Thu, 29 June 2023
Weekly Newsletter

DVN-I
Automotive Interior

NEWSLETTER #167

Editorial

Haptics, Cars, And…Planes?

DVN IMAGE

How do we interact with screens, buttons, switches, and 'smart' surfaces? Haptics, that's how! Haptics are used to deliver rich, engaging user interaction, without having to look at the screen or surface. Haptics means literally the ability to grasp something. The term was coined by German Psychologist Max Dessoir in 1892, as a suggested name for academic research into the sense of touch—like that of acoustics and optics. That's where haptics came from; where it's headed was the main theme of the Grewus Interactive Haptics Conference held recently, and this week we bring you in-depth coverage of that event.

Last week, the Paris Air Show included for the first time a car's world premiere: the Renault Rafale. The schtick was that the essence of aeronautics converges with automotive design; that the car was inspired by the finesse and fluidity of aircraft fuselages. As Renault has an aviation history, they stand astride the two worlds. This week's Coffee Corner shows it goes both ways, with automotive haptics migrating into aircraft cabins.

Just two short months until the DVN Interior Deep Dive in San Francisco, on 29-30 August. We're hard at work preparing to make it a grand event you won't want to miss. Not registered yet? **Sign up**!

Sincerely yours,

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

Grewus Interactive Haptics Conference

GREWUS IMAGES

On June 14 and 15, the interactive Haptics Conference took place at the historic Gastwerk Design Hotel in Hamburg. It was organized and hosted by Hamburg-based electronics maker Grewus. The purposes of the conference were:

- Bringing HMI-relevant disciplines together: what needs to be considered when integrating haptics into an application? How do design, the UI, the UX, the sensors, the mechanics, the driving, and the actuator interact?
- Networking: white-goods experts talking to gaming and automotive experts, uniting different industries in the field of haptics. What are the challenges in each sector, and within the disciplines of engineering and design? What interface options exits? Are synergies possible?
- Industry meets academia: OEMs, tier-1 and -2 suppliers, and scientists meet in one room. What aspects need to be considered for optimal haptics? Which physical parameters can be integrated into the desired design?

The themes were Future of Haptics, Haptics in Industry, Scientific Aspects of Haptics, Haptic HMI Solutions, and Technology Trends and Engineering Devices.

The conference got started with a warm welcome on June 13 on the Alsterlagune Hamburg restaurant boat. Interesting lectures and presentations were given on June 14 and 15 at the beautiful Gastwerk Design Hotel Hamburg, and there was a trip to the world-famous miniature world at historic Speicherboden in Hamburg.

About 90 participants heard 14 lectures and participated intensively in the Q&A sessions and in the practical working groups on haptic and metrological topics.

Lectures

The first speaker was Elisa Santella, managing director and cofounder of Grewus. Her lecture was about haptic trends in automotive HMIs.

Designers and engineers increasingly incorporate haptic feedback into vehicle HMIs, so drivers won't have to take their eyes off the road as often. In addition to improving safety features, haptic technology enables greater personalization of the driving experience. Haptic feedback can be defined, modified, and controlled by software. As a result, it offers designers endless configuration options and a flexible, individualized driving experience.

Later, Santella gave a second lecture on automotive gamification, which she described as an effective way to engage customers and create loyalty. Automakers are using games to strengthen and differentiate their brand, and keep people interested in their products. Passengers are being trained to expect entertainment and gaming in the car with the trends to multimodal HMI and autonomous driving.

Philipp Sachs, COO of XeelTech and cofounder of the Haptics Alliance, has a focus on refining HMIs by enabling intuitive, simplified, and safer interactions through true force feedback in rotary actuators. His talk about collaborative innovations for immersive HMI solutions was about the core elements that turn an HMI into an immersive experience

Dr. Wolfgang Clemens, Director of Product Management and Business Development and management boardmember at PolyIC, gave a presentation on smart integrated touch solutions for HMI surfaces in automotive and home appliances. It described touch interfaces and the integration with lamination, in-mold electronics, and functional foil bonding.

Jörg Stierand, Kurz's Head of Divisional Sales, gave a lecture together with Dr. Wolfgang Clemens. They emphasized that haptic feedback is lacking in most touch automotive applications. Future focus involves combining large, curved HMI parts with force-detection and haptic feedback, with ongoing activities and partnerships for automotive, home appliance, and other consumer markets.

Dr. Iyad Nasrallah, Product Line Manager of TouchNetix's force sensing technology, oversees strategic haptic collaborations. He gave a lecture entitled, "Touch, Force, Hover, Proximity, Haptics…Axiom!". It described how his company's Axiom product range can bring capacitive touch, air gestures, force-sensing, andhaptics into a unique, highly configurable single-chip solution.

Eric Vezzoli, a scientist-turned-entrepreneur, spoke on "Unlockign the Power of Haptic Technology in Gaming: Industry Leaders Explore Best Practices and ROI". He described the implementation of designed haptics in gaming and the multi-platform haptics development.

Since 2021, Stefan Breitschaft has worked as a control panel haptics development specialist at BMW Group. In his talk, "From Sensation to Experience: a Psychological Turn in Haptic Design", he depicted how a psychologically-grounded methodology and philosophy might aid the haptics community and foster haptic design.

Philipp Beckerle is a professor and chair of autonomous systems and mechatronics at FAU Erlangen-Nürnberg. His research interest is in human-centered mechatronics and robotics. In his lecture about human perception of haptics, he outlined different facets of haptic perception, putting emphasis on psychological aspects and how those could be considered in systems engineering to yield human-centric solutions.

Ralf Sandomeer is a Grewus cofounder. He is an engineer and a specialist in integrating components and modules into customer solutions. In his lecture, "The Recipe of Haptic Integration", he tied together the general aspects of mechanics, sensing, measuring, actuating, and driving for haptic applications.

Prof. Dr.-Ing. Thorsten A. Kern specializes in actuator and sensor development for medical HMIs. His lecture was entitled "Vibrotactile Actuators: How to Really Quantify Their Performance for a More General Applicability", and in it he proposed a methodological approach to quantify vibrotactile actuators' performance as frequency-dependent energy sources, based on established theory.

Morten Rothmann is the managing director of Hamsø Engineering, specialists in haptics for HMI solutions. In his lecture, "Selection Criteria of Chips for Driving of Haptics", he introduced technologies for haptic integration and with different hardware driving circuits. The presentation covered topics such as footprint, signal driving, technology advantages and disadvantages, and component selection.

Anouschka Esselun has been a project manager at Grewus since 2018, and has a background in acoustics and digital signal processing. She spoke about measuring of active haptic feedback, and explained that doing so must consider the whole haptic experience—including sensing, human perception, timing, and the haptic effect itself. The goal is to optimize the haptic systems for more immersive and realistic user experience.

Daniel Shor is a designer, researcher, and mechanical engineer exploring the links among emotionality and touch experiences. He is also a research director at Innovobot, and his lecture, "Haptics Language and Design Rules", looked at how designers transmit content, context, and urgency into a simple set of pulses and vibes and how intuitive, interpretable messages can be understood through our skin.

Post-Lecture Workshop

After the lectures, the presented approaches and hardware were available for hands-on tryout by conference participants.

In this hands-on workshop, the participants learned how to use design-thinking techniques and user research to improve the effectiveness and intake rate of vibrotactile notifications. They worked with cutting edge actuators, user research tools, and prototyping equipment on industry-relevant challenges ranging from smart surfaces to wearables with the technical support from Innovobot and Grewus.

Expo booths

During the breaks, visitors browsed the exhibition booths showing the latest innovations, products, and technologies from companies like Kurz/PolyIC, XeelTech and Signata, as part of the Haptics Alliance, TouchNetix, Fischer Automotive, Next System, Hella Interior Lighting, Hamsø Engineering, D-Box, Qorvo, and Grewus.

Kurz / PolyIC presented their electronic and decorative solutions for HMI, 'smart' surfaces with haptic feedback, and backlighting. Many solutions are in production and have a great potential for future applications in the car interior.

Kurz / PolyIC presented their electronic and decorative solutions for HMI, 'smart' surfaces with haptic feedback, and backlighting. Many solutions are in production and have a great potential for future applications in the car interior.

TouchNetix specializes in innovative user experiences based on touch technology. Their Axiom family of user interface chips enables touchless user interfaces and 3D sensing capabilities for a wide range of markets.

Qorvo is an American semiconductor company designing, making, and supplying radio-frequency systems to drive wireless and broadband communications.

Fischer Automotive supplies automakers with kinematic interior components such as ventilation nozzles and cupholders.

Forvia Hella presented a sample with ultra-slim surface illumination, material backlighting, dynamic light scenarios, high power RGB LED module, with integrated touch, sensor and heating functionalities.

Hamburg's Miniaturwunderland

DVN IMAGE

In the evening of the first conference day, the Grewus team organized an absolute highlight, an exclusive tour through the world-famous Miniaturwunderland in the historic Speicherstadt warehouse in Hamburg. This was an incredible experience!

Driving Vision News would like to thank the Grewus team for the excellent organization and realization of the conference, and for the most impressive ancillary activities. We're eagerly looking forward to doing it again next year!

Interior News

Renault Rafale Revealed at Paris Air Show

INTERIOR NEWS

DVN IMAGES EXCEPT AS NOTED

Following on their new Espace, Renault launched another new D-segment vehicle at the Paris air show: the Rafale SUV. Renault CEO Luca de Meo said, "Launching a new a car in a motor show is the norm; launching one at an air show is the Renault way!".

The new car was presented in a booth on the tarmac of the air show, surrounded by new aircraft—the Airbus 321 XLR and the Boeing 777X.

Rafale is a French word that evokes wind, and is also an aeronautical reference. Aviation has played an important part in Renault's history; the Caudron-Renault Rafale, which flew at a record-breaking 445 km/h in 1934, is an example.

Renault says the Rafale is the first production vehicle designed according to the new visual language Gilles Vidal brought in as head of design.

RENAULT IMAGE

The Rafale is 4710 mm long, marginally shorter than the Espace, at 4722 mm. However, the Rafale's track is 40 mm wider than the Espace to enhance its sportier characteristics. Features include full connectivity and a 200-horsepower 'E-Tech' hybrid powertrain.

Inside, Renault highlights the high-end positioning of its model. It incorporates the successful layout of the Austral and the Espace, with the combination of screens including a 12-inch touch screen, and its wrist rest reminiscent of the throttle control of an airplane. There are small touches of noble materials, such as an element of the dashboard in real slate, and Rafale-specific seat; the front ones are upholstered in 61-per-cent recycled Alcantara—a market first, Renault says. Pulsing lights are embedded in the headrest, with their color matching the ambient interior lighting.

RENAULT IMAGE

Another highlight is a new panoramic glass roof, co-developed with glass supplier Saint Gobain. It's 1.5 meters long by 1.2 meters wide, and can darken in seconds to provide sun protection. Its four settings, including the ability to darken only part of it, can be voice-controlled by Google Assistant. The glass roof also adds 3 cm of headroom for rear-seat passengers.

The Rafale will be built in Palencia, Spain. Trim levels will include a top-range Esprit Alpine. Sales start in spring 2024.

Volkswagen's 3-Row ID.Buzz E-Van

INTERIOR NEWS

VW IMAGES

Volkswagen’s 3-row ID.Buzz electric van will go on sale nationwide in the second half of 2024. The 3-row variant has been developed specifically for North America. It's on a longer wheelbase than the 2-row European vehicle that debuted in 2022, plus a bigger battery and more horsepower. The vehicle will be built in Hanover, Germany, along with the 2-row ID Buzz.

The unveiling, at a public beachside event in California, underscores the degree to which VW sees California as a huge market for the vehicle. On hand were hundreds of owners of vintage VW vans who convened prior to the unveiling for a “cars and coffee” show-and-tell.

The skateboard design, with the battery mounted in the floor, saves space and contributes to better handling by locating a large percentage of the vehicle’s weight low in the structure.

The Buzz reprises the boxy shape and short overhangs of the classic VW Bus (Kombi, Bulli…), giving it maximum utility on a minimal footprint. It is 4,887 long, nearly 254 mm longer than the 2-row Buzz; all that additional length comes from a 3,239-mm wheelbase (versus 2,987 for the 2-row). It is 1,979 mm wide and 1,895 mm tall. VW says the long-wheelbase version “is one of the most spacious electric vehicles, with room for up to seven people and a large luggage compartment".

It has a newly-developed panoramic sunroof with electronically controlled tinting, the largest glass roof VW has ever offered. Other features include a head up display, upgraded infotainment, and remote parking via smartphone.

VW says the new, 1.5-m^2 panoramic sunroof with electrochromic glass “brings back memories of the legendary Samba Bus of the 50s”. The glass can be changed from transparent to opaque and back using a touch slider (like VW HVAC controls) or the voice assistant. North American versions will also have heated and cooled seats.

All versions for all markets are built by VW’s Commercial Vehicles plant in Hanover, Germany.

Emotion3D, Chuhang, SAT Collaborate on In-Cabin Analysis System

INTERIOR NEWS

EMOTION 3D IMAGE

Camera-based in-cabin analysis software specialist Emotion3D (see our previous coverage); AD and ADAS radar technology developer Chuhang Tech, and sleep-onset-prediction startup Sleep Advice Technologies (SAT) have partnered to develop a multi-sensor in-cabin analysis system.

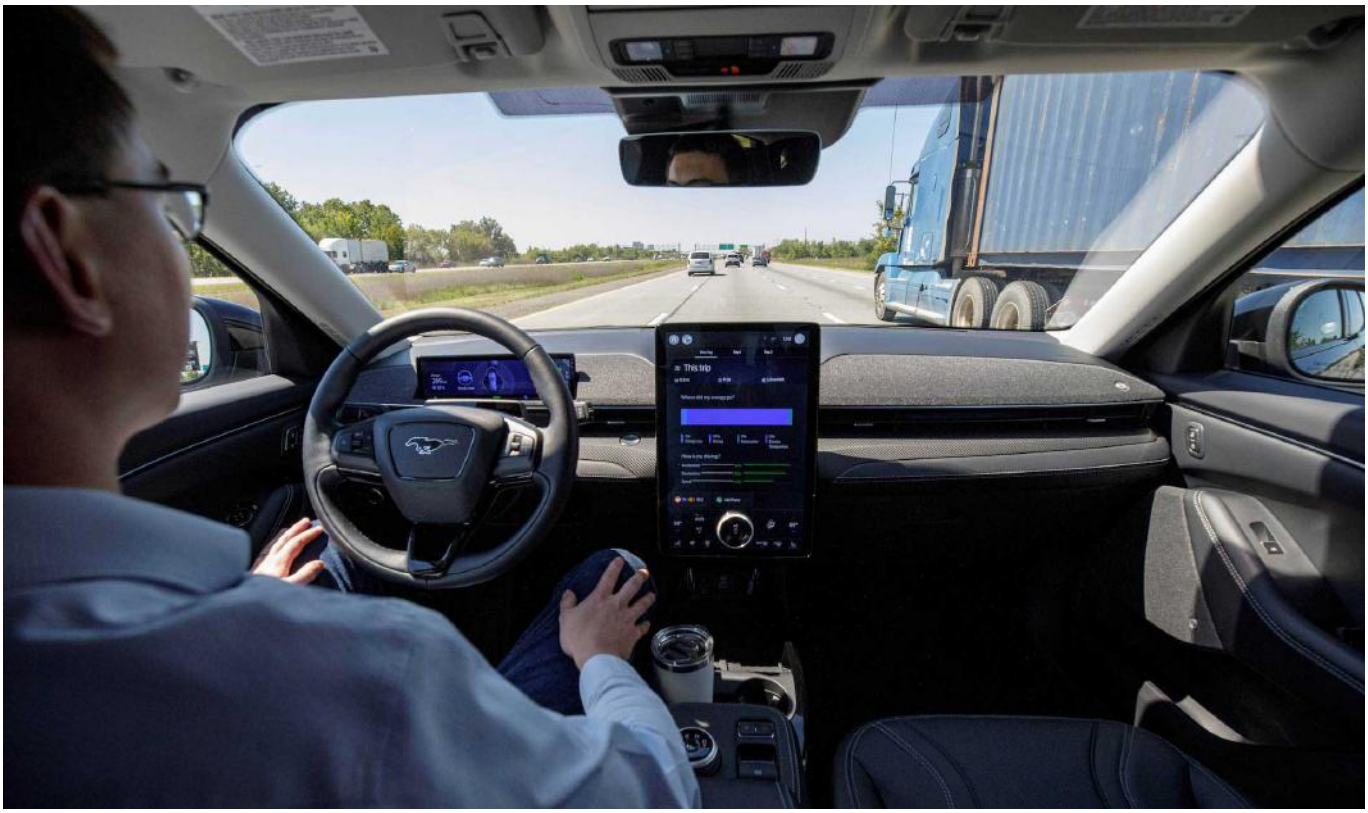
With drowsiness and fatigue causing many crashes and near-crashes on roads around the world, the companies are working on creating a new standard of automotive drowsiness detection. They're co-developing a solution that uses multiple sensors to detect signs of drowsiness and fatigue. These signs will help detecting drowsiness before it really happen, which is the main objective.

A combination of Emotion3D's human analysis software stack Cabin Eye, which gathers valuable information on the driver from camera images, and radar solutions from Chuhang Tech will be used to analyze vital signs. These will be partnered with SAT's sleep onset prediction algorithms to accurately identify signs of drowsiness in real time.

The smart solution will also provide features required by Euro NCAP, including distraction warnings and child presence detection enabled by Chuhang Tech's mmWave radar technology.

UK Poll Shows DMS Understanding but Low Awareness

INTERIOR NEWS



FORD IMAGE

Seeing Machines (see DVN's CEO interview) is the company behind Ford's AI driver monitoring technology that tracks and monitors driver behavior.

The company recently carried out a representative poll looking at the attitudes of UK consumers towards hands-free driving technology which is rapidly becoming mandatory for carmakers to install around the world.

A majority of surveyyed UK road users believe new eye-tracking technology to check driver attentiveness could help improve road safety, but public awareness remains low. The results show that 72 per cent of UK consumers polled have little to no knowledge of this eye tracking technology (as used by Ford in the BlueCruise system). Nevertheless, a 70-per-cent majority believe these systems have the potential to improve road safety and help reduce accidents, with variations in opinions between young and older people and across different parts of the UK.

When asked: 'How do you feel about assisted driving, or being able to take your hands off the wheel in certain circumstances?', 46 per cent said that they are not yet convinced.

Young drivers, as well as drivers in London, were more likely than the national average to believe that DMS would make them a better, more attentive driver. Seeing Machines conducted this survey nationally, with a representative poll of 2,147 UK consumers, in May 2023 to gauge awareness of DMS and better understand consumer attitudes towards the technology.

"The survey shows that there is much work still to be done by carmakers, suppliers, and policy makers in educating the public as to the benefits of advanced driver monitoring systems and the regulatory changes which will make it an unavoidable legal requirement in the decade ahead. Even so, the results indicate that most UK drivers are receptive to these changes and are willing to try out a technology with clear benefits for driver safety, as DMS technology becomes as commonplace as the seatbelt in the years ahead" said Paul McGlone, CEO of Seeing Machines.

Stellantis Plans End-of-Life Vehicle Recycling with Galloo

INTERIOR NEWS

STELLANTIS IMAGE

Stellantis and Galloo, a Belgian metals recycling company, plan to collaborate on end-of-life vehicle recycling.

The Stellantis-Galloo joint venture, in cooperation with selected approved remanufacturing facilities, is to collect a vehicle at the end of its service life, from its last owner. Parts will be sent for reuse, remanufacturing, or recycling. The service is scheduled to start at the end of 2023, initially focusing on France, Belgium, and Luxembourg. It will then be expanded to cover the whole of Europe. The JV also wants to offer its service to other automakers.

Recycling is an integral part of Stellantis' Circular Economy business unit's 4R strategy (Reman, Repair, Reuse, Recycle). The ELV vehicle recycling program is expected to contribute to several goals simultaneously: to increase recycling revenue tenfold and parts revenue fourfold by 2030 compared to 2021, and to achieve a revenue target of more than €2bn by 2030, as outlined by Stellantis in their Dare Forward 2030 strategic plan. In addition, the recycling program is designed to support Stellantis' goal of 40 per cent 'green' materials in new vehicles by 2030.

Mercedes Brings ChatGPT Into the Car

INTERIOR NEWS

MERCEDES-BENZ IMAGE

With the MBUX multimedia system introduced in 2018, Mercedes has raised the possibilities for interaction between driver and vehicle to a higher level. However, dialogic communication between humans and Mercedes still offers potential for improvement. Fasten your seatbelt, because the ChatGPT chatbot has now been integrated into MBUX.

For the time being, this integration is a three-month beta test in which around 900,000 MBUX vehicles in the USA can participate. Customers don't have to do much to opt in, just say "Hey Mercedes, I want to join the beta program". Then the additional software is immediately installed via a wireless internet connection. The voice control system already available in MBUX is characterized by intuitive operation and allows questions about the environment or the control of smart home functions.

Chat-GPT further opens this window of intuitive speech recognition. The AI uses a "Large Language Model", with which the understanding of natural language grows. The question does not have to be formulated in a cumbersomely long way. Thanks to chat GPT, it is 'understood' in the larger context with reference to the preliminary question, which is why a detailed question can be short like in normal interpersonal dialogs.

The basis for the integration of chat GPT is a cooperation between Mercedes and Microsoft. Via the Azure Open AI Service, the car manufacturer uses the AI models from Open AI with corresponding security and data protection functions from Azure. Mercedes retains sovereignty over IT processes in the process.

The Design Lounge

Morphing Controls

THE DESIGN LOUNGE

CONTINENTAL IMAGE

By Athanassios Tubidis

DO NO TOUCH! How many times we read the sign and how often we disobey and still do. No one would ever say do not look, do not listen, but touching is different. The act is certainly related to an instant gratification however evidently, some think you can do without. During the initial years of my studies, I was lucky enough, to be one of the few, to participate in pioneering workshops of Bruno Munari, an Italian artist, designer, and inventor who contributed fundamentals to many fields of visual and non-visual arts with his research on games, didactic methods, creative process, movement, tactile and kinesthetic learning. In his beautiful and poetic work, he depicted aspects of the 'touching' prohibition since and especially the early ages. Considering everything tactile an important learning experience, some of his most passionate works were entirely dedicated to that subsystem of non-language communication, conveying meaning through physical contact. From the 'prebooks' series to his detailed surface research models of 'the tactile speed of materials' as from sandpaper, to orange-peel, to Plexiglas, to fur, he concedes with his audience the perception of surrounding space, decoding touch, movement, and color through kinesthetic learning.

Haptics are often associated to vision impairment yet, in the need to replicate tactile sensations on the otherwise cognitive neutral screen surfaces, a significant technology evolution took place in parallel to anything digital displayed on a screen. Whether you know it or not, you have probably experienced it. Smartphones, game controllers and touchscreen car stereos, all use haptics to deliver richer, more sophisticated, and more engaging user interaction.

Inspired by automotive interiors that, pushing the boundaries of anything digital, tend to became aesthetically clean and minimal, Continental has presented at AIX23 aircraft interiors show, a powerful haptic idea addressed to aircraft cabins. At first glance, the control panel looks like a smooth surface, trimmed with leather. When a hand moves towards the surface, a combination of innovative materials, sensors, electronics and electro mechanics come into play. As the hand nears, capacitive proximity sensors recognize it is a human hand and then activate and illuminate the buttons, which protrude through a stretchable multilayer

surface material, creating a tactile control panel. As the appropriate button is selected, the user's finger pressure is measured to determine if the motion is deliberate, and the tactile feedback signal (in the form of a brief pulse) is triggered as acknowledgment. When users withdraw their hand, the buttons disappear behind the surface.

Besides the hide and seek game, that I could do for hours without even the intent to use the functions but just because it's fun and curious, that haptic feedback has obvious potential advantages. Control zones could be designed through a new aesthetic language, without losing the quality feel of a physical button. Adding of course, the instant haptic pleasure and gratification!

Mercedes-Benz Vision One-Eleven is Re-Envisioned Icon

THE DESIGN LOUNGE

MERCEDES IMAGES

It's been over 50 years since Mercedes-Benz showed the C111 concept, a supercar with gullwing doors, stunning design, and an unusual engine. Shown at the 1969 IAA in Frankfurt, the C 111 had four representatives through the 70s—the C111-II, C111-III, and C111-IV—each with different powertrain components, from Wankels to turbodiesels. While Mercedes only built 16 C 111s for experimental purposes, the car is engraved in many auto enthusiasts' minds for its polymer-based body shells and hot orange paint.

The Mercedes-Benz Vision One-Eleven, shown earlier this month at a media event at the automaker's California design studio, pays tribute to the legendary icon, and incorporates its design philosophy with the technology and performance of tomorrow's EVs. The Vision One-Eleven is a mix of legendary and futuristic, using the C111's low silhouette and bringing futuristic technology like augmented reality to the sports car world.

Inside, the Mercedes-Benz Vision One-Eleven presents the first sports car interior with a lounge concept. It reflects the paradigm shift from self-driven sports car to autonomous electric vehicle within the super sportscar segment and unites two completely different states of being. In race mode with the backrest upright and the compact driver-oriented touchscreen, the interior becomes that of a minimalist driving machine. Conversely, in lounge mode, the seats are fully integrated into the interior sculpture, which merges sills, center tunnel and luggage compartment into a single unit.

This creates a whole new, exceptionally airy spatial concept. In contrast to previous mid-engine sports cars, it takes advantage of the compact proportions of electric motors to extend the interior rearwards. Consequently, the lounge-like interior invites occupants to take their time and relax – a completely new approach for the sports car of the future.

News Mobility

New Mobility Quadricycles, Fiat Topolino, Citroën Buggy, Arz Zero

NEWS MOBILITY

FIAT IMAGE

Fiat's new Topolino EV is a close Stellantis sibling to the Citroën Ami and the Opel Rocks-e

This, the only picture of the Topolino so far from Fiat, shows a convertible with a canvas top and no doors. A similar version of the Ami, called My Ami Buggy, will go on sale starting June 20. Topolino (Italian for small mouse) is the name given in Italy to Disney cartoon character Mickey Mouse. Topolino is also the nickname given in Italy to the original Fiat 500 that was launched in 1936, making car ownership possible for the country's masses as the Volkswagen Beetle did in Germany.

Dimensions are similar to the Ami: 2,410 mm long; 1,390 mm wide, and 1,520 mm tall, with a 6-kW electric motor giving the vehicle a range of 70 km.

The Topolino joins a class of vehicles known in the EU as a quadricycle. Such models have a top speed limited to 45 km/h and the minimum driving age is 14 years old, if the person has a motorcycle license.

The Topolino will be assembled alongside its siblings in Kenitra, Morocco.

"The all-electric Topolino quadricycle is ready to contribute to expanding urban electric mobility," Fiat said in a release. "It is perfectly suitable for the city and people looking for a sustainable and fresh mobility solution, fitting in with Fiat's mission of providing urban sustainable mobility solutions accessible to everyone."

Citroën just introduced a limited edition of their Ami, called My Ami Buggy. Like the first production model released in France, the global version features a khaki color that gives an outdoorsy feel, black protective trim, and gold rims to accent the dark body colors. After launching online sales on June 20, Citroën says all 800 units were sold in 10 hours. The automaker said Belgium stood out, with all 65 units reserved for the nation selling out in less than nine minutes. France had 300 My Ami Buggies sales in one hour, while Spain recorded the fastest order in just over a minute.

ARK IMAGES

Ark is a new British startup. They recently unveiled the Ark Zero, an affordable electric micro-quadricycle car coming later this year. Ark claims to have seating for two adults and one dog. It looks like a tandem setup with a pair of seats placed one behind the other, fighter pilot style

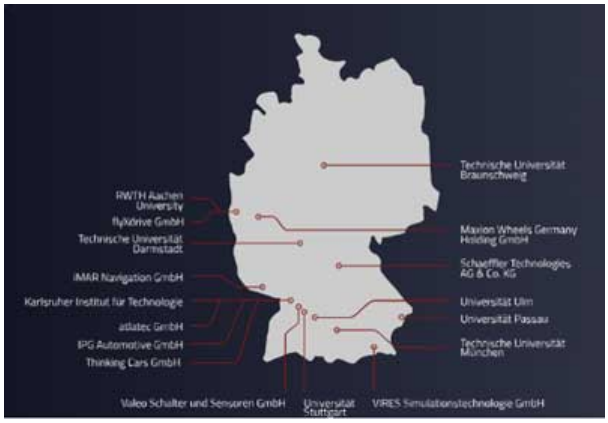
Features include keyless startup, electric windows, hill hold assist, a sun roof and an electric heater, though air conditioning doesn't appear to be an option. The Ark Zero has an aluminum monocoque body and MacPherson strut suspension. That aluminum shell is part of the vehicle's supposed safety features, as the company explained, forming a solid protective shell around occupants, offering enhanced resistance in case of impact.

Universities and Partners for Safe Autonomous Driving

NEWS MOBILITY

RWTH AACHEN IMAGES

Four autonomous vehicle types have been developed as part of the UNICARagil project, which brings together 16 universities and companies at ten locations in Germany that conduct interdisciplinary R&D. The goal was clearly defined: safe driverless driving in mixed traffic through new architectures in hardware and software.



The four vehicles are a cab, a shuttle, a parcel delivery van, and a family car. Their boxy design shows that they are intended for city traffic rather than long-distance routes, and a look inside makes it clear that they were developed from the ground up for autonomous operation: there's no steering wheel, no driving seat, and no instrument cluster.

In the cab's lounge atmosphere, two seats are arranged opposite each other. The shuttle can seat up to eight people. In the parcel vehicle a ceiling-mounted robot loads and unloads parcels, and the interior of the family car can be largely customized.

The new way of thinking starts with the basic structure: The chassis components belonging to a wheel are combined with the drive in a dynamic’s module, each of which drives, guides, steers and brakes a single wheel. These modules are connected to each other via a driving platform that can steer all wheels through 90 degrees. Different cabs can be mounted on this platform, which are equipped with a sensor module at each corner. This modular principle allows maximum flexibility in interior design with minimal development effort for future series production.

The ASOA ("Automotive Service-oriented Software Architecture") middleware is used as the core component of the software platform. The functional architecture also includes a cloud, where the actual 'learning' from experience takes place, road infrastructure such as sensors at traffic lights, and small automated aerial vehicles known as 'info bees'. The networking between these building blocks enables vehicles to interact with conventional cars and commercial vehicles in a predictive and safe manner, even in confusing traffic situations.

The Unicar-agil concept includes an external control center developed by the Technical University of Munich (Institute of Vehicle Technology). From the passenger's point of view, it creates trust in autonomous drivin. It ensures progress when the "intelligence" of the vehicle itself is at a loss, for example because there are obstacles on the route that can only be avoided by violating the rules.

The goal of the follow-up project, AUTOtech.agil, is to transfer the freshly developed modular principle to the entire mobility system and to develop substantial contributions for standardized hardware and software building blocks as an essential step toward networked mobility.

General News

ZF Passive Safety Systems Division Goes Independent

GENERAL NEWS

ZF IMAGE

Passive safety is still paramount to keep occupants safe, even if vehicles are getting more automated. ZF has decided to carve out their Passive Safety Systems division and set it up independently by the end of 2023. This is intended to open up new strategic options for action for the occupant protection systems business and is the result of a continuous review of the ZF portfolio. During the current transformation process in the automotive industry, ZF has evaluated and analyzed the growing transformation business and the growth potential of traditional business areas such as passive safety systems. The company sees divisional independence as the best way to generate stronger growth and a sustainable expansion of the market position of the world's № 2 in the passive safety technology business by involving external investors.

The division's sales in 2021 amounted to €3.8bn. This represents growth of 8.6 per cent compared to 2020, despite the pandemic and the approximately 10 million vehicles that could not be produced due to disrupted supply chains and material shortages. Overall, order intake increased by 60 per cent from 2018 to 2021, reflecting a strong market position. The Passive Safety Systems division is introducing a dedicated website to go along with their new status. "Our new website shows our vision, our structure and, of course, all our innovations and products in a modern and attractive way", says Christopher Rimmele, representing the division.

Porsche Sets New Division for SDV

GENERAL NEWS

Porsche is establishing a new software-dedicated division at their Nardò Technical Center proving ground in Italy, which was founded in 1975 and currently operates over 20 test tracks and facilities across more than 700 hectares of land in Puglia, Italy. At least 185 people help offer engineering services at the NTC, including vehicle testing for more than 90 automakers.

Porsche Engineering Group acquired the “Nardó Ring” in 2012, renamed it the NTC, and they've been operating the proving ground ever since. As a subsidiary of Porsche AG, the engineering group spearheads the development of future intelligent and connected vehicles, including software. Nardó was selected as well because of the nearby talent pool of software experts and engineers.

Now Porsche has announced an entirely new division at the NTC to develop, establish, and eventually implement a software initiative for future EVs, including highly automated driving functions, vehicle-to-vehicle and vehicle-to-infrastructure communication, connectivity solutions, and infotainment innovations. The software-defined vehicle (SDV) is the future of what the car will be, vehicles that will be driven by software and software design. SDV offer significant safety and convenience features, enabling new software-driven in-vehicle experiences and functions and delivering updates and services over-the-air (OTA). For automakers and suppliers, SDVs can deliver major revenue and customer relationship benefits.