SAE 2016 FROM ADAS TO AUTOMATED DRIVING SYMPOSIUM
29 November – 1 December 2016. Munich, Germany

sae.org/cass
Driver Assistance Technology is the here and now in automotive research and development, and The Fowlerville Proving Ground is an independent, global leader in the active safety testing industry.

Advanced Driver Assistance System activities feature
• Development, certification and benchmark testing
• Standardized test procedure execution that includes
  - NHTSA NCAP – FCW, LDW, DBS, CIB, LKS
  - EURO NCAP – AEB vehicle and pedestrian protocols
  - IIHS headlight evaluation and frontal crash prevention tests
  - ISO, SAE and OEM-specific procedures
• NHTSA and EURO NCAP approved static and dynamic vehicle and pedestrian targets
• Test equipment with data and video acquisition, RTK GPS range positioning and driver robotics

The Fowlerville Proving Ground, located in southeast Michigan, USA is a world-class automotive proving ground facility, fully equipped with a professional engineering staff and operations management to exceed expectations.

Contact us at www.ftt-a.com or 517.223.6777 to learn more, or email us at FPG@ftt-a.com.
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EMERGENCY PROCEDURES
During the event, attendees should 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 or SAE representative or report to the SAE registration desk.

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.

OPEN EXCHANGE OF IDEAS
The purpose of this meeting is to provide an open exchange of ideas. Remarks made by participants or members of the audience cannot be quoted or attributed to the individual or their company unless the individual or company expresses permission. Any record of remarks and discussions may not be used unless the individual and their company expresses permission.

CONSENT TO USE IMAGES
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ORGANISING COMMITTEE
SAE International would like to thank the Organising Committee for their valuable contribution.

Jonathan Allan, Ford Motor Company
Markus Armbrust, Opel
Carla Bailo, SAE International / Ohio State University
Cynthia Bay, General Motors
Michael Carpenter, General Motors
Scott Craig, Infineon
Hideki Hada, Toyota
Joseph N. Kanianthra, Active Safety Engineering
Kai Konrad, Infineon
Mahendra Muli, dSPACE
Prasant Narula, Delphi
Donald Parker, Exponent
Holger Schanz, Continental
Rini Sherony, Toyota
Christian Schumacher, Continental
Frank Sgambati, Bosch
Peter Waeltermann, dSPACE

EXHIBITION HOURS

FOYER STRAUSS
Tuesday, 29 November 08:30 - 19:00
Wednesday, 30 November 08:30 - 16:30
Thursday, 1 December 08:30 - 15:30

REGISTRATION HOURS

HOTEL LOBBY
Monday, 28 November 14:00 - 19:00

FOYER STRAUSS
Tuesday, 29 November 08:00 - 19:00
Wednesday, 30 November 08:00 - 17:00
Thursday, 1 December 08:00 - 17:00
Dear Colleagues,

It is my sincere pleasure to welcome you to the SAE 2016 From ADAS to Automated Driving Symposium. This event is the combination of two very timely and relevant events – the SAE Active Safety Symposium and the SAE Autonomous Vehicle Symposium. It is my hope that all of you will take advantage of this opportunity to participate in the shared exhibits and special events associated with the event.

We have strived to make the SAE 2016 From ADAS to Automated Driving Symposium the place where the very latest developments in advanced driver assistance / crash avoidance technologies are presented in depth and detail. The symposium has been developed to bring together the industry leaders to review the current state and lead the future path of active safety and automated driving. The automotive and mobility industries are going through a major revolution, not only with the introduction of more and more advanced driver assistance / crash avoidance systems, but much research is ongoing for autonomous vehicle development. The developments in ADAS systems are leading the way to autonomous systems.

SAE, along with the many outstanding volunteers are committed to providing you the best technical and professional experience possible. We are confident that the technical sessions, exhibits, and special events will provide ample opportunities for technical interchange and learning. I also hope you take advantage of this opportunity to connect with fellow professionals, make some new friends, and enjoy all that Munich offers.

Thanks for coming; we’re glad you’re here.

Sincerely,

James Sherman,
SAE International
**WELCOME COFFEE**

FOYER STRAUSS

Tuesday, 29 November - Wednesday, 30 November | 08:30 - 09:00

Thursday, 1 December | 08:15 - 08:45

**NETWORKING BREAKS**

FOYER STRAUSS

Tuesday, 29 November - Thursday, 1 December | 10:00 - 10:30

Tuesday, 29 November - Thursday, 1 December | 15:00 - 15:30

**NETWORKING LUNCHES**

FOYER STRAUSS

Tuesday, 29 November - Thursday, 1 December | 12:00 - 13:30

**VIEW THIS INFO AND MORE IN THE SAE EUROPE APP**

Get the opportunity to:

- connect with your fellow attendees
- learn more about the sessions and speakers
- find your way around the venue using our online floorplan
- get live access to key information that will make your experience memorable

Sponsored by AVL
## Programme

### Tuesday, 29 November

**Advanced Driver Assist Systems**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>08:30 - 09:00</td>
<td>Welcome Coffee</td>
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</tbody>
</table>
| 09:00 - 09:30  | **ADAS, Automated Cars and Their Contribution to Vision Zero**  
**Opening Keynote:** Anders Lie, Swedish Transport Administration |
| 09:30 - 10:00  | **Overview of Test Methods for ADAS and Automated Driving**  
**Speaker:** Adrian Zlocki, FKA GmbH |
| 10:00 - 10:30  | Networking Break                                                                              |
| 10:30 - 11:00  | **EU Project AdaptIVe: Demonstrating Automated Driving Functions on a European Level**  
**Speaker:** Prasant Narula, Delphi Deutschland GmbH |
| 11:00 - 11:30  | **Federal and State Laws - Effecting How Systems Are Used by OEMs**  
**Speaker:** Jonathan Weinberger, Alliance of Automobile Manufacturers Inc. |
| 11:30 - 13:30  | **Automated Driving: Regulations and Possible Safety Benefits**  
**Speaker:** Ulrich Veh, BMW Group |
| 12:00 - 13:30  | Networking Lunch                                                                              |
| 13:30 - 14:00  | **Development of a Cyclist Target and Test Setup for the Evaluation of Cyclist-AEB System**  
**Speaker:** Sjef Montfort, TNO |
| 14:00 - 14:30  | **Vehicle to Bicyclist Test Scenarios and Surrogate Test Target Development from U.S Data**  
**Speaker:** Rini Sherony, Toyota Motor Corporation |
| 14:30 - 15:00  | **Introduction of Production V2X Technologies**  
**Speaker:** Peter Andres, General Motors LLC |
| 15:00 - 15:30  | Networking Break                                                                              |
| 15:30 - 16:00  | **Drive Me**  
**Speaker:** Trent Victor, Volvo Technology Corp. |
| 16:00 - 16:30  | **Active Safety and Driver Assist Applications for Transit Vehicles**  
**Speaker:** Jonathan Allan, Ford Motor Company |
| 16:30 - 17:00  | **Automation Trust in the Context of Conditional Automated Driving**  
**Speaker:** Sebastian Hergeth, BMW Group |
| 17:00 - 17:30  | **Active Safety Test Equipment - Experience from ISO Global Standardization**  
**Speaker:** Niklas Lundin, AstaZero |
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</table>
| 09:30 - 10:00 | Large Scale Field Test of Forward Collision Alert and Lane Departure Warning Systems Using OnStar Data Collection  
Speaker: Carol A C Flannagan, UMTRI |
| 10:00 - 10:30 | Networking Break                                                                                |
| 10:30 - 11:00 | Development of Improved ADAS HMI Through Driver Performance Studies  
Speaker: Lena Rittger, General Motors LLC |
| 11:00 - 11:30 | Future EDR for Automated Vehicles  
Speaker: Carime Senatore, Exponent |
| 11:30 - 13:30 | Challenges in Global Harmonization  
Speaker: Dr. Anders Lie, Swedish Transport Administration |
| 12:00 -13:30  | Networking Lunch                                                                                |
| 13:30 - 14:00 | Legal/ Liability Impact  
Speaker: Thomas P. Branigan, Bowman & Brooke |
| 14:00 - 14:30 | Functional Safety and Related Aspects of Highly Automated Vehicles  
Speaker: David Ward, Horiba Mira, Ltd. |
| 14:30 - 15:30 | Development of SAE Standards for Active Safety Features  
Speaker: Michael G. Carpenter, General Motors LLC |
| 15:00 - 15:30 | Networking Break                                                                                |
| 15:30 - 16:30 | Expert Panel Discussion: Sensor Inputs from ADAS to Automated Driving  
Moderator: Scott Craig, Infineon Technologies North America Corp.  
Panelists: Hans Adikofer, Infineon Technologies AG - Frédéric Bourcier, Wind River - Ulrich Buker, Delphi Automotive - Christof Lauterwasser, Allianz - Tom Toma, Magna Electronics  
A look at the ecosystem and the respective impact of legislation, sensors, and technology from the perspective of all relevant stakeholders. We will look at the challenges between insurances and NCAP, sensor fusion, and the need for highly automated cars to be dependable safe, secure, available, and reliable. Finally looking at what it will take to gain customer acceptance and mass adoption. |
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>08:15 - 08:45</td>
<td>Welcome Coffee</td>
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<tr>
<td>08:45 - 09:00</td>
<td>SAE International Welcome Speech</td>
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<td>Speaker: Carla Bailo, Ohio State University</td>
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<tr>
<td>09:00 - 09:30</td>
<td>CAMP AVR Project</td>
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<td>Speaker: Michael Carpenter, General Motors Company</td>
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<td>09:30 - 10:30</td>
<td>SAE J3016R - Revised Standard for Levels of Automated Driving</td>
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<td>Speaker: Steven E. Underwood, Univ. of Michigan-Dearborn</td>
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<td>10:00 - 10:30</td>
<td>Networking Break</td>
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<tr>
<td>10:30 - 11:00</td>
<td>Sensing and Perception Technologies for Automated Driving -- Road from Concept to Production</td>
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<td>Speaker: Wende Zhang, General Motors Company</td>
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<tr>
<td>11:00 - 11:30</td>
<td>RADAR Systems</td>
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<td>Speaker: Alexander Ioffe, Delphi</td>
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<td>11:30 - 12:00</td>
<td>Vision Systems</td>
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<td>Speaker: Erez Dagan, Mobileye Vision Technologies</td>
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<tr>
<td>12:00 - 13:30</td>
<td>Networking Lunch</td>
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<td>12:00 - 13:30</td>
<td>LIDAR Systems</td>
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<td>Speaker: Christian Schumacher, Continental Automotive Systems US Inc.</td>
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<td>13:30 - 14:00</td>
<td>Fail-Safe to Fail-Operational</td>
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<td>Speaker: Udo Dannebaum, Infineon</td>
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<tr>
<td>14:00 - 14:30</td>
<td>High-Definition Reference Maps for Autonomous Driving - Production, Challenges and Future Developments</td>
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<td>Speaker: Dr.-Ing. Gunnar Gräfe, 3D Mapping Solutions GmbH</td>
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<tr>
<td>14:30 - 15:30</td>
<td>Sensor Fusion - Hardware/Software, the Cloud and Artificial Intelligence</td>
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<td>Speaker: Nicolas Du Lac, Intempora</td>
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<td>15:00 - 15:30</td>
<td>Networking Break</td>
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<tr>
<td>15:30 - 16:00</td>
<td>Insurance Perspective</td>
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<td>Speaker: Robert Korn, Allianz.</td>
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<tr>
<td>16:00 - 17:30</td>
<td>Automated Driving Development Challenges in a Diverse Global Regulatory Environment Panel Discussion</td>
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<td>Moderator: Carla Bailo, Ohio State University</td>
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The introduction of automated driving systems is challenged not just by the state of the technology itself but also by the myriad regulatory issues and consumer expectations. Current ECE and FMVSS regulations, for example, need to be updated to accommodate introduction of these technologies. Brand new local & state regulations, however, have also emerged in the last few years, some by agencies that traditionally have not engaged in automotive regulation. What impact does this have on OEM & supplier development? What are the main issues driving regulatory action? What are the consumer expectations & concerns with these technologies and how are they being addressed by regulators & industry?
EXHIBITION FLOORPLAN

HOTEL LOBBY

Plenary Room

Registration

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4 5

6 7

8

Table Number Company
1 DRAPER
2 DRAPER
3 DYNAMIC RESEARCH Inc.
4 DYNAMIC RESEARCH Inc.
5 dSpace GmbH
6 XENOMATIX
7 AVL LIST GmbH
8 FT Techno of America
Thank you to the following companies for generously supporting the SAE 2016 From ADAS to Automated Driving Symposium.

**GOLD SPONSOR**

SAE ADAS MOBILE APP SPONSOR

**EXHIBITOR PROFILES**

**AVL LIST GMBH**  
**TABLE #7**

Hans-List-Platz 1  
Graz 8020  
Austria

AVL is the world’s largest independent company for the development of powertrain systems with internal combustion engines as well as instrumentation and test systems.

AVL is an expert partner to the global automotive and mobility industry for the development of innovative powertrain systems. From diesel engines to electric drives, from alternative fuels to control software, from transmissions to batteries.

Unique synergies with AVL Instrumentation and Test Systems and AVL Advanced Simulation Technologies enable the development of highly creative, mature and application-specific solutions in order that they meet their future market challenges.

**DSPACE GMBH**  
**TABLE #5**

Rathenaustraße 26  
Paderborn 33102  
Germany

No matter where you go, wherever engineers are working on cars of the future, dSPACE is there. The company develops and distributes tools for developing and testing electronic control units (ECUs) and mechatronic systems worldwide.

Whether they are working on electronic combustion engine controls, alternative drives or modern driver assistance systems – virtually all international car makers and many of their suppliers rely on dSPACE hardware and software in their current development projects. For developing advanced driver assistance systems, dSPACE offers a well-coordinated tool chain, in which hardware and software tools interact smoothly throughout all the development steps.

**DRAPER**  
**TABLE #1&2**

555 Technology Sq  
Cambridge, MA 02169  
USA

As an independent, not-for-profit engineering research and development company, Draper focuses on the design, development and deployment of advanced technological solutions for the world’s most challenging and important problems. We provide engineering solutions directly to government, industry and academia; work on teams as prime contractor or subcontractor; and participate as a collaborator in consortia. We provide unbiased assessments of technology or systems designed or recommended by other organizations—custom designed, as well as commercial-off-the-shelf.
DYNAMIC RESEARCH, INC.  
355 Van Ness Ave Ste 200  
Torrance, CA 90501  
USA

Dynamic Research, Inc. (DRI) has developed a Guided Soft Target (GST) system for use in evaluation of safety related Advanced Driver Assistance Systems (ADAS) and automated vehicles (AVs). The GST system comprises a hardened, satellite guided (DGPS), self-propelled Low Profile Robotic Vehicle (LPRV) which serves as a means of conveyance for DRI’s Soft Car 360™. The movement of the LPRV is coordinated with the test vehicle such that the LPRV follows a pre-defined path up to the point of a collision. In the event of a collision with the GST, the surrogate vehicle separates from the LPRV and the test vehicle then drives over the LPRV, minimizing or avoiding risk to test personnel and possible damage to expensive test vehicles.

At its facilities in Torrance, and Bakersfield California, DRI provides research and testing solutions related to ADAS development and evaluation. DRI supports its private clients, and is currently under contract to NHTSA, to conduct NCAP tests in the areas of Pedestrian Automatic Emergency Braking, Forward Collision Warning, Lane Departure Warning, Dynamic Brake Support, Crash Imminent Braking, Blind Spot Warning Detection, Rollover, Rear Auto Braking and others.

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XENOMATIX  
Esperantolaan 4  
Leuven 3001  
Belgium

XENOMATIX develops vision solutions for the automotive industry enabling active suspension, obstacle detection, drivable area determination, road type identification and other applications towards AD. Its solid state laser technology allows vehicles to digitize and understand the road and the environment in real-time and in all weather and lightening conditions. XENOMATIX offers a laser-based, solid-state vision system to create a high resolution pointcloud, providing very accurate information on the road profile and possible obstacles. Furthermore, the XenomatiX® development system can also provide data for physical prototype testing and for CAE virtual prototyping. Since the basic components of XenomatiX® technology are small and cheap in mass-production, XENOMATIX together with Tier I partners, will soon get this technology into mass production cars as enabling technology for autonomous driving. The renewing features as high accuracy, fast processing speed and insensitivity to ambient conditions will speed up to the evolution towards real safe AD.

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FT TECHNO OF AMERICA, LLC  
1750 N. Smith Road  
Fowlerville, MI 48836  
USA

Located in USA, Mid-Michigan between Lansing and Detroit, FTTE Techno of America, LLC (FTTA) is a 950 acre automotive proving ground offering test track rental and independent turn-key testing services. Test tracks include a 20 acre VDA; 3 mile oval track; Low/Middle Mu Surfaces; 4,500 ft. 4-lane straightaway; Choppy/Ride Comfort/Special Surfaces; Wavy Road; Gravel; Brake-Hills; Garage and Office space. Testing services specializing in NHTSA NCAP - FCW, LDW, DBS, CIB, LKS; EURO NCAP – AEB Procedures; IIHS Headlamp Testing; V2V and V2X Testing; Coastdown Testing J1263/J2263; benchmark performance testing; field testing and troubleshooting; Vehicle dynamics and brake controls –FMVSS 126, Fishhook, J-Turn, handling/steering evaluations. www.ftt-a.com
### 2016

**SAE 2016 On-Board Diagnostics Symposium**  
September 13-15, 2016  
Indianapolis, Indiana, USA

**SAE 2016 Convergence**  
September 19-21, 2016  
Novi, Michigan, USA

**SAE 2016 Heavy-Duty Diesel Emissions Control Symposium**  
September 20-21, 2016  
Gothenburg, Sweden

**Aerospace Standards Summit 2016**  
September 20-21, 2016  
Arlington, Virginia, USA

**SAE 2016 North American International Powertrain Conference**  
September 21-23, 2016  
Chicago, Illinois, USA

**SAE 2016 New Energy Vehicle Forum**  
September 21-22, 2016  
Shanghai, China

**SAE-TONGJI 2016 Driving Technology of Intelligent Vehicle Symposium**  
September 22, 2016  
Shanghai, China

**SAE 2016 Brake Colloquium & Exhibition - 34th Annual**  
September 25-28, 2016  
Scottsdale, Arizona, USA

**SAE 2016 Aerospace Systems and Technology Conference**  
September 27-29, 2016  
Hartford, Connecticut, USA

**SAE 2016 Commercial Vehicle Engineering Congress**  
October 4-6, 2016  
Rosemont, Illinois, USA

**SAE 2016 Aerospace Manufacturing and Automated Fastening Conference & Exhibition**  
October 4-6, 2016  
Bremen, Germany

**SAE 2016 Transmission and Driveline Technologies Symposium**  
October 17-19, 2016  
Ypsilanti, Michigan, USA

**SAE 2016 All-Wheel Drive Symposium**  
October 17-19, 2016  
Ypsilanti, Michigan, USA

**SAE 2016 Thermal Management Systems Symposium**  
October 18-20, 2016  
Mesa, Arizona, USA

**SAE 2016 International Powertrain, Fuels & Lubricants Meeting**  
October 24-26, 2016  
Baltimore, Maryland, USA

**SAE 2016 Range Extenders for Electric Vehicles Symposium**  
November 2-3, 2016  
Knoxville, Tennessee, USA

**SAE 2016 Augmented and Virtual Reality (AR/VR) Technologies Symposium**  
November 14-16, 2016  
Philadelphia, Pennsylvania, USA

**SAE/JSPE 2016 Small Engine Technology Conference & Exhibition**  
November 15-17, 2016  
Charleston, South Carolina, USA

**SAE 2016 From ADAS to Automated Driving**  
November 29-December 1, 2016  
Munich, Germany

**SAE 2016 Vehicle Electrification and Connected Vehicle Technology Forum**  
November 30-December 1, 2016  
Shanghai, China

**2016 Defense Maintenance and Logistics Exhibition**  
December 5-8, 2016  
Albuquerque, New Mexico, USA

**2016 DOD Maintenance Symposium**  
December 5-8, 2016  
Albuquerque, New Mexico, USA

### 2017

**SAE 2017 SAE Connect2Car at CES**  
January 5, 2017  
Las Vegas, NV

**Symposium on International Automotive Technology 2017**  
January 18-21, 2017  
Pune, India

**SAE 2017 Light Duty Emissions Control Symposium**  
January 23-24, 2017  
Washington, District of Columbia, USA

**SAE 2017 Government/Industry Meeting**  
January 25-27, 2017  
Washington, District of Columbia, USA

**SAE 2017 Hybrid and Electric Vehicle Technologies Symposium**  
February 7-9, 2017  
San Diego-Mission Valley, California, USA

**SAE 2017 On-Board Diagnostics Symposium - Europe**  
February 27-March 1, 2017  
Torino, Italy

**SAE 2017 Additive Manufacturing Symposium**  
March 14-15, 2017  
Knoxville, Tennessee, USA

**SAE 2017 High Efficiency IC Engine Symposium**  
April 2-3, 2017  
Detroit, Michigan, USA

**WCX17: SAE World Congress Experience**  
April 4-6, 2017  
Detroit, Michigan, USA

**SAE Convergence**  
June 4-7, 2017  
San Jose, California, USA

**SAE 2017 Noise and Vibration Conference and Exhibition**  
June 12-15, 2017  
Grand Rapids, Michigan, USA

**SAE 2017 North American International Powertrain Conference**  
September 13-15, 2017  
Chicago, Illinois, USA

**SAE 2017 Commercial Vehicle Engineering Congress**  
September 28-30, 2017  
Rosemont, Illinois, USA

**SAE Brake Colloquium & Exhibition - 35th Annual**  
September 28-30, 2017  
Orlando, Florida, USA

**SAE 2017 On-Board Diagnostics Symposium**  
September 28-30, 2017  
Garden Grove (Anaheim), California, USA

**SAE 2017 AeroTech Conference & Exhibition**  
September 26-28, 2017  
Fort Worth, Texas, USA

**SAE 2017 Thermal Management Systems Symposium**  
October 10-12, 2017  
Plymouth, Michigan, USA

**SAE 2017 International Powertrains, Fuels & Lubricants Meeting**  
October 15-19, 2017  
Beijing, China

For an updated listing of events, dates and locations, please refer to http://www.sae.org/events/