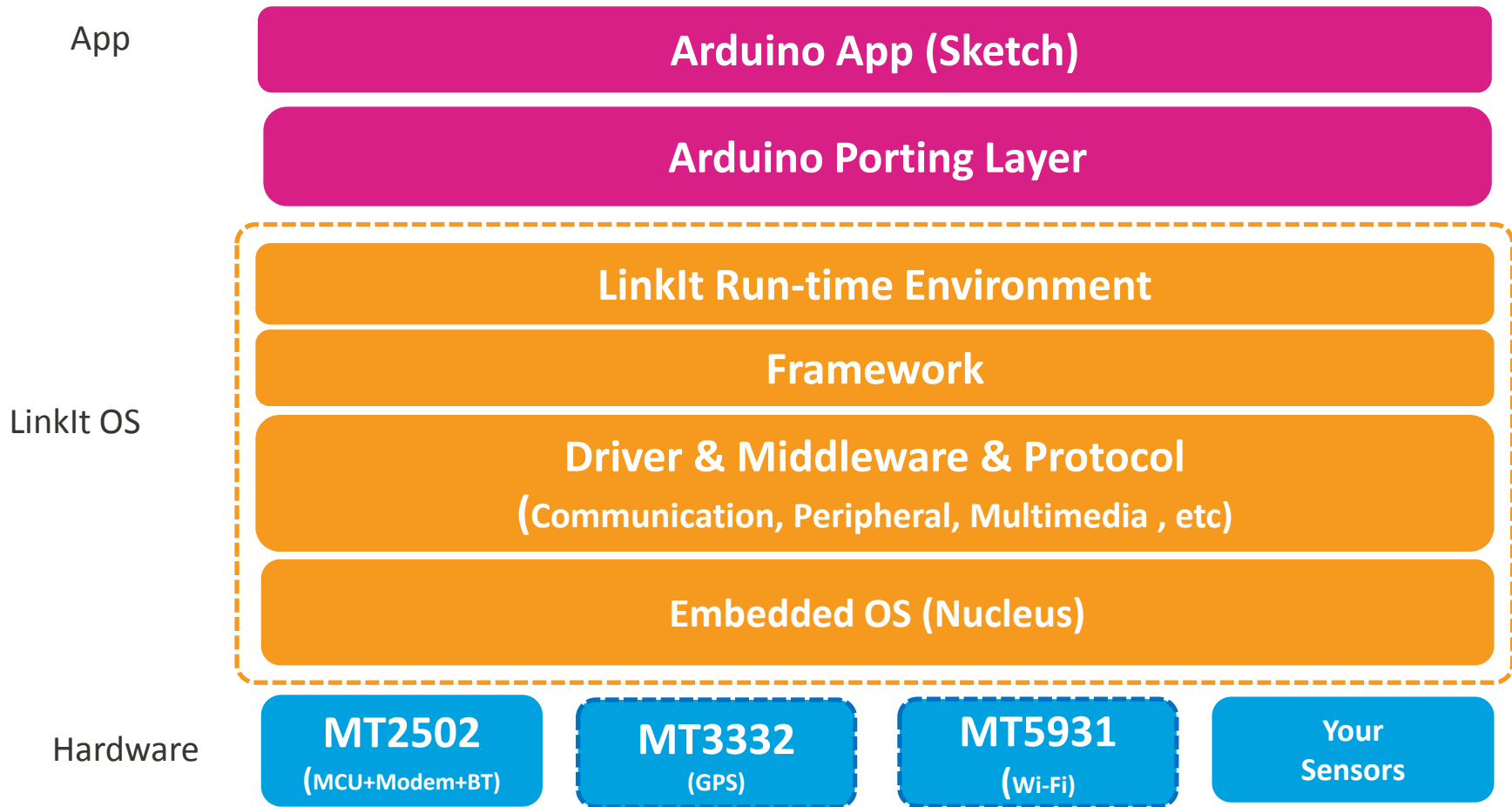
260MHz ARM7 CPU

Bluetooth v4.0 dual mode (legacy + low energy)

PMU integrated

Embedded Flash+ SRAM

LinkIt OS



*MT3332 (GPS) and MT5931 (Wi-Fi) are optional

Hardware Dev Kit - LinkIt ONE

(front view)

GPIO

Headphone Jack

Seed "GROVE" system

USB Jack

SPI

Battery Jack

Reset

Power Out

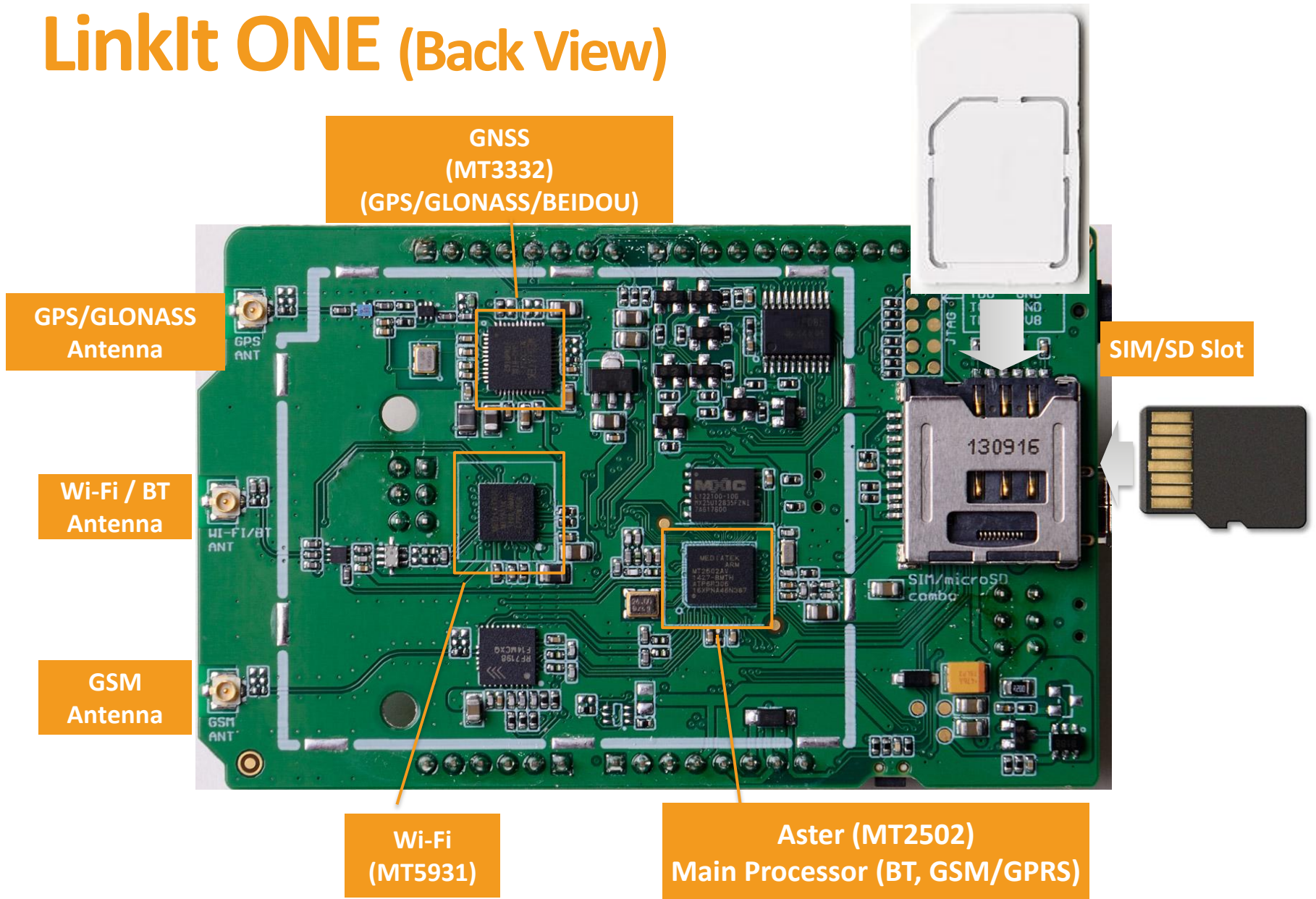
A/D & GPIO

MEDIATEK

labs.mediatek.com/linkithdk



LinkIt ONE (Back View)

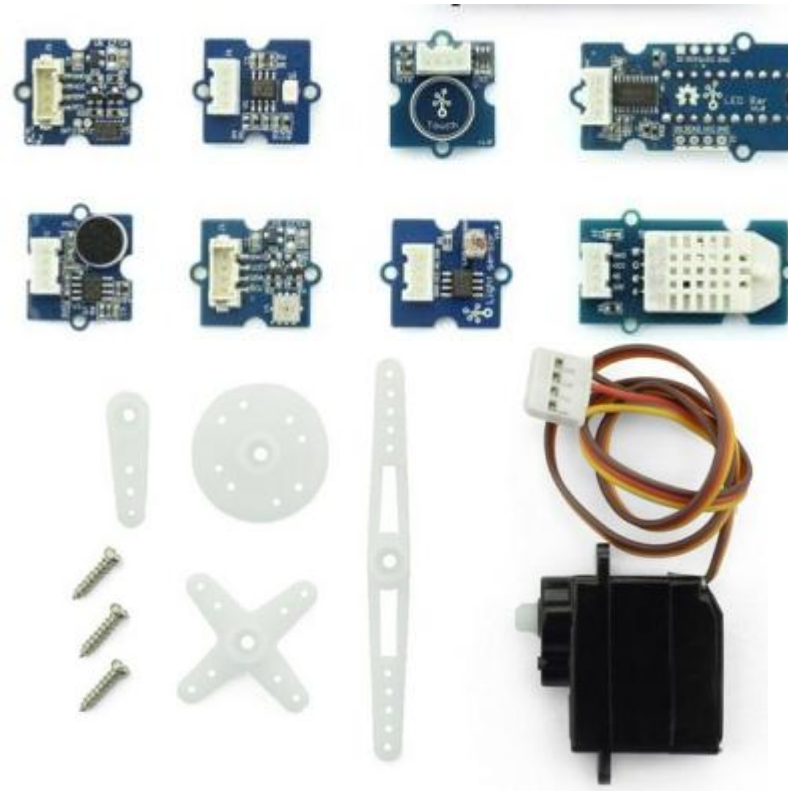


LinkIt ONE HDK

- LinkIt ONE available from Seeed Studio
- \$79 US + shipping
- www.seeedstudio.com/linkitone
- **Get your own LinkIt ONE** – Raffle form at the door



Off the Shelf Sensors



\$69.90 US + Shipping

Hardware Reference Designs

- Pin-out diagram
- Layout
- Schematic
- Chipset technical briefs

MEDIATEK

1.2 Features

- Specifications
 - GPS/GLONASS/GALILEO/BEIDOU (after ICD released) receiver
 - Supports multi-GNSS incl. QZSS, SBAS ranging
 - Supports WAAS/EGNOS/MSAS/GAGAN
 - 12 multi-tone active interference cancellers (ISSCC2011 award)
 - RTCM ready
 - Indoor and outdoor multi-path detection and compensation
 - Supports FCC E911 compliance and A-GPS
- Power scheme
 - A 1.8 volts SMPS build-in SOC
 - Direct lithium battery connection (2.8 ~ 4.3 volts)
 - Self build 1.1 volts RTC LDO, 1.1 volts core LDO, and 2.8 volts TCXO LDO
- Build-in reset controller
 - Does not need of external reset control IC
- Internal real-time clock (RTC)
 - 32.768 KHz \pm 20 ppm crystal
 - 1.1 volts RTC clock output

MT3332

GNSS Host-Based Solution Technical Brief

LinkIt SDK (for Arduino)

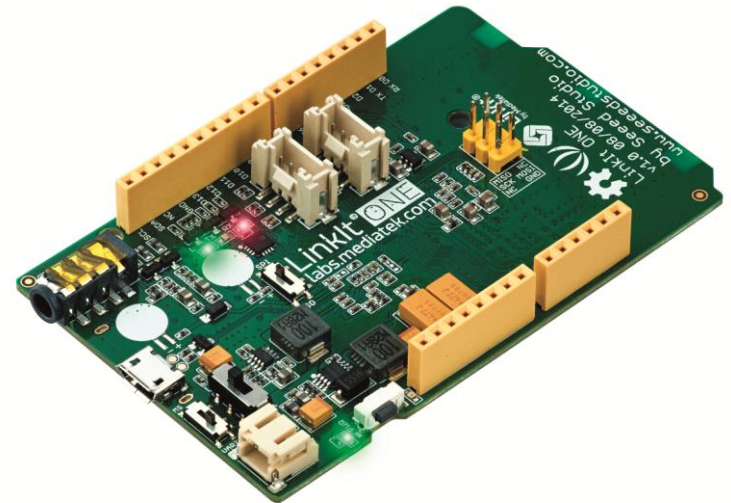
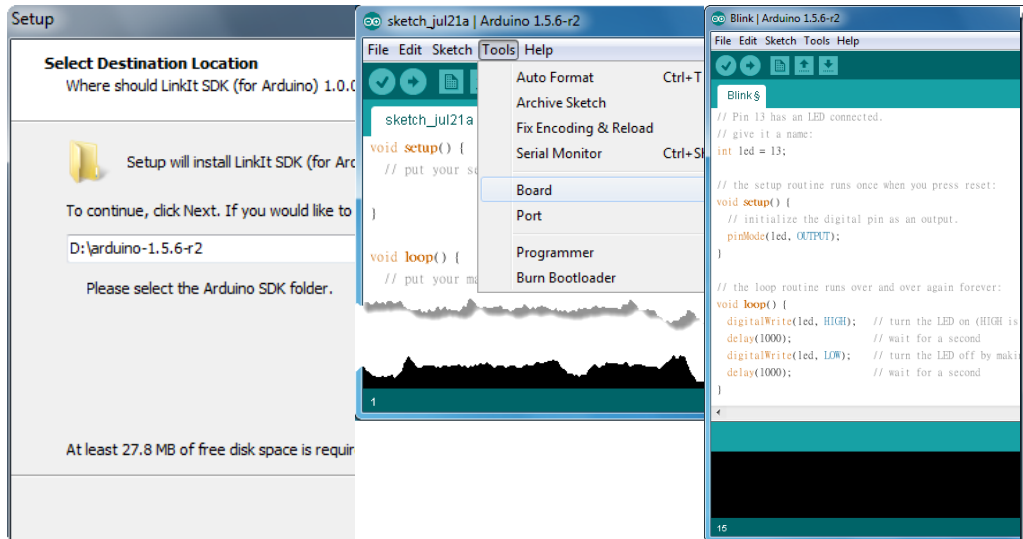
Plug-in to
Arduino IDE

Setup
Board

Create
Sketches

Load to
LinkIt ONE

Run



Core Arduino APIs

- I/O
 - Digital I/O
 - Advanced I/O
 - Analog I/O
 - Serial
- Protocols
 - Serial Peripheral Interface (SPI) protocol.
 - Inter-Integrated Circuit (I2C) protocol.
- Control
 - Servo
 - Stepper
- Interrupts
- Utility
 - Math
 - Time
- Memory
 - EEPROM

Core MediaTek Technologies

LinkIt APIs – Comms

- GSM send & receive SMS
- GPRS network access
- Wi-Fi network access
- Bluetooth comms over SPP
- GNSS positioning information
- Storage (SD card and internal Flash)
- Audio playing MP3
- DateTime absolute time utility

Relevant Links

- labs.mediatek.com/linkit
- labs.mediatek.com/linkitguide
- www.seeedstudio.com/linkitone
- labs.mediatek.com/forums
- <http://forum.xda-developers.com/hardware-hacking/linkit-one>

And more to come ...

- Other hardware boards
- Wider range of developer tools
- Variety of platform for wider range of wearables/IoT, such as:
 - Watches
 - Home automation
 - And more

MEDIATEK



MediaTek SDK for Android

(Preview Release)



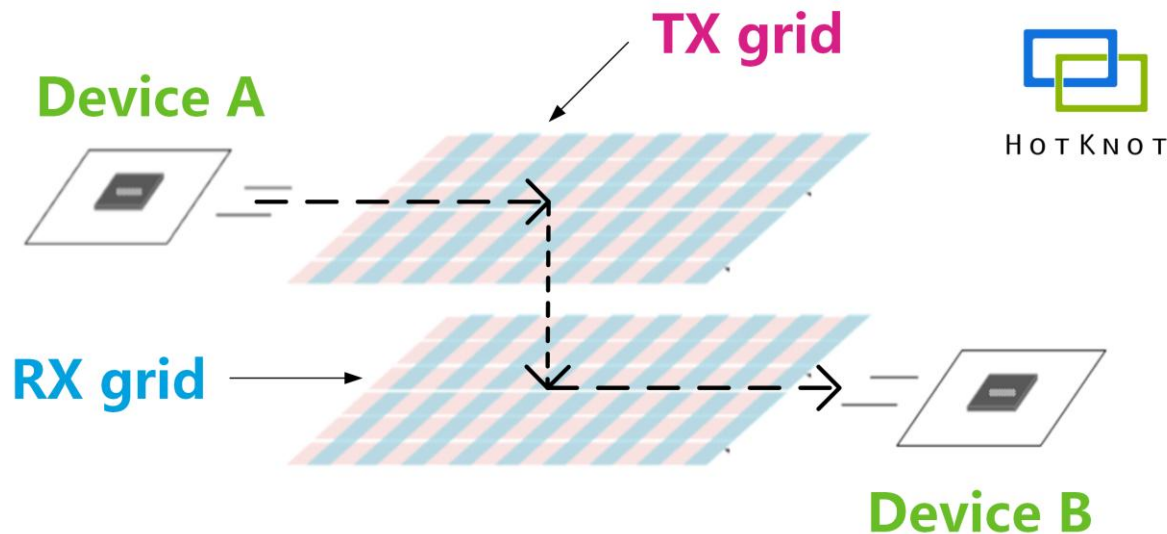
Android Apps Development

- Exclusive MediaTek APIs
- Unique MediaTek technology
- Leverage chipset capabilities
- Plug-in SDK for Google Android SDK
- Preview release
- Feedback forum at labs.mediatek.com/forums



Data Transfer — HotKnot

- Exploits physics of capacitive touch displays
- Transfer by tapping screen-to-screen
- Alternative to NFC



Multimedia

- **Multimedia**
 - Portrait enhancements

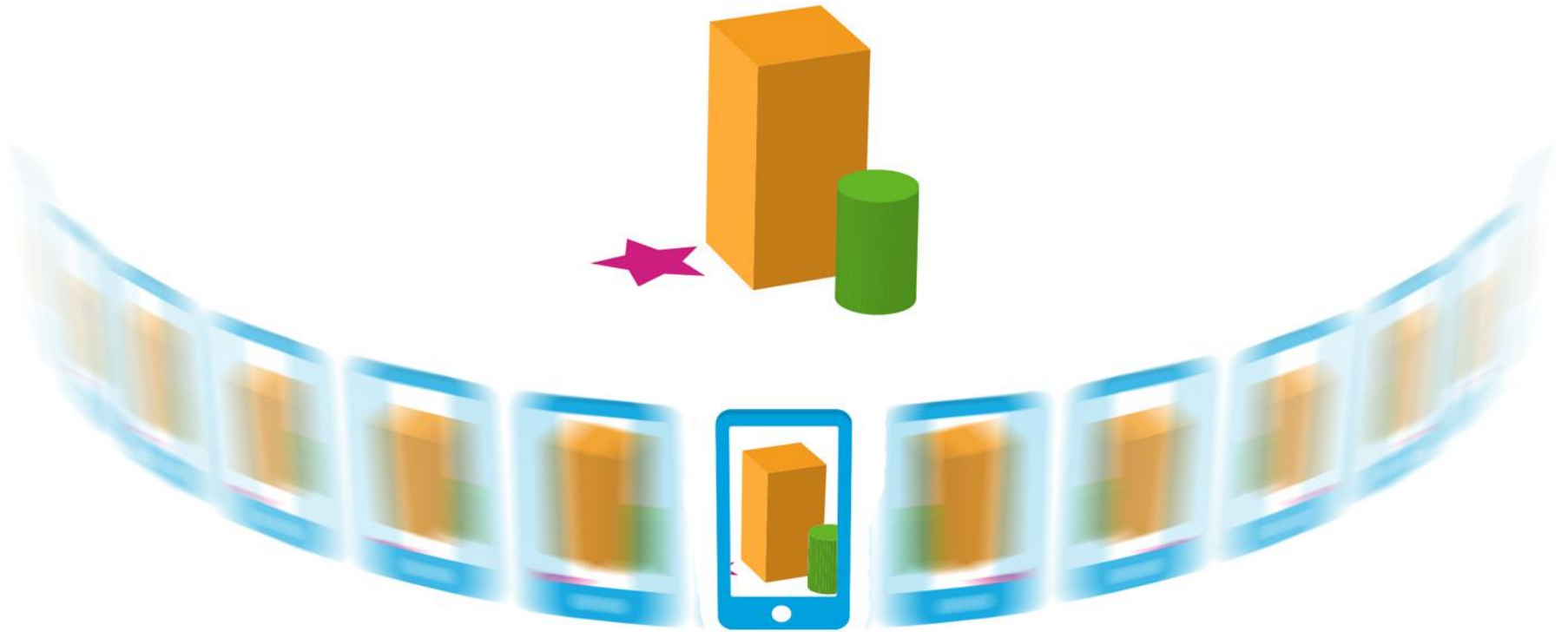


Multimedia

- **Multimedia**

- Portrait enhancements
- Image transformations
- HD audio recording and file tagging
- Gesture detection
- Camcorder settings read
- Multi Angle View (MAV) image

Multi Angle View (MAV)



- Camera and Imaging Products Association Multi-Picture Format
- <http://bit.ly/Zh5wCP>

Telephony

■ Multi-SIM

- Sending data, text, and PDU SMS messages
- Telephony services states
- Listen to telephony services
- Access subscriber information



Chipsets for Android

Features and Capabilities

MediaTek Chipset	API support									
	API Level	com.mediatek.build	com.mediatek.telephony	com.mediatek.hardware	com.mediatek.media	com.mediatek.camcorder	com.mediatek.hotknot	com.mediatek.effect	com.mediatek.imagetransform	com.mediatek.gesture
MT6577	2	✓	✓	✓	✓	✓	✓			
MT6589	2	✓	✓	✓	✓	✓	✓			
MT6582	2	✓	✓	✓	✓	✓	✓			
MT6592	2	✓	✓	✓	✓	✓	✓			
MT6595	3	✓	✓	✓	✓	✓	✓	✓	✓	✓

MediaTek SDK

- Full API set
- Emulator – preview with multi-SIM support
- Custom DDMS – multi-SMS + extras
- API Reference online
- Supported on Windows
 - Any Android development environment



What's Next

- Improved emulator with greater API support
- Reference phones
- API Level 4 – stay tuned!

MEDIA TEK

MediaTek and Open- Source



MediaTek and Open-Source

- Android
 - MediaTek: Forthcoming Android Linux kernel source by chipset – hosted on GitHub
 - Manufacturer: Various source code releases
 - Google Android One
- MediaTek LinkIt
 - Arduino porting layer – source in SDK
 - LinkIt ONE – Hardware Board Reference Design is open and free to use

MediaTek and Open-Source Android One

- Powered by MediaTek SoC (MT6582) with quad-core processor (four Cortex A7 cores)
- 3 handsets Launched in India, other countries coming...
- Android 4.4.4 KitKat Kernel Source Code:
<https://android.googlesource.com/kernel/mediatek/>
 - <https://android.googlesource.com/kernel/mediatek/+android-mediatek-sprout-3.4-kitkat-mr2>
 - <https://android.googlesource.com/kernel/mediatek/+android-4.4.4-r3>



Source Code Releases

	MediaTek Labs	Android One
Hosting	GitHub	Google
Compatibility	MediaTek Chipsets	Android One
Chip support	MT6582 for Android KK MT6595 for Android KK	MT6582 for Android KK
Status	Planning	Launched
Future Plan	<ul style="list-style-type: none"> • Release for kernel source “L” based on shipping kernel • Future chipset releases 	<ul style="list-style-type: none"> • Release for kernel source “L” based on shipping kernel

Customer Releases



Sony Xperia C (MT6589)

<http://developer.sonymobile.com/downloads/xperia-open-source-archives/open-source-archive-for-build-16-0-a-0-47/>



Lenovo A316i (MT6572)

<http://support.lenovo.com/il/en/downloads/ds00337>

Summary

- >30% global share of phones in 2014
- MediaTek understands device ecosystems
- Build your own Wearables & IoT devices with MediaTek LinkIt Development Platform
- MediaTek chips in 1/3 of the world's Android devices (~340 million) by 2014
- Try out MediaTek SDK for Android (preview release) – we want feedback
- Planning Linux kernel source code releases for MediaTek chipsets
- Join labs.mediatek.com

