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Spotlight on White Paper Opportunities

The Texas CAV Task Force was created at the request of Texas Governor Greg Abbott in January 2019. The Texas CAV Task Force is responsible for preparing Texas for the safe and efficient rollout of CAVs on all forms of transportation infrastructure.

The primary functions are:

1. Coordinating and providing information on CAV technology use and testing in Texas.
2. Informing the public and leaders on current and future CAV advancements and what they mean in Texas. This process includes reporting on the current status, future concerns, and how these technologies are changing future quality of life and well-being.
3. Making Texas a leader in understanding how to best prepare and wisely integrate CAV technologies in a positive, safe way, as well as promoting positive development and experiences for the state.

The Texas CAV Task Force is composed of a voting group of no more than 25 members and represents the full spectrum of CAV stakeholders.

The following opportunities have been summarized for each of the five subcommittees for the Texas CAV Task Force.

DATA, CONNECTIVITY, CYBERSECURITY, AND PRIVACY SUBCOMMITTEE

To effectively move forward with data exchanges to support the increasing levels of CAV activity in the state, Texas should consider taking an ownership role in participating in and/or developing data exchanges. Specifically, Texas should consider:

- Developing a comprehensive list of data exchanges that are pertinent to the development and deployment of CAVs and that also will improve operations and safety for human-driven vehicles. This would include an inventory of what private-sector companies would participate in data exchanges for any given use case.
- Identifying the most useful data exchange CAV and safety use cases for the state and its jurisdictions by collaborating with current and future users to identify needs.
- Developing an action plan for using or creating a data exchange for a particular use case that enjoys strong support from both public- and private-sector participants.
- Identifying potential failure points of data exchange collaboration and mechanisms to mitigate the concerns that could impact acceptance and usage.
- Encouraging TxDOT, with the help of metropolitan planning organizations, private contractors, and cities, to make a push for improved WZDx reporting statewide.
- Continuing the procurement of third-party data sources because these data platform-sharing initiatives promote standardization, cooperation, and data fluency at all levels of roadway operations.

EDUCATION, COMMUNICATION, AND USER NEEDS SUBCOMMITTEE

Moving forward, the subcommittee has many opportunities to communicate about CAV activities in Texas, be they pilots, demonstrations, research findings, or workforce initiatives. This is the objective of the tactical communication plan (TCP). The TCP will provide the roadmap necessary for this subcommittee to reach the prioritized audiences and deliver a clear and consistent message about CAVs in Texas.

- Build upon findings from the communication workshop that helped identify and prioritize audiences and their respective motivations. The key messages that provide the foundation for outreach, engagement, and communication will be created based on input from the communication workshop.
- Outline collateral and associated messaging based on the prioritized audiences identified in the workshop. Specifically, an early opportunity is to develop information kits. The kits can include branded and

formatted messages in a variety of pieces, such as fact sheets, FAQs, graphics, social media messages, infographics, short use cases, etc.

- Package information so that it is easy to share with partners and messengers. Providing ready-made information helps ensure the message from the CAV Task Force is consistent. Moreover, branding can help instill trust that the message comes from a reliable and reputable source.
- Identify specific metrics that can be used to gauge reach and effectiveness. The Education, Communication, and User Needs Subcommittee can provide guidance on appropriate metrics, establish thresholds and targets, and determine evaluation time frames and schedules.
- Evaluate changes in attitudes and/or behaviors related to the communication goals and the messages themselves, including factors such as clarity, comprehension, ability to affect change, etc.
- Define communication protocols between the subcommittees of the CAV Task Force. Each subcommittee will likely be the conduit or messenger for outreach to audiences that are particularly relevant to that subcommittee.
- Outline communication protocols and establish a process to ensure each engagement is captured.

FREIGHT AND DELIVERY SUBCOMMITTEE

The following summarizes the opportunities for advancing the three key categories of actions to support freight CAV activity in Texas.

Developing a Transfer Hub/Terminal Strategic Plan

The following opportunities may help the state prepare for and support transfer hub development.

- Assess where there are potential terminal locations in relation to Texas' network and the use of existing tools to understand freight mobility in those areas.
- Assess future conditions to understand the impact of increased truck activity including a look at potential congestion, safety, and asset conditions.
- Develop a catalog of state-owned property and determine where potentially suitable transfer hub property exists that could support transfer hub activity.
- Develop a strategic plan focused on transfer hub development to include:
- Understanding of existing plans by companies operating in Texas;
- Evaluation of private versus open source and the potential impacts or issues;
- Understanding of freight flows and the freight network, as well as where it makes sense to have transfer hubs;
- Assessment of real estate needs including ROW along highways, land use issues, local government planning and zoning conventions, and community mitigation needs; and
- Identification of Texas' role, level of support, and other actions that are needed to help coordinate, facilitate, and mitigate development of transfer hubs and rollout of automated trucking including resources for local governments.

Assessing Texas Freight Network and Automated Truck Impacts

The following opportunities can support an assessment of the transportation network, specifically the Texas Freight Network, to support automated trucking.

- Assess existing and future freight flows in the statewide freight plan and engage Texas industries concerning how they might be thinking of optimizing routes for autonomous trucking.
- Commit to maintaining and using resources (i.e., TCAT and newer freight fluidity tools released in 2023) to assess freight networks, tie commodities and industries to networks, and help identify points that might change or shift when autonomous trucks saturate the network.
- Evaluate truck flows at key freight locations to help identify drayage and circuit operations that may be best targeted for autonomous trucks or platooning.
- Identify potential drayage and circuit routes and what might need to be considered from an operational perspective that would support the freight movement while ensuring safety, efficiency, and environmental improvements.

- Have operations staff work with TxDOT planning, asset management, and pavement staff to research ways to offset asset decline or optimize asset performance given new, repetitive levels of activity on drayage and circuit segments.
- Assess the existing freight network in relation to locations of automated trucking activity (routes and transfer hubs).
- Discuss and document how automated trucking network optimization might cause the routes to be dynamic, and whether there is an expected impact on the network or other infrastructure support is needed.
- Understand where in Texas the circuits or specific freight routes are in order to prioritize for automated trucking implementation.

Working with District Offices to Understand Freight Routing and Build a CAV Ecosystem

Multiple opportunities exist to develop a deeper understanding of the existing autonomous freight network in more detail, share information between the public sector and autonomous trucking companies, and advance a freight CAV ecosystem. These include:

- Continue development of pilots and experiments with companies willing to share data, and test V2I data for state DOT decision-making purposes related to automated trucking. Identify what is useful, what kinds of intel it provides, and the best way to access and process the information. This should build on the TxDOT efforts described earlier, especially for areas like work zones.
- Review, update, and establish new operational procedures for inspections, incident management, routing, etc. that work with autonomous trucking as they do with conventional trucking. Consider how things might need to change, and what data feeds are needed and in what format for messaging the driving community.
- Establish a data/information exchange and repository for more robust sharing of automated trucking activities and state information that can support industry.
- Inventory assets, conditions, property, freight flows, and other important information to support the repository.
- Build on existing efforts such as the Connected Vehicle Data Framework to continue development of CAV data uses, data exchanges, and V2X operations, developing concepts of operation and identifying workforce needs, technology development, and other needs to support advanced data analytics and communications.

Focus on an outreach and communications strategy that helps Texas citizens and local governments understand the changes that are occurring and brings stakeholders into the discussion on how transfer hubs are developing, what stakeholders can expect on freight routes, and other options to keep communications open that will help grow the ecosystem.

LICENSING AND REGISTRATION SUBCOMMITTEE

This provides strategies for TxDOT and other organizations to help educate the users of automated and connected vehicles. This information will help Texas state agencies and other stakeholders understand how to best move forward and prepare their citizens for automated vehicle technologies. Based on the literature review and stakeholder interviews, the following key takeaways allow decision makers to prepare for and educate the users of automated and autonomous vehicles, including freight, passenger vehicles, and shuttles:

- It is critical that all automated vehicle stakeholders use consistent terminology that accurately reflects the capabilities of the technology.
- Collaboration between automobile manufacturers and dealers is important to guarantee successful educational efforts for the consumer regarding the automated features of new vehicles.
- States may consider mandating manufacturer-led training efforts for service and collision technicians that can ensure the prompt transfer of knowledge regarding automated vehicles.
- Chat rooms can be another tool to provide educational elements of automated vehicles, which can apply to automobile dealers, service centers, and collision technicians.
- It is critical to remember that individuals may have different learning styles, so redundant forms of educational tools in assorted styles (e.g., written, video, chat rooms, etc.) will be extremely beneficial for all individuals who interact with automated vehicles.

- States may want to embrace autonomous vehicle deployments because survey results from other deployments have indicated that users have positive experiences. However, the public needs to become familiar and comfortable with the technology before they are willing to use the services on a more frequent basis.
- It is critical that states include the correct stakeholders in the conversations. For example, the state police will be a critical stakeholder concerning automated trucks because these trucks will primarily operate on interstates. Passenger vehicles and shuttles will require interaction with local police because passenger vehicles and shuttles will primarily operate in local jurisdictions.
- Because the ownership model may change with automated and autonomous vehicles, states may want to recognize the value that vehicle safety inspections could play in ensuring that automated and autonomous vehicles are safe for transportation purposes. Vehicle safety inspections in Texas do not currently, by law, require the evaluation of ADAS or autonomous features. This factor could become important when another individual or group owns the vehicle after its initial purchase from a licensed dealer because there will likely be multiple users of the vehicle during its useful life. This is similar in concept to fleet vehicles or car rentals that have multiple users.
- States may want to plan how crash reporting can be updated to reflect automated vehicles. As more data are recorded, states can accurately reflect the safety of autonomous vehicles, but if the data are not recorded, there is no way to tell consumers honestly and transparently about the safety of automated vehicles.
- States may want to plan on how data from connected and autonomous vehicles can and should be used to improve safety and reduce congestion.

SAFETY, LIABILITY, AND RESPONSIBILITY SUBCOMMITTEE

During the background research and interviews performed for the development of this white paper, a primary consideration that came to light was the need for data sharing. Most often, this was referenced in the form of data exchanges where a two-way street of data reception and disbursement could be used to provide entities within the CAV arena with enhanced information about the roadway characteristics and the vehicles driving on them.

To effectively move forward with data exchanges to support the increasing levels of CAV activity in the state, Texas should consider taking an ownership role in participating in and/or developing data exchanges. Specifically, Texas should consider the following:

- Develop a comprehensive list of data exchange use cases and which potential exchanges might serve those needs. This list would include an inventory of which private-sector companies would participate in data exchanges for any given use case.
- Identify the most useful data exchange use cases for the state and its jurisdictions by collaborating with current and future users to identify needs.
- Develop an action plan for using or creating a data exchange for a particular use case that enjoys strong support from both public- and private-sector participants.
- Identify potential failure points of data exchange collaboration and mechanisms to mitigate the concerns that could impact acceptance and usage.