MediaTek Audio Roadmap

2023-Q1

MediaTek Smart Audio Roadmap update 2023/Q1

~2022	2023				2024				2025			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

Premium

+ 30 % DMIPS up
+ HDMI 2.0 Tx/Rx eARC
+ Audio Out Channel (16->32ch)

MT8532

MT7921 11ax+BT5.2

MT7668 11ac + BT5.0

CA55x4 1.7Ghz
I2S in/out, 384KHz/(out: 24+8ch)
HDMI2.0 TX/RX EARC
More peripherals

MT85xx

Planning

Mainstream

MT8518S

MT7668 11ac + BT5.0

MT7921 11ax+BT5.2

CA53x4 1.5Ghz
I2S in/out, 384KHz/(out: 16ch)

MT8518A

MT7668 11ac + BT5.0

MT7921 11ax+BT5.2

*MT8518S + Hifi-4 *2 400Mhz*

CA53 Dual core 1.5Ghz
8ch I2S in & out

MT8508

Planning
Wireless Satellite Speaker

MT8518 **MT9051**

Rich Surround Speaker
CA53 x 4 1.5Ghz
GVA/C4A/Alexa

Platform Suggestions
- MT8532 for Premium WIFI ATMOS soundbar from '22 Products
- MT8518S for mainstream WIFI ATMOS soundbar from '21 Products
- MT8508 for BT ATMOS soundbar

MTK CONFIDENTIAL for Inno®

MT8532 vs MT8518

| Item	MT8518S	MT8532	Note
Process	28nm	12nm	More advanced process node
CPU	Quad CA53 1.5GHz	Quad CA55 1.7GHz	+30% DMIPS
Co-processor	CM4 300MHz	RV33 600MHz	RV33 Power efficiency is 36% better than CM4
DDR	X16/32 DDR3 / X32 LPDDR3 X16 DDR4/LPDDR4	X32 PCDDR3 X32 LPDDR4/X (3200 Mbps)	LPDDR4/X for higher density, data rate and low power than LPDDR4
Flash	SPI NOR/SLC NAND/SPI NAND/eMMC5.1	SPI NOR/SLC NAND/SPI NAND/eMMC5.1	
Audio In	8ch PDM in , 8ch I2S in 16ch TDM in , SPDIF in	8+8ch I2S in , 16ch TDM in SPDIF in x1 , DMIC 2ch x 4	Rich audio I/F
Audio Out	16ch I2S out 16ch TDM out , SPDIF out x1	24+8ch I2S out , 16ch TDM out , SPDIF out x1	
HDMI	X	HDMI2.0 RX/TX, eARC	Support HDMI TX eARC
Peripherals	PCIE gen2 1-lane port /USB2.0/SDIO3.0	USB3.0/PCIE gen2 1-lane Combo Gigabit Ethernet MAC* USB2.0 OTG / SDIO3.0	*Gigabit Ethernet MAC with RMII/RGMII interface

MT8508

Item	MT8508
Process	28nm
CPU	**Dual CA53 1.5GHz**
Co-processor	CM4 300MHz
DDR	X16/32 DDR3 / X32 LPDDR3 X16 DDR4/LPDDR4
Flash	SPI NOR/SLC NAND/SPI NAND/eMMC5.1
Audio In	8ch I2S in **8ch TDM in**, SPDIF in
Audio Out	**8ch I2S out** **8ch TDM out** , SPDIF out x1
HDMI	X
Peripherals	USB2.0

.) Sufficient performance for ATMOS and other differentiation features.
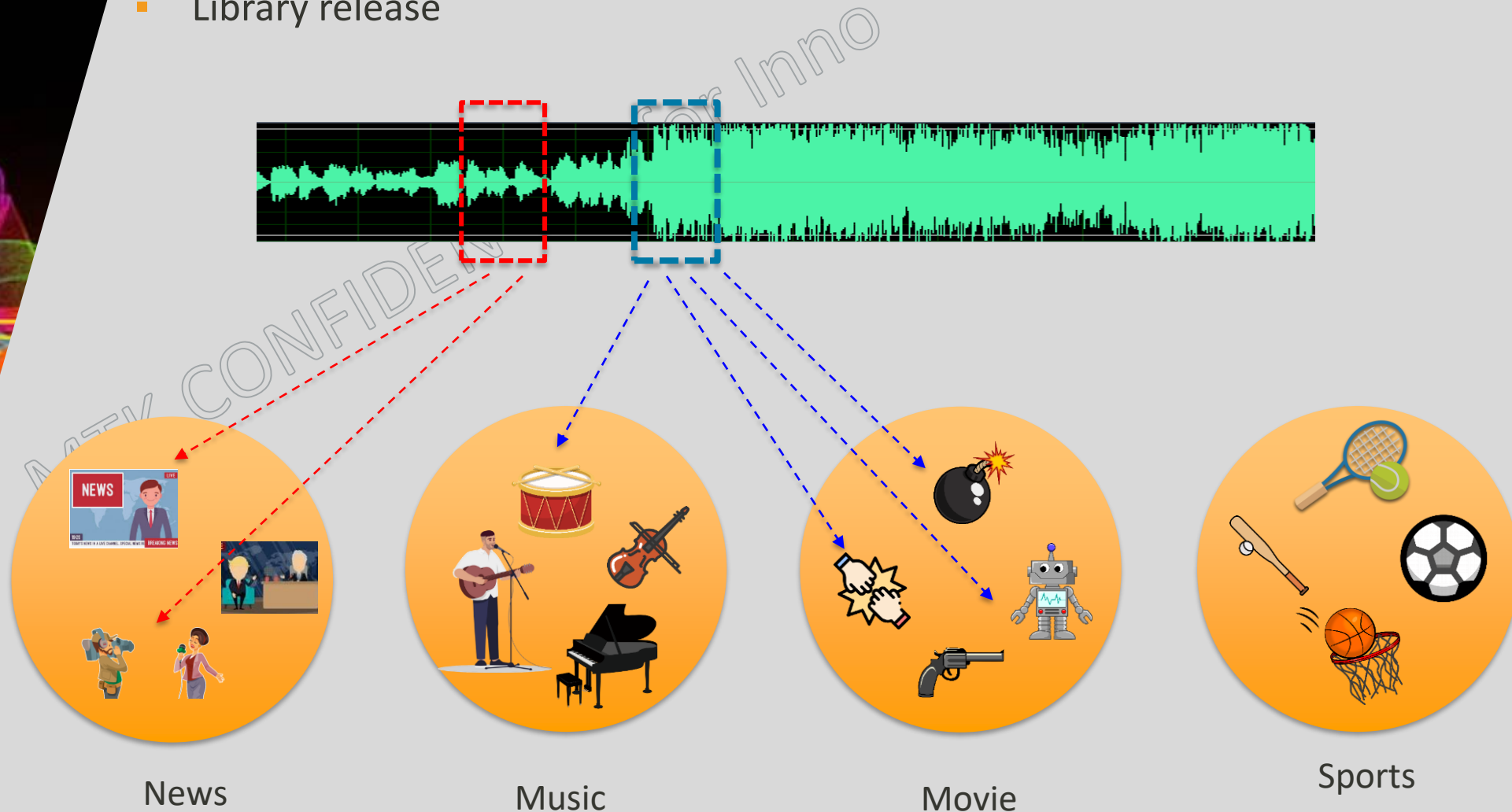
2.) 25% less power consumption than MT8518.
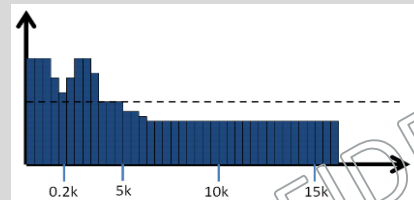- Lower thermal solution cost
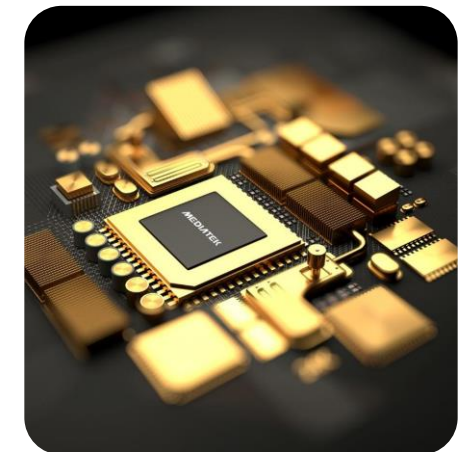
Subject to MTK's change

MTK CONFIDENTIAL for Inno

MTK AI-AQ : Distinguish Audio Scene by AI

- Below graph illustrates how we map audio scene from the original sound track
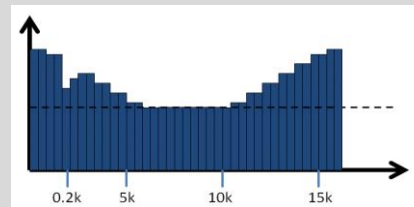- Library release

News   Music   Movie   Sports

MTK AI AQ Sound modes

News
- Specially enhance human voice
- No spatial effect

Movies
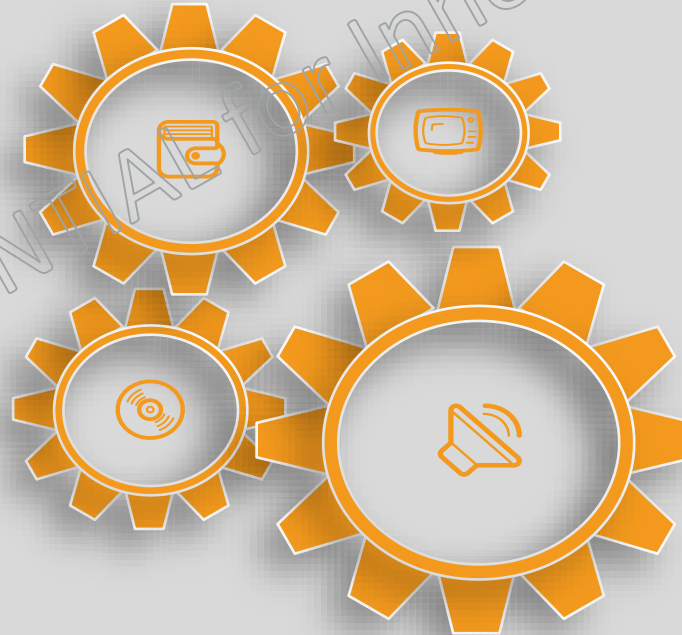- Emphasize low frequency effect
- High spatial effect

Music
- Minor enhance human voice
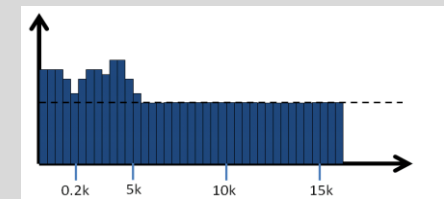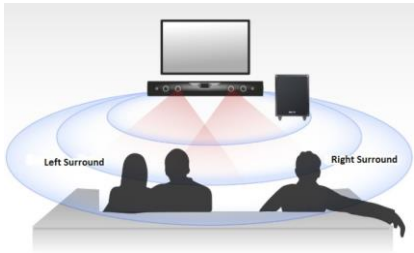- Minor enhance low frequency effect
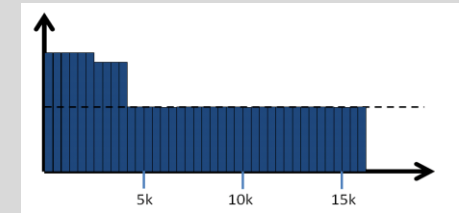
Sports
- Enhance human voice
- Minor spatial effect

Trends to Bring BEST Audio Experience

Horizontal

Immersive

Multi-ch AEC

Best Listening Experience

More Friendly Interaction

Satellite Speaker

Google Assistant amazon alexa

Beam Gen2

Best Way to Enjoy High Quality Audio

More Efficient Connection

WiFi 6

LE Audio

Low Latency application
-- Multi Channel
-- Satellite speaker

MEDIATEK

WiFi 6 Transition Trend

Annual unit shipment by standard (%)

Legend: 11ax, 11ac, 11n, 11b/g
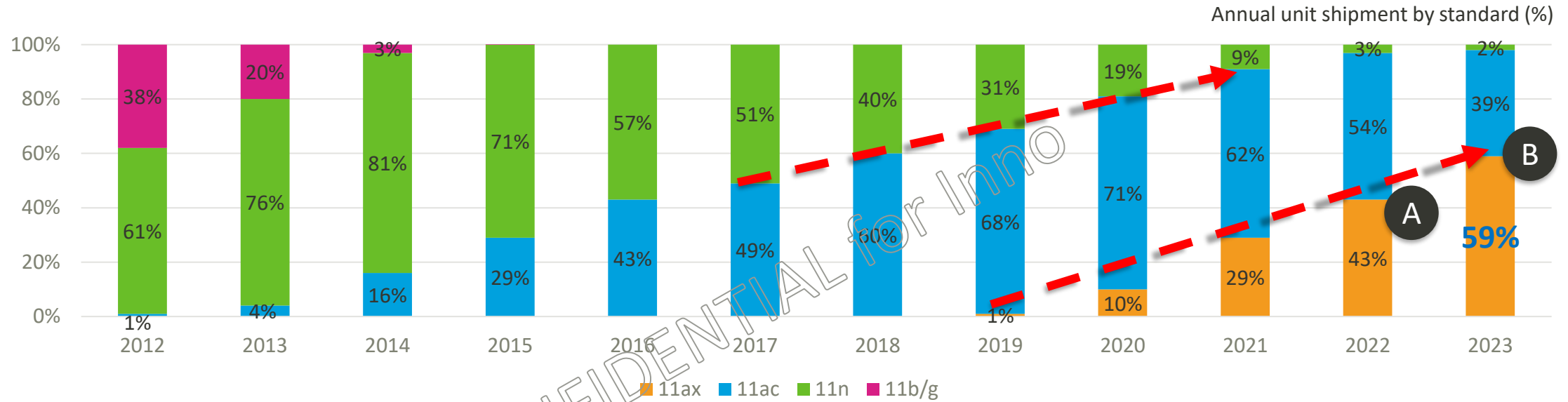
A ➤ WiFi5 AP vs WiFi6 AP shipment in 2022 is already 60% vs **40%**

B ➤ WiFi6 penetrate rate growth rapidly to **59%** in 2023

Suggest to apply WiFi6 from 2023

Router   NBs   Mobiles   TVs   Home/Voice Device   Gaming

SAMSUNG   SONY   TCL   LG   SHARP   Skyworth   Hisense

Dolby ATMOS

Dolby ATMOS - 2022

WIFI and ATMOS Demand Grows in Soundbar
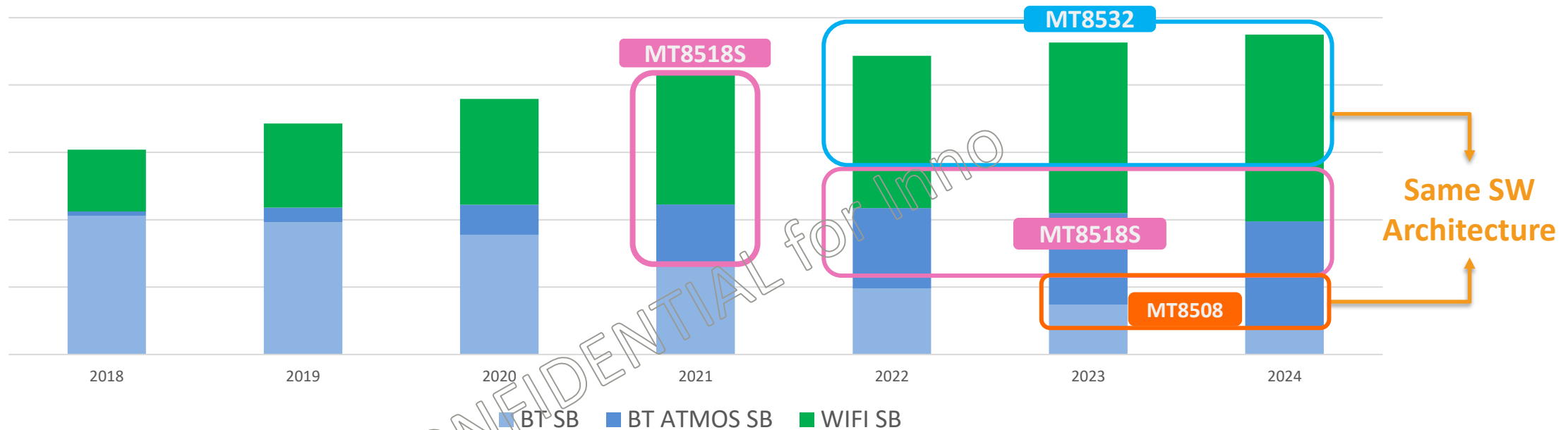
- **Soundbar market trend**
  - Soundbar Qty YoY 10-15% growth continuously
  - Voice Assistant + Streaming trigger WIFI SB segmentation grows
  - Immersive sound(ATMOS/DTS-X) penetrate BT Soundbar segmentation

- **Platform Suggestions**
  - **MT8518** for both WIFI Speaker and BT ATMOS Soundbar
  - **MT8532** with higher performance for WIFI segmentation from '22
  - **MT8508** for BT only and cost-efficient BT ATMOS soundbar from '23 H2.
  - **Same Yocto Linux SW leverage from MT8508 to MT8532 as long-term platform for both speaker and soundbar.**

3/30/2023

Why MediaTek?

MediaTek Platforms

enabling an everywhere connected experience

Gaming	Automobile	Connectivity	Smartphone	Tablet
Digital TV	Wearable	Audio	AR / VR	DC / Cloud Switch

Bring you more benefit

Richer Software SDK

- Complete turnkey : Support Alexa / Google Voice Assistant / GC4A / Airplay2 / Amazon Music

Compatible SDK

- Compatible SDK : 8532 / 8518 / 85xx use the same SW SDK for customer easily migrate to save resource .

Power AQ

- Power AQ : Powerful Acoustic tuning tools with GUI and real time tuning.
- Easy customize the post-process
- Replace the external hardware DSP to lower the total cost for customers

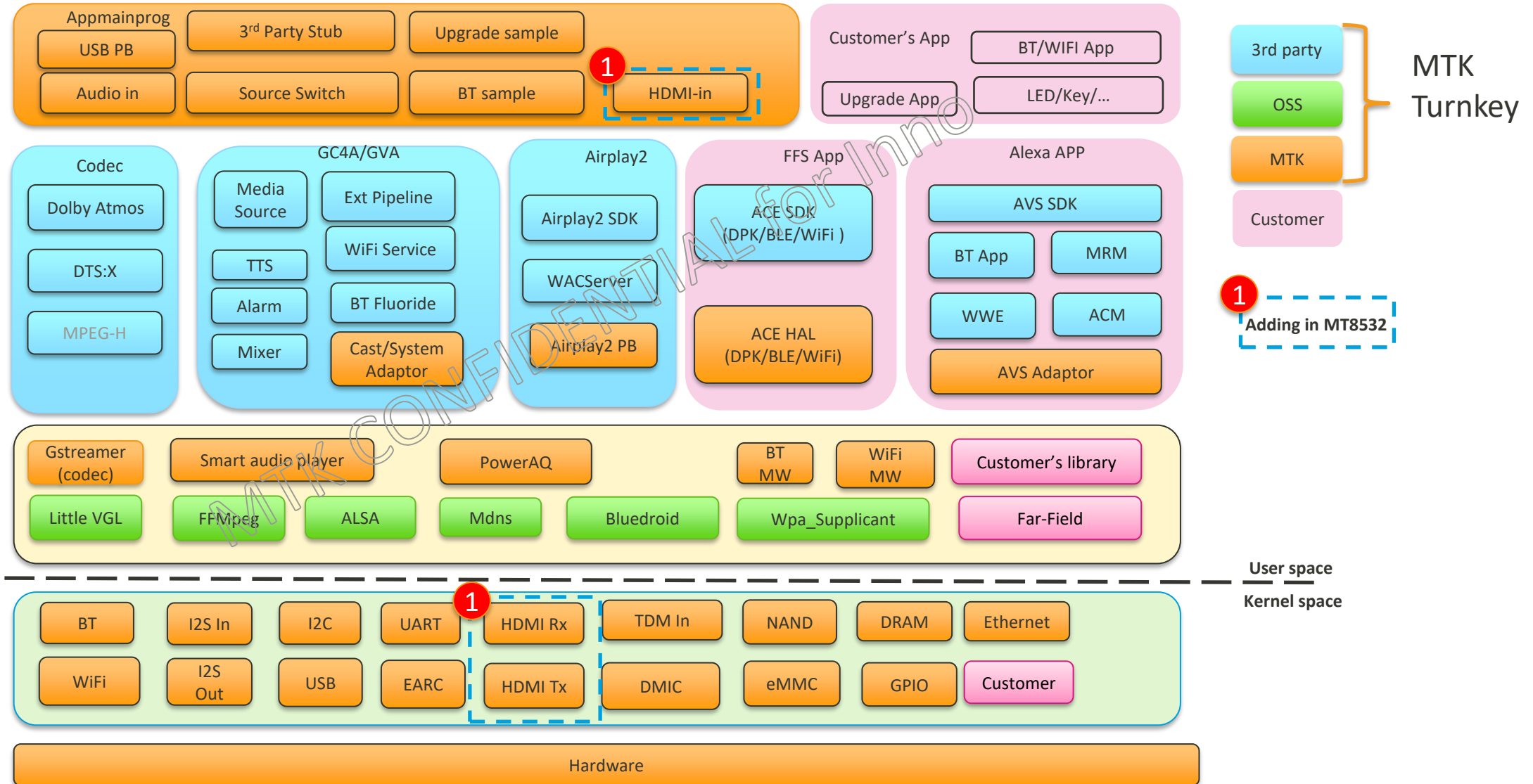**Immersive Sound**

- Support Dolby ATMOS / DTS-X

Better Streaming Quality

- Integrate with external Wifi 6 & BLE Audio
- Wifi 6 : Long range and low latency than Wifi 5
- BLE : Better audio quality ($SBC : 345Kbps \sim= LC3 :160Kbps$)

Multi-channel AEC

- 8532: Support up to 24ch internal loopback
- Simplify AEC circuit into SoC

MT8532/18/XX - SW block diagram

Appmainprog
- USB PB
- 3rd Party Stub
- Upgrade sample
- Audio in
- Source Switch
- BT sample
- ① HDMI-in

Customer's App
- Upgrade App
- BT/WIFI App
- LED/Key/…

Codec
- Dolby Atmos
- DTS:X
- MPEG-H

GC4A/GVA
- Media Source
- Ext Pipeline
- TTS
- WiFi Service
- Alarm
- BT Fluoride
- Mixer
- Cast/System Adaptor

Airplay2
- Airplay2 SDK
- WACServer
- Airplay2 PB

FFS App
- ACE SDK (DPK/BLE/WiFi)
- ACE HAL (DPK/BLE/WiFi)

Alexa APP
- AVS SDK
- BT App
- MRM
- WWE
- ACM
- AVS Adaptor

Legend:
- 3rd party
- OSS
- MTK
- Customer

MTK Turnkey

① Adding in MT8532

- Gstreamer (codec)
- Smart audio player
- PowerAQ
- BT MW
- WiFi MW
- Customer's library
- Little VGL
- FFMpeg
- ALSA
- Mdns
- Bluedroid
- Wpa_Supplicant
- Far-Field

User space
Kernel space

- BT
- I2S In
- I2C
- UART
- ① HDMI Rx
- TDM In
- NAND
- DRAM
- Ethernet
- WiFi
- I2S Out
- USB
- EARC
- HDMI Tx
- DMIC
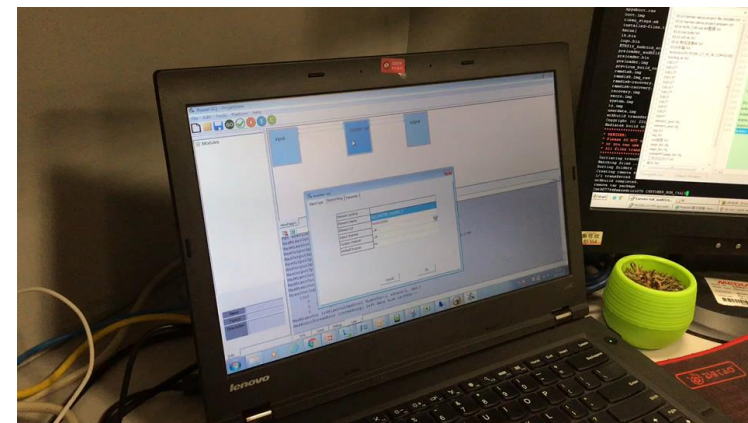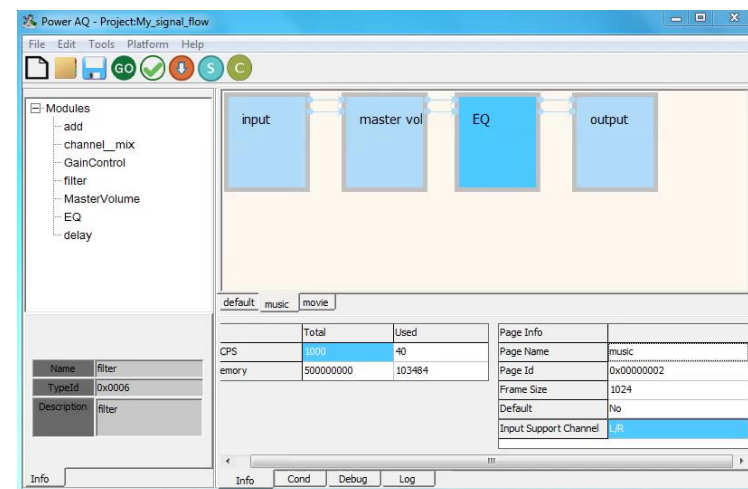- eMMC
- GPIO
- Customer

Hardware

Power AQ - Powerful Audio Quality

MediaTek
Software DSP

- Biquad double precision filter
- Multi-band DRC
- Downmix/remapping
- Volume control
- …etc.

Improve Efficiency

- **Reduce tuning time**
  - Runtime AQ tuning with friendly GUI

- **Cost efficiency**
  - Replace external DSP HW.

MediaTek Audio Software Roadmap

Ready Solution

MTK Audio SDK supported feature

Streaming
- Chromecast for Audio v1.56
- Bluetooth LE Audio — BMR/UMR BMS/UMS
- Airplay2

Audio Effect
- DOLBY ATMOS — ATMOS v1.8
- IMAX ENHANCED By IMAX dts — DTS-X IMAX

VA
- Google Assistant
- alexa

IC	2023						
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**July**
MT8532	1/M UMR (Bluetooth LE Audio)	2/B AVS Music HD (music)		4/M Cast lite		6/M AVS 3.0 + Multiroom (music)	
MT8518S	1/B UMS/BMS (Bluetooth LE Audio)	1/E AVS Music HD (music) / 1/E UMR (Bluetooth LE Audio)		3/E Cast lite			7/M AVS 3.0 + Multiroom (music)

Thank You