DVN-I
Automotive Interior

Thu, 27 May 2021 Weekly Newsletter NEWSLETTER #62

Editorial

DVN Interior Goes To China, In Chinese

H9 INTERIOR (IMAGE: HONGQI)

DVN Interior is now more than two years old. Our community is growing, and we're starting to make sure the community has all information to leverage their membership. We're starting to publish from this week onwards the **Chinese version** of our newsletter. As we get our first members in China, we're progressing commercially, thanks to our local team. It will foster technology exchange between members across the continents, and this newsletter will keep you all in the loop. Stay tuned!

This week In-Depth is providing members with deeper insights on Innova Semi-Conductor and the ISELED Alliance through the exclusive interview of its CEO, Robert Kraus. APIX and ISELED technology, ILaS network are building blocks of the future of interior displays and lighting. It opens "The CTO Forum" a series of interviews from technical leaders within community to be published regularly in this newsletter.

And this week's Design Lounge, continues with how 7-seater SUVs came to such high dominance in the American market, with the striking example of the VW Atlas, as the German brand design, produce and sell it for North America.

感谢加入DVN社区 (Thanks for joining the DVN Community)

肃然 (Sincerely yours)

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

Interview: ISELED Chair Robert Kraus

Robert Kraus is CEO of Inova Semiconductors, and Chair of the ISELED alliance. He kindly granted this DVN-Interior exclusive interview.

DVN-Interior: How are Inova and the ISELED alliance getting along together?

Robert Kraus: We started the ISELED Alliance together with four other companies so the question "how getting along together" does not arise, we are just part of it.

DVN-I: What is special about ISELED?

RK: Among other things, ISELED eliminates the binning problem with the LEDs and enables smart digital control of the basically analog component LED. ISELED reduces system costs because the RGB LEDs and our driver-controller IC are assembled together in a very small SiP (System in Package). Calibration of the smart mini-LED module is already carried out during manufacture of the SiP, which can then be operated like a digital component. The LEDs—theoretically thousands can be cascaded—are controlled via a lean protocol with a data rate of 2 Mbps, since only the address, color, and brightness value have to be transmitted. This is why ISELED is also called a "digital LED".

DVN-I: What is the importance of the ISELED alliance?

RK: The ISELED alliance is an open industry consortium whose members share a common goal: the development of a comprehensive, fully coordinated ecosystem around ISELED. In addition to LED manufacturers, microcontroller suppliers are also represented, as are major automotive tier-1s in the lighting sector from around the world, but also smaller, highly innovative development companies and test equipment manufacturers. When it was founded in 2016, just five companies laid the foundation for the ISELED Alliance. It has since grown to 38 members. Alps Alpine, Grammer, the Chinese LED manufacturer Harvatek, Osram Continental and Yanfeng just recently have joined. This already covers the entire value chain in the automotive lighting sector. And we already have some more inquiries underlining the ever-growing momentum around ISELED.

DVN-I: Which vehicles will be launched with ISELED technology?

RK: In the summer of 2020, the Chinese manufacturer FAW was the first automaker in the world to install ISELED in a vehicle, the premium Hongqi H9 model. There are further models that we, as a tier-3, are not all aware of. In Asia in particular, the market is developing very dynamically. In this first year in full production, we already are selling chips in the double-digit million range which is about five times the forecast we were given still in 3Q20. And already for first applications outside the automotive segment, e.g. in the area of industrial digital signage. From 2023, unit sales will increase enormously, the figure of a billion is on the horizon already for 2025/2026. And ILaS (ISELED Light and Sensor Network), a new bus for the car, will be added from 2025. I have the impression that the major automakers are taking a very proactive approach to the topic of interior lighting effects. Not only premium makers are now installing 40 per cent more light-emitting elements than in the previous generation of their vehicles. Because customers want to have a lighting experience in their cars, the trend is moving away from classic on/off to transition with dynamic effects. This means that the classic architectures, for example with the LIN bus, are reaching their limits with the ever-increasing number of LEDs and the simultaneous dynamization of light. Today, lighting control is often simply attached to the existing on-board electronics, but this is no way to support all the possibilities of the new technology. To ensure that it is nevertheless efficient and cost-effective, this requires a new lighting architecture

DVN-I: What do you mean by a new lighting architecture, and what does it have to do?

RK: The aim is to make the lighting world of tomorrow also possible in the car, hundreds of LEDs, and the whole thing dynamic or even functional. Classic lighting architectures with the LIN or CAN bus cannot achieve this due to their limitations in terms of scalability and the maximum number of clients. This is where our ILaS comes into play, the "ISELED Light and Sensor Network", a new field bus in the vehicle that can integrate sensors and actuators into the network in addition to the ISELED light elements—up to 4097 units.

DVN-I: What does it mean for the LIN bus that ILaS gets its place in the car?

RK: There will be no technology leap to an exclusive ILaS/ISELED architecture in the vehicle, because there is rarely such a disruption in the car. There will be a coexistence of buses for some time. For example, the first ISELED systems will still be docked to the current lighting systems via LIN hubs. However, a major semiconductor manufacturer is already working on the direct connection of the ILaS bus to the ethernet on-board network via an ethernet-to-ILaS bridge chip. Over time, ISELED/ILaS will also become established in volume models, we are quite sure of that. In any case, we are working intensively on our first ILaS bus node device, which we will sample in the middle of the year. Also, the concept for ISELED 2.0 with additional features requested by many customers is ready; we want to have the first samples in 4Q21. A decisive factor for the rapid roll-out of ISELED/ILaS will be that there is soon a broad portfolio of attractive products. To this end, we have a number of semiconductor manufacturers in the ranks of the ISELED Alliance who are already working on corresponding products, e.g. Microchip and NXP on controller components that already support the ISELED protocol. With APIX, our legacy Gbps automotive pixel link, we started in 2008 and to date have more than 150 million nodes installed in cars around the world, we practically had a blueprint of how important ecosystems are for new technologies.

DVN-I: How do you gain confidence that automakers' assembly lines will not stand still because of Inova?

RK: We are already thinking about a proper strategy when we ramp up to very large volumes. Already when APIX was designed in 2005, it was a clear requirement to digitize the Gbps physical layer, which

is a classic analog function, to the greatest possible extent. Today devices with APIX interface are produced by several licensees in different baseline technology nodes and in foundries all over the world. For ISELED and ILaS, where the quantities will be of a completely different order of magnitude, the topic of availability and safeguarding is already at the top of our priorities today.

DVN-I: Are you impacted by the present chip shortage?

RK: We are in the pleasant situation that we can currently meet our delivery obligations and commitments in full. After the slump last year—automakers did not build any cars for weeks—we have a sporty growth plan for 2021 and are already ahead of schedule in the first quarter of 2021. We have already had to revise our forecast to the fabs, which we gave last year, upwards again— and this at a time when the foundries actually have no more capacity. That is a real challenge.

DVN-I: As a small German fabless semiconductor manufacturer, how do you manage to get into new designs?

RK: In the beginning, it was certainly an immense leap of faith from our first customer, premium automaker BMW, to use our APIX immediately in their flagship, the 7 Series (F01). With APIX we had a technically brilliant solution right from the start, and a great team that is still very innovative after 20 years. Over time we have built up credibility—a small, highly innovative semiconductor manufacturer that can "do automotive"—in terms of quality, service and reliability. The numerous awards show that we are really at the forefront of technology; such as recently the "Digital Innovator 2021" award by the PC magazine Chip.

DVN-I: What is the situation with APIX4?

RK: The premium manufacturers are planning to install even larger, higher-resolution displays in the future: After full HD and 4k, there are already plans to use 8k displays in cars as well. We are therefore already thinking specifically about an APIX4 with native 24 Gbps. There are several ways of realization, such as brute force with a lot of computing power, expensive process nodes and other disadvantages. We have almost 30 years of experience in the development of gigabit SerDes [serializer/deserializer] components and are pursuing a different approach here—the best of both worlds, so to speak.

DVN-I: What's next for Inova Semiconductors?

RK: The next logical step is to bring APIX and lighting together by using the broad APIX data highway to transmit not only display but also lighting information together. In some cases, this could eliminate the need for entire control units. In any case, the trend in vehicles is toward centralized, very powerful domain architectures; Tesla has led the way. This opens up many interesting applications, of which the dynamic backlight is just the beginning. Because the topic of display and light is increasingly becoming hyped, we are currently very busy with APIX, ISELED and ILaS. Now we just have to show customers what this new world of visualization can look like; it's all already working in our lab.

Interior News

AUO MicroLED Display Awarded At SID Week

INTERIOR NEWS

The Society for Information Display (SID) held its all-virtual Display Week 2021 last week. Display experts from all over the world voted in the People's Choice Awards

Taiwan-based AUO, one of the largest flat panel manufacturers in the world—there's a **demo video** online—got a Best Technology Demonstration Award for their Integrated Vehicle Cockpit with microLED displays.

In line with increasing market expectations for HMI and safety, the cluster can show high-resolution, high-brightness images for drivers to access important car data. Holes are drilled in the active area of the central information display (CID) to allow buttons or control dials to be installed, making car navigation, entertainment, and communication functions more intuitive to use. A front-seat passenger can also use the touch panel to choose audiovisual content with high image quality.

The S-curve enables the display to seamlessly integrate into the streamline automotive interior design. Comprising a 12.1" microLED cluster display and a 12.1" CID. A V-shaped full-color TFT microLED cockpit display features high brightness, ultrahigh contrast, wide color gamut, and high pixel density. Direct bonding lamination has been adopted to combine together the different displays.

The display also comes with an anti-glare function to enhance safety for drivers during nighttime.

AUO's portfolio also includes interesting small circular microLED display to get smart digital buttonlike controls.

VW ID.X Concept Revealed

INTERIOR NEWS

(IMAGE: RALF BRANDSTÄTTER VIA LINKEDIN)

Not even a month after the reveal of the ID.4 GTX, VW's CEO Ralf Brandstätter unveiled a concept EV on his LinkedIn page. The car is called ID.X, a performance version of the ID.3 hatch, equipped with a bigger battery and modified chassis and appearance.

Brandstätter says the car is 200 kg lighter than the ID.4 GTX, which probably helps to reach the announced performance of 0 to 100 km/h in 5.3 seconds.

Brandstätter said:

"We just introduced the ID.4 GTX. Our first electric performance model is very well received even with our engineers—because with it they have discovered the fun of developing high-performance electric cars. And so we just let them do it. Powertrain, chassis, and infotainment are modified and give the vehicle an extraordinary appearance inside and outside. The result of this experiment is a powerhouse with all-wheel drive, 245 kW power and sporty design. I have often talked about how versatile our MEB [platform] is; the ID.X makes this very clear. Even if the ID.X will not be a production vehicle, we will take up many ideas."

Various VW sources say they "suspect" it will be built.

THE ALCANTARA-COVERED SPORT SEATS LOOK SHARP. (IMAGE: RALF BRANDSTÄTTER VIA LINKEDIN)

Seeing Machines DMS Technology

INTERIOR NEWS

Seeing Machines, based in Canberra, Australia, is a company of experts in human-machine interaction and the artificial intelligence (AI) technologies which enable machines to see, understand and assist the people who are using them—see their **demo video**.

Seeing Machines' approach is not to read driver posture or keep track of hands-on-wheel, but to understand diver attention, to virtually look into the driver's mind.

Their FOVIO Driver Monitoring (FDM) processor employs computer vision algorithms that have been developed over more than 20 years of applied research. The FDM processor sits at the heart of an infrared camera-based DMS (Driver Monitoring System). It offers qualitative measurement of all the levels of driver impairment and engagement, with algorithms that have been calibrated against diverse population studies, examining the ability of drivers to safely control vehicles in complex road environments when in known mental states.

The camera's dynamic sensor and illumination are controlled by the FDM monitoring algorithms. This tight coupling between algorithm and optics enables the DMS system to track a person's eyelids and pupils through sunglasses under every imaginable real-world driving condition.

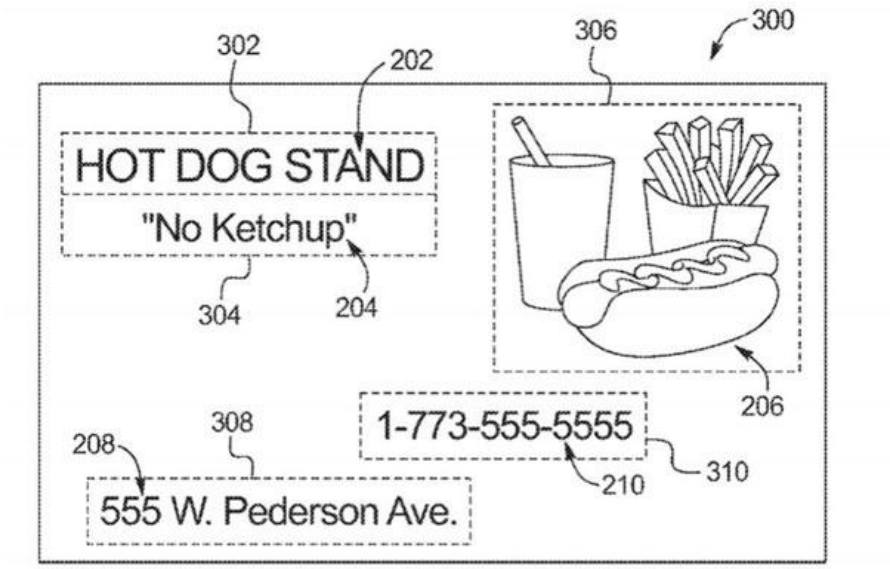
"As vehicles become more automated and until they are capable of handling the driving task 100% of the time, there will always be a requirement for the vehicle to initiate handover back to the driver," says Seeing Machines CEO Paul McGlone. "In order for that handover to be conducted effectively, the vehicle must be able to register the attention state of the driver and react accordingly."

They say a camera-based DMS enables visual attention—the best current available predictor of driver engagement—to be measured, and it can measure this continually, without requiring the driver to perform any unnatural movements unrelated to the driving task.

Ford Patents Tech to Display Ads In Infotainment Systems

INTERIOR NEWS

According to the new Ford patent, named "Billboard Interfaces for Vehicle Displays," the automaker plays with the idea of using a vehicle's cameras to read roadside billboards and display targeted ads related to those billboards' content on the vehicle's infotainment screen, and identifying a segment of that image via a processor. Users would then be able to click on a link to give them more information on the ad.



The line art from the patent filing, which can be seen above, indicates the system can recognize a billboard for a local restaurant and generate a page inside the car. The page has a phone number that can be dialed at the press of a hyperlink, or navigation information can be served based on the address at the press of the link.

Ford could argue that it addresses the issue of lack of accessibility on billboards, providing less distracting(…?) information directly to the driver, usable with just a touch click.

That's probably a potential new revenue stream for the industry through ads: a cheaper car if you accept ads, or paying an extra fee to get a no-ads option.

A Ford speaker said "Patents on new inventions are submitted in the ordinary course of our business, but they are not necessarily an indication of new feature or product plans". Time will tell…!

Faraday Future: Video Conferencing For Rear Seat Passengers

INTERIOR NEWS

California-based shared intelligent mobility ecosystem company Faraday Future has unveiled a new feature in their FF91 EV: a 27" rear seat screen with a video conferencing feature.

Faraday Future started with the Concept FFZERO1 at CES 2016, followed by an FF91 concept the following year; production was expected for 2020.

After a few years' struggle now they are expected to close on their SPAC deal with Property Solutions Acquisition to bring in the financing needed to put the FF91 into production—which they aim do within 12 months from the closing of the deal.

The FF91 is an ultra-luxury vehicle, and a lot of the experience is built around the rear seats, where passengers or mobility service users will be seated. Rear passengers could lower or raise the unique (and massive!) 27" Rear Passenger Display with a simple voice command, and also have the ability to conduct in-vehicle video conferencing—see the **demo video**. A Faraday Future representative said "FF will deliver the latest and most advanced user-focused capabilities in the FF 91. These voice control and video conferencing upgrades are a crucial part of our third-internet living space experience. We continually seek out and discover new ways to enhance both the user and the unique mobility experience of the FF 91, and with these features, we believe our users will truly benefit from the advanced technology we are incorporating into our vehicles".

Antolin's Low-Mass Pano Roof Technology

INTERIOR NEWS

Panoramic roofs are in unprecedented demand in all markets, following the trend of a more user-friendly cabin, open to the external world. But pano roofs needs heavy mechanical systems to open and close, and for shades to block out the hot sun. These heavy systems are far from the car's center of gravity. At the same time, there's increasingly urgent need to reduce the weight of all automotive components to minimize CO_2 emissions. This calls for lightweighting. Grupo Antolin, in partnership with German chemical company BASF, have developed new technical plastic parts to respond to these conflicting needs.

The new Ultradur® material family is ideal for use in plastic frames of solar and panorama headliners. Antolin have made a clever novel design for these frames, including technical details that reduce the mass by up to 60 per cent compared to other traditional solutions on the market.

One of the main advantages of the design of the new plastic parts is the change in the process of attaching the frame to the headliner that allows to eliminate additional process steps, to improve tolerances assembly and, ultimately, improve perceived quality of the final part. In addition, this new process is completely sustainable by not involving solvents or generating emissions.

PBT-ASA-PET, a polyester material, is reinforced with fiberglass and modified with an Acrylonitrile and Styrene copolymer. The result is a rigid material with low shrinkage, high dimensional stability, and good resistance to high and low temperatures. These characteristics make for excellent compliance with tolerances, especially in processes where the frame is stuck to the headliner in the mold at the same time the part is formed.

Ultradur®, BASF's very easy-flowing PBT, allows injection of large parts having excellent dimensional stability, and low warpage at short cycle times. Because of its high-speed property, Ultradur® S 4090 G6 HSP (PBT/ASA blend with 30 per cent glass fibers) offers the possibility to design thin walled large structural components such as roof frames. Following the predevelopment work done with a German customer, the first pilot with this material was launched for a best-seller vehicle with outstanding results. More programs have been marketed with this solution for several automakers.

The Design Lounge

The 'Family Truckster' American Market: Volkswagen Atlas

THE DESIGN LOUNGE

Vehicle types and platforms really define an automaker's brand image. The original Land Rover Defender is a clear example regarding the SUV type/platform. This works well if these vehicles sell well and the automakers derive a good profit from them, but what happens when the brand image doesn't match the platform? Let's look at a case wherein the maker tasked their design teams to clearly apply their unique brand identity to a 7-seater SUV 'family truckster'.

Although of high build quality and engineered very well by sharing the platform with the Porsche Cayenne, VW's Touareg was not a success. In Europe, VW vehicles are known for quality build and materials, positioning them as the highest priced vehicles in each market segment where they compete. The Touareg was introduced globally as a 5 seat near-luxury SUV, and missed the market expectations. Its replacement for 2018, the 7-seater Atlas, is a North American-market-only vehicle and reflects the 'high value' positioning of VW America

7-seater Atlas with VW's visual brand identity

The 7-seater format with good luggage capacity starkly contrasts the outgoing Touareg 5-seater.

Build quality with technology integration can be seen with the instrument panel's long horizontal shape and soft-touch materials for the upper surfaces. This creates a straightforward, Teutonic interior design theme.

VW group's latest display technology is integrated for the driver while keeping VW's standard switching and stalk arrangements.

The center display is quite small by 2021 standards, but includes all of the expected functional features.

Notice how the HVAC controls and shift lever are all previous-generation technologies to keep the overall interior costs low. The allows the Atlas to integrate the high-cost display into the cluster.

The front door panels integrate high quality wood inlays and door panel contrast stitching…

…while the rear doors have no inlays or stitching incorporated into their designs. As you can see, the large glass panorama roof was the priority.

Finally, the fold-flat utility of both the second- and third-row seating and the largest storage volume was prioritized over full power operation.

Volkswagen has made the Atlas one of the highest-value offerings in the 7-seat SUV market segment, making it their best-selling NA market vehicle. Quite a contrast from their now EU-focused Touareg!

News Mobility

_Car interiors Unplugged

NEWS MOBILITY

HYUNDAI INTERIOR CONCEPT (IMAGE: WEB URBANIST)

20. Body of Knowledge

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

All along their historical evolution, car interiors have established a common ground between habitat and mobility, difficult to find elsewhere in such degree of sophistication. Meanwhile, within our modern-day housing, there is a place in which both habitat and mobility are on hold, as hostages of one another. Parking garage holds the greatest concentration of technology, know-how and real estate, inactive nonetheless. It is an uninhabited space, occupied by a static car and its vacant interior. This accumulation of contradictions has triggered the idea of turning the excess capacity into shared-mobility assets; a genius approach backed by technology, bringing 'there' and 'how to get there' into one coherent notion.

Very early on, primitive habitat was put together or carved to suit the human body. A concave space was formed to provide the comfort of protection and the awareness of surroundings. To the opposite, modern habitat is built to suit a different set of needs such as status, which often reveals itself into a much bigger scale than the human body. Due to industrial formats, living spaces have rapidly converted into rectangular modules of types and sizes, losing any cave-like resemblance. Architecture rapidly evolved out of human measure leading into a monumental approach.

With the massive invasion of automobile filling the gaps of urban planning and architecture, mechanical culture became the symbol of solving any problem: just put a car in there. Thus, we have built a great life standard if you happened to be a car. Speed, which equals distance was an additional factor that led into novel perceptions of space, overwhelming any measure. A new set of problems appeared, further away, bigger, faster. Farther away from human scale and habitat, modernists have used helicopters to design cities *(ie Brazilia)* and the result was relevant to the means; the further away the better it looked, missing out everything that really mattered: the living spaces in-between the lines.

Now, in a completely different era with new technologic revelations we begin to realize, try to cure and partly regain the right to the lost 'local' dimension and living experience. However, while correcting and rescaling mistakes of the past, new 'digital' dragons have entered our habitat creating their own

settlement in the process. Just like the automobile at its era, filling all gaps in our cubic living spaces, lead once again to the loss of the ability to build places for people.

Early humans had always very carefully picked the place to live as prospect and refuge, a spot where they could be protected and see what's coming. Cubic spaces have neither of either, while car interiors to this day, maintain both.

Indeed, car interiors are cave-like, organic forms of habitat shaped around human body. Due to progress and intellect, the instinctive trial-and-error process of development was very early disregarded. While itinerant habitat spaces escorted us all along our endeavor to conquer vast new territories, at the same time they evolved on the margin of the major arts and sciences (architecture) and survived by the basic notion of shelter and vision. So, today while we analyze 'excess capacity', 'optimization' and 'resource overflow', we might want to go back to our garage, turn the light on and, admire the most precious relic of human scale inhabited motion, 'safeguarded' in a metal car-body shell, specifically dedicated to the saga of mobility and habitat, in one and only tale. All this is still taking place in a space of our house that architects, up to this day, still don't understand.

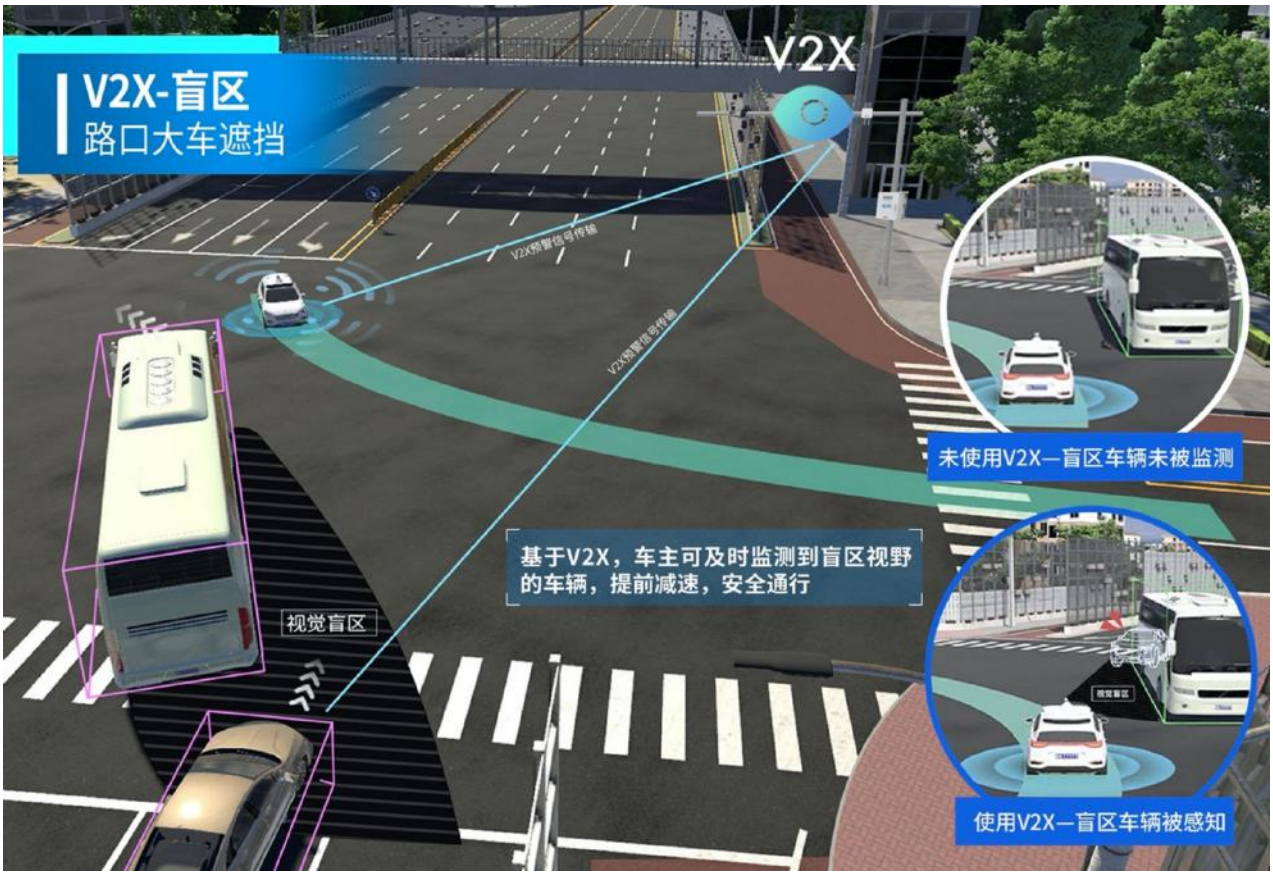
The principle of human scale, snubbed by urbanists and architects, is safeguarded, evolved and reborn at its best version in car interiors. We have to carefully consider them as living organisms that preserve our codes into one precise integral sample of human scale before we effortlessly instruct designers to convey them into hotel lounges of new mobility.

_to be continued…

_____*INDUSTRIOUS*__

Baidu L4 Autonomous Driving With Roadside Sensing

NEWS MOBILITY



(IMAGE: BAIDU)

Baidu, the Chinese technology company specializing in Internet-related services and products and artificial intelligence, has self-driving technology development ambition.

Baidu's 5G-based V2X technology, named Apollo Air, has been devised and developed in partnership with the Institute for AI Industry Research (AIR) at Tsinghua University. It enables a high degree of coordination between vehicles and roads where sensors are installed, making it possible that cars could achieve high-level self-driving capabilities even without the usual object perception system that is normally made up of lidars, radars, cameras, and other sensors.

Last year, China's NDRC (National Development and Reform Commission) and several other government agencies jointly released a development plan that places importance on "vehicle-road coordination technology" used to increase the interaction between smart road infrastructure and self-driving cars, which in turn enhances the safety of autonomous rides.

Baidu started driving test at several upgraded road intersections in the Chinese capital of Beijing, the southern China city of Guangzhou and the northern China city of Cangzhou, Baidu said last week.

"This novel approach will help the industry overcome existing challenges to safely scaling autonomous driving by providing a universal, shared infrastructure that can be applied to any smart transportation vehicle", Baidu said.

It will be interesting to see what shakes out as the best safety and cost tradeoff between sensing technology in the vehicles versus in the roads—we're betting on *both*!

General News

Höga: Ikea-Renault U-Build Car Kit

GENERAL NEWS

Ikea is teaming up with Renault for the Höga project, an electric car, accessible and to be assembled yourself. Still at the project stage, the car is a small city car 2.3 m long and 1.80 m high (the Smart Fortwo is 2.5 × 1.51 m); despite these dimensions, it's spacious on the inside. Originally, it was transportation design student Ryan Schlotthauer's bachelor thesis.

Designed as the ultimate kit car, this tiny vehicle is inspired by Ikea design philosophy and is made to integrate within Renault's EV mobility program. It aims to be "clever, low cost and sustainable," without any compromise to passenger safety, usable interior space, or ease of use.

The car itself ships in a box, like Ikea furniture. There's the upcycled skateboard that ships in one piece and an assortment of parts that you will have to assemble yourself. The A-frame design of the body includes an integrated roll cage, and the two parts click together like Lego. The Höga has 374 total parts and 114 individual parts, and as any DIY product, probably more you will never know what they're for! Color coding is used in the interior to enable the smoothest operation without the need to employ an instruction manual.

The Höga is modular. The cabin has a steering wheel, a large display, and the possibility to use your own device for entertainment. The entire dash clips onto the windscreen, so access and egress are through the front and rear. Ikea would offer a range of options, depending on your needs. You could have two seats in the front, or just the driver seat and more cargo space, or tandem seats with a child's seat in the back.

The Höga is sustainable: the platform is upcycled, and most parts are recyclable, so it won't create waste even after the end of its useful life. Even the box it ships in is reusable: you can send your old furniture back to Ikea as part of its recycling program. Because of the smart use of materials, the Höga would also be cheap, retailing at around €5,300.

Will the project go to market? Probably yes, if it passes quality and cost hurdles, and homologation.

Stellantis, Foxconn In Connectivity JV

GENERAL NEWS

STELLANTIS US HEADQUARTERS (IMAGE: DETROIT FREE PRESS)

Stellantis and Taiwan-based iPhone assembler Foxconn plan to create a joint venture to supply in-car and connected-car technologies. The two companies have signed a non-binding memorandum of understanding to form Mobile Drive, a 50-50 joint venture based in the Netherlands.

Mobile Drive will operate as an automotive supplier, and take part in tenders to provide software solutions and related hardware for Stellantis and other interested automakers, the companies said in a joint statement.

It will focus on infotainment, telematics, and cloud service platform development with software innovations expected to include artificial intelligence-based applications, 5G communication, upgraded over-the-air services, e-commerce opportunities, and smart cockpit integrations.

Tie-up could become a significant alliance in the converging worlds of tech and autos, even if the market was expecting a venture including electric car development and production in China.

Hon Hai Precision Industry, Foxconn's parent company, also has ambitions to supply underpinnings for electric vehicles and has signed deals with Chinese startup Byton and U.S.-based Fisker.

In an online presentation, Stellantis' chief software officer, Yves Bonnefont, outlined the sort of UX innovations the new company is expected to bring to consumers. He said the customer-driven (rather than technology-pushed) approach will see in-cabin experiences that can be completely updatable while leveraging smart data and artificial intelligence.

He pointed to Foxconn and Stellantis previously partnering in the development of the on-board infotainment system first seen in the Airflow Vision design concept, displayed at CES 2020, integrating multiple screens for different people in the car, each screen only visible by one occupant. Screens also could be grouped together with a nod to the future possibilities of advancing levels of automated driving in which occupants can expand their digital experiences when not required to operate the vehicle.

"Today, there's something that matters just as much as beautiful design or innovative technology," says Stellantis CEO Carlos Tavares. "It's how the features inside our vehicles improve the lives of our customers".