Thu, 26 September 2024
Weekly Newsletter

DVN Interior

NEWSLETTER #229

Editorial

Generative 'AI' For Interior Development

AI-GENERATED CAR INTERIOR (FREEPIK IMAGE)

Generative 'AI' is seemingly everywhere these days, hyped as a do-everything tool to provide easy answers to complex problems. If that's true, it's a boon; auto interiors are full of complex problems. The list of examples is endless—seats, cockpits, door panels, roof systems, the whole interior.

This week's in-depth piece takes a look at how generative 'AI' could apply in automotive interiors, with examples which demonstrate applicability for highly complex designs, even if the technology still requires refinement and human oversight. It looks like it might be a much better fit for 'AI' than slapping that label as a buzzword on anything and everything, which is generating consumer backlash to the very idea of 'AI' integration in consumer products—we've got coverage of that, too.

Safety has long been a major topic in car interiors, because that is where the living occupants are. So there's major innovation especially in passive safety, and this week we've got material on DMS, how airbags and seatbelts are supporting the move toward autonomous driving, radar to detect unbelted passengers and left-behind children or pets…and more!

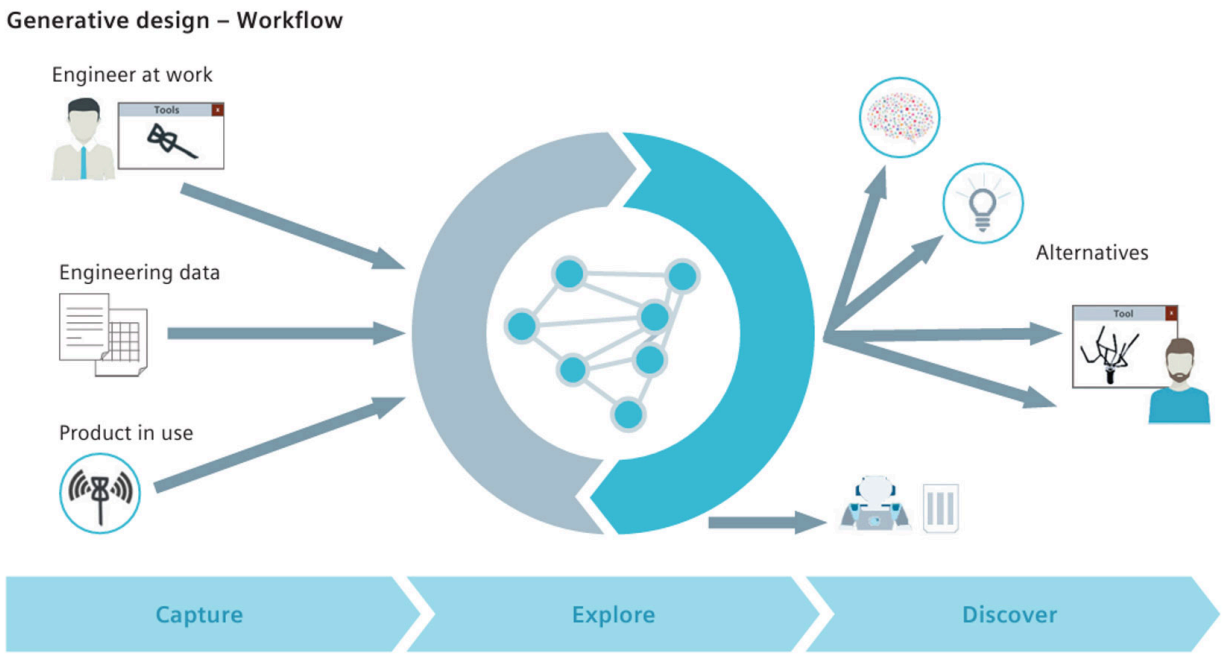
DVN Interior's next event is in less than a month, on 22-23 October in Torino, Italy. The rubric is **Mobility and Sustainable Interior Design**, and the **docket** is now final. If you haven't already, come and register **here**!

Sincerely yours,

Philippe Aumont
DVN-Interior General Editor

In Depth Interior Technology

Generative Design for Interiors: From Many, The One



GENERATIVE DESIGN WORKFLOW (SIEMENS GRAPHIC)

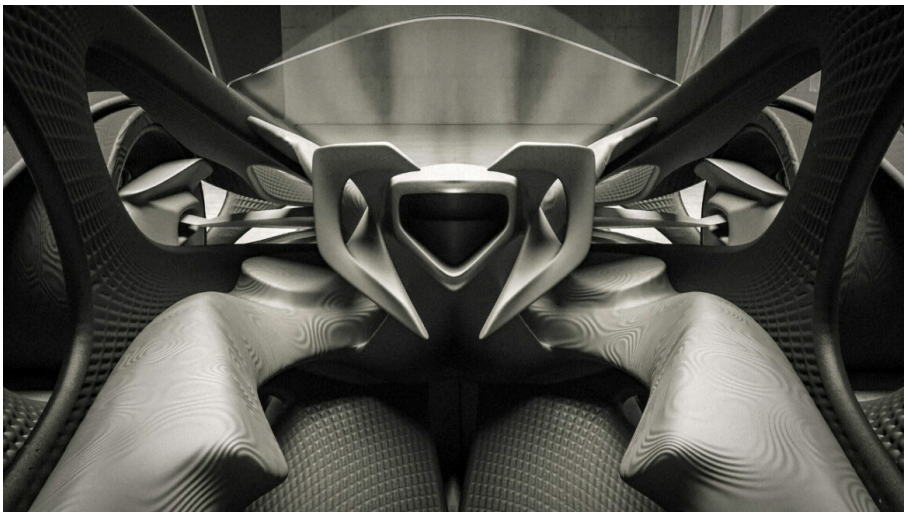
By Olimpia Migliore, DVN Interior Editor

Generative 'AI' is presented as a quick and powerful shortcut for easy solutions to complex problems. Today's and tomorrow's auto interiors are brimming with complex problems. Consider seats: safety, comfort, ergonomics, design, and ecocircular construction all have to be achieved at the same time, within tight cost and manufacturability constraints. Look anywhere else in the interior and you're guaranteed to see more complex problems like this—the cockpit, the door panels, the roof system, the controls and displays. And then there's the greater interior, which must be the kind of environment appropriate to the kind of vehicle: cozy and inviting, practical and functional, exciting and sporty. These conflicting simultaneous demands present great challenges and time-demands in designing components. Seemingly endless discussions are required between developers and designers to find the right compromises and balances among the many styling and engineering requirements.

So-called 'generative design' (GD) is probably not *the* pinnacle solution, but it surely can be a great help to achieve results in shorter times, and it can facilitate new kinds of creativity.

Unlike traditional design processes, wherein human designers create and refine ideas, GD uses algorithms to explore a vast number of design permutations based on predefined goals and constraints, such as ergonomics, materials, safety, and aesthetics. The idea is that 'AI' can evaluate a great many more permutations and combinations very fast, and from among all the permutations can emerge highly functional, personalized, and innovative car interiors.

The process can prioritize parameters like customer preferences and specifications, passenger characteristics, and many more. For instance, using data from human body scans, GD can develop ergonomic seating, ensuring maximum comfort and support based on driver and passenger profiles. It can customize the dashboard layout based on usability, accessibility, and safety factors. Generative algorithms can explore supernumerous seating configurations, dashboard arrangements, and storage placements, optimizing for space, comfort, and safety.



DESIGNER AYOUB AHMAD CREATED THIS HV-001 PROTOTYPE INTERIOR BY DEFINING A SET OF CONDITIONS AND ALLOWING GENERATIVE ALGORITHMS TO FULFIL THEM. (YANKO IMAGE)

Additionally, generative design enables engineers to apply existing data to new platforms effortlessly to maximize the benefits of re-use, sparing design teams from spending time and resources redesigning vehicle systems that already exist.

GD can explore different material combinations—leather, fabric, sustainable materials—to create interiors that meet æsthetic and functional inputs while balancing performance, cost, and environmental compatibility. It can devise interior experiences, including mood lighting and surrounding music.

Generative design tools allow manufacturers to create virtual prototypes of car interiors quickly with 3D printing, which can greatly accelerate design iteration and testing.

It seems a GD business boom is in the offing; the global market size for generative 'AI' in design was estimated at several hundred million dollars in 2022, and it is expected to hit billions by 2032.

All this sounds great, so what's the catch? This constellation of technologies and techniques is immature, and 'AI' still presents a lot of difficult, complex challenges like privacy and data security, 'AI' vs IP rights, and dependencies on 3rd-party platforms.

Especially alarming is the tendency of 'AI' to introduce and amplify bias and errors into whatever task it is given. When 'trained' on flawed, biased, and/or insufficient data—which, almost by definition, they are—the models amplify those flaws, biases, thand deficiencies exponentially. This is a serious constraint on the degree to which everyone involved can really replace human-centric processes with 'AI'-centered ones.

There is high potential for the real, practical time and effort savings to be markedly less than the theoretical savings because the models must be driven and assessed, and unrealistic results discarded. That is because 'artificial intelligence' is a misnomer for the 'AI' that exists today, which is not at all intelligent. It is merely a high-speed prediction and pattern-matching machine, something like a turbocharged version of the autocorrect feature we all love to curse at on our smartphones—not capable of judging right versus wrong, only more-likely versus less-likely.

That will remain the case unless and until artificial general intelligence (AGI) exists. Microsoft cofounder Bill Gates said last year, "There is a robust debate going on in the computing industry about how to create it, and whether it can even be created at all".

Nevertheless, there are some fine, successful applications of generative design in automotive interiors. Here are some of them:

Toyota

GD-DESIGNED SEAT FRAME (TOYOTA IMAGE)

Toyota has been experimenting with an easier way to deal with all the variables related to seat structure development—safety, strength, weight, and thickness—to find the right balance.
Shinsuke Omori is a project manager in Toyota's Vision Design Division's Interior Design Department, and says, "while the current seat frame is designed to meet the strength requirement with trusted manufacturability, it is difficult to make it thinner (…) designers do not usually work on the seat frame itself, but rather add materials to it, and that's the restriction".
But Omori's design team can explore shapes and features for seats without regard to the shape of current parts: "What we are focusing on right now is the balance between comfort, sustainability, weight reduction, and design", Omori says. His team is using 'AI' technology in the Autodesk Fusion 360 product, which is basically generative design.

A GENERATIVE-DESIGN INITIAL OUTPUT SHAPE, LEFT, AND FINAL DESIGN, RIGHT. (TOYOTA IMAGE)

The usual rectangular-shaped seat frame has a flat structure, and the designers tested the idea of optimizing the frame by bringing the core structure towards the center, providing a wider space in front of passengers legs.

Omori says the GD output is "often completely unexpected at first, but we took it further and made slight modifications as we went along. There is always a tradeoff between what a designer wants to do and what generative design creates, and it's fun to see the various patterns of shapes designers don't think of".

Creating this seat frame requires 3D printing, which increases the cost, so further investigation is needed to see that the prototype is compatible with mass-production processes.

Omori notes that with this type of design, it might be possible to keep the spine of the seat the same for various seat sizes and make the rest to fit the user's physique using a 3D printer, for example. The current seats are made of completely different materials, such as metal frames, urethane, and leather, but Omori says it could be possible to move toward mono-materials with generative design.

Volkswagen

The orange wheel shown here is on a vintage Microbus. It was generated by VW and Autodesk; VW's Innovation and Engineering Center in California retrofitted an existing bus with an electric drive system, and used generative design to lightweight some of its components—including the wheels, which weigh 18 per cent less than a comparable one conceived more conventionally.

With generative design it is possible to create structures humans might not have thought of, says VW Group Senior Product Designer Andrew Morandi: "One of the biggest surprises for me was seeing just how much material you could remove from a conventional wheel structure".

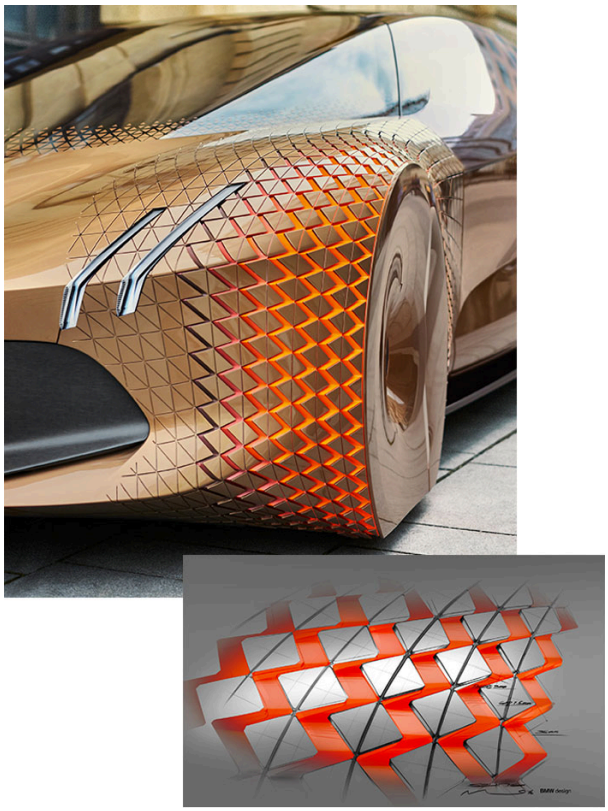
The VW team also applied generative design to the sideview mirror mounts, the steering wheel, and the rear furniture supports shown in these two pictures.

VW Group Principal Product Designer Erik Glaser says, "We wanted to put a generatively-designed object in a place where people will touch it because not only is it intricate and beautiful, but it can also give a sense of just how strong these parts can be".

BMW

BMW has used generative design to create intricate dashboard skeletons that minimize material usage without compromising structural integrity. This approach ensures that parts like the dashboard are both functional and visually appealing, while maintaining a lightweight structure.

Holger Hamps is President of BMW subsidiary Designworks. His teams are using generative design techniques to design new wheel rims and car seats: "We are feeding both technical parameters and design concepts into the program. It (…) takes into account the different specifications as it creates variants. Artificial intelligence is enabling new approaches to be taken and is only in its infancy in the design process. It already features in our day-to-day communications and is becoming more and more important". Nevertheless, Hampf says this intellectual and creative input will not be achievable by machines working autonomously in the foreseeable future.



THE 'ALIVE GEOMETRY' OF THE BMW VISION NEXT 100 CONCEPT CAR IS A RESULT OF GENERATIVE DESIGN. (BMW IMAGES)

More examples

Hyundai**,** through partnerships such as with Sundberg-Ferar, is integrating generative design into their vehicle development, particularly for interior elements

Nvidia Omniverse, in collaboration with automakers like BMW, supports the use of generative 'AI' in creating exterior components and also user interfaces and interior designs. These tools assist in exploring new textures and materials, improving the user experience of elements like door panels and seats.

Rivian is exploring advanced design tools like generative design to create highly functional, sustainable, and æsthetic interiors for their electric SUVs and trucks. Rivian's focus on adventure and eco-conscious design makes GD an excellent fit for creating lightweight, modular interior components that align with their brand values of sustainability and durability.

These examples demonstrate enthusiasm in the automotive industry for generative design, but again, the technology and technique are immature; its dependability is still far from proven or presumable. Especially for highly complex designs involving human factors, aesthetics, and large-scale manufacturing, GD still requires a great deal of refinement and human oversight. This will probably remain so for at least another generation of vehicles, at least for everything concerning highly creative tasks requiring skill, talent, and intuition. Perhaps one day an algorithm will be able to replicate those skills with human-like panache…or not; we will have to wait and see!

Interior News

Driver Assists Cause Distracted Driving, so DMS is Essential

INTERIOR NEWS

STELLANTIS IMAGE

Two recent studies involving Tesla 'Autopilot' and Volvo Pilot Assist have both found that drivers misuse partial automation systems in ways problematic to safety.

The more drivers get accustomed to driver-assist technology intended to reduce the frequency and severity of crashes, the more likely they are to engage in distracted driving responsible for many crashes, according to a new study published last week by IIHS, the Insurance Institute of Highway Safety.

This dismaying phenomenon demonstrates that people have unrealistically high expectations of what ADAS can do, and they put those expectations into practice by handing off much too much car control to systems, well beyond what they're designed, intended, and capable to do. There might also be an element of risk homeostasis, an element of human psychology and behavior which causes us to adapt to a reduced level of risk—antilock brakes instead of regular ones, for example—by increasing risk elsewise (such as by driving more aggressively and following other cars more closely).

The monthlong study by the IIHS and the Massachusetts Institute of Technology's AgeLab examined how drivers use limited hands-free (partial-automation) driving systems. A key finding: drivers were much more likely to primp and groom, fiddle with their phones, eat, or do other visual-manual activities while using the systems on highways. The tendency increased over time as drivers got accustomed to the systems, but in both studies some users engaged in distracted driving from the onset.

"In both these studies, drivers adapted their behavior to engage in distracting activities", says IIHS President David Harkey. "This demonstrates why partial automation systems need more robust safeguards to prevent misuse".

Earlier this year, the IIHS reported that the use of driver-assistance systems has no real effect on safety and crash avoidance, going so far as to call partial automation a convenience feature, like power windows or heated seats.

The IIHS has long advocated for more in-car safety monitoring, like DMS. In March 2024, they completed testing on semiautonomous driving systems, and rated 11 of the 14 tested systems "Poor"; the systems were too easy to misuse and it was too easy for drivers to get away with not paying attention to the road.

Tesla 'Autopilot' was found to gull drivers into thinking it is more capable than it really is—as evidenced by numerous videos online of Tesla owners showing off their misuse on public roadways of their not-really-autonomous cars, and of police officers pulling over Teslas and the first thing out of the driver's mouth is "I had it on 'autopilot!'". Perhaps this is not a surprise, given Tesla CEO Elon Musk's strident oversell of the capabilities of his L^2 'Autopilot' and 'Full Self-Driving' systems; he has also called NHTSA the "fun police".

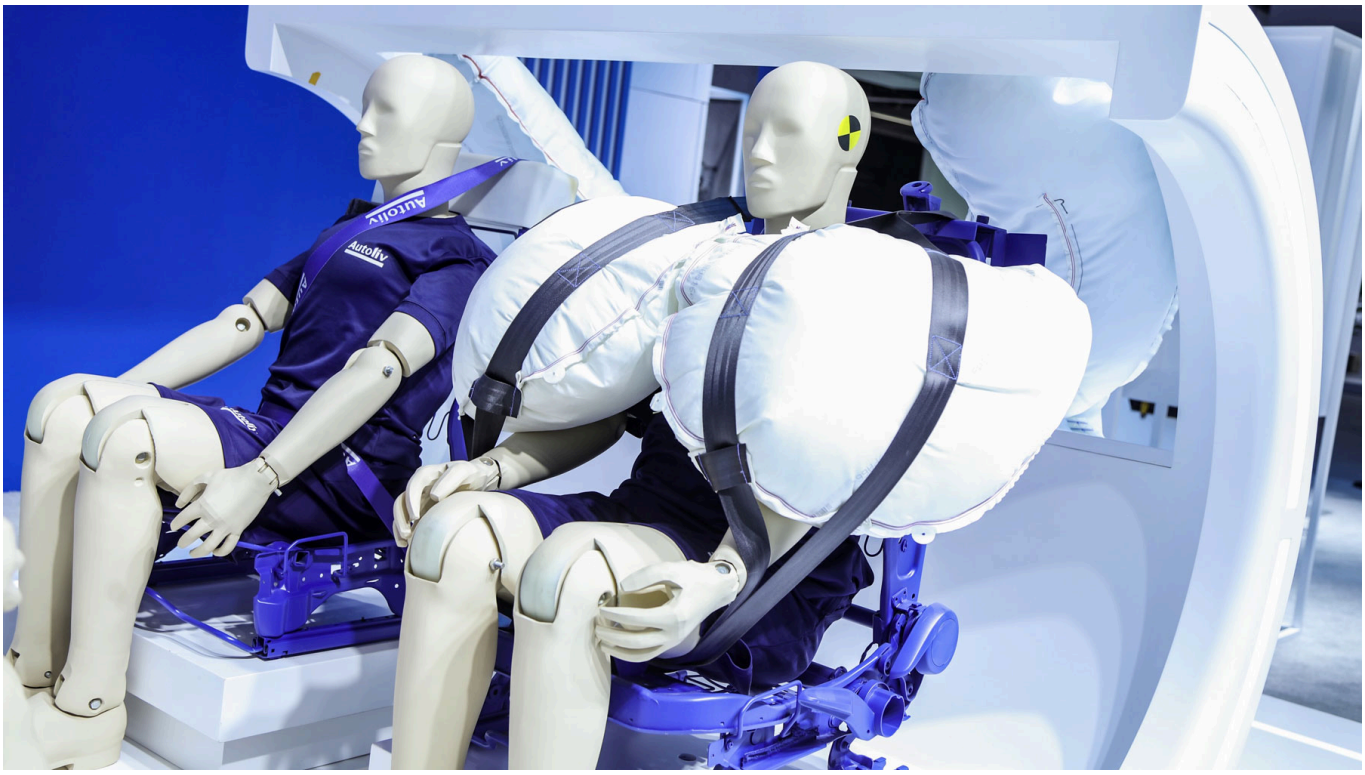
In the same IIHS tests, GM's Super Cruise ranks as the most sophisticated and safest system on highways, with a driver-monitor camera that demands the driver's eyes stay on the road. If they wander to a sandwich or phone, the system demands the driver take over, before eventually pulling the car over and activating emergency services.

Distracted driving has been attributed to a record-high spike in pedestrian fatalities in 2022, the most recent year for which complete data can be had.

It confirms yet again that driver monitoring is crucial to roadway safety until the far-off future when L5 cars—actual, real, non-pretend fully self-driving ones—actually exist.

Airbags and Seatbelts for the Autonomous Age

INTERIOR NEWS



AUTOLIV IMAGE

Sitting, lying down, turning the seat around…all of these are possible in a car which can drive autonomously. The vast increase in the range of possible vehicle occupant positions calls for new kinds of seatbelt and airbag.

"In future, belt systems will no longer be docked into the B-pillar, but will come out of the seat—as is already the case with convertibles today," says Alexander Gulde, Senior Global Virtual Engineering Director at Autoliv.

In addition, seatbelt and airbag systems could merge in the future. Autoliv has developed airbags integrated into the seat belts. "Previous locations for airbags, traditionally above the passenger's glove compartment or in the driver's steering wheel, assume that the passengers are sitting facing relatively straight ahead. This can no longer be assumed when the car is driving autonomously," says Gulde. This is why the systems are increasingly adapting to the seating positions of the occupants and moving with them. Let see if it works for both men and women, as torso are different.

Adaptive safety is another keyword for protecting car occupants. An adaptive safety system triggers the system individually adapted to the occupants and the severity of the accident. Different sensors recognize within fractions of a second how serious an accident will be and how heavy, tall and old the people to be protected are. This determines how tightly the seat belt is tightened and which airbag is triggered.

Toyota's Radar-Based Rear Seatbelt Reminder

INTERIOR NEWS

2025 Toyota Sienna models sold in the US will have what Toyota calls the 'Advanced Rear Seat Reminder', a millimeter-wave radar which detects movement in the vehicle and sends alerts to notify the driver.

The system uses a 60-GHz radar sensor on the headliner; it scans a defined area to detect movement in second- and third-row seats.

If it senses movement after the ignition has been switched off, the driver's door has been opened then closed, and the vehicle has been locked, the system will flash the hazard lights and sound the door lock chime. If the sensor still detects movement 90 seconds after the initial warning, it will sound the horn.

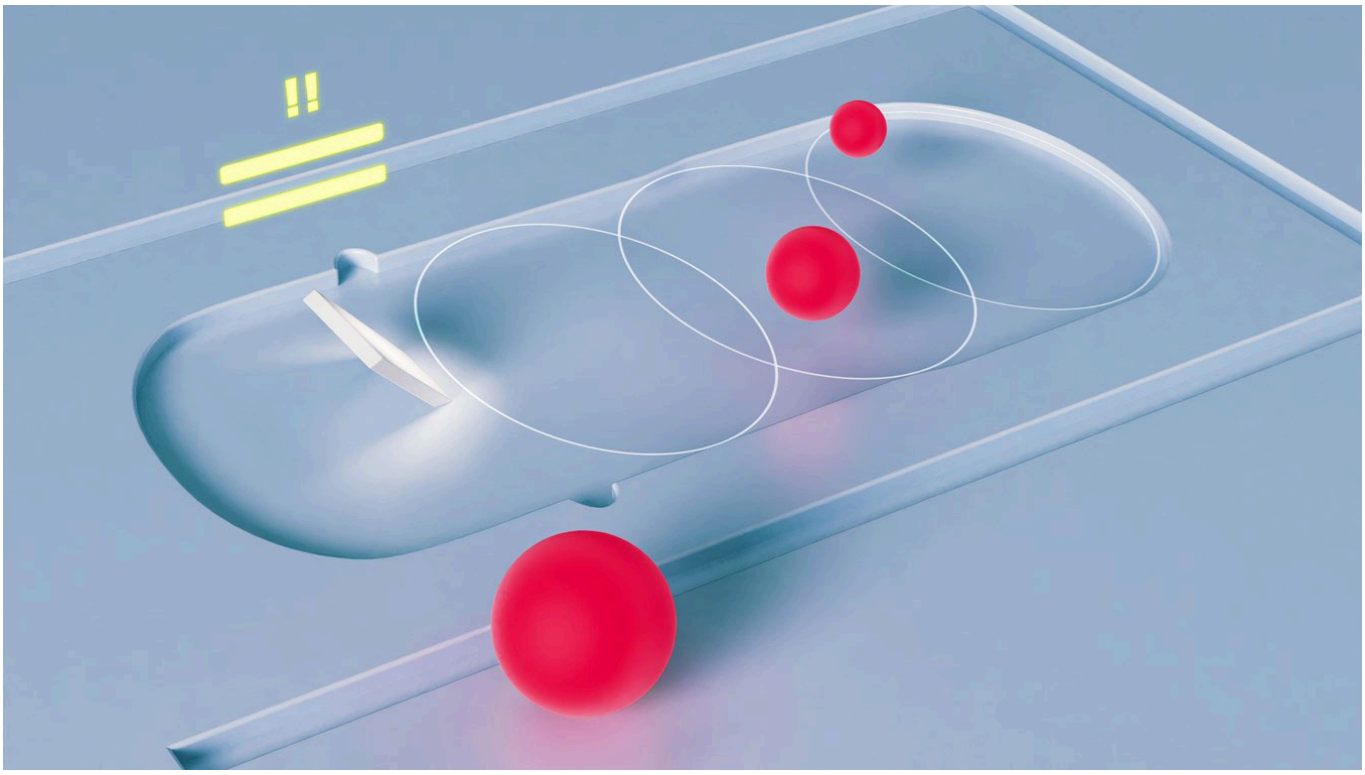
If the driver has registered for Safety Connect and opted in for reminder notifications via the Toyota app, four minutes after the escalation warning starts, the vehicle can send a push notification along with an SMS text message to the mobile number saved in the user's account. Following this, and after an additional two minutes, the user will receive an automated phone call.

If the vehicle is not locked, the car will not chime, flash hazards, or sound the horn. But if the driver has registered for Safety Connect and opted in, a push notification and SMS message will be sent.

The Advanced Rear Seat Reminder first previewed as a concept in 2022. The millimeter-wave radar is unique from ultrasonic systems as it has higher resolution in its movement sensing and may detect movement under objects such as a blanket. It can also accurately sense occupants in low-light scenarios, which camera-based interior monitors cannot.

Volvo's Forgotten-Occupant Radar Sensor

INTERIOR NEWS



VOLVO IMAGE

A system in the 2025 Volvo EX90 uses seven radar sensors to detect virtually any living creature left in the locked vehicle.

Sensors concealed in the overhead console, reading lamps, and cargo compartment scan the interior every time the vehicle is locked. If they detect movement in the footwells, seats, or cargo compartment, he driver gets a message to check the interior, and the doors will not lock.

The extremely precise radar detects 'micro movements' smaller than a millimeter—as subtle as a blanket's rise and fall with the breathing of a sleeping child. The system will not lock the door if it detects movement inside.

Volvo says more than 900 children have died in hot vehicles in the United States since recordkeeping began in 1998. There's no estimate of the number of animals that have perished in hot vehicles.

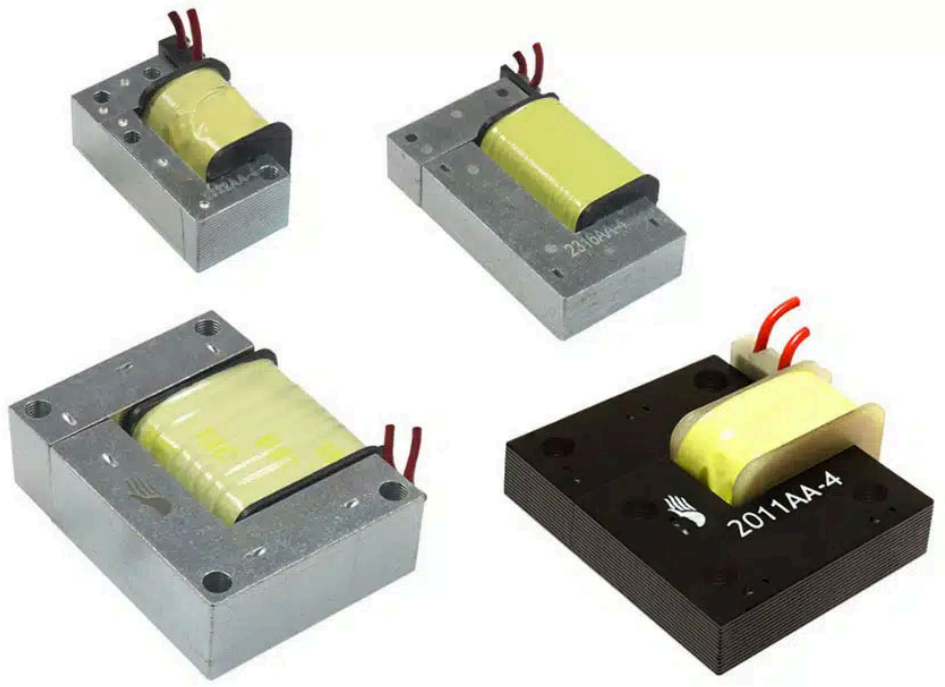
The system is always active, unless the driver disables it.

Even if the driver overrides the alert, the Volvo turns on its climate control to protect occupants from heat or hypothermia. The climate control keeps running until the car's 111-kW battery is drained.

After a set period, the alert also unlocks the doors and rolls down the windows to keep occupants from overheating.

Vishay Expands Haptic Actuator Line

INTERIOR NEWS



VISHAY INTERTECHNOLOGY IMAGE

Vishay Intertechnology has added five new devices to their range of IHPT solenoid-based haptic actuators featuring Immersion Corporation licenses, offering additional sizes and force levels.

Vishay manufactures discrete semiconductors and passive electronic components essential to innovative designs in the automotive, industrial, computing, consumer, telecommunications, military, aerospace, and medical markets.

Providing 12V operation for LCD displays, touchscreens, touch switches, and button control panels for human-machine interfaces in automotive and commercial applications, the actuators deliver high pulse and vibration capability for clear, high-definition tactile feedback.

Available in four sizes from 29 × 21mm to 44 × 37mm, and with variable force output up to 120N, the devices feature a compact, two-piece construction with mounting holes for easy installation and direct application of force.

The actuators' fast response time of 5ms and their high mechanical force allow them to produce HD haptic effects with operating current from 8 to 16 volts. Vishay says the IHPT actuators are ideal for rugged, noisy environments where audio tones may not be adequate to communicate actuation to the user. The devices feature a robust, rigid copper and iron core construction and high temperature operation up to 105 °C.

Example automotive applications include dashboards and center consoles, tactile feedback for electronic shift transmissions, steering wheels, seats, and other in-vehicle controls.

The electromagnetic devices’ low nominal 12V operation eliminates the need for the additional high-voltage circuitry required by other technologies.

The devices come bundled with Immersion licenses, so the design-in process is streamlined and costs are lowered further by eliminating the need to purchase a separate license to implement sophisticated haptic effects.

New VW California is Smart Home on Wheels

INTERIOR NEWS

VW IMAGE

VW's new Multivan California, built on the modular transverse platform (MQB), is something of a smart home on wheels. VW is specifically targeting the iPhone and Instagram generation with touchscreens and apps, space and functionality.

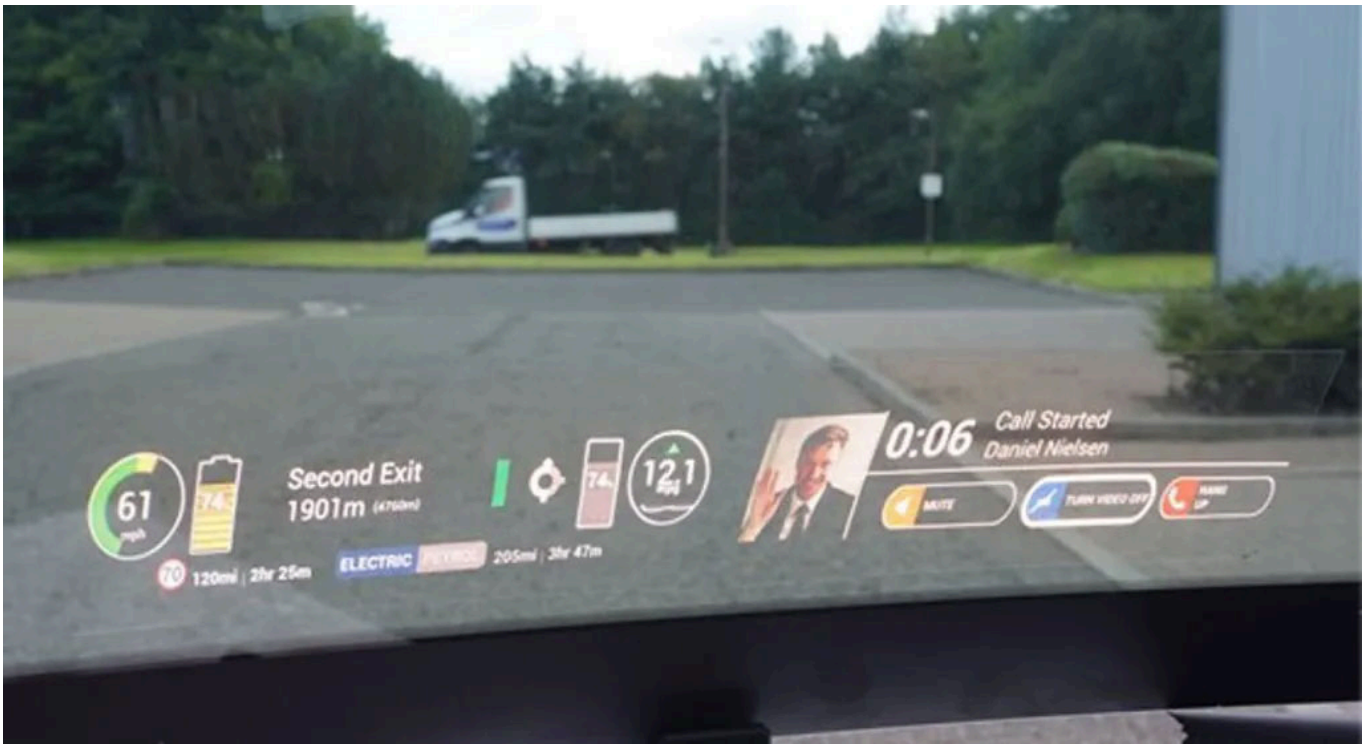
The new Multivan offers improved digitalization, with numerous assistance systems and infotainment with a large touchscreen and voice control. The camping equipment can now also be controlled via an app that runs on the screen in the cockpit, a digital control panel in the C-pillar or the smartphone. HVAC, refrigerator, lighting—everything can be conveniently adjusted. Even the pop-up roof can be controlled via the app.

In addition to the digital innovations, VW has also worked on the classic virtues of interior design. With a length of 5.17 meters and a wheelbase of 3.12 meters, the new California is more spacious. A second sliding door is now standard, making access easier and blurring the boundaries between inside and outside. The kitchens of the five model variants have become more practical and spacious, even if a stove has had to go away for more freedom of movement in some models. Individual seats replace the rear bench, which increases flexibility. The electric parking brake and the selector lever moved to the dashboard make it easier to turn the front seats. New blackout systems create additional storage space and ensure darkness throughout the vehicle at the touch of a button.

VW has made the California fit for the digital generation with many practical details and modern app controls, but still based on the Multivan T7 vehicle, with a combustion-engine powertrain. VW has commented in vague terms about an all-electric California based on the ID.Buzz, but soon after launch, the California will be available as a plug-in hybrid; for the first time with all-wheel drive, and the option of driving at least a few dozen kilometers electrically.

Ford's Multi-Screen Transparent HUD with Ceres HoloFlekt

INTERIOR NEWS



CERES HOLOGRAPHICS IMAGE

Ford, together with manufacturing partners Eastman and Carlex, have achieved application-readiness for Ceres' HoloFlekt technology and HOE-laminated windshield (see Ceres profile and interview in DVN Interior).

Technology from Ceres Holographics was featured in a presentation from Ford Motor Company at the Vehicle Display and Interface Conference earlier this September. The event, put on by the Society of Information Display (SID), included a presentation by Janice Tardiff, a technical expert for Ford, entitled "Prototyping a Holographic Heads Up Display: Design, Production Trial and Performance".

The presentation highlighted the significant technological innovation in both system design and holographic film manufactured by Ceres, the windshield integration process executed by Carlex, and the final display performance. The laminated windshield includes Ceres' HoloFlekt thin film technology. The presentation discussed in some detail the development and evaluation process used by Ford to meet key manufacturing, code testing and user testing to ensure customers' expectations would be met for transparent head-up displays (HUD).

Ceres Holographics CEO Andy Travers says, "Ford has achieved a well-deserved reputation as a technology innovator, and we are pleased with the milestone they have achieved in their testing and implementation of our holographic HUD solution (…) we are confident that the technology has achieved a state of commercial readiness that allows OEMs to offer a differentiated user experience with a primary objective of enhanced safety".

The Design Lounge

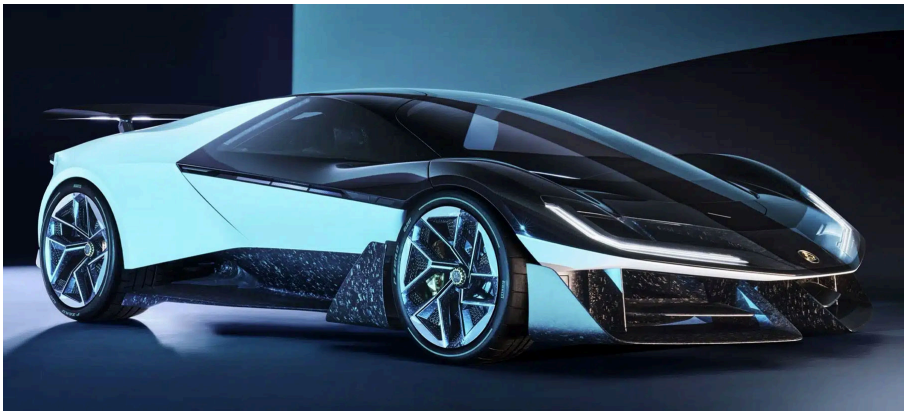
Lotus Theory 1: New Lotus Design Manifesto

THE DESIGN LOUNGE

LOTUS AND DVN IMAGES

COFFEE CORNER
DVN
Interior

Anglo-Chinese brand Lotus has unveiled a high-performance concept car, which they say will serve as a 'design manifesto' for future cars.



Called the Theory 1, it is completely digital technology oriented, driver-focused, humancentric-designed, and performance-engineered. There are nods to the Esprit beltline in what design boss Ben Payne refers of as a

technology line that divides the analogue lower half of the car from the tech-infused upper.

“We are celebrating the analog engineering, the lifeblood of the company, and then adding this technical aspect,” says Payne in a CDN interview. It’s a very important that with our design language that we celebrate the analogue, and that extends to the HMI as well. We’re bringing the best of both worlds together in terms of the physical and the digital.”

The Lotuswear Drive System is designed to deliver the most immersive experience, connecting driver and machine closer than ever before thanks to adaptive robotic textiles, next generation haptic controls and advanced sensorial audio.

Lotus is defining the Theory 1 as a quick supercar. They're aiming for a range of 250 miles from a modest 70-kWh battery, an all-wheel-drive system with its rear motor bolted directly to the suspension,

The car's dimensions are 2.0W × 4.49L × 1.14H meters. Add this relative sensibility to the ingeniously practical doors, three seats, and excellent visibility, and it’s easy to imagine what a production version could look like.

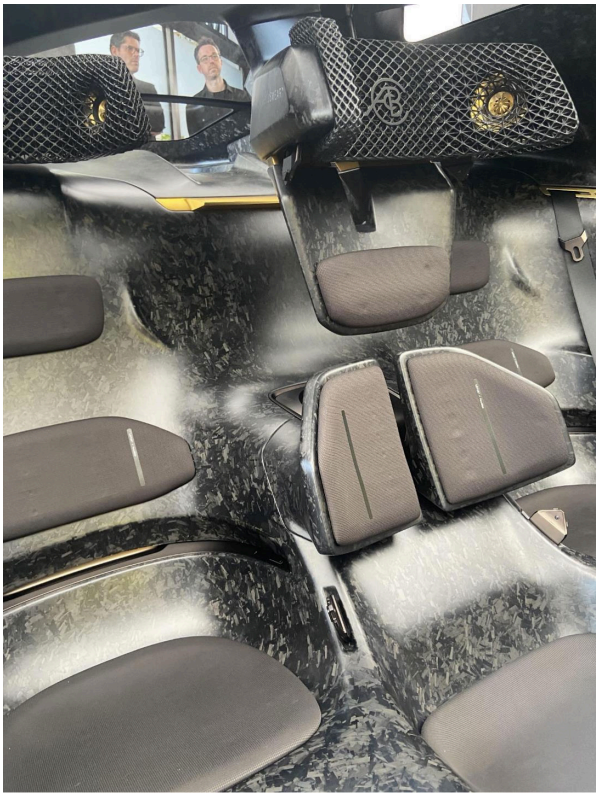
Lotus says the all-carbon Theory 1 has a target of under 1,600 kg, or around 300 kg less than the Evija. For even more weight savings, the car has just 10 "A-surface materials"—those you can see and touch—compared to the industry average of 100, according to Lotus. The 10 include cellulose-based glass fiber, chopped carbon fiber, and titanium, as well as recycled forms of glazing, polyester, rubber, and aluminum.

Butterfly sliding backwards doors create a easy-to-access opening while taking up very little space, and the emptiness of the cabin is remarkable. The driver sits in the center, flanked by two passengers, and all three occupants sit directly on the carbon tub.

A HUD is projected onto a black panel at the foot of the windshield, putting key information such as speed and navigation commands right in the driver’s eyeline. Digital screens act as wing mirrors close to A pillars; light signals are reflected off the windshield in the driver’s peripheral vision;

Embedded in the fabric of the doors, steering wheel, and sculpted seats are dozens of inflatable pods, each individually controlled. Using a technology called fluidics, they work in a similar way to massage seats. They can be used to send haptic feedback to the driver through their seat, or for creating physical buttons that rise from interior surfaces only when they are needed.

Developed by a Berlin company called MotorSkins, the technology was created for exoskeleton-style clothing intended to help with disabilities linked to muscle weakness. But for the Lotus Theory 1 it has been adapted to perform as a so-called reactive textile, where interior surfaces physically change based on how the car is being driven and what the driver needs.



The car has a sound system integrated into its three headrests. The speakers—two per occupant, plus a subwoofer behind the driver—are from audio specialist KEF and provide binaural audio directly at each occupant, to create your own 3D sound experience. Binaural sound usually only works with headphones, since that prevents the speakers from interfering with each other. They're mounted in a 3D-printed lattice structure from Carbon, an additive manufacturing specialist in California.

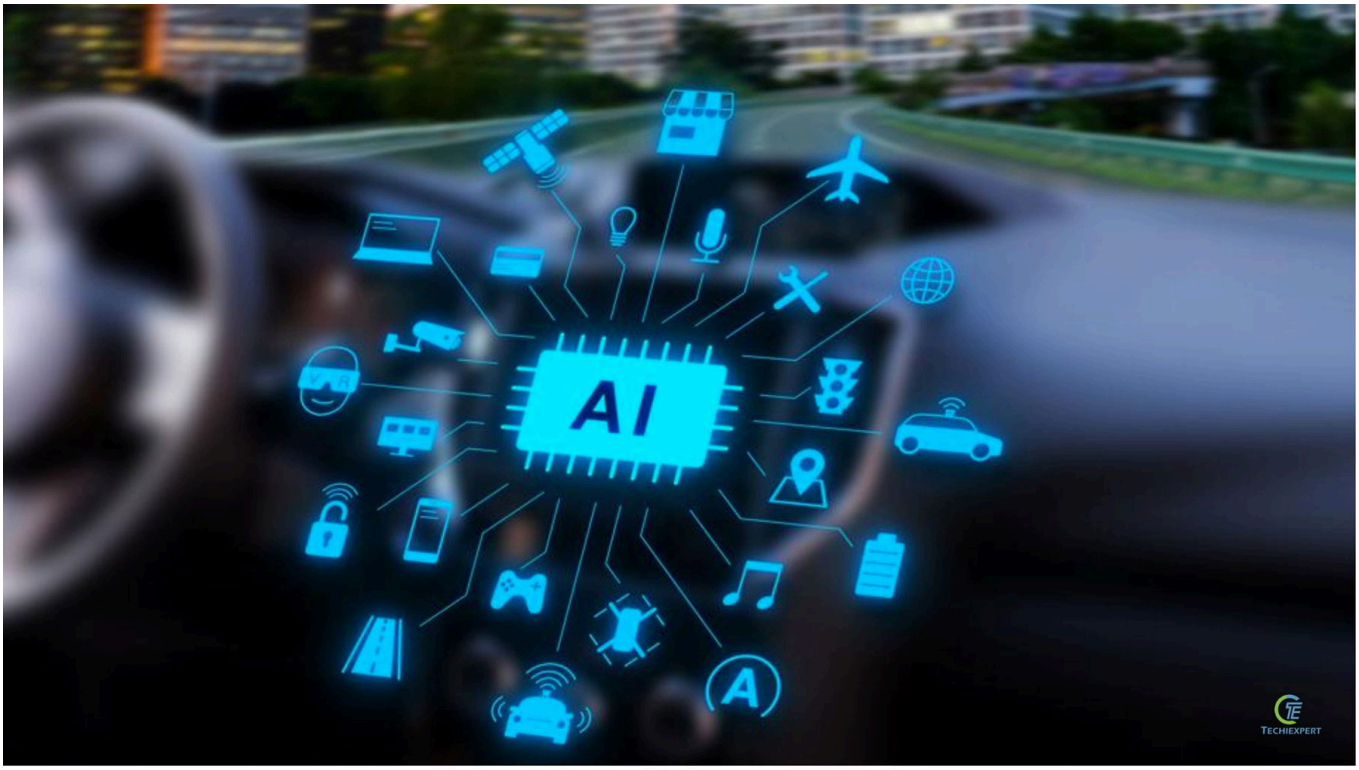
Instead of foam, the headrest lattice is made from a polyurethane elastomer called EPU 46, which has previously been used for shoes and bicycle saddles.

The headrest is made from a single material, but by changing how the lattice shape is printed, it can have multiple compression resistances. This means one component produced from one material can supposedly be made for both comfort and crash protection, lowering the complexity of both production and recycling.

News Mobility

Consumers Put Off by "AI" Products, Including Cars: Study

NEWS MOBILITY



WIKIPEDIA IMAGE

New research has found consumers feel actively repelled by the mention of 'artificial intelligence' ('AI') when they're making purchase decisions, especially with high-risk products such as automobiles.

A Washington State University study published in the Journal of Hospitality Marketing & Management surveyed U.S. adults to examine the link between 'AI' involvement and purchase intentions, indicating a possible emotional distrust strong enough to hurt sales of products described as having 'AI'.

The researchers used identical products and descriptions, with the only difference being whether or not the term 'artificial intelligence' was included. They found the same result across eight different tech product and service categories: 'AI' always got a less favorable reaction.

High-risk products such as medical diagnoses and automated vehicles elicited a stronger negative response, with respondents feeling anxious, uncertain, or mistrustful of whatever product was tested.

Lead researcher Mesut Cicek says, "When 'AI' is mentioned, it tends to lower emotional trust, which in turn decreases purchase intentions. We found emotional trust plays a critical role in how consumers perceive 'AI'-powered products".

The study recommends companies use phrasing like 'advanced' or 'cutting-edge' technology rather than 'artificial intelligence' or 'AI'; it also recommends transparency with 'AI' usage, and a focus on building a trustworthy brand image to alleviate consumers' distrust.

Musk to Take "Full Self-Driving" Circus to Europe, China

NEWS MOBILITY

TESLA IMAGE

Elon Musk is going to try and see how many Europeans and Chinese will swallow his much-debunked "full self-driving" claims. According to a post by Musk on the X platform he owns, so-called "full self-driving" driver-assist system is to be offered on both the European and Chinese markets from the first quarter of 2025 with all its functions currently only available in the USA, "subject to regulatory approval".

Musk added that right-hand drive markets such as the UK are to follow in the late first or early second quarter. In the German online configurator, the "Full Potential for Autonomous Driving" option currently costs €7,500 and comes with a note that the currently activated functions still require active monitoring by the person behind the wheel. The United Nations Economic Commission for Europe (UNECE) plans to publish its proposal for uniform approval conditions for driver assistance systems by the end of September. Tesla's FSD is, at best, an L^{2+} automated driving service; only Mercedes-Benz and BMW currently offer L^{3} autonomous driving functions. It is difficult to accurately judge how far Tesla has actually come in improving its **problematic**, **prone**-to-cause-**accidents** ADAS packages. In the USA, Tesla's marketing of the technology with product names such as "Autopilot" and "Full Self-Driving Capability" has also been investigated by safety regulators several times. At the end of 2023, Tesla's lawyers informed the authorities that the company had relied on what they called "implicit approval"—that is, nobody tried to stop them using those names at first.

Holon Autonomous Shuttle to be Built in Florida

NEWS MOBILITY

Holon, a manufacturer of autonomous, electric shuttles purpose-built shared mobility and sustainable transportation, says announced the launch of its first production plant for autonomous movers in Jacksonville, Florida.

Holon is a subsidiary of global automotive supplier Benteler Group.

The facility of about 50,000 m^2 will be constructed in Jacksonville, with completion expected in 2026.

The plant will be pivotal in advancing Holon's mission to deliver inclusive, emission-free, and sustainable passenger transportation, addressing urban traffic challenges, climate change and demographic shifts.

The mover is being developed in close collaboration with authorities to ensure it complies with relevant federal requirements, including Buy America and Federal Motor Vehicle Safety Standards (FMVSS), upon deployment.

With a top speed of 37 mph and a capacity for up to 15 passengers, the mover is versatile enough for applications including on-demand services like ride pooling and ride hailing, or for regularly-scheduled transit operations.

This Jacksonville plant will produce approximately 5,000 autonomous movers annually.

Prototypes of the mover will be available later this year, with the first vehicles set to be deployed in pilot projects by early 2026.

Targeting municipalities, private operators, and institutions such as airports, campuses, planned communities, healthcare facilities and national parks, the early interest in reserving this limited series of prototypes highlights the growing demand for a flexible, cost-effective mobility solution that can adapt to diverse environments and operational needs.

Holon's mover will be made available in the US through Benteler Mobility in collaboration with Beep, a leading provider of autonomous shared mobility solutions.

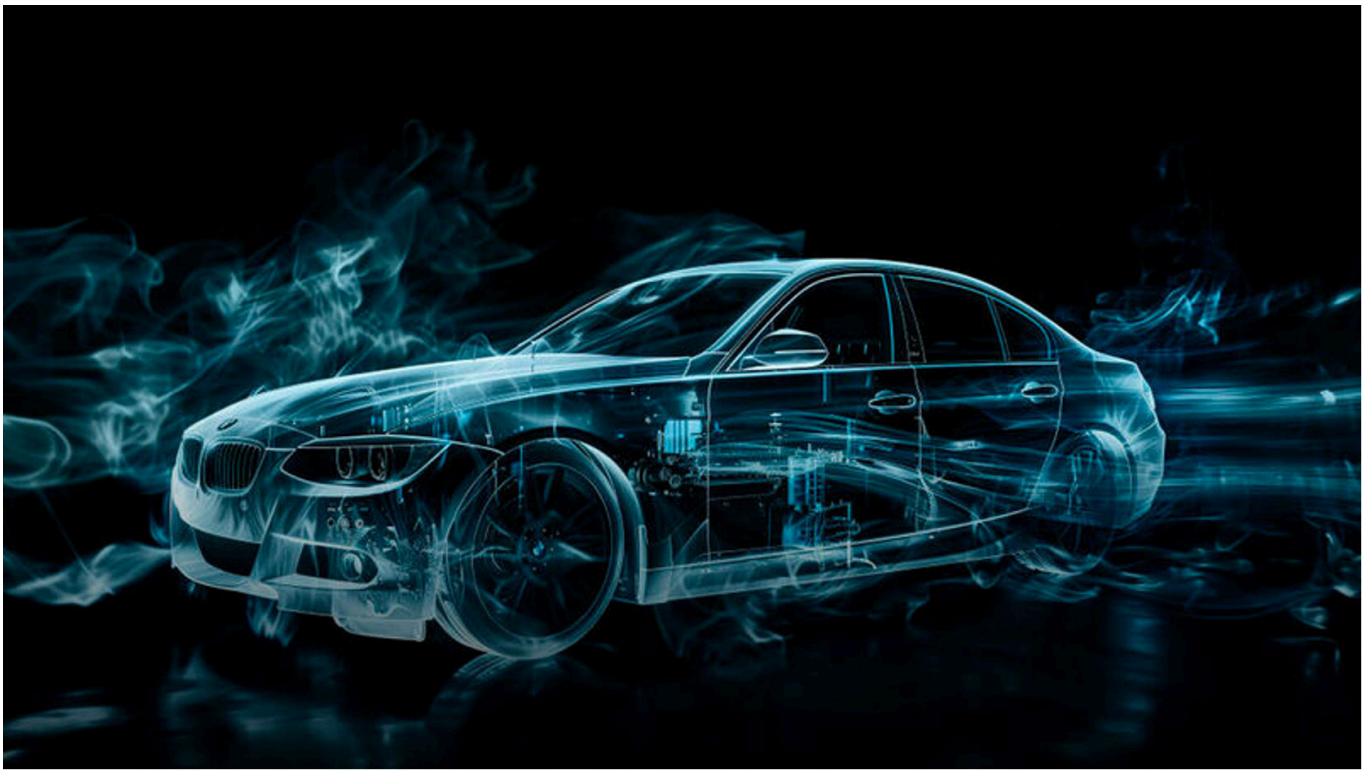
Benteler Mobility will offer comprehensive services for the purchase and implementation of these cutting-edge autonomous vehicles, while Beep, an Orlando-based company, will provide the services and software to deploy, manage and operate the autonomous vehicles to ensure smooth planning and deployment.

Holon's new plant in Jacksonville complements its regional headquarters in Auburn Hills, Michigan. The Benteler Group, Holon's parent company, operates six locations across the US, employing around 1,700 people. Holon is planning further expansion with additional production sites in the future.

General News

European Suppliers in China Declining

GENERAL NEWS



CLASSIQ IMAGE

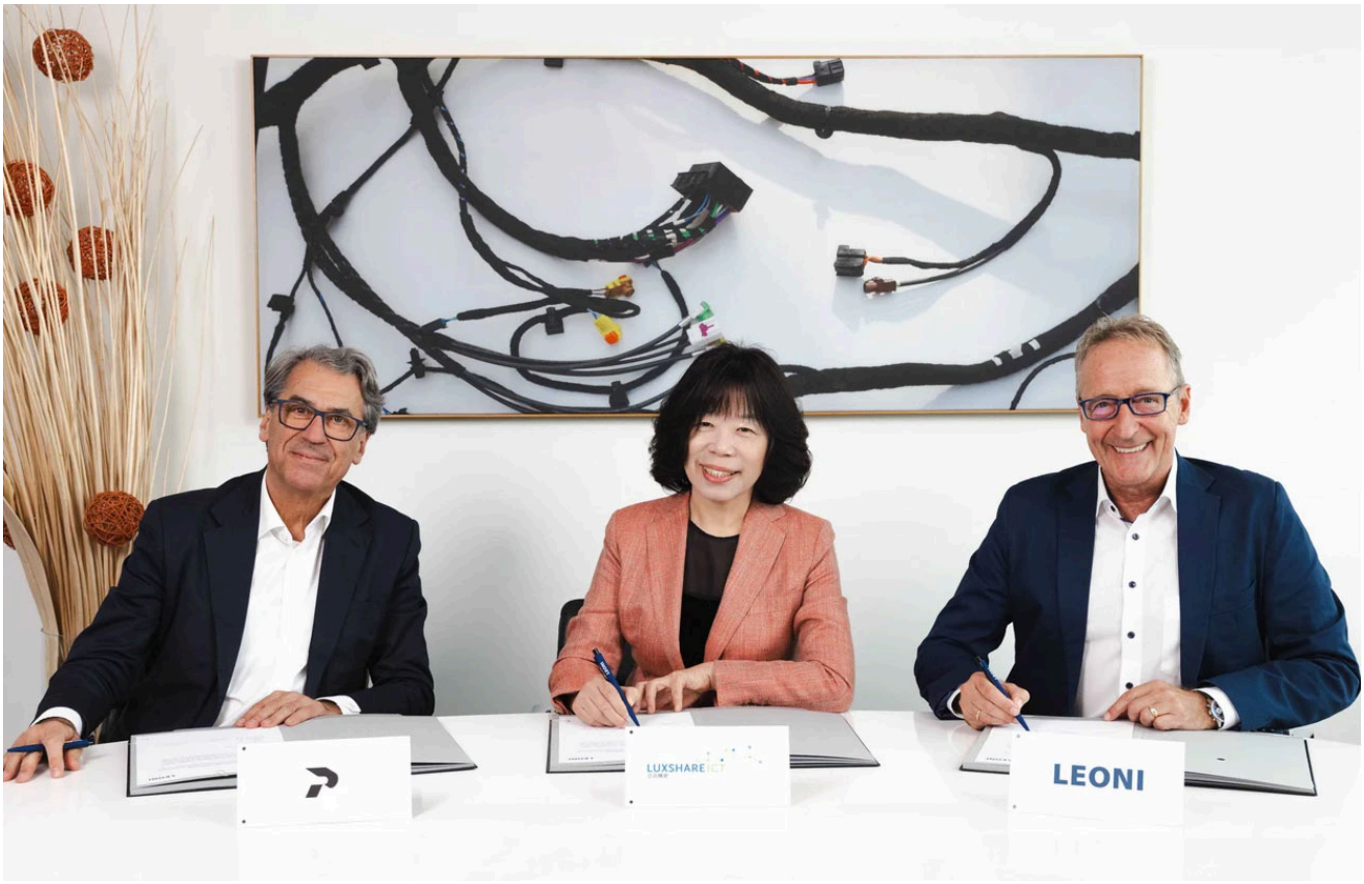
According to management consultant firm PwC, German automotive suppliers are losing ground to their Chinese competitors. "Although they are increasing their expenditure on research and development, decisive innovations are rarely coming from Germany and increasingly often from Asia," says the report.

PwC examined key figures of 84 major suppliers that generate more than half of their turnover in the automotive sector. Among the findings: the global market share of German suppliers has fallen from 27 to 25 per cent since 2020. The share of Chinese suppliers has doubled to almost 10 per cent. One driver here is demand for batteries. In addition, Chinese suppliers are also investing with government aid despite uncertain sales forecasts "and are thus setting the foundations for the future", according to the study. In the past six years, they have quadrupled their investments. "As a result, the competition from China is pulling away in terms of sales growth - albeit at the expense of capital efficiency," the experts write. But the "air is getting thinner for German automotive suppliers".

Technical leaps, new competitors and volatile political decisions have made change in the industry difficult to predict. "The automotive industry and its extensive supplier network have formed the backbone of the German economy for decades. This finely balanced system is currently beginning to falter," says study author Henning Rennert. Although German suppliers are increasing their research and development expenditure, they are increasingly unable to come up with important innovations. Instead of investing heavily with the aim of technology leadership, they are too timid, criticize the PwC strategy consultants.

Leoni Luxshare Partnership

GENERAL NEWS



STEFAN PIERER, GRACE WANG, KLAUS RINNERBERGER, L-R (LEONI IMAGE)

Austrian entrepreneur Stefan Pierer and China's Luxshare have agreed that Luxshare will acquire a 50.1-per-cent stake in Leoni, which was previously fully owned by Pierer. "Having Luxshare as a strong strategic partner will significantly enhance Leoni's competitiveness across all fronts—from portfolio expansion and market access to technological capabilities and production," said Leoni CEO Klaus Rinnerberger.

Leoni's strong connections with the European and American automotive industries, combined with Luxshare's presence in China, will create a robust global platform, enabling both companies to maximize their market potential. Luxshare's expertise in connectors and electronics will further enhance Leoni WSD's ability to provide integrated solutions, benefiting its customers. In return, Luxshare will leverage Leoni's extensive knowledge and leadership in the wiring systems business.

This partnership will also accelerate Leoni Group's financial stabilization, reinforcing the progress achieved over the past year. Entrepreneur Stefan Pierer commented: "With Luxshare, we have found the perfect partner to secure Leoni's long-term success. Both shareholders have demonstrated how a strong business model can propel a company into new markets." Grace Wang emphasized: "This collaboration marks a pivotal step in our journey towards becoming a global leader in the automotive sector."

In a parallel transaction, Time Interconnect Singapore, a joint venture between Luxshare subsidiaries Luxshare-ICT and Time Interconnect Technology, will acquire 100 per cent of Leoni's ACS division. Following the carve-out, ACS will continue to position itself as a leading independent manufacturer of automotive cables.