

Symposium 2021 Breakout Session Title:

B203-Integrated Traffic Management and CVs/CAVs for Freeways and Arterials

Session Contact/Organizers:

Session Contact: Glenn Havinoviski, Mgr Transportation Technologies and Connected Communities, WGI, Inc. – glenn.havinoviski@wginc.com

Co-Lead: Dr Xiao-Yun Lu, Research Engineer, PATH/UC-Berkeley

Organizers:

- Jaap Vreeswijk, MAP Traffic Management
- Ken Wang, PE, AECOM
- Bingchu Chen, Masters candidate (City Planning, Spatial Analytics), University of Pennsylvania
- Simeon Calvert, CITG, TU-Delft
- Dr. Yiheng Feng, Assistant Professor, Purdue University
- Dr. Guoyuan Wu, Associate Researcher, University of California-Riverside
- Dr Jia Hu, ZhongTe Distinguished Chair in Cooperative Automation, Tongji University

TRB Sponsor/Partner Committees (if any): Potentially: RTSMO, Freeway Ops, Traffic Signal Systems, Veh-Hwy Automation

Session Description

This session addresses potential challenges and solutions associated with connected and automated vehicles operating within a real-time transportation management environment including freeway and arterial corridors. Panel sessions will address research and policy issues, as well as current and emerging practices related to the application of integrated traffic management in a connected and automated vehicle environment, including real-time applications and decision support. Topics will include onboard vehicle data needed for traffic management, plus application of real-time speed advisories, lane and traffic flow management, work zone management, arterial vehicle trajectories for signal optimization, and real-time vehicle routing.

Goals/Objectives/Outputs

- Address technical issues associated with integration of CVs, AVs and CAVs with real-time operations strategies in mixed traffic that also include manually-driven vehicles
- Address needs on both the vehicle side and infrastructure side for such integration
- Identify microsimulation challenges for CAVs in a traffic operations environment
- Identify issues relative to managing flow of automated vehicles in a mixed-flow environment
- Identify potential future research topics in these areas

Agenda

OPENING – Glenn Havinoviski

Panel Session A: Research and Policy Issues (70 min) – Moderator: Dr Xiao-Yun Lu

Invited Speakers

- “Integrated Active Intersection Traffic Signal Control with CAVs”, Hao Liu, Carlos Flores Pino, Dr Xiao-Yun Lu (UC-Berkeley)
- “Impact Assessment: Simulation Methodologies for Future Traffic Management and CAVs”, Simeon Calvert (TU-Delft)
- “Corridor level cooperative driving framework to optimize traffic signals and CAV trajectories in mixed-traffic conditions”, Yiheng Feng (Purdue University)
- “Collecting Robust Datasets of Connected and Automated Vehicle Behavior to Inform Model Development”, Dr, Rachel James, Federal Highway Administration, and Zhitong Huang, Leidos
- “Public-Private Management for Future Traffic Management” Serge Van Dam (Rijkswaterstaat – Netherlands)
- “Integration of CAVs with Regional and Statewide Traffic Operations Activities” – Virginia Lingham (WSP)

Panel Session B: Current and Emerging Practices (70 min) - Moderator: TBA

Invited Speakers

- “Regional ICMS and Central Florida Initiatives”, Jeremy Dilmore (Florida DOT)
- “Connected traffic signals and collective perception for autonomous transport (arterial)”, Jaap Vreeswijk (MAP Traffic Management)
- “Experience working with CVs and AVs in an arterial environment”, Faisal Saleem, Maricopa County DOT
- “Infrastructure-Assisted Traffic Management for Cooperative and Automated Driving around Work Zones”, Evangelos Mintsis, Centre for Research and Technology Hellas)
- “Road map for developing road operator core business utilizing connectivity and automation”, Risto Kulmala (Traficon)

Summary Session – Moderator: Glenn Havinoviski:

Interactive discussion of candidate research topics from each of the three panel sessions with whiteboard. (30 min)

- We will have two of the committee organizers or possibly one of each of the panels getting together to describe their takeaways from the sessions and what they believe the implementation and research needs are going forward.
- Concurrently, workshop audience participants will have access throughout the meeting to a virtual “whiteboard” which allows the audience to identify what are potential research topics needed based on what was presented earlier.

- The moderators will identify specific examples of potential research topics from the whiteboard and invite the two panelists to discuss further and offer their thoughts.
- Moderator will do a meeting wrap-up at the end.