2025 Automotive Display Technology and Industry Trends Analysis Report

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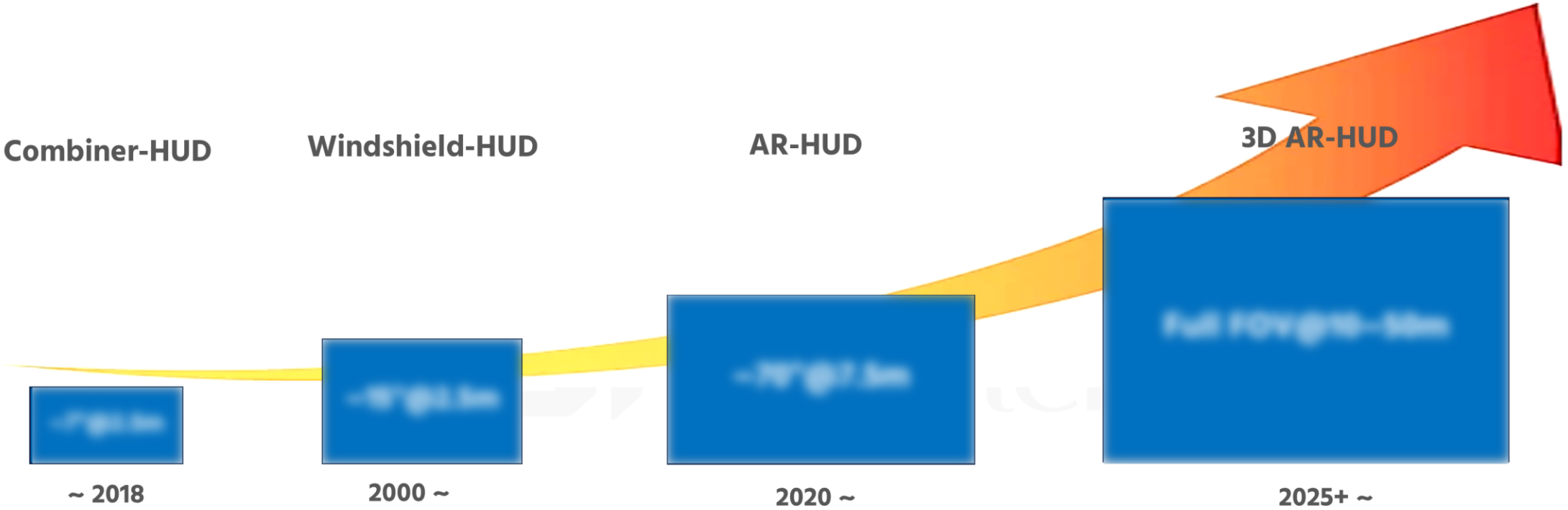
Table of Contents

Table of Contents

Table of Contents

4. Head Up Display

4.2 Evolution of HUDs



- On clear plexiglass
- Mass production
- Low cost

- On front windshield
- Mass production
- Integrated display
- Easy driving-fatigue

- On front windshield
- Small quantity production
- High driving safety
- High technical difficulty and high manufacturing cost

- On front windshield
- Under developing
- High driving safety
- High technical difficulty and high manufacturing cost

4. Head Up Display

4.6 AR-HUD

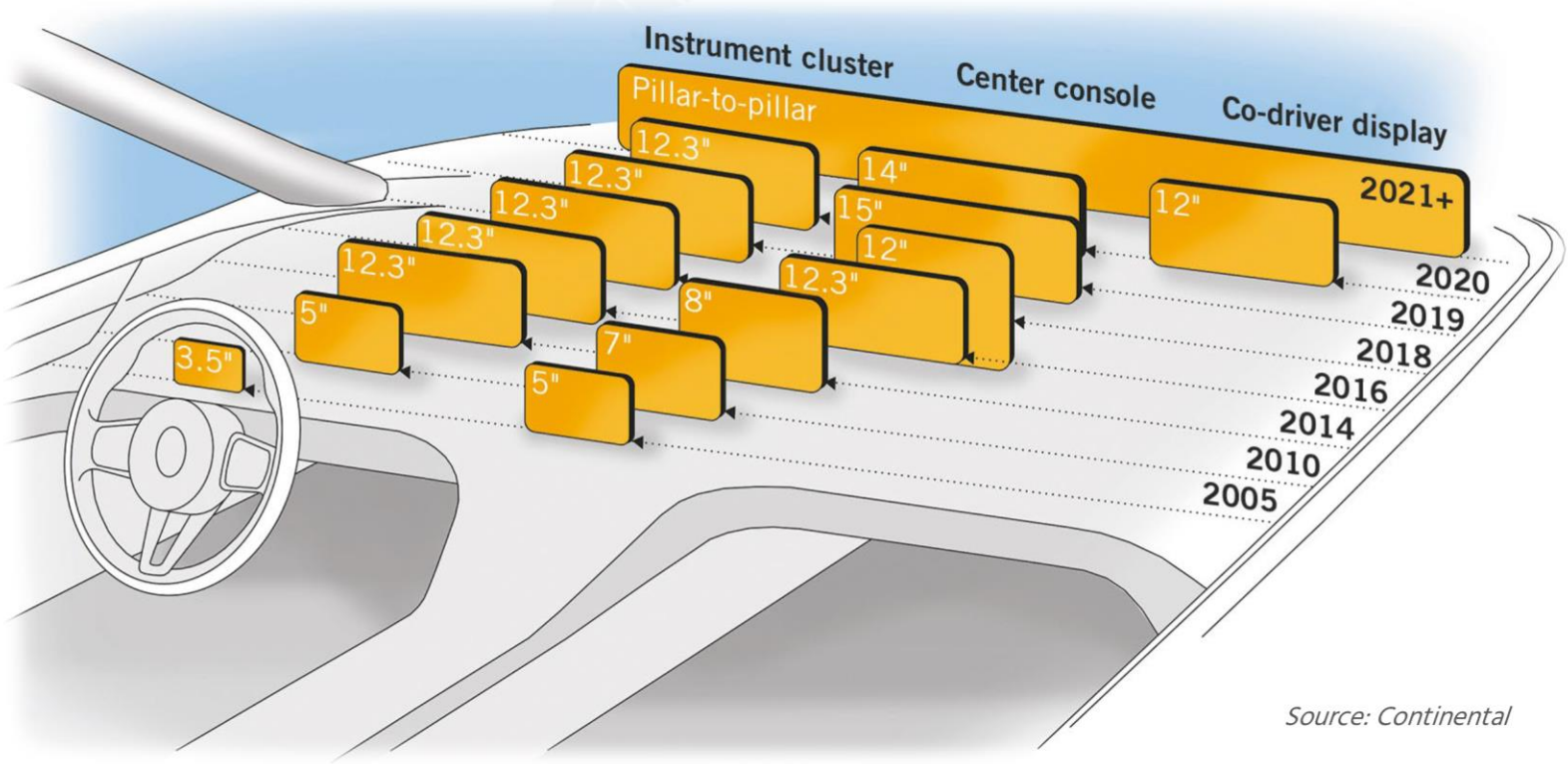
- **AR-HUD vendors**

Vehicle Model	Shipping Time	Projection Size	PGU Display	Supplier
Hongqi EHS-9	Q4, 2020			Crystal Optoelectronics
Mercedes-Benz S Class	Q1, 2021			Nippon Seiki
Volkswagen ID Series	Q1, 2021			LG
Great Wall Wey Mocha	Q2, 2021			Maxell
Audi Q5 e-Tron	Q4, 2021			LG
GAC G S8	Q4, 2021			Huayng Multimedia
Hyundai IONIQ5	Q1, 2022			Hyundai Mobis
BAIC Rubik's Cube	Q3, 2022			-
Nezha S	Q3, 2022			Chonqqing Lilong
Feifan R7	Q3, 2022			Huawei
Dark Blue SLO3	Q3, 2022			Crystal Optoelectronics
Changan Ruicheng plus	Q3, 2022			Huayng Multimedia
Cherry Xingtu Yaoguang	Q1, 2023			Huayng Multimedia
SAIC MG7	Q1, 2023			Shanghai Puchuang
Changan AO7	Q4, 2023			Crystal Optoelectronics
Dark Blue S7	2023			Zhiyun Valley
Geely Zeekr 7x	Q3, 2024			ADAYO Huayang
Cadillac LYRIQ	Q3, 2024			Envisics
Wenjie M9	Q4, 2024			Huawei

5. In-vehicle Display Systems

5.1 In-vehicle display types

- Tesla introduced a 15-inch CID in the 2019 Model 3, the largest ever at the time, to deliver a digitally centered user experience (UX). Other automakers followed suit and began to adopt larger CIDs.
- *** allows passengers to watch videos, check vehicle information, and more while driving, minimizing driver distraction and supporting safe driving.For the first time, the 2020 model year features a passenger display.
- *** first introduced pillar to pillar displays in 2021 and has been supplying them to production vehicles since 2024.

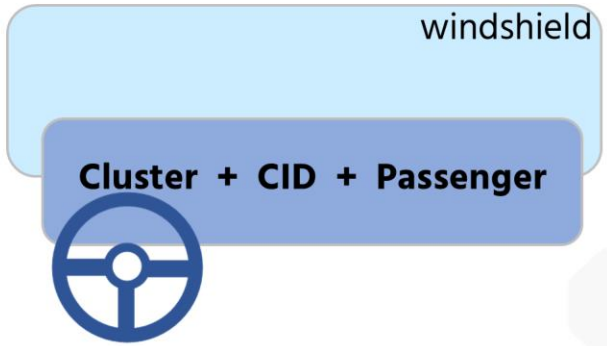


Source: Continental

5. In-vehicle Display Systems

5.7 Integrated screens

- Cluster + CID + passenger display



Mercedes-Benz Hyperscreen

12.3” OLED cluster, 17.7” OLED CID, 12.3” LCD Passenger

HONDA e-EV

8.8” cluster, 12.3” 2-ea LCD

Hyundai Mobis

7” OLED 27” QD + Mini-LED Local Dimming 12.3” OLED

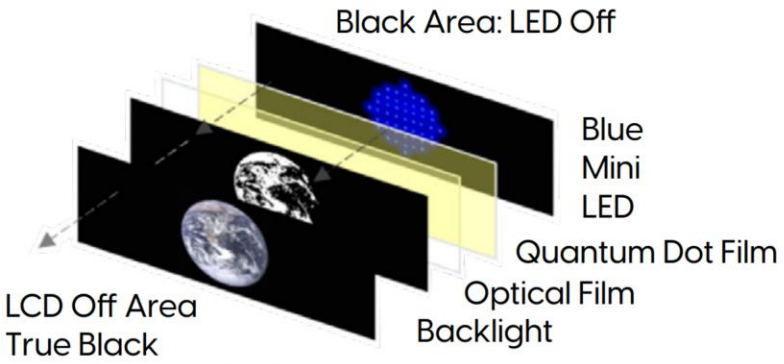
Maxus G90, 3 Screens

6. In-vehicle Display Technology

6.1 TFT-LCD

- **Quantum dot + local dimming**

	DCI-P3	BT2020
LCD	[illegible]	[illegible]
QD-LED	[illegible]	[illegible]
WOLED	[illegible]	[illegible]
QD-OLED	[illegible]	[illegible]



27-inch, QD + Local dimming (Hyundai Mobis)

QD + Mini LED (Harman)

17-inch, QD + Mini LED (Zeekr x7)

9. Trends in Panel Manufactures

9.2 BOE

- In 2016, BOE became the majority shareholder of Varitronix and established a subsidiary, BOE Varitronix. BOE Varitronix is primarily focused on the automotive display module business and serves as the sole sales platform for the BOE Group's automotive business.
- In 2016, BOE established Eswin, a material and component specialist, to supply driver ICs (D-ICs) and chip-on-film (COFs) for displays. Eswin produces D-ICs in cooperation with domestic company Dongbu Hi-Tech and supplies them to BOE.
- In 2019, BOE established a joint venture company, Pixey, with Rohinni, a US-based Micro LED technology company. The joint venture aims to develop display solutions utilizing Mini LEDs and Micro LEDs, with particular focus on applications in LCD backlight units (BLUs) and spontaneous light displays.
- BOE is working with Chinese LED manufacturer HC Semitek to build a new plant to produce Micro LEDs.
- BOE has collaborated with several automotive brands, including Volkswagen, XPeng, BYD, Human, Horizon, SAIC, and Geely, to supply automotive displays. In particular, BOE has formed a strategic partnership with Jieyi Automobile, a leading Chinese automaker, to apply BOE's display technology to various models of Jieyi Automobile.
- For automotive displays, BOE produces a-Si TFT-LCDs on the B2, B3, and B5 lines, LTPS TFT-LCDs on the B6 line, oxide TFT-LCDs on the B18 line, and OLEDs on the B7 and B12 lines.
- The B16 line, scheduled for mass production in the second half of 2026, will produce not only IT OLEDs but also automotive OLED displays, and the first automotive OLED is said to be a 21.7-inch multi-screen OLED that will be supplied to Li Auto.
- Automakers working with BOE include XPeng, BYD, Human, Horizon, and SAIC EMD.

10. Automotive Display Market Analysis and Forecast

10.2 Automotive display revenue