THANK YOU TO THE FOLLOWING COMPANIES FOR THEIR GENEROUS SUPPORT.

GOLD

EATON

Powering Business Worldwide

SCHAEFFLER

ZF

BRONZE

FEV

TOYOTA
EMERGENCY PROCEDURES DURING INNOVATIONS IN MOBILITY

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.

SAE EMERGENCY HOTLINE
+1.724.772.4044
+1.800.581.9295

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.

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.
FACILITY FLOOR PLAN

EXHIBIT HALL

CORNERSTONE

TECHNICAL SESSIONS

THE EVENT CENTER

EXHIBIT HALL

LEGACY BALLROOM
### EVENT-AT-A-GLANCE

**INNOVATIONS IN MOBILITY**

Tuesday, October 29 - Thursday, October 31

Suburban Collection Showplace, Novi Michigan

**Event-at-a-Glance as of April 2, 2019**

#### REGISTRATION HOURS

<table>
<thead>
<tr>
<th>Day</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>2:00-4:00 p.m.</td>
</tr>
<tr>
<td>Tuesday</td>
<td>7:00 a.m.–4:00 p.m.</td>
</tr>
<tr>
<td>Wednesday</td>
<td>7:00 a.m.–4:00 p.m.</td>
</tr>
<tr>
<td>Thursday</td>
<td>7:00 a.m.–1:00 p.m.</td>
</tr>
</tbody>
</table>

#### EXHIBIT HOURS

<table>
<thead>
<tr>
<th>Day</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday</td>
<td>9:30 a.m.–6:00 p.m.</td>
</tr>
<tr>
<td>Wednesday</td>
<td>9:30 a.m.–3:00 p.m.</td>
</tr>
<tr>
<td>Thursday</td>
<td>9:30 a.m.–3:00 p.m.</td>
</tr>
</tbody>
</table>

#### TECHNICAL SESSIONS

<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 a.m. – 11:30 a.m.</td>
<td>Technical Sessions</td>
<td>Session Rooms</td>
</tr>
<tr>
<td>11:30 a.m.– 1:00 p.m.</td>
<td>Luncheon</td>
<td>Exhibit Hall</td>
</tr>
<tr>
<td>1:00 – 2:30 p.m.</td>
<td>Technical Sessions</td>
<td>Session Rooms</td>
</tr>
<tr>
<td>2:30 – 3:00 p.m.</td>
<td>Coffee / Networking Break</td>
<td>Exhibit Hall</td>
</tr>
<tr>
<td>3:00 – 4:30 p.m.</td>
<td>Technical Sessions</td>
<td>Session Rooms</td>
</tr>
<tr>
<td>4:30 – 6:00 p.m.</td>
<td>Networking Reception</td>
<td>Exhibit Hall</td>
</tr>
</tbody>
</table>

#### NETWORKING OPPORTUNITY

<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:30 – 10:00 a.m.</td>
<td>Coffee / Networking Break</td>
<td>Exhibit Hall</td>
</tr>
<tr>
<td>9:30 a.m. - 3:00 p.m.</td>
<td>Exhibit Open</td>
<td>Exhibit Hall</td>
</tr>
<tr>
<td>10:00 a.m. – 11:30 a.m.</td>
<td>Technical Sessions</td>
<td>Session Rooms</td>
</tr>
<tr>
<td>11:30 a.m.– 1:00 p.m.</td>
<td>Luncheon</td>
<td>Exhibit Hall</td>
</tr>
<tr>
<td>1:00 – 2:30 p.m.</td>
<td>Technical Sessions</td>
<td>Session Rooms</td>
</tr>
<tr>
<td>2:30 – 3:00 p.m.</td>
<td>Coffee / Networking Break</td>
<td>Exhibit Hall</td>
</tr>
<tr>
<td>3:00 – 4:30 p.m.</td>
<td>Technical Sessions</td>
<td>Session Rooms</td>
</tr>
</tbody>
</table>

**Registration Sponsored by**

![ZF Logo]


**Registration**
Exhibit Hall

Monday, October 28: 2:00 - 4:00 p.m.  
Tuesday, October 29: 7:00 a.m. - 4:00 p.m.  
Wednesday, October 30: 7:00 a.m. - 4:00 p.m.  
Thursday, October 31: 7:00 a.m. - 1:00 p.m.

** Exhibit Hours**
Tuesday, October 29: 9:30 a.m. - 6:00 p.m.  
Wednesday, October 30: 9:30 a.m. - 3:00 p.m.  
Thursday, October 31: 9:30 a.m. - 3:00 p.m.

**Ride and Drive**
Tuesday, October 29: 11:30 a.m. - 1:00 p.m. and 2:30 - 6:00 p.m.  
Wednesday, October 30: 11:30 a.m. - 3:00 p.m.

**Technical Sessions**
Session Rooms
Tuesday, October 29: 8:30 a.m. - 4:30 p.m.  
Wednesday, October 30: 8:30 a.m. - 4:30 p.m.  
Thursday, October 31: 8:30 a.m. - 4:30 p.m.

**Networking Lunches**
Exhibit Hall
Daily, 11:30 a.m. - 1:00 p.m.

**Networking Breaks**
Exhibit Hall
Tuesday, October 29: 9:30 - 10:00 a.m. and 2:30 - 3:00 p.m.  
Wednesday, October 30: 9:30 - 10:00 a.m. and 2:30 - 3:00 p.m.  
Thursday, October 31: 9:30 - 10:00 a.m. and 2:30 - 3:00 p.m.

**Networking Reception**
Exhibit Hall
Tuesday, October 29: 4:30 - 6:00 p.m.

**Wifi Information**
Username: FREEWIFI  
Password: free2018!
GET THE LATEST EVENT INFO

Download the Innovations in Mobility mobile app

- **LEARN** event features, programs and sessions
- **SCHEDULE** your time and don’t miss out
- **CONNECT** with speakers, exhibitors and attendees
SPECIAL EVENTS TUESDAY, OCTOBER 29

Keynote Speakers

Jono Anderson  
KPMG LLP

Eric Hsieh  
US Department of Energy

George Coates  
WorldAutoSteel

Joanna M. Pinkerton  
Central Ohio Transit Authority

Timothy Frazier  
Cummins Inc

Kevin Quinn  
General Motors

Denise Gray  
LG Chem Michigan Inc. Tech. Center

Jill Sciarappo  
Intel

Jan Hellåker  
Lindholmen Science Park Ltd.

Kevin Stork  
US Department of Energy
SPECIAL EVENTS  WEDNESDAY, OCTOBER 30

Keynote Speakers

David Anderson
US Department of Energy

Wolfgang Warnecke
Shell Global Solutions

Ellen Dunham-Jones
Georgia Technical University

Jody Hall
Steel Market Development Institute

Jeffrey Helms
Celanese Corp.

Michael Mikula
Ford Motor Co.

Program as of October 16. See Mobile App for latest program.

Mobile App sponsored by EATON
Powering Business Worldwide
Keynote Speakers

Carla Bailo  
Center For Automotive Research

Joel Maguire  
BorgWarner, Inc.

Jim Barbaresso  
HNTB Corp.

Greg Melling  
Unity Technologies

Stephen Ciatti  
PACCAR Technical Center

Steven Przesmitzki  
Aramco Research Center

Jerry Gibbs  
US Dept of Energy

Kevin Stork  
US Department of Energy

Don Hillebrand  
Argonne National Laboratory

Program as of October 16. See Mobile App for latest program.

Mobile App sponsored by EATON
SAE International student members and young professionals (ages 18-34) have submitted their technical paper presentations for our SAE Student/Young Professional Technical Paper Competition. Four winners - two students and two young professionals - have been chosen by SAE’s Competition Review Panel. They have received an all-expenses paid trip to SAE Innovations in Mobility and the opportunity to present their work alongside other industry experts. The winners of the competition will network with some of the top industry professionals, and all participants with published papers are enhancing their resumes with a major industry accomplishment, thereby gaining a competitive edge with potential recruiters.

**Simeon Iliev**, Argonne National Laboratory
Presentation Title: Eco-Driving Strategies for Different Powertrain Types and Scenarios (SAE Paper 2019-01-2608)
Presentation Date: October 29
Presentation Time: 11:00 a.m.

**Qianyu Ouyang**, FinitronX
Presentation Title: An IMPC based Parking Assistance System with Interactive Searching Function (SAE Paper 2019-01-2614)
Session: IIM501 Smart Cities (Initiatives)
Presentation Date: October 29
Presentation Time: 11:00 a.m.

**Mehar Bade**, West Virginia University
Presentation Title: Feasibility of Multiple Piston Motion Control Approaches in a Free Piston Engine Generator (SAE Paper 2019-01-2599)
Session Title: IIM308 Range Extenders for EVs
Presentation Date: October 31
Presentation Time: 9:10 a.m.

**Qilun Zhu**, Clemson-ICAR
Presentation Title: Integrated Engine States Estimation using Extended Kalman Filter and Disturbance Observer (2019-01-2603)
Qilun Zhu will present his paper at WCX SAE World Congress Experience in April 2020.
SAE INTERNATIONAL EVENTS

2019

Innovations in Mobility
October 29-31
Novi, MI

Small Engine Technology Conference & Exposition
November 19-21
Hiroshima, Japan

Defense Maintenance and Logistics Exhibition
December 9-11
Spokane, WA

DoD Maintenance Symposium
December 9-12
Spokane, WA

2020

Connect2Car at CES
January 7
Las Vegas, NV

Government/Industry Meeting
January 22-24
Washington, DC

Hybrid and Electric Vehicle Technologies
January 28-30
Pasadena, CA

AeroTech
March 17-19
Pasadena, CA

On-Board Diagnostics – Europe
March 24-26
Dublin, Ireland

High Efficiency IC Engine Symposium
April 19-20
Detroit, MI

WCX SAE World Congress Experience
April 21-23
Detroit, MI

escar USA
May 20-21
Plymouth, MI

CyberAuto Challenge™
June 12-16
Warren, MI

COMVEC™
September 15-17
Rosemont, IL

North American International Powertrain Conference
September 16-18
Chicago, IL

Noise & Vibration Forum
September 22-23
Shanghai, China

Powertrains, Fuels & Lubricants Meeting
September 22-24
Krakow, Poland

On-Board Diagnostics - Americas
September 22-24
Indianapolis, IN

Thermal Management Systems Symposium
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

Innovations in Mobility
October 20-22
Pittsburgh, PA

Small Powertrains and Energy Systems Technology Conference
November 10-12
Minneapolis, MN

Defense Maintenance and Logistics Exhibition December 7-9
Kansas City, MO

DoD Maintenance Symposium
December 7-10
Kansas City, MO

2021

Government/Industry Meeting
February 3-5
Washington, DC

AeroTech
March 9-11
Orlando, FL

WCX SAE World Congress Experience
April 13-15
Detroit, MI

Noise and Vibration Conference & Exhibition
June 14-17
Grand Rapids, MI

COMVEC™
September 14-16
Rosemont, IL

North American International Powertrain Conference
September 15-17
Chicago, IL

On-Board Diagnostics Symposium
September 21-23
Garden Grove, CA

Brake Colloquium & Exhibition
October 17-20
Orlando, FL

For an updated listing of events, dates and locations, please refer to sae.org/events/
## TECH SESSIONS WEEK AT A GLANCE

### ADVANCED PROPULSION

<table>
<thead>
<tr>
<th>Session</th>
<th>AM</th>
<th>PM</th>
<th>AM</th>
<th>PM</th>
<th>AM</th>
<th>PM</th>
<th>Room No.</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Wheel Drive (IIM309)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>Cornerstone I</td>
<td>14</td>
</tr>
<tr>
<td>Hybrid and Electric Powertrain (IIM302)</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Legacy Ballroom IV</td>
<td>12</td>
</tr>
<tr>
<td>Natural Gas (IIM301)</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Legacy Ballroom VI</td>
<td>12</td>
</tr>
<tr>
<td>Net-Zero Carbon Fuels Technology (Part 1 &amp; 2) (IIM307)</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Legacy Ballroom VIII</td>
<td>14</td>
</tr>
<tr>
<td>Range Extenders for EVs (IIM308)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>Legacy Ballroom VIII</td>
<td>14</td>
</tr>
<tr>
<td>Transmission and Driveline (Part 1 &amp; 2) (IIM303)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>Cornerstone I</td>
<td>12, 13</td>
</tr>
</tbody>
</table>

### AUTOMATED & UNMANNED MOBILITY

<table>
<thead>
<tr>
<th>Session</th>
<th>AM</th>
<th>PM</th>
<th>AM</th>
<th>PM</th>
<th>AM</th>
<th>PM</th>
<th>Room No.</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AV Testing, Validation and Certification (IIM410)</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>Legacy Ballroom VII</td>
<td>19</td>
</tr>
<tr>
<td>Artificial Intelligence and Machine Learning Impacts on ADAS and AV Advancements (IIM405)</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>Legacy Ballroom V</td>
<td>18</td>
</tr>
<tr>
<td>Critical Legal, Regulatory, Insurance &amp; Consumer Metrics for AV (IIM411)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>Legacy Ballroom I</td>
<td>20</td>
</tr>
<tr>
<td>Cybersecurity (IIM415)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>Legacy Ballroom V</td>
<td>20</td>
</tr>
<tr>
<td>Health Ready Components (IVHM) (IIM416)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>Legacy Ballroom VII</td>
<td>20</td>
</tr>
<tr>
<td>Human Experience &amp; Interface (IIM413)</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Legacy Ballroom III</td>
<td>16</td>
</tr>
<tr>
<td>Interior Occupant Protection for Automated Vehicles (IIM406)</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Legacy Ballroom VII</td>
<td>16</td>
</tr>
<tr>
<td>Internet of Things, Data Management, and Blockchain (IIM404)</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Legacy Ballroom V</td>
<td>16</td>
</tr>
<tr>
<td>Market Analysis, Deployment Strategies &amp; Impact of Automated Vehicles on MaaS (IIM401)</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Legacy Ballroom I</td>
<td>16</td>
</tr>
<tr>
<td>Sensor Fusion, Integration and Data Collection (IIM403)</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>Legacy Ballroom III</td>
<td>18</td>
</tr>
<tr>
<td>Wireless Communications and HD Mapping (IIM407)</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>Legacy Ballroom I</td>
<td>18</td>
</tr>
</tbody>
</table>

### NEXT GEN MATERIALS

<table>
<thead>
<tr>
<th>Session</th>
<th>AM</th>
<th>PM</th>
<th>AM</th>
<th>PM</th>
<th>AM</th>
<th>PM</th>
<th>Room No.</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine and Materials Convergence (IIM202)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>Legacy Ballroom III</td>
<td>22</td>
</tr>
<tr>
<td>Material Needs of New Generation Vehicles (IIM201)</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>Legacy Ballroom VIII</td>
<td>21</td>
</tr>
</tbody>
</table>

### SMART MANUFACTURING

<table>
<thead>
<tr>
<th>Session</th>
<th>AM</th>
<th>PM</th>
<th>AM</th>
<th>PM</th>
<th>AM</th>
<th>PM</th>
<th>Room No.</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additive Manufacturing in the Automotive Industry (IIM101)</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Legacy Ballroom VIII</td>
<td>23</td>
</tr>
<tr>
<td>Deployment of Smart Manufacturing Technologies Throughout the Automotive Value Chain (IIM102)</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>Legacy Ballroom IV</td>
<td>23</td>
</tr>
<tr>
<td>The Current and Future State of XR in the Automotive Industry (IIM103)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>Legacy Ballroom IV</td>
<td>24</td>
</tr>
</tbody>
</table>

### SMART MOBILITY AND INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Session</th>
<th>AM</th>
<th>PM</th>
<th>AM</th>
<th>PM</th>
<th>AM</th>
<th>PM</th>
<th>Room No.</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Next Generation Infrastructure (IIM507)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>Legacy Ballroom II</td>
<td>25</td>
</tr>
<tr>
<td>Smart Cities (Initiatives) (IIM501)</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Legacy Ballroom II</td>
<td>25</td>
</tr>
<tr>
<td>Urban Mobility (Applications) (IIM504)</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>Legacy Ballroom II</td>
<td>26</td>
</tr>
<tr>
<td>TIME</td>
<td>LEGACY BALLROOM IV</td>
<td>LEGACY BALLROOM VI</td>
<td>CORNERSTONE I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>--------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>Networking Break in Exhibit</td>
<td>Networking Break in Exhibit</td>
<td>Networking Break in Exhibit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:00 a.m.</td>
<td>Student &amp; Young Professionals Technical Paper Competition Winner, Eco-Driving Strategies for Different Powertrain Types and Scenarios (Presentation of SAE Paper 2019-01-2608) (Oral Only) Simon Ilevu, Argonne National Laboratory</td>
<td>Development of High Efficiency, Low NOx Natural Gas Engines (Oral Only) Michael Clifford Kocis, Southwest Research Institute</td>
<td>Ford 10R80 MHT Transmission (Oral Only) Gregory Gardner, Ford Motor Company</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>Networking Lunch in Exhibit</td>
<td>Networking Lunch in Exhibit</td>
<td>Networking Lunch in Exhibit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:00 p.m.</td>
<td>Why Electric Vehicle Wireless Charging is Essential to the Future of Mobility (Oral Only) Steve Gannem, WiTricity</td>
<td>Natural Gas Engine and Aftertreatment Architecture Choices to Meet Future Emissions Regulations (Oral Only) Sarathi Pengarajaram, Cummins Inc.</td>
<td>Performance and Characteristics of the TREMEC TR-9070 DCT 7-Speed Dual Clutch Transmission (Oral Only) Brad Dennis, Maarten Debrouwere, TREMEC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td>Networking Break in Exhibit</td>
<td>Networking Break in Exhibit</td>
<td>Networking Break in Exhibit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:00 p.m.</td>
<td>Fuel Cell System Challenges for Heavy-Duty Vehicles (Oral Only) John Kasab, AVL</td>
<td>Panel Discussion Moderators: Scott Curran, Oak Ridge National Laboratory</td>
<td>Schaeffler P2 Systems and beyond - Enabling modularity for e-mobility solutions (Oral Only) Nick C. Johnson, Schaeffler Group USA Inc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:30 p.m.</td>
<td>Toyota Project PORTAL - ZERO emission Class 8 Truck Powertrain (Oral Only) Takehiko Yokoo, Toyota Motor North America Inc.</td>
<td>Panelists: Mark Dunn, Westport Fuel Systems Sarathi Pengarajaram, Cummins Inc. Kevin Stork, US Dept. of Energy Michael Wang, Argonne National Laboratory Paul Wang, Caterpillar Inc.</td>
<td>Does DCT still have a chance in NA? As a P2 Hybrid it has! (Oral Only) Alex Semanis, Punch Powertrain nv</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:00 p.m.</td>
<td>Innovations in Fuel Cell Stack and System Design (Oral Only) TG Lawy, Ballard Power Systems Inc.</td>
<td>Planned by Hybrid Powertrain Organizers / Innovations in Mobility Steering Committee</td>
<td>The Acceleration of Electrification (Increasing market share of electric vehicles across the globe) (Oral Only) Robert S. Smyczynski, FCA US LLC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIME</td>
<td>Legacy Ballroom VI</td>
<td>Cornerstone I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>8:30 a.m.</strong></td>
<td>Net-Zero Carbon Fuels Technology (Part 1 of 2) (IIM307)</td>
<td>Transmission and Driveline (Part 2 of 2) (IIM303)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Speakers of the Net-Zero-Carbon Fuels Symposium will discuss emerging net-zero</td>
<td>This day will address the development of new transmission concepts, transmission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>carbon fuels technologies and the potential for a more sustainable transportation</td>
<td>enhancements and the advancement of the state of the art of transmission system</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>future. Invited presentations will focus on fuel production technologies,</td>
<td>design &amp; integration. New transmissions, including 48V systems, and high voltage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>combustion and emissions performance, and life-cycle/techno-economic analyses of net-</td>
<td>voltage axles will be highlighted, along with controls and simulations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>zero carbon systems to understand the near-term and long-term pathways to</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>implementation and impacts on transportation and the U.S. energy infrastructure.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8:30 a.m. - 4:30 p.m.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chairpersons:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>John Farrell, National Renewable Energy Laboratory; Robert Wagner, Claus Daniel,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oak Ridge National Laboratory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>9:30 a.m.</strong></td>
<td>Keynote Presentation: The Route of Sustainable Fuels as the Basis for Zero</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emission Mobility – is there a chance for Hydrogen and eFuels?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Oral Only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wolfgang Warneckie, Shell Global Solutions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>10:00 a.m.</strong></td>
<td>Net-Zero-Carbon Fuels</td>
<td>Vehicle Dynamics Modeling Estimation and Control - A Mechatronics Approach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Oral Only)</td>
<td>(Oral Only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Paul Naj, USCAR</td>
<td>Ahmed El-Shaer, Dana</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>10:30 a.m.</strong></td>
<td>Presentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Oral Only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alicia Lindauer, US Department of Energy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>11:00 a.m.</strong></td>
<td>Innovation and Emerging Technology Perspectives in Hydrogen and Fuel cells at the</td>
<td>Dynamic Characterization and Modeling of Wet Clutch Actuator for High-Fidelity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>U.S. Department of Energy</td>
<td>Propulsion System Simulations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Oral Only)</td>
<td>(Oral Only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Max Lyubovsky, US Department of Energy</td>
<td>Hiral Haria, Ford Motor Company; Nikolas Katopodes, University of Michigan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>11:30 a.m.</strong></td>
<td>Networking Lunch in Exhibit</td>
<td>Networking Lunch in Exhibit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1:00 p.m.</strong></td>
<td>An Introduction to the Joint Center for Artificial Photosynthesis</td>
<td>Model-Based Adaptive Estimation of Transfer Case Clutch Touch-Point</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Oral Only)</td>
<td>(Oral Only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Peter Agbo, Lawrence Berkeley National Laboratory</td>
<td>Guoming (George) Zhu, Michigan State University</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1:30 p.m.</strong></td>
<td>The Road to Net Zero Carbon: Decarbonizing Transportation with Alternative Fuels</td>
<td>Trade-off Analysis and Systematic Optimization of Heavy-Duty Diesel Hybrid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Oral Only)</td>
<td>Powertrain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Michelle Kiddier, Oak Ridge National Laboratory</td>
<td>(Oral Only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2:00 p.m.</strong></td>
<td>Presentation</td>
<td>Mufaddel Dahodwala, Satyam Joshi, Erik W. Koehler, Michael Franke, FEV North</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Oral Only)</td>
<td>American Inc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>John Eichberger, The Fuels Institute</td>
<td>(Oral Only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3:00 p.m.</strong></td>
<td>Feasibility Study of Utilizing Electricity to Produce Intermediates from CO²</td>
<td>System Level Cost Optimisation of BEV Powertrain Components and Architecture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Oral Only)</td>
<td>(Oral Only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ling Tao, National Renewable Energy Laboratory</td>
<td>Ajay Lukha, Yasa, Ltd.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3:30 p.m.</strong></td>
<td>Well-to-Wheels GHG Emissions of Transportation Fuels</td>
<td>Schaeffler PowerWheel: Key to New Mobility Concepts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Oral Only)</td>
<td>(Oral Only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Michael Wang, Argonne National Laboratory</td>
<td>Sebastian Wiegelos, Schaeffler AG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4:00 p.m.</strong></td>
<td>Panel Discussion: Net-Zero Carbon Fuels Technology</td>
<td>ProteanDrive In-wheel Technology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Oral Only)</td>
<td>(Oral Only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Panelists: Robert Wagner, Oak Ridge National Laboratory</td>
<td>Ahmad Kilani, Protean Electric</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Peter Agbo, Lawrence Berkeley National Laboratory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Michelle Kiddier, Oak Ridge National Laboratory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ling Tao, National Renewable Energy Laboratory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Michael Wang, Argonne National Laboratory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Planned by Net-Zero Carbon Fuels Technology Organizers / Innovations in Mobility</td>
<td>Planned by Transmission and Driveline Symposium Organizers / Ground Vehicle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Steering Committee</td>
<td>Advisory Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TECH SESSIONS

#### ADVANCED PROPULSION

<table>
<thead>
<tr>
<th>TIME</th>
<th>Cornerstone I</th>
<th>Legacy Ballroom VI</th>
<th>Legacy Ballroom VIII</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 a.m. - 4:30 p.m.</td>
<td><strong>All Wheel Drive (IIM309)</strong>&lt;br&gt;The third day of programming will open with a future of mobility panel followed by a complement of AWD-related sessions with coverage on electric and electric axle drive systems.</td>
<td><strong>Net-Zero Carbon Fuels Technology (Part 2 of 2) (IIM307)</strong>&lt;br&gt;Speakers of the Net-Zero-Carbon Fuels Symposium will discuss emerging net-zero carbon fuels technologies and the potential for a more sustainable transportation future. Invited presentations will focus on fuel production technologies, combustion and emissions performance, and life-cycle/techno-economic analyses of net-zero carbon systems to understand the near-term and long-term pathways to implementation and impacts on transportation and the U.S. energy infrastructure.</td>
<td><strong>Range Extenders for EVs (IIM308)</strong>&lt;br&gt;The Range Extenders for Electric Vehicles Symposium will focus on the specific role of range extenders can have and the dependency on the different potential applications and the state of technologies such as energy storage, fueling infrastructure, etc. Sessions will include discussions of range extender technologies and the use of electrification to enable new or unconventional propulsion systems, and a perspective on the future of range extension technologies.</td>
</tr>
<tr>
<td>Chairpersons: Berthold Martin, FCA US LLC; Steven Wesolowski, Dana; Ryan Kadlec, Magna Powertrain USA Inc.; Azadeh Natrinissa, General Motors</td>
<td>Chairpersons: John Farrell, National Renewable Energy Laboratory; Robert Wagner, Claus Daniel, Oak Ridge National Laboratory</td>
<td>Chairpersons: Hugh Blaxill, Mahle Powertrain, Ltd.; Scott Currar, Oak Ridge National Laboratory</td>
<td></td>
</tr>
<tr>
<td>8:30 a.m.</td>
<td><strong>Keynote Presentation</strong>&lt;br&gt;(Oral Only)</td>
<td><strong>Keynote Presentation: Opportunities to Improve Efficiency in Transportation through Advanced Technology</strong>&lt;br&gt;(Oral Only)</td>
<td><strong>Keynote Presentation: Using Electrification to Balance on ICE</strong>&lt;br&gt;(Oral Only)</td>
</tr>
<tr>
<td>(Oral Only) Don Hillebrand, Argonne National Laboratory</td>
<td>Steven Przesmitzki, Aramco Research Center</td>
<td>Joel M. Maguire, BorgWarner Inc.</td>
<td></td>
</tr>
<tr>
<td>9:10 a.m.</td>
<td><strong>Networking Break in Exhibit</strong></td>
<td><strong>Networking Break in Exhibit</strong></td>
<td><strong>Networking Break in Exhibit</strong></td>
</tr>
<tr>
<td>10:00 a.m.</td>
<td><strong>Drivetrain design of an AWD, Class 3, pure electric Sport Utility Truck</strong>&lt;br&gt;(Oral Only)</td>
<td><strong>Sustainable Aviation Fuel</strong>&lt;br&gt;(Oral Only)</td>
<td><strong>Opportunities and Challenges with Internal Combustion Engine Range Extenders</strong>&lt;br&gt;(Oral Only)</td>
</tr>
<tr>
<td>Charles Vinegar, Bollinger Motors</td>
<td>John Holladay, Pacific Northwest National Laboratory</td>
<td>Ke Li, Cummins Inc.</td>
<td></td>
</tr>
<tr>
<td>10:30 a.m.</td>
<td><strong>An Innovative Approach to a Coaxial Planetary P4 eAxle</strong>&lt;br&gt;(Oral Only)</td>
<td><strong>Perspectives on Achieving Net-Zero-Carbon Fuels for the Marine Sector</strong>&lt;br&gt;(Oral Only)</td>
<td><strong>MAHLE Modular Powertrain - An insight into the development of REx technology and its wider hybrid application potential</strong>&lt;br&gt;(Oral Only)</td>
</tr>
<tr>
<td>Joe Palazzolo, GKN Driveline North America Inc.</td>
<td>Michael Kass, Oakridge National Laboratory; Thomas N. Thompson, Us Maritime Administration (MARAD)</td>
<td>Hugh Blaxill, Mahle Powertrain, Ltd.</td>
<td></td>
</tr>
<tr>
<td>11:00 a.m.</td>
<td><strong>AWD Battery Electric Performance SUV with Dual eMotor Control Algorithm for Optimal Efficiency</strong>&lt;br&gt;(Oral Only)</td>
<td><strong>Panel Discussion: Net-Zero Carbon Fuels Technology</strong></td>
<td><strong>The Wankel Engine as a Range Extender: Some Lines of Research</strong>&lt;br&gt;(Oral Only)</td>
</tr>
<tr>
<td>TIME</td>
<td>Cornerstone I</td>
<td>Legacy Ballroom VI</td>
<td>Legacy Ballroom VIII</td>
</tr>
<tr>
<td>------------</td>
<td>---------------</td>
<td>---------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>8:30 a.m. - 4:30 p.m.</td>
<td><strong>All Wheel Drive (IIM309)</strong>&lt;br&gt;The third day of programming will open with a future of mobility panel followed by a compliment of AWD-related sessions with coverage on electric and electric axle drive systems.</td>
<td><strong>Net-Zero Carbon Fuels Technology (Part 2 of 2) (IIM307)</strong>&lt;br&gt;Speakers of the Net-Zero-Carbon Fuels Symposium will discuss emerging net-zero carbon fuels technologies and the potential for a more sustainable transportation future. Invited presentations will focus on fuel production technologies, combustion and emissions performance, and life-cycle/ techno-economic analyses of net-zero carbon systems to understand the near-term and long-term pathways to implementation and impacts on transportation and the U.S. energy infrastructure.</td>
<td><strong>Range Extenders for EVs (IIM308)</strong>&lt;br&gt;The Range Extenders for Electric Vehicles Symposium will focus on the specific role of range extenders can have and the dependency on the different potential applications and the state of technologies such as energy storage, fueling infrastructure, etc. Sessions will include discussions of range extender technologies and the use of electrification to enable new or unconventional propulsion systems, and a perspective on the future of range extension technologies.</td>
</tr>
<tr>
<td>Chairpersons: Berthold Martin, FCA US LLC; Steven Wesolowski, Dana; Ryan Kadlec, Magna Powertrain USA Inc.; Azadeh Narimissa, General Motors</td>
<td>Chairpersons: John Farrell, National Renewable Energy Laboratory; Robert Wagner, Claus Daniel, Oak Ridge National Laboratory</td>
<td>Chairpersons: Hugh Blaxill, Mahle Powertrain, Ltd.; Scott Curran, Oak Ridge National Laboratory</td>
<td></td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>Networking Lunch in Exhibit</td>
<td>Networking Lunch in Exhibit</td>
<td>Networking Lunch in Exhibit</td>
</tr>
<tr>
<td>1:00 p.m.</td>
<td>Two-Speed EDU Development for Battery Electric Vehicles (Oral Only)&lt;br&gt;Brian Campbell, FEV North America Inc.; Thomas Wellmann, FEV Inc.; Gereon Hellenbroich, FEV Group GmbH</td>
<td>Keynote Presentation: DOE Co-Optimization of Engines and Fuels (Oral Only)&lt;br&gt;Kevin Stork, US Dept. of Energy</td>
<td>Delta’s Catalytic Generator – The Perfect Range Extender (Oral Only)&lt;br&gt;Nicholas Carpenter, Delta Motorsports Ltd.</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>NVH Development Process for Electric Drive Units (EDU) (Oral Only)&lt;br&gt;Thomas Wellmann, Todd Tousignant, FEV North America, Inc.; Christoph Steffens, Peter Janssen, FEV Europe GmbH</td>
<td>Top 10 Bio-derived Blendstocks to Improve Turbocharged Gasoline Engine Efficiency (Oral Only)&lt;br&gt;Daniel J. Gaspar, Pacific Northwest National Laboratory</td>
<td>Fuel Cells for Load Leveling (Oral Only)&lt;br&gt;Michael Reissig, Falko Berg, AVL Powertrain GmbH</td>
</tr>
<tr>
<td>2:00 p.m.</td>
<td>Transmission System Footprint Related to Fatigue, Efficiency and NVH (Oral Only)&lt;br&gt;Molly Renshaw, GKN Driveline</td>
<td>Performance-Advantaged Ether Diesel Bioblendstocks by a priori Design (Oral Only)&lt;br&gt;Derek Vardon, National Renewable Energy Laboratory</td>
<td>Tools for Developing Advanced Range Extender Engines (Oral Only)&lt;br&gt;Matthew Viele, Viele Tech.</td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td>Networking Break in Exhibit</td>
<td>Networking Break in Exhibit</td>
<td>Networking Break in Exhibit</td>
</tr>
<tr>
<td>3:30 p.m.</td>
<td>High Performance Dual Motor e-Axle (Oral Only)&lt;br&gt;Harihar Mathiazhagan, AVL</td>
<td>Co-Optimized Fuel and Multi-Mode GCI Engine (Oral Only)&lt;br&gt;Philip Zoldak, Hyundai Motor Group</td>
<td>Planned by Range Extenders for EVs Organizers / Innovations in Mobility Steering Committee</td>
</tr>
<tr>
<td>4:00 p.m.</td>
<td>SAE Drivetrain Standards Committee Update (Oral Only)&lt;br&gt;Eric R. Frenz, Magna Powertrain USA Inc.; Michael Kocevar, JTDKT Corp.</td>
<td>Planned by Net-Zero Carbon Fuels Technology Organizers / Innovations in Mobility Steering Committee</td>
<td>Planned by Range Extenders for EVs Organizers / Innovations in Mobility Steering Committee</td>
</tr>
</tbody>
</table>
# Human Experience & Interface (IIM413)

With any type of automation, the human experience is the key to its success. Industry experts and consumer advocates discuss the key issues, challenges, and solutions regarding human interaction with automated vehicles (L2+ and L4+) – as passengers, pedestrians, and as drivers of other vehicles.

**TIME**: 8:30 a.m. - 11:30 a.m.

**Chairpersons**: Oliver Spiess, ZF

**Legacy Ballroom III**

**Presentation**
- Kelly Funkhouser, Consumer Reports

**Session Title**: Presentation Considerations for Collision Load Cases and Occupant Protection in Level 4 and 5 Autonomous Vehicles
- Robert Lange, Exponent Inc.

**Session Title**: Automotive - Driving the Future of Mobility
- Raj Paul, Microsoft Corporation

**Session Title**: Keynote Presentation: Advanced Driver Assistance Systems: The ADAS Road to AV Reality
- Jill Sciarappo, Intel

**Networking Break in Exhibit**

**Session Title**: Integrated Safety - Safety Concepts for Future Interiors
- Frank Laakmann, Martin Seyffert, Lothar Zink, ZF Group

**Session Title**: The Role of Connected and Autonomous Vehicles in Smart Cities
- Robert M. McQueen, Bob McQueen & Associates

**Session Title**: Panel Discussion: Internet of Things (IoT)
- Joe White, Reuters - Detroit

**Program as of October 16. See Mobile App for latest program.**

**Mobile App**

**Sponsored by**

**Eaton**

Paving Business Worldwide

---

**Legacy Ballroom VII**

**Presentation**
- Kelly Funkhouser, Consumer Reports

**Session Title**: Considerations for Collision Load Cases and Occupant Protection in Level 4 and 5 Autonomous Vehicles
- Robert Lange, Exponent Inc.

**Session Title**: Automotive - Driving the Future of Mobility
- Raj Paul, Microsoft Corporation

**Session Title**: Keynote Presentation: Advanced Driver Assistance Systems: The ADAS Road to AV Reality
- Jill Sciarappo, Intel

**Networking Break in Exhibit**

**Session Title**: Integrated Safety - Safety Concepts for Future Interiors
- Frank Laakmann, Martin Seyffert, Lothar Zink, ZF Group

**Session Title**: The Role of Connected and Autonomous Vehicles in Smart Cities
- Robert M. McQueen, Bob McQueen & Associates

**Session Title**: Panel Discussion: Internet of Things (IoT)
- Joe White, Reuters - Detroit

**Program as of October 16. See Mobile App for latest program.**

**Mobile App**

**Sponsored by**

**Eaton**

Paving Business Worldwide

---

**Legacy Ballroom V**

**Presentation**
- Kelly Funkhouser, Consumer Reports

**Session Title**: Considerations for Collision Load Cases and Occupant Protection in Level 4 and 5 Autonomous Vehicles
- Robert Lange, Exponent Inc.

**Session Title**: Automotive - Driving the Future of Mobility
- Raj Paul, Microsoft Corporation

**Session Title**: Keynote Presentation: Advanced Driver Assistance Systems: The ADAS Road to AV Reality
- Jill Sciarappo, Intel

**Networking Break in Exhibit**

**Session Title**: Integrated Safety - Safety Concepts for Future Interiors
- Frank Laakmann, Martin Seyffert, Lothar Zink, ZF Group

**Session Title**: The Role of Connected and Autonomous Vehicles in Smart Cities
- Robert M. McQueen, Bob McQueen & Associates

**Session Title**: Panel Discussion: Internet of Things (IoT)
- Joe White, Reuters - Detroit

**Program as of October 16. See Mobile App for latest program.**

**Mobile App**

**Sponsored by**

**Eaton**

Paving Business Worldwide

---

**Legacy Ballroom I**

**Presentation**
- Kelly Funkhouser, Consumer Reports

**Session Title**: Considerations for Collision Load Cases and Occupant Protection in Level 4 and 5 Autonomous Vehicles
- Robert Lange, Exponent Inc.

**Session Title**: Automotive - Driving the Future of Mobility
- Raj Paul, Microsoft Corporation

**Session Title**: Keynote Presentation: Advanced Driver Assistance Systems: The ADAS Road to AV Reality
- Jill Sciarappo, Intel

**Networking Break in Exhibit**

**Session Title**: Integrated Safety - Safety Concepts for Future Interiors
- Frank Laakmann, Martin Seyffert, Lothar Zink, ZF Group

**Session Title**: The Role of Connected and Autonomous Vehicles in Smart Cities
- Robert M. McQueen, Bob McQueen & Associates

**Session Title**: Panel Discussion: Internet of Things (IoT)
- Joe White, Reuters - Detroit

**Program as of October 16. See Mobile App for latest program.**

**Mobile App**

**Sponsored by**

**Eaton**

Paving Business Worldwide

---
<table>
<thead>
<tr>
<th>TIME</th>
<th>Legacy Ballroom III</th>
<th>Legacy Ballroom VII</th>
<th>Legacy Ballroom V</th>
<th>Legacy Ballroom I</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 a.m. - 11:30 a.m.</td>
<td>Human Experience &amp; Interface (IIM413)</td>
<td>Interior Occupant Protection for Automated Vehicles (IIM406)</td>
<td>Internet of Things, Data Management, and Blockchain (IIM404)</td>
<td>Market Analysis, Deployment Strategies &amp; Impact of Automated Vehicles on MaaS (IIM401)</td>
</tr>
<tr>
<td>Chairpersons: Oliver Spiess, ZF</td>
<td>With any type of automation, the human experience is the key to its success. Industry experts and consumer advocates discuss the key issues, challenges, and solutions regarding human interaction with automated vehicles (L2+ and L4+) – as passengers, pedestrians, and as drivers of other vehicles.</td>
<td>As industry begins validation of level 4 and 5 automated systems and vehicles, a great many HMI and seating configurations have been shared in concept vehicles to inspire what is possible. But what is the reality for making sure an occupant in any seating position is safe? This symposium examines the critical work being done and the issues being raised to address occupant protection for both traditional as well as non-traditional vehicles (Low-Speed Neighborhood).</td>
<td>Attendees will hear how The Internet of Things and data management is a key enabler in the connectivity between ADS vehicles and other intelligent devices within the mobility ecosystems through new developments in cloud services, telematics, and over-the-air (OTA) software updates are impacting greater levels of automation in future vehicles. Lastly, speakers will discuss the integration of Blockchain, data management and automated vehicle technologies providing exciting solutions to some of the ***.</td>
<td>Automated and autonomous vehicles promises to change the way we think of personal transportation. The session will provide a market analysis of future automated/autonomous vehicle development as well as offer some insights as to how these vehicles will be deployed from a personal, shared, and fleet owner viewpoints.</td>
</tr>
<tr>
<td>8:30 a.m. - 4:30 p.m.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chairpersons: Oliver Spiess, ZF</td>
<td>Chairpersons: Donald Parker, Exponent Inc.</td>
<td>Chairpersons: Partha Goswami, General Motors</td>
<td>Chairpersons: Wald Aldeeb, Infinion Technologies AG</td>
<td></td>
</tr>
<tr>
<td>1:00 p.m.</td>
<td>Changes and Challenges for Occupant Protection in Future Vehicle Concepts (Oral Only)</td>
<td>Blockchain 101: The Connected Ecosystem (Oral Only)</td>
<td>Mobility as a Service User Experience and Vehicle Ownership Trends (Oral Only)</td>
<td></td>
</tr>
<tr>
<td>Chairpersons: John Capp, General Motors</td>
<td>Daniel Conway, University of Arkansas</td>
<td>Paul Kopp, ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>NHTSA’s Biomechanics and Crashworthiness Research for Automated Vehicles (Oral Only)</td>
<td>Blockchain 201 (Oral Only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:00 p.m.</td>
<td>Toyota’s Collaborative Safety Research Center (CSRRC) and Enhancing Tools to Assess Crash Protection in Future Automated Vehicles (Oral Only)</td>
<td>The Vehicle as its Own Economic Agent (Oral Only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chairpersons: Jason Hallman, Toyota Motor Corp.</td>
<td>Jochen (Joe) Renz, New Mobility Lab.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td>Networking Break in Exhibit</td>
<td>Networking Break in Exhibit</td>
<td>Networking Break in Exhibit</td>
<td></td>
</tr>
<tr>
<td>3:00 p.m.</td>
<td>Panel Discussion: Challenges of Non-Traditional (Low-speed Vehicle) Occupant Protection</td>
<td>Panel Discussion: Blockchain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderators: Jason Forman, University of Virginia</td>
<td>Moderators: Pramita Mitra, Ford Motor Company</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panelists:</td>
<td>Panelists:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raul Arbetazar, Insurance Institute for Highway Safety</td>
<td>Daniel Conway, University of Arkansas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Richard Marks, EcoV Environmental Transportation Inc.</td>
<td>Robert Konstdorf, EOS Detroit Inc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Douglas J. Stein, Avtoliv ASP</td>
<td>Jochen Renz, New Mobility Lab.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planned by ADAS to Automated Driving Organizing Committee / Innovations in Mobility Steering Committee</td>
<td>Planned by Occupant Protection Organizers / Innovations in Mobility Steering Committee</td>
<td>Planned by Vehicle Internet of Things Program Committee / Ground Vehicle Advisory Group</td>
<td>Planned by ADAS to Automated Driving Organizing Committee / Innovations in Mobility Steering Committee</td>
<td></td>
</tr>
</tbody>
</table>
### TECH SESSIONS

#### AUTOMATED & UNMANNED MOBILITY

<table>
<thead>
<tr>
<th>TIME</th>
<th>Legacy Ballroom V</th>
<th>Legacy Ballroom III</th>
<th>Legacy Ballroom I</th>
<th>Legacy Ballroom VII</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SESSION TITLE, DESCRIPTION, AND ROOM</strong></td>
<td><strong>TIME</strong></td>
<td><strong>SESSION TITLE, DESCRIPTION, AND ROOM</strong></td>
<td><strong>TIME</strong></td>
<td></td>
</tr>
</tbody>
</table>
| **8:30 a.m.**| Artificial Intelligence and Machine Learning Impacts on ADAS and AV Advancements (IIM405)  
As AI and ML expands its development into mobility, the impact will be felt throughout vehicles development, design and deployment regarding ADAS, Connectivity, and enhanced user experience technology. Come hear experts address the current state of AI/ML, and future research and developments of this technology as it relates to increasing vehicle automation then participate in a brief panel discussion.  
Chairpersons:  
Oliver Spiess, ZF | 9:30 a.m. - 3:00 p.m.  
Chairpersons:  
| Sensor Fusion, Integration and Data Collection (IIM403)  
Sensors represent the nervous system of vehicles by collecting inputs from the external environment and feeding this information to a driver and/or central computing center within the vehicle. The move from L2+ to L4+ automation has resulted in an exponential growth in the amount of data being collected. How this data collected, processed, and resulting decisions made are critical to the development of L4+ vehicles. Industry experts will discuss new sensor technology, integration, data collection.  
Chairpersons:  
| 8:30 a.m. - 4:30 p.m.  
Chairpersons:  
Wald Alieeb, Infrine Technologies AG | Wireless Communications and HD Mapping (IIM407)  
5G? V2X? Edge Computing? Where will it end for enabled digital services and connectivity and where should we be investing our time and resources and into which technology? Experts also address HD mapping as a critical function for ensuring automated vehicles (L2+ and L4+) are able to effectively navigate their environments by avoiding obstacles, road closures, and traffic to ensure safe and reliable transportation.  
| 8:30 a.m. - 4:30 p.m.  
Chairpersons:  
Patti Kreh, SAE International |
| **9:00 a.m.**| Impact of AI in Automotive Mobility (Oral Only)  
Brett Hillhouse, IBM Corporation  
Towards Kinematic Reconstruction of Roadway Scenes from Single-Camera Input (Oral Only)  
Jason J. Corso, University of Michigan | Relative velocity motion model based Estimation filter for Noise Cancellation and Obstacle tracking using Radar sensor for Environment perception in autonomous vehicles (Oral Only)  
Ravathi T. S, Automotive Research & Testing Center; Nijesh Sadanandan, Automotive Electronic Control Software | Dynamic Edge: Why Big Data and Automated Systems Won’t be Successful Without it (Oral Only)  
Hank Skorny, APTIV | AV Testing, Validation and Certification (IIM410)  
Connected and Automated Vehicles (CAVs) are primed to create disruptive changes in the future of transportation. Yet realizing a fully-evolved CAV ecosystem has hit the fundamental challenges for verification and validation in terms of: (i) uncertainty induced by mixed-traffic and human-variability; and (ii) need for hundreds-of-millions of miles of testing (simulated as well as real-world). It is in this milieu that we propose to further discussions and disseminate information around the emerging R&D, standardization, deployment and policy issues surrounding global deployments of CAVs (by including the critical academic, industry and professional society stakeholders).  
| 8:30 a.m. - 4:30 p.m.  
Chairpersons:  
Patti Kreh, SAE International |
| **9:30 a.m.**| Networking Break in Exhibit | Networking Break in Exhibit | Networking Break in Exhibit | 1:00 p.m. - 4:30 p.m.  
Chairpersons:  
Patti Kreh, SAE International |
| **10:00 a.m.**| How AI is making Drivers Better through ADAS (Oral Only)  
Abhinil Thatte, AEye Inc. | Managing the System-level evolution of ADAS systems to Autonomous Systems (Oral Only)  
Tom Toma, Veoneer | V2X: From here to 5G (Oral Only)  
Ravi Puvvala, Savar Networks | 1:00 p.m. - 4:30 p.m.  
Chairpersons:  
Patti Kreh, SAE International |
| **10:30 a.m.**| See What You Get - Independent Performance Evaluation of Neural Networks for Real-Time Perception (Oral Only)  
Fabian Koark, Inversity Inc. | Integrating LIDAR into the Automotive ADAS roadmap (Oral Only)  
Preetu Thakur, Velodyne LIDAR | ITS America Perspective on 5G (Oral Only)  
Steven Bayless, ITS America | 1:00 p.m. - 4:30 p.m.  
Chairpersons:  
Patti Kreh, SAE International |
| **11:00 a.m.**| Is Artificial Intelligence Certifiable for Deployment in Autonomous Driving (Oral Only)  
Houssam Abdelatif, TÜV SÜD; Stefan Merki, TÜV SÜD Americas | Bringing Intelligence to the Edge (Oral Only)  
Ove Salomonsson, AEye Inc. | S5G Sensor Sharing for Connected and Automated Vehicles (Oral Only)  
Ehsan Moradi-Pari, Honda R & D Americas Inc. | 1:00 p.m. - 4:30 p.m.  
Chairpersons:  
Patti Kreh, SAE International |
| **11:30 a.m.**| Networking Lunch in Exhibit | Networking Lunch in Exhibit | Networking Lunch in Exhibit | 1:00 p.m. - 4:30 p.m.  
Chairpersons:  
Patti Kreh, SAE International |

---

Program as of October 16. See Mobile App for latest program.

Mobile App sponsored by Eaton
### TECH SESSIONS

#### AUTOMATED & UNMANNED MOBILITY

### WEDNESDAY, OCTOBER 30

#### Technical and Business Sessions

<table>
<thead>
<tr>
<th>Time</th>
<th>Legacy Ballroom V</th>
<th>Legacy Ballroom III</th>
<th>Legacy Ballroom I</th>
<th>Legacy Ballroom VII</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 a.m. - 3:00 p.m.</td>
<td><strong>Artificial Intelligence and Machine Learning Impacts on ADAS and AV Advancements (IIM405)</strong>&lt;br&gt;As AI and ML expands its development into mobility, the impact will be felt throughout vehicles development, design and deployment regarding ADAS, Connectivity, and enhanced user experience technology. Come hear experts address the current state of AI/ML and future research and developments of this technology as it relates to increasing vehicle automation then participate in a brief panel discussion.</td>
<td><strong>Sensor Fusion, Integration and Data Collection (IIM403)</strong>&lt;br&gt;Senors represent the nervous system of vehicles by collecting inputs from the external environment and feeding this information to a driver and/or central computing center within the vehicle. The move from L2+ to L4+ automation has resulted in an exponential growth in the amount of data being collected. How this data collected, processed, and resulting decisions made are critical to the development of L4+ vehicles. Industry experts will discuss new sensor technology, integration, data collection.</td>
<td><strong>Wireless Communications and HD Mapping (IIM407)</strong>&lt;br&gt;5G? V2X? Edge Computing? Where will it end for enabled digital services and connectivity and where should we be investing our time and resources and into which technology? Experts also address HD mapping as a critical function for ensuring automated vehicles (L2+ and L4+) are able to effectively navigate their environments by avoiding obstacles, road closures, and traffic to ensure safe and reliable transportation.</td>
<td><strong>AV Testing, Validation and Certification (IIM410)</strong>&lt;br&gt;Connected and Automated Vehicles (CAVs) are primed to create disruptive changes in the future of transportation. Yet realizing a fully-evolved CAV ecosystem has hit the fundamental challenges for verification and validation in terms of: (i) uncertainty induced by mixed-traffic and human-variability; and (ii) need for hundreds-of-millions of miles of testing (simulated as well as real-world). It is in this milieu that we propose to further discussions and disseminate information around the emerging R&amp;D, standardization, deployment and policy issues surrounding global deployments of CAVs (by including the critical academic, industry and professional society stakeholders).</td>
</tr>
<tr>
<td>1:00 p.m.</td>
<td><strong>The Case for Transparent AI</strong>&lt;br&gt;(Oral Only)&lt;br&gt;Monika Minarcin, Accenture</td>
<td><strong>Building the Vision for Autonomous Mobility</strong>&lt;br&gt;(Oral Only)&lt;br&gt;Jason Eichenholz, Luminar Technologies</td>
<td><strong>Advancing Automated Driving with HD Maps</strong>&lt;br&gt;(Oral Only)&lt;br&gt;Praveen Chandrasekar, TomTom</td>
<td><strong>Panel Discussion: Simulation</strong>&lt;br&gt;Panelists: Mahendra Muli, dSPACE Inc.</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td><strong>Machine Learning at Scale for Autonomous Driving</strong>&lt;br&gt;(Oral Only)&lt;br&gt;Michael James, Waymo</td>
<td><strong>Solid State Lidar Technology: A Response to Current Challenges in Autonomous Driving</strong>&lt;br&gt;(Oral Only)&lt;br&gt;Paula Jones, Ibeo Automotive USA Inc.</td>
<td><strong>Digital Maps: Types and Needs</strong>&lt;br&gt;(Oral Only)&lt;br&gt;David Craig, General Motors LLC</td>
<td><strong>Panelists:</strong> Edward Straub, SAE International</td>
</tr>
<tr>
<td>2:20 p.m.</td>
<td><strong>Approaches to Machine Learning and AI in Automotive and the Critical Attributes of Enabling Solutions</strong>&lt;br&gt;(Oral Only)&lt;br&gt;Jim Brown, CloudMade</td>
<td><strong>Solid-State Flash Sensor for Automated Driving</strong>&lt;br&gt;(Oral Only)&lt;br&gt;Pierre Olivier, Eng., LeddarTech Inc.</td>
<td><strong>Real-World Map Data: Simulation and Editing</strong>&lt;br&gt;(Oral Only)&lt;br&gt;Alex Goldberg, Vectorzero</td>
<td><strong>Panel Discussion: Test-Centers</strong>&lt;br&gt;Panelists: David Heeren, Velodyne LiDAR Alexander Lybanger, Transportation Research Center Inc. Huii Peng, Univ. of Michigan-Arbor Eric Rask, Argonne National Laboratory Rahul Rastan, Florida Polytechnic Univ.</td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td><strong>Networking Break in Exhibit</strong>&lt;br&gt;</td>
<td><strong>Networking Break in Exhibit</strong>&lt;br&gt;</td>
<td><strong>Networking Break in Exhibit</strong>&lt;br&gt;</td>
<td><strong>Panel Discussion: Test-Centers</strong>&lt;br&gt;Panelists: Edward Straub, SAE International</td>
</tr>
<tr>
<td>3:00 p.m.</td>
<td><strong>Human intent prediction for accident and near miss prevention</strong>&lt;br&gt;(Oral Only)&lt;br&gt;Maya Pirdeus, Humanising Autonomy</td>
<td><strong>Panel Discussion: Automated Vehicle Sensor Technology</strong>&lt;br&gt;Panelists: Rini Sherony, Toyota Motor North America Inc.</td>
<td><strong>Precise worldwide ultra HD Map Data Collection as basis for Vehicle Test Drives as well as for virtual Testing and Simulation</strong>&lt;br&gt;(Oral Only)&lt;br&gt;Gunnar Gräfe, 3D Mapping Solutions GmbH</td>
<td><strong>Panel Discussion: Test-Centers</strong>&lt;br&gt;Panelists: David Heeren, Velodyne LiDAR Alexander Lybanger, Transportation Research Center Inc. Huii Peng, Univ. of Michigan-Arbor Eric Rask, Argonne National Laboratory Rahul Rastan, Florida Polytechnic Univ.</td>
</tr>
<tr>
<td>3:30 p.m.</td>
<td><strong>Networking Break in Exhibit</strong>&lt;br&gt;</td>
<td><strong>HD Maps: How High is High-Def? How Real is Real-Time?</strong>&lt;br&gt;(Oral Only)&lt;br&gt;Ro Gupta, Carrerra</td>
<td><strong>Understanding Weather at Road Level - Operational Performance Games Using HD Mapping and Road Surface Modeling</strong>&lt;br&gt;(Oral Only)&lt;br&gt;Mark Floyd, Global Weather Corporation</td>
<td><strong>Panelists:</strong> David Heeren, Velodyne LiDAR Alexander Lybanger, Transportation Research Center Inc. Huii Peng, Univ. of Michigan-Arbor Eric Rask, Argonne National Laboratory Rahul Rastan, Florida Polytechnic Univ.</td>
</tr>
<tr>
<td>4:00 p.m.</td>
<td><strong>Planned by ADAS to Automated Driving Organizing Committee / Innovations in Mobility Steering Committee</strong>&lt;br&gt;</td>
<td><strong>Panel Discussion: Simulation</strong>&lt;br&gt;Panelists: Edward Straub, SAE International</td>
<td>** Planned by ADAS to Automated Driving Organizing Committee / Innovations in Mobility Steering Committee**</td>
<td><strong>Planned by Validation, Certification, and Testing Committee / Innovations in Mobility Steering Committee</strong></td>
</tr>
</tbody>
</table>
## THURSDAY, OCTOBER 31
### Technical and Business Sessions

<table>
<thead>
<tr>
<th>TIME</th>
<th>Legacy Ballroom I</th>
<th>Legacy Ballroom V</th>
<th>Legacy Ballroom VII</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 a.m.</td>
<td>Critical Legal, Regulatory, Insurance &amp; Consumer Metrics for AV (IIM411)</td>
<td>Cybersecurity (IIM415)</td>
<td>Health Ready Components (IVHM) (IIM416)</td>
</tr>
<tr>
<td></td>
<td>This session begins with a series of short discussions and a panel on the legal interpretation of transportation regulations and liability legislation for automated vehicle developers, suppliers, insurers, and consumers. This is followed by critical discussions on transportation regulations, insurance and consumer metrics that are influencing how automated vehicles are developed and deployed into the public. Speakers will discuss current work to ensure safe, efficient and reliable automated vehicle operations.</td>
<td>Cyber attacks and breaches become a greater threat as vehicle connectivity and the levels of vehicle automation increase. Industry experts from the Auto ISAC, automotive OEMs, suppliers, infrastructure, and security firms share the latest cybersecurity measures, standards, and regulations being discussed, developed, and deployed to ensure safe and secure transportation.</td>
<td>Health-ready components and systems (HRCS) have been augmented to monitor and report their own condition. In the past, we were operating in a diagnosis paradigm which focused on identification and repair once a failure occurred. In the new IVHM or prognosis paradigm, health management and tracking of system performance prevents unpredicted in-field failures. We believe that HRCS and Integrated Vehicle Health Management (IVHM) will provide great gains in product performance, availability, and safety.</td>
</tr>
<tr>
<td></td>
<td>Chairpersons: Donald Parker, Exponent Inc.</td>
<td>Chairpersons: Oliver Spiess, ZF</td>
<td>Chairpersons: Peter H. Grau, SAE-ITC</td>
</tr>
<tr>
<td>8:30 a.m.</td>
<td>Panel Discussion: ADAS, Automated and Legal interpretation (Oral Only)</td>
<td>A Measured Approach to Increasing Complexity (Oral Only)</td>
<td>Prognostics &amp; Vehicle Health Management in the Automotive Industry (Oral Only)</td>
</tr>
<tr>
<td></td>
<td>Moderators: Marc LeDuc, SAE International</td>
<td>Faye Francy, Auto-ISAC</td>
<td>Steve Holland, General Motors</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>Panels: Thomas P. Branigan, Bowman &amp; Brooke</td>
<td>Vehicle-level Cybersecurity Considerations for the Increasingly Connected, Automated, and AI-informed Mobility Environment (Oral Only)</td>
<td>Predictive Maintenance in Defense and Smart Manufacturing (Oral Only)</td>
</tr>
<tr>
<td></td>
<td>Raj Choudhary, Independent Consultant Jennifer Dukarski, Butzel Long</td>
<td>Eric Pisk, Argonne National Laboratory</td>
<td>Luis Hernandez, Global Strategic Solutions LLC</td>
</tr>
<tr>
<td></td>
<td>Emily Frascaroli, Ford Motor Company</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:30 a.m.</td>
<td>Networking Break in Exhibit</td>
<td>Networking Break in Exhibit</td>
<td>Networking Break in Exhibit</td>
</tr>
<tr>
<td>10:00 a.m.</td>
<td>Panel Discussion: ADAS, Automated and Legal interpretation (continued)</td>
<td>From Start-up to a Tier-1, a Journey in Automotive Cybersecurity (Oral Only)</td>
<td>Condition Based Maintenance Plus (CBM+) in Army Ground Vehicles (Oral Only)</td>
</tr>
<tr>
<td></td>
<td>Thomas P. Branigan, Bowman &amp; Brooke</td>
<td>Akramul Azim, Ontario Tech. University</td>
<td>Carlos Hernandez, Global Strategic Solutions LLC</td>
</tr>
<tr>
<td></td>
<td>Raj Choudhary, Independent Consultant Jennifer Dukarski, Butzel Long</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emily Frascaroli, Ford Motor Company</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:00 a.m.</td>
<td>Intelligent Intrusion Detection System for Autonomous Vehicles (Oral Only)</td>
<td>Commercial Vehicle Fleet and Vehicle Integrated Health Management (Oral Only)</td>
<td>Wally Stegall, The Morey Corporation</td>
</tr>
<tr>
<td></td>
<td>Abdallah Shami, Western University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>Networking Lunch in Exhibit</td>
<td>Networking Lunch in Exhibit</td>
<td>Networking Lunch in Exhibit</td>
</tr>
<tr>
<td>1:00 p.m.</td>
<td>Legislation &amp; Policy Enabling the Testing and Deployment of Automated Vehicles (Oral Only)</td>
<td>Panel Discussion: Cybersecurity for ADAS to Automated Vehicles</td>
<td>A Blockchain-Backed Registry for Health-Ready Components &amp; Systems (Oral Only)</td>
</tr>
<tr>
<td></td>
<td>Aaron Foster, Navya Inc.</td>
<td>Moderators: Andre Weimerskirch, Lear Corporation</td>
<td>Ben Towne, SAE International</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>Uber’s Perspective on Regulation and Automated Vehicles (Oral Only)</td>
<td>Panelists: Lisa Boran, Ford Motor Company</td>
<td>The new HRCS Consortium &amp; Vehicle Health Management (Oral Only)</td>
</tr>
<tr>
<td></td>
<td>Steve Kenner, Uber ATG</td>
<td>Faye Francy, Auto-ISAC</td>
<td>Peter H. Grau, SAE-ITC</td>
</tr>
<tr>
<td>2:00 p.m.</td>
<td>On Road Testing: Some Missing Regulatory Pieces (Oral Only)</td>
<td>Jeffrey Massimilla, General Motors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jeffrey Blackburn, Dataspread Inc.</td>
<td>Shan Murray, ZF Group</td>
<td></td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td>Networking Break in Exhibit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:00 p.m.</td>
<td>Consumers Uncertain about AV Technologies (Oral Only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>John Nielsen, AAA National</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:30 p.m.</td>
<td>The Real-world Effects of Existing Driver Assistance Systems and What We Can Expect Moving Forward (Oral Only)</td>
<td>Planned by ADAS to Automated Driving Organizing Committee / Innovations in Mobility Steering Committee</td>
<td>Planned by ADAS to Automated Driving Organizing Committee / Innovations in Mobility Steering Committee</td>
</tr>
<tr>
<td></td>
<td>David Kidd, Insurance Institute for Highway Safety</td>
<td>Planned by Innovations in Mobility Steering Committee</td>
<td>Planned by Innovations in Mobility Steering Committee</td>
</tr>
</tbody>
</table>

---

**Legacy Ballroom I**

**Legacy Ballroom V**

**Legacy Ballroom VII**
## TECH SESSIONS

### WEDNESDAY, OCTOBER 30

#### Technical and Business Sessions

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION TITLE, DESCRIPTION, AND ROOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legacy Ballroom VIII</td>
<td></td>
</tr>
<tr>
<td><strong>Material Needs of New Generation Vehicles (IIM201)</strong></td>
<td>The new generation of vehicles possess a myriad of material challenges and requirements. This session will provide useful insight into many of the high priority challenges that the materials community is currently addressing related to new generation vehicles while also looking into the near and long-term future to assess and predict the industry’s future requirements. 8:30 a.m. - 4:30 p.m.</td>
</tr>
<tr>
<td>Chairpersons: Qian Zou, Oakland University; Jian Tao, FCA US LLC</td>
<td></td>
</tr>
<tr>
<td>8:30 a.m.</td>
<td>Keynote Presentation: Steel’s Place in Future Mobility</td>
</tr>
<tr>
<td></td>
<td>George W. Coates, WorldAutoSteel</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>Keynote Presentation: Collaborating for Future Steel Vehicles</td>
</tr>
<tr>
<td></td>
<td>Jody N. Hall, American Iron and Steel Institute</td>
</tr>
<tr>
<td>9:30 a.m.</td>
<td>Networking Break in Exhibit</td>
</tr>
<tr>
<td>10:00 a.m.</td>
<td>Electrical Steels for E-Mobility: Where From and Where To</td>
</tr>
<tr>
<td></td>
<td>Erik J. Hilinski, Tempel Steel Co.</td>
</tr>
<tr>
<td>10:30 a.m.</td>
<td>Structural and thermal material and design considerations for a 48V battery pack</td>
</tr>
<tr>
<td></td>
<td>Serin Shen, A123 Systems Inc.</td>
</tr>
<tr>
<td>11:00 a.m.</td>
<td>Sheet Aluminum Solutions for Battery Enclosures</td>
</tr>
<tr>
<td></td>
<td>Blake Zuidema, Novelis North America</td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>Networking Lunch in Exhibit</td>
</tr>
<tr>
<td>1:00 p.m.</td>
<td>Keynote Presentation: Evolving Trends in Automotive Plastics and Composites</td>
</tr>
<tr>
<td></td>
<td>Jeffrey Helms, Celanese Corp.</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>Material Trends in Future Mobility</td>
</tr>
<tr>
<td></td>
<td>Brian Krull, Magna Exteriors and Interiors Corp.</td>
</tr>
<tr>
<td>2:00 p.m.</td>
<td>Advancements in Composite Resin Systems for Electric and Autonomous Vehicle Applications</td>
</tr>
<tr>
<td></td>
<td>Thomas J. Skelskey, Erin Findley, Dan Dowdall, Ashland LLC</td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td>Networking Break in Exhibit</td>
</tr>
<tr>
<td>3:00 p.m.</td>
<td>Panel Discussion: Impact of Future Vehicle Architecture and Duty-Cycle on Material Requirements</td>
</tr>
<tr>
<td></td>
<td>Moderators: Brandon Hance, United States Steel Corp.</td>
</tr>
<tr>
<td></td>
<td>Panelists: Jon Aldred, HBM Prenscia</td>
</tr>
<tr>
<td></td>
<td>Robert Hathaway, Oshkosh Corp.</td>
</tr>
<tr>
<td></td>
<td>Jeffrey Helms, Celanese Corp.</td>
</tr>
<tr>
<td></td>
<td>Gavin Song, Ford Motor Company</td>
</tr>
<tr>
<td></td>
<td>Planned by Next Gen Materials Committee / Innovations in Mobility Steering Committee</td>
</tr>
</tbody>
</table>

Program as of October 16. See Mobile App for latest program.

Mobile App sponsored by Eaton

Powering Business Worldwide
<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION TITLE, DESCRIPTION, AND ROOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legacy Ballroom III</td>
<td></td>
</tr>
<tr>
<td><strong>Engine and Materials Convergence (IIM202)</strong></td>
<td></td>
</tr>
<tr>
<td>Research and development of advanced materials in engine designs is essential for lowering costs, increasing the recyclability of parts, and maximizing the fuel economy benefits. This symposium will specifically examine material selection for coatings, aftertreatment components, and boosted and downsized engines. 8:30 a.m. - 4:30 p.m.</td>
<td></td>
</tr>
<tr>
<td>Chairpersons: Graham Conway, Christopher Suhocki, Southwest Research Institute; James Haynes, Oak Ridge National Laboratory; Mark Hoffman, Auburn Univ.; Michael Kocsis, Southwest Research Institute</td>
<td></td>
</tr>
<tr>
<td>8:30 a.m.</td>
<td>Keynote: Materials Challenges and Opportunities in 21st Century Heavy Duty Engines (Oral Only) Stephen Ciatti, PACCAR Technical Center</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>Keynote Presentation: The Convergence of Material Science and Advanced Engines (Oral Only) Jerry L. Gibbs, US Government</td>
</tr>
<tr>
<td>9:30 a.m.</td>
<td>Networking Break in Exhibit</td>
</tr>
<tr>
<td>10:00 a.m.</td>
<td>Thermal barrier coatings - just a bunch of hot air? (Oral Only) Ashwin Salvi, Achates Power Inc.</td>
</tr>
<tr>
<td>10:30 a.m.</td>
<td>Design &amp; Implementation of In-Cylinder Temperature-Swing Coatings (Oral Only) Peter Andrskiewicz, General Motors Global R &amp; D</td>
</tr>
<tr>
<td>11:00 a.m.</td>
<td>Designing Thin &quot;Temperature Swing&quot; Coatings to Improve the Thermal and Combustion Efficiencies of Kinetically Controlled Combustion (Oral Only) Thomas Powell, Oak Ridge National Laboratory</td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>Networking Lunch in Exhibit</td>
</tr>
<tr>
<td>1:00 p.m.</td>
<td>Upcoming Emissions Regulations, Aftertreatment Solutions and Key Challenges (Oral Only) Krishna Kamasaumudram, Cummins Inc.</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>System Level Approaches for Future Light and Heavy Duty Diesel Regulations (Oral Only) Bryan A. Zavala, Southwest Research Institute</td>
</tr>
<tr>
<td>2:00 p.m.</td>
<td>Gasoline Particulate Filter Development and System Integration (Oral Only) Louise Arnold, Johnson Matthey Inc.</td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td>Networking Break in Exhibit</td>
</tr>
<tr>
<td>3:00 p.m.</td>
<td>Engine Block/Head and Exhaust Manifold of Eco-boost Engine (Oral Only) Mei Li, Ford Motor Company</td>
</tr>
<tr>
<td>3:30 p.m.</td>
<td>Modern Valvetrains: Deploying High-performance Materials in High-volume Components (Oral Only) Mark Carroll, Federal-Mogul Corp.</td>
</tr>
<tr>
<td>4:00 p.m.</td>
<td>Development of Lightweight Engine for Heavy Duty Applications (Oral Only) Yong-Ching Chen, Cummins Inc.</td>
</tr>
</tbody>
</table>

Program as of October 16. See Mobile App for latest program.

Mobile App sponsored by Eaton
Powering Business Worldwide
## TUESDAY, OCTOBER 29
### Technical and Business Sessions

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION TITLE, DESCRIPTION, AND ROOM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Legacy Ballroom VIII</strong></td>
</tr>
</tbody>
</table>
| 8:30 a.m.    | Keynote Presentation: Drive to Production: The Expanding Role of Additive Manufacturing in the Automotive Industry (Oral Only)  
Kevin Quinn, General Motors  
Chairpersons: Chandan Mozumder, General Motors |
| 9:30 a.m.    | Networking Break in Exhibit                                                                        |
| 10:00 a.m.   | Hot Isostatic Pressing (HIP) and Heat Treatment for Additive Manufacturing (Oral Only)  
Magnus Ahlfors, Quintus Technologies LLC |
| 10:30 a.m.   | Modeling, Simulation, and Data Analytics for Metal Additive Manufacturing (Oral Only)  
Alex Plotkowski, Oak Ridge National Laboratory |
| 11:00 a.m.   | Networking Lunch in Exhibit                                                                        |
| 11:30 a.m.   | Build it Better: Additive Manufacturing Post Processing (Oral Only)  
Tyler Reid, GuEngineer |
| 1:00 p.m.    | Future Factories Drive Deep Customization (Oral Only)  
John Waraniak, Specialty Equipment Market Association |
| 1:30 p.m.    | Virtual Design, Development, and Validation for Additive Manufacturing: Current Challenges and Technology Gaps (Oral Only)  
Chandan Mozumder, General Motors |
| 2:00 p.m.    | Networking Break in Exhibit                                                                        |
| 3:00 p.m.    | Panel Discussion: Standards  
Moderators:  
John Wilczynski, National Center for Defense Manufacturing  
Panelists:  
Dave Abbott, GE Aviation  
Shane Collins, Additive Industries  
Jessica Coughlin, American Welding Society D20 Committee on Additive Manufacturing  
Kathryn Hyam, American Society of Mechanical Engineers (ASME)  
James McCabe, American National Standards Institute  
Lisa Spellman, Medical Imaging Technology Alliance  
Planned by Additive Manufacturing Committee / Innovations in Mobility Steering Committee |

## WEDNESDAY, OCTOBER 30
### Technical and Business Sessions

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION TITLE, DESCRIPTION, AND ROOM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Legacy Ballroom IV</strong></td>
</tr>
</tbody>
</table>
| 8:30 a.m.    | Keynote Presentation: Journey to Digital Operations (Oral Only)  
Michael Mikula, Ford Motor Co., Ltd. |
| 9:30 a.m.    | Networking Break in Exhibit                                                                        |
| 10:00 a.m.   | Vehicle Digital Twin + Digital Thread + Blockchain = Road to Profit (Oral Only)  
Joshua Cartellone, Richard T. Meszaros, Accenture |
| 11:00 a.m.   | Crafting a Digital Thread for the Intelligent Factory (Oral Only)  
Karthik Gopalakrishnan, Robert Bosch LLC |
| 11:30 a.m.   | Industry 4.0 (Oral Only)  
David Hanby, ABB Robotics Inc. |
| 12:00 p.m.   | Networking Lunch in Exhibit                                                                        |
| 1:00 p.m.    | The Siemens Digitalization Journey – Creating and Leveraging the Digital Twin of Production (Oral Only)  
Todd Bengtsson, Siemens PLM Software |
| 1:30 p.m.    | Supporting Intelligent Supply Chain and Manufacturing Technologies (Oral Only)  
Darren Coli, Microsoft Corporation |
| 2:00 p.m.    | People Aren’t Things: Extending IoT to Manual Processes (Oral Only)  
Adrian Jennings, Ubisense Inc. |
| 3:00 p.m.    | Panel Discussion: Future of Manufacturing  
Moderators:  
Monika Minarcin, Accenture  
Panelists:  
Ted Brown, Totally Automated Systems  
Darren Coli, Microsoft Corporation  
Adrian Jennings, Ubisense Inc.  
Jeffrey Liaw, Martinrea  
Planned by Smart Mobility and Infrastructure Organizers / Innovations in Mobility Steering Committee |

---

**Additive Manufacturing in the Automotive Industry (IIM101)**  
Additive Manufacturing (AM) continues to be a rapidly evolving and growing technology, as it offers organizations many attractive benefits. This session will focus on AM within the automotive industry, as experts will provide insights on challenges, innovations and lessons learned in critical areas of AM such as part design, modeling & simulation, feedstock materials, post-processing, automation and part-to-part variation.  
8:30 a.m. - 4:30 p.m.  
Chairpersons: Chandan Mozumder, General Motors

**Deployment of Smart Manufacturing Technologies Throughout the Automotive Value Chain (IIM102)**  
IoT, Additive Manufacturing (AM), Digital Thread, Extended Reality (XR), Machine Learning, Artificial Intelligence (AI), Blockchain and Robotics are many of the key technologies which are revolutionizing manufacturing. A thorough understanding of these technologies and a sound deployment strategy is essential to maximize the many benefits that these powerful tools have to offer. This session will explore “Smart Factory” deployment and integration strategies currently being utilized; productivity improvements being realized, and lessons learned throughout the automotive value chain. In addition, industry experts will provide their perspective on the future direction and expected developments in this manufacturing revolution.  
8:30 a.m. - 4:30 p.m.  
Chairpersons: Monika Minarcin, Accenture; Adrian Jennings, Ubisense Inc.
## TECH SESSIONS

### THURSDAY, OCTOBER 31

**Legacy Ballroom IV**

### Technical and Business Sessions

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION TITLE, DESCRIPTION, AND ROOM</th>
</tr>
</thead>
</table>
| Legacy Ballroom IV | The Current and Future State of XR in the Automotive Industry (IIM103)  
Extended Reality (XR) which comprises Augmented Reality (AR), Virtual Reality (VR) and Mixed Reality (MR) enables users to accomplish important functions such as product and process design and training at a fraction of the cost with even greater success than traditional methods when employed properly. These benefits directly correlate to increased quality and efficiency. These impressive capabilities make XR an invaluable tool for manufacturers across all industries. This session will focus on XR within the automotive industry, as XR experts will provide an understanding of its current state of adoption and utilization as well as their perspective on its future direction using business cases and lessons learned.  
8:30 a.m. - 4:30 p.m. |
| 8:30 a.m. | Keynote Presentation: Digital Experience - Exploring Real-time and XR Throughout the Product Lifecycle  
(Oral Only)  
Greg Melling, Unity Technologies |
| 9:30 a.m. | Networking Break in Exhibit |
| 10:00 a.m. | Assisted Reality Solutions for Industry 4.0 – It can never be an Island  
(Oral Only)  
Michael Frans, T-Systems North America Inc. |
| 10:30 a.m. | Bosch Technical Training Supported by Augmented Reality  
(Oral Only)  
Phil LaFond, Bosch Automotive Service Solutions LLC |
| 11:00 a.m. | Networking Lunch in Exhibit |
| 11:30 a.m. | Real World Examples of MR in Production Facilities  
(Oral Only)  
Darren Coil, Microsoft Corporation |
| 1:30 p.m. | Unique Challenges with Next Generation EV's and Autonomous Vehicles  
(Oral Only)  
Philip Little, SYNTHACON |
| 2:00 p.m. | Presentation  
(Oral Only)  
David Golembiewski, Magic Leap Co. |
| 3:00 p.m. | Networking Break in Exhibit |
| 3:00 p.m. | Industry 4.0 – Smart Manufacturing and Smarter Business – The Automotive Industry through the Lens of XR  
(Oral Only)  
Brad Wald, Educator, Emerging Technology Leader, Global Influencer |
| 3:30 p.m. | Panel Discussion  
Moderators:  
Elizabeth S. Baron, Immersionary Enterprises LLC  
Panelists:  
David Golembiewski, Magic Leap Co.  
Randy Nunez, Ford Motor Co., Ltd.  
Brad Wald, Educator, Emerging Technology Leader, Global Influencer |

Program as of October 16. See Mobile App for latest program.

Mobile App sponsored by Eaton

Eaton Powering Business Worldwide

Innovations in Mobility
## SMART MOBILITY AND INFRASTRUCTURE

### TUESDAY, OCTOBER 29

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION TITLE, DESCRIPTION, AND ROOM</th>
<th>ROOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 a.m.</td>
<td>Keynote Presentation: Technology Trends in Moving People (Oral Only) Joanna M. Pinkerton, COTA</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>Keynote Presentation: Smart Mobility efforts in Sweden (Oral Only) Jan Hellåker, Lindholmen Science Park, Ltd.</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>9:30 a.m.</td>
<td>Networking Break in Exhibit</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>10:00 a.m.</td>
<td>Presentation (Oral Only)</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>10:30 a.m.</td>
<td>Intelligent Traffic Control with Connected and Automated Vehicles (Oral Only) Yiheng Feng, University of Michigan</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>11:00 a.m.</td>
<td>Student &amp; Young Professionals Technical Paper Competition Winner: An IMPC based Parking Assistance System with Interactive Searching Function (Presentation of SAE Paper 2019-01-2614) (Oral Only) Qianyu Ouyang, FinitronX</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>Networking Lunch in Exhibit</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>1:00 p.m.</td>
<td>Moving Detroit (Oral Only)</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>Staying Centered: Human-Focused Design in Pittsburgh (Oral Only) Karina Ricks, City of Pittsburgh</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>2:00 p.m.</td>
<td>How to Build a Smart City: Exploring the IEEE Smart City Planning and Technology Standard P2784 (Oral Only) James Frazer, Arc Advisory Group</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>3:00 p.m.</td>
<td>Panel Discussion: Smart State Initiatives</td>
<td>Legacy Ballroom II</td>
</tr>
</tbody>
</table>

### WEDNESDAY, OCTOBER 30

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION TITLE, DESCRIPTION, AND ROOM</th>
<th>ROOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 a.m.</td>
<td>Keynote Presentation: Efficient Mobility Systems Program: DOE’s Research on SMART Mobility (Oral Only) David Anderson, Department of Energy</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>Keynote Presentation: Leveraging AV Shuttle Buses for Better Urbanism and Vice Versa (Oral Only) Ellen Dunham-Jones, Georgia Tech. Univ.</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>9:30 a.m.</td>
<td>Networking Break in Exhibit</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>10:00 a.m.</td>
<td>Panel Discussion: Micromobility Deployment</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>Networking Lunch in Exhibit</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>1:00 p.m.</td>
<td>Panel Discussion: New Concepts for City-Based Mobility</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td>Networking Break in Exhibit</td>
<td>Legacy Ballroom II</td>
</tr>
<tr>
<td>3:00 p.m.</td>
<td>Panel Discussion: Air Mobility</td>
<td>Legacy Ballroom II</td>
</tr>
</tbody>
</table>

Planned by Smart Mobility and Infrastructure Organizers / Innovations in Mobility Steering Committee
<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION TITLE, DESCRIPTION, AND ROOM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Legacy Ballroom II</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Next Generation Infrastructure (IIM507)</strong></td>
</tr>
<tr>
<td></td>
<td>The changing transportation preferences and technologies are driving innovations in infrastructure development. Discussions will center around the macro mobility ecosystem, its infrastructure, and the network communications necessary to support these changes. 8:30 a.m. - 4:30 p.m.</td>
</tr>
<tr>
<td></td>
<td>Chairpersons: Anne O’Neil, Anne O’Neil Consultants LLC</td>
</tr>
<tr>
<td>8:30 a.m.</td>
<td>Keynote Presentation: Emerging Mobility Solutions - What Lies Ahead? (Oral Only)</td>
</tr>
<tr>
<td></td>
<td>Jim Barbaresso, HNTB Corp.</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>Keynote Presentation: Smart Cities, Mobility, and Human Behavior - Seamless integration? (Oral Only)</td>
</tr>
<tr>
<td></td>
<td>Carla Bailo, Center For Automotive Research</td>
</tr>
<tr>
<td>9:30 a.m.</td>
<td>Networking Break in Exhibit</td>
</tr>
<tr>
<td>10:00 a.m.</td>
<td>Panel Discussion: The Macro Mobility Ecosystem</td>
</tr>
<tr>
<td></td>
<td>Moderators: Mark de la Vergne, City of Detroit</td>
</tr>
<tr>
<td></td>
<td>Panelists: Dana Chermesh, DRAW Brooklyn, Jeff Jones, Ford Smart Mobility, Stanislav Sobolevsky, New York University, Jason Zogg, Ford Mobility</td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>Networking Lunch in Exhibit</td>
</tr>
<tr>
<td>1:00 p.m.</td>
<td>Panel Discussion: Next Generation Infrastructure</td>
</tr>
<tr>
<td></td>
<td>Moderators: Anne O’Neil, Anne O’Neil Consultants LLC</td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td>Networking Break in Exhibit</td>
</tr>
<tr>
<td>3:00 p.m.</td>
<td>Panel Discussion: Enabling Infrastructure Communications</td>
</tr>
<tr>
<td></td>
<td>Moderators: James Misner, Qualcomm Technologies Inc.</td>
</tr>
</tbody>
</table>

Planned by Smart Mobility and Infrastructure Organizers / Innovations in Mobility Steering Committee
PARTICIPANTS INDEX

A
Abbott,Dave ........................................ 23
Abdelatif,Houssem ............................... 19
Ahlfors,Magnus ................................. 23
Aggarwal,Sanjay ................................. 26
Aldecoa,Walid ................................. 16,18
Aldred,Jon .............................. 21
Alexander,Rex ................................. 26
Ames,David C ........................................ 12
Anderson,David ................................. 25
Anderson,Jono ................................. 16,25
Andruszkiewicz,Peter ....................... 22
Angeli,Linda Sala ................................ 16
Arnold,Louise ................................. 22
Arbelaez,Raul ................................. 16,17
Attibe,Preadeep ................................. 12
Azim,Akrumal ................................. 20

B
Bade,Mehar ........................................ 14
Bailo,Carla ......................................... 26
Bair,John .......................................... 13
Barbarese,Jim ..................................... 26
Baron,Elizabeth S ............................. 24
Bayless,Steven ................................... 18,25
Bengtsson,Todd ................................. 23
Berg,Falko ......................................... 15
Berndt,Mark ....................................... 19
Bigelow,Pete ....................................... 25
Blackburn,Jeffery ............................... 19,20
Blaxill,Hugh ....................................... 14,15
Bokulich,Frank ................................... 12
Boran,Lisa ......................................... 20
Borgersson,Jim .................................... 12
Branigan,Thomas P ........................... 20
Brannon,Gregory ............................... 20
Brokis,Chuck ...................................... 16
Brown,Jim ......................................... 19
Brown,Ted ......................................... 23
Buchanan,Mark ................................. 12

C
Campbell,Brian ................................... 15
Campbell,Joseph ............................... 18
Capp,John .......................................... 17
Carlson,Richard “Barney” W .................. 12
Carpenter,Nicholas ............................. 15
Carrol,Mark ......................................... 22
Cartellone,Joshua ............................... 23
Castle,Collin ........................................ 25
Chandrasekar,Praveen ....................... 19
Chang,Annie ....................................... 25
Chen,Yong-Ching ............................... 22
Chermesh,Dana .................................. 26
Cherry,Christopher ......................... 25
Choudhary,Raj .................................... 20
Ciatti,Stephen ..................................... 22
Coates,George W .............................. 21
Coil,Darran ......................................... 12,24
Collins,Shane ....................................... 23
Conway,Daniel .................................... 17
Conway,Graham .................................. 22
Corso,Jason J ....................................... 18
Costello,TJ ......................................... 26
Craig,David ......................................... 19
Crecelius,David ................................... 14
Curran,Scott ...................................... 12,14,15

D
Dahodwala,Mufaddel ................................ 13
Daniel,Claus ...................................... 13,14
Debrouwere,Maarten .......................... 12
Denniss,Brad ...................................... 21
Doshi,Komal ....................................... 25
Doutra,Hussen .................................... 13
Dowdall,Dan ....................................... 21
Drennan,J. Scott .................................. 25
Dukarski,Jennifer ............................... 20
Dunham-Jones,Ellen ............................ 25
Dunn,Mark ......................................... 12

E
Eichberger,John ................................... 13
Eichenholz,Jason .................................. 19
Einsig,Barry ....................................... 26
Elm,William ........................................ 16,15
El-Shaar,Ahmed .................................... 13

F
Farrell,John ........................................ 13,14
Feng,Yiheng ....................................... 25
Findley,Erin ........................................ 21
Fiollid,Mark ....................................... 19
Forman,Jason ....................................... 16,17
Foster,Aaron ....................................... 20
Foster,Join Aaron .................................. 20
Francy,Faye ............................................ 20
Franke,Michael .................................... 13
Frans,Michael ....................................... 18
Frascaroli,Emily .................................... 20
Frazer,James ........................................ 25
Frazier,Timothy ................................... 12
Frenz,Eric R ......................................... 15
Funkhouser,Kelly ................................ 16

G
Ganen,Steve ........................................ 12
Gardner,Gregory ................................. 12
Gaspar,Daniel J .................................... 15
George,Philip ....................................... 25
Gibbs,Jerry L ........................................ 22
Goldberg,Alex ....................................... 19
Golembiewski,Bdavid .......................... 24
Gopalakrishnan,Karthik ..................... 23
Goswami,Partha .................................. 16
Graf,Gunnar ........................................ 19
Grau,Peter H ......................................... 20
Gray,Denise ......................................... 12,13
Gupta,Ro ............................................. 19

H
Halley,Scott ......................................... 12
Hall,Jody N ......................................... 21
Halmian,Jason ...................................... 17
Hanby,David ....................................... 23
Hance,Brandon ................................. 21
Hansen,Darren .................................... 12
Hara,Hirai ........................................... 13
Hathaway,Robert ................................... 21
Haynes,James ........................................ 22
Heilen,David ........................................ 12
Helleran,Jan .......................................... 14
Hellenbroich,Gereon ......................... 15
Helms,Jeffrey ...................................... 16
Hernandez,Carlos ............................... 20
Hernandez,Luis .................................... 20
Hillinski,Erik J ....................................... 21
Hillebrand,Dan ..................................... 14
Hillhouse,Brett ..................................... 18
Ho,Anthony ......................................... 25
Hoffman,Ben ....................................... 16

I
Hoffman,Mark ..................................... 22
Holliday,John ...................................... 14
Holland,Steve ...................................... 20
Hsieh,Eric ............................................ 12
Hym,Katrin .......................................... 23

J
James,Michael ..................................... 19
Janssen,Peter ...................................... 15
Jennings,Adrian ...................... 23
Jiang,Hong .......................................... 12
Johnson,Nick C ...................................... 22
Jones,Jeff ............................................. 26
Jones,Paula .......................................... 19
Josh,Satyum ........................................ 13

K
Kadlec,Ryan ........................................ 14
Kamasamudram,Krisna ....................... 27
Kaneti,Liron ........................................ 20
Kasab,John .......................................... 12,15
Kass,Michael ....................................... 14
Katopodes,Nikolaos ............................. 13
Keeton,Darryl ....................................... 26
Konner,Steve ....................................... 20
Kidd,David .......................................... 20
Kidder,Michelle .................................... 13
Kilani,Ahmad ....................................... 13
Kipferler,Arthur ................................... 17
Koak,Fabian ......................................... 22
Kocevar,Michael ................................. 18
Kocisz,Michael ..................................... 12,22
Koehler,Erik W ..................................... 13
Kondorf,Robert ................................... 17
Kopardekar,Parimal ......................... 25
Kopp,Christina ..................................... 25
Kopp,Paul ............................................ 17
Kroh,Patti ............................................ 18
Krull,Brian .......................................... 21

L
Laakmann,Frank .................................... 16
LaFond,Phil ......................................... 24
Lange,Robert ...................................... 16
Lawy,TJ .............................................. 12
LeDuc,Marc ......................................... 20
Li,Jeff ..................................................... 23
Li,Ke ..................................................... 14,15
Li,Mei .................................................. 22
Lindauer,Alicia ..................................... 13
Little,Philip ......................................... 24
Lukha,Ajay ............................................. 13
Lundin,Ben ......................................... 17
Lybarger,Alexander ......................... 13,19
Lyubovskiy,Max ................................... 13

M
Maguire,Joel M ..................................... 14
Majumdar,Sreetha Sinha ...................... 15
Mangan,Rob ........................................ 13
Marks,Patrick ....................................... 17
Martin,Berthold ................................... 14
Massimilla,Jeffrey ............................... 20
Mathiaghavan,Harish ......................... 15
McCabe,James ...................................... 23
McCarthy,Thomas ............................... 13
McGuire,Greg ....................................... 25
McKay,Brian J ...................................... 12
McQueen,Robert M .............................. 16
Melling,Greg ........................................ 24
Meloche,Eric ........................................ 16
Merkl,Steve ......................................... 19
Meszaros,Richard T ............................. 23
Mikula,Michael .................................... 23
Minarcin,Monika .................................. 19,23
Misener,James ..................................... 26
Mitra,Promita ....................................... 17
Music,Radovan ..................................... 16
Mlakar,Kristina ..................................... 26
Moradi-Pari,Ehsan ............................... 18
Mozumder,Chandan ......................... 23
Muentes,Ralf ....................................... 18
Muhl,Mahendra .................................... 19
Murray,Brian ....................................... 20

N
Najt,Paul ............................................. 13
Narimissa,Azadeh ................................ 12,14

O
Olivier,Pierre ....................................... 19
O’Neil,Anne ......................................... 26
Ouyang,Qianyu ..................................... 25

P
Palaizolo,Joe ....................................... 14
Papa,Dominic ...................................... 25
Parent,Dan .......................................... 17
Parker,Donald ..................................... 16,20
Paujil,Raj ............................................ 16
Peng,Hui ............................................. 19
Pindus,Maya ......................................... 18
Pinkerton,Joanna M ............................. 25
Plotkowski,Alex .................................. 23
Powell,Thomas .................................... 22
Prengaman,Christopher ..................... 12
Probst,Nico ......................................... 19
Przesmitzki,Steven ............................. 14
Puvvala,Ravi ....................................... 18

Q
Quinn,Keith ......................................... 23

R
Rao,Rashmi .......................................... 16
Rask,Eric .......................................... 19,20
Razdan,Rahul ...................................... 19
Reid,Tyler ........................................... 23
Reissig,Michael ................................... 15
Rengarajan,Saradhi ......................... 12
Renschaw,Molly .................................. 15
Rezn,Jochen ....................................... 17
Rezn,Jochen (Joe) .................. 17
Ricks,Karina ......................................... 25
Rimanielli,Jon .................................... 25
Robert,Brian ....................................... 12
Rockwell,Chris .................................... 16

S
Sadanandan,Niels ............................... 18
Salomonsd,Ove .................................... 18
Salvi,Ashwin ....................................... 22
Sciarappo,Jill ...................................... 16
Serrarens,Alexander ......................... 12

Innovations in Mobility
27
## Participants Index

<table>
<thead>
<tr>
<th>Name</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seyffert, Martin</td>
<td>16</td>
</tr>
<tr>
<td>Shami, Abdallah</td>
<td>20</td>
</tr>
<tr>
<td>Shen, Serin</td>
<td>21</td>
</tr>
<tr>
<td>Sherony, Rini</td>
<td>19</td>
</tr>
<tr>
<td>Skelskey, Thomas J</td>
<td>21</td>
</tr>
<tr>
<td>Skorny, Hank</td>
<td>18</td>
</tr>
<tr>
<td>Smyczynski, Robert S</td>
<td>12</td>
</tr>
<tr>
<td>Snowden, Justin</td>
<td>25</td>
</tr>
<tr>
<td>Sobolevsky, Stanislav</td>
<td>26</td>
</tr>
<tr>
<td>Song, Gavin</td>
<td>21</td>
</tr>
<tr>
<td>Spellman, Lisa</td>
<td>23</td>
</tr>
<tr>
<td>Spiess, Oliver</td>
<td>16, 18, 20</td>
</tr>
<tr>
<td>Steffens, Christoph</td>
<td>15</td>
</tr>
<tr>
<td>Stegall, Wally</td>
<td>20</td>
</tr>
<tr>
<td>Stein, Douglas J</td>
<td>16, 17</td>
</tr>
<tr>
<td>Stinson, Monique</td>
<td>12, 15</td>
</tr>
<tr>
<td>Stork, Kevin</td>
<td>12, 15</td>
</tr>
<tr>
<td>Stout, Greg</td>
<td>12</td>
</tr>
<tr>
<td>Straub, Edward</td>
<td>19</td>
</tr>
<tr>
<td>Suckow, Brian</td>
<td>25</td>
</tr>
<tr>
<td>Suhocki, Christopher</td>
<td>22</td>
</tr>
<tr>
<td>Tao, Jian</td>
<td>21</td>
</tr>
<tr>
<td>Tao, Ling</td>
<td>13</td>
</tr>
<tr>
<td>Thakur, Rajeev</td>
<td>18</td>
</tr>
<tr>
<td>Thatte, Abhijit</td>
<td>18</td>
</tr>
<tr>
<td>Thompson, Thomas N</td>
<td>14</td>
</tr>
<tr>
<td>Toma, Tom</td>
<td>18</td>
</tr>
<tr>
<td>Toussignant, Todd</td>
<td>15</td>
</tr>
<tr>
<td>T., Revathi</td>
<td>18</td>
</tr>
<tr>
<td>Turner, James</td>
<td>14, 15</td>
</tr>
<tr>
<td>Vardon, Derek</td>
<td>15</td>
</tr>
<tr>
<td>Vergne, Mark de la</td>
<td>26</td>
</tr>
<tr>
<td>Viele, Matthew</td>
<td>15</td>
</tr>
<tr>
<td>Wagner, Robert</td>
<td>13, 14</td>
</tr>
<tr>
<td>Waid, Brad</td>
<td>24</td>
</tr>
<tr>
<td>Wang, Michael</td>
<td>12, 13</td>
</tr>
<tr>
<td>Wang, Paul</td>
<td>12</td>
</tr>
<tr>
<td>Waraniak, John</td>
<td>23</td>
</tr>
<tr>
<td>Warnecke, Wolfgang</td>
<td>13</td>
</tr>
<tr>
<td>Weber, Scott</td>
<td>13</td>
</tr>
<tr>
<td>Weimerskirch, Andre</td>
<td>20</td>
</tr>
<tr>
<td>Wei, Siqin</td>
<td>15</td>
</tr>
<tr>
<td>Wellmann, Thomas</td>
<td>15</td>
</tr>
<tr>
<td>Wendel, Matthew</td>
<td>13</td>
</tr>
<tr>
<td>Wesolowski, Steven</td>
<td>14</td>
</tr>
<tr>
<td>Westervelt, Marla Diane</td>
<td>25</td>
</tr>
<tr>
<td>White, Joe</td>
<td>16</td>
</tr>
<tr>
<td>Wielgos, Sebastian</td>
<td>13</td>
</tr>
<tr>
<td>Wilczynski, John</td>
<td>23</td>
</tr>
<tr>
<td>Winegar, Charles</td>
<td>14</td>
</tr>
<tr>
<td>Wishart, Jeffrey</td>
<td>16</td>
</tr>
<tr>
<td>Yokoo, Takehito</td>
<td>12</td>
</tr>
<tr>
<td>Zagajac, Jovan</td>
<td>26</td>
</tr>
<tr>
<td>Zavala, Bryan</td>
<td>22</td>
</tr>
<tr>
<td>Zhu, Guoming (George)</td>
<td>13</td>
</tr>
<tr>
<td>Zink, Lothar</td>
<td>16</td>
</tr>
<tr>
<td>Zogg, Jason</td>
<td>26</td>
</tr>
<tr>
<td>Zoldak, Philip</td>
<td>15</td>
</tr>
<tr>
<td>Zou, Qian</td>
<td>21</td>
</tr>
<tr>
<td>Zuidema, Blake</td>
<td>21</td>
</tr>
</tbody>
</table>
Innovations in Mobility

October 20–22, 2020

David L. Lawrence Convention Center
Pittsburgh, PA

sae.org/iim
**ARAMCO**  
Booth 419  
16300 Park Row Dr  
Houston, TX  77084  
United States  
aramcoservices.com  

Aramco’s fuels and engines research team leads efforts by the world’s largest energy and chemicals company to develop technologies that reduce or capture emissions from internal combustion engines and improve fuel efficiency. Aramco scientists and engineers working on transportation technologies are based at research centers in the US, France, Saudi Arabia and China.

**AVNET**  
Booth 615  
2211 S 47th St  
Phoenix, AZ  85034  
United States  
avnet.com  

Avnet is a global technology solutions provider with an extensive ecosystem delivering design, product, marketing and supply chain expertise for customers at every stage of the product lifecycle. We transform ideas into intelligent solutions, reducing the time, cost and complexities of bringing products to market.

**BRB TECHNOLOGIES LLC**  
Booth 618  
3504 Larchwood Dr  
Minnetonka, MN  55345  
United States  
icyroads.net  

BRB Technologies is a research and development firm working in the active safety field. Our focus is on improving vehicle dynamics during panic events.

**CENTER FOR AUTOMOTIVE DIVERSITY, INCLUSION & ADVANCEMENT (CADIA)**  
Booth 404  
38221 Plymouth Rd.  
Livonia, MI  48152  
United States  
automotivediversity.com  

CADIA’s mission is to double the number of women and diverse leaders by the year 2030. We take a “made in automotive” approach to diversity and inclusion. We help organizations in the Automotive Industry Rev Up their Diversity and Inclusion programs in the areas of Workforce, Workplace and Supply Chain.

**DATASPEED**  
Booth 406  
2736 Research Dr  
Rochester Hills, MI  48309  
United States  
dataspeedinc.com  

Dataspeed is transforming the automotive, mobility and industrial industries through the highly specialized development of drive-by-wire Autonomous Vehicles (AV). Dataspeed’s ADAS Kit forms the base for a driverless development vehicle. With over 450 AVs on the road today, with our technology, Dataspeed is making technology safe, reliable & cost-effective.

**DLHBOWLES**  
Booth 616  
6625 Dobbin Rd  
Columbia, MD  21045  
United States  
dlhbowles.com  

dlhBOWLES is the recognized leader in the design, development, and manufacture of automotive fluid management and systems components with camera and sensor system integration commonplace in Intelligent vehicles, a clear, unobstructed surface ensures safe operation. dlhBOWLES Camera and Sensor Cleaning Systems provide for efficient and peak functionality of these systems.

**DSPACE INC**  
Booth 402  
50131 Pontiac Trl  
Wixom, MI  48393  
United States  
dspaceinc.com  

dSPACE is the world’s leading provider of hardware and software tools for developing and testing sophisticated electronic control systems, including ADAS and highly automated driving applications. For over 30 years, dSPACE’s comprehensive software and hardware toolchain has empowered engineers to design and innovate, while dramatically reducing development times and cost. dspaceinc.com.

**EATON**  
Booth 709  
GOLD SPONSOR  
13100 E Michigan Ave  
Galesburg, MI  49053  
United States  
eaton.com/emobility  

Eaton is a power management company with 2018 sales of $21.6 billion. We provide energy-efficient solutions that help our customers effectively manage electrical, hydraulic and mechanical power more efficiently, safely and sustainably. Eaton is dedicated to improving the quality of life and the environment through the use of power management technologies and services.
EXHIBITOR PROFILE

IAV AUTOMOTIVE ENGINEERING INC
Booth 417
15620 Technology Dr
Northville, MI 48168
United States
iav.com
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.

LEDDARTECH
Booth 515
4535 Wilfrid-Hamel Ste 240
Quebec, Quebec G1P 2J7
Canada
leddartech.com
LeddarTech is an industry leader providing the most versatile, scalable auto and mobility LiDAR platform based on the unique LeddarEngine™, which consists of a suite of automotive-grade, functional safety certified SoCs working in tandem with LeddarSP™ signal processing software. LeddarTech is responsible for several innovations in cutting-edge mobility remote-sensing applications.

MAHLE POWERTRAIN LLC
Booth 514
14900 Galleon Ct
Plymouth, MI 48170
United States
mahle-powertrain.com
MAHLE Powertrain specializes in design, development and integration of advanced IC engines and electrified powertrain systems. As recognized experts in these fields, MAHLE Powertrain is engaged in research, development and application of traditional and advanced drivelines into cost-effective, production-feasible solutions for enhanced efficiency, improved fuel economy and lower emissions.

MEANS INDUSTRIES INC
Booth 519
3715 E Washington Rd
Saginaw, MI 48601
United States
meansindustries.com
Means Industries develops award-winning, transformational propulsion-system technologies like our Selectable One-Way Clutch through rigorous, innovative design and collaboration with global OEMs. Our manufacturing capabilities include complex propulsion systems and advanced Metal-Forming and Joining, while our emerging Dynamic Clutch technologies will serve as the new building blocks for efficient Propulsion Electrification.

NACHI AMERICA INC
Booth 414
46200 12 Mile Rd
Novi, MI 48377
United States
nachi.com
NACHI is a global company providing rolling bearing and automotive actuator solutions for a variety of applications. With sales offices in 16 countries and manufacturing in 10 countries we are your high-quality, solution-providing supplier of automotive components. Nachi also supplies the Automotive Industry with Cutting Tools, Machinery, and Robotics.

NSL ANALYTICAL
Booth 416
4450 Cranwood Pkwy
Cleveland, OH 44128
United States
nslanalytical.com
Since 1945, NSL has provided the highest standards of product quality from design to launch by providing trusted material testing results. Our clients appreciate the fast turnaround time and the technology we continually invest in to provide accurate, reliable results. Learn how NSL can work with you to solve your product performance challenges.

OAK RIDGE NATIONAL LABORATORY
Booth 705
1 Bethel Valley Rd
Oak Ridge, TN 37830
United States
ornl.gov/manufacturing
Oak Ridge National Laboratory is the largest US Department of Energy science and energy laboratory, conducting basic and applied research to deliver transformative solutions to compelling problems in energy and security while carrying out the research needed to accelerate the delivery of solutions to the marketplace.

SAE INDUSTRY TECHNOLOGIES CONSORTIA
Booth 516
SAE Industry Technologies Consortia
400 Commonwealth Dr
Warrendale, PA 15096
United States
www.sae-itc.com
SAE Industry Technologies Consortia (SAE ITC®) specializes in establishing and managing consortia by providing proven processes, tools and resources. SAE ITC enables public, private, and government organizations to connect and collaborate in neutral, pre-competitive forums thus empowering the setting and implementation of business improvements in highly engineered industries globally.
SUPPLYFRAME  Booth 415
61 S Fair Oaks Ave Ste 200
Pasadena, CA  91105
United States
supplyframe.com

Supplyframe helps companies bring innovative products to market faster through delivering enterprise SaaS solutions connecting the electronics value chain. Powered by the only trusted network for electronics design and manufacturing, Supplyframe enterprise SaaS solutions accelerate new product development and optimize strategic sourcing, enabling customers to intelligently engineer, source, and procure.

TREMEC  Booth 707
46643 Ryan Ct
Novi, MI  48377
United States
tremec.com

Torque transfer solutions from TREMEC are found in products ranging from supercars and high-performance sports cars to severe duty, vocational and commercial vehicles worldwide. The portfolio of products includes manual transmissions, dual clutch transmissions, hybrid & EV drivetrain solutions, clutches, friction materials, mechatronic systems, transmission control units, and control software.

UNIVERSITY OF WISCONSIN - MADISON  Booth 614
432 N Lake St
Madison, WI  53706
United States
wisc.edu

The University of Wisconsin-Madison College of Engineering Office of Engineering Professional Development offers a wide variety of on-line and in-person opportunities for professional development. These include on-line Certificate Programs and Master’s degrees for working professionals, as well as live, customizable topic-driven short courses.

XILINX INC  Booth 615
2100 Logic Dr
San Jose, CA  95124
United States
xilinx.com

Xilinx develops highly flexible and adaptive processing platforms that enable rapid innovation across a variety of technologies – from the endpoint to the edge to the cloud.

RIDE & DRIVE PROVIDERS

AAM
1840 Holbrook St
Detroit, MI  48212
United States
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 to support our customers on global and regional platforms with a focus on quality, operational excellence and technology leadership.

GKN DRIVELINE NORTH AMERICA INC
2200 N Opdyke Rd
Auburn Hills, MI  48326
United States
gknautomotive.com

GKN Automotive is the world’s leading supplier of automotive driveline technology and systems. It develops, builds and supplies an extensive range of automotive driveline technologies – for use in the smallest ultra low-cost car to the most sophisticated premium vehicle demanding the most complex driving dynamics. GKN Automotive is a leading global producer of CVJ Systems, four-wheel drive Systems, Trans Axle Solutions and eDrive Systems and operates in 21 countries at 54 locations employing approximately 29,000 people. It is a pioneer of advanced e-Drive development and in July 2019 produced its 1 millionth electrified driveline system.

MAHLE POWERTRAIN LLC
14900 Galleon Ct
Plymouth, MI  48170
United States
mahle-powertrain.com

MAHLE Powertrain specializes in design, development and integration of advanced IC engines and electrified powertrain systems. As recognized experts in these fields, MAHLE Powertrain is engaged in research, development and application of traditional and advanced drivelines into cost-effective, production- feasible solutions for enhanced efficiency, improved fuel economy and lower emissions.