Thu, 26 December 2024
Weekly Newsletter

DVN Interior

NEWSLETTER #242

Editorial

Smartphonization Of Interior UX Shifts Into High Gear

Season's greetings! Thank you for a great year, including 2 major events in Köln and Torino, and your continued subscription. 2025 will continue with Köln this coming Spring on 8-9 April (**details online**) and our partnership with EAC in Hangzhou, China in Summer on 4-5 June. Save the date, and watch your DVN-I Newsletter for details in January.

This week's in-depth piece is all about the rising presence of apps and 'AI'-based tools into the car interior. They're opening new advertising and merchandising portals within the vehicle, and could help make journeys safer and more enjoyable. Natural vocal dialog is transforming the in-car HMI into something more intuitive, with smoother transitions among home, office, and car. Personalization is also a great benefit.

This is our final 2024 newsletter; we'll take a week's hiatus, then we'll be back with you on Thursday, 9 January.

All of us on the DVN Interior team wish you a happy, successful 2025!

Sincerely yours,

Philippe Aumont
DVN-Interior General Editor

In Depth Interior Technology

'AI', Apps for New In-Car User Experience

NAGARRO IMAGE

The automotive industry is already offering some 'AI-powered' experiences, but customers are still waiting—whether they know it or not; whether they want it or not—for the automotive industry's iPhone moment, when technology transforms the user experience and eliminates pain points, which might include rule-based interaction (particular vocabulary, syntax, and actions required of the user); limited infotainment apps, and limited personalization.

Once that 'iPhone moment' happens, it will usher in more natural and multimodal in-car HMIs using images, videos, and sounds, to improve user experience. Natural-language communication will entail automakers using prompt engineering and fine-tuning methods to enable the 'car-pilot' of the future to interact with users in a way that resonates with their brand culture. Visual content will be generated based on the system's 'understanding' of the context and user preferences. Metaverse (AR/VR) content will be generated for entertainment.

Preferred in-car settings—climate, etc—will be predicted and selected. Safe-driving tips will be proactively suggested under difficult conditions. Occupants will be informed about functions they aren't using, and user feedback and data will be collected and leveraged. Through in-car cameras and sensors, the 'car-pilot', whatever it eventually winds up being called, will detect the user's mood and mental and physical state. It will cheer them up (whether they like it or not?) with peppy music, a conversation, or a light message.

Android Auto and Apple CarPlay as First Step

GOOGLE IMAGE

Android Auto and Apple CarPlay are services developed for iOS and Android to allow the modernization of the automotive world by displaying phone applications directly on the car's screen in compatible vehicles.

Navigation, apps, and infotainment are always at your fingertips, and updates pushed over the air ensure your vehicle is always running the latest software (as with smartphones, if you preferred the way a previous version worked, you will have to use the new version anyway). A voice-control system makes interacting with the apps while driving your car easier and safer.

Android Auto, for example, provides access to Google Maps for navigation, YouTube Music for streaming, and Google Messages for communication. Similarly, CarPlay puts iPhone apps into a driver-friendly format, offering features like Apple Maps, Apple Music, and Siri for voice commands.

These integrations are designed to keep you connected and entertained while driving, without the need to handle your phone, so so you can focus on operating the car—at least the parts that involve your hands; your mind can still get wrapped up in apps.

MERCEDES IMAGE

Integrating ChatGPT and generative 'AI' chatbots into vehicles opens up a wide range of potential features beyond the basics. It could provide real-time alerts and suggestions based on driving conditions, such as weather updates or traffic warnings. The system could monitor vehicle health and remind you of upcoming maintenance needs, like oil changes (maybe not on EVs) or tire rotations. Music, podcasts, or audiobooks could be recommended based on your preferences, and in-car entertainment systems could be voice-controlled. Likewise, you could control smart home devices from your car, such as adjusting your thermostat or turning on lights before you arrive home. Based on your driving habits and preferences (or perhaps based on who paid the most to put ads in front of you), it could suggest nearby restaurants, gas stations, or points of interest. Over time, the system could 'learn' your routines and preferences, offering more personalized assistance and improving its responses.

Here's a look at the state of automaker developments in this direction.

GM developed the integration of ChatGPT into their vehicles as part of their collaboration with Microsoft, as we **previously reported.** The automaker says users can interact with equipped cars in a natural and personalized way to input destinations and get help understanding and use vehicle features—similar to an interactive owner's manual.

VW'ssystem, **as we've described,**helps to make communication with the car more natural-like and to allow VW's voice assistance software to help with more questions beyond the operation of vehicle systems.

DS IMAGE

Drivers in equipped **Stellantis** vehicles (**see previous coverage**) can access the navigation system and other functions via voice commands. ChatGPT is also controlled via voice commands, activated by the phrase "OK Iris" or a button on the steering wheel. On request, ChatGPT can provide tips on places of interest or works of art, or, especially useful for long car journeys with children, tell stories for young and old passengers.

Select **Mercedes** models (**covered** in DVN Interior) have ChatGPT as well, for intuitive speech recognition; the question does not have to be formulated in a cumbersome or prescribed manner.

China's **Nio**, as we've previously **described**, offers their 'Nomi' personal assistant. It can be used via voice control, and can complex queries, responding in a natural language to deliver vehicle-specific information.

Recent Chatbot and 'AI'-based announcements:

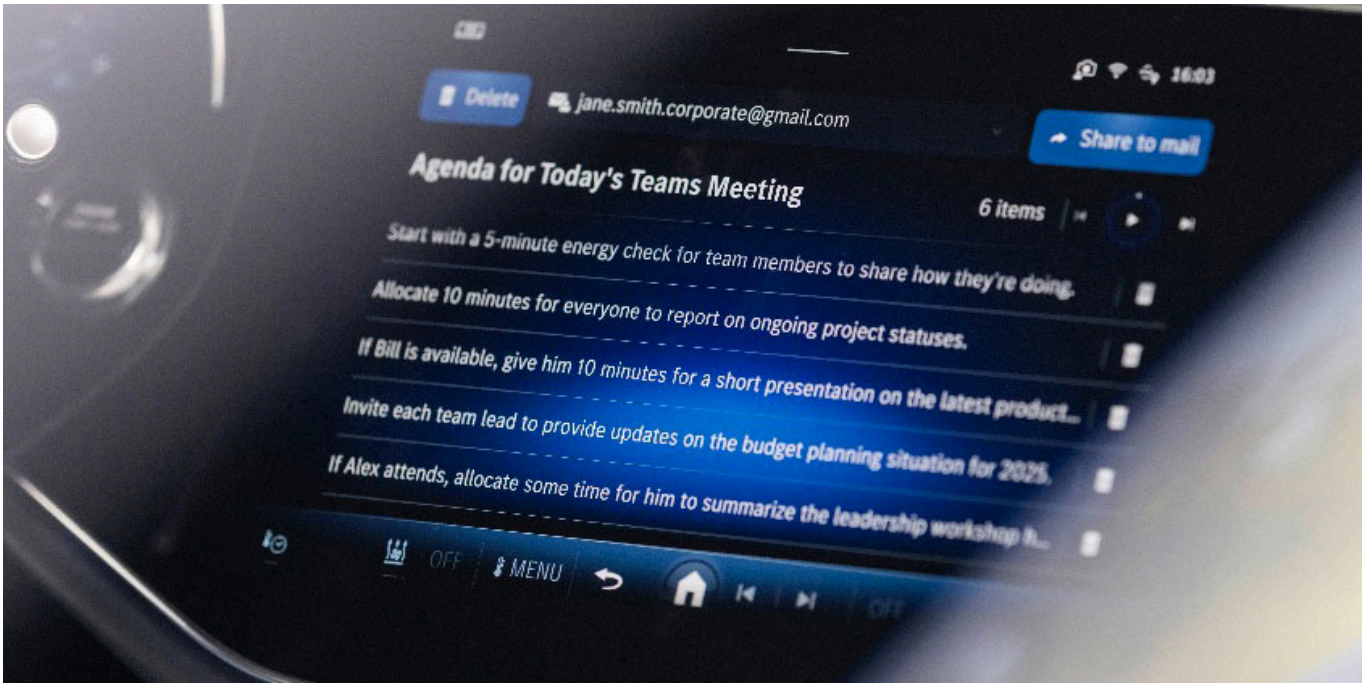
INTELLIAS IMAGE

Intellias and Zeekr

Intellias has been nominated for three projects by Zeekr Technology Europe. This European subsidiary of China's Geely is to receive real-time navigation, a location recommendation system, and a GPT-supported voice assistant from the development service provider. A new development center is to be opened in Krakow for the project scope.

The new location in Poland is intended to expand the capacities of the team in Gothenburg, according to ZTE CEO Giovanni Lanfranchi. Both companies want to present a prototype of a navigation app at CES in Las Vegas at the beginning of January.

Mercedes Intelligent Notes



MERCEDES IMAGE

MBUX Notes is Mercedes-Benz's new speech-enabled note-taking app. Developed in-house, it enables hands-free, multilingual voice notes—grocery lists, meeting agendas, capturing and organising ideas for a blog or renovation project, whatever might come to mind while driving.

It is said to be one of the first in-car notetaking apps using generative 'AI', and Mercedes says it gives customers a safer and more comfortable way to use their drive time more productively. With end-to-end encryption between the car and backend, the anonymized voice notes are sent to the Mercedes-Benz Intelligent Cloud, where they're summarized and structured using OpenAI's GPT-4o generative 'AI'.

Once a user has finished a note, they can ask MBUX Notes to read back the summary to them before sharing the notes via an expanding selection of email clients, so the notes are easily accessed outside the vehicle. MBUX Notes can also be connected to a growing list of other popular notetaking and productivity apps.

Ford In-Car Advertisement System

Ford has filed a patent for an in-vehicle advertisement system. Ford's system, described in patent

2025 FORD ESCAPE (FORD IMAGE)

US2024/0289844A1, would present advertisements visually on infotainment screens and audibly through car speakers. It would tailor the ads to individual drivers by analyzing factors including the vehicle's destination and route.

In May 2021, Ford filed a patent for an in-vehicle advertisement system that would use a vehicle's cameras to read roadside billboards and subsequently display targeted ads related to those billboards' content on the infotainment screen. Then, in April 2023, the automaker published another, similar patent for a system that could also display ads and images on a vehicle's windows. Now, this newly published patent gives idea for an in-vehicle advertisement system that may be used in future Ford vehicles, too.

These days, consumers are bombarded by advertisements—many targeted, based on their search history and interests or demographics—and automakers like Ford are exploring even more ways to push ads into our lives. If this patent comes to fruition, our cars will no longer offer any respite from targeted ads. Things like a vehicle's destination, location, speed, drive mode, or surrounding traffic will determine how many and what kinds of ads to display.

Such a system would optimize ads for companies paying for them, but Ford notes in the patent that the number of ads could be tailored to a user's preference, as well as the history of how they interact with certain ads.

Other Applications

DOGSTER IMAGE

Car infotainment systems have seen a variety of unusual and sometimes quirky apps. Here are a few examples:

- Pet monitoring: some systems allow you to monitor your pets in the back seat using in-car cameras.
- Meditation and relaxation: these apps provide guided meditation sessions or relaxing sounds to help reduce stress while driving.
- Gaming: While not safe for use while driving, some systems include simple games that passengers can play.
- Weather radar: beyond basic weather forecasts, these apps provide detailed radar images and severe weather alerts.
- Economical-driving coach: apps analyze your driving and offer tips to improve fuel/electricity efficiency.

Further integration of all these 'AI'-based tools and apps will bring the 'smartphonization' of cars.

Interior News

Continental: Bio-Based, Recycled Interior Materials

INTERIOR NEWS

CONTINENTAL IMAGE

Continental's Xpreshn material is suitable for door and instrument panels. When used as a monomaterial, it is fully recyclable. Recycling for composite components is also possible. If, for example, both the carrier component and the surface are made of Xpreshn, they can be recycled at the end of their useful life without the additional expense of separating the components. "With the bio-based Xpreshn, we can deliver a product with an optimal carbon footprint that combines technical properties with a wide range of design possibilities," says Gabriele Wittmann, Head of Global Surface Research at Continental.

The supplier's Acella material is meant for other interior applications. It is an artificial leather made from recycled and bio-based raw materials, combined with rPET textile. The polyester yarn used is from recycled PET bottles. According to Continental, this leather substitute can be easily cleaned and is particularly robust. Acella is sustainable without degrading the product properties.

Another sustainable material in Continental's range is Benova Eco Protect, which has won a German Innovation Award. It is said to withstand heat and UV light very well. According to the company it contains only sustainable materials, no critical ingredients, no raw materials of animal origin, no plasticizers, and no solvents. The material is 20 per cent lighter than conventional products, too, so it also indirectly improves the vehicle's energy balance.

Wittman says Continental's Staynu technology allows for "surfaces resistant to dirt, mechanical and chemical stress, for example from cleaning agents, and therefore durable". This technology is currently mainly used in seats and add-on parts, but there are plans to use it for instrument panels as well.

ZF Lifetec's Electromechanical Seatbelt Locks

INTERIOR NEWS

ZF LIFETEC IMAGE

ZF Lifetec is putting their new electromechanical 'e.Locking' seatbelt system into series production. It is available in the supplier's ACR8.S seatbelt retractor unit and electrifies the sensor and triggering system, offering significantly more design freedom for automakers as well as comfort for the occupants.

This solution was developed in anticipation autonomous driving functions becoming more widespread, with new seating concepts and positions becoming more attractive, such as passengers adopting a relaxed position. These positions will require the seatbelt to be integrated into the seat, which is made much easier by the new e.Locking system.

With conventional systems, one mechanical sensor responds to the acceleration of the belt spool movement while another detects the acceleration of the entire vehicle. Typically, a ball sensor is used; sudden acceleration or deceleration of the vehicle blocks the belt spool to prevent the belt being pulled out.

The new e.Locking system in the seat-integrated ACR8.S belt retractor replaces the 12- to 13mm steel ball with an electromagnetic coil that locks the retractor electromechanically via a signal from a central ECU. The vehicle’s acceleration, deceleration, and tilt are measured centrally by sensors in an ECU, evaluated by an algorithm, and a signal is then sent to the coil when the belt retractor should be mechanically locked.

The e.Locking can also be synchronized with driving programs so that, for example, a locked seatbelt provides more support during dynamic cornering. The system can also increase occupant comfort by enabling the belt to extend unhindered on bumpy roads, where today a ball sensor would repeatedly lock briefly. The e.Locking system from ZF is located directly on the retractor, in the same place as the previous mechanical system; the locking mechanism via a pawl remains unchanged. The release algorithm and the control unit will also be part of the ZF Lifetec portfolio.

Rear Seatbelt Reminders to be Mandatory in USA from '27

INTERIOR NEWS

DVN IMAGE

NHTSA, the US National Highway Traffic Safety Administration, has finalized a new rule that will require new vehicles to have seatbelt reminder systems for the rear seats as well—over half a century after the reminders became mandatory for front seats. Once fully implemented, the rule is expected to save 50 lives and prevent more than 500 injuries every year, through increased belt usage. According to NHTSA, seatbelt usage for rear passengers is consistently below that of front-seated passengers, with data from 2022 indicating that rear passengers use a seatbelt 81.7 per cent of the time, versus the front-seat figure of 91.6 per cent. Roughly half of all passenger vehicle fatalities in 2022 involved unbelted occupants.

The amendment to Federal Motor Vehicle Safety Standard № 208 requires audiovisual unfastened-belt alerts for rear passengers, and improved systems for drivers and front passengers.

The new rule will apply to passenger cars, trucks, buses (except school buses, in which only a driver seatbelt is required), and multipurpose vehicles weighing up to 10,000 pounds. Automakers must comply with the new rules by 1 September 2026—the start of the 2027 model year—while rear warnings will become mandatory a year later on 1 September 2027.

City Oasis Interior in Nio Onvo L60

INTERIOR NEWS

NIO IMAGES

Nio has officially launched the L60, the first model from their mass market-oriented brand Onvo, scheduled to arrive in the automaker's first European market in early 2025.

In November, its first full sales month, over 4,300 L60 models were sold in China—about a fifth of Nio's nearly 21,000 vehicles sold that month.

The L60 appears to mimic the Tesla Model Y's exterior and interior. There is just one screen in the front and unlike with Nio-brand cars the infotainment screen is mounted horizontally. It is a 3K screen with a 16:10 ratio and an ultrathin bezel of only 5.35 mm wide, making the screen-to-body ratio 91.5 per cent. In a move away from the style of Nio, the drive selector is moved from the center console to a steering wheel column-mounted stalk as in Teslas.

The center console has two sloped phone charging pads, and another storage space directly in front. Behind are two cupholders along with a split opening cubbyhole. There's a 13-inch HUD, and a three-spoke steering wheel with two scroll wheel controls on it, and there is also a driver fatigue monitoring system.

Front seats can fold down to provide a flat, continuous surface with the thigh supports of the rear bench. Onvo has published several usage pictures of how this space can be used for relaxation. Both front and rear seats are heated, and the front passenger seat has an extra-long movable calf support, which is also heated.

The materials for the seats themselves have been developed in-house; Onvo calls it 'Caretech'. Skin-friendly, non-allergenic, and antibacterial, it has passed OEKO-TEX 100 maternal and infant level 1 certification. In addition, the seats have a 10-layer ergonomic composite structure and a 15-mm-thick composite surface, which Nio says can help avoid fatigue over long journeys. At the launch, the interior was described as a 'city oasis' emphasizing health and comfort.

Rear occupants get an 8" screen mounted on the back of the center console. A mobile app can help achieve the rapid heating of the cockpit from 0 to 20 °C (68°F) in just 30 seconds. The car has a multilayer filtering system which keeps bacteria, PM2.5, and other yuckiness out of the interior air.

A 1.9-m^2 panoramic roof can block 99.99 per cent of ultraviolet rays. There's an 18-speaker, 1,020-watt sound system with Dolby Atmos and a karaoke function. Powering the cockpit is a Qualcomm Snapdragon 8295P chipset. This provides 60 TOPS AI computing power, and the car has 256 GB of storage. There is a 52-liter Midea fridge that you can put under the trunk floor.

Quiet Interior and Tech in Smart #5

INTERIOR NEWS

SMART IMAGES

Smart's new #5 SUV is significantly larger than the brand's two previous small SUVs, and is intended to remain true to the Smart approach of offering as much space as possible for a car of this size. The developers have placed high priority on a quiet interior; the windows and the panoramic roof are optimally insulated.

The frunk holds 72 liters of luggage, with an additional 630 liters in the rear. The seats can be folded down variably for even more space. This even goes so far as to create a comfortable bed with a mattress.

The cockpit is dominated by two 13” screens arranged side-by-side. The front passenger can watch movies while driving. When there is a suitable break, the movie can be easily dragged to the middle with the fingers so that the driver can also watch it.

The Smart is mainly voice controlled via an 'AI' assistant. Leo, the lion avatar, guides you through the controls.

In addition to ambient lighting with 256 colors, the Smart has a sound system that is probably unique in this class. A 20-speaker suite from Sennheiser with almost 2,000 watts of power transform the vehicle into a disco or concert hall. Fun gimmick: the large subwoofer on the dashboard extends upwards and lights up to the beat of the music. This should particularly appeal to the young target group that Smart has always catered to.

Production is scheduled to start at the Geely plant in Changxing, China. According to Smart, the market launch in Europe is planned for the first half of 2025.

The Design Lounge

DS № 8: Premium Interior Full of Technology

THE DESIGN LOUNGE

ALL DS IMAGES

COFFEE CORNER
DVN
Interior

Inspired by the DS Aero Sport Lounge concept, DS № 8 is the new DS Automobiles top model, and the first DS model to be offered only as a fully electric vehicle.

It also marks the start of a new DS model nomenclature. № , typographically known as the Numero symbol, is the standard way of abbreviating "number" in French. The ° part of the Numero on the rear of the car is drawn like the tip of a diamond, and the numeral 8's shape—like an upright infinity symbol—is associated with balance and serenity. To strengthen the brand's identity, the car's rear will carry a **ds automobiles** callout as well.

The wide dashboard is decorative, like a piece of craftsmanship, and technical through the integration of the sound system, air vents, and light signatures. Its design perfectly combines a high level of expertise and advanced technology.

The Clous de Paris-embossed inserts on the steering wheel and air vents, as well as the pearl stitching on the dashboard and armrests, central to DS Automobiles, are still present.

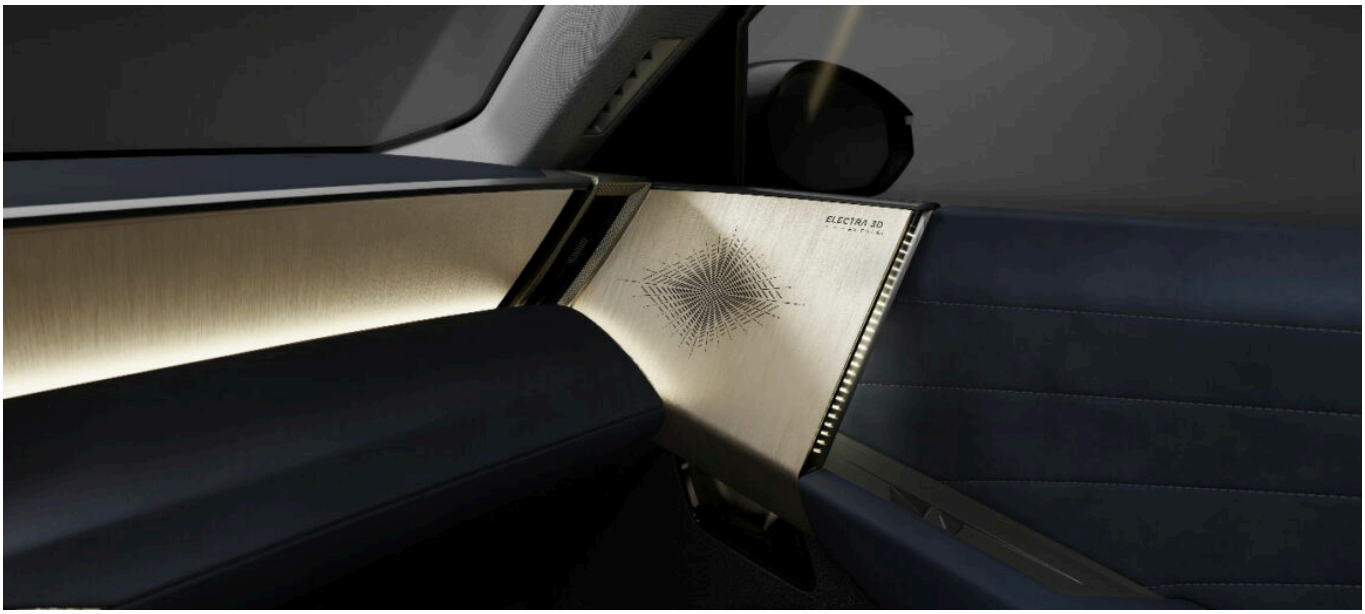
Lighting is a major feature in the new generation of DS interiors. The Inner Lightblade vertical light signatures echo the exterior daytime running lights and mark the position of the door handles. These light up when the doors open, to welcome occupants. The console's backlit graphics are inspired by a starlit sky.

Inspired by the DS Aero Sport Lounge concept, the seats with their 'enveloping' construction feature a slender shape with integral head restraints. High-density foams and adjustable side bolsters on the backrests complete the comfortable seating. The front seats are massaging, cooled, and heated.

Close-up thermal comfort is enhanced by the DS Neck Warmer, a device that favors heating as close to the body as possible to reduce energy consumption. These neck warmers, fitted into the backrests of the front seats, are illuminated by a backlit DS logo with a crystal appearance.

Rear passegners benefit from meticulously studied postural comfort. There's ample knee room, 84 cm of headroom, and backrests inclined at 30° without compromise on their 40/20/40 modularity. Cooled and heated seat bases and backrests complete the comfort.

DS № 8 also offers benchmark soundproofing assisted by carefully fashioned aerodynamics, a complete acoustic treatment, and laminated glass.



When the doors are opened, the DS logo appears in the middle of the 10.25" instrument display. It welcomes the driver with subtly shimmering gold highlights. When driving, the dynamic 'Digital Art' content livens up the background of the instrument display. The speed of this animation is gentle while the contours of the patterns blend into a darker background, so that the driver stays focused on the essential information. In the middle, the design of the odometer is inspired by the world of watchmaking. The readability of the battery charge indicator and the power meter take precedence.

The new X-shaped steering wheel, inspired by DS concept cars, improves ergonomics and offers the driver new grip zones that contribute to driving enjoyment.

There's a double-decker floating center console. The upper part is devoted to the main interactive features. The transmission and drive mode selectors and the audio system’s instant-access volume control fall perfectly to hand. These features have been designed like crystals, while a subtle light animation alludes to the shape of a galaxy. The phone storage area is trimmed in Alcantara. A covered palmrest and the armrest contain extra hidden storage. In the lower part, there's a large storage space that can be hidden by a sliding shutter. It has two removable cupholders and two USB-C sockets. The sides of the console are covered and padded to be pleasant to the touch and in contact with the leg.

The main display is a personalizable 16" item. It provides access to the functions of DS Iris System 2.0, controllable by speech recognition. It is integrated into the dashboard and works seamlessly and responsively like a smartphone. Very slim, it blends perfectly into the surface of the dashboard without encroaching. The chrome stenciling brings a touch of refinement never before applied to a production car.

The Etoile ("star", in French) interior features an exclusive Alcantara, made from 68 per cent recycled materials. The full-grain Nappa leather, incorporating revised watchstrap seats, is now tanned with olive leaf using a non-toxic, totally biodegradable method. Materials reclaimed at the end of their life are also present in the textiles (60 per cent), carpet (75 per cent), and floor mats (96 per cent). The removal of chrome in favor of paint, brushed aluminum, and stainless steel are also part of this approach.

DS and French audio specialist Focal developed a sound system for the car that offers a new concept in integrating 14 speakers throughout the cockpit for a power output of 690 W and an immersive experience, served by a height-adjustable soundstage.

With a line of sight adjusted to 1.29 m above the ground, the driver enjoys an optimum driving position. He will also be able to take advantage of the extended ARHUD, which unobtrusively provides relevant information such as speed and navigation, with waypath arrows to assist the driver. Road signs scroll smoothly across the windscreen in augmented reality.

The Driver Attention Alert is a DMS-like system consisting of two cameras which always monitor the driver’s eyes and behavior for signs of fatigue, distraction or drowsiness. An infrared camera, located at the top of the steering column, observes the face, where they’re looking and eyelids. A multipurpose camera at the top of the windscreen detects the driver swerving between white lines at above 65 km/h. If it concludes they’re not paying attention, the driver is alerted by an audible signal and a warning message in the instrument display.

News Mobility

Mercedes Tests L4 Cars in Beijing

NEWS MOBILITY

MERCEDES-BENZ IMAGE

Mercedes-Benz is now allowed to test L^4 automated driving systems in Beijing. Two S-Classes are on the road on designated inner-city roads and highways in the Chinese capital, equipped with a sensor arrangement developed for the project with lidar, radar sensors and cameras. Chinese company WeRide is a partner in the project; they're a startup specializing in technology for automated driving, and Bosch is among their investors.

The developers want to find out how the system behaves in everyday situations. For example, when turning left with oncoming traffic, when driving through traffic circles, and when turning and parking. The two cars can also automatically change lanes on highways and drive through toll stations autonomously.

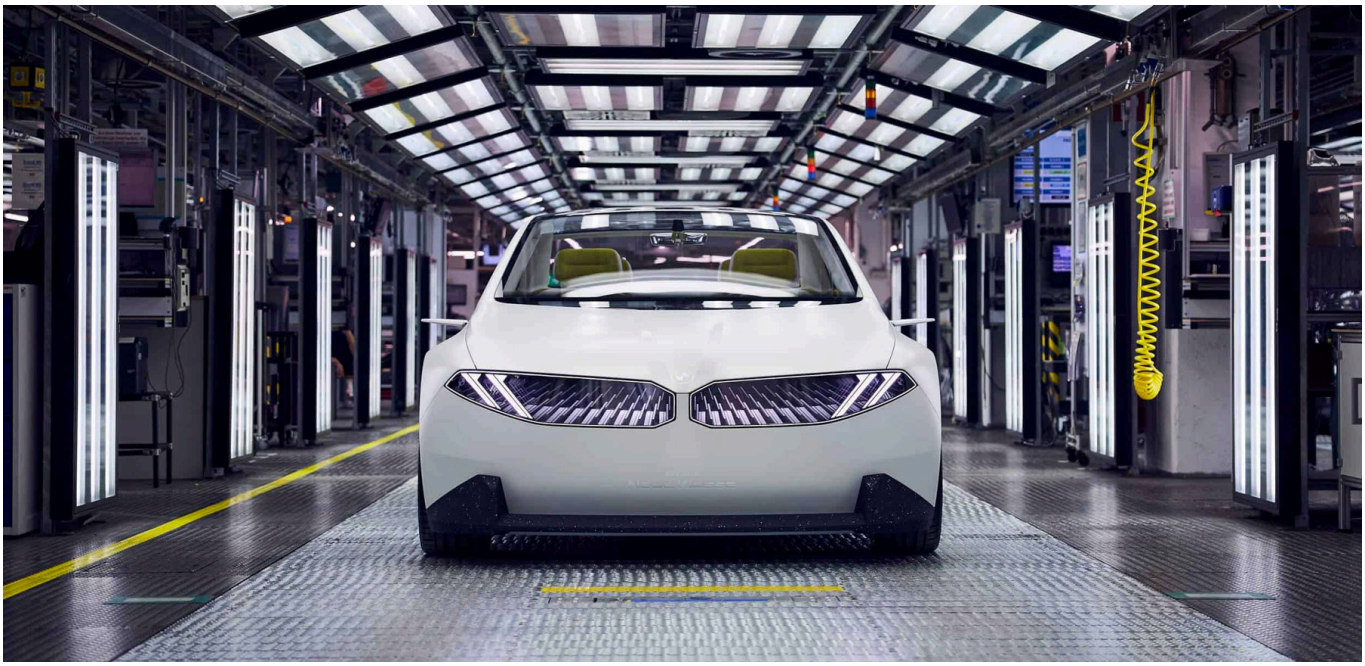
In extreme situations, the vehicle performs a 'minimum risk maneuver': it stops at a safe place. The electrics, steering, and brakes are redundant. Mercedes-Benz intends to use similar assistance systems in private vehicles at a later date.

Around four years ago, the city of Beijing established the Beijing High-level Autonomous Driving Demonstration Area" in the southeast part of the city, where companies are allowed to test autonomous driving functions. According to the Beijing Daily, 19 test companies had set up shop in March 2023 and 578 connected vehicles had covered a total of 14.49 million kilometers. The companies located here include Baidu, Pony, and Sense Time.

General News

BMW, Tata in Digital JV

GENERAL NEWS



BMW IMAGE

This past October, BMW and Tata founded their digital joint venture. The 50/50 joint venture is called BMW TechWorks India and will focus on the development of software for BMW vehicles. The software is to be used in the New Class models, among others.

According to the company, the number of employees will be in the thousands by the end of 2025. Turnover is expected to exceed the 100-million-dollar mark within a few years, as Tata Technologies CEO Warren Harris said. BMW TechWorks India joins BMW TechWorks Romania, which was founded in July with NTT Data, as well as BA TechWorks in China and Critical TechWorks in Portugal. Schaeffler, Mercedes, Stellantis and Magna, among others, already operate development centers in India.

The tasks include writing code for software-defined vehicles, automated driving, infotainment applications and manufacturing processes. BMW will own the software developed in the JV, a departure from its previous strategy of outsourcing such tasks to tier-1 suppliers. This allows the manufacturer to remain flexible when adjusting the software. BMW is thus following what they describe as a "risk mitigation strategy" in which they retain control of the software so its costs and schedule do not get out of hand.

Tata Technologies is already working as a software supplier for JLR, also a Tata Group company. The department also supports American and Chinese car manufacturers with software-defined vehicles.

After Opel, Bochum Reinvents Itself

GENERAL NEWS

2014, LEFT; 2024, RIGHT (BOCHUM PERSPECTIVE / K+S STUDIOS IMAGES)

"Opel's heart has stopped beating," lamented an Opel employee in Bochum, Germany on December 5, 2014, during the plant's last production night shift. The end of the car manufacturer with around 3,000 jobs in the structurally weak Ruhr region caused anger and fear for the future. Today, a business and technology center with more than twice as many new jobs has been created on the site. The project is called "MARK 51°7".

After 52 years, the era of car production, originally intended to compensate for job losses in the mining industry, came to an end. At times, up to 20,000 people worked at the Bochum plant, assembling the Kadett and Manta, Astra and Zafira. At its peak the local ecosystem included many more people, including 660 employees at the Johnson Controls seat assembly plant.

The old facilities were demolished as quickly as possible. In 2017, construction work began on a large DHL parcel center with 600 employees. The neighboring Bochum University, and its renowned focus on IT security, played an important role. This encouraged VW, for example, to locate their IT subsidiary VW Infotainment here, with currently around 1,200 employees. Etas, now a Bosch IT subsidiary with 350 employees, emerged from a university spinoff. The site offers space for up to 2,000 people.

The basis for the new start was considerable investment not only from Opel, but also from the public sector. When selling the developed plots, the planning company ensured that a diverse mix of services, research-related companies and production was created, with companies employing between 150 and 1,000 people, not the one large corporation.

The successful change can also be seen in the city's books: "Bochum's trade tax revenue has doubled in the past ten years," says Ralf Meyer, Managing Director of the municipal company Bochum Perspektive.

Nissan + Honda, Sitting In a Tree…?

GENERAL NEWS

NISSAN CEO MAKOTO UCHIDA (L); HONDA CEO TOSHIHIRO MIBE (R) (GETTY IMAGE)

Nissan and Honda are in discussions about closer collaboration, but they have not publicly made any decisions regarding a merger. The talks are aimed at strengthening their positions in the EV market, particularly in China. and better competing with other major automakers like Toyota and Tesla.

In March, the two Japanese car makers agreed to explore a strategic partnership for EVs.

Honda and Nissan have not denied the story, first reported by Japanese business newspaper the Nikkei, but said it was "not something that has been announced by either company".

A potential merger between Japan's number two and number three car manufacturers could be complicated for several reasons. Any deal is likely to come under intense political scrutiny in Japan as it may lead to major job cuts. Nissan is also likely to be faced with unwinding their alliance with French vehicle manufacturer Renault.

Honda and Nissan agreed in March to cooperate in their EV businesses, and in August deepened their ties, agreeing to work together on batteries and other technology.

In August, the two companies also announced an agreement with Mitsubishi Motors to discuss intelligence and electrification. The Nikkei also reported that Nissan and Honda may eventually bring Mitsubishi into any potential partnership. Nissan is Mitsubishi's biggest shareholder.

Honda and Nissan have been losing market share in China, which accounted for almost 70 per cent of global EV sales in November.

The two brands had combined global sales of 7.4 million vehicles in 2023, but are struggling to compete with cheaper EV makers such as BYD, which has seen its quarterly revenues soar, beating Tesla's for the first time in October.

Nissan has become the latest buyout target in Japan, as they explore a merger with Honda and an overture from Hon Hai Precision Industry, the Taiwan-based manufacturer of iPhones known as Foxconn.