



[A member of LG]

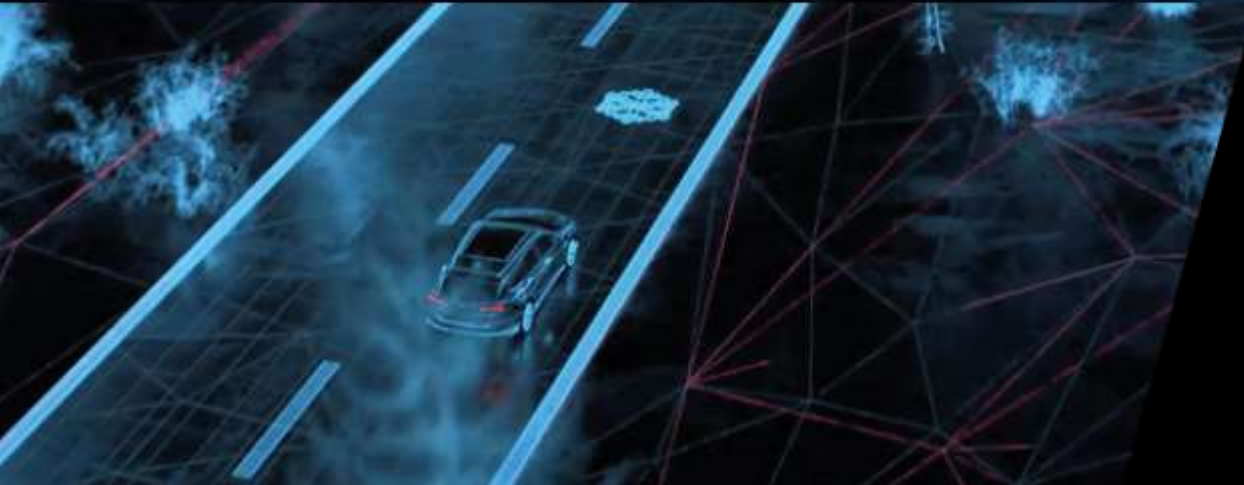
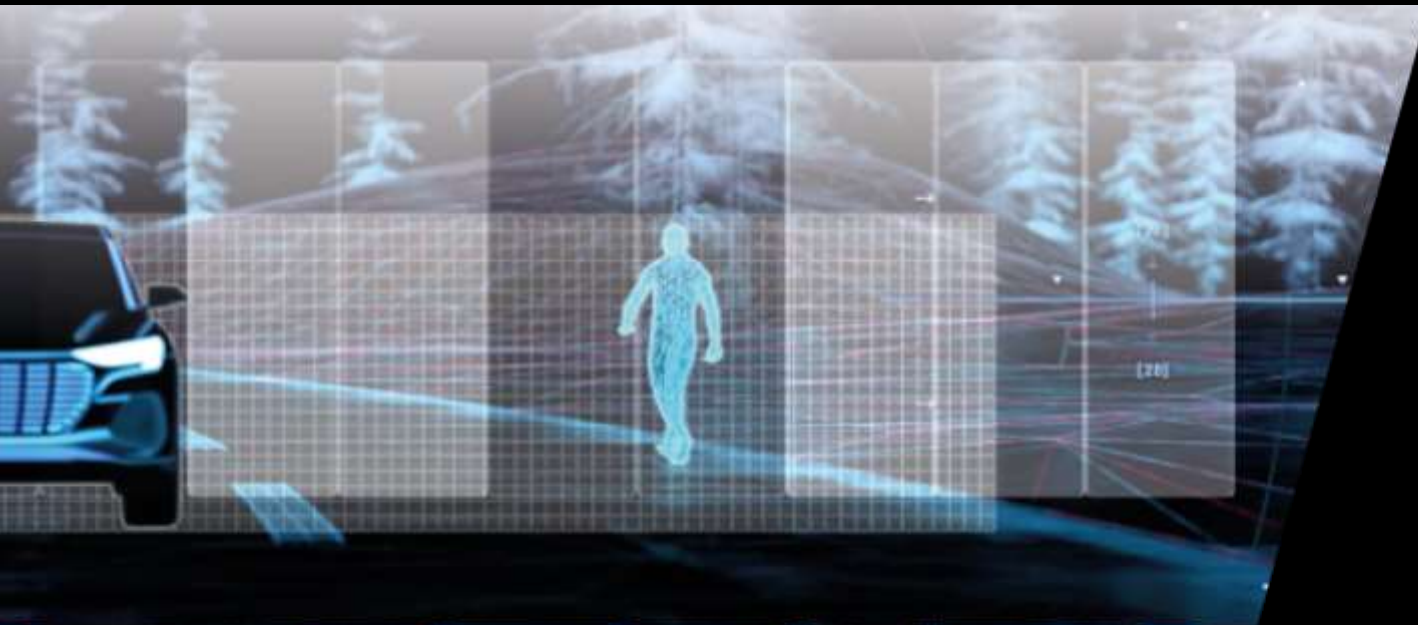
Display Solutions and Challenges

Gerald Boehm





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Motivation

**Applications
and
Requirements**

**Technologies
and
Solutions**



Motivation

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Communication

Information

Warnings

Comfort



Styling and gadget

New functionalities

Animation on demand – **digital business**

Personalization individualization

Advertising



Display – Application - Signaling

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DRL

Luminance > 50 000 cd/m²

Contrast > 200:1

Direction Indicator

Luminance > 25 000 cd/m²

Contrast > 200:1

Position Light

Luminance > 1 000 cd/m²

Contrast > 200:1





Display – Application - Information

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Day

Luminance > 15 000 cd/m²

Contrast > 250:1

> 5 000 cd/m²

> 2 000:1 - **black**

Night

Luminance > 2 500 cd/m²

Contrast > 1000:1





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Display – Application - Entertainment

Day

Luminance > 5 000 cd/m²

Contrast > 250:1

Night

Luminance > 1 000 cd/m²

Contrast > 250:1





ZKW displayZ LD - Technology

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Key facts:

Compact light guide concept
3D appearance | depth effect
400 individually controllable bi-color LEDs

Pixel description:

- > Shape/Size: hexagon/rectangular
- > Brightness: 100 000 cd/m²
- > Pixel size: around 10mm – 2,5 ppi



HELLO! MR. SMITH WELCOME!

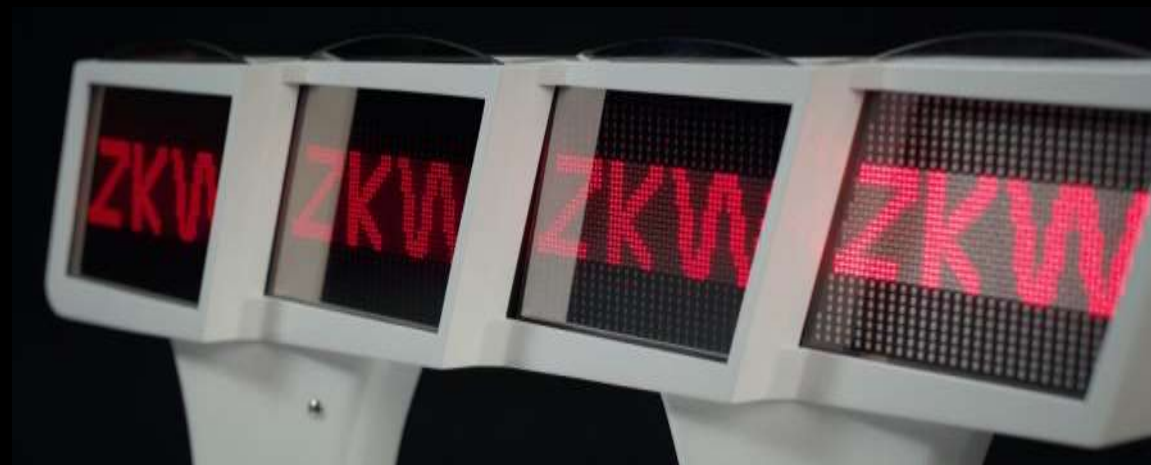
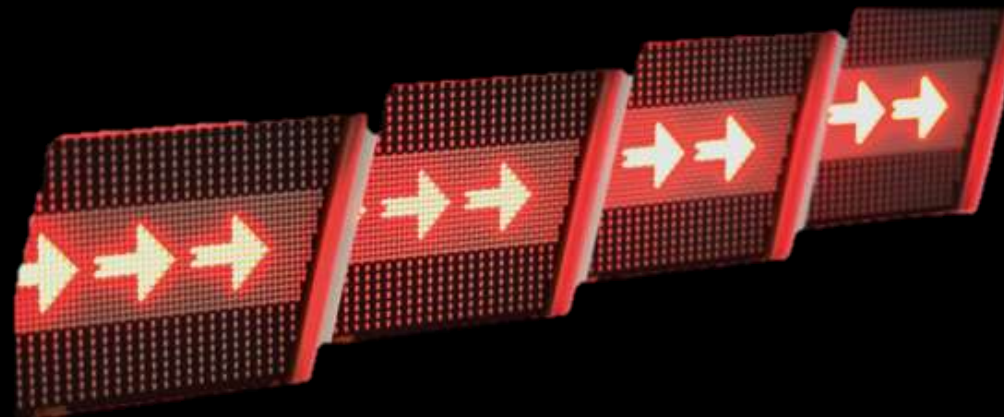


ZKW displayZ HD - LED

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Key facts:

- > 4 x 1248 LEDs individually controllable
- > 3 areas with different pixel pitch
 - > Upper and lower area: 2,5 mm – 10 ppi
 - > Center area: 1,6 mm – 16 ppi
- > luminous area:
 - > Upper and lower area: $2 \times 84 \times 17 = 1428 \text{ mm}^2$
 - > Center area: $84 \times 27 = 2268 \text{ mm}^2$
- > Single LEDs – Red, (Amber, White)
- > Shape of PCB and arrangement of LEDs freely customizable
- > Different appearances possible (colored scatter optics)
- > Coated outer lens possible
Dark appearance when off



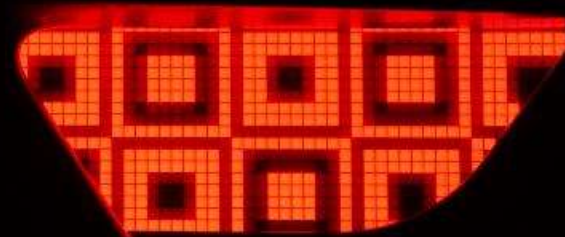


ZKW displayZ HD - miniLED

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Key facts:

- Total: 711 pixel
- Resolution: 3 mm - 9ppi
- Chip size: 25 x 45 μm^2
- Size: 162mm(W), 59mm(H)
- Thickness: 5.3mm





ZKW displayZ HD – 2D-Shape

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Key facts:

Curved Display Set

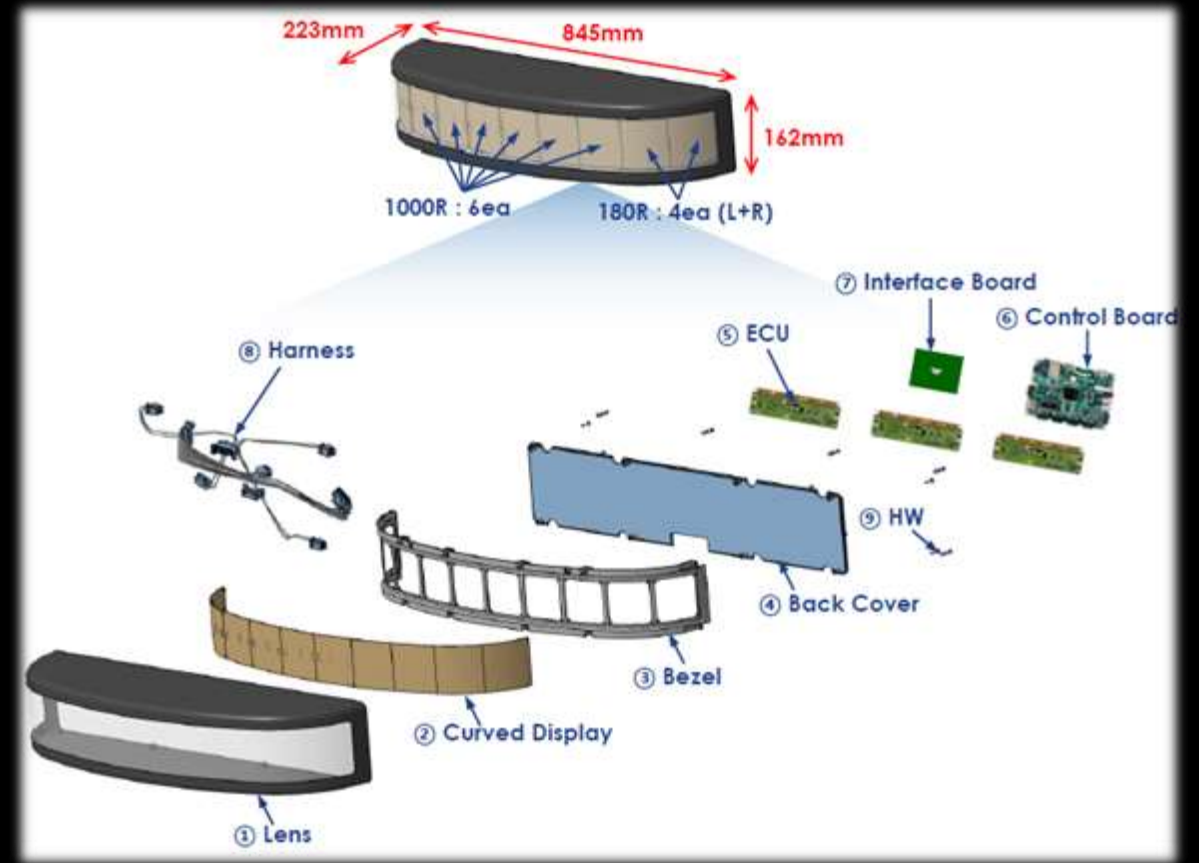
- > Concept applicable to vehicles
- > Manufacturing as Demo SET

Double-Sided SMT

32x32 LEDs per Segment

Pixel: 3mm – 9 ppi

Image processing using FPGA





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Thank You!