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TECHNICAL MEMORANDUM

TxDOT IAC – Technical Support to the CAV Task Force

DATE: August 12, 2020

TO: Zeke Reyna, TxDOT
 Strategic Research Analyst, CAV

COPY TO: TTI_Reports@tti.tamu.edu
 Tim Hein, Research Development Office, TTI
 Ed Seymour, Executive Associate Agency Director, TTI
 Robert Brydia, Senior Research Scientist, TTI

FROM: Beverly Kuhn Research Supervisor
 Senior Research Engineer Texas A&M Transportation Institute

RE: Freight and Delivery Subcommittee
 July 16, 2020 Meeting Notes

Attendees:

Alex Payson	Austin Transportation
Andrea Chacon	TTI
Andrea Gold	UT CTR
Ashley Myers	Grace & McEwan
Bob Brydia	TTI
Brent Skorup	Mercatus
Captain Steven Rundell	Texas DPS
Chelsea Tanaka	Ike Robotics
Cory Clothier	Stantec
Dan Rozycki	Transtec
Daniel Goff	Kodiak
Darran Anderson	TxDOT
David Millikin	WGI

David Ruth	Moto Go
Debra Richmond	Permian Strategic Partnership
Dr. Michael Walton	UT CTR
Ed Seymour	TTI
Gerardo Interiano	Aurora
Hannah Barron	Austin Transportation Smart Mobility
Jason JonMichael	Austin Transportation Smart Mobility
Jeff DeCoux	Autonomy Institute
Jimmy Archer	Texas DMV
Kristie Chin	UT CTR
Michael Sanders	LoneStar UAS A&M Corpus Christy
Monika Darwish	Embark Trucks
Paul Avery	AECOM
Steven Smith	McKinsey & Company
Tom Bamonte	NCTCOG
Victor De La Garza	AECOM

I. Opening Comments/Roll Call – Zeke Reyna, TxDOT

- Zeke welcomed the group. Narrowing down list for 2020 white papers.
- Zeke took roll call of all attendees.

II. Co-Chair Welcoming Statements – Daniel Goff, Kodiak Robotics and Dr. Michael Walton, University of Texas Center for Transportation Research

- Daniel stated goal for SC to help CTR and TTI develop content and perspective for white paper to inform legislature on what is happening with autonomous freight. Narrow down topics and focus. Understand what people are thinking about. Thanked everyone for work.
- Michael welcomed discussion in CAV as important and unique opportunity for Texas regarding the number of applications and situations. Generate guidance and discussion for writing team, but also to think about how to expand/build on opportunities.

III. Topics Highlighted for Task Force Efforts – Zeke Reyna, TxDOT

- Seven topics had been identified in the October 2019 Task Force meeting applicable to the Freight and Delivery Subcommittee.
- They were reconfirmed and expanded upon during the June 2020 Task Force meeting. In July they were further discussed and prioritized through voting.

- Five topics were highlighted for focus during the next few months. These five topics will be voted on prior to the august meeting and the results will become the basis for the first white paper.
- Attendees were invited to offer suggestions for content.
 - **Coordination**
 - AV needs to pull over. inspection. how to communicate to software driver
 - Access to Easements to support Dumb Infrastructure
 - Bring together companies developing CAV freight and compliance / inspection agencies and determine what aspects can be automated
 - Need to work with enforcement agencies and AV manufacturers to define how they can interact, and query those systems, and publish guidelines
 - Crosswalk human driver to software driver
 - Incident management coordination and truck detour
 - collaboration opportunities between industry and secondary learning for education and training/workforce growth
 - Policy guidance information to cities and counties about easement and airspace leasing
 - Police enforcement coordination
 - Automated truck inspection pilots
 - **Infrastructure**
 - Warehousing
 - Need ability for automated vehicles to safely exit highway, pull over, and transition to human driver
 - Border/international trade corridors
 - Electric vehicles
 - Connectivity expansion
 - Demarcating and leasing aerial corridors for UAS
 - Deployment and installation of shared fiber optics
 - Regional Command and Control centers for CAVs coordination
 - Consideration of metro hubs for staging areas both for the pickup of goods and transitioning goods between vehicles
 - (Communication, Navigation, Surveillance
 - Building highways to AV-friendly specs
 - Parking/transfer hubs
 - INTELLIGENT & AUTONOMOUS INFRASTRUCTURE (5G, Edge, ITS, APNT)
 - Managing work zones
 - Road maintenance needs to support AVs
 - Policy guidance on drone ports and vertiports
 - What are the needs?

- Companies operating AVs need heads-up when construction, new lane painting, etc. happens on roads
 - Intermodal
- **First Mile /Last Mile**
 - Urban based CAV last mile delivery of goods and having consistent regulatory oversight / policy throughout TX.
 - How about intermodal of the last mile. Sharing of vehicle space for movement of goods. Including traditional people moving vehicles such as buses, trains, etc.
 - sidewalk bots activate ped crossing (how?)
 - Handoff between automated vehicles and final mile vehicles may require secure drop zones located near urban areas
 - Allocating scarce sidewalk space
 - Intermodal facilities needs
 - Parking areas with charging capabilities and data connectivity
 - How to enable safe crossings low speed arterial crossing high-speed facility
 - Expanding the network beyond 25 mph
 - Accessibility/disability-friendly vehicles
 - Crisis preparation/resilience and COVID
- **Deployments**
 - Need to continue good communications with AV companies, to define their ODDs and coordinate with public agencies
 - Upgrade of traffic signals for SPaT information
 - Need for the public to understand where technology is being deployed
 - USDOT CV APPs
 - Understanding full range of CAV technologies available, and their potential impact on the public
 - Inventory of deployments in the state
 - Collect good knowledge of what local communities know and how they want to be coordinated with for deployments?
 - Identify what resources are needed to facilitate planning between govt and business
 - CAV TF website and AV TEST website are working to post info about every CV and AV test or deployed site in the state
 - Permissive guidance and benchmarks for cities re: delivery AVs
 - Public education around deployments
- **Roadside Environment**
 - What do AVs do at border control checkpoints?
 - Extensive multi-spectral network coverage for communications/control/ info sharing
 - rural roadside enablement (facilities and tech)
 - weigh station/inspection station of the future

- Solution needed for AV to traverse/ bypass inspection stations
- Need for common co-located platform, for systems that communicate with CV systems, or at least some consistency rather than randomness
- Considerations of city planning to accommodate greater delivery services, both lanes usage and curbside ops
- Communications network not only focused on the ground, but able to communicate upwards to UAS
- For public-owned infrastructure, developing reasonable fees and leasing rates
- Digital truck parking and multi-avenue information sharing
- Policies to expedite construction of long-lasting roadside infrastructure (poles, conduit, handholes)
- Transition points for AV to human operated

IV. Next Steps – Daniel Goff and Michael Walton / Zeke Reyna

- Thanked everyone for feedback.
- Next Tuesday, July 21st, Full Task Force meeting.
- Next SC meeting probably 2nd/3rd week of August

V. Closing Remarks – Daniel Goff and Michael Walton

- Thanks, from both/everyone.