DVN-I
Automotive Interior

Thu, 25 November 2021 Weekly Newsletter NEWSLETTER #88

Editorial

Interior Is All About Integration

This week's In-Depth article is the newest in our ongoing series of DVN Interior member discovery via company profiles and interviews. GHSP is a global supplier of mechanical and electromechanical systems to the automotive, transportation, and appliance industries. They do shift systems, consoles, smart actuators, electronics—have a look at our coverage and you'll get the picture.

These are perfect exemplars of today's interior products combining function; æsthetics; value-added surfaces; electronics, and tiny packaging. This kind of integration plays a major (and increasing!) role to build intuitive user experience and safe human machine interface.

Integration is the thoughtful, constructive putting together of all this stuff such that it looks and works like a single system where no missed details would "itch". The interior realm is all about integration where plastic, metal, textile or leather, and electronics blend into a product which has to work perfectly a million times or more, across a giant temperature range, and intuitively without confusing a wide range of users.

This week's Car Interiors Unplugged chapter extends this perspective, showing how UX in general, and any control in particular constitutes an intellectual control of the object, and how interior design has to invent the apposite communication language.

Thanks for being part of the community! We appreciate your presence and participation. If you're not a member yet, come and join us **here.**

There's no Design Lounge piece this week; contributing author Nick Xiromeritis, who wrote most of our Design Lounge articles, passed away last week. We are sad to have lost our friend and colleague.

Sincerely yours,

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

GHSP Company Profile

GHSP HEADQUARTERS AT HOLLAND, MICHIGAN (GHSP IMAGE)

GHSP (**website**) is a leading global supplier of electronic and electromechanical systems for the automotive, transportation, and appliance industries. They assert "We discover, align, and deliver complete solutions in a manner that is worry free and maximizes value for our customers".

The company was established in 1924 in Grand Haven, Michigan—the town name lent the "GH" in the company's current name—as Bolling Manufacturing. Now they have locations all over the world: Michigan, USA; Mexico; Germany; China, and Japan.

In 2020 they moved their headquarters and tech center to Holland, Michigan, in a facility particularly well suited for product development and validation, because of its past use by Prince Corporation and Johnson Controls.

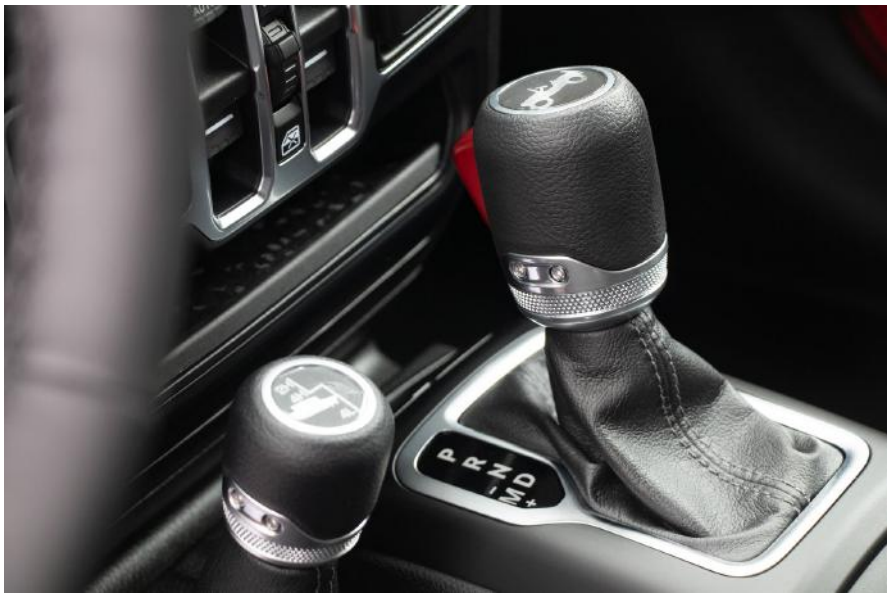
Core competenciescomprise design, mechanics, electronics, software, and systems integration; these are realized with leather, painting, graphics, in-mold decoration, complex mechanisms, sensing, embedded systems, GUI-HMI, interior lighting, and UV-C disinfection. Vertical integration is leveraged to master their value chain, from wire harnesses to motor windings; from plastic injection to leather wrapping and knob assembly; from software to hardware and mechanical design.

Their automotive solutions are grouped in five main areas: shift systems; electronic pumps; smart actuators; electronic controls, and UV-C disinfection integration. Their electronic control engineering also results in products for the premium appliance industry for high-end food preservation and cooking machines.

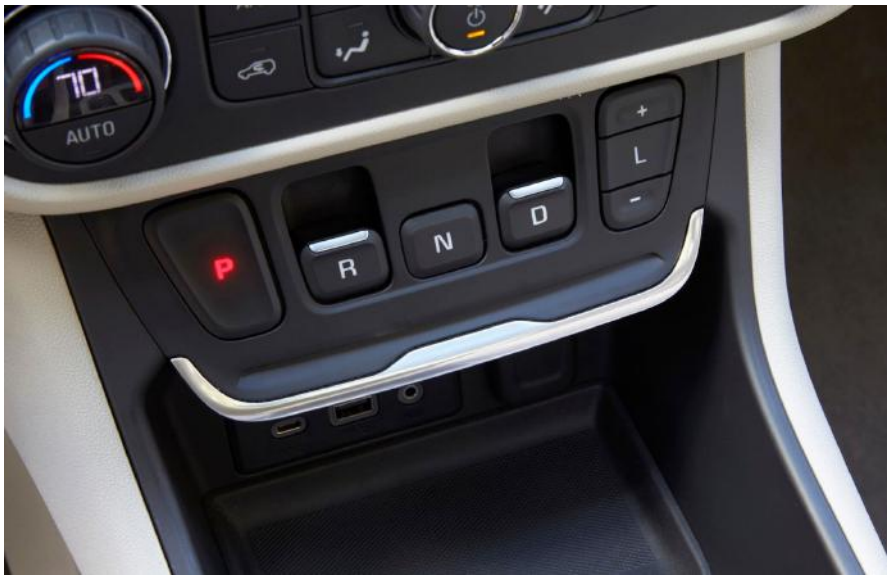
Shift systems

GHSP's product range includes a full portfolio of automatic transmission shifting systems. These include conventional, shift-by-wire, and hybrid shifters; shift knobs with a wide array of synthetic and leather surfaces, and prindle lighting.

The product range includes rotary dials, all sorts of levers, and pushbuttons; today's shifter contains a great deal of technology—electronics (sensors, switches, communication, cybersecurity, solenoids…); mechanics (plastic gearing, position locks, insert-molded levers…) and flare (in-mold decoration; paint-laser-chrome-leather trim and graphics; LED backlighting…).



LEVER SHIFTER (GHSP IMAGE)



PUSHBUTTON SHIFTER IN 2018 GMC TERRAIN (GM IMAGE)

Pushbutton shifters are more intuitive, easier to use, and less tedious than many rotary-knob and nonstandard (e.g., monostable) lever shifters. Today's pushbuttons operate shift-by-wire systems, so in addition to the quicker and easier operation they also free up cabin space; the bulky mechanics of a traditional system are not required.

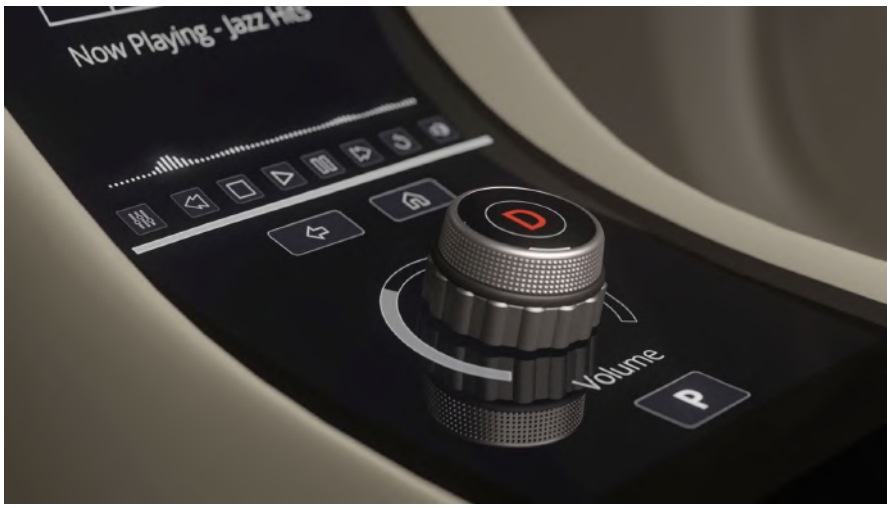
GHSP's dual-stack and multifunction controllers are designed with users and their safety first in mind. They enable drivers to operate the controller without having to take their eyes off the road, just like the standard shift levers of yesteryear—a welcome respite from some of today's poorly-thought-out controllers that can't be operated or position-detected by feel.

At CES 2018, GHSP presented a multifunction control shifter, and a haptic shifter. The multifunction control shifter boasts proximity sensing: it becomes aware of the driver without any physical contact. Drivers use an X-Y trackpad to navigate through features such as news articles, weather status, and more. Once the shifter recognizes the driver, they can use the trackpad to control any option the vehicle may offer. The multifunction control can also shift gears by rotary

motion. LED light pipes that run down the body of the shifter signal when the shifter is activated while also adding an æsthetic element.

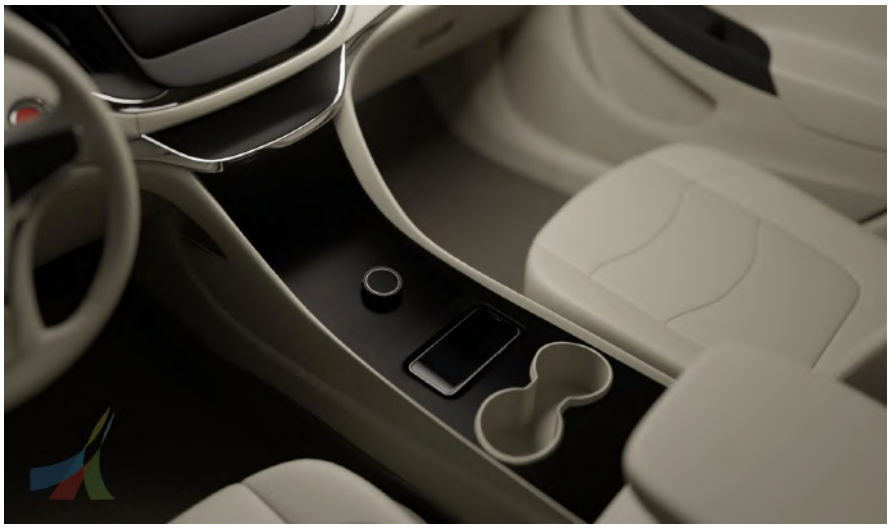
The haptic shifter, developed collaboratively with Ultrahaptics, is a gesture-based item. It uses ultrasound technology that projects sensations onto the user's hand, allowing them to feel and engage with virtual interface devices. With the combination of ultrasonic transducers, a hand tracking device, and algorithms, the user can control various virtual buttons and switches.

Then a few years later at CES 2021, GHSP presented two high-tech control knobs that could help intuitively blend touch and gesture controls.



GHSP IMAGE

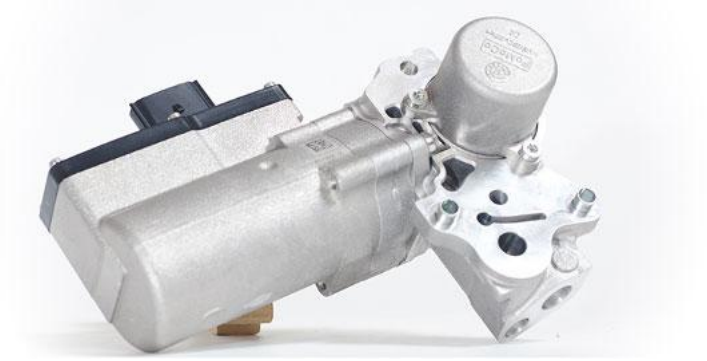
The multifunction controller works with a touchscreen, balancing a simple and uncluttered interface with the tactile feedback of physical controls. As demonstrated in an **online rendering**, the controller can be twisted, pressed, and nudged to control audio and climate settings, autonomous driving technology, and numerous other things, transitioning seamlessly from task to task.



GHSP IMAGE

A **second video** shows how GHSP's dual-stack rotary controller can replace an entire bank of buttons, a traditional control wheel, and a shift lever. When the driver starts the car with a biometric fingerprint sensor on the controller's surface, a second, motorized knob rises concentrically from the main wheel to provide more granular control and feedback.

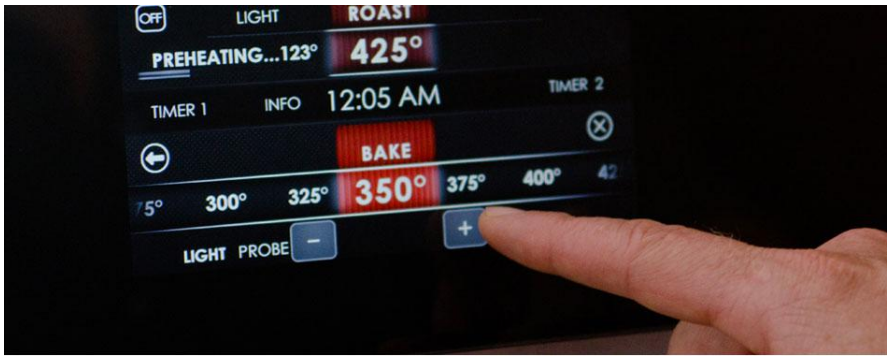
Electronic pumps and Smart Actuators



GHSP IMAGE

GHSP offers pumps and actuators with innovative integration of electronic controls, BLDC motors, and oil and water pump elements in what the maker calls a “CORE-Plus” technology configuration. Applications include stop-start pressure; axle cooling; CVT splash lubrication; hybrid and EV cooling; active NVH control, and active suspension damping control.

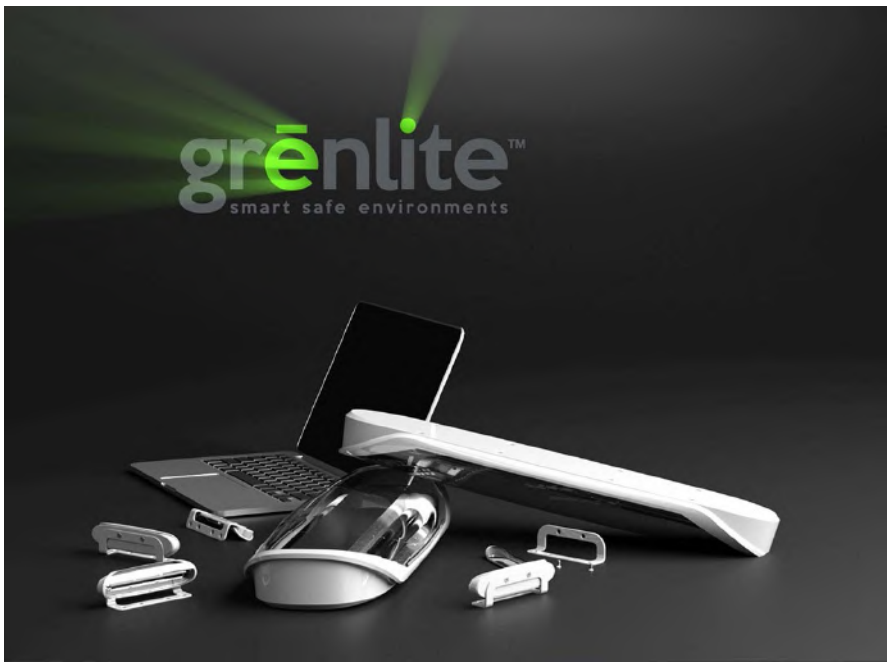
Electronic Controls



GHSP IMAGE

These are for applications as diverse as hardware, software, and mechanical and industrial engineering. GHSP's competencies in the appliance space include full graphical user interface development with smart surface controls; capabilities include graphic design, optical bonding, and metal touch technology. It's easy to see how most of this transfers directly to controls inside cars (though we don't imagine a driver ever wanting to set anything in the car to 400°F/200°C!).

UV-C Disinfection Integration



GHSP IMAGE

The Grenlite UV-C disinfection range from GHSP includes products for use inside personal vehicles. UV-C light kills 99.9 per cent of viruses and bacteria, including harder-to-kill pathogens such as Clostridium *Difficile* (C. diff) and coronaviruses like the ones that cause Covid.

GHSP's chief technology officer Marc Smeyers says "The need to develop our technology to make people's lives easier and safer, whether they are at home or on the road, has drastically become more important over the past year. We are committed to creating highly advanced, intuitive control systems and multifunction devices that advance the future of automotive and introduce a new level of safety the world has come to expect".

Already in use in emergency, mass transit, and commercial vehicles, the Grenlite technology is now coming to personal vehicles. It works to provide drivers with greater peace of mind that their car is a safe and germ-free place. The system, validated for safety and efficacy, continually monitors and reports the disinfection status of targeted surfaces; there's cloud-based connectivity for data logging. It's virtually maintenance-free, and automatically disinfects when the vehicle is unoccupied. UV-C light destroys the DNA of pathogens so they cannot propagate. An **online video** explains in more detail.

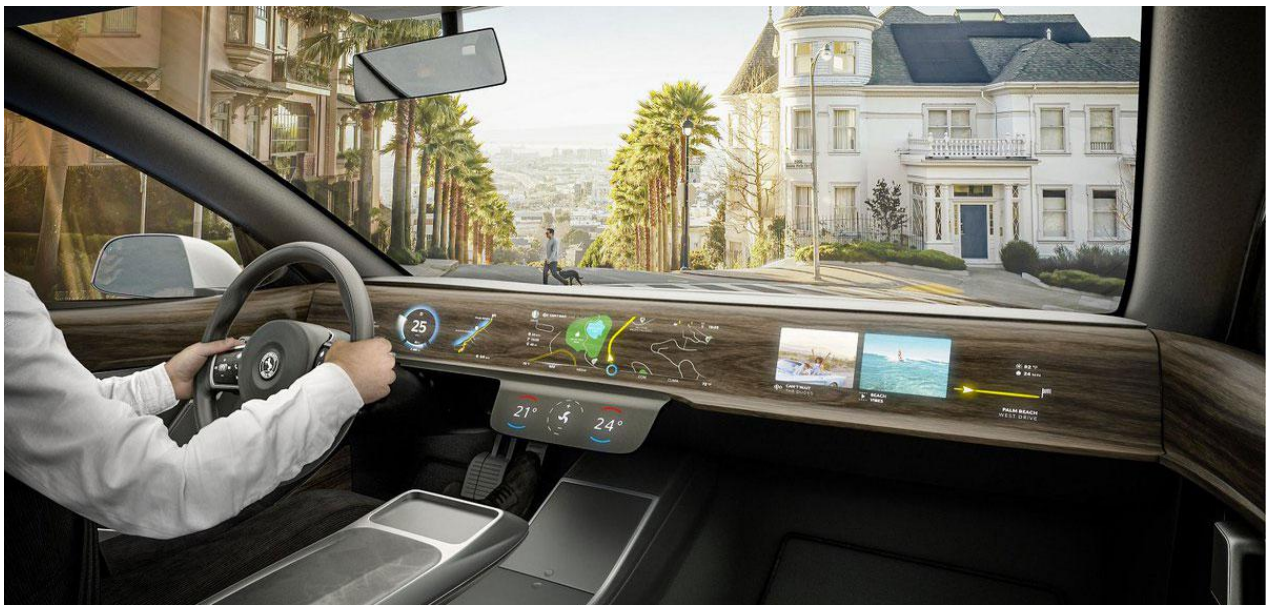
Inductive Technology

GHSP announced last year a collaborative work with Inductive Intelligence of Grand Rapids, Michigan. Induction cooktops are the most common kind found in kitchens in many parts of the world, and they're gaining popularity in North America. But the technology has applications outside the kitchen, too; imagine specially-applied induction technology in your car's cupholder keeping your coffee at the ideal temperature while you drive!

Interior News

Continental ShyTech Display to Tackle Distraction

INTERIOR NEWS



CONTINENTAL IMAGE

Continental has developed a new ShyTech display that supports drivers in keeping attention on important information at all times.

Screens are getting bigger and bigger as the quantity of information keeps increasing. However, not all information displayed is relevant in every situation. This can lead to driver mental overload and distraction, creating safety threats. Furthermore, large displays generate complex integration issues and represent a significant cost. As an alternative, Continental's ShyTech Display is a screen that appears only when it is needed.

Continental HMI strategic head Ulrich Lüders says "Displays are the central HMI in the vehicle; the design of display solutions therefore plays a central role in the design of the cockpit. Our ShyTech displays herald the beginning of a new age and for us they are the epitome of the cockpit of the future: digital, immersive and ‘shy’".

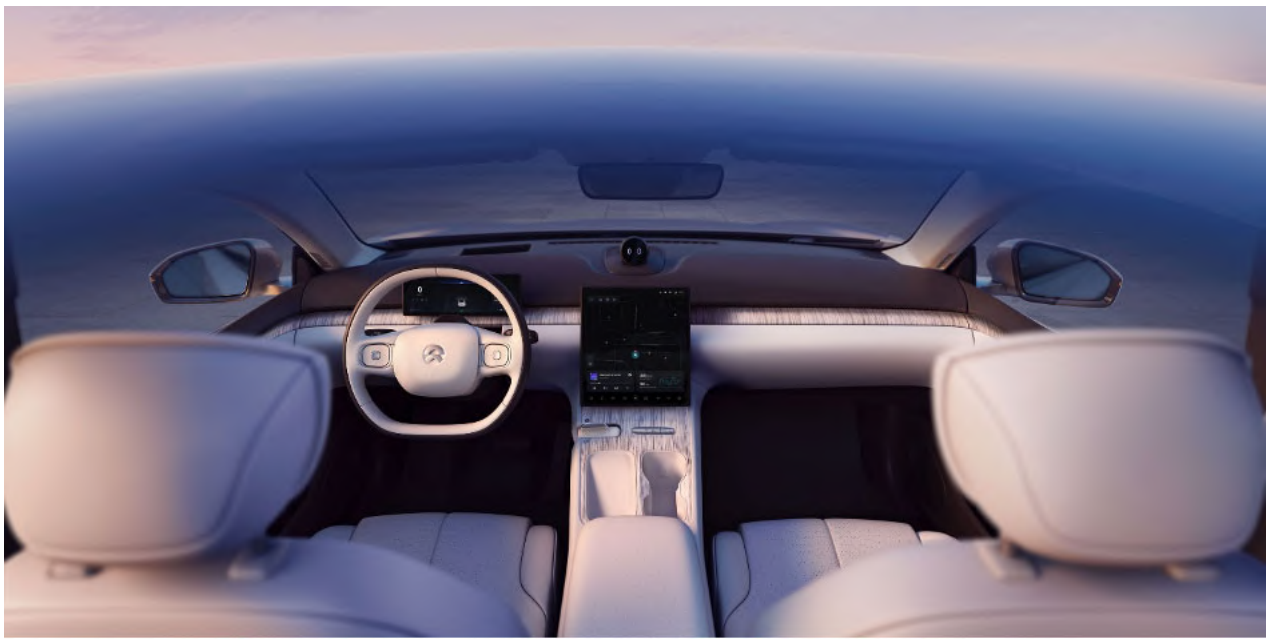
The design approach is to the reduce everything to the essentials. The solution is based on a semi-transparent surface that allows screens to be seamlessly integrated into the surrounding surface, visually as well as haptically. If the display is not needed, it is practically invisible. The displays and controls of the screen are only active when a hand approaches—same for navigation or communication. It is also possible to activate the display via voice control or by briefly tapping the screen surface.

With ShyTech, the display surface is designed to imitate the look of the dashboard (grained plastic, leather covered, wood, or other suchlike). Seamless integration remains no matter what sort of ambient light is around; special backlighting in coördination with the LCD panel and the decorative surface enables the display content to appear in the ideal brightness and sharpness.

Continental plans launch this ShyTech Display in 2023.

Dolby Atmos Sound Tech in the Nio ET7

INTERIOR NEWS



NIO IMAGE

Dolby's Atmos surround-sound technology will be standard equipment on all Nio ET7s, as part of a system including 23 speakers and a total output of 1,000 W. The four primary channels use a 3-way speaker array which features dedicated tweeter, mid-tone and bass driver, a subwoofer, and four overhead speakers.

1,000 W is not the only 1,000 in this big sedan (5.1 × 1.99 m) with a roomy interior within a 306-cm wheelbase—it is announced with 1,000-km range and 1,000-Tflops calculation capability.

The floating displays, two-spoke/two-tone steering wheel, and invisible air ducts in the front and rear provide scenario-based precise airflow control for comfort. A fragrance and air quality systems keep the cabin clean and perfumed. The interior lighting that surrounds the whole cabin comes in 64 culstomizable colors.

Interior material comes from tropical rain forests (Karuun®, rattan) which can be found in 14 pieces within the cabin, each possesses a unique texture and retains its natural touch.

Nio's 2nd-generation digital cockpit features multi-screen interaction among NOMI, a 12.8" amoLED center display, a 10.2" HDR digital instrument cluster, second row multi-function rear seat control with HDR touch screen, and enhanced HUD. The ET7 uses the 3rd-generation Qualcomm Snapdragon automotive cockpit platform with in-car mobile connectivity and communication capability, including 5G, V2X, Bluetooth 5.2, WiFi 6, and UWB.

S-Class Drive Pilot: Hands-Free Through Traffic Jams

INTERIOR NEWS

DAIMLER IMAGE

The New Mercedes S-Class can partly take driving over with Drive Pilot, at least in case of traffic jams and low-speed driving. As soon as the traffic becomes heavier and the speed slower, two white LEDs light up in the steering wheel and a large ***A*** appears in the three-dimensional graphic behind it. Then you press one of the two buttons around the LEDs, the LEDs change to turquoise, then flash, and as soon as they go into a shimmering mode, the driver becomes a passenger; the Drive Pilot drives close to autonomously as long as the slow/stop-and-go traffic condition persists.

Proximity control has long been available even in popular-price cars. It controls the lane, distance and speed by intervening in the steering, accelerator and brakes. But unlike in L^2 systems, with Drive Pilot the driver does not have to put their hands on the steering wheel at regular intervals.

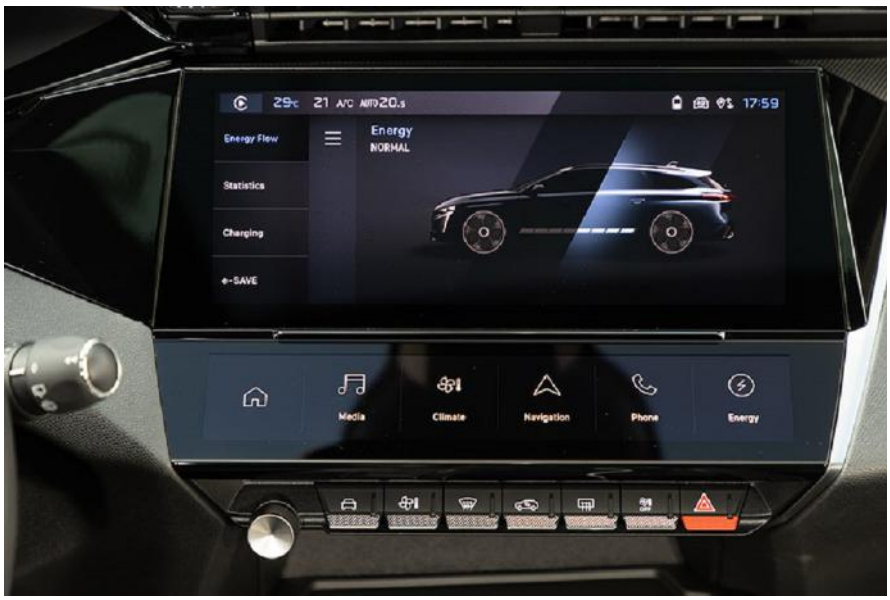
For the almost autonomous assistant, Mercedes uses the cameras and radar sensors already mounted in the car, together with an improved stereo camera, the lidar sensor behind the radiator grille and a high-resolution navigation map. In addition, a camera looks to the rear.

Qualcomm Serve Cockpit Solution to BMW, Peugeot, XPeng

INTERIOR NEWS

BMW IMAGE

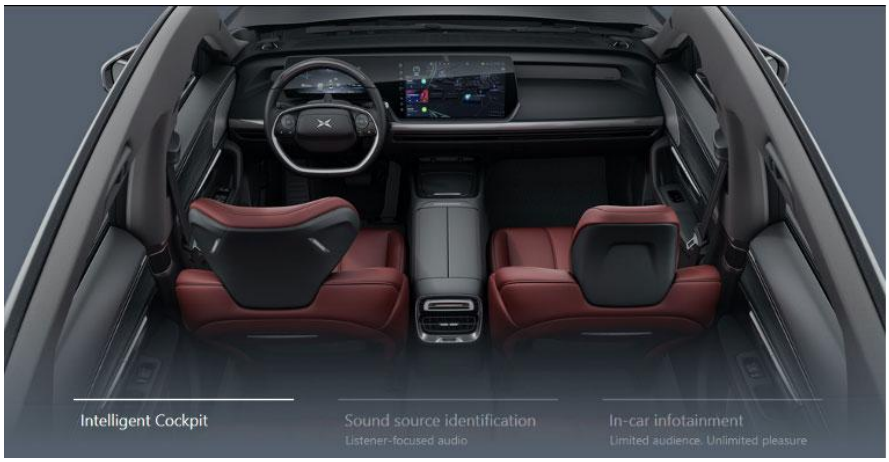
Qualcomm Technologies will supply BMW with products for assisted and automated driving systems—including image processing in a dedicated computer vision system-on-chip (SoC) and a powerful ADAS central computer. The latter is to regulate driving behavior and manage planning and driving functions. The Snapdragon products are also used in the cockpit of vehicles. The electronic platform can be used in the infotainment system, for example, to show graphics on the displays and to implement functions such as positioning, voice control, wireless mirroring (e.g., smartphone and tablet content) and audio playback.



PEUGEOT 308 INTELLIGENT I-COCKPIT (PEUGEOT IMAGE)

Qualcomm's Snapdragon automotive cockpit platform will equip the new Peugeot 308 with the latest digital communication and infotainment system, packaged as the Peugeot i-Cockpit. High-resolution touchscreens will display ultra-clear graphics for a natural and comfortable interaction between the vehicle and its occupants.

Snapdragon automotive cockpit platforms also offer a precisely positioned navigation system, as well as voice control functions, wireless mirror mode, and premium audio.



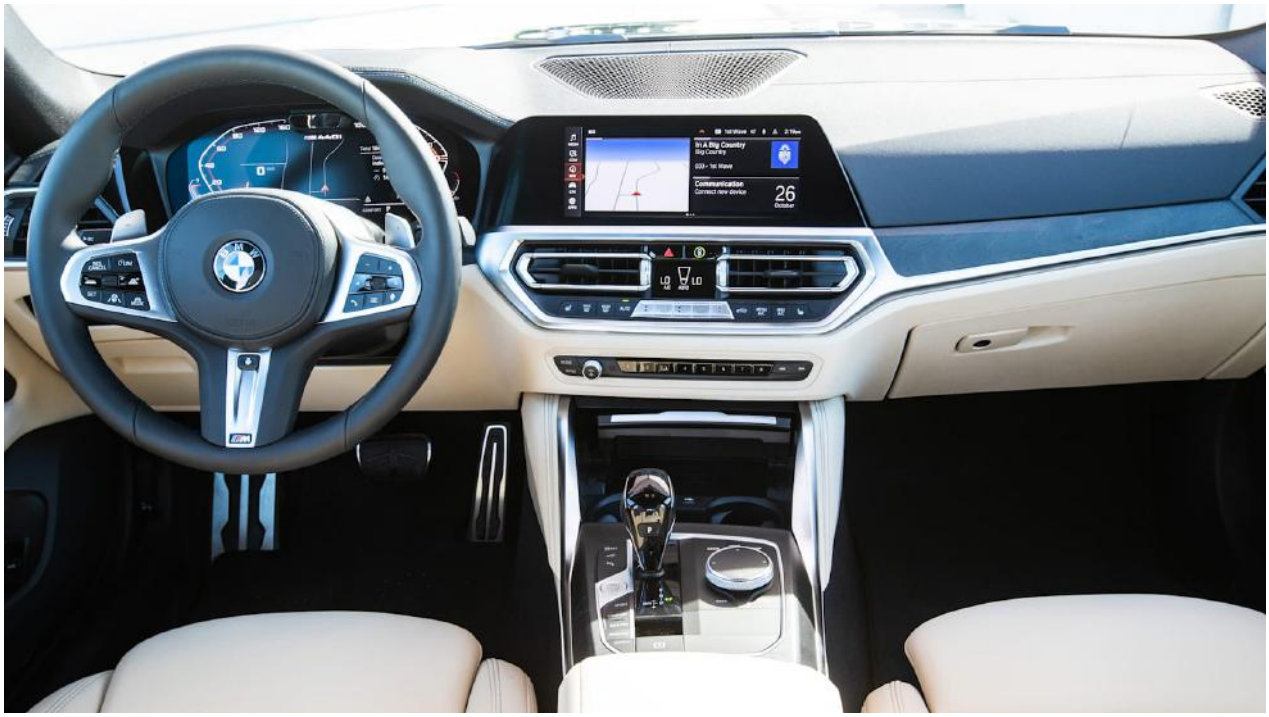
XPENG P7 INTELLIGENT COCKPIT (XPENG IMAGE)

At the recent Auto Guangzhou 2021, Chinese EV startup XPeng announced a strategic coöperation with Qualcomm for application of Qualcomm's Snapdragon automotive cockpit into XPeng's future models. XPeng unveiled their new G9 SUV model, equipped with intelligent cockpit.

GM has also selected Qualcomm. In total, Qualcomm has automotive platform order volumes of more than US $10bn.

New Cars Will Have to Deny Driving by Drunks

INTERIOR NEWS



BMW X5

A trillion-dollar infrastructure bill recently signed into law by U.S. President Joe Biden contains a mandate for NHTSA, the American auto regulatory agency, to issue a regulation requiring automakers to install technology in vehicles to prevent intoxicated motorists driving.

Congress passed and President Biden signed the Infrastructure Investment and Jobs Act, which includes $17bn toward auto safety. This funding allocated for road safety programs is the largest in decades, and it comes amidst severely lousy statistics—such as a U.S. traffic fatality rate about 2.3 times that of Europe's, and traffic-related fatalities have been trending upward in recent years in the U.S, where about 10,000 people die every year due to car crashes involving alcohol.

The mandate calls for cars to "passively monitor the performance of a driver of a motor vehicle to accurately identify whether that driver may be impaired". Additionally, the infrastructure bill requires that all car manufacturers install rear-seat reminders. This safety feature alerts parents if a child (or object that weighs as much as a child) is in the back seat, a mandate that could be put in effect by 2025.

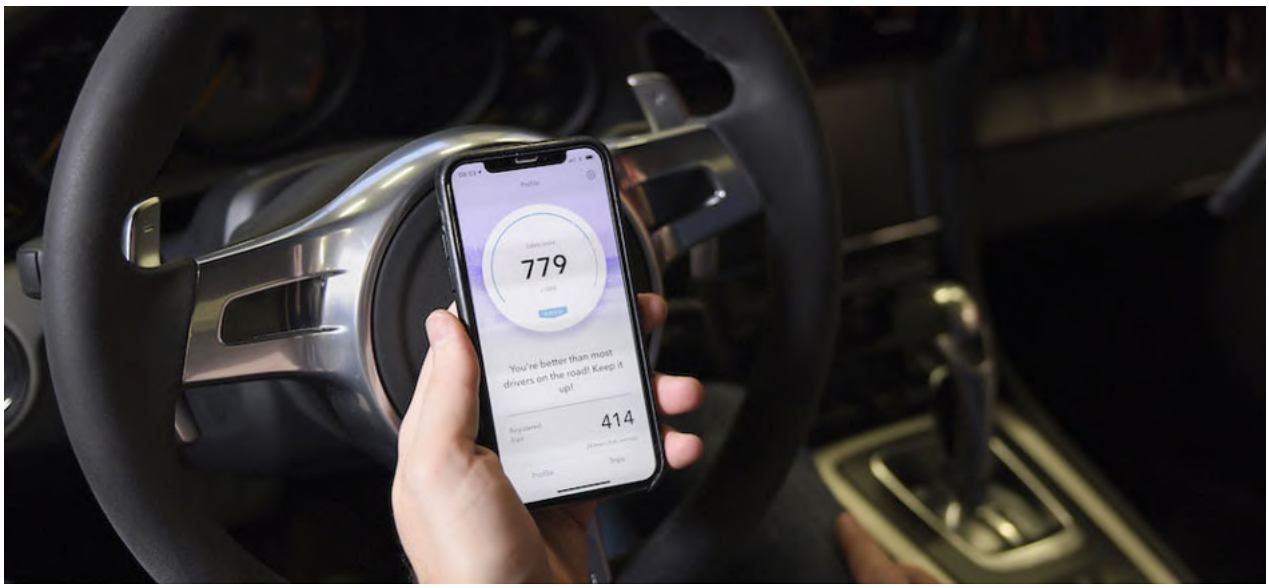
As written in the new law, the monitoring systems would come out in new vehicles no later than 2026. However, a new **U.S. Government audit of NHTSA** suggests this mandate might never come to fruition. Among its findings: NHTSA is unable to issue or update safety standards; the agency cannot act on petitions or complete investigations within the legally prescribed time limit, the agency has no standard process for evaluating petitions (nor other crucial key processes), and the agency still, a decade on, hasn't implemented agreed-upon recommendations arising from the Inspector General's 2011 audit. This new audit adds ugliness to an already-disturbing portrait painted by previous audits in **2018**, **2016**, **2015**, **2014**, and **2011**.

There is also a stormy history to mandates for systems that deny the use of the car to drivers classified by the car as unfit to drive. In the early 1970s, the U.S. Congress directed NHTSA—at that time a functional agency—to require interlock systems starting on 1974-model cars that prevented the car starting if all front-seat occupants hadn't fastened their seatbelts, as shown in **this period filmstrip**. The systems proved troublesome, making cars refuse to start in response to parcels, briefcases, or grocery bags placed on the passenger seat…or just at random. Even when working properly, they were despised by a public not interested in using seatbelts; at the time only a paltry minimum percentage of Americans used seatbelts. The interlock system was so unpopular that its mandate was repealed before the 1974 model year's end.

1974's weight sensors, electromechanical relays, and analog circuitry has given way to modern electronics and much more sophisticated sensors with artificial intelligence. Nevertheless, a false denial seems all but certain, and a car refusing use by sober driver seems a sturdy basis for at least one big lawsuit—which could grow even bigger if the connected car reports the "drunk" driver, who then suffers on their insurability, credit rating, and career.

Autoliv, Here to Analyze Driving Behavior

INTERIOR NEWS



AUTOLIV IMAGE

Autoliv has been involved in automotive safety since 1953, supplying the likes of seatbelts and airbags. Now they're developing connected safety services to address traffic safety via driving behavior. They are using Here Technologies' speed limit, fleet telematics, and weather APIs (application programming interfaces).

Distracted drivers are four times more likely to be involved in crashes than those focused on driving. Around 85 per cent of crashes are caused by preventable driver behavior, and 1 in 3 traffic fatalities worldwide are caused by excessive or inappropriate speed.

With Autoliv Driver Safety Score software, real-time data from the driver’s smartphone is used to analyze driving styles and recommend improvements in four key areas: speed, focus, smoothness, and turns. The software can be used by fleet managers and insurance companies to offer lower premiums through reductions in risky driving behavior.

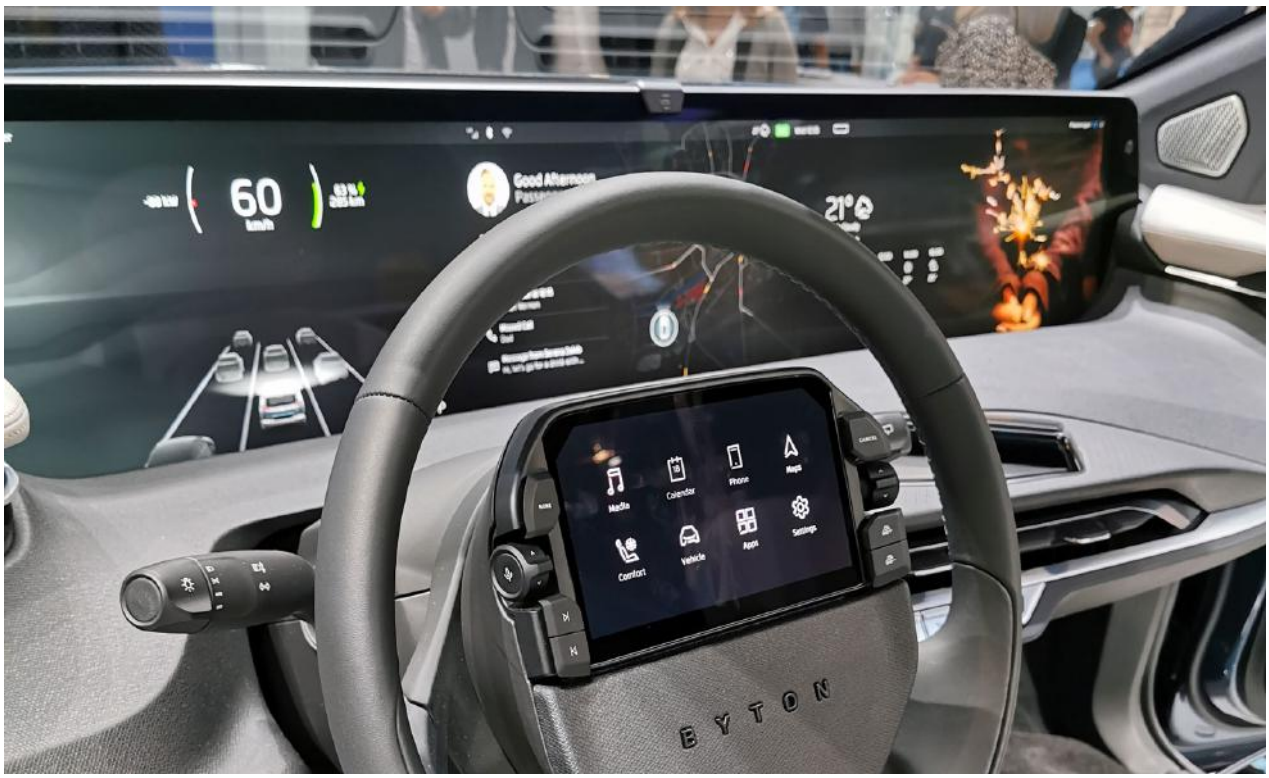
Here's map data and location services help add context—weather, road regulations, traffic congestion—to the information collected from phone and vehicle sensors, making Autoliv’s recommendations comprehensive and personal. Autoliv integrates Here's map data and services, with the ability to include further attributes in its analysis such as road curve radius, slope, height, traffic signage, lane count, physical dividers, and road roughness.

The Safety Score monitors drivers’ real-time behavior, compares it against algorithms based on known causes of crashes, and provides the user with a personalized safe-driver score.

News Mobility

_ Car interiors Unplugged.
(Summary Series, 3rd out of 7)

NEWS MOBILITY



DVN IMAGE

03. Interface Driven ‘Material’ *(in a quest of the third dimension)*

Pressing cuneiform seals into soft clay was perhaps an expression of human uncertainty and worry for the future to come, clearly intending to transpose the permanent physical properties of clay into abstract and volatile, oral language. By doing so, humans not only eternalized their thoughts and tales but also created the process of dialing knowledge into a material, indeed depicting emotions into matter. Today, as connoisseurs of any kind of aesthetic pursuit, alluding always into what is a beautifully balanced, perfectly composed work of art, we call this process, ‘design’. Designing (communicating) letters, characters, symbols, graphics on any possible material or surface to a written visual language, signifies that pictorial and phonetic merge to compel emotions. In the slightest distinction a ‘hello’ in Arial is not the same if written in Bodoni, while in Times New Roman, it can be as unremarkable as absent. From our homes to our cars, we have ‘consumed’ typeface way before kilobytes. This living type of graphic feedback is a product industrially designed to be seen, read and convey meaning. Geometric patterns are universal, more than languages, like a superpower of communication.

We used the drawing board to produce immensely beautiful schemes, representations of living spaces, while designing, reconstructing our cities. Human activity populated any empty street space until the beginning of 20th century. Soon, a four-wheeled urban invader established itself as the dictate mobile reality. Omnipresent strong graphic symbols and direction signs have created the aesthetic atmosphere of the automotive century. Speed, has been the factor that changed perception of far and close to an ever-evolving aesthetic mood that graphically framed mobility. Automobile evolves along with its surroundings, hosting a new optical language as an immaterial

possession of progress. Our lives, intertwined with pictorial codes, reformed into a new era of visual communication.

Moreover, while automobile conquers and configures aesthetically its surrounding space, indeed our living environment, there is an equally intense, truly impactful, aesthetic conquest within its own soul, the interior. Mechanical precision in automotive interiors related always to symbols and letters, from speedometer dials to H-pattern gearboxes. Engine rev, oil pressure, battery voltage, water temperature gauges, in 50s racecars, constitute the man-versus-machine visual interface. Pilots had to know how to make sense of all watchmaking-type digits in order to take critical decisions during the race. 'Hazard bulbs' added light and color to the overall layout while in late 60s the big red and round kill-(engine)-button gives a special visual accent to race cockpits for almost a decade. The 80s are about speed, and toggle switches appear to regulate aerodynamics and suspensions. Carbon fiber makes everything more compact, cockpits as well and, warning-lights gradually replace gauges on the notion that driver needs to know only critical values. The more the warning lights the more the symbols; lights become symbols/letters. Soon, radio communication buttons appear and early computer screens follow with fuel-consumption calculations. The 1989 paddle-shift brings 'everything' into the cockpit and while it is all about space, the 90s bring the cosmic explosion of electronic technology. Real-time data allow driver to adjust accordingly the entire engine cartography and suspension. Ever grown numbers of buttons, dials and symbols are fighting for space in an ever-shrinking cockpit.

Today, on the last few millimeters of surface thickness, we created the most adaptable item that acts though as a disconnection screen of anything analog we could rely on, anything that directly connects us to motion. What became an essential piece of technology with multiple uses, the Swiss army knife of digital era. Screens come to transfer our visual memory from the toggle switch to its icon, by the virtual nature of the 'symbol', an active drawing, a utilitarian magic to increase chances of success. A toggle switch is used by a pilot but its digital twin by every pilot: the one (design) for all. Icons of motion become icons to activate motion hence, portraying a kind of universal semantic. Languages, symbols, cultures merge into one and only sign that has to be significant and carry the exact same meaning for everyone. Unlike physical objects, designs of digital experiences scale as big as inconceivable, from a low-key graphic telltale to the violation of a community's standards. Design process itself diverts between designing for a specific market, segment or region and designing for the entire human race.

The imagination age is a theoretical period, beyond information age, where creativity is the primary maker of economic value. While the ongoing Industry 4.0 and remote automation (AI, Cloud) lead to an ever-increasing number of screen interphases, car interiors lose their essential materiality and redeem, just like anything physical, into a factual finality. Or maybe not.

Through an aesthetic yet applied language, car design has always tested and proved locally-built vehicles into global scale, empowering our mobile self with influential narratives that fed human imagination. Digital interface is the writing of our mobile biographies and mobility 'transactions' across borders, all into a global virtual setting. While instant gratification competes with the physical effort to 'make the machine work', the challenge remains unchanged: empowering emotions.

Merging text to illustration, a new language sort of, is a way to transmit what lays beyond writing, cut through the web polyphony and label an instant feeling. With computers, besides the language simplification, we have accomplished something amazingly great: we have reunited symbols and letters and as frivolous as it sounds - indeed more primitive than we think – we entered an era of interactive language, to communicate, enable, activate, affect. A new practice assigned to extract and augment values of everything previously acquired. Consequently, UX constitutes an 'intellectual control of the object' a kind of media management connecting the product with its reason to exist. Usage interface is coupling digital economy while fancy new terms come up as ephemeral trends to the deficit of older worn, yet valid terminology, leading into a short of a vocabulary inflation. After all, screens are just neutral surfaces, in order to trigger attention, we have to constantly update them.

It might be that UX is the language to tell 'the story of the most complex object ever made. Unlike computer screens, automotive interiors are carriers of impressions, ambiances, sensations and an everlasting muscle-memory of mobility. The most important advancement in restoring social intimacy is referring to the emotional aspect of communication such as intonation, facial expression or body language that a text can hardly represent. In addition, with the tremendous ability of smartphones to transmit images, images lost their power. In an attempt to fill this gap,

our brains create a new processing pattern ‘listening’ or rather looking on what lays beyond language.

The form, material, texture and temperature of physically build switches and buttons had always finger-spelled their specific function keeping the eyes on the road. The oxymoron of looking at it while dialing, is in many ways a step back on the cognitive progress of driving; why is this?

Early humans had always very carefully picked the place to live as a spot where they could be protected and see what’s coming. ‘Shelter and prospect’, this primitive reflex we carry along, in automotive interior terms translates as in ‘touch and vision’. Our mobile adventure started early on from the ground up, mastering traction, mass and gravity through inventive mechanic analogies and compositions that matured over time remaining engraved in our saga of progress (wheels and tires, chassis, suspensions). It took time to put in place all necessary controls to major performance (engine, steering, breaking) and settle human factors (seats, consoles, interiors) adding continually new layers of technology from the tarmac all the way to our fingertips. The apparatus of modern mobility has now been forged among visual and tactile practices on a cognitive neutral surface. It is founded on a premise between enabling choices and enabling emotions, simultaneously an expression of power and a compromise. Uncertain of which one technology to prioritize we chose the touch/screen as the overlap of the two while in an ongoing search of a better rendition. In doing so, we undertook the huge challenge of recording storylines of verbal poetics to capture formal, expressive performance elements, which would otherwise be lost in anything simply written. This performing and versatile act of technology ends up shaping us by shaping our itinerant environment.

The mid-90s shifted space age to computer age where friction and speed acquired a different meaning. Instead of cosmic limits, we run into the limits of our own sociocultural hub. Touch screens are the ever-growing form of interface in Car interiors but indeed are something much greater. Unbeknownst to us, we assumed the task of relentlessly implementing the digital dexterity of the day towards a superior project of civilization. In other words, we are at the odds of converting an empirical skill that people pick up by exposure, even if not formally instructed, into ‘language’ and the extension of its use to describe perception, comprehension and in times, creation of pretty much anything visible. From a join-dot-globalness to ethno-poetics, the challenge lies, from now on, into how the technique of a unique original performance enhance its aesthetic value within each one specific culture and context.

General News

Faurecia Will Hold Most Of Hella

GENERAL NEWS

Faurecia's public-purchase offer will allow controling 79.5 per cent of the actions of Hella. Of this total, the 60 per cent held by Hella's family shareholders were already acquired, as agreed in the acquisition agreement announced this past summer.

To buy back 100 per cent of the capital would have cost Faurecia €6.7bn. With the 79.5 per cent of shares, the investment will be limited to €5.3bn.

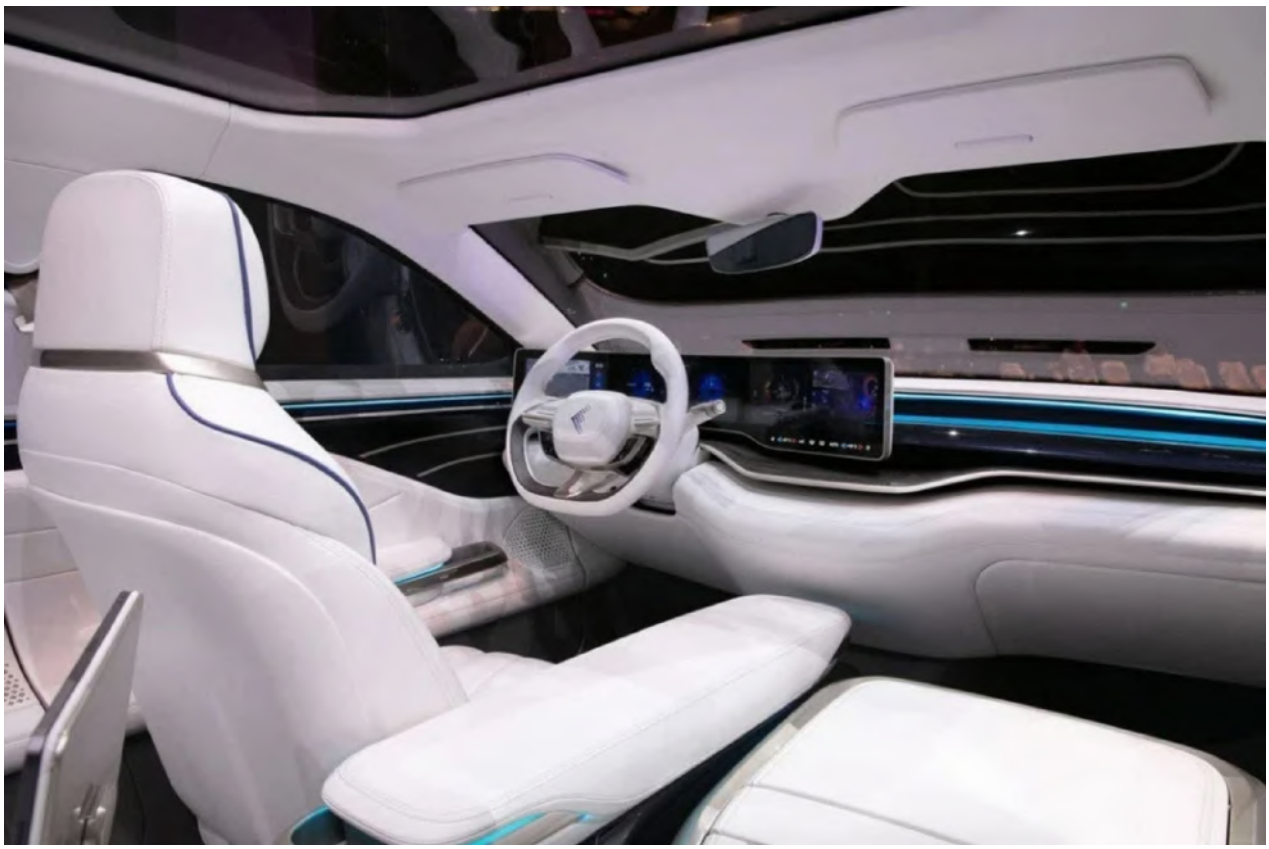
Faurecia will, however, have to contend with a fund activist with 6.5% Hella's voting rights, who seems to be betting that Faurecia will end up making a better offer to minority shareholders.

With the Hella acquisition, Faurecia will position themselves as the № 7 automotive supplier worldwide, with a turnover expected at €26.5bn in 2022. Faurecia have already got approval from close to ten national competition supervisory authorities, and now are awaiting the agreement of the European Commission. Pending that approval, finalisation of the operation is confirmed for the start of next year. Faurecia CEO Patrick Koller says “Faurecia welcomes the positive outcome of the voluntary takeover offer for Hella. We have designed a sustainable organization and governance which allows us to be effective starting Day 1. Our strategic combination with Hella will enable us to accelerate our transformation and deliver long-term value creation for all our stakeholders.”

In parallel, Faurecia announced the final divestment of their Acoustic and Soft Trim division to Adler Pelzer. The division represented sales of €385m in 2019 within Faurecia's Interiors business group, and employs around 1,820 employees in 8 plants and one R&D center, all in Europe.

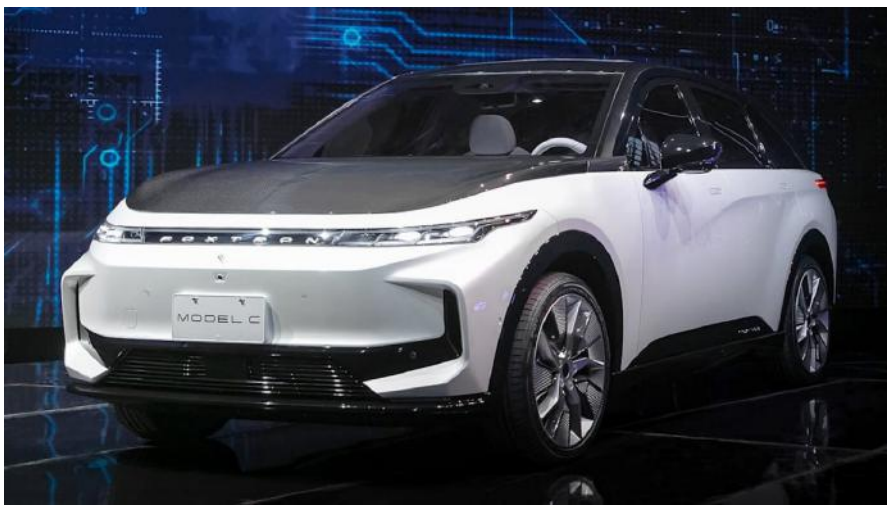
Foxconn's EVs: iPhones for the Road?

GENERAL NEWS



FOXCONN MODEL C (FOXCONN IMAGES

Foxconn has unveiled prototypes of three EVs they plan to build on behalf of car companies. Foxconn will be the ODM—the original *design* manufacturer—of their Model C SUV; a Model E sedan, and Model T bus. The vehicles won't be sold under Foxconn's own brand; established automakers will handle the branding and marketing—just as Apple sells iPhones built by Foxconn. For promotional purposes, the prototypes are branded as Foxtron, a JV between Hon Hai (Foxconn's mother company) and Taiwanese automaker Yulon Motor, which builds vehicles under the Luxgen brand.



The design of the three cars is based on Foxconn's MIH platform. It is intended as a kind of neutral kit, on which various automakers can then develop cars under their own brand names without having to bear the enormous costs of engineering, designing, and building a complete car.

Foxconn wants to become "the Android system of the electric vehicle industry", as senior Foxconn executives put it at the launch of the three e-cars at the company's annual technology

expo last month—an understandable enough comparison, but a bit of an awkward one given that the iPhone is Android's direct competitor. Foxconn, the world's largest contract manufacturer of electronic devices, is just one of many corporations rushing into the new e-mobility El Dorado because of falling margins in their core business. However, their notoriety as a factory for Apple's products, with which Foxconn makes more than half of its turnover, gives it a starting advantage over other aspirants.

Foxconn has systematically positioned themselves more and more as a manufacturer of e-car components and e-cars. They supply parts—dashboards, circuit boards, various plastic parts—for car companies like BMW and Mercedes, and for EV producers such as Tesla and BYD.