

**Lead the LED Industry to the Metaverse:
Frontier Applications and Technical Challenges**

Cloud Wu

LED Display & Backlight IC Product Manager, Macroblock

DRIVE

A

WHOLE

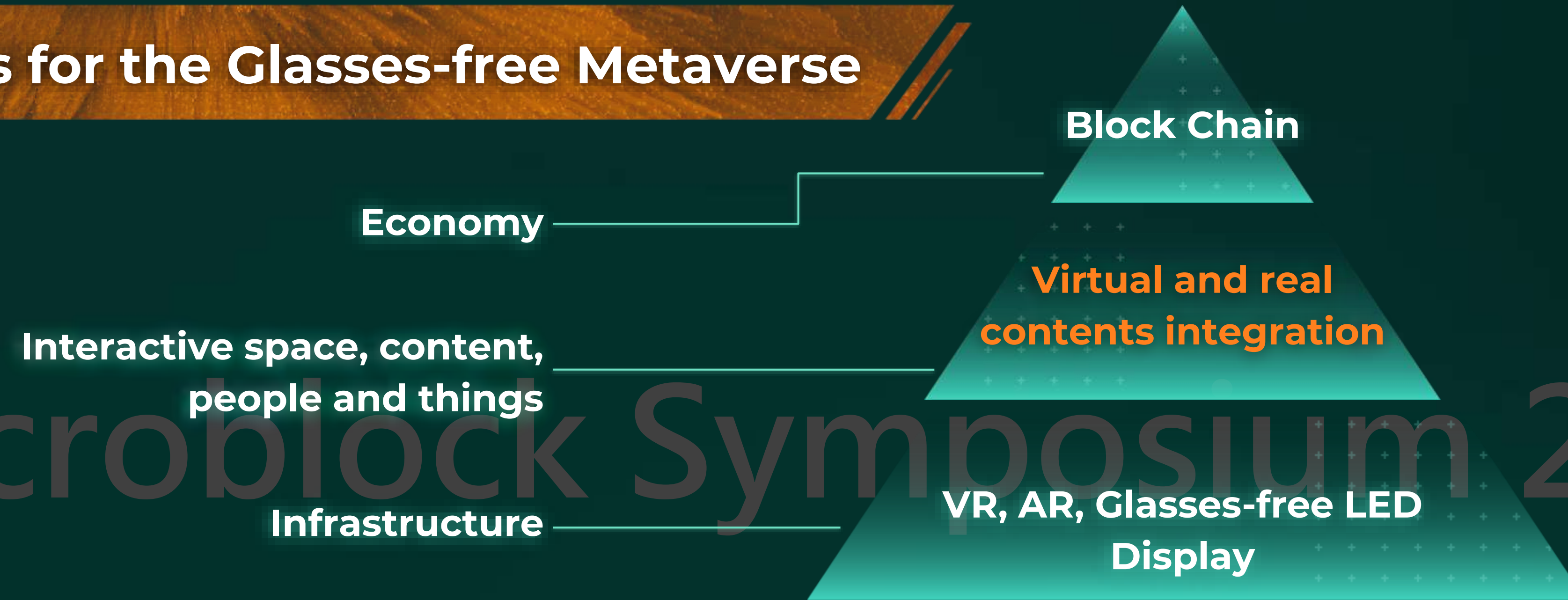
NEW

WORLD

METaverse

Macroblock Symposium 2022

LED Displays for the Glasses-free Metaverse



Macroblock Symposium 2022

**Metaverse
New Applications**

**Simulation Training,
Theater**

5G x Drone x Co-starring

→ Public Works → National Park Tour Guide

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4K / 8K resolution
High frame rate HDR video source

Simulation Training

P1.25- P 1.8

16-bit Grayscale

>1,000nits

Low-grayscale performance

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6K / 12K resolution
High frame rate HDR video source

Theater

P2.7-P4.0
14-bit~16-bit grayscale
High scans design

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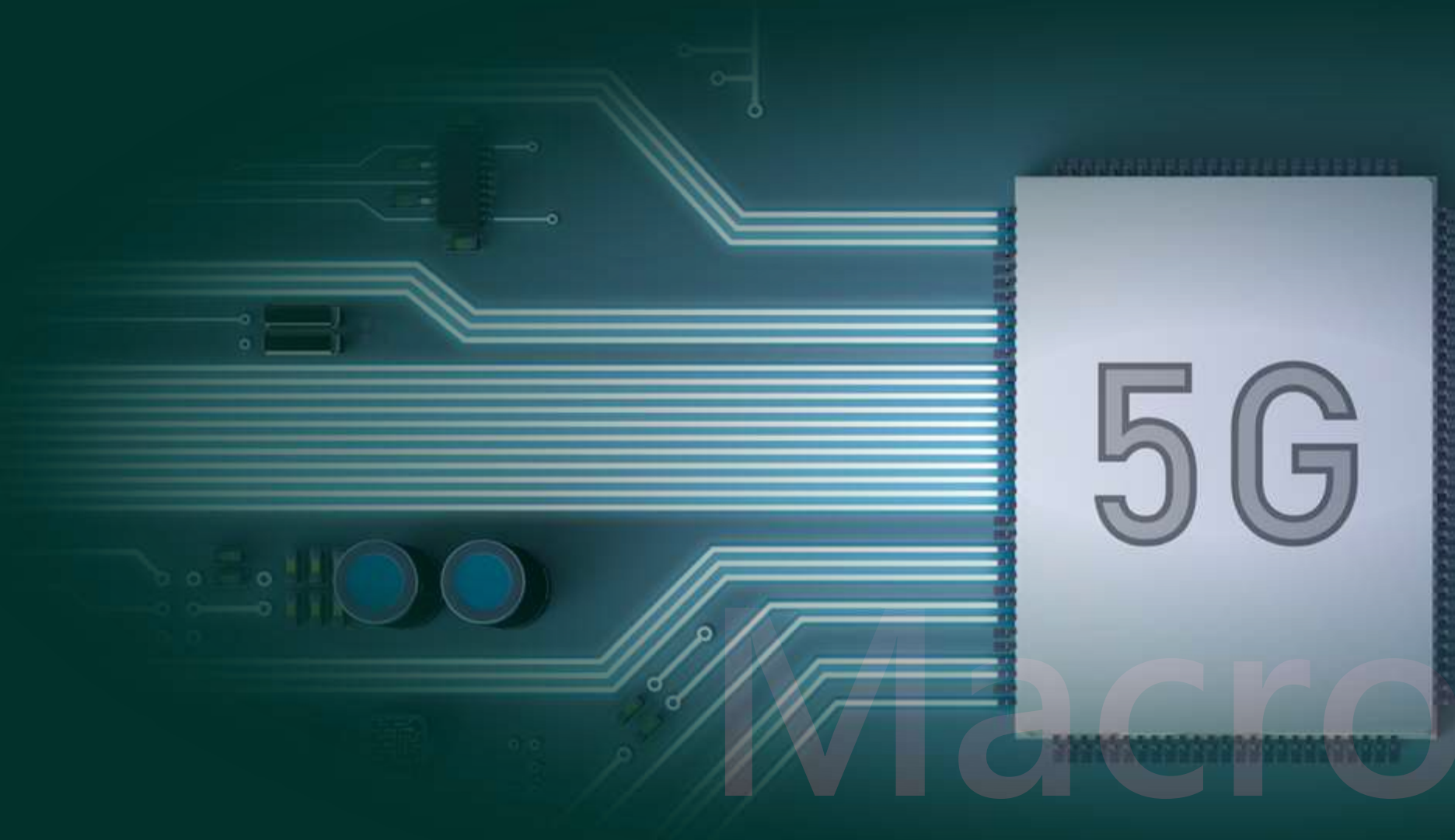




High Bandwidth
Low Latency

v.s. **LED
Display**

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+ **LED Display** **→** **Co-starring**

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5G × Drone
Co-starring

Macr

Asia



Europe



Drone
photography

Transfer images to
the LED display



5G cell site

New Application, New Challenge

✦ **LED Driver Technology**

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Challenge 1 High Frame Rate HDR Video Source



Double video data output

120fps, 240fps Video Source Supported

16-bit | 7680Hz @240fps

16-bit | 3840Hz @120fps

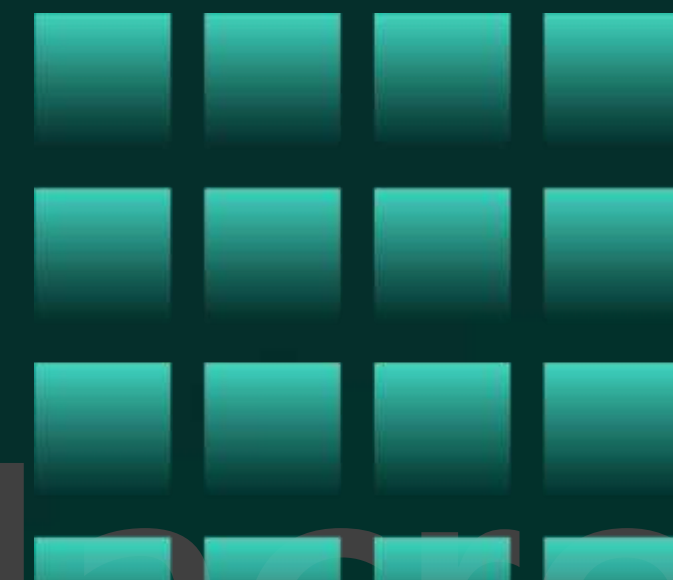
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PWM Enhancement

PWM Enhancement+

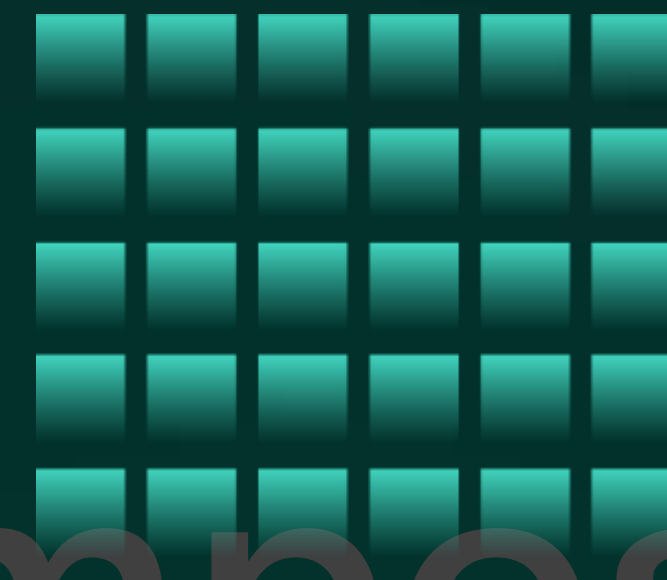
Challenge 2 Higher Resolution

1080P



High pixel density
(Screen-door effect elimination)

4K / 8K / 12K



High frame rate

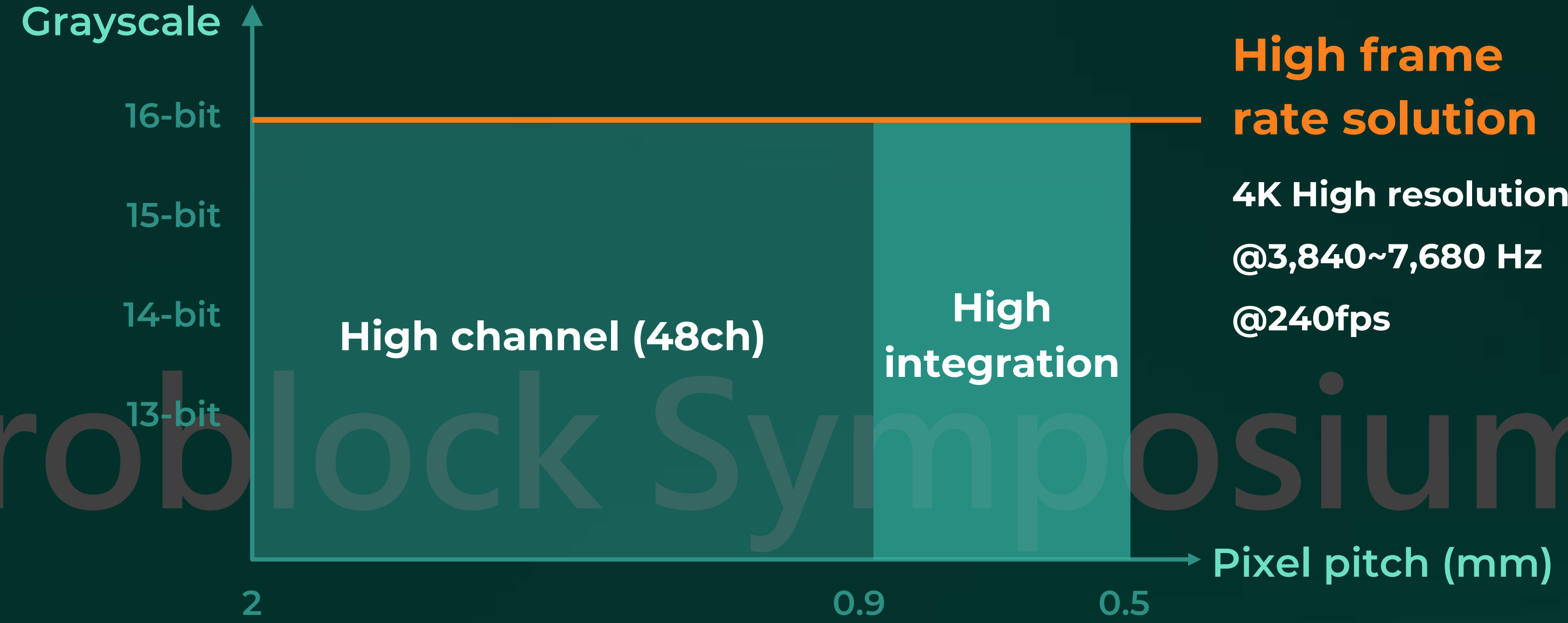
HDR video source

High bandwidth



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**Free the PCB
Layout Space**



**High frame
rate solution**

4K High resolution
@3,840~7,680 Hz
@240fps

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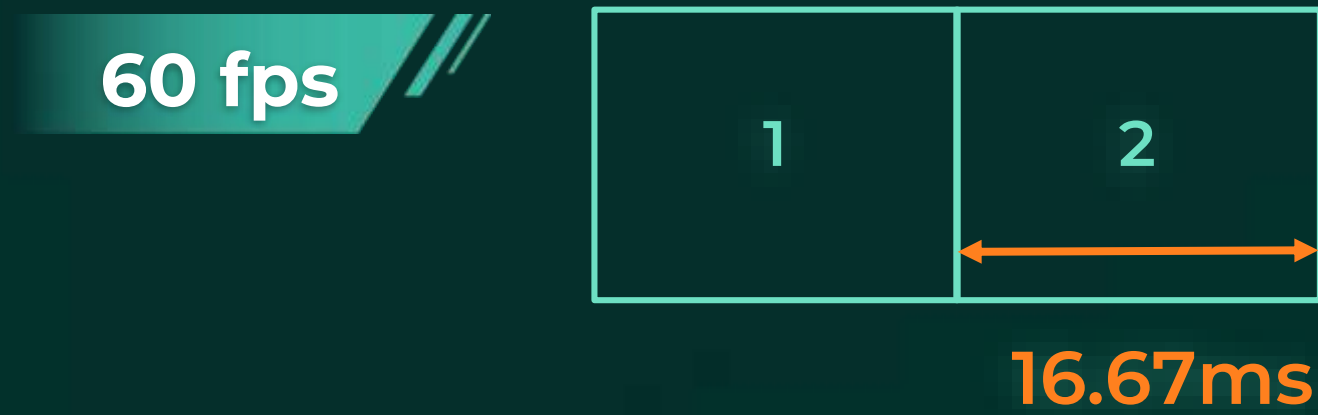
Challenge 3

Display Latency

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Low Latency Transmission



Video data **transmission**
→ **DCLK** double edge trigger

Video data **output**
→ Internal **GCLK** technology

Challenge 4

LED Temperature Rise to
Cause Color Shift

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Lower “LED Display Temperature Rise”

- ◆ Common Cathode Architecture
- ◆ High Channels / High Scans
- ◆ Intelligent Power Saving Mode



- ◆ Lower Cabinet Power Consumption
- ◆ Lower Total ICs' Power Consumption
- ◆ Lower Single IC's Power Consumption

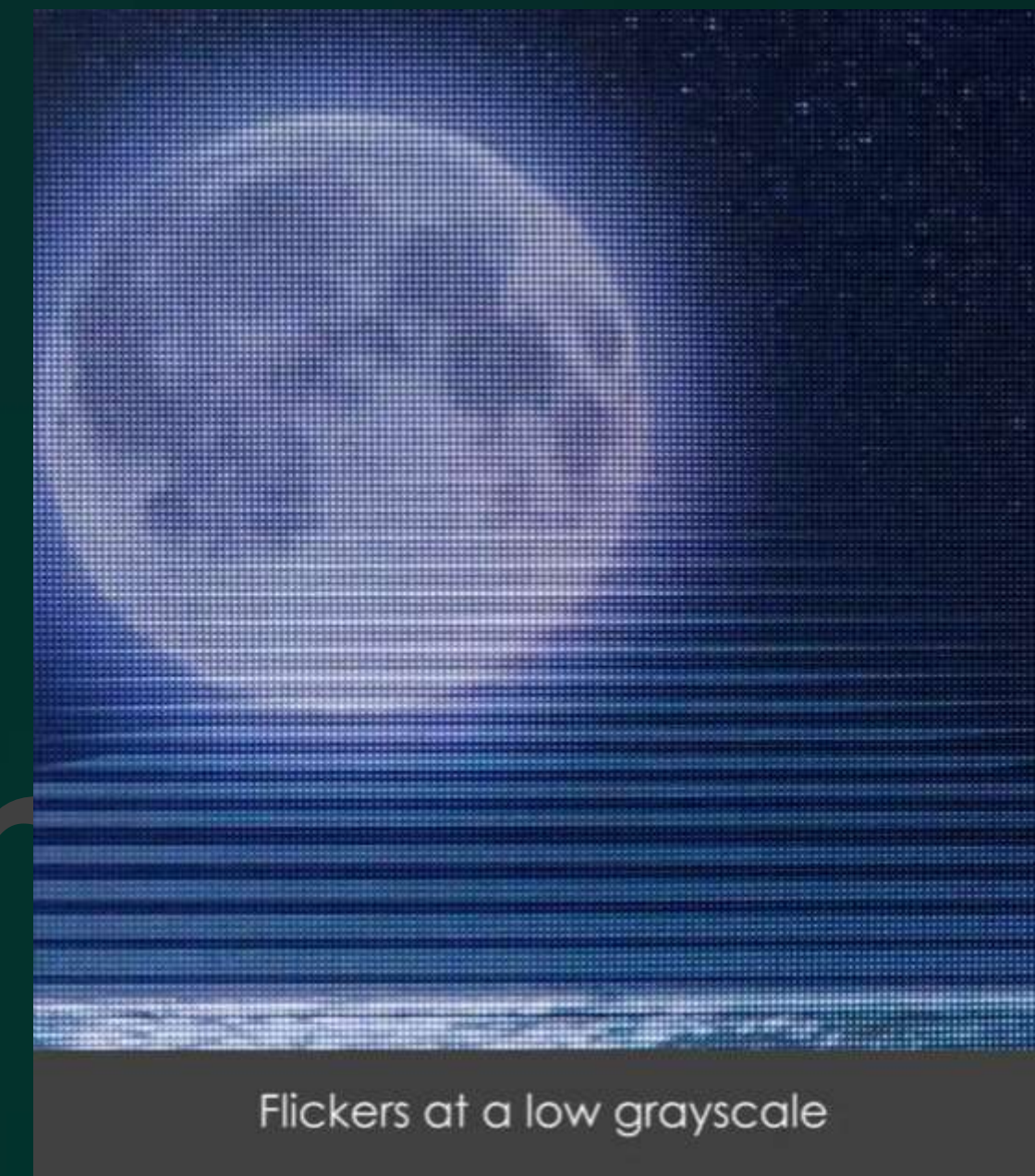
Common Cathode Architecture has been patented : US 11,132,940,B2 ; US 11,132,939,B2

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Challenge 5

Flicker

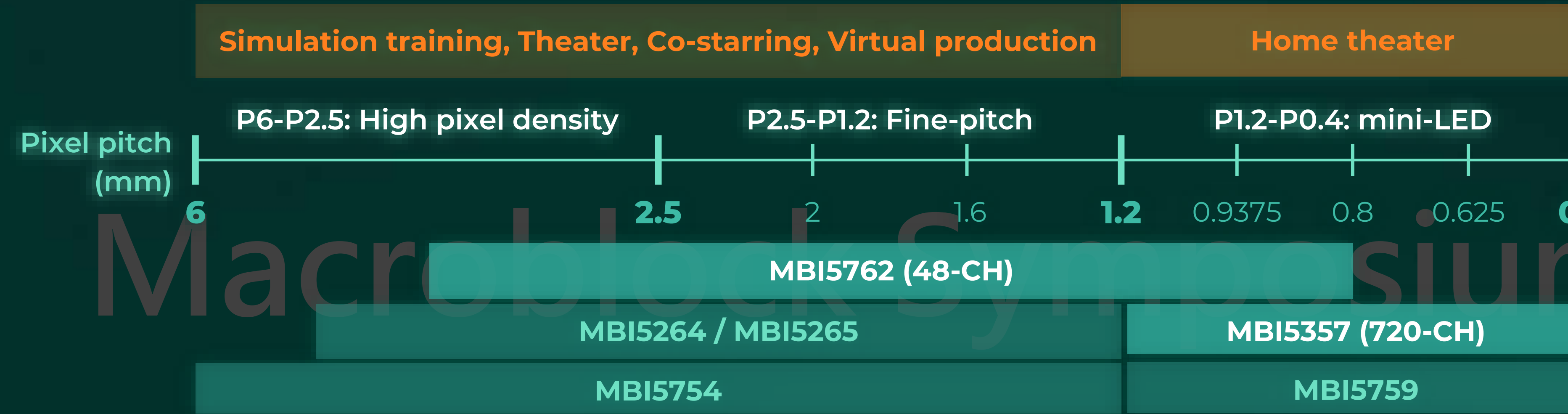
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Hyper Vision Calculation Macroblock Sym



Glasses-free Metaverse LED Driver Solutions



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Thank You !

Innovate for light

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