VERSAILLES 2017

SIA SOCIÉTÉ DES INGÉNIEURS DE L'AUTOMOBILE

29TH EDITION

PROCEEDINGS - ABSTRACTS BOOK

2017-01

International Conference and Exhibition

SIA POWERTRAIN // VERSAILLES 2017

The low CO_2 spark ignition engine of the future and its hybridization

VERSAILLES, FRANCE
7 & 8 June 2017

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The automotive industry is entering one of the most exciting periods in its history: driving aids, high-tech embedded systems, connected cars, large-scale hybridization… in an ultra-competitive environment.

Automotive powertrains, especially gasoline, are first in line to benefit from these opportunities but also to meet future challenges: provide global solutions at reasonable costs and provide performance benefits with increasing respect for environmental issues. Implementing overall powertrain optimization strategies plus hybrid energy distribution will also confirm transmissions' key role.

In this context, the 2017 SIA Powertrain Congress in Versailles addresses "The low CO_2 gasoline engine of the future and its hybridization." The gasoline engine, hybrid or not, has a major role to play: it supports the international development of the automotive industry by meeting most global market needs, it now offers leading performance through downsizing, and its strong synergy with hybridization helps optimize benefits vs. costs.

We hope that you will enjoy the scientific programme and panel session talks, that you will be amazed by the exhibition and that you will benefit from the great networking. Thank you for making this 2017 edition - the 29th of SIA POWERTRAIN Conference - a great success! We look forward to discussing and debating with you during this 2-days event.

The Conference Chairmen
Philippe Bernet & Erwann Samson

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Technical papers

Speakers presentations

You will receive an e-mail after the conference with a link to download the PDF speakers' presentations.

Please note that some speakers can refuse to disseminate their presentations.

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Christian CHAPELLE
Head of Powertrains and Chassis
Groupe PSA

Helmut LIST
President
AVL

Bruno COVIN
Vice president, Alliance Powertrain Strategy
Renault-Nissan

Robert MEYER
Vice President Corporate Strategy/ Cooperations
BMW

Antony HARPER
Director of Engineering Research
Jaguar Land Rover

Koichi NAKATA
Project General Manager, Advanced Engine Design & Engineering Div., Powertrain company
Toyota

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PROGRAMME // 7 JUNE 2017

RICHELIEU ROOM (FLOOR 0) | CONDÉ ROOM (FLOOR +1)
LULLI ROOM (FLOOR -1) | COLBERT ROOM (FLOOR +2)

07:30 › ATTENDEES REGISTRATION - BREAKFAST IN THE EXHIBITION

OPENING PLENARY SESSION & KEYNOTE SPEECHES

08:30 › Opening address by the Conference Chairmen
Philippe BERNET | Renault & Erwann SAMSON | Groupe PSA

08:45 › Global Energy Demand from Road Transportation Vehicles - A View by 2030 by the PFA & BIPE
Catherine GIRARD - Expert Leader, Strategy on Energy and Raw Materials | Renault

09:00 › Renewable fuels: a natural way for green ICE enabling a circular economy
Dario SACCO, Head of Powertrain Research and Technology | Centro Ricerche FIAT

09:15 › The SI Engine: at the end of its development?
Frank ALTENSCHMIDT - Development Engineer | Daimler

09:30 › Consideration of Powertrain Rational Evolution through Electrification
Masaaki KUBO - Powertrain advanced engineering Alliance General Manager | Alliance Renault Nissan

09:45 › Technology Trends For Gasoline Injection Systems
Philippe BERCHER - Deputy Engineering Director FIE, Powertrain Systems | Delphi

10:00 › The transformation of powertrain with electrification
Michel FORISSIER - Product Marketing, Research and Development Director | Valeo

10:15 › Panel Discussion with the Keynote Speakers

10:30 › COFFEE BREAK

	VARIABLE COMPRESSION RATIO **Philippe BERNET | Renault & Erwann SAMSON | Groupe PSA**	CYLINDER DEACTIVATION & CAM PHASING **Geoffroy MARTIN | MOVEO & Ricardo NOVELLA | CMT**	EGR MANAGEMENT **Emmanuel JEAN | Faurecia & Daniel ROETTGER | Ford**	ENERGY MANAGEMENT & CONTROL **Franck ALTENSCHMIDT | Daimler & Yasuo MORIYOSHI | Chiba University**
11:00 ›	Combination of Variable Compression Ratio and Early Intake Valve Closing as a Basis for Future Highly Efficient Gasoline Engines U. Walther, M. Günther, M. Hunger, J. Mueller, S. Nicklitzsch, M. Sens | IAV S. Zwahr | West Saxon University of Applied Sciences of Zwickau	Potentials of Modern Camshaft Phasing Systems P. Solfrank, J. Dietz | Schaeffler	Optimisation of Low Pressure EGR to Reduce BSFC on a 3-Cylinder Gasoline Turbocharged Direct Injection Engine S. Petrovic, A. Kuske, C. Vigild, K. Grieser, J. Groeger, C. Weber | Ford	Predictive and Optimal Control for Connected Hybrid Vehicle M. Sans | Continental Automotive
11:30 ›	AVL Dual Mode VCS™ - The Modular and Cost Efficient CO_2 Reduction H. Sorger, W. Schöffmann, S. Lösch, A. Krobath, A. Fürhapter, W. Unzeitig, G. Fraidl | AVL K. Arens, Th. Weiß, M. Heller | iwis motorsysteme	Dynamic Skip Fire: The Ultimate Cylinder Deactivation Strategy M. Younkins, J. Fuerst, S. Carlson | Tula Technology J. Kirwan, E. Jacque, S. Mafrica | Delphi Automotive	LP EGR mixing under RDE extended conditions: analysis of key parameters influencing condensation I. Vidal García, I. González Tabarés, A. Sotelo Álvarez, X. Pérez Mauricio | BorgWarner	Online Optimal Control of a Plug-in Hybrid Electric Vehicle with Adaptive Battery Discharge Management T. Miro Padovani, A. Ketfi-Cherif | Renault
12:00 ›	VCR-VVA-High Expansion Ratio: A Very Effective Way to Miller-Atkinson Cycle C. Constensou, V. Collee | MCE-5 Development	Innovative Active Torsional Vibrational Damping System for Engine Cylinder Deactivation, Down Speeding & Best Comfort F. Schneider, V. Saxena, A. Moser | BorgWarner	Simultaneous Achievement of Low Emissions and High Efficiency through Dedicated Exhaust Recirculation T. Alger, T. Briggs, C. Chadwell, B. Denton, D. Robertson, C. Henry, G. Bartley | Southwest Research Institute	Fuel Economy Benefits of Electrified Powertrains with Advanced Combustion Engines: Mild to Strong HEV Applications M. Shahbakhti | Michigan Technological University A. Solouk | Ford

12:30 › LUNCH BREAK

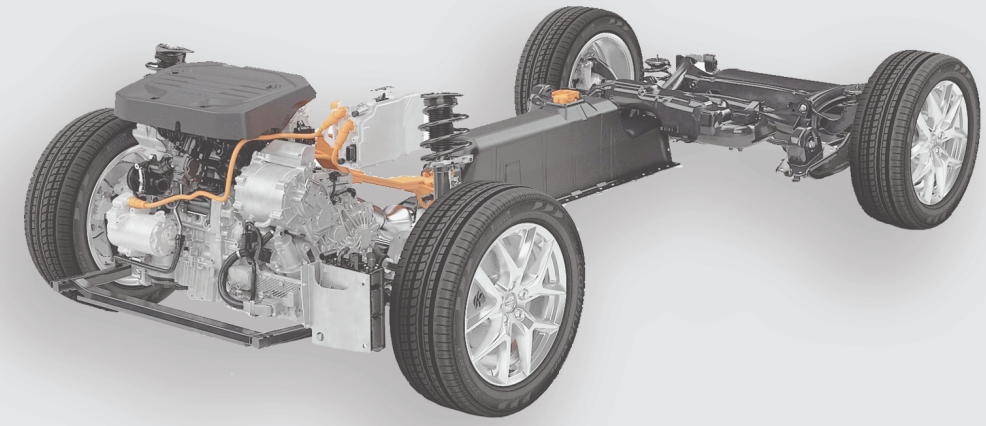
EXPERIMENTAL DATA ACQUISITION

ON-BOARD INSTRUMENTATION | TEST CAMPAIGNS | DATA PROCESSING

&

DEMO CAR / LAB CAR

PROTOTYPING | INTEGRATION | ADAPTATION



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- PRODUCTION OF SPECIFIC TEST BENCHES

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PROGRAMME // 7 JUNE 2017

RICHELIEU ROOM (FLOOR 0) | CONDÉ ROOM (FLOOR +1)
LULLI ROOM (FLOOR -1) | COLBERT ROOM (FLOOR +2)

	ADVANCED ENGINE CONCEPTS Ali MOHAMMADI | Toyota Europe & Andy WARD | Ricardo	PARTICULATE EMISSIONS MITIGATION Nadim ANDRAOS | FEV & Jean Marc BOULARD | IAV	EFFICIENT ENGINE & IGNITION Hans NUGLISCH | Continental & Marc SENS | IAV	HYBRID TRANSMISSIONS Jérôme MORTAL | Jaguar Land Rover & Alex TYLEE | DSD
14:00 ›	Investigation of Combustion Engine Concepts for the use in an Electrified Powertrain V. Bevilacqua, G. Corvaglia, M. Böger, M. Penzel, K. Fuoss, G. Grauli | Porsche	Emissions from Vehicle Exhaust of Gaseous Precursors of Atmospheric Particles K. Sartelet, Y. Kim, C. Seigneur | CEREA	Increasing Modern Spark Ignition Engine Efficiency: Optimization of intake ports dedicated to Miller cycle, high dilution and increased compression ratio J. Trost, O. Laget, M. Cordier, F. Duffour, X. Gautrot | IFPEN	Electric Drive Units for Hybrid/Electric Vehicles F. Garbo, A. Michaelides, J. Mortal | Jaguar Land Rover
14:30 ›	A Modular Base Engine Architecture for 48V Mild Hybrid Applications P Grzeschik, J. Scharf, T. Uhlmann, M. Souren, A. Balazs, S. Sonnen, A. Koch, B. Stapf, C. Nebbia | FEV	Gasoline Particulate Filters - Market and Technology Trends and their Impact on Calibration M. Görgen, S. Herrmann, M. Hendrikx, M.Nijs, J. Scharf | FEV S. Sterlepper l Institute for Combustion Engines, RWTH Aachen University	Engine and Aftertreatment Strategies for Lean Gasoline Engines to Meet Real Driving Emissions Legislation E.Koehler, R. Osborne, M. Keenan, T. Downes | Ricardo	2L/100km Eolab to global PHEV-HEV project solution N. Fremau, A. Ketfi, A. Vignon | Renault
15:00 ›	200kW/l: Modular Engine Family Stretch for Highest Commonality and Performance M. Neubauer, P. Kapus, D. Hilbert, W. Schöffmann, K. Prevedel, C. Wolf | AVL	Performance of advanced Gasoline Particulate Filter Material for Real Driving Conditions D. Waters, D.Thier, Y. Ito, M. Yamashita, C. D. Vogt, K. Kato, T. Shimoda, T. Aoki, M. Makino | NGK	Homogenous Lean Burn Combustion for Gasoline Engines: A Comparison between High Energy Spark Ignition and High Frequency Corona Ignition Systems A. Paa, G. Rottenkolber, M. Wörner, C. Spang, T. Friedrich | University of Applied Sciences Esslingen	PREX 3: Next generation of DHT with full on demand Actuation P. Janssen, Y. Zhang | FEV
15:30 ›	Extremely Downsized Gasoline Demonstrator Vehicle M. Bassett, J. Hall, T. Cains | MAHLE Powertrain R. Wall | Aeristech		A Novel Low-Temperature Plasma Ignition System Applied to a GHP Engine O. Matsumoto | Sustainable Engine Research Center T. Kuboyama, Y. Moriyoshi | Chiba University T. Nakamura, Y. Kinuzawa | Toyota K. Tanoue | Ohita University	The Future for the Connected Drivetrain Systems S. Shepherd | Drive System Design

16:00 › COFFEE BREAK

PANEL SESSION
Moderator: Laurent Meillaud, Automotive Journalist

16:30 ›
Christian CHAPELLE - Head of Powertrains and Chassis | Groupe PSA
Bruno COVIN - Vice president, Alliance Powertrain Strategy | Renault-Nissan
Antony HARPER - Director of Engineering Research | Jaguar Land Rover
Helmut LIST - President | AVL
Robert MEYER - Vice President Corporate Strategy/Cooperations | BMW
Koichi NAKATA - Project General Manager, Advanced Engine Design & Engineering Div., Powertrain company | Toyota

CLOSING ADDRESS

18:30 › Jacques Graizon - SIA Chairman & Prof. Helmut LIST for the 10 years of AVL LMM in AVL Group

18:45 › COCKTAIL IN THE EXHIBITION

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PROGRAMME // 8 JUNE 2017

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08:00 › WELCOME COFFEE IN THE EXHIBITION

	MICRO & MILD HYBRIDS Pierre Yves GEELS | AVL & Sebastien POTTEAU | EMC-MTT	FUEL INJECTION Rémy SCHMITT | BOSCH & Philippe SOUHAITE | Groupe PSA	BOOSTING TECHNOLOGIES Gunther FRAIDL | AVL & Gaétan MONNIER | IFPEN	VIRTUAL ENGINE DESIGN Kyoungdoug MIN | Seoul National University & Jean Sebastien ROUX | Honeywell
08:30 ›	Next Gen 48 Volt Hybrids by New Architectures and Connectivity F. Graf, S. Lauer | Continental Automotive	Port Fuel Injection: Combustion Efficiency Improvement & PN Reduction C. Genin | Continental Automotive	VNT™ Turbocharger for Gasoline "Miller" Engines N. Bontemps, J-S. Roux, D. Jeckel | Honeywell A. Schloßhauer | Institute for Combustion Engines, RWTH Aachen University D. Lückmann, R. Aymanns | FEV	Fully virtual Development of a EU7 compliant Gasoline Combustion System, using an efficient OD/1D/3D based Development Approach N. Genty, N. Iannucci, A. Raulot, A. Tellier | Groupe PSA L. Boettcher, E. T. Faulseit, C. Frottier, M. Riess, M. Sens | IAV
09:00 ›	12+12V and 12+48V Hybridization: A Modular Approach and Transmission Impacts O. Coppin | Valeo	Realising Mixture Formation Benefits with a Dual Port Fuel Injection (PFI) System A. Kevric, P. Richardson, H. Kaneta, M. Iwamuro, T. Mizobuchi, H. Shibata | DENSO	AC Cooler for Electrical Supercharger Compressed Air E. Droulez | Valeo	Numerical Study on the Particle Number Emission of Different Charge Motion and Injection Strategies in a DI-SI Engine at High Engine Load D. Notheis, A. Velji, T. Koch, M. Bertsch | KIT
09:30 ›	The Hybridised Layshaft Transmission B. Chiswick, M. Lorenzo, M. Hole | Drive System Design	Near-Field Velocity Measurement of a Multihole GDI Injector Y. Cao, J-B. Blaisot, S. Idahcen, C. Lacour | CORIA	Enhanced Gasoline Engine Performance with Water Injection J. Op de Beeck, L. Duez | Plastic Omnium	Simulation of Fast Transients of GDI Engines using Large-Eddy Simulation B. Roux, J. Bohbot, G. Pilla, M. Cordier, A. Poubeau, S. Jay | IFPEN

10:00 › COFFEE BREAK & STUDENTS POSTER SESSION !

	REAL DRIVING EMISSIONS CHALLENGES Jean Christophe LAMODIERE | AVL & Philippe BERCHER | Delphi	KNOCK MITIGATION Alain FOCH | Renault & Jean Jacques MILESI | Dynergia	GASOLINE AUTO-IGNITION CONCEPTS Virginie MOREL | ARAMCO & Pierre DURET | IFP School	ADVANCED TRANSMISSIONS Omar HADDED | DSD & Pascal HERVET | Valeo
11:00 ›	Increasing RDE Robustness using Methods of Statistical Learning F. Springer, M. Hegmann, M. Knaak, D. Reppel | IAV	The Effect of Thermal Boundary Conditions on Knock Characteristics in a Single Cylinder Spark Ignited Engine S. Cho, C. Song, K. Min | Seoul National University M. Kim | Myeongji University K-P. Ha, B. Kim, I. Suh | Hyundai Motor Group	Transition between SI and CAI Operating Modes in an Automotive, Low Cost, Gasoline, 2-Stroke Engine J. Benajes, J.J. Lopez, J. Valero-Marco | CMT-Motores Térmicos G. Coma, C. Libert | Renault	E-Clutch as an Enabler for the Hybridisation of Manual Transmissions L. Muller, M. Kneißler, T. Eckenfels | Schaeffler


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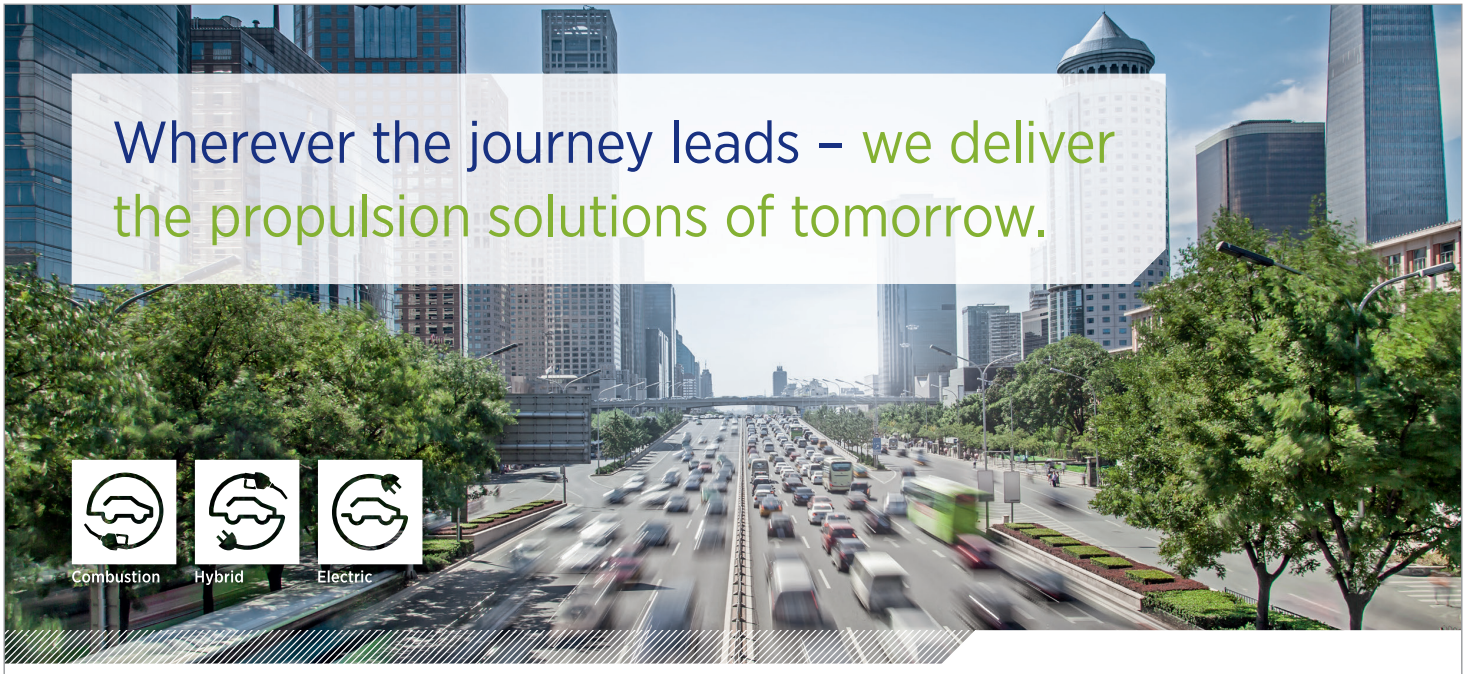
	RICHELIEU ROOM (FLOOR 0)	LULLI ROOM (FLOOR -1)	CONDÉ ROOM (FLOOR +1)	COLBERT ROOM (FLOOR +2)
11:30	New modelling process to estimate real-world emissions P. Barker | RICARDO	Knock Investigation through Optical Diagnostics in a Turbocharged GDI Engine using Fuels with Different Octane Number P. Sementa, F. Catapano, S. Di Iorio | CNR ISTITUTO MOTORI	Injection Strategy for GCI Engine at Low Load P. M. Pinazzi, F. Foucher | University of Orléans	Freewheeling Concept: Hybrid Benefits for Manual Transmission at Low Cost G. Bartley, S. Fraser | Drive System Design
12:00	RDE Testing for the Future. Digital Transformation and Realtime-Simulation of Real Driving Emissions and Fuel Consumption C. Poetsch, F. Pfister, J. C. Wurzenberger, F. Le Rhun | AVL	Knock Mitigation Techniques for Highly Boosted Downsized SI Engines V. Doria, A. Stroppiana, M. Ferrera | Centro Ricerche FIAT- EMEA FCA Powertrain S. Luisi | EMEA FCA Powertrain F. Millo, M. Mirzaeian, D. Porcu | Politecnico di Torino	Advancement of GDCI Engine Technology for US 2025 CAFE and Tier3 Emissions M. Sellnau, M. Foster, W. Moore, K. Hoyer, J. Sinnamon, B. Klemm | Delphi	Novel Actuation and Control for a Multi-Speed Powershifting Transmission for Electrified Vehicles A. C.O. Smith, R. Taylor, R. J. Barnes | Vocis
12:30	vRDE - A Virtual Extension of the RDE Tool Chain H. Mezher, M. Wenig, C. Armbruster | Gamma Technologies	Octane-on-Demand as an Enabler for Lowering CO_2 Footprint of Mobility: From Engine Tests to Vehicle Demonstration and Life Cycle Analysis V. Morel, M. Bedon, V. Gordillo Zavaleta | Aramco L. de Francqueville, G.Bourhis, F. Vidal-Naquet, S. Charmasson, S. Dosda | IFPEN	Progress in Light-Duty OPGCI Engine Design and Testing R. Hanson, F. Redon, S. Strauss, A. Salvi | Achates Power	TRANSCEND - Ultra-Wide Ratio Hybrid DCT S. Nesbitt | Jaguar Land Rover
13:00	POSTER AWARD CEREMONY			
13:15	LUNCH BREAK			
	NEW ENGINES INTRODUCTION Federico MILLO | Politecnico di Torino & Amin VELJI | Karlsruhe Institute of Technology			
14:30	The New Renault 1.0 MPI Engine Ph. Grataloup, A. Jarasse, O. Chambert, M. Cuyeu, D. Dragne, S. Pruski, F. Alizon, B. Gourdel, J.P. Le Lagadec, S. Bauchet | Renault			
15:00	PSA Group's Proposals to Improve the Engine of the Year 2015 & 2016 F. Gouzonnat, S. Dessarthe, N. Goursot, P. Souhaite, S. Izelfanane, S. Le Coq | Groupe PSA			
15:30	Ingenium SI engine - Control strategies to deliver a world-class engine N. Brockley, J. Saunders, M. McAllister, F. Borean | Jaguar Land Rover			
	CLOSING SESSION			
16:00	Gasoline Powertrains: Fascinating Challenges for Mobility and Environment Patrice MAREZ - Powertrain System Senior Expert - Vice President | Groupe PSA			
16:30	Conference synthesis & Conclusion by the Conference Chairmen Philippe BERNET | Renault Erwann SAMSON | Groupe PSA			
16:45	END OF CONFERENCE			



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SIA POWERTRAIN - VERSAILLES 2017

7 and 8 June 2017, Versailles

- 40 presentations // 450 participants
- Exhibition and sponsoring opportunities

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4 et 5 Octobre 2017, Mulhouse

- 25 présentations // 200 participants
- Possibilité d'exposition et de sponsoring

BIG DATA : APPLICATIONS ET CONDITIONS DE RÉUSSITE POUR L'AUTOMOBILE

30 Novembre 2017, Palaiseau

- 12 présentations // 100 participants
- Possibilité d'exposition et de sponsoring

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16 and 17 May 2018, Rouen

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- Exhibition and sponsoring opportunities

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