



Transportation Research Board Annual Meeting

MINUTES

Traffic Flow Theory and Characteristics (ACP50) – Summer meeting

*Monday, August 23, 2021, 1:30 PM – 3:30 PM CST
Virtual Meeting*

Chair: L. leclercq

Minutes prepared by: S. Hamdar

Please note that these minutes have a PowerPoint companion with more details included.

- 1- Prof. Leclercq called the meeting to order at 1:30 pm.
- 2- The meeting attendees from the committee's members and friends introduced themselves.
- 3- Minutes from the previous ACP50 meeting (held on January the 7th, 2021) have not yet been reviewed and will be approved during the annual meeting next January.
- 4- Dr. James presented several Federal Highway Administration (FHWA) programs and activities: several FHWA reports were being reviewed before publication:
 - a. CAV AMS Case Studies:
 - i. SR-99 (California) Case Study Final Report available online: <https://rosap.ntl.bts.gov/view/dot/54795>.
 - ii. I-66 (Virginia) Case Study Final Report available online: <https://rosap.ntl.bts.gov/view/dot/56284>
 - iii. Traffic Optimization for Signalized Corridors Final Report status: approved by FHWA Public Affairs for publication. It is undergoing final layout and 508 review and should be available online soon.
 - b. CAV AMS Model Development:
 - i. CAV AMS Model Development Final Report Status: approved by FHWA Public Affairs for publication. It is being adapted for final layout and 508 review. It should be available online in the fall of 2021. The models documented in the final report are all open source and are available on GitHub (along with their algorithm description documents):

- CACC and connected human driver model: <https://github.com/STOL-AMS/TO-22-Improved-CACC>
 - AV lane changing model: <https://github.com/STOL-AMS/TO-22-Lane-Changing>
 - Merge coordination: <https://github.com/STOL-AMS/TO-22-Merge-Coordination>
 - Speed harmonization: <https://github.com/STOL-AMS/TO-22-Speed-Harmonization>
- c. Trajectory Investigation:
- i. Trajectory Investigation for Enhance Microsimulation Calibration Final Report status: the final report has cleared both FHWA Public Affairs and 508 reviews for publication. It will likely be available on the Repository and Open Science Access Portal in the fall 2021.
 - ii. The numerical vehicle trajectories extracted from videos collected from drones and helicopters will be made available on data.transportation.gov under creative commons zero. If the data is needed before it is published, please email Rachel.James@dot.gov.
 - iii. Due to the size of the video files, the video data may not be stored online for direct download. If the drones or helicopter data are of interest, please email Rachel.James@dot.gov (the helicopter data is over 3TB and is currently stored in a hard drive at the FHWA Data Resources Testbed. The drone videos are smaller in size and easier to share).
- d. Multiresolution Modeling:
- i. Three reports are in various stages of the FHWA Publications Process. The data will likely be available on the Repository and Open Science Access Portal in the fall of 2021.
- e. CAV AMS Data Collection:
- i. The three ADAS/ADS data collection projects are underway. The data collection and data management plans for all three teams are available. Most of the teams are currently conducting data collection rehearsals to test their data collection plans. The teams will begin the bulk of data collection in the Fall.
 - One team is collecting data in Northern VA using a CARMA vehicle (L2) and a human driven vehicle (L0).
 - One team is collecting data using a discrete ADAS (L2) and a readily identifiable ADAS in Central Ohio.
 - One team is collecting data using a platoon of ADAS (L1), independent ADAS (L2), and independent ADS (L3) in Chicago and Washington DC. This data collection effort will also collect aerial data of surrounding vehicles using high-altitude fixed cameras or a helicopter (both stationary and following the subject vehicle(s)). These datasets, once collected, will be made publicly available, though not likely until later into 2022.
- f. Narrow Lanes:
- i. The Narrowing Freeway Lanes and Shoulders to Create Additional Travel Lanes Final Report is available at <https://rosap.ntl.bts.gov/view/dot/57273>. This project created/calibrated macroscopic (HCM-like), microscopic (calibrated car-following models), and safety (HSM-like) models and conducted case studies to help agencies understand the impact of narrowing freeway lanes to create additional travel lanes on real-world roadways.

- 5- Prof. Leclercq presented the ACP50 Chair's report:
- a. The next TRB Annual Meeting will be held in person in January of 2022 with restrictions:
 - i. One lectern session per committee
 - ii. One workshop per section
 - iii. Committee meetings' may not last more than 105 minutes
 - iv. Workshops will take place on Thursday morning
 - b. There is no Call for Papers (CFP) sponsored by ACP50 for this upcoming TRB Annual Meeting given the aforementioned restrictions. Generally, we have three calls associated mainly with Connected and Automated Vehicles (CAVs), Macroscopic Fundamental Diagrams (MFDs), Pedestrians Modeling among other topics. Such calls may be resumed for the 2023 Annual Meeting with possible collaborations with other committees.
 - c. The committee has submitted a workshop proposal led by ACP50-3 (ACP50 Subcommittee on Connected and Automated Traffic Flow) and has worked on merging such proposal with another proposal submitted by ACP80 (Traffic Simulation Committee). However, the proposal was not selected. The two proposals selected were:
 - i. Assessing the Performance, Capabilities, and Support for Traffic Management Systems (TMSs) - submitted jointly by ACP15, ACP20, ACP25, and AED50.
 - ii. Highlights from the 10th Annual TRB Automated Road Transportation Symposium – submitted by ACP30, AP020, and AJL40.
 - d. 140 papers were received by the committee for review: this is considered as a 32% increase if compared to the 2021 annual meeting, after a 45% reduction between 2020 and 2021.
 - e. The ACP50 TRB Review Subcommittee is thanked with two new welcomed subcommittee members: Prof. Monica Menendez and Prof. Jiwon Kim. The remaining subcommittee members are: Prof. R. Bernini, Prof. V. Gayah, Prof. N. Geroliminis, Prof. S. Hamdar, Prof. S. Ahn, Prof. H. Mahmassani, and Prof. T. Toledo.
 - f. The ACP50 Committee is now part of the Safety and Operations Section and there is interest in collaborating with other committees on topics including safety, human factors, bicycle, pedestrians ...etc. Such collaborations may take the form of joint proposals, calls for papers, research projects ...etc. Committee members are encouraged to initiate and lead such collaborations. If there is interest, a contact with Prof. Robert Bertini may be established to discuss how to proceed.
 - g. The next ACP50 membership rotation is in 2022: actual members may send an email to the Committee's chair to express their desires to rotate off or to continue as members. Rotated off members may always pursue their activities as friends. Friends may inform the chair if they volunteer to be part of the committee keeping in mind that the seats are very limited.
- 6- The ACP50 Subcommittees' reports were presented:
- a. Joint Subcommittee on Traffic Simulation Models (ACP50-1; SimSub): no report was presented. A note was made that this is a joint subcommittee with the relatively newly formed TRB Traffic Simulation Committee (ACP80). The normal procedure is that Subcommittees may be elevated to Committees (such as the case with ACP80) and thus that ACP50-1 may need to be merged with ACP80 given the redundancy in its role. A discussion between the ACP50 Committee's chair and with the Subcommittee's chair (Prof. M. Hadi) is needed to clarify the status of this Subcommittee.
 - b. Subcommittee on Crowd Flow Dynamics, Modeling and Management (ACP50-2): no report was presented.
 - c. Subcommittee on Connected and Automated Traffic Flow (ACP50-3: CAT-Flow): A report was presented by the Committee's chair, Prof. Samer Hamdar and the leader of the Adaptive Cruise Control (ACC) Initiative and the Subcommittee's member, Prof. Chen:
 - i. 17 TRB 2022 handled papers by ACP50-3 members and friends

- ii. A workshop proposal submitted titled The Past, Present and Future in Traffic Flow: from First Order Continuum Models to Connected and Automated Vehicles (CAVs) Deployment. The proposal was not selected. A note has been made by the committee's chair for better preparation and strategy the following year.
 - iii. The book chapter of the Automated Vehicle Symposium (AVS) 2020 session organized by the subcommittee was published: Artificial Intelligence for Automated Vehicle Control and Traffic Operations: Challenges and Opportunities (<https://www.springerprofessional.de/en/artificial-intelligence-for-automated-vehicle-control-and-traffic/19345102>)
 - iv. The committee membership is expanded, and the website is being updated: <https://tftcav.seas.gwu.edu>. If interested in joining the subcommittee and/or volunteering, a contact may be established with Prof. Samer Hamdar.
 - v. New initiatives are being formulated including a webinar initiative on different topics starting with the ACC topic (presented by Prof. Chen): A background on the ACC initiative is presented with special focus on ACC resources including a data repository and a webinar series. Additional details may be found on the ACP50-3 website and/or the initiative website: <https://sites.google.com/view/accresources/webinars>. More questions may be directed to Prof. Danjue Chen.
 - vi. The first 2021 subcommittee meeting was scheduled to be held on August the 27th, 2021.
- d. Research Problem Statements Subcommittee: a report was presented by Prof. Gayah:
- i. the goals of the subcommittee and previous statements submitted were presented.
 - ii. Details on the process adopted for statements' development were offered: the focus is on developing statements that can help practitioners at the national US level and that can eventually be turned into National Cooperative Highway Research Program (NCHRP) projects. The needs are needed on November 1st, annually, and they are to be reviewed by the AASHTO Committee on Research and Innovation. Collaborating with other committees developing such statements and having the support of local departments of transportation and highway offices are needed and encouraged.
 - iii. Details on the NCHRP Synthesis program were introduced: the program aims at documenting current practices for specific highway topics with funding of the range of 45,000 USD. The deadline for submitting topics of the NCHRP Synthesis program is in February (2022).
 - iv. Some potential topics for consideration were presented.
 - v. Volunteering to develop topics/statements is appreciated after contacting Prof. Gayah.
- e. Paper Review Subcommittee: figures on the 2022 TRB Annual Meeting review process lead by the ACP50 Committee were presented by Prof. Leclercq:
- i. 140 papers are handled by the ACP50 Committee; 97 papers are submitted for presentation only and 43 papers are submitted for presentation and publication. This is an increase if compared to the 2021 meeting (106 papers) but a decrease if compared to earlier years starting in 2017 (i.e., exceeding 190 papers). The decrease may be attributed to the establishment of the ACP80 Traffic Simulation Committee handling some papers that may have been handled by the ACP50 Committee; given that the number of papers submitted only for presentation have returned to pre-pandemic levels (as noted by Prof. Mahmassani), additional review cycles may be needed for better evaluation.

- ii. The review timeline needs to be adhered to: the review assignment is due on August 18, 2021; the reviews are due on September 15, 2021; the 1st round of decision is due between October 1 and October 15, 2021.
 - iii. The review process is further explained. An inquiry (by Prof. Knoop) is made on the papers submitted only for publication. It was explained that such papers are submitted to Transportation Research Record (TRR) directly (with no submission deadline) and these papers are not handled by committees. The reviewers are not transferred automatically when moving a paper from the TRB Annual Meeting Review Platform and the TRR Review Platform. However, the review history may be seen by the handling editor.
 - f. Awards Subcommittee: a report was presented by Prof. Ahn:
 - i. The Subcommittee members were introduced: Prof. J. Kim, Prof. M. Menendez, Prof. R. Bertini and Prof. S. Ahn.
 - ii. Special thanks were dedicated to Prof. Leclercq for his service in the subcommittee.
 - iii. An inquiry has been made to consider papers for TRB awards even if submitted only for presentation:
 - TRB (as expressed by Mr. Cunard) will follow the rules specified by the committees/sections for each of the awards presented.
 - There is resistance to such idea (as expressed by Prof. Mahmassani) with an alternative proposition: 1) working with TRR staff to expedite the review process associated with papers considered for awards; 2) differentiating such papers in the review system; and 3) informing the authors of the papers of such consideration (in October) for encouragement to submit their papers for presentation and publication.
 - A proposal on handling papers considered for awards will be prepared and submitted for the committee.
 - ii. A recommendation was made to name the Best Paper on Traffic Flow Theory Award after Prof. Nathan Gartner: the recommendation was approved by the Committee.
 - iii. The 2021 Award for the Best Paper on Traffic Flow Theory was announced: Replicating Microscopic Fundamental Diagram in Five Minutes (by Daiheng Ni) (Daiheng Ni. Replicating Microscopic Fundamental Diagram in Five Minutes (TRBAM-21-00479). The 100th Transportation Research Board (TRB) Annual Meeting. Washington DC. January 2021.)
 - g. Mid-Year Meetings (by Prof. Leclercq): the ACP50 2020 midyear meeting was cancelled due to the pandemic. The 2022 midyear meeting will be held in conjunction with the 24th International Symposium on Transportation and Traffic Theory (ISTTT 24): July 24-26, 2022, Beijing, China. The 2023 midyear meeting will be held in Amsterdam, the Netherlands.
 - h. Outreach and Diversity Subcommittee: a report was presented by Prof. Hamdar: the newsletters, webinars, and website are being updated regularly. In terms of the TFTC Journal Club, a proposal (by Prof. Talebpour) will be submitted to the committee's chair for approval.
- 7- A TRB report was presented by Mr. R. Cunard:
 - a. The 2022 Annual Meeting will be an in-person event but there are still concerns associated with the COVID-19 Delta Variant. TRB will follow the District of Columbia (DC) requirements. As of now, the TRB DC offices will be open on October the 4th but with a proof of vaccination required.

- b. The social distancing requirement led to having less sessions held and less rooms available; there are no limitations associated with the poster sessions especially with the opening of a new exhibit hall.
 - c. The future annual meetings' planned dates were presented (<http://www.trb.org/AnnualMeeting/FutureDates.aspx>)
 - d. Around 4700 papers were received for consideration for the 2022 TRB Annual Meeting: This number is 20% less than the number of papers submitted for the 2020 Annual Meeting but 10% more than the number of papers submitted for the 2021 Annual Meeting.
 - e. There will be one podium session per committee in 2022; there is no limitation on the poster session numbers; it was suggested that all papers may be presented in poster sessions while dedicating the podium session for the discussion of a topic of interest. Each committee will have 90 minutes to hold a meeting during the day (weekend or weekday). There will be no evening sessions. Finally, there will be no chairman lunch event but there will be a chairman invited hot topic session. The sessions' schedule will be provided at a later stage.
 - f. The TRR Impact Factor doubled over the last two years (from 0.75 to 1.56).
 - g. A suggestion was made to the authors concerned about their papers not being reviewed by the ACP50 review team: incorporate key words such as traffic flow or traffic flow committee and choose the Operations Section during submission. The paper will be then directed to Mr. Cunard. It is always recommended to keep track of the paper number and an email may be sent to Mr. Cunard for follow-up or inquiries.
 - h. The TRB is adopting a new process for its new e-newsletter; there will be a need to resubscribe to the newsletter in order to be added to the mailing list.
 - i. A question has been asked (by Prof. Zockaie) on the hotel reservations: the hotel reservations should be open between the end of September and the first week of October (given the COVID-19 pandemic).
 - j. Another question was asked (by Prof. Coifman) on the possibility of streaming the sessions via Zoom even if attending in person: TRB does not support such service.
 - k. A note was made that between ACP50 and ACP80, the committees have received more papers than the number received in 2021 with special interest in connected and automated vehicles (CAVs).
- 8- J. Sturrock provided updates on the ACP40 (Highway Capacity Quality of Service) Committee and the ACP80 (Traffic Simulation) Committee activities:
- a. ACP80 is reviewing and providing committee-based comments on chapters of the Traffic Simulation Manual (TSM) to be addressed in a modified document.
 - b. The ACP80 midyear meeting will be held on the 15th and the 16th of September 2021.
 - c. The ACP40 Committee midyear meeting is scheduled on August 24-27 of 2021.
 - d. The Highway Capacity 6.1 publication will be published by the end of 2021 in a printed form and in two searchable forms (pdf and e-pub). The update includes information on the CAVs with research focused on planning level adjustment factors.
- 9- Members and friends of other committees (ACP15: Committee on Intelligent Transportation Systems; ACP20: Committee on Freeway Operations; ACP30: Committee on Vehicle-Highway Automation; AEP40: Committee on Transportation Network Modeling) are encouraged to provide updates on the corresponding activities.
- 10- J. Sturrock provided an update on FHWA activities: there are several FHWA reports being reviewed before publication with an additional list of ongoing projects:
- a. The Reliability User Guide and Videos are pending review
 - b. The CAV Modeling and Simulation Framework Report is published, and the CAV Analysis Tools Report is under review while the corresponding case-studies information are published.

- c. Additional ongoing projects sponsored by FHWA are:
 - i. Data Analytics Guide and Web-based training
 - ii. The Data Fusion Guide Project
 - iii. The National Highway Institute Web- Based Traffic Analysis Tools Training
 - iv. The Traffic Analysis Tool Capability and Maturity Model Project
 - v. The Active Transportation Demand Management Cohort: this project has two parts: the first part aims at getting agencies to develop user communities to explore new implementations of ATDM strategies; there are currently nine agency communities that apply ATDM strategies, who are participating in this project. The second part aims at quantifying the benefits of such strategies for evaluation and recommendation purposes.

11- Announcements: the attendees were reminded that the ISTTT24 will be held between July 24 and July 26, 2022, in Beijing, China.

12- The meeting was adjourned at 3:30 pm.