OVERVIEW OF THE SAE ON-ROAD AUTOMATED DRIVING (ORAD) COMMITTEE ACTIVITIES

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Committee Structure

On-Road Automated Driving (ORAD) Committee

- Planning Task Force
- Definitions Task Force (+ ISO JWG & coop auto)
- J3018 (on-road testing guidance) Task Force
- Behaviors & Maneuvers Task Force
- Verification & Validation Task Force
- Simulation Task Force
- Reference Architecture & Interfaces Task Force
- Identifying ADS-DV User Issues for Persons with Disabilities Task Force
- Infrastructure Needs Related to Automated Driving Task Force
- TBD

Proposed Task Forces based upon industry requirements
J3016

• Taxonomy of automation levels and definitions of terms
• 2014 – Information Report
• 2016 – Recommended Practice
• 2018 – Recommended Practice
• Added several new terms, corrected errors, clarified misunderstood concepts
• Ballot passed with minor comments, to be issued shortly

Joint Working Group

• Agreement in 2017 for JWG rules and procedures
• Issue joint documents SAE J3016 / ISO 22736
• “Global harmonization”
• Currently meeting in Singapore
J3016 Levels of Driving Automation

SAE J3016™ LEVELS OF DRIVING AUTOMATION

What does the human in the driver’s seat have to do?

What do these features do?

Example Features

For a more complete description, please download a free copy of SAE J3016: https://www.sae.org/standards/content/j3016_201806/
Definitions Task Force

**J3216**

- Taxonomy of cooperative automation and definitions of terms working with FHWA
- Progress continues on defining terms related to types of communication, including informational, intent-sharing, agreement-seeking, and defining participants and devices, including road users and road operators.
J3018 Task Force

**J3018**
- Guidance for on-road testing of prototype systems
- Applies to levels 3, 4, and 5
- 2015 – Information Report
- 2019 – Information Report, now published
- 2020 – Recommended Practice

**Key Updates**
- Background material from 2015 is no longer needed
- Provide more concise information
- Update terms from J3016
- Identify several types of test drivers (based on “early stage” vs. “late-stage” prototype vehicle)
- Classroom instruction, test track training, on-road training, workload management
Behaviors & Maneuvers Task Force

**J3164**
- Provide definitions, taxonomies, and preliminary best practices for maneuvers and behaviors
- Identifying scenarios and circumstances for achieving a MRC
- Applies to levels 3, 4, & 5
- New Information Report in development

**Preliminary Development**
- Literature review of behavioral competencies
- Draft of fundamental definitions
- Consider aspects of human behavior that could be incorporated in document
- Generating behavior taxonomy based on:
  - Ontology of maneuvers
  - Ontology of operational design domain
  - Ontology of object and event detection and response
Verification & Validation Task Force

**J3092**
- Provide definitions, information, best practices, and testing methodologies to support V&V
- Applies to levels 3, 4, & 5
- New Information Report in development

**J3206**
- Safety principles
- New Information Report in development

**Current & Future Development**
- Literature review of V&V entities and activities
- Reviewing published safety principles
  - CAMP Automated Vehicle Research
  - Intel Responsibility Sensitive Safety
- Measuring conformance to safety principles
- Guidance on using test methodologies
- Guidance on interpreting test results
**J3131**

- Provide terms and definitions for automated driving software architecture
- Applies to levels 3, 4, & 5
- Currently in development

**Content**

- Builds upon National Institute of Standards and Technology material
- Enable developers to have common understandings in conversation
- Schematic architecture diagram is only for reference purposes
  - Does not dictate how an architecture is configured
  - Does not impose design requirements
Infrastructure Needs Related to Automated Driving Task Force

**Scope & Purpose**
- Develop roadway infrastructure information to support automated technologies while continuing to support human driver needs
- Applies to all automation levels
- Diverse participation
  - Infrastructure organizations
  - Automotive industry
  - Academia

**Current Activities**
- Interaction with Behaviors & Maneuvers TF
  - Crosscheck ontology of ODD
- Drafting survey to gather information from stakeholders regarding infrastructure needs
  - Preliminary list of questions created
  - Benchmarking SAE cybersecurity survey

Road surface  Lane marking  “3D” crosswalk (Iceland)
Identifying ADS-DV User Issues for Persons with Disabilities TF

**J3171**
- Gather and develop information on issues for a specific population of users
- Limited to ride sourcing scenarios
- Ingress/egress issues are beyond the scope of this document
- Applies to ADS-DV (see J3016)
- New Information Report
  - Ballot closed 10.23.19

**Activities & Content**
- Reviewed existing US driver’s license requirements
- Conducted interviews with stakeholders
- Performed literature review
- Universal design principles and guidance for user interfaces
Simulation Task Force
• Recently established based upon increasing importance and use of simulations
• Large interest shown
• Developing scope and specific deliverables
• Need for simulation verification

Current TF Proposals
• AV Test Site Community of Practice
  • Developing scope, objectives and outputs with AV Test site community
• Mapping TF
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