

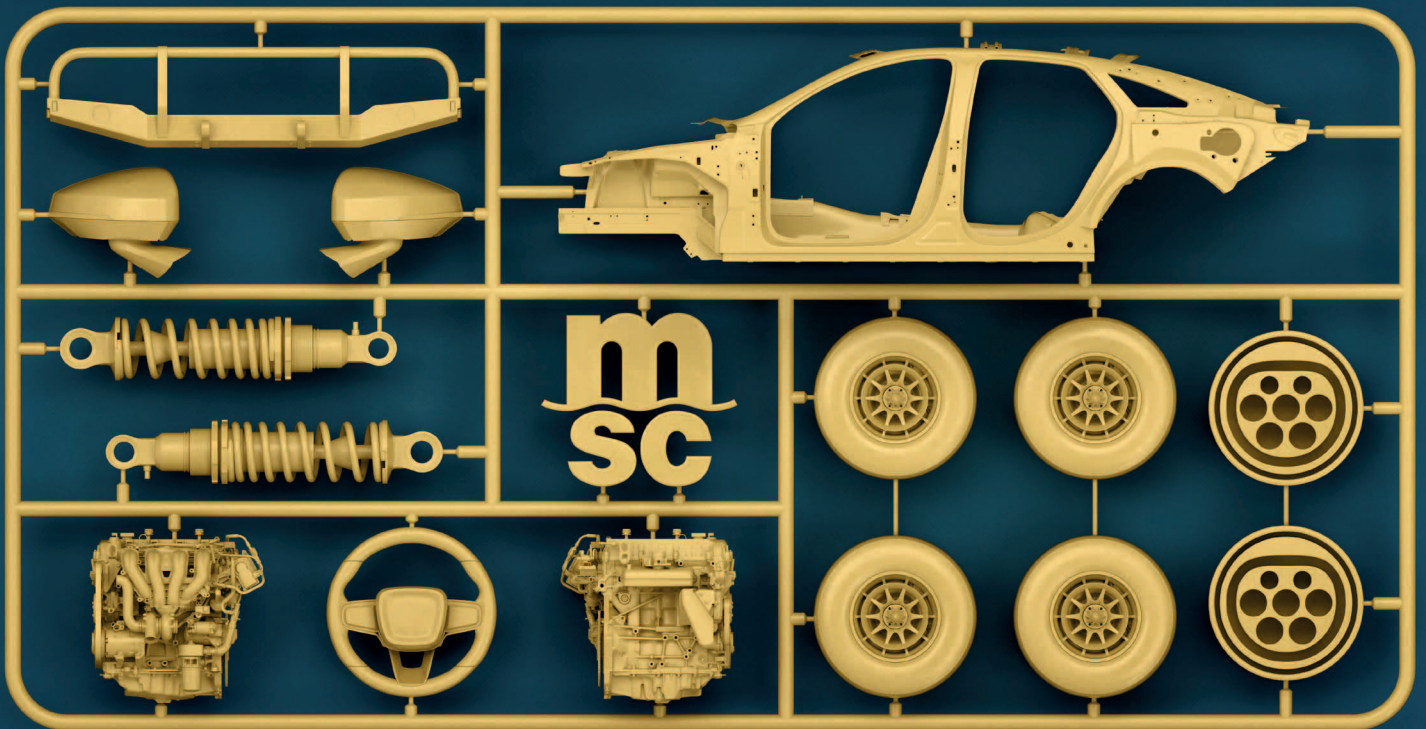
# Automotive World MAGAZINE

Issue 52 | April 2024



**Nvidia's Blackwell  
unleashes the  
AI revolution**

**Apple** shelves EV project | **Nvidia** opens the AI floodgates | **Harman** 'ignites' digital services |  
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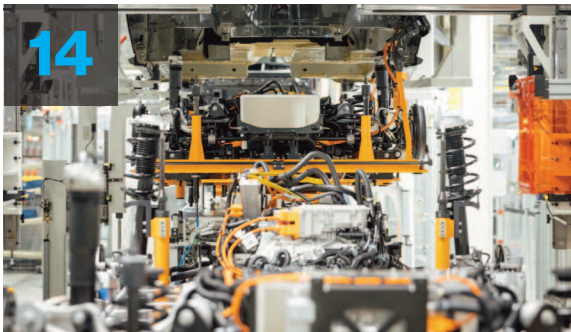
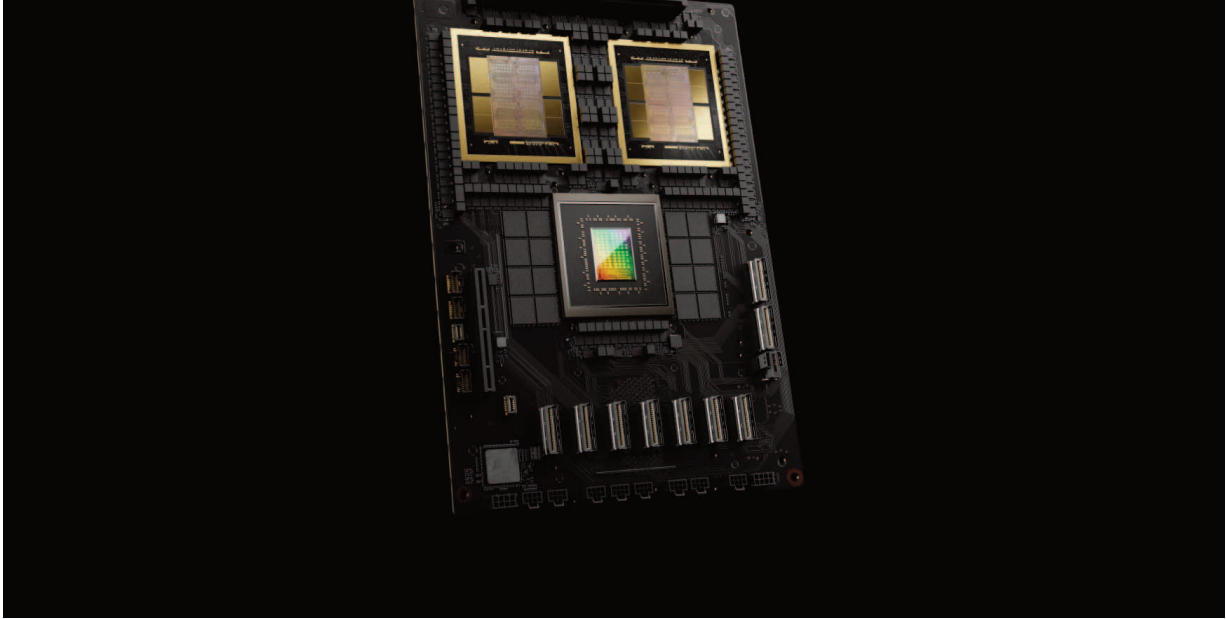
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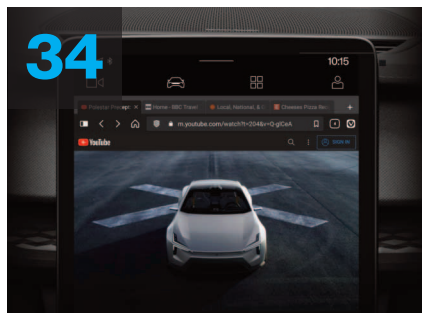
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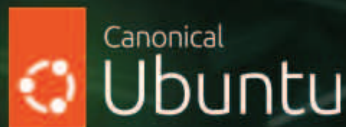


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# Nvidia's Blackwell unleashes the AI revolution

Nvidia CEO Jensen Huang offers a deep dive into the implications of Blackwell, a computing game changer.  
By Megan Lampinen

**N**vidia has become the darling of artificial intelligence (AI), arguably one of the most transformational technologies of this era. The semiconductor specialist's graphics processing units (GPUs) are widely regarded as the go-to solution for the training and deployment of all sorts of AI models, including those used within the mobility sector. Currently riding an almost unprecedented wave of investor enthusiasm, Nvidia has a market capitalisation of US\$2.14tr. That makes it the third most valuable company in any sector in all the world. It's against this backdrop that Chief Executive Jensen Huang took to the stage to give a two-hour keynote, unofficially

opening the annual GPU Technology Conference (GTC) in San Jose, California, on 18 March 2024.

## A gateway to AI innovations

Nvidia describes the annual event as "more than just a conference. It's a gateway to the next wave of AI innovations." This year's GTC is the first in-person event since 2019, and the enthusiasm was palpable. "I hope you realise this is not a concert," Huang joked as he took the stage. "You have arrived at a developers conference, where there will be a lot of science describing algorithms, computer

architecture, and mathematics." And indeed, the two-hour presentation consisted of a deep dive into the latest capabilities of what Huang described as "the soul" of Nvidia: the intersection of computer graphics, physics, and AI.

The spotlight fell on the new Blackwell platform, named after the mathematician David Blackwell and described by Huang as "insane," "unbelievable," and "pushing the limits of physics of how big a chip could be." As a whole, the Blackwell platform is positioned to support accelerated computing and generative AI, enabling AI training and real-time large language model

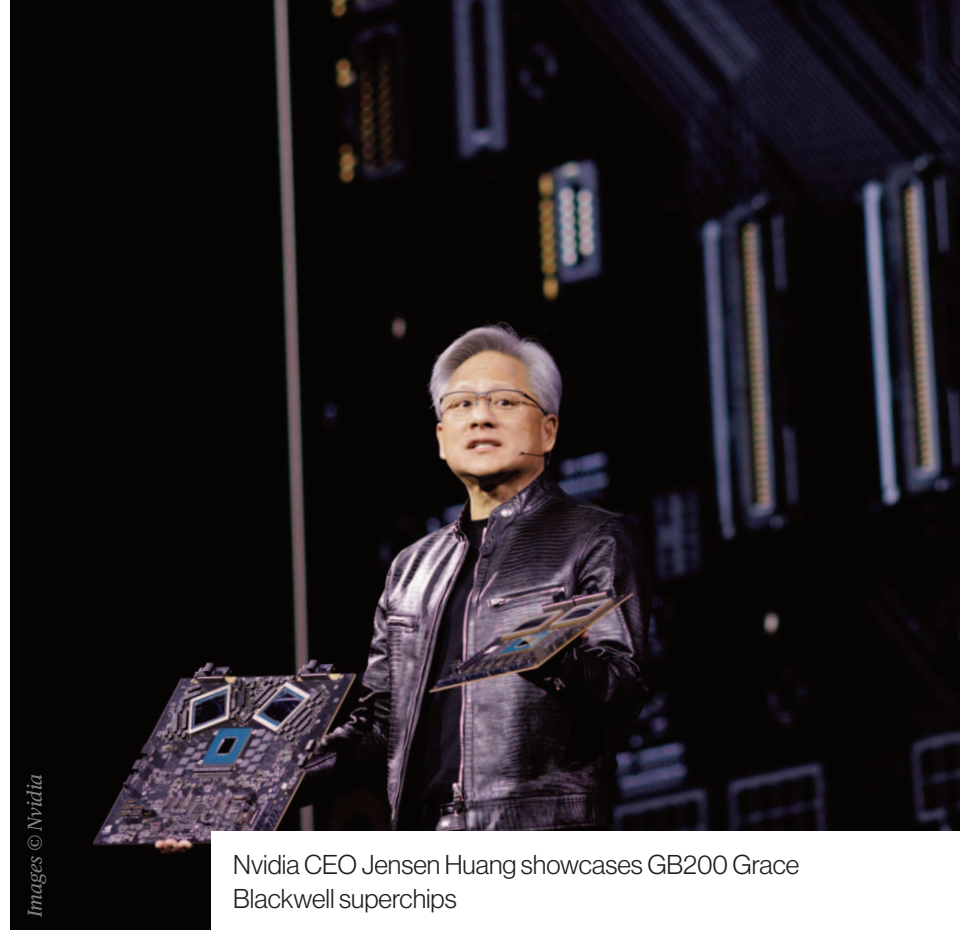


(LLM) inference for models scaling up to ten trillion parameters. This includes the world's most powerful chip—packed with 208 billion transistors, Blackwell-architecture GPUs combine two-reticle limit GPU dies connected by a ten TB/second chip-to-chip link into a single, unified GPU.

Compared to Hopper, the previous generation of AI-optimised GPU, Blackwell is between two and 30 times faster and consumes a fraction of the power. “We need bigger GPUs,” said Huang. “Blackwell is the largest chip physically possible—twice the size of Hopper and a massive leap in compute. It is the engine of the new industrial revolution.”

While the previous industrial revolution was all about generating electricity, he suggests, this one will be about generating intelligence, and data centres will be regarded as AI factories. Nvidia figures suggest that over the last eight years, the industry has increased AI compute by a staggering 1,000 times. At the height of the PC revolution, it was increasing by 100 times every ten years. “The rate at which we are increasing computing is insane,” the CEO emphasised. The same language was used to describe the increasing complexity of software: “In this new world, the software is insanely complicated. It is very large and getting larger. There are so many different things you want it to learn.”

Today it learns on words, images, and video. Increasingly it will also use reinforcement learning, synthetic data generation, and learn through debate with other systems. There's also a fundamental shift in

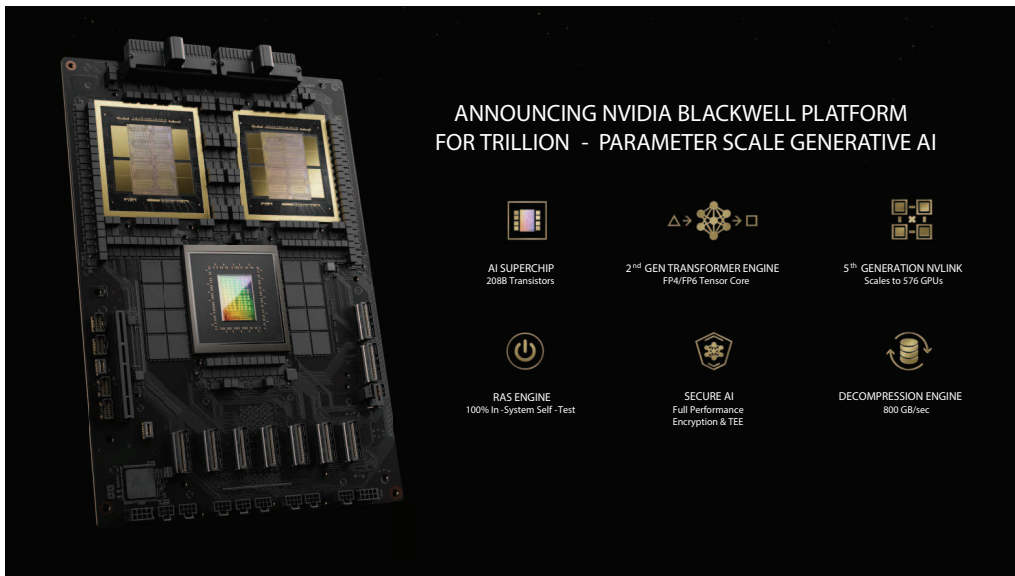


Nvidia CEO Jensen Huang showcases GB200 Grace Blackwell superchips

focus from using AI for inference to using AI for generation, meaning generative AI such as ChatGPT. “Blackwell is designed to be a generative computer. It's the first time that people are thinking of our GPUs in that way. Our GPUs went from computer graphics generation processors to AI generation processors.”

## Autonomous vehicles

Blackwell holds the potential to revolutionise numerous fields. “No conference in the world has a greater assembly of researchers from such diverse fields of science—climate tech, radio science, autonomous vehicles, AI,” he noted. “US\$100tr of the world's industries are represented in the room today. There is definitely something going on. The computer is the single most important instrument in society today. The fundamental transformation of computing affects everything.”



The Blackwell architecture is designed for transformer, LLM and generative AI workloads

And that includes autonomous vehicles. “Everything that moves will be robotic, there is no question about that. One of the largest industries will be automotive,” emphasised Huang. A handful of leading automakers have adopted the Nvidia Drive Thor centralised car computer to power their next-generation models, including Level 2+ electric vehicles (EVs), robotaxis, and autonomous delivery vehicles. This in-vehicle computing platform, architected and designed for generative AI applications, succeeds Drive Orin and integrates the new Blackwell architecture.

Nuro, Plus, WeRide, and Waabi are among the players that have selected Thor to power autonomous driving systems for trucking applications. BYD is building its next-generation EVs on Thor and plans to use Nvidia’s AI infrastructure for cloud-based AI development and training technologies, along with the Omniverse platform to develop tools and applications for virtual factory planning. Hyper, the luxury brand owned by GAC AION, is also going with Thor for its upcoming EV range,

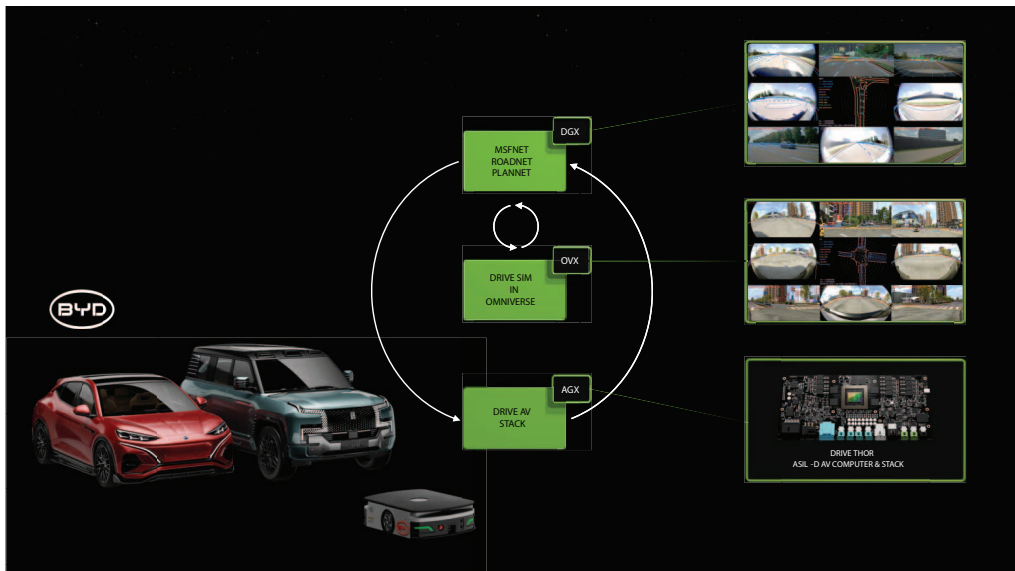
scheduled to enter production in 2025 with SAE Level 4 capabilities. Xpeng plans to use Thor as the AI brain behind its in-house [XNGP AI-assisted driving system](#). Li Auto and Zeekr have also announced plans to build their future models on Thor.

## The China issue

It’s a Chinese-heavy customer group, but China itself remains a significant thorn in Nvidia’s side ever since the Biden Administration introduced trade restrictions on high-spec AI-grade hardware in late 2022. The concern is that this technology could have military applications.

“Fundamentally there’s not much difference between automatically navigating a car and automatically flying a drone filled with missiles,” Sandeep Rao, Head of Research at Leverage Shares, tells *Automotive World*. “It’s pretty much fact that Nvidia’s AI-relevant chips are leagues better than what China is currently producing.” Rao estimates that 16-20% of Nvidia’s revenue comes from the sale of AI-relevant chips in China, most for use in data centres.





Generative AI is redefining autonomy and the global transportation industry as a whole

In the wake of the sanctions, Nvidia has come up with a couple of new chips, the L20 and H20, specifically for the China market. These include many of the features to support AI but with reduced computing power to comply with US regulations. Jensen was pushed on the China question from several angles by media at an exclusive closed-doors event within GTC, but his answers were vague: “Whatever we sell to China will have to be export-control compliant. We have the L20 and H20 and are doing our best to optimise those for China and certain customers there.”

Huang was also questioned on China’s role within the Nvidia supply chain and the uncertainties that could pose. Pointing to the DGX platform as one example, he noted that it contained about 35,000 different parts that come from numerous countries, including China: “It’s the same for the automotive and defence industries. The supply chain is quite complicated. I have every confidence the goal for the nations is not adversarial. They have to work out some unfairness issues, but the

doomsday scenario is not likely. The things that we can do are related to resilience and compliance, and then we let other people do their jobs.”

## Changing the world

Despite the potential holdback in China, Huang confidently told attendees that Blackwell will be the most successful product launch in Nvidia’s history, pointing to “unbelievable excitement” from governments, OEMs, ODMs, and telcos. The likes of Oracle, AWS, Microsoft, and Google have all said they want to be among the first to offer access to Blackwell GPUs through their respective cloud platforms.

“Accelerated computing has reached tipping point,” Huang asserted. “General purpose computing has run out of steam. We need a new way of computing so we can continue to consume more computing while being sustainable. In every industry where we engage, the impact is dramatic...If Hopper changed the world, what could Blackwell do?”

# Apple's cancelled 'Titan' presages rise of mass market EVs

Apple's decision to shelve its EV project could indicate that the industry needs to shift away from premium products to mass market models. By Will Girling





**F**rom 2014, Apple conducted R&D on a prospective vehicle codenamed ‘Project Titan’. Although the company kept most details under wraps, it was widely reported to be an autonomous electric vehicle scheduled for release in the latter half of the 2020s. However, in February 2024, Apple executives cancelled the project to refocus on artificial intelligence instead.

The news broke at a time when the future of electric mobility is less assured than previously assumed. Global electric vehicle (EV) sales are forecast to grow 36% year-on-year in 2024—down from 62% in 2023, according to Fastmarkets—and this slowdown is causing significant market re-evaluation. In February 2024 alone, Renault [cancelled its Ampere IPO](#), Mercedes-Benz pushed back its 50% total EV sales target from 2025 to 2030, and both GM and Ford announced intentions to tame the scope of their respective EV ambitions.

With a 2023 net income of US\$97bn, Apple has resources to which even the largest automakers can only aspire. So, what could its decision to abandon EV development indicate about the market’s prospects?

## **EVs: difficult in different ways**

Adrian Stalham, Chief Change Officer at business consultancy Sullivan & Stanley, tells *Automotive World* that developing an EV today is challenging regardless of starting position. Automakers must redesign and rethink platforms and systems originally created for internal combustion engine (ICE) models,

while the rise of software-defined vehicles requires them to also [develop digital products and services](#) outside their core competencies.

“For tech companies, it’s difficult in a different way,” he explains. “While they’re able to build tech products and services, they have no experience building suspension and steering systems that create the ‘feel’ of a car brand.” Additionally, the relatively slow design and production cycles of building vehicles are at odds with Big Tech’s emphasis on fail-fast software development. Some analysts assert that [ecosystem collaboration](#) could gradually resolve both parties’ deficiencies.

However, even if EV developers forge the relationships necessary, they are not guaranteed to unlock a lucrative market for their efforts. While EVs normally command a premium at initial purchase, Stalham notes that their value often crashes quickly, which is particularly problematic for leased cars. Analysis by *Auto Trader* found that new EVs in the UK lost around 50% of their value in three years compared to 34% for ICE.

“Porsche and Audi are starting to find that there is a very weak second-hand market for EVs, with depreciation at rates that outstrip ICE cars by a mile.” Subsequently, he believes this poor residual value will then affect new sales going forward, creating a negative feedback loop that makes investing in EVs unattractive from the outset.

## **Macro challenges**

Even if an EV developer decides to proceed from R&D to production, the profitability of manufacturing



The full Ampere lineup—Renault’s IPO for the brand was cancelled following analyst scepticism and negative EV market trends

© Renault Group

remains uncertain. While high-volume output could generate significant profit margins per unit, even despite [rising labour costs](#) in markets like the US, OEMs are struggling to realise the potential. Ford’s sector-specific losses up to 2023 are estimated at US\$6bn. Combined with high sticker prices, government subsidy programmes are proving indispensable to help build and sell EVs, even in the world’s leading market, [China](#).

However, Stalham considers this is a temporary salve to a long-term problem. “While governments are subsidising new sales, the payback has yet to be worked out.” The taxation of ICE fuel is a simple equation, but an equivalent for EVs—he suggests a pay-by-mile formula—would entail “huge infrastructure costs” on charging stations in the first instance and country-wide co-ordination to optimise deployment.

Creating comprehensive charging networks is often cited as the means by which EVs could finally [enter the mainstream](#). However, achieving this requires a shared roadmap between government and automotive stakeholders. If countries [waver in their commitment](#) to phasing out ICE, Stalham states that industry

“uproar” over accelerating EV investment while delaying payoff could dissuade new entrants. This also creates space for ICE innovation to postpone EV adoption.

He proposes that synthetic fuels and hydrogen, which share similar pump infrastructure and a more comparable ownership experience, could offer more “eco-friendly” vehicle options that still align with what customers want. Toyota’s strong sales figures in late 2023 may also stimulate wider market appetite for [hybrid powertrains](#) as a decarbonisation solution while the macro challenges surrounding EV adoption are resolved.

## Mass market values

Global market conditions mean getting the EV segment back on track could be difficult in the medium term. As high inflation and interest rates delay or prevent purchases, consumers may find transitioning to the unfamiliar battery-electric powertrain less attractive. Range and charge anxiety, says Stalham, are still far from resolved and will continue to hold back sales. “No one wants to be stuck without charge, and charger rollout delays have made this worse.”



There is still some hope that new technology could reignite enthusiasm for EVs: “The good news is that batteries are progressing fast, but with that comes higher costs.” As of 2024, batteries account for approximately 28% of an EV’s total cost, according to Statista. Therefore, adding more cells for greater range without shifting to a more affordable chemistry has a proportional impact on prices. If current trends continue, Stalham posits that bifurcated EV product portfolios—large and expensive long-range EVs and smaller, cheaper short-range “runabouts,” with few offerings in between—might be the result.

Future success could ultimately be determined through brand differentiation. In EV terms, that means developing a product that lies comfortably in the middle of these

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While governments are subsidising new sales, the payback has yet to be worked out

extremes and can be manufactured profitably. GM, Ford, and Tesla have all outlined plans for affordable mass market models, with BYD already



offering a glimpse of what’s possible. Stalham adds that automakers must also learn to better leverage brand capital in the electric era to reflect mass market values. He partially attributes low demand for Volkswagen’s ID.3 in late 2023 to the discontinuation of the Golf name (associated with affordability, reliability, and fuel efficiency) earlier that year.

*Bloomberg* estimates that Apple’s investment in ‘Titan’ could have totalled US\$10bn. Due to the production deficiencies of a tech brand operating in the automotive space, as well as its worldwide reputation for delivering premium products, it is, perhaps, not surprising that the company didn’t foresee a worthwhile payoff. Although premium spec EVs might have commanded the early adopter market, the future is set to belong to affordable, mid-sized EVs in an infrastructure ecosystem that supports them.



# Do EVs really mean a jobs bloodbath?

The situation regarding jobs losses in the EV transition is more nuanced than headlines suggest, writes Ian Henry





**R**eports of tens or even hundreds of thousands of jobs being lost as automotive manufacturing transitions to electric vehicles (EVs) appear regularly in the press. In February, a report from Hanover University of Applied Sciences said that supplier jobs in Germany could fall from the current 270,000 to 200,000 by 2030, employment in the sector having been at 310,000 in 2019. This report followed news that Bosch, Continental, ZF and Forvia would be cutting thousands of jobs; some losses were due to falling demand, but most of the predicted or anticipated losses are being attributed to the transition to EVs. At the same time, the VDA admitted that the job losses between 2019 and today have been because of declining vehicle production in Germany, where Ford, Opel and Volkswagen have seen significant falls in production. Demand is a major impact on employment in manufacturing.

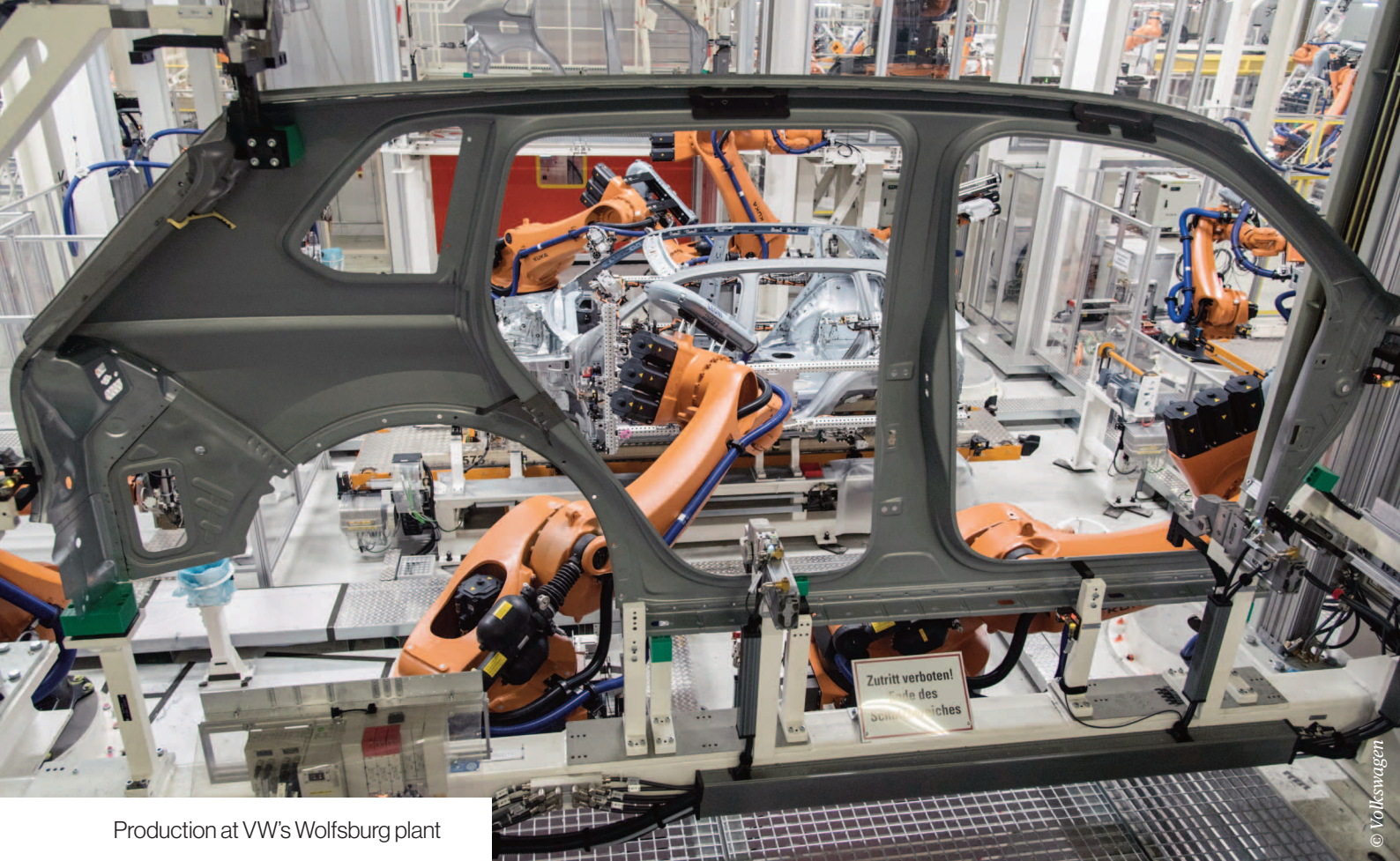
Go back a little over two years and CLEPA, the European components' sector trade association, spoke of half a million jobs being lost by 2040, adding that around 225,000 new jobs would be created, meaning the net loss was "only" expected to be around 275,000. This would, it was claimed, happen if the EU mandated only zero emission vehicles could be sold from 2035. The Italian unions had reported 60,000 jobs would be lost in Italy, while Volkswagen said that the transition to EVs would cost 30,000 jobs; in supporting evidence, VW cited how Tesla will only need 12,000 employees to build half a million cars in Berlin but VW itself needs 25,000 to build 700,000 cars at its largest car plant in Wolfsburg. Such figures can be

misleading as individual factories vary tremendously in terms of how vertically integrated they are and how much work is contracted to suppliers outside the factory.

“

**There is nothing new in industrial and locational change; it has happened before, and it will happen again**

Making sense of these sorts of claims is fraught with challenges; are we comparing like with like, what are the timescales involved and, perhaps, most significantly, how unusual is the scale of impending job losses? Industries evolve, technology changes and manufacturing industry migrates arguably as much as people migrate. The coal industry is almost no more in Europe, the steel industry is much less labour intensive than it was in its employment heyday and many other traditional manufacturing sectors have lost jobs, through automation or moving production to lower cost locations. On top of this government policies and incentives or subsidies can play a significant role in industrial location decision-making and therefore employment numbers.



Production at VW's Wolfsburg plant

Government policy is encouraging EV component production to locate in Europe and the US rather than Asia. European vehicle companies also need to source batteries and other EV specific components in Europe for a variety of reasons, including rules of origin requirements for exports across the English Channel and the industry's wish to reduce dependence on China. So, China or other Asian countries are "losing" potential jobs which might have made components for exports to Europe. Instead, those jobs will exist in Europe.

They will of course replace jobs in the production of components which will not be required in EVs, ie engines, transmissions, clutches, gear change systems, exhausts, and related parts. However, new jobs will be created in minerals refining, battery cell production and battery assembly. Batteries will, moreover,

require electronic controls, cooling systems, casings and bracketry which involve similar skills and techniques as in traditional automotive production. Similarly, electric motors require techniques akin to gear cutting and metal stamping, albeit on smaller parts than in conventional transmissions. The parts will also involve different materials and the need for different dedicated machines, but some component suppliers should be able to make EV parts, albeit with reskilling and investment in new equipment.

There is also little substantive data on how many jobs have been lost so far. Partly this is because EV production is still in its infancy and factories have not reached optimal scale and efficiency. Few engine or transmission plants have yet closed; these parts are still very much required, and will continue be



required, albeit in declining volumes through to the mid-2030s at least in Europe, and probably longer elsewhere.

Certainly, there will be job losses because of the switch to EVs, and the industry and policy makers in governments will need to address the reskilling and retraining of thousands of people as part of this transition. It is far from certain, however, that there will be a sudden cliff edge in terms of job losses. Partly this is because the transition to EVs has slowed, with consumers reluctant to make the switch for various reasons, mainly the cost of EVs, and partly because of concerns regarding charging. The expected jobs bloodbath has not yet actually happened, and it may be more accurate to say that recent job losses are a function of demand as much as anything.

Long term, jobs will go in traditional areas of car production, but new jobs in mining, mineral refining and energy will be required. The reality of how many jobs will be lost will moreover be clouded by some losses being due to locational changes; minerals mining and refining almost always take place in different locations to traditional automotive production, while battery cell and battery assembly plants are also often set up in new locations.

Northvolt's battery production in northern Scandinavia is far from a traditional automotive production location; similarly, the Tata battery cell factory for JLR in the UK will create 4,000 jobs in Somerset in the west of England, certainly not a hotbed of automotive production. These batteries will effectively replace the engines which JLR currently makes in Wolverhampton,



Tata is setting up a gigafactory in the UK

where it employs 1,500. However, the JLR Wolverhampton factory will transition to producing electric motors and assemble the cells from Somerset into complete batteries, so there may well be a net gain in jobs within Tata-JLR.

The situation regarding jobs losses in the EV transition is rather more nuanced than some headlines will suggest. There will also be an intermediate period when EV production finally ramps up and ICE production slows ahead of legacy factories closing; and at this time, there may even be a temporary rise in total employment across new and old technologies. However, because the new technology jobs will not normally be in the same place as current production, a distortion of labour markets will come into play. And in this sense, automotive manufacturing is facing the same transition as once impacted farming, coal mining, shipbuilding, textiles and other manufacturing sectors. The transition will not necessarily be “pretty” or easy and for many the loss of employment will be economically and socially very painful. But there is nothing new in industrial and locational change; it has happened before, and it will happen again.

# AV culture must emphasise safety, trust, and societal good

Will Girling reports on SMMT Connected 2024 and the route by which autonomous vehicles could rise above a recent ‘trough of disillusionment’

“Connected and autonomous vehicles (AVs) are already a reality, although there are many different stages of development,” said Mike Hawes, Chief Executive of the UK Society of Motor Manufacturers and Traders (SMMT). Speaking at the trade association’s Connected 2024 event, Hawes suggested that the global industry’s challenge is to overcome the “hype cycle” that has led to widespread [disillusionment](#) with these technologies in recent years, particularly SAE Level 4 AVs.

At the same time, the race for global leadership is accelerating. Markets like Germany and US, which already

have legislative frameworks in place, are gaining an early advantage and putting AVs on public roads. Others, such as UK, which has its Automated Vehicles Bill progressing at uncertain speed through Parliament, may not achieve this milestone until 2030.

“Tomorrow’s vehicles depend on what we do today,” emphasised Hawes. Every player in the sector must define a coherent roadmap for scaling AVs. René Hosse, Head of Autonomous Driving (AD) System Definition & Assurance at Volkswagen Commercial Vehicles, suggested four keystones: technological readiness, societal acceptance, regulations, and established business cases.

## Focusing on the 'here and now'

Most of the event's speakers agreed that AV technology is imminently or already prepared for deployment. However, the route by which AD systems could fully enter the mainstream is an ongoing source of debate. David Keene, Chief Executive of Aurrigo, put forward autonomous pods for restricted locations like airports, campuses, and sport venues. Others, such as Waymo's Head of International Policy and Government Affairs George Ivanov, touted the benefits of robotaxis operating openly in cities.

While a highly visible segment in the global market, robotaxis are yet to turn a profit in any of the markets in which they operate. A January 2024 article by MIT Technology Review noted that the removal of Cruise fleets in the US was not accompanied by the expansion of other companies' services, indicating that operating costs per ride prohibit expansion. Indeed, Bryn Balcombe, Autonomy Systems & Regulation Expert at Oxa, stated that his company considers personal robotaxis neither beneficial nor economically viable. Instead, Oxa is pursuing the public transit market (up to 20 people) through [AV shuttle](#) services.

The general consensus at Connected 2024 was that AV developers should be focused on the 'here and now' requirements of society instead of tech-centric moon shots. VW's Hosse argued that the context of an AD system's deployment is critical. "We still see the value of Level 4, but only in use cases where removing the driver from the equation has a clear benefit," he told *Automotive World*.

For Volkswagen, that means public transport: "The driver shortage is an ongoing threat to the sector."

Around 40 of the automaker's ID. Buzz model, the AV that will spearhead its new solution, are currently driving in limited operational design domains in Germany (Hamburg and Munich) and the US (Austin, Texas). "Throughout the forthcoming months and years, we plan to scale up to more than 100 vehicles. Once the validation phase is complete, we will have the proof that [the service] is safe."

“

Tomorrow's  
vehicles depend on  
what we do today

## Creating public trust

A very strong emphasis on public safety is becoming table stakes for AD system development. In territories where AVs do not operate frequently, stated Hawes, "people will be anxious" at the prospect of driverless vehicles. However, even in modern robotaxi hubs like California, antipathy among residents is growing as traffic collision events continue to stack up—in February 2024, a Waymo vehicle was torched by an angry crowd in the Chinatown district of San Francisco.





VW ID. Buzz—the automaker is trialling AV public transport services using this model in Germany and the US

© Volkswagen

Clear industry regulations will be the foundation of community trust, said SMMT’s Head of Technology and Innovation David Wong, but equally important is familiarity. “Research has shown that public opinion is far more positive after learning more about these vehicles and trying them.” Both Tom Stringer, Product Strategy Director at JLR, and Maria Uvarova, Senior Vice President of Software Product at Stellantis, believe that communicating the uses and tangible customer benefits of connected and AD systems will be imperative for building trust. However, that messaging isn’t yet axiomatic within the industry.

In March 2024, the Insurance Institute for Highway Safety announced a new ratings system for the safety profile of partial AD

systems available from all major OEMs. Of the 14 tested, only one (Lexus’ Teammate) scored ‘acceptable’, while the majority were ‘poor’ due to ease of misuse. Empathy for the end user—how will a product be used and what do they want from it—should therefore be another key consideration. This makes close partnership between OEMs and Tiers 1s essential, particularly at a time when AD features are a novelty for many. “Customers understand the issues they face, not the technology,” stated Stringer.

The AV sector’s ongoing challenge is that it must prioritise safety while also considering overall R&D investment and delivery timescales. Reconciling the three is difficult, but Hosse emphasised that AVs without

public trust is tantamount to planning for failure. “Safety should never be allocated with cost; it’s important that safety is the main factor, no matter what the project. That approach must be incorporated not just in the cars but also in a company’s culture.”

## A new culture: bettering society

The speakers at Connected 2024 held optimistic expectations about the future of AVs, ranging from new modern luxury experiences in the private passenger vehicle sector to economic growth through automated logistics vehicles. “These benefits are already apparent in both the EU and US. The technology is ready; the regulations are not,” said Peter Hafmar, Vice President & Head of Autonomous Solutions at Scania. Developers in countries still awaiting legislation have lead-time to finetune their systems. When AVs function as they should, he added, they won’t seem extraordinary. However, their societal impact could be.

Singapore, for example, has a government-backed autonomous fleet to transport the elderly and disabled. Hosse argued that AVs can be a force for empowering citizens and making cities more accessible to everyone. Jim Sanders, Director of Innovation at the Royal National Institute of Blind people, acknowledged that two-thirds of the UK’s two million registered blind felt excluded from current mobility options. On the other hand, he cautioned that AVs, by dint of having no driver for assistance, could exacerbate the problem without carefully considering user needs.

Sanders claimed it is in this aspect that a fusion of AVs and connected sensors driven by artificial intelligence could prove transformative for assessing passenger needs automatically. However, the rigours of developing an AD system mean that “accessibility cannot be a second thought” in the process, but rather the fulcrum for an entire project. “We shouldn’t focus on technology to the exclusion of people.” The goal, stated Waymo’s Ivanov, is to elevate AVs beyond their currently limited scope into everyday essential services.

“

We shouldn’t focus on technology to the exclusion of people

The future of AVs, he continued, depends on educating the public early, taking a big-picture approach, and focusing on what can be delivered safely in the near term. “Take the best lessons from a state like California instead of reinventing the wheel every time.” While many companies across the world talk about how they’re changing vehicle technology, the real winners could be those that show how their products could change society.



# Michigan: mobility innovation builds on Motor City heritage

Michigan put the world on wheels, but can the state now connect and electrify it too? By Megan Lampinen





**T**he US state of Michigan has built a global reputation for vehicle manufacturing over the past 100 years.

Production shaped the development of metro Detroit into the world-famous Motor City, the automotive capital of the world in the early 1900s. But since then, the business of car production has evolved into smart mobility provision, with a focus on software, battery technology, and connectivity. Michigan is determined to keep up with the breakneck pace of change, and central to that effort is the Office of Future Mobility and Electrification (OFME).

OFME brings together state government, academia, and private industry with the goal of creating safer, more equitable and environmentally conscious transportation. “The future of mobility isn’t solely about technological advancements,” says Justine Johnson, Michigan’s Chief Mobility Officer. “It’s about enriching lives, creating equitable opportunities, and connecting communities to a brighter future.”

## What does that look like?

Chief Mobility Officer at the state level is a role unique to Michigan, and Johnson leads OFME in this position. Her focus is on fostering people-centric mobility solutions and partnerships between government entities such as the Michigan Economic Development Corporation (MEDC), Michigan Department of Transportation (MDOT), and the Executive Office of the Governor (EOG). The OFME was only founded in 2020 but has since played a key role in generating more

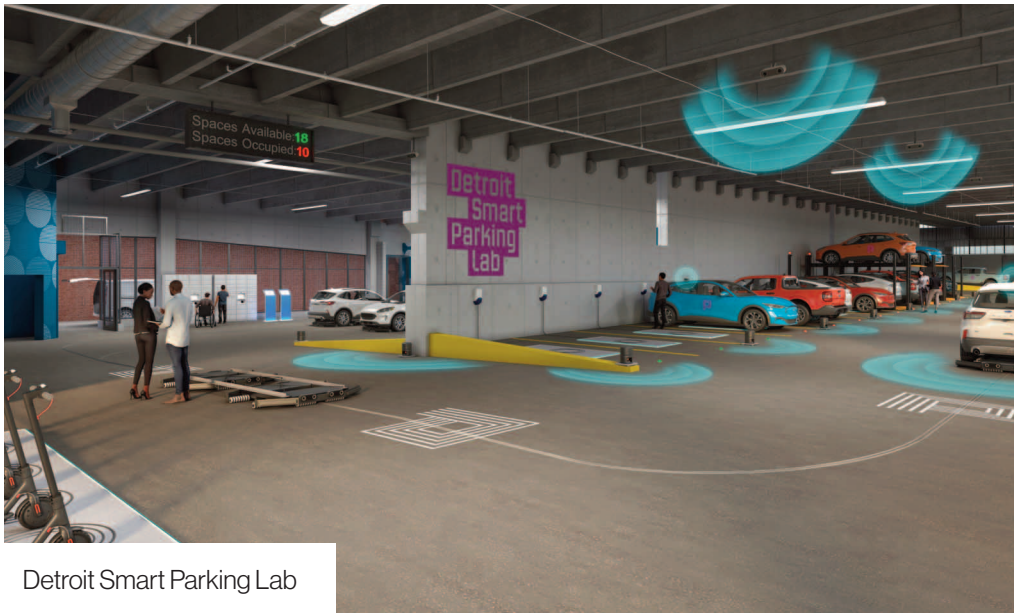


The CAV corridor will create lanes that are purpose-built to accelerate connected and automated vehicles

than US\$485m in mobility-focused revenue and kickstarted US\$163.5m in subsequent funding for local companies.

“Michigan’s mobility heritage has kept the world moving forward for more than a century, and today, it continues to be the place where the next generation of transportation and mobility is designed, delivered, and deployed,” says Johnson. “We are both a national and a global hub for mobility innovation.”

The state accounts for 62% of total US spending on mobility and automotive R&D. Much of this relates to electric vehicles (EVs). One-third of all US EV batteries are made in Michigan. It’s also home to the US’ first electric roadway, with Electreon’s dynamic wireless charging technology installed along Detroit’s 14th Street. At the moment, the road is being used to test innovative technology that charges EVs as they drive—no cables or plugging in—in a real-world environment. The aim is to make it available to the public in the next few years.



Detroit Smart Parking Lab

© Bosch

Michigan has also been working in collaboration with other states to provide interstate mobility solutions like the Lake Michigan EV Circuit. When complete, this ‘electric Route 66’ will serve as a network of EV chargers spanning a 1,100-mile scenic route around Lake Michigan. The partnership brings together Michigan, Indiana, Illinois, and Wisconsin to build and maintain the chargers. “With this announcement, we are putting the country on notice that the Midwest is the place to be for clean energy and small business growth,” said Michigan Governor Gretchen Whitmer.

In 2023, the state partnered with Daimler Truck North America and DTE Energy to build Michigan’s ‘truck stop of the future’. The federally funded site is supporting the Mobility Charging Hub project geared at helping commercial truck fleets transition to electric powertrains and modernising the truck stop experience. Speaking at the time of the announcement, Lt Governor Garlin Gilchrist II commented how this was just the latest of many government initiatives designed to position the state as “the best place to innovate the future.”

Similar platforms for testing innovation can be found in the Detroit Smart Parking Lab, which focuses on automated parking, and Michigan Central, which is exploring urban air mobility applications. Connectivity and automation are also under the spotlight with the Cavanaugh Connected and Automated Vehicle (CAV) corridor. Stretching along Interstate 94, the project is designed to improve safety on the corridor, reduce congestion, and support testing of advanced vehicles.

“Michigan’s history of being the place that put the world on wheels makes it stand out among other states,” Johnson tells *Automotive World*. “It has shown true leadership in the next mobility revolution by prioritising a diverse mobility ecosystem that encompasses land, air and water mobility solutions. It demonstrates that Michigan doesn’t rest on its laurels and is continuing to move towards a future world where mobility innovation connects communities to housing, jobs, and economic prosperity.”



The Mobility Charging Hub offers a place for companies to test new technologies, digital services, and business models

## A 'global epicentre of mobility'

Today, Michigan accounts for about 19% of all US automotive production, more than any other state. Out of the top 100 automotive suppliers, 96 have a base in Michigan. The state also claims national leadership when it comes to mobility-related patents.

It is not only positioning itself as a centre of production but also development and testing. As Johnson puts it, "Michigan really has the best of both worlds, combining essential R&D as well as programmes that help pilot new technologies." The MEDC and OFME are particularly proud of their various innovative programmes and initiatives supporting an electric ecosystem and sustainable transportation, including the Michigan Mobility Funding Platform, the Mobility Wallet Challenge, and Fresh Coast Maritime Challenge

Building on its heritage with the Big Three, today Michigan has a mix of investments from household names like Ford, General Motors, Stellantis,

and Toyota, along with start-ups like local company Our Next Energy. Lucid, the California EV start-up, recently announced plans to set up a new R&D facility in Southfield, Michigan. Speaking at the time of Lucid's February 2024 announcement, Maureen Donohue Krauss, President and Chief Executive of the Detroit Regional Partnership, which served as lead on the project, commented: "This is exactly the kind of company we want to add to our automotive and mobility sector. As they innovate, they will grow, expand their footprint, create more jobs, and attract other innovators; strengthening our position as the global epicentre of mobility."

As new mobility investments continue to pour in, Michigan has indeed secured itself a place in the emerging future mobility ecosystem. Pointing to its business friendly climate, diverse talent pool, and access to world class autonomous vehicle testing environments, Johnson suggests the state has "everything businesses need to innovate, develop and deploy next-generation mobility."



# Agility defines start-up innovation for Volvo Group

With investments in the start-up space declining, Volvo Group's CampX programme targets continued, albeit cautious, expansion. By Stewart Burnett

**T**he commercial vehicle (CV) industry has seen numerous disruptions over the last 15 years, ranging from electrification to connectivity. As a result, many of the industry's major OEMs have reached out to the start-up ecosystem to help them prepare for the future. One noteworthy example is Volvo Group and its CampX project, which hosts four different innovation hub sites spread across Europe, the US, and India.

However, the European start-up boom may have already peaked. A December 2023 report by Atomico revealed that after investments

skyrocketed between 2020 and 2021—from US\$39bn to US\$100bn—they have since declined sharply, reaching US\$45bn in 2023. A contemporaneous article by the *Economist* cited a complicated regulatory environment and rising interest rates as two factors contributing to the slump.

Helene Niklasson, Head of CampX at Volvo Group, believes that start-ups have a vital role to play in “industry-wide transformation”. However, the best approach is a cautious one, with expansion measured by other metrics besides capital: “We’re thinking in terms of being quicker and simpler and scaling our momentum.”



## The CampX approach

Since 2019, when its first innovation hub launched in Gothenburg, Sweden, Volvo Group's CampX concept has opened an additional three locations: Bengaluru, India; Lyon, France; and Greensboro, North Carolina, US. The goal of this expansion was to accelerate the development of relevant technologies and services that help ensure Volvo Group keeps pace with a rapidly changing CV industry. "We're going to need everyone on board for this transformation, and that means global partnerships outside of Volvo Group," Niklasson tells *Automotive World*. At each hub, there is a small

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It takes a big resource burn to get all hands on deck preparing for the future

team responsible for matching the needs of 'product owners'—Volvo staff overseeing the roadmap for a given solution or component—to the start-up best suited to help deliver them. This ensures the collaboration is as targeted and fruitful as possible, minimising potential resource wastage.





# CampX

BY VOLVO GROUP



The CampX programme has brought several products and solutions to market since its 2020 inception

At all four locations, there is an accelerator programme—the “main activity” of the CampX concept. “Here, we embark on a short proof-of-value project that tests out their solutions and how well we work together,” says Niklasson. At its conclusion, the product owner must decide whether to continue the engagement with the start-up and if so, in what format to bring the solution into the Volvo platform. To secure the most optimal outcomes, a participating start-up company must be established before it is chosen. “You need to have some maturity if you want to have Volvo as a client.”

However, there are still opportunities for early-stage start-ups to engage with Volvo through an incubator programme at the Gothenburg site. “We invite them to come work in our greenhouse,” Niklasson explains. “The product owner doesn’t need to outline a specific challenge, but they do need to believe in the start-up and that it’s

important to strengthen our resources in their focus area.” While this is less likely to result in a product being brought to market, it does help the start-up find industry relevance that could ultimately bring them closer to securing Volvo as a client.

Finally, there is the venture builder programme, which is location-agnostic. This is typically used in instances where there is a partially formed in-house development that can be outsourced to an external company to expand on and validate. By spreading projects across these three approaches, Volvo believes it can achieve maximum value from its development process.

## Careful expansion

Niklasson highlights that CampX has seen tangible results across all three approaches. Of the more than 80 accelerator projects embarked on to



date, almost 75% have resulted in collaborations and 15% have resulted in products that reached the market. “These projects are mainly oriented around electromobility: battery management, safety systems, and so on.” In addition, the venture builder programme has enabled four new revenue streams and two spin-off companies, with Volvo as a co-owner. One example, Fyrqom, offers an automated system for calibrating the tyre pressure monitoring system on heavy-duty vehicles.

ups to the Gothenburg site through joint deals with universities. To date, Volvo Group has conducted five successful incubations.

By carefully weighing each expansion and new project based on product owner’s needs, the company’s approach reflects a wider industry attitude that the start-up segment should be approached with greater caution. The cancellation of Ampere’s IPO in January 2024 following [concerns about its structure](#) and the

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By sharing our knowledge, we can contribute in a positive way to the transformation of the CV industry

Other successful projects include the use of AI to drive fuel advisor service to customers in the South American market. Another, targeting Nordic markets, uses sensors and lights to detect animals on the sides of the road and help prevent collisions. “It gets dark in Sweden during winter, and you get lots of animals from the woods onto the roads,” says Niklasson. “There’s a real demand for a solution.”

She notes that the incubator programme has the potential to be exported to other locations. “It’s still very Europe-centric because we want direct oversight. We may expand it, but we first need to figure out if that’s the best approach.” There are also plans to increase the inflow of start-

extent of its independence from the Renault Group is one prominent example. From Niklasson’s perspective, however, the decline in start-up investments is little more than a “correction” after two years of explosive growth.

“It takes a big resource burn to get all hands on deck preparing for the future,” she emphasises. In this regard, one key focus area is better integration between in-house development and external collaborators. “If I were to summarise the challenge, it’s really speed,” Niklasson concludes. “Our intent is to partner and integrate. By sharing our knowledge, we can contribute in a positive way to the transformation of the CV industry.”



# Harman's app store evolution ups UX and revenue potential

The industry is heading towards a future of on-demand experiences, and Ignite could be the short-cut automakers need.

By Megan Lampinen



The automotive industry's evolution from car production to mobility provision is rewriting the rules of competition. Brand differentiators are moving away from horsepower and hardware to apps and experiences. As a result, the vehicle is becoming yet another aspect of the consumer's digital life. For automakers, the key is to match a seamless connection with a rich experiential offering.

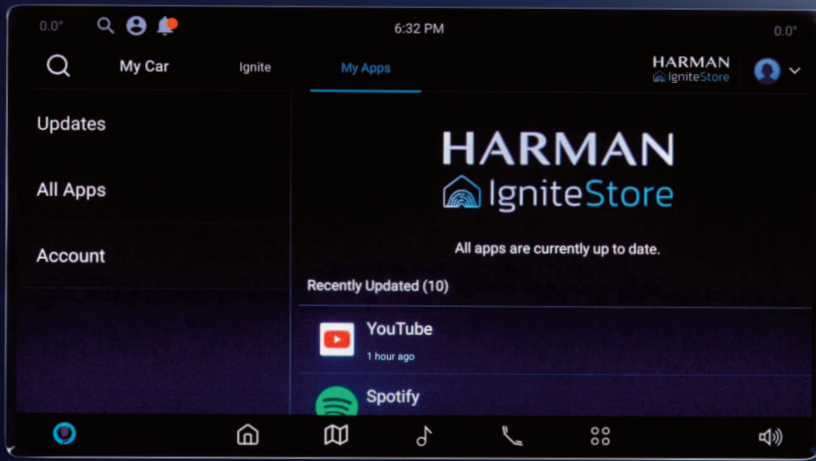
Harman's Ignite Store offers one way for automakers to optimise their in-car digital experience offering with minimal hassle. It's an automotive cloud platform that allows OEMs to develop, manage and operate their own in-vehicle app store with as much customisation and branding as they want. Not only does this enhance the relationship with consumers, but it also opens up potentially lucrative new monetisation opportunities.

## A huge differentiator

Cariad, Volkswagen Group's software company, was the first adopter of the Ignite Store, with Audi the first brand to offer the array of apps. At the moment, there are 70 different apps available from various third parties. "This is a huge differentiator," emphasises Jens Beckmann, Senior Director of the Harman Ignite Store. "The app offering at most OEMs is very limited because they have had to progress app by app, working with each individual developer. We have built a huge, centralised ecosystem that grants them immediate access to all 70 apps."

The most recent partners to join the ecosystem include electric vehicle (EV) charging provider ChargePoint, gaming company Vector Unit, and connected navigation software expert Telenav. All of the apps are chosen specifically for their potential to enhance the in-vehicle user





The Ignite Store is designed to help consumers bring their digital lifestyles into the vehicle

experience (UX). “We are targeting true automotive scenarios,” Beckmann tells *Automotive World*. “We don’t just want to copy the mobile world and put all those various media apps into our automotive store. We are introducing apps that can really improve the experience in and around the vehicle.”

For instance, ChargePoint allows EV drivers to search for charging stations and even pay for a charging session. The integration of a payment feature in the Ignite Store is new, with the

announcement coming out at CES 2024 in January. Significantly, it paves the way for new digital experiences and business models. “The payment solution means we can offer paid apps, created by both OEMs and the developer community,” notes Beckmann. “We can also allow for the introduction of subscription-based services in the vehicle. Finally, we can facilitate in-app purchasing.” Mavi marks the first in-app purchasing option, allowing drivers and passengers to order food and drinks from various chain stores inside the vehicle.

## Ripe for innovation

The number of apps available within the Ignite Store will grow in the months ahead. Beckmann concedes that there may be a limit on how many should be offered, but Harman has already signed more than 100 partnerships and is working to launch all of them “relatively soon.” Eventually, he suggests the Ignite Store could offer the top 200 mobility-centric apps.

Other than food ordering and EV charging, connecting the vehicle to other devices will be a key focus for future additions. Harman is already pursuing this angle with its Ready Upgrade feature, which allows drivers to install Samsung’s SmartThings functions for a range of services that connect the vehicle to the home and vice versa. For example, while sitting at home a driver can start the car, adjust the HVAC, check the battery’s state of charge, and open or close the vehicle’s windows. From the car, they can control home appliances like the television and air-conditioner.



In the future, as vehicles introduce more automated driving functions, gaming and media apps will become more important, as will the role of car audio. “We will have completely new audio experiences when it comes to watching media and playing games in the car of the future,” he predicts. At CES, Harman introduced its latest approach to in-car audio systems in the form of SeatSonic. Here the speakers are moved from their usual position on the doors and trim panels and instead installed directly into the seats. The promise is a personal, flexible sound subsystem for all passengers.

## Automaker and driver relationship

Today Ignite Store is an Android app store, but it could become a hub for all sorts of services in the future. “Imagine a marketplace, white labelled, on top of which OEMs can put their own branding and offer not only Android apps but also software features, driving functions, any kind

of service and experience for the vehicle,” Beckmann suggests.

Such an ecosystem could foster a stronger, more meaningful relationship between automaker and end customer. “Right now, automakers are competing with Uber, with Apple, with Amazon,” he says. “You could argue that on the apps alone, this will be a hard fight to win over time. But once we’ve broadened beyond just automotive-specific apps to include vehicle functions and services, then the relationship between the OEM and the end customer moves to the next level.”

This is no long-term future Beckmann is talking about. Harman is already working on a feature-on-demand product and expects to introduce it before the third quarter of 2024. “At some point, everything could come together into a single marketplace with an integrated payment service, offering all sorts of experiences and services,” he reiterates. It’s the UX of the future, and it’s just around the corner.

# Will privacy decide the web browser wars?

**Vivaldi laid the groundwork for in-vehicle web browsing, but others are now catching on to the market's potential.**

**By Megan Lampinen**

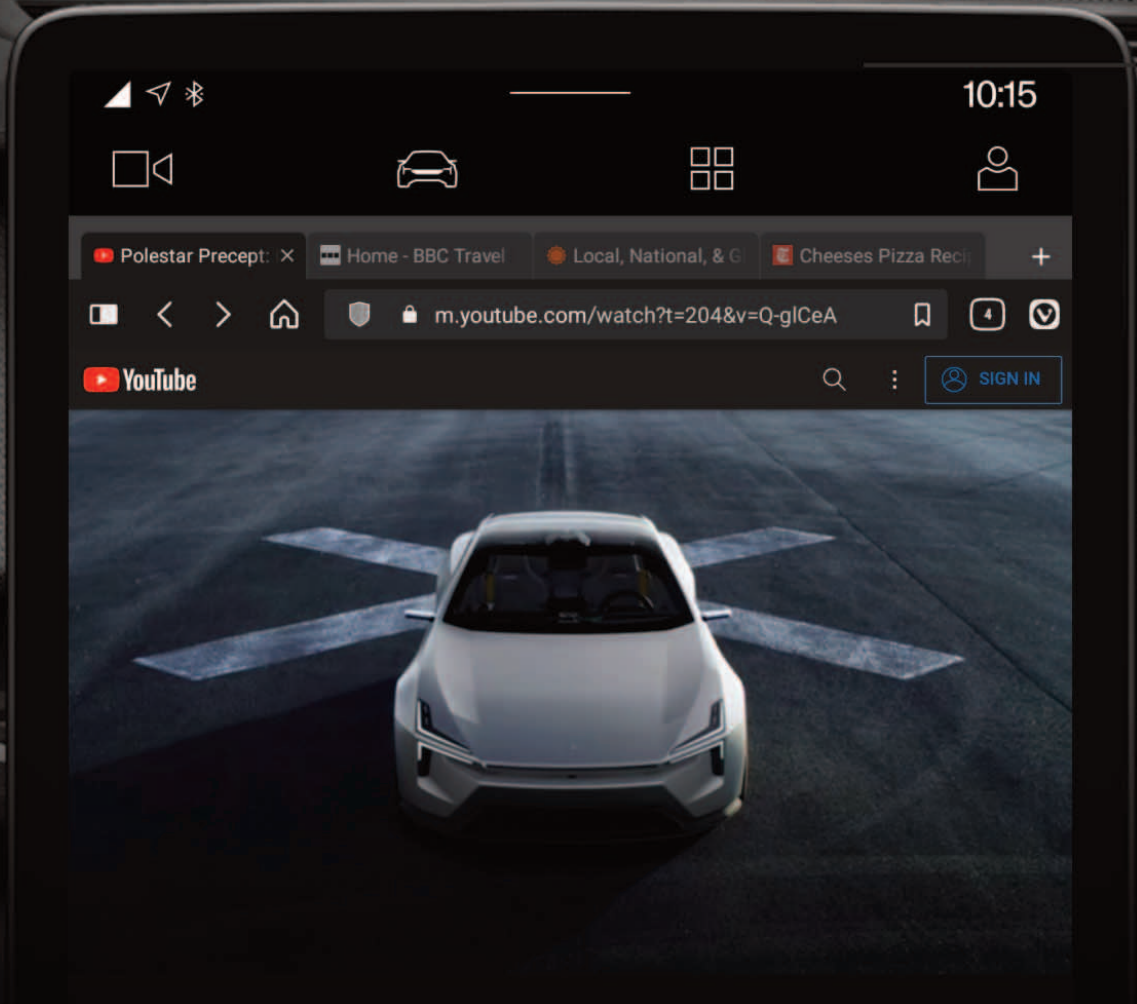
**C**onnectivity is shaping the user experience (UX) for today's drivers and vehicle occupants, and its importance will only grow in the coming years. Statista estimates that there will be more than 400 million connected cars on the world's roads by 2025, with hundreds of millions of occupants potentially wanting to connect to various services.

Automakers offer a range of in-car connected apps accessible through the touchscreen, including music players, navigation and electric vehicle (EV) charging services. The list is growing all the time, but the ecosystem in no way compares to what's available on the internet. That's where an embedded web browser comes in to play.

Ford was an early mover on this front, offering an Opera browser in select trucks and vans from about 2009, but it was Tesla that brought web browsing to the passenger car segment with its Model S. Like many new technologies, Tesla's initial browser suffered teething problems. The automaker later switched to a Chromium-based browser, the same engine that powers Google Chrome, but glitches and slow loading speeds persisted. In a 2022 interview with a Tesla Owners Club, Chief Executive Elon Musk conceded that the browser "sucks", describing it as "worse than some iPad from five years ago, by a lot."

And by then, competition had arrived. For years Tesla was the only high-volume car brand on the





market with an embedded browser. Just before Christmas 2021, the Polestar 2 began offering Vivaldi for Android Automotive as an optional download within the Google Play Store. “Polestar rang us, asking if we would like to provide a browser in the car,” says Jon Stephenson von Tetzchner, the founder of both the Vivaldi and Opera browsers. “Google couldn’t or wouldn’t do what Polestar wanted.”

Adapting a browser for use in a car entailed adjustments to screen sizes and input methods, as well as adherence to various regulations. The final product took the form of a full-scale web browser offering advanced tab management, streaming ability, and advanced security measures. To minimise driver distraction, Vivaldi also decided to restrict the browsing

function to when the vehicle is parked. With Tesla, users can browse while in motion.

“We have a principle of delivering on anything and saw that it wasn’t going to be too hard,” explains von Tetzchner. Polestar Chief Executive Thomas Ingenlath wanted to deliver it to users as a Christmas present, so it launched on 23 December.

## A gateway to everything

Web browsers are a significant addition to the in-car experience because they open the door to new possibilities. “If you have a browser, there’s no limit to what you’re able to do,” von Tetzchner tells *Automotive World*.



The 2024 Lincoln Nautilus SUV will be the first vehicle to feature the Ford and Lincoln Digital Experience, which offers the Vivaldi browser

So, what do vehicle occupants want to browse? Anything you can think of, and this is where von Tetzchner's experience with Opera proved helpful. Opera was one of the earliest desktop browsers but also became a big player in the mobile space. "In many ways, we were the first browser to do mobile for real," he says. "At the time, everyone was saying people wouldn't want to use their mobile to browse. We disagreed. I expect that automotive will prove the same."

Some of the original Opera team members moved to Vivaldi when von Tetzchner formed the company and took their knowledge with them. Part of what they learned from the mobile industry and from Ford's early use was that browsing is very individual. Some people will use their browser for work, others will use it for gaming, and yet others will stream videos from YouTube. "For some of these functions, you will go through dedicated apps, but mostly you just use the browser,"

notes von Tetzchner. "We are the gateway to that, at least until those specific services become available, and then we are a gateway to everything else."

After Polestar launched Vivaldi, other automakers followed, including Renault, Mercedes, Volkswagen Group, and most recently Lynk & Co and Ford. As the only browser in the Google App Store, Vivaldi had a solid first-mover advantage. "We knew we had to move quickly to take advantage of our unique position in a market that was not dominated in the same way as others."

It enjoyed this exclusivity for about two years, but at CES 2024, Polestar and Volvo announced that they were bringing Chrome browsing to certain vehicles with Android Automotive. Ingenlath said the company had been "waiting a long time" for "this much more convenient solution." Vivaldi will be offered "as a holdover" until the Chrome rollout is ready.



Von Tetzchner had always expected Google to make such a move and was only surprised by the length of time it took. “At the start we expected we would have maybe a month or two, but we had more than two years [as the only browser in Android Auto],” he notes. “Google announced some time ago that Chrome would eventually be there, and now it has a beta. I would expect others to come as well.”

## Data collection concerns

While Vivaldi may have lost its unique position, Google’s move reinforces the potential importance of in-vehicle web browsing. The timing is also significant, coming as it does with the rising wave of EVs. As EV numbers grow, more people will spend more time sitting in their car waiting for it to charge, and they will all need some way to pass the time. The same goes for automated driving: as the vehicle takes on more of the driving tasks, all occupants may find themselves with time to work, play, or relax. And the more they use their browser, the more data may be collected on them.

Websites collect and store user data, usually to provide targeted advertisements and personalised content. But there’s a potential for serious misuse, and von Tetzchner wants to see this field under greater regulation. “No company should be allowed to collect vast amounts of data on users,” he asserts. “It is not natural, and it should be illegal. I don’t understand why it’s not been stopped a long time ago.”

While there are legitimate concerns about profiling users, the risk extends beyond individual privacy. “When

you collect information on numerous people for marketing, that data could also be used for politics and influence campaigns,” he warns. “That makes it a societal problem.”

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If you have a browser, there’s no limit to what you’re able to do

Industry players have responded in various ways to privacy concerns. Google’s Privacy Sandbox is one example. This initiative, which promises to improve privacy across websites and apps, limits tracking to the browser. Von Tetzchner is not impressed: “This is presented as a privacy feature, but tracking in the browser as opposed to the cloud doesn’t make it any better.”

Vivaldi works to two fundamental principles: privacy is a default, and everything’s an option. As the company explains it, that translates into designing software that protects the privacy of all users and not tracking how they use it. The browser comes with a built-in ad blocker, tracking protection, and encrypted sync functionality. As the market for in-car browsing grows, security and privacy could prove a pivotal differentiator among providers.



# Low volumes make it tough going for new entrants

It's hard to see how Lucid, Rivian or Nikola might make the kind of breakthrough needed to avoid being anything other than minor players, writes Ian Henry



**A**lthough it has built a strong and seemingly defensible market position, [Tesla faces many challenges](#). For other new entrants in vehicle manufacturing, the future is far less rosy. Arrival, the UK-based, Hyundai-backed, SPAC-financed electric commercial vehicle start-up has placed its key UK operations into administration. It has not yet built a single vehicle despite having claimed it would revolutionise not just the EV market but the production process too. It had intended to make vehicles in a series of micro factories, none of which have been built or operationalised.

Other new entrants have managed to build vehicles, but at much lower volumes than the companies themselves had suggested, and investors had expected. These low volumes have been reflected in poor financial results. Rivian, the SUV and pick-up truck company backed by Amazon, has announced losses which reduced from US\$1.75bn in Q4/2022 to US\$1.53bn in Q4/2023 and it forecast production for 2024 would be flat compared to 2023 at around 57,000 units. It is cutting its salaried workforce by 10%, having lost US\$5.43bn for the whole of 2023.

Admittedly, it was able to report a rise in vehicle deliveries, from just over 8,000 in Q4/2022 to just under 14,000 in Q4/2023. Even so with its cash burn continuing at high levels and expected capital expenditure of US\$1.75bn in 2024, it will be sometime before it can generate a turnaround in its financial fortunes. And quite how the company expects to survive in the long term with such



Rivian is jockeying for a foothold in the EV segment with SUV, pick-up and van offerings

low volumes, and significant ongoing investment, is a mystery, the solution to which is not clear. Rivian is cutting its prices, with its entry models the R1T pick-up starting at just under US\$72,000, still a hefty entry price; whether such price cuts will in turn generate substantial new volume remains to be seen.

Rivian also plans to shut its factory, the former Mitsubishi plant in Normal, Illinois, for several weeks in Q2/2024 while it introduces several new suppliers and makes changes to its production processes in the search for efficiency gains. But it no longer expects to make the 82,000 vehicles originally projected for 2024, expecting to make around the same number of vehicles as it did in 2023. For reference, 82,000 is just over 10% of the typical annual volumes which

Ford sells of the (admittedly larger) F150 pick-up alone; scale matters and Rivian does not have it.

And while Rivian has reported flat production forecasts and a reduction in its losses (but no clear path to profitability), another new entrant, Lucid (which has significant financial backing from the Saudi sovereign wealth fund, PIF) reported increased Q4/2023 losses at US\$654m, up from

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Quite how the company expects to survive in the long term with such low volumes, and significant ongoing investment, is a mystery

the US\$473m loss in Q4/2022. Revenue for the quarter fell from US\$258m to US\$157m.

Moreover, its recent production volumes are even lower than Rivian's, having made less than 8,500 electric

Air sedans in 2023. It plans to add a crossover, called Gravity later in 2024 and a third, smaller model by the end of 2026, so any benefit of this model is a long way off. The financial markets were not especially impressed with Lucid's results, marking its shares down 8.4%; it is worth noting that Lucid shares are now trading at 90% less than they did at their peak in 2021. This is perhaps not surprising given that its 2023 loss more than doubled to US\$2.8bn, up from US\$1.3bn in 2022; its revenue also fell, from US\$608m in 2022 to US\$595m in 2023. The company attributed its problems to the macroeconomic environment, especially higher interest rates; also adapting its cars for the peculiarities of the Saudi Arabian market has proved more difficult than expected.

Lucid also hopes to take on BMW and Mercedes in Europe and plans to position the Air Pure sedan up against BMW's i5 and Mercedes' EQE, especially in Germany, Switzerland, Norway, and the Netherlands. However, the BMW and Mercedes models themselves form only a small niche, less than 100,000 in worldwide sales between them, reinforcing the challenge which Lucid has: its current target market segment is limited. It hopes to be able to offer its customers access to the Tesla charging network as an incentive.

Perhaps the Lucid models will win over a few BMW or Mercedes customers but there is little to suggest they will achieve the scale which the established brands have any time soon. Moreover, while Lucid is following in Tesla's wake and its backers clearly believe they could have the same success as Tesla, it is important to note that Tesla had the





The Lucid Air

advantage of being the first mover in the EV market; the likes of BMW and Mercedes have since caught up in many ways and they have their historic brand strength to carry them forward. Lucid does not have this and while it might carve out a small niche, short of it merging with one of the established brands in its premium sector, it is difficult to see how it can generate the volumes and achieve the economies of scale which the likes of BMW and Mercedes already have.

Things are not much better in the commercial vehicle market; Nikola, the large electric truck producer, has reported a Q4/2023 loss of nearly US\$154m, admittedly an improvement on the US\$222m loss reported a year earlier. Nikola

reported revenue for Q4/2023, doubling from US\$5.5m to US\$11.5m as truck deliveries rose from 20 to 35 in the quarter. For the whole of 2023, revenue was nearly US\$36m, with 114 trucks delivered. But both figures were down on 2022, when revenue was nearly US\$50m with 131 trucks delivered.

By comparison, Mercedes sold 195,000 trucks in North America, up from 187,000 a year earlier. Just as Rivian and Lucid are minnows in the car market, so is Nikola a minnow in the truck market; and crucially, in such a scale driven industry, with such low volume, it is difficult to see how Lucid, Rivian or Nikola are going to make the kind of breakthrough which is needed to avoid being anything other than minor players.





# Telematics levels playing field for fleet decarbonisation

**Electrification may work for larger fleets in developed countries, but telematics can still help lower emissions for smaller fleets.**  
**By Stewart Burnett**

**A**round the world, the transportation industry is transitioning towards a cleaner future. A global consensus emerged from meetings of the UN Framework Convention on Climate Change that road emissions must be lowered by a minimum of 50% by no later than 2050 to mitigate the worst consequences of climate change.

Fleets contribute disproportionately to road emissions. The heavy-duty segment, for instance, is responsible for 25% of all road transport emissions in the EU





despite only accounting for 2% of all vehicles. Ride-sharing fleets also contribute heavily to road emissions: a 2020 study published by the Union of Concerned Scientists revealed that ride-hailing trips cause an estimated 69% more pollution on average than the trips they displace. This is because many of those trips would have utilised public transport, combined with a widespread dependency on gasoline cars among ride-sharing drivers.

Efforts to decarbonise vehicle fleets of all types are unfolding at an uneven pace globally. While California will ban the sale of new diesel trucks from 2036 onwards, other regulatory bodies,

such as in India, have not set such concrete targets.

The transition towards a decarbonised future poses a global challenge, but the telematics industry can support fleets of all types in lowering emissions, even when using fossil fuels. As Aliaksandr Kuushnyau, Chief Executive of Lithuania-based telematics platform Wialon, Gurtam's flagship product, observes, the role of a telematics provider is facilitating sustainability. They do not have a stake in electrification but can offer tools for increasing the fuel efficiency of smaller fleets that cannot afford (or are not obliged by regulation) to switch to electric





**Aliaksandr Kuushnyau,**  
Head of Wialon, Gurtam

© Gurtam

vehicles (EVs). In this capacity, Kuushnyau argues, the telematics industry has an important role to play in a lower-emission future.

### **How is the role of telematics providers changing?**

The business of being a telematics service provider will require huge changes. Ten years ago, you were just installing devices, providing the platform, and it worked fine: the customer was happy just to have visibility. But now, OEMs already provide some basic functionalities like location tracking. So, companies providing telematics solutions need to change, and they need to do more. This means going deeper into projects, understanding all the fleet's requirements, and what insights they want to gain. In many cases, this will be sustainability, but not always—certainly fleets operating in different regions will have other priorities.

### **What is your perspective on the transition away from fossil fuels in fleets?**

Based on what I see right now, meeting net zero would be really hard with the current global trajectory of fleet transformation. I'm

happy that some countries have those commitments, but we need to recognise that it's mainly developed countries and big corporations that are in a position to think this way and have resources and means to pursue it. Even in those developed countries, I see it happening later than the timelines currently mandate. I do think those will be postponed.

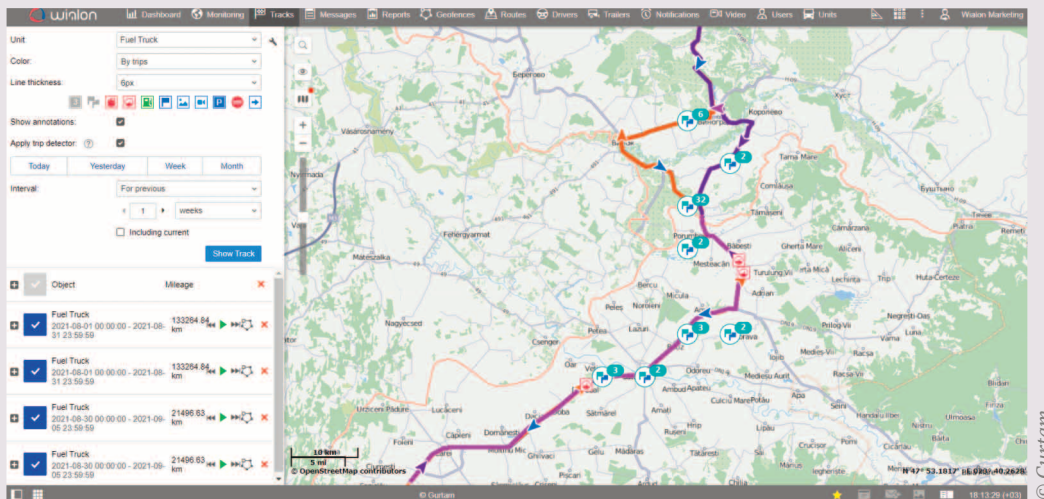
But still, the shift has begun, and more and more companies are adopting that approach. In that sense, Wialon is happy to be the one that serves this purpose for fleets that need a little help. We have seen that, as we provide these fleets with data on their footprint, they start shifting in a positive direction.

### **How do you convince a smaller fleet to adopt telematics?**

It's always a question of means and being able to justify the additional expense. You have to factor in that we are currently living through a financial crisis. GDP is not growing as fast as expected, and fuel is getting more and more expensive. But that is exactly why they need fleet management: it's a small investment to increase efficiency.

When you are paying a monthly fee for each device, say US\$15 per month, it is really not much in the bigger picture. Compare it to fuel and driver costs, which will both run in the thousands per month for every truck in a commercial fleet. With telematics, that US\$15 per month offers the chance to regain control over your drivers, your fuel, and your carbon footprint.

That's the main idea. Nothing is forcing you to pay for telematics—it's not like the tyres or something that



The Wialon platform allows fleet managers greater visibility over their drivers

the vehicle can't run without. Rather, you pay to get savings. When you can demonstrate that the system pays off within a couple of months and you are saving, not only in terms of fuel but also net emissions, then many of the smaller fleets tend to be won over.

**One of the major trends purported to help with decarbonisation is ride-sharing. How can telematics help this industry?**

Right now, both of the major car-sharing companies here in Vilnius use our Wialon platform. We can see that this trend is on the rise, and our platform has tools for public transport companies, shuttle buses, and even corporate car-sharing operators to manage their footprint. If there are EVs in these car-sharing fleets, then we can help by detailing instances of inefficient driving, likely vehicle range, and utilisation. If not, then we can still see the wasteful use of gasoline.

Ultimately, we are not the ones responsible for shifting fleets towards new ownership models or new powertrains. We just need to address and support the changes that we see


emerging for fleets through our platform. If it's happening, then our aim is to support it.

**What tools are available at Gurtam to help smaller fleets reduce their emissions?**

It's important to recognise that not all fleets are in a position to switch to EVs. This could be based on their budget, their mileage, or the available infrastructure—it's different for all of them. What's important to understand is that a portion of their emissions come from fuel being used inefficiently. We can offer visibility on fuel use not only at the company level but also at the vehicle and driver levels. It's very important that we can alert drivers and fleet managers to cases of inefficient driving—such as instances where a driver is idling with their engine on.

There are often cases where drivers are taking a longer route simply to avoid a toll road. This might create a very marginal saving in terms of their overall expenses, but when they see, through our platform, the extent to which it increases their emissions and wastes time, they may consider changing their approach.





# What will the Chinese government do about OEM consolidation?

As the Chinese EV market becomes saturated, automaker consolidation looks inevitable, but state support could create a unique result. By Ian Henry



**R**eports coming out of China in recent months hint strongly at a looming problem of overcapacity, both in internal combustion engine (ICE) and electric vehicle (EV) manufacturing. The issue impacts both legacy international vehicle companies with joint ventures in the country and the new domestic EV companies. A combination of the move away from ICE vehicles, the slower than anticipated EV ramp-up, and economic uncertainty worldwide will almost certainly lead to consolidation in the Chinese vehicle manufacturing sector. This should not come as a surprise, as mergers, acquisitions, and consolidation among vehicle companies have been long-established features of the industry and its historical structural evolution.

GM—best known today for its Buick, Cadillac, Chevrolet, and GMC brands in the US—was created by merging the original owners of these brands. The company has also acquired older marques such as Oldsmobile, Pontiac, Reliance, Marquette, as well as the recently sold Vauxhall and Opel in Europe and Holden in Australia.

In Europe, Audi was formed out of Auto Union, DKW, Horch and Wanderer, names that are long gone and the contemporary operations of which are now radically different to their early constructs. It seems inevitable that China's auto manufacturing sector will shortly enter a consolidation phase with many names consigned to posterity, some even before they were well known within China, let alone in the world at large.

What is interesting now is that Chinese companies are beginning to call for the government to coordinate and lead the restructuring required. Whether the Chinese authorities decide to adopt a centralised planning approach or allow the market to let the fittest survive in a classic form of market capitalism will be worth monitoring over the next couple of years.

Li Xiang, Chief Executive of Li Auto, a new company founded in 2015, recently called for the Chinese to set up “a consolidation mechanism”, citing his fear of operations and financial problems “as a result of competition”. He highlighted the case of the US original Big Three (GM, Stellantis, and Ford) having been formed out of mergers and competition, although the degree of government intervention and direction here was minimal.

The political consensus from outside China, as evidenced in views from the US and European authorities, is that Chinese EV companies have benefited from direct or indirect subsidies. Accordingly, these authorities will respond with enhanced tariffs and other restrictions on exports from China, a response that will prevent many Chinese manufacturers from exporting their way out of their domestic difficulties. It is true that some legacy companies do export from China to the US or Europe—including GM through Buick, Volvo, Nissan, and BMW—but for how long they will continue to do if enhanced tariffs are applied is an open question.



Xpeng's G9—the company's future could be defined by VW's decision to invest in it directly, rather than through its acquisition of a European brand

© Xpeng

It is also important to note that it is not just domestic brands in China facing problems from overcapacity and slowing or changing markets. A March 2024 report from the *Financial Times* highlighted Hyundai's US\$1.15bn plant in Chongqing, opened in 2017 with a capacity of 300,000 ICE vehicles per year. In December 2023, the plant was put on sale for less than one quarter of its investment value. Given that Hyundai and Kia sold 1.8 million vehicles in China in 2016 but just 310,000 in 2023, the decision to walk away from the 2017 factory in unsurprising.

Moreover, this is likely to be one of many such cases in the years ahead, as China's move from ICE to EVs leaves the likes of Hyundai and other foreign manufacturers with plants they cannot fully utilise across China.

Mitsubishi is the highest profile non-Chinese firm to exit entirely from the country. Leaving joint venture plants in the hands of their Chinese partners to be mothballed or repurposed to produce EVs is unlikely to solve the looming structural overcapacity in China.

According to a September 2023 report by Chinese media company Yicai Global, only one-third of joint ventures between Chinese and foreign automakers in recent years had a utilisation rate above 50%, while half had utilisation below 30%. The general view is that car plants need a utilisation rate of 70% to break even, let alone make sustained profits. Even with lower costs in China than elsewhere, it is unsurprising that talk of consolidation and plant closures is rising.

Moreover, it is not just car companies talking about the need for consolidation: European supplier Forvia (formerly Faurecia) is cutting 10,000 jobs, largely because of falling demand in China as the number of domestic vehicle companies reduces. WM Motors filed for bankruptcy in October 2023, followed by Borgward—itsself having bought and tried to revive an old German name. Other Chinese brands that have all but disappeared include Aiyas, Dorcen, Enovate, Levdeo, Lifan, Singulato, Zhido and Zotye. Some of these may re-emerge in future consolidation moves, but most will not, especially those with limited inherent brand value.

Whether there will be ten to 12 major Chinese vehicle companies operating “on a large scale” by 2030, as suggested by UBS analyst Paul Gong in the *Financial Times* in October 2023, is open to debate. That may well be a reasonable projection for China itself, but how many of these will realistically be able to operate worldwide is another matter.

BYD seems likely to become a global player, although how much access it will have to the US market is another question, especially if the return of Donald Trump to the White House leads to 100% tariffs on Chinese vehicles. MG (part of SAIC), Chery, and Geely (if it continues to include Volvo and Lotus within its portfolio) may be potential global players, but how many more Chinese players will achieve such status is another question.

Of course, Chinese companies could replicate the Geely route and buy European brands, or they may survive through investment from

Western companies, such as Xpeng, in which Volkswagen has invested US\$700m and taken a 4.99% stake. Taking a different route, new EV maker Leapmotor has decided the best way to survive is to form an alliance with Stellantis: Leapmotor will operate in China but has licensed sale and production of Lemoore models and platforms outside China to Stellantis.

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Many of the new names that saw the EV trend and believed they could stake a claim will disappear

The consolidation of Chinese OEMs is just beginning, and many of the new names that saw the EV trend and believed they could stake a claim will disappear. As this happens, it will be no more than has happened in many other sectors worldwide, but how the Chinese state responds may chart a different route to those we have seen elsewhere.



# The human experience remains central to automotive retail

Physical plus digital is the key that will unlock value, argues Randy Miller

**I**n the rapidly evolving landscape of automotive retail, a shift is underway from traditional, product-centric, and dealership-focused sales models to customer-centric, digitally delivered approaches. Understanding consumer behaviours and expectations is crucial in navigating this transition.

The EY Mobility Consumer Index (MCI) survey reveals that while enhancing the digital experience is important, the physical dealership remains a powerful attraction for consumers who place a high value on the human element when purchasing a car. Moreover, the dealership is a

vital hub for long-term value creation, a key driver for sustainable growth sought by both OEMs and dealers.

The EY MCI report, now in its fourth year, provides in-depth analysis of mobility trends and car-buying intentions based on responses from 14,500 consumers in 20 countries. The findings indicate that for both electric vehicle (EV) and internal combustion engine (ICE) car buyers, the dealership continues to play a significant role. Consumers prioritise the dealership experience when purchasing a new car, seeking not only to experience the vehicle physically, but also to gain assurance that they have

made the right choice. The relationships consumers build with dealership staff drive loyalty and, in turn, value creation. Even digitally savvy EV buyers prefer having dealership staff answer their questions about relatively new and rapidly evolving EVs compared with the familiarity they have with ICE vehicles.

At the same time, the use of digital channels is on the rise for various aspects of the buying journey, particularly for initial stages like pre-sales research and information gathering. This complex landscape challenges the prevailing narrative of an all-encompassing digital transition. Beneath the surface, various



Many consumers still value the physical dealership

groups of automotive customers prefer different combinations of digital and physical channels. The challenge for both OEMs and dealers is to become genuinely customer-centric by offering the omnichannel experiences consumers desire while maximising long-term value by tapping into the new and existing value pools.

## Digital-first but dealers stay strong

For all car buyers, whether interested in ICE or EV vehicles, the buying journey increasingly begins online. Initial research and information gathering online,

including the use of social media, third-party apps, and dealership and/or OEM websites, is preferred by 83% of ICE buyers and 90% of EV buyers. Digital channels are also favoured for pre-sales activities such as using online car configurators, virtual reality car viewers and booking test drives.

Adopting a digital-first approach does not mean abandoning the dealership entirely. As the buying journey progresses, consumer preferences shift to include visiting dealerships to interact with salespeople, experience the vehicles in person and obtain in-person quotes.

In terms of actual purchases, buyers' preference for dealerships over online channels has steadily increased from 54% in 2021 to 61% in 2023. Surprisingly, EV buyers, often considered more digitally savvy, show the strongest preference for dealerships, with 64% choosing to make a purchase at a dealership rather than online, compared with 58% of ICE buyers. Cars are not like mobile phones, and even digital natives seek in-person reassurance when making a significant financial commitment.

Consumers rely on dealerships for three key aspects of the car-buying experience. Especially for EVs, which are still relatively

new, consumers seek knowledgeable dealer staff to provide a deeper level of interaction and assurance in making the right vehicle choice. While virtual tours are valuable, consumers prefer to physically experience a car before committing to a purchase. The proportion of all car buyers visiting dealers to experience a car has increased by 3% from 2022 to 66%. Then there is pricing. Despite the growing popularity of fixed-price retail with OEMs, over 60% of both EV and ICE buyers prefer visiting multiple dealers to secure the best quote for a particular vehicle. The proportion of all car buyers visiting dealers to get quotes has increased by 6% compared with 2022.

## Reassure the enthusiasts, convince the skeptics

The MCI Survey segments respondents based on their level of EV-mindedness, from EV enthusiasts to EV skeptics. Dealers play a crucial role in addressing the needs of these groups. EV enthusiasts represent 13% of all buyers. These consumers are committed to sustainability, prioritise performance over cost, and are inclined toward using digital channels for initial research. Despite their digital affinity, they still prefer to visit dealers for quotes and to experience the vehicle, with 64% choosing a dealer for their final purchase.

EV skeptics represent 11% of all buyers. Skeptics are conservative, cost-conscious and eco-doubters. They heavily rely on dealerships at all stages of the buying process, showing a preference for in-person interactions tailored to their concerns.

## Shifting sales models

To adapt to evolving customer behaviours and accelerate the transition to EVs, OEMs are revamping their sales models from product-centric to customer-centric approaches. Two alternative sales and distribution models are challenging the traditional dealership model.

The direct-to-consumer model, favoured by new entrant OEMs, offers more control over pricing and the customer journey. However, building reach and scale requires substantial OEM investment.

In general, incumbent OEMs seeking to transition their legacy dealer networks prefer the agency model. It provides exposure to customers, control over pricing and leverages existing dealership distribution networks.

Many OEMs are experimenting with these models, such as making new outlets agency-only in some regions or differentiating sales models between powertrains (EVs via agency route and ICEs through traditional dealerships).

## Too far, too fast?

The shift to customer-centric models is built on certain assumptions about consumer behaviour, including the preference for fixed prices, the replacement of physical channels with virtual ones, and the predominance of online channels for car purchases. However, real-world consumer behaviour and preferences challenge these assumptions.



Consumers, even digitally savvy ones, prefer visiting multiple dealers for quotes and opt to make their purchases in-person, not online. Virtual experiences are seen as complementary to physical ones. In the eagerness to embrace digital channels and cut dealership-related costs, OEMs risk damaging their established relationships with dealers and, paradoxically, becoming less customer-focused. There's a risk of moving too far ahead of consumers, detracting from the buying experience rather than enhancing it.

## Physical plus digital is the key that will unlock value

True customer-centricity means giving customers what they want, and the MCI data suggests that consumers desire both physical and digital elements in their buying experience. Personal interactions at dealerships are still highly valued, forming the core of the purchase journey even for tech-forward consumers.

Furthermore, EVs remain relatively new and fast-changing in consumers' minds, with diverse groups of car buyers at different stages of their EV journey. OEMs must meet customers on their own terms, using the mix of physical and digital channels they prefer, rather than expecting customers to conform to predefined expectations.

The right blend of physical and digital not only enhances the customer experience but also catalyses value creation by opening doors to

emerging value pools beyond traditional revenue streams. Opportunities include areas like insurance, finance, telemetry-based maintenance, alternative ownership models, micromobility, and mobility-as-a-service. Unlocking these opportunities requires OEMs and dealers to work collaboratively and focus on data-driven decision-making, innovative price management, and operational transformation.

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Various groups of automotive customers prefer different combinations of digital and physical channels

The blend of EV vs ICE needs to be even more centric to customer wants with EVs becoming a preferred choice vs mandated. Continued improvements in model choice, range, charging infrastructure, charging time and cost are still needed to fuel that choice.

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*About the author: Randy Miller is EY Global Advanced Manufacturing & Mobility Leader*

# Robotic charging is at the intersection between EVs and AVs

Unlocking the full potential of electric and autonomous vehicles could depend on innovative charging solutions using robotics. By Will Girling

**W**hile the modern automotive industry is shaped by many important trends, electrification and automation are two of the largest. By 2030, the global electric vehicle (EV) market is projected to be worth US\$1.6tr, according to Fortune Business Insights, while Precedence Research forecasts that autonomous vehicles (AVs) will reach US\$1.3tr. But to what extent are the futures of these technologies interconnected?

That is the question Crijn Bouman, Chief Executive of autonomous EV charging solution provider Rocsys, asked himself in 2016. “I founded one of the first DC fast charging

companies, Epyon, in 2005. It was bought by ABB six years later, and I stayed there for a time as head of the product line. When one of our clients demonstrated AV technology to me, I realised it was the future.” He co-created Rocsys in 2019.

“EVs and AVs are the two massive trends in mobility, driven by problems like climate change, population density in cities, etc. But infrastructure isn’t ready to support either,” he states. Subsequently, Rocsys’ mission is not only to solve e-mobility’s charger efficiency issues through automation, but also to prepare an ecosystem that can optimise self-driving EV fleets.





Images © Rocsys

## Considering the market

Bouman concedes that the timeline for AVs' mass deployment is uncertain but nonetheless considers it "inevitable". Given the growth in global EV sales, it is not unreasonable to conclude that many of these AVs will be battery electric models, and the necessity of comprehensive and accessible charger networks is recognised in major automotive markets. However, he believes efficiency issues and bottlenecks will not be resolved unless the industry addresses the demands of both the present and future market.

In the first instance, Rocsys is considering how to improve large-scale charger parks instead of the home charging segment. "Heavy-duty fleet operators need to charge hundreds of vehicles at one time," says Bouman. "For them, charging is mission critical, but capacity is constrained." Notably, these are also environments expected to provide the most solid near-term business case for AV deployment, yet the danger of many heavy-duty AVs operating at the same time restricts human activity within them. Without an autonomous charging solution, operators face both regulatory safety concerns and sub-optimal up-time.



An Audi parked beside a ROC-1 unit—Rocsys is collaborating with the automaker, but the results will only be revealed from 2026

Rocsys' solution is the ROC-1, a robotic arm that uses camera-based artificial intelligence combined with tactile feedback to dock and undock a connector with an EV's charging port, all without external assistance. "It basically replaces the human hand," says Bouman. Although the company is not alone in touting the potential of automated EV charging—Lotus' Flash Charging Robot debuted in December 2023—the ROC-1 can be retrofitted to "any" existing charge point using CCS-1, CCS-2, MCS and Euro-Din connectors. No additional system integration is required, and ROC-1 units can be monitored and controlled from a safe distance using Rocsys' API.

## A cheap, flexible proposition

The e-mobility sector has no shortage of alternative charging solutions. For example, wireless charging company Electreon demonstrated in May 2023 that it could sustain an EV driving constantly for more than 100 hours over a distance of 1,500km. A report by MarketsandMarkets estimates that wireless charging could be worth US\$1.3bn by 2030. However, Bouman is sceptical about the degree of

standardised vehicle redesign potentially required, to which some automakers may be unwilling to commit. Conversely, he considers automated charging to be a cheaper and more flexible proposition that optimises OEMs' existing technology while still creating avenues for new innovation.

In the near term, Rocsys will explore opportunities in the yard logistics and ports markets, including projects at the ports of Rotterdam, Long Beach, and Oakland. It is currently working with an unnamed "large operator" to reduce the time between an EV parking and charging to within 30 seconds. The ultimate goal is to eliminate both 'dead time' and queuing caused by failing to move already fully charged vehicles away from the unit quickly. "We want to create a drive-through charging station facilitated by our charging robots," says Bouman. He claims that such a system could create up to 25% more capacity than standard solutions.

Looking ahead, the company also plans to help introduce automated charging for the passenger vehicle market in collaboration with OEMs like Audi, BMW, and Porsche.



However, Bouman clarifies that any innovations will only be debuted from 2026 onwards: “Those are the models that will have the necessary automatic parking functionality.” In the meantime, the company is “authoring the standard on robotic charging” by chairing a global stakeholder association, the Charging Interface Initiative (CharIN), which is scheduled to release IEC/ISO standards by late 2024. The industry, Bouman argues, must prepare itself for an AV-defined future.

## The business sense of robotic charging

“Having more AVs on the road will change everything. But for companies to deploy them at scale, automatic charging will be a must.” More broadly, Rocsys believes the application of its solutions will grow as humans become increasingly less physically present in vehicles. This applies to both teleoperations, a sector gaining momentum in both passenger transport and logistics use cases, and nascent robotaxi fleets. Support staff won’t necessarily be replaced, but they will be redistributed, and companies will need to examine where they can add the most value in the new charging ecosystem.

“At first, manned charging hubs seem like a simple proposition, but they just aren’t,” states Bouman. “The charging hubs of some North American AV providers have around 30 chargers and between ten and 20 people to manage them. To scale operations for an entire city, it would probably take ten hubs and several hundred people just for charging.” AV operators’ often cited desire for 24/7

services could also lead to further complications: extra expenses for worker amenities, increased staff count for night shifts, regulatory considerations, etc. Since introducing automated charging can scale staff back to just those required for monitoring the robots, he believes there is “little business sense” for robotaxi companies not to do so.

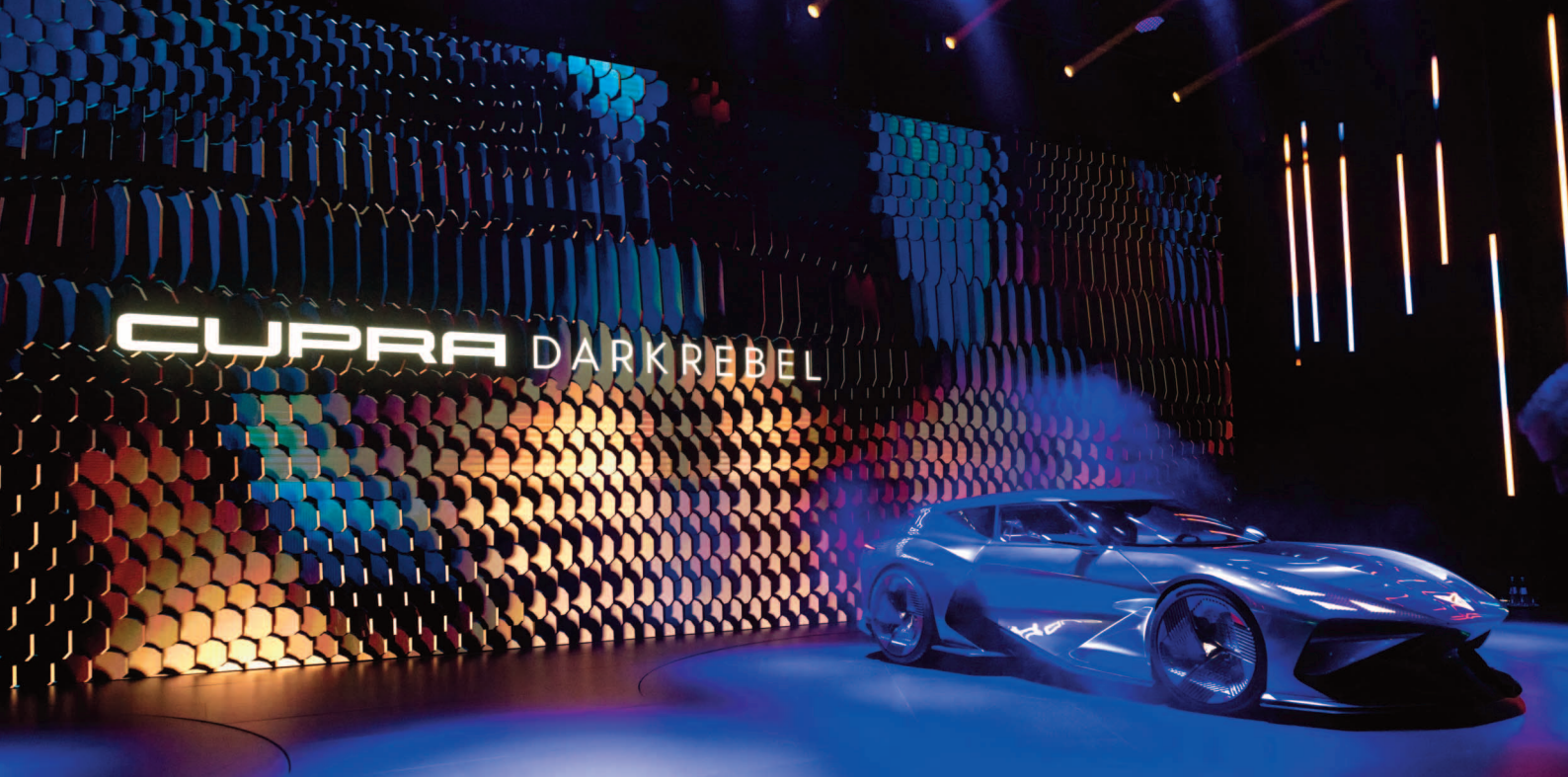
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To deploy [AVs] at scale, automatic charging will be a must

Autonomous passenger vehicles, particularly robotaxis, have experienced significant headwinds following traffic incidents and public dissatisfaction in the communities within which they operate. “They’ve had a bumpy ride to say the least, but that’s only to be expected,” says Bouman. Adamant that the market is simply experiencing the technology’s “adoption curve”, he foresees an impending AV “arms race” between the US and China over the next five years that leads to substantial progress. However, to create a profitable industry in the wake of that development, the logistics of charging must first evolve to unlock AVs’ full potential.

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# Are automotive launch events still relevant in 2024?

Jennifer Davidson explores how new model launch events can be adapted for the modern age

**F**rom Alfa Romeo's first mainstream electric car to BMW's all-new IX3 SUV, alongside more affordable vehicles like the Citroen e-C3, 2024's automotive calendar is already packed with eagerly anticipated launch dates and car unveilings. With the shortage of semiconductors,

manufacturing times have been much slower, resulting in a backlog of new models waiting to be announced. So, the automotive industry is set for an exciting but fiercely competitive year ahead. Standing out as the model of the year will be extremely tough, and brands will need to pull out all the stops.

Auto shows and car launch events have traditionally been the year's highlight for car enthusiasts. Brands invite media, fans, dealerships and other critical stakeholders to highly produced and often glamorous events to ensure their latest machines start life with plenty of attention. But today, with social media, new



technologies, and an enormous digital ecosystem at their fingertips, there are a plethora of touchpoints available for brands to connect with the audiences they need.

That begs the question: are launch events still relevant today? And how can they be adapted for the modern age?

## 1886 to 2024: The evolution of car launch events

Launch events have been part of the automotive industry since the beginning, when Karl Benz revealed the world's first car—the three-wheeled Benz Patent-Motorwagen—to the public on 3 July 1886. Unveiled on the Ringstrasse in Mannheim, Benz publicly drove the car for the first time, reaching a top speed of 10mph. A little underwhelming by today's standards, but truly revolutionary at the time. Benz set the stage for the launch events to come over the next one and a half centuries, some of which helped to propel car models into phenomenal and long-lasting successes.

In April 1964, then-Chief Executive Henry Ford II debuted the Ford Mustang at the largest exhibit of the New York World's Fair. Almost 22,000 Mustangs were snapped up immediately by buyers, and Ford went on to sell more than 400,000 within its first year of production. The Mustang was solidified as one of the most iconic cars of the twentieth century.

Fifty-two years later, Tesla enjoyed a similar experience when unveiling its Model 3. With a launch event to rival



the likes of Apple and Samsung, 325,000 pre-orders were made within its first week, reportedly the most successful product launch ever. The Model 3 went on to become the all-time bestselling plug-in electric car worldwide.

As new technologies emerged, the 2010s saw brands embed impressive digital elements into their car launch shows. In 2017, the unveiling event for the Volkswagen Polo made cool use of augmented reality (AR) on-stage, using an invisible screen to create 3D imagery around the car on display.

Then, the pandemic. All physical events were shut down, and so the likes of Audi, Toyota and Mercedes-Benz had to reveal new car models to the media and the public through online streams and social media. Although COVID-19 restrictions have since been lifted, its impact on how car manufacturers bring new models to market has been long-lasting. Behaviours have shifted; e-commerce has skyrocketed with no signs of reverting, and journalists have become



Digital media lacks the spectacle and physical experience of an in-person event. Pictured: Seat's Jorge Díez and Wayne Griffiths at the DarkRebel unveiling in Munich

© Seat

used to receiving the information they need at their desks. Now, brands can bring cars to audiences through digital avenues alone, streaming presentations straight into people's homes.

Advancements in AR and virtual reality (VR) technologies also create even more opportunities for audiences to experience cars remotely. Last year, for example, Ford experimented with a virtual launch for its new Explorer. The brand created a virtual world in which audiences could 'test drive' the vehicle from their own devices, with European marketing director Peter Zillig calling the innovation a "one-of-a-kind opportunity for us to create meaningful connections with potential customers".

## The role of launch events today

The benefits of launching a car via digital channels are apparent; brands can achieve wider reach at lower cost.

However, digital media lacks the spectacle and physical experience of an in-person event. Driving a car is a highly physical and immersive experience by nature. From the feel of the steering wheel in your hands and the view of the road ahead to the smell of leather seats and the sound of the engine, almost all of your senses are engaged. That experience cannot yet be accurately replicated through a digital medium.

At launch events, audiences can touch the car, get inside it, and explore its features from all angles. As one of the most expensive purchases most people will make in several years, consumers want to know they're getting the best product for their money.

Brands can also drive an emotional connection with that car far more easily in person than they can digitally, and with such fierce competition this year, strong brand connections will be more critical than ever. Events are all about connecting face-to-face and building



meaningful relationships. They are a powerful way to unite communities and buyers, provide positive experiences, and create life-long brand advocates.

From Henry Ford II to Tesla's Elon Musk, there are also opportunities for company leaders to take to the stage and humanise the brand, or for employees to speak to attendees directly and address any concerns. This is especially important when launching electric cars, which many consumers still view with trepidation.

Tesla's Cybertruck events in 2019 and 2023 show the power events still hold for automotive brands. Both events received extensive press coverage, and according to Chief Executive Musk, Tesla received over 250,000 reservations for the apocalypse-ready vehicle within a week of unveiling it. Following the 2023 delivery event in November last year, that figure reportedly reached two million. For Tesla, brand advocacy is everything; these events are one of its most crucial tools.

Ultimately, few other products have such a natural affinity with launch events as cars. Even as consumers increasingly shift to online shopping, cars remain one of the few products they want to try in person before buying. A recent survey by JudgeService found that only around one in ten UK shoppers plan to buy a car exclusively through a digital process, with the vast majority keen to visit a physical dealership showroom at some point during the purchase process.



Future events need to blend the power of digital and in-person experiences to drive that crucial emotional connection while securing mass reach

## The future of car launch events

So, are automotive launch events still relevant today? Absolutely. In fact, they've never been more crucial to stand out among the sea of new cars due to hit the roads this year. However, that doesn't mean they don't need to evolve. Future events need to blend the power of digital and in-person experiences to drive that crucial emotional connection while securing mass reach.

That might mean live-streaming an in-person event. The Cybertruck delivery event was streamed on X (formerly Twitter); with its punky underground venue and excited crowd, the event perfectly embodied the car's brand while reaching millions of people in their homes. Alternatively, it could mean creating AR and VR experiences to complement an event and immerse those who could not attend.

Undoubtedly, the pandemic revealed many lessons about the value of digital media for automotive brands. However, the industry must not forget the tactics it used to sell cars successfully over the many years that came before.

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*About the author: Jennifer Davidson is Founder of Sleek Events*



# **Can Canada help drive North American EV battery leadership?**

**Cracks are showing in China's dominance over the battery supply chain, as Canada leads the way with superior ESG performance.  
By Stewart Burnett**



A full global transition to electric vehicles (EVs) will require a dramatic increase in battery production to meet the scale of demand. As many as 700 million battery EVs may be on the road by 2040, according to a June 2023 report by BloombergNEF. Vineet Mehta, Director of Battery Technology and System Architecture at Tesla, estimated in 2022 that a complete transition to electric transportation will require around ten terawatt hours (TWh) of battery production by 2030. By the end of 2022, total global manufacturing capacity sat at around 1.2TWh.

At present, the world depends heavily on China for its battery needs, with the country possessing 75% of all battery manufacturing capacity and 90% of anode and electrolyte production. However, other countries are picking up the pace. Around 30 battery plants are either operational or under construction in the US, up from only two in 2019.

From 2020 onwards, BloombergNEF has conducted an annual ranking of countries' performance in the global battery supply chain. It tracks a range of variables, including the availability of raw materials, downstream demand, manufacturing capacity, and environmental, social and governance (ESG) performance. China has maintained first place in this ranking until 2024, when it was overtaken—not by the US, but by Canada. How did Canada capture the top position, and



Northvolt has secured funding for a US\$5.2bn battery plant near Montreal

what does it reveal about the shifting dynamics of the global supply chain?

## Fast developments

Kwasi Ampofo, Head of Metals and Mining, BloombergNEF, did not anticipate China losing its top spot to Canada so quickly. “Things have been moving in the right direction in North America, but the results still came as a surprise,” he tells *Automotive World*. “Canada has attracted a series of investments from automakers and battery manufacturers over the last 12 months.”

Developments in Canada have touched upon all aspects of the battery value chain. Upstream, the materials technology and recycling firm Umicore will build a plant in Ontario to “complete the missing link in North America’s EV battery value chain”, producing

advanced high-nickel chemistries, with options for other chemistries including high lithium manganese (HLM) and solid-state. Battery manufacturing capacity is also set to increase exponentially—a US\$5.2bn Northvolt gigafactory near Montreal is currently under construction and expected to boast a capacity of 60GWh upon opening. Stellantis has also secured US\$15bn in funding for a battery plant in Ontario with a minimum capacity of 45GWh.

The Canadian government has noted it was able to win a contract from Volkswagen to build an EV plant despite several US jurisdictions putting “way, way more” money on the table. Prime Minister Justin Trudeau attributed the success to plentiful access to raw materials, an educated workforce, and a “progressive” approach to developing local industry.



Stellantis and LG Energy Solution (LGES) joint venture NextStar Energy EV battery plant in Windsor, Ontario



Canadian Prime Minister Justin Trudeau (left) is welcomed by NextStar Energy CEO Danies Lee (right) for a tour of the NextStar Energy RV battery plant in Windsor

## Sustainable supply chains

While such developments certainly help to put Canada in a strong position, they are not

enough to indicate any kind of supply chain leadership. “The countries that scored high in the rankings aren’t just those that invested in new projects and expanded their infrastructure—it’s also those

that improved their ESG footprint,” says Ampofo. “Canada is a clear example of that.”

Canada has several strengths in terms of its sustainability profile. For instance, more than two-thirds of its energy mix comes from renewable sources, whereas around 80% of energy in China comes from burning fossil fuels. At the time of writing, it is also the only Western country with an end-to-end EV supply chain, with most of its exports delivered to its southern neighbours. Meanwhile, China ships much of its exports globally, entailing long supply chains.

Environmental non-profit CDP estimated in its 2020 Global Supply Chain Report that an organisation’s supply chain emissions are, on average, 11 times higher than its operational emissions.

Ampofo attributes China’s slip to second place to its poor ESG performance. “China may have retained its global lead in raw materials, battery manufacturing and demand, but as sustainability becomes more important across the lifecycle of lithium-ion batteries, more proactivity is going to be needed to tackle ESG issues. This will benefit its supply chain in the long term.” Deeper reforms to the country’s energy sector, he emphasises, could help improve its environmental standing and overall attractiveness for foreign trade.





Visualization of Volkswagen Group-owned battery company PowerCo SE's future cell gigafactory in St. Thomas, Ontario

## Strength in partnerships

Some factors are beyond China's control: the rise of protectionist policies in

working to secure their supply and diversify from China. This will lead to a race, with countries 'friendshoring' as much as possible," Ampofo emphasises.

US Inflation Reduction Act (IRA) as a "crucial" factor in boosting Mexico's supply chain prospects when it comes to batteries. In July 2022, its Ministry of Economy lauded the IRA for not discriminating against the manufacture of batteries and EVs from other North American countries. In addition to having largely untapped lithium reserves, [Mexico is also seeing interest from OEMs](#): in December 2023, Tesla secured land use permits for an EV gigafactory in the northern border state of Nuevo Leon.

Amposo concludes that China's battery manufacturing capacity may continue to grow in the years to come, but its market share will slowly decline. Neither Canada nor any other country can, in isolation, pose a credible challenge to China's domination over the global battery supply chain. By partnering together, however, North America could forge ahead.

“ Things have been moving in the right direction in North America, but the results still came as a surprise

Western countries lowers the demand for Chinese exports while encouraging domestic supply and demand, as well as trade with neighbouring countries. "Many countries are

Indeed, BloombergNEF's 2024 ranking also reveals that Mexico has made significant progress, advancing nine positions from 28th to 19th since the previous year. The firm characterises the