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Editorial

DVN Team: Hard At Work On The 2 Upcoming Workshops

After the shift of the DVN Paris workshop in 2023, all of us on the DVN team are now focused on two important events of the usual high professional importance, but also of great personal significance to me. I'm particularly excited about the DVN Interior Workshop in Frankfurt on 25-26 April, for it will be the first face-to-face DVN Interior Workshop. And the DVN US Workshop near Detroit, Michigan on 20-21 June is a biggie for me because at the last pre-Covid US Workshop, just before the opening of the second day, I nearly died after slipping on icy pavement. I was three weeks in a Detroit hospital before I was well enough to return home, and then two months recuperating in a French hospital. Whew!

We plan these events to bring the DVN community right to where significant work is being done; to allow automakers to present their achievements and their needs; tier-1s to present their innovations, and tier-2s to show their new products and technologies. That's how mutually-beneficial connections are established and strengthened in these times of ever-accelerating technological and technical evolution and product cycle compression. Save the dates; participate!

This week's DVNewsletter contains more detailed information on these important events. I look forward to seeing you!

Sincerely yours,

In Depth Lighting Technology

DVN Interior Köln Workshop: Building Up to the Best

The upcoming DVN Interior Workshop is in final preparation, and it will reflect major car interior trends. The rubric is **Experience Interior • Technology for Safety, Comfort, & Fun**.

The workshop is structured around six sessions:

• HMI: Human-Machine Interaction
HMI is much more than screen readability. There are many ways to interact with the vehicle (buttons, switch, touch screen, voice, gesture), and for the vehicle to interact with the driver (screen message, HUD, sound, light, vibration).

• Driver Monitoring Systems
DMS started out as a safety feature to reduce accidents related to driver drowsiness and inattention. It is becoming even more important as regulation is making it mandatory in new vehicles. As they evolve to become more advanced, the industry will leverage this detection technology to improve more aspects of all vehicle occupants' health and comfort.

• Interior Lighting
Interior lighting is more than just what one sees when sitting in the vehicle. Interior lighting enhances the travel experience; facilitates finding and operating vehicle controls; supports infotainment, and visually improves surfaces and materials. In this context, intelligence means adapting to context; to mood. Lighting is increasingly a pillar of interaction between the vehicle and the driver, an integral part of the vehicle's safety system. Lecturers will include:
· Dr. A.Bizal, Interior Lighting Innovation (Hella)
· Tobias Huber, Head of Advanced Development (AMS Osram)
· Stefan Hoffmann (Inova Semiconductors)
· Michael Bender (Melexis)
· A speaker from BMW

• Functional Surfaces
Car interior surfaces are located all around drivers and occupants—dozens of square metres throughout the vehicle! These surfaces previously just determined the interior styling; now they play a much bigger role as they becoming functional through the likes of sensing and haptic features, projection, and other new integrative techniques.

• Interior Air Quality
IAQ (interior air quality) is growing in importance as more driving is done in dense urban traffic and people are increasingly aware—and concerned—about it. IAQ is quantified as the concentration of pollutants like CO_2, NO_x and VOCs. Now it's moving beyond just measuring extraneous substances in the air; now it's adding new ones; namely, fragrance: increasingly a criterion of perceived quality and a design element reflecting the signature of the brand.

• **Materials/Sustainability.**
Car interiors represent a major challenge in terms of sustainability and carbon neutrality. Interiors also play a major role in consumer perception of sustainability through how materials and surfaces look and feel. What is true for the whole car is especially true for interiors, wherein plastic is the predominant material. Plastics represent about 12 to 15 per cent of the weight of today's vehicle, which translates to 150-200 kg of plastic per vehicle, with a big chunk of it in the cabin.


PHILIPPE AUMONT


CARSTEN BEFELEIN

We expect attendance of 150 people on-site following the lectures, visiting the exhibition booths, and networking. Get set to exhibit, to speak, or just to attend! Find more information **here**.

DVN US Workshop '22: Save the Date; Book Your Booth!

The 24th DVN US Workshop is coming up in four months' time, near Detroit on 20-21 June. All of us at DVN, the whole team, are doing our best to make a big success of the event. European, North American, and Asian contingents are optimistic about coming to the US by then, and we are confident the Workshop will be a grand success. The rubric, **Safety &**

Design: Challenges & Opportunities, is timely and crucial, and the information and ideas shared at the event will make real contributions to decrease traffic fatalities in the world and propose new designs.

Registration will be open soon, and we look forward to welcoming your attendance and participation in an inspiring, exciting, lively, and safe conference in Michigan. Of course we will regulary keep you informed about any changes and updates, here in the weekly DVNewsletter. Among the topical sessions will be *Automaker Achievements in Design and Safety · Effects of New Front and Rear Design on Safety · Effects of Safety Functions on Design · Status and Evolution of Regulations in the World · Light Source Effects on Design and Safety · Enabling New Design and Safety Functions.*

Attendees will have the great privilege of lectures from the likes of Audi, Ford, GM, Lucid, Rivian, Stellantis, and Volvo; Hasco, Hella, Koito, Magna, Marelli AL, Mind, Valeo, XingYu, and ZKW; the greatest and most innovative lighting-and-vision tier-2s; and research and regulatory voices from Europe, North America, and Asia.The speakers will explain how digital and HD lighting technologies allow communication with other drivers, pedestrians, and cyclists; the effect on safety for vulnerable road users, and how new technologies will facilitate new designs. The panel discussion will grapple with the rubric**Design Depending on Technology, or Vice Versa? Impact of Regulations.**

There will be ample time for individual communication and networking during the coffee breaks, lunches, and especially the cocktail and dinner as a highlight on the first day. The workshop will highlight how new technologies will contribute increasing safety in the world, while facilitating new designs. Topics will include front and rear lighting; ADB, LED, mini- and microLED, OLED, laser, and MLA technologies' effects on safety and design; and new functions including lit design elements like illuminated front grilles.

WOLFGANG HUHN

HECTOR FRATTY

The event will bring together more than 300 participants from all over the world—managers, experts, decisionmakers, researchers, and practitioners involved in lighting and ADAS. Discussion panels and exhibition booths will host fruitful exchanges between all attendees.

Lighting News

Michel Favre CEO of HELLA, Yves Andres Chief Lighting Business Group

LIGHTING NEWS

MICHEL FAVRE

YVES ANDRES

The HELLA Shareholder Committee resolved on the appointment of Michel Favre and Yves Andres as new members of the Management Board of HELLA.
Michel Favre, currently Executive VP, Group CFO at Faurecia, will take over as HELLA CEO in July. Dr. Rolf Breidenbach will terminate his management contract, supporting Faurecia/HELLA group in an advisory capacity.
Yves Andres, currently Executive VP Clean Mobility at Faurecia, will join the HELLA Management Board in April. After a transition period he will take over responsibility for the Lighting Business Group from Dr. Frank Huber.

Michel Favre has been EVP Group CFO at Faurecia since 2013. Prior to that, he also spent 13 years at automotive supplier Valeo, where he held various specialist and management positions, including leading the Lighting Business.

Yves Andres has been with Faurecia since 2007. Since 2021, he has been responsible for the Clean Mobility Business Group. Previously, he held positions at Faurecia in the areas of finance, manufacturing, sales & program management and general management in both Europe and US. He began his career in 2005 at automotive supplier ZF.

Opel, TUD Open Cooperation in Light Technology

LIGHTING NEWS

Opel and the TU Darmstadt have begun joint research into new lighting technologies. The automaker's strategic partnership with TU Darmstadt will enable a new era of lighting technologies; Opel CEO Uwe Hochgeschurtz says "Advanced adaptive light systems do so much more than just illuminate the road according to the prevailing conditions. They are linked to numerous assistance systems and make driving safer and more comfortable. Together with TU Darmstadt, we want to develop all-new lighting systems and bring them to the market".

The funded research will include an intelligent, self-adapting front and rear lighting system that optimally adapts to the environment and traffic situation as well as other influencing factors. Initial tests with a prototype are already planned for the end of the year. “We want to revolutionise automotive lighting with this technology, and accompany the development through all stages, from research to prototypes and testing to the finished product,” says Professor Tran Quoc Khanh, Head of the Department of Adaptive Lighting Systems and Visual Processing at TUD.

For both partners, the new Open Lab means a win-win situation: Stellantis can draw on the expertise of TU Darmstadt to transfer research findings into vehicle systems, and the TU's doctoral students can use the automotive company's technical infrastructure to test their developments in the field.
"If everything goes as planned, the first vehicles with the lighting technologies developed with Stellantis will be seen on the roads by 2028", Khanh says. “They will have one of the most intelligent lighting technologies in the world".

More Cars Win Max IIHS Plaudit as Headlamps Improve

LIGHTING NEWS

The number of vehicles earning the IIHS' highest safey grade grew for 2022 models as better headlamps and front-crash prevention become standard offerings.
Compared with 49 in 2021 models, 65 in 2022 models have so far received the Top Safety Pick+ award, with more models still being tested.

To qualify for a Top Safety Pick award, vehicles must have *good* ratings in all six of the institute's crashworthiness tests. Vehicles also must be available with *good* or *acceptable* headlamps, and *superior* or *advanced* front crash prevention. The Top Safety Pick+ is awarded to models that meet those same requirements and also have *good* or *acceptable* headlamps as **standard fitment** across all trim levels and packages.

Vehicles from Hyundai, Volkswagen, and Volvo have received the most awards so far this year: Hyundai Motor Group earned 11 TSP+s and 10 TSPs; the VW Group got eight TSP+s and three TSPs, and Volvo earned ten TSP+ awards. And 34 models classified by the institute as SUVs earned TSP+.

Of the 65 TSP+ models, 31 come equipped exclusively with *good*-rated headlamps. IIHS also are adding a nighttime pedestrian crash prevention test. The new test will not be part of the criteria for Top Safety Pick, the institute said, but vehicles will need to have *superior* or *advanced* ratings to qualify for Top Safety Pick+.

Expanding EV Market Drives Innovative LED Applications

LIGHTING NEWS

EVs are boosting the demand for automotive LEDs. While LED headlamp market uptake exceeded 60% in 2021 in the automotive sector as a whole, the figure is 90% in the NEV (new-energy vehicle) category, according to a TrendForce survey. All automakers are actively promoting smart LED headlamp technology. ADB proliferation is expected to jump around 4% in 2023 and 7% per cent in 2025, up from 2% in 2021.

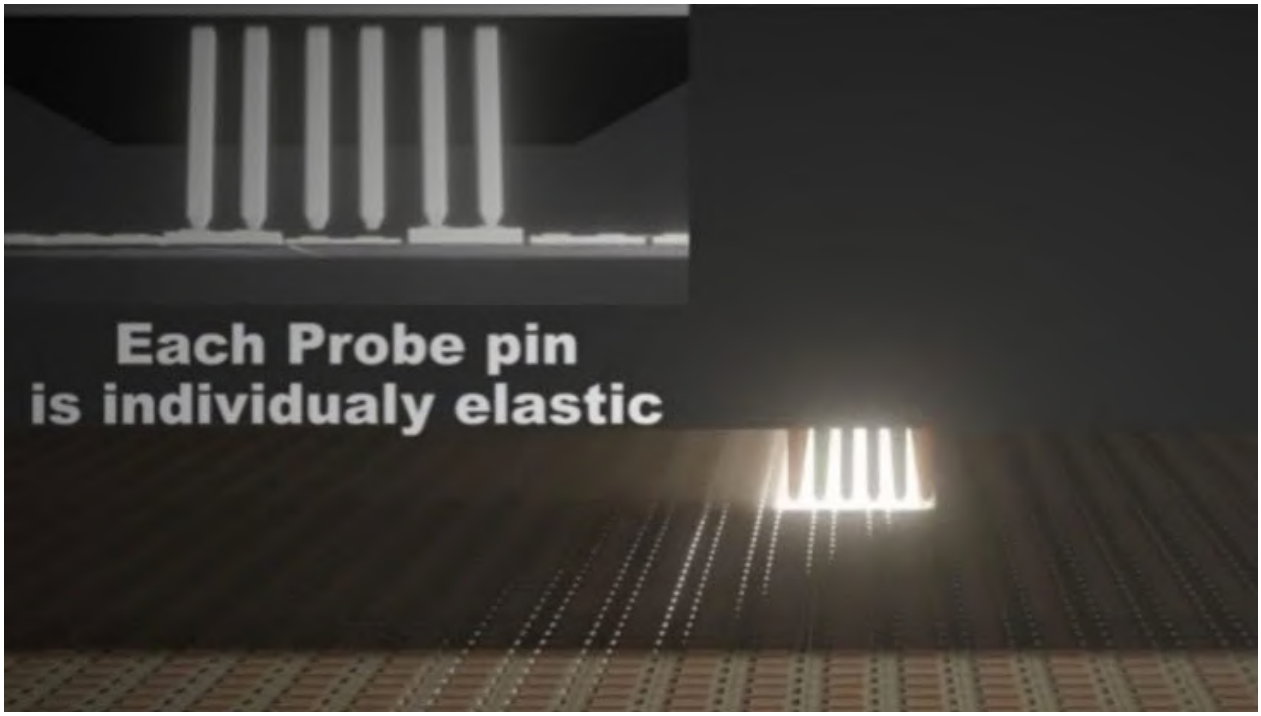
With the popularity of smart application-equipped EVs, interior features are diversifying. International automakers are forced to balance user-friendly features and car safety. As the features get more sophisticated, electronic circuit may generate more electromagnetic interference (EMI). Therefore, electronics parts and components suppliers will have to tune their solutions to meet more stringent regulations.

In the last newsletter, published in 22 February, DVN wrote "IHS-Markit foresee around 36 million cars equipped with ADB in 2026". It was not 36 million cars but 36 million ADB systems which means 18 million cars equipped with ADB. This forecast is a little more than the TrendForce forecast.

DVN would like to apologize to IHS and its members on the wrong information.

NANO X Attracts Investment for "Mass production of Micro LED Inspection Probe"

LIGHTING NEWS



NANO X, a micro and mini LED inspection equipment company, is attracting investment and expanding their operation. They announced that they have received investments worth €4m from C&CI Partners and others. The company revealed plans to use this investment to build a mass production line for micro LED inspection probes in the Gosaek Industrial Complex in Suwon, South Korea. Their goal is to complete the production line in May, which will have the production capacity to churn out 600 probe cards per month.

Probe cards made by NANO X are used to measure micro LED chip performance. These probe cards are able to inspect whether the micro LED is operating normally by checking the voltage change, wavelength, and intensity of light when a current is applied.

Since Micro LEDs have a size of 100μm or less, inspecting these chip units have been difficult. Traditionally these micro LED chips would be collected and made into modules or panels, in order to check for abnormalities. However, this method was problematic and ineffective because when a defective product is found, the LED chip must be removed from the module and replaced with a functioning chip, which resulted in decreased productivity and increased costs.
The NANO X probe consists of 5-10 μm sized pins that directly come in contact with and inspect each micro LED. It was emphasized that each pin has a separate spring structure to solve issues regarding non-contact that can occur when micro LED heights are different.

Valeo Sales Up to €17 billion

LIGHTING NEWS

Valeo's 2021 annual results are in line with the preliminary financial information published on 26 January, with sales of €17.26bn and EBITDA margin at 13.4% of sales

2021 sales
2021 automotive production was up by only 4% year on year. Hit by the Covid crisis in 2020, business was severely disrupted by the electronic components crisis in 2021. Compared to 2020, consolidated sales came in at €17.26bn, up 5%. Gross R&D expenditure increased three per cent to €1.70bn:

Visibility Systems: €5.1bn (-16% vs. 2019)
Powertrain Systems: €4.6bn (-9% vs. 2019)
Thermal Systems: €3.9bn (-14% vs. 2019)
Driving Assistance Systems: €3.4bn (-6% vs. 2019)

In 2022, based on IHS Markit annual automotive production estimates corresponding to around 82.9 million vehicles, Valeo have set a sales goal bracket of €19bn to €20bn.

By 2025,Valeo target market-beating growth of 13 per cent as they rebound from Covid and chip shortages. They aim to increase original-equipment sales by around 13 per cent to outperform the market by more than 5 percentage points, assuming global car production of around 98.5 million vehicles in 2025.

On 26 January 2022, the Board of Directors decided to appoint Christophe Périllat as Chief Executive Officer, in accord with the succession plan announced in October of 2020. Jacques Aschenbroich will continue to act as Chairman of the Board of Directors until the end of his current term of office as a director.

Faurecia Predict Happy Trajectories

LIGHTING NEWS

Faurecia are forecasting a rise in annual sales, as they expect semiconductor shortages to ease starting in the second half of this year. The French car parts group now foresee full-year sales of €18bn, up from €15.6bn last year, and say they will release full-year guidance for the combined group with Hella, along with first-quarter sales figures, by the end of April. The combined group, called Forvia, is set to become the 7th-largest automotive supplier in the world.

CEO Patrick Koller says "Our most exciting challenge for 2022 will be the great opportunity to combine our operations and teams with Hella to create a powerful group, which is far more than the sum of the two preexisting companies".

Faurecia, who supply seats, dashboards and fuel systems, also expect their operating margin to be between six and seven per cent this year, compared with last year's 5.5 per cent—based on assuming worldwide automotive production will recover to 78.7 million vehicles in 2022.

Driver Assistance News

Great Success at the DVN Lidar Think Tank

DRIVER ASSISTANCE NEWS


ATTENDEES F2F


ONLINE HYUNDAI'S FREIDING


ONLINE FORD'S ZEGELAAR

The first DVN Lidar Think Tank took place on February 21/22 in Frankfurt in-person and online with:
- OEMs Ford, Hyundai, Stellantis, Volvo, Nio.
- Tier 1's and Lidar companies Valeo, Huawei, Ibeo, Cepton, Blickfeld, Aeye, Liangdao, Koito, Velodyne.
- Tier2 companies Lumentum, AMS Osram, Auer Lighting and Fraunhofer IMS as research institute.

The target of the Think Tank was to evaluate, how a lidar community could enrich the lidar ecosystem.

The Think Tank started with presentations about some DVN findings with respect to the lidar ecosystem and the launch of a newsletter.
Afterwards three working groups were formed to discuss following topics :
- What are the benefits and the needs of a cooperative lidar community
- How the community could support standardization, use case definition, testing
- How to promote safety and convenience benefits of lidar enabled functions

As input from the lighting community, Geoff Draper, former GTB chairman, presented the role and history of standardization and regulation for automotive lighting.

In a final plenary session, the results of the working groups and the way forward were discussed. The conclusions confirmed the benefit of a lidar community in terms of establishing a leading communication platform between the industry value chain, test houses, research institutes and regulators.

Valeo CEO: hypergrowth for CO2 Free and ADAS

DRIVER ASSISTANCE NEWS

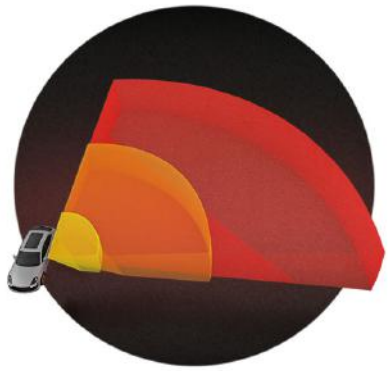
Valeo is going all-in on a business strategy focused on electrification and ADAS to secure its place in a market it believes will see an “explosion” in growth.
CEO Christophe Périllat outlines the imperative of the production strategy to the company’s long-term business success. “Our strategy is very simple and straight forward. Mobility will become carbon-free and will become safer. The growth and use of these technologies will, literally, explode in the coming years.”

He says we are only at the beginning of a period of what he calls hypergrowth for these two pivotal markets for the automotive industry. “I think the growth in electrification and ADAS will last one or two decades and be a growth that we have never seen before. In the next 15 years the electrification market will reach €200bn, while the ADAS market will reach €120 billion. “Just these two markets will triple the current addressable market for Valeo creating for us a fantastic growth opportunity. So, our mission is to accelerate electrification and also accelerate ADAS, and I believe we can make it happen at the same time” he says.

He adds that the two main planks of the strategy are complemented by two more that work to the traditional strengths of the company, lighting and the interior experience.
“In a car with electrification and ADAS there is space for more lighting to reinforce brand, to reinforce styling, to reinforce communication. More lighting around the car, more lighting inside the car, more lighting everywhere,” Périllat explains. “Lastly, ADAS reinvents your task inside the car – the reinvention of the interior experience.”
Périllat says focusing on the four areas will lead to sales of €25 billion by 2025, representing an annual growth of 13% for the period 2021-25.
The company is expecting to see global sales to automakers rise to €24 billion by 2025, with a sales goal of €40 billion by 2030. “I am fairly confident about this number since we have already booked 70% of the 2025 business,” he says, noting Valeo’s 13% growth over the period is expected to be double the forecast expansion of the automotive market.

PreAct: Software-Definable Flash Lidar

DRIVER ASSISTANCE NEWS



PreAct Technologies, an Oregon-based developer of near-field flash lidar technology, announced that its patent pending T30P flash lidar is the industry's first sensor designed to be software-definable and integrate easily into a complete AD system stack for automakers.
Vehicles with software-defined architectures require sensor technology that can support over-the-air updates throughout the life of the vehicle, allowing OEMs to generate ongoing revenue by offering powerful new features and functionality.
"We are excited to bring our software-definable flash lidar to market, furthering the advancement of autonomous mobility across multiple industries," said Paul Drysch, CEO of PreAct Technologies. "We've spent the last three years creating a solution that fulfills the need of software-defined vehicles."

PreAct's flash lidar architecture is based on modulated waveforms that can be optimized for different applications via over-the-air updates, along with an application stack that resides on the edge. The flexibility of a software defined lidar allows Tier 1 suppliers and OEMs to package one sensor for multiple use cases, that can update to meet their changing needs as more user and sensor data become available.

T30P, with a frame rate of 200 fps and QVGA resolution, is also the fastest flash Lidar on the market making it well suited for ground and air robotics or industrial applications – systems which all share a need for fast, accurate and high-resolution sensors that can reliably define and track objects in all environmental conditions.

PreAct's T30P Flash LiDAR sensor suite will be available in July 2022.

Why software-defined car signals a paradigm shift

Extract from Automotive News Europe

DRIVER ASSISTANCE NEWS

With its connectivity and ADAS, the software-defined car is poised to bring about dramatic change. The quantity and complexity of electronic devices used in cars expand with each new generation. A typical vehicle built in 2000 had approximately 10 processors and featured a few thousand lines of code. Fast forward 20 years, and today's cars have about 45 processors with hundreds of millions of lines of code.

In the traditional vehicle architecture, with these devices connected by copper, the wiring loom becomes hugely complex and represents a high proportion of the vehicle build cost. For a vehicle designed using a traditional architecture, we've reached a ceiling of capability.
The software-defined vehicle represents a radical, even disruptive, departure separating the hardware from the software and moving away from the “flat” architecture traditionally seen in conventional vehicle design. It will feature two parallel architectural changes, namely zones and domains. Three or four zones are likely, with control units merged and centralized into high-powered computers. Wiring becomes simpler in a zonal approach, and the software environment more scalable and flexible with domains connected by automotive ethernet, accessed via domain controllers. The software is easily upgradeable by centralized over the air (OTA) updates and efficiently supports the user-defined vehicle.

Use cases can be made virtual, and the real-time requirements of safety systems with guaranteed response times assured. Using machine learning and AI in such systems yields more human-like responses than the conventional software code's "if-then-else" nature. Here, secure vehicle-to cloud connectivity becomes increasingly important. In this instance, technological disruption is not only the emergence of specific new hardware platforms but also the convergence of several technologies and methodologies.
Features such as ADAS, further enhanced by AI and machine learning, bring the horizon closer for Level 4 autonomy, the driver for much of this advancement. Hardware abstraction enables the hardware to be interchangeable, allowing new entrants to enter the automotive arena, be they tech giants or new startups.

General News

Gartner's Top Five Tech Trends for '22

GENERAL NEWS

"In the past, automakers focused on the mechanical components of vehicle development, leaving most of the software" to others, says Gartner senior research director Pedro Pacheco. "As digital technology makes all the difference in the car, software will become the main driver of profit growth for automakers". Here's Gartner's top-five trend list:

1 • Automakers review their approach to hardware sourcing. Automakers are reevaluating their long-held just-in-time inventory strategy, which led automakers and tier-1 suppliers no buffer inventory to fall back on during the various chip shortages. As a result, automakers are reviewing how they deal with chip manufacturers and considering designing their own chips. Gartner predict that by 2025, 50 per cent of the top 10 automakers will design their own chips.

2 • Digital giants integrate the car into a holistic ecosystem. 2022 will see digital giants, such as Amazon, Google, Alibaba, and Tencent, expand their footprint in vehicle technology. "These tech companies are bringing the car closer to their respective ecosystems, which, in turn, opens new vehicle-connected services", Pacheco says.

3 • Open Data and Open-Source collaboration models gain momentum. In 2021, several tech companies created open-source vehicle architecture operating systems and open EV platform. This approach of adopting new partnership models in the automotive sector will increase in 2022. In addition, automotive companies will increasingly look at data in a similar way to that of the tech world.

4 • Established automakers ramp up OTA as their main digital revenue channel. Last year saw major changes in the automotive over-the-air (OTA) software market when several car manufacturers began to offer software updates. As most automakers have updated hardware on the vehicles to enable software updates, they will begin to shift to a revenue model that is based on services rather than the sale of the asset.

5 • AVs: More regulations, but commercialisation hurdles persist. Despite sensing technologies improving, perception algorithms becoming more sophisticated and regulations and standards progressing, developers of autonomous vehicles continue to struggle to scale autonomous operations to new cities or geographies.Proving the safety and effectiveness of autonomous technology is taking a long time and extensive simulation and real-world testing are making commercialisation slow and expensive.

Stellantis See Sunny Skies

GENERAL NEWS

Stellantis made a fast start in their first year after the merger of Fiat Chrysler Automobiles and PSA Group, with the world's № 4 automaker reporting profitability and benefits from the combination that exceeded targets.

The group say the margin on their adjusted operating profit rose to 11.8 per cent last year, above its target of about 10 per cent, because of strong execution on synergies, which generated around €3.2bn in net cash benefits. CEO Carlos Tavares says "Record results prove that Stellantis is well positioned to deliver strong performance, even in the most uncertain market environments". Tavares will shortly present the group's business plan.

Stellantis forecast a double-digit margin again this year. The pro-forma figure for 2020 was 6.9 per cent. Margins in North America climbed to a record 16.3 per cent last year.

VW Hots Up Porsche IPO Mullover

GENERAL NEWS

VW Group are in advanced discussions with Porsche Automobil Holding, the group's largest shareholder, about a potential IPO of the Porsche brand—and the two parties have negotiated a framework agreement as the basis for preparing such a step.

An IPO could include the acquisition of ordinary shares—which bestow voting rights upon the holder of Porsche AG.
Speculation about a Porsche listing, which could be a record-breaking IPO, has lifted hopes on the stock market several times over the past year, but no decision has been made due to a complex stakeholder setup.

Bloomberg Intelligence estimates Porsche could be valued at between €60bn and €85bn. That compares with a current market value of around €112bn for the entire group. A separate Porsche listing could offer a new funding option for the group. VW largely rely on generating enough cash on their own and on bond issues, because their convoluted shareholder structure limits options to raise fresh equity capital without diluting shareholdings of key stakeholders that control about 90 per cent of VW's voting stock.

Porsche's Chief Financial Officer Lutz Meschke first raised the benefits of an IPO in 2018, saying such a move could unlock value and replicate Ferrari's successful share sale years ago.