Thu, 29 August 2024
Weekly Newsletter

DVN Interior

NEWSLETTER #225

Editorial

What Makes A Safer HMI?

RIGHTWARE IMAGE

There's a particular buzz, still in the background but growing louder. It started in parallel with the proliferation of displays along the last decade. There was **that methodical Swedish test** demonstrating the abject inferiority of touchscreen controls versus physical ones. And last year, VW's CEO **explained adding some physical controls back** to the Tiguan because customers really do not like too many functions piled onto the touchscreen. And this year, Euro NCAP declared that touchscreen operation of certain functions will soon cost penalty points.

So, the HMI war rages on. That is the focus of this week's in-depth piece, and it goes to the crux of HMI design, cornerstone of the functional architecture of a vehicle interior. It is central to safety, via driver workload and distraction.

DVN Interior's next event is coming soon, on 22-23 October in Torino, Italy. The rubric is **Mobility and Sustainable Interior Design**, focusing on the intermerging progress of design and sustainability in context of circularity and sustainability.

Highlights will include a visit to Stellantis' labs; keynote lectures from Italdesign, Pininfarina, Stellantis, and major interior and material suppliers; two panel discussions to explore how interior design and materials can support sustainability and evolve into regenerative businesses that renew, restore, and grow people, places, and the planet synergistically.

Don't miss it, register now! All information is on the **DVN Interior Website**, including the detailed docket, expo program, and sponsorship opportunities. I look forward to meeting you there.

Sincerely yours,

Philippe Aumont
DVN-Interior General Editor

In Depth Interior Technology

HMI: 'Smart AI', or Switches and Buttons?

BMW IMAGES

Modern car cockpits are increasingly integrating advanced technology, offering features like voice control, touch-sensitive surfaces, and 'AI'-driven personalization. These innovations allow drivers to interact with their vehicles through gestures, swipes, and haptic feedback, displaying vital information like speed, navigation, and weather.

Consumers are supposed to demand these features to mirror their experiences with smartphones and tablets. But unlike consumer devices, car interfaces must prioritize safety, ensuring minimal distraction from driving and allowing operation of the car without unnecessary or excessive cognitive load. 'AI' is supposed to facilitate this by learning drivers' preferences and automating various functions.

But there is a countermovement advocating for the return of physical buttons and switches, at least for safety-critical functions like turn signals and windshield wipers. Vehicles won't be able to get a five-star safety rating from Euro NCAP, starting in 2026. Studies like one comparing the speed, accuracy, and distraction entailed in operating the controls of a 2005 car versus modern cars, demonstrate that physical controls are safer and less distracting than complex touchscreens.

BMW Panoramic Vision

The new BMW Neue Klasse models feature four central display elements and controls, including Panoramic Vision—a HUD that spans the entire winshield. There's a 3D HUD in the driver's direct line of sight, a multifunction steering wheel with tactile feedback, and the central display.

Panoramic Vision highlights essential driving information relevant for the driver and passengers with a high light intensity and contrast onto a dark-coated area at the lower edge of the windshield. This creates an extremely sharp image always visible.

A new menu opens with a hand movement, navigation starts with voice control, touch-sensitive glass surfaces light up and show vehicle and motor speed, battery capacity and range, and information about the weather, traffic, music, or calendar entries. Control is sometimes via voice, sometimes via hand movement, swipe, or haptic pressure.

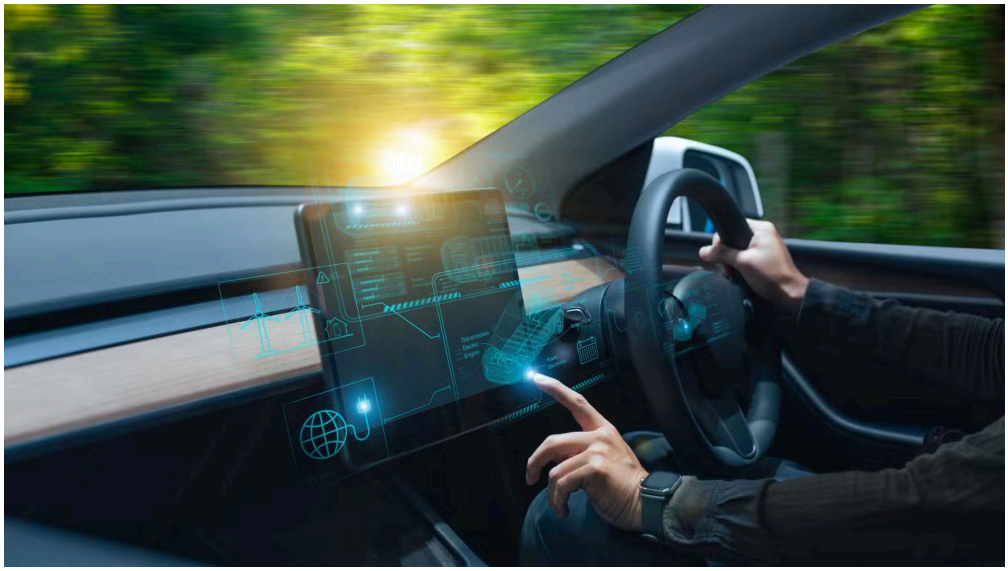
Thomas Harter is in charge of interactive digital solutions at Elektrobit. He says, "This is exactly what customers have wanted and vehemently demanded in recent years, because it is what they know from the consumer world, from their phones and tablets". But how well does the phone/tablet comparison hold up? Those devices and their apps are designed to grab and captivate the users' attention and cognition. Screens in cars should have the exact opposite effect: as little distraction and cognitive load as possible. The eyes and mind should stay on the road, not on the screen.

AI and HMI

The industry is now trying to resolve this conflict with so-called 'smart artificial intelligence'. The idea is that in the future, the driver will no longer navigate through the infotainment system with help from 'artificial intelligence', but the 'AI' itself will become the conductor of the entire feel-good climate in the car.

The 'AI', in this dream, 'knows' the driver's preferences from previous commands, and starts certain actions independently—guides through the navigation, reminds of upcoming calls, configures the driver's seat, and conditions the interior with light, climate control, sound, and so on. "This eliminates many setting steps, clicks through the menu, and the frustrating search for functions on different levels", says Harter. Elektrobit is one of the few suppliers to have shown such integration at the CES in Las Vegas.

Euro NCAP Puts Their Foot Down



This techbro dream of everything controlled via screens and touch and 'AI' has sparked pushback. There is increasingly loud preference for buttons, dials, and other physical controls. Euro NCAP has thrown their considerable weight behind this demand for the return of safer physical controls; starting from 2026, touch operation of certain vehicle functions will cost penalty points. From 2026, real switches, levers, or buttons will have to be present for the turn signals, hazard lights, windshield wipers, horn and SOS emergency call if a car is to be eligible for the five-star safety rating. Euro NCAP would also like to see even more basic functions such as seat and mirror adjustment or ventilation be operable using discrete, physical elements.

This is not Euro NCAP playing stick-in-the-mud; it is that outfit applying the brakes to the pile-on of every single control onto unintuitive touchscreens or surfaces which defy muscle-memory and require the driver to take their eyes and mind off the road for unsafe durations.

Most manufacturers are officially reacting to the discussion on the new Euro NCAP standards. Volvo, for example, told Automobilwoche they support the goal of reducing distraction, and that the new requirements

in their present form have already been implemented in all Volvo cars.

This is also the case with Mercedes and VW, whose interiors are generally also very digital. Mercedes says they consider a direct control element for those five functions sensible. VW, has not commented on the changes to the NCAP protocol, but has said that basic functions in their vehicles can already be operated using physical controls.

Touchscreen Safety Problems

"These developments—the reduction in screens, but also the revival of buttons and haptic elements—show the famous pendulum mechanism that we know from many developments," says Andreas Nienhaus, a partner at Oliver Wyman management consultancy. "New technologies are hyped at first, things get a little over the top and then everything settles down to a comfortable level," he says.

Studies have found legitimate safety concerns with touchscreen controls, especially with huge screens like the 17" item in the middle of the Tesla Model X. "The viewing angle to a button is different than to the bottom of a display, and there is no haptic or acoustic feedback from the system as to whether the function is working," says Nienhaus.

TESLA MODEL Y TOUCHSCREEN (TESLA IMAGE)

In the Tesla Model Y, the windshield wipers (among many other crucial functions) can only be controlled via the touchscreen, which Euro NCAP will deduct points for from 2026.

Swedish automobile magazine Vi Billägare **conducted** a test with eleven current vehicles and a 17-year-old Volvo. Drivers were allowed to get accustomed to the various cars, then asked to drive at 110 km/h on an airfield, during which the drivers were asked to do simple, normal tasks like changing the radio station or adjusting the air conditioning.

The car that was by far the easiest to operate was the 2005 Volvo V70, with all physical controls. The test drivers completed the tasks within ten seconds, during which the car travelled 306 meters. In contrast, the drivers in the current-model MG Marvel R needed 44.6 seconds to complete the same tasks and covered 1.37 kilometers—more than quadruple the time and distance of the old Volvo.

Designers are supposed to be looking for the happy medium. "There is something to the criticism," says Nienhaus, but the number of functions in cars has exploded in recent years. "You need an infotainment system just to be able to control an ADAS system," he says.

It is now up to automaker designers to figure out a balance. Nienhaus says a no-buttons-at-all arrangement like Tesla's is out of the question, "but the right combination of haptics, voice and touch, combined with 'smart AI'—that will be the future".

Interior News

Seat Vibes Increase Muscle Strength: Toyota Boshoku

INTERIOR NEWS

TOYOTA BOSHOKU SEATS IN LEXUS LS (TB IMAGE)

Toyota Boshoku has published an academic paper entitled, "Immediate Effect of Local Vibration on Motor Unit Firing Behaviour and Muscle Strength in Healthy Young Adult Males," jointly researched with Kanazawa University, in the European Journal of Applied Physiology.

In 2018, the supplier made an agreement with Kanazawa University to promote industry-academia collaboration, and have been doing research and development toward improving comfort and safety for cars of the near future. As one of the research themes, a joint research group from the company's Mobility Space Planning Field and Kanazawa University's Institute of Science and Engineering, Faculty of Frontier Engineering, has been working on this research. While a person is sitting on a seat, when vibration stimulation is applied to the back side of the thigh (biceps femoris) at a certain frequency and amplitude, it stimulates the front side of the thigh (quadriceps femoris), which is closely involved in walking and fall prevention. The data show that the contractile activity of muscle fibers was immediately activated and muscle strength increased.

Toyota Boshoku will accelerate their research so this knowledge can be applied in mobile spaces such as automobile and aircraft seats, as well as chairs in living spaces.

Renault Symbioz Has Modern, Tech-Savvy Interior

INTERIOR NEWS

RENAULT IMAGES

The Renault Symbioz is a compact (C-segment) CUV—an extended version of the Captur, built on the CMF-B HS platform shared with the Renault Clio and Nissan Juke. The model was announced in February 2024 and unveiled in May.

Its name is from the Greek "symbiosis", which means "living together". An unrelated concept car of the same name was presented at the 2017 IAA in Frankfurt.

The new car has a distinctly Renault-like bearing and appearance, and could be viewed as a bulked-up Captur. It is also in line with the larger members of the family, such as the Scenic.

The Symbioz is also like the Austral, too, another family crossover available with a full-hybrid powertrain, with smaller footprint of 441L × 179W cm.

The interior has a mix of materials including wide-mesh upholstery fabric with part of the diamond logo embossed on the seats. The upper instrument panel has a brushed aluminum finish, while the lower is finished in a fine-grain TEP material with visible top stitching. An upright, almost monolithic touchscreen perches atop the dash, with chunky metal buttons below.

All versions get a 10.3" digital instrument display and 10.4" vertical touchscreen, the latter of which runs on Android and offers inbuilt Google Maps, voice assistant, and other apps through the Google Play store.

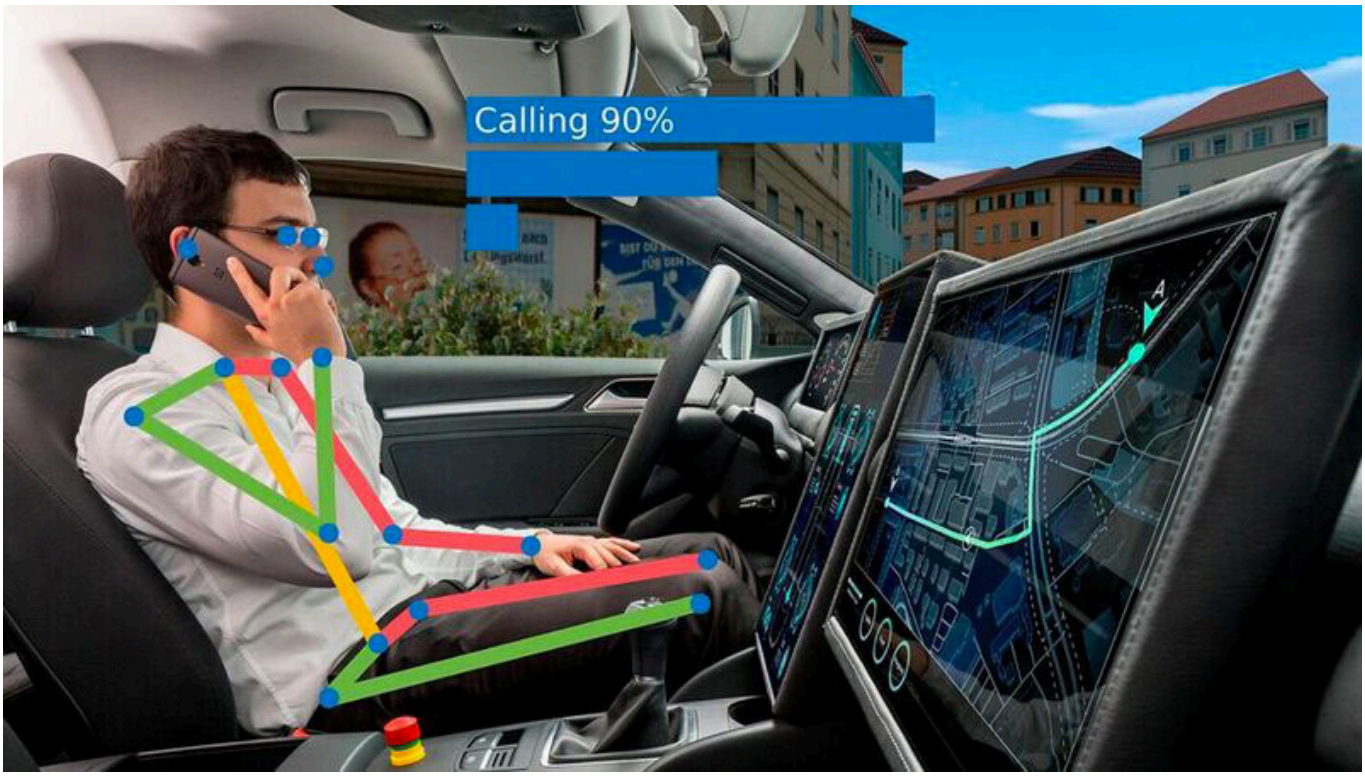
The digital instrument cluster offers several different views—though no traditional circular dial display. If you use the inbuilt Google Maps through the infotainment system you can view it through here too, unlike when you mirror your smartphone.

There are physical switches on the steering wheel, plus that row of metal buttons directly beneath the central screen, allowing for adjustment of HVAC temperature and fan speed without drilling down through sub-sub-sub-submenus on the touchscreen.

One standout feature is the Solarbay panoramic glass sunroof, which can lighten or darken at the touch of a button or voice command. This helps maintain a comfortable temperature inside the car while keeping it bright and airy.

Karli Research Project For Better Driver-Car Interaction

INTERIOR NEWS



FRAUNHOFER IOSB/ZENSCH IMAGE

As vehicle automation increases, interaction with people must be prioritized and rethought. A research team from the Fraunhofer Institutes for Optronics, System Technologies, and Image Exploitation (IOSB) and for Industrial Engineering (IAO) has set itself this task together with ten partners, including Continental, Ford and Audi, as well as a number of medium-sized companies and universities, in the "Karli" project. The name stands for artificial intelligence for adaptive, responsive, and level-compliant interaction in the vehicle of the future.

The applications developed in the Karli project have three main focuses:

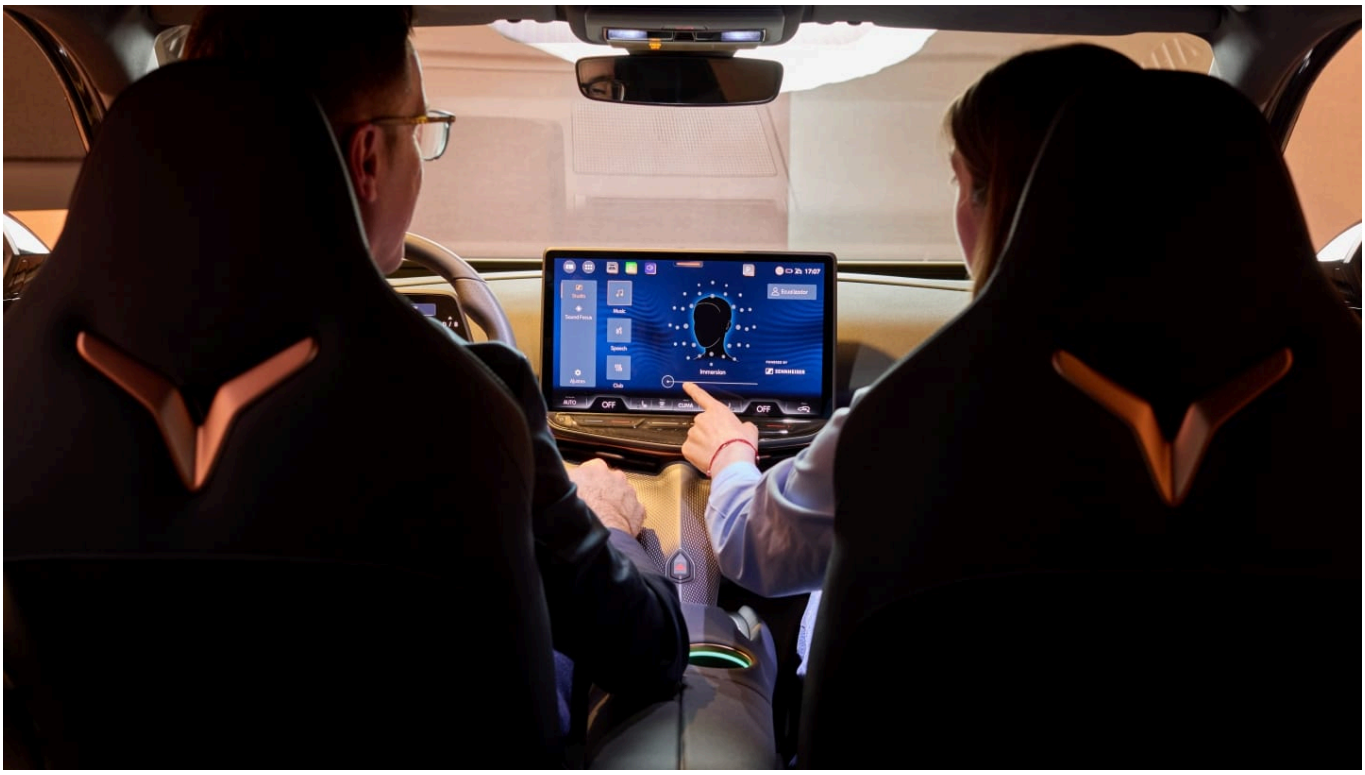
- Warnings and instructions are intended to encourage behavior adapted to the level of automation. The user response is adapted to the respective level—visually, acoustically, haptically, or a combination. The interaction is controlled by 'AI' agents, the performance and reliability of which are evaluated by the partners.
- Anticipate and minimize motion sickness. Between 20 and 50 per cent of people suffer from motion sickness. Depending on expected accelerations on winding roads, passengers should be given tips or help at the right time in relation to their current activities.
- Generated user interfaces ('GenUIn' for short) are the third focus of the Karli project. These are individualized speeches and tips provided on how to reduce nausea if it does occur. These tips can relate to the current activity, which is recorded by sensors, but also take into account what options are available in the prevailing context. By expressing their wishes, users are also given the opportunity to gradually personalize the entire interaction in the vehicle and adapt it to their needs.

Various sensors are used to record activities in the car, with optical sensors from interior cameras playing a central role. It must be transparent what information a sensor collects and what it is used for. Therefore, in another project called Anymos, Fraunhofer researchers are working on anonymizing camera data, processing it sparingly and protecting it effectively.

Meanwhile, a mobile research laboratory based on a Mercedes EQS is researching user requirements for L^3 automated driving. The findings from the Karli project will be tested and evaluated in practice there. The first functions could be available in series production vehicles from 2026.

Cupra, Sennheiser Collaborate on New Audio System

INTERIOR NEWS



CUPRA IMAGE

The Cupra Tavascan now features a new audio system developed in collaboration with premium audio partner Sennheiser.

The result of the partnership is an audio system that aims to provide a customizable and immersive experience for drivers and passengers. According to Sennheiser, the system operates by analyzing various musical components in real time, then redistributing these elements throughout the car, enhancing the original artistic intentions and emotion.

Users can customize their sound experience on a scale from 0 to 3, allowing for different levels of immersion. José Luis Álvarez, in charge of sound system projects at Cupra says "The sound can be adjusted manually or automatically, focusing on different occupants and offering modes like Music, Speech or Club".

To achieve the ideal audio setup, Cupra and Sennheiser integrated 12 hi-fi speakers and developed a proprietary algorithm. This tailored sound experience is designed specifically for the Cupra Tavascan, and likewise individually for other revamped Cupra models.

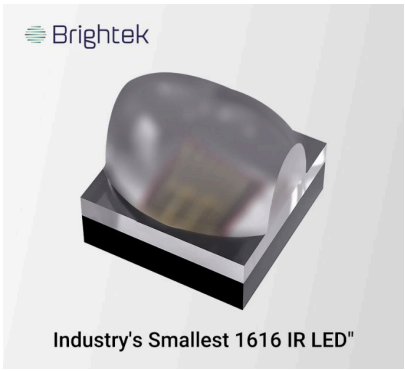
Brightek's Asymmetric IRED

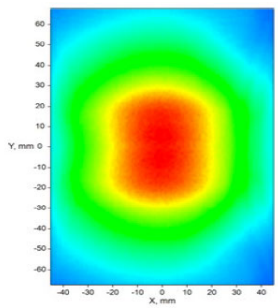
INTERIOR NEWS

Brightek Optoelectronic recently released their 1616 High Power Asymmetric IRED (Infrared-Emitting Diode). This IRED, with a packaging size of only 1.60 × 1.60 × 1.37 mm, is the smallest high power asymmetric LED in the industry. This compact size provides advantages in space-constrained applications, offering design flexibility, especially in wide-angle image sensor illumination scenarios.

The new IRED has passed AEC-Q102 automotive reliability certification, which proves excellent performance in extreme conditions such as high temperatures, humidity, and vibrations, making it a reliable solution for automotive sensing systems.
Being compliant with the IEC-62471 eye safety standard, it is suitable for long-term or close-range use, such as in driver- and occupant-monitoring systems.

The asymmetric design of the 1616 LED ensures superior uniformity, achieving a uniformity rate of 38 per cent, compared to less than 27 per cent in traditional LEDs. This feature is crucial in high-precision applications such as access control and automated logistics systems, significantly enhancing recognition accuracy and system stability.





130° × 110° OF UNIFORM ILLUMINATION

The 1616 High Power Asymmetric LED has garnered widespread attention and recognition in the market due to its exceptional performance and broad application scenarios. More product details can be found on Brightek's site.

Phononic Vibes: The Art of Sound Management

INTERIOR NEWS

PHONONIC VIBES IMAGE

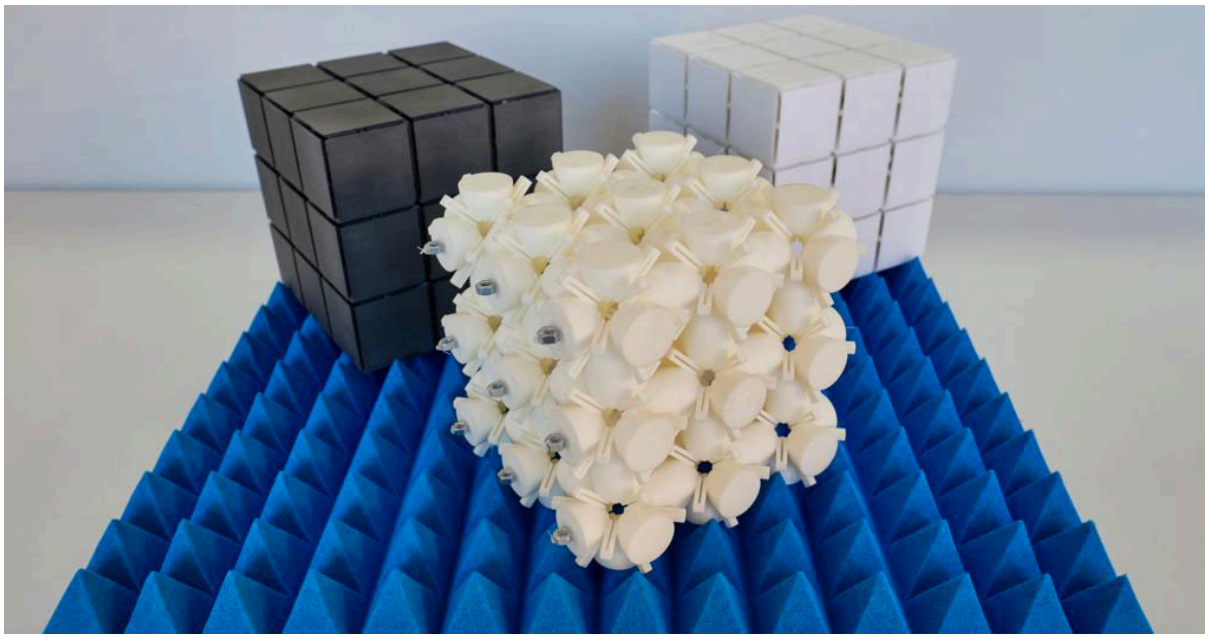
Three young Italian engineers have a startup called Phononic Vibes, founded in 2018 as a spinoff from Politecnico di Milano. The company has recently raised a €6m funding round for the development of a breakthrough technology in the field of sound absorption.

The invention, covered by 12 patents, is a modular device for the isolation of low-frequency and broad-spectrum vibrations, a sound trapping panel labyrinth made of metamaterials capable of absorbing both sound and mechanical waves. These metamaterials are artificially created with specific electromagnetic properties that distinguish them from other materials; their macroscopic characteristics depend not only on their molecular structure but also on their structural geometry.

They have a unique labyrinthine designthat allows the waves to be reflected several times within the structure, iteratively attenuating until it disappears. Its periodic structures are made from materials commonly used in civil and mechanical engineering, such as steel and concrete, or even 3D-printed recycled plastics. Several of the devices can be assembled side-by-side to create a true soundproof barrier.

The device can limit the propagation of vibrations, both elastic and acoustic, generated by traffic, machinery, and equipment, allowing the mitigation of many types of noise—medium-frequency sounds characteristic of speech and some musical instruments, and low-frequency sounds caused by engines.

Phononic Vibes' panels are 3D-printed from waste plastic and enable a vibration-reduction several orders of magnitude greater than currently available technologies on the market, and at significantly lower cost.



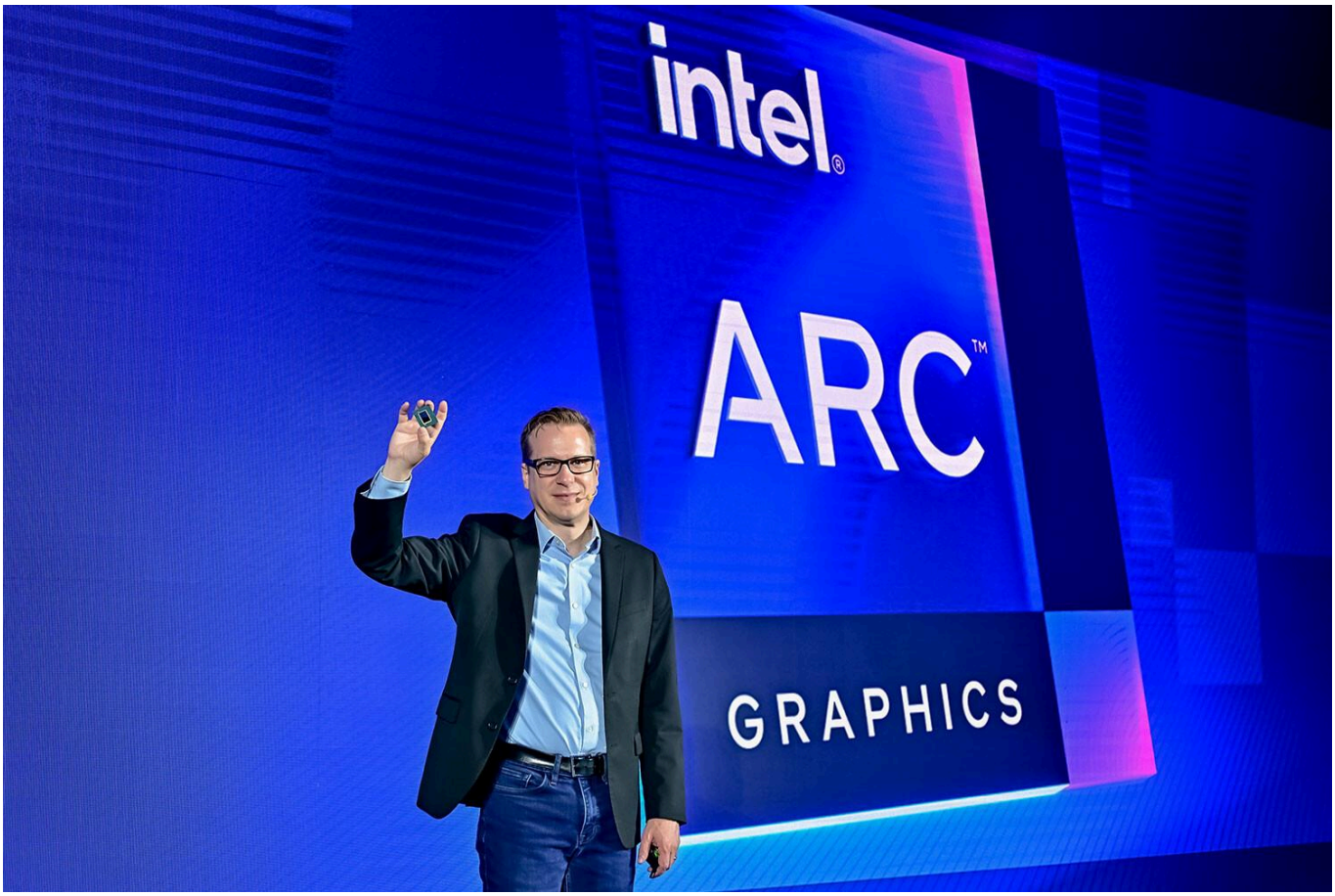
PHONONIC VIBES IMAGE

Examples of developed applications in automotive interiors include:

- **MPA, MetaPanelAbsorbing:** lightweight layer of recycled plastics or metals can save up **97 per cent of weight** versus existing solutions thanks to the metamaterial resonant phenomenon. It is also less expensive and more sustainable, and, being tunable, particularly suited for high frequency noise.
- **MRS, MetaResonators:** thin, lightweight antivibrators which reduce particularly low frequency noise. In automotive applications they allow to efficiently absorb roadborne noise with 80 per cent less weight than bitumen layers, in more sustainable way.
- **MLW, MetaLowFrequency:** it allows to save weight, being efficient in low-frequency noise attentuation. Successful applications have been made in automotive, naval, and building applications.

Intel's New Discrete GPU for In-Vehicle 'AI'

INTERIOR NEWS



INTEL IMAGE

Intel has introduced their first discrete graphics processing unit (dGPU), tailored specifically for the automotive industry. The Intel Arc Graphics for Automotive, revealed at Intel's AI Cockpit Innovation Experience event, will be deployed in vehicles by next year. Intel says it will "elevate in-vehicle 'AI' capabilities".

The new dGPU is designed to address the increasing need for advanced computing power in modern vehicle cockpits. By integrating Intel Arc graphics into its existing portfolio of 'AI'-enhanced, software-defined vehicle systems-on-chip, Intel is providing automakers with a scalable platform designed for a unified development process, enabling a single vehicle platform to be designed across various trim levels.

Automakers can start with the Intel SDV SoC and later integrate the discrete GPU to handle more complex computing tasks and expand 'AI' capabilities. Intel says their technologies enable advanced voice, camera and gesture recognition, with support for high-definition screens, 3D graphics, and multiple in-vehicle cameras.

'AI' algorithms that learn driver preferences aim to provide a highly personalized in-car experience, adjusting settings without the need for voice commands. Demonstrations at the event included local large language models (LLMs) for vehicle control and interaction. The dGPU can also support immersive 4K displays, multiscreen setups, and advanced interfaces.

"Intel's strategy is to bring the power of 'AI' into devices of every size and shape, and we're thrilled to bring that expertise and our vast open 'AI' ecosystem to the automotive industry," said Jack Weast, vice president and general manager of Intel Automotive.

The Design Lounge

Lamborghini Temerario: Techno Interior for High-Power Car

THE DESIGN LOUNGE

The Temerario, unveiled last week at the Monterey Car Week, is the first Lamborghini to have a V8 twin-turbo engine paired with three electric motors, with an overall maximum power of 920 CV (907 HP). It features new design style concepts, while offering customization options and connectivity content never seen before.

In keeping with the Lamborghini tradition of naming car models after famous fighting bulls, Lamborghini CEO Stephan Winkelmann said, "Temerario is the name of a bull that fought in 1875, and Temerario means fierce, courageous".

Lamborghini says the interior is large enough to accommodate a driver up to 196 cm tall (6'5"), wearing a helmet. The interior borrows some styling cues from the Revuelto; four stitching patterns are available, and the 18-way adjustable driver's seat is heated and ventilated.

The driver faces a technological dashboard like that of the Revuelto. The 8.4" central interface controls the multimedia. There's a voice assistant, as well as wireless smartphone replication of Apple CarPlay and Android Auto. It also includes a swipe function allowing the driver to move content to the 12.3" instrument cluster, or to the 9.1" passenger screen.

The cabin atmosphere is luxurious and sporty, with leather and carbon; carbon can optionally dress up the central console, air vents, dashboard, and steering column. The steering wheel is race-inspired; on the left side is a rotary button for the different driving modes, and one for the suspension modes with the lifting function to overcome speed bumps.

Vauxhall Mokka Coffe-E SUV: Drink Coffee During Charging!

THE DESIGN LOUNGE

VAUXHALL IMAGES

One of the oddest recent automotive coancepts must be the new battery-electric Vauxhall Mokka Coffe-E concept.

Vauxhall's proposal to pass the time spent charging a BEV is to provide a barista-quality coffee break experience in the back of the compact SUV.

Its mobile coffee shop features two coffee machines, grounds, and pods, both using Mokka-inspired premium coffee blends. A milk steamer, coffee grinder, and fridge are all integrated, ensuring drivers have everything they need to make the perfect coffee.

A pull-out drawer houses barista-quality tools, including scales to measure a precise quantity of beans, a Weiss Distribution Technique tool to ensure a smooth extraction flow of coffee, and an espresso tamper to evenly pack the grounds.

The coffee grinder and mini-fridge all sit within a cabinet concealed by two Alcantara-covered doors with stainless handles and hand-stitched design echoing the interior details of the Mokka EV. Within the base of the unit is a pull-out table tray to provide a flat surface to assemble drinks. When not in use, the table tray stows away securely into the base of the unit; just below it are stowed two handcrafted British-made Fox umbrellas for use in case it might rain in the U.K.

Vauxhall collaborated with award-winning British artisanal coffee roasters Cafeology. The Mokka Coffe-E range contains a series of six blends all roasted and packaged in Sheffield, inspired by the color palette of the Mokka Electric. Vauxhall Managing Director James Taylor says, "Three-quarters of EV drivers plan their trips around their desire for coffee, so we decided to create the Mokka Coffe-E, the perfect accompaniment for a charging break – delivering Vauxhall drivers with barista-quality coffee wherever they choose to charge".

Ford's Revamped Capri is Electric SUV

THE DESIGN LOUNGE

FORD IMAGES

The all-electric Ford Capri has been designed to focus on enhanced driver and passenger convenience, with features such as an adjustable infotainment screen, keyless entry and start, and heated front seats that incorporate memory and massage functions.

The car has partial Sensico trim, powered driver sport seats with massage function, a seven-speaker sound system with integrated soundbar, and a 14.6in touchscreen with tilting function—all as standard equipment. The 14.6-inch Sync Move screen moves smoothly up and down to allow for the most comfortable viewing angle. Sync Move features voice activation, connected navigation, and a configurable interface with light and dark modes. Wireless Android Auto and Apple CarPlay compatibility are standard. A dedicated holder accepts two large smartphones and includes a wireless charger.

The driver can adjust the viewing angle of the infotainment display to reveal a secret compartment known as 'My Private Locker'. A second compartment, the MegaConsole, is located below the front armrest, with a capacity of 17 liters of storage, and the trunk has a capacity of 572 liters.

The premium trim incorporates a premium 10-speaker Bang and Olufsen sound system with subwoofer and soundbar, luxurious soft-touch materials, heated steering wheel and LED ambient lighting with 10 different colors.

It also features five different driving modes: normal, eco, sport, individual, or for the all-wheel drive version, traction.

Standard ADAS includes 12 ultrasonic sensors, five cameras, and three radar sensors for 360-degree monitoring, 'intelligent' adaptive cruise control with stop-go capability, assisted lane change, lane centering, a HUD, traffic sign recognition, wrong-way alert, blind spot monitoring, clear exit warning, lanekeeping assistant, cross-traffic alert with active braking, and pre-collision assist to prevent or mitigate accidents. The car has front and rear parking sensors, reverse brake assist, a rearview camera, and active park assist.

News Mobility

Waymo Pulls Away from the Robotaxi Competition

NEWS MOBILITY

WAYMO IMAGE

Robotaxi company Waymo wants to use fewer cameras and radar sensors than they do now. The next generation of vehicles and software will use only 13 cameras instead of 29. And the number of lidars that scan the car's surroundings will be reduced from five to four. The sixth generation of the Waymo system is to be integrated into Chinese Zeekr electric cars; Waymo currently has several hundred converted Jaguar iPace EVs. It is not known how the recent U.S. introduction of 100-per-cent tariffs on Chinese-made cars might affect the plans.

Waymo is particularly advanced in the development of software for autonomous driving, and transports passengers with driverless robotaxis in San Francisco, Los Angeles, and Phoenix. The company currently makes more than 50,000 paid trips per week, and Zeekr's new vehicle is currently being tested with safety drivers at the wheel. Waymo has not yet given any indication of when the Zeekr cars will be integrated into the commercial fleet, but the present expectation is for the two latest generations of the system to be on the road at the same time.

Waymo currently has virtually no competition in the robotaxi business. Cruise cars are only just beginning to return to the streets after a fatal accident in San Francisco. Amazon's Zoox is still working on their launch of a driverless-cab service in Las Vegas. Tesla robotaxis are vaporware; Elon Musk's incessant claims of imminence have long been regarded as another of his boy-who-cried-wolf deals. Moreover, experts are skeptical, as Musk insists lidar and radar are unnecessary—contrary to virtually everyone in the world who makes a living by knowing what they're talking about in this field.

General News

Bentley to Join Sustainable-Leather Org

GENERAL NEWS

LEATHER NATURALLY IMAGE

Volkswagen Group--owned Bentley Motors says they have become the first automotive member of Leather Naturally, an organization calling themselves the global voice of the sustainable leather industry, dedicated to promoting the use of certified, responsibly-sourced leather as a natural byproduct of a responsible circular economy.

Leather Naturally chair Debbie Burton has said she is delighted to welcome Bentley as a member of the organization. Bentley leather and color development technical expert Marc Stang says, "The application of the latest sustainable leathers allows an even wider variety of choice for our customers and further supports our industry-leading Beyond100 strategy."

Leather Naturally has a global membership from a wide range of industries. The organization promotes certified, responsibly-made leather by providing trusted facts and inspiration for consumers, designers, and brands. Educational and promotional activities focus on leathers made from hides and skins that are a byproduct from the food industry, and which would otherwise mostly be wasted.

Responsibly-made leather is a valuable alternative for oil-based products such as plastics like PVC and Polyester, adding value to an important renewable material, via efficient and modern processing techniques.

Europe's Best-Selling EVs in '23

GENERAL NEWS

Tesla's Model Y was the most popular EV in Europe in 2023. With over 250,000 units, the model achieved two and a half times as many new registrations as the second-place BEV, the same maker's Model 3. 100,000 of those were registered across Europe last year. This is according to an analysis of new registrations by market observer Jato (28 countries: EU excluding Bulgaria + EFTA + UK). The VW ID.4 came in third place with 85,000 new registrations. The MG 4, a Chinese model, achieved a respectable fourth place with 72,000 units. Here's the top-ten list:

1	Tesla Model Y	251.604
2	Tesla Model 3	100.888
3	Volkswagen ID.4	85.088
4	MG 4	72.212
5	Škoda Enyaq	66.247
6	Fiat 500	64.244
7	Volkswagen ID.3	63.460
8	Dacia Spring	59.186
9	Volvo XC40	50.976
10	BMW i4	48.958

According to the European manufacturers' association ACEA, the share of battery-electric cars rose to almost 16 per cent last year; in 2022, it was 14 per cent. According to Jato analyst Felipe Munoz, subsidies still played a major role in this growth, mainly in the commercial sector. The number of new commercial BEV registrations increased significantly, while the private BEV market grew much more slowly than the overall European passenger car market. "The lack of interest from private buyers is a major hurdle that the industry needs to overcome," says Munoz.