

Automotive Industry Weekly Digest

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[OEM Highlights] Polestar inks five-year, 65,000-unit deal with Hertz

Polestar has announced a deal with car-rental company Hertz to provide up to 65,000 Polestar vehicles for its global operations over the next five years. Automotive News has quoted a source as saying that the deal means a potential for USD3 billion in revenue over that time period, although Polestar has not confirmed the figure. The first vehicles will arrive in the second quarter of 2022 in Europe, then in late 2022 in North America and Australia. Hertz's first orders will be for the Polestar 2, although further vehicle mix has not been announced.



Outlook and implications

Hertz has indicated that it intends to offer more electric vehicle (EV) rental cars than other companies, and orders like this one will help it get there. The importance of this is purely in that it is an EV order – Hertz routine orders do not make this much news. In October 2021, Hertz announced a deal with Tesla for 100,000 vehicles. For a younger company like Polestar, the contract order provides a solid base of vehicle sales, in contrast to Tesla, which as an EV powerhouse still easily sells everything it builds. In addition, Hertz and other car-rental companies are still building up inventory after the combination of contracting their rental fleets in 2020 during the lockdown days of COVID-19 when people were not travelling followed by the ongoing low-inventory problem affecting fleet and retail customers. In this environment, securing a medium-term deal is good for Hertz, and announcing a medium-term deal for EVs can bolster its image. Furthermore, adding EVs to any rental vehicle fleet creates another opportunity for consumers to experience the option for the first time. IHS Markit March 2022 light-vehicle sales forecast projects Polestar's global sales reaching 150,000 units in 2028.

[OEM Highlights] OEMs update production impact of Ukraine war

IHS Markit perspective

Implications A number of OEMs have given updates on the latest impact of the war in Ukraine on their supply chains and production output.

Outlook Notably, the VW passenger car brand has announced that it has ramped up production faster than expected after stoppages incurred, while Skoda has said that its Ukrainian wiring harness supplier has restarted production.



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*Volkswagen Group*

A number of OEMs have given updates on the impact of the war in Ukraine on their production operations, after many of them announced production disruptions as a result of suppliers based in the country stopping production relating to wiring harness supplies. The Volkswagen (VW) passenger car brand announced that it has mitigated the issue better than it initially expected by ramping up production at its main Wolfsburg plant at a quicker rate than was originally planned. In a statement shared by Automotive News Europe (ANE) the company said that it planned to restart a second shift for the Golf at the plant as early as today (23 March). And in the coming weeks, the Golf production line will return to the standard three-shift pattern that had been in operation prior to the disruption of wiring harness supplies from Ukraine, with the three-shift pattern to be restored as quickly as possible. However, the company said that further production disruptions could not be ruled out. At the same time it said that its battery electric vehicle (BEV) plants in Zwickau and Dresden would take longer to return to 'normal' levels of production, with Zwickau expected to be making cars again in early April. However, the word 'normal' in this context should also be seen in relation to the ongoing semiconductor supply crisis that is still leaving production at lower levels than prior to the crisis. This issue is not directly related to the conflict in Ukraine. The combined VW Group has attempted to mitigate the stoppage of supplies of wiring harnesses from supplier Leoni's plant in Ukraine by broadening its sourcing from supplier factories in Romania, Hungary, Tunisia, and Morocco, as well as in Mexico and China.

Meanwhile, the VW passenger car brand's sister unit Skoda has said that its wiring harness supplier based in Ukraine had restarted production and supplies to its Czech factories, according to a Reuters report. Karsten Schnake, Skoda's board member for purchasing said, "Our partner in Ukraine decided to restart production of wire harnesses this week, with full service and full security for workers there." Schnake added that although some wiring harness suppliers in Ukraine have restarted production it, like the VW passenger car brand, was also looking to double source wiring harness supplies "in case something goes wrong" and that this double sourcing would be available to the company in the next three to four weeks. Skoda said that it had stopped production of the Enyaq battery electric vehicle (BEV) earlier this month while also stating that maintaining production of the Scala and the Kamiq was at risk.

However, while the two VW Group brands had positive news, this was not the case for Ford's European production operation which is facing Ukraine-related disruption at its German factory in Saarlouis which makes. According to an ANE report the Saarlouis plant stopped production of certain Focus models on Monday (21 March) for five days. However, the Ford supply stoppage is unrelated to the wiring harness supply issue that has affected other carmakers as a result of the war in Ukraine. Instead it involves the supply of the 12.3-inch infotainment screen that is available in the updated Focus, according to the Ford statement. It is continuing to build the versions of the Focus that are fitted with the standard eight-inch screen. Ford is also having issues with getting deliveries of enough steering wheel parts for the Focus, according to local media reports, as some of these are also sourced from Ukraine. Ford also announced a separate pause for the Fiesta production in Cologne for this week as a result of ongoing semiconductor supply issues, with a similar stoppage announced for the Valencia plant in Spain which builds the Galaxy and S-Max. Ford also stated that production of the Ford Tourneo



Connect passenger minivan remains suspended at the VW-owned plant in Poznan, and that this stoppage is related to the Ukraine conflict.

Outlook and implications

It remains important for IHS Markit to continue to distinguish between production stoppages that are a result of the conflict in Ukraine and those which are the result of the ongoing global shortage of automotive semiconductors. The latter is still by far the biggest limiting factor on production getting back to levels which would keep pace with pent-up consumer demand, both globally and in Europe. However, it should also be noted that the two situations are beginning to interact. The first challenge is that neon gas supply disruptions are increasing. Suppliers in Ukraine control nearly half of high-purity neon supplies to the semiconductor industry, where the element is used in lasers that etch patterns onto microchips. Our primary research suggests that the immediate risks are low, based on semiconductor manufacturers holding sufficient inventories of neon gas, but visibility on this issue is poor. The second challenge is availability of palladium, used in semiconductor plating and finishing. With this in mind IHS Markit recently revised its global light-vehicle production forecast downwards for 2022 and 2023, by about 2.6 million units for each year. Following our March forecast round, we now expect global light-vehicle production at 81.4 million units in 2022 and 88.5 million units in 2023. Mark Fulthorpe, IHS Markit executive director for global production forecasting, said, "With the March forecast release, we removed 2.6 million units from our 2022 and 2023 outlook, but the downside risk is enormous. Our worst case contingency shows possible reductions up to 4 million units for this and next year." In 2022, our latest forecast cuts 1.7 million units from European production alone, which broadly includes just less than 1 million units from lost demand in Russia and Ukraine. However, the situation in Ukraine is obviously extremely fluid and we will continue to react to the latest developments to bring clients the most accurate updates and forecasts as possible.



[Technology & Mobility Highlights] Sony formally sets up new mobility company

Japanese multinational conglomerate Sony has officially set up a new mobility company, Sony Mobility Inc., effective from today (1 April). According to a company statement, the new company will develop and commercialise a mobility service platform and will manage the development of businesses such as the "aibo" autonomous entertainment robot and Airpeak professional drone. It will also advance the taxi service SRide using artificial intelligence and sensing technology to provide safer and more secure transportation.



Outlook and implications

Sony has at times indicated its growing interest in the future mobility market and the technology it is developing in this field. In January, it unveiled the Vision S 02 sport utility vehicle (SUV) concept at the CES 2022 expo. The company envisions that its electric vehicle (EV) will have the latest safety features, including driver assistance, in-cabin monitoring, and lane change support system. Last month, Sony and Honda announced they had signed a memorandum of understanding (MOU) creating a strategic alliance on EV development and mobility services.

[Technology & Mobility Highlights] Wejo launches new real-time traffic intelligence solution

Solution detects traffic conditions in real-time, identifies road closures, and slowdowns



Source: Getty image/Just_Super

Wejo has launched Wejo RTTITM, it said in a press release on 5 April. It is a real-time traffic intelligence solution offering holistic insights of traffic conditions and safety incidents using connected vehicle data.



The solution has low latency, highly granular traffic updates, and offers real-time speeds and travel-times. The solution detects traffic conditions in real-time, identifies road closures, and slowdowns.

“Wejo has always been at the forefront of making connected vehicle data available to all—now we are doing the same for real-time traffic information to help our customers understand, anticipate, and respond to what is happening on roads and highways. Wejo RTTI can empower our customers to shape the future of transport and road safety to drive the future of smart mobility, smart cities and smart living,” said Richard Barlow, Founder and CEO of Wejo.

Outlook and implications

Vehicle data is increasingly being used not only by OEMs and service providers but also governments to develop traffic systems. Wejo aggregates vehicle data and offer deep insights on driver performance, and traffic conditions among others.

At CES 2022 in January this year, Wejo unveiled the Wejo Neural Edge platform in partnership with Microsoft. The data processing platform will allow for intelligent handling of data from vehicles at scale and offer insights. In December 2021, the company also partnered with Mercedes-Benz Connectivity Services to unveil livestream access to parking event data for mobility services providers and infrastructure operators in Europe. The live flow of anonymized vehicle data will stream approximately 10–14 million unique parking events daily from Mercedes-Benz vehicles in the European Union.



[EV & Energy Efficiency Highlights] NIO open to sharing battery swap tech

NIO is open to sharing its battery swapping platform with other automakers in both China and global markets, reports Automotive News, citing the head of NIO's European operations. Hui Zhang, managing director of NIO's European operations, told journalists at an event held in Norway last week that NIO is in talks with automakers without naming them. NIO opened its first battery swapping station in Norway in January. The electric vehicle (EV) maker intends to install 20 battery swapping stations covering Norway's five biggest cities and major highways by the end of 2022.



Outlook and implications

NIO does not provide details regarding the technology sharing, which is likely to involve licensing its vehicle platform to another automaker. One barrier for NIO to widen the adoption of its battery swapping technology among EV makers is the high cost of building such facilities. Automotive News, citing a study published by the Swedish Transport Administration, said that each battery swapping station costs USD772,000 to build in China, including batteries and site leasing. In China, NIO had deployed 884 battery swapping stations as of the end of March. The number of these stations in China has been growing quickly in the past year compared with battery recharging, and it only takes a few minutes to replace a spent battery with a fully charged one. The Chinese government has also introduced incentives to support the rollout of EVs with swappable batteries. EVs featuring swappable battery packs are eligible for central-government-granted subsidies, which, under the 2021 programme, are no longer granted to vehicles priced above CNY300,000 (USD47,151).

[EV & Energy Efficiency Highlights] BYD stops production of ICE cars, to focus only on EVs and PHEVs

BYD's battery capacity stood at over 5GWh in March 2022



Leading Chinese electric vehicle (EV) manufacturer BYD Company Ltd has stopped the production of internal combustion engine (ICE) powered vehicles since March 2022, the company said in a regulatory filing to the Hong Kong Stock Exchange on 3 April 2022. BYD said that it would only focus on manufacturing battery electric vehicles (BEVs) and plug-in hybrid vehicles (PHEVs).



The Chinese carmaker said that it will continue to produce and supply the components of ICE vehicles to maintain continuity in providing comprehensive services to its existing customers. While the company's update came on the sidelines of its March sales and production volumes, BYD also said that its installed capacity of new energy vehicle power batteries and energy storage batteries stood at 5.35 GWh for March 2022.

Outlook and implications

A Reuters report dated 3 April 2022 mentioned that BYD's move to produce only BEVs and PHEVs is in response to Beijing's pledge to boost green energy consumption and cut down on the carbon emissions. BYD becomes the latest carmaker to join the others such as Volvo, Ford, General Motors, Mercedes-Benz and Jaguar Land Rover that plan to phase out combustion engine vehicles.

BYD's new energy vehicle or NEV portfolio includes BEVs and PHEVs. The company reported Sunday that it sold 104,878 new energy vehicles during March 2022, up over 400% y/y.

The company has recently signed a strategic cooperation agreement with London-based oil and gas company Shell plc wherein it aims to develop a network of EV charging stations across China. The said agreement between the two companies also entails providing the customers of BYD electric vehicles the access to Shell's EV network across Europe.



[GSP] Greater China sales and Production Commentary -2022.03

Greater China sales

February 2022: +17.8%; 1.57 million units vs. 1.33 million units

YTD 2022: +6.8%; 3.93 million units vs. 3.68 million units

In February 2022, 1.57 million light vehicles were sold in Greater China, up by 17.8% compared with the same month of 2021. Specifically, light vehicle sales in mainland China increased by 19%, from 1.30 million units in February 2021 to 1.55 million units. Passenger vehicles recorded sales of 1.37 million units, increasing by 23.2% year on year (y/y), while light commercial vehicle (LCV) sales went down by 5.9% y/y to 0.18 million units.

On a year-to-date (YTD) basis, light-vehicle sales in mainland China increased by 7.5%, from 3.6 million units to 3.87 million units. Precisely, passenger vehicle sales increased by 9.1% y/y to 3.42 million units, while LCV sales decreased by 3.1% y/y to 0.45 million units. Segment-wise, YTD sedan sales rose by 9.2% y/y from 1.54 million units to 1.68 million units, and the sport utility vehicle (SUV) segment increased by 9.4% y/y from 1.49 million units to 1.63 million units. For multipurpose vehicles (MPVs), YTD sales increased by 3% y/y to 0.11 million units. By country of origin, the YTD market share of mainland Chinese local OEMs rose from 37.9% to 40.0%, thanks to a more extensive level of new-energy vehicle (NEV) penetration.



The major risk to the short-term forecast remains semiconductor supply shortages, but the rise in cases of the Omicron variant of COVID-19 poses significant additional risk. The more frequent and more widely spread Delta and Omicron variant outbreaks place a larger share of mainland Chinese regions under zero-COVID-19 containment measures more constantly, thus restricting local economies from functioning normally. Mainland China's "dynamic zero-COVID-19" strategy, the official name of the zero-COVID-19 policy, calls for strict containment measures to minimize economic disruptions. However, the uneven medical care infrastructure and resources across locales prevent consistent implementation of such containment. This, plus the political incentive structure of pandemic containment—the immense political costs to local officials for failures of COVID-19 containment—would lead to local authorities imposing excessive containment measures.

The Russian invasion of Ukraine is an additional risk that would result in higher gas, oil, and electricity prices and potential disruptions in gas deliveries as well as shortages, not only of energy but also of other key commodities and materials imported from Russia (such as wheat, aluminum, steel, and nickel). In mainland China, where the pass-through from producer to consumer prices is smaller and where electricity prices are tightly regulated, the fall in private consumption from the global energy shock is relatively moderate. Nonetheless, in the worst-case scenario, real GDP growth might decrease by 0.6 percentage point in 2022 (from 5.3% to 4.7%).

At this stage, we expect light vehicles sales in mainland China to grow by 3.9% to 24.8 million units in 2022. The net light vehicle sales loss will amount to around 1.1 million units in 2021, and 700,000 units in 2022 owing to the disruption in chip supply.



Greater China production

February 2022: +6.0%; 1.44 million units vs. 1.36 million units

YTD 2022: +5.4%; 3.77 million units vs. 3.58 million units

Greater China's light vehicle production in February recorded 1.44 million units, a significant increase of 6.0% year on year (y/y). In mainland China, light vehicle production increased 6.2% y/y, to 1.43 million units. Mainland China's automotive production outperformed our initial estimate despite the chip crisis and the Chinese lunar spring festival break. Strong rebound in the Volkswagen (VW) group and Japanese OEMs has driven growth, among which, the entire VW group production surged by over 30% y/y in January and managed to maintain a positive development in February. As for mainland Chinese domestic OEMs, BYD has consistently achieved tremendous performance after its first DM-i model was launched.

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Greater China's light vehicle production for full year 2022 is forecast at 25.02 million units, with a 0.7% y/y increase. In mainland China, production reached 24.78 million units, marking moderate growth of 0.8% y/y. After a strong performance in January and February, the auto industrial output will be damaged by some headwinds in the following months. Owing to unstable semiconductor delivery, Great Wall and Geely did not meet the initial production target in February. The other Chinese domestic OEMs could also be affected in the following months. Moreover, the Russia-Ukraine war could further hurt fragile semiconductor industry from the second half of the year, leading to additional shortage although the chip capacity has been improved since 2021. The other major interruption will be a new wave of COVID-19 infections in mainland China. To maintain zero tolerance for COVID-19, both production and commercial activities have been strictly constrained in affected cities from this week, such as Shenzhen and Changchun. In the following weeks, a comprehensive social-containment measures would be implemented, causing wider operation closures and limited vehicle production. To account for those uncertainties to mainland Chinese light vehicle production, we reduced 200,000 units in the March forecast, leading to 0.7% deceleration for 2022 (one percentage lower than February forecast).

The latest vehicle inventory alert (VIA) index, issued by the China Automobile Dealers Association (CADA), stood at 56.1%—2.2% month on month (m/m) lower and 3.9% higher than in the same period of 2021—above the threshold. In February, automotive retail was fairly stable. Sporadic COVID-19 outbreaks and small-scale lockdowns across the market affected some automotive sales. However, encouraging policies during the Spring Festival in some cities made up for the loss.



In February, passenger vehicle production in Greater China increased 9.5% y/y, to 1.26 million units. Market segment-wise, car production stood at 0.62 million units, with a 12.9% y/y increase. Production of multipurpose



vehicles (MPVs) increased 6.4% y/y, to 43,922 units. Production of sport utility vehicles (SUVs) increased 6.3% y/y, to 0.60 million units. Take Tesla and BYD as examples: although new energy passenger vehicles declined slightly month-on-month owing to the public holidays, the output of battery-electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) continued to maintain the rapid growth momentum compared with the same period in 2021. In addition, mainland Chinese domestic brands such as SAIC and Chery have also exported a record number of cars since 2021.

In February, light commercial vehicle (LCV) production in Greater China posted 0.18 million units, down 13% y/y. Market segment-wise, production of chassis-cabs stood at 0.11 million units, marking a decrease of 16.6% y/y. Vans stood at 0.05 million units, a drop of 0.2% y/y, and pickups fell 18.1% y/y to 25,917 units. LCV production, which was strongly stimulated by policy, had likely suffered deeply from the new emission regulations along with the overdraft effect since 2020, all of which led to the declining output in 2022. A downward trend has already been seen since 2021.



[Supplier Highlights] Hankook unveils new family of tyres for high-performance EVs

South Korean tyre manufacturer Hankook has announced that it will be launching its new global iON family of tyres, specifically designed for application in high-performance premium electric vehicles (EVs), in May. According to a company press release, the new tyres feature reduced rolling resistance thanks to a high proportion of natural oils, notably lower rolling-noise characteristics thanks to Hankook's sound absorber technology combined with a specific pattern design, and ultra-resistant aramid fiber-based material composition that provides high resilience needed to handle the instant high torques produced by powerful EVs. The company stated that the new tyres will initially be available in sizes between 18 and 22 inches. In Europe, the Hankook Ventus iON S summer version will be available from May and the Hankook Winter i*cept iON version from September. In North America, the Hankook Ventus iON A tyre will be available as an all-season version. CEO and president of Hankook Tire & Technology, Sooil Lee, discussed the unique selling point (USP) of the tyres, stating, "With the introduction of this new iON tyre family, our company is increasingly considering the rapidly growing demand for electric vehicles and the associated need for suitable tyres, also in terms of the need for replacements. With an improved range per battery charge, this new generation of tyres will help to further optimize the efficiency of electric vehicles in everyday use."



Outlook and implications

Demand for Hankook's new iON tyres is expected to rise significantly over the next few years thanks to the growing electrification of vehicle drivetrains worldwide. The global share of EVs in total vehicle sales is expected to rise at a rate of 36.6% annually, according to IHS Markit estimates, increasing the market share from 6.4% in 2021 to 29.5% by 2028. Hankook's OE tyres optimised for electromobility are currently already being used by OEMs such as Audi, BMW, Porsche, and Volkswagen (VW).

[Supplier Highlights] Protean partners with Dongfeng to drive market penetration of in-wheel corner modules

The partnership allows the possibility of Protean's in-wheel motor modules being fitted in future Dongfeng vehicles



Source: Getty Images/Bosca78

British automotive technology company Protean Electric announced via press release on 31 March that its joint venture in China, Wuxi Weifu Electric Drive Technology (WFDT), had struck a partnership with Dongfeng Motor Corporation Technical Center (DFMTC), the R&D department of Chinese automaker Dongfeng Motors (DFM), to drive market adoption of the company's ProteanDrive in-wheel motor (IWM) solution.

According to the press release, the new partnership will leverage DFMTC's expertise in distributed drive technology and WFDT's industrialized manufacturing capability to advance the application of ProteanDrive in new DFM programs, specifically through DFMTC's Any-Drive technology.

Protean CEO Andrew Whitehead stated that the company was focusing on technical innovation and R&D that will support DFM's own technology, enhancing market positioning of in-wheel motors. Director of DFMTC, Tan MingQiang, stated meanwhile that the collaboration would lead to breakthroughs in core technologies in key fields that will help realize IWM technology industrialization.

Outlook and implications

The British company first started collaborating with DFM in 2016. In 2021, ProteanDrive powered DFM's E70 4WD to complete winter testing.

The company's Chinese joint venture was formed with partners Human Horizons and Wuxi Weifu e-Drive Technology when the Weifu Group led the company's Series E funding round in 2018.

The company's IWM combines an electric motor, brake, suspension, and steering system into a single corner module that can be integrated with a modular rolling chassis to drastically simplify vehicle packaging, freeing up space on the vehicle.

Other companies that have developed electric IWM-based corner modules for rolling chassis systems include Michelin and REE. Unlike Protean's IWM, REE's REEModule uses a unique suspension design that allows the heavy motor to be sprung despite being within the wheelhub space, significantly improving vehicle dynamics.



[VIP ASSET] Automotive UI/UX technologies - startups driving the market

With the industry increasing spend on technologies, UI/UX startups will lay a pivotal role in the coming years



Source: GettyImages/metamorworks

In the last decade, the automotive industry has seen a significant increase in the use of technologies, driving the advancement of autonomous mobility, e-mobility, and connectivity. Despite the COVID-19 pandemic denting cash flow of companies, an IHS Markit survey in 2021 revealed a 6.5% average increase in automotive research and development (R&D) spending by companies, with 45% spending their R&D budget on software and software-related feature development. The move toward software-heavy products has increased the pool of developers, with a large number of startups popping up in the last few years. This article analyzes the key startups focusing on automotive UI/UX technologies.

Raythink Technology: The Shenzhen-based company develops augmented reality heads-up display (AR-HUD) applications for cars. Its products, the Tri-Lane AR-HUD and Mono-Lane Plus AR-HUD, assists with precise lane positioning. It displays information such as lane-level navigation, front collision warning (FCW), pedestrian collision warning (PCW), and lane departure warning (LDW) on the windshield. Its investors include Qianha:i FOF, Weed Ventures, and existing investor Oriental Fortune Capital. Its patented technology, OpticalCore, enables a wide-angle field of view (FOV) of 23°x 5°.

Envisics: Established in 2018, Envisics specializes in holographic technology used in AR-HUD. The UK-based startup has developed a Dynamic Holography Platform that uses light and creates HUD images. The company claims that its product is 40% smaller and 50% more energy efficient than conventional HUDs. Its investors—Hyundai Mobis, GM Ventures, and SAIC Motors—are all working with Envisics to develop AR-HUDs. In January 2021, it partnered with Panasonic Automotive Systems to develop and commercialize next-generation HUDs.

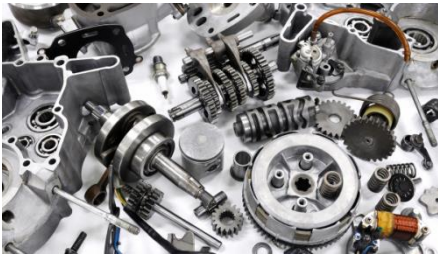
Wayray: WayRay specializes in holographic augmented reality (AR) technology used in HUDs, producing holographic optical systems and hardware and software development kits (SDKs). Its OEM partners include Hyundai and Porsche, and it has also tied up with Karma automotive to develop AR HUD technologies. Its Deep Reality Display technology enables different parts of the virtual image appear at different distances. It has already raised nearly USD200 million from Alibaba, as well as Hyundai and Porsche, among others.



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Phiar Technologies: Currently led by former Global Head of Google’s Android Automotive Platforms Gene Karshenboym, Phiar uses its spatial-AI Engine and Mobility AR Engine for real-time intelligent navigation, smart parking, and HD mapping. Phiar offers in-vehicle displays and windshield HUDs in partnership with Panasonic Automotive and mobile devices. Its Lightweight Spatial AI is used for object tracking, lane segmentation, depth perception, and ground plane estimation. In January 2022, Phiar partnered with Qualcomm to develop an intelligent AR HUD navigation and situational awareness module.

Holoride: With Audi and Porsche as its OEM partners, Holoride has been focusing on “back seat entertainment.” The company uses navigation data to create virtual experiences for rear-seat passengers. Holoride develops VR headsets for Audi. The VR turns the cars’ windshield and windows into gaming screens. For example, if the car is speeding, the user experiences the speed as an effect in the game. The company has also tied up with advanced driver assistance systems (ADAS) developer Terranet AB to help create optimal in-vehicle experiences.

Canatu: This startup develops carbon NanoBud-based films, touch sensors, and heaters. The high flexibility of the touch sensors enables greater design freedom and an enhanced user experience. Canatu touch sensors can be formed to any 3D shape and are used to create multipurpose switches and sliders that replace multiple mechanical buttons and controls. Canatu has several partnerships with OEMs and suppliers like Daimler, Denso, Faurecia, 3M, and TS Tech.

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