

ARTS22 Breakout Session Title:

352-Interactive Traffic Management for Highly Automated Vehicles

Session Contact/Organizers:

- Claudio Roncoli, Assistant Professor, Aalto University (Session Contact):
- Risto Kulmala, Principal Advisor, Traficon Ltd.
- Tom Alkim, Strategic Advisor, MAPtm (
- Yingyan Lou, Associate Professor, Arizona State University
- Glenn Havinovski, Vice President, JMT Technology Group

Session Description

The session is aimed at discussing what kind of traffic management is needed to deal with highway traffic including also highly automated vehicles capable of driverless operation in specific Operational Design Domains (ODD). The topics to be addressed include traffic management measures to maintain and extend the ODDs, data exchange between traffic management centers and AVs, the concept of ODD awareness, digitizing and translating traffic code and traffic regulations, minimal risk maneuvers, human factors and reactions to traffic management measures, and key use cases.

Goals/Objectives/Outputs

- To provide insights on the needs to develop traffic management for automated vehicles including the roles and responsibilities of the stakeholders.
- To increase understanding of the digital, physical, and operational infrastructure associated with automated vehicles and traffic management.
- To introduce the concept of distributed ODD awareness.
- To discuss the roles and responsibilities of various stakeholders in translating traffic codes and rules into machine readable format as well as the expected responses of the AVs to these codes and rules.
- To raise awareness on the human factors safety issues associated with operating AVs in different infrastructure situations, including traffic management.

Agenda

Description:

The session is split into two parts: a) Traffic management support part and b) Traffic management response part. Each part will be implemented so that first the panelists (5 each part) are going to deliver short presentations to introduce the different sub-topics, highlight the current knowledge, novel solutions, and the questions that are still unanswered. Then there will be a moderated panel discussion, where also participants from the audience will be invited to contribute.

Moderator:

Tom Alkim, Strategic Advisor, MAPtm

Panelists:

Traffic management support part – 1:30 PM – 3:00 PM

1. Siddartha Khastgir, University of Warwick - Distributed ODD awareness
2. Risto Kulmala, Principal Advisor, Traficon Ltd - Data exchange between AVs and TMCs
3. Torsten Geißler, German Federal Highway Research Institute (BASt) - Traffic management support to AVs including how to deal with edge cases
4. Dr. Yingyan Lou, Leidos – Recent Developments of U.S. Department of Transportation’s (USDOT) Cooperative Driving Automation (CDA) Program: CARMA Ecosystem, cooperative perception
5. Sujith Racha, Leidos – USDOT’s CDA Traffic Use Cases: Highway and arterial mobility applications.

*** Break ***

Traffic management response part - 3:30 PM – 5:00 PM

6. Aria Etemad, Volkswagen Group Innovation - AV response to traffic code and rules
7. Jessica Uguccioni, Lead lawyer for the UK Law Commissions’ automated vehicles review - Translation of traffic code to AVs
8. Claudio Roncoli, Assistant Professor, Aalto University - Freeway traffic control for AVs in mixed traffic environment
9. Natasha Merat, Professor, University of Leeds - AV occupant/driver involvement with regard to reacting to operational and strategic traffic information
10. Dr. Starla Weaver, Leidos - Human factors safety issues associated with operating AVs under TM systems