



Editorial

DVN Study 2021: Insight From Behind Closed Doors



LEFT TO RIGHT: R. SCHÄFER · L. METZEMAEKERS · W. HUHN · H.FRATTY · S.BERNER · J.P. RAVIER
(NOT SHOWN:GEOFF DRAPER, CARSTEN BEFELEIN)

After months and months of dilligent work, we've completed our latest DVN Study. This time we took a new approach, working in a team with eight industry experts to examine the diverse demands, interests, and influences of design, marketing, and lighting engineering inside an automaker. The DVN Study 2021 provides insight from places and spaces usually off-limits to outsiders, and so stands to facilitate mutual understanding amongst automakers and tier-1 and -2 suppliers. We're proud to present this concise, exciting-to-read study:

LIGHTING UNDER PRESSURE?

LEVERAGING TENSIONS BETWEEN DESIGN, MARKETING, AND ENGINEERING

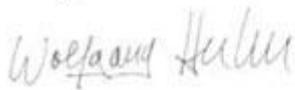
This study will help you to best manage the relationship with all departments during new projects. We give you new perspective by describing and explain how and why decisions are made, and by whom. The roles of design, marketing, and engineering in the early phase of the car process are explored in detail; you will come to understand their needs their pressure and their daily headache, 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.

We only would like to add a comment from one of the greatest experts in marketing, very involved in the relevant fields: *"(...) frictions between departments with different goals, targets and ways of thinking are daily experienced by hundreds of well-motivated engineers, stylists, and marketing people around the world, but [in this study] maybe for the first time these challenges and conflicts are clearly described and made transparent for potential common solutions"*.

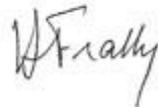
[Contact us](#) for your copy.

More information and online purchasing on [DVN website!](#)

Wolfgang Huhn
Study Chief Author

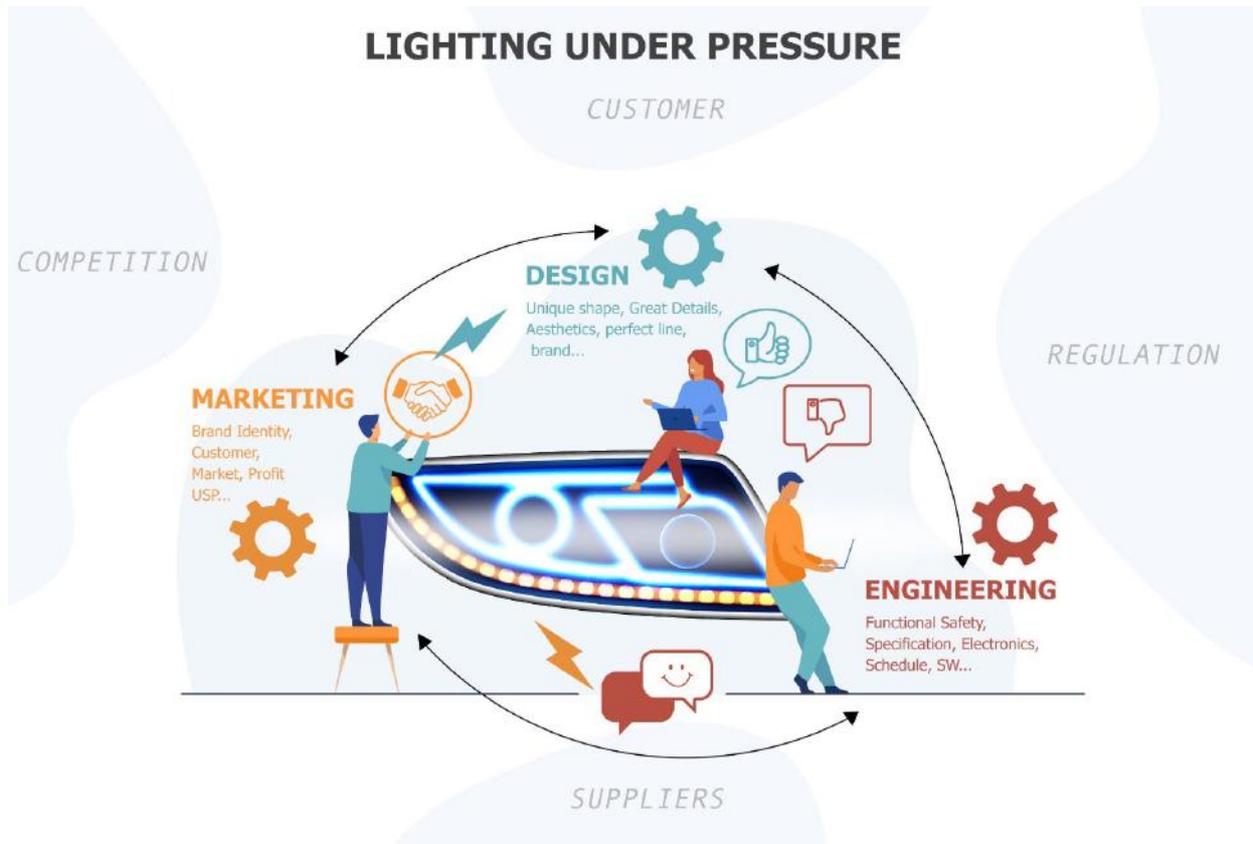


Hector Fratty
DVN CEO



In Depth Lighting Technology

DVN Study 2021



Lighting under Pressure?

Leveraging Tensions Between Design, Marketing, and Engineering

This study focuses on the automaker perspective of the vehicle creation process and, provides the opportunity to better understand its intricacies, including:

- The roles and responsibilities of the automaker's design, marketing, and lighting-engineering that often seem opaque to outside observers. This insider information makes it more transparent by providing insight from places and spaces usually off-limits to outsiders, and so stands to facilitate mutual understanding amongst automakers and tier-1 and -2 suppliers;
- How to educate new managers, engineers, account managers, and project leaders for a better understanding of the vehicle creation process, to raise motivation and avoid frustration and prepare for the stormy times of a vehicle launch program;
- How to improve the capability to anticipate the complexity created by new influences and changed priorities in the automaker's process;
- How to transform from passive observer to active participant, early in the car creation phase, by leveraging the detailed behind-the-scenes information provided in the booklet.

A group of senior experts in the field of car lighting—Carsten Befelein, Geoff Draper, Hector Fratty, Wolfgang Huhn, Leo Metzemaekers, Jean Paul Ravier, and Ralf Schäfer—have analysed how a new vehicle model is created and the roles of the different personnel, especially with respect to creating the lighting system.

Not unexpectedly, during the discussions it became obvious that a variety of tensions exist among the three key functions of **design, marketing, and lighting engineering**.

As with past DVN Studies, one element of information gathering was through interviews with a number of key stakeholders from design, marketing and lighting engineering, mainly within automakers.

The study starts by describing the main demands of the three key functions, including the influence of the homologation process. The study concludes by outlining the upcoming tensions, and unavoidable target conflicts, during the development of a vehicle and how to deal with them in a constructive manner.

The DVN Study 2021 shines light on these tensions with real-world examples, such as the role of lighting engineering in its relations to marketing, design, and regulation.

Main chapters

Business opportunities

Design demands and trends

- Mission of design expressed by designers
- Megatrends influencing design and styling
- Design: styling demands for lighting
- Design trends and demands expressed from DVN designers' interviews
- Future styling trends and demands
- Takeaways from design demands

Marketing demands and trends

- On the importance of marketing
- The roles of marketing during the vehicle creation and lifecycle
- Automaker brand value and signature
- Marketing trends and demands expressed from DVN designers' interviews
- Takeaways from marketing demands

Lighting engineering demands and trends

- Introduction to the role of engineering and its main relationships
- Relation, tension, conflicts with design
- Relation, tension, conflicts with marketing
- Value drivers for lighting engineering
- Takeaways from engineering demands

Regulatory and safety demands

- Homologation and regulation
- Tensions in the programme for the launch of a new vehicle model range
- The UNECE or EU exemption procedures

- Fundamental requirements to enable a new lighting function to be regulated
- How to avoid delays to the introduction of new functions
- Conclusion

Leveraging tensions

- Some aspects of the vehicle design process
- Reasons for pressure on the designers
- Reasons for pressure on marketing
- Reasons for pressure on engineering
- The role of the program director
- The others are not enemies
- The right organisation
- The role of DVN

Lighting News

DVN Releases the Report on DVN US Workshop

LIGHTING NEWS



DVN releases its monthly report on DVN US Workshop.

DVN Gold members will have the possibility to [download this report](#), to follow the summary of the 32 lectures, and to have a look of the exhibition booths, **to see and download Novi Speakers presentations in pdf format by [clicking here](#).**

SESSION 1: Status of Safety Situation on the roads

UMTRI, Michael Flannagan, Research Associate Professor Human Factors Division
IIHS, Matthew Brumbelow, Regulator,
Mount Sinai-Icahn School of Medicine, John Bullough

SESSION 2: OEM contribution to safety improvement

Audi, Michael Hamm, Manager Development Headlamps,
Volvo, Paul-Henri Matha, Technical Leader Exterior Lighting,
GM, Michael Larsen, Exterior Lighting Technical Lead
Ford Motors, Luciano Lukacs, Global Core Exterior Lighting Supervisor,
Jaguar Land Rover, Shammika Vickramasinghe, Group Leader

SESSION 3: Set Makers Technology Achievements to increase Safety

Marelli-AL, Ernst-Olaf Rosenhahn, Head of Lighting Innovation
Valeo, John Orisich, Manager - Advanced Development and Simulations
Varroc, L.Brisson, SiLC, R. Muenster, and BlueSpace Pazhayampallil
Hella, Pavel Ondryska,
Koito-NAL, Viren Merchant, Assistant General Manager - New Technology

SESSION 5: Regulations : Harmonisation of technical requirements for ALS

GTB, David Puglisi, Secretary of GRE IWG-SLR
Sapphire Technical Systems, Michael Piscitelli,
SMVIC/SAC/TC114/SC21, Ms. Wang Wei,
Varroc, R. Neumann, Chair GTB Scientific Group/Co-Chair GTB Strategy Group
Mount Sinai Icahn, John Bullough, UMTRI Michael Flannagan

SESSION 6 - Light source innovation

Lumileds, Michel Zwanenburg, Regional VP NAFTA Automotive,
Samsung, Will Chung, Principal Engineer, Automotive LED Marketing
AMS Osram, Michael Godwin, NA Director, Visible LED Products
Kyocera SLD Laser, Paul Rudy, SVP BD, CMO & cofounder MKT and BD,
TI, Brandon Seizer, Product Marketing Engineer

SESSION 7 – Technology Enablers

AML Systems, Ludovic Toulisse, R&D Director
Docter Optics, Hagen Schweitzer, Manager Optical Design,
Covestro, Paul Platte, Senior Marketing Manager,
LMT, Stephen Dahle, Board member and Sales Director



High-Tech Headlamps: Explainer Video From CNBC

LIGHTING NEWS



CNBC, a world leader in business news and real-time financial market coverage, recently published a feature [video](#) on headlighting. It features John Bullough, Todd Morgan, and other notable people involved in lighting talking about past and current technologies. It's always interesting to see and hear what mainstream news media get right (and wrong) about the intricacies of vehicle lighting technology and regulation. Sample quote:

Headlights are quietly undergoing a technological revolution, and regulators are trying to catch up. For much of automotive history, innovation came to headlights gradually. But over the last few decades, the pace has quickened. Now, the so-called ADB, adaptive driving beams can illuminate an entire road while shutting off any bulbs that would shine in the eyes of oncoming drivers. Even more sophisticated headlights have such high resolution that they can display graphics or even animations. These could be used to display warnings or other important information in front of the driver. In theory, the technology could enable a car to project an entire movie from its headlamps.

PACE 2021 Awards Announced

LIGHTING NEWS



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In an online presentation last week, Automotive News PACE awards were bestowed on 14 companies for product and technology advances and 10 emerging innovations from both global suppliers and small startups.

Of the 24 awards given out, ten went to companies involved in lighting, interior, and ADAS:

- **Bosch:** L² autonomous Class 8 truck lanekeeping system
- **Valeo:** All-weather lidar cleaning system; data interface for ultrasonic near-field perception systems
- **Faurecia:** IRYStec perceptual display platform vision
- **Continental:** Curved plastic display screen lenses
- **RoboSense:** MEMS solid-state automotive lidar
- **Arbe:** 4D imaging radar
- **Detect-It:** Coder-free AI enterprise software
- **Lear:** INTU Thermal Comfort with ClimateSense technology
- **Vayyar:** Automotive 4D imaging radar

Hi-Spec ZKW LED Lights on New Opel Astra

LIGHTING NEWS



The IntelliLux LED Pixel Light, already popular on Opel's Insignia and Grandland models, now arrives on the new Opel Astra. ZKW put 84 LEDs in each headlamp to provide a highly-versatile ADB system. The light module and electronic components are integrated into the extra-slim lamps themselves.

ZKW have significantly improved and further developed the system with more and smaller segments for higher resolution and lighting quality: Compared to the previous system, the new Pixel Light has not only vertical, but also horizontal segments for both high and low beams. This technology makes it possible to illuminate the gap created when declaring an oncoming or leading vehicle.

The wing-shaped DRL uses specially-developed microoptics to deliver a homogeneous appearance, whether lit or unlit.

Marelli AL to Embiggen China Plant

LIGHTING NEWS



Marelli have signed a framework agreement to enlarge their existing lighting plant with the Wuhu Economic Development Area authorities. The Wuhu plant opened in 2005, and now will be expanded to enable greater production of front and rear lamps.

The expansion, which is expected to be complete in 2023, will add 21,000 m² for a new R&D centre and new production lines for electronics aimed at vehicle lighting applications.

The larger plant is seen as crucial for Marelli AL's growth in the region, in response to the growing demand for lighting electronics and to customers' evolving needs, as vehicle illumination becomes more and more advanced.

Hella Report Good Quarterlies, With Chip-Shortage Asterisk

LIGHTING NEWS



Hella's final complete results for the first quarter of the fiscal year (1 June to 31 August 2021) include currency and portfolio-adjusted sales rising by 9.5 per cent to €1.5bn, while adjusted EBIT increased from €56m to €91m. The supplier's automotive segment significantly outperformed the market, but has taken a severe hit on account of ongoing chip and component shortages. CEO Dr. Rolf Breidenbach says "Given the current market conditions, the start of the new fiscal year was, as expected, very challenging. Our automotive business in particular was impacted by further increasing supply bottlenecks for certain electronic components. However, we once again outperformed the market. This speaks for our strong strategic positioning. Above all, the Aftermarket and Special Applications segments also developed very successfully".

Hella's predictions for FY 2021-22 were lowered last month in view of significantly reduced market expectations. They expect currency- and portfolio-adjusted sales in the range of €6bn to €6.5bn, and an adjusted EBIT margin between five and seven per cent (previously about 8 per cent).

Breidenbach says "The industry environment deteriorated noticeably in the first quarter, in particular due to the worsening component crisis. According to the latest market forecasts, it can be assumed that in all likelihood around ten million fewer vehicles will be produced worldwide this fiscal year than was still expected in July of this year".

Hot Halogen Headlamps Turn Toyota Tundra Trucks Toasty

LIGHTING NEWS



Toyota Tundra pickup trucks—almost 160,000 of them, from the 2018 to 2021 model years—are being recalled to fix a faulty headlamp circuit that can catch on fire. The trouble is caused by a wiring harness, made in the Philippines and improperly configured to keep the low beam filament of the H4 bulb energised during high beam operation. This throws a steep thermal overload on the headlamp socket and common ground wire. Like all 2-filament halogen bulbs, the H4 (known as HB2 in the US market) is not designed or intended to light both filaments at the same time, except for brief periods during beam switchover.

The socket and wires heat up to critical temperatures when the high beams are used for prolonged periods, particularly when the truck is stationary or being driven at low speed, and there's no cooling airflow past the components. The wiring insulation and bulb socket can melt and lead to an open circuit (no headlamp operation) or a short circuit, aggravating the damage and posing the risk of fire. Toyota are aware of 18 incidents, of which six have involved fire.

To remedy the situation, Toyota dealers will inspect and update affected trucks' engine wiring harness, headlamps, headlight bulbs, and sockets; faulty components will be replaced free of charge, and owners who have already paid for related headlamp fixes will be eligible for reimbursement.

Toyota say some affected vehicles were sold outside the United States; the existence or extent of recall operations in other countries is not known. Trucks with the optional LED headlamps are not affected.

Driver Assistance News

Continental Shuffles the Cards

DRIVER ASSISTANCE NEWS



Continental have announced plans for a restructuring that will combine their business activities around connectivity, mobility and high-performance computing. Their tires and ContiTech divisions, focused on rubber technologies, are to become independent group sectors, while their Automotive Technologies brand will split into five business areas: Safety and Motion; Autonomous Mobility; Smart Mobility; User Experience; and Architecture and Networking.

Continental are calling it a market-orientated reorganisation. CEO Nikolai Setzer says "Mobility of the future is sustainable, automated and connected; we are thus making the most of the potential presented by our unique strong technology position in all of these fields. We are pooling our expertise, particularly when it comes to software".

Lidar Technology With 30x Performance Improvement

DRIVER ASSISTANCE NEWS



With a 30x performance improvement and 70% cost reduction over InnovizOne, Innoviz Technologies, a provider of high-performance solid-state Lidar sensors and perception software, has unveiled the new generation InnovizTwo 905nm Lidar sensor. It is expected that the updated version will allow for its adoption by any type of vehicle and promote faster adoption of safe autonomous driving. The InnovizTwo LiDAR sensor is specifically designed for automakers and Robotaxi, shuttle and delivery companies requiring an automotive-grade, mass-producible solution.

The new design includes a new detector, scanner and multiple developments in the optical packaging and the electric design. Features include:

- Extended Field of View (FoV) of $125^{\circ} \times 40^{\circ}$
- Increased native resolution of 0.07×0.05 degrees, over 8000 lines each second, leaving no hazardous object undetected
- Range of 300m gives the ability to see small, dark objects with 10% reflectivity at over 220m under strong sun conditions of 100Klux using the high resolution of 0.07×0.05 degrees and 20 frames per second, keeping a full field of view.

InnovizTwo samples will undergo rigorous testing and revisions this year to reach an optimum design. The product will enter series production during 2022 and serve leading OEM car programs due in 2023. Innoviz is also developing new manufacturing tools to reach production levels of between 500,000 and 1,000,000 units per year by 2024. Customers presently using InnovizOne today will be able to soon switch to InnovizTwo.

Mammoth Lidar Junction-Watch Trial Begins

DRIVER ASSISTANCE NEWS



A new study on improving traffic, energy efficiency, road safety and air quality is being conducted at the University of California, Irvine (UCI), where 25 road junctions around the campus will be equipped with Velodyne's lidar systems. The study is said to be the largest lidar-based traffic monitoring solution in the world.

HIMaC2 (the Horiba Institute for Mobility and Connectivity²) plan to create a public road network platform for the development, evaluation, and deployment of emerging and future connected and autonomous vehicle technologies. Using Velodyne's lidar, the network will be able to monitor traffic networks and public spaces.

Velodyne say traffic coordination of junctions and AVs could reduce congestion by up to 30 per cent, and emissions by up to 15 per cent, while improving safety.

HIMaC2 will study how traffic coördination can be improved through data and analytics generated by the lidar. Using advanced infrastructure monitoring as a vehicle-to-everything solution, the program will generate critical data for traffic and crowd flow, path planning and protect users in all weather and lighting conditions.

Blaize & LeiShen: Agreement to integrate Lidar and AI

DRIVER ASSISTANCE NEWS



Blaize announced a strategic cooperation agreement with Lidar solutions leader LeiShen, for in-depth cooperation on the integration of Lidar and AI functions in intelligence applications for autonomous operation across a range of automotive in China.

As part of the agreement, Blaize and LeiShen are building a sensor fusion solution combining LeiShen Lidar technology with AI processing on the Blaize Pathfinder P1600 SOM embedded AI accelerator.

LeiShen is the only Lidar company that has mastered the four ranging principles of time flight method, triangulation method, phase method and FMCW at the same time, and independently developed 1550nm fiber laser and its core components.

In April 2021, LeiShen launched the second hybrid solid-state Lidar in the world and the first one officially certified by vehicle regulations in China Up to CH32. As well, LeiShen launched the high-profile 128 wire vehicle gauge hybrid solid-state lidar ch128x1.

General News

Lucid Starts Production of the Groundbreaking Lucid Air in Arizona

GENERAL NEWS



LUCID AIR ELECTRIC SEDAN WITH ITS THIN HEADLAMPS

Lucid Group which is setting new standards with its advanced luxury EVs, kicked off its Production Preview Week, a series of events during which Lucid opened the doors of its Advanced Manufacturing Plant (AMP-1) and Lucid Powertrain Manufacturing (LPM-1) factories in Casa Grande, Arizona, to members of the media.

The EPA recently released its official range estimate for the Lucid Air Dream Edition Range, which is the longest range for any electric car rated by the EPA 520 miles on a single charge.

«The proprietary EV technology that Lucid has developed will make it possible to travel more miles using less battery energy. Our technology will allow for increasingly lighter, more efficient, and less expensive EVs, and today represents a major step in our journey to expand the accessibility of more sustainable transportation,» said Peter Rawlinson, CEO and CTO, Lucid Group. «I'm delighted that production cars endowed with this level of efficiency are currently driving off our factory line».

Schaeffler, Mobileye partner on autonomous shuttle project

GENERAL NEWS



Schaeffler and Mobileye are teaming up on a self-driving shuttle project that will pair Schaeffler's engineering expertise in drivetrain and chassis with Mobileye's knowledge of driver assistance and autonomous systems. The customizable vehicle platform will be available starting in 2023.

For the steering and drive components, Schaeffler will offer a variety of variants, from a simple drivetrain through an e-axis and central steering to the use of four "Schaeffler Corner Modules," which could be implemented based on customer requirements. The corner modules allow for a steering angle of up to 90° and have been developed in for series production and scalability.

Mobileye's Drive perception system offers two independent subsystems (cameras and radars plus lidars) for what it calls "True Redundancy."

Jana Striezel is New Renault Purchasing Director

GENERAL NEWS



Jana Striezel will join Renault Group later this month as Renault Purchasing Director and Europe Director of Purchasing for the Alliance.

She will operate under Alliance Purchasing Organisation Managing Director Gianluca de Ficchy, and report to Renault Group CEO Luca de Meo. She will also be a member of the Renault Management Committee.

Striezel studied law and economics at Bayreuth University in Germany, and is an alumna of Yale Law School in the United States.

She was CEO of For-Med then partner at Freshfields Bruckhaus Deringer, before joining the Volkswagen Group in 2014 as head of their Antitrust Department. In 2017, she led an emissions-related task force; two years later, she was appointed Executive Director of Exterior Corporate Purchasing for the Volkswagen Group and brand.

New COO at Renault Mobilize

GENERAL NEWS



Renault has appointed Fedra Ribeiro, a mobility executive with Robert Bosch, as chief operating officer of the automaker's Mobilize unit.

Renault CEO Luca de Meo in 2020 created Mobilize to develop and commercialize mobility services with a target of 20% of automotive revenues coming from such services by 2030. Renault Group Deputy CEO and CFO Clotilde Delbos heads the unit. Mobilize has just presented a lineup of dedicated mobility vehicles, including the Limo, a compact electric sedan for ride-hailing use developed by a Chinese JV partner. In production in second half of 2022.

Ribeiro began her career at Volkswagen in 1998, working in product engineering in her native Portugal. She worked at Raytheon from 2001 as an account manager, and joined Bosch in 2012, working as an executive in service solutions and mobility solutions. In 2018 she became a senior VP at Bosch Connected Mobility Solutions before assuming her current role.

Since January, Ribeiro is executive VP progressive mobility at Bosch.