

Applus Together standard



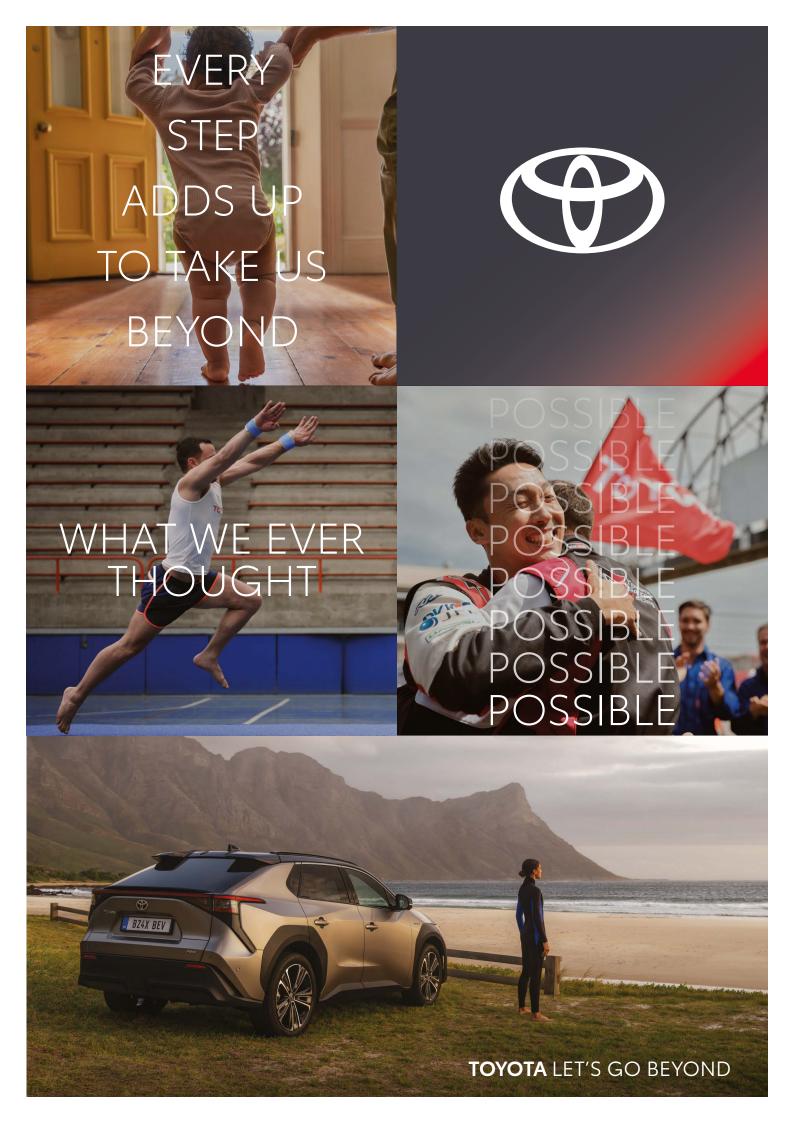


12 – 14 September 2023
Barcelona International Convention Centre (CCIB), Spain
www.fisita.com/congress

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The FISITA World Congress 2023 is organised by FISITA and STA (Sociedad de Técnicos de Automoción)

**FISITA President** 

Nadine Leclair

**FISITA Chief Executive** 

Chris Mason

**STA President** 

José Manuel Barrios

Join the conversation: **#FISITACONGRESS23** 

www.fisita.com/tmce







# Introducing FISITA and STA





FISITA is the global membership organisation for the automotive and mobility systems engineering community. It now brings together hundreds of thousands of engineers across four-member category types including automotive engineering societies, corporate members, strategic partners, and academia.

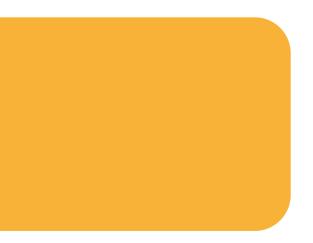
FISITA brings its members together in a pre-competitive environment to develop thought leadership, collaborate on projects, network and share knowledge. For more information on FISITA membership and benefits please contact:

☑ c.martins@fisita.com

The Sociedad de Técnicos de Automoción (STA) is a cofounding member of FISITA since 1948 and has more than 800 individual and corporate members. Our mission is to promote the progress of the technological advances and mobility within the Spanish automotive industry and to provide a neutral platform to share experiences and opinions among peers.

To achieve our goals, the STA works as a local and global platform for knowledge exchange between industry and academia, with particular emphasis on being a leading advocate for the education of young engineers. We also are a significant local and global events organiser, including technical sessions at the Automobile Barcelona, international congresses, and the Formula Student Spain competition, among many others.

For more information on STA membership and benefits please contact STA's administration manager via ☑ sta@stauto.org





# Welcome to

# FISITA World Congress 2023 in Barcelona

We are delighted to be returning to a face-to-face event at the Barcelona International Convention Centre (CCIB) in Catalonia, Spain and you are invited to the 39th FISITA World Congress.

FISITA's mission remains the same as it was when our organisation was founded seventy years ago - to promote knowledge sharing among stakeholders in a way that positively contributes to the development of safe, sustainable and affordable mobility solutions. By supporting engineers from different nations to work together, FISITA helps guide the future direction of the global automotive and mobility systems engineering profession.

There are 3 main themes for this year's Congress which are Design, Use and Manufacture. The technical programme will cover significant research in subjects including propulsion, power & energy efficiency, integrated safety, new manufacturing technology & methodology and software defined vehicle. The Congress will serve as the powerful motivator for the continued growth of the automotive and mobility industry and its contributors.

In addition to the expert scientific and technical information, the Congress will offer delegates the opportunity to make contacts and build relationships with colleagues from all over the world. Alongside the technical sessions and the international exhibition, there will be geographical climate change sessions and the latest work of the FISITA Working Groups.

Our international exhibition will feature the leading organisations who represent the entire value chain from leading industry players to new entrants and is a great opportunity to meet new suppliers.

We are delighted to announce that the Student Opportunities Programme returns to Congress, offering students the chance to attend the conference and present a poster for peer and industry review.

Catalonia is a hub for innovation and technology, with many companies and research centers working on cutting-edge mobility solutions and with a highly skilled workforce and a strong academic community; also, it has a rich cultural heritage and a vibrant arts scene. All together make its capital city the ideal environment for discussing and showcasing the latest developments in the field with like-minded individuals from around the world.

We hope you can join us in Barcelona for what is sure to be a fantastic event - we look forward to seeing you there!



**Nadine Leclair** President FISITA



**José Manuel Barrios** President STA



# TURNING PASSION INTO PERFORMANCE



Motorsport is in our DNA. That's why we put all our passion into researching and developing the most advanced braking systems so we can help those who rely on us be successful too. The same passion and dedication run through everything we do, because innovation is always a race. There is no finish line.

TURNING ENERGY INTO INSPIRATION



# **Organisation**

### FISITA World Congress Strategy Committee



José Manuel Barrios STA



**Joaquim Huggett** IDIADA



**Carles Grasas** 



**Chris Mason** FISITA



Emma Georgiades



**Ainhoa Sánchez** IDIADA

#### Scientific Committee



**José Manuel Barrios** STA Chairman of FISITA World Congress 2023



**Russ Shields** 



**Christophe Aufrere** Forvia



**Ondrej Vaculin** TU Ingolstadt



**Adria Ferrer** IDIADA

## Student Opportunities Programme Working Group



**Friedrich Wolf-Monheim**Ford Motor Company
Chairman, FISITA World Congress Student
Opportunities Programme



Luděk Hynčík



**Ebtissem Bouguila** Mercedes-Benz AG



**Harry Watson** 

#### FISITA Society Members































































#### Argentina

Asociación de Ingenieros y Técnicos del Automotor (AITA)

www.aita.org.ar

#### **Australasia**

Society of Automotive Engineers – Australasia (SAF-A)

www.saea.com.au

### Austria

Österreichischer Verein für Kraftfahrzeugtechnik

☑ Email: info@oevk.at

▼ www.oevk.at

#### Belgium

Union Belge des Ingénieurs de l'Automobile (UBIA) ☑ Email: info@ubia.be

**▼** www.ubia.be

#### Brazil

Associação Brasileira de Engenharia Automotiva (AFA)

☑ Email: relationship@aea.org.br

**▼** www.aea.org.br

#### China

Society of Automotive Engineers of China (SAE-China)

☑ Email: office@sae-china.org

www.sae-china.org

#### Croatia

Croatian Society for Engines and Vehicles (CroSEV) ☑ Email: marko.bunjevac@cvh.hr

#### **Czech Republic**

Česká Automobilová Společnost (CAS)

☑ Email: cas-sae@email.cz

▼ www.cas-sae.cz

#### **Finland**

Suomen Autoteknillinen Liitto r.y. (SATL)

▼ www.satl.fi

#### France

Société des Ingénieurs de l'Automobile (SIA)

**▼** www.sia.fr

#### Germany

Verein Deutscher Ingenieure e.V. (VDI e.V.)

**▼** www.vdi.de

#### Hungary

Gépipari Tudományos Egyesület (GTE – Vehicle Division)

☑ Email: mail@gteportal.eu

▼ www.gteportal.eu

#### India

Society of Automotive Engineers, India (SAEINDIA)

☑ Email: connectus@saeindia.org

www.saeindia.org

#### Italy

Italian Association of the Automotive Industry (ANFIA - ATA)

☑ Email: anfia@anfia.it

www.anfia.it

#### Japan

Society of Automotive Engineers of Japan, Inc. (JSAE)

▼ www.jsae.or.jp

#### Korea

The Korean Society of Automotive Engineers (KSAF)

**▼** www.ksae.org

#### Latvia

Latvia Association of Automobile Engineers (LAIA)

☑ Email: raitis.mazjanis@gmail.com

▼ www.laia.lv

#### Lithuania

Lithuanian Society of Automotive Engineers (LAIS)

Techników

☑ Email: raimundas.junevicius@vgtu.lt

**▼** www.lais.lt

#### **Poland**

Stowarzyszenie Inżynierów Mechaników Polskich (SIMP)

Mechanikow Polskich (SIMP)

☐ Email: ptim@simp.pl

▼ www.ptim.simp.pl

#### Romania

Societatea Inginerilor de Automobile din Romania

▼ www.siar.ro

#### Serbia

Jugoslovensko Drustvo za Motore i Vozila (JUMV) ☑ Email: cduboka@gmail.com

#### **Slovak Republic**

Spolok Automobilových Inžinierov a Technikov Slovenska (SAITS)

☐ Email: saits@saits.bts.sk

**▼** www.saits.bts.sk

#### Slovenia

Association of Mechanical Engineers and Technicians of Slovenia - Automotive Group (AMETS-AG)

▼ www.zveza-zsis.si

#### **Spain**

Sociedad de Técnicos de Automoción (STA)

▼ www.stauto.org

#### Sri Lanka

Institute of Automotive Engineers – Sri Lanka (IAE – Sri Lanka)

**▼** www.iaesl.lk

#### Sweden

Swedish Vehicular Engineering Association (SVEA)

☑ Email: info@sveafordon.com

▼ www.sveafordon.com

#### **Switzerland**

Society of Automotive Engineers Switzerland (SAE Switzerland)

 $oxed{\boxtimes}$  Email: info@sae-switzerland.ch

**▼** www.sae-switzerland.ch

#### Thailand

Society of Automotive Engineers of Thailand (TSAE)

☑ Email: tsae@tsae.or.th

▼ www.tsae.or.th

#### The Netherlands

Koninklijik Instituut van Ingenieurs (KIVI NIRIA -Automotive Division)

▼ www.kivi.nl

#### **United States of America**

Society of Automotive Engineers International (SAE International)

igspace Email: customerservice@sae.org

**▼** www.sae.org

International Society for Terrain-Vehicle Systems (ISTVS)

☑ Email: hello@istvs.org

**▼** www.istvs.org

### FISITA Corporate Members





中国汽研 CAERI

Aioi Nissay Dowa Insurance	BYD	Forvia	
Keisuke Niiro, President	Lian Yubo, Executive Vice President	Christophe Aufrère, CTO	
Aisin Corporation	Contemporary Amperex Technology Co., FEV Limited (CATL)		
Hiroshi Tsutsui, Executive Officer	Zuoye Shao, Senior Manager	Stefan Pischinger, President & CEO	
Ansys		Ford Motor Company	
Christophe J. Bianchi, Chief Technologist	China Automotive Engineering Research Institute Co. Ltd. (CAERI)	Brendan Carberry, Manager – Sustainability and Emissions Ford Research and Advanced	

Christophe J. Bianchi, Chief Technologist	Institute Co. Ltd. (CAERI)	Brendan Carberry, Manager – Sustainabil and Emissions Ford Research and Advanc
AVL List GmbH	Chen Tao, Vice President	Engineering

AVL List GmbH	Chen Tao, Vice President	Engineering
Helmut O. List. Chairman & CEO		FSD

**China FAW Corporation Limited** Schuricht, Managing Director Philipp Liang Guiyou, General Assistant Manager Baidu

**Fujitsu Limited** Zhenyu Li, Senior Corporate Vice President **Dassault Systèmes SE** Yasutoshi Takeda, Corporate Executive Officer, Senior Vice-President Head of Mobility Unit Laurence Montanari, Vice President

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Yoshifumi Kato, Chief Technology Officer Matt Warner, Vice President Operations **BMW Group** 

**dSPACE** Dominik Schuster, Vice-President Vehicle Safety **General Motors** Takashi Miyano, President Kent Helfrich, Chief Technology Officer, Vice

President GM Ventures, VP Global R&D **Bosch Mobility EDF** Klauda, Executive Vice-President

Engineering, Cross Domain Computing Solutions **Honda Motor Company** Yves Schlumberger, Head of the R&D Electrical Mobility Programme Toshihiro Mibe, President, CEO & Representative Director bp plc **ESI Group** Richard Pearson, Senior Technical Advisor, Mobility

**Hyundai Motor Company** Executive Vice-President, Emmanuel Leroy, **Industry Solutions** Jaehoon Chang, President Florence Barre, Chief of Staff to the CEO

#### **IDIADA Automotive Technology SA**

Josep-Maria Farran, CEO

#### Infineon

Freeman Cao, Senior Vice-President & Head ATV

#### **IRP Systems**

Moran Price, CEO & Co-Founder

#### **Jatco**

Tatsuya Osone, Chief Technology Officer

#### **KDDI**

Toshikazu Yokai, Executive Officer

#### **Koito Manufacturing Co. Ltd.**

Takashi Ohtake, Director & Senior Advisor

#### Marelli

Tom Hyder, Global Head of Advanced Innovation

#### Michelin

Jean-Luc Bouvier, Executive Fellow B2C

#### **MIRISE Technologies**

Masato Hashimoto, Member of the Board of Directors

#### Motul

Olivier Montange, Group CEO (President of the Management Board)

#### NIO

Feng Shen, Executive Vice-President

#### Nissan Motor Co., Ltd.

Takao Asami, Senior Vice-President

## NTT (Nippon Telegraph & Telephone Corporation)

Katsuhiko Kawazoe, Senior Executive Vice President

#### **NXP Semiconductors**

Peter Wiese, Vice-President Automotive Sales EMEA

#### Panasonic Automotive Systems Co., Ltd.

Masashige Mizuyama, Executive Vice President

#### **Plastic Omnium**

Alexandre Corjon, EVP Innovation and Software

#### **Oualcomm**

Giuseppe Russo, Vice President

#### **Reed Mobility**

Nick Reed, Founder at Reed Mobility; Chief Road Safety Advisor at National Highways

#### **Renault Group**

Gilles Le Borgne, Executive Vice-President Engineering

#### Renesas

Takeshi Kataoka, Senior Vice-President & Co-General Manager of Automotive Solution Business

#### Schaeffler Group

Dierk Reitz, Vice-President R&D Powertrain

#### Shell Global Solutions (US)

Selda Gunsel, President

#### Siemens

Vincent Braibant, VP, Simulation and Test Solutions

#### **Sony Semiconductor Solutions Corporation**

Terushi Shimizu, Representative Director, President & CEO

#### Stellantis

Laurent Di Valentin, CAE Senior Expert

#### Tata Motors

Rajendra Petkar, President & CTO

#### **TE Connectivity**

Kei Matsui, President

## Toshiba Electronic Devices & Storage Corporation

Kazuteru Saginao, Director of Technical Marketing

#### **Toyota Motor Corporation**

Hiroaki Okuchi, Operating Officer (Fellow of Advanced R&D and Engineering)

#### Valeo

Geoffrey Bouquot, Group CTO & Vice-President Strategy

#### **VINCI**

Pierre Delaigue, Director - Connected, Autonomous, Electric Mobility Projects

#### Vitesco

Stéphane Fregosi, CEO

#### Weichai Power Co., Ltd.

Tong Dehui, Vice General Manager

#### **Yazaki Corporation**

Masahiro Kanda, Director Special Advisor

#### Zenrin

Hideyuki Fujisawa, Director of the Board



# FISITA World Congress 2023 programme overview

For the breakdown of the Technical session information please see

	09:00	Technical session
	10:30	Break
į	10:45	FISITA World Congress Opening Ceremony
	11:25	Hyundai Motor Company keynote on Electrification in mobility: ultimate engineering solutions for carbon neutrality
ber	11:55	CATL keynote
oten	12:25	Panel discussion on Artificial Intelligence
Sep	13:25	Lunch
12th	14:25	Bosch Mobility keynote on software defined mobility enablement
day	14:50	Shell keynote on Fuels and energy carriers for decarbonisation of transport
Tuesday 12th September	15:15	Keynote
	15:40	Panel discussion on software defined vehicle
	16:40	Break
	17:00	Technical session
	18:30	Close
	08:00	Technical session
	09:30	Break
	10:00	Bosch Mobility keynote on Reinventing mobility systems from inside out- how to afford it
Wednesday 13th September	10:25	Applus+ keynote on Innovation as a tool for an uncertain future
tem	10:55	AVL keynote on Carbon neutral passenger car vehicles developed with attribute engineering
Sep	11:45	Panel discussion on advanced manufacturing
13th	12:55	Lunch
day	14:00	Keynote
nesc	14:25	Euro NCAP keynote on Safer heavy trucks & the new Euro NCAP program  Panel
Wed	14:50 15:50	Break
	16:50	Technical session
	17:40	Close
	19:00	Gala Dinner
	19.00	Gala Diffile
	08:00	Technical session
	09:30	Break
	10:00	NIO keynote on NIO, a user company
	10:25	Keynote  Keynote
P	11:15	Keynote
que	11:40	Keynote
epte	12:05	Panel discussion on propulsion systems
th S	13:05	Lunch
y 14	14:20	Technical session
Thursday 14th September	15:50	Break
Thu I	16:10	Climate Change panel discussion
	17:10	Keynote
	17:45	FISITA World Congress closing ceremony
	18:15	Farewell drinks reception
	19:00	Close



#### Discover NIO's smart EV technologies

NIO, a pioneer and a leading company in the premium smart electric vehicle market, was founded in 2014. Our mission is to shape a joyful lifestyle by offering high-performance smart electric vehicles and ultimate user experience. NIO has R&D centers and manufacturing facilities in more than a dozen cities, including Shanghai, San Jose, Munich, Oxford, Berlin, Budapest, and Singapore. We have established sales and service networks in China, Norway, Germany, the Netherlands, Sweden, and Denmark to provide products and services to users in over 300 cities worldwide. By 2025, we plan to extend our services to users in more than 25 countries and regions worldwide.

With a pioneering global technology and R&D team, NIO is dedicated to providing premium vehicles, high-performance electric drive and smart automotive technology solutions through our production network of world-class manufacturing centers and an established supply chain. Holding over 6,600 global patents, our portfolio includes innovations in batteries, electric drive systems,

and battery swapping technology that is unprecedented around the world. NIO's battery swapping roadmap features a number of unprecedented key technologies, more than 2,000 patent applications, and 22 new or revised standards.

NIO has eight high-performance smart electric vehicles: the ES8, a six-seater smart electric flagship SUV, the ES7 (or the EL7), a mid-large five-seater smart electric SUV, the ES6, a five-seater all-round smart electric SUV, the EC7, a five-seater smart electric flagship coupe SUV, the EC6, a five-seater smart electric coupe SUV, the ET7, a smart electric flagship sedan, the ET5, a mid-size smart electric sedan, and the All-New ES8, an all-round SUV.

Currently, we offer four models – ET5, ET7, EL7 and ES8 (Norway only), in five European markets: Denmark, Germany, the Netherlands, Norway, and Sweden.

The NIO team welcomes you to visit Stand 120.





# FISITA Knowledge Lounge featuring Climate Change and FISITA Working Group sessions

Throughout the three days of the TMCE, FISITA will launch the Climate Change sessions, establishing a long-term, president-led initiative enabling the important subject of climate change to be considered by the international community of FISITA in two-year cycles from 2023. The sessions will be delivered by expert teams, detailing the current status, challenges and opportunities in three key regions of the world: the Americas, Europe and Asia.

The 2023 sessions will conclude with the experts determining the key priority focus to move forward as a working group activity within the FISITA community through the two-years before bringing their findings back once again to the Technology of Mobility Conference and Exhibition in 2025. In doing so we intend to grow a significant and influential thought leadership focus on climate change in two-year cycles for the long term.

We will be showcasing the work undertaken by the following groups:

- Carbon Neutral Mobility
- Digitalisation
- Industry Disruption
- Intelligent Safety
- Next Generation Mobility

If you are interested in learning more about the FISITA Working Groups please contact:

> ☑ **Daniele Ventriglia** FISITA Technical Manager



We crive help the

**FEV** 

We love technology. And we understand it deeply. This enables us to pioneer ideas and shape strategies that keep our clients, partners and our people ahead of the game. Then we explore, challenge, test and learn – continually improving the solutions we implement and the ways we work together. This helps us develop world-class innovations – on and off the road. For a better future and a greater quality of life for everyone.

We drive innovation to help the world evolve.

feel evolution fev.com

# **Prime Partners**

Applus+ / Booth: 127,141,142

**A**rplus<sup>⊕</sup>

宁德时代

Applus+ is a Spanish corporation and a worldwide leader in the testing, inspection and certification (TIC). It is a trusted partner, enhancing the quality and safety of its client's assets and infrastructures while safeguarding their operations. Its innovative approach, technical capabilities and highly-skilled and motivated workforce assure operational excellence across multiple sectors in more than 70 countries. The Group, which has over 25,000 employees, is committed to sustainability.

We have the accreditations and recognition of the main control bodies of the countries in which we operate, which certify our operational excellence and independence. Our services and business strategy are aligned with the significant global megatrends of energy transition, electrification, and connectivity. We are strongly committed to innovation and digitalisation, which

has resulted in 151 current patents from 34 different families and more than 210 research projects, some of which were developed under the umbrella of Applus+ Ventures, our corporate venturing programme. Our digital transformation processes have received prestigious international awards, such as the AVA Digital Awards, Globee Awards and SAP Quality Awards. We have renowned talent development programmes, including the Global Management Development Programme (GMDP), designed exclusively for Applus+ by the Instituto de Empresa (IE Business School). Health and safety in the workplace is the main focus of Safety Day, our biggest annual corporate event.

Applus+ helps clients reduce their environmental impact, improving the safety and sustainability of their products and assets. The company

sets ESG (Environmental, Social and Governance) targets every year and monitors their fulfilment. These actions have attracted external recognition: above-average scores by S&P Global (54, 81% percentile), Sustainalytics (15.6, "Low risk"), MSCI ESG Ratings (AA), from the CDP (B), from Gaïa (71/100), from Standard Ethics (EE+, "Very Strong"), and the inclusion of Applus+ within the FTSE4Good Index Series of Ibex. We are also part of the Ibex Gender Equality Index, and we have joined the UN Global Compact and the international Science Based Targets initiative (SBTi) to reduce global warming and fight climate change.

Email: maria.sancha@applus.com Telephone: +34 691 250 977 Website: www.applus.com

#### Contemporary Amperex Technology Co., Limited (CATL)



Headquartered in Ningde, China, CATL has established thirteen battery manufacturing bases worldwide, namely in Ningde, Fujian Province; Liyang, Jiangsu Province; Xining, Qinghai Province; Yibin, Sichuan Province; Zhaoqing, Guangdong Province; Lingang Special Area of China (Shanghai) Pilot Free Trade Zone, Shanghai; Xiamen, Fujian Province; Yichun, Jiangxi Province; Guiyang,

Guizhou Province; Jining, Shandong Province; Luoyang, Henan Province and Erfurt, Germany; Debrecen, Hungary. At the same time, CATL has opened subsidiaries in Munich, Germany; Paris, France; Yokohama, Japan; Detroit, USA as well as other places.

To achieve the goal of fossil fuel replacement in stationary and mobile energy systems with highly efficient electrical power systems that are generated through advanced batteries and renewable energy, and promote the integrated innovation of market applications through electrification and intelligentization, CATL maintains continuous innovation four dimensions, namely material and electrochemistry system, structure system, extreme manufacturing and

business model.

In H1 2022, the company's global sales revenue totaled 113 billion vuan (about 16.84 billion U.S. dollars), up 156% YoY, and its net profit reached 8.2 billion yuan (about 1.22 billion U.S. dollars), up 82% over the previous year. The sales revenue of EV battery systems and energy storage systems increased by 160% and 171% respectively YoY. Moreover, revenue in overseas market increased by 123% YoY. According to SNE Research, CATL's EV battery consumption volume ranked first in the world from 2017 to 2021 consecutively, and its market share in the global EV battery market reached 34.8 percent in H1 2022. CATL also enjoys wide recognition by global OEM partners. According to ICCSino, CATL ranks first in the market share of global

energy storage battery production in 2021.

CATL attaches great importance to R&D, and it has set up R&D centers in Ningde, Liyang, Shanghai, Xiamen and Munich. In the first half of 2022, CATL invested about 5.8 billion yuan (about 864.2 million U.S. dollars) in R&D, up 107% YoY. There are 12,132 CATL staff members engaged in R&D, with 2,233 of them holding master's degrees and 193 holding Ph.D. degrees. Its R&D system covers a wide range of fields including material research, product development, engineering design, testing and analysis, intelligent manufacturing, information systems, project management among others. The company boasts the National Engineering Research Center for Electrochemical Energy Storage Technology, the Key Laboratory of Lithium-ion Battery Enterprise of Fujian Province, as well as the Test and Validation Center certified by the China National Accreditation Service for Conformity Assessment. Moreover, CATL has set up the 21C Lab, which focuses on the frontier research of the fundamental matters in the field of energy storage and conversion, and established the Postdoctoral Research Workstation and the Fujian Academician Expert Workstation. CATL's issued and pending patents amount to 12,924 worldwide, and it has contributed to the drafting or amending of over 70 industry standards at home and abroad.

In 2021, CATL's Ningde facility was recognized by the World Economic Forum as a Lighthouse Factory, and its Yibin plant was certified as the world's first zero-carbon battery plant. CATL is now establishing a new energy industry ecosystem that integrates electrification and intelligence based on its technological leadership and supply chain integration capabilities. The company has launched innovative solutions such as intelligent BESS charging stations, electric vessels,

electric smart unmanned mines and battery swapping heavy-duty trucks. EVOGO, its battery swap service brand featuring modular battery swapping, is launching services across the country. CATL aims to build a closed loop of full life battery service through new business models such as battery rental and purchasing, swapping and recycling based on the separation of vehicles and batteries. In the future, CATL will actively fulfil corporate social responsibilities and make outstanding contributions to the cause of global new energy development.

Email: ShaoZY01@catl.com Telephone: +86-195 5931 7989 Website: www.catl.com

#### **Hyundai Motor Company**

Established in 1967, Hyundai Motor Company is present in over 200 countries with more than

120,000 employees dedicated to tackling real-world mobility challenges around the globe.

Based on the brand vision 'Progress for Humanity,'Hyundai Motor is accelerating its transformation

Into a Smart Mobility Solution Provider. The company invests in advanced technologies

Such as robotics and Advanced Air Mobility (AAM) to bring about revolutionary mobility solutions,

While pursuing open innovation to introduce future mobility services. In pursuit of sustainable future for the world, Hyundai will continue its efforts to introduce zero emission vehicles equipped with industry-leading hydrogen fuel cell and EV technologies.



# 49 years



#### Back in the 70s,

an ambitious designer sketched out the most mesmerizing car you've never seen. It was sleek. It was powerful. It was a work of art on wheels — an icon that inspired icons, such as a time-traveling car from a famous sci-fi movie and even our N Vision 74. This machine paved the way for progress, influencing our own vision of the future. But not a single ad was ever made for this car. It didn't even see the production light.

So, we are honoring this jaw-dropping machine — with the ad that should have been. Finally here, in all its glory. Anyway, if you've read up to this point, you're

officially part of a select crowd that reads long copy ads in 2023. The point: the car that got away 49 years ago has arrived today.

The Pony Coupe concept.

Restored, revitalized, and ready to blow everyone away. Again.

# making.



# **Sponsors**

#### **Gala Dinner Sponsor**

Brembo leads the world in the design and production of high-performance braking systems and components for top-flight manufacturers of cars, motorbikes and commercial vehicles.

Founded in 1961 in Italy, Brembo has a long-standing reputation for providing innovative solutions for OEMs and aftermarket. Brembo also competes in the most challenging motorsport championships in the world and has won over 600 titles.

Guided by its strategic vision – "Turning Energy into Inspiration" – Brembo's ambition is to help shape the future of mobility through cutting-edge, digital and sustainable solutions.

With about 15,000 people across 15 countries, 30 production and business sites, 8 R&D centers and with a turnover of € 3,629 million in 2022, Brembo is the trusted solution provider for everyone who demands the best driving experience.



Brembo is the owner of the Brembo, AP, AP Racing, Breco, Bybre, J.Juan, Marchesini and SBS Friction brands.

https://www.brembo.com



#### Farewell Drinks Reception Sponsor / Booth: 86

NITREX is the only fully integrated global player in the surface treatment industry. With a presence in over 20 countries, our portfolio of innovative solutions and unrivalled expertise assists customers in achieving greater tolerances, meeting the highest standards, reaching sustainability goals and becoming more profitable along the way.

With over 35 years of experience, we are the preferred choice of blue-chip customers around the globe for turnkey heat-treat systems, reliable technologies with over 4,000 proven formulas, proprietary high-end instrumentation, failsafe digital controls and surface treatment services.

www.nitrex.com

#### **Diamond Sponsor / Booth: 128**

Bosch Mobility is the largest Bosch Group business sector. According to preliminary figures, it generated sales of 52.6 billion euros in 2022, and thus contributed almost 60 percent of total sales from operations. This makes the Bosch Group one of the leading automotive suppliers.

The Mobility Solutions business sector pursues a vision of mobility that is safe, sustainable, and exciting, and combines the group's expertise in the domains of personalization, automation, electrification, and connectivity. For its customers, the outcome is integrated mobility solutions.

The business sector's main areas of activity are injection technology and powertrain peripherals for internal-combustion engines, diverse solutions for powertrain electrification, vehicle safety systems, driver-assistance and automated functions, technology for user-friendly infotainment as well as vehicle-to-vehicle and vehicle-to-infrastructure communication, repair-shop concepts, and technology and services for the automotive aftermarket.

Bosch is synonymous with important automotive innovations, such as electronic engine management, the ESP anti-skid system, and common-rail diesel technology.



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#### FEV has always pushed the limits.

FEV is a globally leading engineering provider in the automotive industry internationally and recognized leader of innovation across different sectors and industries. Professor Franz Pischinger laid the foundations by combining his background in academia and engineering with a great vision for continual progress. The company has supplied solutions and strategy consulting to the world's largest automotive OEMs and has supported customers through the entire transportation and mobility ecosystem.

## As the world continues to evolve, so does FEV.

That's why FEV is unleashing its technological and strategic expertise into other areas. It applies its forward thinking to the energy sector. And its software and system know-how will enable the company to lead the way making intelligent solutions available to everyone. FEV brings together the brightest minds from different backgrounds and specialties to find new solutions for both current and future challenges.

#### But FEV won't stop there.

Looking ahead, FEV continues to push the limits of innovation. With its highly qualified 7200 employees at more than 40 locations globally, FEV imagines solutions that don't just meet today's needs but tomorrow's. Ultimately, FEV keeps evolving – to a better, cleaner future built on sustainable mobility, energy and software that drives everything. For the companies' partners, its people and the world.
#FeelEVolution

https://www.fev.com/



#### **Gold Sponsor**

AVL List GmbH ("AVL") with its headquarters in Graz, is one of the world's leading mobility technology companies for development, simulation and testing in the automotive industry, and in other sectors. Drawing on its pioneering spirit, the company provides concepts, solutions and methodologies for a greener, safer and better world of mobility.

AVL constantly expands its portfolio of high-end methodologies and technologies in the areas of vehicle development and testing. With a holistic approach - from ideation phase to serial production - the company covers vehicle architectures and platform solutions including the impact of new propulsion systems and energy carriers.

To achieve the vision of climate-neutral mobility, AVL drives innovative and affordable solutions for all applications from traditional to hybrid to battery and fuel cell electric technologies.

As a global technology provider, AVL's offerings range from simulation, virtualization and test automation for product development to ADAS/AD and vehicle software. The company combines state-of-the-art and highly scalable IT, software and technology solutions with its application knowhow, thereby offering customers extensive tools in areas such as Big Data, Artificial Intelligence, Cybersecurity or Embedded Systems.

Furthermore, AVL is striving towards a safe and comfortable driving experience for everyone and brings a comprehensive understanding of assisted and automated driving functions in different vehicles and environments into play.

AVL's passion is innovation. Together with 10,700 employees at more than 90 locations and with 45 Tech and Engineering Centers worldwide, AVL is supporting customers in their mobility ambitions. In 2021, the company generated a turnover of 1.6 billion Euros, of which 12% are invested in R&D activities to ensure continuous innovation.

https://www.avl.com/en



#### Silver Sponsor / Booth: 186

Elektrobit is an award-winning and visionary global vendor of embedded and connected software products and services for the automotive industry. A leader in automotive software with over 35 years serving the industry, Elektrobit's software powers over five billion devices in more than 600 million vehicles and offers flexible, innovative solutions for car infrastructure software, connectivity

& security, automated driving and related tools, and user experience. Elektrobit is a wholly-owned, independently-operated subsidiary of Continental.

For more information, visit us at **elektrobit.com** 





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Shell is an international energy company with expertise in the exploration, production, refining and marketing of oil and natural gas, and the manufacturing and marketing of chemicals.

We use advanced technologies and take an innovative approach to help build a sustainable energy future. We invest in power, including from renewable sources such as wind and solar. We also invest in electric vehicle charging and low-carbon fuels for transport, such as advanced biofuels and hydrogen.



# Sponsor the Student Opportunities

## **Programme at the FISITA World Congress 2023**

Do you want to engage with and advise engineering students who could become the mobility talent of tomorrow?

Will you help to guide and support students who have a passion for engineering to join our international community?

As your company looks to the future and embraces the challenge of technology changes and trends, your support will help to inspire the next generation of mobility engineers and technologists at the FISITA World Congress 2023.

Previous FISITA World Congress Student Opportunities Programmes have been a great success with 50 international students attending – this is a unique platform for your organisation to meet with and advise those looking to enter the braking industry and support students at this year's event to learn first-hand about their career options as they enter the mobility industry.

As a Student Opportunities Programme Sponsor for the FISITA World Congress, you will be invited to meet with participants in the dedicated student room area for students, industry and academics to network.

Sponsorship packages start from just EUR 2,000 and your company will be eligible to engage in a number of student-focused activities.

A range of sponsorship benefits include:

- Opportunities to view students' CVs prior to FISITA World Congress and arrange 1-2-1 meetings at the event
- Take part in a 'CV check' session at the FISITA World Congress arrange for a member of your HR department to attend and offer information, advice and guidance to students entering the industry
- Your company name and logo included in the FISITA World Congress Final Programme, website and app
- Opportunities to meet and network with students





**To be a sponsor** of the FISITA World Congress Student Opportunities Programme contact

**Cristina Martins** 

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# **Technical Programme**

#### All the technical sessions mentioned will feature a mix of the below topics:

Advanced & sustainable material	sustainable mater	ials
---------------------------------	-------------------	------

**Automotive disruption** 

**Comfort technologies** 

**Digitalisation** 

**Industry 4.0** 

Integrated safety, connected & automated driving

**Intelligent transport systems** 

**Lightweight & advanced vehicle platforms** 

New manufacturing technology & methodology

New mobility transport models, smart communities & cities

Personal, commercial & multimodal mobility (road, off road and non-road vehicles)

**Planning & management** 

Propulsion, power & energy efficiency

**Regulatory environment** 

Road & energy infrastructure

**Safety & cybersecurity** 

Software defined vehicle

Sustainability, circular economy & life cycle

User experience, lifestyle & aftermarket

## Tuesday 12th September

	09:00 – 10:30	Technical session
	10:30 – 10:45	Break
	10:45 – 11:25	Welcome addresses
Tuesday 12 <sup>th</sup> September	11:25 - 11:55	<b>ChangHwan Kim</b> , Senior Vice President on Electrification in mobility: ultimate engineering solutions for carbon neutrality <b>Abstract</b> The mobility market has undergone significant changes in various aspects, including consumer perceptions, lifestyle patterns, national policies and economies, following the pandemic. In order to adapt swiftly to the strengthening environmental regulations and rapidly evolving trends, automotive manufacturers, including Hyundai Motor Group, are deploying rapid and efficient electrification strategies, introducing EV dedicated platforms, and actively exploring new mobility markets.  Having mentioned this, with the need to align with global environmental policies and need to support advanced technologies such as autonomous driving and AI, the importance of electrification, particularly energy technologies like batteries, has grown significantly. In this plenary speech, Dr. Kim aims to discuss the inevitable electrification in mobility and essential technologies for carbon neutrality. This lecture will also explore the electrification vision and future strategy of Hyundai Motor Group.
epte	11:55 - 12:25	CATL keynote
2 <sup>th</sup> S	12:25 - 13:25	Panel discussion on artificial intelligence
ay 1.	13:25 - 14:25	Lunch
esde	14:25 - 14:50	Bosch Mobilty keynote
2		Mariella Minutolo ETAS on software defined mobility enablement
	14:50 - 15:15	Shell keynote  Karsten Willbrand on Fuels and energy carriers for decarbonisation of transport  Abstract  Even with the fastest pathway towards electrification and hydrogen as zero-emission solutions, a legacy fleet of internal combustions will remain on the roads for many years to come. Decarbonization solutions will hence be needed for conventional fuels.  Biofuels are a lower cost option which can play an important role to help decarbonizing on-road transport in the near- and midterm. Blue Gasoline, Blue Diesel and HVO100 are fuels that can be used "drop-in" for diesel combustion engines in the legacy fleet. For gasoline engines ethanol is a blend component that allows fossil carbon reduction and delivers high octane, which enables blending of lower-octane bio-naphtha or e-fuels like MTG. E20 is seen as a logical next step for gasoline engines, as many newer vehicles on the roads are technically able to run on E20.  Considering feedstock constraints for bio-fuels, also e-fuels will play a role, especially for aviation and marine, as they will need liquid and energy-dense fuels in the longer run.

	15:15 - 15:40	Keynote
/12 <sup>th</sup>	15:40 - 16:40	Panel discussion on software defined vehicle
da) ten	16:40 - 17:00	Break
Tues	17:00 - 18:30	Technical session
	18:30	Close

# Wednesday 13<sup>th</sup> September

	08:00 - 09:30	Technical session
	09:30 – 10:00	Break
Wednesday 13th September	10:00 – 10:25	Bosch Mobility keynote Matthias Klauda on Reinventing mobility systems from inside out - how to afford it  Abstract The steadily increasing speed of transformation in the automotive industry is well visible in the ambitious technology roadmaps of manufacturers and suppliers. Our industry is well used to demanding requests to reach benchmark performance while keeping up cost-efficiency and quality. Ever accelerating time-to-market requirements and massive upfront investments are becoming an increasing challenge for all market players.  One of the largest obstacles for the various emerging automotive architectures, be it on E/E, hardware, or software level, is the high variance in design and technology choices. This limits cost savings from centralization / consolidation into high-performance computers and controllers, requires costly and time-consuming adaptations, and makes it burdensome to keep vehicles up-to-date in the field.  Noting these inefficiencies, traditional inside-out product strategies and independence-oriented work styles are (amongst
		other things) to be in focus when addressing for industry's challenges in the transformation process. Focusing on the key technology aspects, this paper I will hence talk about the importance of establishing and nurturing effective cross-industrial networks of eco-systems and standards for driving non-differentiating technology aspects.  Our observation of these new setups, be it new cross-industry initiatives or open platforms such as Eclipse.SDV, SOAFEE, and COVESA, is them being are very different from their earlier predecessors. Less contributing to technology standards, their potential is to early on identify common needs and from there to drive the goals of standardization of technology elements based on aligned reference architectures, interface standards, and designs. This can open a path to reduce implementation complexity as well as to gain speed and cost-efficiently in the software-defined vehicle and mobility system.  Applus+ keynote
	10:25 – 10:55	Abstract In recent years, the automotive industry has undergone a radical change that has led to the arrival of new players and the transformation of the traditional ones. In particular, we will highlight two important disruptions:  - Electrification. Traditional internal combustion engine propulsion has given way to hybrid and electric solutions.  - Robotization. The process began with driver assistance systems (ADAS), but advances in connectivity, cyber security and artificial intelligence will soon lead to driving automation.  These two disruptions raise many questions and are a source of uncertainty: How will consumer demand evolve? How will the legal framework evolve? How will the traditional automotive groups reorganize? What new players will emerge and what role will they play? Faced with these changes and, above all, with the uncertainty they cause, what can Applus, as an automotive product development partner, do to position itself in the best possible way?  The answer lies in making the most of our company's existing innovation capabilities within our company: there is no doubt that a culture of innovation is a very useful tool to face the uncertainties of the market, as it not only prepares for changes that are more or less known, but also prepares to respond quickly and without crisis to unforeseen changes.  We will present some examples of innovation carried out recently which will demonstrate Applus' ability to help our clients with the significant product development challenges they will need to face in the coming years.

		AVL keynote
		Uwe Dieter Grebe on Carbon neutral passenger car vehicles developed with attribute engineering
13 <sup>th</sup> September	10:55 -11:20	Abstract  The demands for sustainability, the energy crisis and global conflicts are making us aware of the strong global interconnection of all industry sectors for achieving our targets of greenhouse gas reduction. The efficient use of energy and raw materials is becoming increasingly important and determines the development priorities for future mobility. A reduction in greenhouse gas emissions is only possible by consistently addressing all emissions over the entire lifecycle of the vehicles. That means the design and development, the production process, the in-use phase and the recycling have to be optimized.  This keynote will cover the industry transition from ICE to EV. The timeline for this transition and the consideration for various further improvements for the different propulsion technologies and the energy carriers being used in the vehicle will be considered. The speech will go deeper on light duty vehicle applications and look at use cases and technical solutions for EV. The use of sustainable fuels for ICE is an integral part. The battery-electric vehicle will be reviewed with regards to the architectural layout and the functional fulfillment of the required features. In the early phase of vehicle development major decisions are taken for subsequent development process steps. Vehicle platform and architecture options are evaluated using the AI powered Attribute Engineering method. Positive impacts of future software and function defined vehicle concepts on vehicles efficiency are considered.
sday	11:20: 11:55	Keynote
Wednesday	11:55 – 12:55	Panel discussion on advanced manufacturing
We	40.55	
	12:55 – 14:00	Lunch
	12:55 – 14:00 14:00 – 14:25	Lunch Keynote
	14:00 – 14:25	Keynote
	14:00 – 14:25	Keynote Euro NCAP keynote
	14:00 – 14:25 14:25 – 14:50	Keynote Euro NCAP keynote Matthew Avery on Safer heavy trucks & the new Euro NCAP program
	14:00 – 14:25 14:25 – 14:50 14:50 – 15:50	Keynote  Euro NCAP keynote  Matthew Avery on Safer heavy trucks & the new Euro NCAP program  Panel
	14:00 – 14:25 14:25 – 14:50 14:50 – 15:50 15:50 – 16:10	Keynote  Euro NCAP keynote  Matthew Avery on Safer heavy trucks & the new Euro NCAP program  Panel  Break

# Thursday 14th September

	00.00 00.20	
	08:00 – 09:30	Technical session
	09:30 – 10:00	Break
	10:00 – 10:25	NIO keynote
		Hui Zhang on NIO, a user company
Thursday 14 <sup>th</sup> September		Abstract Mr. Hui Zhang's presentation will focus on the emphasise of NIO's user-centric approach by showcasing the company's technology innovation and milestones, recent performance, as well as the significance of user services and user experience through the NIO App and NIO House.  Additionally, the presentation will also focus on NIO's development strategy for European distribution, highlighting the company's commitment to delivering exceptional user experiences and expanding its presence in the European market.
pten	10:25 – 10:50	Keynote
h Sep	10:50 – 11:15	Keynote
y 14	11:15 – 11:40	Keynote
sday	11:40 – 12:05	Keynote
돌	12:05 – 13:05	Panel discussion on propulsion systems
	13:05 – 14:20	Lunch
	14:20 – 15:50	Technical session
	15:50 – 16:20	Break
	16:10 – 17:10	Climate Change panel
	17:10 – 17:35	Keynote
	17:35 – 18:15	Closing ceremony
	18:15 – 19:00	Closing drinks reception
	19:00	Close

# **Link Engineering Company**



Link Group, Inc. (LINK), parent to Link Engineering Company, Link Industries, and Tescor, consists of businesses that offer customized solutions, with a focus on delivering high value to each of their customers. LINK's corporate headquarters are in Plymouth, Michigan (US), with manufacturing and design facilities, laboratory and vehicle test operations, and support teams around the world.

#### Visit our booth at this year's event!





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Applications

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- Lab Monitor Module
- Maintenance Module



















# Social Programme

#### **Gala Dinner**

Sponsored by:



Wednesday 13th September

19:00 - 22:30

A highlight of the FISITA World Congress is always the Gala Dinner.

#### FISITA World Congress Farewell drinks reception

Sponsored by:



Terrace

Thursday 14th September

From 18:15 onwards

Wind down after a busy day's learning and take the opportunity to network at the Farwell drinks reception courtesy of Nitrex. Free of charge to full FISITA World Congress participants

(Expo-only passes do not include entry to the Drinks Reception or the Gala Dinner unless additionally purchased).





# Delegate registration

#### **Delegate registration includes:**

- Admission to all FISITA World Congress sessions
- · Admission to the Exhibition Hall
- · A copy of the Final Programme
- A copy of the Exhibitor Directory
- Full access to the TMCE app
- Admission to the farewell drinks reception
- Coffee / refreshments
- Lunches

#### **Expo only registration includes:**

- · Admission to the Exhibition Hall
- Access to Knowledge Lounge sessions
- · A copy of the Exhibitor Directory
- Access to the TMCE app
- Coffee / refreshments
- Lunches

	3 day access	2 day access	1 day access
Non-member	€1452	€968	€484
FISITA Corporate Member	€1161.60	€774.40	€387.20
FISITA Society Member	€1161.60	€774.40	€387.20
Presenting Author	€726	€484	€242
Academic / Government employees	€726	€484	€242
Full time students	€363	€242	€121
Expo only	181.50€	€121	€60.50
Gala Dinner (Wednesday 13 September)		€181.50	



# <u>Click here</u> to register for FISITA World Congress 2023

Payment can be made by bank transfer or credit card using our secure online payment system.



For more information or help with registration, please contact: fisita2023@pacifico-meetings.com

#### **Notes:**

- All prices are inclusive of Spanish VAT (value added tax) at 21%.
- Prior to registering, please email Kirstie Bali to receive your appropriate discount code. Failure to do so will result in full price registration.
- Proof of current full-time student status is required, please email your documentation to Kirstie Bali

# **Accommodation**

Hotel	Star rating*	Link
AC Hotel Barcelona Forum	***	Web AC Hotel Barcelona Forum
Barcelona Princess	***	Web Barcelona Princess
Vincci Maritimo	***	Web Vincci Maritimo
Front Maritim Barcelona	***	Web Front Maritim Barcelona
Attica 21 Mar Barcelona	***	Web Attica 21 Mar Barcelona
Hesperia Barcelona del Mar	***	Web Hesperia Barcelona del Mar
SB Icaria Barcelona	***	Web SB Icaria Barcelona
Occidental Atenea Mar – adults only	***	Web Occidental Atenea Mar
Eurohotel Diagonal Port	***	Web Eurohotel Diagonal Port
Amrey Diagonal	***	
Barcelona Condal Mar	***	Web Barcelona Condal Mar
Claris Gran Luxe Barcelona	****	Web Claris Gran Luxe Barcelona
Majestic	****	Web Majestic
Palace	****	Web Palace
Alexandra (Hilton)	***	Web Alexandra
Renaissance Barcelona	****	Web Renaissance Barcelona
El Avenida Palace	***	Web El Avenida Palace
Catalonia Eixample 1864	***	Web Catalonia Eixample 1864
Catalonia Plaza Catalunya	***	Web Catalonia Plaza Catalunya
Gallery	***	Web Gallery
Gran Hotel Catalonia	***	Web Gran Hotel Catalonia







General Chair - Adam McNeill

Vice President of Engineering US, BMW

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# **General Information**

#### Language

The official language of the conference is **English.** 

#### **Programme Changes**

The organisers are not liable for any changes made to the programme.

Please visit the web site regularly for updates.

#### **Final Programme**

The Final Programme will be provided on-site in the delegate bag.

#### **Official Conference App**

The **TMCE 2023 App** is downloadable from your browser and will contain the most up to date conference information, including live technical programme updates.

#### **Venue**

FISITA World Congress 2023 will take place at **Barcelona International Convention Centre (CCIB)**. The CCIB, the Barcelona International Convention Centre (CCIB) has become since 2004 a leading European location for event organisation. Enjoying a privileged location in modern, cosmopolitan Barcelona, the CCIB can be found within the city's new business and technology district, known as 22@.

Address: Plaça de Willy Brandt, 11-14, 08019 Barcelona, Spain

#### **Entry into Spain**

**EU-Citizens** No visa required. Entry is allowed with both passport and id-card.

**Non-EU-Citizens** Any foreign visitor entering Spain must have a valid passport. Visitors from countries whose citizens require visas should apply to the Spanish consulate or diplomatic mission in their own country.

To view a list of countries whose citizens require a visa to enter Spain and all other requirements please visit https://www.spain.info/en/travel-tips/visa-passport/

If you require a visa application letter, when registering online you will be given the option to request a visa, should you require a visa please ensure you select 'yes'. If you have any further questions, please email

fisita2023@pacifico-meetings.com

#### Spain

Barcelona is in the Central European time zone. Central European Standard Time (CET) is 1 hour ahead of Greenwich Mean Time (GMT).



#### Climate

Spain is a country with a mild climate all year round but still preserves its seasonal contrasts.

The temperatures are mild, but there are still differences depending on the seasons and areas of the country. The mildest temperatures are in spring and autumn, allowing you to enjoy the outdoors practically the whole day long.



#### **Currency**

The official Spanish currency is the **EURO**. International credit cards are accepted everywhere.

Foreign currencies are exchangeable at all major banks, city centre exchange offices and at the airport.

Business hours of most banks are: 08:30 – 14:30 (Mon.-Fri.)



#### **Tipping and Etiquette**

Service charges and VAT are generally included in the price. The customer has the option to not leave any tip at all. However, restaurants expect a 10% tip on each bill—although it's not a formal rule and the percentage can be much lower.

#### **Shopping**

Shops in Barcelona are usually **open Monday to Saturday from 09:00-21:00.** On Sundays, shops are closed, with some exceptions such as bakeries, train stations and petrol stations. The closest shopping centre to the venue is Diagonal Mar.

#### Tax

The city of Barcelona levies a **Visitors Tax,** per day, depending on the type and category of the accommodation. This additional tax is collected by the owner of the accommodation you are staying at. Spanish Value Added Tax in included in all prices. The most common tax is 10% for food & beverage, cultural activities and transport and 21% for general services.

#### **Electricity**

Electric current in Spain is without exception **AC 230V/50Hz.** Sockets only fit round two-pin plugs (use of adapters is necessary for all devices).

#### Insurance

Participants are strongly advised to obtain travel insurance (medical, personal accident and luggage) in their home country prior to departure.

#### **Public transport**

Barcelona has a very well-developed public transport system. Metro and buses in the city centre are operated by TMB. Bus tickets can be bought on board the buses (single tickets) and in the metro stations (travel cards). Metro tickets can be bought at metro stations.

The same ticket is valid for both the bus and the metro. Riding without a valid ticket will result in a fine. City trains also run in Barcelona and the surrounding area with two companies, RENFE and FGC. Travel centres in Catalunya and Sants Stations (main train stations) will provide you with further information.

#### Taxis / Cabify / Bolt

It is customary to flag down a taxi. Furthermore, there are many taxi-stops in the city and you can order a taxi by telephone. Prices are set according to a basic charge and a set price per kilometre. Barcelona

A taxi from the **Barcelona Airport to the CCIB** costs approximately **EUR 40** 



#### **Getting to Barcelona**

Barcelona is easily reached by air, rail or road.

The city's international airport, Barcelona International Airport (also known as El Prat de Llobregat Aeropuerto or Aeroport de Barcelona) is situated 13 km South West of the city centre

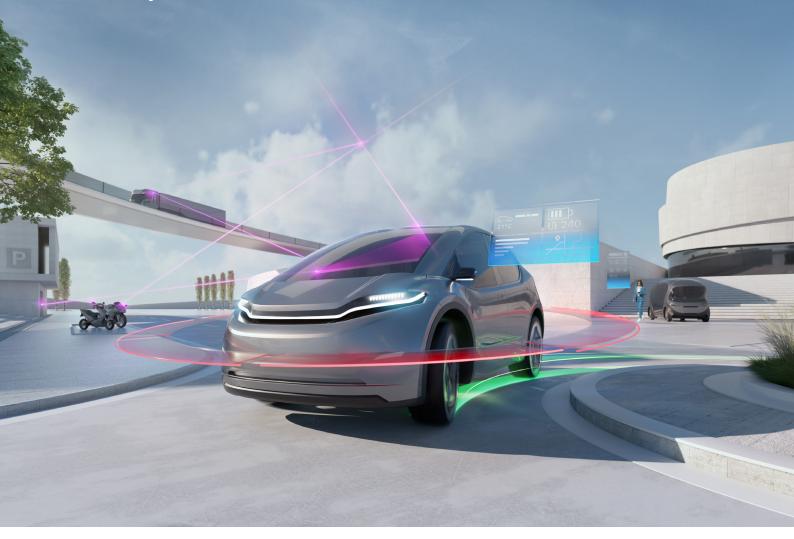
Barcelona's main railway station, Barcelona Sants Train, has excellent local, national and international links.

The city is well connected with the Spanish Highway system.

# Shaping a new era of mobility

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