ADVANCED SAFETY STANDARDS & RESOURCES

Driver Vehicle Interface
Collision Avoidance & Mitigation
Vehicle Communications

Helping industry engineer safe vehicles
Driver Vehicle Interface
The number of human interfaces in today’s vehicles increases with the introduction of each new convenience feature, infotainment system, navigation or mobile device. Improved and simplified vehicle/human interfaces are needed to reduce secondary task demands, help manage driver workload and ultimately, improve driver safety while using in-vehicle technologies.

Collision Avoidance & Mitigation
It’s the first opportunity within a crash scenario to save lives and reduce injuries—the prevention of crashes from first occurring. Reduced property damage and traffic congestion, inevitable results of most crashes, are also served by advancing collision avoidance and mitigation technologies. With systems like Electronic Stability Controls, for example, dramatically reducing the number of run-off-road crashes and rollovers, there is a clear need to accelerate the development and use of other advanced safety technologies.

Vehicle Communications
Vehicle communications provide endless opportunities for safer driving. Whether its vehicle-to-vehicle communications for improving the availability and effectiveness of such advanced safety technologies as collision avoidance or the enabling of applications like speed management and intersection collision avoidance, a transportation system featuring connectivity among vehicles, the infrastructure, and portable devices can only work to maximize automotive and public safety.

Solutions to safe, connected vehicles can be complex and costly. SAE International can help the automotive industry find these solutions.
Providing a neutral forum for the development of needed engineering guidelines, the collective wisdom and thought leadership of the volunteers on its standards development committees can help industry advance these technologies, increase productivity, and reduce costs. With a 106-year history steeped in functional safety standards, SAE stands ready to tackle the complex advanced safety issues of today. Offering one of the largest libraries of intellectual property focused on mobility technology, the past and current work of the global engineering community can be referenced for designing, developing, and implementing the next generation of safety systems to save lives, prevent injuries, and reduce economic costs due to road traffic crashes.
SAE STANDARDS

J2972  Definition of Automotive Hands-Free Operation of a Person-to-Person voice and/or Data Wireless Communication Systems
J2944  Operational Definitions of Driving Performance Measures and Statistics Standard
J1050  Describing and Measuring the Driver's Field of View
J1138  Design Criteria - Driver Hand Controls Location for Passenger Cars, Multipurpose Passenger Vehicles, and Trucks (10 000 GVW and Under)
J1139  Direction-of-Motion Stereotypes for Automotive Hand Controls Operating Characteristics and User Interface
J1741  Discriminating Back-Up Alarm System Standard
J2119  Manual Controls for Mature Drivers
J2364  Navigation and Route Guidance Function Accessibility While Driving
J941  Motor Vehicle Drivers' Eye Locations
J2365  Calculation of the Time to Complete In-Vehicle Navigation and Route Guidance Tasks
J2395  ITS In-Vehicle Message Priority
J2561  Bluetooth Wireless Protocol for Automotive Applications
J2735  Dedicated Short Range Communications (DSRC) Message Set Dictionary
J2808  Road/Lane Departure Warning Systems: Information for the Human Interface
J2399  Adaptive Cruise Control Operating Characteristics and User Interface
J2400  Human Factors in Forward Collision Warning Systems Operating Characteristics and User Interface Requirements
J2478  Proximity Type Lane Change Collision Avoidance
J2571  Advanced Driver Interface Systems for Commercial Vehicle Operations
J2678  Navigation and Route Guidance Function Accessibility While Driving Rationale
J2830  Process for Comprehension Testing of In-Vehicle Icons
J2831  Development of Design & Engineering Standards for In-Vehicle Text Messages
J2872  Driver Hand Control Reach
J985  Vision Factors Consideration in Rearview Mirror Design
J2802  Blind Spot Monitoring System (BSMS): Operating Characteristics and User Interface

These standards related to Advanced Safety Systems and Technologies commonize practices, processes, and products throughout the industry and pave the way for the advancement of technology and the improvement of vehicle safety.

Technical standards enable and enhance:
• consistent and clear expectations for product performance and reliability
• regulatory compliance
• consistent product quality
• compatibility and interoperability
• more efficient procurement

Standardization also:
• lowers trade barriers
• lowers purchasing costs
• decreases design time
• promotes innovation
• increases new technology speed to market

USE SAE STANDARDS.
IMPROVE YOUR BUSINESS AND INDUSTRY.
SAE’s various standards development committees are actively working on solutions to safe, connected vehicles. While standards can help the advancement of the industry, your personal participation in the standards development process can contribute to the advancement of your company and personal career.

Corporate Benefits:
- Input into the direction of the standards
- Competitive intelligence through advance knowledge of standard direction
- Advance warning of pending regulations and influence over the technical basis of the regulation
- Insight into the competitive environment
- Product liability protections
- Strong relationships with customers and suppliers
- Association with the leading society for advancing mobility technology

Individual Benefits:
- Professional development from continuous working contact with peers
- Peer recognition for advancing your industry’s sectors technologies
- Excellent networking and learning opportunities from product developers/users around the world
- Discover emerging technologies
- Contribute to the industry’s body of technical knowledge

JOIN AN SAE STANDARDS COMMITTEE. INFLUENCE THE FUTURE OF YOUR CAREER, BUSINESS, AND INDUSTRY.
SAE EVENTS

Attend SAE events related to Advanced Safety Technology or search SAE's Virtual Conference Center (http://vcc-sae.org/) for archives of select events and/or sessions.

Crash Avoidance I - Crash Causation, ESC, Lane Keeping, and Other Avoidance Technologies (SAE 2011 Government Industry Meeting, Session Code: G209I)

Crash Avoidance II - ITS and Vehicle Safety Communication (SAE 2012 Government Industry Meeting, Session)

The Challenges of Implementing New Technologies While Improving Safety (SAE 2011 World Congress, Session Code: ANN105)

Human Factors in Driving and Automotive Telematics (SAE 2011 World Congress, Session Code: B302)

How Driver-Vehicle Interface explains Driver Distraction (SAE 2011 World Congress, Panel Code: B302)

Human Factors in Driver Vision and Lighting (SAE 2011 World Congress, Session Code: B301)


Smart Mobility is Connected (SAE 2010 Convergence, Session Code: CNVG100)

Be Smart, Be Safe - Partnering to Create Safe Mobility (SAE 2010 Convergence, Session Code: CNVG400)

A Holistic Introduction to Commercial Telematics (Seminar ID, C0947)

Occupant/Interior Vehicle Packaging: Designing for the Customer (Seminar ID, C0108)

SAE 2012 World Congress

Call for Papers included the following Safety/Active Safety topics:
- Departure Warning/Lane-Keeping Assistance
- Collision & Blindspot Warning
- Active Pedestrian Protection
- Backover Protection
- Collision-Imminent Braking
- Collision Avoidance
- V2V/V2I Safety Applications

Related Session Titles:
- Brake Technology (Session Code AC100)
- Active Safety (Session Code AC600)
- Vehicle Dynamics Stability and Control (Session Code AC500)
- Occupant Protection: Integrated Safety Systems (Session Code B411)
- Intelligent Transportation Systems - Safer, Smarter, Faster (Session Code AE313)


Advanced Chassis Control and Rollover (SAE 2011 Commercial Vehicle Engineering Congress, Session Code CV201)

SAE 2011 Intelligent Vehicle Systems Symposium - Advancing the Connected Mobility Experience

How Driver Vehicle Interface explains Driver Distraction (SAE 2011 World Congress, Session Code B302)

The Challenges of Implementing New Technologies While Improving Safety (SAE 2011 World Congress, Session Code: ANN105)

SAE 2012 Convergence® - The premier transportation electronics event

Autonomous Connected Vehicle Technologies (Seminar)

Learn of the latest developments and gain valuable personal connections to expert presenters and like-minded peers by attending SAE events.

Contribute to the advancement of this issue and shape the future of tomorrow’s advanced vehicle technologies and systems by organizing a technical session, authoring a paper, or providing event leadership.
Driver-Vehicle Interaction SAE Standards Subscription (Online, SUB-STD-00010)
The standards in this subscription cover measuring the driver’s field of vision, ITS in-vehicle message priority, advanced driver interface systems for commercial vehicle operations, discriminating backup alarm systems and more.

What Engineers and Managers Need to Know About Human Factors (Book R-331)

Performance Metrics for Assessing Driver Distraction: The Quest for Improved Road Safety (Book R-402)


Intelligent Vehicle Initiative (IVI) Technology Advanced Controls and Navigation Systems, 2011 SAE Paper Collection (Online, COLL-TP-00128)
The 12 papers in this on-line collection cover vehicle communications and networks, driver drowsiness and driving pattern detection, sensors and GPS, vehicle and chassis control and autonomous vehicles, route prediction, head-up displays and power transmission for electric vehicles.

Telematics Communication Technologies and Vehicular Networks: Wireless Architectures and Applications (Book B-IGI-004)

Automotive Informatics and Communicative Systems: Principles in Vehicular Networks and Data Exchange (Book B-IGI-002)

Forensic Aspects of Driver Perception & Response, 3rd Edition (Book B-876)

Driver Distraction Research 2010 SAE Paper Collection (Online, COLL-TP-00114)
This technical collection features 23 technical papers published between 1998-2010 covering topics such as telematics, driver assistance systems, driver fatigue, human machine interfaces, and crash prevention systems.

Electronic Braking, Traction, and Stability Controls, Volume 2 (Book T-129)

Object Detection, Collision Warning and Avoidance Systems, Volume 2 (Book PT-133)

Active Safety and the Mobility Industry (Book PT-147)

Driver Assistance Systems (Book MR-SB-076)


Sensors and Transducers, SAE Paper Collection (Online, STDTP-00001)
These SAE Technical Papers published since 1994 address the innovations and changes to the automobiles embedded systems in response to increased legal requirements for safety, emission reduction, fuel economy and onboard diagnostic systems. Papers cover both the internal vehicle systems and the external systems (object detection and collision avoidance).

Connected Vehicle Technology e-Newsletter from the editors of SAE's Automotive Engineering International

Equip yourself and staff with the standards documents needed for the consistent development of high quality products, compliance with regulatory agencies, and a more efficient operation.

Stock your library with SAE technical papers and books on emerging technologies and new applications from leading mobility experts around the world. Essential industry knowledge both past and present to facilitate research and development.
Forensic Aspects of Vision and Highway Safety (Book B-732)

Forensic Aspects of Driver Perception & Response, 3rd Edition (Book B-876)

Safety-Critical Automotive Systems (Book PT-103)


Infotainment Systems (Book PT-135)

Intelligent Vehicle Technologies (Book R-310)

In-Vehicle Networks and Software, 2011 SAE Paper Collection (Online, COLL-TP-00127)
The 14 papers in this on-line collection cover: protocols, gateways, vehicle control, message handling, X-by-wire, diagnostics, off-board connectivity and vehicle-to-vehicle or vehicle-to-infrastructure communications. Embedded software development topics cover requirements, implementation, algorithms, modeling, and autocode generation.

Automotive Telematics (Book T-105)

Automotive Antenna Design and Applications (Book B-880)

Reinventing the Automobile (Book B-896)

Automotive Lighting Technology and Human Factors in Driving Vision and Lighting, 2011 SAE Paper Collection (Online, COLL-TP-00133)
The 16 papers in this on-line collection discuss: image processing methods; adaptation into automotive of the NASA developed CATS (Cognitive Avionic Tool Set); safety and performance benefit associated with the use of a spotter mirror; automotive legibility; 25W HID headlamp; automotive illumination design with LED modules; and more.

Cooperative Communications for Improved Wireless Network Transmission: Framework for Virtual Antenna Array Applications (Book B-IGI-003)

Handbook on Advancements in Smart Antenna Technologies for Wireless Networks (Book B-IGI-001)

DELIVERY OPTIONS FOR SAE TECHNICAL STANDARDS

The more than 10,000 standards in the SAE database now include historical standards, and can be accessed through one of the targeted solutions below:

• SAE Digital Library is the industry’s most comprehensive resource, encompassing 175,000+ technical papers, standards, and related publications from SAE and other renowned organizations. A customizable corporate solution! digitallibrary.sae.org

• SAE Subscriptions are online portfolios of SAE standards or technical papers focused on targeted technologies and industries. subscriptions.sae.org

• SAE JPaks let you decide how many ground vehicle standards you need and when you need them. Choose from packages that provide up to 10, 15, 25, 35, or 50 downloads per year. sae.org/jpaks

• SAE Ground Vehicle Standards on DVD provides convenient, portable access to more than 2,400 individual standards, recommended practices, and information reports. sae.org/gvcd