Editorial

Endless Variety In In-Car Display Architecture

HONDA SALOON CONCEPT (HONDA IMAGE)

It's indisputable: displays and screens are, more than ever, the center piece of the interior. Their size, shape, architecture, and optical performance are the discriminating elements of any new vehicle, whether it is a car, a truck, or a shuttle. This week's in-depth article looks at various cockpit architecture solutions, confirming that possibilities are endless. What is interesting is that it combines concept solutions as presented at CES in production vehicles (Lincoln Nautilus, Lucid Gravity, VW ID.7…), and next iterations (Mercedes Hyperscreen). It reflects the mid-long-term momentum, already started some years back and expected to last for year to come.

Many solutions presented at CES will be onstage at the upcoming **DVN-Interior Workshop in Köln** on 23-24 April Make your plan to attend, especially if you want to exhibit and/or to hold a lecture.

And: the **DVN Report** on CES 2024 goes live today, in parallel with this edition of your DVN-I Newsletter.

Sincerely yours,

Philippe Aumont
DVN-Interior General Editor

In Depth Interior Technology

In-Car Display: Size and Architecture

ELEKTROBIT DEMONSTRATOR (DVN IMAGE)

CES this year confirmed the automotive industry's focus on software-defined vehicles and artificial intelligence. And we should also look to the visible hardware side of vehicles, and the importance of screens and displays as a key vehicle interior differentiator. Automakers, suppliers, and startups showcased many architectural, functional, and technical solutions, with the same goal of changing the in-vehicle experience.

The major trends for in-vehicle displays are increasing size and resolution, and new cockpit architecture. This year we saw solutions with a wide display screen positioned far forward, near the base of the windshield. That puts the display much closer to the driver's usual line of sight; it's a bit of an incursion into head-up display territory. This can improve the driver's situational awareness and safety, as they needn't shift their gaze down from the road to see the display. At the same time, it frees up big swaths of real estate for new ideas of what a dashboard should be.

Here's a look at new product announcements to understand the strategies being tried:

Mercedes: Screen Are the New Horsepower

Mercedes vision is that screens are the new bench-racing topic (replacing horsepower), and the defining character. That's why their screens are getting bigger and more prominent. Luxury is expressed through digital means, with screens married with emotions.

(MERCEDES IMAGE)

Mercedes-Benz introduced their new operating system at CES for implementation across all 2024 models. The new operating system, called Mercedes-Benz Operating System, or MB.OS, is developed by Unity Technologies and replace the existing MBUX infotainment platform.

James Liu is Director f MB.OS Customer Experience and Design. He explained Mercedes' vision of luxury and technology, and how luxury is supported by differentiation. Mercedes started as a metal-bending company and now they're a technology and digital company. Mercedes, as an automaker, is a champion of supplier management. In that respect, and as a connectivity architect, they selected a supplier partner, Unity, to develop their MB.OS.

Liu said: "With our own operating system, we want to achieve three key things: to shape the user interface according to a luxury brand, to create a bidirectional communication with the customer and to integrate the digital lifestyle of the customer into the vehicle domain." Target is to give back time to users,

The new OS will come complete with audio and video streaming, in addition to immersive gaming and messaging applications. It will also offer AR-enhanced experiences and use AI to adjust vehicle settings depending on the habits and preferences of owners. This system was first previewed in the Vision EQXX Concept and includes complex, real-time 3D graphics.

Unity is an American video game software development company based in San Francisco, but founded in Denmark in 2004 as Over the Edge Entertainment. Their expertise is in real-time 3D platforms, and their stuff powers 70 per cent of all mobile games on the market. they also are leaders in augmented and virtual reality technologies. Designers from Mercedes-Benz used Unity Industrial Collection, a complex 3D product visualization software package, to craft the UI and UX designs across the digital cockpit, including the instrument cluster, infotainment, and passenger displays.

Ford Strategy in the Lincoln Nautilus

FORD IMAGE

Lincoln's Nautilus has a dashboard-spanning 48-inch display screen called the Immersive Panoramic Display, with a smaller touchscreen in the middle as well. The big display screen is positioned near the base of the windshield.

Ford claims up to five times faster main processing and 14 times faster graphics processing than their current Sync 4 system, with four times the memory, eight times the storage, and 5G connectivity. Screens will offer 4K resolution and dynamic dimming to keep sharp contrast under different lighting conditions. Ford also has brought more software development in-house, which they say will allow for quicker development of new features and OTA updates.

To make use of the expansive panoramic format, Ford designers have spread out functions normally crowded into a touchscreen or instrument cluster across the dashboard. Maps can be shown on the main screen with an audio menu on the touchscreen below, giving each roughly the amount of real estate as some cars' entire screens.

The Nautilus' decluttered instrument cluster shows speed and, if equipped, information for Ford's BlueCruise driver-assist system. Secondary information like tire pressure readouts and the clock have been moved to widgets on the passenger's side of the dashboard. According to Ford, these can be reconfigured to show different things and are designed to be 'glanceable' to minimize distraction. Their look is based on

smartphone push notifications, and engineers used eye-tracking tests to ensure they meet safety guidelines for driver attention.

In a simpler version of it, it features built-in Google apps and video streaming, with a more conventional touchscreen architecture.

Lucid

LUCID IMAGES

The Lucid Air, though it is a Premium EV, did not go the bigger display route; they created UX a different way. The climate control illustrates this point. Lucid knows physical controls are important, so the driver and the passenger each have their own physical fan speed and temperature controls that are tactile and easy to use with no more than a split-second glance. They're ensuring that drivers know they're pressing a button without having to actually look at the screen; here, tactile feedback (haptics) is the enabler.

For the Lucid Gravity, designers moved the curved display up below the sight line and into full view, and put in a flattened steering wheel that is shorter but still rounded at the bottom

VW ID.7

Volkswagen's latest electric model, the ID.7, has a traditional center-screen architecture complemented with illuminated touch sliders, a HUD, and the ID.Light communication bar. The interior is completely dominated by that 15-inch central screen. The AR HUD complements the HMI, with information such as speed, lane markings, distance warnings, and turn arrows from the navigation system in the driver's line of sight. Status displays containing information such as the current and maximum permitted speeds are projected into the close range (a simulated 3.5 m in front of the vehicle). In contrast, the system projects journey-relevant information and current instructions from the navigation system into the far range (about 10 m in front of the vehicle). These symbols are positioned in line with the real world outside the vehicle—this is augmented reality. The ID.Light function (strips of light under the windscreen) provides the driver with information that can be perceived intuitively.

<u>Porsche</u>

PORSCHE MACAN TURBO (PORSCHE IMAGE)

The cockpit architecture of the Macan leans heavily on that of the facelifted Cayenne in terms of style and layout. It includes up to three digital displays, including standard 12.6-in. curved instrument panel and 10.9-in. infotainment touchscreen displays.

Ram 1500 Concept

The Ram 1500 Revolution BEV truck concept, presented at CES 2023, was updated this year with a different architecture. There is no screen in front of the driver to serve as digital gauge cluster, and the truck has a pair of stacked 14-inch landscape screens in the center of the dash. The lower screen has three different positions it can be set to, and it can even be detached so that various truck functions could be operated from outside the vehicle.

Ram notes that even though there is no digital gauge cluster, the driver will be able to see key information thanks to an ARHUD projected onto the windshield. The vehicle also has cameras instead of traditional side mirrors (still not allowed in the USA) and an advanced around-view 360° camera system that also includes a smart backup camera.

Peugeot Inception

PEUGEOT IMAGE

Another CES 2023 reminder, Peugeot's Inception concept took a new angle with the installation of a screen into its Hypersquare control system. This HMI replaces the traditional steering wheel and displays control information on its tablet-like surface.

Pictograms for different features such as air conditioning, volume, and advanced driver-assistance systems (ADAS) are displayed on two side panels, located inside the circular recesses. This allows the driver to rely only on their thumbs, with no need to let go of the controls.

CES 2024 Highlights

It's cliché to say that cars are becoming more like smartphones on wheels, and displays are as mandatory in new cars as steering wheel and pedals. In the two previous DVN Interior editions, we reported many architecture and technology solutions, such as:

- Forvia's Horizon HMI features: 3D graphics content floats in space and HMI feature selections are made by eye tracking. In DVN
- Yanfeng EVI concept eliminates the traditional instrument panel, and incorporates all key features and interior functions into a central display, and a smart cabin seat. In DVN
- Valeo ImagIn Q4 is composed of projection modules, smart adaptable user interfaces, and software dedicated to projection and content management. In DVN
- Auo Smart Cockpit, immersive and engaging visual experience in DVN
- LG introduced a range of infotainment screens one of which is a front passenger display designed to be invisible to the driver by dint of viewing angle control technology, to let passengers do things like watching a movie without distracting the driver. In DVN
- Plastic Omnium Plastic Omnium dynamic interior dashboard projection system. In DVN
- Hyundai Samsung concepts to visualized their partnership for Car-to-Home a and Home-to-Car services in DVN
- Harman Ready Vision system display important information on the lower portion of the windshield without obstructing the overall view. In DVN
- Elektrobit newest curved-screen display to make for an immersive in-vehicle experience in DVN

Summary

Many vehicles retain a conventional layout, with a central touchscreen and digital instrument cluster. Some makers, like Mercedes-Benz, have spread three individual screens across the dashboard, Lincoln now has a true door-to-door display, and tier-1s showed many different innovative solutions. At the end, safety should be the deciding factor; any time spent not watching the road puts drivers at risk, and from that perspective touchscreens-for-everything is not a good idea.

However, we are still missing complete understanding on driver focus and stress levels using HUDs compared to a center-mounted nav screen. In the future, we can expect to see more advanced and larger screens, as well as more innovative ways of integrating them into the car's interior. The possibilities are endless!

Interior News

Ford Mulls Making Parts From Olive Waste

FORD IMAGE

Every year, pruning olive trees creates 7 million tons of waste. Ford engineers in Cologne launched an innovative research project to explore how that food waste could be re-purposed to create auto part prototypes. They found the parts to be durable, and believe research like this could enable lighter weight parts that reduce the amount of plastic used in vehicle parts, reduce the carbon footprint of auto parts, and bring the company closer to its goal of using more recycled and renewable content in its vehicles.

Explored within the framework of the COMPOlive project, dedicated to fostering environmental improvements in olive production, replacing plastics with bio-composites and supporting the circular economy, the initiative aimed to repurpose olive tree waste to create auto parts. This would reduce plastic usage in these components and mitigate air pollution resulting from traditional waste disposal methods like burning.
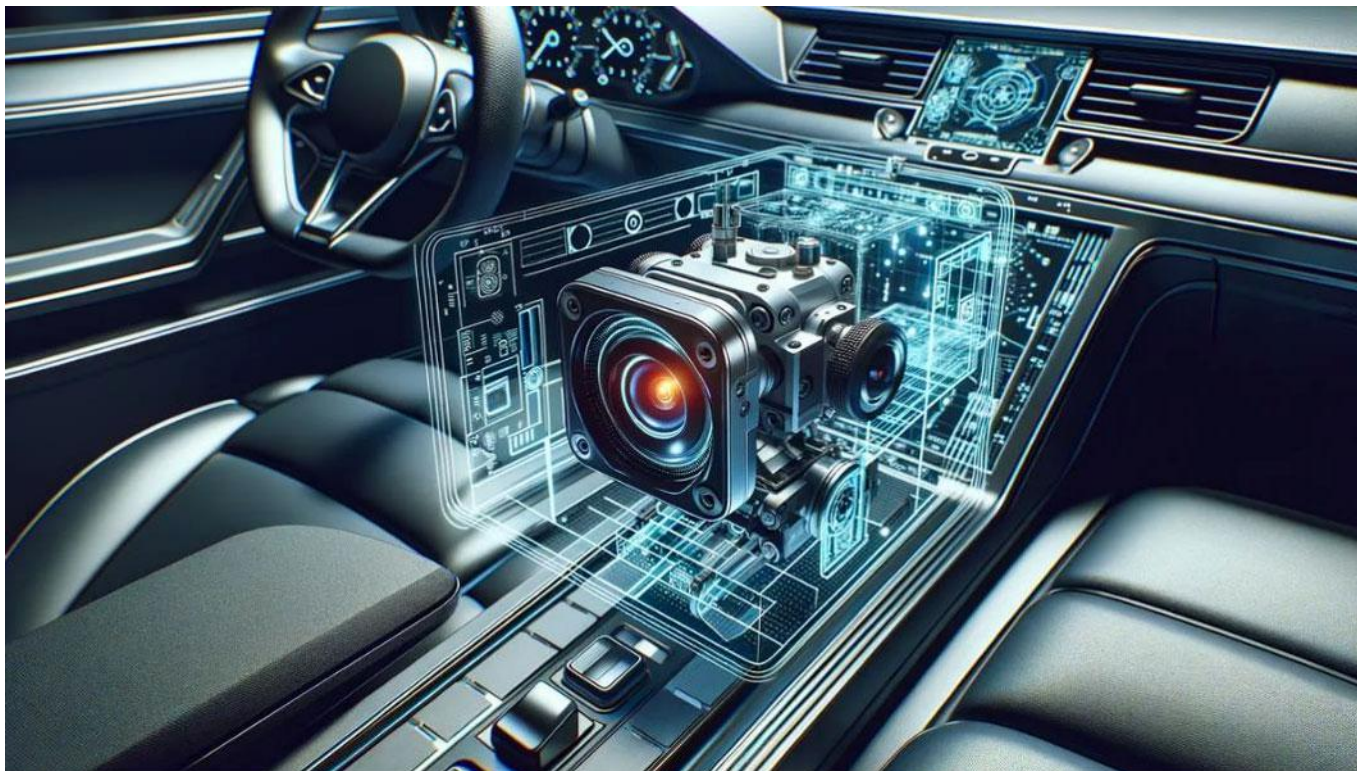
During the trial, which ran from 2020 to 2023, engineers successfully crafted prototype footrests and sections of the car's boot area using olive tree waste. Testing has demonstrated the durability and strength of these parts. Ford is now in the process of evaluating the feasibility of mass production, potentially contributing to the development of the next generation of electric vehicles.

Ford engineers at the European headquarters in Cologne, Germany, employed simulation technology to assess the viability of olive tree materials in terms of durability, strength and moldability. The prototypes, composed of 40 per cent fibers and 60 per cent recycled polypropylene plastic, were created through a heating and injection molding process.

Inga Wehmeyer, project lead at Ford, said: "In using the waste from olive trees, we have been able to substitute a significant amount of petroleum-based raw material in the interior parts. The sustainable fibers create a unique surface appearance and would be directly visible to our customers." Thomas Baranowski, injection molding expert, added: "The right mix with different ratios of waste material and polypropylene enabled us to produce a material that shows no compromise in strength, durability, or flexibility." See video.

Production Reference Design for Advanced In-Cabin Sensing

LEOPARD IMAGING IMAGE

Eyeris Technologies, Omnivision and Leopard Imaging have collaborated on a production reference design to improve safety and comfort in the automobile cabin. The jointly developed design integrates Eyeris' advanced monocular 3D sensing AI software algorithm into Leopard Imaging's 5MP backside illuminated global shutter camera, which uses Omnivision's OX05B image sensor and OAX4600 image signal processor.

The production reference design uses depth-aware in-cabin sensing data. This is done by Eyeris' monocular 3D sensing AI technology, which enables any 2D image sensor, including the latest RGB-IR sensors, to provide valuable depth-aware whole-cabin sensing including distribution and outage management system data.

In addition to using Omnivision's OX05B 5MP RGB-IR image sensor, the production reference design also uses Omnivision's OAX4600 ISP to process Eyeris's monocular 3D sensing AI data. It also benefits from Leopard Imaging's camera design-house capabilities.

The companies say that the production reference design is designed to enable auto manufacturers and Tier 1s to achieve faster time-to-market with low integration risk.

Eyeris founder and CEO Modar Alaoui says, "Our partnership with Omnivision and Leopard Imaging offers automotive customers the industry's most advanced 3D software along with a hardware production reference design kit for in-cabin sensing." Modar was a speaker at the virtual/online DVN Interior Workshop in 2020.

Baidu Maps for Smart Cockpits

LUXEED S7 (VEHICLEINFO IMAGE)

Baidu and Huawei want to integrate the Chinese search engine provider's map service into smart cockpits in cars. Among other things, this involves navigation and assistance systems.

These include navigation at lane level, a traffic light countdown, real-time parking navigation, personalized navigation voice packages, extensive voice interaction and functions such as navigation displays in the cockpit and on the head-up display.

According to Baidu, the traffic light countdown covers 3,000 districts and counties in the country. The system shows the remaining time of the current traffic light color, allowing drivers to adjust their driving style. Audi presented a similar function at the beginning of 2020. However, according to the manufacturer, it is currently only available in Düsseldorf, Ingolstadt, Frankfurt am Main and Salzburg.

The real-time parking space navigation works with "tens of millions of parking spaces across the country". The system displays waiting times in real time and recommends parking spaces.

According to Baidu, lane-level navigation in cities can be "rapidly rolled out in cities across the country in 2024". Baidu promises nationwide coverage. Baidu's maps will be available in every vehicle equipped with Huawei's Smart Cockpit, such as Luxeed S7, the Aito M9, or Baidu self-driving taxis, Apollo project in Beijing, which will play a role in its collaboration as well.

In future, the companies want to update the maps in the cockpit in real time and synchronize them with the development stages of the maps on cell phones. The smart cockpits use "HarmonyOS" as the operating system, which Huawei has been developing since 2016.

Continental Smart Cockpit HPC

CONTINENTAL IMAGE

The electrical/electronic architectures of today's vehicles are reaching their limits in terms of complexity and performance. Connectivity, electrification, shared mobility, and finally, automated, and autonomous driving require great amounts of computing power.

Accordingly, the central computing power with corresponding functions is concentrated in a few, but powerful central high-performance computers. This supports the decoupling of software and hardware and simplifies continuous updates and improvements to the 'lifelong learning' vehicle.

The new solution combines the powerful processors of the Telechips Dolphin family with pre-integrated functions for cluster, infotainment, and visualization of Advanced Driver Assistance Systems, enabling great user experience beyond the premium segment.

In collaboration with Google Cloud, Continental integrates generative AI technology directly into the vehicle server. This allows drivers to interact with their car in a natural dialogue.

Google is also working on a smart chatbot. Sparrow, developed by Alphabet subsidiary DeepMind, is intended to circumvent some of the problems with ChatGPT. Through reinforced learning, Google's system should understand, for example, how to verify sources and when such verification is not available.

There are already a number of alternatives to ChatGPT that also work with natural language processing, such as the Dialogflow platform from Google and Amazon Lex.

Bridge of Weir's New UK Design Studio

MCLAREN SPEEDTAIL (BRIDGE OF WEIR IMAGE)

Natural leather is under pressure from alternative materials popping up in context of growing sustainability concerns and vegan trends. But leather experts are still investing in automotive; UK automotive leather supplier Bridge of Weir has opened an advanced design studio in Warwick, in the UK Midlands, near major automakers and R&D centers.

Founded in 1905, Bridge of Weir is a family-owned business, operating one of Europe's largest leather production facilities. The new site will advance leather design and offer a showcase of design-led innovations and collaborations for automotive interior applications. Key objectives for the Advanced Design Studio are to accelerate and expand the capabilities of leather as an automotive interior material, focusing on the latest in design developments within advanced finishing, sustainability, and digital techniques.

The company said the move also brings them closer to automaker customers such as Jaguar Land Rover, Aston Martin, and McLaren. The studio offers CMF (color, material, and finish) teams the opportunity to have easier and more frequent engagement with designers.

Consumer Perceptions on Connected Cars and Data

AVANCI IMAGE

A Salesforce survey of more than 2,000 car owners and lessors in the US revealed that only a few drivers understand what a 'connected car' is and what data is being collected. That's an opportunity for the industry to articulate the connected-car experience and their data use policies, particularly in an age of AI.

Connected cars are forecast to make up 95 per cent of all vehicles on the road by 2030, with each one generating an estimated 25 gigabytes of data per hour, which is the same amount of data as it would take someone to stream 578 hours of music.

The research also highlights some other important findings:

- Drivers do not fully understand the benefits of the connected car: 65 per cent of drivers are unfamiliar with the concept of a connected car, including 37 per cent who have never heard the term before. Once the definition of the connected car was understood by consumer, drivers ranked connected features— Apple CarPay or Android Auto integration, gaming or video streaming, diver assist features, Wi-Fi/in-car data, smartphone app functionality like remote lock and remote start, emergency assisted services, touchscreen console, and OTA software updates, and more.
- Greater awareness on the benefits of the connected car is needed: More than six out of 10 drivers say they don't have or aren't using apps such as Apple CarPlay and Android Auto to do things like make calls, stream music, or use preferred navigation apps.
- Premium services can attract vehicle purchases: When it comes to their next vehicle purchase, drivers are most likely to be willing to pay a premium for advanced features, including driver assist (43 per cent), touchscreens (33 per cent), and smartphone integration (31 per cent).
- Drivers report being willing to trade personal data for valuable benefits: As many as 67 per cent of drivers are willing to trade personal data for better insurance rates; 43 per cent are willing to trade personal data for advanced driver personalization (e.g., personal driver profiles for seat, mirror, and entertainment settings), and 36 per cent are willing to trade personal data for enhanced personal safety features, such as real-time vehicle health monitoring and alerts.

The Design Lounge

Motocompo

COFFEE ☕ CORNER
DVN
Interior

By Athanassios Tubidis

HONDA CITY WITH MOTOCOMPO AT MOTORCAR MUSEUM OF JAPAN (WIKIMEDIA IMAGES)

'You're Under Arrest' is the title of a Japanese manga series featuring a fictional police station in Sumida, Tokyo. Right in the mid-'80s, while mixing drama and action with some comedy and humor, the author K.Fujishima passionately illustrated an imaginary approach to urban mobility that would have perfectly fitted in the 2020s. The vehicle he chose to embody his plot was Honda motocompo, also an '80s design classic.

Cinema, fashion, and hairstyles are everlasting depictions of the '80s, but the decade is also known about great inventions and unforgettable moments in music, sports and many more. The first IBM PC became available, the CD-ROM was invented, the Apple Macintosh was born. Microsoft marketed Windows. Fuji introduced the disposable camera, and digital cellular phones appeared. The '80s was also about payphones, magazine posters, waterbeds, watching music videos on MTV, indoor smoking(!), Blockbuster and movie rentals, and it was the time when you could record your own music (and own it!). High-definition television and Prozac were invented as well. Extreme opinions and polarizing debates about Coke versus New Coke took place, often stealing precious time from chasing, with a joystick, little ghosts in Pac-Man's labyrinth at the arcade. For the first time you did not have to go to a mailbox, you could simply place your letter inside a futuristic machine—the fax machine—and it would arrive at the destination right away, exciting! We would dress up to send or receive a message from a fax machine. :)

Cars would stand in traffic but motorcycles could go through. That was the idea of Fujishima's urban police chase but also the purpose of Honda's 1981 Motocompo: an agile, foldable, 49-cc motorcycle in the form of a luggage, nested in the trunk of their Honda City supermini.

The Motocompo was street-legal, but few people used it after all. With its 2.5-hp engine, it could reach a top speed of about 50 km/h—dependent on the size and weight of the driver, what he was wearing and carrying in his pockets. Hence, strict performance figures are not something that could be factually tested, verified and stated. Let's say, you could aim for 36 km/h if you'd wear a light, well-tightened helmet and there was a proper rear wind of around 30 km/h. But then, you were laughing so hard that you needed to stay upright to have any chance of seeing where you're going. If it was ever posted on a motorcycle review, perhaps it was the slowest one with the lowest performance figures ever published. Every extra mile-per-hour was so hard to win that you were happy to discover, usually after the ride, that there was even a tiny speedometer attached to the handlebar! Indeed, Honda engineers had thought that speed could be eventually something to keep an eye on. However, the attention was on the road. Even without speed bumps on the tarmac, you always had the feeling of sliding off the bike as if you were seated on a loosely bolted luna-park seat.

Although it was great fun, the Motocompo did not last very long, it was in production for only two years. It was basically a gadget, a toy that would make you host unwisely time trials with your friends in an empty parking lot. The seating position was even lower than that of its mothership (the Honda City supermini). In case you would decide to go for a ride across the neighborhood, the driving sensations were soon turning awkward. The moment a car would go by, looking downwards, you would feel dangerously close to becoming overly familiar with its door-panel at any moment. In terms of denser traffic, it might be that no one has ever witnessed a motocompo slaloming through standing or slowly moving cars, but we could get a glimpse of that unlikely scenario, through fujishima's magnificent illustrations. The Motocompo is a motorcycle at about the size, with the engine size of a chainsaw. However, with an 80-mile range from its half-gallon tank, today it would go almost as many miles as a fully charged Honda-e (2020). It was so close to being the perfect urban transport.

Among upcoming trends, 2020s are also about a collective '80s nostalgia, and for Gen Zers it is about the whole vibe, as if that decade never ended. Many feel that the era represents a carefree time that was, more than anything, about having fun. The Motocompo, with its absolute self-confidence, became a cult object, especially when many found out it could fit in the trunk of today's most vehicles. Its value increased in a spectacular way and the Motocompos now sell for much more than any roadworthy Honda City.

The automotive world is a complex and fascinating place with its fair share of successes and failures. In times, a stylish failure is celebrated almost as much as an achievement. From Edsel and DeLorean, to the objectively unappealing yet subjectively irresistible Subaru Impreza and its commercial success, next to a forward-thinking flop like Audi A2. The tiny Motocompo has its place proudly in the list of cult heroes, bringing a fun flair from the '80s to future urban mobility.

WeRide Unveils L4 Bus at CES

At CES, WeRide launched their Robobus autonomous minibus, providing the only on-site L^4 autonomous driving minibus demo ride. The new WeRide Robobus employs a fully autonomous design, integrating WeRide's proprietary software and hardware solutions. It has lidar, high-definition cameras, blind-spot lidar, and millimeter-wave radar, for 360-degree view of its surroundings and a 200-meter obstacle detection range.

The bus' dimensions are 550L × 205W × 265H cm, and it accommodates up to ten passengers. It is powered by a 120-kW electric motor, has a top speed restricted to 40 km/h, and an NEDC range of 300 km. It can recognise lane markings, traffic lights, signs, pedestrians, and other vehicles, facilitating seamless navigation through intricate urban traffic.

WeRide, founded in 2017, focuses on autonomous driving—particularly, L^4 autonomous driving technology. They're headquartered in Guangzhou, and operate R&D centers in China and California. They have conducted research, testing, and operations in over 26 cities globally, totalling up to over 25 million kilometers of autonomous driving and nearly 1,500 days of operation. Their solutions are targetted at autonomous taxis, minibuses, freight and sanitation vehicles, and advanced intelligent driving. Company partnerships include the Renault-Nissan-Mitsubishi Alliance, Yutong Group, *GAC* Group*, and Bosch.*

News Mobility

May's First Driverless Transit Service in Arizona

May Mobility, a Michigan-based autonomous ride-hail and shuttle startup, has launched their first driverless service for riders on public roads in Sun City, Arizona. The vehicles are Toyota Sienna Autono-MaaS units; they will operate daily during the week.

They're equipped with May's MPDM (Multi-Policy Decision Making) technology, which is designed to make safe driving decisions under uncertainty—including when the vehicle encounters an unknown scenario. It runs real-time, on-board simulations to analyze thousands of possible scenarios every second, choosing the **safest** thing to do—or at least the **most acceptable** one.

The company launched its on-demand autonomous public transit service with TransitTech company Via, to serve the retirement community of Sun City and provide greater access to affordable mobility with shared, on-demand autonomous vehicles.

May Mobility's public sector go-to-market strategy is to partner directly with stakeholders like cities, transit agencies, municipalities, and government agencies to identify gaps in public transport systems and solve transport challenges for communities.

General News

Hyundai, Kia Restructure R&D to Enhance Future Mobility

Hyundai Motor Group say they have established a new research and development structure designed to enhance their future mobility development capabilities, as the group boosts development of connected, intelligent vehicles.

The newly-restructured R&D Division will be headed by Heui Won Yang, who was promoted from EVP of the Total Vehicle Development division, where he gained significant expertise in vehicle development including platform engineering, design and project management.

The new R&D division is intended to improve efficiency and competitivity, and to speed up the introduction of new mobility products and services. It will work closely with the new Advanced Vehicle Platform division to accelerate software-defined vehicle strategies and develop competitive future mobility products and services.

The AVP Division was created by merging the group's SDV Division, the Mobility Engineering and Technology Acceleration (META) tech unit, and the Vehicle Software tech unit. It will be run by Chang Song, formerly head of the SDV division, and will oversee the development of HMG's product innovations including software and hardware. It will also continue to oversee 42dot, the software mobility unit under Hyundai Motor Group (which just clinched a deal with Samsung Electronics to develop an AI-based SDV platform at CES 2024)

The R&D Division and the AVP Division will be the main pillars of HMG's R&D operations, driving forward the group's hardware and software innovation.

Who Will Write the Code for the Car of Tomorrow?

HARMAN IMAGE

Two big industry topics this year—reflected at CES—are artificial intelligence and software-defined vehicles. Both are software, and therefore difficult to grasp or put on a stand as a product.

SDVs are primarily being addressed by suppliers. For them, it is a decisive turning point in vehicle development. Car manufacturers lack the skills and capacity to take control of every line of code in the car, so development is currently bumpy at the software subsidiaries of the two largest car manufacturers, Woven (Toyota) and Cariad (Volkswagen). As a result, there is hope among the suppliers that they will still be able to supply complete hardware + software systems, which is crucial for their margins. However, the automaker must be able to access the source codes for updates, and interaction with software from other suppliers must be guaranteed.

As for software, there's increasing pressure on tier-1 suppliers. Qualcomm, Nvidia, and Mobileye are already established suppliers. Intel also supplies chips for vehicle systems, and they're serious about it, pushing hard with their SoC system for SDVs.

Intel Automotive VP Jack Weast and Intel CEO Pat Gelsinger welcomed Andy An onstage at CES; he's CEO of Zeekr and President of Geely—the Chinese automaker who is the first customer for the Intel system.