

# WCX

**APRIL 9-11  
2019  
DETROIT**

## EVENT GUIDE

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# THANK YOU TO THE FOLLOWING COMPANIES FOR THEIR GENEROUS SUPPORT.



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## WCX LEADERSHIP TEAM

**Ray Corbin**  
**Taylor Frey**  
AVL

**Doug Patton**  
DENSO International America, Inc.

**Joe Guertin**  
FCA US LLC

**Stephen Kraemer**  
FEV

**Donna Bell**  
**Mazen Hammoud**  
Ford Motor Company

**Mark A. Johnson**  
General Motors

**Jim Keller**  
Honda R&D America, Inc.

**Roy Goudy**  
Nissan

**Steve Horaney**  
Original Equipment Suppliers Association

**George Cook**  
Toyota Motor Company

**Jim Forlenza**  
SAE International  
Director Engineering Events

**Gretchen Stokes**  
SAE International  
Conference Director

## EMERGENCY PROCEDURES DURING WCX

During the event attendees are to follow the established emergency guidelines of the facility where the emergency occurs. **Based on the location of the incident, report emergencies to the nearest venue representative and/or security personnel if available, or report to the SAE registration area.**

Should a catastrophic event occur, attendees should follow the safety and security instructions issued by the facility at the time of the event. This includes listening for instructions provided through the public address system and following posted evacuation routes if required.

In the event of an emergency or a major disruption to the schedule of events at the event, attendees and exhibitors may call this number to receive further information about the resumption of this event. Updates will also be provided via the SAE website at [sae.org](http://sae.org).

## SAE EMERGENCY HOTLINE

+1.800.581.9295

### Customer Service

+1.877.606.7323

## FIRST AID SERVICES

### C1

Tuesday, April 9  
7:00 a.m.–5:00 p.m.

Wednesday, April 10  
7:00 a.m.–5:00 p.m.

Thursday, April 11  
7:00 a.m.–8:00 p.m.

## SECURITY / LOST AND FOUND

### A-3, Front Hall A

Security is of continued importance. Your patience and understanding is appreciated as we do everything possible to secure the event. Please report any emergencies to Cobo security and staff or SAE personnel.

### Bag Checks

Your safety during WCX is of the highest importance. To maintain a safe atmosphere, WCX official security officers will be conducting random bag checks throughout the Event.

## CAMERA POLICY

Attendees are permitted to bring camera equipment onto the show floor. Exhibitors retain the right to restrict photography of their products or displays and such decisions are within the discretion of the exhibitor and are not controlled by SAE International.

No one under the age of 18 is permitted at the event or on exhibition floor unless part of an SAE/AWIM sponsored school tour planned and pre-arranged by SAE.

No photographs or recording of remarks, discussion or presentations may be made without permission.

## Consent to use of images

Please note that photographs and video taken by or on behalf of SAE International of event activities and attendees shall be the property of SAE International. By registering for an SAE International event, you consent to the use by SAE International of any photograph or video in which you appear, including for promotional purposes, in print, digital, or other format, without notice or compensation to you.



**BOOTH #1419**

## **LEARNING LAB SESSIONS**

**Session:** Functional Safety Influencing  
Autonomous Vehicle Engineering  
Tuesday, 10:30 AM

**Session:** Innovations in Risk Management  
Connecting Global Mobility Engineering  
Wednesday, 1:30 PM

From Requirement Management to DFMEA, PFMEA, Control Plans and other areas of Quality Risk Management, PLATO solutions integrate and link all risk information together taking your company **Beyond Compliance** to a new level of risk management and quality control required to meet accelerating automotive technology.

**Visit PLATO at booth #1419.**

PLATO North America

Dearborn, MI  
[www.plato-inc.com](http://www.plato-inc.com)

313-486-4865

# EVENT INFORMATION

## Registration Hours

### Main Concourse, Cobo

Monday, April 8  
11:00 a.m.–5:00 p.m.  
Tuesday, April 9  
7:00 a.m.–5:00 p.m.  
Wednesday, April 10  
7:00 a.m.–5:00 p.m.  
Thursday, April 11  
7:30 a.m.–3:00 p.m.

## Exhibit Hours

### Hall C/D

Tuesday, April 9  
8:45 a.m.–5:30 p.m.  
Wednesday, April 10  
8:45 a.m.–5:30 p.m.  
Thursday, April 11  
8:45 a.m.–4:00 p.m.

## Networking Receptions

### Exhibit Hall C

Tuesday, April 9  
4:30–5:30 p.m.  
Wednesday, April 10  
4:30–5:30 p.m.

## WCX Gala

### Cobo Atrium

Thursday, April 11  
5:00–7:00 p.m.

## SAE Member Lounge

### Exhibit Hall C

Tuesday, April 9  
8:45 a.m.–5:30 p.m.  
Wednesday, April 10  
8:45 a.m.–5:30 p.m.  
Thursday, April 11  
8:45 a.m.–2:00 p.m.

## SAE Operations Office

### Pre-function area of Exhibit Hall C Entrance

Tuesday, April 9  
8:00 a.m.–4:00 p.m.  
Wednesday, April 10  
8:00 a.m.–4:00 p.m.  
Thursday, April 11  
8:45 a.m.–4:00 p.m.

## SAE Sales Office

### Exhibit, Booth 2327

Tuesday, April 9  
8:45 a.m.–5:30 p.m.  
Wednesday, April 10  
8:45 a.m.–5:30 p.m.  
Thursday, April 11  
9:00 a.m.–4:00 p.m.

## Media Center

### Exhibit, Hall D

Tuesday, April 9  
8:00 a.m.–6:00 p.m.  
Wednesday, April 10  
8:00 a.m.–6:00 p.m.  
Thursday, April 11  
8:00 a.m.–4:00 p.m.

## Participant Lounge

### Room 330 A/B

Tuesday, April 9  
8:30 a.m.–5:30 p.m.  
Wednesday, April 10  
8:30 a.m.–5:30 p.m.  
Thursday, April 11  
7:30 a.m.–4:30 p.m.

## Coat/Luggage Check

### Hall B Lobby/Level 2

Tuesday, April 9  
7:00 a.m.–7:00 p.m.  
Wednesday, April 10  
7:00 a.m.–6:30 p.m.  
Thursday, April 11  
7:00 a.m.–8:00 p.m.

Tuesday Networking  
Reception Sponsor



Wednesday Networking  
Reception Sponsor

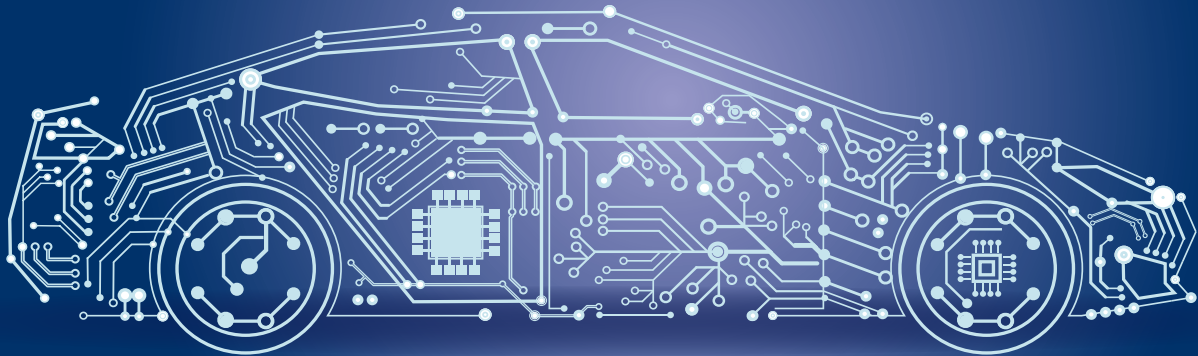
IBM Watson IoT

## ACCORDING TO RESEARCH:

- Electronic systems will account for **50%** of car costs by **2030**. (*Freescale/NXP*)
- The automotive electronics market will reach **~\$280 billion** by the year **2020**. (*Grandview Research*)

WITH THE INCREASED DEMAND FOR SAFETY, CONNECTIVITY AND INFOTAINMENT,

## IPC HAS THE AUTOMOTIVE INDUSTRY COVERED ...



**... BY DRIVING INTELLIGENT SOLUTIONS AND STANDARDS**

### Top IPC Standards for the Automotive Market

- ✓ IPC-6012DA-WAM1, *Automotive Applications Addendum to IPC-6012D, Qualification and Performance Specification for Rigid Printed Boards*
- ✓ Automotive addendums under development:
  - IPC-A-610, *Acceptability of Electronic Assemblies*
  - IPC J-STD-001, *Requirements for Soldered Electrical and Electronic Assemblies*
  - IPC/WHMA-A-620, *Requirements and Acceptance for Cable and Wire Harness Assemblies*
- ✓ Documents to support
  - Thermal Cycles
  - Test Methods
  - Solder Fatigue
  - Press Fit



Visit **IPC at Booth 1642!** For more information on IPC and IPC's standards development activities, visit [www.ipc.org/automotive](http://www.ipc.org/automotive).

# EVENT INFORMATION

## Concessions Exhibit, Back of Hall D

Tuesday, April 9  
10:00 a.m.–2:00 p.m.  
Wednesday, April 10  
10:00 a.m.–2:00 p.m.  
Thursday, April 11  
10:00 a.m.–2:00 p.m.

## Security/Lost and Found A3 - Front Hall A

## Hotel Shuttle Schedule Cobo Atrium, Atwater Drive

The shuttle will run a continuous loop at ten-minute intervals from the Motor Lobby of the Marriott Renaissance Center to Cobo Center.

Tuesday, April 9  
7:00 a.m.–8:30 p.m.  
Wednesday, April 10  
7:00 a.m.–6:30 p.m.  
Thursday, April 11  
6:30 a.m.–8:00 p.m.

## Wi-Fi Access at Cobo Center

Cobo Center has free, ultra-high speed Wi-Fi service available throughout the facility. Search for “cobofree” to access the Wi-Fi. Accept the terms and conditions.

## WCX Ask Alexa Pre-function of Exhibit Hall C Entrance

For additional details see page 14.

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# GET THE LATEST EVENT INFO

Download the WCX™ mobile app

- **LEARN** event features, programs and sessions
- **SCHEDULE** your time and don't miss out
- **CONNECT** with speakers, exhibitors and attendees

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or visit the Apple App Store or Google Play and search for the SAE International Events app to download.

Download on the App Store GET IT ON Google Play

P183375





# AUTOMOTIVE INNOVATION

## Call for Papers

### The first top English academic journal of China's Automotive Industry

- Global distribution
- Reflecting the top-level research and technical advance of automotive engineering
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### Reasons for Submission

- Opportunities to spread your research or opinions all over the world
- Opportunities to discuss the research with peers
- Opportunities to lead the development directions of technologies
- Publishing the paper in an international journal free of charge

### Topics

Covering the principles, methodologies, designs, theoretical background, and cutting-edge technologies in connection with vehicles, the main topics include but are not limited to :

- Energy-saving and green vehicles
- Electric vehicles
- Intelligent and connected vehicles
- Automotive safety technologies
- Automotive manufacturing technologies
- Automotive industry system engineering

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### Contacts

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E-mail: [jai-editor@sae-china.org](mailto:jai-editor@sae-china.org)

**Global Submission and Free download online**

[www.ChinaSAEjournal.com.cn](http://www.ChinaSAEjournal.com.cn) [www.springer.com/42154](http://www.springer.com/42154)

# SPECIAL EVENTS

## 11th Annual Global Automotive & Mobility Innovation Challenge (GAMIC™)



### Learning Lab, Hall C

Tuesday, April 9  
Noon–5:00 p.m.

GAMIC will again have its finals at WCX on April 9 at COBO Center in Detroit. Twelve finalists will be judged by OEM and Tier 1 executives as well as seasoned entrepreneurial experts. The GAMIC keynote address will be given by Ken Washington, Chief Technical Officer of Ford Motor Company. The 12 competitors will be shooting for more than \$350,000 in prizes (mostly in-kind prizes to speed their North American business time-to-market). They will compete in four categories:

- Energy and Advanced Mobility
- Sensors, Actuators, Manufacturing, and Materials
- New Business Models and Cybersecurity
- New, High-Value Technology Innovations

## Career Corner

Front of Exhibit Hall C

Tuesday, April 9  
8:45 a.m.–5:30 p.m.

Wednesday, April 10  
8:45 a.m.–5:30 p.m.

**“If you want a glimpse of how the future is being engineered, there is no better book than Burns’ *Autonomy*.”**

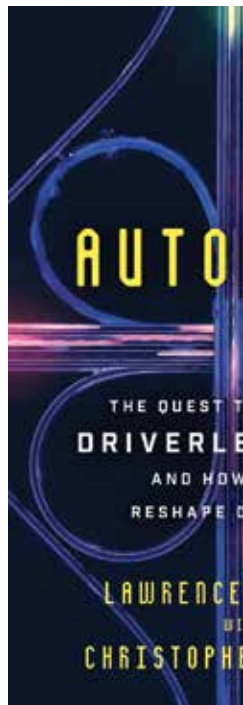
**—JEFFREY D. SACHS,**

University Professor at Columbia University and  
Senior UN Advisor on Sustainable Development

**“An authoritative preview of the autonomous age.”**

**—JOHN CASESA,**

Former Group Vice President,  
Global Strategy, Ford Motor Company



# SPECIAL EVENTS

## Technology Pavilions

Exhibit Hall C

Tuesday, April 9 and Wednesday, April 10  
8:45 a.m.–5:30 p.m.

Thursday, April 11  
8:45 a.m.–4:00 p.m.

### Connect2Car Pavilion

Explore the products and technology shaping the future of autonomous vehicles, connectivity and cybersecurity.

### Lightweighting - Materials - Efficiency Pavilion

Investigate the latest in material development and application and research and development organizations.

### Korean Pavilion

Visit this dedicated area where 16 exhibitors—from startups to well-established mobility players—will showcase the latest technology and innovations from South Korea.

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**Micromobility Pavilion featuring Spin**  
Hall D (enter through Hall C)

Sponsored by

**SPIN**

Tuesday, April 9 and Wednesday, April 10  
8:45 a.m.–5:30 p.m.

Thursday, April 11  
8:45 a.m.–4:00 p.m.

Spin is a first- and last-mile micromobility company providing shared electric scooters in almost 30 cities and college campuses nationwide. All kinds of people use Spin to get around in a sustainable way, whether touring their city, getting to and from work, or heading back from a weekend errand. As a company we are committed to ensuring safety both in our operational practices and in our hardware and technology. We're excited to be at SAE educating people on the best ways to ride scooters, with the goal of cutting down on car rides for short trips and giving people another enjoyable, efficient way to get around.

### Start-up Pavilion

Discover emerging innovations in this new area dedicated to start-ups. See page 59 for additional details.



**“The drama, ambition and genius characterizing the race to develop self-driving cars zoom into sharper focus in *Autonomy*.”**

**—USA TODAY**

**“Anyone interested in learning about how we got to where we are today should definitely grab a copy.”**

**—FORBES**

**AVAILABLE NOW IN HARDCOVER, EBOOK, AND DIGITAL AUDIO**

# SPECIAL EVENTS

## SAE Annual Business Meeting and Service Recognitions

Meeting Room 260

Tuesday April 9  
3:30–4:30 p.m.



During the meeting, SAE President Paul Mascarenas will announce the 2019 Board of Directors, discuss his presidential activities, and present the following SAE International Service Recognitions:

- Excellence in Engineering Education Award
- Forest R. McFarland Award
- Lloyd L. Withrow Distinguished Speaker Award
- SAE Emeritus Recognition
- SAE Outstanding Faculty Advisors Program

Additionally, David L. Schutt, SAE Chief Executive Officer, will share a 2018 year-end report.

## SAE International Awards Ceremony with Presenting Sponsor J.D. Power

Sponsored by

**J.D. POWER**

Meeting Room 260

Tuesday, April 9  
5:30–7:30 p.m.

See page 26 for details.



## WOMEN'S BREAKFAST AND ROUNDTABLE DISCUSSION



### Thursday, April 11

The Exchange, Hall C, COBO Center

**7:30 a.m. – BREAKFAST**

**8:00-9:15 a.m. – ROUNDTABLE**  
**New Mobility: Women Leading Disruptive Innovation**

The global landscape of the automotive industry is changing rapidly, and leadership in automotive is also changing dramatically. Hear thought leaders discuss challenges and opportunities they face in making the cultural transformation necessary for organizations to successfully handle complexity, uncertainty and volatility in the industry today.

Moderator: Denise Gray, LG Chem Michigan Inc. Tech Center

Panelists: Alisyn Malek, May Mobility Inc.

Greta Cutulenco, Acerta Analytics Solutions

Stacey Miller, Toyota Motor North America Digital Transformation & Mobility Group

Minyang Jiang (MJ), GoRide Health LLC



**Admission to breakfast and panel presentation is included with WCX registration.**

**REGISTER for the Expo Only Three-Day pass to attend this and other WCX events: [sae.org/wcx](http://sae.org/wcx)**

Sponsored by: **TOYOTA**

P19343762

# SPECIAL EVENTS

## SAE Mobility History Committee

### The History of the Future: Powering the Cars of Tomorrow

From steam to fuel cells our dreams about what would power the future of mobility have changed substantially over the years. Take a journey through this history with the SAE Mobility History Committee's vehicle display and presentation featuring over a century of innovation history.

#### Mobility History

#### Booth #2301 – Exhibit Hall C

Vehicles include:

- Stanley Steamer 3
- Detroit Electric
- Model T Ford
- Chrysler Turbine
- Toyota Prius
- Tesla Model S
- and more

This year's Mobility History presentation will also feature talks in the Learning Lab on:

- McLaren Engines
- Ford Specials of the 50's & 60's
- Vehicle Designer Alex Tremulis
- Powering the Cars of the Future

Presentations will be held 10:00 a.m.-12:00 p.m. on Thursday, April 11 in the Learning Lab, Exhibit Hall C.

For more information on the Learning Lab presentations see page 23.

# TORAY MATERIALS

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**TORAYCON® PBT** for weight reduction and high-temperature applications

**TORAYCA®** high-end Class A CFRP for panels; structural applications for BIW sills, pillars and reinforcements  
**ZOLTEK™ PX35** for structural, SMC and Thermoplastic CFRP applications



**Teflon™ PTFE** fiber for stabilizer bar bushing

**TORAYPEF®** and **TORASOFT™** polyolefin foams for interior trim

**Ultrasuede®** non-woven ultra-fine fiber suede for seating, headliner and trim

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# SPECIAL EVENTS

## SAE Autonomous Demo Days

Exhibit, Hall B (enter through Hall C)

Tuesday, April 9

9:30 a.m.–4:00 p.m.

Wednesday, April 10

9:30 a.m.–4:00 p.m.

Thursday, April 11

9:30 a.m.–3:00 p.m.

In partnership with



SAE Autonomous Demo Days is a public facing event created to give people hands on experience with automated vehicles and reinforce engineering advancements designed to enable safety and show the differences between ADAS and automated functions.

SAE, in partnership with PAVE [Partners for Automated Vehicle Education] and Dataspeed, Inc., will give WCX attendees a chance to test ride the future.

## SAE J3300 Driving Skills Certification Ride and Drive

Exhibit, Hall B (enter through Hall C)

Tuesday, April 9

8:45 a.m.–4:30 p.m.

Wednesday, April 10

8:45 a.m.–4:30 p.m.

Thursday, April 11

12:00–3:00 p.m.

Sponsored by



The Driving Skills Standards Committee (J3300) is establishing consistent, globally-recognizable driving skill certification standards. The Committee has over 60 participants representing 30 OEMs, suppliers, other automotive-related organizations.

This completely new, global, multi-level driving skill certification process spans the spectrum from very basic to extremely advanced levels, as well as for specialty applications such as trailer towing, winter driving, and operators of automated vehicles.

The standards can apply to basically anyone who drives or operates a vehicle, whether it be for test driving on proving grounds, operating fleet vehicles on public roads, or teen drivers.

Attendees at the WCX 2019 will be able to see and participate in two of the driving certification tests. One course will be set up for DL1 certification which focuses on basic driving and maneuvering skills. The other course will be set up for TT1 certification which focuses on basic trailer towing of small to mid-size trailers.



## 13<sup>TH</sup> ANNUAL AWIM INTERNATIONAL JETTOY COMPETITION

APRIL 10, 2019

Sponsored by



Hall A

9:00 a.m. – 2:00 p.m.

500+ Elementary age students (in Engineering Design Teams of 4) compete in distance, accuracy, and timed events. SAE International will host this competition through the gracious sponsorship of Adient, KIA and ZF.

P19348745

# SPECIAL EVENTS

## WCX Connected Vehicle Challenge Face-Off

Learning Lab, Exhibit Hall C

Thursday, April 11

12:00–3:00 p.m.

Sponsored by



Organized by the SAE Vehicle Internet of Things Program Committee.

This year's entries in the Connected Vehicle Challenge were more technology driven than ever. Out of the box thinking by our universities and start-ups set the tone for innovation. Come see the finalists compete in our own SAE "Shark Tank" with Celebrity Judges.

### Competition Finalists

*CPD - Child Presence Detection*

Konstantin Berezin, CAARESYSs

*Connected Two Wheelers, Safe Two Wheelers*

Rutooj Deshpande, Team: GoVidYouth Mobility

*Embry-Riddle Aeronautical University Project Proposal*

Andrew Ferree, Charles Reinholtz, Embry-Riddle Aeronautical University

*Duality Proposal*

Apurva Shah, Duality Robotics

*Digi Plates*

Ali Simeto, Ulozi motors

*HazARD: Hazard Autonomous Reporting and Detection*

Sam Stone and Layne Gustafson, Binghamton University

*Connected Vehicle Accident Predictor for Pedestrian Safety*

Lisheng Yang, Virginia Tech

### Celebrity Judges

Mitch Dornich, Vice President of Product at Sirius XM Connected Vehicle

Michael G. Carpenter, Vehicle Performance Owner – Active Safety, General Motors Company

Oliver Spies, Director Product Strategy, ZF

Joe Barkai, Consultant, Speaker, Author and Blogger



MICHIGAN SCIENCE CENTER  
APRIL 29, 2019

LEARN : CONNECT : SHARE

at Michigan's Largest Internet of Things Event!

IoT Tech Connect has been developed as an unbiased gathering where companies, institutions, associations, and professionals can network, show off their products and services, and become educated on Internet of Things, (IoT) and Autonomous Vehicles. Dozens of sponsors and exhibitors expected. 500+ attendees will be coming to hear from industry thought leaders during our keynotes and breakout sessions.

### Keynote Speaker



**Larry Burns, Former GM Vice President of R&D**

Burns, who just published his latest book, *Autonomy: The Quest to Build The Driverless Car – And How It Will Reshape Our World*, will discuss how electric-powered driverless vehicles used in transportation services will radically transform the automotive industry.

### CAV/Smart Cities Speakers



**Barry Einsic**  
CAVita



**Michael Noblet**  
President & CEO at American Center for Mobility



**Carrie Morton**  
MCity



**Daron Gifford**  
Partner,  
Plante Moran



**Kirk Steudle**  
Econolite



**Jeremy McClain**  
Continental Automotive Systems, Inc

### Track Sessions

- CAV/Smart Cities
- Cybersecurity
- XR, AR
- IoT 101
- Mobility
- Electric Vehicles
- Technology-as-a-Service
- Entrepreneur Support

**Tickets \$125**

Get tickets now:

[iottechconnect.com/events/iot-tech-connect-2019](http://iottechconnect.com/events/iot-tech-connect-2019)

# SPECIAL EVENTS

## Women's Program

### New Mobility: Women Leading Disruptive Innovation Panel

Sponsored by **TOYOTA**

The Exchange, Exhibit Hall C

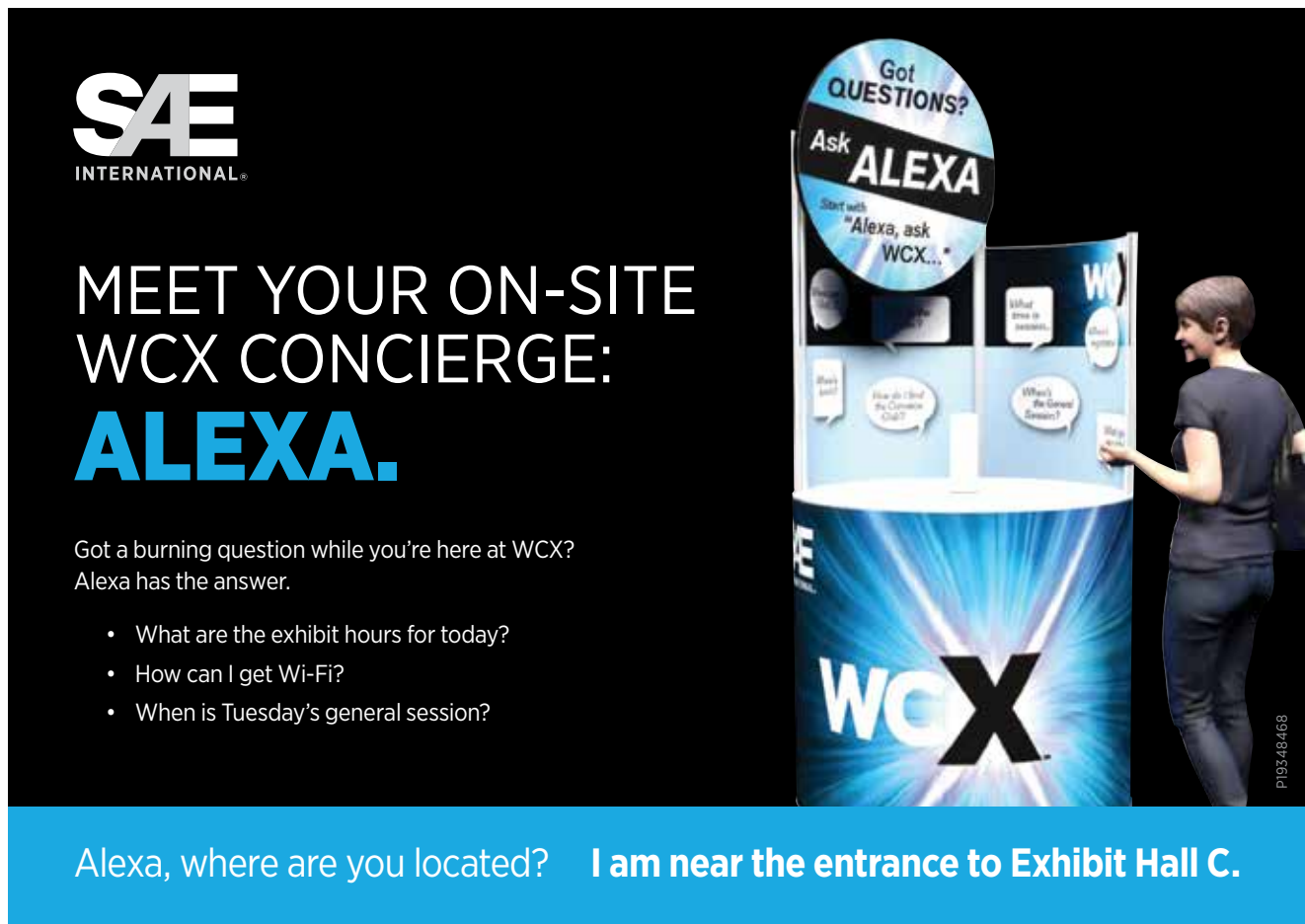
Thursday, April 11

Breakfast: 7:30–8:00 a.m.

Panel: 8:00–9:15 a.m.

The breakfast panel is open to all WCX registrants.

See ad on page 10.



**SAE**  
INTERNATIONAL®

## MEET YOUR ON-SITE WCX CONCIERGE: **ALEXA.**

Got a burning question while you're here at WCX?  
Alexa has the answer.

- What are the exhibit hours for today?
- How can I get Wi-Fi?
- When is Tuesday's general session?

Got QUESTIONS?  
Ask **ALEXA**  
Start with "Alexa, ask WCX..."

What time is session?  
What's the General Session?  
How do I find the Convention Club?  
What time is the event?  
What time is the event?

WCX

P19348468

Alexa, where are you located? I am near the entrance to Exhibit Hall C.



# SPECIAL EVENTS

## WCX Gala

Atrium, Cobo Center

Thursday, April 11

5:00–7:00 p.m.

We have reimagined the Annual Banquet and you won't want to miss out on this special event. Join us for an evening of fun and celebration as the industry gathers to recognize industry leaders and celebrate WCX!

The evening will provide the opportunity to gather in a relaxed environment designed to maximize networking opportunities. The gala dinner will feature action food stations and lively entertainment, as guests stroll through the atrium, catch up with colleagues, meet new industry players and recognize industry leaders who will be part of the 2019 Honored Guests.



**Jack Hammons**

Illusionist

America's Got Talent Contestant



### WCX GALA TICKETS

Tickets can be purchased onsite in the Registration Area

Single ticket      \$75

## SAE Boards and Committees

Meeting list available via WCX Mobile App

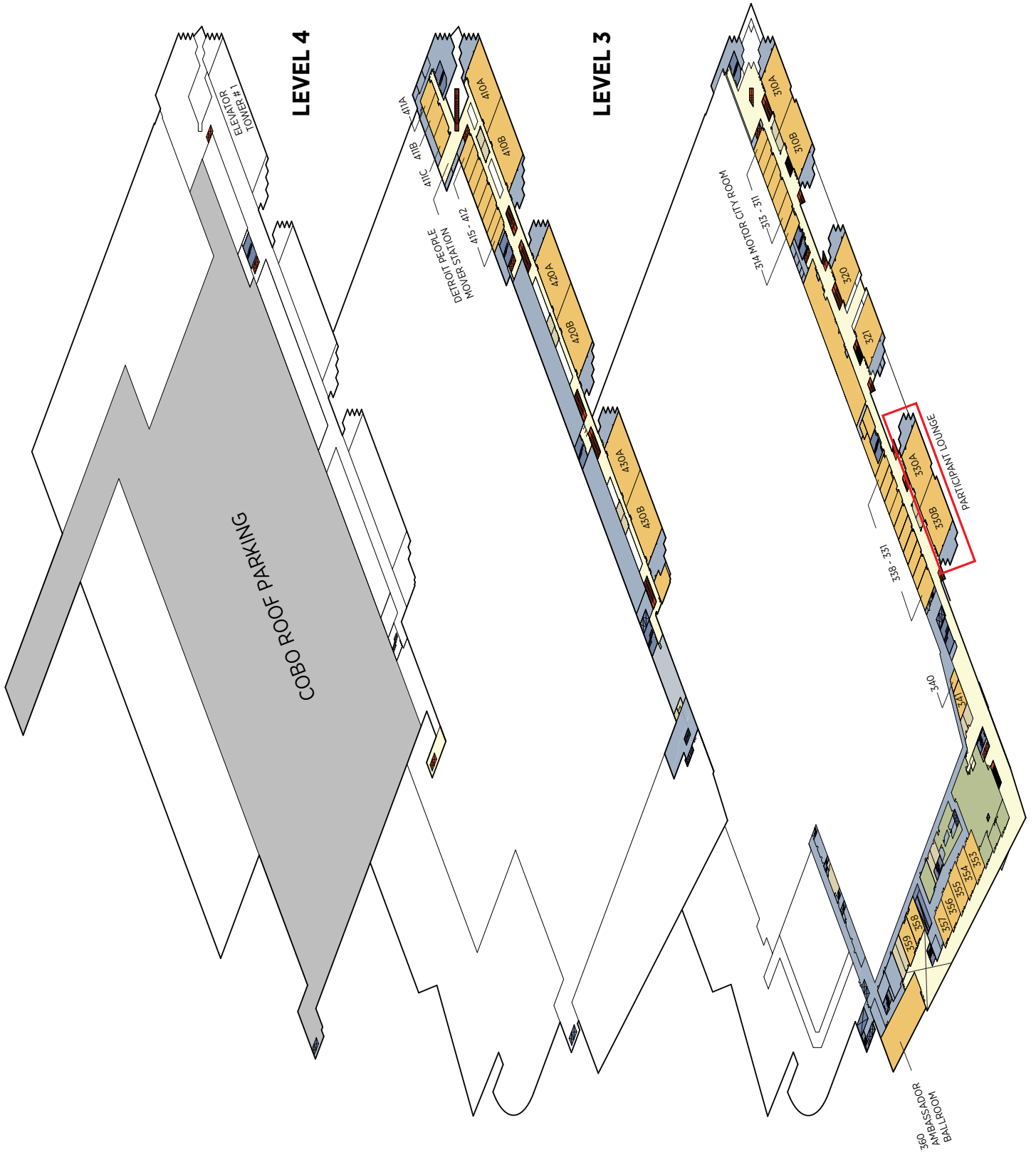
## SAE Professional Development Seminars

Seminar schedule available via WCX Mobile App



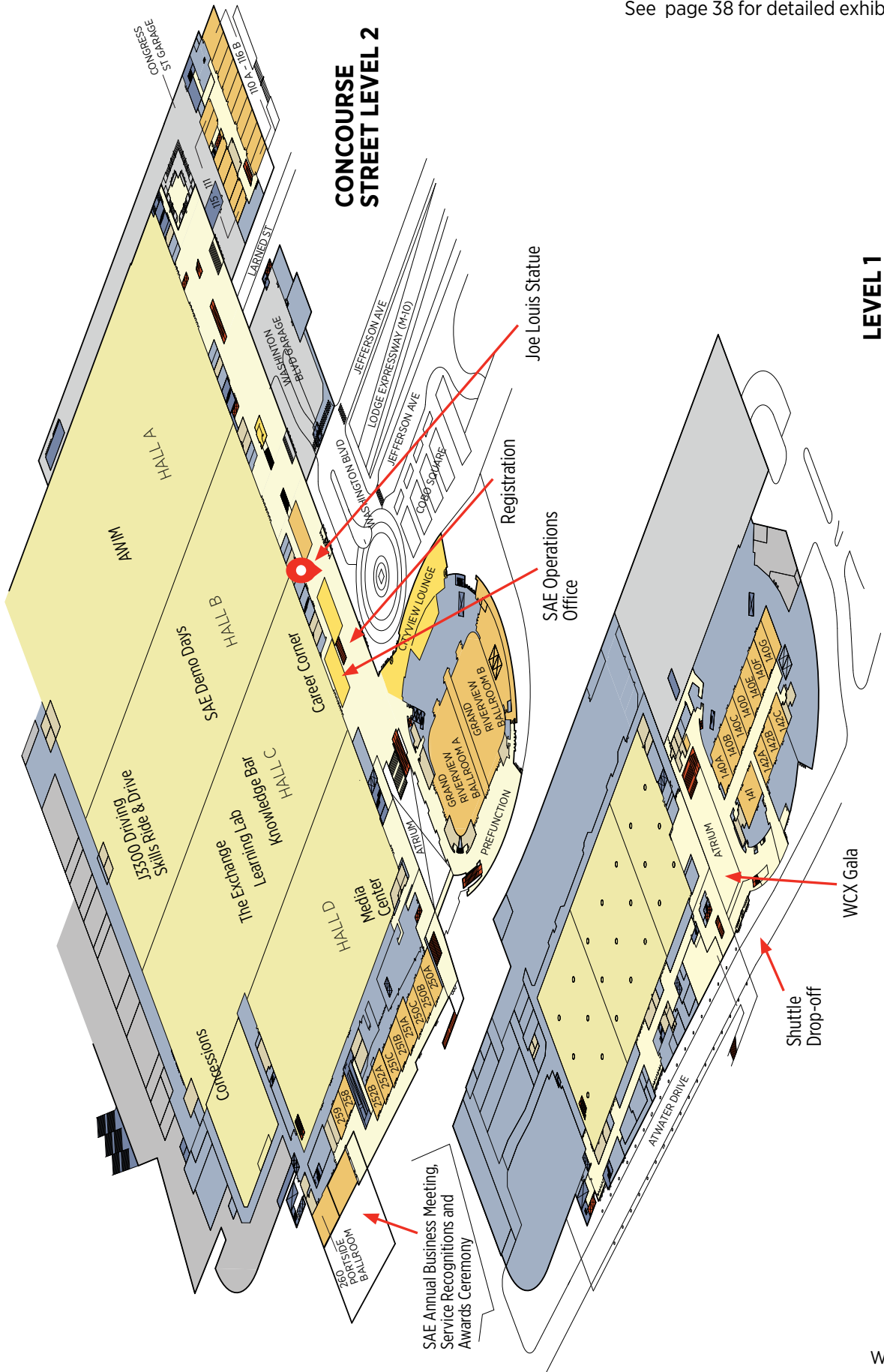
Download the  
WCX Mobile App

# COBO CENTER FLOOR PLAN



# COBO CENTER FLOOR PLAN

See page 38 for detailed exhibit floorplan.



# WCX EVENT-AT-A-GLANCE

| TUESDAY, APRIL 9   | WEDNESDAY, APRIL 10  | THURSDAY, APRIL 11   |
|--|--|--|
| 8:00-8:45 a.m.   <i>Exhibit Hall, The Exchange</i><br><b>Keynote Speaker</b>   | 8:00-8:45 a.m.   <i>Exhibit Hall, The Exchange</i><br><b>Keynote Speaker</b>   | 7:30-8:00 a.m.   <i>Exhibit Hall, The Exchange</i><br><b>Continental Breakfast</b>   |
| 8:45-9:45 a.m.   <i>Exhibit Hall</i><br><b>Continental Breakfast</b>   | 8:45-9:45 a.m.   <i>Exhibit Hall</i><br><b>Continental Breakfast</b>   | 8:00-9:15 a.m.   <i>Exhibit Hall, The Exchange</i><br><b>Women's Panel</b><br><i>Sponsored by Toyota</i>   |
| 8:45 a.m.-5:30 p.m.   <i>Exhibit Hall</i><br><b>Exhibits &amp; Career Corner</b>   | 8:45 a.m.-5:30 p.m.   <i>Exhibit Hall</i><br><b>Exhibits &amp; Career Corner</b>   | 8:30-11:30 a.m.   <i>Meeting Rooms</i><br><b>Technical Sessions</b>  |
| 8:45 a.m.-4:30 p.m.   <i>Hall B</i><br><b>SAE J3300 Driving Skills Certification Ride and Drive</b><br><i>Sponsored by Technical Professionals Group</i> | 8:45 a.m.-4:30 p.m.   <i>Hall B</i><br><b>SAE J3300 Driving Skills Certification Ride and Drive</b><br><i>Sponsored by Technical Professionals Group</i> | 8:45 a.m.-4:00 p.m.   <i>Exhibit Hall</i><br><b>Exhibits</b>   |
| 9:30 a.m.-12:30 p.m.   <i>Exhibit Hall, The Exchange</i><br><b>Leadership Summit</b>   | 9:00 a.m.-2:00 p.m.   <i>Exhibit Hall</i><br><b>SAE AWIM - International Jet Toy Competition (13<sup>th</sup> Annual)</b>                                | 8:45 a.m.-3:00 p.m.   <i>Hall B</i><br><b>SAE J3300 Driving Skills Certification Ride and Drive</b><br><i>Sponsored by Technical Professionals Group</i> |
| 9:30 a.m.-4:00 p.m.   <i>Hall B</i><br><b>SAE Demo Day</b><br><i>In partnership with PAVE and Dataspeed, Inc.</i>  | 9:30 a.m.-12:30 p.m.   <i>Exhibit Hall, The Exchange</i><br><b>Leadership Summit</b>   | 9:30-10:30 a.m.   <i>Exhibit Hall</i><br><b>Networking Break</b>   |
| 10:00-11:30 a.m.   <i>Meeting Rooms</i><br><b>Technical Sessions</b>   | 9:30 a.m.-4:00 p.m.   <i>Hall B</i><br><b>SAE Demo Day</b><br><i>In partnership with PAVE and Dataspeed, Inc.</i>  | 9:30 a.m.-12:30 p.m.   <i>Exhibit Hall, The Exchange</i><br><b>Leadership Summit</b>   |
| 10:00 a.m.-5:30 p.m.   <i>Exhibit Hall</i><br><b>Learning Lab</b><br><i>Sponsored by Honda</i>   | 9:45 a.m.-5:30 p.m.   <i>Exhibit Hall</i><br><b>Learning Lab</b><br><i>Sponsored by Honda</i>  | 9:30 a.m.-3:00 p.m.   <i>Hall B</i><br><b>SAE Demo Day</b><br><i>In partnership with PAVE and Dataspeed, Inc.</i>  |
| 1:00-4:45 p.m.   <i>Exhibit Hall</i><br><b>Knowledge Bar</b><br><i>Sponsored by Delphi Technologies</i>  | 10:00-11:30 a.m.   <i>Meeting Rooms</i><br><b>Technical Sessions</b>   | 10:00 a.m.-3:30 p.m.   <i>Exhibit Hall</i><br><b>Learning Lab</b><br><i>Sponsored by Honda</i>   |
| 1:30-4:45 p.m.   <i>Meeting Rooms</i><br><b>Technical Sessions</b>   | 1:00-4:45 p.m.   <i>Exhibit Hall</i><br><b>Knowledge Bar</b><br><i>Sponsored by Delphi Technologies</i>  | 1:00-3:15 p.m.   <i>Exhibit Hall</i><br><b>Knowledge Bar</b><br><i>Sponsored by Delphi Technologies</i>  |
| 1:40-4:40 p.m.   <i>Exhibit Hall, The Exchange</i><br><b>Leadership Summit</b>   | 1:30-4:45 p.m.   <i>Meeting Rooms</i><br><b>Technical Sessions</b>   | 1:00-4:00 p.m.   <i>Meeting Rooms</i><br><b>Technical Sessions</b>   |
| 2:30-3:15 p.m.   <i>Exhibit Hall</i><br><b>Networking Break</b>  | 1:40-4:40 p.m.   <i>Exhibit Hall, The Exchange</i><br><b>Leadership Summit</b>   | 1:40-3:20 p.m.   <i>Exhibit Hall, The Exchange</i><br><b>Leadership Summit</b>   |
| 3:30-4:30 p.m.   <i>Room 260</i><br><b>SAE Annual Business Meeting and Service Recognitions</b>  | 2:30-3:15 p.m.   <i>Exhibit Hall</i><br><b>Networking Break</b><br><i>Sponsored by Carpenter Technology Corp.</i>  | 2:30-3:15 p.m.   <i>Exhibit Hall</i><br><b>Networking Break</b>  |
| 4:30-5:30 p.m.   <i>Exhibit Hall</i><br><b>Networking Reception</b><br><i>Sponsored by DSM Engineering Plastics</i>                                      | 4:30-5:30 p.m.   <i>Exhibit Hall</i><br><b>Networking Reception</b><br><i>Sponsored by IBM Watson IoT</i>  | 5:00-7:00 p.m.   <i>Cobo Atrium</i><br><b>Gala</b>   |
| 5:30-7:30 p.m.   <i>Room 260</i><br><b>SAE International Awards Ceremony with Presenting Sponsor, J.D. Power</b>   |  |  |

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# THANK YOU FOR YOUR SUPPORT!

SAE INTERNATIONAL acknowledges and thanks the following organizations that have funded the SAE standards program this past year. SAE standards increase the safety and quality of vehicle components and systems, reduce purchasing costs and make engineering work easier.

Association of Equipment Manufacturers

BMW of North America LLC

DENSO International America, Inc

FCA US LLC

Ford Motor Company

General Motors LLC

Honda Motor Co LTD

Magna Intl, Inc

Nissan

Toyota Motor Corporation

TARDEC

**SAE standards – they make your engineering work easier**

Contact [lou.donato@sae.org](mailto:lou.donato@sae.org) if you would like to join this distinguished group.

## OPENING KEYNOTE PRESENTATION AND INTERVIEW

8-8:45 a.m.

**The Exchange - Exhibit Floor**

### Welcome and Introduction by



#### **David L. Schutt**

Chief Executive Officer  
SAE International

### Featured Keynote Speaker



#### **Charles Payne**

Host of “Making Money” on Fox Business, Chief Executive Officer and principal financial analyst of Wall Street Strategies

#### **The Great Race: Finally Reaching Magic Motorways**

In this insightful keynote Mr. Payne provides a comprehensive analysis of wall street’s perspective on the new mobility ecosystem. He will discuss how investors look at the impacts of regulation, insurance, customer acceptance on technology development and deployment. He will share a brief evaluation of the mobility industry as seen by Wall Street along with new economic opportunities and investments such as new IPOs in the Mobility as a Service (MaaS) industry. Mr. Payne will conclude with thoughts on the challenges and opportunities that will impact future investments.

### Executive Interview with



#### **Paul Mascarenas**

2019 SAE President

## KEYNOTE PRESENTATION AND INTERVIEW

8-8:45 a.m.

**The Exchange - Exhibit Floor**

### Welcome and Introduction by



#### **David L. Schutt**

Chief Executive Officer  
SAE International

### Keynote Speaker



#### **Erez Dagan**

Executive Vice President Products and Strategy, Mobileye  
Vice President, Intel Corporation

#### **Safety, ADAS to AD**

The field of active driver assistance, L0 - L2, may be viewed as a blend of systems responding to emergencies under human driving as well as systems conducting the vehicle relying on the driver's emergency response.

What does the upcoming leap to higher levels of autonomy entail in terms of safety expectations and delivery? In his talk, Mr. Dagan will traverse this continuum of human-to-automated safety and explore the roles of technology suppliers. He'll examine the roles of the public and regulation bodies in the critical articulation and alignment of safety-expectations and the technology required to cater to these expectations, while introducing a safety framework that bridges the two.

### Executive Interview with



#### **Ken Washington**

2019 SAE Vice President, Automotive

# SPECIAL EVENTS

## WCX LEADERSHIP SUMMIT

EXHIBIT HALL, THE EXCHANGE

Experts discuss the links between business and technology in this unique venue. In specialized roundtable discussions, you'll gain key insights from executives on the critical business issues driving quality, performance, safety, design, development and cost optimization of mobility.

Here, you'll hear from thought leaders who will address critical business issues surrounding technology development that affect vehicle design and deployment strategies.

| TIME       | TUESDAY, APRIL 9   | WEDNESDAY, APRIL 10  | THURSDAY, APRIL 11  |
|------------|--|--|---|
| 8:00 a.m.  | <p><b>Opening Keynote and Executive Interview</b></p> <p><i>Charles Payne, Chief Executive Officer and Principle Analyst of Wall Street Strategies, Inc.</i></p>   | <p><b>Opening Keynote and Executive Interview</b></p> <p><i>Erez Dagan, Sr. VP and GM, Strategy, Research &amp; Development, Mobileye, An Intel Co.</i></p>  | <p><b>New Mobility: Women Leading Disruptive Innovation</b></p> <p><i>Executives address challenges and opportunities in making the transformation needed for organizations to handle complexity, uncertainty and volatility in the mobility ecosystem.</i></p>                           |
| 9:30 a.m.  | <p><b>TechTalk: Intelligent Motorsport - the Most Extreme Proving Ground for Self-driving Cars?</b></p> <p><i>Roborace looks at what the the next 110 years look like, in the new era of Artificial Intelligence, robotics and self-driving cars?</i></p>  | <p><b>TechTalk : The Future of Mobility – Moving People, Data and Freight</b></p> <p><i>The 21st century, is about moving people, data and freight – and how technology and innovation are creating a safer, greener and smarter world.</i></p>  | <p><b>TechTalk: Mobility 2030 – The Effects of Oil Pricing and Electric Infrastructure on EV Deployment</b></p> <p><i>An examination on how technology in both hydrocarbon and alternative energy markets will continue to shape energy markets and transportation demand.</i></p>        |
| 10:00 a.m. | <p><b>C2C Roundtable: What Do Autonomous Vehicles Mean for Regulation?</b></p> <p><i>Automated Driving Systems present many potential benefits to society. Experts will address the regulatory aspects of promising new technologies including international implications.</i></p>                               | <p><b>C2C Roundtable: What is the Benchmark and Expectation for AI in Automotive?</b></p> <p><i>Come hear executives discuss the social and economic impact that AI will have on the automotive industry and customer acceptance of future state technology.</i></p>   | <p><b>Roundtable: Today, Tomorrow, and the Future of Propulsion Systems</b></p> <p><i>We have multiple choices for propulsion today and tomorrow -Traditional ICE, Hybrid, Hybrid-Electric, and Electric but what about the future?</i></p> <p><b>Sponsored by AVL</b></p>                |
| 11:20 a.m. | <p><b>C2C Roundtable: CyberSecurity, Do We Feel Good Enough to be Just A Little Paranoid?</b></p> <p><i>As we move towards further vehicle connectivity and automation, many security challenges remain unclear. Come hear executives discuss the long-term cybersecurity approaches needed.</i></p>             | <p><b>C2C Roundtable: Privacy and Customer Acceptance of Data Monetization</b></p> <p><i>Industry executives and research experts discuss what is that ideal state of collecting consumer data, and how to prevent exceeding that tipping point of customer acceptance.</i></p>  | <p><b>Roundtable: Still Not Dead –Developments in ICE</b></p> <p><i>With the continued opportunities for efficiencies in ICE development, where can we go and how is this impacted by regulation, customer acceptance and OEM platform strategies?</i></p> <p><b>Sponsored by AVL</b></p> |
| 1:40 p.m.  | <p><b>TechTalk: Artificial Intelligence: The Winter of our Discontent or Mild Spring Frost?</b></p> <p><i>A talk on what is practical with today's AI technology to successfully leveraging AI in automotive and insight on the challenges ahead that need to be solved.</i></p>                                 | <p><b>TechTalk: Trust In Tech</b></p> <p><i>An examination by BlackBerry of technology and why we should trust in tech.</i></p>  | <p><b>TechTalk: Key Trends That are Shaping the Market/the Future</b></p> <p><i>What are converging trends impacting the auto industry with the potential of changing it dramatically?</i></p>  |
| 2:10 p.m.  | <p><b>C2C Roundtable: Does Deploying Safe AV's Require Rethinking Validation?</b></p> <p><i>Executives and experts convene to address new approaches to AI/AV validation so that we we build confidence that our AV's are safe for the road.</i></p>   | <p><b>C2C Roundtable: Technology Transition: Cloud and Car Enabled Digital Services</b></p> <p><i>5G? V2X? EDGE Computing? Executives address business drivers and technology challenges for enabled digital services and connectivity to meet customer expectations.</i></p> <p><b>Sponsored by 5G Automotive Association</b></p>                       | <p><b>Roundtable: As Executives, Where are We Spending our Resources</b></p> <p><i>Executives discuss allocation for development of future mobility technology while continuing to utilize resources in advancing current technologies.</i></p>   |
| 3:30 p.m.  | <p><b>C2C Roundtable: The Business Challenges on System Engineering for Automated Driving Technologies</b></p> <p><i>Come hear industry executives from OEMs and suppliers explore opportunities to more fully leverage systems practices and expertise.</i></p> <p><b>Sponsored by ESG Automotive, Inc.</b></p> | <p><b>C2C Roundtable: What is the Future Vision of a Vehicle's Interior and the Technology to Deliver Upon this Digital Environment?</b></p> <p><i>Industry executives discuss the current and near future state of these technologies and the business decisions occurring to meet customer's expectations for HMI Interface and configuration.</i></p> |   |



# SPECIAL EVENTS

## WCX LEARNING LAB

EXHIBIT HALL, BOOTH 1908

Get unprecedented interaction and go one-on-one with new technology from exhibitors in the Learning Lab. You'll discuss the latest innovations in mobility products with engineers and suppliers in an intimate theater venue, as well as have the opportunity to ask questions and experience hands-on demonstrations.

| TIME       | TUESDAY, APRIL 9   | WEDNESDAY, APRIL 10  | THURSDAY, APRIL 11   |
|------------|--|--|--|
| 9:45 a.m.  |  | <b>Expanding the Conversation: PAVE and The Need to Inform the Public About Automoated Vehicles</b><br><i>Grayson Brulte, PAVE</i>   |  |
| 10:00 a.m. | <b>Honda Mobility Collaboration Garage</b><br><i>CJ Saigusa, Honda R&amp;D Americas, Inc.</i>                      |  | <b>The Ford "Special" of the 50s and 60s: A Peculiarly British Phenomenon (Presentation of SAE Paper 2019-01-1255)</b><br><i>J. Howard Evans, Colletronics, Ltd.</i> |
| 10:30 a.m. | <b>Functional Safety Influencing Autonomous Vehicle Engineering</b><br><i>Mark Chambers, PLATO NA</i>              | <b>IAMTS Overview</b><br><i>John Tintinalli, SAE International</i>   | <b>McLaren Engineering Race Engines</b><br><i>Roger Schaible Meiners, RPMarketGroup LLC</i>  |
| 11:00 a.m. | <b>Trends in Battery System Testing</b><br><i>Joel Stanley, Horiba</i>   | <b>Generating Real World Emissions Testing in the Laboratory</b><br><i>Leo Breton, Horiba</i>  | <b>Spotlight on Alex Tremulis</b><br><i>William S. Tremulis</i>  |
| 11:30 a.m. | <b>Tailoring Autonomous Tech to Fit the Business (Not the Other Way Around)</b><br><i>Gil Hellmann, Wind River</i> | <b>Software Quality for the Future of Connected Vehicles and IoT</b><br><i>Devon Bleibtrey, ESG</i>  | <b>The History of the Future: Powering the Cars of Tomorrow</b><br><i>Erika M. Anden, SAE Mobility History Committee</i>   |
| 12:00 p.m. | <b>GAMIC Competition</b>   | <b>SAE ITC: Industry Consortia Driving Implementation of New Technologies</b><br><i>Laurie Strom, SAE ITC</i>  | <b>Connected Vehicle Challenge Face-off</b>  |
| 12:30 p.m. | <b>Finalists:</b><br><i>Bedestrian<br/>Bmmpr<br/>Energsoft</i>   | <b>Understanding Your Product's Competitive Position Through Benchmark Testing</b><br><i>Paul Heffernan, Clark Testing</i>   | <i>See page 13 for more information</i>  |
| 1:00 p.m.  | <i>Enviro Clean Diesel<br/>GBatteries<br/>Joyride Technologies</i>   | <b>See how a Square Ball will Steer You Right</b><br><i>John Sweetwood, CCTY Bearing</i>   |  |
| 1:30 p.m.  | <i>Orbitless Drives<br/>SafeMode Tech<br/>VectorZero<br/>Voxel51<br/>WaveSense</i>                                 | <b>Innovations in Risk Management Connecting Global Mobility Engineering</b><br><i>Mark Chambers, PLATO NA</i>   |  |
| 2:00 p.m.  |  | <b>Automotive SPICE: How to Ensure ASPICE Success</b><br><i>Ed Neubecker, Amit Talwar, IBM; Anthony Tisler, A123 Systems, Joe Meagher, 321 Gang; Brett Hillhouse, IBM</i>                |  |
| 2:30 p.m.  | <i>See page 8 for more information</i>   | <b>C-V2X use on The Road for Safety and Efficiency</b><br><i>Jovan Zagajac, Ford (SGAA Member)</i>   |  |
| 3:00 p.m.  |  | <b>C-V2X Momentum and Commercial Readiness</b><br><i>Christopher Armstrong, Panasonic (SGAA Member)</i>  |  |
| 3:30 p.m.  |  | <b>Using Desktop Methodologies to Accelerate Automotive Software Quality</b><br><i>Ross Dickson, ASTC Design</i>   |  |
| 4:00 p.m.  |  | <b>If you can't stand the heat, get out of the engine: Engineering solutions for rising powertrain temperatures and pressures</b><br><i>Danielle Rickert, Carpenter Technology Corp.</i> |  |
| 4:30 p.m.  |  |  |  |
| 5:00 p.m.  |  |  |  |
| 5:15 p.m.  | <b>Announcement of the 4 GAMIC Winners</b>   |  |  |
| 5:30 p.m.  |  |  |  |

Sponsored by

**HONDA**

# SPECIAL EVENTS

## WCX KNOWLEDGE BAR

EXHIBIT HALL, BOOTH 1400

Subject-matter experts will lead 40-minute discussions on the critical technology listed below that will advance the design, deployment and development of future vehicles. The goal of the knowledge bar is to get your questions addressed and to help problem solve issues you are having in a casual environment. Come prepared with your questions on the given subject matter or learn how this technology will shape the future of mobility.

| TIME      | TUESDAY, APRIL 9   | WEDNESDAY, APRIL 10  | THURSDAY, APRIL 11  |
|-----------|--|--|---|
| 1:00 p.m. | <b>High Voltage Vehicle Wireless Charging</b><br><i>Gene Saltzberg, General Motors LLC, Retired</i><br><i>Chao Yu, PATAC: Pan Asia Technical Automotive Center</i> | <b>Battery Validation</b><br><i>Vince Socci, National Instrument</i>                             | <b>CGI Injector Technology</b><br><i>Mark Sellnau, Aramco Research Center- Detroit</i>                |
| 1:45 p.m. | <b>Prognostics for Condition Based on Maintenance Plus (CBM+)</b><br><i>David Dansizewski, US Army CCDC Ground Vehicle Systems Center</i>                          | <b>Cockpit HMI Software Architecture</b><br><i>Scott Rush, General Motors LLC</i>                | <b>GCI Emissions Control Challenges</b><br><i>James Park II, Oak Ridge National Laboratory (ORNL)</i> |
| 2:30 p.m. | <b>Cybersecurity for Autonomous Vehicle Systems</b><br><i>Dariusz Mikulski, Ph.D., US Army CCDC Ground Vehicle Systems Center</i>                                  | <b>Biomimicry</b><br><i>Dr. Emily Kennedy &amp; Stephen Howe, University of Akron</i>            | <b>GCI in Opposed Piston Engines</b><br><i>Fabien Redon, Achatas Power</i>                            |
| 3:15 p.m. | <b>What V2X Connected Vehicle Standards Mean to You</b><br><i>Sua Bai, Honda</i>   | <b>Automatic Emergency Braking</b><br><i>Oleg Kirovskii, ZF Group</i>                            |   |
| 4:00 p.m. | <b>Metal Additive Manufacturing</b><br><i>David A. Pierson, MAGNET</i>   | <b>Advanced Imaging Technologies for Autonomous Drive</b><br><i>Jeff Morin, On-Semiconductor</i> |   |

Sponsored by

**Delphi**  
Technologies

# ATTENTION SAE MEMBERS

DON'T FORGET TO STOP BY THE  
EXCLUSIVE MEMBERSHIP LOUNGE

## Activities Include:

- Meet the SAE Membership Team and network with fellow members
- Attend a presentation: “Things You Never Heard In Engineering Class: Leveraging SAE Involvement for Career Advancement” on Tuesday at 2:30 p.m. with SAE Member Dean Case, Consultant, Motivo Engineering/Grassroots Motorsports
- Enjoy complimentary coffee daily from 8:45 a.m. - 2:00 p.m.
- Discover volunteer opportunities through SAE Propel
- Learn about Member Connection (members-only online community)
- Sign up to become a mentor or mentee
- Wear an SAE Member ribbon for a chance to win a prize

## Located on the exhibit floor, lounge hours are as follows:

Tuesday, April 9, 8:45 a.m. - 5:30 p.m.

Wednesday, April 10, 8:45 a.m. - 5:30 p.m.

Thursday, April 11, 8:45 a.m. - 2:00 p.m.



## YOU BELONG HERE.

Review all of the member career tools and benefits available to you at [sae.org/membership/benefits](https://www.sae.org/membership/benefits)

Stop by the member lounge to join, or visit [sae.org/join](https://www.sae.org/join) today.

# AWARDS & RECOGNITIONS

Awards and Recognitions presented at WCX19

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## SAE MEDAL OF HONOR

Mohamed E. M.  
El-Sayed, P.E.  
Professor and  
Preceding Director,  
School of  
Engineering  
Technology,  
Eastern Michigan  
University



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## ARCH T. COLWELL COOPERATIVE ENGINEERING MEDAL

Robert L. Galyen, Jr.

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## ARCH T. COLWELL MERIT AWARD

Hassene Jammoussi  
Robert Jentz  
Wesley Kerstens  
Michael Kluzner  
Dewitt Lampman  
Imad H. Makki  
Mukesh Rustagi  
Jason Skeen  
Michael Ulizio  
Chester Walawender

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## ARNOLD W. SIEGEL INTERNATIONAL TRANSPORTATION SAFETY AWARD

Dainius Dalmotas

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## EDWARD N. COLE AWARD FOR AUTOMOTIVE ENGINEERING INNOVATION

Charles E. Freese V.

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## SAE ENVIRONMENTAL EXCELLENCE IN TRANSPORTATION (E2T) AWARD

Rajan Ahuja  
John Bocksnick  
Josh Brown  
Paul Davidsaver  
David Geiger  
Dave Knight  
Josie Landers  
Bryce Metcalf  
Todd VanTilburg

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## EXCELLENCE IN ENGINEERING EDUCATION (TRIPLE "E" AWARD)

Raj Rajendran

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## FOREST R. MCFARLAND AWARD

Kirby Baumgard  
Matthew Castanier  
Ray Corbin  
Sara Dadras  
Soodeh Dadras  
Yichao Guo  
Andrew Ickes  
Michael Kass  
Eric Krivitzky  
Sotirios Mamalis  
Ezio Mancaruso  
Rachel Muncrief  
Darrell Robinette  
Corina Sandu  
Anand Srinivasan  
Jian Tao  
Curtis Vincent  
Yunqing Zhang  
Feng Zhu

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## J. CORDELL BREED AWARD FOR WOMEN LEADERS

Ewa Bardasz

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## HARRY L. HORNING MEMORIAL AWARD

Koji Kitano  
Susumu Nagano  
Koichi Nakata  
Nozomi Yokoo

---

## HENRY FORD II DISTINGUISHED AWARD FOR EXCELLENCE IN AUTOMOTIVE ENGINEERING

Stephen Poulos

---

## HENRY O. FUCHS STUDENT AWARD

Johnathan Pegeus

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## INTERNATIONAL LEADERSHIP CITATION

Raymond Champagne

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## LLOYD L. WITHROW DISTINGUISHED SPEAKER AWARD

Michael Douba  
John Heywood  
Timothy Johnson  
Imad Khalek  
Philip Koopman  
Blaine Leonard  
John Meyer  
Paul Miles

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## SAE OUTSTANDING FACULTY ADVISORS PROGRAM

John M. Mativo

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## MYERS AWARD FOR OUTSTANDING STUDENT PAPER AWARD

Stefano d'Ambrosio  
Enrico Oliva  
Nicolò Salamone  
Roberto Vitolo

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## RALPH TEETOR

Tanvir Farouk  
Xiao Hu  
Diane Peters  
Xinjie Zhang

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## RODICA BARANESCU AWARD FOR TECHNICAL & LEADERSHIP EXCELLENCE

Laura Hitchcock  
Denise M. Rizzo

# AWARDS & RECOGNITIONS

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## RUMBAUGH OUTSTANDING STUDENT LEADER AWARD

Greg Sawvelle

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## RUSSELL S. SPRINGER AWARD

Paul Dekraker  
Mark Stuhldreher  
Youngki Kim

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## SAE EMERITUS AWARD

Richard Greaves  
Charles Westbrook

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## SAE FELLOW GRADE OF MEMBERSHIP

Christopher Atkinson  
Yi Ding  
Yan Fu  
Robert (Bob) L. Galyen  
Ing. habil. Valentin Ivanov  
Ken (Xiaodi) Kang  
Fangwu (Mike) Ma  
Kyoungdoug Min  
Patrick J. Philips  
Peter Kelly Senecal  
John F. Van Gilder  
Michael Wang

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## SAE DELCO ELECTRONICS INTELLIGENT TRANSPORTATION SYSTEMS AWARD

Jayendra Parikh

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## SAE JOHN JOHNSON INDIVIDUAL AWARD FOR OUTSTANDING RESEARCH IN DIESEL ENGINES

Aleksey Yezerets

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## SAE JOHN JOHNSON AWARD FOR OUTSTANDING RESEARCH IN DIESEL ENGINES-PAPER AWARD

Cody Allen  
Lisa Farrell  
Dheeraj Gosala  
Mrunal Joshi  
Edward D. Koeberlein  
James McCarthy Jr.  
Aswin Ramesh  
Gregory Shaver  
Sirish Srinivasan  
Alexander Taylor  
Matthew VanVoorhis  
Kalen Vos

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## SAE JOHN MELVIN MOTORSPORT SAFETY AWARD

Steve Peterson (Posthumously)

---

## SAE/AISI SYDNEY H. MELBOURNE AWARD FOR EXCELLENCE IN THE ADVANCEMENT OF AUTOMOTIVE SHEET STEEL

Atsushi Hanyu  
Shingo Hayashi  
Takuya Hirade  
Kentaro Ishiuchi  
Hideki Masuo  
Tsuyoshi Yoshida

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## SAE/TIMKEN-HOWARD SIMPSON AUTOMOTIVE TRANSMISSION AND DRIVELINE INNOVATION AWARD

Hussein Dourra

---

## SUBIR CHOWDHURY MEDAL OF QUALITY LEADERSHIP

Kush K. Shah

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## TREVOR O. JONES OUTSTANDING PAPER AWARD

Yu Seung Kim  
Huaxin Li  
Di Ma  
Brahim Medjahed  
Pramita Mitra

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## VINCENT BENDIX AUTOMOTIVE ELECTRONICS ENGINEERING AWARD

Wesley Kerstens

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## J.D. POWER ENGINEERING AWARD FOR HIGHEST-RATED ALL-NEW VEHICLE

Award Recipient(s) to be Announced

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## J.D. POWER ENGINEERING AWARD FOR HIGHEST-RATED VEHICLE REDESIGN

Award Recipient(s) to be Announced

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\*\*Additional Awards & Recognitions information which may not be listed here can be found at [wcx19.org](http://wcx19.org). Any omissions from this page are unintentional and may be due to information that was unconfirmed at the time of print.

### AWARDS AND RECOGNITIONS CEREMONIES

Tuesday, April 9, 2019  
Room 260 (Portside ballroom)  
Cobo Center

Recognitions Ceremony 3:30 p.m.

Awards Ceremony 5:30 p.m.

Awards & Recognitions Reception  
7 p.m.

# CALL FOR PAPERS AND PRESENTATIONS

## WCX SAE World Congress Experience

April 21-23, 2020 | Cobo Center, Detroit

[sae.org/wcx](http://sae.org/wcx)

WCX is the future of mobility, focusing on technologies and their application to solve critical problems that move the automotive industry forward. In addition to electronics, safety, powertrain, materials, emissions, and propulsion, WCX is seeking experts to address the latest in Autonomous Driving Systems, IoT, semiconductors, ADAS, Smart Manufacturing, Artificial Intelligence and Smart Transportation.

We are asking you to share your time and talent by offering to give a presentation or presentation with technical paper on the critical issues and technology that are shaping the future of mobility.

**Deadline to submit abstract: September 17, 2019**

### Benefits of Authorship and Presenting

- Expand your professional experience and influence as well as your organization's leadership by demonstrating subject matter knowledge and expertise to mobility professionals from around the world.
- Connect with subject matter experts in the mobility industry to expand business opportunities.
- Be a conduit for discussion on further advancements in mobility in the areas of Automotive Electronics, Safety, Powertrain/Propulsion, Materials, Emissions, Vehicle Automation, and Micromobility.
- Discuss successes and problems encountered during research with your peers who may have similar experiences and lessons learned to share.
- Your technical paper could be selected for Advances and Current Practices in Mobility: SAE International Conference Proceedings — collecting our best technical papers in online issues throughout the year, increasing eligibility of inclusion into scientific indexes. (Written Only papers are not eligible for this Journal)
- Authors receive a discount on event registration.

### Call For Reviewers

SAE International is also seeking help from experts willing to volunteer their time and technical acumen to review technical manuscripts for the Technical Sessions.

### Benefits of Being a Manuscript Reviewer\*

- Expand your technical knowledge by reviewing manuscripts and achieving prior awareness of the latest technologies and practices coming to the mobility industry.
- Demonstrate your subject matter expertise to the organizers developing technical sessions.
- Become a bigger part of the technical community by contributing to the mobility industry's body of technical knowledge.
- Connect with other subject matter experts in the mobility industry to expand business opportunities
- Reviewer receive a discount on event registration
- Reviewer Resources: Reviewer, guidance and judgement information is provided here [sae.org/participate/volunteer/reviewer-resources](http://sae.org/participate/volunteer/reviewer-resources)

## Topics Under Consideration

With over 225 sessions offered at WCX below is a sampling of topics we are looking to see abstract submissions for this Conference.

### Automotive Electronics/ Connectivity/IoT/Smart City

- Active Safety
- ADAS
- Advanced Electronics Functions
- Artificial Intelligence
- Augmented and Virtual Reality (AR/VR)
- Automated Driving Systems
- Cybersecurity
- Electronics and Electrical Systems
- Electronics in the Interior
- Electronics in Transportation
- Electronics in Powertrain
- Electromagnetics and Antennas, EMI/EMC
- Harnesses and Wiring
- Integrated Cloud Technology
- IoT
- On-demand/shared Mobility
- Simulation and Model Based Architecture
- Systems Engineering
- V2V/V2I/V2X

### Environment/Emissions/ Sustainability/Thermal Management

- Alternative Fuels and Power Sources
- Emissions
- Lightweighting and Energy Reduction
- Noise Reduction and Abatement
- Sustainable Systems
- Thermal Systems

### Materials and Lightweighting

- Bearings, Lubricant Systems & Tribology
- Biomaterials
- Composites
- Ferrous
- Interiors
- Seating
- Materials Modeling & Testing
- Non-Ferrous
- Plastic Components, Process and Techniques
- Polymers & Coatings

#### Important Information

- Please note that speakers will be charged a nominal fee to attend this conference.
- Approval of final manuscript does not guarantee that the author will be given a speaking slot.
- Presentations will be assigned based upon topic applicability and the number of available speaking slots.
- If your Manuscript is selected for Podium Time and you do not attend, your manuscript may not be eligible for publication.

### Design and Smart Manufacturing

- Additive Manufacturing
- Body Design and Engineering
- CAD, CAM, CAE, and Optimization
- Design for Manufacturing
- Integrated Computational Materials Engineering (ICME)
- Modeling, Simulation, and Testing for Automotive and Military Applications
- Robotics and Manufacturing Automation
- Robust, Reliability, and Deterministic Design in Automotive Engineering
- Smart Manufacturing/Industry 4.0

### Advanced Propulsion/Powertrain

- Advances in Thermal & Fluid Sciences
- Compression and Spark Ignition Engines
- Control and Optimization
- Engine Boosting
- Engine Components and Subsystems
- Engine Flows and Combustion Diagnostics
- Fuel and Additives
- Fuel Cells, Electric Vehicles, and Hybrids
- High Efficiency and Reduced CO<sub>2</sub>/km
- In-Cylinder Velocity Measurements
- Lubricants
- Multi-Dimensional Modeling
- Systems Analysis & Modeling
- Transmissions & Drivelines

### Body/Chassis/Occupant and Pedestrian Safety/Structure

- Aerodynamics
- Body Structures
- Design Optimization: Methods & Applications
- Ergonomics
- Fire Safety
- Functional/Passive Safety
- Human Factors
- Lighting Technology
- Motorsports
- Occupant Protection
- Steering, Chassis & Suspension
- Tires & Wheels
- Vehicle Dynamics and Simulation

#### PUBLISHING WITHOUT PRESENTATION

If you wish to publish a paper without presenting, please submit your abstract on SAE Open Call for Content portal at [sae.org/events/calls.htm](http://sae.org/events/calls.htm)

## How to Submit an Abstract

**Abstracts must be submitted online via website page to only ONE session. Offered papers shall not have been previously published; and if accepted, contributors will not release their paper for publication through other media.**

1. A summary that states the objective of the paper/presentation
  2. Tentative title
  3. Name of the author and co-authors and all contact information
  4. Selection of the most appropriate technical session
- Paper acceptance will be based on organizer moderated peer review of a review ready manuscript.
  - Refer to the author resources site at [sae.org/participate/volunteer/author](http://sae.org/participate/volunteer/author) for other useful information in preparing your paper.
  - Portal for submission of abstracts will be open on June 1, 2019
  - Abstract submission period: June 1 through September 17, 2019
  - Review Ready Manuscripts due to session organizers November 1, 2019
  - Final Manuscripts and copyright assignment due to SAE January 28, 2020

Upon submission, you will receive an automatic reply with your paper offer number. If you do not receive a paper offer number at that point, please retry on-line submission or contact [nori.fought@sae.org](mailto:nori.fought@sae.org)

#### AUTHOR RESOURCES

The following SAE web sites provide useful information to assist you in submission of your materials:

General Author resources page  
[sae.org/participate/volunteer/author](http://sae.org/participate/volunteer/author)

Example of SAE International Technical Paper  
[volunteers.sae.org/authors/sae\\_tech\\_paper.pdf](http://volunteers.sae.org/authors/sae_tech_paper.pdf)

#### PRESENTER RESOURCES

The following SAE web sites provide useful information to assist you in development and presentation of your materials: [sae.org/participate/volunteer/presenter-resources](http://sae.org/participate/volunteer/presenter-resources)

#### For questions contact:

Nori Fought  
SAE International  
+1.248.273.2465  
[nori.fought@sae.org](mailto:nori.fought@sae.org)

# TECHNICAL SESSIONS

# ADVANCED PROPULSION/POWERTRAIN

|  | TUE |    | WED |    | THUR |    | Room No. |
|--|-----|----|-----|----|------|----|----------|
|  | AM  | PM | AM  | PM | AM   | PM |          |
| Abnormal SI Combustion (Knock) (PFL213)  | -   | -  | -   | ✓  | -    | -  | 141      |
| Abnormal SI Combustion (Preignition & SPI/ LSPI) (PFL217)                          | -   | ✓  | -   | -  | -    | -  | 415 A    |
| Advanced Battery Technologies (Part 1 - 3) (PFL730)                                | -   | ✓  | ✓   | ✓  | ✓    | ✓  | 357      |
| Advanced Fuel Cell Vehicle Applications (Part 1 & 2) (PFL720)                      | -   | -  | -   | ✓  | ✓    | 4  | 415 A    |
| Advanced Hybrid and Electric Vehicle Powertrains (Part 1 & 2) (PFL710)             | ✓   | ✓  | ✓   | -  | -    | -  | 410 B    |
| All Wheel Drive (PFL620)   | ✓   | -  | -   | -  | -    | -  | 250 C    |
| Alternative Fuel and Fuel Additive Effects on SI Combustion Processes (PFL214)     | -   | ✓  | -   | -  | -    | -  | 412 A    |
| Alternative and Advanced Fuels (Part 1 & 2) (PFL330)                               | -   | -  | -   | ✓  | ✓    | ✓  | 412 B    |
| Automotive Gasoline Engine Lubricants (PFL340)                                     | ✓   | -  | -   | -  | -    | -  | 353      |
| Basic SI Combustion Processes (PFL211)   | ✓   | -  | -   | -  | -    | -  | 142 C    |
| CI & SI Power Cylinder Systems (PFL530)  | -   | ✓  | -   | -  | -    | -  | 141      |
| Cold Start and Transients (PFL290)   | -   | -  | ✓   | -  | -    | -  | 414 B    |
| Combustion Control and Optimization (PFL280)                                       | ✓   | ✓  | -   | -  | -    | -  | 356      |
| Combustion in Compression-Ignition Engines (Part 1 - 3) (PFL220)                   | -   | ✓  | ✓   | ✓  | ✓    | ✓  | 310 B    |
| Combustion in Gaseous-Fueled Engines (PFL270)                                      | ✓   | ✓  | -   | -  | -    | -  | 358      |
| Control System Design & Calibration (PFL130)                                       | -   | -  | -   | -  | ✓    | ✓  | 413 A    |
| Controls for Hybrids and Electric Powertrains (PFL750)                             | -   | -  | -   | -  | ✓    | ✓  | 358      |
| Diagnostic Development (PFL150)  | -   | -  | ✓   | -  | -    | -  | 142 C    |
| Dilute SI Combustion (Stratified Charge, EGR) (PFL216)                             | -   | -  | -   | -  | -    | ✓  | 410 B    |
| Driveline Components/Subsystems (PFL670)   | ✓   | ✓  | -   | -  | -    | -  | 415 B    |
| Driveline Controls (PFL640)  | -   | -  | -   | ✓  | -    | -  | 415 B    |
| Driveline Lubricants (PFL360)  | ✓   | -  | -   | -  | -    | -  | 412 B    |
| Driveline Modeling (PFL680)  | ✓   | ✓  | -   | -  | -    | -  | 413 A    |
| Driveline NVH and Launch Devices (PFL660)  | -   | -  | -   | -  | ✓    | ✓  | 312 B    |
| Dual Fuel Combustion (PFL260)  | -   | -  | -   | -  | ✓    | ✓  | 415 B    |
| Electric Motor & Power Electronics (PFL740)  | -   | -  | -   | -  | ✓    | ✓  | 321      |
| Engine Block, Cylinder Heads, Oil & Water Pumps, Intake & Exhaust Systems (PFL580) | ✓   | ✓  | -   | -  | -    | -  | 312 B    |
| Engine Boosting Systems (PFL520)   | -   | -  | ✓   | ✓  | -    | -  | 251 C    |
| Fluid Flow Measurement & Analysis (PFL140)   | -   | -  | ✓   | -  | -    | -  | 250 B    |
| Fuel Injection and Sprays (Part 1 - 3) (PFL320)                                    | ✓   | ✓  | ✓   | ✓  | ✓    | ✓  | 258      |
| Fuel and Additive Effects on Engine Systems (PFL310)                               | ✓   | -  | -   | -  | -    | -  | 141      |
| Heavy Duty Diesel Lubricants (PFL350)  | -   | -  | ✓   | -  | -    | -  | 415 B    |
| High Efficiency IC Engines Concepts (Part 1 - 3) (PFL170)                          | ✓   | ✓  | ✓   | ✓  | ✓    | -  | 320      |



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# ADVANCED PROPULSION/POWERTRAIN

|  | TUE |    | WED |    | THUR |    | Room No. |
|--|-----|----|-----|----|------|----|----------|
|  | AM  | PM | AM  | PM | AM   | PM |          |
| Holistic Session on Fuel Consumption and Fuel Economy (PFL370)   | ✓   | ✓  | -   | -  | -    | -  | 321      |
| Homogeneous Charge Compression Ignition, HCCI (Part 1 & 2) (PFL230)  | -   | -  | -   | ✓  | ✓    | ✓  | 414 B    |
| IVT / CVT (PFL630)   | -   | -  | ✓   | -  | -    | -  | 250 C    |
| Models for Air & Exhaust Management (PFL111)   | ✓   | -  | -   | -  | -    | -  | 250 B    |
| Models for CI Combustion & Emissions (PFL113)  | -   | -  | -   | ✓  | -    | -  | 412 A    |
| Models for Driveline & Drive Cycle Simulation (PFL115)   | -   | -  | -   | -  | ✓    | -  | 412 A    |
| Models for Plants & Controls and Fuels & Fuel Storage (PFL114)   | -   | -  | -   | -  | -    | ✓  | 412 A    |
| Models for SI Combustion & Emissions (PFL112)  | -   | ✓  | -   | -  | -    | -  | 251 A    |
| Multi-Dimensional Engine Modeling (Part 1 - 3) (PFL120)  | ✓   | ✓  | ✓   | ✓  | ✓    | ✓  | 359      |
| New CI & SI Engines and Components (PFL510)  | -   | -  | -   | -  | ✓    | ✓  | 356      |
| Partially Premixed Compression Ignition, PPCI (PFL250)   | -   | -  | -   | -  | ✓    | ✓  | 141      |
| Recent Developments in China and U.S. Propulsion Systems Technologies (PFL180)   | -   | -  | ✓   | ✓  | -    | -  | 358      |
| SI Combustion Ignition (PFL215)  | -   | -  | -   | ✓  | -    | -  | 356      |
| Small Engine Technology (PFL540)   | ✓   | -  | -   | -  | -    | -  | 142 B    |
| Technical Expert Panel Discussion: SAE Panel on Low Speed Preignition ( LSPI)/ Stochastic Preignition Status and Next Steps (PFL299) | -   | -  | ✓   | -  | -    | -  | 141      |
| Technical Expert Panel Discussion: What does the future hold for Lubricants? (PFL300)  | -   | -  | -   | ✓  | -    | -  | 140 B    |
| Transmission Systems/Drive Unit (PFL610)   | -   | -  | ✓   | ✓  | -    | -  | 321      |
| Valvetrain, including VVA and Powertrain Actuators & Sensors (PFL570)  | ✓   | -  | -   | -  | -    | -  | 357      |

# TECHNICAL SESSIONS

# AUTOMOTIVE ELECTRONICS/ CONNECTIVITY/IOT/SMART CITY

|  | TUE |    | WED |    | THUR |    | Room No. |
|--|-----|----|-----|----|------|----|----------|
|  | AM  | PM | AM  | PM | AM   | PM |          |
| AI & Machine Learning (AE205)  | -   | -  | -   | -  | ✓    | ✓  | 259      |
| Autonomous Systems (Part 1 & 2) (AE506)  | -   | -  | ✓   | ✓  | ✓    | ✓  | 140 A    |
| Big Data Analytics and Vehicle Insight (IOT300)  | -   | -  | -   | -  | ✓    | -  | 310 B    |
| Bio-Inspiration: Turning Challenges Into Opportunities (AE207)   | -   | ✓  | -   | -  | -    | -  | 250 C    |
| Cybersecurity for Cyber-Physical Vehicle Systems (AE202)   | -   | -  | ✓   | ✓  | -    | -  | 251 B    |
| Driver Assistance Systems: Algorithms, Applications and Electronic Sensing (Part 1 of 2): Path Planning and Controls (AE401)         | -   | -  | -   | ✓  | -    | -  | 312 B    |
| Driver Assistance Systems: Algorithms, Applications and Electronic Sensing (Part 2 of 2): Perceptions AND Other ADAS related (AE401) | -   | -  | -   | -  | ✓    | ✓  | 251 C    |
| Electromagnetics and Antennas (AE402)  | -   | -  | -   | -  | ✓    | ✓  | 252 B    |
| Electronics Design - Processes, Optimization Techniques, Hardware Design (AE107)   | -   | ✓  | -   | -  | -    | -  | 251 C    |
| Engine & Transmission Control (AE301)  | ✓   | -  | -   | -  | -    | -  | 412 A    |
| High Voltage Vehicle Charging - Conductive and Wireless (AE304)  | -   | -  | ✓   | ✓  | -    | -  | 259      |
| Intelligent Transportation Systems (Part 1 & 2) (AE504)  | -   | ✓  | ✓   | ✓  | -    | -  | 252 B    |
| Intelligent Vehicle Initiative (AE501)   | -   | -  | ✓   | ✓  | -    | -  | 413 B    |
| Mobility of the Future (IOT100)  | -   | -  | -   | ✓  | -    | -  | 140 C    |
| Model-Based Controls and Software Development (AE103)  | -   | -  | -   | -  | -    | ✓  | 311 B    |
| Sensor Fusion (AE302)  | ✓   | ✓  | -   | -  | -    | -  | 413 B    |
| Software / System Testing and Validation (AE109)   | -   | -  | -   | -  | ✓    | ✓  | 413 B    |
| System Diagnostics/Prognostics and Predictive Maintenance (AE203)  | ✓   | ✓  | -   | -  | -    | -  | 259      |
| System Safety and Verification of Automated Driving Systems & ADAS (Part 1 - 3) (AE403)  | ✓   | ✓  | ✓   | ✓  | ✓    | -  | 252 A    |
| Systems Engineering (AE101)  | ✓   | -  | -   | -  | -    | -  | 252 B    |
| Systems Integration (AE108)  | -   | -  | ✓   | -  | -    | -  | 312 B    |
| Ultra-Reliability & Robustness in Automotive Electronics (AE404)   | -   | -  | -   | -  | -    | ✓  | 252 A    |
| V2X (Vehicle to Everything) Communications (AE503)   | -   | -  | -   | -  | ✓    | ✓  | 251 B    |
| Vehicle Networks and Communication (AE201)   | ✓   | -  | -   | -  | -    | -  | 251 B    |
| Wiring and Harnesses (AE303)   | -   | ✓  | -   | -  | -    | -  | 412 B    |



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# TECHNICAL SESSIONS

# BODY/CHASSIS/OCCUPANT AND PEDESTRIAN SAFETY/STRUCTURE

|   | TUE |    | WED |    | THUR |    | Room No. |
|---|-----|----|-----|----|------|----|----------|
|   | AM  | PM | AM  | PM | AM   | PM |          |
| Active and Automated Driving System Safety (Part 1 & 2) (SS400)   | -   | -  | -   | ✓  | ✓    | ✓  | 313 B    |
| Automotive Lighting Technology (SS300)  | -   | -  | ✓   | ✓  | -    | -  | 331 B    |
| Electric Vehicle Drivetrain Dynamics (SS901)  | -   | ✓  | -   | -  | -    | -  | 331 A    |
| Human Factors in Driver Vision and Lighting (SS301)   | -   | -  | -   | -  | -    | ✓  | 331 B    |
| Human Factors in Driving and Automotive Telematics (SS302)  | ✓   | ✓  | -   | -  | -    | -  | 338      |
| Human Factors in Seating Comfort (SS303)  | ✓   | ✓  | -   | -  | -    | -  | 331 B    |
| Motorsports Engineering (MSEC100)   | -   | -  | -   | -  | ✓    | -  | 331 B    |
| Occupant Protection: Accident Reconstruction (Part 1 of 3) (SS500)  | ✓   | ✓  | -   | -  | -    | -  | 354      |
| Occupant Protection: Accident Reconstruction (Part 2 of 3) (SS500)  | -   | -  | ✓   | ✓  | -    | -  | 354      |
| Occupant Protection: Biomechanics (SS501)   | -   | -  | -   | -  | ✓    | ✓  | 338      |
| Occupant Protection: Event Data Recorders (EDR) and Accident Reconstruction (Part 3 of 3) (SS500)         | -   | -  | -   | -  | ✓    | ✓  | 354      |
| Occupant Protection: Integrated Safety Systems (Part 1 & 2) (SS503)                                       | ✓   | -  | ✓   | -  | -    | -  | 313 B    |
| Occupant Protection: Occupant Restraints (Air Bags, Seat Belts, Knee Bolsters, Child Seats, etc.) (SS504) | -   | ✓  | -   | -  | -    | -  | 313 A    |
| Occupant Protection: Rear Impact, Side Impact and Rollover (SS506)  | -   | -  | -   | ✓  | -    | -  | 338      |
| Occupant Protection: Safety Test and Simulation Methods and Applications (SS508)                          | -   | ✓  | -   | -  | -    | -  | 313 B    |
| Steering and Suspension Technology Symposium (Part 1 of 2): Suspension Topics (SS600)                     | -   | -  | ✓   | ✓  | -    | -  | 331 A    |
| Steering and Suspension Technology Symposium (Part 2 of 2): Steering Topics (SS600)                       | -   | -  | -   | -  | ✓    | ✓  | 331 A    |
| Tire and Wheel Technology (SS700)   | ✓   | -  | -   | -  | -    | -  | 414 B    |
| Vehicle Aerodynamics (Part 1 of 3): Vehicle Interaction and Fundamental Aerodynamics (SS800)              | ✓   | ✓  | -   | -  | -    | -  | 250 A    |
| Vehicle Aerodynamics (Part 2 of 3): Experimental Technologies & Correlation and CFD Methods (SS800)       | -   | -  | ✓   | ✓  | -    | -  | 250 A    |
| Vehicle Aerodynamics (Part 3 of 3): Aerodynamics Development, Rotating Flows, and Motorsports (SS800)     | -   | -  | -   | -  | ✓    | ✓  | 250 A    |
| Vehicle Dynamics, Stability and Control (Part 1 of 2) (SS900)   | -   | -  | -   | ✓  | ✓    | ✓  | 353      |

|   | TUE |    | WED |    | THUR |    | Room No. |
|---|-----|----|-----|----|------|----|----------|
|   | AM  | PM | AM  | PM | AM   | PM |          |
| 3D-Printing (IDM201)  | ✓   | -  | -   | -  | -    | -  | 251 C    |
| Blockchain for Supply Chain and other Application (IDM800)                          | -   | -  | -   | -  | ✓    | ✓  | 312 A    |
| Body Engineering and Design (SS100)   | ✓   | ✓  | -   | -  | -    | -  | 142 A    |
| CAD/CAM/CAE Technology (Part 1 & 2) (SS101)   | -   | -  | ✓   | ✓  | ✓    | ✓  | 313 A    |
| Data & Analytics (Includes Drive Cycle) (IDM304)                                    | -   | ✓  | -   | -  | -    | -  | 311 B    |
| Design Optimization - Methods and Applications (Part 1 & 2) (SS103)                 | -   | -  | ✓   | ✓  | ✓    | ✓  | 142 A    |
| Design for Reliability and Robustness (IDM101)                                      | -   | -  | -   | -  | ✓    | -  | 311 B    |
| Developments in Accelerated Reliability and Durability Testing (IDM104)             | ✓   | -  | -   | -  | -    | -  | 310 B    |
| Intelligent Manufacturing (IDM202)  | ✓   | -  | -   | -  | -    | -  | 311 A    |
| Modeling and Simulation of Military Ground Vehicles (Part 1 & 2) (IDM301)           | -   | -  | -   | ✓  | ✓    | ✓  | 414 A    |
| Modelling and Simulation of Electric Vehicle and Electrification (IDM302)           | ✓   | -  | -   | -  | -    | -  | 313 A    |
| Reliability and Accelerated Testing (IDM102)  | -   | -  | -   | ✓  | -    | -  | 311 B    |
| Reliability and Robust Design in Automotive Aero-Thermal and Fluid Systems (IDM103) | -   | -  | -   | ✓  | -    | -  | 311 B    |
| Robotics Design (IDM203)  | -   | -  | ✓   | -  | -    | -  | 311 A    |
| Simulation, Test, & Validation (IDM303)   | -   | -  | ✓   | -  | -    | -  | 311 B    |



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# TECHNICAL SESSIONS

# EMISSIONS/ENVIRONMENT/ SUSTAINABILITY

|  | TUE |    | WED |    | THUR |    | Room No. |
|--|-----|----|-----|----|------|----|----------|
|  | AM  | PM | AM  | PM | AM   | PM |          |
| Advanced Catalysts and Substrates (PFL422)   | -   | -  | -   | -  | -    | ✓  | 142 C    |
| Advances in Alternative Energy Sources for Sustainable Development in the Transportation Sector (Part 1 of 2) (SDP103) | -   | -  | ✓   | ✓  | -    | -  | 312 A    |
| Advances in Nox Reduction Technology (PFL424)  | -   | -  | ✓   | ✓  | -    | -  | 251 A    |
| Advances in Particulate Filter Substrates (Part 1 & 2) (PFL423)  | -   | -  | -   | ✓  | ✓    | ✓  | 250 B    |
| Climate Control (Part 1 & 2) (HX104)   | -   | -  | -   | ✓  | ✓    | -  | 142 C    |
| Emission Control Modeling (Part 1 & 2) (PFL430)  | -   | -  | -   | ✓  | ✓    | ✓  | 142 B    |
| Emissions Measurement and Testing (Part 1 & 2) (PFL440)  | -   | -  | -   | ✓  | ✓    | ✓  | 250 C    |
| Energy Efficiency of Thermal Systems & Autonomous and Connected Vehicle Thermal Management (HX103)                     | -   | -  | -   | -  | -    | ✓  | 310 B    |
| Exhaust Emissions Control - New Developments (PFL410)  | ✓   | ✓  | -   | -  | -    | -  | 420 A    |
| Gaseous Engine Emissions (PFL460)  | -   | -  | -   | ✓  | -    | -  | 310 B    |
| LCA and Automotive Sustainability: Materials Production; Manufacturing; Use; End-of-Life (SDP102)                      | -   | ✓  | -   | -  | -    | -  | 312 A    |
| Meeting the ARB Low Emission Standard (PFL426)   | -   | -  | ✓   | -  | -    | -  | 310 B    |
| Particle Emissions from Combustion Sources (PFL450)  | -   | -  | -   | -  | ✓    | ✓  | 140 A    |
| Powertrain Thermal Management (HX106)  | -   | ✓  | -   | -  | -    | -  | 250 B    |
| System Integration and Durability (PFL421)   | -   | ✓  | -   | -  | -    | -  | 142 C    |
| Technical Expert Panel Discussion: EU/CHINA (PFL470)   | -   | ✓  | -   | -  | -    | -  | 251 B    |
| Thermal System Components (HX101)  | ✓   | ✓  | -   | -  | -    | -  | 140 A    |
| Thermal Systems Modeling and Simulation (HX102)  | -   | -  | -   | -  | ✓    | ✓  | 140 B    |
| Thermal Systems for Hybrid and Electric Vehicles (HX105)   | -   | ✓  | -   | -  | -    | -  | 142 B    |
| Vehicle Electrification Strategies for Sustainability (SDP104)   | ✓   | -  | -   | -  | -    | -  | 312 A    |

# TECHNICAL SESSIONS

# MATERIALS AND LIGHTWEIGHTING

|   | TUE |    | WED |    | THUR |    | Room No. |
|---|-----|----|-----|----|------|----|----------|
|   | AM  | PM | AM  | PM | AM   | PM |          |
| Advanced Analysis, Design, and Optimization of Materials, Restraints, and Structures for Enhanced Automotive Safety and Weight Reduction (M202) | -   | -  | -   | -  | ✓    | ✓  | 140 E    |
| Advances in Coatings (M400)   | ✓   | ✓  | -   | -  | -    | -  | 140 G    |
| Advances in Instrument Panels, Seats, and Interiors (M301)  | -   | -  | ✓   | -  | -    | -  | 140 C    |
| Advances in Lightweight Materials (M102)  | ✓   | -  | -   | -  | -    | -  | 140 C    |
| Advances in Metalcasting (M106)   | ✓   | ✓  | -   | -  | -    | -  | 140 B    |
| Applications of Advanced High-Strength Steels and Press Hardening for Automotive Structures (M104)  | -   | ✓  | -   | -  | -    | -  | 140 C    |
| Automotive Composite Materials and Structures (M302)  | -   | -  | -   | -  | ✓    | -  | 140 G    |
| Automotive Engineering Testing and Test Methods (M203)  | -   | -  | -   | ✓  | -    | -  | 311 A    |
| Automotive Polymeric, Plastic Components and Composites (M300)  | -   | -  | -   | -  | -    | ✓  | 140 G    |
| Automotive Tribology (M214)   | ✓   | ✓  | -   | -  | -    | -  | 140 F    |
| Failure Analysis of Materials, Components, and Systems (M107)   | -   | -  | ✓   | -  | -    | -  | 140 B    |
| Fatigue Modeling / Testing & CAE Durability Analysis (Part 1 & 2) (M200)  | -   | -  | ✓   | ✓  | ✓    | ✓  | 140 D    |
| Industry Roadmap: Accelerating Wide-Spread Adoption of Polymers and Plastic Composites for Enabling Automotive Mega Trends (M999)               | ✓   | -  | -   | -  | -    | -  | 251 A    |
| Load Simulation and Vehicle Performance: Handling and Dynamics (M210)   | -   | -  | -   | -  | ✓    | -  | 311 A    |
| Load Simulation and Vehicle Performance: Multi-body Dynamics and Intelligent Vehicle Dynamics (M209)  | -   | ✓  | -   | -  | -    | -  | 140 E    |
| Load Simulation and Vehicle Performance: Nonlinear Components/Systems (M206)  | -   | -  | ✓   | ✓  | -    | -  | 140 G    |
| Load Simulation and Vehicle Performance: Ride Comfort (M207)  | ✓   | ✓  | -   | -  | -    | -  | 414 A    |
| Load Simulation and Vehicle Performance: Tire and Terrain (M208)  | ✓   | -  | -   | -  | -    | -  | 140 E    |
| Materials-Environment Interactions (M217)   | -   | -  | ✓   | -  | -    | -  | 414 A    |
| Modeling and Simulation in Composites, Plastics, and Polymers (M215)  | -   | -  | ✓   | ✓  | -    | -  | 140 F    |
| Multi-Discipline Interaction and Special CAE Applications (M213)  | -   | -  | ✓   | ✓  | -    | -  | 140 E    |
| Optical Measurement and Nondestructive Testing Techniques in Automotive Engineering (M204)  | ✓   | ✓  | -   | -  | -    | -  | 140 D    |
| Sheet Metal Forming Technology (M105)   | -   | -  | -   | -  | ✓    | ✓  | 140 C    |
| UV/EB Leading the Way for the Future of Automotive (M401)   | -   | -  | -   | -  | -    | ✓  | 311 A    |
| Welding and Joining and Fastening (M216)  | -   | -  | -   | -  | ✓    | ✓  | 140 F    |



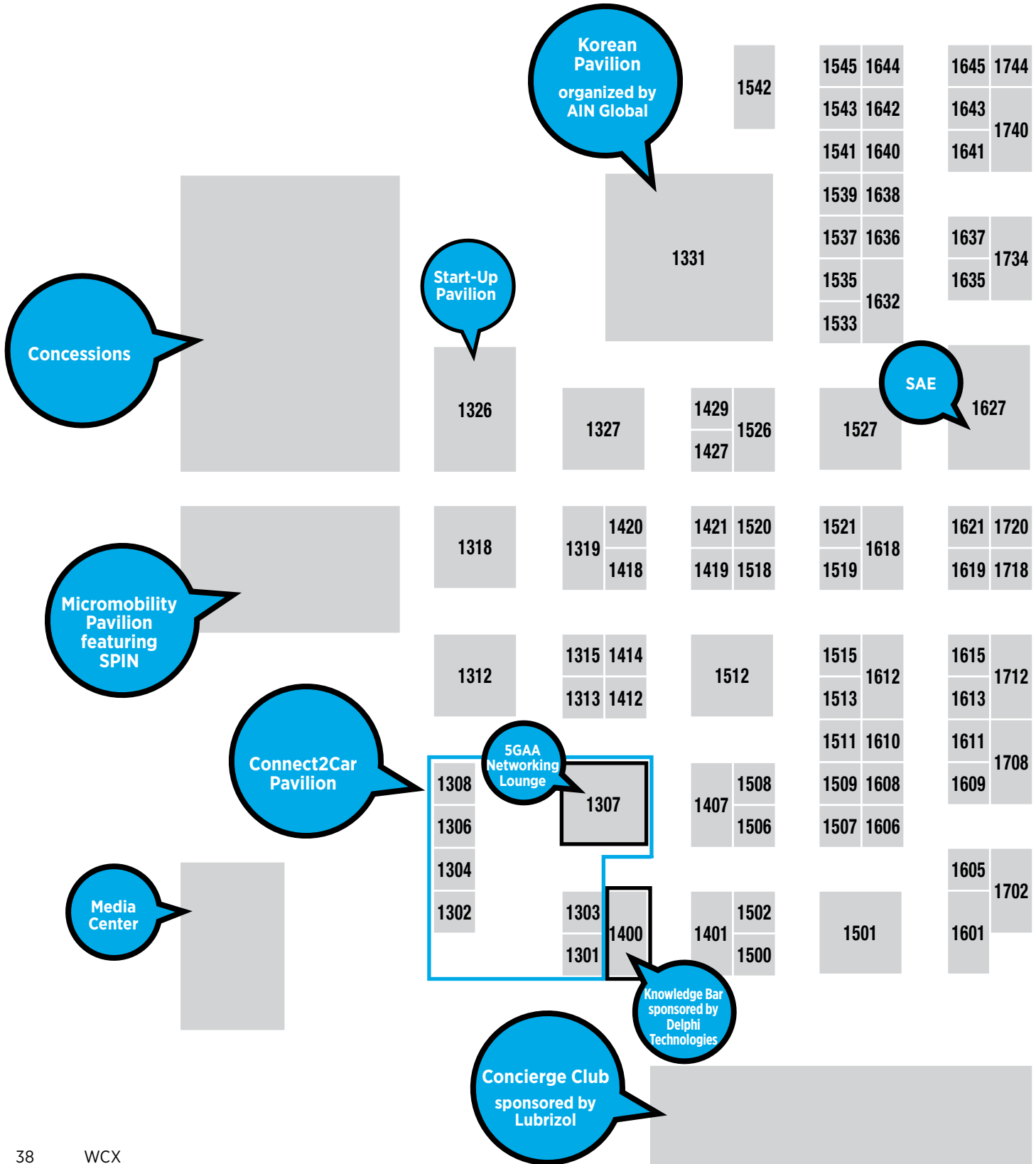
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# FLOOR PLAN





Exhibitor Services

Concessions

The Exchange

SAE J3300 Certification in Exhibit Hall B

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2243

2141 2240

2241

2239

2135 2236

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2235

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SAE

SAE Event Sales Office

2127

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1918

2017

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2219 2320

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2217 2316

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2113 2212

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2313

Lightweighting-Materials-Efficiency Pavilion organized by AluMag

2109 2208

2207

MOBILITY HISTORY COMMITTEE

2301

SAE Autonomous Demo Days in Exhibit Hall B

2107 2206

2101 2200

2201 2302

2300

Learning Lab sponsored by Honda

1701

2003

Career Corner

SAE Membership Lounge



EXHIBIT HALL ENTRANCE

CC1 CC2 CC3 CC4 CC5 CC6 CC7

WCX

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# EXHIBITOR LIST AS OF MARCH 29

| Company  | Booth | Company  | Booth | Company  | Booth |
|--|-------|--|-------|--|-------|
| <b>A</b>   |       |  |       |  |       |
| A&D Technology Inc                                 | 1515  | Jing-Jin Electric  | 2141  | <b>Y</b>   |       |
| AAM - American Axle & Manufacturing                | 1717  | JobsOhio   | 1632  | Yinlun TDI LLC   | 2135  |
| ACE Climatic Wind Tunnel                           | 1421  | <b>K</b>   |       |  |       |
| AdvanTech International                            | 1712  | Kamax  | 2212  | <b>LIGHTWEIGHTING MATERIALS</b>  |       |
| AK Steel Corporation                               | 2119  | KWANG DONG   | 1401  | <b>EFFICIENCY PAVILION</b>   |       |
| Altran   | 1319  | <b>L</b>   |       |  |       |
| Aofu Environmental Technology Co Ltd               | 1619  | LaVision Inc   | 2206  | organized by  |       |
| Applus IDIADA                                      | 2207  | Liquidmetal Technologies Inc   | 1608  | AluMag Automotive LLC 2215   |       |
| ArcelorMittal                                      | 1312  | <b>M</b>   |       |  |       |
| Argonne National Laboratory                        | 1315  | Melecs EWS GmbH  | 1637  | Aluminum Extruders Council 2320  |       |
| Asahi Kasei  | 2003  | Michigan Technological Univ  | 1541  | AMT Die Casting 2316   |       |
| Asia Forging Supply Co Ltd                         | 2300  | MPP  | 2201  | Grupo Aluminio de Occidente SA de CV 2217  |       |
| ASM International                                  | 1539  | MSC Software   | 2236  | KIPP Car Comfort Systems 2213  |       |
| Auros Knowledge Systems                            | 1641  | <b>N</b>   |       |  |       |
| <b>B</b>   |       |  |       |  |       |
| Baier & Michels USA Inc                            | 1612  | NASA Technology Transfer Program   | 1609  | Lightweighting Materials Efficiency Pavilion 2215  |       |
| BAZZAZ Inc   | 1643  | Nifco America Corp   | 2143  | Nikkei MC Aluminum America Inc 2314  |       |
| Beijing Tianyuan Aote Rubber and Plastic           | 2315  | NOF America Corp   | 1429  | Rheinfelden ALLOYS GmbH & Co Kg 2312   |       |
| Big Ass Fans                                       | 1412  | Numeca USA Inc   | 1613  | WHB International Inc 2219   |       |
| Bomatec International Corp                         | 1511  | <b>O</b>   |       |  |       |
| Bruel & Kjaer North America Inc                    | 2108  | Optimized Thermal Systems Inc  | 1636  | <b>CONNECT2CAR PAVILION</b>  |       |
| <b>C</b>   |       |  |       |  |       |
| C&U Americas LLC                                   | 1512  | <b>P</b>   |       |  |       |
| CAMBUSTION   | 2113  | Phillips Tube G  | 1418  | 321 Gang Inc 1308  |       |
| Caresoft Global                                    | 1414  | Plato North America Inc  | 1419  | 5GAA Lounge 1307   |       |
| Catalyst Product Development                       | 1611  | Poppelmann Plastics  | 1513  | ASTC 1306  |       |
| CCTY Bearing                                       | 1720  | Proto Manufacturing Inc  | 1427  | Autoliv 1301   |       |
| Cebi   | 1520  | <b>Q</b>   |       |  |       |
| Cipher Automotive                                  | 2313  | QuickLabel   | 1615  | C2A Security 1303  |       |
| Clark Testing                                      | 2302  | Quintus Technologies   | 1509  | Vector 1302  |       |
| Comsol Inc   | 1518  | <b>R</b>   |       |  |       |
| Convergent Science Inc                             | 1702  | Radtech - The Association for UV+EB Tech   | 2243  | Wind River 1304  |       |
| Cruise Automation                                  | V3    | Rapid+ TCT   | 1640  | <b>KOREAN PAVILION</b>   |       |
| <b>D</b>   |       |  |       |  |       |
| D&V Electronics                                    | 1734  | organized by  |       |  |       |
| Dataspeed Inc                                      | V1    | AIN Global Foundation 1331   |       |  |       |
| Detroit Engineered Products                        | 1638  | HyunJin FB 1331  |       |  |       |
| DEWEsoft LLC                                       | 2240  | Ilshin Plastic Co Ltd 1331   |       |  |       |
| DfR Solutions                                      | 1621  | Kunhwa Engineering Co Ltd 1331   |       |  |       |
| Donaldson Company Inc                              | 1506  | Samjin Jeonggong Co Ltd 1331   |       |  |       |
| Dynacast/OPTIMIM                                   | 2101  | SamYang Metal Co Ltd 1331  |       |  |       |
| <b>E</b>   |       |  |       |  |       |
| Eastman  | 1527  | Shilla Industrial Co Ltd 1331  |       |  |       |
| Elemance LLC                                       | 2110  | Shin Chang Precision Ind Co Ltd 1331   |       |  |       |
| Elsevier   | 1507  | Shinhan Precision Ind Co Ltd 1331  |       |  |       |
| Endurica LLC                                       | 2109  | Shinyang Tech Co Ltd 1331  |       |  |       |
| EngSim Corporation                                 | 2112  | SINDO Co Ltd 1331  |       |  |       |
| ESTECO North America                               | 1605  | TPC Co Ltd 1331  |       |  |       |
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| FCA US LLC   | 1701  | <b>START-UP PAVILION</b>   |       |  |       |
| Ford Motor Company                                 | 1709  | BRB Technologies LLC SUP12   |       |  |       |
| FRAM Group   | 1740  | CoLab Software Inc SUP2  |       |  |       |
| <b>G</b>   |       |  |       |  |       |
| Gamma Technologies                                 | 1708  | Enviro Clean Diesel SUP9   |       |  |       |
| Gemini Automotive Inc                              | 1606  | Mirabilis Design Inc SUP1  |       |  |       |
| General Seal Corporation                           | 1744  | Novac Supercap SUP8  |       |  |       |
| GKD-USA Inc  | 1502  | Orbitless Drives Inc SUP7  |       |  |       |
| Granta Design                                      | 1610  | Perpetua Inc SUP13   |       |  |       |
| <b>H</b>   |       |  |       |  |       |
| HBM Test and Measurement + B&K Sound and Vibration | 2108  | Tesseract Structural Innovations SUP3  |       |  |       |
| Hirtenberger Automotive Safety                     | 1635  | Vectorzero SUP10   |       |  |       |
| Hyundai Motor Group                                | 1918  | VisualThreat SUP5  |       |  |       |
| <b>I</b>   |       |  |       |  |       |
| I&V Automotive Engineering Inc                     | 1318  | Voxel51 SUP11  |       |  |       |
| Ijlin Steel Corporation                            | 2319  | WaveSense SUP6   |       |  |       |
| Impro Group  | 1508  | ZOMIO Inc SUP4   |       |  |       |
| Indo-MIM   | 2200  | <b>CAREER CORNER</b>   |       |  |       |
| Integral Technology Co Ltd                         | 2107  | Aptiv CC7  |       |  |       |
| International Magnesium Assoc                      | 2317  | FCA US LLC CC5   |       |  |       |
| Intrepid Control Systems Inc                       | 1407  | Ford Motor Co CC2  |       |  |       |
| IPC  | 1642  | Honda R&D Americas Inc CC3   |       |  |       |
| I-PEX Connectors                                   | 2214  | Mitsubishi Motors R&D of America Inc CC1   |       |  |       |
| <b>J</b>   |       |  |       |  |       |
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| <b>M</b>   |       |  |       |  |       |
| <b>N</b>   |       |  |       |  |       |
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### SPONSOR

1 Dauch Dr  
Detroit, MI 48211  
United States

[aam.com](http://aam.com)

AAM (NYSE:AXL) delivers POWER that moves the world. As a leading global tier 1 automotive supplier, AAM designs, engineers and manufactures driveline, metal forming and casting technologies that are making the next generation of vehicles smarter, lighter, safer and more efficient. Headquartered in Detroit, AAM has over 25,000 associates operating at nearly 90 facilities in 17 countries.

## ACE CLIMATIC WIND TUNNEL

Booth **1421**

2000 Simcoe St N  
Oshawa, Ontario L1G 0C5  
Canada

[ace.uoit.ca](http://ace.uoit.ca)

The ACE Climatic Wind Tunnel is a research and testing facility which offers chambers and technology for climatic, structural durability and life-cycle testing. Facilities include one of the largest and most sophisticated climatic wind tunnels (CWT) on the planet.

## A&D TECHNOLOGY INC

Booth **1515**

4622 Runway Blvd  
Ann Arbor, MI 48108  
United States

[aanddtech.com](http://aanddtech.com)

A&D Technology delivers integrated test & lab management solutions to the transportation & energy markets for a wide range of applications, from durability to vehicle simulation. With over 30 years of experience and more than 1000 installations worldwide, A&D has the proven technology to help you implement the most advanced and cost-effective solution for your testing challenge.

## ADVANTECH INTERNATIONAL

Booth **1712**

1600 Cottontail Ln Ste 3  
Somerset, NJ 08873  
United States

[advantechinternational.com](http://advantechinternational.com)

Advantech International established as an international trading and development company, partners with world class manufacturers to deliver engineered components. Our Vehicle Components Group offers cutting edge component solutions within these technology categories; Metal Forming, Electrification & Autonomous Products and Engine Valve Train Components - Timing Chain Systems.

## AK STEEL CORPORATION

Booth **2119**

9227 Centre Pointe Dr  
West Chester, OH 45069  
United States

[aksteel.com](http://aksteel.com)

AK Steel is a leading producer of flat-rolled carbon, stainless and electrical steel products, primarily for the automotive, infrastructure and manufacturing, electrical power generation and distribution markets. Through its subsidiaries, the company also provides customer solutions with carbon and stainless steel tubing, die design and tooling, and hot- and cold-stamped components.

## ALTRAN

Booth **1319**

3929 Six Mile Rd Ste 212  
Livonia, MI 48152  
United States

[altran.com](http://altran.com)

Altran works with client companies to transform how they do business in order to compete more effectively in today's connected digital world. From aligning development approaches with urgent business needs, expanding development capacity, and offloading sustaining engineering projects. Altran ensures companies accelerate the pace of innovation while effectively managing product life.

## AOFU ENVIRONMENTAL TECHNOLOGY CO LTD

Booth **1619**

Fumin Rd Economy Dev Area  
Shandong 251500  
China

[sdaofu.com](http://sdaofu.com)

We are the largest substrate manufacture in China. The new products DOC 400/4, ACT DPF, SCR 600/3 with uniform reliable quality and very competitive price can meet customer's requirement. The products DOC, DPF have been mass exported to North America and Europe. If you have any requirement and question, please send E-mail to: [info@aofuchina.com](mailto:info@aofuchina.com) and visit our website.

## APPLUS IDIADA

Booth **2207**

100 W Big Beaver Rd Ste 200  
Troy, MI 48084  
United States

[applusidiada.com/en](http://applusidiada.com/en)

With over 25 years of history and 2,500 engineers, Applus IDIADA is an engineering company providing design, testing and engineering services to the automotive industry worldwide. Headquartered in Europe, the company is also located in Michigan and in California.

# EXHIBITOR PROFILES

## ARCELORMITTAL

Booth **1312**

1 S Dearborn St Fl 19  
Chicago, IL 60603  
United States

[usa.arcelormittal.com](http://usa.arcelormittal.com)

ArceLorMittal is the world's leading steel and mining company. Guided by a philosophy to produce safe, sustainable steel, we are the global leader in the automotive market. We deliver value to our customers by investing in our operations and research, launching new steel products, identifying co-engineering opportunities with customers, and innovating steel solutions.

## ARGONNE NATIONAL LABORATORY

Booth **1315**

9700 S Cass Ave Bldg 201  
Lemont, IL 60439  
United States

[anl.gov](http://anl.gov)

Argonne National Laboratory's transportation research program deploys experts from many disciplines to address the problems of foreign oil dependency and greenhouse gas emissions. Working with the U.S. transportation industry, Argonne researchers improve processes, create transferrable technologies, and provide cost-effective solutions in support of U.S. Department of Energy goals.

## ASAHI KASEI

Booth **2003**

900 E Van Riper Rd  
Fowlerville, MI 48836  
United States

[ak-america.com](http://ak-america.com)

Multinational company producing engineered polymers (Asahi Kasei Plastics), battery separators (Celgard & Daramic), semi-conductors (AKM), UVC-LEDs (Crystal IS) and fabrics (Sage Automotive Materials) for the automotive, commercial and recreational vehicle industry.

## ASIA FORGING SUPPLY CO LTD

Booth **2300**

Detroit Metro Airport Center  
11677 Wayne Rd Ste 112  
Romulus, MI 48174  
United States

Asia Forging Supply was established in 1997 in Taiwan. By its innovative business model, MMS (Mechanical Manufacturing Service, a virtue manufacturing service) AFS became: 1. One stop supplying center for forging, casting, stamping, machining; 2. One stop supplying center for CNC machine; 3. One stop supplying center for automation, tooling, jigs and fixtures.

## ASM INTERNATIONAL

Booth **1539**

Materials Park  
9639 Kinsman Rd  
Novelty, OH 44073  
United States

[asminternational.org](http://asminternational.org)

ASM International connects materials professionals to the resources necessary to provide professional development and improve materials performance. As the world's most established materials information society, ASM engages members through a global network and provides access to trusted materials information through reference content, education courses, international events, and research.

## AUROS KNOWLEDGE SYSTEMS

Booth **1641**

19575 Victor Pkwy Ste 250  
Livonia, MI 48152  
United States

[aurosks.com](http://aurosks.com)

Auros Knowledge Systems is the leading Knowledge Aware software and service provider. Our software takes knowledge out of documents and put it into a tool that intelligently delivers knowledge to users in their flow of work; activating it to ensure it gets reused. Learn more about Auros at our website.

## BAIER & MICHELS USA INC

Booth **1612**

65 Brookfield Oaks Dr  
Greenville, SC 29607  
United States

[baier-michels.com](http://baier-michels.com)

Baier & Michels USA, Inc. located in South Carolina is a full service manufacturer and provider of automotive fasteners around the world. B&M USA can provide your team, with virtually any type of engineered automotive fastener. With our global engineering team b&m can support your prototype, production and VA/VE activities.

## BAZZAZ INC

Booth **1643**

1150 W Central Ave Unit B  
Brea, CA 92821  
United States

[bazzaz.net](http://bazzaz.net)

BAZZAZ is a manufacturer of Engine Control Electronics including; ECUs, A/F Ratio Measurement, Wire Harnesses, and other assemblies. Our capabilities include Embedded Design, UX/UI Design, SMT/Harness Assembly & Testing. With a deep heritage in motor-sports, BAZAZ has 15+ years of knowledge and experience to bring your ideas to reality, efficiently.

# EXHIBITOR PROFILES

## BEIJING TIANYUAN AOTE RUBBER AND PLASTIC CO LTD

Booth 2315

No 12 North Fengxiang Development Zone  
Huairou District Beijing 101400  
China

[tvat.net](http://tvat.net)

Beijing TYAT is a global top player in the manufacture of high-performance vehicle rubber and plastic parts in the non-tire rubber sector. Core technologies including Turbocharger hoses, Cooling & Heating hoses, Air conduction hoses and Fuel transmission. TYAT uses cutting edge knowledge to ensure that Engineering Design services are at a level of excellence.

## BIG ASS FANS

Booth 1412

2348 Innovation Dr  
Lexington, KY 40511  
United States

[bigassfans.com](http://bigassfans.com)

Big Ass Fans leads the industry in cooling airflow and energy-saving comfort. Our powerful, efficient fans are engineered to bring relief that lasts, even in the harshest conditions. Ranging in diameter from 18 in. to 24 ft. and featuring a variety of speeds and automated environmental controls, Big Ass Fans sets the standard for a more productive facility at a fraction of the cost.

## BOMATEC INTERNATIONAL CORP

Booth 1511

400 Finchdene Sq Unit 6  
Toronto, Ontario M1X 1E2  
Canada

[bomatec.com](http://bomatec.com)

Made from Malaysia and Canada, Bomatec is more than just magnet. We are your one stop source for magnets assemblies for motors and sensors; -Permanent and Soft Magnets -Cores, chokes, inductors, filters and transformers -SMC - Soft Magnetic Composite - MIM - Metal Injection Molding.

## BRUEL & KJAER SOUND AND VIBRATION + HBM TEST AND MEASUREMENT

Booth 2108

6855 Commerce Blvd  
Canton, MI 48187  
United States

[bksv.com](http://bksv.com)

Innovative testing solutions from the merger of Brüel & Kjær and HBM. Brüel & Kjær offers comprehensive NVH engineering solutions for the sound and vibration industry. HBM offers mobile-rugged DAQ, power analyzers and torque sensors plus Presncia software including nCode for fatigue and durability analysis and ReliaSoft for ensuring reliability.

## C&U AMERICAS LLC

Booth 1512

45901 Five Mile Rd  
Plymouth, MI 48170  
United States

[cubearing.com](http://cubearing.com)

C&U Americas, LLC, is the North American subsidiary of C&U Group, one of the world's top 10 bearing manufacturers & China's largest producer. We offer a full line of bearings for use in automotive OEM, OES and aftermarket. We offer over 30,000 bearing types in a wide range of specifications & sizes. We produce over 1.125 bil bearings per year in our independently certified plants

## CAMBUSTION

Booth 2113

J6 The Paddocks  
347 Cherry Hinton Road  
Cambridge CB1 8DH  
United Kingdom

[cambustion.com/products](http://cambustion.com/products)

Cambustion's fast-response gas and particulate analyzers enable engineers worldwide to understand engine operation to meet emissions targets, including real world driving. Rapid transient mapping capabilities offer efficient methods for emissions compliance. Cambustion's GPF/DPF Filter Testing System provides cost-effective testing and development including ashing studies.

## CARESOFT GLOBAL

Booth 1414

7025 Veterans Blvd Ste A  
Burr Ridge, IL 60527  
United States

[caresoftglobal.com](http://caresoftglobal.com)

Caresoft Global is a technology driven engineering solutions company working in the areas of competitive assessment (automotive benchmarking), engineering services and solutions to address challenges relative to product development, cost optimization, manufacturing and aftermarket. Our solutions are a combination of competencies, customer experience and specific enablers such as Platform.

## CATALYST DESIGN

Booth 1611

2920 Fortune Cir W Ste E  
Indianapolis, IN 46241  
United States

[catalystpdg.com](http://catalystpdg.com)

Ingenuity, speed, and collaboration; that's how we cultivate vital intellectual property. With over 15 years of experience in industrial design, engineering, prototyping, and manufacturing – we are the experts at bringing products to life. Discover your market potential with integrated solutions from Catalyst Product Development.

# EXHIBITOR PROFILES

## CCTY BEARING

Booth 1720

1111 Rose Rd  
Lake Zurich, IL 60047  
United States

**CCTYBearing.com**

Bold engineering produces bold design. At CCTY Bearing our engineers re-imagine what is possible in motion control. These innovative ideas lead to patented products like the Square Ball Universal Joint-TM and entire bearing assemblies. As a full-service manufacturing partner, we lend our engineering support to automotive OEMs to quickly turn new product ideas into reality.

## CEBI

Booth 1520

41800 W 11 Mile Rd Ste 225  
Novi, MI 48375  
United States

**cebi.com**

Cebi is a worldwide expert in the manufacture of electromechanical components for the automotive industry, household appliances, e-mobility applications and industrial applications. Cebi has developed a broad range of products that improve safety, performance and comfort for every driver. With this variety, we supply our electromechanical products to 95% of worldwide car manufacturers. By considerably investing in our R&D department, we are the global leader for washer systems including pumps and filler flap actuators. We are the European leader for temperature sensors and closing mechanisms.

## CIPHER AUTOMOTIVE

Booth 2313

39-41 Charing Cross Rd  
London WC2H 0AR  
United Kingdom

**cipher.ai**

Cipher Automotive is the only AI analytics software to provide the patent intelligence required by teams responsible for strategic decisions relating to the future of the car. Now used by leading OEMs and their suppliers, Cipher Automotive includes a taxonomy of over 200 patented technologies.

## CLARK TESTING

Booth 2302

1801 Route 51  
Jefferson Hills, PA 15025  
United States

**clarktesting.com**

Clark Testing has been providing product qualification testing and design verification for manufacturers for over 20 years. We provide our clients with independent, objective and competitively priced solutions to their testing needs. Clark's comprehensive catalogue of testing services provides a foundation for our commitment to product quality. Let us provide that service to you.

## COMSOL INC

Booth 1518

100 District Ave  
Burlington, MA 01803  
United States

**comsol.com**

COMSOL Multiphysics® is an industry-leading scientific software package for the modeling and simulation of any physics-based system. A particular strength is its ability to account for interdependent, coupled physics known as multiphysics phenomena. Modules for specific disciplines including AC/DC, acoustics, plasma, heat transfer, MEMS, RF, and structural mechanics are available.

## CONVERGENT SCIENCE INC

Booth 1702

6400 Enterprise Ln Ste 101  
Madison, WI 53719  
United States

**convergecf.com**

Convergent Science is a computational fluid dynamics (CFD) company. Our flagship product, CONVERGE, is a revolutionary CFD software with truly autonomous meshing capabilities that eliminate the grid generation bottleneck from the simulation process. Convergent Science is headquartered in Madison, Wisconsin, and has offices in the US, Europe, and India and distributors worldwide.

## CRUISE AUTOMATION

Booth V3

1201 Bryant St  
San Francisco, CA 94103  
United States

**getcruise.com**

## DATASPEED INC

Booth V1

1935 Enterprise Dr  
Rochester Hills, MI 48309  
United States

**Dataspeedinc.com**

Dataspeed is the global leader in Autonomous Vehicle (AV) drive-by-wire technology. Hundreds of customers have trusted Dataspeed's expert software and hardware engineers with their driverless car integrations, including sensor developers, mobility-as-a-service providers, research institutions, and government agencies. Dataspeed is dedicated to building AV solutions that are safe, reliable, and cost-effective.

# EXHIBITOR PROFILES

## DETROIT ENGINEERED PRODUCTS

Booth 1638

850 E Long Lake Rd  
Troy, MI 48085  
United States  
[depusa.com](http://depusa.com)

Detroit Engineered Products (DEP) is an Engineering Solutions and Product Development company. Since its inception in 1998 in Troy, Michigan, USA, DEP is now a global company with footprints in Europe, China, Korea, Japan and India. DEP uses the accelerated and transformed product development process, accomplished by utilizing our proprietary CAE platform, DEP MeshWorks, which rapidly reduces the development time of products across industries.

## DEWESOFT LLC

Booth 2240

10730 Logan St  
Whitehouse, OH 43571  
United States  
[dewesoft.com](http://dewesoft.com)

## DFR SOLUTIONS

Booth 1621

9000 Virginia Manor Rd Ste 290  
Beltsville, MD 20705  
United States  
[dfrsolutions.com](http://dfrsolutions.com)

DfR Solutions is world-renowned for its expertise in applying Reliability Physics Analysis to electronics technologies and is a leading provider of quality, reliability, and durability services to the electronics industry. Sherlock Automated Design Analysis™ software provides crucial insights and solutions early in product design and throughout the product life cycle.

## DONALDSON COMPANY INC

Booth 1506

PO Box 1299  
1400 W 94th St  
Minneapolis, MN 55440  
United States  
[donaldsonventing.com](http://donaldsonventing.com)

Donaldson Company has supplied more than a billion vents that protect devices and enclosures from pressure fluctuation, liquids, and harmful contaminants. From automotive components to mobile phones to hearing aids, we have a vent that will work for you or our team of industry-leading designers can provide you with custom solutions to meet your venting needs.

## D&V ELECTRONICS LIMITED

Booth 1734

130 Zenway Blvd  
Woodbridge, Ontario L4H 2Y7  
Canada  
[dvelectronics.com](http://dvelectronics.com)

Founded in 1997, D&V Electronics has continuously pioneered the innovation and development of scientific testing technologies. We design and manufacture electric powertrain testers, alternator and starter testers for endurance, laboratory and end-of-line production testing. High speed data collection and scientific accuracy are hallmarks of our products.

## DYNACAST/OPTIMIM

Booth 2101

195 Corporate Dr  
Elgin, IL 60123  
United States  
[dynacast.com](http://dynacast.com) and [optimim.com](http://optimim.com)

Form Technologies is pioneering the next generation of precision component manufacturing in die casting (Dynacast), metal injection molding (OPTIMIM), and investment casting (Signicast).

## EASTMAN

Booth 1527

575 Maryville Centre Dr  
Saint Louis, MO 63141  
United States  
[eastman.com/saflex](http://eastman.com/saflex)

Eastman's automotive glazing products include Saflex® polyvinyl butyral (PVB) interlayers for glass lamination. Glass fabricators and automotive engineers count on Saflex for high quality products, reliable service, and expert advice to help deliver world-class technology for laminated glass. Visit our booth, or [eastman.com/saflex](http://eastman.com/saflex) to learn more.

## ELEMANCE LLC

Booth 2110

3540 Clemmons Rd Ste 128  
Clemmons, NC 27012  
United States  
[elemance.com](http://elemance.com)

Elemance's vision is to protect and improve human life by providing virtual human body model based tools and expertise to enable truly human centered design. Elemance licenses the GHBMC family of models, including simplified and detailed male and female finite element models, and provides consulting services related to injury biomechanics and other human body modeling applications.

# EXHIBITOR PROFILES

## ELSEVIER

Booth 1507

230 Park Ave Ste 800  
New York, NY 10169  
United States  
[elsevier.com](http://elsevier.com)

Elsevier is a global information analytics business with an advanced portfolio of tools including Engineering Village – which now indexes SAE standards - Knovel, ScienceDirect and Scopus. Combining incomparable information assets, powerful analytics and technologies, Elsevier helps Automotive Engineers and Researchers invent, develop products, commercialize ideas, improve productivity.

## ENDURICA LLC

Booth 2109

1219 W Main Cross St  
Findlay, OH 45840  
United States  
[endurica.com](http://endurica.com)

Endurica brings the best verified Elastomer Fatigue-Life Prediction capabilities to your design team. We offer simulation software for engineers to address durability issues at the design stage by using your FEM. We also provide testing equipment, materials characterization, consulting services, training and FEA modeling. A solution for your rubber fatigue problems. #GetDurabilityRight

## ENGSIM CORPORATION

Booth 2112

PO Box 11  
O Fallon, IL 62269  
United States  
[engsim.com](http://engsim.com)

EngSim Corporation is a consulting company specializing in the analysis and development of internal combustion engines and vehicles. EngSim uses industry standard tools such as GT-SUITE and CONVERGE CFD to perform projects for OEM's, suppliers, and start-ups from around the world.

## ESTECO NORTH AMERICA

Booth 1605

39555 Orchard Hill Pl Ste 457  
Novi, MI 48375  
United States  
[esteco.com](http://esteco.com)

ESTECO is a pioneer in numerical optimization solutions, specializing in the research and development of engineering software for all stages of the simulation-driven design process. ESTECO's top-class products, modeFRONTIER and VOLTA, are used worldwide, helping companies increase efficiency in design simulation and accelerate product innovation.

## FCA US LLC

Booth 1701

### SPONSOR

800 Chrysler Dr  
Auburn Hills, MI 48326  
United States  
[fcanorthamerica.com](http://fcanorthamerica.com)

FCA US LLC is a North American automaker based in Auburn Hills, Michigan. It designs, manufactures, and sells or distributes vehicles under the Chrysler, Dodge, Jeep®, Ram, FIAT® and Alfa Romeo brands and SRT performance designation. FCA US is part of the Fiat Chrysler Automobiles N.V. (FCA) family of companies.

## FORD MOTOR COMPANY

Booth 1709

### SPONSOR

2101 Village Rd  
Dearborn, MI 48124  
United States  
[corporate.ford.com](http://corporate.ford.com)

Ford Motor Company is a global company based in Dearborn, MI. The company designs, manufactures, markets & services a full line of Ford cars, trucks, SUVs, electrified vehicles & Lincoln luxury vehicles, provides financial services through FMCC & is pursuing leadership positions in electrification, autonomous vehicles & mobility solutions. Ford employs apx. 202,000 people worldwide.

## FRAM GROUP

Booth 1740

1900 West Field Court  
Lake Forest, IL 60045  
United States  
[fram.com](http://fram.com)

Fram Group is among North America's largest and most diversified companies servicing the vehicle replacement parts market. Our industry leading businesses include Autolite, and FRAM Filtration. We supply a broad range of automotive products under well-known industry brands, including: Autolite® spark plugs and wire sets; FRAM® filters.

## GAMMA TECHNOLOGIES LLC

Booth 1708

601 Oakmont Ln Ste 220  
Westmont, IL 60559  
United States  
[gtisoft.com](http://gtisoft.com)

Gamma Technologies LLC develops GT-SUITE, a leading multi-physics CAE system simulation software. GT-SUITE includes a library of physics-based templates covering fluid flow, thermal systems, mechanics, electrics, magnetics, chemistry, and controls. GT also develops and supports GT-AutoLion, the leading Li-ion battery simulation software for 1-D and 3-D battery analysis and design.



# EXHIBITOR PROFILES

## GEMINI AUTOMOTIVE INC

Booth 1606

1571 Marentette Ave  
Windsor, Ontario N8X 4E4  
Canada  
[geminiautomotive.com](http://geminiautomotive.com)

Gemini Automotive Inc. located in Windsor, Ontario Canada supplies both oe and aftermarket following products and services:  
Weldment for automotive parts; Ball bearings;self-lubrication bearings;universal joints; Transmission and engine chains  
Tooling components

## GENERAL SEAL CORPORATION

Booth 1744

42320 Yearego Dr  
Sterling Hts, MI 48314  
United States  
[gseal.com](http://gseal.com)

General Seal Corporation is one of the worldwide leading manufacturers of industrial products. We are currently IATF16949:2016 certified. We have seven divisions globally to produce the following products: Teflon Seals; A/C lip seals, face seals; A/C compressors and components including clutches, gaskets, o-rings, and bearings; heavy duty and high performance truck clutches.

## GKD-USA INC

Booth 1502

825 Chesapeake Dr  
Cambridge, MD 21613  
United States  
[gkdusa.com](http://gkdusa.com)

GKD-USA manufactures state of the art mesh and filter solutions made of metal and synthetic wires, as well as technical fibers for use in all industrial sectors. With innovative web technologies and the latest simulation methods, GKD-USA develops and produces custom technical weaves, semi-finished products, components and filter equipment.

## GRANTA DESIGN

Booth 1610

Granta Design Ltd, 300 Rustat House  
60-62 Clifton RoadCambridge CB1 7EG  
United Kingdom  
[grantadesign.com](http://grantadesign.com)

In the automotive industry, time-to-market is critical. Granta Design, the materials information technology experts, provide software support and resources to help automotive enterprises manage critical data about materials, streamline processes, minimize legislative and supply chain risk, and gain competitive advantage.

## HBM TEST AND MEASUREMENT & B&K SOUND AND VIBRATION

Booth 2108

19 Bartlett St  
Marlborough, MA 01752  
United States  
[hbm.com](http://hbm.com)

Innovative testing solutions from the merger of HBM and Brüel & Kjær. HBM offers mobile-rugged DAQ, power analyzers and torque sensors plus Prensica software including nCode for fatigue and durability analysis and ReliaSoft for ensuring reliability. Brüel & Kjær offers comprehensive NVH engineering solutions for the sound and vibration industry.

## HIRTENBERGER AUTOMOTIVE SAFETY

Booth 1635

3201 University Dr Ste 150  
Auburn Hills, MI 48326  
United States  
[has.hirtenberger.com](http://has.hirtenberger.com)

Hirtenberger Automotive Safety is a global partner to automotive and non-automotive industries for pyrotechnic solutions. Hirtenberger develops and produces components for occupant protection and pedestrian protection. Our products are used for active hoods, buckle and seat belt pretensioners and high voltage circuit breakers for hybrid and electric vehicles.

## HYUNDAI MOTOR GROUP

Booth 1918

### SPONSOR

6800 Geddes Rd  
Superior Twp, MI 48198  
United States  
[hyundaimotorgroup.com](http://hyundaimotorgroup.com)

Hyundai Motor Group (HMG), which includes Hyundai Motor Company and Kia Motors, is South Korea's largest automobile manufacturer. The automotive sector of Hyundai Motor Group was formed in 1998 when Hyundai Motor Company purchased Kia Motors. In 2017, HMG sold 7.2 million vehicles globally.

## IAV AUTOMOTIVE ENGINEERING INC

Booth 1318

15620 Technology Dr  
Northville, MI 48168  
United States  
[iav.com/us](http://iav.com/us)

IAV is the single source for OEM and supplier needs. Focusing on powertrain, electrification, alternative fuels, active and functional safety, infotainment, fleet development and more. IAV has capabilities in design and concept, powertrain development, analysis, simulation, testing, optimization, validation and integration for all vehicle applications.

# EXHIBITOR PROFILES

## ILJIN STEEL CORPORATION Booth 2319

1746 Haguk-ro Imail-eup Imsil-gun  
Jeollabuk-do 55927  
South Korea  
[iljinsteel.co.kr](http://iljinsteel.co.kr)

ILJIN STEEL, the premier seamless manufacturer in South Korea, is actively participating in automotive module business. MR Damper - For a smoother and safe driving automobile Upset Drive Shaft - An improved monoblock design substituting friction-welding and swaging process. Worm Wheel - Leading the industry in low-cost production through process management.

## IMPRO INTERNATIONAL LIMITED Booth 1508

1055 Remington Blvd Se A  
Bolingbrook, IL 60440  
United States  
[improrecision.com](http://improrecision.com)

Impro is a leading integrated solutions provider of Investment castings, Precision machining parts, Sand castings and Surface treatment. We provide manufacturing solutions to critical application areas such as fuel systems, turbo chargers, EGR systems, air conditioning systems, steering systems, emission systems for the automotive industry.

## INDO-MIM Booth 2200

214 Carnegie Ctr Ste 104  
Princeton, NJ 08540  
United States  
[indo-mim.com](http://indo-mim.com)

Indo-MIM is a leading and trusted global supplier of precision-engineered products using Metal Injection Molding (MIM) as core manufacturing technology: supplying many critical MIM components for automotive industry in a wide variety covering Turbochargers, fuel system, powertrain, Vehicle safety and interior applications.

## INTEGRAL TECHNOLOGY CO LTD Booth 2107

Kintetsu Dojima Bldg 19F 2-2-2 Dojima  
Osaka 530-0003  
Japan  
[integral-technology.co.jp/en/index.html](http://integral-technology.co.jp/en/index.html)

Integral Technology is a CAE software company that is focused on automatic FE mesh generation with its unique 3D feature recognition technique. Applying its product FORTUNA, the users can reduce their cost and time on creating FE mesh models maintaining the quality of the result mesh for their simulations. FORTUNA automates your manual mesh modifying work for crash and NVH simulations.

## INTERNATIONAL MAGNESIUM ASSOC Booth 2317

1000 Westgate Dr Ste 252  
Saint Paul, MN 55114  
United States  
[intlimg.org](http://intlimg.org)

IMA's mission is to promote the use and light-weight benefits of the metal Magnesium in material selection and encourage innovative applications. IMA offers education, facilitates networking, and a comprehensive buyers guide on primary producers, recyclers, foundries, fabricators, end-users and suppliers. IMA is the global voice of the magnesium industry. Learn more at our website.

## INTREPID CONTROL SYSTEMS INC Booth 1407

31601 Research Park Dr  
Madison Heights, MI 48071  
United States  
[intrepidcs.com](http://intrepidcs.com)

Intrepid provides innovative tools for engineers in vehicle, test, & embedded engineering. Widely recognized for its neoVI and ValueCAN series tools, Intrepid has also developed RAD-Galaxy and RAD-Star devices to interface with 100BASE-T1. Intrepid supports the latest networks and protocols including AUTOSAR, CAN, CAN FD, LIN, FlexRay, Automotive Ethernet, Keyword, UART, J1939, ISO 14229

## IPC Booth 1642

3000 Lakeside Dr Ste 105N  
Bannockburn, IL 60015  
United States  
[sanjayhuprikar@ipc.org](mailto:sanjayhuprikar@ipc.org)

IPC is a global industry association dedicated to the success of its 5,000 member-company sites which represent all facets of the electronics industry. As a leading source for industry standards, training, market research and advocacy, IPC supports programs to meet the needs of an estimated \$2 trillion global electronics industry.

## I-PEX CONNECTORS Booth 2214

41700 Gardenbrook Rd Ste 117  
Novi, MI 48375  
United States  
[i-pex.com](http://i-pex.com)

I-PEX uses our precision manufacturing process to go from product design to mass production. Our high precision molds and molding machines are designed and manufactured in-house, which means we have control over the entire process from start-to-finish. We offer build-to-print options, as well as off-the-shelf connectors specifically for the automotive industry.

# EXHIBITOR PROFILES

## JING-JIN ELECTRIC

Booth 2141

24301 Catherine Industrial Dr Ste 124  
Novi, MI 48375  
United States  
[jje.cn](http://jje.cn)

Jing-Jin Electric (JJE) is China's leading supplier of traction motors and electric drive assembly for EV, HEV and PHEV. JJE provides competitive drive motors featuring high power intensity and high reliability. JJE main products include motors, motor controllers, transmissions, reducers, control software, electric drive assembly and its core parts and components.

## JOBSONIO

Booth 1632

41 S High St  
Columbus, OH 43215  
United States  
[JobsOhio.com](http://JobsOhio.com)

JobsOhio is the state's economic development organization charged with driving job creation and capital investment in Ohio through business attraction, retention and expansion efforts. Our team of industry experts understands the needs of growing businesses and supports them with the resources necessary to succeed. Visit our website.

## KAMAX

Booth 2212

1606 Star Batt Dr  
Rochester Hills, MI 48309  
United States  
[kamax.com/en/](http://kamax.com/en/)

KAMAX is a global manufacturer of high strength Automotive fasteners and complex cold formed parts. We serve our customers through manufacturing locations in Europe, North America and Asia. KAMAX employs 3,500 employees worldwide and generate 750 Million euros in turnover serving Automotive OEMs and Tiers.

## KWANG DONG

Booth 1401

5141 Highmount Dr  
Troy, MI 48098  
United States  
[kwang-dong.kr](http://kwang-dong.kr)

Plastic box and container manufacture and sales in Michigan for auto parts.

## LAVISION INC

Booth 2206

211 W Michigan Ave Ste 100  
Ypsilanti, MI 48197  
United States  
[lavisoin.com](http://lavisoin.com)

LaVision provides integrated measurement systems for experimental fluid dynamics including combustions and multiphase flows, material characterization, and in cylinder / combustion chamber measurement for the automotive and aerospace markets. Established over 25 years ago LaVision is the market leader in image based measurement systems playing a pioneering role in the development of tech.

## LIQUIDMETAL TECHNOLOGIES INC

Booth 1608

20321 Valencia Cir  
Lake Forest, CA 92630  
United States  
[liquidmetal.com](http://liquidmetal.com)

Liquidmetal provides advanced molding solutions for complex and high performance metal parts. It's amorphous metal technology imparts uncompromising precision, strength and corrosion resistance for applications in a broad range of markets. The company's metal injection molding (MIM) operations provide an alternative manufacturing option to ensure complete customer satisfaction.

## MELECS EWS GMBH

Booth 1637

GZO- Technologiestrasse 1  
Siegendorf 7011  
Austria  
[melecs.com](http://melecs.com)

Melecs EWS is - with a turnover of 262 million euros and about 1300 employees - the largest EMS provider with Austrian roots and has more than 25 years of experience. Melecs offers everything from a single source: from development, engineering and project management through industrialization and production to logistics.

## MICHIGAN TECHNOLOGICAL UNIV

Booth 1541

1400 Townsend Dr  
Houghton, MI 49931  
United States  
[mtu.edu](http://mtu.edu)

SAE of Michigan Tech is a combined group of five hardworking enterprise teams. BAJA, Formula, Clean Snowmobile, Auto Drive, and Supermileage all compete on a national level against top colleges with the same goals, to design the best products which put them higher in the results.

# EXHIBITOR PROFILES

## MPP

Booth **2201**

150 Ford Rd  
Saint Marys, PA 15857  
United States

[metalpowderproducts.com](http://metalpowderproducts.com)

MPP is a global company with operating facilities in the US and China. MPP has 60+ years of experience in custom-engineered powdered metal and MIM parts from a variety of materials, and is the world's leading producer of parts from aluminum powder.

## MSC SOFTWARE CORP

Booth **2236**

4675 Macarthur Ct Ste 900  
Newport Beach, CA 92660  
United States

[mscsoftware.com](http://mscsoftware.com)

MSC Software is a global leader in helping product manufacturers to advance their engineering methods with simulation software and services. Academic institutions, researchers, and students employ MSC's technology to expand individual knowledge as well as expand the horizon of simulation. MSC Software employs 1,300 professionals in 20 countries. Visit [mscsoftware.com](http://mscsoftware.com)

## NASA TECHNOLOGY TRANSFER PROGRAM

Booth **1609**

ST22 NASA/MSFC  
Huntsville, AL 35812  
United States

[technology.nasa.gov](http://technology.nasa.gov)

Whether putting rovers on Mars or sustaining life in extreme conditions, NASA develops technologies to solve some of the most difficult challenges ever faced. Through our Technology Transfer Program, we are bringing these same technologies down to Earth so that they can be applied to solving real-life problems and improve the quality of everyday life.

## NIFCO AMERICA CORP

Booth **2143**

8015 Dove Pkwy  
Canal Winchester, OH 43110  
United States

[nifcousa.com](http://nifcousa.com)

Nifco America Corporation designs, manufactures, and supplies custom injection molded plastic components and assemblies globally. The company started off specializing in fasteners, but has since then branched out to all areas of the vehicle including interior, exterior, kinematic, and fuel products.

## NOF AMERICA CORP

Booth **1429**

1 N Broadway Ste 912  
White Plains, NY 10601  
United States

[nofamerica.com](http://nofamerica.com)

NOF Corporation is a leading specialty polymer manufacturer supplying diverse industries, especially focus on the automotive industry. Our unique technologies are proven to be beneficial for automotive products and materials. Our special polymers named as MODIPERR A Series', NOFR-ALLOY KA Series' and NOFR-ALLOY TZ Series' are used for increase in comfort of drivers and parts weight.

## NUMECA USA

Booth **1613**

1044 Larkin St  
San Francisco, CA 94109  
United States

[numeca.com](http://numeca.com)

Founded on the principle of offering the best possible CFD, meshing, and optimization solutions, NUMECA has become the vendor of choice of the world's most demanding engineers and scientists. Our solutions range from: external aerodynamics to transmissions, turbochargers, drivetrains, gearboxes, clutches, and bearings.

## OPTIMIZED THERMAL SYSTEMS INC.

Booth **1636**

7040 Virginia Manor Rd  
Beltsville, MD 20705  
United States

[optimizedthermalsystems.com](http://optimizedthermalsystems.com)

Optimized Thermal Systems (OTS), Inc. was founded by Dr. Reinhard Radermacher in 2002 in response to a recognized need for specialized consulting and software development in heat transfer and energy conversion. Teaming with colleagues, Dr. Radermacher established a workforce committed to solving unique thermal challenges brought forth by various industries, including HVAC and automotive.

## PHILLIPS TUBE GROUP

Booth **1418**

5578 State Route 61  
Shelby, OH 44875  
United States

[phillipstube.com](http://phillipstube.com)

An industry leader in welded steel tube, Phillips Tube Group operates three tubing heavyweights: Shelby Welded Tube, Middletown Tube Works and Phillips Tube Group of Alabama. With an unbending commitment to quality, durability and reliability, it's no wonder Phillips Tube Group is the #1 fuel filler manufacturer, and the preferred tube supplier for automotive, HVAC and other major industries.

# EXHIBITOR PROFILES

## PLATO NORTH AMERICA INC Booth 1419

3200 Greenfield Rd Ste 300  
Dearborn, MI 48120  
United States

[plato-inc.com](http://plato-inc.com)

PLATO is providing companies with solutions for Quality Risk Management and Functional Safety. From Requirements to DFMEA, PFMEA, Control Plans and any other Risk Management Documentation, PLATO solutions provide an easy to use solution to take your company beyond simple compliance to a whole new level of risk management and quality control. Stop by our booth for a demo.

## POPPELMANN PLASTICS Booth 1513

2180 Heart Dr  
Claremont, NC 28610  
United States

[poepplmann.com](http://poepplmann.com)

## PROTO MANUFACTURING INC Booth 1427

12350 Universal Dr  
Taylor, MI 48180  
United States

[protoxrd.com](http://protoxrd.com)

PROTO is a leading manufacturer of x-ray diffraction (XRD) systems. Our product line includes residual stress measurement systems, powder diffraction, Laue single crystal orientation, custom XRD systems, electropolishers, and custom X-ray tubes. Our LXRD and iXRD diffraction systems provide a fast and efficient way to perform Residual Stress measurements quantitatively.

## QUICKLABEL Booth 1615

600 E Greenwich Ave  
West Warwick, RI 02893  
United States

[quicklabel.com/](http://quicklabel.com/)

QuickLabel is the leading manufacturer of production-capacity, full-color digital label printers, barcode printers, media and labeling software that allow businesses to print their own labels on-demand. QuickLabel introduced the first tabletop digital color label printer and continues to innovate labeling solutions specifically for manufacturers and processors who want to print product.

## QUINTUS TECHNOLOGIES Booth 1509

8270 Green Meadows Dr N  
Lewis Center, OH 43035  
United States

[quintustechnologies.com](http://quintustechnologies.com)

Quintus Technologies has designed, built and installed more than 150 Flexform™ hydroforming presses for major manufacturers worldwide, including Ford, Boeing, BMW, and Airbus, along with a growing number of component suppliers to the automotive industry, as well as the aerospace industry.

## RADTECH - THE ASSOCIATION FOR UV+EB TECH Booth 2243

6935 Wisconsin Ave Ste 207  
Shevy Chase, MD 20815  
United States

[radtech.org](http://radtech.org)

RadTech is the non-profit trade association dedicated to ultraviolet and electron beam processes (UV+EB). Work in the area of light cure materials supports innovations in 3D printing, dirt resistant coatings, adhesives, electronic applications and much more. Visit us and download our info graphic on UV+EB automotive applications at our website.

## RAPID+ TCT Booth 1640

1000 Town Ctr Ste 1910  
Southfield, MI 48075  
United States

[rapid3devent.com](http://rapid3devent.com)

RAPID + TCT is known worldwide as North America's most important additive manufacturing event. It's where you will witness groundbreaking product announcements, experience 375+ hands-on exhibits, learn real-world solutions from industry experts, and network with thousands of peers. The 2019 event will be held May 20-23 in Detroit, MI.

## SAATI AMERICAS CORP Booth 2233

201 Fairview Street EXT  
Fountain Inn, SC 29644  
United States

[saati.com](http://saati.com)

SAATI is a manufacturer of precision woven synthetic media for various automotive applications. SAATImotion mesh is used in the separation of solid particles from air or fluids and can also be engineered to separate liquids from other liquids. (Water from fuel, for example). SAATI Acoustex mesh is also a premier choice for car audio systems.

# EXHIBITOR PROFILES

## SAE EVENT SALES

Booth **2327**

400 Commonwealth Dr  
Warrendale, PA 15086  
United States

[sae.org/attend](http://sae.org/attend)

Meet the SAE Sales Team and discover the 20+ events SAE manages annually. New product, or collaborating on a project with fellow industry players? SAE Events provide forums to showcase your advancements among targeted technical and executive attendees. We can customize participation packages to meet your objectives for exposure, networking, recruiting and more.

## SAE INTERNATIONAL

Booth **1627**

400 Commonwealth Dr  
Warrendale, PA 15086  
United States

[sae.org](http://sae.org)

SAE International is committed to advancing mobility knowledge and solutions for the benefit of humanity. Stop by the SAE booth (#1627) to learn about how SAE is leading mobility through innovation, including the entire CASE ecosystem. In addition, learn more about our professional knowledge and learning solutions for engineers.

## SAE INTERNATIONAL

Booth **2127**

400 Commonwealth Dr  
Warrendale, PA 15086  
United States

[sae.org](http://sae.org)

SAE International takes pride in leading the way for tomorrow's engineer with programs structured to provide real-world knowledge on mobility engineering. Stop by the SAE booth (#2127) and learn more about SAE solutions for K-8 STEM education - A World In Motion (AWIM) - and the Collegiate Design Series.

## SAE ITC

Booth **2239**

400 Commonwealth Dr  
Warrendale, PA 15086  
United States

[sae-itc.org](http://sae-itc.org)

SAE ITC® provides resources and services for public and private organizations to collaborate in a neutral forum to drive innovative solutions to industry challenges. We provide the legal framework for pre-competitive collaboration along with a suite of strategic and operational services to help programs or consortia quickly impact their industry.

## SAE MOBILUS

Booth **2242**

400 Commonwealth Dr  
Warrendale, PA 15086  
United States

[saemobilus.sae.org](http://saemobilus.sae.org)

SAE MOBILUS® recently launched the Automated & Connected Knowledge Hub and we would like to get your feedback on it. We also are working on several new initiatives that we hope would be beneficial to you and would like you to help us make sure we are on the right track.

## SAE MOBILITY HISTORY COMMITTEE

Booth **2301**

1427 Ravineview Ct  
Bloomfield Hills, MI 48304  
United States

[sae.org](http://sae.org)

The Mobility History Committee will host at two displays 11 vehicles. On Apr 11, in Learning Lab, Exhibit Hall C, there will be 4 historical vehicle talks.

## SANDVIK MATERIALS TECHNOLOGY

Booth **2009**

982 Griffin Pond Rd  
Scranton, PA 18411  
United States

[materials.sandvik](http://materials.sandvik)

Serving the automotive industry for more than 70 years, Sandvik is a high technology engineering and advanced materials group. With a strong focus on R&D, we have more than 2,000 specialists developing advanced material solutions to meet the future needs of customers, including Mercedes, Ford, BMW, GM and Toyota.

## SEOUL INDUSTRY ENGINEERING CO

Booth **1526**

186 Gosanro Namyangju-si Gyeonggi-do  
Seoul 472-0R0  
South Korea

[SeoulCorea.com](http://SeoulCorea.com)

Seoul Industry Engineering (SIE) of South Korea offers a heavy-duty turbocharger test system, EGR test system and state-of-the-art portable air flowmeter. SIE is well equipped to fulfill your testing requirement with its own technology. It has been exporting its equipment to Germany, China, India, and Thailand as well as to many foreign affiliated companies in South Korea since 1996.

# EXHIBITOR PROFILES

## SFC KOENIG LLC

Booth 1313

73 Defco Park Rd Ste 6  
North Haven, CT 06473  
United States  
[sfckoenig.com](http://sfckoenig.com)

Leading the field of high-quality, sealing and flow control technology, SFC KOENIG® develops and manufactures a wide range of products and highly reliable solutions, both standard and customized, for an unrivalled means of delivering precise components easily installed in as-drilled fluid passages. Delivering solutions for uncompromising automotive applications for over 20 years.

## SHANGHAI AUZONE

Booth 1535

No 348 Yuanqu Rd Antikng Twn Jiading  
Shanghai 201805  
China  
[auzone.com](http://auzone.com)

Shanghai Auzone specializes in engineering, developing and manufacturing throttle bodies, our main market is OEM, it takes 70% market shares, at the same time, we have about 30% high lever aftermarket business.

## SHENZHEN POWER MOTOR IND CO LTD

Booth 1533

No 275 Dalian Rd Beitun  
Shenzhen Guangdong 350001  
China  
[power-motor.com](http://power-motor.com)

Shenzhen Power Motor Industrial Co., Ltd. is a professional manufacturer of AC/DC universal motors, located in Shenzhen. We have more than 1,800 employees and over 100 among them concentrate on R&D, who are highly educated and experienced. Since established in year 2001, Shenzhen Power Motor is devoting itself in R&D high quality motors, our products widely used in home appliances.

## SHIN-ETSU MICROSI

Booth 1601

10028 S 51st St  
Phoenix, AZ 85044  
United States  
[microsi.com](http://microsi.com)

Shin-Etsu is a leader in developing advanced, semiconductor packaging materials for encapsulating all types of semiconductor devices. This broad line of products is made of silicone molding compounds and epoxy molding compounds that offer low stress, very low warpage, and high thermal conductivity.

## SHOWA CORPORATION

Booth 1501

707 W Cherry St  
Sunbury, OH 43074  
United States  
[amshowa.com](http://amshowa.com)

SHOWA Corporation, a manufacturer of the key components that affect driving and riding comfort is globally positioned at 29 locations throughout the world. A manufacturer of automotive and motorcycle products include; vehicle shock absorbers, power steering systems, propeller shafts, differential gears, gas springs, CVT pumps, motorcycle front forks, rear cushions and other products.

## SIMERICS INC

Booth 1500

1750 112th Ave NE Ste C250  
Bellevue, WA 98004  
United States  
[simerics.com](http://simerics.com)

Highly efficient and accurate CFD software from Simerics Inc requiring significantly lower problem setup and run times. Vehicle applications include front end flow, external drag, underhood / underbody thermal, cabin comfort, windshield deicing, water fording, fuel tank etc. Powertrain applications include cooling, lubrication, fuel, exhaust, turbocharging, torque converters etc.

## SMALLEY

Booth 2208

555 Oakwood Rd  
Lake Zurich, IL 60047  
United States  
[smalley.com](http://smalley.com)

We are the exclusive manufacturer of the industry-leading Spirolox® Retaining Rings, an innovative design that features a no gap, 360° retaining surface without protruding ears to interfere with mating components. We are also the originator of Crest to Crest® Wave Springs which save up to 50% of space compared to conventional coil springs.

## SPAL USA

Booth 1644

1731 SE Oralabor Rd  
Ankeny, IA 50021  
United States  
[spalusa.com](http://spalusa.com)

SPAL designs and manufacturers sealed (IP68 and IP6K9K) DC brush and brushless motor electric cooling fans and centrifugal blowers for use in a vast array of cooling applications including radiators, oil and transmission coolers, condensers, evaporators, heaters, CACs, batteries (hybrid and EV applications), and for ventilation.

# EXHIBITOR PROFILES

## SPIN

Booth **D1**

450 Mission St  
San Francisco, CA  
United States  
**spin.pm**

Spin profile is missing: My Fault it must not have copied over!  
Spin is a first- and last-mile micromobility company providing shared electric scooters in almost 30 cities and college campuses nationwide. All kinds of people use Spin to get around in a sustainable way, whether touring their city, getting to and from work, or heading back from a weekend errand. As a company we are committed to ensuring safety both in our operational practices and in our hardware and technology. We're excited to be at SAE educating people on the best ways to ride scooters, with the goal of cutting down on car rides for short trips and giving people another enjoyable, efficient way to get around.

## STANADYNE CORPORATION

Booth **2227**

92 Deerfield Rd  
Windsor, CT 06095  
United States  
**stanadyne.com**

Stanadyne is a global technology leader in engine-based fuel management solutions, specializing in the design, development and manufacture of diesel and gasoline fuel pumps and injectors for original engine manufacturers. Stanadyne produces innovative and customized solutions that allow its customers to differentiate their market offerings through superior quality and technology.

## STERLING TECHNOLOGIES INC

Booth **2235**

28024 Center Oaks Ct  
Wixom, MI 48393  
United States  
**sterlingtech.org**

Sterling Technologies is an OEM partner to automotive and on-highway industries, specializing in production, service and recall campaign support. Capabilities include integrated electrical and mechanical assemblies which are highly scalable and flexible to the customer requirements.

## SYNERGEERING GROUP LLC

Booth **2115**

25335 Interchange Ct  
Farmington Hills, MI 48335  
United States  
**rapidnylon.com**

Synergeering Group is a direct service bureau for their exclusive RapidNylon®; large, fully-functional rapid prototype parts, delivered in just days. Using modified Laser Sintering technology & GF-Nylon material, parts have the highest level of accuracy & durability. Parts are air tight, insoluble to chemicals & heat tolerant up to 140°C.

## SYN-TECH LTD

Booth **1618**

1550 W Fullerton Ave Ste G  
Addison, IL 60101  
United States  
**syn-techlube.com**

Syn-Tech Ltd. is a global leader in the formulation and manufacturing of problem solving lubricants. We provide component analysis to establish lubricant requirements, lubricant formulation, manufacturing and testing of electrical, mechanical and pneumatic lubricants. Areas of expertise include: aerospace, automotive, food grade, medical, military, industrial and recreational lubricants.

## TASKING

Booth **1537**

1 University Rd Ste 2  
Boston, MA 02215  
United States  
**tasking.com**

Altium TASKING products are the tools of choice for embedded software development across a diverse range of industries including Tier-1 automotive suppliers and industry-leading car manufacturers. We create complete development environments that allow engineers to create reliable, safe, and high-performance applications. Over 30,000 engineers around the globe rely on TASKING compilers.

## TEXAS A&M UNIVERSITY

Booth **2237**

Mechanical Engineering  
MS 3123  
College Station, TX 77843  
United States  
**mengr.tamu.edu**

Texas A&M has a robust SAE program which promotes real engineering learning coupled with industry applications. The program supports Baja, FSAE, and Champ car. FSAE at A&M is a one year project integrated with senior design. Each year a new car is designed and build by new students from scratch this is to remain in line with the original intent of FSAE. At A&M we do not focus on building race cars, we focus on building engineers that can build race cars or wind turbines or hospital beds.

## THE LEE COMPANY

Booth **1521**

2 Pettipaug Rd  
PO Box 424  
Westbrook, CT 26498  
United States  
**leeimh.com**

The Lee Company designs and manufactures a complete range of miniature, precision fluid control products for use in automotive and off-highway vehicle hydraulic and fuel systems. Products on display include miniature check valves, pressure relief valves, shuttle valves, precision orifices, safety screens, flow controls, air bleeds and expansion plugs.



# EXHIBITOR PROFILES

## THE OHIO STATE UNIVERSITY Booth 1632

2036 Neil Ave  
Columbus, OH 43210  
United States

[engineering.osu.edu](http://engineering.osu.edu)

The Center for Automotive Research (CAR) is an interdisciplinary research center aimed at improving sustainable mobility. Current research includes connected and autonomous vehicles; electrified powertrains and electric and hybrid vehicle systems and energy management; energy storage-from materials to systems; clean and efficient combustion engines; and innovative mobility solutions.

## TORAY INDUSTRIES Booth 1327

2800 Livermpos Rd Bldg D  
Troy, MI 48083  
United States

[toray.com/automotive](http://toray.com/automotive)

Toray provides advanced materials for weight reduction, powertrain, safety, and comfort. Our belief is "Cars evolve through Materials".

## TOYOTA MOTOR NA R&D Booth 2017

### SPONSOR

8777 Platt Rd  
Saline, MI 48176  
United States

[toyota.com](http://toyota.com)

Toyota (NYSE:TM) has been a part of the cultural fabric in the U.S. and North America for 60 years, and is committed to advancing sustainable, next-generation mobility through our Toyota and Lexus brands. Toyota has created a tremendous value chain as our teams have contributed to world-class design, engineering, and assembly of more than 33 million cars and trucks in North America.

## TRANSPORTATION RESEARCH CENTER INC Booth 1632

10820 State Route 347  
East Liberty, OH 43319  
United States

[trcpg.com](http://trcpg.com)

Transportation Research Center Inc. (TRC) is the leading independent automotive testing facility & proving grounds in the U.S., specializing in research & vehicle testing. TRC operates 24/7, offering numerous facilities including a 7.5 mile high speed test track, a 50 acre vehicle dynamic area, a 9000 ft skid pad, performance & durability testing areas as well as numerous labs.

## TTM TECHNOLOGIES Booth 2234

8150 Sheppard Ave E  
Scarborough, Ontario M1B 5K2  
Canada

[ttm.com](http://ttm.com)

TTM Technologies, Inc. is a leading global printed circuit board manufacturer, focusing on quick-turn and volume production of technologically advanced PCBs, backplane assemblies and electro-mechanical solutions as well as a global designer and manufacturer of high-frequency radio frequency (RF) and microwave components and assemblies.

## VELODYNE LIDAR Booth 1420

5521 Hellyer Ave  
San Jose, CA 95138  
United States

[velodynelidar.com](http://velodynelidar.com)

Velodyne Lidar, recognized worldwide as the leader in lidar technology, provides the smartest, most powerful lidar solutions for autonomy and driver assistance. Velodyne's high-performance product line includes the cost-effective Puck™, versatile Ultra Puck™, perfect for L4-L5 autonomy Alpha Puck™, ADAS-optimized Velarray™, and the groundbreaking software for driver assistance, Vella™.

## WHITFORD CORP Booth 1718

47 Park Ave  
Elverson, PA 19520  
United States

[whitfordww.com](http://whitfordww.com)

Whitford Worldwide is a global manufacturer of the world's largest, most complete line of fluoropolymer coatings for industrial and consumer industries. Whitford's Xylan provides benefits including excellent adhesion and resistance to wear, abrasion and chipping along with water- or solvent-borne options. For use on applications like steering systems, fasteners, pistons and more.

## WOMEN IN CYBERSECURITY (WICYS) Booth 2241

370 S Lowe Ave Ste A-244  
Cookeville, TN 38501  
United States

[wicys.org](http://wicys.org)

Women in CyberSecurity (WiCyS) is a 4,000 member non-profit organization dedicated to recruiting, retaining, mentoring and advancing women in the cybersecurity workforce. WiCyS works with strategic partners to move the needle from 11% women in cybersecurity to a 50% goal. Contact WiCyS at [info@wicys.org](mailto:info@wicys.org) or visit [wicys.org](http://wicys.org) for details.

# EXHIBITOR PROFILES

## YINLUN TDI LLC

Booth 2135

33533 W 12 Mile Rd  
Farmington Hills, MI 48331  
United States  
[yinlundi.com](http://yinlundi.com)

## CONNECT2CAR PAVILION

### 321 GANG INC

Booth 1308

14362 N Flw Blvd Ste 1000  
Scottsdale, AZ 85260  
United States  
[321gang.com](http://321gang.com)

321 Gang helps organizations improve their ability to design and develop high-quality systems & software. We are an IBM Platinum Business Partner, winner of IBM's 2018 Top Industrial Partner of the Year award and Scaled Agile Gold Training Partner (SAFe). Our consultants average 20 years of Systems & Software expertise.

### ASTC

Booth 1306

Level 5  
76 Waymouth Street  
Adelaide, South Australia 5000  
Australia  
[astc-design.com](http://astc-design.com)

ASTC is the design partner to the global embedded electronics supply chain, from semiconductors, IP and software companies, through to OEM and systems companies. ASTC is changing the way companies develop new embedded electronic products. With ASTC expert product engineering, innovative new methodologies, and advanced design software, customers can design better products.

### AUTOLIV

Booth 1301

1320 Pacific Dr  
Auburn Hills, MI 48326  
United States  
[autoliv.com](http://autoliv.com)

Autoliv is worldwide leader in automotive safety systems, developing and manufacturing automotive safety systems for all major automotive manufacturers in the world. We are working side by side with our customers to solve the forthcoming automotive safety challenges of electric and autonomous vehicles with Autoliv pyrotechnical safety switches.

## C2A SECURITY

Booth 1303

Hebron Rd 24  
Jerusalem 9354212  
Israel  
[c2a-sec.com](http://c2a-sec.com)

C2A Security offers a comprehensive suite of cyber security solutions for the automotive industry, providing in-vehicle end-to-end protection. C2A products are based on a deep knowledge of the automotive industry's pains and requirements, and have been engineered from the ground-up with automotive manufacturers' needs in mind: cost, time-to-market and integration complexity.

## VECTOR

Booth 1302

39500 Orchard Hill Pl Ste 400  
Novi, MI 48375  
United States  
[vector.com](http://vector.com)

For 30-years Vector has been integral in the development of automobile electronics. With 24 locations worldwide and over 2,000 employees dedicated to support the automotive industry with a professional platform of tools, software components and services for developing embedded systems. Vector is driven to help customers master the complex issues and simplify them.

## WIND RIVER SYSTEMS

Booth 1304

500 Wind River Way  
Alameda, CA 94501  
United States  
[windriver.com](http://windriver.com)

Wind River is a leader in software for safe, secure, and reliable intelligent systems, including those for the internet of things (IoT). Around since 1981, our technology is in more than 2 billion products, including more than a 100 million automobiles. For the auto market, we offer a software framework for the next generation of connected car.

## KOREAN PAVILION

### AIN GLOBAL FOUNDATION

Booth 1331

247 Gongdan 1-daero 3rd Fl  
Sihung-si Gyeonggi-do 15079  
South Korea  
[ainglobal.org](http://ainglobal.org)



We were established in 2000 as a non-profit entity under the Ministry of Trade, Industry and Energy to assist small and medium sized Korean enterprises in automotive industries. We annually organize Korea Automotive Industry Exhibition(KOAASHOW), the largest exhibition in Korean automotive industry. You can see more details at the show website ([koaashow.com](http://koaashow.com)).

# EXHIBITOR PROFILES

## HYUNJIN FB

Booth 1331

7 Seongseogong-danro Dalseo-gu  
Daegu  
South Korea  
[hyunjinfb.com](http://hyunjinfb.com)

HyunJinFB Corporation supports the Total-Solution from product development to mass production such as Fine Blanking, PRO&Compound Mold & JIG Design, Making, Production, Processing, Delivery and PROTO prototype, SPARE, SOP Production. Especially, we have 1000, 325, 250 tons FB Machines. So, have a lot of experience and technology for Fine Blanking (F/B) Mold Making, Repair.

## ILSHIN PLASTIC CO LTD

Booth 1331

80 Gukkasandanbuk-ro Gugi-myeon Dalseong  
Daegu-si 43011  
South Korea  
[ilshin-plastic.co.kr](http://ilshin-plastic.co.kr)

As the results from our ceaseless R&D activities and efforts for manufacturing many safe & robust interior/exterior plastic components of automobile and industrial reinforced plastic products since our company was founded in 1971, our company has dominated the market as a world-class competitive company after having exceeded the domestic top company in the plastic component industry.

## KUNHWA ENGINEERING CO LTD

Booth 1331

91, Grongdan 8-Yo, Jinhyang-Eup  
Kyunjsan-St  
Suoth Korea  
[kunhwa-eng.com](http://kunhwa-eng.com)

Kunhwa-EnG has been producing high quality AL die casting parts with well-equipped facilities and abundant manufacturing experience. We are having overseas business with Renault France and Daimler truck Germany and Detroit Diesel Corporation in USA. Therefore we would like to expand a new business with also global automotive companies.

## SAMJIN JEONGGONG CO LTD

Booth 1331

68 Daeheung1-gil Seongnam-myeon  
Chungnam-Do 31247  
South Korea  
[samjinnut.co.kr](http://samjinnut.co.kr)

Established: 1973, Turnover in 2018: US\$160Mil. Main products: Steel nuts and forged parts. Accreditation: IATF16949, ISO-14001, OHSAS-18001 No. of employees: 304 Main customers: HYUNDAI/ KIA MOTORS, GM NORTH AMERICA, GM KOREA, GM GLOBAL, MOBIS, GLOVIS, MANDO AND ETC. Domestic operation: 3 plants. International operation: Warehouse (Rochester Hills, MI, USA)

## SAMYANG METAL CO LTD

Booth 1331

973-2 Kalsan-dong  
Dalseo-gu Taegu 704-900  
South Korea  
[samyangmetal.com](http://samyangmetal.com)

Samyang Metal Company was founded in 1985 and producing automotive compressor shaft & rotor assembly, shaft for starter motor, and shaft for alternator. It recorded about \$30 millions in sales in 2018. For 35 years since Samyang was founded, it has become the world's best company in shaft manufacturing.

## SHILLA INDUSTRIAL CO LTD

Booth 1331

14 Jaingongolan 1-ro Jain Myeon Kyungsan  
Gyeongsangbuk-do 38550  
South Korea  
[shillaind.co.kr](http://shillaind.co.kr)

Shilla Industrial Co., LTD. is a manufacturer of coil assembly and plastic/cutting processing products that are used in actuators, and it has accumulated know-how in production for preparing the rapid demand increase of the electric vehicle market. In particular, we are providing reliable and qualified parts of Stator application, Alternator and Motor with reasonable price.

## SHIN CHANG PRECISION IND CO LTD

Booth 1331

8 Seongseogdanbuk-ro 4-gil Dalsea-gu  
Doegu 42711  
South Korea  
[rubbersc.com](http://rubbersc.com)

We can produce various kind of rubber products with accumulated technology for 41 years of manufacturing machinery and mold, and it is possible to reduce production cost by know-how of improving production efficiency. Especially, it is possible to produce oil & water leakage related products such as Oil Seal, Gasket, O-ring, X-ring, Dust Cover, Gromet, Diaphragm.

## SHINHAN PRECISION IND CO LTD

Booth 1331

93 Seongseo-ro  
Dalseo-gu 42719  
South Korea  
[shinhankorea.com](http://shinhankorea.com)

Shinhan Precision is a global leader in fine-blanking press technology and is offering high quality products to GM global plants and several Tier1 customers in the field of Auto Transmission, Dual Clutch Transmission, Transfer Case, Seat Parts, and A/C Compressor Parts.

# EXHIBITOR PROFILES

## SHINYANG TECH CO LTD Booth 1331

768 17 YehYeon-ri Guji-Meon Dalseong-gun  
Daegu 43013  
South Korea  
[livingbio.kr](http://livingbio.kr)

We have worked to utilize the various advantages of sponges such as shock resistance, oil resistance, elasticity, resilience, sound absorption, and insulation, and developed sponge-based products that offer various functions such as soundproofing, dustproofing, shock resistance, neck protection, and comfort through our sponge-related research and technologies.

## SINDO CO LTD Booth 1331

114 Gukgosandan-daero  
Daegu 43011  
South Korea  
[sindokorea.com](http://sindokorea.com)

Highly efficient and accurate CFD software from Simerics Inc requiring significantly lower problem setup and run times. Vehicle applications include front end flow, external drag, underhood / underbody thermal, cabin comfort, windshield deicing, water fording, fuel tank etc. Powertrain applications include cooling, lubrication, fuel, exhaust, turbocharging, torque converters etc.

## TPC CO LTD Booth 1331

574 Iryeou-ro Jiuyang Eup  
Gyeongsau-city  
South Korea  
[tc21.co.kr](http://tc21.co.kr)

Our company was established in 1998. Our main products are DOM(Drawn Over Mandrel) Tubing, As-Welded Tubing, Fuel Filler Neck A'ssy and Water Pipe. We introduced vertical production systems from As-Welded Tube to DOM Tubing that allows quality-consistency and price competitiveness. We are ready to provide you with our best service.

## LIGHTWEIGHTING - MATERIALS - EFFICIENCY PAVILION

### ALUMAG AUTOMOTIVE LLC Booth 2215

Kirchplatz 1a Alte Apotheke  
Menden 58706  
Germany  
[alumag.com](http://alumag.com)



AluMag® co-organizes the WCX 2019 Lightweighting - Materials - Efficiency pavilion. AluMag® is a market development company that has extensive knowledge and worldwide contacts within the automotive & aluminum-, magnesium- and composite industry. We access new markets and open doors for your business - regardless of application, material, process or product.

### ALUMINUM EXTRUDERS COUNCIL Booth 2320

1000 N Rand Rd Ste 214  
Wauconda, IL 60084  
United States  
[aec.org](http://aec.org)

The Aluminum Extruders Council (AEC) is the trade association of the North American aluminum extrusion industry, representing over 70% of North American production. Application experts from the Council's Automotive Team will be present with examples of innovative automotive extrusion applications, design reference materials, and more.

### AMT DIE CASTING Booth 2316

106 Cote Street  
St Cyprien, Quebec GOL 2PO  
Canada  
[amtdiecasting.com](http://amtdiecasting.com)

AMT is a high pressure die casting company specializing in demanding applications. State-of-the-art technology combined with strong know how makes AMT the "go-to" supplier for challenging parts. Heat-treated, weldable, leaktight and thin walls are some of the characteristics we can achieve with the use of our proprietary A+ high-vacuum process.

### GRUPO ALUMINIO DE OCCIDENTE SA DE CV Booth 2217

Melbourne 101 Centro Logistico Jalisco  
Acatla de Juarez Jalisco 45713  
Mexico  
[gaoaluminio.com](http://gaoaluminio.com)

Grupo Aluminio de Occidente (GAO) is a certified Mexican extrusion and fabrication company which opened its doors in 1989. With the launch of GAO's new state of the art extrusion and fabrication facility they are now focused on the automotive and electronic sectors; providing precision and tight tolerance extrusions.

### KIPP CAR COMFORT SYSTEMS Booth 2213

Gottlieb-Daimler-Strasse 19  
Sulz Neckar 72172  
Germany  
[kipp-ccs.com](http://kipp-ccs.com)

KIPP has been successful by focusing on comfort solutions for automobiles. KIPP offers the manufacturing processes Tooling, Prototyping, Processing, Finishing, Milling, Turning, Diecasting (zinc, aluminium, magnesium), Injection moulding (thermoplastics and thermosets), Metal- and non-ferrous metalworking, Surface finishing and Assembly. We have worldwide three production plants.

# EXHIBITOR PROFILES

## LIGHTWEIGHTING MATERIALS Booth 2215

Kirchplatz 1A Alte Apotheke  
Menden 58706  
Germany  
[alumag.com](http://alumag.com)

Lightweighting - Materials - Efficiency Pavilion, organized by AluMag®. This pavilion will showcase technologies that help suppliers to: Decrease weight and improving powertrain efficiency to reducing emissions; Function integration and structural lightweighting; Design, develop, and manufacture new materials and processes; Pursue green powertrains, ICE emission reduction, and battery.

## NIKKEI MC ALUMINUM AMERICA INC Booth 2314

6875 Inwood Dr  
Columbus, IN 47201  
United States  
[nmaluminum.net](http://nmaluminum.net)

NIKKEI MC is an aluminum casting alloy producer that has produced a variety of casting alloys which mainly transform into automotive components. New this year is Castaduct®-42 (AlMg4Fe2). This alloy brings the highest ductility and strength to large and thin-wall structural casts without heat treatment and related processes.

## RHEINFELDEN ALLOYS GMBH & CO KG Booth 2312

Friedrichster 80  
Rheinfelden D-79618  
Germany  
[rheinfelden-alloys.eu](http://rheinfelden-alloys.eu)

RHEINFELDEN ALLOYS specializes in developing, customizing, producing and selling hi-tech aluminum casting alloys. The following alloys are used by Premium European OEMs: Silafon-36, Castama-35, Magsima-59, Magsima-plus, Castasi-37 and the brand new Castaduc-42. To meet demands of electrical power modules with high thermal conductivity, Castasil-21 was recently launched.

## WHB INTERNATIONAL INC Booth 2219

101 W Ohio St Ste 810  
Indianapolis, IN 46204  
United States  
[whbinternational.com](http://whbinternational.com)

WHB Automotive is a family-owned 2nd generation company located in Curitiba, Brazil produces cast iron (DISA & KW), steel forgings, aluminum gravity & HPDC's (up to 3000T) for our OEM's, Tier 1 and Tier 2 global customers. Product segments include propulsion, drive-line, braking, chassis, transmission for LV, MD, HD, Agriculture and Industrial customers. All plants are IATF certified.

## START-UP PAVILION

### BRB TECHNOLOGIES LLC Booth SUP12

3504 Larchwood Dr  
Minnetonka, MN 55245  
United States  
[icyroads.net](http://icyroads.net)

BRB Technologies is an R&D firm holding key patents on a unique active safety technology that addresses vehicle dynamics in crash avoidance situations.

### COLAB SOFTWARE INC Booth SUP2

5 Hallett Crescent  
St. John's, Newfoundland Labrador A1B 4C4  
Canada  
[colabsoftware.com](http://colabsoftware.com)

CoLab Software helps engineering teams streamline their design review process and resolve issues faster. Their product, Gradient, leverages cutting edge viewing technology to give all project stakeholders access to CAD files in the web. Built-in model analysis and issue tracking tools allow reviewers to provide feedback in real-time, without needing an expensive CAD license.

### ENVIRO CLEAN DIESEL Booth SUP9

5552 Vista Creek Ln  
Saint Louis, MI 63128  
United States

We take the soot out of diesel. Backed by 6 patents, our technology uses a probe inserted into a diesel exhaust system which creates a plasma stream. Powered by a unique pulsing power supply, the plasma converts particulate matter into harmless gaseous byproducts. We are currently in the early stage of fundraising to create more prototypes.

### MIRABILIS DESIGN INC Booth SUP1

1159 Sonora Ct # 116  
Sunnyvale, CA 94086  
United States  
[mirabilisdesign.com](http://mirabilisdesign.com)

Mirabilis Design provides virtual prototyping software for vehicle systems, sub-systems and components. This virtual prototype provides early and comprehensive visibility into the timing, throughput, energy consumption and scheduling of the design. Design teams validate requirements, explore the architecture, optimize the specification and identify system bottlenecks using this model.

# EXHIBITOR PROFILES

## NOVAC SUPERCAP

Booth **SUP8**

Via Vivarelli 10  
Modena, MO  
Italy  
[novacsupercap.com](http://novacsupercap.com)

NovaCentrix offers industry leading photonic curing tools, conductive inks, material and expertise enabling development and production of next generation printed electronic devices – some already on the market. PulseForge® tools utilize photonic curing, a technology for processing functional inks in milliseconds on low-temperature, flexible substrates such as paper or plastic.

## ORBITLESS DRIVES INC

Booth **SUP7**

3250 W29th Ave  
Vancouver, British Columbia V6L 1Y6  
Canada  
[orbitless.com](http://orbitless.com)

ORBITLESS is a patented, revolutionary new high efficiency, low noise gearbox platform. Applications include electric vehicle powertrains, actuator, robotics, medical devices, or any other application where electric gear motors are used. It has been validated with two leading Precision gear motor manufacturers showing 50% losses and 30% the noise traditional planetary gears.

## PERPETUA INC

Booth **SUP13**

906 W 2nd Ave Ste 600  
Spokane, WA 99201  
United States

Perpetua's Flexfan technology is a welcomed alternative to the current forced-air cooling solutions in hot harsh environments. We will help you solve the thermal management challenges that were previously unthinkable with conventional rotary fans. Perpetua can work with you from design to product testing to mass production.

## TESSERACT STRUCTURAL INNOVATIONS

Booth **SUP3**

535 W Research Center Blvd Ste 135  
Fayetteville, AR 72701  
United States  
[tesseractinnovations.com](http://tesseractinnovations.com)

Tesseract Structural Innovations is developing new solutions for vehicle safety. Its flagship product, the Uniform Deceleration Unit or UDU, is a unique structure that has the ability to absorb an enormous amount of energy during a vehicle crash. During a small overlap front crash, UDU absorbs significant amounts of the kinetic energy and reduces the crash forces on the vehicle.

## VECTORZERO

Booth **SUP10**

5650 El Camino Real Ste 250  
Carlsbad, CA 92008  
United States  
[vectorzero.io](http://vectorzero.io)

Vector Zero builds interactive road modeling, traffic and scenario tools, primarily targeted towards autonomous and ADAS vehicle testing. GIS and vector data can be imported to help model real-world locations and synthetic test cases can be created on the fly. Road Runner's ability to model both the geometry and semantics of the most complicated urban intersections quickly is unique.

## VISUALTHREAT

Booth **SUP5**

2055 Junction Ave Ste 110  
San Jose, CA 95131  
United States  
[visualthreat.com](http://visualthreat.com)

VisualThreat is a leading connected-car data analytics vendor based in California. The company offers the on-the-fly visual analytics platform for automotive big data to provide real-time query and interactive analytics on streaming data. Also VisualThreat help dealerships by generating the Car Health Report for used cars for the inspection and evaluation purposes.

## VOXEL51

Booth **SUP11**

410 North 4th Ave 3rd Fl  
Ann Arbor, MI 48104  
United States  
[voxel51.com](http://voxel51.com)

Voxel51 is an Ann Arbor based seed stage startup that has a team of 15 scientists, researchers, and engineers solving the thorniest problems in video processing and data management. Based on decades of academic research and the application of latest AI frameworks, Voxel51 has built a computer vision platform to solve the infrastructure challenges of working with massive volumes of video.

## WAVESENSE

Booth **SUP6**

444 Somerville Ave  
Somerville, MA 02143  
United States  
[wavesense.io](http://wavesense.io)

WaveSense enables the safest and most reliable navigation for self-driving vehicles by creating and tracking against subterranean maps of roadways using ground-penetrating radar. Already in pilots with large OEMs and Military use. Self-driving vehicles using WaveSense can navigate in snow, rain, fog, poor/no lane markings and other common but challenging conditions created by surface dynamics.

# EXHIBITOR PROFILES

## ZOMIO INC

Booth **SUP4**

Urb Hacienda Florida 837 Calle Magnolia  
Yauco, PR 00698  
United States  
[zomio.io](http://zomio.io)

ZOMIO is an innovative startup that's driving innovation, research and the development of new consumer products. As a new wave of technology arrives and the future automotive landscape changes, ZOMIO will be at the forefront creating and developing new consumer products that focus on safety and make everyday tasks easier.

## CAREER CORNER

### APTIV

Booth **CC7**

100 Northern Ave  
Boston, MA 02210  
United States  
[aptiv.com](http://aptiv.com)

### FCA US LLC

Booth **CC5**

800 Chrysler Dr  
Auburn Hills, MI 48326  
United States  
[fcanorthamerica.com](http://fcanorthamerica.com)

### FORD MOTOR CO

Booth **CC2**

2101 Village Rd  
Dearborn, MI 48124  
United States  
[corporate.ford.com](http://corporate.ford.com)

### HONDA R&D AMERICAS INC

Booth **CC3**

21001 State Route 739  
Raymond, OH 43067  
United States  
[hondaresearch.com](http://hondaresearch.com)

## MITSUBISHI MOTORS R&D OF AMERICA INC

Booth **CC1**

3735 Varsity Dr  
Ann Arbor, MI 48108  
United States  
[mitsubishicars.com](http://mitsubishicars.com)

## SATYAM VENTURE ENGINEERING SERVICES PVT LTD

Booth **CC6**

850 Stephenson Hwy Ste 512  
Troy, MI 48083  
United States  
[satyamventure.com](http://satyamventure.com)

## UNIV OF MICHIGAN-DEARBORN

Booth **CC4**

4901 Evergreen Rd  
Dearborn, MI 48128  
United States  
[umdearborn.edu/cecs](http://umdearborn.edu/cecs)

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## 2019

### Government/Industry Meeting

April 3-5  
Washington, DC

### High Efficiency IC Engine Symposium

April 7-8  
Detroit, MI

### WCX SAE World Congress Experience

April 9-11  
Detroit, MI

### Connect2Car™ at WCX

April 9-11  
Detroit, MI

### New Energy & Intelligent Connected Vehicle Technology Conference

May 21-22  
Shanghai, China

### Aviation Technology Forum

June 4-5  
Shanghai, China

### Noise and Vibration Conference & Exhibition

June 10-13  
Grand Rapids, MI

### escar USA

June 12-13  
Ypsilanti, MI

### International Conference on Icing of Aircraft, Engines, and Structures

June 17-21  
Minneapolis, MN

### SAE CyberAuto Challenge™

July 21-26  
Warren, MI

### JSAE/SAE International Powertrains, Fuels & Lubricants Meeting

August 25 - 29  
Kyoto, Japan

### COMVEC™

September 9-11  
Indianapolis, IN

### Connect2Car Executive Leadership Forum

September 17-18  
Chicago, IL

### On-Board Diagnostics

September 17-19  
Garden Grove, CA

### North American International Powertrain Conference

September 18-20  
Chicago, IL

### Brake Colloquium & Exhibition

September 22-25  
Orlando, FL

### AeroTech Europe

September 24-26  
Bordeaux, France

### Thermal Management Systems

October 15-17  
Plymouth, MI

### Innovations in Mobility

October 29-31  
Novi, MI

### Small Engine Technology Conference & Exposition

November 19-21  
Hiroshima, Japan

### DoD Maintenance Symposium

December 9-12  
Spokane, WA

## 2020

### Government/Industry Meeting

January 22-24  
Washington, DC

### Hybrid and Electric Vehicle Technologies

January 28-30  
Pasadena, CA

### AeroTech Americas

March 17-19  
Pasadena, CA

### WCX SAE World Congress Experience

April 21-23  
Detroit, MI

### COMVEC™

September 15-17  
Rosemont, IL

### North American International Powertrain Conference

September 16-18  
Chicago, IL

### International Powertrains, Fuels & Lubricants Meeting

September 22-24  
Krakow, Poland

### Thermal Management Systems

October 6-8  
Mesa, AZ

### Brake Colloquium & Exhibition

October 11-14  
San Antonio, TX

### Heavy-Duty Diesel Emissions Control Symposium

October 13-14  
Gothenburg, Sweden