

Symposium 2021 Breakout Session Title:

B403-Remote Support for Automated Vehicle Operations

Session Contact/Organizers:

Session contact: Jaap Vreeswijk, Traffic Architect Connected & Automated Driving, MAP traffic management (the Netherlands)

Session Description

What is remote support, why is needed and who is the service owner? Remote support comes in different shapes and forms. Typically, a remote human operator provides instructions, permission or waypoints to the vehicle, or remotely drive it. However, the purpose and tasks of the operator are very diverse for different modes and environments: ports and yards, (on-demand) taxi services and low-speed passenger shuttles, long-haul commercial trucks, road-based last-mile/middle-mile delivery vehicles, sidewalk delivery robots, privately owned vehicles, autonomous vessels and air mobility, on confined areas, segregated and shared infrastructure. Moreover, there is an intuitive synergy with road traffic management and fleet management services, and eventually multi-domain integrated operations management centres. This session will increase awareness and understanding of remote support by sharing experiences and achievements alongside discussion of technological requirements, operational aspects and future research needs.

Agenda

Date: Thursday 15th July 2021

Time: 9h00 – 12h00 EDT ~ 15h00-18h00 CET

9h00 (EDT): Panel Session A: Setting the Scene (70 min – 14 min/speaker incl Q&A)

Introduction to goals of the session and overview of remote support for automated vehicle operations with different examples of concepts of operations and the solutions developed. Four speakers will deliver a presentation followed by a panel discussion with room for Q&A.

- Jaap Vreeswijk, Traffic Architect, MAP traffic management (the Netherlands) – *Setting the scene of remote support for automated vehicle operations*
- Elliot Katz, Co-founder and Chief Business Development officer, Phantom Auto (U.S.) – *Remote Operation: The Key Ingredient for Deploying Autonomy*
- Elisa Bin, Research Engineer & Facilities Coordinator, KTH Royal Institute of Technology (Sweden) - *Automated Vehicle Traffic Control Tower, towards safe and connected transport system*
- Olav Madland, CEO, Applied Autonomy (Norway) - *Experience and end user feedback from operation of public transport without safety driver 2021*
- Azra Habibovic, Senior researcher, RISE (Sweden) - *Human factors in remote operation of automated vehicles*

5 min break

10h15 (EDT): Panel Session B: Technological perspective (70 min – 14 min/speaker incl Q&A)

Features and technological aspects related to remote support, such as: connectivity and communication, vehicle and roadside surveillance equipment, standardization, scalability, cybersecurity, etc. Three speakers will deliver a presentation followed by a panel discussion with room for Q&A.

- Kiel Clasing, Manager Business Development / Timothy Gallagher, Senior Account Manager, Oceaneering (U.S.) – *Carry-over opportunities of remote command and control technology used in other industries*
- Amit Rosenzweig, CEO, Ottopia (Israel) - *The many technologies behind universal teleoperation*
- Manuela Papadopol, CEO, Designated Driver (U.S.) – *Debunking Myths about Teleoperations*
- Edward Griffor, Associate Director, National Institute of Standards and Technology (U.S) - *Safety Assurance for Automated Vehicles*
- Andrew Phillips, Manager, Connected and Automated Vehicle Safety Programs (Canada) - *Road safety considerations for the development and testing of remote support technologies*

5 min break

11h30 (EDT): Panel Session C: Implementation and research needs (30 min)

Panel will summarize the need for remote support and discuss synergies with other roles and responsibilities in the operational domain. The session will review the virtual 'whiteboard' with an overview of takeaways, open issues, implementation needs and topics for future research collected during the break-out session.

- Machiel Kleingeld, Regional Business Development Manager, Arriva (the Netherlands)
- Elliot Katz, Co-founder and Chief Business Development officer, Phantom Auto (U.S.)
- Elisa Bin, Research Engineer & Facilities Coordinator, KTH Royal Institute of Technology (Sweden)
- Olav Madland, CEO, Applied Autonomy (Norway)
- Azra Habibovic, Senior researcher, RISE (Sweden)
- Kiel Clasing, Manager Business Development / Timothy Gallagher, Senior Account Manager, Oceaneering (U.S.)
- Amit Rosenzweig, CEO, Ottopia (Israel)
- Manuela Papadopol, CEO, Designated Driver (U.S.)
- Edward Griffor, Associate Director, National Institute of Standards and Technology (U.S)
- Andrew Phillips, Manager, Connected and Automated Vehicle Safety Programs (Canada)

Session resources

- All participants will have access throughout the meeting to a virtual "whiteboard" which allows the audience to identify their main takeaways of the panel sessions, questions, implementation needs and future research topics based on what was presented earlier.

- One of the session organizers will maintain the whiteboard such as merging and arranging contributions from the audience.
- The moderator will refer to topics from the whiteboard and invite panelist to discuss further and offer their thoughts.

Session moderator:

- Jaap Vreeswijk, Traffic Architect CAD, MAP traffic management (the Netherlands)