



IHS Markit®

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[OEM Highlights] Lamborghini lays out electrification strategy

IHS Markit perspective

Implications	Lamborghini, best known for its mid-engine supercars, has set out its strategy for its transition to electrified powertrains, including plans for a battery electric fourth model in the second half of the decade.
Outlook	Although the brand is synonymous with internal combustion engines (ICEs), and especially those in a V12 configuration, the automaker has also been exploring electrified powertrains in both concepts and ultra-limited-edition models. This strategy now lays out a roadmap towards the electrification of its entire range, but it also go some way towards maintaining the company's roots.

Lamborghini, best known for its mid-engine supercars, has laid out its strategy for its transition to electrified powertrains for all its models by 2024. Under the name “Direzione Cor Tauri” – or “Towards Cor Tauri”, Cor Tauri being the brightest star in the Taurus constellation – the automaker has mapped out a “move towards a future that is electrified but always faithful to the heart and soul of the ‘bull’ brand”. The company aims to cut the carbon dioxide (CO₂) emissions of its line-up by 50% by the beginning of 2025. However, this will go hand in hand with a focus on “identifying technologies and solutions that guarantee top performance and driving dynamics in keeping with the marque’s tradition”.

The strategy envisages three phases:

- In the first phase, Lamborghini intends to celebrate the combustion engine over the course of 2021 and 2022 by presenting models “paying tribute to the company’s recent period of continuous success”. It adds that two new cars in the V12 model line-up will be announced in 2021.
- The second phase, which will be completed by the end of 2024, will mark the brand’s transition to hybrid technology. The company says that 2023 will see the launch of its first “hybrid series production car”, which will be followed by the inclusion of this type of powertrain in all of its models by the end of 2024. It notes that in order to maintain the performance of its vehicles, it is working on new technologies and the application of lightweight carbon-fibre materials to compensate for the weight of electrification.



Lamborghini Sián FKP37, Source: Lamborghini

- The third phase will see the automaker launch the first battery electric Lamborghini during the second half of the decade. This will be a fourth model dedicated to this technology, which will join its existing line-up. The company adds that “technological innovation in this phase will be oriented towards ensuring remarkable performance, and positioning the new product at the top of its segment.”



In support of this transition, Lamborghini is planning to invest over EUR1.5 billion (USD1.8 billion) during the next four years.

The plan also takes a holistic approach to reducing emissions by 2030, and includes the decarbonisation of the company's Sant'Agata Bolognese (Italy) manufacturing facility. The company says that it already achieved CO₂-neutral certification in 2015, and this has been maintained despite volumes having leapt in the wake of the launch of the Urus sport utility vehicle (SUV). In addition to reducing CO₂ emissions, environmental protection, sustainability in the supply chain, attention to employees, and corporate social responsibility will also form integral parts of this strategy.

Outlook and implications

This is something of a pivot for a brand that is best known for its high-revving, naturally aspirated ICEs, and especially those in a V12 configuration. However, as the brand's president and CEO Stephan Winkelmann noted in a statement alongside the announcement, it is "necessary in the context of a radically-changing world, where we want to make our contribution by continuing to reduce environmental impact through concrete projects".

The company has been taking exploratory steps with electrification for some time. As early as 2014, the company displayed the Asterion LP910-4 concept at that year's Paris Motor Show (France), which combined the V10 engine used by its Huracán model with plug-in hybrid components, including two electric motors that drove the front wheels and one within the transmission. However, the first vehicle to reach customers with some degree of electrification has been the ultra-limited-edition Sián FKP37 and its roadster sibling. Based broadly on the current Aventador, the model's naturally aspirated V12 engine is combined with an electric motor that is supplied with electrical energy from a supercapacitor rather than a lithium-ion battery, which is charged via a regenerative braking system and can provide an additional power boost when required.

The statement from Lamborghini highlights the challenge that all high-performance sports-car manufacturers face with the transition towards electrification. Although electric motors provide almost instantaneous torque, which can subject a vehicle's occupants to acceleration that can almost be described as violent, the battery pack required to provide the performance and range expected adds a significant weight penalty, which can be detrimental to a vehicle's dynamic capabilities. In addition, for many customers to whom such supercars appeal, battery electric powertrains lack the visceral thrill brought about by the noise and feel of an ICE powertrain, particularly for a brand such as Lamborghini.



2014 Lamborghini Asterion LP910-4 concept, Source: Lamborghini

However, this is obviously countered by the growing regulatory pressures against ICE-powered vehicles. Such pressures not only relate to the increasingly strict emissions regulations and targets, but also plans to ban the sale



of this technology entirely. So far, the most notable market for this has been the United Kingdom, although others are likely to follow suit over time.

As is the case with Ferrari, Lamborghini is already taking steps to prepare for this. Given the uncertainty over what the market reception might be, the decision to use the launch of a fourth model as an entry point into the battery electric powertrain space makes some sense. Winkelmann told Autocar that initial development has begun, but no decision has been made on what the model's final form will be. He said, "This will be at least a 2+2 or four-seater ... We imagine a two-door car mainly at this moment, but we haven't yet taken a final decision on the bodystyle or the power output." The senior executive added that a final decision will be made following an analysis of bodystyle and volumes in this segment, but also after Lamborghini has found the best solution from a platform in the wider Volkswagen (VW) Group. IHS Markit expects that this will most likely be the PPE architecture that will underpin a range of premium battery electric vehicles, including Bentley's efforts to become an all-electric brand at the turn of the decade.

In the near term, the hybrid solution will focus on plug-in hybrid types and take in both the Urus SUV and the replacements for the Huracán and Aventador. Winkelmann told Autocar that the cars will have performance "equal to or even better than today". However, while the Aventador's replacement will benefit from a V12 engine, it will gain the supercapacitor technology used in the Sián, with Winkelmann calling this "a good bridge to test the reaction of our customers" to electrification, but restricted by its limited electric capacity. The use of this technology will enable the brand to delay making any final decision on the future of ICE models, and it may be potentially hoping that some kind of compromise for their future can be found, such as the synthetic fuels that other parts of the VW Group are working on.

Our forecast for Lamborghini broadly reflects the timing of launches under this new strategy. We also anticipate that the new fourth product line will help lift the brand's annual production volumes above 8,000 units again in the second half of the decade.

[OEM Highlights] Ford executive hints at EV-only future, Ford renames transmission plant

Ford's president of the Americas and International Markets Group, Kumar Galhotra, says the company is "working toward" an all-electric line-up in the US, with no timing indicated, reports Automotive News. Separately, the company is renaming a Michigan (US) transmission plant to reflect its shift to electric motor and transmission production. Reuters quotes Galhotra as saying the F-150 Lighting was "just the beginning of a whole new era at Ford," which could eventually mean an all-electric line-up in the US. Galhotra said Ford has not set a target date, but is on the path to an electric line-up. Automotive News quotes Galhotra as saying, "I can easily see a point where we'd say, 'Here's the date where we'd be all-electric.' We're certainly working toward it." Among the reasons for not setting a timeframe for the US, the executive said, is uncertainty in the US environment, compared with Europe where Ford has indicated it will sell only zero-emissions passenger cars by 2030. "The two markets are in a very different place. As that market was maturing and moving in Europe, it was clear at what point we'd be all-electric. I suspect the same thing is happening here; we're just not at that point," Galhotra said. Separately, Ford announced it has renamed its Van Dyke Transmission Plant to Van Dyke Electric Powertrain Centre. The facility is moving to production of electric motors and electric transaxles, supported by a recent USD150-million investment. Previously



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the plant produced suspension components and traditional transmissions, having added hybrid transmissions in recent years as well. Production of eMotors is due to be at full pace in mid-2021; the component can be used in electric vehicles (EVs) or a hybrid, according to the company. John Savona, vice-president for manufacturing and labour affairs at Ford, said “The advanced technology we are using at the Van Dyke Electric Powertrain Center is taking us to the next level for Ford’s electric future. The electric transformation we are making now is going to allow us to scale quickly as customer interest grows for our new electric vehicles.”



Outlook and implications

Ford has not yet announced a specific target for US EV sales, though Galhotra’s comments reinforce the company’s behaviour in moving this direction. This includes increasing investment into EVs from USD11 billion to USD22 billion through 2025 announced earlier in 2021, the reveal of the E-Transit and F-150 Lightning as well as launch of Mustang Mach-E, as well as commitment to produce EVs in Canada. Renaming the transmission facility further reinforces the importance of the shift for Ford, and follows General Motors’ renaming assembly facilities aimed at EV production.



[Digital Highlights] Stellantis and Foxconn outline digital cockpit JV

IHS Markit perspective

Implications Stellantis and Foxconn have announced a 50/50 joint venture (JV) aimed at creating digital cockpits and personalised connected services, called Mobile Drive.

Outlook Top automakers have been investing billions in software developments, as have many players in the supplier community. Although this new JV has potential, there is little outlined in the presentation that has not already been part of the visions set out by other automakers and suppliers. However, if it can create scale and value, this could see technology deployed faster and potentially provide access to the technology for some automakers without the direct expense of internal development. The partnership between Stellantis and Foxconn follows talks between Fiat Chrysler Automobiles (FCA) and Foxconn in January 2020 regarding the development of electric vehicles (EVs) and connected cars for China, which were delayed by the FCA-PSA merger and have substantially changed. The new company will be based in the Netherlands, as Stellantis also is, and no financial details have been made available.



Stellantis and Foxconn have announced a 50/50 JV aimed at creating digital cockpits and personalised connected services, called Mobile Drive. The two companies issued a joint statement on 17 May outlining the targets and initial structure of the new company. Mobile Drive aims to be a “customer-centric software leader”. It will develop advanced in-car and connected-car technologies, with the mission of accelerating go-to-market timelines. Stellantis and Foxconn see the new company as bringing together Stellantis’s experience in global vehicle design with Foxconn’s global development in the software and hardware areas of smartphones and consumer electronics. “The combination will position Mobile Drive at the forefront of global efforts to deliver a new frontier of in-cabin information and entertainment capabilities, seamlessly connected inside and outside the vehicles in which they are installed,” the statement reads.

Stellantis CEO Carlos Tavares said, “Software is a strategic move for our industry and Stellantis intends to lead with Mobile Drive, a company that will enable the swift development of connectivity features and services that mark the next great evolution of our industry, just as electrification technology has.” Stellantis chief software officer Yves Bonnefont is quoted as saying, “With this partnership, we will push the boundaries in connected car technology and bring immersive experiences yet to be imagined. Mobile Drive ultimately gives us the agility we need to provide the digital experience of the future at the speed our customers demand.”

Mobile Drive will focus on infotainment, telematics, and cloud service platform development. It will work towards software innovations with artificial intelligence (AI)-based applications, 5G communication, upgraded over-the-air services, e-commerce opportunities, and smart cockpit integrations, according to the statement. The Mobile Drive JV also follows work carried out between the former FCA (now part of Stellantis) and Foxconn on the Airflow Vision



concept displayed at CES 2020. The concept focused on a new take for the interior, although at the time FCA did not announce the Foxconn connection.



As outlined during a presentation, Mobile Drive aims to create an open and future-proof design. The presentation also included a video describing its vision. The aim is for customer-focused technology that is intuitive and reactive, personalised, and updateable and upgradeable. Mobile Drive aims to create technology that is part of a consumer's digital life, with off- and on-board seamless experience, with apps and an open ecosystem. The system will include an intelligent assistant and support e-mobility. In working as a Tier-1 supplier, Mobile Drive expects to leverage scalable technology, including biometric recognition, AI, distant command, augmented reality, and smart infotainment. The vision includes allowing for sharing and providing digital access to vehicles, over-the-air functions, and monitoring and predictive maintenance. As a supplier, Mobile Drive also says that being customer centric includes being true to the brand DNA of the vehicle with which it is working.

From a vehicle or transportation consumer view, Mobile Drive sees its primary consumer focus as personalised and geographically localised services. It will focus on smart infotainment (content streaming, navigation, vehicle information queries, emergency assistance). A seamless experience between smartphones and smart cockpit will be enabled through data integration, hardware integration, control integration, and service integration. The company aims to create context-aware personalised recommendations, using real-time scenarios, driver and passenger behaviour analysis, user profile analysis, and personalised recommendations. Mobile Drive will aim to create products that offer a centralised and integrated electronic cockpit, as well as making it smart through the use of biometric technology, multi-screen interactive technology, voice and gesture interaction, and augmented navigation. Both for driven and potentially autonomous cars, Mobile Drive sees the interior as a third living space and will look to develop solutions for everything from work to family in an immersive experience, including car-to-X navigation and internet of things (IoT) smart interactions. In getting there, Mobile Drive will focus on cyber security, hosting third-party apps, and big data analysis.



The two companies note that Stellantis brings to the JV its automotive experience, advanced design and integration capability, connectivity, cockpit, and infotainment innovations, and regulation and specification knowhow. Foxconn brings smart device experience: system software and application development, cloud service and big data with an internet service platform already generating revenue, and cutting-edge AI algorithm technology developed with academia.

Outlook and implications

Top automakers have been investing billions in software developments, as have many players in the supplier community. Although this new JV has potential, there is little outlined in the presentation that has not already been



part of the visions set out by other automakers and suppliers. However, if it can create scale and value, this could see technology deployed faster and potentially provide access to the technology for some automakers without the direct expense of internal development. The partnership between Stellantis and Foxconn follows talks between FCA and Foxconn in January 2020 regarding the development of EVs and connected cars for China, which were delayed by the FCA-PSA merger and have substantially changed. The new company will be based in the Netherlands, as Stellantis also is, and no financial details have been made available.

With this deal, Stellantis has the potential to jump-start its resources for the development of in-car connectivity and software services, as well as data analytics and software-as-a-service. Foxconn has been working tirelessly to become more involved in the automotive industry, and this is another opportunity to further this goal.

According to the announcement, the JV will behave as a Tier-1 supplier and operate at arm's length from Stellantis. Mobile Drive will have the opportunity to bid on Stellantis projects, as well as projects at other automakers. Stellantis and Foxconn will have 50/50 voting rights in Mobile Drive, with contributions "mainly in kind" No investment figures have been provided. Mobile Drive will be "comprised of highly trained and experienced software engineers". Prior to the merger of FCA and Groupe PSA, which created Stellantis, FCA had launched its Uconnect 5 system, which offers 5G connectivity, over-the-air updates, and e-commerce options. However, in creating this JV and potentially sourcing these connectivity products through Mobile Drive in the future, there could be an opportunity to improve scale as Mobile Drive will have the chance to offer its technology to companies outside of Stellantis. However, Mobile Drive enters an arena where there is competition from other OEM in-house projects, as well as from software companies and existing Tier-1 suppliers such as Visteon.

[Digital Highlights] VW brand head says digitisation will be the real industry disruptor

The head of the Volkswagen (VW) passenger car brand, Ralf Brandstätter, has said that digitisation will be the major industry disruptor to the automotive industry over the next decade despite the accelerated roll-out of battery electric vehicles (BEVs), according to an Autocar report. The VW passenger car brand and the VW Group have made massive investments in their digital architecture capability, although the launch of the ID.3 BEV and the Mark 8 Golf were both hit by issues to do with their digital architecture. Brandstätter said, "The real disruption is still coming. If you believe with electric cars alone we've arrived in the future already, you're wrong. Digitalisation is the key. The car is now a software-driven product." VW will offer largely standardised cars in the future, with consumers buying new digital features using over-the-air (OTA) updates. The VW passenger car brand has already announced that its Project Trinity vehicle will be the introductory product for this new philosophy. However, updates for the ID.3 and ID.4 will be available through OTA at a much earlier stage, Brandstätter said, "With that, new ideas for business models will be created. It's a 'magic loop': every 12 weeks, we want to create a software update and also emotions. Yes, we can do back-fixing with updates, but the emotional part is that you will notice you're getting additional features that are developed within the lifetime of the car."



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Outlook and implications

VW is rolling out its new range of BEVs with increasingly sophisticated digital architectures, and functionality will increasingly be the key differentiating factor for vehicle user experience. With cash-rich big tech disruptors like Apple waiting in the wings to launch their own automotive products it is increasingly important that traditional OEMs invest in their own bespoke architectures to stop them turning into low-value hardware providers.



[EV Highlights] China to fully electrify its public transport vehicles by 2035

China is aiming for all the vehicles used in the public service area to be fully electrified and for fuel-cell vehicles (FCVs) to be commercially viable by 2035, according to Gasgoo, citing an action plan by China's Ministry of Industry and Information Technology (MIIT). The government also plans to promote electrified buses and other vehicles used in city logistics services and urban sanitation.



Outlook and implications

China has been aggressively pushing the use of new-energy vehicles (NEVs) in both the private and public transport domains. Despite the impact of the coronavirus disease 2019 (COVID-19) pandemic on vehicle sales, the NEV market continued to expand during 2020. Sales of NEVs, which include battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs), and fuel-cell vehicles (FCVs), increased 10.9% to 1.37 million units last year. As well as providing subsidies and increasing licence plate quotas in the private vehicle segment, the government is also focused on setting up a charging infrastructure network across the country. With electric vehicles gaining popularity in China, the country is also promoting hydrogen fuel-cell technology. In September last year, China announced new policies to support sales of hydrogen FCVs and the development of the industry's supply chain and technologies. Under policy guidance announced last year, local governments are encouraged to provide subsidies to promote sales of FCVs and support the construction of hydrogen refuelling stations.

[EV Highlights] SAIC-GM to build Ultium EV platform in Hubei

SAIC-GM, the joint venture (JV) between SAIC Motor and General Motors (GM) in China, has signed an agreement with the Wuhan municipal government to manufacture the smart all-electric vehicle platform Ultium in the capital of Hubei province, according to Gasgoo. Around 95% of the components used in the Ultium-based electric vehicles (EVs) are expected to be sourced locally in China.



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Outlook and implications

New energy vehicles (NEVs) based on GM's Ultium EV platform are to be produced mainly by SAIC-GM, starting with the Cadillac Lyriq in 2022. The state-of-the-art Ultium battery system and third-generation global electric platform will integrate GM's engineering flexibility, technology advances with highly localised manufacturing, and supply chain in China to enhance quality and cost-competitiveness. According to IHS Markit's light-vehicle production forecast, the first model based on the Ultium platform, the Cadillac Lyriq, will go into production in November 2022, with output expected to be around 3,500 units in 2022 and 18,000 units in 2023. Production of five additional models, all based on the Ultium platform will begin in 2023. These five models will be two sport utility vehicles (SUVs) and one multi-purpose vehicle (MPV) under the Buick brand, one Cadillac SUV and one Chevrolet MPV. To compete with rivals in the Chinese market, GM has introduced several new EVs over the past 12 months, including the Chevrolet Menlo electric crossover, the Buick Velite 7 electric SUV, and the plug-in hybrid version of the Velite 6. However, SAIC-GM is unlikely to manage significant share gains in the Chinese EV market until the arrival of its new-generation EVs based on GM's new global EV platform.



[GSP] Global Sales and Production Commentary -2021.04

Global sales

March 2021: +52.2%; 8.26 million units vs. 5.43 million units

YTD 2021: +20.9%; 20.52 million units vs. 16.98 million units

- Auto demand prospects in the COVID-19 age will be largely determined by the path of the pandemic, including progress on vaccine programs. Many vaccine roll-outs are now in full swing, ahead of schedule in the United States and the United Kingdom and with bold targets for mainland China and India. Elsewhere, progress is mixed with a blend of limiters, including vaccine supply constraints, authorization delays, administrative bottlenecks, and reluctant populations. The evolving post-COVID-19 landscape is intensifying operational and economic pressures on the global automotive industry, especially as OEMs and suppliers seek to fathom the ebb and flow of “new normal” demand levels. Hopes remain that effective vaccine rollouts accelerate through the second quarter of 2021 and be widely available by late summer.
- After a 3.6% contraction in 2020, the world real GDP forecast is reset higher at 5.3% in 2021, 4.4% in 2022, and 3.1% in 2023. Business conditions are improving in most regions, with March figures for the JPMorgan Global Composite Output Index (compiled by IHS Markit) advancing 1.6 points to 54.8, its highest level since August 2014. Stronger recoveries are expected for the US, Canada, the UK, and mainland China, with downgrades for Brazil and India. The price of Dated Brent crude oil is expected to average USD66/barrel in 2021 and USD63/barrel in 2022 (2020 averaged USD42/barrel).



- While the world is expected to gradually emerge from the gloom through 2021, mixed recovery prospects are expected. Key markets continue to suffer elevated, even rising, levels of COVID-19 infections, with a need for renewed stringent virus control restrictions. Ongoing supply chain pressures on key raw materials and components, especially semiconductor shortages, could mean stabilization of supply may not emerge until the fourth quarter of 2021, which could further threaten full-year prospects for 2021. Year-to-March 2021 demand rose 20.9% but clearly comparative year-on-year figures for the coming few months will be massively skewed due to the dramatic declines seen during peak lockdown months of 2020. Global demand for 2021 is expected to post 84.4 million units, up 9.7% y/y (modest net global upgrade), with improving momentum for 2022 and 2023, as risks recede (both years upgraded).
- As a reminder of the sheer scale of delayed and destroyed demand from the COVID-19 crisis, 2020 global demand posted 76.9 million units, down 14%, with the year a virtual write-off as runaway virus levels and stringent lockdown restrictions decimated the auto industry. Benchmarked against the IHS Markit pre-COVID-19 forecasts made in January 2020, COVID-19-related losses for 2020 represent about 12 million units compared with potential global auto demand. Recent months have witnessed an unprecedented flurry of OEM announcements on their electrification plans for the coming 5–15 years. These target setting exercises will either jolt stakeholders into action or further mystify an already fast-changing market environment.



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- Mainland China—first in, first out—year-to-March 2021 demand posted 5.84 million units (up 72% y/y). Comparing year-to-March 2021 against the same period of 2019 offers another way to gauge recovery prospects, with current demand just 4% below pre-COVID-19 levels. For 2021, 24.85 million units (up 5.0% y/y) are expected—a downgrade on semiconductor supply risks and reflects payback from China 6 and incentives. This effectively delays some recovery demand into 2022 owing to an elongation of supply rebalancing. Effective pandemic containment limited 2020 losses to just -4.6%, to 23.7 million units.



- The US—back in business—rebounding economics, surging job creation, government stimulus, impressive vaccine roll-out, and emboldened consumers are contributing to a robust recovery. For 2021, the forecast has been reset to 16.53 million units (up 13.3% y/y), which is an upgrade. Restocking pressure from ongoing supply chain disruption rules out a higher upgrade—semiconductors and severe weather impacts. As a result, the 2022 forecast (up 182,000) was further upgraded. For reference, 2020 US auto demand posted 14.6 million units, down 14.6% y/y.
- Europe—could do better—2021 prospects remain muted, with recovery momentum frustrated by extended containment measures and the slow vaccine roll-out across European Union members. The region will also feel supply chain impacts, with total 2021 Western and Central European demand reset lower at 15.18 million units, up just 9.7% (down 60,000). A second COVID-19 summer is a particular risk for Southern European markets. Virtually, all markets are expected to remain below 2019 levels of demand (pre-COVID-19) for the next few years. 2020 automotive demand posted 13.8 million units (down 23.6% y/y).

Global production

March 2021: +34.7%, 7.52 million units vs. 5.58 million units

YTD 2021: +14.0%, 20.34 million units vs. 17.85 million units

- The April forecast is reduced by 610,000 units, or 0.7%, from the March update. This contraction puts the full-year outlook at 83.48 million units, which represents an 11.9% increase over the latest estimate of 2020 output. The main influence on the forecast remains the ongoing supply-chain issue surrounding semiconductors. IHS Markit analysts have identified 1.3 million units at risk of disruption in the first quarter and another 700,000 units are noted as of mid-April, with the situation developing on a daily basis. Note, these volumes are only what has been reported to date and are not absolute adjustments made to the forecast but provide strong influences on the forecast for the balance of the year.
- Since the last forecast, IHS Markit analysts have incorporated the impact of the fire at the Renesas semiconductor plant in Japan, which broke out in the early hours of 19 March, and the spillover effects of the severe weather that disrupted a number of operations in the southwest US, including semiconductor facilities of Infineon, NXP, and Samsung. The result of these further disruptions, on top of the existing shortage of supplies



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that became evident in late 2020, has further changed the pattern expected for 2021 production. These new challenges will limit the capability of the supply chain to deliver additional capacity for automotive demand, affecting the 2021 outlook with significant disruptions in the first and second quarters stemming from semiconductor shortages, with the third quarter still at risk but at a lower level, and the fourth quarter expected to see an alignment between supply and demand from vehicle producers. Any compensatory volumes are at this stage expected to be delayed until the first half of 2022.



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[Supplier Trends and Highlights] Changan to launch smart EVs jointly developed with CATL, Huawei

The brand will seek a separate listing



Source: Getty Images/josemoraes

Changan Automobile will roll out its electric vehicles (EVs) jointly developed with Huawei Contemporary Ampere Technology (CATL) by the end of May, Yicai Global reported on 20 May. The EV brand will be called AB and will seek a separate listing.

Outlook and implications

The development was first announced in November last year. Other automakers in mainland China have set up separate premium brands for manufacturing EVs. Dongfeng introduced a new premium EV brand Voyah in mainland China and will reportedly launch all-electric and hybrid vehicles under the brand. The first model under the brand is expected to be launched later this year, which will be manufactured at Dongfeng's Wuhan plant. In 2019, Geely also launched its first high-end pure-electric brand 'Geometry' for global markets.

Huawei said it will not make the vehicles itself but provide its intelligent connected vehicle technologies to its OEM partners.

[Supplier Trends and Highlights] Hesai to supply lidar sensor for Baidu's fifth-generation autonomous vehicle

Lidar sensor have reported accuracy of about 2 cm



Source: Getty Image/ Scharfsinn86



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Baidu Apollo has signed an agreement with Hesai Technology under which Hesai will develop a lidar sensor for Baidu's fifth-generation autonomous vehicle, Caixin Global reported on 19 May. According to the article, the customized lidar will have an accuracy of about 2 cm and object detection radius which is 1.5 times wider than current products in the market and cost less.

Baidu is expected to mass produce its fifth-generation autonomous vehicle in the third quarter of fiscal 2021. The vehicle will be commercialized and used for robo-taxi services.

Outlook and implications

Earlier in May, Baidu has launched the Apollo Air vehicle-to-everything (V2X) technology which enables Level 4 autonomous driving on public roads using roadside sensing. Apollo Air enables vehicle without sensor equipment to attain high-level autonomous driving capabilities.

In April, Baidu announced plans to open fully driverless robo-taxi services in Beijing which will see the use of fully driverless Apollo Go Robotaxis. The service will first be launched in Beijing's Shougang Park—one of the venues for the 2022 Beijing Winter Olympics—and will soon be transporting visitors at the games.



[VIP ASSET] Android's grip tightens on automotive OS

Android Automotive's significance lies with Google Automotive Services (GAS), a suite that provides options to integrate a series of services from Google including Maps, Play Store, and Assistant



Source: Getty Images/metamorworks

Android Automotive has taken the automotive headunit by storm. From its initial introduction in early 2017 until now, six global automakers across more than 10 brands have signed on, accounting for nearly one-fifth of all vehicles once fully rolled out. The significance of Android Automotive lies with Google Automotive Services (GAS). The GAS suite provides options for automakers to embed a series of services from Google, including Maps, Play Store, and Assistant, among others. The other side of this story lies with the google cloud, data, and which industry players will have the opportunity to define the connected car era.

Android Automotive: The OEMs that signed on

- **Volvo/Polestar:** Polestar 2 was the first model announced leveraging Android Automotive for the model year 2021. Volvo's all-electric XC40 also leverages the operating system (OS), with both electric vehicles (EVs) featuring the full suite of Google Automotive Services (GAS). In March 2021 Volvo announced that the C40 Recharge will be next to adopt the OS.
- **Renault-Nissan-Mitsubishi Alliance:** The Alliance announced that their partnership with Google in 2018 across "multiple models and brands" originally set to begin in 2021, although 2022 is more likely.
- **General Motors:** GM announced their intention to adopt Google's OS in 2019 to power their vehicles in 2021, spanning Chevrolet, Cadillac, GMC, and Buick. GM has highlighted three key improvements in its user experience (UX) going forward—voice assistant, embedded navigation, and in-vehicle applications. The upcoming Hummer EV is expected to be one of the first to launch with Android Automotive.
- **Stellantis:** In perhaps the least publicized Android Automotive announcement to date, comprising a brief post to LinkedIn, Groupe PSA announced their plan to launch the OS in their vehicles starting in 2023. Closely related to that agreement, but before the formal merger between PSA and Fiat Chrysler Automobiles (FCA), FCA's Uconnect 5 will also be powered by Android Automotive. GAS implementation is still to be determined as the automaker has highlighted embedded navigation from TomTom, voice assistance from Amazon Alexa, and SiriusXM 360L built into the initial vehicles launching with Android Automotive.
- **Ford:** The most recent addition to this list, Ford announced a major shift away from Blackberry's QNX across Ford and Lincoln brands from 2023. This new platform will embed the Android Automotive OS, utilizing Google Assistant for voice commands, Google Maps for navigation, and the Play Store for other Android apps.

Impact on OS share outlook

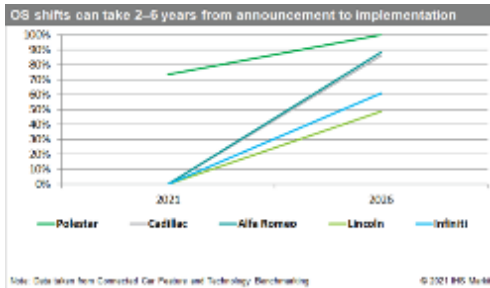


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Confirmed announcements from some of the largest global automakers are reflected in a significant OS share shift. While the first announcement goes back to 2018 from Volvo, it took several years to see the real introduction and model-level rollout. To truly assess the weight of the adoption, we need to look toward 2026.



Highlighting five luxury brands from the aforementioned automakers, the proliferation strategy comes into focus.

- According to IHS Markit’s Feature Technology Benchmarking, Android Automotive OS will be integrated in every Polestar EV from 2022, representing the first brand to deploy the OS and fully standardize it through their lineup.
- Alfa Romeo shows a steady upward trajectory in integrating Android OS from 2022, with 90% of its cars eventually expected to feature the system by 2026. Over 90% of Alfa Romeo cars currently run on Linux OS.
- Integration of Android Automotive in Infiniti models is expected to see a jump in 2023 and surpass 60% of its vehicles by 2026. Most of its cars now run on Linux and a Generic Android OS.
- More than 86% of Cadillac’s vehicles is expected to run on Android Automotive OS by 2026, and is expected to see a similar trajectory as the other GM brands. A Generic Android OS is used in around 95% of Cadillac models currently.
- As the latest addition to the Android fray, Lincoln will be the last among the brands mentioned to ramp up adoption. By 2026, nearly half of new Lincolns sold will run on Android Automotive. The vast majority of Lincoln vehicles currently leverage QNX.

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