Editorial

AV Push Pulls In-Cabin-Monitoring

(IMAGE: PATHPARTNER)

The car of the future always bristles with fresh features borne of new ideas. But one reason why they're called "concept cars" these days and not "dream cars" any more is that an increasing proportion of any given concept car's futuristic features are really plausible. Consider autonomous vehicles, and the new use cases they bring: the industry recognizes the need to understand the exact, detailed condition of the driver for safe handoff of the driving task from the car to the driver. And another recognition quickly followed; it became obvious that monitoring the driver would bring benefits today, not just when AVs really begin to proliferate. Driver monitoring can already address issues such as drowsiness and loss of vigilance. This, in turn, paves the way for technology to manage the alertness of the driver, which in its own turn exerts pulls and provides missing links in a virtuous circle. That is exactly what's happening today for in-cabin monitoring.

Our in-depth this week takes a look at cabin monitoring with radar, leveraging radar expertise growing in the industry because of more automated vehicles to understand their environment.

The Design Lounge looks at the Shanghai Auto Show from the design perspective. Interior news includes a summary of the Shanghai DVN Workshop lectures not presented in last week's edition. All lectures remain **available as VODs** until May 15.
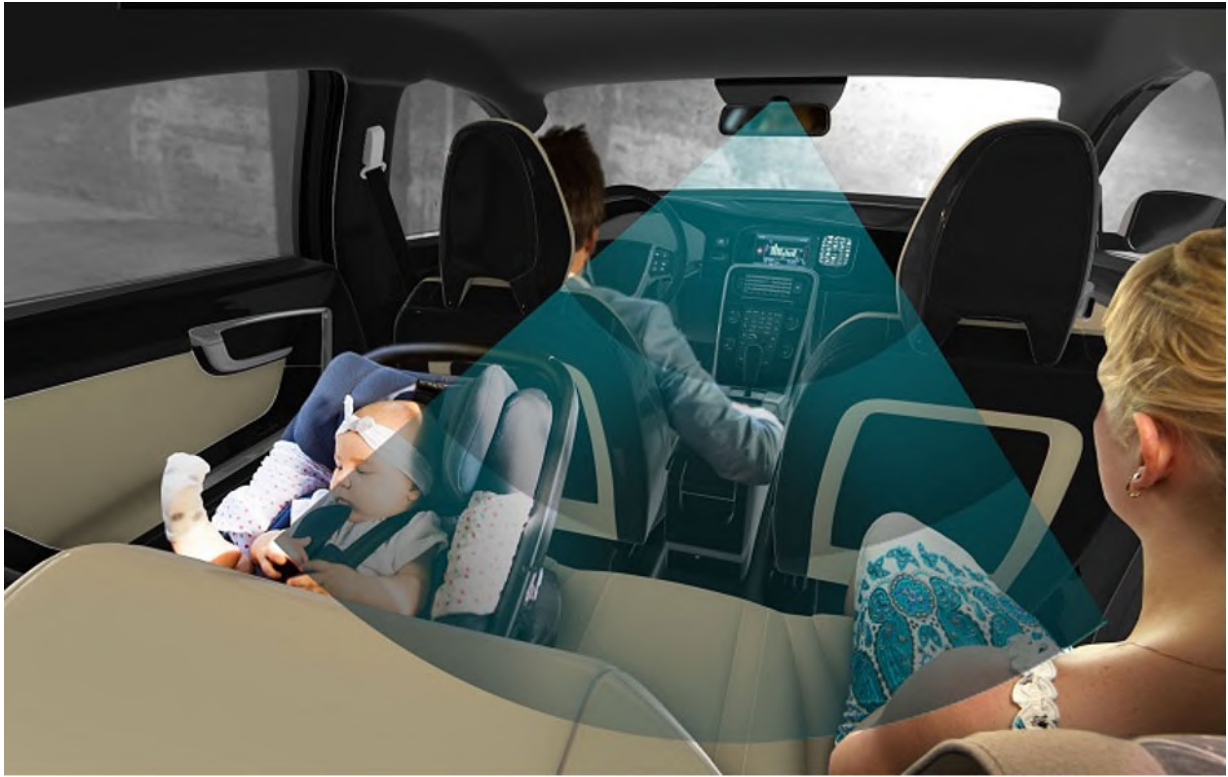
Sincerely yours,

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

In Cabin Monitoring With Radar

(IMAGE: ELECTRONIC PRODUCTS)

Radar is a detection system that uses radio waves to determine the distance, angle, or velocity of objects. It can be used to detect aircraft, ships, spacecraft, guided missiles, motor vehicles, weather, and many other things. Within the trend of vehicles capable of taking on gradually more and more parts of the driving task as they evolve toward full-time autonomous driving, even most fully-human-driven cars are using radar to spot outside obstacles on the road, all around, including other vehicles in the blind spot.

So, as radar expertise is growing in the automotive industry, new applications are making themselves apparent: why not use radar to detect what is happening inside the vehicle, such as a drowsy driver, children left in a car, and even conditions today identified by switches (unbelted passenger, door left open).

Because of many hot-car deaths in the United States, according to the National Highway Traffic Safety Administration, with more than half of them involved children left in a car (most of them kids under 2 years old), all new passenger vehicles starting from 2025 will need to have seat sensors and alert systems.

In Europe, the European New Car Assessment Program (Euro NCAP) roadmap added child presence detection systems as a roadmap feature, most likely in 2024, with some carmakers implementing the solution since 2020. It's more than just knowing there's a child still in the vehicle; the goal is to develop systems that can detect children who may be out of the driver's view, such as in rear-facing car seats, and distinguish them from objects that are similar in size and weight. New vehicles today may already have

cameras and weight sensors placed in seats for detecting the presence of a person, but current technologies have limitations.

Many companies and experts say that monitoring passengers without a camera can make it hard to accurately know what's going on in the car, and more prone to false positives. But cameras can fail to identify a child in a rear-facing car seat if it's not angled correctly; they can't see a child covered with a blanket; they all have blind spots, and their effectiveness is affected by the ambient light—too much or not enough means the system can't see.

Cameras also raise security and privacy concerns, and tend on the one hand to be very visible to the occupants, and on the other hand to take up significant space. So, invisible, micro-compact solutions are called for; ones that don't create identifiable images.

So: radar. The United States FCC (Federal Communications Commission) waived restrictions to incorporate radar technology inside of vehicles. The accuracy of in-cabin sensors is particularly important for occupant detection. Automotive radar sensors provide an effective solution that's easy and affordable to deploy.

Radar sensors using millimeter-wave technology can provide the high accuracy needed for effective child detection in a wide range of vehicle cabins and scenarios. Radars can't be physically blocked; their waves pass through materials such as plastic, drywall, and clothing and can detect a child or pet even hidden behind a blanket, a book, or whatever.

Radar systems measure parameters such as distance, movement, speed, direction of movement and angular position. The electromagnetic waves also detect the slightest movements. Patterns such as the rising and falling of a person's chest can be determined this way, for the radar system perceives even minimal and slow changes. Breathing can thus be detected even under warm winter clothes or blankets, since the technology differentiates movement even in the millimeter range.

By complementing weight sensors with radar or even replacing them altogether, it's possible for these new in-cabin sensing systems to detect people and motion, discerning between a person and an inanimate object, between an adult and a child, to help build more accurate systems for seat-belt reminders and also for airbag deployment.

Airbag systems can also benefit from more accurate sensing. By using radar, it's possible to discern the difference between a child or adult in a seat. In the event that

airbags are deployed, the airbag can adjust to account for the posture and the size of the occupant to best be protected.
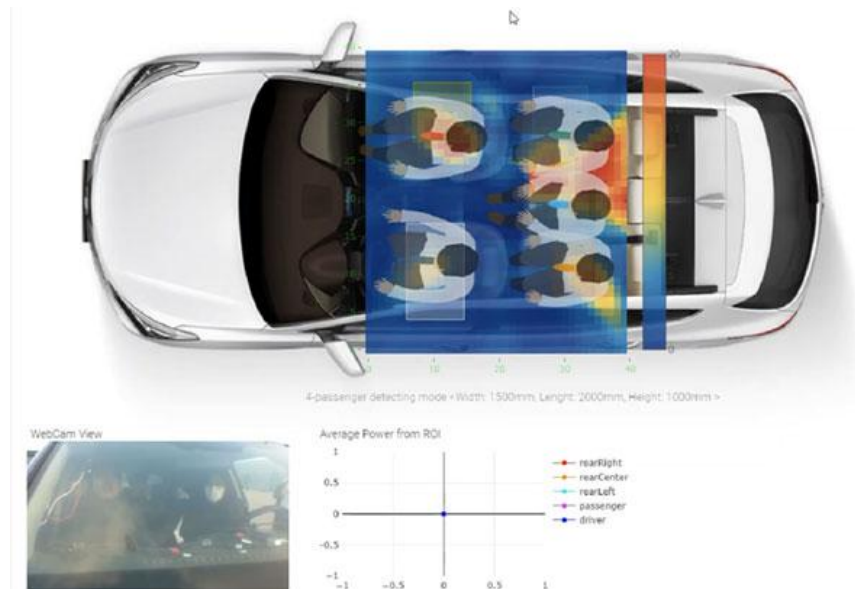
(IMAGE: TEXAS INSTRUMENTS)

The 60-GHz single-chip AWR6843 mm-wave sensor from TI (Texas Instruments) has fine movement-detection capabilities that can detect breathing, movement like yarn, blinking, and head movement to estimate the fatigue or sleepy state of the driver and activate an alert; it could help making the distinction between a small child and an inanimate object. It can simultaneously estimate the heart and breathing rates passengers, and if located into the overhead console or the roof. headliner, it will cover all passengers.

These sensors are Automotive Electronics Council-Q100–qualified and help automotive designers achieve Automotive Safety Integrity Level (ASIL) B requirements for interior sensing systems. The sensors also work across a wide temperature range, including a cabin whose temperature could rise quickly on a hot day.


A single Vayyar sensor monitors two complete seating rows and the presence of five occupants, replacing several in-car sensors.

Vayyar Imaging is an Israeli semiconductor company producing 4D imaging radar sensors. They say their single-chip radar system can provide a view of the entire car, including the trunk, without the need to record any faces or identifying information; and that it can differentiate between inanimate objects and passengers. So if a briefcase is left behind, the system doesn't freak out car owners by indicating their kid might be in the back seat.

Vayyar also say their system can track the driver's body and head position to make sure they're not nodding off behind the wheel. And it keeps count of how many

passengers enter and leave the car to make sure nobody is left behind.

Radar signals transmitted close to occupants are about 0.001× the strength of smartphone WiFi, and operate within the 60 GHz spectrum band—a standard for WiFi used to connect any tablet. See Vayyar's video.
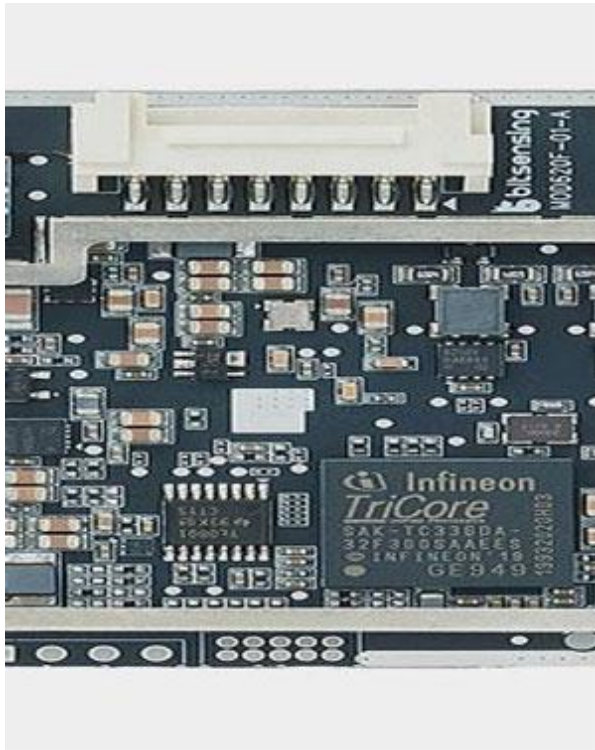
60GHZ IN-CABIN VEHICLE SENSING RADAR BITSENSING MOD620

Bitsensing is an imaging radar technology startup founded in 2018 and based in Seoul, South Korea. They've got a radar chip that can detect people underneath blankets and monitor the breathing and heart rates of passengers—and they say after a crash, their system can share vital statistics with emergency responders. Their demo video describes a variety of tasks the system can do with number of occupants, babies, objects, vehicle vibration, people walking around, and even head intrusion from the outside.


(IMAGE: TESLETTER.COM)

Bitsensing and Vayyar's chips can also sense about 2 m around the car. That enables features like Tesla's Sentry mode. Sentry Mode adds a unique layer of protection to Tesla vehicles by continuously monitoring the environment around a car when it's left unattended. When enabled, Sentry Mode enters a "Standby" state, like many home alarm systems, which uses the car's external cameras to detect potential threats.

Swedish electronics firm Veoneer and AI startup Affectiva want to incorporate radar sensing to check on passengers in autonomous vehicles and make sure the robocars don't start driving before passengers are done climbing into the car or buckling their seat belt. Veoneer was spun off in 2018 from Autoliv's electronics and automated driving division. Affectiva is a software company spun out of MIT's Media Lab. They're building artificial intelligence to identify and keep track of human emotions, cognitive states, activities, and the objects people use, by analyzing facial and vocal expressions.
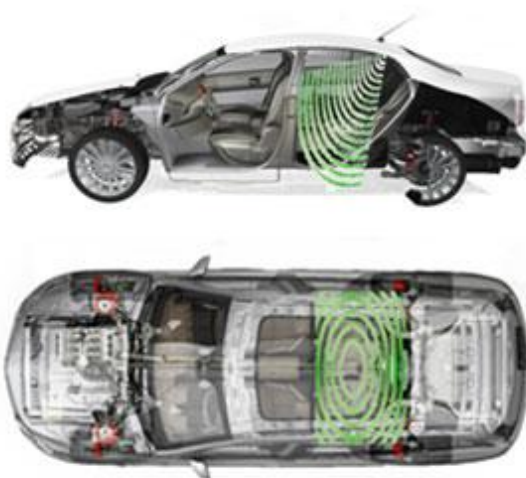
(IMAGE: INNOSENT)

Innosent—short for *Innovative Radar Sensor Technology* company, based in Donnersdorf, Germany, has a system to detect precisely the number of people in the vehicle and their locations. Radar reliably recognizes adults, little children, and animals. The system provides this information to the driver. For example, the system reminds the driver, as they're preparing to exit, of passengers in the back seat. They've put up a demo video of their own.

Radar sensors are not only changing the way that vehicles sense the environment around them but also how they sense what and who is occupying them. Now it is possible for a single radar sensor to detect and determine the position of all occupants inside a car, classify the occupants in rear seats as an adult or a child, and track occupant vital signs. Radar's ability to sense through solid materials makes it possible to detect an unattended child, monitor occupant status, and estimate a driver's vital signs with greater accuracy than ever before.

It will be interesting to see if and when radar sensing technology will make camera-based systems obsolete…!

Interior News

The Intelligent Cabin by Grupo Antolin (DVN Shanghai Workshop Lectures)

Antolin, the Interior Spanish Global supplier, presented their Intelligent Cabin perspective, live from Shanghai. The presentation was made by Pablo García Bravo and Weijie Huang, from the supplier's Shanghai office.

Intelligent Cabin means what can-could-will be the future of the car interior with new cockpit features and technology—in cabin monitoring, interior lighting, air purification, using natural materials—whenever it is possible.

This Intelligent Cabin, as shown here in the Elin Concept, was first presented at the 2021 virtual CES. It starts with safe and smart access with face recognition (with EPP— Elastic Preserving Projections— technology integrated in the B-pillar), and multi-user configuration. It goes on with closing an acoustic door made out of natural materials, backlighting and active and functional surfaces. This door can integrate a capacitive pad, for instance for seat adjustments and backlighting. Air in the cabin is sanitized by an air purifying overhead console, with a headliner integrating ambient and functional LED lighting. The sun visor, which becomes a kind of available surface because of low usage, can be transformed into a projectionable surface.


Cockpit technology complexity emphasizes the need for integration expertise, as presented in parallel on a demonstrator at the Shanghai auto show with lighting, display, and electronic integration. Technology in the demo car includes a DMS (Driver

Monitoring System) developed together with Cipia, formerly Eyelight; touch functions using capacitive sensing, automatic glove box, backlighting, and incorporates natural materials such as cork and bamboo. Styling and decoration can be achieved with deco-modules.

"ILaS – The New Lighting Network For The Car", by Inova (DVN Shanghai Workshop Lectures)
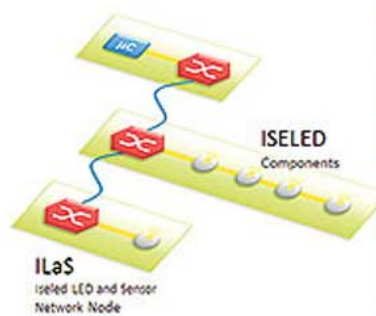
Semiconductor specialists Inova's Applications Manager Stefan Hoffmann gave a talk on what is needed behind the scenes—behind the screens—to make all these new features and functionalities possible: the hardware/software structure, the electronics network with light and sensors, targeting efficiency, and to minimize development while ensuring full reliability.

Inova takes a leadership role in ISELED (Intelligent Smart Embedded LED), an innovative technology based on highly integrated, smart LED modules enabling dynamic ambient and functional lighting solutions. The ISELED Alliance is an open, industrial alliance with the objective of developing a comprehensive ecosystem—a complete system solution for innovative automotive lighting—based on ISELED technology. Today, various ISELED products from several manufacturers are available, such as LED modules from Dominant (SeddLED), Osram (Osire) and Everlight (Smartled).

Expanding the originally ISELED protocol with the development of the ILaS bus concept (ISELED Light and Sensor network) will further broaden the applications which will benefit from the innovative and cost-efficient technology. With ILaS, not only LED elements, but also other components such as matrix LED lights, sensors and actuators can in future be controlled in large numbers via a simple two-wire connection—far beyond the original idea of automotive interior lighting.

This network can support next generation of in-car lighting, which will typically comprise of 10 to 100 LEDs or more mounted on flexible light strips. Each 'group' consists of one red, green and blue LED to form a 'pixel', which is then intelligently controlled by the ISELED smart RGB LED driver in the LED module, effectively replacing present solutions utilizing multiple microcontrollers and a relatively slow LIN bus.

This centralized architecture offers less synchronization efforts, easier system & components updates, better life rendering and no latency.

"Ambient light takes the next step towards ASIL", by Osram/Melexis (DVN Shanghai Workshop Lectures)
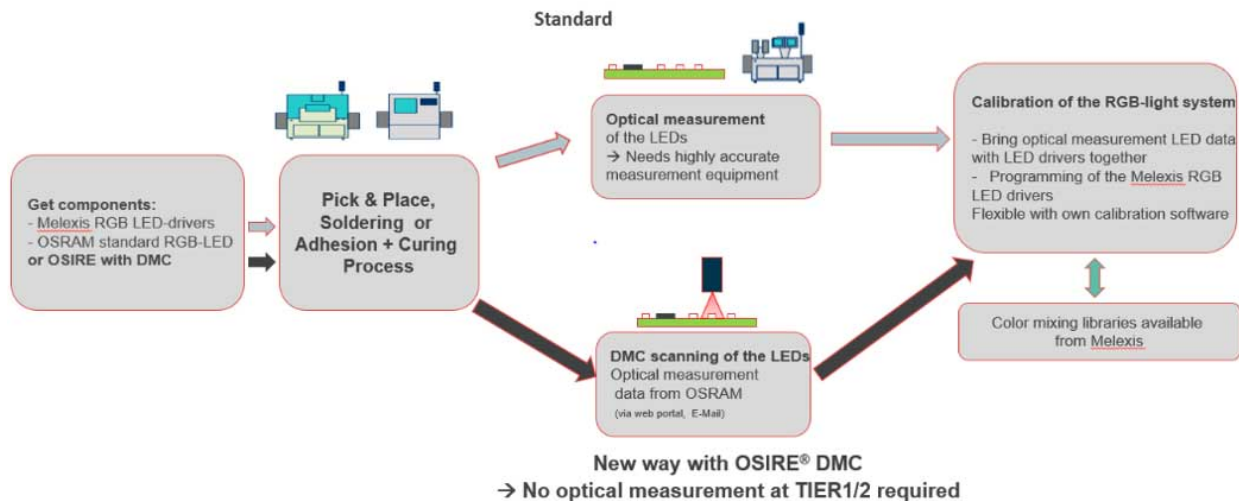
Osram Automotive Marketing Manager Mingjie Dou and Melexis Senior Field Application Engineer Linhong Song gave a joint lecture, live from Shanghai, in the field of smart ambient light with the title: "The Next Step Towards Safety Applications".

Mingjie Dou gave a short glance at AMS and Osram: The combined revenues exceed USD $5.5bn; there are about 30,000 employees and over 20,000 customers; 40+ major R&D locations, 15,000+ patents, and 110+ years design and manufacturing. As one of the leaders in optical solutions, AMS and Osram presented the OSIRE RGB-LEDs E3635 -Toplooker, E5515 - Sidelooker and E3323 with DMC and enhanced functionality for chip configuration.

The image below shows the process flow of a RGB light system with Osram standard LEDs in comparison to the new OSIRE LEDs with DMC and RGB-LED-drivers from Melexis.
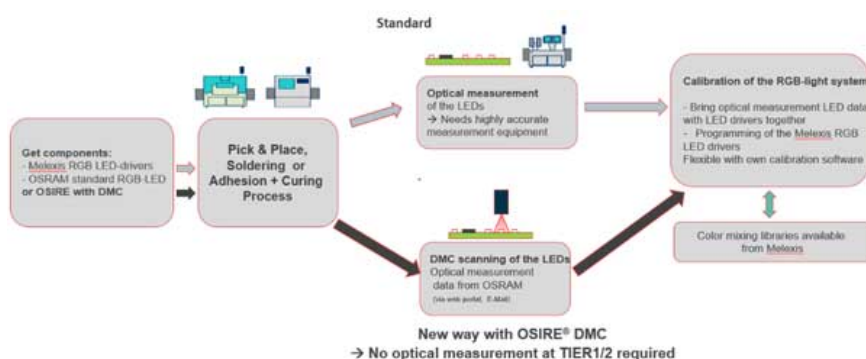
Linhong Song emphasized that Melexis has the mission to create innovative microelectronic solutions for smart automotive, medical and industrial applications (see Melexis Company Profile in DVN-I Newsletter № 54). Melexis has the following targets for automotive RGB LED lighting applications: wiring across the car by using standard bus systems, cost sensitive solutions, easy to use and to implement in tight space requirements and fusion of safety display function with ambient light.

OSRAM OSIRE® E3323
with DMC

Melexis MLX81116
6 RGB Channel Automotive LED Driver
with MeLiBu™ high speed communication interface

The image shows an example of a smart light PCB from Melexis with Osram OSIRE E3323 RGB-LEDs with DMC and the MeLiBu LED driver with high-speed communication interface.

MeLiBu - OSIRE is a very suitable couple for advanced safety, because

- MeLiBu CAN-FD over UART communication enables ASIL-B according ISO26262 at high robustness and low BOM
- Real differential bus structure enables simple wiring harness
- DMC (Dot Matrix Code) gives access to the LEDF calibration data
- Optical measurement data with high accuracy at 50mA and 10mA provided by Osram
- Calibration data stored within LED driver for temperature compensated color mixing
- Calibration data directly used by LED driver delta UV accuracy of color mixing >0,01
- Full 16bit resolution setting for 10mA and 50mA ==> 32bit overall color/dimming range
- Synchronous switching from 10mA to 50mA without color/intensity change for a glare-free night operation

"Interior Optical Design Workflow", by Ansys (DVN Shanghai Workshop Lectures)

Ansys Application Engineer Sen Zhang talked about "Interior optical design workflow", as a development and simulation tool to preview the targeted user effect, and the user perception. Within the validation process, step by step, from quick preview, to live preview and then, final validation, it includes visibility and perception criteria. It covers also DMSand simulation of alerts, including light alerts.

Ansys Speos is a dedicated workflow for creating an opto-mechanical system, using optical part design module, with benefits such as easy usage for non-experts, and communication between CAD systems, and even between different Catia versions.

Based on generative optical design, this workflow dramatically increases development productivity and reduces engineering development time and cost, while improving style convergence.

Workflow starts with import and design, then followed by photometric validation, visual ergonomic validation and final optimization. Optical part design generates automatically the targeted geometry, with light guides, optical lenses and surfaces, or freeform or honeycomb lenses. Photometric validation includes interactive simulation, and live preview (in real time). Visual ergonomic validation simulates occupant perception of light, colors, and materials thanks to the SPEOS human vision module. It facilitates validation of color and material harmony, texture light and brightness, visibility and legibility, visual comfort, and overall, perceived quality.

Magna Packages DMS Into Rearview Mirror

Drivers can be monitored in a car interior from many different places. We've already presented camera-based solutions located mostly in the steering wheel, without mentioning seat-based solutions, or radar-based solutions presented here before in the in-depth.

Magna International, the Canadian-based global auto supplier and builder, introduced their new driver monitoring system, using camera-based technology to actively detect, predict and react to distracted driving. Head and eye movements are tracked, with alerts notifying the driver of inattentiveness.

This Driver Monitoring System utilizes their industry leading ADAS camera and interior mirror technologies to offer a systems level approach for providing these features and functionalities. Seamlessly integrated into the interior mirror, the system boasts an unobstructed view of the drivers face and body allowing a safer and more comfortable driving experience. This camera-based system can actively detect, predict and react to distracted driving while making allowances for normal actions like checking blind spots.

The system is scalable to include features such as child presence detection, seat belt detection and even offers video conferencing and facial recognition. The system is demonstrated in an **online video**.

Genesis X Concept Interior With Surrounded Cockpit

(IMAGE: GENESIS)

Genesis, the luxury vehicle division of Hyundai Motor Group, officially introduced the Genesis X Concept, an EV-based GT (Gran Turismo) concept car. In particular, the new concept car is a high-performance GT that maximizes use of the Two Lines design element that Genesis is known for.

The Genesis X Concept's interior features a driver-oriented design with a cockpit that surrounds the driver with all operating systems and displays. The dashboard is enveloping the driver and is connected to a floating center console. The slim and indirect air vents that surround passengers, as well as the side window molding, emphasizes the model's Two Lines concept with a sense of unity with the exterior design.

(IMAGE: GENESIS)

The free-form display manages various functions such as clusters, navigation and HVAC (heating, ventilation, and air conditioning) systems, and the Crystal Sphere Electronic Shift Lever integrates driving mode settings in a high-tech atmosphere of the interior.

A two-spoke steering wheel wears an airbag cover with an illuminated Genesis-signature lace around the center badge. The door armrests "float" above the panel thanks to slick accent lighting, and the bridge-style center console offers open storage beneath. The stylists created a differentiation of space by coloring the driver's seat scotch brown and the passenger seat ocean blue green. The Genesis X Concept features bucket seats and four-point seat belts, which are optimized for driving, and its exposed metal seat frames create an athletic impression.

(IMAGE: GENESIS)

The use of upcycled materials emphasizes the eco-friendliness of the Genesis X's interior. A weave-patterned fabric made out of leftover pieces of leather from previous manufacturing processes was used for the safety belts, parts of the steering wheel, and the airbag cover.

Audi A6 e-tron Interior

(IMAGE: AUDI)

Flat is considered as the new premium characteristic in e-mobility. In the case of the A6 e-tron, the generously dimensioned 100 kWh battery is distributed over the entire vehicle base, which makes a fairly low silhouette overall. At the end of 2022, the automaker promises the first production models based on PPE (Premium Platform Electric), which will serve as the basis for vehicles in various segments.

Also due to the flat battery, the interior of the A6 E-Tron is spacious and offer its occupants plenty of legroom in the front and rear position. In addition, there is no longer a cardan tunnel for an all-wheel drive train.

The interior design concept hinges on a layout whereby the upper section of the light-colored instrument panel forms an arc across the cabin. This panel incorporates the dash display, while the MMI (multimedia interface) monitor is surrounded by a contrasting black piano finish bezel. A contour bisects the upper and lower sections of the dashboard, the latter housing the control panel for the standard three-zone automatic air conditioning system with physical, rather than touchscreen, control buttons. The flat lateral air vents with their aluminum-faced edges amplify the width of the interior, which sweeps around to meet the front door trims, what Audi terms a "wraparound" effect.

(IMAGE: AUDI)

The standard e-tron GT quattro features sports seats with eight-way adjustment upholstered in a combination of leather and synthetic leather, while the RS e-tron GT models feature seats with more adjustment options and ventilation and massage capability. The rear seats offer sufficient space for adults, with occupants positioned lower in the car than the driver, their feet located in a 'foot garage', a recess incorporated in the design of the battery pack running beneath the passenger compartment.

Following consumer trends, there will be an optional leather-free design package, which includes upholstery in a combination of artificial leather and a material called Cascade, using a proportion of recycled materials such as polyester fibers made from old plastic bottles, textiles, or residual fibers from selvages. There are 119 recycled plastic bottles in each upholstery set! Dinamica (see DVN Interior 7 January 2021), a microfiber material which has similar properties to Alcantara and comprises recycled fibers, is also incorporated in elements such as the center console, the upper sections of the door inserts and the upper part of the instrument cluster. The floor carpet and floor mats are made from Econyl, introduced by Aquafil, a material consisting of 100% recycled nylon fibers from production waste, fabric and carpet remnants, and old fishing nets (see JLR in DVN Interior 20 October 2020).

In the layout of its controls and displays, the e-tron GT quattro and RS e-tron GT follow the current Audi concept of all information appearing mainly on two large displays. The driver operates the Audi virtual cockpit plus (12.3") via the multifunction steering wheel and controls the central MMI touch display (10.1") via touch. Powering the control and display functions in all models is Audi's third-generation modular infotainment platform (MIB 3). The conventional side mirrors have been replaced by cameras for virtual mirrors in small (7") OLED screens mounted on the top-right corner of the door panel. The driver will be able to zoom in and out, and to select from one of three pre-programmed settings for adjusting the virtual mirrors for parking, turning, for highway driving including a blind spot functionality.

(IMAGE: AUDI)

The optional contour/ambient lighting package softly illuminates the surfaces and precisely traces the elementary lines of the interior.
The body is specially insulated and sealed in all areas where it could transmit disturbing sound. Passengers can relax and talk to each other even at high speeds.

The Design Lounge

2021 Shanghai Design Insights Part 1

Although the new vehicles virtual reveals of 2020 were quite successful, it is refreshing to have a "real" live, in-person 2021 Shanghai auto show to report on. Although localized, this gave everyone the change to touch, feel and compare multiple automakers' new releases and concepts under one roof. So let us look at some of the Shanghai 2021's key design insights starting with indigenous Chinese automakers.

Historically, we have seen that to establish design maturity and presence for a new automaker, it takes two to three generations establishing the staffing, talents and experience required.

MG CYBERSTER

Although MG is an established historic brand, they've had a turbulent ownership history that includes the former British Leyland Group, BMW, and Nanjing Automobile Group that is now part of the SAIC group.

The storied brand is most iconic vehicle is the MGB roadster form 1962, which MG, referenced with their Cyberster BEV concept roadster without the commonly used 'retro' moniker.

A modern/futuristic outlook for the Cyberster melds the interior and exterior design elements. Notice that the doors and seats are color matched while also flowing into a singular visual element that uses contrasting 'floating' seat cushions. These are separated with the 'spear like' center console creating a driver focused cockpit.

Dominating the cockpit is another steering yoke design (again referencing modern race cars, not retro) which highlights an integrated cluster/display/side mirror panel with 3D

visual effects.

Using the upper seating and headrest shapes helps meld the interior and exterior design elements for the Cyberster. The addition of modern/futuristic technical elements behind the seats on the exterior further distance the MG Cyberster from its MGB 'ragtop' heritage and focus on the modernization of the MG brand.

Geely has also introduced Zeeker brand with the 001 CUV with a strong clean form language for their exterior. Noticing the restrained use of a traditional front 'grill' reference for these BEVs.

The interior/cockpit also balances between a driver's focused and broad open environment using a tablet-type UX/HMI center display and slightly angled floor/tunnel console.

By lighting the decorative trim panel on the instrument cluster with a dot-matrix motif, a clear high-tech feeling is achieved that may come to help define the Zeeker brand for Geely.

The dot-matrix motif is also used for the speaker grills with a less linear patterning than used for the light decorative panels.

This interplay between the linear dot-matrix elements is successfully used on the center/floor console detailing along with the seat stitching design.

Like Zeeker, the Xpeng P5 exterior does not attempt incorporate traditional front 'grill' elements into its design language, unlike some European automakers are today.

Again, a very modern/clean horizontally strong interior theme that highlights the UX/HMI display while creating an open and sophisticated environment.

Xpeng highlights the technology of the P5 by having a subdued IP background. This is contrasted further by choosing a US legal sized vertical format for the UX/HMI central display.

The rear seating compartment also has a subdued but technical feeling.

The balance of the Xpeng is best visualized when the optional 'cinema-projector' feature is enabled that transforms the interior space/usage into a lounge when the vehicle is not in motion.

These examples highlight the advanced level of sophisticated design the 'new' OEM brands brought to the Shanghai 2021auto show. Next week, we'll look at how brands from outside China showcased their future vehicle line-ups.

News Mobility

_Car interiors Unplugged

360° CAR INTERIOR; (IMAGE: STORYBLOCKS)

17. The great alibi_

(this story is part of an ongoing series introducing automotive interiors as an evolution of our habitat)

A multitude of new technologies and stakeholders entering the automotive business, empowers a race to the top for the next disruption. With digital being in the front line, we are assisting a real time transformation of car interiors and their usage. More and bigger screens become the main part of the visible interior, turning it into a wallpaper theme, something like an insta-interior that affirms "mobility" as a service. How meaningful and relevant is such an interior space, and how does that identify with the people in it?

In the early 1920s, streets were described by any type of activity that could take place between buildings. The language of the street changed by the mechanical culture of the automobile and by the 1930s streets were perceived as 'freedom to move'. Later on, traffic engineering, inspired by preexisting water traffic projects, thought out streets as solidified rivers of circulation. Terms such as fluidity became tech language of the time. Three decades later, scientists took over the mission to define future through their own etymology: speed, acceleration, torque, aerodynamics and then efficiency, and more 'efficiency' again by the late 90s, but this time defined by economists.

Optimization, corporate practices and exponential growth of connectivity led to

financial models demonstrating the efficiency of shared mobility. Under this doctrine, we undertook a new concept of merging public transport features with the private space of car interiors. Selling mobility as a service, completely detached from one specific interior, proves out to be theoretically promising and effective. The 'successful deficit' of this definition though is what destroys our understanding of public and private in the name of innovation; any short-term commercial success addresses the effort to create a tech antidote to 'mobility status for everyone'. Certainly, we are trying to provide mobility but in fact, what we are really doing is tainted logistics. We cannot conjure the evils of private mobility and public transportation by blurring them together since we underachieve in both for the imaginary occupants, not there yet, because there is nothing interesting about it.

The performative aspect of our language is what shapes reality and, technology is the language of today. In order to administrate and synthetize complex reality matters, we need language skills that come from a much longer experience than the digital talent of the day, as future is already conditioned by the methods, we use to describe it. Understanding begins always with the formulation and the coding of a project.

If we have to carry on the task of progress, we have to do better with automobile and interiors, mobility and technology as a whole. The greatest misallocation of know-how and resources is the one that predefines what and how innovation should look like. A prediction game that on the long run becomes like weather report but, regrettably in this case, predictions are worst influencers of markets to a 'profit only' driven reality. Morally incompatible statistics become enablers of decision-making, unintentionally but systemically.

Our ability to create meaningful places for humans with character and quality depends entirely on our ability to define space, employ precise vocabulary, synthetize perception into forms, on principles of civic awareness. Without being in charge anymore of anything that connects us with our physical proximity, there is a thin line between 'efficiency' and losing interest for mobility as an original act. Car Interiors demonstrate the talent of collaborative effort to connect the pieces into a whole that is bigger than the sum of its parts, defining space and our future living in order to inform us of who we are; Citizens, consumers or termites.

_to be continued…

_____INDUSTRIOUS__

Toyota's Woven Planet Buys Lyft Self-Drive Unit

TOYOTA WOVEN PLANET HQ (SOURCE: TOYOTA)

Toyota will acquire Lyft's self-driving technology unit for USD $550 million, the companies said, as the Japanese automaker steps up its automation ambitions with its newly created Woven Planet division.

Woven Planet will take over the 300-plus employees of Lyft's so-called Level 5 division. The acquisition will provide Toyota access to the U.S. ride-hailing company's advanced autonomous driving technology.

Toyota set up Woven Planet in January to develop connected vehicle, autonomous and semi-autonomous driving technology. Woven Planet Group is an expansion of the operations of Toyota Research Institute - Advanced Development, Inc. dedicated to bringing its vision, "Mobility to Love, Safety to Live" to life. After the addition of the Lyft staffers, Woven Planet will consist of about 1,200 employees.

This acquisition will give Toyota a direct presence in Silicon Valley and London and expand the Woven City smart-city project at the base of Japan's Mount Fuji, effectively helping it ride through dramatic changes expected in the mobility industry and major centers bolsters its automation ambitions

This strategic move confirms Toyota commitment to new mobility, and this acquisition, under the umbrella of Woven Planet, could indicate that automated mobility belongs more to a Smart City than to an automaker.

At the same time, it shows that Lyft's business, as with most of their peers, is focusing on being a MaaS (Mobility as a Service) provider, and not a mobility technology provider.

General News

Eissmann Took Over Minda KTSN Plastic Solutions
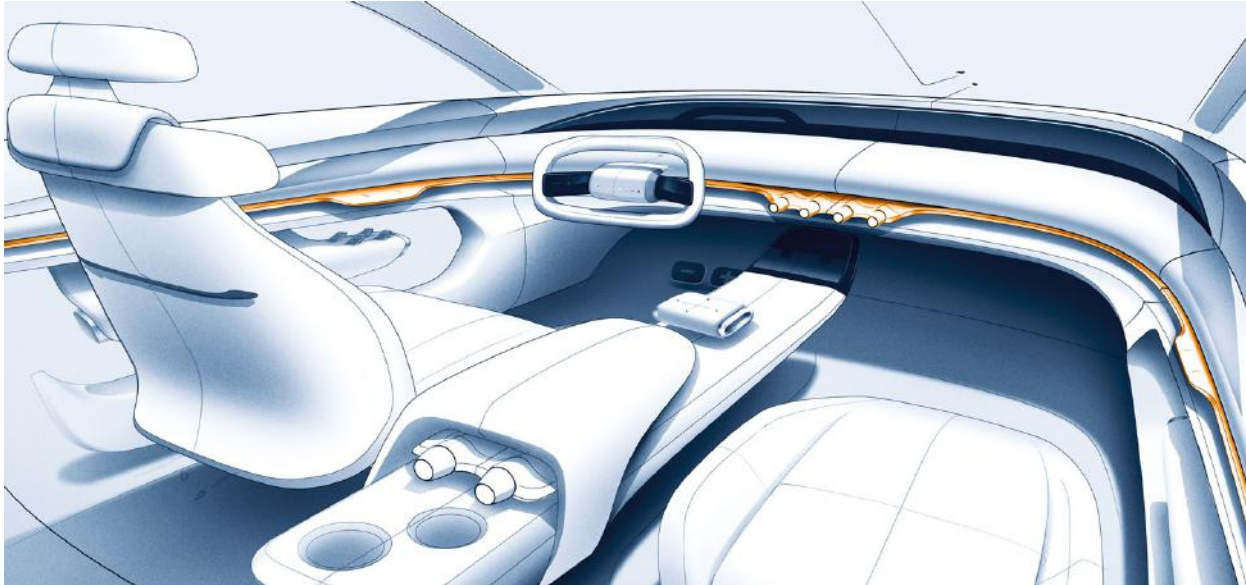
(IMAGE: EISSMANN AUTOMOTIVE)

Eissmann Group Automotive, based in Baden-Wurttemberg, Germany, manufactures quality shifter modules, trim components, interior modules, seat trim, airbag covers, and kinematics such as air outlets. They started 55 years ago, as a local lamination company, becoming a supplier of high-end leather interiors, to stand now as a global automotive supplier, employing 5000 people, within 12 locations in Europe, North America and China.

Eissmann´s core competence has always been about high-class interior surfaces with focus on affordable luxury and individualization.

KTSN is a well-known automotive supplier in the fields of injection molding and kinematics technologies. Its products include gloveboxes, seat back panels, cup holders and other plastic components. The Pirna, Gemany company, which filed for insolvency in June 2020, also has sites in Mexico and Poland.

(IMAGE: EISSMANN AUTOMOTIVE)

The integration of KTSN into the Eissmann Group extends product and competence range. Kinematic modules like storage systems or air vents are now designed and produced in-house. These high-precision modules are supplied as single component or part of a full interior module.

The former Minda KTSN Plastic Solutions is now called Eissmann Automotive KTSN.

Williams Partners with Italdesign For High-Performance EV

Williams Advanced Engineering (WAE), based in Oxfordshire, UK, have entered partnership with Italdesign Giugiaro, a design and engineering company and brand based in Moncalieri, Italy, to create a complete high-performance EV.

WAE will combine their new EVX modular electric vehicle platform with Italdesign's renowned vehicle design and turn-key development expertise to develop complete upper premium EV production solution which can support the rapid industrialization of tomorrow's premium electric Sports GTs, Crossovers and sedans.

EVX integrates the battery casing with elements more commonly perceived as part of the body structure. Front and rear chassis structures mount to the carbon composite case and crash loads can be transferred via internal reinforcements to the integral side sills. The resulting higher profiled cross section achieves much of the torsional stiffness needed to deliver the full potential of the platform. These two design philosophies reduce reliance on the upper structure, which then gives greater design freedom for a variety of "top hats". State of the art WAE designed modular battery system, enabling up to 1000kW power output or the ability for EVs to travel 1000 km between charges. WAE has strong battery experience, being the FIA Formula E World Championship original supplier of batteries

Starting from WAE rolling chassis, Italdesign's Engineering Team then complete the vehicle architecture adding safety systems, structures, seats, UX devices to constitute the modular platform that will be the base to build-up several different high performances vehicles.

This team effort—see **video**—reduced time to market, flexibility and cost for low-to-medium volume production business cases (up to 10,000) always difficult to achieve profitably. profit level.