



## Transportation Research Board Annual Meeting

### MINUTES

Committee on Traffic Flow Theory and Characteristics (ACP50)  
Thursday, January 7, 2021 10:00 AM-1:00 PM EST (Virtual Meeting)

Chair: S. Ahn

Minutes prepared by: L. Leclercq

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

#### Welcome and Call to Order

S. Ahn

#### Introductions – Members & Friends

All Attendees

- See sign-in google sheet for the full roster of attendance:  
[https://docs.google.com/spreadsheets/d/1XdurPVrjmdsSPGTZmCRZTH6e3nbHlcDeIgliI\\_fyNRdA/edit#gid=0](https://docs.google.com/spreadsheets/d/1XdurPVrjmdsSPGTZmCRZTH6e3nbHlcDeIgliI_fyNRdA/edit#gid=0)
- 125 participants appear online to the meeting.
- The TRB code of conduct is presented by the chair:
  - Title: Preventing discrimination, harassment, and Bullying: Expectations for participants in NASEM activities.

#### Review and Approval of Minutes

S. Ahn

Committee Meeting of January 13, 2020

Committee Meeting of August 17, 2020

- The minutes for January 13 is approved without modifications.
- The minutes for August 17 will be approved during next summer meeting.

#### Chair Report

S. Ahn

This year the agenda includes:

- TRB activities
  - Two subcommittee meetings:
    - Traffic simulations ACP80(1), on Jan 5<sup>th</sup>.
    - Connected Automated Vehicles ACP50(3), on Jan 8<sup>th</sup>
    - Crowd Flow Dynamics, Modeling and Management ACP50(2), canceled
  - One workshop by Connected Automated Vehicles ACP50(3), on Jan 21<sup>st</sup>
  - One lectern session on advanced in traffic flow theory, on Jan 27<sup>th</sup>
  - Three poster sessions on Jan 25<sup>th</sup> and 28<sup>th</sup>

- All details can be found in the online program.
- TRB Centennial
  - Website: <http://www.trb.org/Centennial/Celebration.aspx>
  - The Centennial papers can be found on the TRB website, including the contribution from the ACP50 committee: <https://trbcentennial.nationalacademies.org/centennial-papers/operations-and-preservation>
  - A special session to celebrate the 100th annual meeting was planned but canceled because of organization issues (incompatibility with the online system). The idea is to replan this special session for the next meeting (2022).
    - Title: Celebrating TRB Centennial: Past, Present, and Future Traffic Flow
    - Interactive Session: Simulation Experiments with a Ring Road
      - Past: human-driven vehicles with no automation
      - Present: human-driven vehicles + ACC vehicles
      - Future: connected automated vehicles
    - Panel Discussion
    - For now, S. Ahn, C. Buisson, H. Mahmassani, L. Leclercq, S. Hamdar, A. Talebpour, A. Skabardonis, R. Stern, and D. Work have volunteers for the special call. More are welcomed.

## TRB Report

**R. Cunard/R. Bertini**

- This year we have a month for the annual meeting! 15000 attendees.
- The TRB will have limited capacity to organize conferences, workshops this year. Limited visibility about what will be possible.
- Poster papers will be available 24/7 on the online platform. The poster session will permit interactions through chat with the authors.
- The content of the annual meeting will be all recorded and collected until Feb 20<sup>th</sup>. The content will be available online for all participants by the end of March.
- The Operation section is now part of safety and operation group, which includes three sections: operations, safety, and human factors. There are 24 committees under this group. New opportunities may emerge in the future to make connections with other sections: safety and human factors.
- The information for young members (under 35) group will be announced to the members and friends.
- A certificate of appreciation has been prepared for Prof. Soyoung Ahn for her service as chair of the ACP50 committee. It will be delivered to her as soon as possible.

## FHWA Programs & Activities

**J. Sturrock/R. James**

- This year, FHWA has published:
  - The traffic analysis toolbox with 3 revisions 2019 updates. It can be accessed through the FHWA website: <https://ops.fhwa.dot.gov/trafficanalysisitools/>
  - Scoping and Conducting Data-Driven 21st Century Transportation System Analyses: this document defines a Continuous Improvement Process (CIP) to integrate data-driven time-dynamic operational analyses within transportation systems management.
  - Guides (e.g., reliability user guide, CAV analysis, modeling and simulation framework and toolbox) were completed but are waiting for approval before publications. They will be published on 3<sup>rd</sup> quarter of 2021.
- The current projects:
  - Data analysis guide with remote training

- Data Fusion guide
- Traffic analysis tools capability maturity model
  - Develop a road map to improve and increase the maturity with respect to traffic analysis tools.
- Active transportation demand management coherent project: *This project is looking at the application of active transportation demand management strategies, e.g., corridor traffic demand management strategies. It is looking at the implemented strategies and lesson learns from them, such as applications, promotions, and evolution of the travelers' behavior. The goal is to get better quantification of the benefits of the applications of active transportation demand management.*
- Web-based training for traffic analysis tools: This project is primarily focused on traffic analysis tools 2019 revision. It will be developed in and provided through the national highway institute.
- Data acquisition effort is underway to better assess how human interacts with new vehicle technologies. This is supported by Transportation Research Center Inc. (TRC) and University of Illinois at Urbana-Champaign (UIUC). TRC is partnering with UCLA, and UIUC is partnering with Northwestern University and George Washington University.
  - TRC will collect data using many CAVs on freeways and arterials in central Ohio.
  - UIUC will collect data from 20 advanced driver assistance systems and automated driving systems. They are going to use 12 vehicles with one capability, 4 with two capabilities and 4 with four capabilities. The data will be collected first on a busy arterial in Washington DC and then on three freeways.
  - All data will be collected with respect to the variables in traffic analysis and simulation tools.
  - All collected data will be published online in two years.
- Some project reports of micro-simulation, including connected vehicles and evaluation have been finished recently and the reports will be available soon. For instance:
  - A report on macroscopic and microscopic tools to evaluating the impact of narrowing freeway lanes on operations and safety: under final review and will be available this year.
- Trajectory data are collected by drones and helicopters – This project outputs are online but still for internal access. It will be available soon for the community.
- The multiresolution modeling project was started last year. Two reports on data practice and CAV analysis are provided and will be published as a single document soon. In parallel, the comprehensive document on multi-resolution modeling methodology is under preparation. The first draft will be provided in April. The online version will be published in 2022.
- CAV analysis modeling and simulation tools AMS – The final report is currently under review and will be available soon. Here are new algorithms developed by this project:
  - Lane changing model: <https://github.com/STOL-AMS/TO-22-Lane-Changing>
  - Improved CACC model: <https://github.com/STOL-AMS/TO-22-Improved-CACC>
  - Speed harmonization: <https://github.com/STOL-AMS/TO-22-Speed-Harmonization>
  - Merge coordination: <https://github.com/STOL-AMS/TO-22-Merge-Coordination>

## Membership

S. Ahn

- Chair rotation in 2021 (April)
  - Prof. Ludovic Leclercq has been nominated to become the next chair of the ACP50 committee.
- The next member rotation will be in 2022.

## Traffic Monograph

S. Ahn

- The Monograph of TFT would need some updates to include traffic modeling for connected and automated vehicles and the network Macroscopic Fundamental Diagram. The question about how the publication will be ensured is raised. The question of which support can be secured to help the effort is asked. A subcommittee will be created and report during the next meeting.

## **TFTC Subcommittee Reports**

### ***Crowd Flow Dynamics, Modeling and Management (ACP50(1))***

**S. Ahn**

- Crowd symposium has been postponed to 2021
- A special call for papers is being considered in 2021

### ***Connected and Automated Traffic Flow (CAT-Flow) (ACP50(3))***

**S. Hamdar**

- The subcommittee meeting has not happened at the time of the ACP50 meeting.
- 16 CAV papers handled this year (6 accepted; 3 lecterns (standard session/workshop invitation); 4 posters; 2 re-review for publication consideration).
- A Workshop will happen at TRB on Jan, 21st, 2-5 pm.
  - From Traffic Flow Modeling of Connected and Automated Vehicles to Transportation Guidelines, Policies, and Specifications: Lessons Learned and Opportunities Missed.
- AVS 2020 Breakout Session was held on AI for AV control and traffic operations: challenges and opportunities
  - A book chapter will be published.
- AVS 2021 Breakout Session organization will be discussed during the subcommittee meeting
- The website has been updated.
- A call for papers is available through Frontiers journal
  - Transportation Systems Modeling Section: Changes in Transportation Systems in the Era of Artificial Intelligence and Robotics: From Vehicle Technology to Traffic Management.

### ***Joint subcommittee on Traffic simulations ACP80(1)***

**C. Melson**

- New SimSub is now sponsored by ACP50 and ACP80 (the new traffic simulation committee).
- The new role is to collect and identify user needs, recommend actions to address user needs, and provide a forum and information exchange.
- The short-term activities will be identified to continue SimSub
- ACP80 website will turn to Simsub website and the website will be updated soon.
- Liaison with other Committees: Hamdar, S. and Ozbay K. have volunteers. More are welcomed.
- Call for volunteers for involving in the activities has been made. All ACP50 members and friends are welcomed.

## **Research Problem Statements**

**V. Gayah**

- Research needs statements need to be sponsored by a state DOT. Usually, they should be submitted by Nov 1<sup>st</sup>.
- When you wrote a RNS, you increase your chance to get a NCHRP project funded later on.
- This year one RNS was submitted jointly with the SimSub by S. Hamdar, D. Chen, M. Hadi, V. Gayah. Five states are supporting this RNS.
- NCHRP synthesis topics can fund the state-of-the-art effort. The deadline is Feb 17<sup>th</sup>, 2021.

Coordination with V. Gayah would help to improve the chance of success and better tracking of all effort.

- Integrating safety in operation can be the subject of the next RNS.

## **Paper Review**

**S. Ahn**

- The chair first recalls main the deadlines related to the paper review process.
- The review decision on papers submitted for publication are either reject or send to TRR editorial board.
  - There are some issues about the transfer of reviewer identities between the TRB and the TRR system. These issues are currently investigating by the chair and H. Mahmassani.
  - A publication advisory group is presented briefly: This group is responsible for all publications at TRB and TRR. Researchers for any questions or comments can contact it.
- This year 109 papers have been received. This is a significant drop (-44%) compared to last year, but there are multiple reasons. 65 papers are accepted for presentation: 4 papers were accepted for lectern sessions and 61 for poster sessions. The acceptance rate is 60%. Among the 48 papers submitted for publication, 15 have been transferred to the journal.
- Note that 65 papers went to the new simulation committee.

## **Awards**

**L. Leclercq**

- Five award decisions to be made annually: two internal to committee and three recommendations to TRB.
- Please mention award eligibility status on the title page of the paper to help the process; papers must be submitted for publication to qualify.
- Award subcommittee has four members: M. Menendez (chair), L. Leclercq, R. Bertini, and J. Kim. L. Leclercq will step out this year, and the chair of the subcommittee will choose the replacement.
- 2020 Mickle award: nomination made but canceled due to all the ongoing TRB/TRR changes.
- 2020 Burggraf award: nomination made but canceled due to all the ongoing TRB/TRR changes.
- 2020 Cunard award presented to 20-03535: Categorizing Merging and Diverging Strategies of Truck Drivers at Motorway Ramps and Weaving Sections using Trajectory Dataset by S. Sharma, M. Snelder, L. Tavasszy, H. Van Lint.
- 2020 Greenshields award presented to 20-01415: Lane detection and lane changing phenomena identification with data from a swarm of drones by E. Barmounakis, G. Sauvin, N. Geroliminis.
- 2020 Best theoretical Paper on Traffic Flow Theory presented to 19-05914: 20-04375: Estimation of the change in cumulative flow over probe trajectories using detector data by P. Van Erp, V. Knoop, E. S. Smits, C. Tampere, S. Hoogendoorn.
  - An idea is to name this award: "Nathan Gartner Award".
- There is no Best reviewer award this year.
- This year, same as before, the paper had to be submitted (and accepted) for TRR publication to qualify for any award. However, this requirement will be reviewed, given the changes to TRR.

## **Mid-Year Meetings**

**S. Ahn**

- The 2020 summer meeting is canceled because of the pandemic.
- The next midyear meeting will happen during ISTTT 24, Beijing, China, 2021.
- TU Delft is happy to organize the Midyear meeting in 2022 in Amsterdam.

- It would be interesting to have a midyear meeting through Zoom to increase attendance.

## Outreach and Diversity

**A. Talebpour**

### Committee Communications

A. Talebpour

- Video shoot-out for midyear meeting is postponed because of the pandemic.
- A form is disseminated to better know what are the expectations from the community in terms of communication. (<https://forms.gle/XvR7GUWtkK8TF6>)
- The Newsletters is transformed into a new website (<http://tftcnews.blogspot.com/>) with monthly issues.

### TFTC Journal Club

A. Talebpour

- The news about the journal club will be announced after TRB.

### TFTC Webinar

R. Aghamohammadi

- TFTC webinars are going well:
  - 8 webinars were already done in 2020.
  - More webinars are scheduled for 2021 starting in February.
  - Please volunteer by contacting J. Laval and R. Aghamohammadi to present.
- All webinars are recorded and available on the TFTC Youtube channel.

### Committee Website

A. Zockaie and R. Aghamohammadi

- The new website has a new address: [www.tftc-trb.org](http://www.tftc-trb.org) available for the next 10 years. All attendees can use it to subscribe to TFT Friends Google Group and TFT Webinars Google Group.
- A TFTC LinkedIn page has been created ([www.linkedin.com/company/tftc-trb](http://www.linkedin.com/company/tftc-trb)).
- The Google sheet and scholar page will be updated soon.
- Awards page will be updated and categorized.

## Liaison with other Committees

**All Attendees**

### Young Members Council

E. Gonzales

- There will be a meeting Safety and Operations Group Young Members Subcommittee, AC000(1) on Monday, Jan 11<sup>th</sup>, 4-5:30 pm.
- The committee is presented shortly:
  - All early in the profession can involve in this council not only people under 35 years old. Experienced people can also be involved as mentors.
  - The activities are useful for graduated students and postdocs.

### Highway Capacity Quality of Service Committee (ACP40)

J. Sturrock

- There will be several updates on the highway capacity manual issued this year as version 6.1.

### Traffic Simulations Committee (ACP80)

M. Hadi

- A simulation workshop was held in three days with 183 attendants.
- The collaboration between this committee and ACP50 is highlighted.
- The TSSM (Transportation System Simulations Manual) will be reviewed and published by TRB by the end of the year.

## **International Liaison**

## **International members and attendees**

- NCHRP 03-137 Project K. Ozbay
  - The topic is about algorithms to convert basic safety messages into traffic measures.
  - Simulation-based data, drone data and trajectory data are used in this project for calibrating and validating online and offline algorithms.
  - All data, algorithms (codes) and materials will be available online.
- Frontiers in Future Transportation L. Leclercq
  - Several special issues related to ACP50 subjects are available on the website.

## **Announcements and Future Meetings**

## **All Attendees**

- The automated vehicles symposium, 2021, will be held fully virtual and sponsored by TRB.
  - The planning meeting on Friday, Jan, 15<sup>th</sup> 10 am.
- ISTTT24 will happen in Beijing in 2021.
- Advertisement is made for the next TRISTAN XI conference in June 2022.

## **New Business**

## **All Attendees**

- 2022 Annual Meeting Calls for Papers (Due in May) All Attendees
- 2022 Workshop Proposals (Due in June)
- Special TFTC Session in 2022
- Triennial Strategic Plan
- Revise Monograph on Traffic Flow Theory

## **Adjourn**

## **All Attendees**