FISITA WMC WORLD MOBILITY CONFERENCE

BARCELONA 3-5 JUNE 2025

Event Review

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Foreword *by Chris Mason, CEO, FISITA*

The World Mobility Conference (WMC) is FISITA's flagship event, an essential gathering of professionals dedicated to the technology of mobility. This conference offers a unique platform for international engagement, connecting automotive and mobility systems engineers, technical specialists, industry executives, and thought leaders from around the world.

FISITA's WMC is more than a series of presentations and panel discussions; it is the heartbeat of the mobility engineering community, facilitating discussion, testing innovative ideas, and enabling networking and collaboration. Aligning conference topics and themes with those of FISITA's online Expert Groups, WMC ensures continuity and relevance, providing a seamless blend of in-person and digital engagement within a two-year cadence.

Reflecting on FISITA's proud 75-year heritage, WMC 2025 brought together a diverse spectrum of participants; from heavy-duty truck makers and passenger car manufacturers to Tier One suppliers, new technology players, academia, specialist trade bodies, independent consultants, and influential C-suite executives, to explore challenges and opportunities in advanced chassis technology, digitalisation, artificial intelligence, safety, automated driving, and—most importantly—sustainability.

The programme for WMC 2025, meticulously developed by the FISITA team, reflects the latest trends and strategic priorities shaping the future of mobility. As the world shifts toward electrification and places sustainability at the heart of mobility, WMC 2025 served as a catalyst for collaboration, knowledge sharing, and forward-looking innovation.

FISITA is committed to supporting the international engineering community and advancing mobility for the benefit of society. WMC 2025 is a testament to that commitment, building on decades of rich history, and positioning FISITA at the forefront of technological progress in mobility.

FISITA CEO Chris Mason with WMC 2025 Principal Speaker José Muñoz, President & CEO, Hyundai Motor Company, and FISITA President ChangHwan Kim, Executive Vice President, Hyundai Motor Company

ChangHwan Kim
President
FISITA

Welcome *by ChangHwan Kim, President, FISITA*

At the 2025 World Mobility Conference, engineers, researchers, and leaders from around the world came together with one goal: To move mobility forward. The mobility world is changing fast. Electric vehicles, autonomous driving, smart cities, and sustainable solutions are no longer just ideas—they're real, and they're here.

In this time of change, FISITA has an important job. We don't just follow trends—we help set them. We support new ideas, encourage collaboration, and focus on making mobility not only better, but also safer, greener, and more human-centred.

Looking ahead, we have some clear goals for the period 2025–2027. First, we will refresh our leadership. We want leaders from all backgrounds and regions to help guide our future. With our new Committees and Regional Vice Presidents, we'll make sure different voices are heard and included.

Second, we will grow our membership. FISITA should be the go-to place where professionals from all areas of mobility come to connect and grow. We'll work hard to welcome more individuals and organizations into our community.

Third, we will elevate our flagship event, World Mobility Conference, into the top global gathering for mobility technology. Alongside this, we will continue to evolve the World Mobility Summit; already an essential gathering for technical leadership, the Summit will grow into a space for deeper conversations and bold ideas that help shape the future of mobility.

These priorities are not mine alone; they belong to all of us. FISITA is a team effort, and we need your ideas, your energy, and your support.

So I invite you all—members, partners, collaborators, and future leaders—to be part of this next chapter. Let us build together a FISITA that is more inclusive, more agile, more impactful than ever before.

Before I close, I want to say how honoured I am to follow Mike Anderson as the President of FISITA. Mike's leadership and dedication have helped FISITA grow and evolve, and we're grateful for everything he has done. The strong foundation he has built will continue to guide us as we move forward.

I also want to extend a warm welcome to Matthias Klauda, who will serve as FISITA's next President-elect. Matthias brings great experience and passion to this role, and I look forward to working with him as we lead FISITA into the next chapter together.

Finally, I want to thank everyone involved in this year's WMC, from Chris Mason, CEO of FISITA, to all the incredible people at FISITA who worked tirelessly to make this event a success.

I'd like to close with this thought: The future of mobility will not be written by chance—it will be written by those with the courage to imagine it and the commitment to build it. If WMC 2025 highlighted just one thing, it's this: together, we will shape the future of mobility.

WMC 2025 –
an industry facing and embracing mobility challenges

The automotive industry's disruptive evolution is pushing in new directions, with pressure to electrify and place sustainability at the centre of everything it offers. As the curtain was raised on the 2025 FISITA World Mobility Conference, the organisation's Executive Board member, and President of the Spanish Society of Automotive Engineers (STA) **Jose Manuel Barrios** was keen to highlight who's driving the sector forward: "FISITA attendees will help forge the collaboration needed to face the challenges," he said.

Xavier Roca, Industry General Director of the Government of Catalonia firmly put his support behind the automotive industry: "The next few years might be decisive for the European automotive sector, so we must stand by it. Electrification provides significant opportunities," he said.

Principal speaker: José Muñoz, Hyundai

Taking the stage as the Principal Speaker, Hyundai Motor Company's President and CEO **José Muñoz** gave a captivating talk on the future of mobility.

Muñoz's leadership has already driven the company forward, with consecutive record results helping make Hyundai Motor Group, which includes Kia, the third largest automaker in the world. The US market has been critical to its success, he said, but so has its ability to proactively adjust to challenges.

"Our mission is to provide products for humanity. We've committed to carbon neutrality by 2045, and we're going to invest $90 billion to sell 2 million EVs by 2030 and offer a full model line-up of 21 EV models by 2030."

Hyundai is continuing to evolve its EV technology but is also investing in other powertrains with next-generation hybrids, and hydrogen.

Muñoz said Hyundai will develop battery solutions to revolutionise mobility, and he believes the company can achieve a range of close to 1,000km for its hydrogen vehicles. But it isn't solely these products that are helping the company succeed; Hyundai is also investing in manufacturing, and its smart factory in Singapore acts as an open innovation lab for future mobility R&D, with concepts that can spread to other facilities serving different markets.

Under Muñoz's guidance, Hyundai also hopes to lead in software, robotics, and autonomous technology, he said: "Software is at the heart of everything we do, but that isn't all. We have Boston Dynamics where we develop robotics technologies that help people, and another important area is Motional, making autonomous vehicles a reality, leveraging its experience from robotaxis."

Chery and VinFast deliver plenary keynotes

During the plenary sessions, several influential figures in the industry took to the stage to share their views on the development of mobility. **Dr Jin Shang**, Assistant to the President of Chery Automobile, and CEO & CTO Kaiyang Laboratory, Chery's advanced technology R&D operation, provided an insight into his team's innovative approach. The introduction of AI-driven systems, ongoing development and implementation of autonomous driving technology, and the lowering of carbon emissions were among the key challenges he listed.

At the same time, Shang emphasised the need for rapid innovation, suggesting that speed is crucial in the fight to stay ahead of competition. This was one of the primary reasons behind the founding of Kaiyang Laboratory and will continue to be an important topic as numerous Chinese OEMs roll out new car programmes at so-called "China speed".

"How do we quickly build our systems to leverage technology in the car?" Shang asked. "The car is still a high-speed platform, so we need very good safety and also lower cost to be competitive. No matter which market we are in, or the sustainability challenges that we face, from our point of view we need to figure out how we can build new things and introduce new technologies in a timely manner."

Disruption and reducing time-to-market are also blueprints for VinFast, the Vietnamese electric carmaker. **Dr Duong-Van Nguyen**, the company's Global Deputy CEO, and head of ADAS/AD, outlined the company's approach to speedy development, and gave a glimpse into its approaches to AV technology development and deployment.

"The megatrends for future mobility are electrification and autonomous driving," he said.

> "The rise of EVs is very important, and the transition from assisted to fully autonomous vehicles is gaining pace. At the same time, vehicle connectivity and the digital transformation with smart and intelligent systems is critically important. The use of AI is now everywhere and will continue to evolve."

Plenary panels address sustainability, and industry disruption

An energetic plenary panel formed of **Henry Bzeih**, Chief Software Officer at Ampere, Volvo Group's Senior Vice-President of Powertrain Engineering **Mehdi Ferhan**, and **Pierre Millette**, Chief Technology Officer at the European Automobile Manufacturers' Association (ACEA), took to the stage to discuss OEMs' responses to the evolution of mobility, bringing together inputs on software-defined vehicles and decarbonisation. Ferhan said: "There's no silver bullet for propulsion, but the industry should embrace the road to decarbonisation and the opportunities it offers."

With so much disruption in mobility—and more widely as the world looks to lessen its impact on the environment—many see automotive as a step behind, but ACEA's Millette was keen to counter that outlook. "Automotive has been disruptive for 150 years and there's so much going on still today, including software, decarbonisation, and automation. Don't look at manufacturers as dinosaurs—I see a lot of forward-looking work being done," he said.

In the plenary panel discussion on sustainable mobility and the circular economy, The Future is Neutral's Chief Technology Officer **Sophie Schmidtlin** said the company is keen to collaborate to make circularity a success, and **Umit Sengezer**, Toyota Motor Europe's Head of Circular Economy, agreed, noting that sustainability is not just an environmental imperative, but also a financial opportunity; **Peter Lukassen**, Bosch's Director of Operational Sustainability said that Europe alone is missing out on €80 billion because of poor recycling, and a circular approach could help decrease costs in the long term. Geely Innovation Centre's Chief Scientist **Dr Perry Gu** added that scale could help firms increase recyclability; "We share common architectures, so if we resolve an issue on one architecture, we can use it across brands," he said.

The shift from automotive to mobility sector breeds disruption and opens the door to new approaches—and that was the topic underpinning the panel on industry disruption. Xiaomi EV is a company born from the consumer electronics world, and its Head of European R&D Centre, **Rudolph Dittrich** was clear about its outlook on the industry: "The car is becoming part of a puzzle; trying to change something that's old isn't the way to do it—the disruption comes from doing something new," he said. The "new" is being customer-centric. "In the world we live in right now we can very quickly react to customer needs, really listen to them and deliver what they want. That's what attracts them to the brand," said Dittrich.

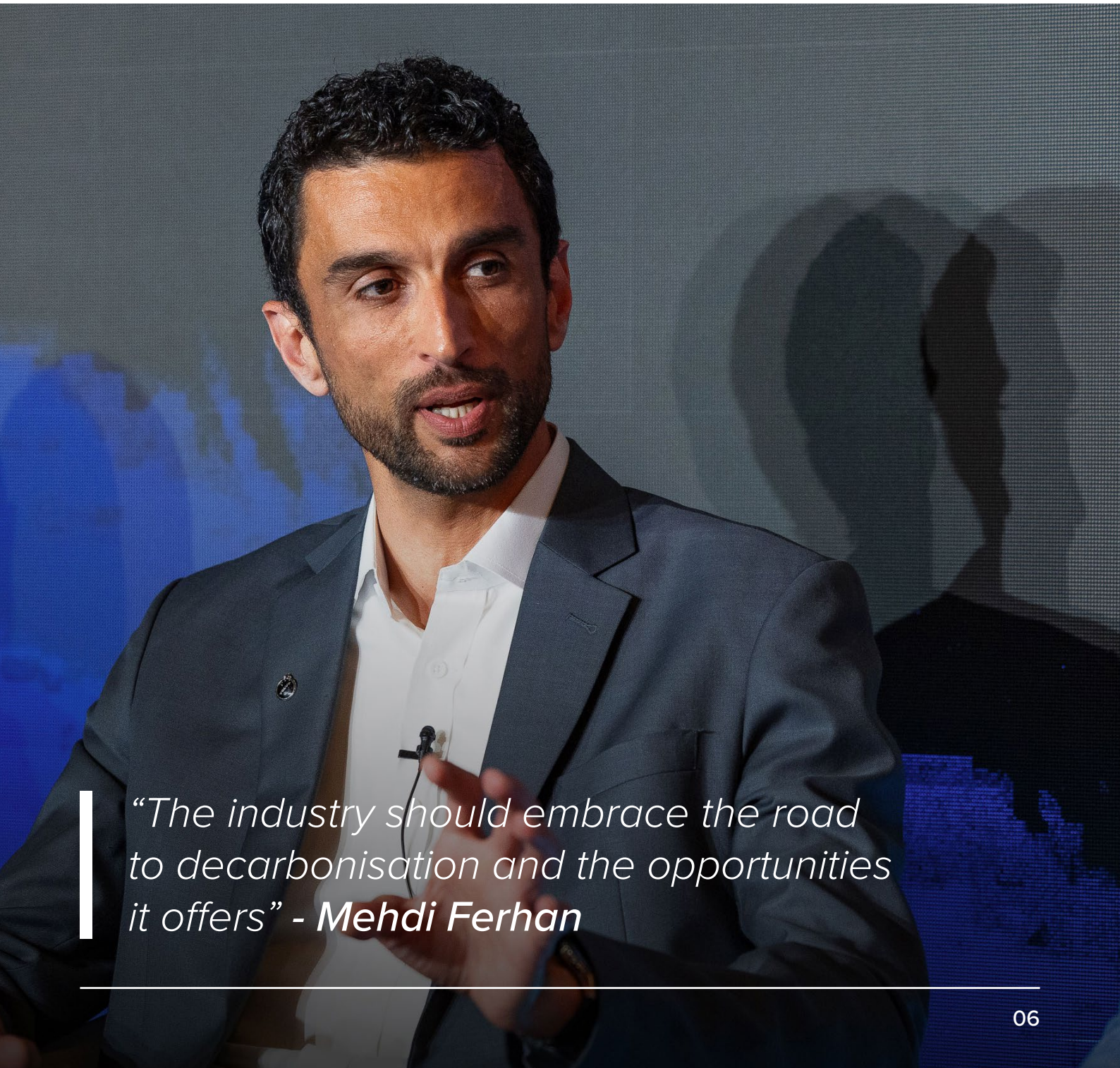
Ethan Sorrelgreen, Senior Director and Technical Advisor to the Chief Technology Officer at Woven by Toyota noted the difference between an established company and a start-up when it comes to the ability to react and pivot at speed, but he noted that he can supply the software and the in-vehicle experiences that customers want, and that reflect Toyota's traditional car-first legacy. "We're also disrupting and changing, but in a much bigger and harder way. In the 150 countries we work in, and in the numerous models we have, we're building foundations on a global scale."

For **Eric Gauthier**, Head of European Operations at Windrose Technology, the challenge is slightly different, namely attempting to help electrify the truck industry with a product that fits a diverse global market. But the customer remains at the centre of the firm's thinking, he said: "The driver is the key. The interior is transformational, we have a central driving position, and we have a huge cabin. That is the joy we bring."
But this is also pushing electrified heavy-duty technology forward. "We've seen ICE trucks arriving that have been built around electrification as best as possible," he said. "Our trucks are built around electricity—a different shape, different battery, different concept."

Commercial vehicles – a critical piece of the mobility puzzle

Mobility is about the movement of people and goods, and Windrose Technology's **Eric Gauthier**'s point to delegates—that everything around them "got there by truck"—emphasised the importance of focusing on developments in freight and delivery, from business models, to vehicle design, to propulsion technology.

Dr Mircea Gradu of Ballard Power Systems discussed the role of hydrogen in heavy duty vehicles; **Eric Gauthier** discussed the evolution of pure electric heavy duty vehicle solutions; and **Mehdi Ferhan** presented Volvo Group's three-pronged approach that involves combustion engine, hydrogen, and pure battery electric vehicle technology, with a target of net zero by 2050 across all Volvo Group brands, notably Volvo Trucks, Renault Trucks, and Mack, and includes on-highway, off-highway, and construction vehicles.



> *"The industry should embrace the road to decarbonisation and the opportunities it offers"* - ***Mehdi Ferhan***

The case for mixed propulsion system portfolios

A major topic of discussion during the event was the on-going development of the powertrain. Engineers delivered insight into the latest technical innovations for internal combustion engine (ICE) vehicles, but the focus was the evolution of battery electric vehicles (BEVs) and the steady rise in uptake across Europe and globally.

At the same time, diversification of the powertrain mix is considered a crucial approach as carmakers aim to meet various consumer needs while simultaneously reducing carbon emissions. During a panel discussion on the future of propulsion technology, **Gerhard Meister**, Vice President, Business Field Electrification at AVL List, explained the need for a wide selection of market offerings, ensuring consumers are not forced into choosing a vehicle unsuitable for their needs.

“The long-term goal to become carbon neutral remains unchanged,” he emphasised. “How we get there and what technology we use along the way is probably wide open at this point. There is no one-size-fits-all solution, as different solutions might make more sense depending on the location and area of the world. But we need to keep the end goal in mind, limiting CO2 production and becoming carbon neutral.”

Although expectations for BEV sales are high, Meister and several of his peers suggested that plug-in hybrid electric vehicles (PHEVs), hybrid electric vehicles (HEVs), and range-extended electric vehicles (REEVs) will all play important roles in the powertrain mix. The role of fuel cell electric vehicles (FCEVs) in the market is less clear, he said, but while some remain sceptical, experts from Toyota were keen to showcase the benefits of the technology and highlight potential future use cases.

“We are looking at a tank-to-wheel CO2 impact and the total picture which includes a life cycle assessment,” observed **Thiebault Paquet**, Vice President Research & Development, Toyota Motor Europe. “There is a big role for government here. They need to have the right taxation plans in place for fuels. Today, if we look at hydrogen, it is one of the cleanest solutions for passenger vehicles, but the electricity used to create the hydrogen is not 100% green. So we need to have a well-defined strategy for fuel and energy infrastructure, and come to a powertrain mix that will help us reach carbon neutrality at an affordable price point.”

Regardless of the approach, government influence is likely to have a significant impact on the future of the powertrain mix. **Matthias Klauda**, Executive Vice President Engineering, Robert Bosch, believes that a move away from ICEs to any electrified vehicle relies heavily on intervention in the form of regulation and mandates.

“If we do not regulate anything, then the combustion engine will remain cheap and nobody will move forward,” he warned. “But if we over-regulate, the technology is forced against the consumer view, and funding is poured into an area that might not make sense. How do we get a balance between openness for technology but also regulation? It is a difficult challenge and needs to be addressed as we look to the future of propulsion.”

This point was emphasised by **Maximilian Guettinger**, Co-founder and CEO, Emil Motors. He is a proponent of the shift away from ICEs to BEVs, but highlights a number of issues that need to be addressed to ensure the move is smooth. First and foremost is the fact that governments around the world are still working closely with fossil fuel companies.

“Overall, I think it is very important to keep a balance,” Guettinger stated. “But it simply does not make sense to incentivise electric vehicle adoption when we are still heavily subsidising the oil and gas industries. We need to keep efficiency high and offer all products at a good price, but over regulation will not work.”

Policy is key to the automotive industry’s future but the subject is rarely known for inducing lively debates. That said, **Dr Stephan Neugebauer**, Director Global Research Cooperation at BMW Group and Chairman of the European Road Transport Research Advisory Council (ERTRAC), and **Klaus Kersting**, Senior Manager of e-Powertrain at IDIADA were both animated during a panel discussion on the impact of regulatory policies on propulsion system innovations. Neugebauer’s argument was that current regulation is steering the industry towards EVs, but what’s really needed is policymaking that initiates competition between technologies to help drive development forward.

And, in a shift in the status quo, where Europe and North America have typically pushed regulation, China is now helping set the agenda. Kersting noted that thermal regulation for EVs is now being designed in China, demanding that vehicles meet strict fire and smoke requirements, to keep occupants safe in the vehicle cabin should an incident occur.

Battery advances

In the event's battery technology discussions, advanced battery technologies were top of the agenda, where the balance between cost, performance, and wider EV adoption are crucial to the sector's success. **Jeonghun Seo**, Head of Battery System Design at Hyundai Motors and Chair of the FISITA Battery Technology Expert Group, noted that cost was critical, but expanded on the need to improve safety with the introduction of early fire detection and fire extinguishing systems to help build trust in the technology.

As Europe increases investment in battery manufacturing to keep pace with demand and meet competition from China and South Korea head on, **Alain Raposo**, Product and Process Engineering Executive Vice-President at Automotive Cells Company (ACC) said: "We're focusing on NMC (nickel manganese cobalt) as we think this can compete with LFP (lithium iron phosphate). It's almost the same energy density and fast-charge capable." But the firm still wants to compete with higher energy density technologies and deliver charging times as short as 15 minutes.

Batteries are at the heart of the industry and many firms have one eye on next generation technologies to help them power the future. **James Eaton**, Co-Founder and CEO of Ionetic, **Alain Raposo** of ACC, and **Jeonghun Seo** of Hyundai Motors all agreed that NMC and LFP had a long-term future in the industry, and there was also space for LMFP (lithium manganese iron phosphate) technology. Seo's outlook for the market was succinct but touched on the huge challenges the industry faces: "Cost is the most important market factor; to be cost competitive we need to have low-cost solutions, but we also need to maximise range as well as safety, and include sustainability," he said.

With the automotive industry's transition to electrification, improving efficiency is critical to adoption, both in passenger and commercial vehicles. With a three-speaker line-up, the session on "Enhancing powertrain efficiency in electric vehicles" delivered approaches to boost powertrains in an electrified age. **Ralph Biller** from Dresden University of Technology showcased a method to design electric powertrains and the traction battery to improve longitudinal acceleration.

Biller was followed on stage by Politecnico di Torino's **Stefano Favelli**, who highlighted the benefit of a predictive cruise control system for light-duty vehicles: "Using the dynamic model and benchmarking it with the baseline over three driving cycles, it achieves a five percent range extension through modifying the working points of the electric motor," he said.

The final presentation of the session was by **Dongwoo Kim** from Hyundai Motor Company. The firm's engineers have developed a way to improve electric motor efficiency using deep neural networks to create a fully automated optimisation approach, helping drive electric passenger vehicles further.

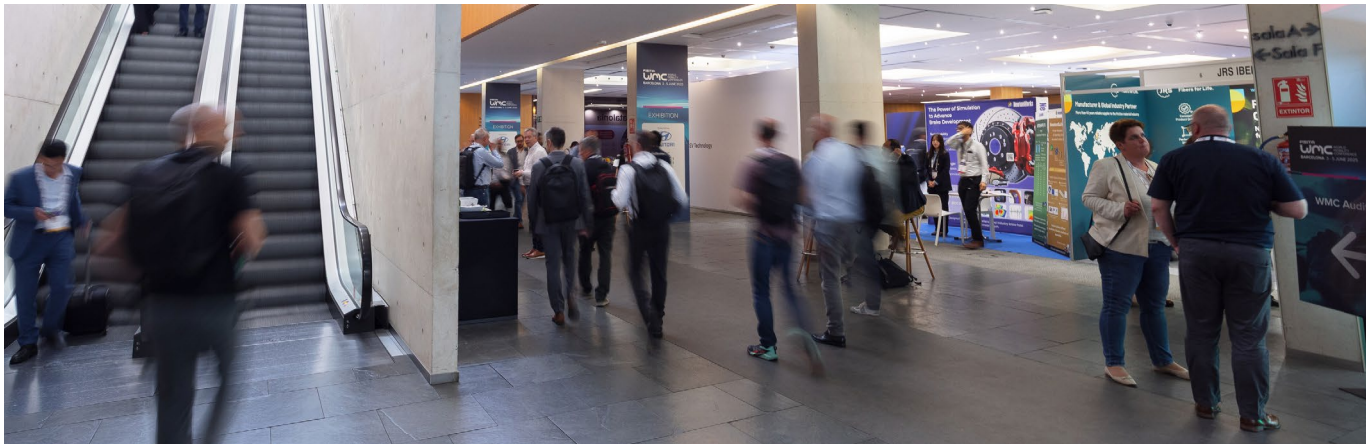
While many of the discussions centred around passenger vehicles, the backbone of the transport network is heavy-duty fleets. **Dr Mircea Gradu** from Ballard Power Systems shared his thoughts on the fuels he thinks will help keep them moving: "We believe H2 ICE only has a relatively small window of competitiveness in the heavy-duty long-haul market. Our analysis shows that in the long run BEV and FCEV technologies are the most attractive solutions, but we expect fuel cell vehicles to offer the best operational efficiency."

Model-based development

Convergent Science's Co-Founder **Dr Kelly Senecal**, well known as a proponent of combustion engine technology, presented the case for a mixed propulsion approach to meeting increasingly strict emissions legislation. For him, tailpipe emissions are only part of the challenge, and a wider view is needed that looks at the entire life of a vehicle. That means EVs are only part of the solution, and tools, including advanced computational fluid dynamics (CFD) mechanisms, can be used to test different fuels to help create a range of fuel options to power the mobility sector.

One of the busiest sessions brought simulation and evaluation to the fore, as **Dr Piotr Bielaczyc** Global Powertrain Expert at BOSMAL Automotive R&D Institute took a deep dive into particulate emissions in the automotive, aviation, and marine sectors. IDIADA's Electrical Engineer, **Agustin Bucciarelli** highlighted how the firm's hardware in the loop system can evaluate inverter silicon in real-time; and **Jiho Cho** from Hyundai Motors explained how the firm developed an evaluation platform to test a dual SCR system: "We wanted to make the after-treatment development process faster and cheaper, and we use simulations and optimisation to do that. We want to help engineers decide what catalyst to use, and help meet new regulations," he said.

Dr Kennichiro Ogata, Assistant Chief Engineer at Honda delivered a paper on simulation technologies to optimise vehicle system performance; he explored how the OEM was challenging conventional development processes that can lack flexibility. To solve this, Honda focused on model-based development to front-load workloads, using high accuracy simulation that can be applied across a vehicle's development programme.



Sustainability

The agenda in the Sustainability track included presentations of key findings from two FISITA Expert Groups, Circular Economy and Carbon Neutral Mobility, chaired by **Sophie Schmidtlin** of The Future is Neutral and **Grace Zang** of NIO, respectively.

On the subject of material sourcing for BEVs **Maximilian Guettinger** of Emil Motors emphasised the need for supply chain resilience, and suggested that many companies in the automotive industry will need to alter their current approach to ensure they can react to various market volatilities while simultaneously lowering their impact on the environment.

He was also keen to emphasise the growing demand for critical materials driven by the market for lithium-ion batteries, and the challenges of sourcing rare earth metals used in electric motors. These metals resources are finite, and typically sourced from large mining operations that can have a detrimental impact on local landscapes. Finding solutions to lower dependency on these materials could be crucial as the demand for BEVs continues to grow around the world.

Sourcing eco-friendly materials for interior surface trims was another hot topic of conversation. A panel discussion featuring **Jiseob Park**, Senior Research Engineer at Hyundai, explored the potential use of biomaterials inside the vehicle. Several carmakers have already adopted bio-based leatherettes, cork, and even cactus for interior finishes, and as Park observed, the move away from virgin plastics inside the vehicle has been gathering pace over recent years.

He presented a study on a flax-based material, demonstrating advantages such as a 33% reduction in carbon footprint and 22% reduction in weight when compared to traditional plastic products. Park believes that more bio-based materials will feature in new models as carmakers look to reduce their environmental impact in every area of the vehicle.

The sustainability theme continued with Bcomp's Chief Revenue Officer **Per Martensson**, **Henning Flaig**, Vice-President of Business Development and Commercial Excellence at Hydro, and **Karl Meira**, Director of OEM Partnerships at Cyclic Materials in a follow-up panel, where everyone agreed that for things to progress, companies have to align with OEM needs but also help manufacturers understand their perspective. In short, more partnerships and greater transparency is the way to push automotive sustainability forward.

Reducing the carbon footprint of vehicles during every stage—design and development, manufacturing, the use phase, and end-of-life handling—ties directly in with the concept of the circular economy, a key theme during the event. Much of the discussion centred on the role of steel and how end-of-life vehicle scrap can be reused in order to close the loop and realise a circular economy—and the importance of factoring ELV into the design process.

However, other areas and components of the vehicle are just as important for consideration, as circularity impacts every aspect of the business. One particularly complex area is the powertrain and its role in the circular economy, which was the subject of a lively panel discussion. **Remi Cornubert**, President of Strat Anticipation, stressed the importance of design, and how reusability and recyclability for all system components must be considered from a very early stage.

This point was emphasised by **Dr Perry Gu**, Chief Scientist, Geely Innovation Center. But Gu also suggested that a "secondary life" for powertrain systems outside the vehicles must be considered as a way to achieve circularity. Using batteries as energy storage systems, for example, is already being explored by numerous companies, and, he suggested, could help offset the short lifespan of BEVs.

Thilo Bein, Head of Knowledge Management at Fraunhofer LBF, noted the need for full lifecycle analysis. "We have to look at the full life of batteries, from the mining of raw materials to recycling or second life applications," he said. "These impacts will vary considerably depending on the battery chemistry, and for each chemistry we need to make a strong business case for circularity. Some chemistries are not as easy to dismantle, which makes it difficult to provide a business case for recycling. It all needs to be considered from a system point of view."

Energy infrastructure – the essential building block for electrification

With the scene set by the International Energy Agency, sharing insight from the IEA's annual Electric Vehicle Outlook, the Energy Infrastructure agenda included presentations and discussions on bidirectional charging, charging infrastructure, battery swap technology, Battery as a Service (BaaS), and battery energy storage systems (BESS).

In one of the highlights of the day, **Feng Shen**, FISITA Executive Board Member and Executive Vice President of NIO, **John Fox**, FISITA Corporate Board Member, and **Apostolos Petropolos** of the IEA discussed "The Business and Technology of Charging". Comparing BaaS enabled by battery swapping and wire-bound bidirectional charging showed that vehicle batteries can provide more benefits than just powering an EV—both for the individual user as well as for the overall energy system. The IEA modelling confirms that while the overall amount of energy for electric mobility is readily available, the power required for high-speed charging poses a significant challenge for energy systems, which can be partially mitigated by intelligent use of batteries. Panellists agreed that developing countries would be better off using electric mobility for their future economic and mobility growth, rather than relying on fossil technologies and associated dependencies.

The evolution of advanced chassis technology

The chassis-focused activities at WMC 2025 demonstrated the industry’s convergence around three critical themes: the evolution of mobility through advanced AI and virtualisation technologies, the imperative for standardisation across physical and virtual development processes, and the transformative impact these changes are having on engineering education and workforce development.

Through expert group presentations, panel moderation, and technical sessions covering motion control and integrated chassis systems, it became clear that the automotive industry is at an inflection point where traditional engineering approaches must evolve to accommodate AI-driven development methodologies and integrated chassis control architectures.

Chair of the Advanced Chassis Technology Expert Group, **Fabio Squadrani**, was joined in presenting the group’s key findings by **Tomohiro Yokoyama** of Toyota Motor Company, **Bernd Grojer** of AVL, **Lutz Richter** of SoftServe and ISTVS, and **Giovanni Berardo** of Toyota Motor Europe.

Future mobility systems & solutions

Marc Alochet of Ecole Polytechnique delivered a presentation on the concept of an Affordable Sustainable Electric vehicle (ASEV) and its role in the decarbonisation of mobility.

Later, the question, “How do you integrate automated vehicles into public transport networks?” was tackled in a Future Mobility panel discussion by **Eran Ofir**, CEO of Imagry, **Rainer Becker**, Director Business Development at MOIA, and **Jeroen Beukers**, Head of Innovation at Transports Publics Genevois.

Moderated by **Guido di Pasquale** of PAVE Europe, the panel addressed the considerable challenges of integrating AVs into transit—technically, bureaucratically, and commercially; the huge benefits of doing so; and the pilot programmes in place to road test not just the vehicles, but also the business models.

Digitalisation and artificial intelligence

AI quickly became a pillar of the World Mobility Conference, at the heart of countless presentations and sessions, including the session on the work of the FISITA Digitalisation Expert Group, presented by **Laurent Di Valentin** of Stellantis, and **Ernesto Motolla** or Toyota Motor Europe.

One of the first to touch on the subject was **Dr Jin Shang** of Chery Automobile. His in-depth keynote session looked at the safety and security challenges associated with AI in autonomous driving and intelligent vehicles. “The industry needs to face the future challenges of dynamic, multimodal, and migration safety as well as cross-border compliance for AI autonomous driving,” he said, also noting that functional safety in AI autonomous driving has at its core ISO 26262 (an industry standard for functional safety of electrical and electronic systems in road vehicles) combined with dynamic scenario protection and global certification to ensure system reliability and adaptability.

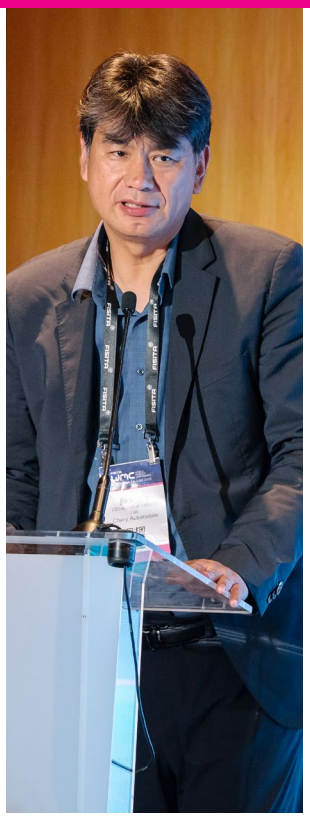
As more vehicles harness the benefits of connectivity **Albert Carles** System Engineering Consultant at OTC Engineering explained the current challenges and how they need to be addressed. Another aspect of security is the integration of AI into safety-critical components. **Daniel Scholz**, of Fraunhofer Institute of Cognitive Systems (IKS), looked at how the technology can be safely used for motor control, but sounded a cautious note for attendees: “AI-enhanced embedded systems can be safety critical, but there’s a gap, there’s no holistic unified safety assurance,” he said. “Our system ensures robustness and resilience of AI models in motor control using runtime monitoring.”

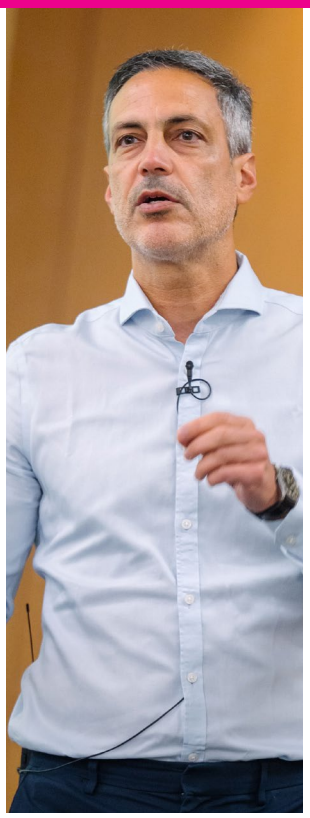
AI’s impact drives deep into every part of the sector, pushing automotive development in a myriad of ways, delegates heard. **George Geevarghese**, AVL List Product Line Manager highlighted how the technology could be utilised to predict vehicle maintenance specifically for battery diagnostics using machine learning, thereby minimising downtime. Hyundai Motors used machine learning to help predict buckling in tie-rods, as **Changgon Kim**, Senior Research Engineer at the company explained, noting that the system uses a dataset based on different designs from 19 vehicles generating 384 data points; indeed, it’s been built into an internet browser-based prediction tool to aid engineers.

Fraunhofer IKS has developed its APIKS platform allowing machine learning and safe integration of AI to ensure robust practices, linked to the CARLA simulation platform, to prototype and validate automated driving systems for safety. As Department Head **Núria Mata** said, “We need to develop autonomous driving systems that can navigate unpredictable real-world conditions, interpret huge amounts of data, and make critical decisions.” She hopes Fraunhofer’s technology will be able to test and validate autonomous systems for a wide array of real-world scenarios, ensuring simulations cover diverse environmental conditions, traffic patterns, and potential hazards.

For all the important and increased conversations about AI, arguably one of the most eye-opening brought together A2MAC1’s Chief Technology Officer **Arno Zinke**, **Morgan Jenkins**, Secondmind.ai’s Chief Product Officer and **Olivier Flebus**, Digital and AI Leader at Schaeffler to discuss its use in computer aided engineering (CAE). For many engineers, according to the panel, AI could prove a useful tool to leverage, but there is an issue surrounding understanding. AI too often is linked to large language models (LLMs), when what the industry should be talking about is machine learning, neural networks, and the ability it gives engineers to improve their work. By leveraging this new software approach, project times could be drastically reduced.

Jenkins was clear about the impacts: “We did a proof of concept with a North American OEM on powertrain calibration, and they were looking to reduce costs and cut burn time. We looked at how long it would take us to train the model to the same level of accuracy as the original data, and ultimately, it got to the same level of accuracy with about 60% less data. Less data means reduced burn time,” he said.






Safety and automated driving

There is a long list of potential use cases for AI in the automotive industry, from aiding supply chain operations and maximising efficiency, to improving manufacturing processes and factory applications, to harnessing data and providing features inside the vehicle during the use phase. The importance of AI as a tool for the industry consistently cropped up in presentations and discussions, including those centred on the development of the autonomous vehicle (AV).

This went beyond the passenger vehicle segment and into the integration of AI and autonomous driving technology in the public transportation network. As well as leveraging it to operate autonomous buses in cities, AI could be used to connect these buses to a centralised system, maximising the efficiency of the fleet and ensuring users can rely on its convenience. But, despite the fact that the technology is already capable, regulation is stalling its introduction.

“The technology is already there, but right now the barrier is regulation,” stated **Eran Ofir** of Imagry. “The first question a regulator asks is, ‘How do we know this is safe? Can you prove it?’ We cannot show them what will happen in every single scenario, because at the end of the day, the AI-based system is trained by humans. So, in the same way that you wouldn’t be able to predict what a human would do in a certain scenario, you also cannot predict what the autonomous bus will do. As a result, we have to bring experts in AI explainability to show it is safe through statistics and data analysis. We are working hard with regulators around the world to get this technology on the road.”

Dr Jin Shang of Chery Automobile joined a panel with **Dr Laia Pagès Giralt**, Executive and Research Manager at CARNET-UPC and **Dr Jose Salvador Solaz Sanahuja** from Instituto de Biomechanica’s (IBV) Head of Innovation and Smart Cities, to discuss how software and AI will unlock the future of mobility. While the opportunities are available, there was a cautious note that vehicle features need to be customer tested; if not, they could be switched off, wasting development time and adding no value to vehicles.

Remi Bastien, Strategic Advisor to the CEO of FISITA, and **Stephane Buffat**, director of LAB, the Laboratory of Accidentology, Biomechanics and driver behaviour, presented the key findings of the FISITA Intelligent Safety Expert Group, which is exploring the use of intelligent vehicle technology for the protection of vulnerable road users (VRUs), and **Dr Nick Reed** presented the work to date of FISITA’s Automated Driving Expert Group.

Other presentations included **Robert Bateman** of Nissan outlining the automaker’s work in the UK’s EvolvAD autonomous driving programme, and **Patrick Ayad** of Hogan Lovells delivering a compelling and entertaining talk on the regulatory framework for AVs. Meanwhile, **Sergi Domeyó Fauró** of IDNEO joined **Maria del Mar Hernandez** of Vodafone and **Abel Carbonell** of IDIADA in a panel about innovations in detection and perception technologies.

Award-winning technical presentations

The WMC 2025 agenda featured invited speakers from industry and academia delivering keynotes and panel discussions on a range of topics based on the FISITA Technology of Mobility Ecosystem. The event also featured presentations of technical papers, which were marked by the conference review team upon submission; at WMC 2025, the highest scoring paper from each of the seven topic streams was recognised during the closing ceremony. The winners were:

- **Advanced Chassis Technology:** Gennaro Sorrentino, Politecnico de Torino, “Suspension Actuators for a Novel Low-Voltage Reconfigurable Battery Electric Vehicle”
- **Digitalisation & Artificial Intelligence:** Nuria Mata, Fraunhofer Institute for Cognitive Systems (IKS), “APIKS: A Modular ROS2 Framework for Rapid Prototyping and Validation of Automated Driving Systems”
- **Energy Infrastructure:** Joan Carles Artigau, IDIADA, “EV Driving Usage Analysis Based on Real Charging Data Across EU Countries”
- **Future Mobility Systems & Solutions:** Do Hoi Kim, Hyundai, “Development of a Prefabricated Hybrid Upper Body For microfactory”
- **Propulsion Systems:** Jiho Cho, Hyundai, “An Optimal Development of dual SCR system for Heavy duty Diesel Engine using Genetic Algorithm”
- **Safety & Automated Driving:** Eun Ji Cho, Hyundai, “A LiDAR Odometry Algorithm using Simple and Fast Vertical Edge Feature Extraction”
- **Sustainability:** Miranda Jarvis, A2MAC1, “Sustainable Design Through CO2 Benchmark Analysis”

The highest scoring technical papers at WMC 2025 were recognised by FISITA CEO, Chris Mason, and President of the Spanish Society of Automotive Engineers (STA), Jose Manuel Barrios

Student and Young Engineer Award 2025

Shuncong Shen received first prize in the 2025 FISITA World Mobility Conference Student and Young Engineer competition. It was presented by **ChangHwan Kim**, FISITA President and Executive Vice President, Hyundai Motor Company, along with **Ouafae El Ganaoui Mourlan**, FISITA Vice President, Education Committee and Chair Professor on Sustainable Mobility at IFP Energies Nouvelles, and **Martin Kahl**, CTO at FISITA.

The award, for the poster titled, "*Path planning for autonomous personal mobility based on artificial potential field and guidance assistance*," was accepted by Shuncong Shen on behalf of his fellow team members **Hatsuda Motoki**, **Toshio Ito**, and **Toshiya Hirose**, all of whom are students at the Shibaura Institute of Technology College of Engineering, Japan.

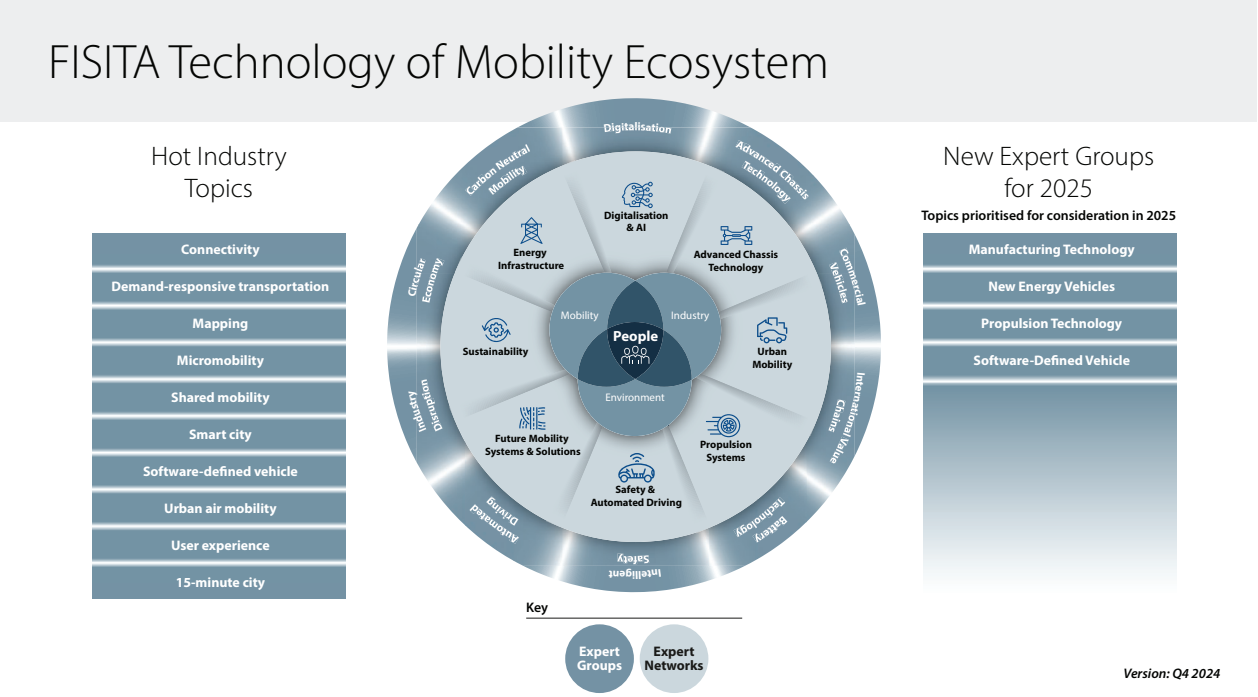
Ten key takeaways from WMC 2025

Summarising the key takeaways from seven topic streams and three plenary sessions risks overlooking critical messages; nonetheless, ten important lessons from WMC 2025 are outlined below, as much to round up this event report as to inspire discussion and engagement—and any feedback is welcome:

1. **Electrification may be inevitable, but the discussion must include mixed propulsion technology portfolios:** The inevitability of battery electrification across much of the automotive industry—and the mobility ecosystem more broadly—is balanced by ongoing discussions about mixed propulsion technology portfolios. The potential for hydrogen remains an important topic, as does the ongoing evolution of the combustion engine, both for ICE vehicles and the emerging popularity of range-extended EVs. And for success in battery technology, cost is the critical factor, with an urgent need for safe and sustainable low-cost solutions that also maximise range.
2. **Successful electrification is entirely reliant on robust infrastructure:** Automakers and suppliers may be adjusting for the inevitability of electrification, but difficult times lie ahead without a robust energy infrastructure; this will rely on an intelligent mix of bidirectional charging, charging infrastructure, battery swap technology, Battery as a Service (BaaS), and battery energy storage systems.
3. **Customer acceptance—a higher hurdle than technology readiness and regulatory compliance for the deployment of AVs?** We learned about the challenges and opportunities of using automated vehicles in public transportation and goods delivery; we heard about the challenges of deploying AVs in a world of multi-speed regulatory frameworks and regionally varied public perception; and critically, we heard about the challenges of customer perception and acceptance when it comes to AV deployment.
4. **Critical developments at the point where the vehicle meets the road:** Bringing together often siloed disciplines in the ACT track is revealing promising insights on the future of chassis technology, with industry leaders aligning on frameworks for physical and virtual development, AI-driven innovation opportunities, and exciting new approaches to engineering education that will empower the next generation of automotive professionals.
5. **AI is everywhere…the challenge is how to use it:** AI is transforming the automotive industry, driving advancements in autonomous vehicles, safety, and engineering efficiency. The technology is enabling predictive maintenance, accelerated development, and new business models, but regulatory hurdles and the need for robust safety standards remain. What's clear is the importance of understanding AI's different forms to fully leverage its potential and address misconceptions.
6. **It got there by truck—efficiently and sustainably:** There's exciting innovation in commercial vehicle propulsion technology to ensure that whatever you can see around you "got there by truck"—from ongoing research into the use of hydrogen, to pure battery electric truck platforms, to the use of mixed portfolios such as the Volvo Group strategy, which offers ICE, hydrogen, and pure battery solutions across its numerous brands.
7. **International value chains need new levels of resilience and reduced levels of dependence:** Procurement and supply chain specialists, in the face of increasing cost and regulatory pressure, as well as geopolitical challenges, need to develop new levels of resilience; this includes localising sourcing, reducing exposure to rare earths and other critical materials, and ensuring their business models accommodate circularity and sustainability.
8. **Sustainability is a new business strategy that's decades old:** The underlying takeaway from the plenary session, "Sustainable mobility and the circular economy" is that sustainability is an all-new business strategy that's been around for years. The question is, should sustainability be run as a separate, standalone business unit? The challenge has been set for automakers and suppliers to ensure the industry transitions from sustainability-as-a-compliance-cost to sustainability-as-a-business-strategy.
9. **Think beyond the car:** For automakers and suppliers, it's essential to think beyond the car, delegates heard; all mobility stakeholders need to think smarter about transportation; automotive is a key piece of the mobility puzzle, but it's not the only piece, and it needs to fit into the wider mobility ecosystem.
10. **WMC 2025 shines a spotlight on an industry embracing change:** WMC 2025 highlighted the willingness of the automotive industry to embrace the myriad challenges that it currently faces, including rapidly evolving consumer preferences, regulatory pressure, and heightened geopolitical tensions. Offering a unique platform to bring together an impressive representation of the global automotive industry, WMC 2025 saw speakers offer a realistic and upbeat assessment of an industry being shaped by innovation while also leading that innovation.

Engage with FISITA

The agenda at the 2025 World Mobility Conference (WMC 2025) was shaped by the FISITA Technology of Mobility Ecosystem.



The FISITA Expert Groups align with the topics of the FISITA Technology of Mobility Ecosystem and presented their key findings as part of the main conference agenda, bringing together FISITA's in-person and digital offerings in a blended engagement strategy. This strategy will now focus on the next stage of the technology of mobility journey as we look ahead to WMC 2027.

The FISITA Expert Group portfolio enables unique peer-to-peer networking, member-led knowledge-sharing, and collaboration in the pre-competitive space to advance the global conversation around mobility innovation.

FISITA Connect, our exclusive member platform, provides access to FISITA Digital Forums, and the Digital Library, and will provide access to exciting new content launches and member benefits to be shared with members during the second half of 2025.

To learn more about FISITA membership, join one of our Expert Groups, or discuss how to engage with our global mobility engineering network, please contact FISITA Chief Operating Officer, Julie Geraud (j.geraud@fisita.com).

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