New VESA Features and Application

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Multimedia Group
2017.6.22

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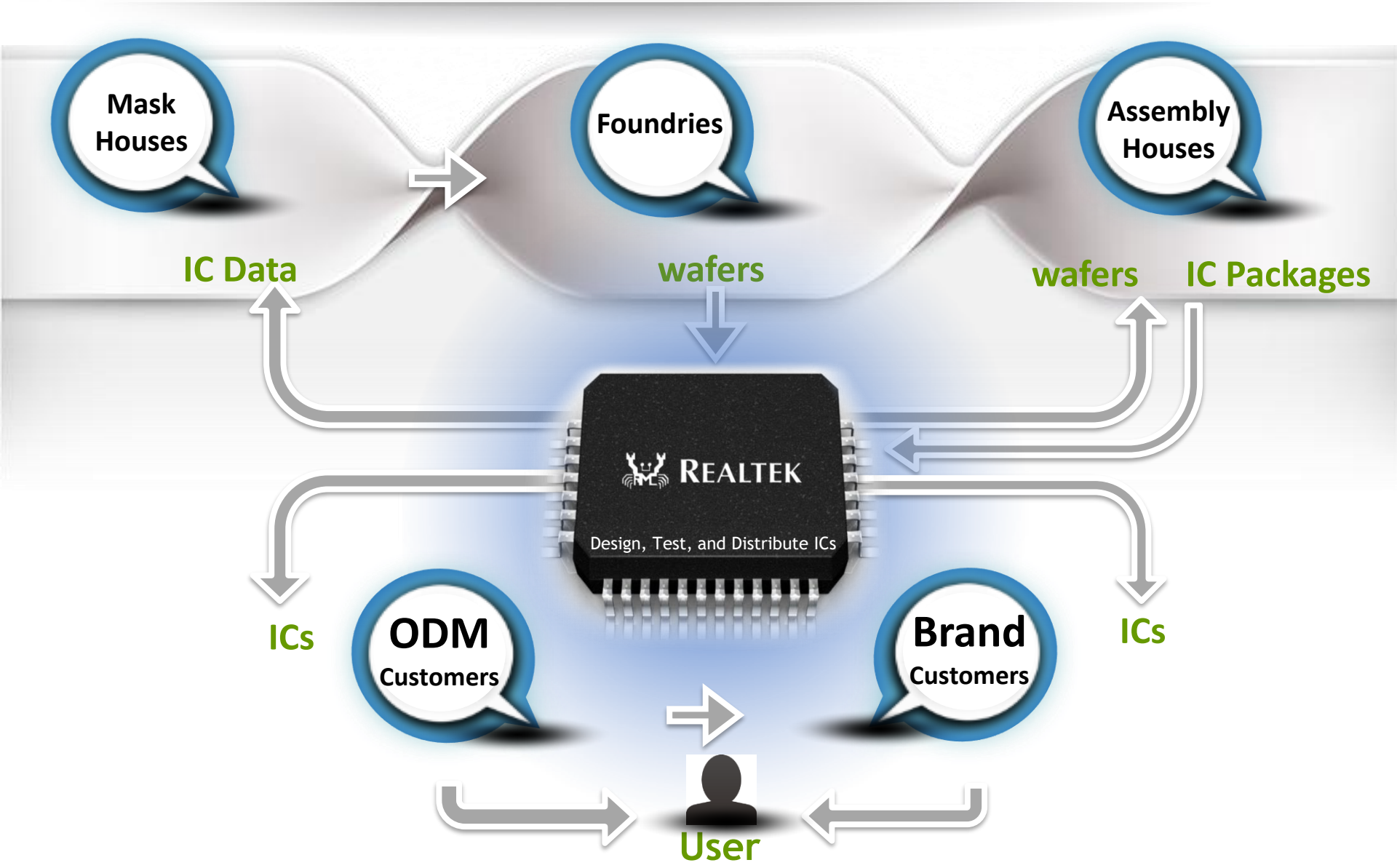
Our Role in the Industry



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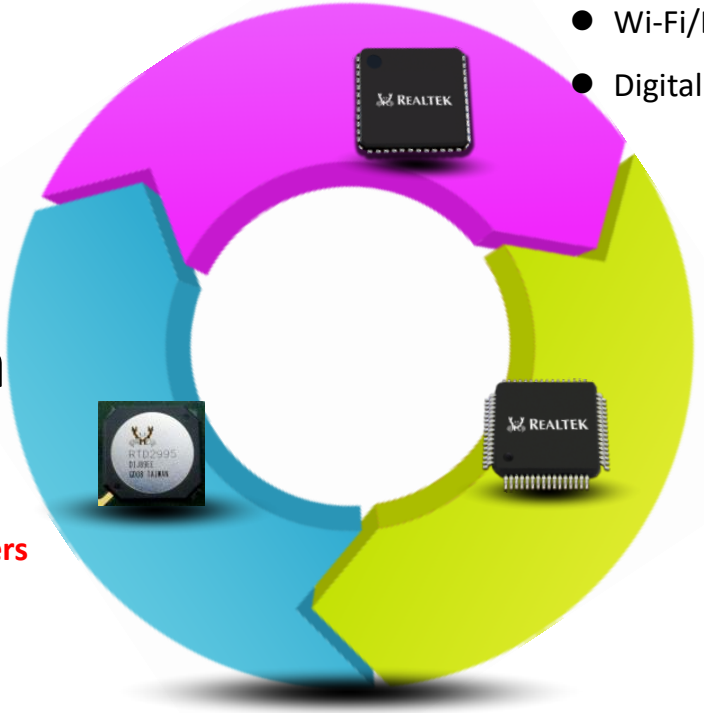
Realtek Business Groups & Product Lines

Communications Network ICs

- NIC: NIC PHY, Automotive Ethernet
- Switch Controllers/Gateway Controllers
- Broadband: ADSL2+/VDSL/G.fast, XPON SoC
- Wi-Fi/Bluetooth/IoT Solution
- Digital Home Center: OTT, NAS, STB



Multimedia ICs

- **LCD Monitor Controllers**
- **Translators**
- LCD TV Controllers

Computer Peripheral ICs

- **USB Type-C Controllers**
- **USB HUB Controllers**
- PC High Definition Audio Codecs
- Class-D Amplifier
- Consumer Audio Codecs
- Card Reader Controllers
- Web Camera Controllers
- SSD Controllers

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Exciting New Features

VESA Spec Evolution

Higher Speed

- HBR3
  - 8.1GHz/ Lane
  - 5K60 one cable

More Capacity

- DSC 1.2a
  - Visually Lossless
  - 3:1 compression
  - 8K60 one cable

Better Connectivity

- DP Alt-Mode over USB Type-C

Better Performance

- HDR Framework
- FEC
- MST Policy
- New Audio Transport

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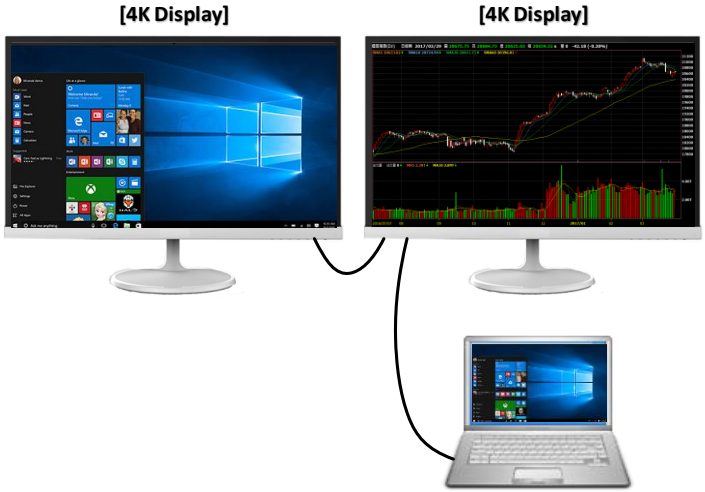
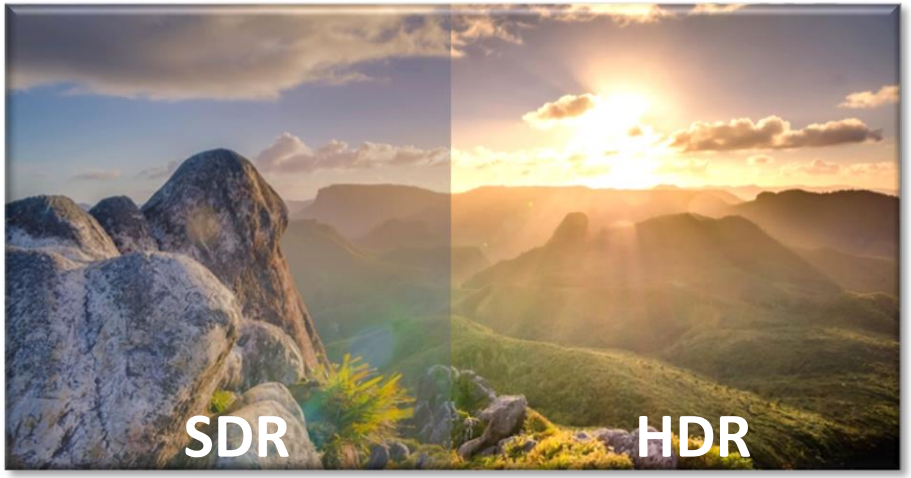
DP Version Evolution

DP 1.1	DP 1.2	DP 1.3	DP 1.4
• RBR – 1.62G • HBR – 2.7G **FHD 144Hz Gaming**	• RBR – 1.62G • HBR – 2.7G • HBR2 – 5.4G **4K 60Hz Deep Color**	• RBR – 1.62G • HBR – 2.7G • HBR2 – 5.4G • HBR3 – 8.1G **4K 120Hz Gaming** **4K 60Hz Multi-Stream**	• RBR – 1.62G • HBR – 2.7G • HBR2 – 5.4G • HBR3 – 8.1G • HDR • DSC **8K 60Hz HDR Video**





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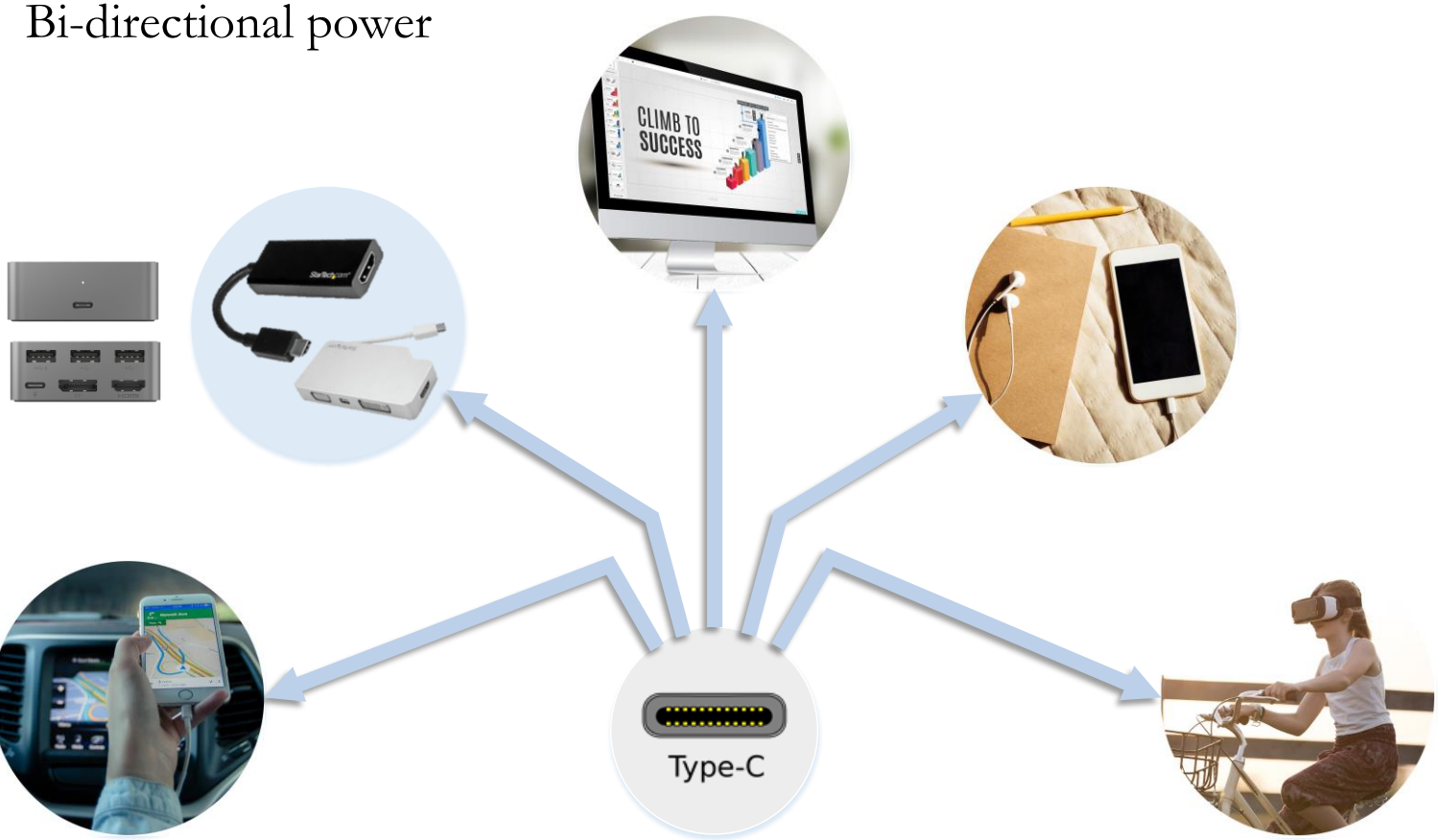
DP Alt-Mode Use Cases

- **Merits of DP over USB-C**
  - Audio/Video
  - Full duplex data transmission
  - Bi-directional power

A12	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1
GND	RX2+	RX2-	VBUS	SBU1	D-	D+	CC	VBUS	TX1-	TX1+	GND
GND	TX2+	TX2-	VBUS	VCONN			SBU2	VBUS	RX1-	RX1+	GND
B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12

A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
GND	TX1+	TX1-	VBUS	CC1	D+	D-	SBU1	VBUS	RX2-	RX2+	GND
GND	RX1+	RX1-	VBUS	SBU2	D-	D+	CC2	VBUS	TX2-	TX2+	GND
B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1



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Why DP Alt-Mode

- Most commonly adopted alt-mode
- Scalable in nature
- Guaranteed compatibility

HDMI 1.4

Pros:
- Widely adopted

Cons:
- 4K30
- No Data
- Market Confusion

MHL

Pros:
- Existing MHL devices

Cons:
- Compatibility
- Low adoption rate

TBT3

Pros:
- 40Gbps data
- DP Alt-mode
- Graphic dock

Cons:
- Expensive

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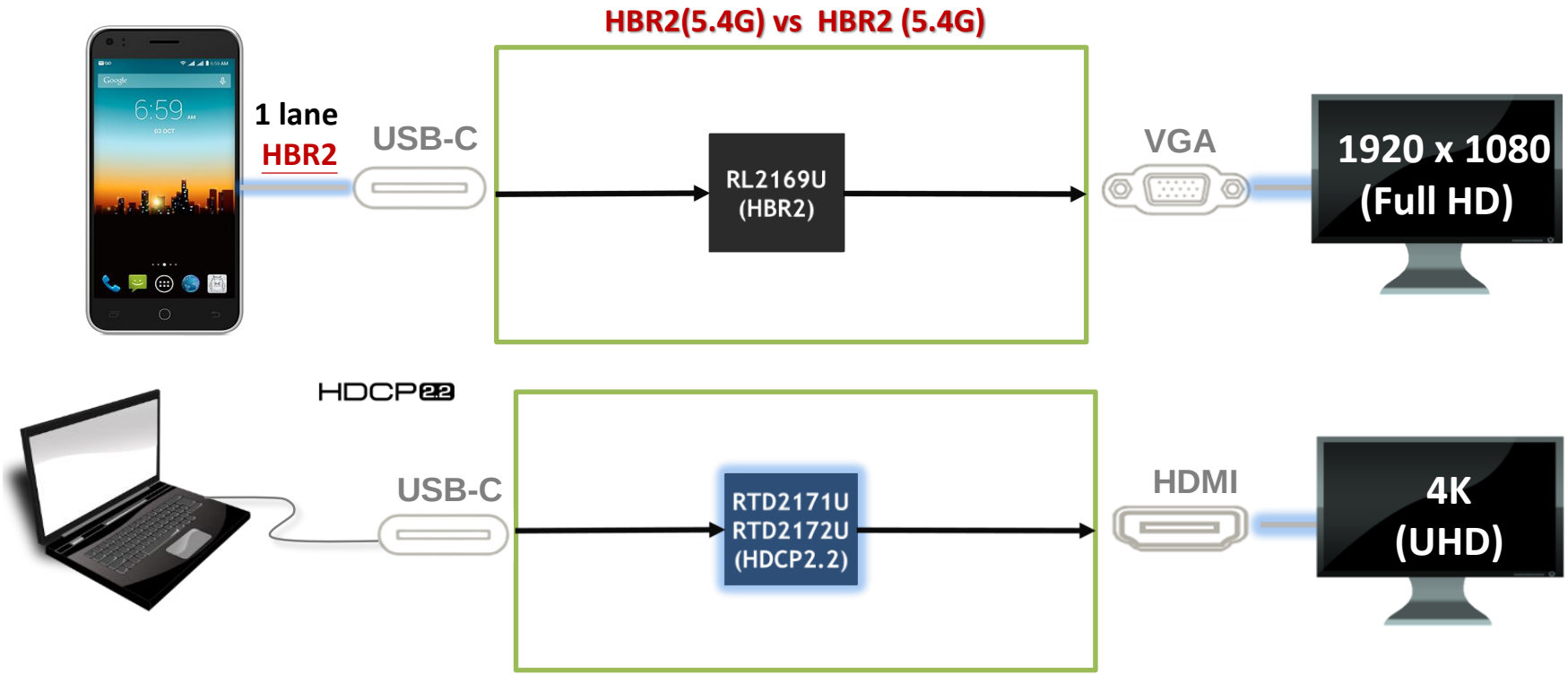
Realtek Position

- Worldwide 1st certified HBR3 sink
- HBR3 reference sink
- DP alt-mode protocol converter



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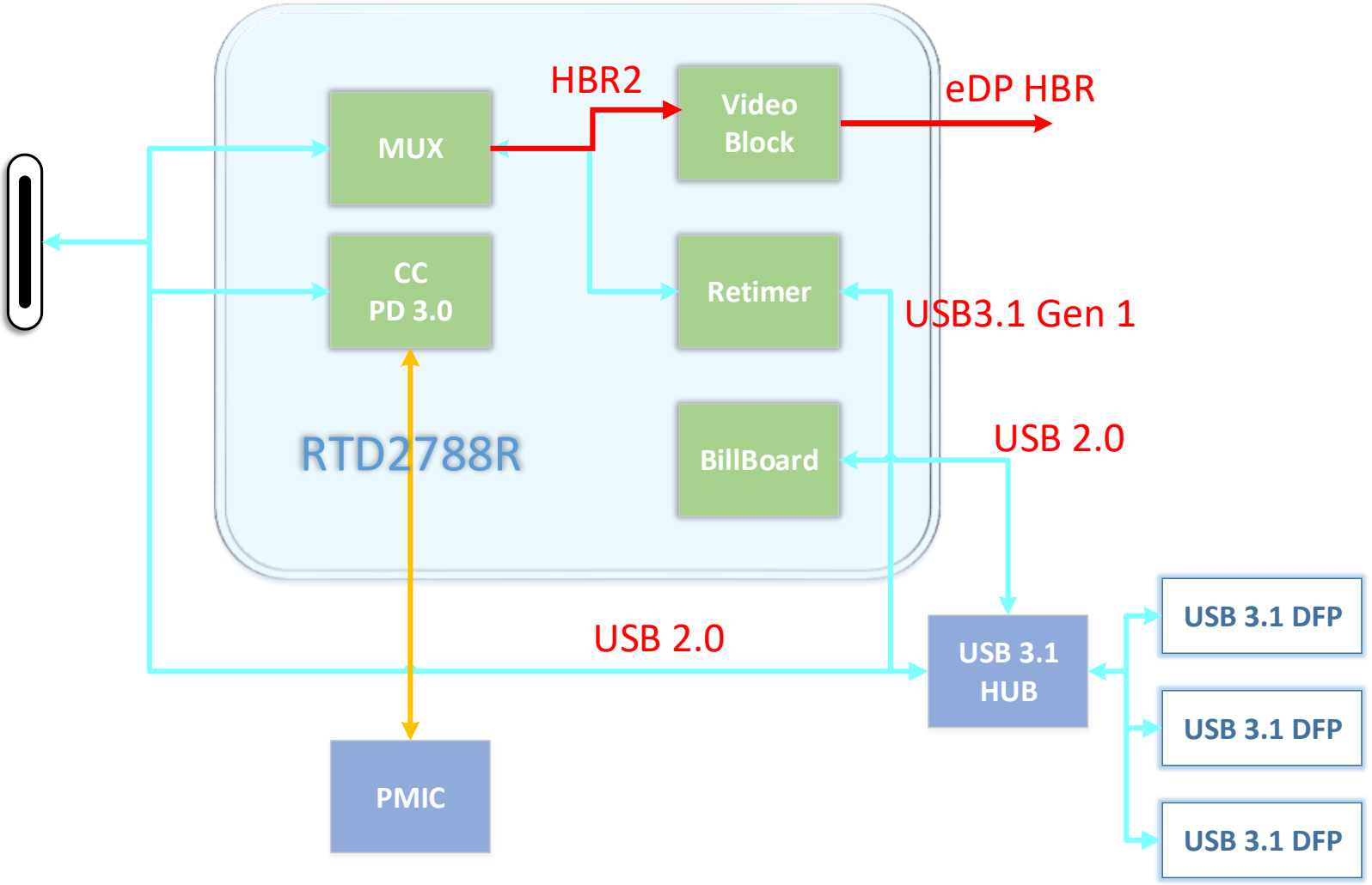
DP alt-mode scalar



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