DVN-I
Automotive Interior

Fri, 9 April 2021 Weekly Newsletter **NEWSLETTER #55**

Editorial

Digital Reins To Drive Your Horse(power)!

LEXUS LF-Z CONCEPT (IMAGE : CARBODYDESIGN)

For their Lexus LF-Z concept, Toyota's designers held in mind the rubric of *tazuna*, which is a Japanese-style set of reins tied to a horse's bit to provide for rider control. A sort of "HHI" (human-horse interface), if you will. The concept car's interior design is thusly inspired. Rein-like concepts are perhaps hard to render in an automobile—we traffic in HMI now—but these reins are digital, safe, and driver-friendly. You'll find details in today's Newsletter. And this week's Unplugged Mobility chapter starts from the same horse analogy, with the firewall protecting the passenger cabin and making way for a harness to control the vehicle.

We continue profiling companies to give the community an opportunity to get to know them and their technologies, techniques, and expertise. This week we turn the

DVN-I spotlight on Inova, specialists in semiconductors for serial data communication and smart LEDs; the basis of the ISELED Alliance.

Enjoy your reading. By all means please **share your thoughts with us** on how we're doing and what you'd like to see us do differently. Remember, the Shanghai DVN Workshop takes place on 19-20 April, with full online access and specific sessions on cockpit and interior lighting. To register, either for the whole event or if you have interest only in the interior-light sessions, please **contact me** or **Salomon Berner.**

We're glad you're here and proud to present this latest edition of DVN-I. If you're not a member yet, **come and join us**!

Sincerely yours,

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

Inova Semiconductors GmbH

Inova is a private fabless semiconductor company, founded 1999 and headquartered in Munich Germany. Its mission is the development, manufacturing and worldwide sales of innovative Gigabit link solutions for serial data communication and smart LED solutions for the automotive market.

Inova has received several awards, e.g. between 2017 and 2021:

- **Frost & Sullivan**: Customer Value Leadership Award 2017
- **Brand eins**: Innovator 2018 and 2019 in the sector „automotive supplier“
- **Focus**: Growths Champion 2018, 2019 and 2021
- **ElectroniqueS**: Electrons d‘Or 2019
- **Stifterverband**: Innovative Through Research – Seal of Approval 2020/2021
- **F.A.Z. - Institut:** Deutschlands digitale Innovationsführer 2020
- **Chip**: Digital Innovator 2021

The main brands of Inova are the **APIX** (= Automotive Pixel Links) SerDes Semiconductor products and the **ISELEDs**, smart digital RGB-LEDs. Meanwhile there are more than 150 Mio APIX devices on the road.

The third generation of APIX (**APIX3**) is targeted to address the enhanced requirements for infotainment and cockpit architectures in vehicles. Those architectures support multiple automotive UHD resolutions in car displays based on the most recent and future generations of high performance SoC.

IMAGE: INOVA SEMICONDUCTORS GMBH

The new APIX3 technology supports transmissions of up to 6 Gbps over one shielded twisted pair (STP) cable and up to 12 Gbps over a quad twisted pair (QTP) connection. This is four times the speed of the previous APIX2 generation. APIX3 supports video with HD and Ultra HD displays and offers a number of unique features for in-car video, such as:

- Transmission of multiple video channels on one connection for advanced cockpit architectures
- Support of 100 Mbps Ethernet and other serial interface protocols
- Advanced diagnostic capabilities, including cable monitoring, for preventative detection of cable degradation.

By supporting different cable media (such as STP, QTP and Coax), APIX3 reduces the cost of cables to car manufacturers, OEMs and Tier 1 suppliers. It provides scalable bandwidth, which means it can be used from entry-level to high-end systems.

Inova is also working with its partners to establish a full supporting ecosystem, including cables and connectors. The new APIX3 technology is backward compatible with APIX2. It provides full duplex communication channels, and an active equalizer to automatically adjust to transmission lines individually, thus allowing plug and play connectivity. It also provides compensation for cable aging and temperature. APIX3 supports safety-relevant applications, and meets automotive EMI and robustness requirements. The APIX3 IP is also available for licensing.

IMAGE: INOVA

The next generation of in-car **ambient lighting** will typically comprise of 10 to 30 LEDs mounted on a flexible light strip. 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, effectively replacing the present cumbersome and costly work-around utilizing multiple microcontrollers and a slow LIN bus.

ISELED is a smart LED concept, to overcome the limitations in existing in-vehicle LED lighting architectures and specific issues with calibration and communication.

Inova Semiconductors joined forces with BMW to develop alternative solutions. The result of the collaboration was a new concept called ISELED. The basic idea behind ISELED is to shift the costly external processes for ensuring stable light parameters – brightness and color stability to embedded processing in the RGB LED itself. This means that the LED is “digitized” so that it can be addressed via a “lean” protocol – just like any other digital component – using only the target parameters for color and brightness.

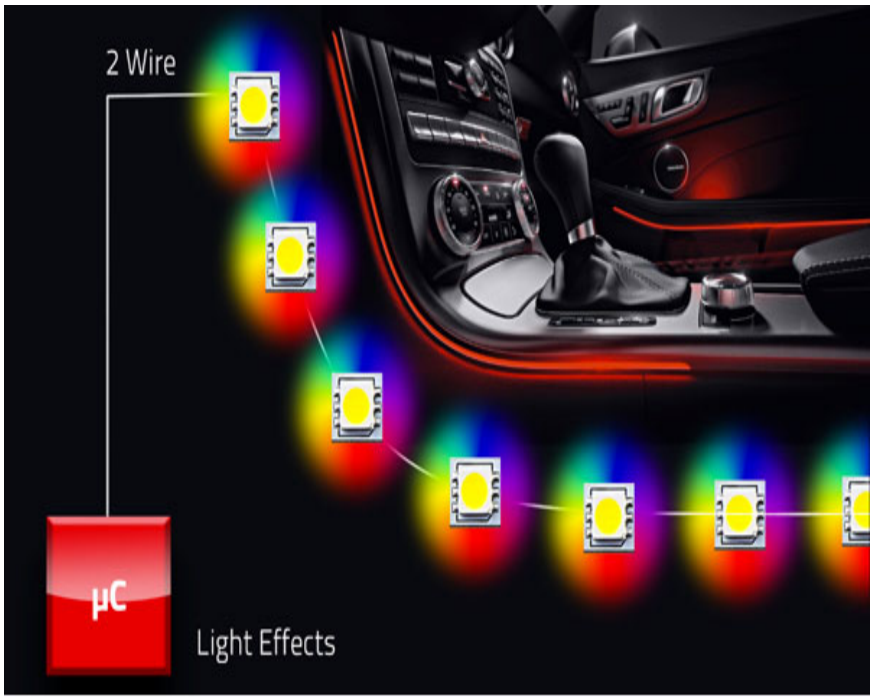
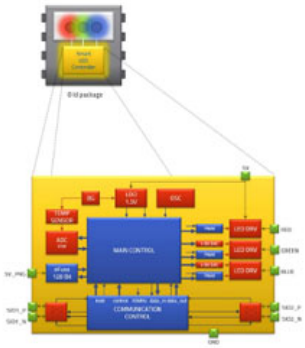


IMAGE: INOVA

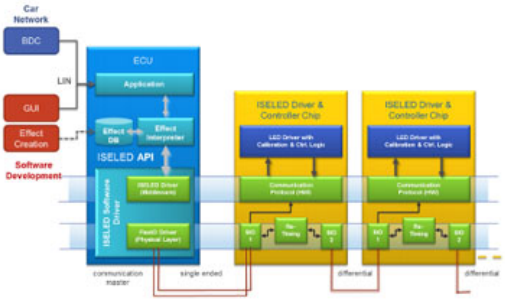
LED Chains

The centerpiece of the new digital LED is a tiny controller chip of just 1 mm² area designed by Inova. The three color RGB-LEDs – red, green and blue – are embedded by the LED manufacturers (e.g. Dominant Opto Technologies) in a compact housing measuring about 3x4x0.6 mm. It provides the required current sources and communication logic for driving and addressing the LEDs, and also includes all circuits and control functions required for calibrating the three individual LEDs precisely to the color and brightness reference values during final test at the LED manufacturer. This can all be done without the need for the usual binning and barcoding of the LEDs. The characteristics are then stored in a small memory directly in the LED controller so that they can be used as corrective values when addressing the LEDs. In addition, a temperature sensor is integrated and calibrated during the chip test, which determines the current temperature of the LEDs and can be used to adjust the brightness based on it.

Since the entire “data overhead” of all LED characteristics during the data transfer between the system controller and the LED strips is not required anymore, the only remaining task of the communications protocol is to transmit the actual light control commands, which is not too different from addressing pixels on a display. Data is transmitted in a differential and highly EMC-friendly manner at 2 Mbit/s. Despite the relatively low data rate, it is theoretically possible to accommodate up to 4,079 LEDs. The control commands are virtually present quasi-simultaneously at each RGB module, which forwards the data stream to the next module in the chain, delayed by only 4 clock cycles or approximately 2 µs. It is possible to address about 300 RGB LEDs at video speed and to use these as individual pixels of large LED screens or displays with 24 (3 times 8) bit resolution.



(images: Inova) Smart LED concept



ISELED software architecture

Key features and benefits:

- The serial protocol with embedded clock reduces the wiring effort. Only one differential line is required (SPI requires five)
- Differential communication in the chain (in contrast to single-ended SPI) maximizes robustness against EMC disturbances.
- Single-ended communication with the microcontroller is automatically recognized, which simplifies the interfacing via standard GPIOs and supports the usage of every microcontroller.
- No power consumption when there is no data communication. The LEDs maintain their brightness and color without the need of a refresh. So, if the color does not change, then no power for communication is required.
- Only changes in color are transmitted, without any refresh required. This minimizes the communication bandwidth.
- Optional CRC protection detects communication errors.
  The half-duplex, bidirectional communication enables diagnostic data reads.

Until now, ISELED smart LED drivers have only been available for purchase integrated in an LED module. The INLC10AQ is the first standalone driver available that enables manufacturers to custom design their own choice of external LED strips.

The ISELED Alliance

Several LED-related solutions for the automotive market are continuously being developed under the umbrella of the open ISELED Alliance.

IMAGE INOVA

The ISELED Alliance was started in autumn 2016 with the founder members Dominant Opto Technologies (LED manufacturer), NXP (system controller), TE Connectivity (connectivity) and Pforzheim University of Applied Sciences (optical measuring systems). Inova's goal for ISELED was not just to create an innovative LED concept. Its objective was to offer customers an all-inclusive system solution with compatible hardware components and the corresponding software. Microcontrollers from NXP and Microchip are available supporting the ISELED protocol. First user software is designed by LucieLabs, a French IoT start-up and a member of the alliance. It allows for the design of individual light scenarios and the convenient control of these via smartphone. Several tier1 suppliers are part of the alliance With their strong focus on LED lighting in the car interior, they contributes important

aspects from a user's perspective to the alliance, and participating to to develop smart LEDs systems for smarter cars.

There are currently 38 partners in the ISELED Alliance:
Allegro Microsystems, AlpsAlpine, Brightek, Cemm Thome, CoAsia / Itswell, DesignLED, Display Lab Pforzheim Uni, Dominant Opto, Dräxlmaier, Dr. Schneider, Elmos, Everlight, Feno, Grammer, Grupo Antolin, Harvatek, Hella, Inova Semiconductors, iSYS RTS, Lightworks, Lucie Labs, Marquardt, Magna, Melexis, Microchip, Novem, NXP, Osram Continental, Osram, Preh, Prettl Group, Tactotek, TE Connectivity, Techniplas, UG Systems, Valeo, Xingyu Automotive and Yanfeng.

The alliance was created to bring multiple competencies together to enable new features that are not possible with current state-of-the art solutions. Its node and bandwidth scalability creates a lot of room for new functionality and use-cases yet to be discovered and invented.

Interior News

LF-Z Concept Previews Lexus Brand Transformation

INTERIOR NEWS

Lexus announced on March 30 initiatives for the transformation of the Lexus brand by dint of the world premiere of the "LF-Z Electrified", a BEV concept car to meet diversifying needs and lifestyles of customers around the world. Z stands for Zero Emission Future.

By 2025, plans are for 20 new Lexus-branded BEV, PHEV, and HEV models developed in their new business and technical center in Shimoyama—20 km from Toyota City—that integrates development, design, production technology, and planning departments, to encourage innovative vehicle development in a "technical center in harmony with nature and local communities"

The interior is equipped with cockpit designed around a *tazuna* rubric (the word is Japanese for "reins"), with an open and minimalist design. Inspired by the relationship between horse and rider, who communicate through a single set of reins, steering wheel-mounted switches and the vehicle's HUD integrated to create a space in which various functions, such as the navigation system, audio system, and driving mode selection can be performed while concentrating on driving and without movement of the driver's line of sight or need to operate complicated switches. AI, by learning the driver's preferences and behavioral traits, enhances safety and security along the way. It also serves as a lifestyle concierge, proposing routes and restaurant reservations, among other services.

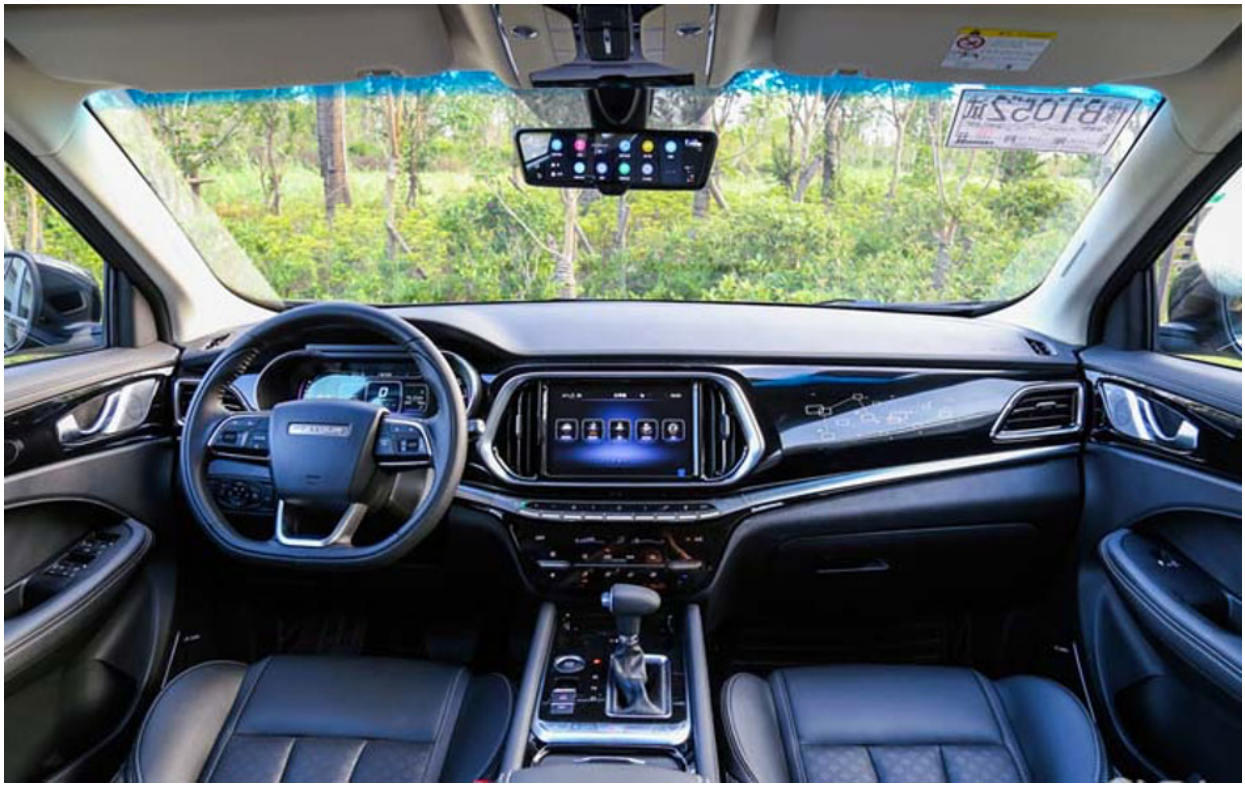
Low positioning of the instrument panel relative to the vehicle occupants is used to express a refreshing minimalism and a space that offers *omotenashi* (hospitality).

The car has a new all-wheel-drive architecture called Direct4: a motor on each wheel, and batteries installed longitudinally under the floor to increase rigidity and to help mitigate vibrations and attenuate external noise before it reaches the cabin.

An **online video** hosted by Lexus International President and Chief Branding Officer Koji Sato presents the LF-z (the link is cued up to the interior-design portion of the video, but the whole thing is well worth watching).

Chery: Dual Screens With BlackBerry, Desay

INTERIOR NEWS



CHERY JETOUR X90 (IMAGE: CHINAPEV.COM)

Canada's BlackBerry has progressively transformed themselves into an IoT company. They and Desay SV, based in Huizhou, Guangdong, China (SV comes originally from **S**iemens **V**DO) are in partnership to introduce a dual-screen virtual smart cabin controller.

It's a new-gen technology available today, leveraging QNX Hypervisor and the QNX Real-time Operating System (RTOS), to enable safer driving in two Chery models: the Tiggo 8 Plus and the Jetour X90. Both are L^2 AD-capable, and both are based on Chery's T1X platform. The intent of the cooperation is to give drivers and passengers "a multi-sensory immersive cinematic experience while on the road", according to the makers.

The QNX Hypervisor offers the same functionality and performance as the QNX Neutrino RTOS, but with an added safety-certification and virtualization support. It can partition and isolate safety-critical and infotainment systems, ensuring the continued function of critical systems even if other components fail. It allows for the consolidation of multiple systems with diverse OSs and different reliability and security requirements onto a single SoC (system on chip).

Automakers and tier-1s use BlackBerry QNX software in their advanced driver assistance, handsfree and infotainment systems, along with digital instrument clusters and connectivity modules. This technology is embedded in more than 175 million vehicles on the road today.

Garmin First With Integrated Alexa Custom Assistant

INTERIOR NEWS

Garmin, headquartered in Olathe, Kentucky, USA, provide navigation and infotainment to automakers worldwide as a tier-1 supplier of GPS navigation and wearables, including voice recognition and dash cam incident detection. And now they've announced the integration of Alexa Custom Assistant into Garmin's in-vehicle infotainment systems. Alexa Custom Assistant lets automakers access Alexa's advanced AI to create their own intelligent assistants tailored to their brand personality and customer needs. Named "Brandon" for **demonstration** purposes, it uses Amazon's AI technology to ensure each request is handled by the correct assistant. If a customer asks Alexa when their car needs an oil change, or to roll the window down, the request will be routed to the branded assistant. If the request is to play an audio book, then, it will be routed to Alexa.

The Alexa Custom Assistant technology will be available on Garmin's latest infotainment solutions, which are built on Qualcomm's latest chipsets. Automakers will still work with Amazon directly to define the experience and access custom wake word and voices for their assistant implementations.

TomTom's Cloud-Native Dynamic Navigation

INTERIOR NEWS

TomTom, founded in 1991, is a world-leading company of independent location technology specialist expertise. They've announced the arrival of TomTom Navigation for Automotive, a cloud-native hybrid navigation solution developed for the automotive industry.

TomTom's navigation is used by more automakers than any other. The latest iteration is cloud-native and able to take advantage of super-fast and up-to-date routing, search and fresh maps, while still offering a fully functional offline mode. When no data connection is available, the solution switches to its onboard software and maps, making it available anytime.

This new user interface is designed around safety and ease of use. An intuitive interface can be displayed on the center stack, cluster screen, HUD, and passenger screens in different sizes and aspect ratios. This integrated approach means important information such as turn-by-turn and lane-level navigation instructions, as well as traffic and hazard warnings can be projected on the vehicle's HUD or cluster screen, increasing driver safety and comfort. The driver can also interact directly with TomTom's navigation via easy-to-use voice assistance from Amazon Alexa, or whatever.

It can be integrated with vehicle sensors, enabling it to display vital information linked to advanced driver assistance systems and/or refueling or recharging needs. Dynamic range mapping helps drivers to visualize the vehicle's range—especially important for EVs. If the predicted range is insufficient to reach the selected destination, the driver is alerted to find a charging location and provided with a cost comparison of the available convenient charging points within range. The chosen

charging point is then added to the driver's destination. TomTom's new navigation offers automakers and tier-1s a fast and cost-effective route to a new navigation experience level. The technology is easily integrated in any in-vehicle infotainment system, as has been demonstrated by multiple leading suppliers. The solution is offered as one pre-integrated stack and delivered through easy-to-use SDKs and APIs to be deployed across multiple brands and car lines.

Realistic Augmented Sound by Ricardo

INTERIOR NEWS

For over 100 years, Ricardo has been using engineering and research and development expertise to help global vehicle manufacturers innovate and improve the efficiency and performance of their products to bring them to market quicker and cheaper without compromising safety or quality.

VW GOLF 7 GTI REVO STAGE 3 TEST (IMAGE: RICARDO)

Automakers rank powertrain sound high among important vehicle attributes—it enhances the dynamic driving experience and conveys excitement and emotion as part of their brand image. Realistic Augmented Sound by Ricardo (RAS-R) provides high quality sounds of power to enhance the driving experience, strengthen brand image, and protect pedestrians.

For internal combustion engines, turbocharging and tightening pass-by noise emission regulations limit the extent to which natural sound can be used. For electric vehicles, strong responsive performance is not naturally matched by sound, leading to an unnerving (i.e., poor) driving experience, danger for pedestrians, and inconsistent brand image.

RAS-R uses a sensor on the power unit to provide a live stream of authentic sound, rich in genuine information. Other augmented sound systems only use sound synthesis, readily perceived as fake or artificial, and so inadequate for premium cars. But the Porsche Taycan, Tesla, and even Nissan Leaf get an embedded sound system for sound quality

Of course, some amount of 'fake' sound is crucial for safety, mostly at low speed, for pedestrians—as addressed by the AVAS regulations. But the quality is utterly crucial. The RAS-R system provides a tunable sound that enhances the dynamic driving experience, in a system easily re-calibrated for vehicle variants. Check video use cases: **EV with system on**, **EV without system on**, **ICE with system on**, **ICE without system on**.

Marquardt Ambient Lights in New MB S-Class

INTERIOR NEWS

Marquardt wants to make life easier: cars should sense and respond to how the driver is feeling, moment by moment. Warning systems should perceive how dangerous a situation really is and make autonomous driving safe. Whether it's in the field of vehicle mobility or the smart home, Marquardt tries to connect man and machine with intelligent, electronic and electromechanical systems and components.

Now, Marquardt's active ambient lighting creates the right mood in the cockpit of the new Mercedes (and ultraluxurious Mercedes-Maybach) S-Class cars. Up to 320 LEDs stage the interior according to individual preferences. But the system offers much more than beautiful colors. When entering the vehicle, the driver is greeted with a running light animation. During the car ride, the active ambient lighting warns with a red-light animation by integrating the driving assistance systems, e.g., in case of danger of collision or any other dangerous situations.

IMAGE: MERCEDES-BENZ

Marquardt works on individually controllable RGB-LEDs for light as an intelligent comfort and safety function. The ambient lighting is static or dynamic as running lights with dynamic adaption in several areas of the car interior. Further developments are lighting elements for integration into a control panel and the combination of ambient and functional lighting and HMI operation in one module. Touch sensor technology with direct illumination provides new operating and functional concepts, intuitive and flexible in different colors for an easy operation. Light becomes a control element, as shown in a **demo video**.

IMAGE: MARQUARDT

Infotainement Future through Media Content with XPeri?

INTERIOR NEWS

XPERI AND PANASONIC AUTOMOTIVE WIN BEST-OF-SHOW AT NAB 2019

Xperi is a San Jose, California holding company that licenses technology and intellectual property in areas such as mobile computing, communications, memory and data storage, and 3D integrated circuit. Markets include semiconductor packaging and interconnect solutions, mobile, computational imaging, audio and automotive. In their recent webinar, the nascent hybrid radio market was analyzed from an automotive industry perspective. It identifies the current state of play in terms of commercial offerings, operational requirements, component services and standards as well as development options.

Advanced in-vehicle infotainment can deliver rich digital radio, immersive audio, audio post-processing, and more. Xperi's broadcaster-focused solutions—HD Radio, TiVo®, AIM® (all in media), and Arctic Palm®, provide radio companies with the tools necessary to deliver the best experiences to listeners. Their safety solutions for in-cabin monitoring systems DTS® AutoSense™ was presented in DVN Interior last week.

DTS AutoStage™ is a global hybrid solution that combines linear broadcast with IP-delivered content for a richer, more personalized in-cabin infotainment experience. DTS AutoStage enhances the radio experience by adding internet connectivity to deliver additional benefits and features such as on-air radio program information, talent, artist, and song station contact, as well as lyrics, related events in nearby venues, internet-only content, podcasts and more. DTS AutoStage is compatible with the following Global Radio formats: analog FM, DAB+, and HD Radio. Its global platform has content sourced from 78,000+ radio stations, 100,000+ broadcasts, 40+ million tracks, 4+ million albums, 1+ million artist bios, all aggregated, curated and personalized to create superior in-vehicle radio listening for its users and featuring easy content discovery. It confirms that the future of infotainement, beyond its hardware, will be around media content.

Tesla Tops China NEV Registration

INTERIOR NEWS

LI ONE SUV 6-SEATER INTERIOR

China's market registrations are assessed by enumerating MLI volume—every buyer must have an MLI contract to be allowed to drive (MLI is Mandatory Liability Insurance for Traffic Accidents of Motor Vehicles)

Gasgoo just reported that, according to the China Insurance Regulatory Commission (CIRC), that for the first two months of the year, the NEV (New Energy Vehicles) insurance volume totaled 239,136 units (+346.6% YoY), 16% of which came from Chinese startups.

It is noteworthy that Tesla is well ahead of Chinese startups in terms of monthly insurance registrations. Last month, consumers in China bought the MLI for 34,560 China-made Tesla vehicles with more than 70% as Model Y. In February Tesla sold more than all the Chinese startups combined.

Nio, XPeng, Li Auto, WM Motor, Hozon Auto and Leapmotor, contributed to around 95% of the Chinese startups' totals. Within the Top 6, Nio, XPeng and Li Auto.

Lixiang Automotive Inc. (Li Auto) is one of the latest NEV producers, not yet presented in DVN. They reported sales success for their first vehicle, the Li One SUV. It's a big car (5.0 × 1.96 × 1.76 m), a 6-seater with 2 large 2nd-row seats. It has four screens; two for infotainement, a digital gauge cluster and a console convenience display, and 800 km range per NEDC.

The Design Lounge

BEV vs ICE 5 Doors • Part II

THE DESIGN LOUNGE

Last week we overviewed the Kia EV6 and Citroën DS 4 models. Now let's take a closer look at the cockpit area of these vehicles focusing on the floor/tunnel console and doors.

Typically, the instrument panel defines the vehicle interior theme, but in some cases other areas, such as the floor console can be the defining interior element. Both Kia and DS (Citroën) have used this area.

The DS 4 has emphasized the tunnel console by covering hidden panels with soft-touch materials instead of the previous piano-black trend, and switches and storage places are relatively more exposed rather than hidden.

The EV6 has also emphasized the tunnel console to create a more sporting atmosphere for the cockpit with a rotary prindle and charging/storage elements placed a bit asymmetrically.

Regular press-type switches for the HVAC are incorporated into a jewel like horizontal bar element in the DS 4.

Kia uses a mix of capacitive and rotary switches with integrated displays for the HVAC interface. This is integrated into the instrument panel and duct decorations.

The DS 4's switch bar floats on a curvaceous instrument panel without the typical horizontal split that delineates the upper and lower portions of its construction. The use of suedelike covering material indicates a more sport-oriented option package.

With the EV6, Kia has executed its design theme in a more traditional manner with the long horizontal ducts that incorporate lighting elements, splitting the upper and lower instrument panel sections. Kia, like Citroën, uses a suedelike material in the door panels.

Uniquely, especially for an ICE variant, the prindle on the DS 4 is a secondary design element. The touch interface for the UX/HMI has the priority, along with the trimmed

hand rest.

The soft trim materials to cover the tunnel console, a mix of suede and leather, give the DS 4 interior an upscale feel and finish.

The EV6 highlights the driver and passenger areas with contrasting material coverings and a light guide separating the two zones.

Vinyl patterned and textured materials are used on the armrest and instrument panel soft-touch areas.

Citroën, with the detailing in the DS 4, has chosen to emphasize contrasting material haptics and finishes. This is best showcased by the power window switchgear, integrated within the door panel decorative trim that is split in half with the upper portion using a wood finish and the lower in plastic. Note also the single pushbutton for the door locks: push to lock, push again to unlock. Never again hit the wrong end of the switch!

Metal switches are also available…

…along with the trim strip integration into the HVAC ducts integrated into the door panels.

This attention to detail enhances the DS 4's luxury market positioning and further differentiates the DS line from lesser Citroëns.

Next week we will look closely at the door panels and trim level options on both of these vehicles.

News Mobility

_Car interiors Unplugged

NEWS MOBILITY

THIS FIREWALL, ON A CHILD'S "SHOW CAR", HAS BEEN SHAVED OF ALL ATTACHMENTS AND THE HOLES FILLED IN.

13 Driving Force_

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

In 1837, Thierry Hermes founded his harness workshop in Paris (the nowadays iconic luxury brand) with the original intent to serve the needs of European noblemen providing leather riding gear. Harnesses back in the day were the steering, braking and accelerating all in one, defining the quality of the ride. Based on this perception of quality as a sensation, the company's iconic duc-carriage-with-horse logo and signature orange boxes stand to this day as a reminder of the specific approach of the 180-year luxury brand, based on the idea of senses through the controls of motion.

In modern day automotive engineering, 'firewall' is the part of the automobile body that separates engine and passenger compartments. It defines the interior habitable space, the name originates back in the day of steam-powered vehicles, protecting from unpleasant sensations of noise and heat, aiming to upgrade the quality of the journey. The only exception to this strict engineering protocol is the commands.

Firewall is only accessible via the steering column and anything that became to be 'the harness', meaning the controls of today's vehicles and all that connects travelers with the road. U-joints, bearings, swivel connections, ball sockets along with power hoses and pumps, dumpers, pistons, springs, cylinders, reservoirs and hydraulic fluids transferring motion, are all some invisible and mostly unknown to general public parts that evolved over the years from leather harness to a multi component engineered "ecosystem", securing the most linear, analog and accurate transmission of motion. The final assembly optimizes connections between habitat and motion, defining the feel and the character of any car interior. Amongst others is the case of Bentley, the Hermes of the automobiles, where car interior branding is given through a well-defined and exact type of connection-sensation between 'its inhabitants' and the road.

Due to the actual circumstances, a short-lived globalization is turning digital and transforming itself through all sorts of borders creating, by repetition and practice, an upcoming phenomenon: remoteness and regulating anything from distance, like a vehicle away from its cockpit. In other words, controlling the sensation of travel, away from the location. This is equivalent to a global firewall between motion and the experience of it while the only access, 'the harness' of the digital era is data. Remoteness implicates detachment from anything like controls, steering, braking etc. However, digital globalization has to rely on local resources and constraints. Operated remotely, the physical sample of gear becomes a territorial status that is locally serviced and globally updated. Augmenting anything means global-and-local, big-and-small at the same time.

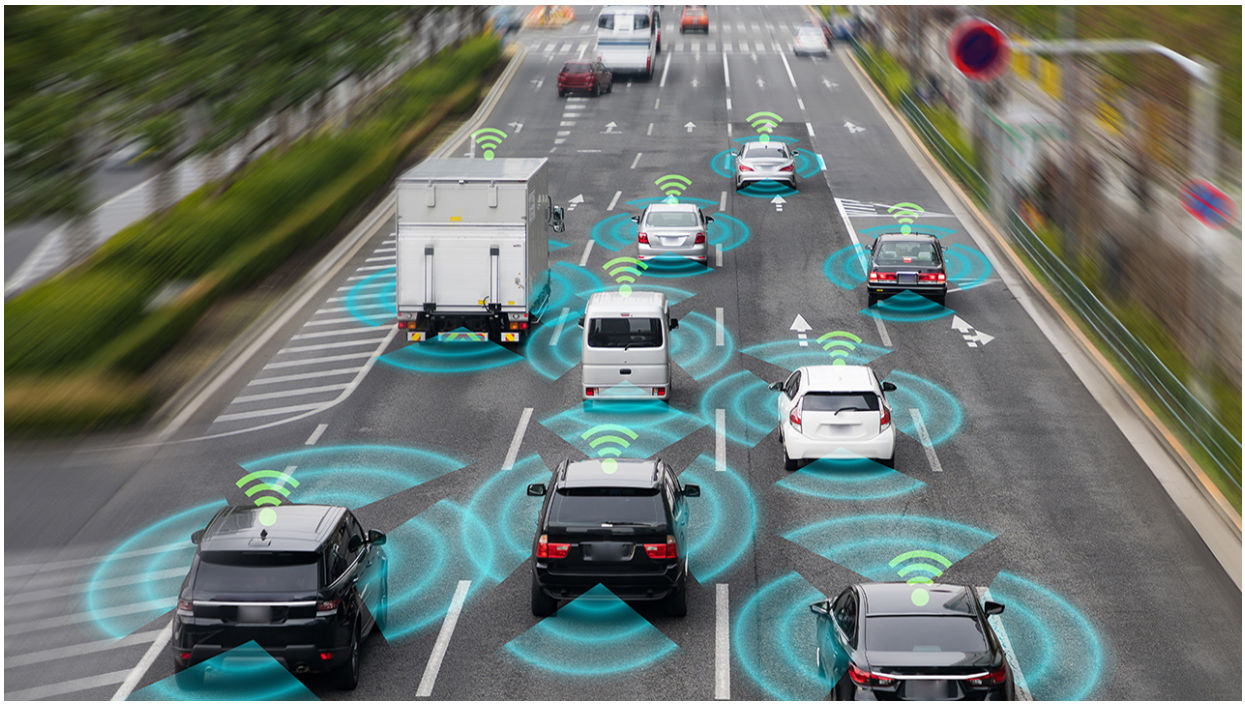
Regarding autonomous vehicles, and with respect to automotive ergonomics and human factors, the greatest sense of all is the sense of motion (acceleration, turning, breaking, bumping, ground texture etc.), before even touching into any other comfort factor in detail. It is about the emotion of perceived responsiveness and the sense of being in charge during the ride. Here comes the point break and the distinction of anything remotely operated, opening a big debate on the comparison of one self to the systemic aspect of mobility. As car interiors have not really changed, yet it feels different. How does the "global firewall" define the future of car interiors and the experience within?

_to be continued…

_____*INDUSTRIOUS*__

Consortium for Cooperative AV Safety Standards

NEWS MOBILITY



Automated Vehicle Safety Consortium™ (AVSC) members are actively involved in testing and on-road pilots of automated vehicles. They have decades of experience introducing safe and trusted vehicles. SAE International® and the SAE Industry Technologies Consortia® (SAE ITC) are convening the charter and future members to establish safety and testing principles focused on the safe deployment of L4 and L5 automated driving systems.

Aurora, Daimler, Ford, Motional, Toyota, GM, Honda, Lyft, and VW are part of the consortium. They'll issue guidance on various safety performance metrics that should be measured when developing and operating AVs. The goal is to help the whole industry speak the same language, and to understand each other.

As testing and pilot deployments occur in greater numbers in public settings, they recognize the need to establish these safety principles for the operation of AVs. Together, their work will inform and accelerate industry-wide safety standards, so they may earn the trust of local communities as pilots and deployments become more widespread.

The consortium's safety principles fall into three themes: proper systems in place for testing, interaction with people and systems, and the collection, protection, and sharing of data. These technology-neutral principles are key considerations for deploying AVs on public roads. A best practice guide recommends AV developers to track the severity and frequency of crashes and citable traffic law violations; maintain a defined space around a vehicle (like two car lengths) as a buffer between other objects; show safe vehicle control when in motion; and share its reaction time when it detects objects and events.

General News

Brose, VW Agree Joint Venture

GENERAL NEWS

SIGNATURE CEREMONY IN WOLFSBURG (IMAGE: VOLKSWAGEN)

The Brose Group and Volkswagen have signed an agreement to establish a joint venture that will develop and manufacture complete seats, seat structures and components, and other interior parts. Brose will acquire half of Volkswagen subsidiary Sitech, specializing in the production of metal car seat frames and complete seats. Brose and Volkswagen will each hold a 50 per cent share. Brose will take over the industrial leadership and consolidate the joint venture for accounting purposes. The transaction is still pending antitrust law approvals and other standard closing conditions.

The parent company of the new joint venture will continue to operate from its headquarters in the Polish town of Polkowice. In addition to existing development and production sites in Eastern Europe, Germany and China, plans are under way to expand activities in Europe, America, and Asia. Both companies will be represented equally on the board, with Brose providing the Chief Executive Officer and the Chief Technology Officer. Volkswagen will appoint the Chief Financial Officer and will also be responsible for production.

Over the long term, the joint venture is expected to establish a solid position as one of the industry's top three makers in this space. The joint venture can offer its customers all key products across the entire value chain. Brose and Sitech's portfolios complement each other perfectly. As a leading supplier of seat structures, Brose is bringing its systems knowledge and years of expertise in manual and power adjusters as well as comfort components to the table. The automotive supplier also uses software and sensorics to connect its mechatronic components. This creates intelligent concepts for the vehicle interior. Sitech has comprehensive expertise in

development, assembly and logistics for complete seat systems and metal structures.

Sitech anticipates sales of around €1.4bn during the current fiscal year, generated by a workforce of over 5,200. Brose sales are at €5.1bn, with a 25,000-strong workforce. The joint venture is expected to double business volume to €2.8bn by 2030, with growth within the VW Group and beyond. The number of employees is expected to rise to around 7,000.

Lear Buys M&N Plastics

GENERAL NEWS

M&N PLASTICS (IMAGE: M&N PLASTICS)

Lear Corporation, based in Southfield, Michigan, has acquired M&N Plastics in nearby Sterling Heights, a privately-owned injection molding specialist and manufacturer of engineered plastic components for automotive electrical distribution applications. The buy increases Lear's capabilities to engineer and produce complex parts for electrical distribution including high-voltage wire harnesses and power electronics

According to Lear, M&N Plastics possesses industry experience and technical expertise across its management, engineering, administrative, and other functions. The company operates manufacturing facilities in Sterling Heights and El Paso, Texas, with state-of-the-art injection molding capabilities, which enables it to be a niche market leader and critical partner to its customers. Their 29 press sizes range from 85 ton to 720 ton. They mold engineered plastic components including thermal injection molding of class A parts and insert molding. M&N records $30m in sales, and has 130 employees.