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Editorial

DVN Study 2021 Goes Live

We're pleased to announce the DVN 2021 Study is now available. A great deal of thought, effort, and thorough research has gone into it, to mould it into a powerful, value-packed document that will facilitate mutual understanding amongst automakers and tier-1 and -2 suppliers, bringing readers insights and information usually off-limits to them. It's called ***Lighting Under Pressure—Leveraging Tension Between Design, Marketing, and Enginering***.

The study starts with two prefaces which highlight the content; one from Wolfgang Huhn, DVN Study team and former head of lighting and vision systems development at Audi; and the second from Ford's Vehicle Programs Director Jackie Marshall DiMarco. Both prefaces brim with expertise gained by the authors' deep and relevant experience in project management.

Wolfgang Huhn wrote his contributions, he says, in an "emotional and engaged way, because this was part of his daily life". Most of the examples he presents are based on his personal experience in the lighting engineering part of the vehicle development process. "My intention", he describes, "was to provide an insight, where the doors are normally totally closed, to help the mutual understanding between the OEM, and the Tier 1, and Tier 2 suppliers".

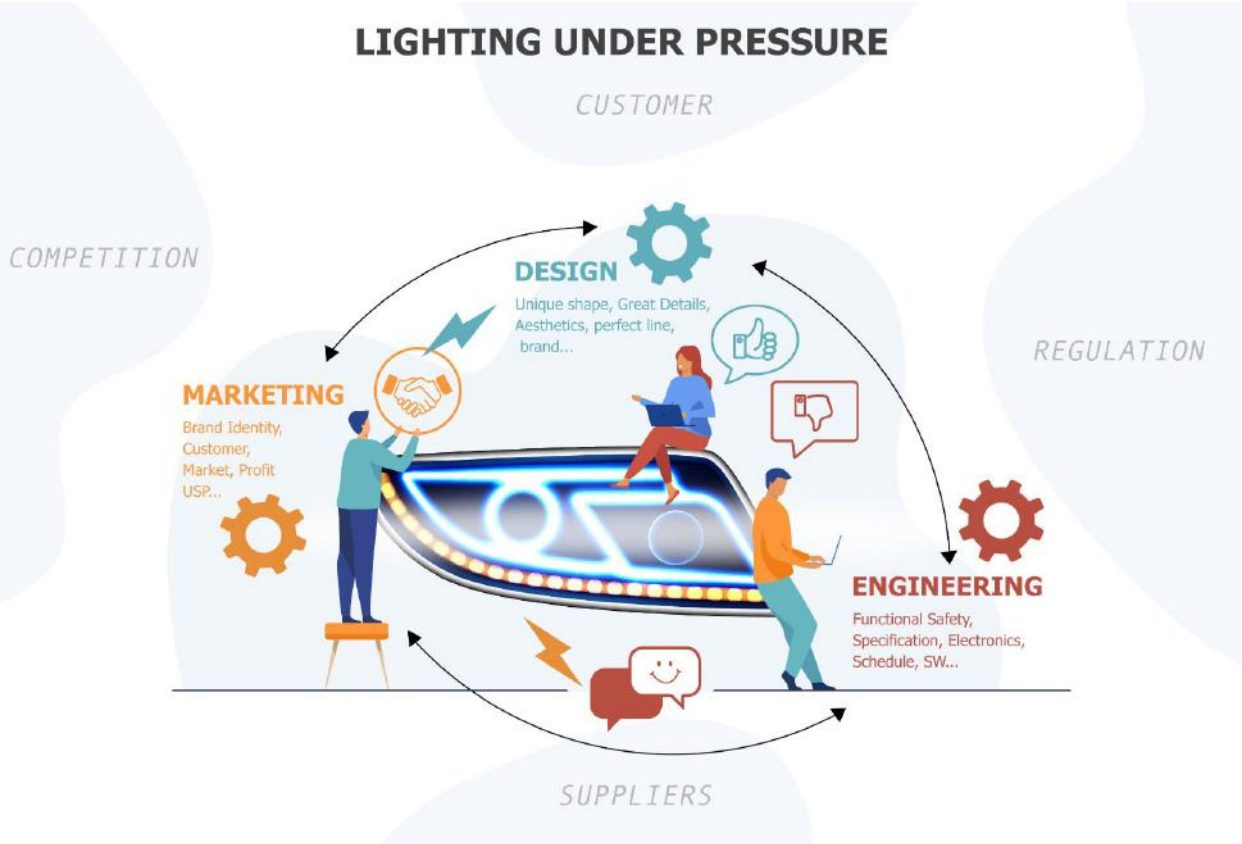
And Jackie Marshall DiMarco thoroughly explains how the study explores the healthy tensions between design studios, marketing, and product development: "It is a serious reality we have found at Ford that exterior lighting is a complex part of that relationship, now more than ever based on the signature, regulation, and performance aspects".

The roles of design, marketing, and engineering in the early phase of the car process are explored in detail; you will come to understand their needs, their pressures, and their daily headaches so your automaker-supplier partnerships can thrive with better support. We have integrated dedicated messages to engineers, marketers, and designers. This is a very fine piece of work, which would be much more expensive if you were to commission a business consulting company to do it for you, so get your copy as soon as you're able!

Sincerely yours

In Depth Lighting Technology

DVN Study: Two Prefaces Highlight the Content



The DVN 2021 Study starts with two prefaces which highlight the content; one from Wolfgang Huhn, DVN Study team and former head of lighting and vision systems development at Audi; and the second from Ford's Vehicle Programs Director Jackie Marshall DiMarco. Both prefaces brim with expertise gained by the authors' deep and relevant experience in project management. We present below these two prefaces:

Wolfgang Huhn, DVN Study team leader; former Audi head of lighting & vision development

In this study you will find a somewhat unusual description of the early phase of a vehicle creation process. The whole study is a team result of course, however I wrote my contributions in an emotional and engaged way because this was part of my daily life and—all in all—it was a great time.

Most of the examples, especially in the content of chapter 9, are based on my personal experience in the lighting engineering part of the vehicle development process. During my working life, the importance of lighting changed dramatically from a commodity to a brand-shaping element. This study includes the different demands, interests and influences of design, marketing, and lighting engineering inside an automaker.

My intention was to provide an insight, where the doors are normally totally closed, to help with mutual understanding among the automaker and the tier-1 and -2 suppliers. The development phase of a new vehicle model is full of time and cost pressures, unexpected changes, and late decisions. Design sets the trends and creates exciting shapes (where the form doesn't necessarily always follow the function from the lighting point of view). Marketing defines the future customer expectations inside the brand values. Lighting engineering makes all this feasible with technical innovations together with the suppliers, and the vehicle program director is the referee. Lighting is a fascinating job—believe me!

Jackie Marshall DiMarco, Ford Vehicle Programs Director

At Ford Motor Company, we continue on our journey to help build a better world where every person is free to move and pursue their dreams. This journey for each customer is very personal and can manifest itself in a relationship with a vehicle for personal use, for work purposes, or both. We have found that exterior lighting is a complex part of that relationship and journey, now more than ever based on the signature and performance aspects that need to be brought together to bring unforgettable character to the vehicle while delivering unparalleled customer satisfaction.

The vehicle development process begins years before images of our new models are released for public consumption, as do the tensions between the teams bringing life to the vehicle throughout the creative and engineering processes. The healthy tension between design studios, marketing, and product development is a serious reality, as explored in this DVN Study. As a global automaker developing platforms for multi-market usage, we must also consider the strong impact of certification/homologation throughout the markets when carefully considering the content for each vehicle. A single or limited-region product is relatively simple to plan and develop as compared to a multi-regional or even global platform in which the tough choices become more complex in lockstep with the diversity in regulations and customer preferences.

We can consider the styling (design), voice-of-the-customer (marketing), and technical

requirements (engineering) all as separate inputs to the development of lighting products between the automaker and suppliers, however at their essence there is one factor: the customer. The lighting and vehicle design must communicate artistry and technology, but if they are not working in harmony to create an attractive and desirable aesthetic, the styling exercise has failed.

Marketing indeed has the crucial role to monitor the pulse of the needs of the customer in terms of features and content. And finally, while we may view the engineering activity is a dry, unemotional process, at the heart of it are specifications designed to ensure customer satisfaction throughout the life of the vehicle. And so, we are constantly balancing the valid arguments of the various domains always with the customer at the centre of the debate. When we discuss exterior lighting on the vehicle, we also may be limiting ourselves to the legally required functions. We need to think beyond these boundaries as well when adding functionality to our vehicle in terms of more signature lit content or even perimeter/zone lighting to get the maximum out of every day in terms of work and play.

Our customers are pursuing their dreams, and lighting products create safety through visibility, drive passion, enable businesses to get work done, and bring our family members safely home at night in that pursuit. Going forward, the greater lighting community can reduce these omnipresent tensions through increased modularity as well as the harmonisation of lighting regulations and performance criteria throughout the primary markets. A higher focus in these areas will allow us to bring more innovative and safer products to the markets that relate to the significant automotive paradigm shifts that are under way.

Lighting News

“The Autonomous”: Why Lighting Community should be Involved

LIGHTING NEWS

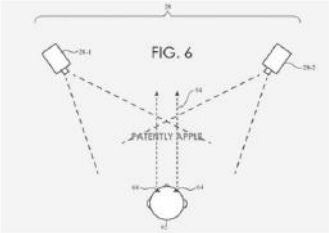
The Congress “The Autonomous” took place Oct. 29th in Vienna’s Imperial Palace. The Austrian High-Tech company TTTech with their Co-Founder and congress chairman Ricky Hudi were organizing the event.
High level speakers CEOs, CTOs and VPs of important companies like ARM, Audi, BMW, Infineon, CARIAD, Nvidia, Lyft, Virgin Hyperloop, Waymo and many others out of the autonomous traffic first line, draw the attention of politicians. The Austrian secretary of state for trade and industry was present for hours at the VIP evening, the secretary of labor was a guest at a panel discussion.
Six panel discussions and three keynotes dominated the main hall. In three side halls the workshops and technical presentations took place. Target was to initiate a collaboration to realize autonomous traffic including road, air rail. Regulations was one important panel discussion with e. g. Tatjana Evas, AI Policy Development and Coordination at the European Commission. One of the workshops was dedicated to regulation development.

At Collaboration and Regulation development the lighting community is decades ahead. We could support here and bring in a lot of experiences. On the other side we could place our lighting demands, which is a tiny, but important detail in future automated traffic.

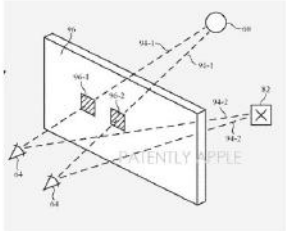
At the registration each attendee could choose a sticker to show his Covid distance demands: Green: Shaking hands is ok, Yellow: "Fist-touching" for hello is ok; Red: Please keep 1.5 m Covid distance.

Apple Patent ADB-like Visor, Mirror Technique

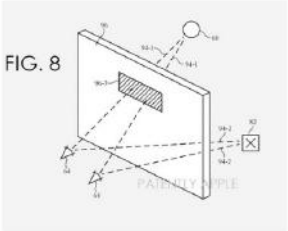
LIGHTING NEWS



Flowchart of illustrative steps involved in using a light modulator to reduce glare



Perspective view of an illustrative window with multiple locally darkened portions



Single darkened portion to reduce glare

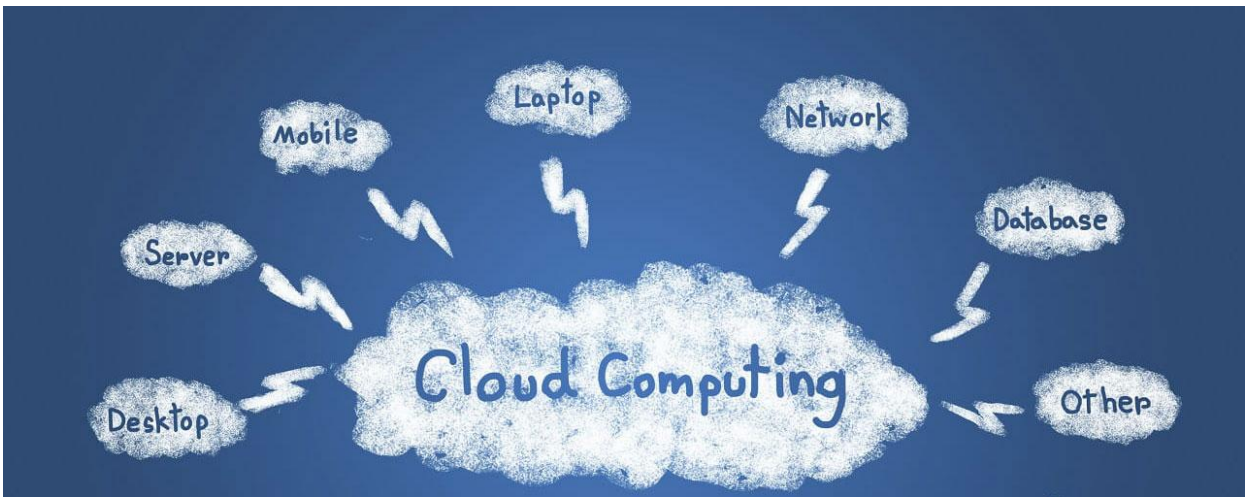
The swing-down-and-outward sunvisor has been basic vehicle equipment for most of a century. Now, tech companies are looking to improve on this old-time, low-tech solution to glare from direct and reflected sunlight. Last year, Bosch **showed their idea** for an ADB-like visor replacement. Now Apple want in on the game, as it seems, if one of their **newest patents** is predictive—and not just in visors, but in mirrors, too. They've put together a control circuit that keeps track of the driver's gaze and exterior glare sources, including the direction in which they're projecting light towards the vehicle. Based on this information, relevant areas of a window or mirror are selectively and dynamically darkened to block the glare from reaching the vehicle occupant's eyes.

The light modulator does the darkening job, and it can be incorporated into windows and mirrors as a photochromic layer; a liquid crystal modulator; an electrochromic modulator, or some other kind. Cameras or other hardware may be used to perform triangulation operations that help control circuitry accurately determine the location of driver, driver eyes, and driver gaze direction.

The Cloud Will Change Everything in the Car: Study

Extract from Roland Berger study

LIGHTING NEWS



The cloud will prevail tomorrow when all vehicles are connected. The technology will change everything. Tomorrow, connected cars will have access to data that will be external to the car, which will be able to consolidate this data to define specific functionalities, depending on the driver's profile, or the particular settings of a vehicle.

The breakthrough that the cloud will bring is that it will make it possible to outsource the computing power necessary for the operation of the car. This will totally change the place of the computers present in a car.
- Today, depending on the model, there are between 50 and 70 calculators. Each function is performed with a specific computer, which is sold by a tier-one with sensors and actuators.
- Tomorrow, the calculations will be more centralized in larger, higher performance computers, which will cover several functions. These computers will be distributed to the four corners of the car to centralise the functions and reduce the wiring of the cars.

The systems sold by suppliers have consisted of sensors, actuators and computers. Tomorrow, they may no longer be able to sell the calculator ... and at best be able to sell the software separately. But in the box that contained the software and the calculator, the software represented only five to 30 per cent of the cost of the product (depending on the complexity of the software), a significant loss in turnover for the automaker. Pure software players will also try to sell software and replace equipment manufacturers. At the same time, some manufacturers are also working to internalize software development, especially when they provide strong differentiation for customers. We are facing a very strong and structuring market phenomenon.

HELLA Designs Light Signature for Peugeot 308

LIGHTING NEWS

HELLA, together with the car manufacturer Stellantis, has developed a characteristic light signature for both the front and rear lighting of the new Peugeot 308.

The central element of the design is in the middle of the radiator grille: the radome, a translucent cover for radar systems, adorns the new Peugeot brand logo. HELLA has contributed in the radome business to the implementation. "The radome is not only an important eye-catcher, but is also becoming increasingly important in the future with a view to autonomous driving. After all, it protects the sensors, which are essential for autonomous driving, from environmental influences and ensures their functionality," says Dr Frank Huber, HELLA Managing Director responsible for the Lighting Division. In the Peugeot 308, for example, the radome, a translucent cover for radar systems, adorns the new Peugeot brand logo, conceals the automatic cruise control ACC with Stop & Go function including lane departure warning.

The hook-shaped LED DRL additionally emphasize the brand's typical appearance at the front of the vehicle. The striking light signature is continued in the rear lighting. This is characterized by narrow full LED taillights displaying the typical three claws. The implementation with EdgeLight technology creates a spatial 3D effect, which ensures a high recognizability of the vehicle on the road.

Cree Are Now Called Wolfspeed

LIGHTING NEWS

Cree have announced a corporate name change to Wolfspeed, which has served as the brand for the company's silicon carbide materials and semiconductor devices business unit for the past six years.

CEO Greg Lowe says the company "are now a pure-play global semiconductor powerhouse; the next generation in power semiconductors will be driven by silicon carbide technology, with superior performance that unleashes new possibilities and positive changes to the way we live."

Wolfspeed say they lead the market in the worldwide adoption of silicon carbide and GaN technologies, providing industry-leading solutions for efficient energy consumption and a sustainable future. Wolfspeed's product families include silicon carbide materials, power-switching devices, and RF devices targeted for applications including electric vehicles, fast charging, 5G, renewable energy, and storage.

Nio Hires JLR, VW Designers for Munich Studio

LIGHTING NEWS

ALISTER WHELAN

JOAQUIN GARCIA

Chinese EV maker Nio, seeking to expand their product range and enter the European market, have hired senior designers from Jaguar Land Rover and Volkswagen Group. Joaquin Garcia, having spent six years at VW's SEAT brand and five at Škoda, is now a senior design director at Nio's Munich design studio. He holds a master's degree from the Royal College of Art in England, started his career at Renault, and later moved to Ford. He ran his own studio for several years before joining Škoda in 2010 as design coordinator, and moved to SEAT in 2015 as head of exterior design.

And Alister Whelan, after 21 years at Jaguar Land Rover, has also been named a senior design director at Nio's Munich studio. A graduate of Coventry University in England, he started his career at Audi. In 2000 he joined JLR, where his positions included Jaguar interior design manager, Jaguar chief designer, and Jaguar interior colour and materials creative director.
Whelan was chief designer of the the Jaguar F-Pace SUV and F-Type sports car. His most recent post at JLR was design director of interior and digital experience.

Both executives started their new positions this month and report to Nio design director Kris Tomasson.

Hella's SOS 360° Emergency Lamp

LIGHTING NEWS

Retroreflective red warning triangles must be carried in every vehicle by law in Europe, but Hella don't consider that adequate protection—after all, the vehicle itself remains unmarked beyond its hazard warning flashers (if they're working). That's the logic behind their new compact SOS 360° LED warning lamp. Car drivers can place the lamp on the vehicle's roof, using its magnetic mounting to attach it safely. In this way the scene of a crash is made safer in an instant.

The SOS 360° fits into any glovebox. It can be switched on manually or, as soon as it makes contact with a vehicle, it becomes magnetically activated. Its high-performance LEDs make an all-around warning signal, which can be seen up to a kilometre away to warn other road users in time to avoid the crash.

It can also provide a bright white continuous light which serves as a torch or a work light—great if work has to be carried out in the engine compartment. In such a case the lamp can be secured to the opened hood by means of its magnetic attachment feature.

Driver Assistance News

Qualcomm, SSW Scoot Past Magna to Buy Veoneer

DRIVER ASSISTANCE NEWS

Chipmaker Qualcomm and SSW Partners, a New York-based investment partnership, are buying Veoneer for USD $37 per share in an all-cash transaction, representing a total equity value for Veoneer of $4.5bn.

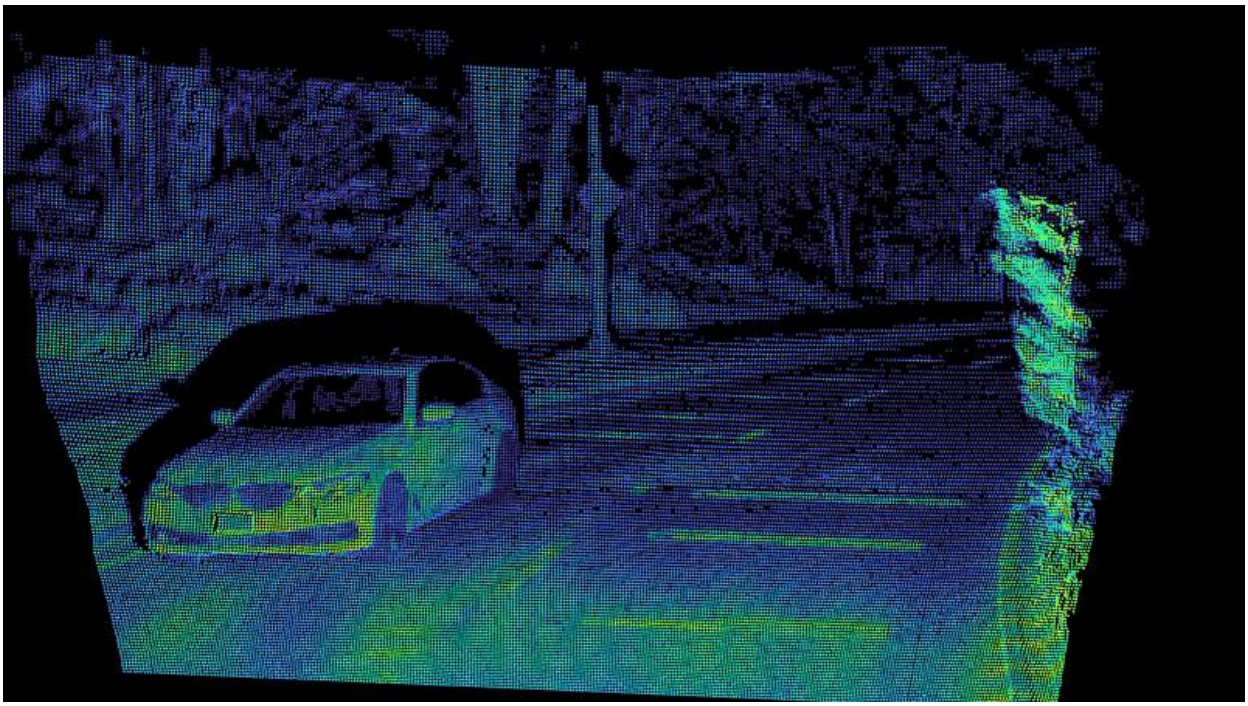
The deal edges out Canada-based Magna International, who refused to raise their bid for Veoneer; Qualcomm’s offer is an 18 per cent premium to Magna's $31.25-a-share bid. The deal is expected to close next year.

At closing, SSW will sell Veoneer’s Arriver business to Qualcomm and “lead the process of finding strong, long-term strategic partners” for Veoneer’s other units, the companies say.

Magna, whose previous offer to buy Veoneer had been accepted, said Veoneer's board determined that the previously announced proposal by Qualcomm is a "superior proposal" in terms of the previously announced merger agreement between Magna and Veoneer, which allowed that agreement to be unwound if Magna chose not to beat it.

Ouster Create «Ouster Automotive»

DRIVER ASSISTANCE NEWS



The transaction, which is expected to be completed by the end of the year, will see around 80 Sense employees transferred to Ouster, including CEO and former Google executive Shauna McIntyre. McIntyre would later become President of Ouster Automotive, a new division of the company directly focused on the emerging opportunity for lidar deployment in autonomous vehicles.

Co-founded five years ago in Durham, NC by veteran optical telecommunications executive Scott Burroughs, Sense Photonics has developed a digital lidar platform based on vertical cavity surface emitting lasers (VCSELs) and diodes. single photon avalanche (SPAD).
In 2019, the company raised $ 26 million in venture capital, with Samsung and Shell participating in the Series A funding round.
Like Ouster, the company's approach is based on the concept of 'flash lidar', and earlier this year the company launched a system that is believed to be capable of generating point cloud images at a rate of over 10 million points per second.

"Flash Sense architecture uses global shutter acquisition to produce incredible high-resolution 3D images up to 200 meters away for 10% reflective targets in direct sunlight - with no motion blur and no data gaps." », Says the firm.

“The expected merger synergies are clear. We have a great opportunity to marry our two platforms to achieve further victories in automotive design. In addition, Ouster's resources, manufacturing know-how and proven execution ability give us the confidence that together, we have what it takes to become the automotive market leader. "

Eric Lebeau is New Vedecom CEO

DRIVER ASSISTANCE NEWS

Vedecom, the Institute for the Energy Transition, dedicated to the mobility of the future, is a public-private partnership foundation of the University of Versailles St Quentin. They've appointed a new general manager from the Renault group, Eric Lebeau, to succeed Philippe Watteau.

Lebeau, Director of Research Partnerships, Advanced Engineering, and Public Funding at Renault, was already a member of the Vedecom board of directors and actively involved since early 2020. His candidacy to succeed Watteau, who directed the institute for the past three years, was selected by the Board of Directors, chaired by Tony Jaux (Stellantis, PFA), on September 10; Lebeau will step up on 1 November.

Despite a context of unfavourable health and economic crisis, the institute has mobilised to maintain a dynamic of innovation, with the reaffirmed confidence of industrialists, the state, communities, and academic partners.

Vedecom enable their partners to innovate through uses and technology, and bring with them breakthrough innovations around electric motorisation, new means of charging, 5G, and connectivity; data, and AI on and off the automated vehicle. They are currently carrying out around thirty French and European multi-partner R&D projects, including 13 projects half-funded by the PIA (Investir l'Avenir Program) via the ANR.

General News

Model Differentiation will be up to 80% Software: VW

GENERAL NEWS

CARIAD CEO DIRK HILGENBERG

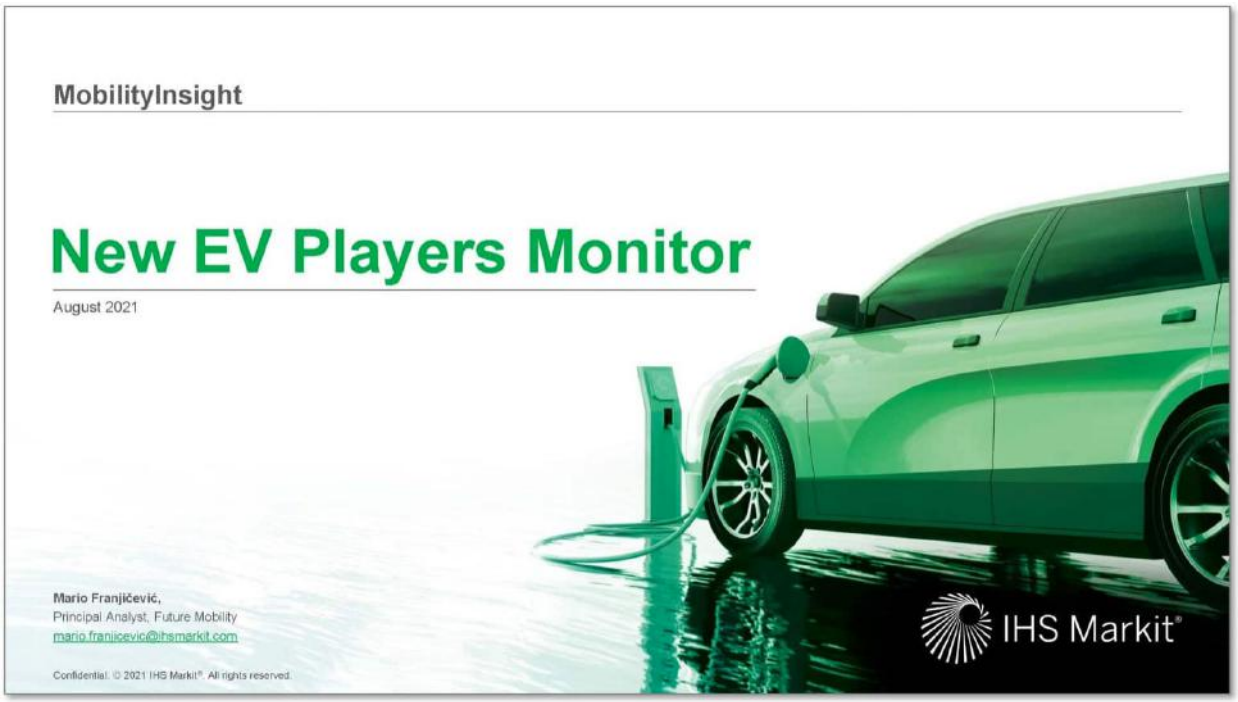
Traditionally, car buyers picked a certain model because they liked its physical attributes: as engine power, vehicle design, or dynamic response. In the future, differentiation between models will be 70 to 80 per cent down to software, Volkswagen Group CEO Herbert Diess says

VW Group already have 4,000 people working within their Cariad software division, and plan to hire an additional 1,000 as they prepare to launch their VW-OS operating system in 2025. The automotive software market will triple in size over the next 10 years as value added from software-based solutions increases to €252bn in 2030 from €76bn in 2020, according to consultant Berylls, who also predict the value of software per vehicle will rise to €2,375 from €820 over the same timeframe, with the biggest chunk of that increase coming from ever greater autonomous driving capability.

The increasing complexity of new cars has thoroughly tested automakers' software-writing ability. VW, for example, have about 100 million lines of computer code in the current Golf, a tenfold increase on a car built in 2010. VW predict that number will rise to 200 to 300 million lines of code when they launch their Trinity electric sedan in 2026 using the 2.0 version of VW.OS.

BEV Prevalence: 20% by '27?

GENERAL NEWS



According to the recently-released IHS Market Light Vehicle Production Forecast, global light vehicle production volumes are expected to exceed 100 Million units by 2027. About 20 per cent of the forecasted 100 Million units in 2027 are expected to be battery electric vehicles.

As the changing automotive landscape steers toward increased electrification, this provides a robust growth opportunity for BEVs to lure a raft of newly founded EV startups. As battery electrification, autonomous driving, and mobility as a service undergo convergent evolution, they have the potential to create the biggest paradigm shift in the 130+ year history of the car industry, affecting established business models and disrupting traditional supply chains.