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TECHNICAL MEMORANDUM

TxDOT IAC – Technical Support to the CAV Task Force

DATE: February 9, 2022

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
February 3, 2022 Meeting Notes

Attendees:

| | |
|-----------------|--|
| Aisa Showery | Texas Department of Transportation |
| Andrea Chavez | Grace & McEwan Consulting, LLC |
| Anna McAuley | University of Texas Center for Transportation Research |
| Bobby Cottam | Burns and McDonnell |
| Brent Skorup | Mercatus |
| Brian Moen | City of Frisco |
| Carolyn Mays | Texas Department of Transportation |
| Daniel Goff | Kodiak |
| Darran Anderson | Texas Department of Transportation |
| David Millikan | WGI |
| David Ruth | Motogo |
| Ed Seymour | Texas A&M Transportation Institute |
| George Bitar | Volvo |

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| Giacomo Yaquinto | Texas Department of Transportation |
| Jimmy Archer | Texas Department of Motor Vehicles |
| Joe Henry | Lone Star UAM |
| Kjeld Lindsted | Panasonic |
| Kristie Chin | Texas Innovation Alliance |
| Monika Darwish | Kodiak |
| Nicole Katsikides | Texas A&M Transportation Institute |
| Rama Dhanikonda | City of Richardson |
| Robert Brydia | Texas A&M Transportation Institute |
| Thomas Bamonte | North Central Texas Council of Governments |
| Zeke Reyna | Texas Department of Transportation |

I. Opening Comments/Roll Call – Zeke Reyna

- Welcome and thank you for attending this first meeting of the year for the Freight subcommittee. We appreciate everyone taking the time to attend and participate
- Review of members and attendee list in lieu of roll call.

II. Chair Welcoming Statement - Daniel Goff

- Welcome everyone and thank you for joining us today.
- I think a lot of exciting stuff to talk about today.

III. Mural Board Discussion – TTI Team

- Focus for Today
 - Goal: Identify what TxDOT should do to ensure forward thinking operational opportunities for Autonomous Freight, specifically Autonomous Trucking.
 - Audience: CAV Industry – Public and private sector
 - Deliverable: White Paper
 - Goal for Today: Review status / Input on content and/or missing items. Recruit interview volunteers.
- Background
 - Many state and federal efforts but technology is mostly new.
 - More deployment expected by 2024 including operations without safety drivers, targeted at the middle mile.
 - Industry expects cost savings, which is catalyst to deployment.
 - Inspections is a target, maybe “pre-flight” trucks before trip.
 - Need broad public/private sector partnerships for vehicle approval and safety reporting.
 - In addition, while freight CAV has been considered mostly at the long-haul, Interstate level, there is recognition that freight CAV is growing in different types of freight-centric locations. including:
 - Controlled Environments (e.g., ports, warehouse and distribution centers, intermodal facilities):

- Streets (e.g., urban areas, suburban streets, and strong mix of activities and modes (bike and pedestrian with urban delivery)).
 - Resource Roads (access to facilities like forest and agriculture).
 - Highways (Interstates and major roadways).
- Key State DOT Operations Activities
 - This research found that there are some new activities in the autonomous trucking space:
 - Comments:
 - Seems to cover the topics
 - Might need to address a truck conspicuity issue, particularly with respect to breakdowns
 - Long term plans for how vehicles talk to on a day to day basis to DPS and talk to TxDOT
 - How to increase in scale?
 - TRANSFER HUBS: Understanding the property needs for transfer hubs and roadway right of way (ROW) to support autonomous trucking.
 - Networks may change travel patterns and freight flows.
 - Coordination with local governments will be critical.
 - DOTs may want to catalogue and grade available state-owned property, especially highway right of way, to support transfer facilities (P3 or grant match).
 - Comments:
 - Tie transfer hubs to truck parking
 - Texas TPAS - I10 effort
 - In the end, a transfer hub is a parking lot, perhaps with specific features
 - TxDOT has 30M per year for 10 years to facilitate and build truck only parking areas as well as expanding existing rest areas for more truck parking
 - What elements to add/consider for existing areas or new facilities
 - TxDOT Maint has 10-year plan (augment plus new)
 - Future meeting could highlight TxDOT truck parking and transfer hubs
 - FREIGHT ROUTES: Business route optimization, what will routes look like with automation?
 - Understanding how the freight network is going to change if companies adopt autonomous operations.
 - Comments:
 - Hub proximity to highways could be a tie to truck parking
 - Current model appears to be facility to facility
 - TxDOT in the middle of the next Texas Freight Mobility plan
 - Need industry input to help identify the most strategic corridors for AV network - allows investments to be targeted to AC operations
 - Needs to be data driven - does TxDOT have data to help?
 - Can a "specification" for the truckport be published?
 - 90% of what comes to you through the Port of Houston goes through Dallas Fort Worth by truck

- CIRCUITS: Drayage and circuit route identification for automation and platooning.
 - Identify where there may be dedicated lanes or routes for platooning or automated trucks to move freight in a circuit.
 - Pavement condition from repeated truck operations may be problematic, needs assessment and planning.
 - Comments:
 - Kodiak can engage on this. Engineering teams are not as concerned about this on long-haul.
- FREIGHT AV ECOSYSTEM: Continuing the development of the CAV ecosystem/Data Development.
 - Consider ways to use V2I that supports the system operators and decision-makers, autonomous trucking, and conventional trucking.
 - Develop freight traveler information systems that work for autonomous vehicles and conventional vehicles.
 - Review and or establish and update operational procedures that can be flexible with technology as it evolves.
 - Outfit the network with sensors and devices to have as much opportunity as necessary to collect freight user experience.
 - Comments:
 - Need to consider aerial and PDD as well.
- Identified Research & Action
 - How will the freight network change with new autonomous trucking networks?
 - Does TxDOT or the State of Texas have property along highways ROW that could support autonomous trucking?
 - Map and assess existing and future freight flows to plan for changes, especially on the parts of the freight network that TxDOT can best control.
 - Assess existing and future freight flows in the statewide freight plan and engage Texas industries on how they might be thinking of optimizing routes for autonomous trucking.
 - Continuing development of visual freight flow resources to aid in discussions and decision-making.
 - Evaluate truck flows at key freight locations for those that are drayage and circuits for potential platooning and automation.
 - Research ways to offset asset decline or optimize asset performance given new, repetitive levels of activity on drayage/circuit segments.
 - Test out V2I data for state DOT decision-making purposes. Identify what is useful, what kinds of intel does it provide, what is the best way to access it and process it.
 - Review, update, and establish new operational procedures for inspections, incident management, routing, etc. that works with autonomous trucking as it does with conventional.
 - Comments:
 - Database queries to TxDOT for building a safety case NHTSA as well). Create a baseline query to run repeatedly and publish the results.
 - See what goal is to allow AV developers to exceed the goal

IV. Next Steps – Bob Brydia, TTI

- As is taking place across all the subcommittees, we will be continuing these interviews, reaching out to different companies to get answers to these questions. Again, we're not asking for anything proprietary.
- We will wrap it up with a White Paper of which you will see an initial draft for review so we can get your input.

V. Closing Remarks – Daniel Goff / Zeke Reyna

- Thanks for a really great conversation as we made a ton of progress.
- Thanks everybody for taking the time to be part of this and for the great feedback
- Be on the lookout for emails from us in the near future on Senate Bill 1308
- Also be on the lookout for an invitation to a Full Task Force meeting in the near future