Thu, 11 July 2024
Weekly Newsletter

DVN Interior

NEWSLETTER #220

Editorial

Fast, User-Centric Interior Development In China

SUZHOU, CHINA (DVN IMAGES EXCEPT AS NOTED)

I spent 10 days in China with part of the DVN team, to visit DVN members and attend the EAC Enmore interior event at the Suzhou Conference Centre, A 40,000-m^2 venue with over 30 conference rooms. Suzhou is a city of about 10 million inhabitants, about 100 km from Shanghai. DVN co-hosted a lidar event there.

This week's in-depth article summarizes these conferences, followed by interior news, mostly dedicated to the visits I had with Chinese suppliers and automakers. Jidu and Nio gave a strong impression of development in China, especially how speed is crucial and how it completely changes how a company does work (develop on your own, digitalization of development tools, decision making process and flat organization).

Most striking is the focus on users; you can really touch and feel what it means to develop based on user surveys, clinics, consumer research, probably helped by a customer base much younger than in Europe of the US. It drives a high level of technical content with focus on new features, whatever the technology is, as long as it is economically feasible to offer and attractive and satisfactory to customers.

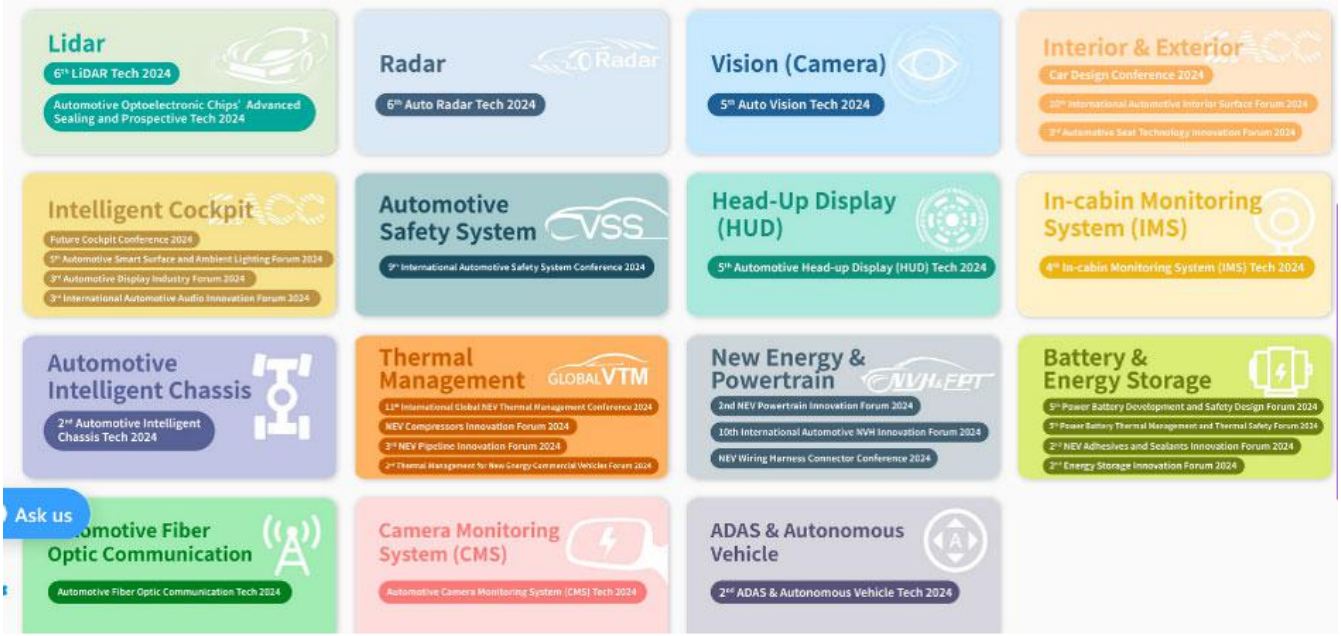
I hope this week's information will help you to optimize your development processes!

Sincerely yours,

Philippe Aumont
DVN-Interior General Editor

In Depth Interior Technology

Car Interior in China, EAC Enmore Conferences



EAC IMAGE

EAC 2024 took place in Suzhou, China, on 21-22 June. It included expositions and conferences about new energy vehicles, smart cabins and smart driving. EAC and DVN co-hosted a lidar event.

DVN AT EAC: L-R LUC BOURGEOIS, PAUL-HENRI MATHA, ERIC AMIOT, PHILIPPE AUMONT

EAC (Enmore Automotive & Intelligent Vehicle Exhibition) focuses on new energy and intelligence in the automotive industry. The goal is to create a technically grounded and commercially valuable platform for communication and cooperation. The exhibition covers various fields, including interior and exterior decoration, lighting, NVH, acoustics, head-up display, automotive safety, intelligent network connection, and more. Here is the report from these conferences, with a focus on car interiors.

Conference session subjects included intelligent cockpits, smart surfaces, seating, safety and design, future automotive interior market perspectives, new energy vehicles, AI, voice recognition, DMS, HMI and generative HMI—everything making cockpits smarter, and user experience more friendly.

One hall was dedicated to automakers, with GAC, Geely, Ford, Weilai, Zeekr, and Nezha covering new energy vehicles and intelligent driving. Suppliers showed off their innovations and ideas in intelligent cockpit solutions, and innovative in-vehicle entertainment systems, to further enhance the display effect of the whole vehicle brand.

Design Forum

In this forum focusing on automobile design and innovation, Chen Zheng, vice president of Geely Auto Group, delivered the opening speech as the chair of the conference.

Zhou Yanglin, chief product expert of smart cockpit at SAIC Group Innovation Research and Development Institute, discussed the development trend of smart cockpits in the second half of the new energy track,

Pier Luigi Ferrari, vice president of Geely Innovation Design Institute, shared "Geely's Design Way: Innovation in Heritage", highlighting the continuous innovation and evolution in design heritage.

Great Wall

Yang Yongzhe, director of technology brand and planning at the product digitalization center of Great Wall Motor shared the competitiveness of cockpit product design in the era of smart cars.

In the Chinese market, Great Wall sells SUVs and pickups. Abroad, they started to export vehicles in 1998, and now sell in more than 60 countries and regions, covering regional markets such as Russia, South Africa, Australia, the Middle East, Africa, South America, and Asia Pacific, with total overseas sales of more than 600,000 units.

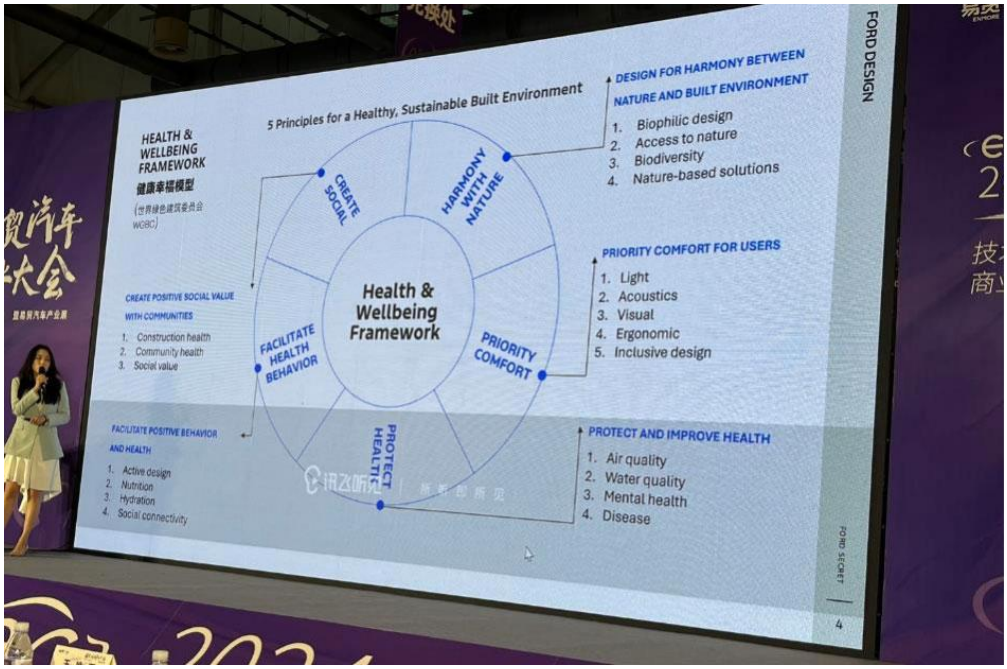
GWM has the Haval (one of their vehicle brands) Technology Centre with five functions including R&D, production, testing, modeling, and data processing. In the future, GWM will invest C¥30bn to build global R&D systems and development in active and passive safety technology, intelligent interconnection, automatic pilot.

GWM has four brands, with the concept of Focus, Dedication, Specialization. They are developing AI to enhance emotional value, to help transform the machine in emotional user experience. They consider 41 per cent of users rate technology as their № 1 criteria, with brand as № 2.

The next major development step is NOA—navigation on autopilot—as developed already on the Wey VV7.

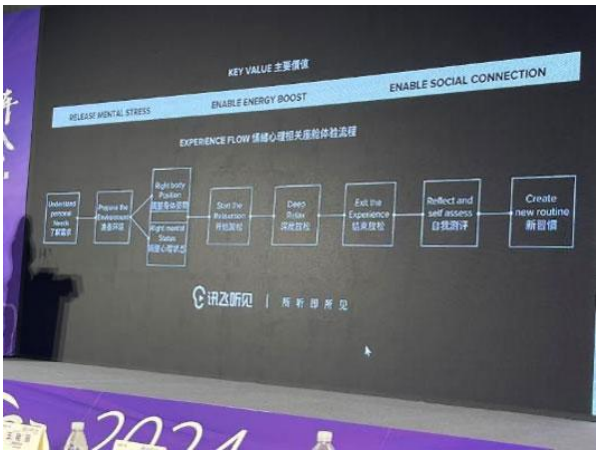
They presented a design-appropriateness approach, where simplicity is a target, with good balance between knobs and touchscreens. They claim they don't think into function, they think from a user perspective, using AI to extend this experience, not to control it!

Ford



Ford China's Associate Experience & Service Design Director Claire Ching presented how Ford developed a car interior as a healthy cabin, a private healing space.

They claim, in the post-pandemic era, that health and wellbeing are making a dynamic comeback. Wellbeing is achieved through balance among cultural tensions, and balance between nature and technology via touch screens, to have digital immersion.



In that respect, interior experience enablers are ambient lighting, odor diffusers, in-seat vibration/massage to better relax, all what triggers body senses, to get a healing effect. Concept of seat-to-sense is mentioned, to encourage proper posture. That requires a 360° personal data collection and analysis. In short: the better the machine knows you, the more seamless is the experience.

Later, Ford China and IMG design director Max Wolff shared "Ford Design: Crafting New Icons for the Future", showing the strategies and concepts of creating new iconic designs for the future. He also emphasized that while development logic has for some time been 'in China, for China', now it has changed to 'in China, for the world'.

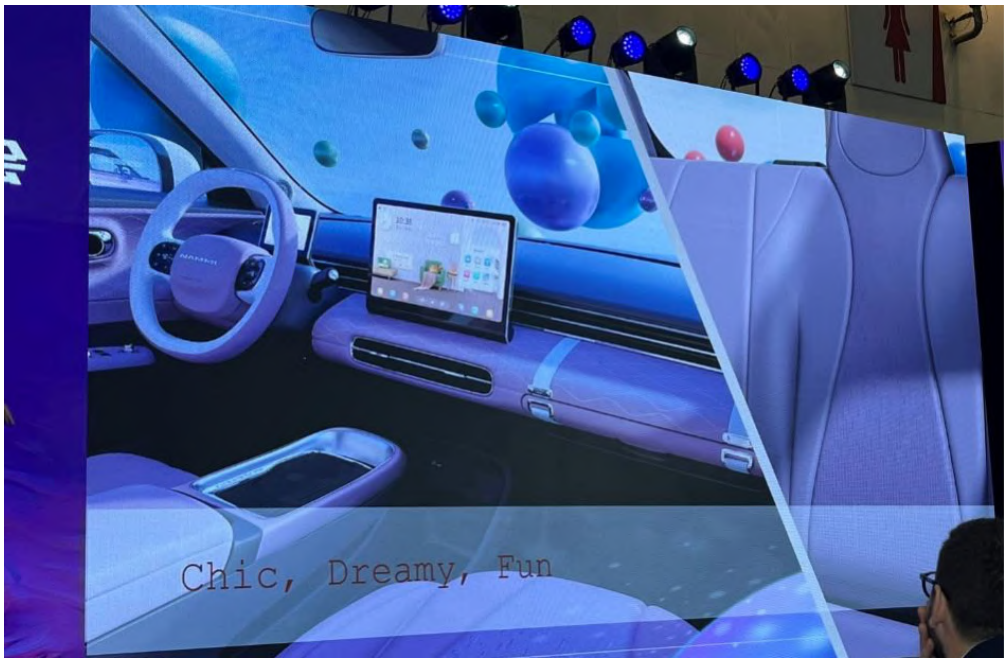
Xpeng Design

Xpeng Design spoke about their design thinking process and AIGC (Generated Content) Assisted UX Design, the way they develop 'experience innovation'. In 2019, Xpeng became the first EV maker in China to introduce intelligent cockpit features. The G6 is equipped with an upgraded smart in-car operating system, Xmart OS 4.0, powered by a Qualcomm Snapdragon chipset and 15" touchscreen display for a more intuitive, GPTlike, intelligent HMI experience.

They are now using generative AI, extended with ChatGPT and Midjourney. These pictures show options it provides as visual design for the G9 HMI screen:

XPENG G9 HMI OPTIONS, AND FINAL INTERIOR

Dongfeng



Dongfeng Motor is a state-owned automaker headquartered in Wuhan, Hubei. Founded in 1969, it is the smallest of the big four Chinese state-owned makers. Design Director Henning Knoepfle shared “No Place Like Home!”, showing the feeling of home with the future cockpit design concept.

Donfeng brands are:

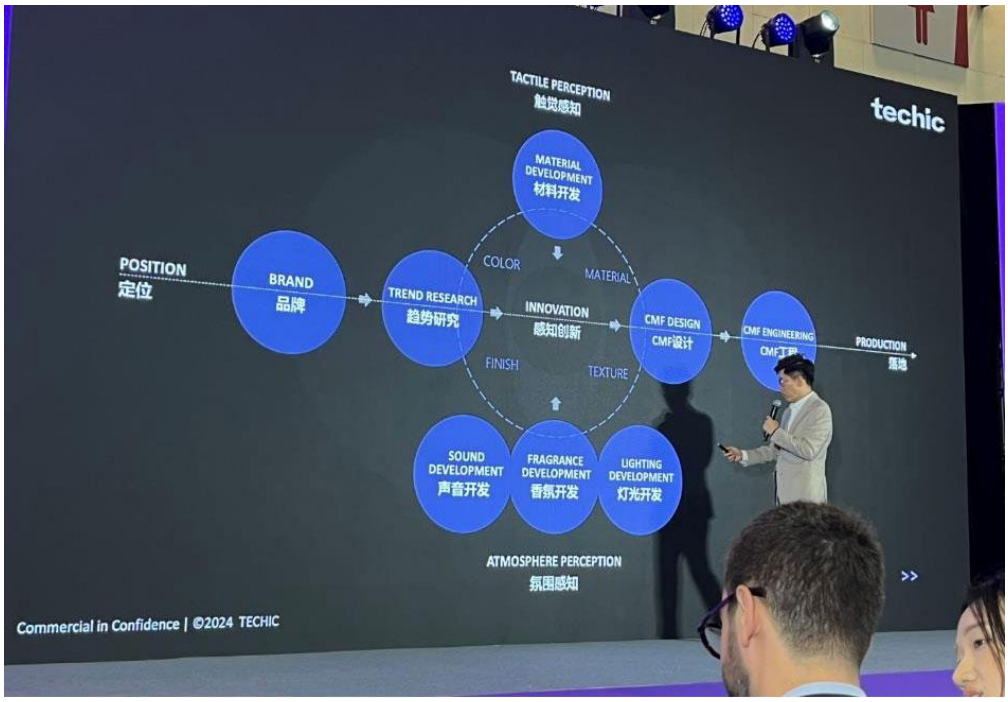
- Voyah (premium EVs)
- M-Hero (high performance luxury off-road vehicles)
- Aeolus / Fengshen in Chinese (mass market)
- eπ (full-size EVs)
- Nammi (budget EVs)

Knoepfle presented how to design and position these different brands, such as Nammi for a dreamy world, chic, and fun; eπ for affluent hedonism; M-Hero for expansive individuals, luxury off road; all having personally focused interiors, distinct surface execution. Every brand has to be put in its context, to express fully its value, its emotional value, as cars can’t be only smartphones on wheels.

GAC

Pontus Fontaeus, executive design director of GAC Advanced Design Los Angeles, presented Technology, Collaboration and Love - The New Era, expounding on the new era significance of technology, collaboration, and emotion in design.

Techic



Gao Maosen, CEO of Techic CMF Innovation Centre, introduced CMF Immersive Perception Design-Synesthesia Resonance 3.0, exploring the application of sensory resonance design in user experience.

Techic is the first CMF R&D center in China to offer automotive CMF end-to-end services.

CMF is the right approach to tell the brand story with color and materials, including texture, sound, fragance, and more. It connects to the five senses via muti-sensory connection. For instance, immersive atmosphere and color help understand luxury, thanks to classic colors, a symbol of elegance.

It supports achievements of the three main development goals, though they look a little bit contradictory: innovation, high quality, and low cost.

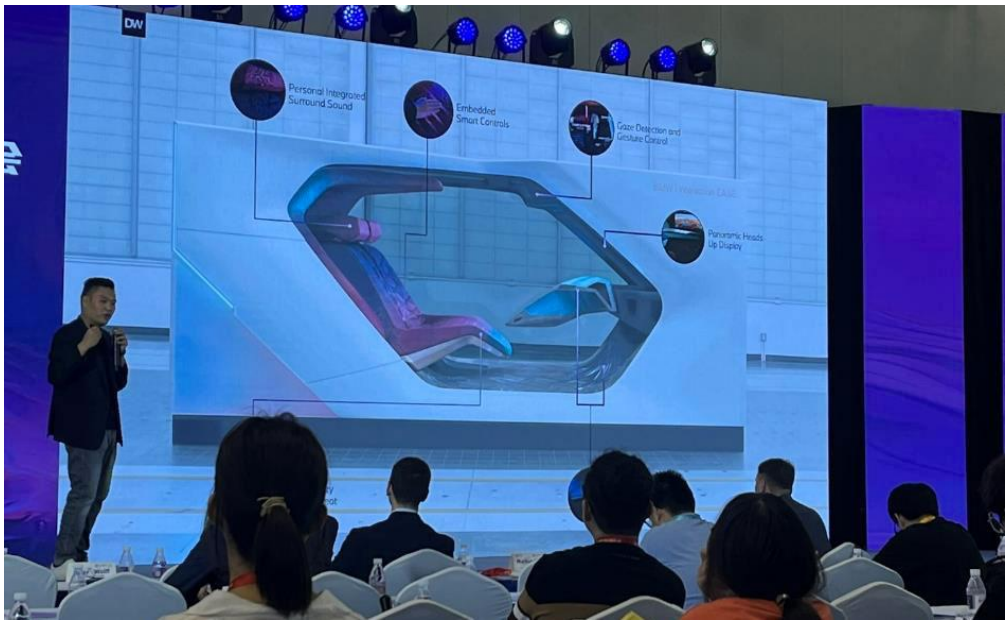
He presented the concept of Involution, for continuous pursuit of technology and aesthetics, and emphasized CMF R&D as core competencies for new material and new processes.

Zeekr

Javier Garcia Gallardo, Zeekr's design director, shared "Hidden Energy Design Philosophy", exploring the practice of hidden energy design philosophy. In the Chinese context, that means technology, urban lifestyles, and regulation.

It helps with Zeekr's core "lifestyle capsule" message. Then it is easy to copy, to have rapid expansion and, homogenization, keeping brand variation.

BMW



BMW AT CES 2020: LUXURY INTERIOR EXPERIENCE

Harry Sze, Creative Consultant Director of BMW Group Designworks Shanghai Studio, shared “Foresight, Strategy, Vision – Designing with Clear Purpose”, emphasizing the vision, strategy and goals behind the design. At BMW Design, there’s one vision, and four design domains: design strategy; CMF; exterior/interior design, and UI/UX digital design.

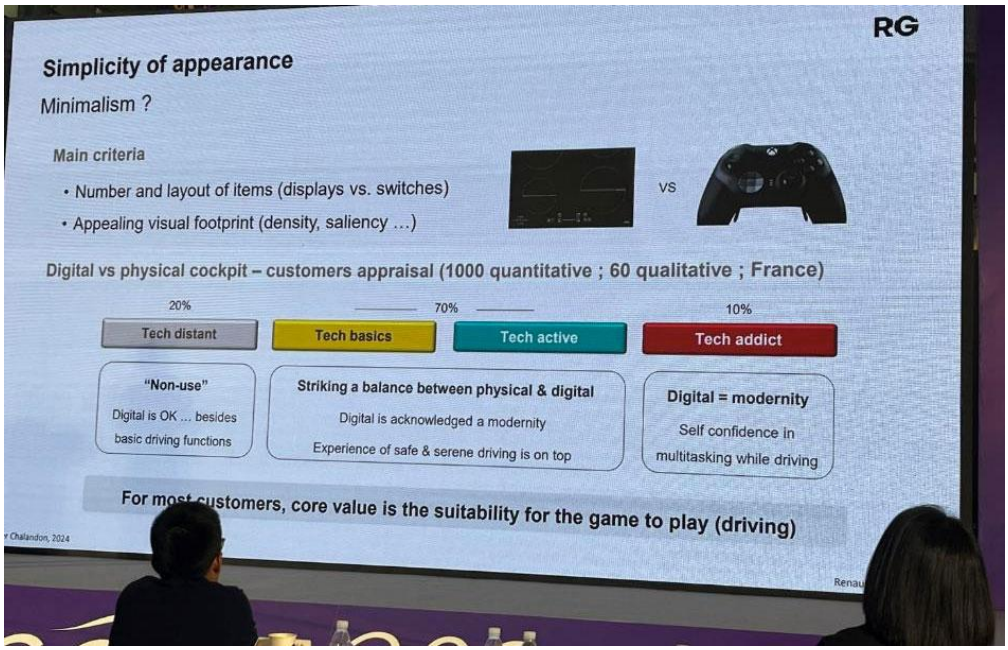
Attached to the brand, which is not only a logo, it turns into a feeling, the luxury of coming home. CMF provides materials, going from nature to cultural, creating a circular experience

Renault

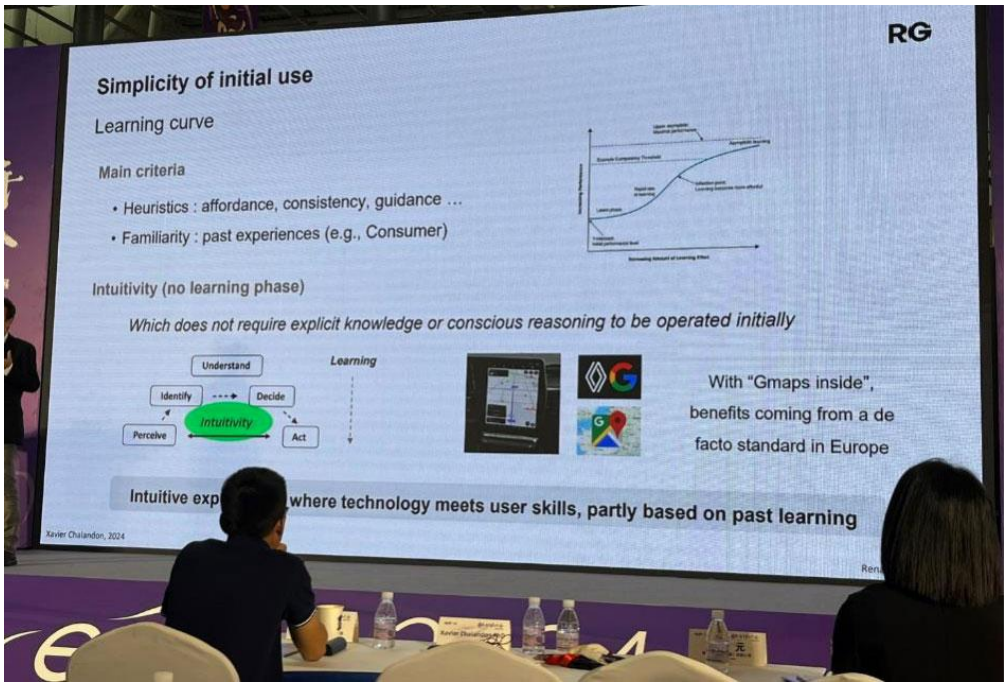
Xavier Chalandon, HMI Expert Leader at Renault, gave an interesting lecture titled: “Simplicity within the Automotive User Experience”. HMI is complex, embraces many parameters, therefore simplicity is not that obvious.

Simplicity can be described in different user situations:

- Simplicity of appearance



- Simplicity of initial use



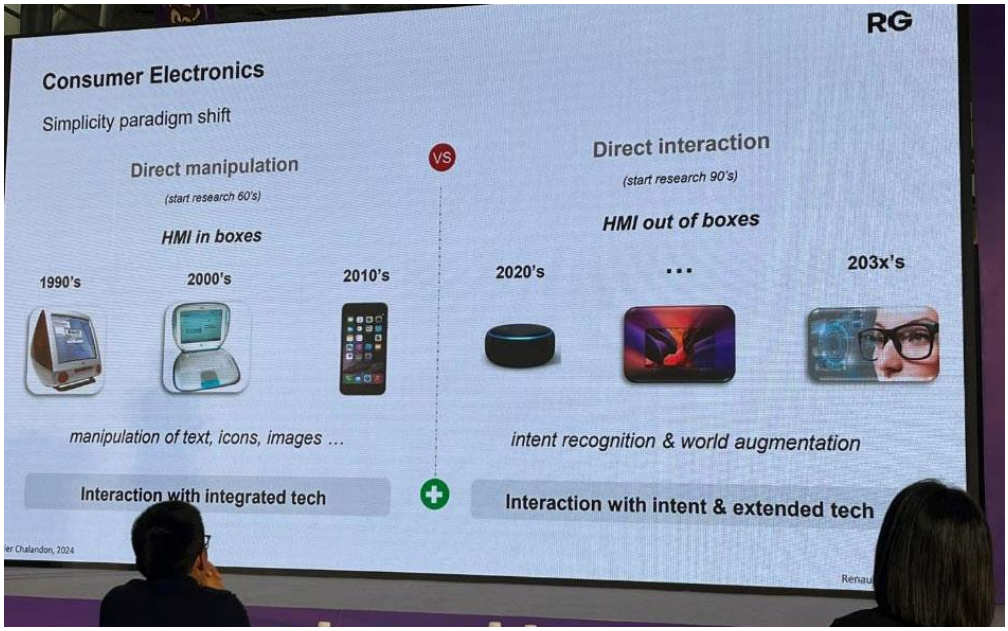
- Simplicity of daily use

- Simplicity *while* driving, which is mostly linked to safety
- Simplicity *of* driving, which can be summarized in serenity

HMI should be an intuitive experience, meaning there's no learning necessary, and there's no boredom. AI can expand adaptation, but it can still make mistakes or exhibit behavior that is not intelligent (could be named artificial stupidity!)

Driving context monitoring shouldn't be punitive, not with alerts, but providing awareness to anticipate. Self awareness is pretty much missing.

Looking to HMI Timeline 2000-2025 and parallel with consumer electronics, the next step is to go from 'touch-tech' to 'intent-tech', where HMI needs a new balance to build, between focused (slow) interaction, and sensorial (fast) interaction with light, sounds, haptics, etc.



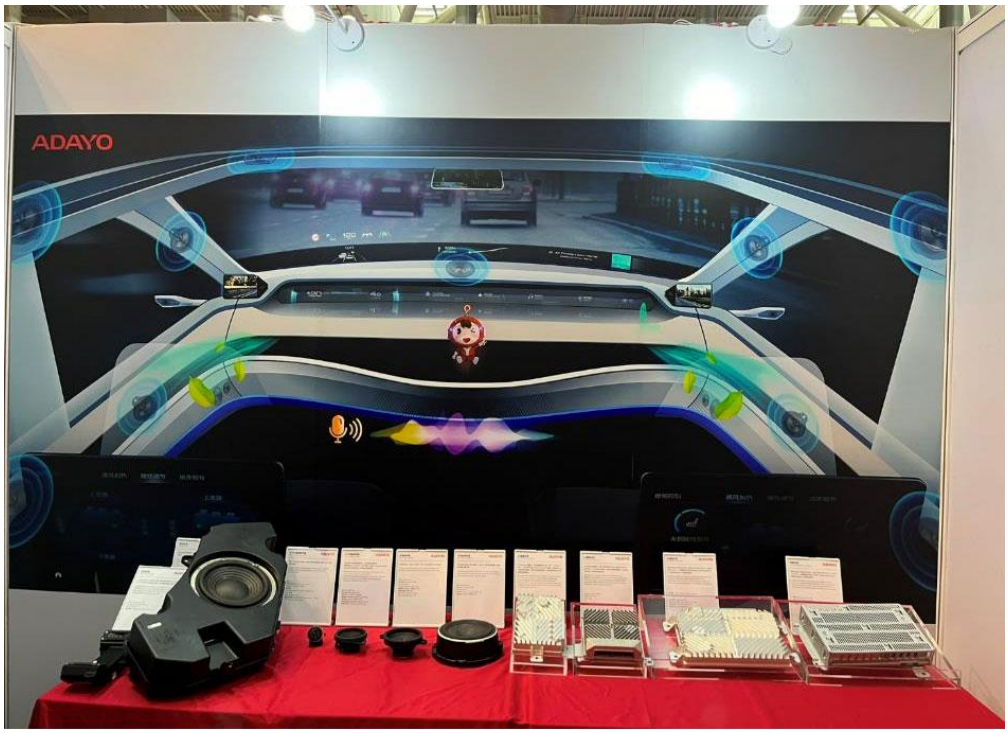
IM Motors

IM Motors is an EV joint venture between SAIC and Chinese technology companies Zhangjiang Hi-Tech and Alibaba Group.

Mudi Ma, the Intelligent Cockpit Lighting System Product Designer, gave a lecture about interior lighting information exchange. Lighting could be synchronized with music, in different dimensions, up to 3D with rhythm. It is all about multi modal interaction (gesture, voice, AR/VR, phone, light), supporting multi-tasking. It can be integrated with AI large models, and also supporting HUD.

Expo booths

Dowell Chemicals: Sichuan Dawei Technology was established in November 2003. Its main business is the research, development, production, and sales of leather chemicals. They presented leather anti-wrinkles nappa solutions.



- **Adayo** (Foryou Corporation Automotive Electronics) has a wealth of smart cockpit, smart driving and connected vehicle system products. Their portfolio includes cockpit domain controllers, digital clusters, IVI, digital rearview mirrors, acoustic systems, climate controls, and HUDs. It includes speaker technology developed together with Pioneer, which will equip the upcoming Ineos Grenadier.

In-Stich

InStitch develops solutions for cutting, sewing, and wrapping of plastic trim parts **Ceres Holographics** (recently presented and interviewed in DVN Interior) and **Eastman** unveiled an industry-first fully-integrated windshield featuring multiple holographic transparent-display HUDs in a single-laminate construct.

Interior News

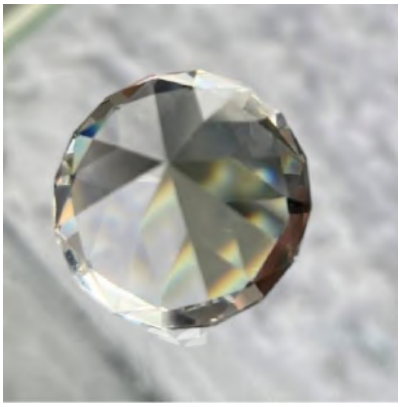
Huaju Crystal for Premium Interior Decoration

INTERIOR NEWS

DVN IMAGE

The DVN team visited Zhejiang Huaju Photoelectric ("Huaju", or "HJ" for short), located in Pujiang, Jinhua, Zhejiang Province, 250 Km south of Shanghai. The plant is in an area with crystal expertise development by the local government, with several companies working in that field.

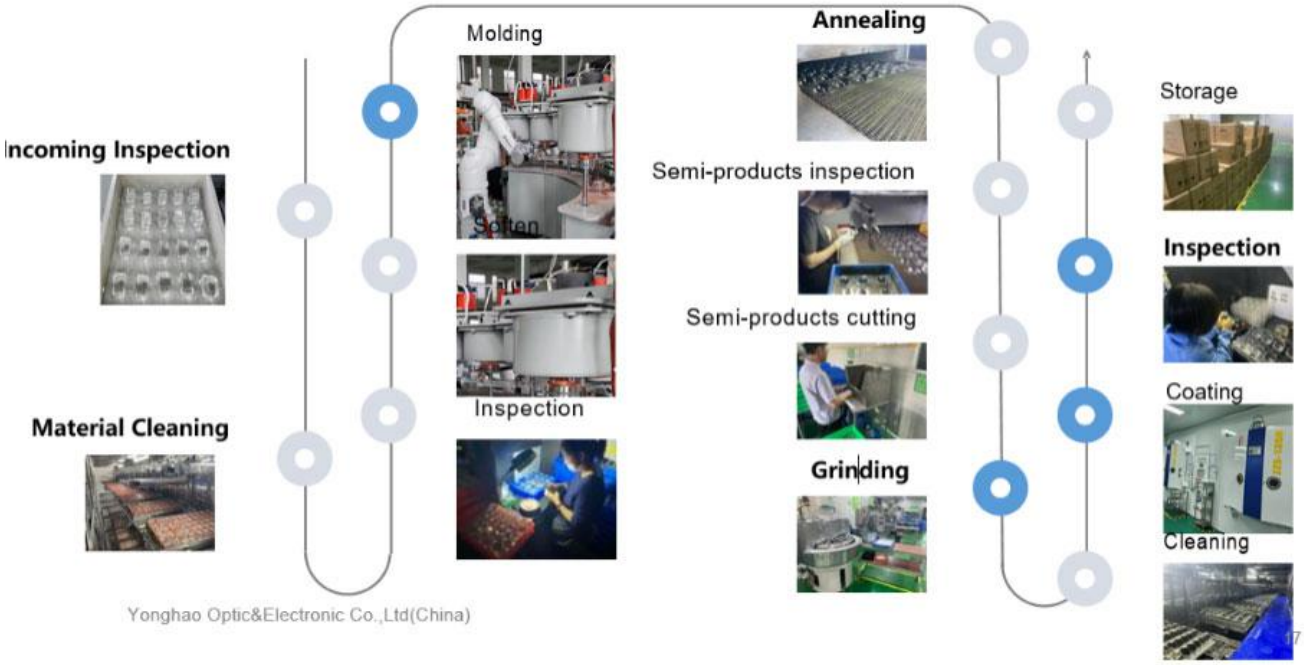
Main products are aspherical glass, plastic, precision lenses, lens barrels, glass covers, and crystal interior/exterior parts.



"Crystal glass" is technically inaccurate, because glass lacks a crystalline structure and is instead an amorphous solid. Crystal has optical properties, which are used in light and lenses, and interior decoration, as light behaves differently depending on which direction the light is propagating. Plastic crystals are possible from an optical perspective, but it is very different from a haptic perspective

HJ's sold-parts count will be about 20 million this year, with a revenue of €30m and a staff of 250 persons. 60 per cent of sales are in China, with Europe and North America growing. Crystal-made components are more and more used in car interior to provide classy decoration with for premium finishes. They areused for gear shifter, HMI buttons, door handles, and suchlike. 95 per cent of production there is for automotive.

Crystal sounds like it would be expensive, but it is not—not compared to glass. Look at the Xiaomi SU7 interior as an affordable application example.



HJ IMAGE – PRODUCTION PROCESS

HJ masters all the production process steps, including clean-free workshops, testing, coloring, quality inspection, and tooling.

They used to be a tier-1 to the automakers, but the future is more organized with a trio: OEM design, tier-1, and HJ as crystal expert. There's no real standard so far, neither test requirements, the expert is setting the bar, key is conformity to what has been agreed upon with the OEM design department. More to come later with forthcoming DVN-Interior in-depth coverage.

Jifeng's Full Comfort Seating Portfolio

INTERIOR NEWS

JIFENG TEAM, L TO MIDDLE, YAN HAO, COMMERCIAL & STRATEGY DIRECTOR, SAM XIA, CEO, PHILIPPE AUMONT, DVN

Ningbo Jifeng Auto Parts was established in 1996 and now has become a global player, since the acquisition of Grammer AG in 2019, the German commercial seat and auto-console expert.

Jifeng's main products cover complete seats, headrests, armrests, and console systems; their first complete seat business was started with Nio in 2021. They continuously adhere to innovation, with professional R&D team, with more than 380 engineers in their 3 development sites, and advanced test equipment, effective quality control and production capability, integrating Grammer's experienced R&D resources, their R&D strength has been further enhanced.

They have a focus on NEV vehicles, with makers such as Tesla, Li Auto, and WM. Their seating systems and components are supporting new level of comfort, what passengers are expecting in the interior of future more automated vehicles;

Jifeng strives for the core value of "Simplicity, Practicality, Efficiency", aiming at continuously improving technology capability in vehicle cab interior.

Their product portfolio includes:

- Specialty mechanisms, such as calf-rest, foot support, table function
- Standard structures, with 3 levels (Premium, Standard, and Eco)
- Captain chair with zero gravity concept (picture)
- Self-adaptive seat, using proprietary algorithm.
- Heated and ventilated seat
- Isolated rear seat
- Rear seat tilt with air bladders
- Magic flip for 3rd row seats
- Removable music headrest, to remove headrest to get fold flat with easy reconnect.
- Hidden armrests

They are using efficient development tools, such as KBE (knowledge-based engineering), a digital program management system, advanced trim patterns design tools, CAE simulation, etc. Watch for in-depth coverage coming soon.

Jidu 01, Automated Driving and Automated Interior

INTERIOR NEWS

JIDU 01 DRIVING TEST

Jidu is a new Chinese brand, based on a joint venture between Baidu, the Chinese digital giant, and Geely Holding Group. The cars are manufactured in Ningbo, Zhejiang province, where Geely has several plants. Jidu is the OEM and Ji Yue 01 is the name of the model.

DVN had the chance to visit their development center, close to Hongqiao in Shanghai. What is immediately striking is that it looks much more like a digital company development center – à la Google – and not so much like an automaker.

Jidu 01 on the parking lot. It is a long sedan (4853L × 1990W × 1611H mm), with a 3-meter wheelbase, which is very good for interior space. It is based on the Geely SEA (Sustainable Experience Architecture) platform. Baidu provides all automated driving systems, and the voice recognition, only developed now for mandarin. The system is as fast as 500 ms and covers complex scenarios in and out of the vehicle, four-way simultaneous conversations, and continued conversations. The AI system also integrates multi-modal interactions including voice, gestures, and visual cues to enhance personalization to the users.

The interior is spectacular with a yoke-like steering wheel and a 35.6” 3D single-piece screen, even if it can be divided in 3 sections – driving infos, navigation/comfort setting, and entertainment (movie/music) for the passenger. The screen doesn’t extend to the left side of the cabin. It only extends to the left-center of the yoke. The graphics are cool, and thanks to all the camera’s it can project a 360-degree surround view of the vehicle. The vehicle is connected to infrastructure, with information like traffic lights countdown on display, surrounding vehicles and vulnerable users.

It is complemented by a small 7” screen on the center console as a mini-infotainment system for rear seat occupants Air ventilation is very smooth with diffusion all along the dashboard.

The doors are devoid of handles, replaced by a button and fully automatic opening. To prevent these motorized doors from hitting an obstacle, they each incorporate a radar.

JiYue 01 is the world’s first model to support voice-activated/controlled parking while outside the vehicle.

It has been launched with Nvidia Drive Orin autonomous drive chips and vision-centric intelligent drive architecture that features 11 HD cameras, 12 ultrasonic radars, and 5-millimeter wave radars, supporting the EV’s ROBO Drive Max feature.

The vehicle has been developed from scratch, no support from Geely or Volvo. They mostly relied on suppliers. They claimed their strength, as in China in general, is the speed of the development and approval process.

Rebo's Innovative Interior Lighting

INTERIOR NEWS

REBO LIGHTING CTO DR QI (RIGHT)

With a rich history dating back to 1869, Rebo has a legacy as an established automotive company, a small international company, and grew with different acquisitions along recent years (Like FER, ex Bosch in Eisenach, Germany), with a milestone in 2018 when Rebo Group was founded. Rebo Chongqing recombined with Zhengze, Rebo Germany, and Rebo USA.

Sales in 2024 are C¥2bn (€250m), with their work split about 50/50 interior/exterior.

The main product focus turned in 2010 to LED interior lighting, small lamps (any lamp except front lamps) and signal lighting development. Production and sales expanded the business to Dongfeng-Nissan, BYD-Mercedes, Geely, Shanghai Automotive (SAIC) and Beijing Automotive (BAIC).

Their lighting and electronics portfolio addresses three increasing market trends:

- Lighting to enhance both the interior ambiance and exterior appearance of a vehicle
- Lighting to be applied in various additional functions on the vehicle, especially in EVs such as charge status indicators and ‘frunk' lamps
- Lighting to improve safety by ensuring that the vehicle/driver can see and be seen by other vehicles and pedestrians

Their "LED attachment optics for light bundling, light control and light distribution in roof modules" achieved first place in the plastics award of the International SPE for outstanding development achievements in lighting technology. It opened the ground to overhead console modules, complex parts, including now features such as microphones, sun roof control, roof lights, rain sensors, front camera, lidar, DMS camera, child presence radar (UVB best solution, RF 6-7 Hz, best to detect objects and movements)

Their interior lighting expertise and development includes systems, including optic, light source, housing, and electronics. They rely on a standardization logic, with standard modules, i.e. 15 different applications with the same lamps (footwell, trunk, frunk...)

Nio's Interior and Development Process

INTERIOR NEWS

NIO CARS RECHARGING ON THE PARKING LOT

Nio's model line includes the ET5, ET5T, EC6, ES6, EC7, ET7, and ES8, all based on its NT 2.0 EV platform. Nio was founded in 2014 in Shanghai, with brand values including safety, comfort, and smarts.

Nio also revealed their new low-cost Onvo L60 last month. The electric SUV is the first of Nio's new Onvo mass-market brand aimed at Toyota and Volkswagen. The Onvo L60 starts at $30,500 (C¥219,900) as a potential Tesla Model Y rival. With over 20,000 electric vehicles delivered (again) last month, Nio broke its monthly and quarterly records. The surge comes with new models rolling out as Nio aims to expand the brand. Nio has two manufacturing plants in Hefei, Anhui, China in collaboration with JAC Group.

DVN had the chance to meet with John Wang, Cabin Comfort and Safety System Engineering Department VP. This department is charge of seating, CMF, restraints systems, mechanisms, and any components used in car interior.

Their strategy relies on 3 pillars, with a good balance between them: smart cabins for more automated vehicles; powertrain system, including batteries and swapping concept (2,400 stations now in China); and vehicle comfort and Safety.

They developed around a safety concept of 'due care' with focus on users, similar to NCAP, including head/body protection (like in 3rd row).

They claimed to be working on synergy between active and passive safety, using pre-safety solutions (seat and belt pre-positioning when crash is imminent)

They also strongly emphasize development speed, a way to illustrate is that benchmarking is a way to look in the past. They want to be first, so they need to invent their own new solutions. Digitalization of development is also a strong enabler, with no prototyping capabilities, all is done by suppliers.

The Design Lounge

Verne: Rimac's New L4 EV

THE DESIGN LOUNGE

COFFEE CORNER
DVN
Interior

RIMAC IMAGES

Mate Rimac, founder of Rimac, launched a new L^4 autonomous electric car brand called Verne, with market launch planned for 2026. Rimac is best known for its electric hypercar, the Nevera, and for its surprising takeover of Bugatti through its partnership with Porsche.

But now it is stepping into the other side of the EV spectrum: from hypercars to autonomous cars.

Mate Rimac, along with two other Rimac executives, have launched a new brand called Verne. It's not clear how the Rimac Group plays into this beyond sharing employees, but it sounds like it is part of it, as the brand was launched at Rimac's headquarters in Croatia a couple of weeks ago.

Verne is using Mobileye's L^4 autonomy system and therefore, its core technology is more the vehicle platform than the autonomous driving system.

The vehicle is built on a completely new platform designed around safety and comfort, engineered solely for autonomous driving using the Mobileye Drive autonomous platform. It is completely rethought, conceived, designed, and engineered as a safe and comfortable autonomous vehicle.

It’s a two-seater built around the passenger experience since the vehicle is driverless. There’s an extensive sound system and a giant screen with a UI built for a variety of passenger experiences.

It is built for ride-hailing systems with a high level of customization. Verne says that the customers are going to be able to customize the experience via an app before the vehicle arrives:

It’s a re-envisioning of the ride-hailing app and mobility platform. The customers can personalize the vehicle’s settings via app before ordering a ride. That way, the vehicle will be set exactly how you like it with the comfort, lighting, temperature and even scent. Even though the customer will never own the vehicle, it will be tailored to feel like your own. On the backend, Verne uses all the benefits an autonomous connected fleet provides to make the service run smoothly and efficiently in every city.

Verne is going to launch first in Zagreb in 2026, and the company plans to expand in Europe and the Middle East shortly after.

News Mobility

Autonomous Vehicles are Not Always Safe to Drive

NEWS MOBILITY

VECTOR INFORMATIK IMAGE

Autonomous vehicles are frequently said to have a lower accident risk in most situations than those driven by humans. Maybe or not, but there are definitely exceptions. Accidents involving an automated vehicle are significantly more likely at dusk and when turning, US researchers write in the journal "Nature Communications".

Researchers from the University of Central Florida in Orlando have now compiled data on accidents involving autonomous vehicles from several American databases and compared it with more than 35,000 accidents involving vehicles with human drivers. 15 per cent of accidents involving human drivers involved pedestrians, compared to just 3 per cent of accidents involving autonomous vehicles. In almost 20 per cent of the accidents involving human drivers, inattention or poor driving behavior was evident beforehand.

On the other hand, 5.5 per cent of accidents involving autonomous vehicles occurred in roadworks or in connection with special incidents, such as accidents involving other road users. For human drivers, this rate was only just over 1 per cent. In the case of rear-end collisions, 79 per cent were caused by human-driven vehicles. And when autonomous vehicles were the cause, in almost three quarters of cases (72 per cent) they were not driving in automated mode—in other words, a human was responsible.

In a special analysis, the researchers also took into account the traffic load, the weather, the road surface, the location of the incident and other characteristics of the accidents. From this, they drew up predictions for the probability of accidents in certain situations.

According to the results, the probability of a highly automated vehicle having an accident in the rain is only around a third of that of a human-driven vehicle. The scientists explain this in part by the fact that radar sensors allow autonomous vehicles to see up to 150 m ahead, while humans may have to make do with a tenth of the visibility.

There is a noticeably higher risk of accidents with autonomous vehicles in difficult visibility conditions at dusk and when turning. At dusk, the probability of an accident is more than five times higher, and when turning, it is still twice as high as with a vehicle driven by a human.

Overall, the researchers assess the accident risk of autonomous vehicles positively: "Based on the results of the model estimation, it can be concluded that highly automated driving systems are safer than human-driven vehicles in most scenarios due to their object detection and avoidance, precise control and better decision-making."

China Wants to Take the Lead in Autonomous Driving

NEWS MOBILITY

XPENG IMAGE

China's government is launching a new pilot program and issuing licenses for automated driving on public roads. Initially for level 3 functions, but the goal is complete autonomous driving level 5.

On 4 June, nine companies received new licenses to begin L^3 automated driving. All nine are Chinese manufacturers, including carmakers BYD and SAIC.

The pilot program will begin simultaneously in seven Chinese cities, including Beijing, Shanghai and Guangzhou. This is the first concrete implementation of the plan from November 2023 called "Notice on Conducting the Pilot Program for Intelligent Connected Vehicle Access and Road Traffic". China is thus clearly leading the way internationally in terms of permission for road tests for driverless driving. Elsewhere, including in the USA and Japan, the authorities have recently become more cautious following accidents.

The new pilot program now allows the Chinese companies involved to conduct road tests that go beyond anything previously approved worldwide in terms of territorial spread and potential risk.

The Ministry of Industry in Beijing wrote in its announcement that this should pave the way for the "further commercialization of advanced autonomous driving technologies". China's communist leadership hopes that the expanded road tests will help its domestic industry to become the international technology leader in automated driving.

The Chinese Society of Automotive Engineers has predicted that by 2030, 20 per cent of all vehicles sold in China will be fully L^5 autonomous. A further 70 per cent will be equipped with relatively advanced assistance systems.

This means that Chinese carmakers are gaining ground on international automakers such as BMW, Mercedes-Benz, and Tesla. Although they have received individual test licenses for L^3 tests in China, they have not been involved in the pilot program, which comprises a total of five stages. At the end of the program, there will be production licenses for the construction and sale of advanced autonomous driving systems in China.

General News

Volkswagen Invests Billions in Rivian and Software

GENERAL NEWS

RIVIAN IMAGE

Volkswagen is getting help with electric cars from Tesla challenger Rivian—and wants to spend up to five billion dollars and develop technology for future vehicles in a joint venture.

The cooperation is quite narrowly defined: Software, control computers and network architecture. Volkswagen will switch to Rivian's technology and software for new cars in the second half of the decade. This could save VW a lot of money compared to developing the technology in-house.

Rivian developed its own architecture in which the car electronics are divided into several zones with their own computers. In the first generation of the Rivian platform, 17 of these control units were still required, said Scaringe. Now, for the second generation, the number has been reduced to seven.

In an architecture based on the zone principle, one control unit takes over functions across several areas. Rivian arranged these ECUs (Electronic Control Units) distributed throughout the vehicle in order to shorten the distance for data transmission.

Rivian is one of the few manufacturers to have such a zone architecture in series production - and therefore valuable for VW, commented Pedro Pacheco, automotive analyst at market research firm Garter, on the deal. Considering how much money Volkswagen has already invested in the development of its own platform, the billions for Rivian are "a real bargain" for VW. The deal also sends a signal that things that were once developed in-house could now come from another manufacturer.