DVN-I
Automotive Interior

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Editorial

Display: Centerpiece Of The Interior

IMAGE: PANASONIC

The 22nd DVN Workshop will take place on 19-20 April as a specially-organized hybrid event: those near Shanghai can attend in person; while registered attendees around the world can have access anytime via video on demand. There will be two sessions focused on auto interiors with special emphasis on the future of HMI/in-cockpit displays, and interior lighting. Eight interior-focused lectures will be presented by speakers from Antolin, Ansys, Inova, Pforzheim University, Osram-Melexis, DesignLED, Novem and PolyIC. Find more information in this week's In-Depth, including the link to register.

Really, displays and—more broadly—HMI are the centerpiece of any car interior today, and this week's news confirms it: from the Mercedes EQS Hyperscreen to the Lada multimedia sound enhanced system, for every brand in every segment there are products ripe for leverage as unique selling propositions; just look at the example of VW's Nivus in Brazil.

Display technology is increasingly augmented, too, with the HUD to summarize driving information in direct view sight, and with augmented reality display technology for both the HUD and cluster displays—take a look at this week's Design Lounge for the latest chapter of our detailed DS 4 versus EV6 comparison.

Enjoy this week's news. I'm ever so glad you're with us!

Sincerely yours,

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

Interior Sessions at DVN Shanghai & Online Workshop

The 22nd DVN Workshop is a special hybrid event: it will take place live in Shanghai on 19-20 April at the Marriott Shanghai Parkview Hotel, during the Shanghai Auto Show 2021 press days. And registered attendees who can't get to Shanghai can log in for an online simulcast of the complete event, and can access the lectures and discussions as video-on-demand whenever best suits them in their diverse time zones around the world. To register, visit **this page**; scroll down and click the blue "Register Online" button.

The Workshop will include two action-packed sessions devoted to vehicle interiors on the second day. The first session is **HMI and Display in Tomorrow's Cockpit**. Interior displays have become the centerpiece of the car cockpit, and the interaction between the driver and the car (HMI) is key to user experience and safety. Technological evolution and economy of scale is bringing greater automation onto the roads; more and more new vehicles arrive with L^2 or L^{2+} capabilities thanks to ADAS technologies inside and outside the car. These levels mean a mix of self-driving (motorway, traffic jam) and human-driving scenarios, where management of transitions will be key to traffic safety. This session will give us a better understanding of HMI and Display evolution in that context, and also the technology and software needed behind the screens to ensure efficiency, safety and comfort.

IMAGE: ANTOLIN

Through the architecture of their latest concept car, Grupo Antolin will present their Intelligent Cabin, where user features and innovations include cockpit trends and advanced ambient lighting.

Professor Dr. Blankenbach from Pforzheim University, deeply involved in electronic and display organizations and conferences, will present a lecture about new design visions and holistic HMIs by advanced display technologies. He'll explain the concept of holistic user experience, and where new display technology will support this system approach with new shapes, higher pixels, holograms, augmented reality and emotional interaction between human and automobile.

IMAGE: INOVA

A semiconductor export from Inova will talk about that company's ILaS, a new in-car lighting network developed in a context of thinking about the hardware and software structure behind the screen, the electronic network and its light and sensors to facilitate efficient development and operation with maximum reliability.

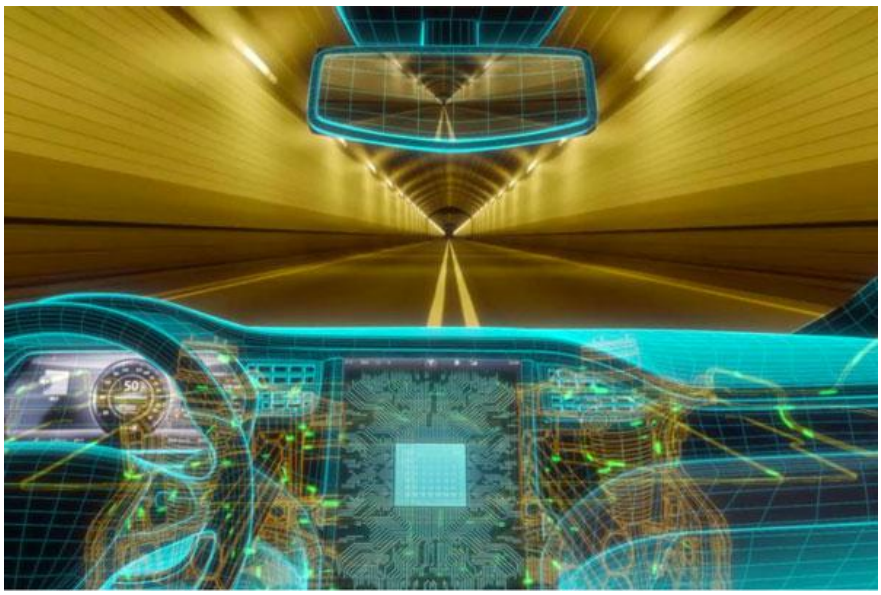


IMAGE: ANSYS

An Ansys expert will discuss interior optical design workflow, with Ansys development tools to simulate and get a true-to-life preview of the targeted user perception.

The second session is **Smart Interior Lighting**. Market analysts predict a tenfold increase in lighting elements in the near future's car interiors; lighting is becoming pivotal to the overall perception as well as safety, and this session will address how ambiance, decoration, alert, personalization, and brand signatures are changing by dint of new lighting techniques.

IMAGE: MELEXIS

Osram and Melexis will talk about next steps toward safety applications for smart ambient lighting—fusion of safety display functions with ambient lighting, for example, and what is the right technical solution with components and architecture to make it all work work in a safe, user-friendly manner.

Dr. James Gourlay, CTO of DesignLED in Scotland, will talk about backlighting technologies. Interior personalization is becoming more and more important, and integrated lighting with very thin backlight is a cost-effective solution tunable through software and controls, and with OTA update possibilities.

IMAGE: NOVEM

Novem's R&D Director will then talk about the supply landscape for light- and function-integrated interiors. He will address how we combine the physical and the digital for seamless user experience, putting together new functions in premium materials such as wood, aluminum, and carbon in the interior, and how this influences automaker/supplier relationships.

Wolfgang Clemens, Director of Product Management & Business Development at PolyIC, will describe his company's innovative HMI panels with integrated touch sensors. They enable new kinds of HMI by combining decoration and light while incorporating capacitive touch sensors with haptic feedback.

Both sessions will be followed by a live Q&A time, with ample opportunity for on-site and on-line participants to query the presenters as a panel.

Be sure and block out the time to attend and participate, no matter where you are. To register, visit **this page**; scroll down and click the blue "Register Online" button.

Interior News

Mercedes Benz EQS Interior Preview

INTERIOR NEWS

IMAGE: MERCEDES

The Mercedes EQS is set to replace the S-Class in a few years, providing the same level of luxury in an all-electric vehicle. Its official world premiere was last Thursday, so here's a first look—watch for more detail in next week's edition of The Design Lounge.

The EQS rolls almost noiselessly; engineers worked to decouple the already quiet electric motors acoustically and vibrationally. NVH (noise, vibration, and harshness) are minimised by the two permanently excited synchronous motors being embedded in special foam mats and isolated from the substructure by elastomer bearings. In addition, the motor stators use "skew windings" which reduce fine vibrations that cause characteristic electrical whining noises, and as a happy second benefit also reduces the use of rare earths in the permanent magnets of the rotors.

The car looks sleek, smart, and elegant, with a low roofline, the slope of which does constrain headroom somewhat. But the knee room is ample. Light and fluffy leather seats are similar to the S-Class.

IMAGE: MERCEDES

In the cockpit, a screen landscape spreads across the entire width of the vehicle. It looks very spacey, but the controls are familiar as a new generation of MBUX. The MBUX Hyperscreen extends across the entire width between the A-pillars to around 1.40 meters (55 inches!) and is peppered with artificial intelligence. The narrow air ducts sit above the glass panel, which seamlessly combines the instrument cluster, central and passenger touchscreens. The presentation of information virtually merges with the material thanks to the three flush-framed displays. The "zero-layer concept" is intended to simplify operation and make the most important functions directly accessible on the top display level.

From there can be chosen the multimedia program, a massage program via the leather seats, or the screen can be employed and enjoyed as a kind of decor element. The driver should be able to experience the Mercedes EQS with all their senses. A sound program can play nature and driving sounds, and a filter system is designed for clean and odorless air. Ambient lighting includes the contours of the dashboard, door panel components and the four leather lounge chairs. There is also a sustainable materials concept with wood from local forests, decorative fabrics made from marine plastic waste, artificial leather and microfibers made from recycled PET bottles.

IMAGE: MERCEDES

The driver holds a comfortably thick-rimmed steering wheel with numerous controls built in. The dashboard hood swings up high behind the wheel for a classic instrument binnacle effect, and the accelerator pedal is bottom-hinged for maximum driver comfort.

Thanks to sensors and radar, the EQS' electronics sense vehicles ahead, and when the driver takes their foot off the accelerator, the system brakes independently and electrically regenerates in the process. Shorter charging times are realized by an intelligent thermal management system that operates whenever the navigation system is active. The battery can also be preheated or cooled while driving so when the driver reaches a fast-charging station, it is in an optimal temperature window, which significantly speeds up charging.

Hyundai Mobis' New Mobility Concepts

INTERIOR NEWS

HYUNDAI MOBIS M.VISION X

During their transformation strategy conference, Hyundai Mobis disclosed two urban shared mobility concept cars, the M-Vision X and M-Vision POP, while also demonstrating new technologies reflecting the post-Covid 19 era.

The M.Vision X is a 4-seater mobility vehicle. The concept is based on reinterpretation of interior space. The "X" stands for the e**x**pansion of communication, connected e**x**perience, and e**x**pedition into a new space.

The interior architecture of the M.Vision X is structured around a vertical cockpit in the center looking like a square pillar. On each of the four sides there's a 28" display. Passengers communicate contact-free with the vehicle by means of gestures to control all driving-related functions: the autonomous driving mode, AI speakers, and infotainment. There is also a sterilization function that uses UV lighting to automatically sterilize the vehicle once the passengers get out of the car. Projection technology is also available to have all transparent windows potentially used as screen to watch movies or deploy advertisements. Seating position and arrangement is also flexible to be used in all scenarios, as shown in an **online video**.

The M-Vision POP, for its part, is a small EV concept, developed under the theme of "Tech Joy", with the idea of giving users pleasure through a convergence of the latest company technologies. In that logic, they speak of "Phobility", a combination of Phone and Mobility. It means mobility enjoyed on a smartphone. That's why there's a steering wheel dock to control the vehicle with the smartphone, which becomes integral to automobile. The smartphone navigation screen interfaces with the front display of the vehicle, and the user recognition or voice recognition function can be used as well. It is also possible to use smartphone sensors for wireless steering of the automobile. Interesting to notice the e-Corner module: each the four wheels of the vehicle can be rotated up to 180º. As a result, crab driving, or even 360º rotation, is possible. Parallel parking becomes simple!

During the same conference, Hyundai Mobis also unveiled their next-generation integrated cockpit system (M.VICS: MOBIS Vision of Integrated Cockpit System). This integrates multiple core technologies of Hyundai Mobis—ADAS, biometrics, and "Blooming Sound". In consideration of COVID-19, Hyundai Mobis produced a demonstration video of the integrated cockpit system, and a contact-free promotion targeting global automakers is underway.

Melexis' New Multichannel RGB LED Driver

INTERIOR NEWS

Melexis is a global microelectronics engineering company, its profile was presented in DVN-I Newsletter № 54. **MLX81117** is their newest lighting IC to support the MeLiBu high-speed communication interface, enabling automakers to deliver enhanced features in new models like intelligent animated automotive lighting concepts. The technology is already being incorporated by automakers to enhance the safety features of their latest models.

Car manufacturers continue to adopt animated lighting in the cabin, to provide important information such as driver-assistance prompts, vehicle status updates or advanced comfort functions like adaptive roof lighting. It is becoming increasingly mainstream to use RGB LED lightbars to communicate with the driver through color-coded, color-changing and blinking sequences. However, this presents engineering challenges, such as maintaining consistent color across all of the LEDs in the lightbar and implementing simultaneous light changes.

The MLX81117 addresses this by integrating the Melexis MeLiBu high-speed communication interface IP. MeLiBu controls individual LEDs to implement the lighting effects in the different vehicle's systems. The intelligent RGB-LED controller also provides real-time compensation of any color drift caused by environmental changes, and color-mixing accuracy with a ∂UV of <0.01 per cent to eliminate any distinguishable differences between LEDs.

The MeLiBu communication interface uses a CAN-FD physical layer to deliver robust and reliable performance at up to 2 Mbit speeds. MeLiBu also delivers intelligent and high-resolution operation to mitigate temperature-related color drift, to maintain a consistent and non-distracting user experience under all operating conditions.

The MLX81117 LED driver IC's additional features include brightness control across a wide dimming range, which allows adjustments for natural light levels. The MLX81117 complies with ISO 26262 functional safety requirements up to safety integrity level B (ASIL B) and the design also delivers low EMI and high levels of immunity, to meet the EMC regulations. Samples are available now.

KEY FEATURES:

- MCU for extended LED control algorithm, color mixing and full diagnosis
- Red/Green and Blue LED temperature compensation without additional external components

- Color mixing accuracy of < 1 per cent ∂UV and 16-bit color/intensity control
- Storage of LED calibration data directly within LED driver
- Low side programmable calibrated current sources for LED control
- Direct LED drive without additional external components
- LEDs fully diagnosable (Short circuit, broken line, threshold monitor)
- MeLiBu™ communication interface; real-time update of > 250 RGB LEDs without delay.
  - 5.5 - 18 V supply voltage (40 V proof)
- ASIL B classification
- QFN32 5x5 package, 32 pins
- 16 LED drivers

Key applications

- Adaptive roof light
- Highly animated light modules
- Smart light bar
- Advanced driver communication by light
  - Safety warning applications
  - Advanced navigation support
  - Blindspot warning

New Volkswagen Taigo coupe-SUV

INTERIOR NEWS

The new Volkswagen Taigo will be launched this summer and arrive in showrooms before the end of the year. It will use the same parts and engines as the Volkswagen T-Cross, the brand's smallest SUV. All will be assembled in Pamplona, Spain.

The car is based on a model already being sold in South America, the VW Nivus.

VW NIVUS INTERIOR, WITH BRAZILIAN LANDSCAPE! (IMAGE: VW)

Details of interior have not been released yet, but the vehicle package will allow a roomier cabin than that in the T-Cross. We can assume that most of the interior seems to be shared with other small VW models, with a glossy touchscreen in the center of the dashboard, and high-spec cars will get VW's Active Info display instead of traditional dials.

We may expect carryover from the Nivus, launched in Brazil last year. José Carlos Pavone, Volkswagen's Head of Design for Latin America, says "Since the beginning of the project, we have defined that the Nivus' design should be innovative, attractive and, at the same

time, functional". It starts with a coupe design, with C pillars going down fast with fluidity, while keeping harmonious proportions and volume—space enough to carry up to five occupants comfortably.

The multimedia center, fully developed in Brazil, provides an intuitive usability experience unprecedented in the Brazilian market. With an extremely high resolution 10" screen, touch-sensitive, anti-scratch and virtual buttons, this platform provides modern connectivity resources and a variety of services and streaming. Associated with the digital panel (Active Info Display), also 10", it creates two large digital islands in the Nivus dashboard. This digital cockpit presents an intuitive, logical, intelligent and modern interface, which can be operated through the new steering wheel, the same item used in the New Golf.

The Nivus also debuts VW Play Apps, a virtual store created exclusively for Volkswagen customers to download applications directly through the VW Play as easy as downloading a smartphone app. There's enough memory onboard to store 25 times the size of the Waze app, and custom-partnered apps include Estapar (parking), 12 min(audiobooks), Ubook (audiobooks), Porto Seguro (insurance), Deezer (music),Waze (navigation) and IFood (food delivery). The trunk lid can be opened through one of VW Play's virtual buttons.

Safety-first strategy is reflected in interior equipment, such as fatigue detector, ISOFIX latches, top-tether for child seats in the rear, rearview camera and other safety and comfort items, including ACC.

Lada's Affordable Multimedia With Arkamys Surround Sound

INTERIOR NEWS

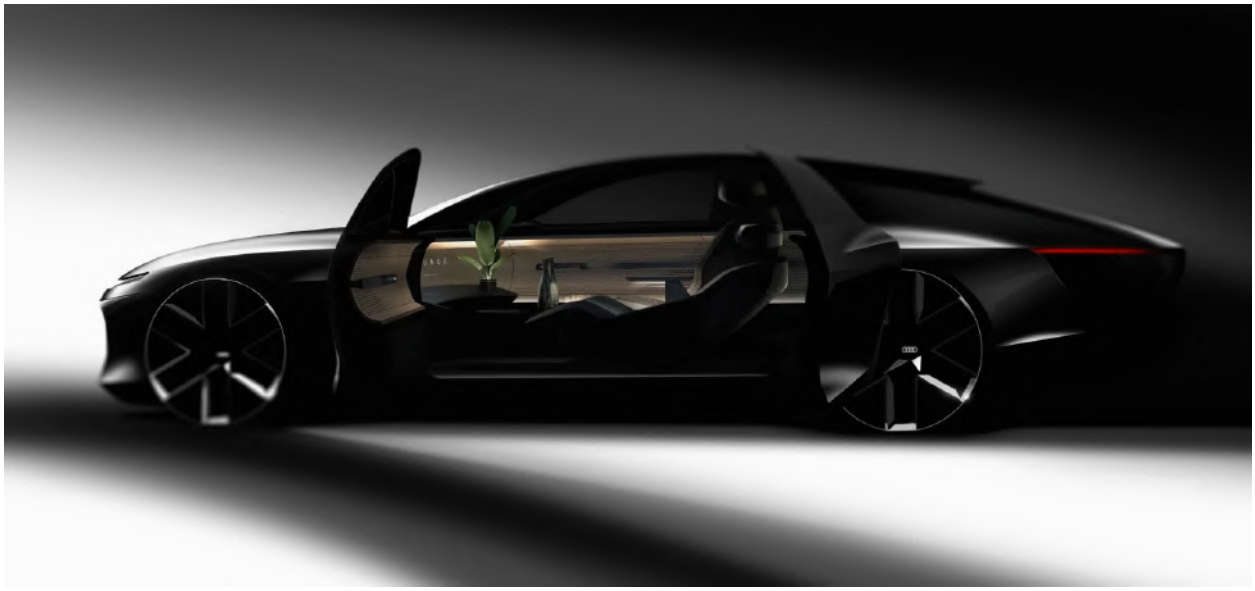
IMAGE: SOLESO

AvtoVAZ (originally VAZ), the Russian Lada-maker owned by the French Groupe Renault, have a new multimedia system called Lada EnjoY Pro. It was developed to cater affordably for local consumer wishes and new technologies. It provides the full functionality of a modern smartphone integrated into the car, and is priced consistent to the car segment. It gets support for Apple CarPlay, Android Auto and a full set of Yandex (Russian GAFA "equivalent", machine learning expert) Auto services. There's an 8" HD screen with a responsive and bright IPS matrix, with regularly updated software that allows to maintain the relevance of all existing functions, add new ones and increase the stability of their operation, leveraging user preferences through machine learning.

System quality is enhanced by a high-quality surround sound system by Arkamys, based in France, who researched, created and then patented a process for sound spatialization. It provides accurate and live effect music reproduction, taking into account the materials of the interior trim, the characteristics of the speakers and their location in the car, adjusted to consider the architecture and interior volume of each car model in which it will be used. Unique algorithms of sound distribution in space create the effect of a concert hall.
All these features can be managed without being distracted from the road. Answering a call, switching a track, adjusting the volume, changing the music source, and more can be done either with the buttons on the steering wheel, or via the smart voice assistant. A rear-view camera with dynamic parking lines allows safe maneuvering in reverse, and warning signals will promptly notify the driver of situations when maneuvering is unsafe—when the trunk is open or the speed when reversing is too high, for example.

Audi Artemis SZ: Luxury Without Wheel

INTERIOR NEWS



According to a media report, the concept for this first Audi model of the Artemis electric showcase project will be presented at the IAA this fall in Munich. The SZ is showing a sketch from Audi's secret project Artemis for the first time. A revolutionary concept, beyond electric propulsion, over-the-air updates and central compute, things which will be mainstream in a few years. The vehicle is said to be conceived as a sporty, elegant mix of wagon and four-door coupe, and will be reminiscent of the Prologue concept car shown in 2014. There has already been speculation about the sales designation; perhaps it will be the "A9 e-tron".

AUDI A9 2017 COCKPIT; SOURCE: AUDI

The vehicle was developed by the Artemis taskforce outside the usual Audi organization, as Artemis has been an independent company since December 2020, the Porsche project

named K1 is to follow in 2025, and a large electric SUV for Bentley has already been approved.

Board Chairman Marcus Duesmann says the company's target is to match Tesla software level. He also said later that the first car of the new electric car task force Artemis will be neither a large sedan above the A8 nor a large SUV above Q7. Instead, the newly developed electric vehicles will stand in a category of their very own. Duesmann and other high executives including those in management positions at Volkswagen Group Research and Development acknowledge the automotive industry's struggle to make autonomous vehicles. According to the German Wirtschaftswoche, Duesmann is currently working on a concrete timetable for phasing out the internal combustion engine "in the next 10, maybe 15 years."

Audi chief designer Marc Lichte says "The car is becoming a living space: the driver's seat can become a living space with a 50° backrest position can be put back while driving in such a way that you can put your feet up at the same time. Autonomous driving is a completely new application. This has major consequences for what a car looks like and what the passengers can do in it".

While a lot of luxury concepts still locates the lounge landscape in the rear, Audi interior approach is really to clear up the front driver's workplace, such as Tesla did, and to create cabin-like interior with VIPs no longer sitting in the second row. "Instead, the coach cabin is missing, the service staff has cleared the control room and taken away the usual operating fuss", says Lichte.

Yes, Car Child Seats Expire!

INTERIOR NEWS

2019 CHRYSLER PACIFICA HYBRID

When baby № 2 comes along, can you reuse your old car seat? Or if get a second-hand seat on eBay, can you use that? Maybe or not, because child car seats have expiration dates; in general, between six and 10 years after manufacture. It's due to wear and tear, changing regulations, recalls, and the limits of manufacturer testing.

Transportation agencies, professional medical associations and car seat manufacturers are constantly conducting and evaluating safety and crash tests. Also, technology is forever evolving, such as side-impact protection to spring-loaded whiplash protection. This means that car seat safety stats can be improved with as new features, materials, or technologies are introduced. It raises an interesting question about factory-installed integral child seats…!

Manufacturers such as Britax and Graco publish expiration dates this on their websites, and national regulations in many developed countries require that all child seats be labelled.

USA-SPEC CAR SEAT LABEL

The Design Lounge

BEV vs ICE 5 Doors • Part III

THE DESIGN LOUNGE

In wrapping up the 5-Door ICE vs BEV comparison, a key task for the Kia and Citroën DS design departments is how the various option and trim levels are executed for their specific interiors.

These levels slot in as entry level, luxury/premium, sport/performance and utilitarian type of themes using specific materials, finishes, and options enhancing the overall brand signature and market positioning by interior design.

Let's start with the optional HUD units that are available for both the Kia EV-6 and Citroën DS 4.

DS 4 HUD SIMULATION (TOP), EV-6 HUD SIMULATION (BOTTOM)

DS 4 CLUSTER DISPLAY (TOP), EV-6 CLUSTER DISPLAY (BOTTOM)

Without driving each vehicle, it is impossible to describe the UX/HMI/HUD specifically. What we do see is that both the EV-6 and DS 4 are using the latest augmented-reality display technology for both the HUD and cluster displays. This adds a simulated depth onto real time road situational usage.

Full-color displays and multi-color HUDs are present in both cars. Citroën, and the PSA group more generally, have moved away from their previous HMD (Head Medium Display) technique, which projected images onto a retractable transparent glass between the steering well and the windshield and was unique to the PSA group.

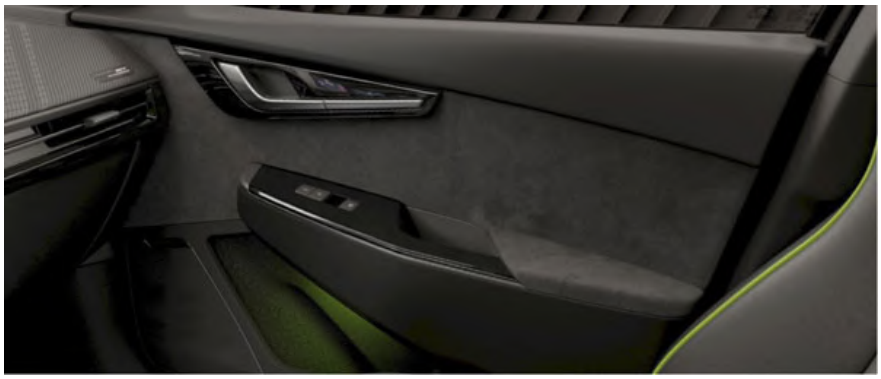
The HUD technology is an optional extra that is currently used by nearly all new BEV vehicles such as VW and Audi but—like lidar—is not available in Tesla models.

Optional levels can be also seen with the various door card options used by both Kia and Citroën.

Light and dark leather/vinyl is used as a contrast element within the door trim within the upper/luxury option level DS 4:

…with the use of a suede like material that flows from the IP to the door panels indicating the 'sport/performance' variation.

Luxury-stitched door panel armrests tie into the now iconic DS "wristwatch" seat design.



Kia's EV-6 uses a suede-type material and performance leather/vinyl material, contrasted with chartreuse accents for lighting and seat trim for the top end sport/performance EV-6 GT.

Suede is also highlighted for their mid-level interior that also emphasizes the sport element of the Kia EV-6 GT-line…

…with the entry level eliminating the suede and using a light contrasting trim cover and door panel.

The EV-6 GT-line front cockpit with contrasting materials used on the seats and tunnel/floor console.

The seats have separate head restraints with a rounded seatback shape. They also use a cloth material as standard with optional suede.

The EV-6 GT is the clear performance level, using a multitude of suedes and contrasting piping, stitching, and lighting throughout.

Further enhancing and differentiating is the use of "tombstone" seats with integral head restraints in the GT. These also use a metallic trim panel to define an opening between the headrest and seatback that is typically used for seatbelt passageways on racing vehicles.

The rear seats have conventional head restraints, with the colorways from the front seats also present here.

Citroën has also incorporated their successful 'wristwatch' design style for the DS 4 along with the color palette that is used within the other DS luxury vehicles.

This trim style has been updated now so that it 'flows' into the bolster areas of the seats, not just the inserts as previously executed within the DS line vehicles.

This style is also carried over for the rear seats along with perforated leather.

Surprisingly, the luxury version for the DS 4 is not the 'wristwatch' trim level but a flowing design featuring stitching and a high contrast white/black placement that integrated the tunnel console, door panel armrest/inserts and seating.

Very impressive is the execution of the leather wrapped tunnel/floor console that eliminates any plasticky-seeming materials. Its use creates a quality feel with contrasting soft-touch leather and the glass and metal touch screen interface.

Finally, using a highly stitched trim cover along with the light materials further enhances the handcrafted luxury/quality environment that Citroën sought with the design of the DS 4.

News Mobility

_Car interiors Unplugged

NEWS MOBILITY

LEXUS LFA TPC 2015 LIGHT INTERIOR (IMAGE: TOYOTA)

14. ‘Checking the highlights’_

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

The 'style' of an era is given by a set of features that makes it notable or historically recognizable. It is often defined by technological, social and economic events that synthetize commonly accepted reforms as a new way of expression. '*If the style of 1300 was Gothic, 1500 renaissance, 1900 art nouveau, the style of our era…*' as Gulious C. Argan mentioned '*.is Industrial Design*'. *And,* after the post-modernist manifesto of the late 20th Century we are conscientiously entering an era of 'aesthetic memory' of all previous moments, boosted by technology. In the case of the recently revealed Lexus LF-Z interior, the 'horse and carriage' narrative showcases the latest masterpiece of the extraordinary brand.

Design-wise, car interiors are like imploded objects, like sculptures that have turned inside-out. Passing from convex to concave, there is a certain growth in perception of what is proximity, requiring a specific 3D skill-set to claim the title of an interior designer in the automotive industry. Awareness of all form and proportion is primary when an object is seen from far or close, defined by light and its reflections running on every single surface. Light and reflections are 'the tools' that define car exteriors, until the moment concave

forms appear, as absorption of light and uncontrollable visual effects start playing a peculiar role. Among others, Porsche has played over the generations on the limits of this notion without ever turning into negative surfaces. A special mention is due to my teacher Pinky Lai who analyzed and challenged every section of the Porsche Carrera fenders, explaining surface limits depending on light inversing itself.

While exterior designers handle with meticulous attention the positiveness of any surface sweep, or even stretching the limits of flatness to give the illusion of negative and checking the highlights, there is a whole world of concave conception that takes place next door, literally. The car situation is such that asks to really open that door and get in a world where reflections and light are handled differently, sometimes the opposite way. An object from outside, a world from inside is the peculiar existence of interiors. While in car body design, proportion, stand, shape, depth of field, perspective and surface development refer to a mysterious yet instinctively perceived rule of continuity and completion, interiors obey to different set of optical-cerebral laws. Empty space, interrupted forms, perceived but not actual continuity, floating elements and intentional contrast of light and dark are some of the physical features of the cognitive roller-coaster in the interiors design world. Before mentioning all purely functional, often blindly-used parts, such as handles, gearshift paddles, dials and toggle switches, details have a tactile expression, shaped by ergonomic; just like a hide-and-seek between what is objectively functional and instinctively aesthetic, between dressed and naked. Dressed in the sense of surfacing and naked in the sense of form-given-by-pure-function. Parameters are so vast and interweaved that is difficult to judge what is right or wrong. Vision, narrative, excitement and strong convictions lead the way to what feels sound, yet is subjective. To realize the full potential of the recently presented Lexus LF-Z, a whole tale of ancestral principles of motion calls mobility to duty. Lexus design communicates *that the Lexus driving signature gives the driver a sense of being seamlessly connected to the car's acceleration, deceleration and steering at all times, with prompt linear responses that are faithful to their inputs and intentions'.* Perhaps, but how can we instantly evaluate all that just by looking at the press-release interior images through our computer screen? And yet, we are persuaded! The reigns that have inspired motion control for millennia now come to play through their most modern aesthetic depiction: it makes perfect sense. It is almost like a composition, a symphony of design components visually played to that specific Lexus script. Design is the only immediate instinctive evaluation of anything that triggers emotions and anything mobile can be highly emotional.

By our innate talent to project to the next big thing, we, humans, evaluate anything new on subjective, non-quantifiable measures: from a completely underwhelming experience of a fault-proof engineered contraption to a child-like dream and there is no science that can bridge that gap. From a low-key thrill of clicking the blinkers to the aggressive action of a fast left turn taking over a truck on a two-way alley, pumping enough adrenaline to crush anything on the way, we become momentarily the hero of our instant script. Car interiors are conceived, designed and set to inspire our mobile self.

_to be continued…

_____*INDUSTRIOUS*__

Inrix 2020 Global Traffic Scorecard

NEWS MOBILITY

Inrix collects billions of anonymous data points every day from diverse sources including connected vehicles, mobile devices, navigation units, fleet vehicles, road and garage infrastructure, and publicly available information on incidents. With coverage on all roads in countries of coverage, and lane by lane precision.

As we embark on the one-year anniversaries of country-wide lockdowns throughout the world, the Inrix 2020 Global Traffic Scorecard is telling us how mobility evolves during this special, and how it could shape the future

To no surprise, the COVID-19 pandemic upended short and long transportation trends. With work-from-home policies, on-again/off-again lockdowns, travel limitations and border closures, general mobility trends show decreasing congestion, and "light" mobility increase (walk, bicycle).

Interesting key findings from all around the globe:

- In the U.S., drivers lost an average of 26 hours due to congestion in 2020, down from 99 hours last year, New York (100 hours), Philadelphia (94 hours) and Chicago (86 hours) lost the most time to traffic congestion.
- Bogota (133 hours), Bucharest (134 hours), New York (100 hours), Moscow (100 hours) and Philadelphia (94 hours) comprise the Top 5 most congested cities in the world by Impact Rank, despite a 22 per cent to 34 per cent drop from 2019.
- In the U.K., drivers lost on average 37 hours due to congestion in 2020, down from 115 hours in 2019, London (69 hours), Lincoln (47 hours) and Bristol (37 hours) lost the most time to traffic congestion, despite a 53 per cent to 64 per cent drop
- In Germany, drivers lost on average 26 hours due to congestion in 2020, down from 46 hours in 2019, Munich (65 hours), Berlin (46 hours) and Hamburg (33 hours) lost the most time to traffic congestion, despite a 25 per cent to 31 per cent drop
- Downtowns, the hardest hit areas by the pandemic due to the densification of people, employment, office buildings, restaurants and entertainment, are projected to be last to recover during the re-emergence period, lagging suburban and rural travel throughout 2021. Over the first two months of 2021, trips to downtown were down 44 per cent from pre-COVID levels in the U.S, down 52 per cent in the U.K. and 40 per cent in Germany.

These facts lead Inrix to believe that downtowns, the hardest hit areas by the pandemic due to the densification of people, employment, office buildings, restaurants and entertainment are going to be the last to recover during the re-emergence period, likely far into 2021 or 2022. Indeed, vaccination rates, the return to office buildings, limits on gatherings and the viability of restaurant and entertainment venues will still play a large part in whether downtowns will return to normal any time soon.

General News

Hyundai Mobis' Transformation Strategy

GENERAL NEWS

JUNG SOO-KYUNG, EXECUTIVE VP, HEAD OF THE PLANNING DIVISION

Seoul-based Hyundai Mobis is the 7th largest leading automotive supplier. The company got started in 1977 and now there are 30,000+ employees and R&D activities in Korea, Germany, China, India and the US; They operate in sensors and sensor fusion system, in controllers and software design capabilities, in lighting, and in safety control. Their products also include various electrification components, brakes, suspension, steering, airbags, and electronics.

At their Strategies and New Technologies Conference recently, they introduced their mid- to long-term transformation strategy of accelerating their transition to a software-centered platform leader. They'll progressively exit hardware to focus on systems, their software structure, and the associated ecosystems.

In accord with the Hyundai Motor Group's future strategy in electric vehicles, autonomous driving and Urban Air Mobility (UAM), Hyundai Mobis will bolster their technologies as a leading affiliate.

Jung Soo-Kyung, Head of the Planning Division (Executive Vice President), who gave a presentation at the conference, said: "We will expand our business as a leading company in platform-based systems that have integrated hardware competitiveness with software."

This transformation will be implemented largely in three directions (Transformation X-Y-Z)

"Transformation X" is to innovate for future growth, based on their core technological competences, such as autonomous driving, electrification, and connectivity, and to expand its business to global automakers. To this end, the company will continue to carry out open innovation with strategic investment in promising technologies; examples with Velodyne for Lidar, or Envisics for AR-HUS.

"Transformation Y" is to innovate in business model around the same core technological competencies, such as new mobility service market with level-4 autonomous robotaxi, or dedicated platforms to global automakers or Purpose-Built Vehicle (PBV) companies, or to secure smart factory infrastructure utilizing AI and big data.

"Transformation Z" is to find long-term new growth for at least 10 years into the future, like UAM (Urban Air Mobility) leveraging competencies in robotics, electric propulsion system and avionics.

To support this strategy, the company will continuously increase direct R&D investment from ₩1tn (€750m) to ₩1.7tn (€1.275bn) in 2025. As part of this effort, the company is planning to increase the prior art R&D costs, which amount to about 14 per cent of total R&D costs, to 30 per cent in 2025.

Xiaomi, Huawei Bring Consumer Electronics to Automotive

GENERAL NEWS

XIAOMI CEO LEI JUN

Two major consumer electronics companies are entering the automotive sector witht wo very different approaches. After extensive market research over the past few months, Xiaomi—a major Chinese smartphone maker, № 3 in the world—decided to move forward into the EV market, CEO Lei Jun says. He will directly lead Xiaomi's EV unit and "this will be the last startup project in my career," Lei said. Xiaomi are prepared to invest $10bn into this EV project; their extensive cash reserves provide them with a comfortable advantage over other EV startups in China such as Nio, Byton, and Bordrin.

Xiaomi can leverage their high brand recognition among young Chinese consumers, and will target a post-1995 generation less reluctant to buy domestic Chinese brands and more likely to buy electric vehicles.

IMAGE: HUAWEI

IMAGE: GASGOO

Huawei will take a different tack. They're also a major telecommunications and consumer electronics giant, and they've introduced the "Hi" brand for intelligent automotive solutions, dedicated to jointly develop intelligent electric vehicles with industry partners by using Huawei's intelligent car solutions and operating system.

The Hi solution is powered by Huawei's all-new architecture for computing and communication and five-intelligences system that focuses on the driving, intelligent cockpit, intelligent electrification, connectivity, and intelligent automobile cloud..

Furthermore, the solution involves augmented reality techs such as lidar and AR-HUDs for better mapping services, path detections, directions, and more.

Huawei and Xiaomi follow another Chinese giant, Baidu, sort of a Chinese counterpart to Google with Internet-related services and products and artificial intelligence, who announced earlier this year their creation of a company to manufacture intelligent electric cars with Geely.