

# New VESA Features and Application



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# Role in Supply Chain





# Connected World

## More connected, Smarter



**Infrastructure**  
Switch, Gateway,  
Broadband



**Personal**  
PC, BT  
Wi-Fi



**Smart City**  
IoT Solution



**Connected Home**  
TV, Monitor, OTT, IoT,  
Surveillance, Voice Assist



**Connected Car**  
Automotive Ethernet



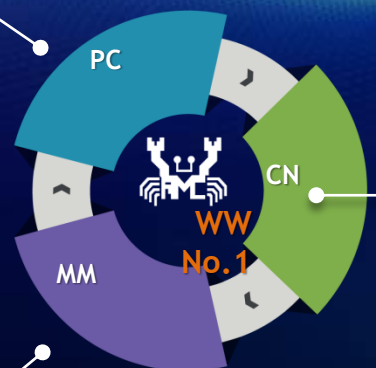
# Realtek Solutions

## Computer Peripheral ICs

- PC High Definition Audio Codecs
- Consumer Audio Codecs
- Card Reader Controllers
- Webcam Controllers
- USB Type-C Controllers

## Multimedia ICs

- LCD Monitor Controllers
- LCD TV Controllers
- Translators



## Communications Network ICs

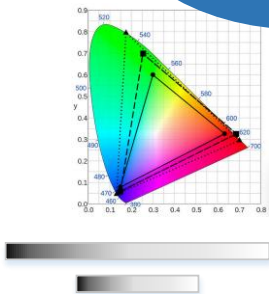
- Ethernet NIC / PHY
- Automotive Ethernet Solutions
- Switch Controllers/Gateway Controllers
- Broadband: ADSL2+ /VDSL/G.fast, xPON
- Wireless: Wi-Fi/ BT, GPS, IoT
- Digital Home Center: STB/OTT

# Efforts in Display Technology

Better Quality



Better Pixel



High Dynamic Range

Wide Color Gamut

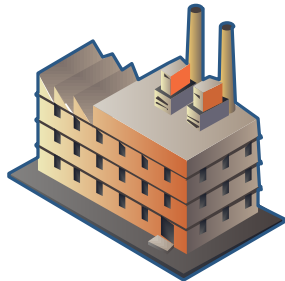
Higher Resolution

Higher Refresh Rate

More Color Depth

# What VESA Has Done

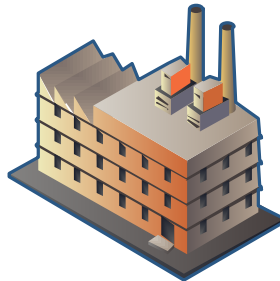
## Display Stream Compression



### VDC-M

- 4:1 Compression
- Visually Lossless
- Small Display
- MIPI DSI Display

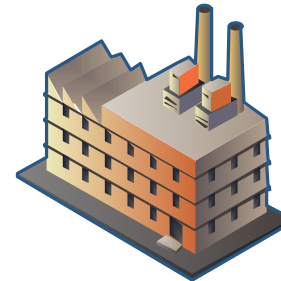
## Display Performance Metrics



### DisplayHDR

- 3 Performance Levels
- 400: Entry
- 600: Enthusiast
- 1000: Professional

## Display Port



### DP 1.4a

- Improve Robustness
- High Speed Cable

### DP Next Gen

- 2X+ Current Speed
- Less Overhead



## □ Why a new standard

- Many HDR displays but no guaranteed quality
- UHD Premium only for high-end market



## □ Difference from other standard

- **Multi-tier performance level** for different market
- **Open standard** which everyone can download from website
  - ✓ <https://displayhdr.org/>
- Focus on **PC Display**
  - ✓ Promoted by major players in PC industry
- **Self-testable** toolkit
  - ✓ Test tool can be downloaded from Microsoft store
  - ✓ Simplified test setup
  - ✓ Let public reviewers examine the quality of products

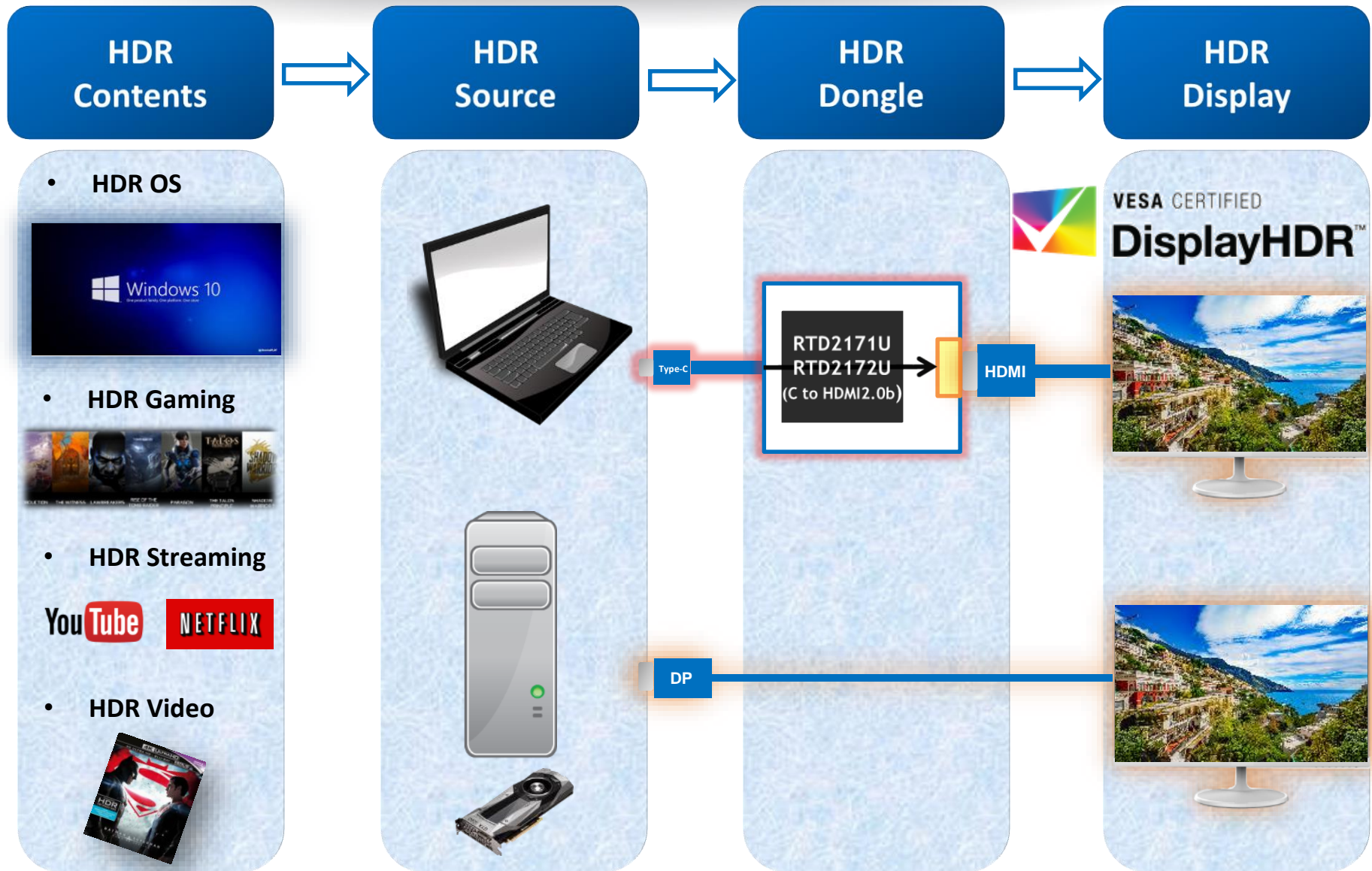
# DisplayHDR Tiers

Tiers	Brightness	Darkness	Colorfulness	Bit Depth	Response
SDR	250 - 300	0.5	95% sRGB	8-bit processing	N/A
DisplayHDR 400	400	0.1 min	95% BT.709	10-bit processing	8 Frames Black to white
DisplayHDR 600	600	0.1	99% BT.709 90% DCI-P3		
DisplayHDR 1000	1000	0.05 min	99% BT.709 90% DCI-P3		

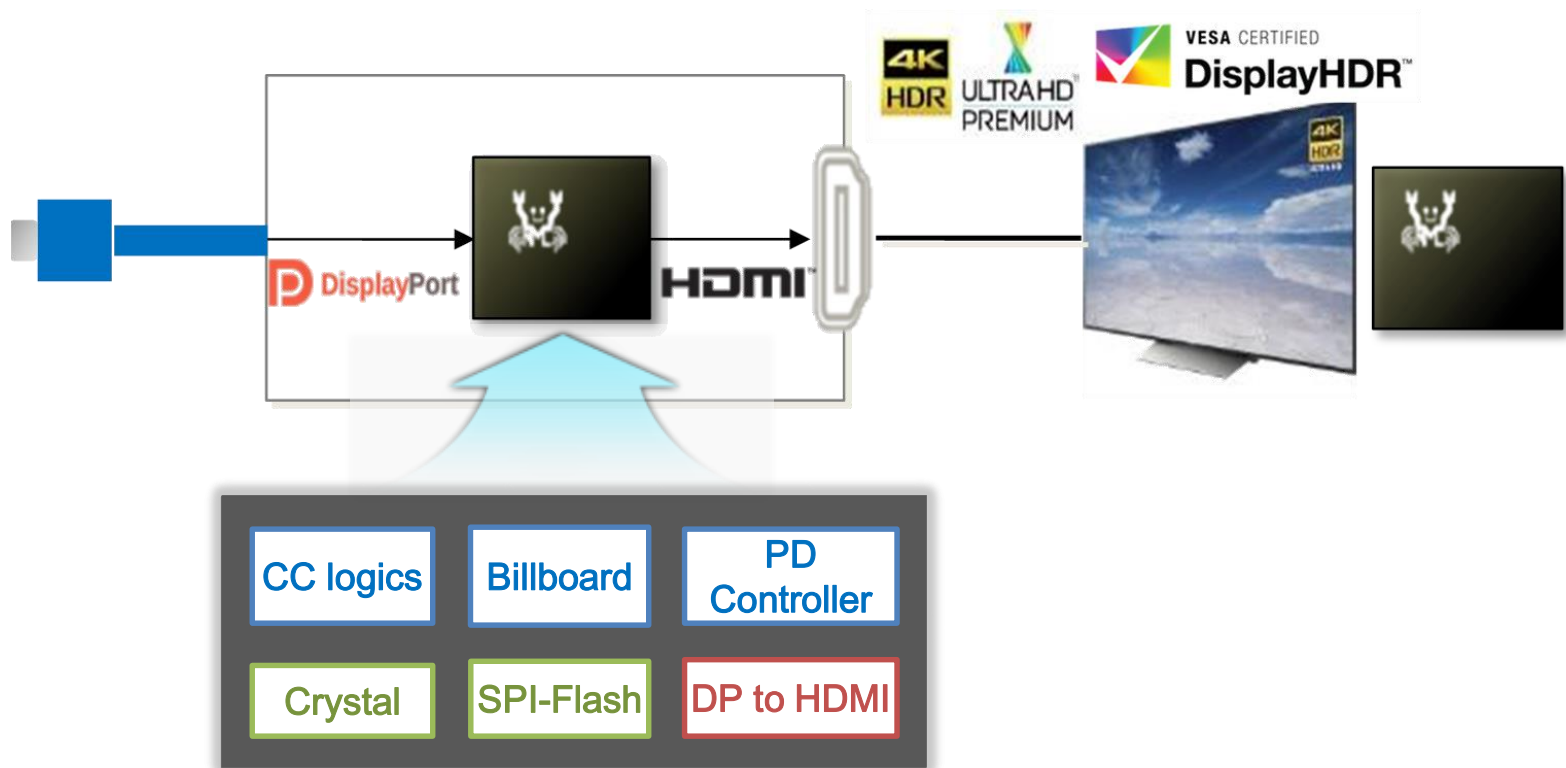
- ☆ Significant improvement from typical SDR displays
- ☆ Cover different needs. From basic to content creation.



# HDR Ecosystem



- ❑ One of the promoters to develop DisplayHDR spec
- ❑ Worldwide 1<sup>st</sup> **DP to HDMI 2.0 HDR adapter**
- ❑ Worldwide 1<sup>st</sup> **HDR Scaler**
- ❑ Worldwide 1<sup>st</sup> **C to HDMI single chip adapter with HDR**





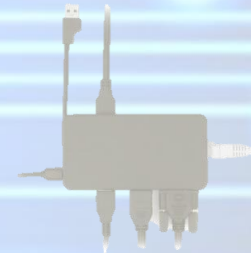
## DP Converter

- ✓ DP to HDMI



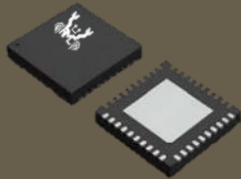
## USB-C Single Chip

- ✓ USB-C to HDMI 4K@30p
- ✓ USB-C to HDMI 4K@60p

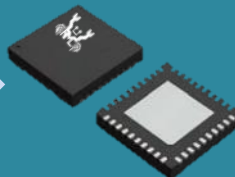


## DP Multimedia HUB

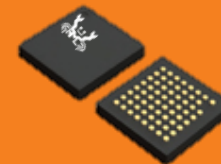
- ✓ 1 to 3 SST HUB
- ✓ 1 to 4 MST HUB



QFN



QFN



BGA



# Scaler Product Line

- All Realtek HDR solutions support **HDR on both HDMI and DP.**
- All Realtek HDR solutions support **HDCP 2.2 on both HDMI and DP**
- Several solutions already DisplayHDR Certified

## 4K

### RTD2795UT

- ◆ DP1.4 HBR2
- ◆ HDMI 2.0b
- ◆ Emb. DRAM
- ◆ LQFP216

◆ 706b31e

◆ 51101 D1K411

### RTD2797UPM

- ◆ DP1.4 HBR2
- ◆ HDMI 2.0b
- ◆ CEA HDR
- ◆ BT2020
- ◆ Uniformity
- ◆ DP MST
- ◆ PIP/PBP/4P
- ◆ BGA

- ◆ BGA
- ◆ 51101 B1B141B
- ◆ D1 M21
- ◆ 1111111111
- ◆ B11010

### RTD2797KP

- ◆ **8 Regions**
- ◆ DP1.4 HBR2
- ◆ HDMI 2.0b
- ◆ CEA HDR
- ◆ BT2020
- ◆ Uniformity
- ◆ PIP/PBP/4P
- ◆ BGA

- ◆ BGA
- ◆ 51101 B1B141B
- ◆ 1111111111
- ◆ B11010
- ◆ CEA HDR

Economic

Premium

--End--

