Thu, 31 August 2023
Weekly Newsletter

DVN-I
Automotive Interior

NEWSLETTER #176

Editorial

DVN Triple Event In San Francisco: A Grand Success!

The DVN Interior Deep Dive, together with the DVN Lighting Workshop, finished yesterday in San Francisco—too late to be reported in this week newsletter. It was a great event, the first-ever DVN event on the US West Coast, and we will report on it next week. Also keep an eye out for our coverage of the Munich IAA Mobility show, opening to the press and the public on September 4th.

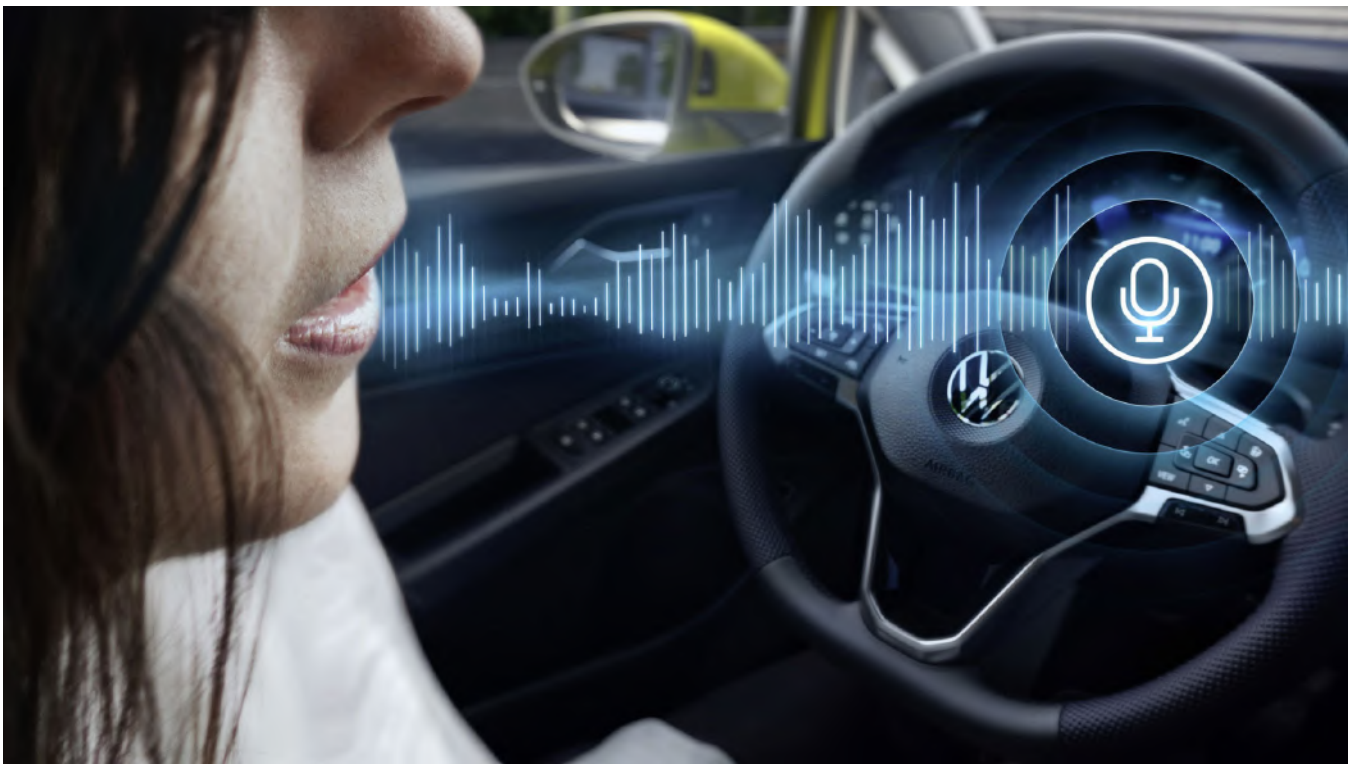
This week's in-depth report is about voice control as an alternative to touchscreens. Is that realistic? Most likely yes, with caveats. Have a look, and this article will feed the next discussion we'll have within the DVN Interior community. If you're not yet a member, that's a good opportunity to register, **here**!

Sincerely yours,

Philippe Aumont
DVN-Interior General Editor

In Depth Interior Technology

Is Voice Control a Viable Alternative to Touchscreens?



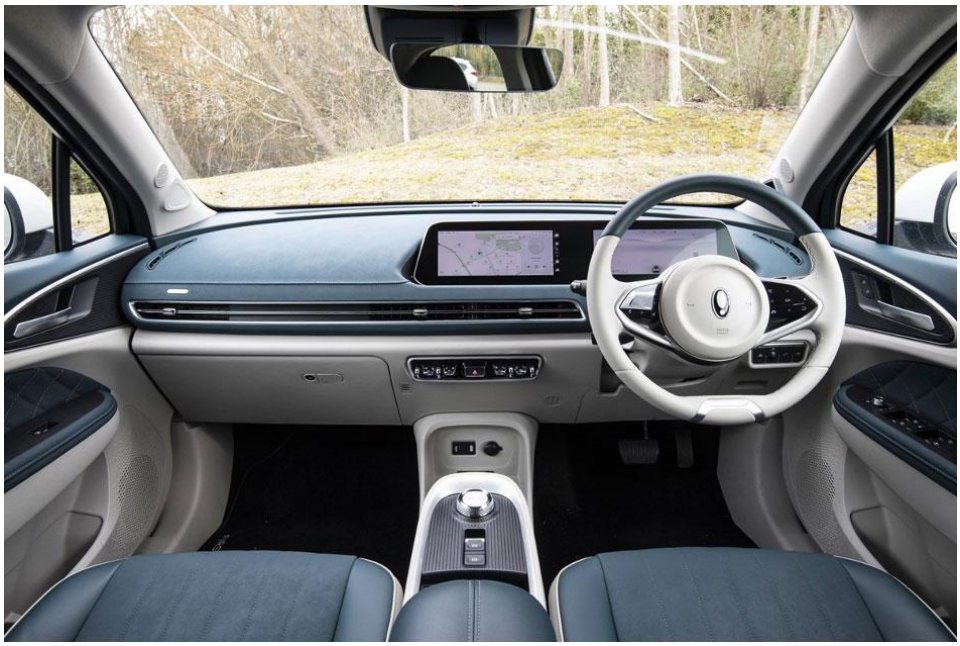
VOLKSWAGEN IMAGE

Touchscreens are all the rage; they're sprouting and growing like mushrooms: virtually everywhere, in virtually every kind of automobile. As we **reported earlier this month**, they are increasingly recognized as a problematic way of implementing the driver/vehicle interface. Meanwhile, voice control is steadily evolving, too. The world of mobile devices has successfully demonstrated this with Siri, Alexa, and others.

Alongside the touchscreen, voice control has become one of the most important operating systems in the car. The range of functions of cars in general and infotainment systems in particular is growing immeasurably, but real physical controls are considered old-fashioned, passengers are already getting lost in the menus on the touchscreens, and gesture control will probably be limited to only a very few commands. Therefore, developers and ergonomists are turning to spoken words. With significantly improved technology and a behavioral pattern among users that has been changed by smartphones, voice control in vehicles will become much more important in the future.

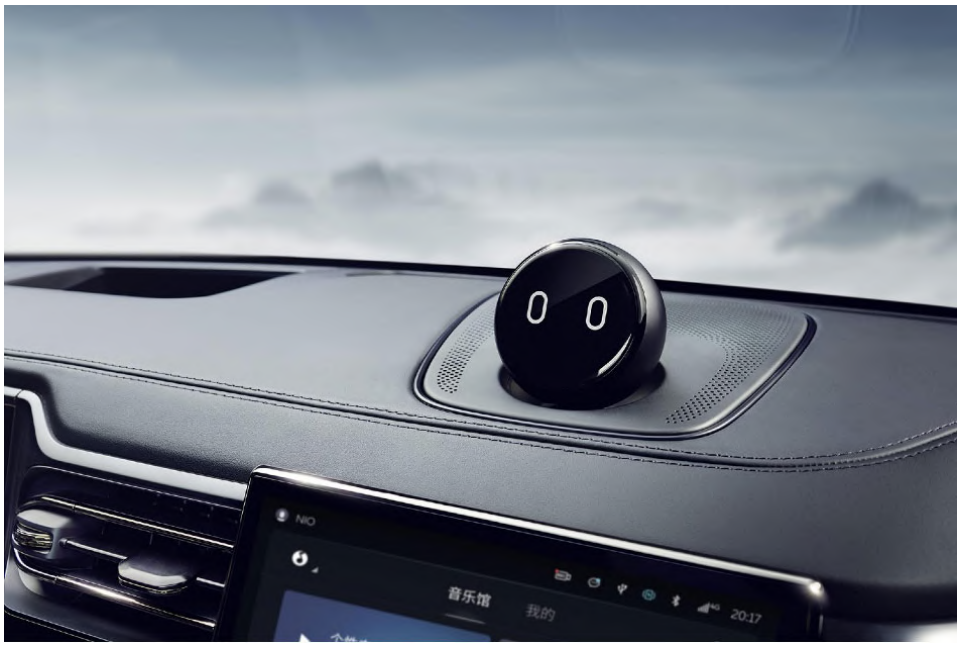
The magic words for this are 'natural language input'. Today's voice controls can achieve a quasi-fluent speech, but is that good enough? The average person gets through the day with an active vocabulary of about 4,000 words or so. Rather than wade through command lines and chains of commands, the operator speaks a more or less normal monologue and the car picks out the appropriate keywords. As one developer says, "It's not the human, but the technology that needs to learn vocabulary if the system is to be successful".

At the same time, car manufacturers are also integrating external voice controls from Google and Apple and Amazon. Alexa and Siri are becoming the digital co-driver; you can not only make calls with voice control, enter navigation destinations, or dictate messages, but also open the blinds in your smart home or check the supplies in the refrigerator.



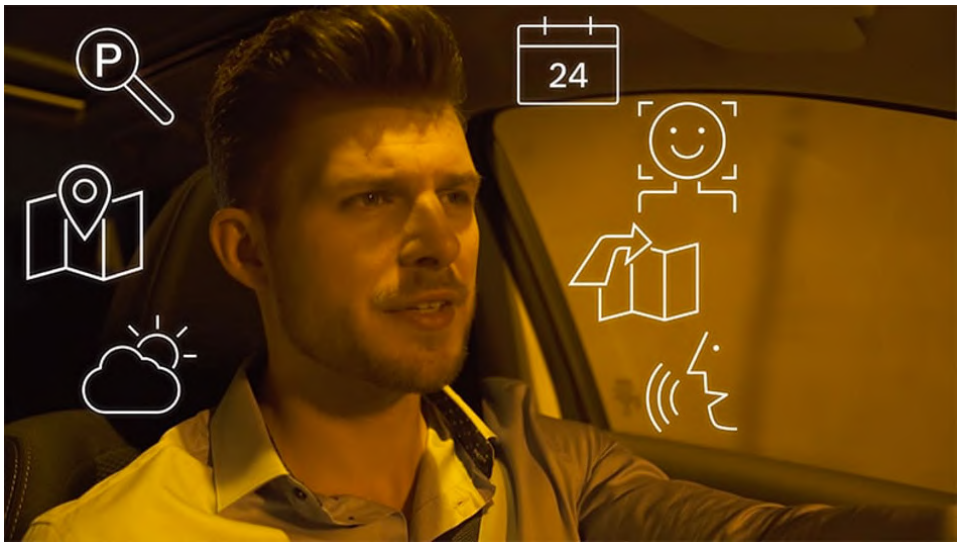
ORA FUNKY CAT (GREAT WALL IMAGE)

In the medium term, the voice control system also wants to recognize and influence moods, and the Chinese-made Ora Funky Cat is the first to do so. The electronics in that car use the choice of words and tone of voice to infer the driver's emotional state and adjust it with music, air conditioning, and lighting, and targeted speech in case of doubt.



NIO IMAGE

Nio shows it's not far from there to the 'virtual passenger', where voice control has literally been given a face: Instead of just chattering from the screen, a digital companion is embodied as a lump on the dashboard. It looks at the driver through big googly 'eyes', and thus does what Siri and such have not yet achieved: nonverbal communication. The system is named Nomi, and it presently has the capabilities to go beyond standard infotainment and navigation functions. We looked at Nomi **awhile back, in September 2020**.



BOSCH IMAGE

The Bosch speech recognition needs no external data connection; the onboard infotainment system handles all the speech processing itself. This ensures reliable voice control, even in tunnels and areas with poor cellular coverage.

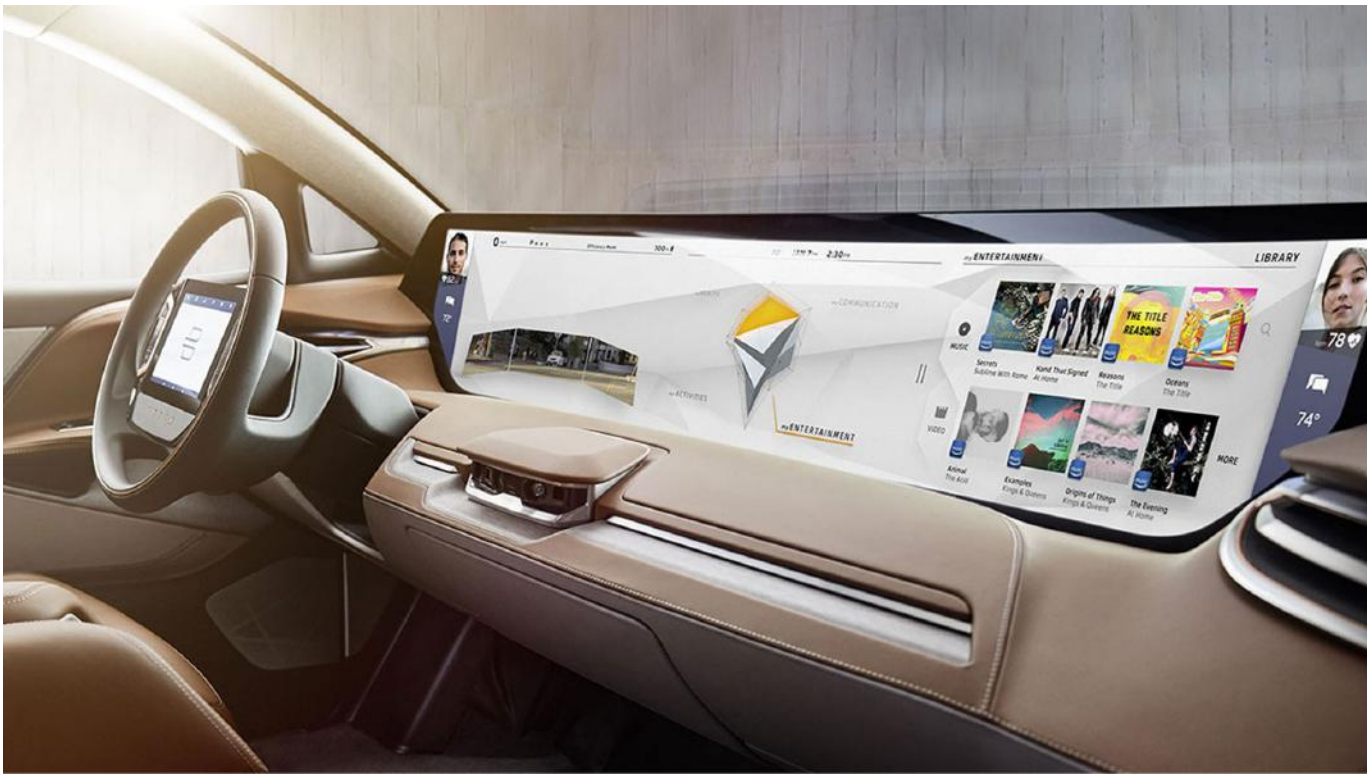
The system handles accents as well as cultural and regional differences in speech. Passengers and their individual configurations are recognized—all to lessen distraction while driving, thus increasing safety and convenience.

So is voice control an alternative to touchscreens? Yes. Is it the one that will come to prevail? Probably; it is going in the right direction. But likely it will complement rather than replace other HMI modalities.

Interior News

IM Technologies' Adaptive Cockpit Patent

INTERIOR NEWS



BYTON IMAGE

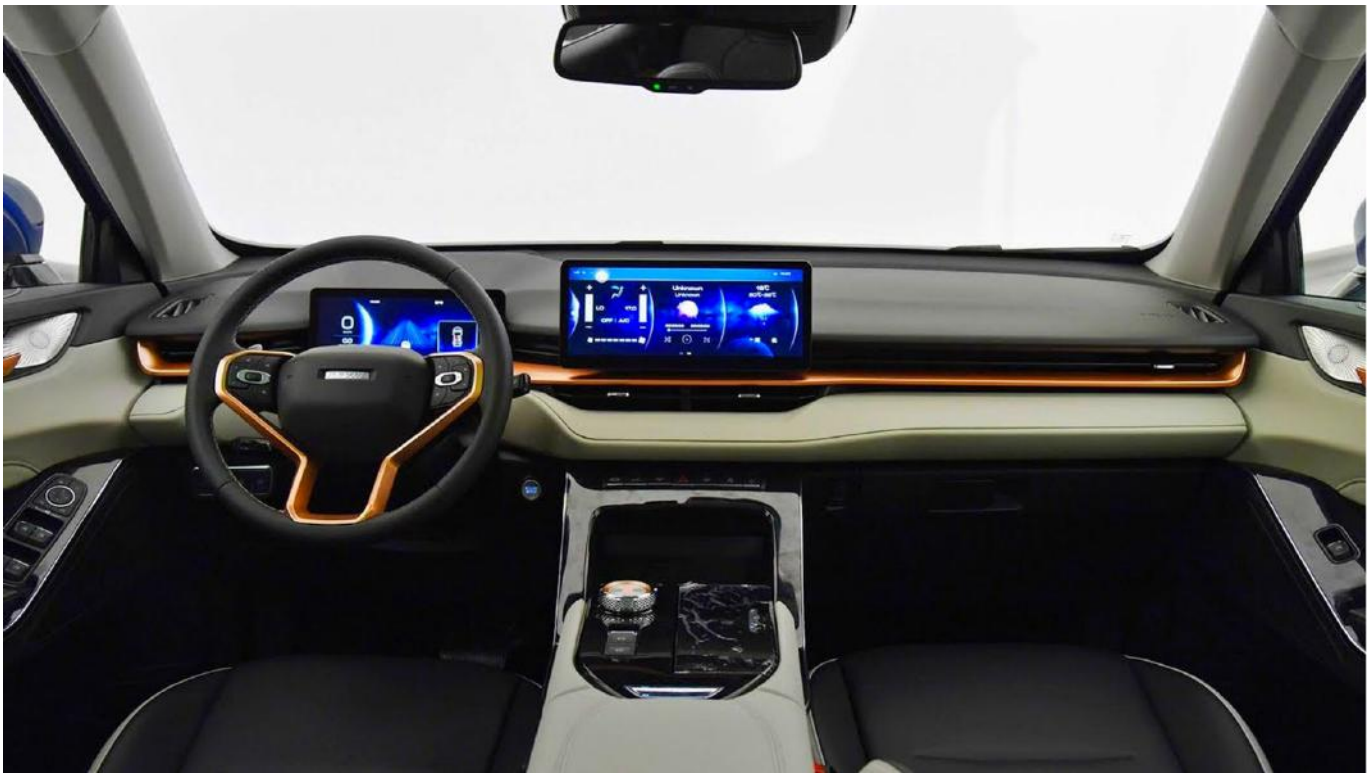
IM Technologies (for 'Innovative Minds'), based in Pune, India, providess design and engineering services. They have worked with many Indian and European automakers on products including instrument panels, door trims, consoles, pillar trims, and greenhouse / soft trim parts, in product development phases from concept to SOP. Their expertise lies in such technologies as plastic injection and premium covering and decoration techniques like slush molding; IMD; wood decoration; leather covering, and chroming.

They recently announced a new patent filed for a progressive design of infotainment and advanced screen systems. It caters for the lean dashboard and EVs where the focus is on adaptability, with a very simple underlined mechatronic system to make it appear and disappear from the dashboard.

The logic is that the screen need not to be present upfront all the time, but must appear on demand, making space for a cluster-free, ergonomic dashboard system.

Foryou, BlackBerry in Digital Cockpit Development Pact

INTERIOR NEWS



GREAT WALL MOTORS' HAVAL H6S (GREAT WALL IMAGE)

Chinese automotive electronics supplier Foryou General Electronics will collaboratively integrate BlackBerry's technology into forthcoming Foryou digital cockpits, which will go into various vehicle models, including those from Great Wall Motor.

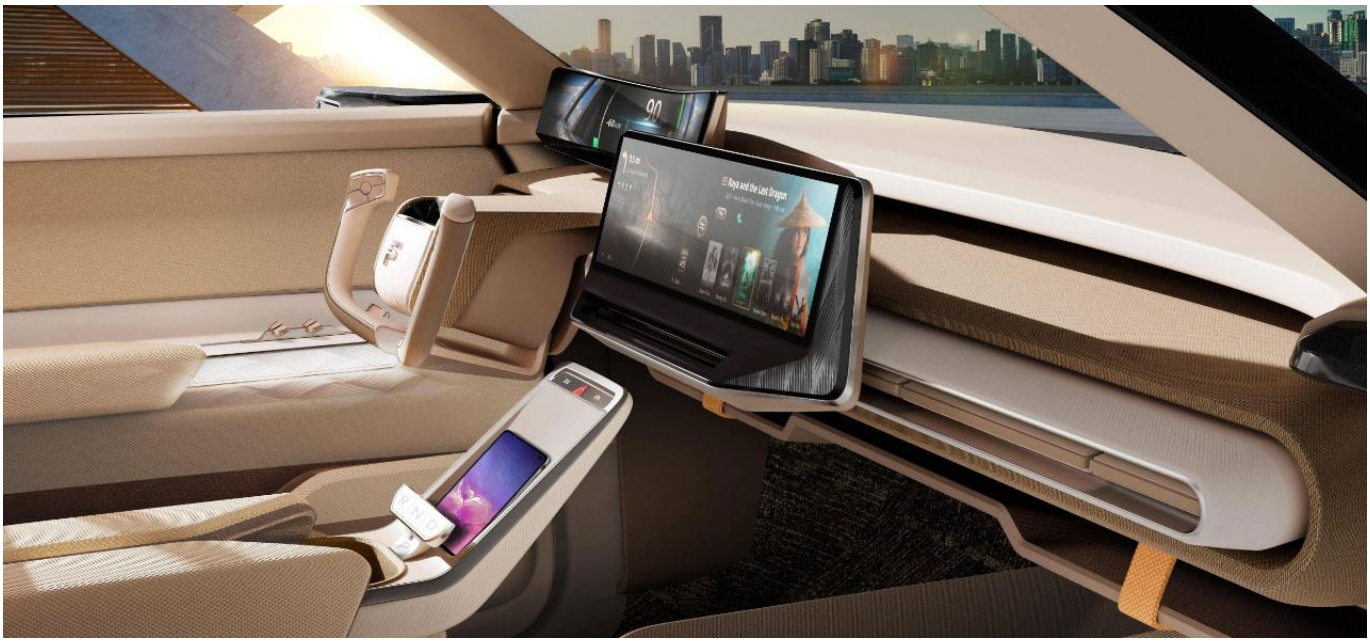
Foryou is using BlackBerry's QNX Neutrino real-time operating system (RTOS) and QNX Hypervisor to ensure the functionality, security, and reliability of digital cockpits. This collaboration enhances vehicle software development, maintaining exceptional performance, integration, and scalability for automakers.

This venture builds on the decade-long partnership between Foryou and BlackBerry; in January 2022, the two companies jointly developed a cockpit domain controller for a leading commercial vehicle maker.

Foryou's innovative digital cockpit solution, powered by BlackBerry QNX, integrates diverse operating systems and security levels into a single comprehensive platform, providing users with a secure and immersive driving experience. The BlackBerry QNX also grants Foryou flexibility and scalability in digital cockpit design, reducing both initial development costs and long-term expenses.

Five Forvia Technologies Picked for Pace Awards

INTERIOR NEWS



Five Forvia technologies have been selected as 2023 finalists for the Automotive News PACE and PACEpilot Awards.

The two technologies in the running for the PACE Award (for automotive suppliers, in recognition of a commercialised technological product or process innovation) are the Immersive Display, which combines high- and low-definition screen areas of customizable shape and size to create a seamless user experience, and All-in-One Seating, wherein seat sensors can help identify potential physical pain.

And for the PACEpilot award, which recognizes pre-commercial, post-pilot innovations, the finalists are

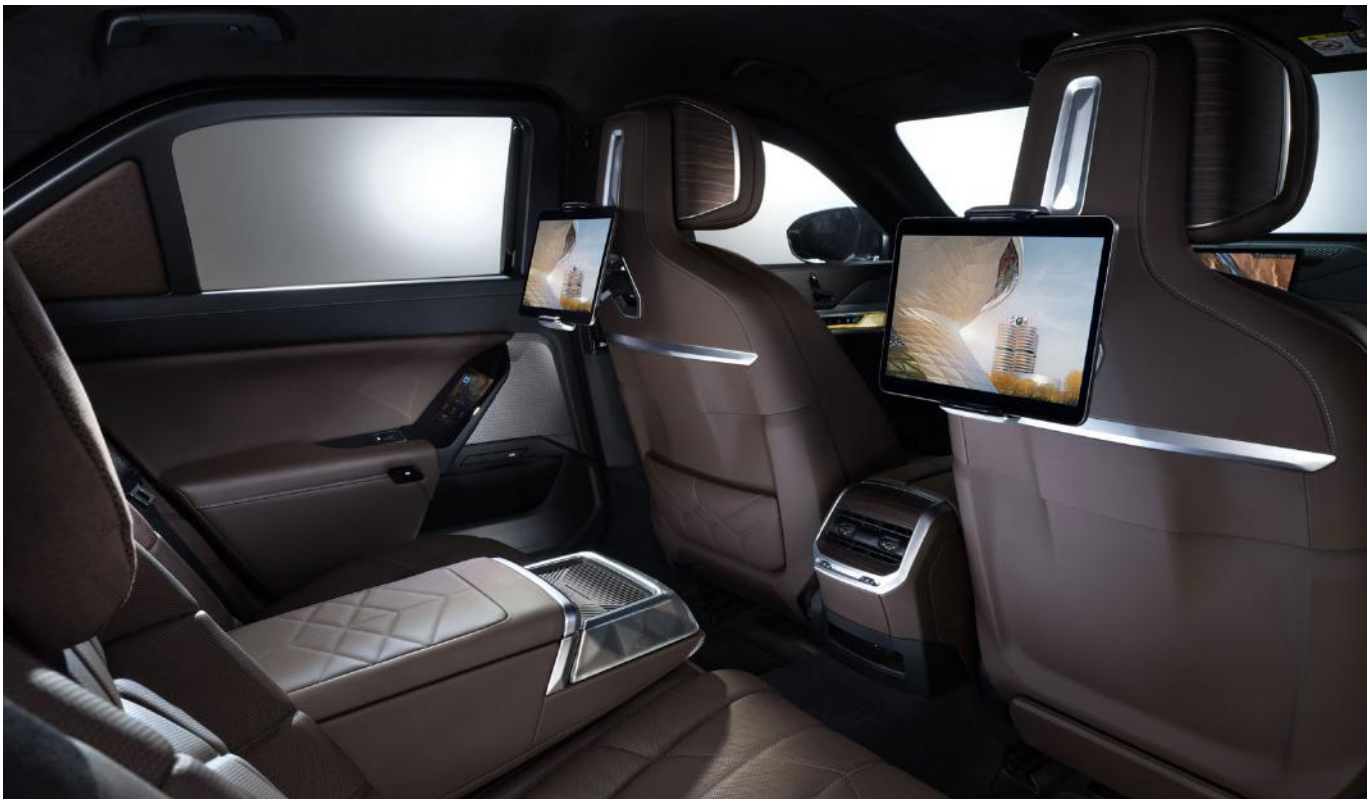
• eMirror Safe UX, which replaces exterior wing and rearview mirrors with a camera-based system to bring the surrounding view to the driving display;

• Dynamic lighting surface activation with light tile technology within the cockpit, and

• Hella's Intelligent Power Distribution Module with integrated electronic fuse. PACE and PACEpilot Award winners will be announced at a ceremony next year.

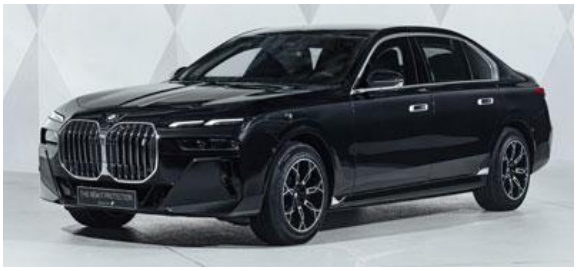
BMW 7/i7 Protection Cars Bristle With Safety Systems

INTERIOR NEWS



BMW IMAGES

BMW has revealed the i7 Protection, billed as the world's first ever protection sedan with an all-electric drive system, and 7 Series Protection, based on the standard 7 Series model.



The Protection cars are designed to offer VR9-class protection from attacks with firearms and explosives, per the criteria of Germany's Association of Test Laboratories for Attack-Resistant Materials and Constructions (VPAM).

BMW's new Protection Core—the entire supporting structure of the car's body is made of armor steel—ensures the highest level of protection for occupants. It forms a self-supporting protective cell, which is then combined with protection-spec doors, armoring for the underbody and roof, and special glass.

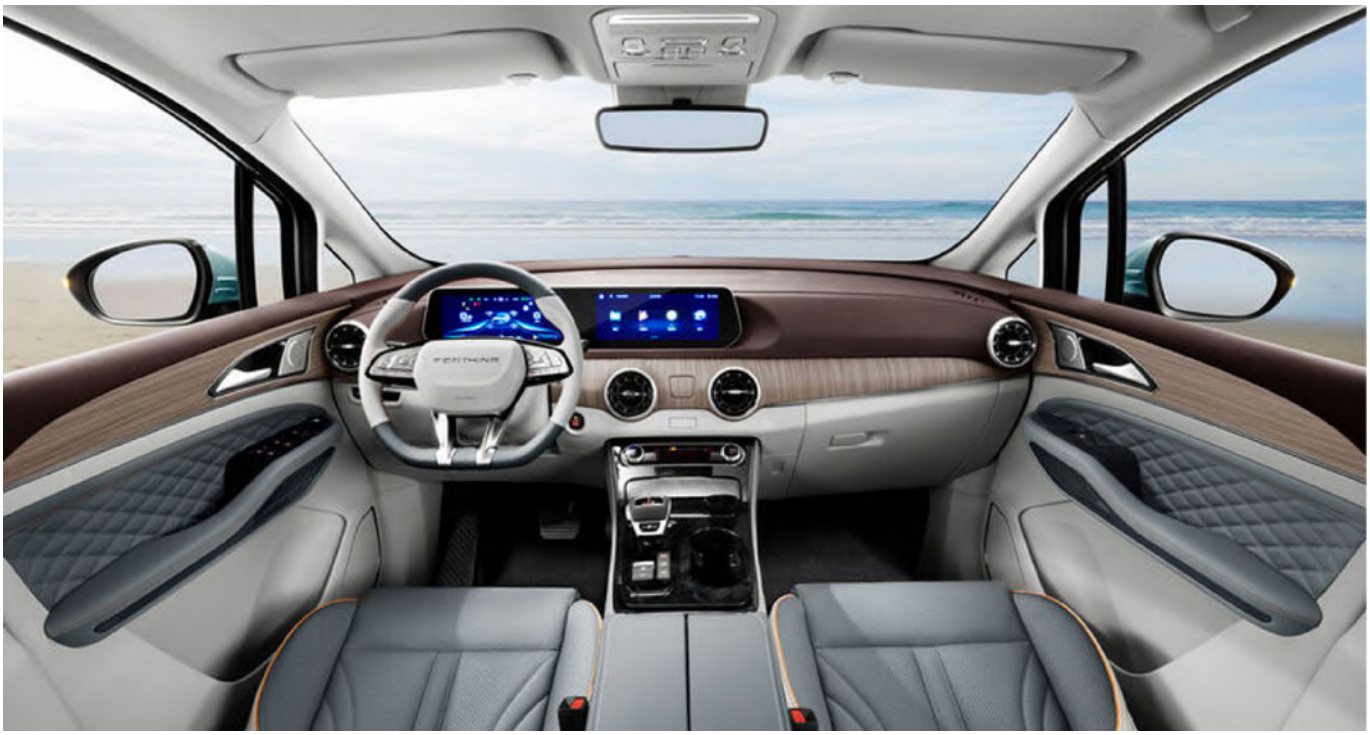
An extensive range of sensors, cameras, and driver assistance systems has been fitted, with systems BMW says are focussed on supporting professional chauffeurs with information and warnings, including a detailed view of the vehicle's surroundings.

The cars are equipped with the latest iDrive system, based on BMW Operating System 8.5, with the BMW Curved Display. An intercom system also comes as standard equipment, enabling occupants to communicate with people on the outside without having to open doors or windows.

Optionally, there's a fresh-air supply system, a fire extinguishing system, flashing lights, and radio transceivers, among other components one might expect to see in a James Bond movie. The cars will be first shown to the public at IAA Mobility 2023.

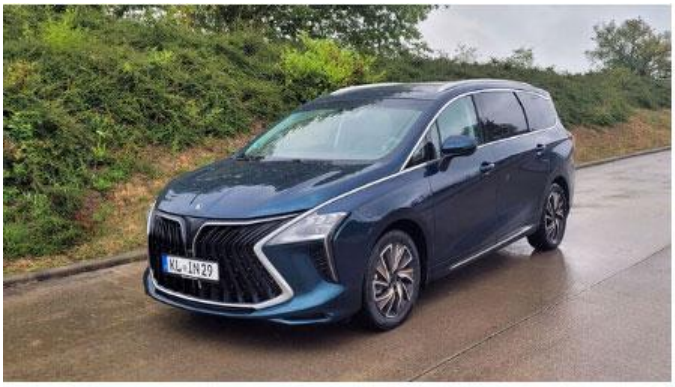
Dongfeng's Luxury Van Interior

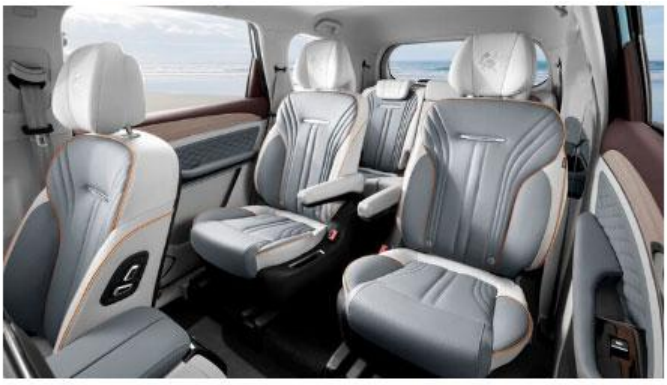
INTERIOR NEWS



DONGFENG IMAGES

The DFM Forthing 4 U Tour is a 7-seater van from the Dongfeng Group, with a recommended pricing around €31,000.





It has a highly designed interior with a feel-at-home atmosphere. The seats are upholstered in light-colored imitation leather, which is also found in the interior door trim. The trim elements look like wood, though they're made out of plastic. Overall craftmanship is very good, with many high-value details like the massive folding tables for the second row of seats.

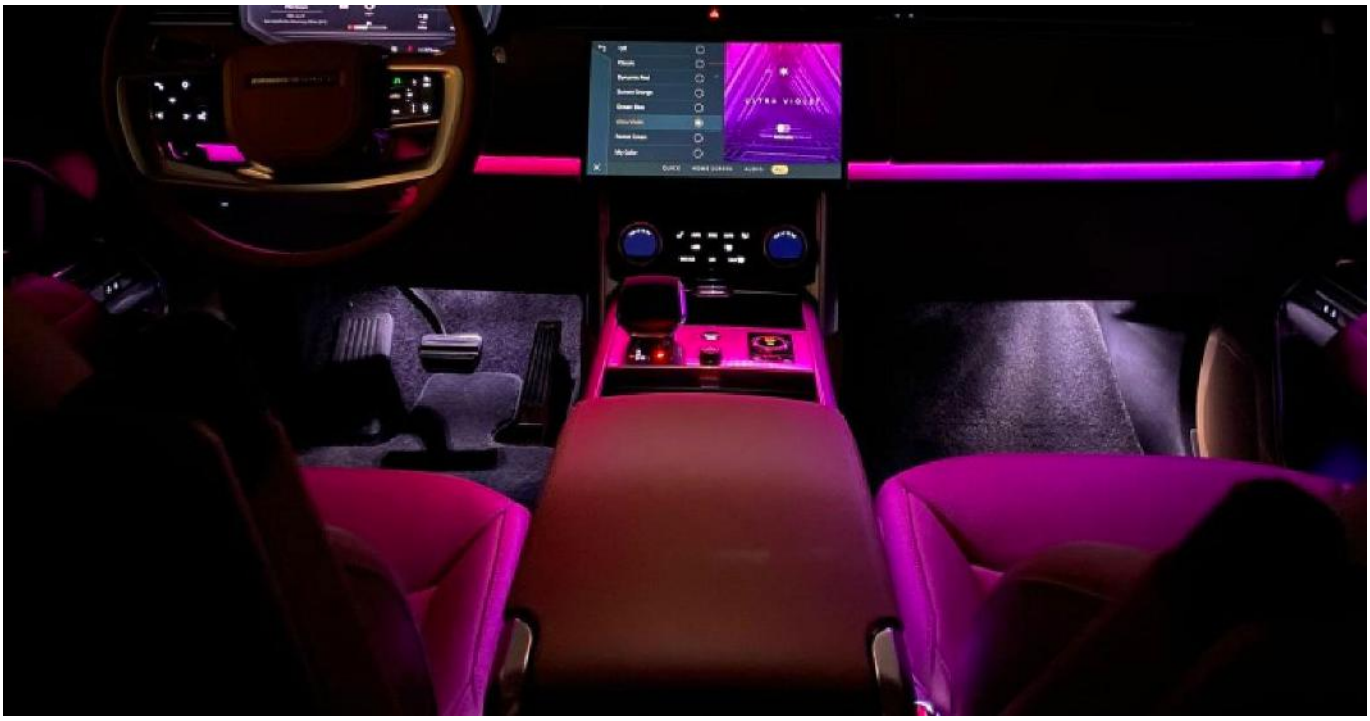
The two luxurious individual rear seats are electrically adjustable and, like the seats for the driver and front passenger, heated and ventilated. The seat climate control can even be automated. It can be adjusted in such a way that heating or ventilation comes on automatically at a certain outside temperature. The driver can also enjoy a massage function.

The third row is accessed by passing through the side-sliding middle seats. The numerous storage areas are practical. The compartment between the two front seats is even air-conditioned. Seat pockets and various hooks are further practical details. The small flap between the air vents in the center console is clever; a holder for smartphones can be attached here.

Connectivity is limited—you can connect your smartphone to the car via Bluetooth or USB cable, but Apple Carplay and Android Auto are not available.

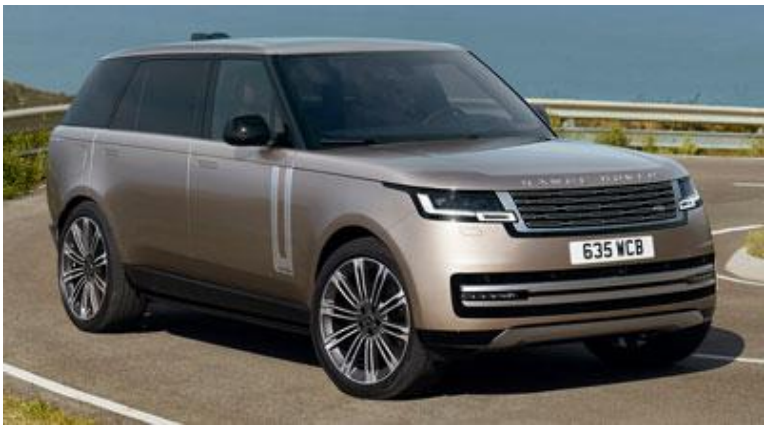
Range Rover Interior, Illumination and Pivi Pro Touchscreen

INTERIOR NEWS



RANGE ROVER IMAGES

With perforated-leather upholstery and a highly responsive voice control, the Land Rover Range Rover SE is a silent acoustic cocoon with an interesting interior,



There's a complete menu of features, starting with vehicle outline puddle lamps that illuminate before one even opens the door. Lighted metal sill plates invite entry, where the startup screen welcomes with a time-of-day-specific greeting and illuminated seatbelt buckles make easy work of strapping in.

Interior highlights include Windsor leather seats with massaging function in the first and second rows; 4-zone climate control with heated third-row seats; a power-accessed third row; perforated, stitched-leather seats; wood trim; aluminum on the console, dash and steering wheel; a circular-pattern knit headliner, and hidden, soft-touch cupholders. The center console alone is an intriguing mix of cubbies and hidden spaces, with ample storage room throughout.

The Range Rover has a remarkably capable UX tech and user interface. The Amazon Alexa-based Pivi Pro system delivers rapid, accurate responses for communication; information, and navigation. The Meridian 3D Surround Sound System provides clear audio regardless of volume level.

There's a floating, curved 13.1" infotainment screen offering crisp 3D navigation displays along with intuitive haptic feedback. Information in the center screen and instrument cluster is projected in the multicolor head-up display, offering navigation information and driver-assistance detail at a glance. The vehicle’s ADAS suite includes good lane-keeping assistance and smooth full-range cruise control.

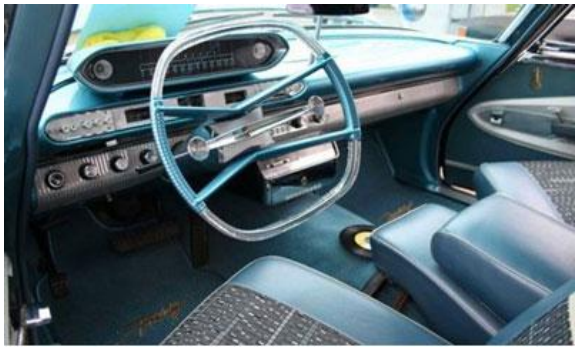
The cabin is bathed in the color of choice by the interior illumination, accenting the cross-cabin trim, door panels and center console as well as providing soft lighting in footwells and door pockets.

The Design Lounge

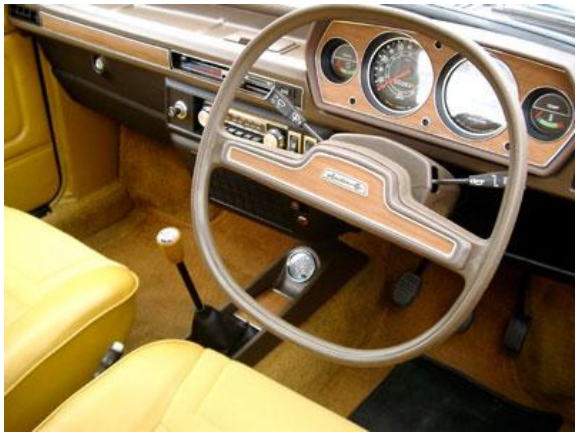
Who Invented the Steering Wheel?

THE DESIGN LOUNGE

No, the steering wheel was not invented at the same time as the wheel. The wheel was invented well before writing, so no one took notes! No one knows exactly when cars started having steering wheels instead of tiller handles but it must have been right about when humans started growing a second arm…!



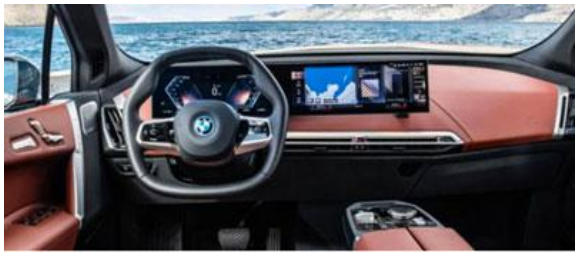
While the coffee talk goes on, early wheeled vehicles—ancient carts and chariots—did not have a steering wheel. Instead, they typically used a system called shaft-steering with the front axle attached to the vehicle through a pivoting tube. The development of the steering wheel as a system for controlling vehicles came much later in human history. The earliest known use of a steering wheel can be traced back to 1894 when Alfred Vacheron used one on his custom, four-horsepower Panhard to participate in the Paris-Rouen race in France, while Ohio bicycle manufacturer Alexander Winton is credited with creating the first mass-market steering-wheel-equipped car in 1898.



Why are steering wheels round? Well…they're not always, as DVN-Interior has **previously reported**. The blue 1960 Plymouth at the top of this article has a squircle-shaped steering wheel; Chrysler put them in many models from the late 1950s through the early 1960s. Perhaps that was an inspiration for the similarly squircular wheel on the 1973 Austin Allegro shown here.

Between the 1980s and '90s, an incredible evolution of the steering wheel took place thanks to F1 races. From a massive 40cm diameter wooden circle in the 1950s, getting just enough leverage to turn the car, to a sculpted carbon fiber unit in the early 2010s, with more computing power than any laptop, steering wheels got smaller. Top and bottom sections were removed or flattened. Functionality and strength increased, along with cost and

complexity. With steering wheels resembling a space station control center, F1 drivers today must memorize hundreds of switch combinations to access all settings provided. They no longer get feedback through the wheel but from it as well. Meanwhile, rally driving became widely available through video game consoles, spreading a firsthand experience of the modern steering-wheel interfaces. In parallel, the exponential growth of tech systems such as drive by wire, assisted steering, lanekeeping assist, etc. are nudging the real driving experience ever closer to its gaming perception. Thus, the physical input applied by a driver to a steering wheel is no longer limited to rotation about a single axis (e.g., PlayStation controllers). But on real roads, in real cars, with real grownups in the driver seat, the degree to which the 'wheelness' can be taken out of the steering wheel is practically limited. Elon Musk scornfully ("[not] another boring round wheel") went too far with his videogame fantasy; the yoke he installed instead is **widely despised** as just the wrong way to do it.



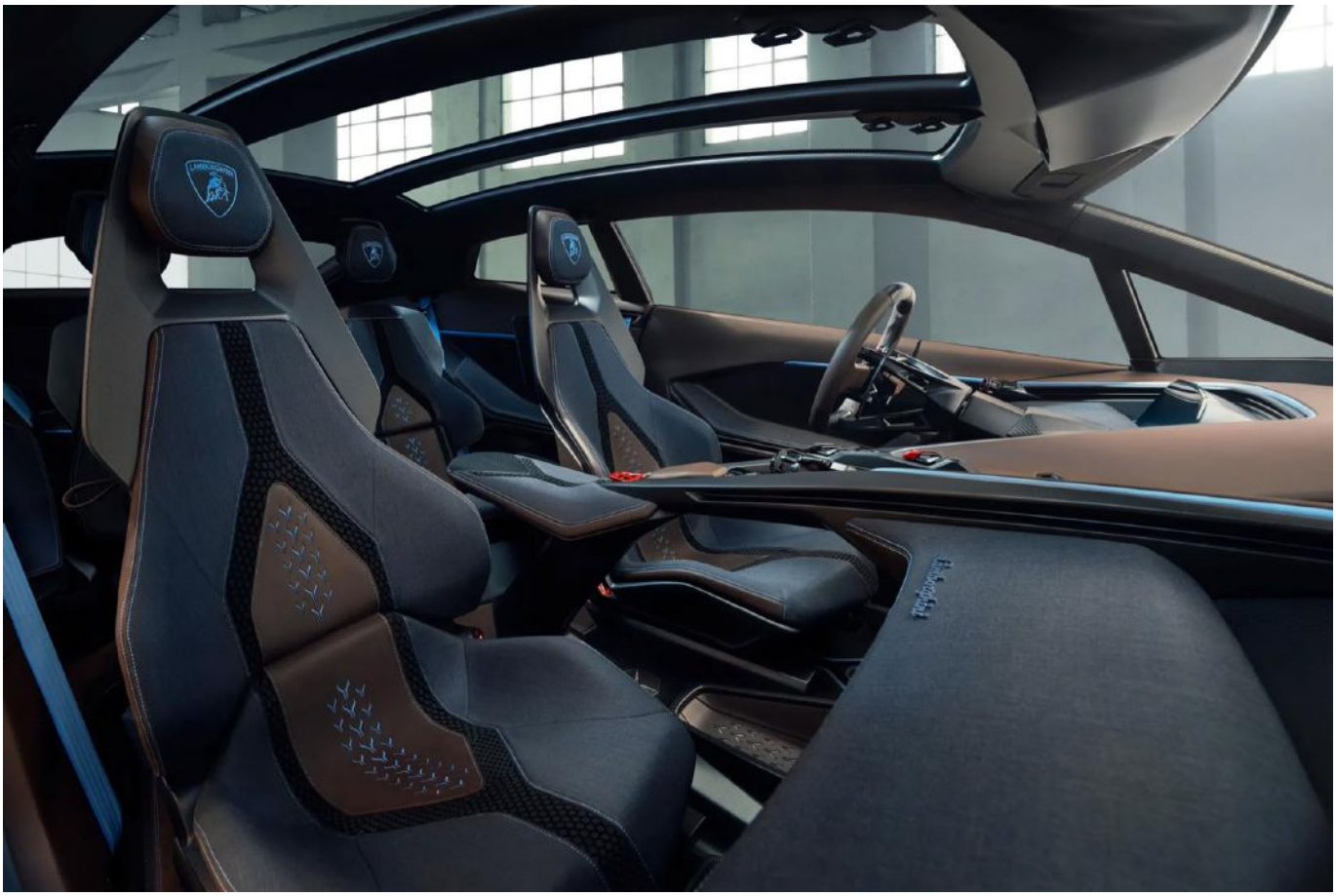
Are we still calling it a steering *wheel*, even if it's not round? Probably. Peugeot calls the one in their Inception a 'Hypersquare', but most people will probably still call it a wheel—just like we still 'dial' phone numbers even though pushbutton phones were introduced 61 years ago and actual rotary dials are all but extinct. And this BMW item is hexagonal, but still a steering wheel.

So, why do self-driving cars even have steering wheels? Because they're not self-driving cars. Nobody is selling actual, real self-driving cars yet; they are either adaptations of existing cars, with steering wheels, or they are not yet fully self-driving. Real self-driving cars don’t have steering wheels, just a red stop button.

'Taking the wheel' means taking control of the entire vehicle, not just the steering; becoming driver instead of passenger. The difference between heading towards the destination and how to stay on track, is related to the ability of always exploring multiple paths and taking chances. The very notion of controlling the appeal of the entire journey, makes the steering wheel not just the main driving tool but also the symbol of imminent change of direction. Going-specifically-there-right-now is what expresses the basic idea of freedom to move and moving slightly to the right or to the left, in order to go faster forward towards the destination, is our primary relation to the territory and its 3-dimensional aspect. The lateral movement is what gives the feedback, the condition and the quality of motion, the reason why it is said that a race is always won at the corners.

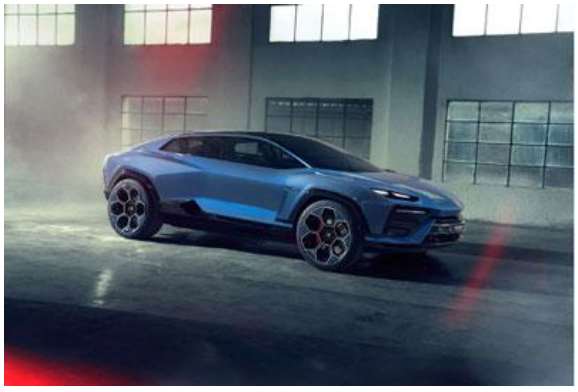
Lamborghini's First EV Concept: Lanzador

THE DESIGN LOUNGE



LAMBORGHINI IMAGES

Lamborghini unveiled their first-ever EV at Monterey Car Week. They describe the concept as a high-ground-clearance GT with 2+2 seating. The Lanzador includes what Lamborghini calls an “unprecedented onboard experience,” which stays true to the brand’s DNA but also offers a glimpse into its future.



A trunk is hidden under the short front bonnet, while the glass tailgate opens wide. With adjustable rear seats, the EV is adaptable to most situations.

The interior layout is designed to make it feel like you’re a pilot, with active controls on the sports steering wheel (which we note is mostly round!), bucket seats with high seat position, and dual digital screens. One screen is for the instrument panel in front of the driver, and the other is a retractable entertainment system for the passenger.

A newly-developed Lamborghini Dinamica Veicolo Integrata (LDVI) driving dynamics control system creates an even finer and more precise drive. Aerodynamics also plays a critical role; the car has the ALA (Aerodinamica Lamborghini Attiva; 'Lamborghini active aerodynamics') system, the technology used in the Huracán Performante and Aventador SVJ to optimize efficiency. **See video**.

News Mobility

Autonomous Vehicles Mean Slower Travel Times?

NEWS MOBILITY

A new study, supported by the North Carolina Department of Transportation. finds that connected vehicles, which share data with each other wirelessly, significantly improve travel time through intersections, but automated vehicles can actually slow down travel time through intersections if they are not connected to each other.

Corresponding author of the research Ali Hajbabaie (photo), an associate professor of civil, construction and environmental engineering at North Carolina State University, says, "There is a lot of research showing that automated vehicles can improve safety. But our research here—which relies on computational modeling—suggests that if we want to also improve travel time, an increase in automated vehicles isn't enough; we need vehicles that are capable of communicating with each other and with the traffic-control systems that manage traffic flow at intersections".

The researchers used a computational model that simulates traffic conditions. They accounted for four types of vehicles: human-driven vehicles (HVs); connected vehicles (CVs) driven by humans which share information with other connected vehicles and with the control system that manages traffic lights; automated vehicles (AVs); and connected automated vehicles (CAVs).

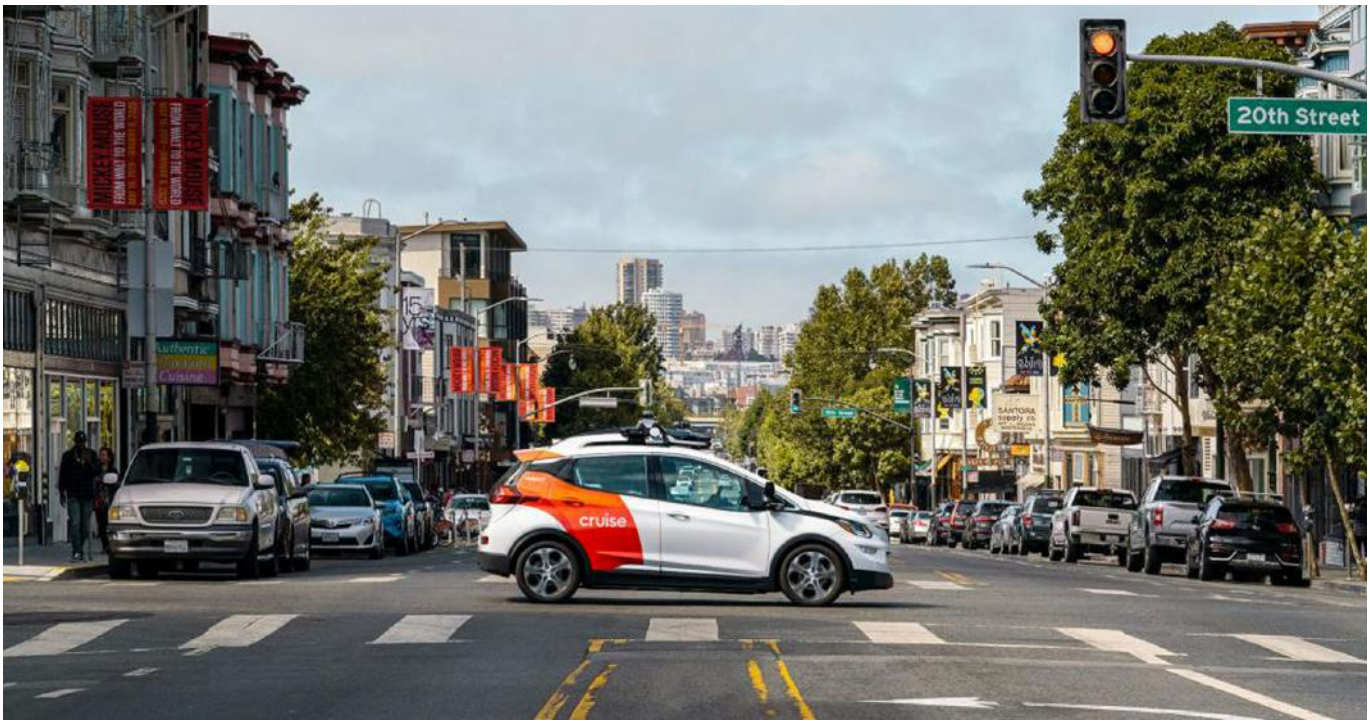
"Because of their programming, AVs are assumed to move more cautiously compared to human drivers," Hajbabaie says. "Their safety stems, in part, from their being programmed to drive conservatively. CVs and CAVs are designed to receive information about the future state of traffic lights and adjust their speeds to avoid stopping at intersections. As a result, the movement of CVs and CAVs is expected to be smoother, and have a lower number of stops, than HVs and AVs."

One clear takeaway was that the higher the percentage of CVs and CAVs, the greater the intersection capacity. In other words, when more vehicles on the road were connected, more vehicles could flow through the intersection more quickly. Higher capacity also means that, on average, you have fewer vehicles sitting in line at a red light.

The paper, "**Effects of Connectivity and Automation on Saturation Headway and Capacity at Signalized Intersections**," is published in the Transportation Research Record journal. The paper was co-authored by Eleni Bardaka, an assistant professor of civil, construction and environmental engineering at NC State; and by Mehrdad Tajalli, a recent Ph.D. graduate from NC State.

Unaccompanied Cab Services OK'd for San Francisco

NEWS MOBILITY



CRUISE IMAGE

San Francisco is becoming quite a testing ground for robotaxi services. Waymo and Cruise have been granted permission in principle to transport paying passengers around the clock throughout the city—without a safety driver.

The California Public Utilities Commission quashed opposition from San Francisco residents and the city's transit agency with its decision. With the expanded permit, it is now legal for companies to try out on a large scale how well a business model with self-driving cars works. The vehicles are expensive, so they must be used as much as possible to earn money.

Critics point out that driverless cars have been blocking roads because of software errors, obstructing traffic and hindering the work of emergency services. Videos of Cruise cars clogging intersections are all over the Internet. During a music festival, several robotaxis blocked a road because of the overloaded cellular network, one car got stuck in wet concrete during road construction work, and then came the accident with the fire truck on its way to a fire. Proponents, on the other hand, say computers cannot be distracted at the wheel as human drivers can.

The CPUC decision opens the door to commercial use of novel robotaxis without steering wheel and pedals. Today Cruise and Waymo use EVs converted to self-driving, but they are both preparing cars with space only for passengers.

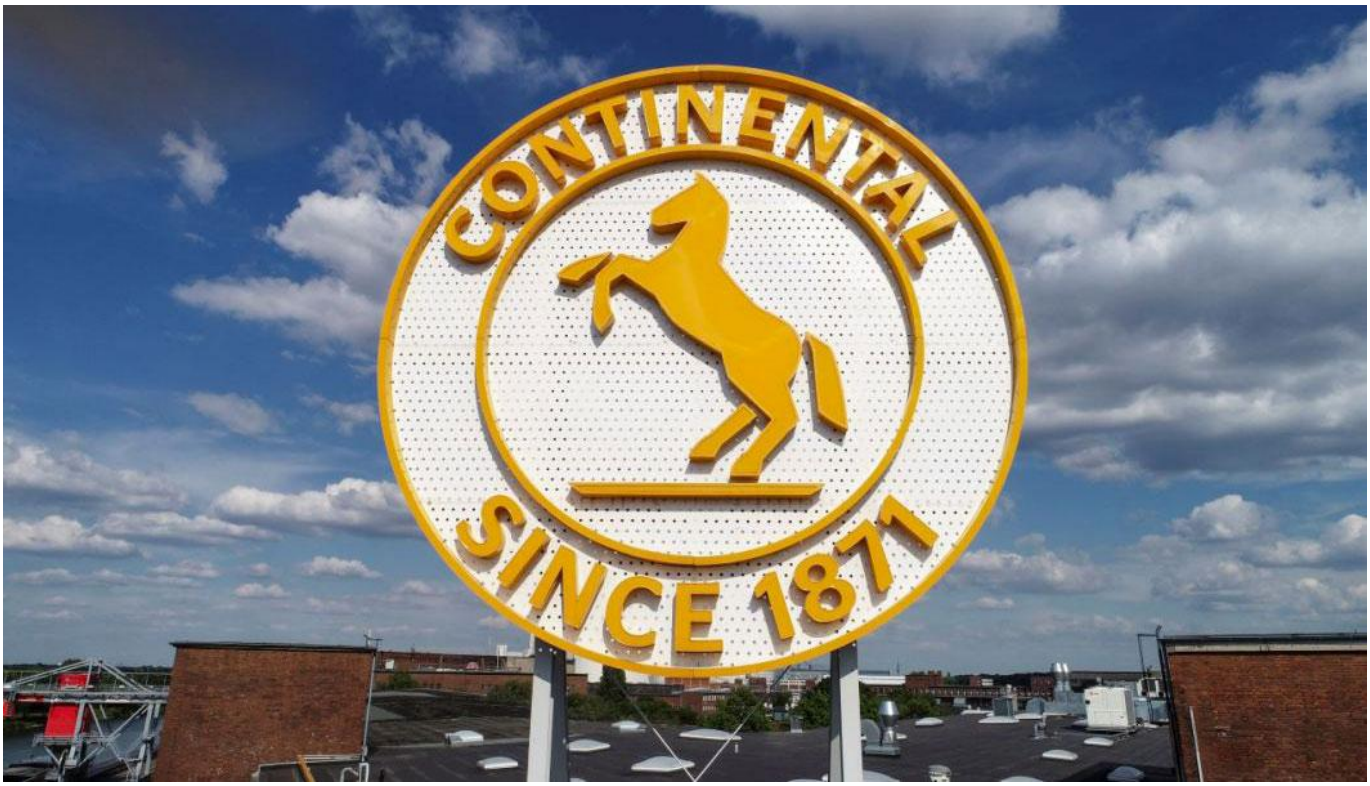
The hype surrounding autonomous driving has cooled off noticeably as it has become clear that the technology will take more time and money than many in the industry had originally said. Ride service provider Uber, for example, sold their robot car division. Apple, on the other hand, continues to let their test cars do laps in Silicon Valley. And in Germany, Mobileye wants to set up a robot cab service.

Pending studies, Cruise will now put a maximum of 50 robot cabs on the road during the day and up to 150 at night.

General News

Continental Mulls ContiTech Selloff

GENERAL NEWS



Continental is reportedly considering selling their ContiTech auto division, which specializes in belts and sealing systems, as part of a broader company-wide reorganization. ContiTech in general uses development and material expertise for products and systems made of rubber, polyamide, metal, textile, and electronic components to combine these with individual services.

In interior, ContiTech includes a Surface Solutions division, specialists in surface materials and the associated production technologies. The business area offers polyamide- or rubber-coated foils, sheets, and fabrics from a single source, used for automotive interior trim.

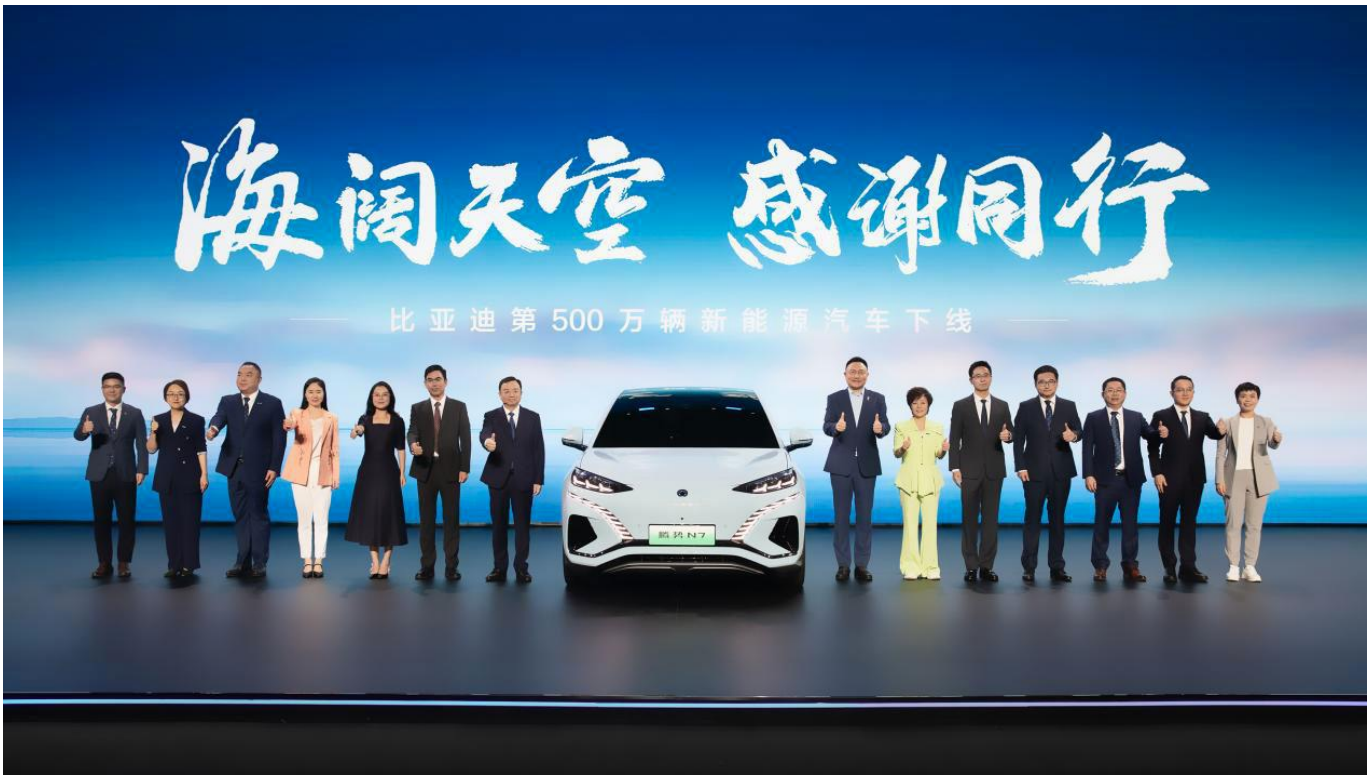
According to Reuters, the company has undertaken a series of moves to enhance profitability due to a significant drop in market capitalization from €50bn to €13bn since 2018.

It announced a restructuring plan earlier this year which would involve consolidating ContiTech into three regional divisions—Europe, the Americas and Asia Pacific—as well as creating a separate unit focused on electromobility.

Manager magazin said the tire business and non-automotive section of ContiTech would remain core components.

BYD's 5-Millionth Vehicle

GENERAL NEWS



BYD IMAGE

On 9 August, BYD's 5-millionth new-energy vehicle rolled off the production line, making BYD the first car company in the world to achieve this milestone. Chairman and President Wang Chuanfu expressed his heartfelt thanks to 5 million new energy users, government departments, media friends, upstream and downstream partners, peer friends, and more than 600,000 employees.

At the event, Wang delivered BYD's 5 millionth new energy vehicle, a Denza N7, to Luo Zhenyu, the keynote speaker of the "Friends of Time" New Year's Eve speech and founder of the App. Luo said he was very honored to be BYD's 5 millionth new energy vehicle owner. BYD spent 20 years doing a proof question about NEV and Chinese automobiles. Do the right thing, wait for the return of time, BYD's long-term doctrine is the best interpretation of "friends of time".

Up to now, BYD has 11 research institutes, more than 90,000 R&D personnel, a total R&D investment of more than €100 billion, and now submits an average of 19 patent applications every working day and obtains 15 patent awards. BYD has launched a series of disruptive technologies such as blade battery, DM hybrid, CTB battery body integration, and others.

Wang Chuanfu said that the development trend of NEV is irreversible, and predicted that the penetration rate of NEV vehicles in the Chinese market will exceed 60 per cent in 2025, and the market share of Chinese automobile brands will increase to 70 per cent.